



European Union Aviation Safety Agency
Comment-Response Document 2017-21

Appendix
to ED Decision 2019/004X/R

RELATED NPA 2017-21 — RMT.0624 (PHASE 2) — 15.2.2019

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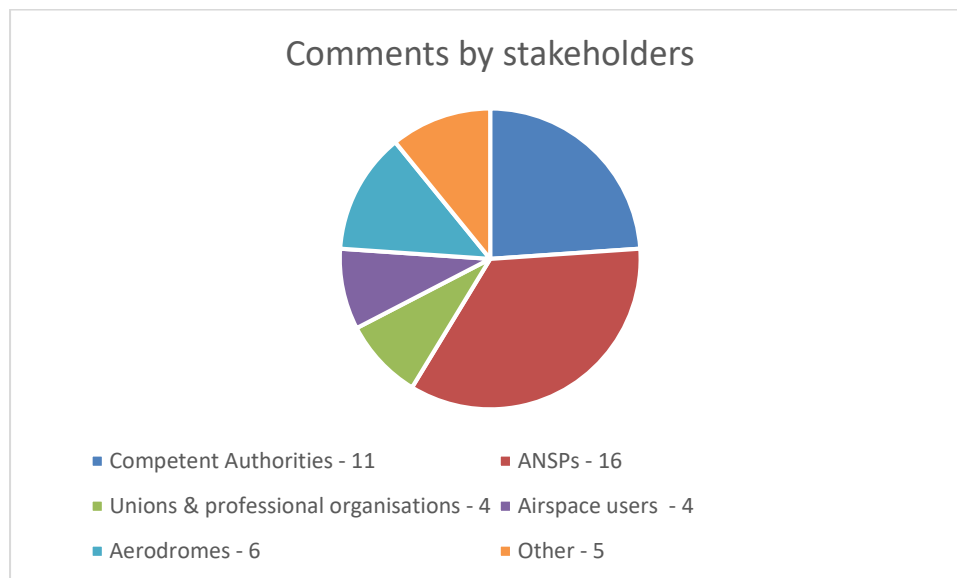
1. Summary of the outcome of the consultation

NPA 2017-21 was issued for public consultation on 21 December 2017. The public consultation was closed on 3 April 2018. Some commentators provided their comments after this date and their comments were also taken into account and are included among the comments/responses in this CRD.

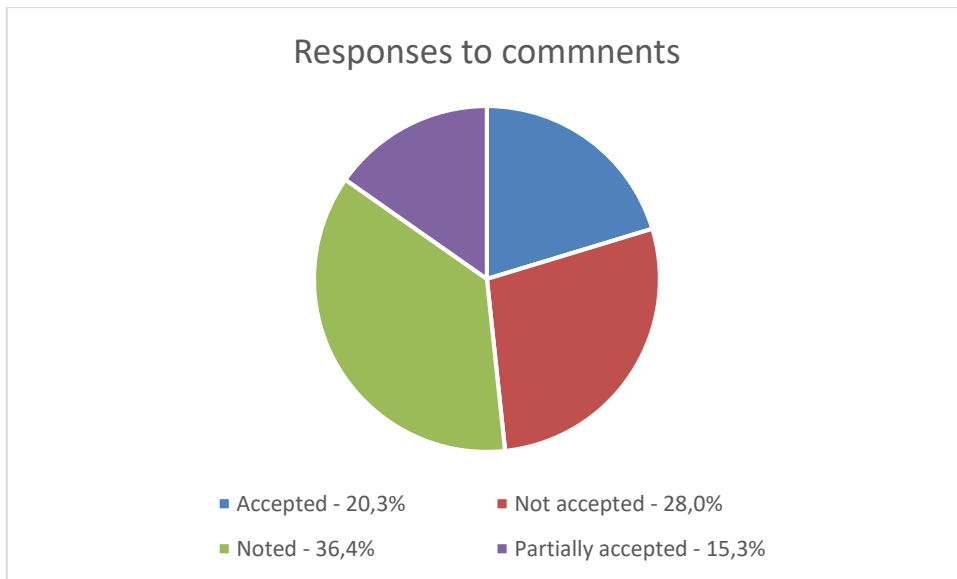
EASA noted that a significant number of comments were duplicated. In general, EASA acknowledges that the comments received were very beneficial for the verification of the validity of the approach and of the content of the proposal. In many cases, the comments proposed amendments with the related justifications, which facilitated the review and, when considered appropriate, led to the introduction of modifications to the initial NPA proposal and to the finalisation of the material.

For a general description of the stakeholders views and the major concerns raised, see Section 2.4. of the Explanatory Note to ED Decision 2019/004/R.

In total, during the public consultation of NPA 2017-21 EASA received 832 comments from 46 commentators, distributed as follows:



The comments were answered as follows:



2. Individual comments and responses

In responding to comments, a standard terminology has been applied to attest EASA's position. This terminology is as follows:

- (a) **Accepted** — EASA agrees with the comment and any proposed amendment is training programmes, separation standards transferred to the revised text.
- (b) **Partially accepted** — EASA either agrees partially with the comment, or agrees with it but the proposed amendment is only partially transferred to the revised text.
- (c) **Noted** — EASA acknowledges the comment but no change to the existing text is considered necessary.
- (d) **Not accepted** — The comment or proposed amendment is not shared by EASA.

Note 1: *The title of the document contained in NPA 2017-21 as 'Guidelines on Remote Aerodrome Air Traffic Services' has been changed to 'Guidance Material on remote aerodrome air traffic services' (please see Annex I to ED Decision 2019/004/R). In Note 2 and in the comment responses below, it is referred to mostly as the 'Guidelines' or the 'Guideline document'. (In a few of the responses, it is referred to as 'Guidance Material (document)').*

Note 2: *The order and numbering of some chapters/sections in the Guideline document have been changed in the published Annex I to ED Decision 2019/004/R, compared to the version contained within the NPA. All chapter/section references in the comment responses below refer to the version that was published within NPA 2017-21, unless otherwise stated.*



(General Comments)

-

comment 3

comment by: GdF

By definition a remote tower ATCO/AFISO cannot judge distances by using retinal disparity (e.g. 3D-Vision). Therefore, it is not possible to provide adequate separation to aircraft.

This shall be made clear in the NPA.

IFATCA Policy is:

Separation standards and procedures for Remote and Virtual Towers shall be developed or adapted and implemented based on a robust safety case and the demonstrated capabilities of the system.

Reduced Separation

ICAO 4444: 6.1 REDUCTION IN SEPARATION MINIMA IN THE VICINITY OF AERODROMES

[...] the separation minima [...] may be reduced in the vicinity of aerodromes if:

a) adequate separation can be provided by the aerodrome controller when each aircraft is continuously visible to this controller; [...]

ICAO 4444: 7.11.6 shall be applicable only if both aircraft are taking-off.

response

Not accepted

ICAO Doc 4444 Chapter 6.1 ('Reduction in separation minima in the vicinity of aerodromes') is applicable from a remote tower in the same way as from a conventional tower. Particularly with regard to recital 'a)', a reduction in separation minima can be applied subject to the controller's judgement (i.e. 'adequate separation can be provided by the aerodrome controller when each aircraft is continuously visible to this controller'), as is the case also from a conventional tower.

Regarding the statement 'a remote tower ATCO/AFISO cannot judge distances by using retinal disparity (e.g. 3D-Vision)', it is a common misconception in the context of (remote) aerodrome ATS that depth perception and the ability to judge distances is based mainly on the distance between the eyes. Human depth perception based on eye distance is effective at near distances only (typically up to 6 metres). On longer distances, depth perception is based on references such as relative size, location of objects used as references, motion, etc. Hence, depth perception based on eye distance is not relevant for the provision of aerodrome ATS. The ability for depth perception and distance judgement is therefore not affected by providing aerodrome ATS based on a visual presentation on screens compared to the OTW from a conventional tower.

A footnote clarifying this aspect has been added to Section 5.2 of the Guidelines.

Regarding the comment related to ICAO Doc 4444 Chapter 7.11.6:



No reason can be found — nor does it seem relevant — for which ICAO Doc 4444 Chapter 7.11.6 (based on its content) would be applicable only if 'both aircraft are taking off'.

To summarise (and in response to the IFATCA policy provided in this comment), normal separation standards and practices apply also from a remote tower.

comment

46

comment by: *GdF*

GdF proposed text for deletion is ~~stroke through~~

GdF proposed text for insertion is shaded

GdF requests clarification of the text

response

Noted

comment

86

comment by: *EUROCONTROL*

The EUROCONTROL Agency welcomes the publication by EASA of Notice of Proposed Amendment 2017-21 on the 'Technical and operational requirements for remote tower operations'. It also thanks EASA for the opportunity that has been given to submit comments.

The main comment that EUROCONTROL would like to offer is general: although the proposal will, as intended, facilitate safe and harmonised implementation of remote aerodrome ATS throughout EASA member states, it seems that it is - as such - possibly insufficient to achieve entirely this objective. In fact, there are several aspects of remote aerodrome ATS, especially the concept of multiple mode of operation largely inspired by SESAR joint work, that still need to be addressed - as it is often the case after conceptual innovation - through a certain form of technical and operational validation.

More generally, the EUROCONTROL Agency would like to confirm that it will read with interest the comments on this NPA received from stakeholders and the responses given to them by EASA in its future comment-response document (CRD).

response

Noted

EASA thanks EUROCONTROL for their interest in NPA 2017-21 and the corresponding CRD (this document). EASA would also like to thank EUROCONTROL for their comments provided on the NPA as well as their active involvement in its production, through the participation in the related EASA rulemaking group.

As concerns the general comment provided in this particular comment, please find the EASA response below:

As mentioned in several places in NPA 2017-21, whereas the single mode of operation is already implemented and approved for some aerodromes by the relevant competent authorities, EASA recognises that the concept of multiple mode of operation has not yet been operationally implemented. Nevertheless, EASA



considers that there is already sufficient information and data available to provide regulatory support and guidance to facilitate its safe implementation, as well as to provide a basis for its further development. The concept of multiple mode of operation has been studied and validated, e.g. within SESAR, for many years — both in the context of ATC and AFIS. SESAR Solution #52, i.e. multiple mode of operation to two low-density aerodromes, has completed E-OCVM concept maturity level V3, meaning that it is sufficiently mature to be ready for ‘industrialisation’ (V4). The next steps in the E-OCVM, i.e. ‘deployment’ (V5) and ‘operations’ (V6), can typically only be reached on the local implementation level and would benefit from the support of a regulatory framework, which is where the proposed EASA Guidelines/AMC/GM come into place. It can also be noted that continued research is ongoing within SESAR 2020, evaluating the multiple mode of operation concept for more challenging operational context/environments beyond the scope of SESAR Solution #52 (i.e. higher traffic volumes and increased number of simultaneous aerodromes).

comment	104	comment by: <i>Finnish Transport Safety Agency</i>
	<p>Finnish Transport Safety Agency welcomes the EASA approach to this NPA since it allows flexibility and risk/performance based approach in the creation of remote ATS concepts still enabling interoperability and ensuring common approach for ATS personnel licensing and qualification requirements.</p> <p>The NPA provides clear guidelines for CAs/ANSPs when planning, validating and assessing remote ATS concepts especially in the field of multiple and more complex mode of operations.</p>	
response	<p>Noted</p> <p>EASA thanks the Finnish Transport Safety Agency for their supportive comment.</p>	
comment	179	comment by: <i>AESA/DSANA</i>
	<p><u>Comment</u> Prior to the introduction of the service, the list of responsibilities/accountabilities for the aerodrome infrastructure (including maintenance, safety, physical security, cybersecurity) should be established.</p> <p><u>Justification</u> Accountabilities Aerodrome/CNS/RTS</p>	
response	<p>Noted</p>	
comment	180	comment by: <i>AESA/DSANA</i>
	<p><u>Comment</u></p>	



	<p>AESA would appreciate a commitment of the ANSPs that the connection between the RTC and the positions is doubled and physically separated in order to guarantee the service provision.</p> <p><u>Justification</u> Redundancies/Contingencies in Service Provision</p>
response	<p>Accepted</p> <p>The recommendation has been incorporated in Guidelines Section 5.10.</p>
comment	<p>185 comment by: IFATCA</p> <p>IFATCA is providing its comments based on our global policy which is added here for better understanding.</p> <p>ADME 2.15 REMOTE AND VIRTUAL TOWER Technology has created the possibility to provide aerodrome control service from a location other than the aerodrome itself. This new concept is being developed both in SESAR and NEXTGEN and is also studied in other countries such as Australia. This document studies the factors behind the interest in remote towers as well as the potential advantages and areas of concern. IFATCA Policy is: ATCOs shall not be required to provide a Remote and Virtual tower service for more than one aerodrome simultaneously. See: Resolution B8 - WP 92 – Gran Canaria 2014 IFATCA Policy is: Separation standards and procedures for Remote and Virtual Towers shall be developed or adapted and implemented based on a robust safety case and the demonstrated capabilities of the system. See: Resolution B9 - WP 92 – Gran Canaria 2014 IFATCA Policy is: Standards, procedures and guidance for Remote and Virtual Towers are required. See: Resolution B10 - WP 92 – Gran Canaria 2014 IFATCA Policy is: Remote and Virtual tower systems should be capable of providing the same service level as an aerodrome control tower; partial aerodrome control service configurations are undesirable. See: Resolution B5 - WP 89 – Sofia 2015 IFATCA Policy is: Provisions, training programmes, separation standards and a specific Remote Tower endorsement are required for operating at Remote and Virtual Towers. See: WP 158 – Toronto 2017</p>
response	<p>Noted</p>
comment	<p>201 comment by: IFATCA</p> <p>IFATCA's logic in the comments is as follows:</p> <p>IFATCA proposed text for deletion is stroke through</p>

response	<p>IFATCA proposed text for insertion is shaded IFATCA requests clarification of the text</p> <p>Noted</p>
comment	<p>253 comment by: AESA/DSANA</p> <p><u>Comment</u> No reference to compliance with Commission Regulation (EC) 482/2008 related to SW safety assurance</p> <p><u>Justification</u> Systems related should comply with Commission Regulation (EC) 482/2008.</p>
response	<p>Noted</p> <p>The explicit mention of all applicable regulations and standards was not considered appropriate. Please note the last paragraph of Section 1.2. of the Guidelines.</p>
comment	<p>325 comment by: René Meier, Europe Air Sports</p> <p>Europe Air Sports (EAS) and the organisations' member federations and unions thank the Agency for the preparation of this NPA. Our comments were prepared by members of the board of EAS and of the European Powered Flying Union (EPFU).</p> <p>After studying the texts with so many non-binding provisions proposed, where ICAO's views are more straight-forward, we think numerous conflicts will arise in the fields of application of (EU) 2015/340.</p>
response	<p>Noted</p> <p>EASA thanks EAS and EPFU for their review of NPA 2017-21 and for the comments provided.</p> <p>This specific comment is however not fully understood. It is not clear which ICAO views are referred to. The amendments to ICAO PANS-ATM (Doc 4444) relating to remote ATS ('Amendment 8 to the PANS-ATM', as outlined in State Letter AN 13/2.1-18/67 of 9 August 2018) have neither links nor any conflicts with Regulation (EU) 2015/340. As regards remote aerodrome ATS and Regulation (EU) 2015/340, EASA has developed specific associated AMC and GM.</p>
comment	<p>335 comment by: Martin Ryff</p> <p>We thank EASA giving the opportunity to comment this document.</p> <p>We consider that the remote tower concept allows air traffic control to become more efficient, which forms a real benefit for aviation, especially to General Aviation. The Aeroclub of Switzerland therefore welcomes the initiative of EASA to update the guidelines as contained in NPA-2017-21. However, it must be noted that guidelines do not form a stable legal basis for the operation of remote tower, but</p>



response

leave interested parties in a rather uncomfortable situation with regard to legal certainty. Furthermore it must be kept in mind, that we still face some reservations, namely from airtraffic controllers. If EASA really wants to promote the remote tower concept, a solid legal basis is needed, which gives clear answers to all stakeholders involved. We therefore expect that EASA is working towards a binding regulation in due time. The current situation is not satisfactory and needs to be improved as soon as possible.

Noted

The reasons for the chosen regulatory level/approach are primarily the following:

- Requirements on aerodrome ATS (ATC/AFIS) provision already exist (ICAO, EU and national level) and are (still) applicable.
- Requirements related to the assessment of changes to functional systems and their oversight already exist (Regulations (EU) Nos 1034/2011 and 1035/2011 and Regulation (EU) 2017/373, the latter supplemented by an extensive set of AMC & GM to support ATS providers and their competent authorities.) and are (still) applicable.
- A stand-alone ‘Guidance Material’ document is therefore chosen in order to support the fulfilment of the above-mentioned requirements/regulations in a remote aerodrome ATS environment and in order to provide a single source of information encompassing all aspects. The only exception is the qualification and training of ATCOs, for which EASA has chosen to provide separate AMC and GMs to Regulation (EU) 2015/340.

comment

392

comment by: NATS

NATS welcome the update and improvements from the previous NPA and especially, the more performance based approach, and less constraining to particular use cases. It provides suitable guidance for those wishing to utilise the technologies, whilst not constraining the potential innovation and expansion of the concepts, which may deliver even further efficiencies and safety enhancements in time.

We acknowledge the use in the introduction of the term “Digital Towers” – but need to consider if the various uses of “Remote”, and Remote Aerodrome services, is still fit for an encompassing term for both service and method. In places the document struggles to read cohesively where the use of the Term “Remote” becomes confusing where it refers to the technology or a particular use case.

some examples:

These could be classed as providing “Remote Aerodrome Services” – but not necessarily what is classed as a “remote tower”.

- Heathrow Contingency, no visuals operates from a remote location away from existing VCR
- Japan – AFIS services, limited or no visuals, but remote locations.

There is nothing remote about the below – but use what is being called “Remote Tower technology”



- Amsterdam – utilises the technology within existing tower, some of the conventional towers at EHAM are further away from the runway than some so called remote towers are!
- Budapest solution is from a site located within boundary of airport.
- Heathrow development for Tower in Cloud – will utilise cameras on the existing VCR

As other solutions come on line, such as a conventional tower that may be providing A “remote view” of another airfields runway, it will further confuse what is meant by the various uses of Remote, RTM, RTC etc.

Within the document (2.1) it describes the use of the technology within an existing Tower, it no longer has a name for the Module, RTM doesn’t fit, the document even acknowledges this, and is further evidence that continued use of the Term Remote, will become increasingly confusing, and potentially hinders the development and understanding by the wider community.

Impact

The Term Digital has now been widely accepted and in use by industry and ANSPS, who have moved away from the term remote towers, other “Document” editors take lead from EASA – and while much agreement across these groups of the need to change, everyone is waiting for the other to do so – EASA should take that lead and modernise the approach and language to the technology and service, so that it helps create better understanding.

Suggested Resolution

Review uses of the terms/phrases that refer to remote towers/remote aerodrome services – so they only used when referring to a service that is significantly remotod from the airfield, and not the technology.

Remote is a particular use case, using the new capabilities the technology provides, and while it is understandable where the origins of the naming comes from as the first deployment and research project in SESAR, was focussed on a specific need to provide the services remotely, it should now use better terminology to reflect the capability/technology, which may be utilised to provide remote services, or enhancements to existing..

The Term Digital Towers, better fits all the above examples and likely future concepts.

The term Remote Aerodrome Services is a specific use case of the use of the technology, and while not covered within this document has other considerations to consider(such as people movement, environment and weather differences etc.), where as other solutions using the same technology, don’t have the same issues, it likely to make future concepts/guidance and maybe regulation easier – that the use of the term remote is limited to a service when it is provide from a significantly different location of the airfield.

where multiple “Digital” towers are deployed together, other functions may be within this centre, such as Approach Radar or even area control so referring to it as a remote Tower Centre(RTC) doesn’t really align with the other functions that will also be within the facility



response Not accepted

It is acknowledged that a ‘remote tower’ may indeed not necessarily be located remote/away from the aerodrome it is providing service to. However, ‘remote towers’ (or ‘remote tower operations’) is well-established terminology within the ATM community. It is the so far used terminology within SESAR and EUROCAE publications. EASA has with NPA 2017-21 introduced the term ‘remote aerodrome ATS’ to be fully clear on its meaning. Neither the definition of this term, nor the definitions of the terms ‘remote tower’, ‘remote tower centre’, ‘remote tower module’, which are also included in NPA 2017-21, indicate that a ‘remote tower’ needs to be placed away from the aerodrome. The ‘remote tower’ definition has been amended to clarify that it is, in fact, a geographically independent facility, from which aerodrome ATS can be provided through indirect observation of the aerodrome and its vicinity, utilising a visual surveillance system.

Having the above in mind, it is clear that the ‘Heathrow Contingency’, used as an example in the comment above, is not covered by the ‘remote aerodrome ATS’ / ‘remote tower’ definitions used in the Guidelines, and thereby also not in the scope of the EASA ‘guidelines’. (This does not mean that it could not be used for contingency purposes.) With regard to the other examples given in the comment (Amsterdam, Budapest, Heathrow development for Tower in Cloud, conventional tower providing a ‘remote view’ of another aerodrome), they are all covered as operational application examples in Sections 3.2. and 3.3. In the same context, as the comment refers ‘Within the document (2.1) it describes the use of the technology within an existing Tower, it no longer has a name for the Module, RTM doesn’t fit, the document even acknowledges this,..’, it can be noted that this topic is clarified by the Notes provided in the respective sections.

comment 396 comment by: NATS

With reference to Comment no. 392 The title would be at odds now with the principles and expanded scope, - a suggested change would ensure now and for future additions it encompasses both the technology but equally the multiple use cases that it allows.

Suggested Resolution
Change to: Guidance on the Use of Digital Tower Technology & Remote Aerodrome services Operations

response Not accepted

See the response to comment 392.

comment 424 comment by: LfV

LfV fully supports the EASA initiative to regulate remote aerodrome ATS. LfV believes that EASA chose the best regulatory approach by starting with development



	of guidance material (soft law) complemented with harder regulation only when needed.
response	Noted EASA thanks LFV for their supportive comment.
comment	468 comment by: <i>Swedavia</i> Swedavia fully supports the EASA initiative to regulate remote aerodrome ATS. Swedavia believes that EASA chose the best regulatory approach by starting with development of guidance material (soft law) complemented with harder regulation only when needed.
response	Noted EASA thanks Swedavia for their supportive comment.
comment	475 comment by: <i>Air Navigation Services Finland Oy</i> ANS Finland welcomes introduction of EASA guidelines/soft law for provision of remote aerodrome ATS in multiple mode of operation. The NPA document is well prepared and in our view the approach followed by EASA well enables remote aerodrome ATS implementations with different technical solutions.
response	Noted EASA thanks ANS Finland for their supportive comment.
comment	484 comment by: <i>European Transport Workers Federation - ETF</i> 1) EASA must consider the task of trying to address safety issues related to the introduction of the remote tower operation in isolation from social or economic issues as virtually impossible. Remote tower operations are mainly introduced because of economic reasons: it makes aerodrome air traffic services cheaper. The introduction of RTO has an obvious social impact as it changes the place where ATCO/AFISOs work. The question of how support services are conducted and especially maintenance services is also crucial from a social perspective. As the main driver is to make cost of service provision cheaper, there is a threat that labour costs might also be under attack either by generally reducing salaries or by reducing the staffing level especially when asking ATCO/AFISO to have multiple unit endorsements leading to potential use of multiple mode of operations. The safeguard that existed in the first phase (applicability only to single mode of operation for one aerodrome with low traffic density) is now completely gone yet most worries are left unaddressed. Regarding those that are, the dogmatic approach not to introduce any stringent requirements weakens this regulatory proposal to a level which makes it impossible for us as staff representatives to endorse this proposal.

response	<p>Noted</p> <p>The reasons for the chosen regulatory level/approach are primarily the following:</p> <ul style="list-style-type: none"> — Requirements on aerodrome ATS (ATC/AFIS) provision already exist (ICAO, EU and national level) and are (still) applicable. — Requirements related to the assessment of changes to functional systems and their oversight already exist (Regulations (EU) Nos 1034/2011 and 1035/2011, and Regulation (EU) 2017/373, supplemented by an extensive set of AMC & GM to support ATS providers and their competent authorities.) and are (still) applicable. — A stand-alone ‘Guidance Material’ document is therefore chosen in order to support the fulfilment of the above-mentioned requirements/regulations in a remote aerodrome ATS environment and in order to provide a single source of information encompassing all aspects. The only exception is the qualification and training of ATCOs, for which EASA has chosen to provide separate AMC and GMs to Regulation (EU) 2015/340. <p>Social aspects have been addressed during the production of this NPA through the involvement of staff/union representation in the rulemaking group of RMT.0624 as well as through the NPA public consultation. Economic aspects were also considered for the development of this regulatory proposal. Additionally, social and economic aspects need to be addressed independently at implementation level (as conditions often differ hugely between different States/providers/units and every implementation case will be unique in terms of these aspects).</p>
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comment	<p>485 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>1) The regulatory approach taken by EASA is entirely based upon the assumption that there are no changes to the service provided. This has not yet been proven, nor is any element of justification of this assumption provided. We consider that it is not possible to differentiate between the service provided and the conditions in which the service is provided. Those conditions fundamentally change with the introduction of remote tower operations so we cannot adhere to the assumption upon which EASA attempts to answer this question. Furthermore, the regulatory approach is based on the safety assessment of changes which EASA recognises, at the same time, as not being mature. How can we trust that safety will be safeguarded when the approach is based on an immature system?</p>
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response	<p>Noted</p> <p>EASA do not share the view that the approach is based on an immature system. Any change shall be introduced only after the relevant safety assessment of changes to functional systems, in accordance with the applicable regulations and the procedures accepted by the relevant competent authority.</p> <p>The overall EU regulatory framework within ATM/ANS concerning changes to the functional system is based upon the principle of distributed responsibility, with</p>
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safety assessments as a fundamental component. Mechanisms to ensure this principle as well as to ensure compliance with the regulation are in place — for example, the oversight of ATS providers by their Competent Authorities as well as EASA standardisation activities within Member States.

See also the response to comment 494.

comment 486 comment by: *European Transport Workers Federation - ETF*

1) The status of overlaid information: can it be used for control purposes? What are the responsibilities of the operators associated with it? Can ATCOs/AFISOs be responsible when ignoring overlaid information (e.g. radar label not associated with any visible aircraft)?

response Partially accepted

The beginning of Section 5.2.5. explains that the aim of the tools/functionalities listed, including digitally overlaid information in the visual presentation, is solely to increase the ATCO/AFISO situational awareness. For the 'radar tracking' segment, a reference to ICAO Doc 4444 has been added.

comment 487 comment by: *European Transport Workers Federation - ETF*

Attachment [#1](#)

1) ETF considers to have demonstrated that additional skills are required to provide air traffic services using this technology in our response to the questionnaire on licensing requirements performed during the rulemaking phase 2 (see file attached). Those skills need to be trained regardless of the unit specific training using a tool that would fit this purpose perfectly: a rating endorsement.

response Not accepted

In the mentioned paper, ETF are stating that 'any set of generic skills common to any remote tower implementation is limited in scope as it is once again particular to the operation of each individual position' which indeed, as pointed out in Section 2.5 of the NPA, is one of the reasons for EASA not to introduce a rating endorsement for remote aerodrome ATS.

It has to be taken into consideration that no harmonised training content exists for the current rating endorsements (except for the TWR endorsement, for which the training is included as part of the 'Aerodrome Control Instrument Rating for Tower' course), nor for the unit endorsement courses (except for 'remote aerodrome ATS' and 'flight tests'). Therefore, the introduction of items through GM to be addressed during a unit endorsement course for remote aerodrome ATS goes beyond the standard approach of the ATCO rule and brings sufficient added value to facilitate an appropriate level of safety.



The items listed as ‘additional skills required to provide air traffic services using this technology’ in the ETF response to the ‘RMT.0624 Phase 2 - RTO licensing and training questionnaire’ (attachment #1 to this comment), have been included, to the extent possible, as items to be addressed in GM3 ATCO D.060(c) and GM4 ATCO D.060(c).

comment 488 comment by: *European Transport Workers Federation - ETF*

1) Remote tower ATS technology allows for cross-border service provision. As the NPA does not include any limitation in the way the service is to be provided, it should tackle issues related to cross-border aerodrome air traffic service provision such as the differences in airspace management (including civil-military coordination in this context), the allocation of responsibilities of competent authorities, language issues related to coordination with aerodrome services for example. The number of issues left unaddressed seems unreasonable to ETF.

response Noted

Cross-border ATS provision is already normal practice in Europe, including provision of aerodrome ATS. Elements such as those mentioned in the comment above are managed through ATS designation conditions and/or through Article 10 of Regulation (EC) No 550/2004 (the so-called Service Provision Regulation).

comment 569 comment by: *HIAL*

In 2017 HIAL contracted Helios (Egis), an established air transport consultancy, to conduct an independent scoping study into the feasibility of HIALs mid to long term Air Traffic Management Strategy (ATMS 2030) for the Highlands and Islands area of Scotland. Following a seven month scoping exercise Helios delivered their independent recommendation to the HIAL Board and Scottish Minister for Transport in Dec 2017. Both the Board and the Transport Minister formally accepted the Helios recommendation on 08 Jan 2018.

Helios recommended that HIAL should construction of a new green field “Centralised Surveillance and Remote Tower Centre” to provide sustainable ATS for the company’s seven controlled aerodromes located at Inverness, Dundee, Kirkwall, Wick, Stornoway, Sumburgh and Benbecula. The supporting business case, also prepared by Helios, is built on the premise that surveillance based on WAM and ADS-B and Multi-Mode Remote Tower Operations will become a feature of ATM service provision across the globe in the not too distant future. However, at this point in time there is no regulation with the UK to support either. Therefore, it is refreshing to review the guidelines within the NPA which, which in the opinion of HIAL, have clearly demonstrated the enabling pillars essential for the implementation of a significant part of our overall strategy i.e. multi-mode remote tower operations.

ATMS 2030 will be the largest single project ever undertaken by the HIAL Group and one of the largest ATM projects in the UK. The introduction of a Surveillance and Remote Tower Centre for up to seven controlled aerodromes offers the potential to significantly enhance safety and reduce costs whilst at the same time presenting HIAL



response	<p>with the opportunity to generate additional revenue that could help reduce reliance on Government subsidy, thus ensuring the future of our airports without which we could not support the air connectivity that is so vital to the rural communities within the Highlands and Islands of Scotland.</p> <p>Noted</p> <p>EASA thanks HIAL for their supportive comment.</p>
comment	<p>644 comment by: ATCEUC</p> <p>1) ATCEUC thinks that is impossible keep the social aspects of the introduction of “Remote Aerodrome ATS” away from the NPA. Whilst we are not against this technology for itself, we don’t agree on the scope it is intended to be used. As we all remember at the beginning it was intended to provide ATS in remote aerodromes but now it is going to be used only to try to reduce the costs of ATS for the airlines but we think that costs won’t be reduced due to the necessity to have people on site for any technical problem and to provide all the other “Air Navigation services” stated in Regulation 2004/549 (communication, navigation and surveillance services; meteorological services for air navigation; and aeronautical information services;)</p> <p>2) ATCEUC thinks that there are changes in the type of service provided in the same way that there is a difference between the provision of Area Control Service with or without surveillance systems. ATCEUC agrees that some aspect in the provision can be enhanced with the adoption of new technologies but it has to be clearly stated which are the new tasks of ATCOs and AFISOs, if there are. This cannot be done with “soft law” while it has to be done with an appropriate European Regulation that could overcome national laws giving to all the professionals involved certainty on the legal framework of operations</p>
response	<p>Noted</p> <p>The reasons for the chosen regulatory level/approach are primarily the following:</p> <ul style="list-style-type: none"> — Requirements on aerodrome ATS (ATC/AFIS) provision already exist (ICAO, EU and national level) and are (still) applicable. — Requirements related to the assessment of changes to functional systems and their oversight already exist (Regulations (EU) Nos 1034/2011 and 1035/2011, and Regulation (EU) 2017/373, supplemented by an extensive set of AMC & GM to support ATS providers and their competent authorities.) and are (still) applicable. — A stand-alone ‘Guidance Material’ document is therefore chosen in order to support the fulfilment of the above-mentioned requirements/regulations in a remote aerodrome ATS environment and in order to provide a single source of information encompassing all aspects. The only exception is the qualification and training of ATCOs, for which EASA has chosen to provide separate AMC and GMs to Regulation (EU) 2015/340.



Social aspects have been addressed during the production of this NPA through the involvement of staff/union representation in the rulemaking group of RMT.0624 as well as through the NPA public consultation. Additionally, social and economic aspects need to be addressed independently at implementation level (as conditions often differ hugely between different states/providers/units and every implementation case will be unique in terms of these aspects).

There are no changes in ATCO/AFISO **ATS** tasks/responsibilities foreseen (resulting from the introduction of remote aerodrome ATS), nor any changes in the ATS provision (requirements on aerodrome ATS still apply and need to be fulfilled).

comment

699

comment by: DACTCA

In general this document sets high standards for the ANSPs and the NSAs and their integrity. A weak, understaffed or otherwise inefficient ANSP/NSA could cause procedures and/or safety assessments to be less efficient or unsafe. Liability should be clearly defined. Failure to produce robust/durable procedures and safety cases should relieve the controller of any liability, and this must be made clear to the ANSPs and NSAs defining the procedures and safety cases.

response

Noted

EASA guidance material is of a non-binding nature and hence should not define the liability.

The safety assessment of changes to the functional system is governed in the EU by the so-called ATM/ANS common requirements (Regulations (EU) Nos 1034/2011 and 1035/2011, and Regulation (EU) 2017/373, supplemented by an extensive set of AMC & GM to support ATS providers and their competent authorities).

comment

710

comment by: SINCTA

1. As time goes by, it seems that any worries associated with Remote Towers in single mode operation are forgotten. Are we mature and consolidated enough with regard to operational experience on RTO to consider at this time the multiple mode operation? SINCTA believes this exercise comes too early given the lack of expertise on the most basic mode of operation (single mode).
2. SINCTA is completely against the multiple mode of operation on RTO. SINCTA believes that the consideration of such operation complies with the cost-effectiveness domain only, disregarding the first premise of air navigation: Safety. Moreover, we fail to understand the need to create guidelines on multiple mode of operation at a time when only one SESAR Solution related to this mode of operation exists. It seems a bit hasty and reckless.

response

Noted

As mentioned in several places in NPA 2017-21, whereas the single mode of operation is already implemented and approved for some aerodromes by the



relevant competent authorities, EASA recognises that the concept of multiple mode of operation has not yet been operationally implemented. Nevertheless, EASA considers that there is already sufficient information and data available to provide regulatory support and guidance to facilitate its safe implementation, as well as to provide a basis for its further development. The concept of multiple mode of operation has been studied and validated, e.g. within SESAR, for many years — both in the context of ATC and AFIS. The results are clear — multiple mode of operation can be provided in a safe manner for the operational scenarios that have been tested. Please refer to SESAR Solution #52 ('Remote tower for two low-density aerodromes', published late 2015). Continued research is ongoing within SESAR 2020, evaluating the multiple mode of operation concept for more challenging operational context/environments (i.e. higher traffic volumes and increased number of simultaneous aerodromes).

comment

722

comment by: *The Norwegian Air Sports Federation*

The Norwegian Air Sports Federation (NLF – Norges Luftsportforbund) supports the general concept of remote towers, as the concept may increase flexibility and decrease costs, while maintaining or even – in some respects – increasing the level of safety. Furthermore, NLF supports the objective of the proposed issue 2 of "Guidelines on Remote Aerodrome ATS".

We are, however, concerned that the needs for those airspace users not needing ATS has not been well covered in the proposal. Indeed, how the proposal affects air sports and general aviation is not covered to the extent one would expect, based on the "Roadmap for Regulation of General Aviation" (2012). While "multiple mode of operation" could well facilitate the needs of commercial air transport, we definitely see a risk that general aviation movements could be significantly restricted. To mitigate such risks, we would encourage the Agency to consider guidance in the document on how an aerodrome could be controlled at certain times only.

Please see our comment to Chapter 8 "Possible impacts for airspace users" for further details.

response

Noted

The NPA deals with ATS provision (when provided from a 'remote tower'/'remote tower module', see the definitions in Guidelines Chapter 2). Aerodrome ATS provided from a 'remote tower'/'remote tower module' is essentially the same service as aerodrome ATS provided from a 'conventional tower' (existing regulations and requirements on the provision of aerodrome ATS still apply and need to be fulfilled), hence no impact on general aviation is expected. The airspace classification and the ATS provided in accordance with the airspace classification is outside the scope of the NPA.

It shall be noted that the Guidelines Section 4.2 states that multiple mode of operation 'is to be used only when the operational circumstances so allow and when certainty exists that workload and complexity can be managed'. This could be



compared with the staffing of positions in a conventional tower; during certain times with low traffic, the aerodrome ATS might be provided by one position/ATCO, whereas during other times there might be a need to increase the number of positions/ATCOs to cope with the amount of traffic.

In addition, recital 4 of Regulation (EC) No 550/2004 states that the certificates of the ANSP shall ‘specify the rights and obligations of air navigation service providers, including non-discriminatory access to services for airspace users (...)’.

The opening hours of an airport and the associated ATS unit are normally determined in coordination between the aerodrome operator and the ATS provider. It is expected that such decisions take into account the operational limitations as well as the needs of the airspace users.

comment

746

comment by: *European Cockpit Association*

The “Guidance Material on the implementation of the remote tower concept for single mode of operation, Issue 1, 3 July 2015” (Annex to ED Decision 2015/14/R) clearly states in 2.2.2. that “As regards aviation undertakings (e.g. aerodrome operator, aircraft operators), the ATS provider should seek their participation in the safety assessment process when assumptions and risk mitigations are shared with those aviation undertakings concerned.”

ECA believes that this also includes the participation of pilot representative bodies such as the national pilot associations and ECA itself. However, this is not adequately addressed in NPA 2017-21, especially keeping in mind that there have been numerous reports from various countries in Europe, where pilot associations as stakeholders are not being included sufficiently in the implementation process of remote towers.

response

Accepted

The coordination with affected aviation undertakings is governed by Regulation (EU) No 1035/2011, which is to be replaced by Regulation (EU) 2017/373 as of 2 January 2020. The text in Guidelines Section 6.1.1 has been adjusted for a better alignment with the actual requirements of Regulation (EU) No 1035/2011 and Regulation (EU) 2017/373.

In this regard, it can also be noted that both regulations stipulate a responsibility for service providers to ‘..establish a consultation process with the users of its services on a regular basis or as needed for specific changes in service provision, either individually or collectively.....’ (Chapter 8.1, Annex I to Regulation (EU) No 1035/2011 and ATM/ANS.OR.A.075 of Regulation (EU) 2017/373). Guidelines Chapter 8 has been extended to clarify and emphasise this service provider responsibility (as stipulated by Regulation (EU) No 1035/2011 and Regulation (EU) 2017/373).

comment

841

comment by: *UK CAA*

	<p>Comment: UK CAA welcomes recognition within the draft Guidelines of the entry into law of Regulation (EU) 2017/373 and its eventual revocation of Regulations (EC or EU) 1034/2011 and 1035/2011. An indication of how and when the document will be amended to reflect 2017/373 taking effect in 2020 (e.g. replacement of references to ICAO text in lieu of 2017/373 text), and subsequent amendments resulting from incorporation of Parts AIM and FPD, plus amendments to Parts ATS and MET would be welcome.</p> <p>Justification: Provision of clarity on planned document maintenance.</p>
response	<p>Noted</p> <p>The Guideline document is to a large extent future-proofed thanks to the inclusion of placeholder footnotes referencing applicable requirements of Regulation (EU) 2017/373 where applicable and possible, including footnotes to e.g. proposed Part-ATS requirements. For any other update needs that may arise, as well as replacement of these footnotes with direct references, the Guideline document will be amended through EASA regular update procedures, as appropriate and in a timely manner.</p>

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comment	61	comment by: ENAV
	<p><i>ENAV expresses extensive interest in the development/implementation of the concept of Remote Tower. While we support the process that lead to publishing guidelines and GM/AMC rather than dedicated hard law, in our view the work produced results to be of a very high level, and in some sections too general. Although it leaves considerable freedom for the ANSP, from an architectural point of view, in fact it does not provide substantial guidance, thus somehow not achieving the intended goal of supporting stakeholders. In fact, the validation of systems needed before putting the system into service, shall be carried out by the ANSP under the supervision of the NSA. In case the systems will be deployed without any clear reference to sets of recognized and stable specifications, an increased effort to demonstrate that there is “no impact on the service provided” is expected. This would possibly raise some concerns and generate problems for the ANSP processes of certification</i></p>	
response	<p>Noted</p> <p>As concerns recognised specifications, please note that EUROCAE has developed ‘Minimum Aviation System Performance Specification Standards (MASPS) for Remote Tower Optical Systems’, which, where relevant, are referenced in the Guideline document.</p> <p>Furthermore, EASA thanks ENAV for their comments, which have been taken into consideration in the respective sections of the NPA.</p>	
comment	105	comment by: Naviair



		<p>Comment to 4th paragraph, 2017/373: As 2017/373 repeals 482/2008, 1034/2011, 1035/2011 and 2016/1377 when it enters into force January 2 2020 guidance could be added on how to handle the transition and the impact to the new regulatory setup. This should also address the areas in this guidance material where reference is solely made to the regulation which are about to be repealed – and which do not address 2017/373 (i.e. there will be no regulative requirements or guidance on these areas when 2017/373 enters into force).</p>
response	Not accepted	<p>For all references in the Guidelines to Regulations (EU) Nos 1034/2011 & 1035/2011, there are footnotes indicating the corresponding IR/AMC/GM of Regulation (EU) 2017/373. Guidance on how to handle the transition to the new regulation is outside the scope of this NPA/RMT (not specific to remote aerodrome ATS).</p>
comment	136	<p>comment by: <i>Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)</i></p> <p>Generic comment, that terminology and wording used is targeting ATS which may not be suitable for ADR OPS and ADR CA.</p>
response	Noted	<p>The aerodrome operator/operations and their competent authority is extensively covered in e.g. Guidelines Chapter 7.</p>
comment	137	<p>comment by: <i>Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)</i></p> <p>The NPA addresses OPS and AISP, not included in the scope.</p>
response	Noted	<p>The comment is not understood. The objectives of the NPA were presented in its Section 2.2. and the scope of the Guidelines is as outlined in Guidelines Section 1.2.; 'The scope of this document is the overall concept of remote aerodrome ATS... // .. covers the technological, procedural and operational aspects of remote aerodrome ATS, in order to facilitate a safe and harmonised implementation throughout EASA member states in accordance with the objectives of ATS.'</p>
comment	138	<p>comment by: <i>Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)</i></p> <p>The NPA proposes AMC/GM to 2015/340, why not ATCO TO in scope?</p>
response	Noted	<p>ATCO training organisations are not the organisations implementing remote aerodrome ATS, therefore are not listed in the parenthesis in the first bullet of</p>

Guidelines Section 1.1., which however is not exclusive. The Guideline document only makes reference to the AMC and GM related to Regulation (EU) 2015/340 and ATCO training organisations are in the scope of Regulation (EU) 2015/340.

comment

395

comment by: NATS

With Reference to our comment no. 392 with respect to Technology and service provision – Following wording changes suggested:

The introduction of Digital Tower Technologies, sometimes referred to as Remote Towers, has enabled and continues to innovate ways in which Aerodrome ATS may be provided. This includes the concept of the remote provision of aerodrome air traffic services (ATS) which, enables provision of aerodrome ATS from locations/facilities without direct visual observation. Instead, provision of aerodrome ATS is based on a view of the aerodrome and its vicinity through means of technology. The term that is used to describe this in this NPA is ‘remote aerodrome ATS’. This Notice of Proposed Amendment (NPA) addresses the technological, procedural and operational aspects of remote aerodrome ATS, in order to facilitate its safe and harmonised implementation throughout EASA member states, in accordance with the objectives of ATS. The overall objective of this rulemaking task is a maintained or increased level of safety in cases where ATS is provided using Digital Tower technology, and remotely, compared to ATS provided solely from a conventional tower, without the addition of Visuals provided by Digital Tower technology . Therefore, this NPA introduces ‘guidelines on remote aerodrome air traffic services’ – which is within the scope of the current regulatory framework (Commission Implementing Regulations (EU) No; 1034/2011, 1035/2011, 2017/373, 139/2014 and 923/2012) – intended to support ATS providers and aerodrome operators implementing remote aerodromes ATS, and Digital Tower Technology, as well as to support their competent authorities. At the same time, this NPA proposes a set of updated Acceptable Means of Compliance (AMC) and Guidance Material (GM) to Commission Regulation (EU) 2015/340 laying down technical requirements and administrative procedures relating to air traffic controllers’ licences and certificates. In addition to a safe and harmonised implementation of remote aerodrome ATS, the proposed changes are expected to promote the development of new technology and to facilitate an efficient and proportionate ATS. The content of this NPA does not address social or economic aspects related to remote aerodrome ATS which would need to be addressed at a local level.

response

Not accepted

See the response to comment 392.

comment

459

comment by: René Meier, Europe Air Sports

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	<p>Last line: "...would need to be addressed at local level": What does this mean, what is your definition of "local" in this context? We think "national" is the term to be applied, probably "international" or "transational".</p> <p>Rationale: Who knows, probably somewhen in a not too distant future, St. Gallen-Altenrhein's and Friedrichshafens' traffic will be controlled by a remote tower located at Zürich, or Munich, or Stuttgart, for example. "locally" would require quite a wide definition.</p>
response	<p>Partially accepted</p> <p>This wording has been removed in those instances where it was used in the Guideline document. Social aspects have been addressed during the production of this NPA through the involvement of staff/union representation in the rulemaking group of RMT.0624 as well as through the NPA public consultation.</p> <p>As concern cross-border operations, such ATS provision is already normal practice in Europe, including provision of aerodrome ATS, and is managed through ATS designation conditions and/or through Article 10 of Regulation (EC) 550/2004 (the so-called Service Provision Regulation).</p>
comment	<p>725 comment by: <i>Federal Aviation Administration</i></p> <p>General Comments:</p> <ul style="list-style-type: none"> • The FAA suggests keeping this document as flexible as possible to allow for changes and advancement in technology. • Spell out all acronyms in the document
response	<p>Noted</p> <p>Acronyms have been spelled out only when deemed appropriate. Some acronyms, e.g. 'ATS' are not always spelled out. A 'List of acronyms' is provided in Appendix 5 to the Guidelines to support the reader.</p>

1. About this NPA	p. 3
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<i>Why and what - rationale</i>	p. 4-5
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comment	<p>62 comment by: <i>ENAV</i></p> <p>footnote #7 - Add Italy SESAR Large Scale Demonstrations performed in in Germany, Hungary, Ireland, Italy, the Netherlands and Sweden.</p>
response	<p>Noted</p>



As the text forms part of the NPA 'explanatory note', it cannot be changed retrospectively (the NPA is already published); however, this will be corrected in future EASA publications.

comment

139

comment by: *Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)*

The approval process in Sweden did not review that change to move ATS units to the RTC against Doc 9426.

response

Noted

comment

332

comment by: *CANSO*

footnote #7 - Add Italy

SESAR Large Scale Demonstrations performed in in Germany, Hungary, Ireland, **Italy**, the Netherlands and Sweden

response

Noted

As the text forms part of the NPA 'explanatory note', it can unfortunately not be changed retrospectively (the NPA is already published); however, this will be corrected in future EASA publications.

comment

397

comment by: *NATS*

Editorial – "...The result from the work of this second phase is contained this NPA."

Change to: The result from the work of this second phase is contained **within this NPA**

response

Noted

EASA thanks NATS for this editorial comment, however as the text forms part of the NPA 'explanatory note', it can unfortunately not be changed retrospectively (the NPA is already published).

comment

460

comment by: *René Meier, Europe Air Sports*

2.1. Why we need to change the rules - issue/rationale
page 4/92

Lowermost line: "The latter - if introduced properly, carefully and wisely, may have the potential to increase efficiency and safety of operations": Thank you for this, I think we all fully agree. One concern we have: Who defines what "properly", "carefully", "wisely" mean? For sure not the airports concerned, not the ATS providers, not the aircraft operators alone. And without some binding from of quite tailor-made collaborative decision making such a rule change will end in a fiasco.



response

Rationale:

Any rule change of this dimension will only be successful when all interested parties are involved from the concepts start. Why do I insist? Because today, 2nd April 2018, I got involved in discussion which should have been held in December last year as regards the introduction of a new regime at an aerodrome I know quite well. Simply not properly initiated, not carefully reflected, not wisely communicated.

A "Council of Collective Wisdom" (CCW) for every location or combinations of locations is a need. And all stakeholders must be integrated to prevent creating losers.

Noted

Re. 'Who defines what "properly", "carefully", "wisely" mean?':

- The assessment of changes to functional systems and their oversight is governed in the EU by the so-called ATM/ANS Common Requirements (Regulations (EU) Nos 1034/2011 and 1035/2011, to be replaced on 2 Jan 2020 by Regulation (EU) 2017/373). Every remote aerodrome ATS implementation is subject to a local safety assessment, in accordance with the above-mentioned regulations, and an approval by the competent authority.
- These EASA Guidelines have been produced to support the safety assessment and implementation of remote aerodrome ATS, together with e.g. the technical standards published by EUROCAE (which is being referenced within the Guidelines.)

Re. 'Any rule change of this dimension will only be successful when all interested parties are involved...':

- There is (in principle) no change of the rules. The existing requirements on aerodrome ATS (ATC/AFIS) provision (ICAO, EU and national level) remains applicable. Another aim of the Guidelines is to support the fulfilment of these requirements in a remote aerodrome ATS environment.
- The coordination with aviation undertakings affected by a change is governed by ATM/ANS Common Requirements (see regulatory reference above). See also the response to comment 746.

comment

570

comment by: HIAL

Multiple mode operations form an integral part of HIAL's mid to long term ATM strategy (ATM Strategy 2030) and we commend EASA for expanding the scope from the single mode concept in line with SESAR development and evidence from industry that many ANSPs intend to introduce multiple mode operations (The [Irish Aviation Authority](#) have already publicly stated their belief that tower services can be safely provided simultaneously to multiple airports by a single controller). HIAL considers remote towers to be a forward-thinking concept that can help ANSPs such as HIAL to secure a more future-proofed means of delivering air traffic services. By publishing a policy that considers a wider and innovative concept capable of supporting implementation in the future, EASA is removing the potential for constraint and/or



	restriction of further development. This makes it easier for progressive ANSPs such as HIAL to pursue continuous improvement programmes which are interpreted as being more mature than current UK CAA policy. EASA, by contrast, has resolved to explore the use of new and emerging air traffic technologies and concepts in order to achieve a safer, more efficient, more cost effective and more environmentally friendly aviation environment.
response	Noted EASA thanks HIAL for their supportive comment.

2.2. Why and what — objectives

p. 5

comment	64 comment by: <i>DFS Deutsche Flugsicherung GmbH</i> 'to ensure a maintained or increased level of safety...' should be replaced by 'to ensure a sufficient level of safety...'
response	Noted This text refers to the objective as it was set out in the Terms of Reference for RMT.0624 (published on 9.12.2014). It should however be noted that this formulation is not used in the new updated Guideline document.
comment	78 comment by: <i>BMVBS</i> 'to ensure a maintained or increased level of safety...' should be replaced by 'to ensure a sufficient level of safety...'
response	Noted See the response to comment 64.
comment	291 comment by: <i>ENAV</i> to ensure a maintained or increased level of safety...' should be replaced by 'to ensure an acceptable level of safety...'
response	Noted See the response to comment 64.
comment	333 comment by: <i>CANSO</i> 'to ensure a maintained or increased level of safety...' should be replaced by 'to ensure an acceptable level of safety...'
response	Noted



See the response to comment 64.

comment

572

comment by: *HIAL*

HIAL believe EASA have met their objective and provided a route for HIAL to implement ATMS 2030; SESAR validations and demonstrations have shown that multiple mode of operation can be performed in a safe manner, whilst issues related to training, licensing and ATS provision have been clearly outlined via AMC and GM which considers Human Factors aspects in a holistic sense.

The NPA reduces uncertainty and/or unnecessary barriers to implementation; by identifying challenges and proposing limitations and mitigation measures it guides and supports ANSPs transitioning to remote tower capability and explains how assurance of safety can be demonstrated. The guidance within the NPA helps to reduce the unknowns and resolve some of the technical, operational and regulatory related questions that surround the implementation of remote tower technologies, thereby enabling ANSPs to better determine the cost, resource and time required for successful implementation.

response

Noted

EASA thanks HIAL for their supportive comment.

comment

843

comment by: *air traffic controller*

For whom is R-ATS cost efficient? ATM, airport owners or airspace users?

response

Noted

The potential cost benefit may ultimately end up with the passengers.

2.3. Why and what — overview of the proposals

p. 5-6

comment

48

comment by: *ENAV*

As mentioned, ICAO is proposing to amend the procedures in PANS-ATM exactly to adapt the ICAO framework and support the use of "visual surveillance system" in the provision of aerodrome control service.

Without PART-ATS updated and applicable, ANSP wishing to implement remote towers for aerodrome ATC, will have to demonstrate that new operating methods continue to satisfy ANSP certification requirements; obviously, this is something different from the described change management process that is mandatory anyway for any change, even when something is explicitly recognized by "hard law".

ANSPs would, instead, benefit from an exhaustive framework.

It is not immediately evident why a minimum set of dedicated requirements for ATS



response	<p>provision, would impair technological developments, while it is clear that standardization remains a paramount goal of SES.</p> <p>Noted</p> <p>The amendments introduced to ICAO Doc 4444 (PANS-ATM) related to ‘remote ATS’ (Amendment 8) has been reflected in the final version of the Guidelines/AMC/GM. Part-ATS will be updated accordingly through EASA rule maintenance activities.</p>
comment	<p>106 comment by: <i>Naviair</i></p> <p>Considering this fact, It would be an aid if the references made in this guidance material not only refers to 2017/373 (and other applicable regulations) where relevant, but also specifies the AMC and/or GM to be used – especially when considering the “single source of information” approach applied for this guidance material.</p>
response	<p>Noted</p> <p>All references to other regulations include information on the relevant IR/AMC/GM, when applicable.</p>
comment	<p>190 comment by: <i>IFATCA</i></p> <p>IFATCA is of the opinion that multiple remote tower is not within the scope of the existing regulatory framework (ICAO) in particular when it comes to reduced separation:</p> <p>ICAO: 6.1 REDUCTION IN SEPARATION MINIMA IN THE VICINITY OF AERODROMES</p> <p>[...] the separation minima [...] may be reduced in the vicinity of aerodromes if:</p> <p>a) adequate separation can be provided by the aerodrome controller when each aircraft is continuously visible to this controller; [...]</p> <p>By definition a remote tower ATCO/AFISO cannot judge distances by using retinal disparity (e.g. 3D-Vision). Therefore, it is not possible to provide adequate separation to aircraft.</p> <p>This shall be made clear in the NPA.</p> <p>IFATCA Policy is:</p> <p>Separation standards and procedures for Remote and Virtual Towers shall be developed or adapted and implemented based on a robust safety case and the demonstrated capabilities of the system</p> <p>IFATCA suggest that a paragraph is introduced under 2.3. to make clear that ICAO 6.1. cannot be achieved.</p>
response	<p>Not accepted</p>

See the response to comment 3, which applies both for single and multiple mode of operation.

comment 339 comment by: *Martin Ryff*

Regulation of remote tower by AMC/GM and guidelines may only serve as an interim solution. For the sake of legal certainty a binding regulation is needed.
(See comments under "General")

response Noted

See the response to comment 335.

comment 461 comment by: *René Meier, Europe Air Sports*

2.3. How we want to achieve it - overview of the proposals
page 6/92

The reason for the level of "guidelines": Such guidelines require best possible hazard identifications and risk assessments. We do not think that one single document will satisfy all the needs, except it is the meaning of the authors that one single document, based on a common roster is to be established.

Rationale:

On the one hand any open formula is helpful when it comes to the introduction of new methods or provisions, on the other a not to be neglected risk of too many interpretations exists in parallel leading to never-ending discussion among ATS personnel, aerodrome staff, flight crews of any flying machine intend to operate on, into or out of an installation.

response Noted

See the response to comment 335.

comment 573 comment by: *HIAL*

The guidance is not limited to technical aspects of RT implementation and considers operational and procedural aspects as part of overall change management in detail. Remote towers are not purely a technical system; they are a fundamental operational change, which must be considered as a "whole system change". Whilst EASA recognise extensive operational experience of multi-mode operations is not available, they have supported on-going implementation projects and are best placed to consider a wide range of key aspects including training, licensing, human performance and operational transition. Safety intelligence transferred to the guidance within the NPA will secure buy-in from operational staff and stakeholders who need assurance of both the broad and the finer aspects of RT implementation.

response Noted

EASA thanks HIAL for their supportive comment.



comment	747	comment by: <i>European Cockpit Association</i>
	While we understand the reasoning behind the application for soft law, ECA members have expressed the urgent wish for hard law in some areas of Remote Tower application. Most importantly this includes communication and common procedures (see also comment on 3.1) in order to achieve harmonisation and clear unambiguous standards across Europe.	
response	Noted See the response to comment 335.	

2.4. Why and what — What are the expected benefits and drawbacks of the proposals

p. 6-7

comment	844	comment by: <i>air traffic controller</i>
	If multiple-mode will be allowed by the authority there must be taken into consideration the human factors tasks. And a courage to set restrictions.	
response	Noted Human factors aspects/tasks are well covered in the Guidelines, see Section 6.2. on 'Human factors assessment'. Section 6.2.1. covers human factors aspects related to remote aerodromes ATS in general, and Section 6.2.2. covers human factors aspects specific to multiple mode of operation.	

2.5. Why and what — non-consensus in the RMG

p. 7-8

comment	2	comment by: <i>GdF</i>
	GdF agrees with ATCEUC. Multiple Operations is considered unsafe (see NPA 12.2) and a specific endorsement shall be introduced. IFATCA Policy is: ATCOs shall not be required to provide a Remote and Virtual tower service for more than one aerodrome simultaneously.	
response	Noted The comment does not specify whether the question is about rating or unit endorsement. AMC and GM (AMC1 ATCO.B.020(a) and GM1 to AMC1 ATCO.B.020(a) to Regulation (EU) 2015/340 on the use of unit endorsements in case of remote aerodrome ATS have been introduced. Furthermore, a specific GM (GM4 ATCO.D.060(c)), listing items to be addressed in the unit endorsement course in case of multiple mode of operation, has been developed. As for rating endorsement, see the response to comment 487.	



As regard GdF's view 'Multiple Operations is considered unsafe':

The concept of multiple mode of operation has been studied and validated, e.g. within SESAR, for many years — both in the context of ATC and AFIS. The results are clear — multiple mode of operation can be provided in a safe manner for the operational scenarios that have been tested, refer to SESAR Solution #52 ('Remote tower for two low-density aerodromes', published late 2015). Continued research is ongoing within SESAR 2020, evaluating the multiple mode of operation concept for more challenging operational context/environments (i.e. higher traffic volumes and increased number of simultaneous aerodromes).

As mentioned in several places in NPA 2017-21, whereas the single mode of operation is already implemented and approved for some aerodromes by the relevant competent authorities, EASA recognises that the concept of multiple mode of operation has not yet been operationally implemented. Nevertheless, EASA considers that there is already sufficient information and data available to provide regulatory support and guidance to facilitate its safe implementation, as well as to provide a basis for its further development.

comment

100

comment by: ISAVIA ohf.

MULTIPLE MODE OF OPERATION

Is multiple mode of operation safe (as debated on pages 7 and 8)? The answer may be different whether the ATS service provided is ATC service or AFIS.

PANS-ATM 7.1.1.2 "Aerodrome controllers shall maintain a continuous watch on all flight operations on and in the vicinity of an aerodrome as well as vehicles and personnel on the manoeuvring area." It is difficult to imagine one ATCO doing this simultaneously and sufficiently at two airports at the same time.

In the NPA on page 7: "EASA recognises that several of each other independent SESAR validations and demonstrations have shown that multiple mode of operation can be performed in a safe manner under certain limited operational context and applications (and considered that appropriate mitigation measures to reduce the risks are implemented)."

There is no further explanation in the NPA about what these mitigation procedures can be and as far as ATC service is concerned the SESAR Solution # 52 does not provide answers to how the ATCO can follow PANS-ATM 7.1.1.2. Therefore it is not clear how it can be considered safe for one ATCO to work two ATC positions at the same time.

This should be explained further.

response

Partially accepted

The concept of multiple mode of operation has been studied and validated, e.g. within SESAR, for many years — both in the context of ATC and AFIS. The results are clear — multiple mode of operation can be provided in a safe manner for the operational scenarios that have been tested, refer to SESAR Solution #52 ('Remote tower for two low-density aerodromes', published late 2015). Continued research is ongoing within SESAR 2020, evaluating the multiple mode of operation concept for



more challenging operational context/environments (i.e. higher traffic volumes and increased number of simultaneous aerodromes).

As mentioned in several places in NPA 2017-21, whereas the single mode of operation is already implemented and approved for some aerodromes by the relevant competent authorities, EASA recognises that the concept of multiple mode of operation has not yet been operationally implemented. Nevertheless, EASA considers that there is already sufficient information and data available to provide regulatory support and guidance to facilitate its safe implementation, as well as to provide a basis for its further development.

As concerns recommended limitations and mitigation measures/procedures, refer e.g. to Guidelines Section 4.2. (introductory section/text, 2nd paragraph) and Sections 4.2.1.-4.2.6. and Section 5.14.1.1. Also note that (as the comment refers to 'one ATCO to work two ATC positions at the same time') Section 5.14.2. has been amended to clarify that all systems and information are to be combined in one single physical workstation.

As concerns 'continuous watch' and how to achieve that in a multiple mode of operation set-up, refer to Guidelines Section 5.14.4.

Furthermore, it is acknowledged that ICAO PANS-ATM Chapter 7.1.1.2 also reads: '..Watch shall be maintained by visual observation,..'. In this regard, it needs to be understood that the spirit of this ICAO provision is not that the controller has to visually observe/survey all parts of the aerodrome and its vicinity (and all flight operations, vehicles and personnel) at every single point in time. This is virtually impossible even from a conventional tower (it is impossible for the human vision to survey 360 degrees at any given point in time) and likely so also in a single mode of operation set-up. At times, the controller also needs to focus her or his attention to a specific point/part of the area of responsibility, making it impossible to, at the same time, visually observe the remainder part of the area of responsibility. Instead, the 'continuous watch' here is to be interpreted as keeping a continuous awareness of all flight operations, vehicles and personnel, by visually scanning the area of responsibility (i.e. the aerodrome(s) and its vicinity). To exemplify, a comparison can be made with an aerodrome with parallel runways where the tower is situated in-between those runways. Neither in this case is it possible for a single ATCO/AFISO to visually survey both runways at any single point in time. (However, a difference between the parallel runway aerodrome example and multiple mode of operation of e.g. two single-runway aerodromes, is that in the latter case the traffic on/to/from the two runways are naturally separated.)

The introductory text of Section 4.2. as well as the text in Section 4.6. have been amended for better clarity. Section 5.14.4. has been expanded with reasoning concerning 'continuous watch' in multiple mode of operation.

comment 107

comment by: Naviair



response	<p>It could be clarified that there is currently no intention on doing this.</p> <p>Noted</p> <p>The mandatory organisational and technical requirements for all actors involved in the ATS provision (Member States, competent authority, ATS provider), applicable also to remote aerodrome ATS, are already stipulated in various EU Regulations (1034/2011 and 1035/2011, in the future repealed by Regulation (EU) 2017/373). With RMT.0624, EASA elects to issue soft law (primarily GM and a limited number of AMC related to specific aspects of ATCO qualification and training) to better specify and support the aforementioned requirements in the context of remote aerodrome ATS.</p>
comment	<p>151 comment by: <i>Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)</i></p> <p>EASA position third bullet: Reading the document it is evident that there are limited experience on the concept and on especially multiple operations as defined in the NPA. It would then be preferable if the GM took on a more neutral standpoint collecting and presenting the information on the subject currently available. EASA should take specific care not to lead implementers or stakeholders to believe that hurdles can be overcome by just adding another feature to the technical system. Nor should the GM make (false) statements on the potential of the concept or on future development.</p>
response	<p>Noted</p> <p>The aim of the Guidelines in general and of Chapter 4. in particular (see Section 4.2. on multiple mode of operation) is to present the information available from a neutral viewpoint. EASA is of the opinion that this aim is achieved in a balanced way, especially following a few adjustments introduced to the text based on the comments provided by the Swedish Transport Agency on specific sections (see e.g. comments 141, 157, 159, 160, 163, 164 and their responses.)</p>
comment	<p>184 comment by: <i>IFATCA</i></p> <p>Global IFATCA policy is: ATCO shall not be required to provide a Remote and Virtual tower service for more than one aerodrome simultaneously.</p> <p>This is motivated by the following elements. We have not found in the EASA position sufficient answers to these points.</p> <p>Multiple endorsements - ANSPs and ATM suppliers have widely promoted the benefits of consolidating tower ATCO staffing into central locations. It is inevitable that with RVT technology, ANSPs will seek to establish centres (RTC) where numerous aerodromes are controlled from a single facility. This will likely result in tower controllers being expected to hold endorsements for multiple aerodromes.</p>

- There are existing examples where ATCOs concurrently hold endorsements for more than one aerodrome, however it is unlikely that more than one of these would be exercised in a single shift, as the aerodromes would be in different locations.
- In situations where controllers are expected to maintain and exercise multiple endorsements, training (including refresher training), rest breaks, HMI design and other relevant factors must be taken into account to ensure controller competency. It may be necessary to align procedures at airports where controllers are expected to hold multiple endorsements, such as renaming taxiways and visual reporting points and aligning alarm plans and Letters of Agreements between the ANSP and the aerodrome operator and approach control.
- Stated plans by some ANSPs for ATCOs to operate more than one tower simultaneously are of significant concern. The potential for sudden unexpected peaks in workload and loss of situational awareness could lead to a significant reduction in ability to provide safe ATS, including during expected periods of low traffic.
- The concept of operating multiple towers simultaneously differs greatly from the enroute or approach environment, where there are numerous examples of controllers performing different control functions (eg. enroute combined with approach, or operating numerous enroute sectors). Generally when enroute and approach functions are combined, it will be a contiguous and coherent volume of airspace, allowing the controller to develop a single mental model of the situation. Operating multiple towers would result in a fragmented situational awareness, and there is potential for significant differences in factors such as weather between the aerodromes.
- Instead of operating several aerodrome simultaneously, it might be possible to reduce costs by co-locating an RTC next to a TRACON or ACC and work tower and approach as a common rating and by the same body of controllers, combining TWR and APP functions at times of low traffic.

The mentioned SESAR Validations and demonstrations have never achieved multiple remote tower environment, we therefore find it strange that this is being used as an argument. Current simulation and validation at E-OVCM level 3 are being carried out by end of March 2018 and the results are unknown.

The paragraph discussion the SESAR validations shall be adapted accordingly.

response

Noted

The concept of multiple mode of operation has been studied and validated, e.g. within SESAR, for many years — both in the context of ATC and AFIS. The results are clear — multiple mode of operation can be provided in a safe manner for the operational scenarios that have been tested. Please refer to SESAR Solution #52 ('Remote tower for two low-density aerodromes', published late 2015). Continued research is ongoing within SESAR 2020, evaluating the multiple mode of operation concept for more challenging operational context/environments (i.e. higher traffic volumes and increased number of simultaneous aerodromes).

As mentioned in several places in NPA 2017-21, whereas the single mode of operation is already implemented and approved for some aerodromes by the



relevant competent authorities, EASA recognises that the concept of multiple mode of operation has not yet been operationally implemented. Nevertheless, EASA considers that there is already sufficient information and data available to provide regulatory support and guidance to facilitate its safe implementation, as well as to provide a basis for its further development. In response to the listed bullets of this comment (following the same order):

- Indeed, this may be the case. Already today (in traditional/conventional tower operations) there are examples where ATCOs hold unit endorsements for more than one aerodrome.
- Although this point has low/no relevance, there are existing examples (in traditional/conventional tower operations) where ATCOs, holding separate unit endorsements for two geographically nearby aerodromes, may operate two aerodromes in the same day (e.g. one aerodrome in the morning and another aerodrome in the afternoon).
- EASA agrees with the statements and proposals presented in this bullet, except for the parts about ‘renaming taxiways and visual reporting points’, as they are typically named/designated taking into account other considerations, see e.g. the response to comment 32.
- Multiple mode of operation is to be used only when the operational circumstances so allow. Refer to the introductory text of Guidelines Section 4.2. concerning peaks in workload, refer to Guidelines Section 4.2.2. (regarding capacity peaks or high ATCO/AFISO workload in general) and 5.14.1.1. (regarding the handling of unexpected events such as abnormal an emergency situations).
- Again, SESAR results are clear, Solution # 52 has reached and completed E-OCVM concept maturity level V3. (Industrialisation (V4) and local implementation will need to, with the support of a regulatory framework (e.g. EASA guidelines) and subject to a positive local safety assessment, bring the concept into deployment (V5) and operations (V6).)
- Combining TWR and APP roles (operating tower and approach by a single ATCO) is already common practice among some ATS providers in EASA Members States.

Lastly, the statement claiming that ‘The mentioned SESAR Validations and demonstrations have never achieved multiple remote tower environment,..’ is not correct. SESAR Solution #52 has completed E-OCVM concept maturity level V3 for multiple mode of operation to two low-density aerodromes.

As the statement ‘..Current simulation and validation at E-OVCM level 3 are being carried out by end of March 2018 and the results are unkown’ mentions, this relates to the continued research mentioned in the beginning of this response (aiming to reach V3 also for more challenging operational context/environments beyond the scope of Solution #52).



comment

186

comment by: IFATCA

~~Most importantly, remote aerodrome ATS does not imply any changes to the provided service. The service is still the same (aerodrome ATS) and there are no, or only minimal, changes in operational procedures.~~

IFATCA does not agree with this for the following reasons:

Aerodrome control is a critical ATC service, and as such must have a very high level of reliability and redundancy. Ultimate fall backs that exist in traditional towers such as ALDIS signal lamps and handheld transceivers will not be available.

While integration of surveillance technologies and alerts into the screen display provides an opportunity to enhance situational awareness, if not implemented appropriately, it might pose the risk of information overload or 'alarm fatigue' for controllers. Nuisance alerts can create unacceptable distractions for ATCOs. In complex task environments such as ATC, research has shown false alarms to lead to less frequent and slower alarm responses (Bliss, Dunn & Fuller 1995).

Automation can lead to a tendency of over reliance on the correct functioning of the system to maintain situational awareness. In a highly automated system it is essential that fundamental controller skills and knowledge are maintained through regular training in degraded operations.

Poorly implemented alerts and corresponding procedures can lead to ambiguity in controller/pilot responsibilities. The provision of safety net alerting in automated en-route environments is well established, and it is known that safety net alerts require specific and unambiguous procedures for assessment and response to the alert. Ambiguity in the procedure or responsibility for alert response can lead to inappropriate action or lack of action

Regardless of the levels of quality and reliability of RVT, they will not be the 'same' as traditional towers. Conventional control towers are able to utilise reduced separations in the vicinity of an aerodrome. This is in part due to their simplicity. All that is required is a functioning radio, there is no latency and they have multiple redundancy. RVT have more potential points of failure and may not be able not be relied on to the same degree. Existing methods of separation will need to be reviewed and assessed with regards to their suitability for use with RVT.

Specific separation standards for RVT should be devised through a scientific process taking into account all factors relevant to the RVT operational environment, including but not limited to – system latency, visual performance/resolution, effect of visual compression. At the time of writing, there are no specific RVT standards approved at the ICAO or national regulator level.

Although RVT are intended to provide as accurate a representation as possible of a control tower view, ultimately, the camera technology is a form of electronic surveillance, not direct visual observation. Existing visual control practices and separation standards cannot simply be transplanted into RVT operations without undergoing rigorous assessment of their suitability for RVT.



IFATCA defines visual observation as -
Observation through direct eyesight of objects situated within the line of sight of the observer possibly enhanced by binoculars

IFATCA policy on visual observation remains valid. RVT sensor and display technologies should be considered a means of surveillance, rather than visual observation, and required performance standards defined accordingly.

There will be a number of differences between traditional towers and remote towers in the area of human factors. These may include, but are not limited to, eye strain and fatigue, low light and night conditions, depth perception.

It is well established that prolonged use of screens leads to eye fatigue and eyestrain. This can be exacerbated by sub-optimal lighting, and factors such as screen flicker, screen refresh rates, and resolution. Continuous noise from cooling fans, and dry air from air conditioners can also have a fatiguing effect. ATCOs who have experience working in advanced tower simulators frequently report that they are unable to work for prolonged periods due to eye fatigue and strain caused by electronic displays.

Remote tower installations need to be rigorously assessed with regards to the above, and ATCO shift lengths and break requirements set accordingly. It may be the case that ATCO shift lengths need to be shorter, and required breaks longer and at more regular intervals, than for a traditional tower.

Night and low light operations pose a similar issue. ATCOs assessing trial RVTs have reported reduced screen resolution, pixelation, as well as difficulty distinguishing between runway, taxiway and off-airport lights during night hours. Additionally, it has been reported by some ATCOs involved in trial assessments that judging distance visually is generally more difficult than in a traditional tower.

Full meteorological observation (METOBS) may not be able to be performed by ATCOs operating remote towers. The function may need to be delegated to an accredited person on the aerodrome site, such as airport fire service personnel or the aerodrome operator. In some countries, this function is already performed by someone other than an ATCO, such as the aerodrome operator, particularly at uncontrolled aerodromes. At major airports, this function is often performed by dedicated meteorological personnel.

ATCOs may lose intimate local knowledge of weather patterns due to being located offsite, particularly where ATCOs regularly work more than one aerodrome from a remote facility. This could affect critical decision making and situational awareness where it relates to weather.

Aerodrome control is a critical service, as remote towers will require an exceptionally high level of reliability and redundancy.

- - ATCOs using the system must have a high level of confidence in its reliability. Benefits of new technology may be partly negated if ATCOs don't trust the system, reducing any efficiency benefits if ATCOs revert to procedural or conservative techniques.



	<ul style="list-style-type: none"> • Alerts and warnings for controllers will be necessary to alert them immediately to system failure or degradation, including latency issues, screen freezing, and camera and other failures. • Manned towers generally have 2 levels of communication redundancy (secondary and tertiary equipment – ie: handheld). Handheld transceivers are not possible in a remote tower, so another form of tertiary redundancy should be devised. • Camera installations must be able to be cleaned regularly and at short notice. A number of factors such as condensation, raindrops, bird droppings or nesting and dust could impair visibility or damage camera installations. • Where multiple aerodromes are controlled from a single centre, a system failure or building evacuation could cause multiple aerodromes to lose ATC service. It could be the case that an aircraft's destination, as well as suitable alternates, become unavailable with little or no notice. Contingency procedures must be available for provision of appropriate levels of ATS in such circumstances.
response	<p>Noted</p> <p>See the response to comment 494.</p> <p>Furthermore, in response to some of the reasons listed in the comment, see the bullets below. (For the parts/reasons where there is no specific response provided, this means that EASA agrees and/or that the topic is already sufficiently covered by the EASA Guidelines/AMC/GM).</p> <ul style="list-style-type: none"> — The Guidelines proposed by EASA do not envisage different communication facilities than those available in a conventional tower. Fallbacks such as signalling lamps and the use of back-up/emergency radios (equivalent to handheld radios in conventional towers) would be available also in a remote tower. — Concerning separation methods/standards, the use of reduction in separation minima and depth perception, see the response to comment 3. As regards technical standards, it can be noted that EUROCAE has published a Minimum Aviation System Performance Standards (MASPS) for Remote Tower Optical Systems, specifying its end-to-end performance. It can furthermore be noted that the amendments to ICAO (PANS-ATM) Doc 4444 include a new Section 7.1.1.2.1, reading 'Visual observation shall be achieved through direct out-of-the-window observation, or through indirect observation utilizing a visual surveillance system which is specifically approved for the purpose by the appropriate ATS authority.'. The EASA Guidelines are fully in line with the amendments to ICAO (PANS-ATM) Doc 4444, applicable as of 8 November 2018. — Concerning fatigue, eyestrain etc. These aspects are relevant for all/most system changes, e.g. also when building/upgrading a conventional tower. However, these aspects are addressed in the Guidelines (Sections 5.13 and 6.2.) as well as in the ATCO qualification and training package (GM3

ATCO.D.060(c)) as issues/items/factors to be considered when implementing remote aerodrome ATS.

- Concerning the claims on low-light and night operations. This has not been reported as an issue by the ATS units where remote aerodrome ATS are in (full) operation. Nevertheless, the appropriateness and performance of the visual surveillance system in low-light and night conditions is an important part of the design specification when implementing remote aerodrome ATS. This aspect is therefore also addressed in the Guidelines (last paragraph of Section 5.3.1.). In this context, EASA recalls what is outlined in Guidelines Section 5.2.: A visual presentation can never exactly replicate the ATCO/AFISO visual performance obtained from an out-the-window view (which also is not key for the implementation of remote aerodrome ATS, instead what is key is to ensure that the visual surveillance system/visual presentation is sufficiently supporting the ATS provision). To some extent, the achieved performance will be better and to some extent the performance will be less good. For instance, (and as mentioned in several places in the Guidelines), in some cases of implementation, brighter presentation/reproduction of the operating environment compared to the real world during dusk and dawn conditions (i.e. prolonged hours of daylight) has been reported. Furthermore, with new technical enablers such as IR cameras and overlays such as runway/taxiway framings, visual performance in low/no light and lowvisibility conditions could be improved compared with real-life/conventional tower operations.
- Concerning METOBS. It is acknowledged that full meteorological observation is not an ATS task; however, sometimes this work is performed by ATCOs/AFISOs in some ATS units/some Member States. (In this regard, it can be noted that the two ATS units in Sweden where, so far, remote aerodrome ATS is provided, METOBS is still performed by the ATCOs from the remote tower modules, based on the technical system and procedures implemented.) Potential changes in task distribution between organisations, as a result of the introduction of remote aerodrome ATS, MET related tasks included, is addressed in the EASA Guidelines, see e.g. the checklist in Appendix 1. As regards knowledge of local weather characteristics, a new item has been introduced to GM3 ATCO.D.060(c) 'Unit endorsement course' to cover this aspect.

Text on maintenance procedures for the cleaning of camera installations, as needed, has been added to Section 5.2.4.6.

comment

187

comment by: IFATCA

IFATCA disagrees with comments with some of EASA's position:

Following the judgment of Ueberlingen (CH), Sette Fratteli (I) and others IFATCA is worried about the approach taken by the proposed NPA.



	<p>Only when the system has proven to meet the expected level of performance (in any circumstances) is it legally acceptable to introduce the new system. From the validation exercises under SESAR, none of the degraded mode in multiple scenarios have proven to make up for these requirements.</p> <p>From a legal point of view to operate a system and counting that there will be never a failure is not acceptable. The Mitigation actions which have so far been assessed under SESAR, do not fulfill the requirement outlined by the judgements mentioned above. It is about the safety guarantee ANSP is delivering in all circumstances and not only in normal operations.</p>
response	<p>Noted</p> <p>The SESAR work has assessed also degraded mode procedures and E-OCVM maturity level V3 has been reached (completed) for the published SESAR Solutions. ATS providers are responsible for providing sufficient evidence for an acceptable level of safety for any change to the functional system, as part of the local safety assessment.</p> <p>The aim with the safety assessment is to identify hazards and degraded modes which can affect the ATS, to determine their severity and to implement mitigations to deduce their effects to acceptable levels. The safety assessment is to be reviewed by the competent authority.</p> <p>How to operate in degraded modes, contingency procedures, the set-up of the maintenance organisation, etc., is to be defined on the local implementation level and to be specified e.g. in the operations manual. This should be based on the outcome of the local safety assessment/safety case, taking into account not only the recommendations stemming from the Überlingen investigations, but all factors in accordance with the EU regulatory framework for the assessment of the changes to the functional system.</p>
comment	<p>188 comment by: IFATCA</p> <p>IFATCA comments:</p> <p>EASA is currently not able to identify (...)</p> <p>As the emerging properties are not simulated neither validated it is maybe too early to conclude that the approach taken by EASA is sufficient. In particular the non identification of specific skills needed on multiple remote towers. According to the EASA license a tower ATCO needs to do a certain number of training and on the job training hours before being allowed to work on this unit. Obligations on currency is required. When it comes to multiple remote tower, the added system complexity, the new way of working etc. require a double set of new requirements. New skills such as multiple tasks at the same time are required. etc.</p>
response	<p>Noted</p> <p>The comment does not raise any aspects/issues which could not be handled within the framework of the current ATCO rules and the requirements for unit training.</p>

Concerning multiple mode of operation (with reference to the statement ‘require a double set of new requirements’), specific GM (GM4 ATCO.D.060(c) to Regulation (EU) 2015/340), covering items to be addressed in the unit endorsement course, has been introduced.

comment 389 comment by: *Finavia Corporation*

We are mostly in favour of the proposed NPA and the decision of EASA to produce guidelines instead of hard law.

response Noted

EASA thanks Finavia for their supportive comment.

comment 398 comment by: *NATS*

NATS acknowledge the need for EASA to provide the narrative on the Union members of the taskforce, view for the consultation, we equally agree and applaud EASA for their response, the proposals from the unions do not meet with the Performance based regulation that should be utilised. However we feel that if from this consultation other reviewers equally agree with EASA's stance, that for clarity within a guidance document from EASA, the unions comments should be removed from the final published version, as this aligns with the commenting process(i.e other comments that are rejected wouldn't still get inserted into the document)

Suggest

Remove comments – if consensus of respondents agree with EASA's stance and not unions.

response Noted

The views of the ETF and ATCEUC representatives of the rulemaking group were presented for transparency reasons as part of the NPA publication.

comment 482 comment by: *Heathrow airport*

We very much support the selected approach for soft law / guidance. We believe this is the best choice to achieve the aims to ensure harmonious and safe deployments but remains flexible enough to ensure deployments can be flexible enough to meet local safety and operational needs.

response Noted

EASA thanks Heathrow airport for their supportive comment.

comment 489 comment by: *European Transport Workers Federation - ETF*

Attachment [#2](#)



The presentation of the disagreement in the RMG is unbalanced. One way it is evident is the length of text allowed for both viewpoints. We have presented our point of view in the general comments above. We would like to answer EASA's viewpoint in more detail with the following:

EASA claims that "there are no, or only minimal, changes in operational procedures". It seems difficult to understand any coherence when the rest of the approach is based on the safety assessment of change. If there is no change then the rest is irrelevant.

EASA acknowledges in its justification that trust is an important element to implement new technologies. With the lack of reflection of our concerns in the proposal, it is difficult for us to trust that the approach will meet its objectives.

Regarding the justification not to introduce a rating endorsement, we have contributed in writing as to what skills are affected by remote tower operations and never got feedback as to why EASA does not consider our input valid.

response Noted

Regarding the presentation of ETF and ATCEUC representatives' disagreement, see the response to comment 645. EASA thanks ETF for their comments provided on NPA 2017-21, to which all responses have been provided in this CRD.

The introduction/implementation of remote aerodrome ATS is a change to the functional system. 'Functional system' is defined in Regulation (EU) 2017/373 as 'a combination of procedures, human resources and equipment, including hardware and software, organised to perform a function within the context of ATM/ANS and other ATM network functions'. The safety assessment concerns the change to the functional system, which may or may not include changes to operational procedures. As concerns the implementation of remote aerodrome ATS, it is likely to believe that the biggest change to the functional system relates to equipment, but will of course also affect the human resources and potentially also the procedures.

Concerning the statement in the comment that ETF 'never got feedback' and the related attachment:

EASA has provided feedback to ETF on their inputs repeatedly; within the work of the rulemaking group (e.g. during the rulemaking group meetings) as well as during two separate and dedicated bi-lateral meetings held between EASA and ETF+ATCEUC, which were set up upon requests submitted through letters from ETF+ATCEUC to the EASA Executive Director. Furthermore, EASA's position/feedback is presented in NPA 2017-21 Section 2.5.

Furthermore, see the responses to comments 494 and 487.

comment 575

comment by: HIAL



HIAL support the EASA position that multiple mode operation is safe and that guidelines for implementation provide sufficient scope and flexibility for competent authority approval. We further support the EASA view that there is no need for a separate endorsement for RT since the service is the same regardless. This eliminates costly licensing requirements and again paves the way for HIAL to implement ATM Strategy 2030 with minimal licensing constraint.

The NPA outlines the context and extent of training required for licensing in accordance with Regulation EU 2015/340; it is clear that an entirely new training programme is not necessary and, in conjunction with the proposals associated with NPA 2015-04 (Technical and operational requirements for remote tower operations), has provided AMC and GM in the form of high level objectives which can be introduced as part of the UEC and which are able to facilitate refresher training and conversion training. We note the AMC and GM are in support of Regulation EU 2015/340 which already regulates the training requirement for remote aerodrome services and details the subjects, subject objectives, topics and subtopics which should be integrated into unit endorsement courses. Since a regulatory path for licensing has been identified, the benefits of remote towers can be fully exploited; training and cross licensing can be harmonised across airports and simplified to some extent by the ability to more realistically emulate a live environment through design features and more intuitive working positions. Cross licensing enables ATCOs and AFISOs to provide ATS to various aerodromes, hence flexible staffing may be achieved and thus costs may be reduced as ATCOs and AFISOs are not bound to one aerodrome. Remote tower technology will however introduce a range of new systems into the VCR resulting in significant change to the working environment, human factors aspects and working procedures, all of which are addressed by the NPA.

response

Noted

EASA thanks HIAL for their supportive comment.

comment

645

comment by: ATCEUC

In our opinion, ATCEUC's disagreement (And ETF's as well) should be well explained. ATCEUC and ETF are the most representative stakeholders among ATM professionals and we are the only one who are going to work actively with this kind of technology.

response

Noted

ATCEUC and ETF rulemaking group representatives were requested by EASA (through an email, dated 18 October 2017) whether they wished to have their disagreements related to ATCO licensing and multiple mode of operation expressed in the NPA and if so, how they wished to have it expressed. Both representatives responded (ATCEUC through an email, dated 18 October 2017, ETF through an email, dated 19 October 2017) confirming that they wished to express disagreement and provided explanations and justifications for their positions which they requested be included in the NPA. Their disagreements and the explanations they provided thereto have been presented in NPA Section 2.5. in a fully transparent manner.



Furthermore, ATCEUC and ETF have submitted numerous comments on NPA 2017-21 (this comment being one example), explaining their views further. As for all comments provided by all stakeholders, the ETF and ATCEUC comments have been carefully assessed and responded to. When justified, amendments have been introduced accordingly to the regulatory proposal presented in the NPA.

comment

707

comment by: *DACTCA*

With regards to licensing it is our view that a license to work in a visual tower should not automatically be a ticket to work in a remote/digital version of the same without training. The tools, the layout, the compression onto less than 360 degrees poses a number of rarities with regards to the behaviour of "tracks" that could be completely different to conventional towers and therefor requires sufficient familiarization and currency monitoring. Simply leaving it up to the maturity of the ANSPs and their SMS is irresponsible.

response

Noted

Guidance material (GM1 ATCO.D.085) on conversion training has been introduced to address the transition from a conventional to a remote tower.

comment

726

comment by: *Federal Aviation Administration*

Current Text: Most importantly, remote aerodrome ATS does not imply any changes to the provided service. The service is still the same (aerodrome ATS) and there are no, or only minimal, changes in operational procedures.

Specific Comment: In some cases, it might be determined that some of these systems may force an air traffic control specialist to provide air traffic services that heavily rely on procedural considerations in terms of the 2D versus 3D view presented on the display screens that are not augmented by RADAR or other technology separately from the RTS itself. This may indicate that different levels of service can be provided by different systems.

Proposed Text: Most importantly, remote aerodrome ATS does not *necessarily* imply any changes to the provided service. The service *may* still be the same (aerodrome ATS) with no, or only minimal, changes in operational *procedures based upon demonstrated system performance*.

response

Not accepted

This formulation will be changed in the Guidelines and in future EASA communication/publications, in line with the response to comment 494. Also note that the commented text forms part of the introductory text of the published NPA (not the regulatory proposals themselves, which are presented in Chapter 3 of the NPA) and can therefore not be changed at this stage.

comment

727

comment by: *Federal Aviation Administration*

	<p>Current Text: EASA considers that the service provision is the same, regardless if being provided from a remote or a conventional tower.</p> <p>Proposed Text: EASA considers that the service <u>may</u> be the same, regardless if being provided from a remote or a conventional tower.</p>
response	<p>Not accepted</p> <p>See the response to comment 726, which is valid also for this text/comment.</p>
comment	<p>749 comment by: <i>European Cockpit Association</i></p> <p>ECA does not support the implementation of Multiple Remote Tower Services (RTS) until sufficient experience with Single RTS has been gained and until human factors and technical implications have been thoroughly researched and are adequately mitigated to ensure safe ATC operations.</p> <p>According to NPA 2.4 no experience exists on multiple mode operation using different services (ATS+AFIS). Furthermore NPA 2.5 points out that any multiple mode operation is recommended to be developed out of single mode operation in order to gain experience first.</p> <p>We therefore support ETF's and ATCEUC's position not to allow multiple mode operation at this stage.</p>
response	<p>Noted</p> <p>See two last paragraphs of the response to comment 2. Furthermore, it is noted that this comment itself refers to recommendations which are in fact provided in the proposed Guidelines (Sections 4.2.4. & 4.2.5.). It needs to be understood that any case of remote aerodrome ATS implementation, single as well as multiple mode of operation, is subject to a local safety assessment in accordance with the procedures accepted by the relevant competent authority. The intention of the proposed Guidelines is to provide support and guidance for the local safety assessment, including e.g. aspects related to human factors and technical implications, to be performed for each case of implementation.</p>
comment	<p>750 comment by: <i>European Cockpit Association</i></p> <p>Typo: SEASR has to say SESAR</p>
response	<p>Noted</p> <p>As this text forms part of the NPA 'explanatory note', it can unfortunately not be changed in retrospect (the NPA is already published).</p>
comment	<p>751 comment by: <i>European Cockpit Association</i></p>



response	<p>“EASA is currently not able to identify a specific set of skills required for remote aerodrome ATS”.</p> <p>This may be true for single RTS operation, however when it comes to multiple RTS operation this may require the specific set of skills referred to earlier and therefore a licensing scheme.</p> <p>Noted</p> <p>The full sentence in the NPA referred to in this comment reads: ‘EASA is currently not able to identify a specific set of skills required for remote aerodrome ATS, <u>that would be common for the different implementation projects</u> (and taking into account that the technical solutions can be different from implementation to implementation) and that would justify to establish what should be part of said rating endorsement.’</p> <p>A specific GM (GM4 ATCO.D.060(c) to Regulation (EU) 2015/340), listing items to be addressed in the unit endorsement course in case of multiple mode of operation, has been introduced. See also the response to comment 188.</p>
comment	<p>842 comment by: UK CAA</p> <p>Page No: 8</p> <p>Paragraph No: 2nd paragraph beginning “in relation to the argument”.</p> <p>Comment: UK CAA agrees that there is no requirement for a specific remote aerodrome ATS rating.</p> <p>Justification: Aerodrome control service remains aerodrome control service in terms of the provision of the ATS itself. The processes and systems used by the ATCO to deliver that ATS may change but that is associated with local implementation and should be delivered through the unit training plan and endorsement course. A Unit License Endorsement (ULE) must be passed for each aerodrome and appropriate levels of currency must be maintained for each endorsement.</p>
response	<p>Noted</p> <p>EASA thanks UK CAA for their supportive comment.</p>
comment	<p>833 comment by: Think Research</p> <p>Level of Regulation</p> <p>The ETF claim that the level of ‘guidelines’ is unsatisfactory, and instead would prefer ‘harder’ regulation. It has already been acknowledged that the level of maturity of multiple mode Remote Tower is lower than that of single mode. As such, a softer approach is considered more appropriate at this stage. There is no change to the actual service being offered by a single or multiple mode Remote Tower, compared to a traditional tower, and so a softer regulatory approach is justified- especially, as</p>



response	<p>EASA note, in the performance based regulatory environment the industry is moving towards.</p> <p>Noted</p> <p>EASA thanks Think Research for their supportive comment.</p>
comment	<p>834 comment by: <i>Think Research</i></p> <p>Human Performance Claims</p> <p>The ETF cite a human factors concern, specifically the mental capacity of an ATCO to conduct multiple tasks simultaneously, and claim that this has been proven to lead to errors being made. If this claim is to influence the outcome of this NPA, the study from which these claims are made should be cited.</p>
response	<p>Noted</p>
comment	<p>835 comment by: <i>Think Research</i></p> <p>Multiple Mode Restrictions</p> <p>ATCEUC are reportedly in favour of a complete prohibition of the multiple mode of operation. In addition, an ETF position paper (<i>ETF Views on Remote Tower- April 2016</i>) expresses concern about multiple mode Remote Tower, and call for the prohibition of a single controller providing a simultaneous service to more than one aerodrome. ATCEUC's claim that multiple mode is [in their view] unsafe and disrespectful is considered highly subjective, and possibly driven by other motives. The Joint public statement issued by ATCEUC and ETF (22 Sept 2017) explain that <i>'The reality is that one Air Traffic Controller or Aerodrome Flight Information Service Officer could be responsible for servicing air traffic in several busy airports simultaneously in the near future with all of the safety implications that brings.'</i> In this case, clearly there may be significant safety implications- however the use case for multiple mode Remote Tower was never for a single ATCO/FISO to be providing a service to 'several busy airports' at once. This statement claims <i>'To date, trials run under the Single European Sky ATM Research Joint Undertaking umbrella proved that it is difficult and potentially unsafe to operate two movements'</i>. This is contrary to the Braunschweig SESAR Human in the Loop validation exercise, where one ATCO safety provided a service to three aerodromes simultaneously. To this end, it is recommended that the concern raised here does not impact the NPA decisions.</p>
response	<p>Noted</p> <p>Concerning EASA's position on multiple mode of operation, see the response to comment 710.</p>
comment	<p>845 comment by: <i>air traffic controller</i></p> <p>I strongly recommend R-ATS to be some form om rating endorsment as the environment and the methods most likely differ from the ones in a conventional</p>

	<p>TWR. Also the fact that the Visual presentation of 360 degrees is limited to 225 degrees or even less. The NPA says: <i>-There are no, or minimal, changes in operational procedures</i> This may be for smaller airports or for airports with strict procedures and aircraft with similar performance. Differences in the presentation (visual presentation) also purpose for a unit endorsement.</p>
response	<p>Not accepted See fourth (last) bullet, including sub-bullets, under 'EASA's position' (NPA 2017-21 Section 2.5.) and see the response to comment 487.</p>

3. Proposed amendments - 3.1. Draft guidelines

p. 9

comment	56	comment by: <i>ENAIRE</i>
	<p>NO, there is no need to modify current standard R/T procedures in remote aerodrome ATS units. The premise of the remote aerodrome ATS is that “there is no change in service provision (aerodrome ATS)”. Thus no additional awareness should be required to pilots, apart from the specific recommendations cited in 5.14.1.2 (“same or similar runway designators”), or other local procedures published in AIP. In any case, according to point 9 in the NPA (page 70): AIP shall include “indication that remote aerodrome ATS is provided (in AIP AD 2.23 ‘Additional Information’, for each relevant aerodrome)”. So neither additional standard information, nor communications are needed in normal operation. Had the situation would require further information, current provisions on Voice communication procedures must be sufficient (i.e., SERA.14001).</p>	
response	Noted	
comment	87	comment by: <i>DTCA</i>
	<p>Page 9, Question to stakeholders. Danish Transport, Construction and Housing Authority (DTCA) has the following comments to EASA's question to stakeholders if there is a need to indicate, for the radio communication between the pilot and ATCO/AFISO, the provision of remote aerodrome ATS (e.g. by the addition of the word '<i>remote</i>' to the ATS unit call sign on the initial call).</p> <p>DTCA is of the opinion that there is no need to indicate, in the radio communication between the pilot and ATCO/AFISO, that the ATS is being provided from a remotely located position. Even more, DTCA finds that it would be inappropriate and superfluous to indicate, in the radio transmission, that ATS is provided from a remotely located position for the reason that the ATS provided to the specific aerodrome/site is the same as if provided from a conventional TWR/cabin at that aerodrome.</p>	



response	<p>Going beyond the scope of the question however, DTCA is of the opinion that it should be considered to reflect in the AIP for the specific aerodrome that ATS is provided from a remotely located position.</p> <p>Further, DTCA is of the opinion that the current regulations for radio communication (SERA.14055 based on the ICAO provisions in ICAO Annex 10, Vol. II, Part V) may not be sufficiently accurate to cater for the situation for multiple mode operations. We believe that there is a need for an increased situational awareness for the ATCO/AFISO during multiple mode operations.</p>
response	Noted
comment	<p>94 comment by: ISAVIA ohf.</p>
	<p>Item 3.1 page 9, EASA asks a question. Item 9 page 70 mentions that it should be mentioned in AIP AD 2.23 that remote aerodrome ATS is provided. Therefore not needed, the pilot should understand what „remote tower“ means.</p>
response	Noted
comment	<p>103 comment by: Finnish Transport Safety Agency</p>
	<p>Finnish Transport Safety Agency supports the indication of the provision of remote aerodrome ATS in radio communication between the pilot and ATCO/AFISO.</p> <p>In addition, also for clarity purposes, the inclusion of the name of the aerodrome should be considered in the context of runway related clearances during multiple mode of remote ATS operations.</p>
response	<p>Noted</p> <p>The topic raised in the second paragraph in the comment above is covered by/discussed in Guidelines Section 5.14.1.2..</p>
comment	<p>108 comment by: Naviair</p>
	<p>In the event of Multiple Mode Operations there should be clear indication to ATCO/AFISO from which airport and in which frequency the radio call is coming from. Currently there are not that many "recommendation" for this.</p> <p>Additional comments on chapters 5.6, 5.14.1.2, 5.14.3 and 6.2.2.</p> <p>Remote aerodrome ATS should be transparent to airspace users hence it's not relevant to indicate if service is local or remote.</p> <p>In multiple mode of operations, it might be relevant to indicate the mode of operation to airspace users e.g. via ATIS or R/T, to contribute to airspace user's situational awareness.</p>

response	<p>Noted</p> <p>The comment is 'Noted' as regards the response to the 'Question to stakeholders' (last two sentences of the comment).</p> <p>The other aspects/comments are responded to separately in the respective comments provided on other segments of the NPA.</p>
comment	<p>140 comment by: <i>Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)</i></p> <p>Question to stakeholder: Information in AIP sufficient, no need for "remote" in the radio communication between the pilot and ATCO/AFISO. As stated on page 7 in the NPA <i>Most importantly, remote aerodrome ATS does not imply any changes to the provided service. The service is still the same (aerodrome ATS) and there are no, or only minimal, changes in operational procedures.</i></p>
response	Noted
comment	<p>176 comment by: <i>AESA/DSANA</i></p> <p><u>Answer to "Question to stakeholders"</u> We do not consider necessary to introduce the term "remote" in the initial call as the remote service should not be different from a conventional service for the pilot. In addition, the information of the type of service provided is always published in AIP AD-2. However, AESA is open to consider other options.</p>
response	Noted
comment	<p>292 comment by: <i>ENAV</i></p> <p>Question to stakeholders; For the radio communication between the pilot and ATCO/AFISO, is there a need to indicate the provision of remote aerodrome ATS (e.g. by the addition of the word 'remote' to the ATS unit call sign on the initial call</p> <p>ENAV comment: No. The word "remote", what does that mean for the pilot or airport staff and are they expected to act different-if not, don't use it</p>
response	Noted
comment	<p>293 comment by: <i>ENAV</i></p> <p>The whole NPA insists on the fact that providing the service remotely should be transparent for the airspace user. Moreover, the information will already be provided in AIP (according to 9). Therefore, it is not useful to provide the information on the radio and may on the contrary has negative impact of frequency over-occupancy.</p>

response	<p>ENAV suggestion: Do not ask for addition of the word 'remote' to the ATS unit call sign on the initial call.</p> <p>Noted</p>
comment	<p>294 comment by: ENAV</p> <p>NO, there is no need to modify current standard R/T procedures in remote aerodrome ATS units.</p> <p>The premise of the remote aerodrome ATS is that “there is no change in service provision (aerodrome ATS)”. Thus no additional awareness should be required to pilots, apart from the specific recommendations cited in 5.14.1.2 (“same or similar runway designators”), or other local procedures published in AIP. In any case, according to point 9 in the NPA (page 70): AIP shall include “indication that remote aerodrome ATS is provided (in AIP AD 2.23 ‘Additional Information’, for each relevant aerodrome)”. So neither additional standard information, nor communications are needed in normal operation. Had the situation would require further information, current provisions on Voice communication procedures must be sufficient (i.e., SERA.14001)</p>
response	<p>Noted</p>
comment	<p>334 comment by: CANSO</p> <p><u>Question to stakeholders</u></p> <p>For the radio communication between the pilot and ATCO/AFISO, is there a need to indicate the provision of remote aerodrome ATS (e.g. by the addition of the word ‘remote’ to the ATS unit call sign on the initial call</p> <p>CANSO comment: No. The word "remote", what does that mean for the pilot or airport staff and are they expected to act different-if not, don't use it</p>
response	<p>Noted</p>
comment	<p>337 comment by: Martin Ryff</p> <p>As regards question under 3.1., we are of the opinion, that such information must be given at the begin of the radio communication between the pilot and the ATCO/AFISO. Furthermore it needs also to be mentioned in the ATIS.</p>
response	<p>Noted</p> <p>With regard to your comment on ATIS, EASA is of the opinion that such information is to be provided in the AIP (as described in Chapter 9 of the Guidelines). ATIS messages should contain information of non-permanent nature in order to reduce the length of the radio transmissions.</p>

comment	351	comment by: <i>CANSO</i>
	<u>3. Question to stakeholders</u>	
	The whole NPA insists on the fact that providing the service remotely should be transparent for the airspace user. Moreover, the information will already be provided in AIP (according to 9). Therefore, it is not useful to provide the information on the radio and may on the contrary has negative impact of frequency over-occupancy.	
	CANSO suggestion: Do not ask for addition of the word 'remote' to the ATS unit call sign on the initial call.	
response	Noted	
comment	352	comment by: <i>CANSO</i>
	<i>3. Proposed amendments and rationale in detail / 3.1. Draft guidelines (Draft EASA decision) / Question to stakeholders: For the radio communication between the pilot and ATCO/AFISO, is there a need to indicate the provision of remote aerodrome ATS (e.g. by the addition of the word 'remote' to the ATS unit call sign on the initial call)?</i>	
	NO , there is no need to modify current standard R/T procedures in remote aerodrome ATS units.	
	The premise of the remote aerodrome ATS is that “there is no change in service provision (aerodrome ATS)”. Thus no additional awareness should be required to pilots, apart from the specific recommendations cited in 5.14.1.2 (“same or similar runway designators”), or other local procedures published in AIP. In any case, according to point 9 in the NPA (page 70): AIP shall include “indication that remote aerodrome ATS is provided (in AIP AD 2.23 ‘Additional Information’, for each relevant aerodrome)”. So neither additional standard information, nor communications are needed in normal operation. Had the situation would require further information, current provisions on Voice communication procedures must be sufficient (i.e., SERA.14001).	
response	Noted	
comment	387	comment by: <i>Scandinavian Airlines System</i>
	3.1 Question to stakeholders.	
	Airspace users would like to obtain information whether the airport is remotely controlled or not. However, instead of having the information over radio, it should be mandatory to publish the information in the AIP, AD section.	
response	Noted	
comment	390	comment by: <i>Finavia Corporation</i>
	Our opinion is that there is not a need to add the word 'remote' to ATS unit call sign.	
response	Noted	

comment	<p>399 comment by: NATS</p> <p><i>For the radio communication between the pilot and ATCO/AFISO, is there a need to indicate the provision of remote aerodrome ATS (e.g. by the addition of the word 'remote' to the ATS unit call sign on the initial call)?</i></p> <p>No. No requirement to, we don't for Approach or Area (This is an example also of the confusion the word remote gives – if the technology is being used in a Conventional Tower, or even a site at the aerodrome, would the need for RTF Remote be required then?)</p>
response	Noted
comment	<p>423 comment by: Belgocontrol</p> <p>Question to stakeholders :</p> <p>For the radio communication between the pilot and ATCO/AFISO, there is <u>no</u> need to indicate the location of the service provision as considered not to be relevant, assuming the service delivery / working methods remain unchanged.</p>
response	Noted
comment	<p>425 comment by: LfV</p> <p>Question to stakeholders: For the radio communication between the pilot and ATCO/AFISO, is there a need to indicate the provision of remote aerodrome ATS (e.g. by the addition of the word 'remote' to the ATS unit call sign on the initial call?)</p> <p>LfV response: No. The word "remote", what does that mean for the pilot or airport staff and are they expected to act different-if not, don't use it. For stakeholders, the actual information of how the services are provided is more relevant to be described in the national AIP section AD2 for the respective Airport</p>
response	Noted
comment	<p>477 comment by: Air Navigation Services Finland Oy</p> <p>The provision of remote aerodrome ATS unit should be indicated to pilots somehow; this could be included in the ATIS broadcast and possible changes on the service provision type could be broadcast on the relevant ATS frequencies. However, in multiple mode of operations it would be beneficial to change the ATS unit call sign to just "remote tower", leaving out the name of the aerodrome. The aerodrome name should, however, be included in all runway clearances in accordance with section 5.14.1.2.</p>
response	<p>Noted</p> <p>With regard to your comment on ATIS, EASA is of the opinion that such information is to be provided in the AIP (as described in Chapter 9 of the Guidelines). ATIS</p>



messages should contain information of non-permanent nature in order to reduce the length of the radio transmissions.

comment 483 comment by: *Heathrow airport*

We believe it is sufficient to state the relevant modes of operation (standard and fall-back plus any other modes of operation) in the AIP, and that no further additional RT should be required. Exception may be required for cases where the pilot is asked to respond differently depending upon mode of operation in use, in this last case it may be prudent for different RT to be used to confirm the current operating state and therefore the difference requirements in place. In all instances, the need for RT adjustments should be considered as part of the local safety assessment; requiring a once size fits all approach across all operations may overload RT at some high capacity aerodromes.

response Noted

comment 490 comment by: *European Transport Workers Federation - ETF*

Question to stakeholders : ETF considers that it is needed. The field of view can be limited even more than from a conventional tower. It is especially needed when it comes to the multiple mode of operations as the service is provided by one ATCO/AFISO to multiple aerodromes making it more difficult for pilots to gain situational awareness. It is an additional factor for potential mistakes in the application of clearances which were directed at another aircraft.

response Noted

Guidance and recommendations related to communication procedures in multiple mode of operation and information to pilots on the same are provided in Guidelines Section 5.14.1.2. and Chapter 9.

comment 576 comment by: *HIAL*

HIAL have no particular view on whether ‘remote’ should be used for callsigns purposes and perhaps comment to the NPA will identify the best solution. However, in a similar way that ACCs are remote from their sector, there should be no requirement to state ‘remote’ as this will have no operational difference on service provision or responsibilities. The remote reference should however, be captured in the aerodrome AIP entry.

response Noted

comment 646 comment by: *ATCEUC*

<p><u>Page 9 : Question to stakeholders :</u> For the radio communication between the pilot and ATCO/AFISO, is there a need to</p>	<p>ATCEUC thinks considers that it is needed. We think that in any moment all the pilots should be aware that the service is provided from a remote location and that the</p>
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	<p>indicate the provision of remote aerodrome ATS (e.g. by the addition of the word 'remote' to the ATS unit call sign on the initial call) ?</p>	<p>ATCO/FISO can have a different perception of what is going on in the aerodrome compared to what can be perceived from a conventional tower.</p> <p>In case of Multiple Remote aerodrome ATS (ATCEUC disagree with this kind of operations) it should be indicated with the addition of something like "multiple remote" to the ATS Unit Call sign. This will allow pilots to understand that not all the aircraft receiving information and clearances are flying in the vicinity or on the same aerodrome.</p>
response	Noted	
comment	652	comment by: <i>Flughafen Berlin Brandenburg GmbH</i>
	<p>It may be beneficial to use the word "remote" on the the initial call during (unscheduled) contingency situations where ATS is provided from a remote tower as a back-up for a conventional tower (as defined in section 3.2) and where a timely promulgation of a NOTAM (as described in section 7.2.1) is / was not possible.</p>	
response	Noted	
comment	664	comment by: <i>HungaroControl</i>
	<p><i>NO, there is no need to modify current standard R/T procedures in order to indicate the provision of remote aerodrome ATS.</i></p> <p>Based on the result of pilot consultation, carried on following the BUDAPEST 2.0 SESAR Large Scale Demonstration project and on our experiences derived on live remote TWR operations at Budapest Liszt Ferenc Airport and on the SESAR PJ05. multi remote simulation, we consider that there is no need to indicate the provision of remote ATS by adding the word 'remote' to the ATS call sign on the initial call. In our opinion it would not be give any added value for pilots rather increase the frequency occupation time. We better support inclusion of aerodrome names/ATS unit call sign for all transmissions that increasas the Situational Awareness.</p>	
response	Noted	
comment	709	comment by: <i>DTA</i>
	<p>Answer to the question to stake holders:</p> <p>As the whole NPA aims at defining provision of remote aerodrome ATS in a transparent way for the airspace users, it doesn't seem necessary to indicate the provision of remote aerodrome ATS during communication by radio. This information will already be provided in AIP, according to section 9 Aeronautical</p>	

response	<p>information products and services. Providing this information on the radio may have negative impact of frequency over-occupancy.</p>
response	<p>Noted</p>
comment	<p>712 comment by: SINCTA</p> <p>SINCTA does consider the need to indicate the provision of remote aerodrome ATS. We do not agree with EASA’s statement that “remote aerodrome ATS does not imply any changes to the service provided”. The service is dramatically different and pilots must be aware of which ATS service is in force in such aerodrome(s).</p>
response	<p>Noted</p>
comment	<p>728 comment by: Federal Aviation Administration</p> <p>Based on conversations that have been held with members of the US pilot community and within the FAA, preliminary conversations may indicate that it is not necessary to indicate the provision of remote aerodrome ATS in radio communications. Indications that aerodrome ATS is being provided by a remote aerodrome ATS may be identified through charting.</p>
response	<p>Noted</p>
comment	<p>748 comment by: Avinor Air Navigation Services (Avinor Flysikring AS)</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>Page No: 9 Paragraph No: 3.1</p> <p>Comment: There should be no need to indicate the provision of remote aerodrome ATS in the communication between the pilot and ATCO/AFISO.</p> <p>Justification: The type of service provided will be regardless of the site from where it is provided, and the type of service provision (i.e remote) should be well known from the AIP. If deemed necessary, ATIS could also be used for this information.</p> </div>
response	<p>Noted</p>
comment	<p>755 comment by: European Cockpit Association</p> <p>“For the radio communication between the pilot and ATCO/AFISO, is there a need to indicate the provision of remote aerodrome ATS (e.g. by the addition of the word ‘remote’ to the ATS unit call sign on the initial call)?”</p> <p>ECA believes that procedures and documentation need to be transparent to pilots and operators. Therefore, it is recommended to clearly mark the provision of remote tower service provision in the relevant airport and AIP data sheets, in order to ensure</p>



response	<p>that all stakeholders are adequately informed. This also includes the provision of data to dispatchers and flight planners, e.g. to assess the requirement for additional extra fuel to mitigate the risk of destination and alternate airports being affected by a contingency situation at a common remote tower centre.</p> <p>With respect to communication procedures it has to be ensured that there are no misunderstandings or transmission overlaps. ECA therefore believes that uncoupled frequencies should be the preferred mode of operation. Additionally, this will eliminate to use of non-standard phraseology and ensure that the transition from conventional to remote tower operation will be smooth and in accordance with current standards and procedures.</p>
	Noted
comment	<p>765 comment by: UK CAA</p> <p>Page No: 9</p> <p>Paragraph No: Question to stakeholders.</p> <p>Comment: UK CAA believes there is no need to include a distinct RTF callsign suffix; pilots should be aware that this is the case through briefing (SERA.2010(b) and ICAO Annex 2 requirement). There is no requirement to change established RTF procedures regarding the identity of the ATS function being provided.</p> <p>Justification: Alignment with SERA and ICAO Annex 2.</p>
response	Noted
comment	<p>766 comment by: UK CAA</p> <p>Page No: 9</p> <p>Paragraph No: Question to stakeholders</p> <p>Comment: UK CAA does not support the addition of any phraseology to indicate the provision of remote aerodrome ATS. An inclusion in the AIP together with the annotation of the main camera housing (RTR) on the aerodrome chart is considered sufficient.</p> <p>Justification: Avoidance of superfluous radiotelephony requirements.</p>
response	Noted
comment	<p>836 comment by: Think Research</p> <p>Question to stakeholders</p> <p>This section asks for comments relating to the adaptation of ATSU's callsigns to include the word 'remote', where a service is being provided by a Remote Tower facility.</p>



The callsign allocated to an ATSU denotes the type of service being provided—tower, ground, radar, approach etc. As has been already stated, the level of service being offered by a Remote Tower will not change. An AFIS will continue to provide the same level of AFIS service as is provided by a traditional tower. As such it is not considered necessary for the term ‘Remote’ to prefix the ATSU callsign designator (*‘information’*, in this example).

The fact that the service is being offered remotely should be made known to operators and pilots, by means of AIP updates and NOTAMS. However, it should be made clear that the service will remain the same, and the pilot is unlikely to notice any difference.

A pilot does not necessarily need to know where the service is being provided from as this will not affect the operation of the aircraft in any way. Any tasks which the ATCO/AFISO may need to carry out (visual observation of aircraft, inspection of landing gear etc.) will still be carried out by a Remote Tower service.

Including the term ‘Remote’ in the callsign infers that a different service may be expected, and possibly even that the service is in some way reduced, or a ‘lower level’ of service compared to a traditional tower, or may imply that the service offered is purely procedural to pilots unfamiliar with the concept. This is clearly not the case, and it is therefore recommended that the ATSU callsigns remain the same as they are today.

The conceptual elements of Remote Tower are based around the use of a new ATS system, the various visual presentation systems and enablers. The use of other ATS systems for service provision is not deemed something that should be prefixed to ATSU callsigns and there is no evidence to suggest that the use of Remote Tower technical enablers requires such a change.

response Noted

comment 846 comment by: *air traffic controller*

Preferably all aspects should be taken into consideration before the decision to choose R-ATS. The experience so far is that a decision is already taken and the ATCO is forced to make it work.

response Noted

Introduction of remote aerodrome ATS is a change of the functional system and is therefore subject to a local safety assessment, in accordance with the applicable requirements (Regulations (EU) Nos 1034/2011 and 1035/2011, to be replaced by Regulation (EU) 2017/373 as of 2 January 2020) and the procedures accepted by the relevant competent authority.

3.1. Draft guidelines - 1. Introduction

p. 14

comment 400 comment by: *NATS*

Align with comments made on executive summary (comment No 392)

Suggested Text



response	<p>“The introduction of Digital Tower Technologies, sometimes referred to as Remote Towers, has enabled and continues to innovate ways in which Aerodrome ATS may be provided. This includes the concept of the remote provision of aerodrome air traffic services (ATS) which, enables provision of aerodrome ATS from locations/facilities where direct visual observation is not available. Instead, provision of aerodrome ATS is based on a view of the aerodrome and its vicinity through means of technology. Throughout this document, The term that is used to describe this is ‘remote aerodrome ATS’</p>
	<p>Not accepted</p> <p>See the response to comment 392.</p>
comment	<p>462 comment by: <i>René Meier, Europe Air Sports</i></p> <p>Guidelines 1. Introduction page 14/92</p> <p>Request: "guidelines" should be defined here already.</p> <p>Question: Why do you create a new term? Why could we not make use of "guidance material"</p>
response	<p>Noted</p> <p>The document name/title has been reverted to ‘Guidance Material..’ in it its final version.</p>
comment	<p>491 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>The rulemaking group had a general agreement not to include digital towers as a way to refer to remote tower operations, yet EASA proposes to include it in the document. Digital towers shall be considered as a commercial name and ETF considers it is not EASA’s role to promote a commercial term for something which it is commonly known under another name. EASA adapts to requests which are not safety-related from the industry but refuses to take the staff’s concerns at the same time.</p>
response	<p>Not accepted</p> <p>The notion of the word ‘digital’ has been included in the introductory text only (not in the definition itself). EASA does not consider it to be safety-critical whether the word ‘digital’ is used or not. There is a reason to mention ‘digital’ for the sake of clarity/understanding (‘Is it the same as remote towers or is it something else/completely different?’).</p>
comment	<p>730 comment by: <i>Federal Aviation Administration</i></p>



response	<p>Current Text: Regarding "Instead, provision of aerodrome ATS is based on a view of the aerodrome and its vicinity through means of technology."</p> <p>Specific Comment: This sentence is conveying the idea that aerodrome ATS is based solely on the visual information obtained from the remote tower. Provision of aerodrome ATS is based on information sources other than "a view" and can be provided based on information obtained from communications and other equipment.</p> <p>Proposed Text: Instead, provision of aerodrome ATS is based on a view, <u>communications, and other information sources.</u></p> <p>Partially accepted</p> <p>See amended text of the first paragraph of Guidelines Chapter 1.</p>
comment	<p>767 comment by: UK CAA</p> <p>Page No: 14 onwards</p> <p>Paragraph No: Draft guidelines</p> <p>Comment: There is a case for a summary of the SESAR JU remote tower trials and outcomes. However, this would be better presented as an Annex to the Guidelines rather than scattered throughout the draft.</p> <p>Justification: Better document layout and readability.</p> <p>Proposed Text: Remove all SESAR JU-related text and present in a dedicated Annex to the Guidelines.</p>
response	<p>Not accepted</p> <p>References to and a summary of SESAR results are concentrated predominantly in Chapter 4 of the Guidelines. Furthermore, the SESAR documentation was an important foundation for the Guidelines; such documentation has been assessed and referenced with care. To reference SESAR results in an appendix/annex only is not deemed sufficient for the purpose of the Guidelines and would complicate the traceability for the provided recommendations.</p>

3.1. Draft guidelines - 1.1. Purpose and intended readership

p. 14

comment

189

comment by: IFATCA

IFATCA agrees with the fact that every single implementation needs to be carefully evaluated. It is not because some validation exercises have been carried out on simulators and/or some validation platform that a conclusion can be drawn. In particular the degraded modes and the all time safe provision of ATS needs to be evaluated properly. This merits further guidance material from EASA.



response	<p>Noted</p> <p>EASA agrees with the comment but at the same time believes that the Guideline document extensively covers the aspects raised. In addition, it meets the scope/goal of the Guidelines, that is to support ATS providers, aerodrome operators and their competent authorities with the implementation and provision of remote aerodrome ATS and to help them fulfil the applicable existing regulations/requirements on aerodrome ATS provision as well as the applicable regulations/requirements related to changes to the functional system, in the case of remote aerodrome ATS.</p>
comment	<p>492 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>Is this paragraph to be understood as one safety assessment per aerodrome affected being needed? This is an approach we would favour as local circumstances differ from one aerodrome to the next but this would require more clarity in the document. Also, for the multiple mode of operations, ETF suggest to have a safety case for every configuration possible: if aerodrome A, B and C are remotely controlled and it is planned that a service can be provided to A, B and C from one RTM. However, when traffic requires one of them to be split then there should be one assessment for each combination.</p>
response	<p>Accepted</p> <p>The safety assessment should include/cover all aerodromes and all operational modes/configurations. A new Section 6.1.1. has been added for clarification.</p>
comment	<p>647 comment by: <i>ATCEUC</i></p> <p>ATCEUC position is that this can lead to lose the chance to build bases for future Standardization. ATCEUC thinks that we should start to define few but clear Minima Standards, namely I.R. possibly in coordination with ICAO</p>
response	<p>Noted</p> <p>See the response to comment 335.</p> <p>Technical standards for 'remote tower optical systems'/'visual surveillance systems' has been developed and published by EUROCAE. Where relevant and applicable, references to these EUROCAE standards have been introduced in the Guideline document.</p> <p>As regards ICAO, recent amendments related to remote aerodrome ATS have been introduced in ICAO Doc 4444 (PANS-ATM) through Amendment 8, applicable as of 8 November 2018. Additionally, ICAO has just re-initiated an activity to address the specificities of remote aerodrome ATS operations. EASA will closely follow this development to assess if any amendment to its ATS-related regulatory framework, including that on remote aerodrome ATS, is to be introduced.</p>



3.1. Draft guidelines - 1.2. Scope

p. 14

comment 493 comment by: *European Transport Workers Federation - ETF*
 As stated in the general comment to the NPA, we disagree that a differentiation between safety-related aspects and socio-economic factors can be made about remote towers.

response Noted
 Socio-economic aspects were considered in the development of this regulatory proposal.

comment 577 comment by: *HIAL*
 HIAL are pleased to note the guidance is not limited to technical aspects of RT implementation and considers operational and procedural aspects as part of overall change management in detail. Remote towers are not purely a technical system; they are a fundamental operational change, which must be considered as a “whole system change”.

response Noted
 EASA thanks HIAL for their supportive comment.

comment 648 comment by: *ATCEUC*

PARAGRAPH 1.2: “...this document covers the technological, procedural and operational aspects of remote aerodrome ATS, in order to facilitate a safe and harmonized implementation throughout EASA member states...”	How can an implementation be “harmonized if everything is delegated at the local level? Isn’t this a contradiction? Which is the effective role of EASA in all this issue? Isn’t there a kind of “conflict of interest” in asking to whom should implement (after having payed the technologies) to conduct Safety Assessment and to evaluate final product/result? Where are guarantees for an impartial work in respect to safety and workers’ job?
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It does not address social or economic aspects related to remote aerodrome ATS which would need to be addressed at a local level.	As already reported, ATCEUC thinks that those two aspect are so deeply linked that they cannot be separated
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response Noted



As regards the first part of above comment, see the response to comment 335. Harmonisation in this context is to be seen from the regulatory perspective, i.e. providing a common European regulatory framework which is known (and stable) to all stakeholders, so that all stakeholders know what to expect/relate to in terms of regulation/standardisation.

As regards the second part of the comment above, the quoted sentence has been deleted. Social aspects have been addressed during the production of this NPA through the involvement of staff/union representation in the rulemaking group of RMT.0624 as well as through the NPA public consultation. Economic aspects were also considered for the development of this regulatory proposal. Additionally should these aspects be addressed independently at implementation level (as conditions often differ hugely between different states/providers/units and every implementation case will be unique in terms of these aspects).

3.1. Draft guidelines - 1.3. Document Structure

p. 14-15

comment	768	comment by: UK CAA
	Page No: 14	
	Paragraph No: 1.3 Document Structure	
	Comment: This is unnecessary (the 'document structure' is addressed by the comprehensive table of contents) and merely adds bulk to the draft. We believe this paragraph should be deleted.	
	Justification: Better document layout and readability.	
response	Not accepted	
	EASA is of the opinion that this text provides the reader a good overview of the document content/structure and a better understanding of the intent/aim of the respective chapters.	

3.1. Draft guidelines - 1.4. Background and justification

p. 15-16

comment	12	comment by: GdF
	Also, the first industry standard on	
	Typo	
response	Accepted	



comment	<p>141 comment by: <i>Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)</i></p> <p>Generic comment, the accumulated experience on multiple is limited.</p>		
response	<p>Noted</p> <p>The comment is correct. At the same time, it should be acknowledged that experience is continuously increasing through e.g. the R&D activities undertaken within SESAR 2020. However, it is a fact that there are so far no real operational experiences available, which is also explicitly highlighted in the Guideline document. Despite this, EASA considers that there is already sufficient information and data available to provide regulatory support and guidance to facilitate its safe implementation, as well as to provide a basis for its further development.</p>		
comment	<p>181 comment by: <i>AESA/DSANA</i></p> <p><u>Comment</u> The remote aerodrome ATS should be also consistent with national regulatory framework, and therefore national regulatory framework should be included (ICAO, EU and national level).</p>		
response	<p>Accepted</p>		
comment	<p>494 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>"As remote aerodrome ATS is considered consistent with and within the scope of the existing regulatory framework (ICAO and EU) and as there is no change in service provision (aerodrome ATS),..."</p> <p>This assertion is not supported by any sort of proof in the NPA. We would therefore ask EASA to provide evidence of that.</p>		
response	<p>Partially accepted</p> <p>The wording ‘..there is no change in service provision (aerodrome ATS),..’, although in principle correct, did not perhaps describe the situation to its full extent. The aim of the text was to describe that the way the ATS are defined is valid regardless if service is provided from a remote or a conventional tower. Independently of the type of service provided (aerodrome ATC or AFIS) or the traffic to which the service is to be provided (IFR or VFR), it must comply with existing regulations. The last paragraph of Section 1.4. has been amended to clarify the intended meaning and purpose of the text.</p>		
comment	<p>649 comment by: <i>ATCEUC</i></p> <table border="1"> <tr> <td>Page 16 : 1.4 As remote aerodrome ATS is considered consistent with and within the scope</td> <td>ATCEUC think there are changes in the provision of</td> </tr> </table>	Page 16 : 1.4 As remote aerodrome ATS is considered consistent with and within the scope	ATCEUC think there are changes in the provision of
Page 16 : 1.4 As remote aerodrome ATS is considered consistent with and within the scope	ATCEUC think there are changes in the provision of		

of the existing regulatory framework (ICAO and EU) and as there is no change in service provision (aerodrome ATS),...	services and those changes have to be investigated and Assessed.
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response Partially accepted
See the response to comment 494.

comment 731 comment by: *Federal Aviation Administration*

Current Text: "there is no change in service provision (aerodrome ATS)"

Specific Comment: We are not clear what is meant by service provision. There could be change to service level. We recommend clarifying, possibly with examples.

Proposed Text: The service may still be the same (aerodrome ATS) with no, or only minimal, changes in operational procedures based upon demonstrated system performance.

response Partially accepted
See the response to comment 494.

3.1. Draft guidelines - 2. Definitions

p. 17-18

comment 49 comment by: *ENAV*

Non-rigorous definitions, as in guidelines, do not help the reader, and potentially add ambiguity (see below for few examples). Furthermore, there is no need for them in the document since concepts are explained in the text or the use of terms is not so rigid (see for example 3.2)

Just to make an example:

'Remote aerodrome ATS' means provision of aerodrome ATS based on a view of the aerodrome and its vicinity through the means of a visual presentation system (and supported by other technology as needed).

Aerodrome ATS is not defined, but the two words are:

1'aerodrome' means a defined area (including any buildings, installations and equipment) on land or water or on a fixed, fixed off-shore or floating structure intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft;

2)'air traffic service (ATS)' means a generic term meaning variously, flight information service, alerting service, air traffic advisory service, air traffic control service (area control service, approach control service or aerodrome control service);

Instead we have that:



	<p>a) aerodrome control service means air traffic control service for aerodrome traffic; and that</p> <p>b) aerodrome traffic' means all traffic on the maneuvering area of an aerodrome and all aircraft flying in the vicinity of an aerodrome. An aircraft operating in the vicinity of an aerodrome includes but is not limited to aircraft entering or leaving an aerodrome traffic circuit;</p> <p>It is evident that ATSP does not provide the service on or to the aerodrome but ATS is provided to "aerodrome traffic" as defined. The new definition expands somehow the scope of ATS provision.</p> <p>Furthermore, the expression "aerodrome ATS" is used in the text without any possible misunderstanding issues arising with the definition.</p> <p>It would be better to use "Aerodrome control services or Aerodrome Flight Information Service"</p> <p>(note that the definition for AFIS is expected in PART-ATS it should include the provision of ALRS)</p>
response	<p>Partially accepted</p> <p>A definition for 'aerodrome ATS' has been added.</p>
comment	<p>769 comment by: UK CAA</p> <p>Page No: 17/18</p> <p>Paragraph No: 2 "Definitions"</p> <p>Comment: Presentation of Definitions in unnecessarily repetitive and the lack of alphabetical order does not make for intuitive reading. Presentation as per EU Regulations and EASA AMC/GM convention is preferred and recommended.</p> <p>Justification: Ease of reference.</p> <p>Proposed Text Taking into consideration UK CAA comments concerning 'controller working position (CWP)', 'conventional tower', 'remote tower', 'visual presentation' and "'visual presentation system', amend to read as follows:</p> <p>"For the purpose of these Guidelines the following definitions apply.</p> <p>'Aircraft movement' means an aircraft take-off or landing at an aerodrome.</p> <p>'Direct visual observation' means observation through direct eyesight of objects situated within the line of sight of the observer, possibly enhanced by external elements (e.g. binoculars).</p> <p>'Identify/identification' means the ability to couple a detected or recognised object with a specific individual aircraft/vehicle. This may be done via e.g. visual means (e.g. by reading the registration mark of an aircraft), by applying probability theory (e.g. 'the aircraft/object currently on final must be the same aircraft as I have on my flight strip as there are no other flight strips and no other known aircraft in the aerodrome vicinity'), by system support providing the call-sign or squawk code (or upon squawk ident request), by aircraft position reports, by requesting aircraft turns/movement/flashing lights to identify.</p>

‘Multiple mode of operation’ means the provision of ATS from one remote tower module for two or more aerodromes at the same time (i.e. simultaneously).

‘Operational context’ means the operational characteristics – such as aerodrome size/layout, traffic volume and complexity, related airspace and flight procedures, number of simultaneously served aerodromes, etc. – that should be considered when remote aerodrome ATS is to be implemented.

‘Out-the-window (OTW) view’ means a view of the areas of responsibility of the aerodrome ATS unit from a conventional tower, obtained via direct visual observation.

‘Remote aerodrome ATS’ means provision of aerodrome ATS based on a view of the aerodrome and its vicinity through the means of a visual presentation system (and supported by other technology as needed).

‘Remote tower’ means a facility from which aerodrome ATS can be provided to aerodrome traffic through real-time visual presentation by electronic means of the elements contained in its area of responsibility (manoeuvring area and vicinity of the aerodrome, together with other elements that support the operation where the ATS is provided from a location different from where the view on the visual presentation is acquired from.’

‘Remote tower centre’ (RTC) means a facility housing one or more remote tower modules.

‘Remote tower module’ (RTM) means a combination of systems and constituents from where remote aerodrome ATS can be provided, including one or more CWP(s) and the visual presentation. (It can be compared with the tower cabin of an aerodrome conventional tower.)

‘Single mode of operation’ means the provision of ATS from one remote tower module for one aerodrome at a time.

‘Visual presentation’ means a view of the areas of responsibility of the aerodrome ATS unit, provided by means of a visual surveillance presentation system..

‘Visual surveillance system’ means an electro-optical system providing an electronic visual presentation of traffic and any other information necessary to maintain situational awareness at an aerodrome and its vicinity. A visual surveillance system will normally consist of numerous integrated elements, including sensor(s), data transmission links, data processing systems and situation displays.

‘Workstation’ means the ATCO/AFISO working position, which includes the ATS systems/functions as necessary for the service provision, but excludes the visual presentation.”

response

Partially accepted

The duplicate of one definition has been removed.

See also the response to comment 142

comment

142

comment by: *Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)*

response	<p>Definitions are not in alfabetic order which makes the text confusing.</p> <p>Noted</p> <p>It is deemed that the pedagogical benefit stemming from the grouping of definitions outweighs the non-alphabetical order, given that the number of definitions is fairly low.</p>
comment	<p>144 comment by: <i>Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)</i></p> <p>Parenthesis in ‘Remote aerodrome ATS’ means provision of aerodrome ATS based on a view of the aerodrome and its vicinity through the means of a visual presentation system (and supported by other technology as needed) is redundant.</p>
response	<p>Accepted</p> <p>The definition has been simplified.</p>
comment	<p>143 comment by: <i>Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)</i></p> <p>Discrepancy in definitions between RAATS and Conventional/remote TWR regarding Aerodrome traffic and aerodrome and its vicinity.</p>
response	<p>Accepted</p> <p>The definitions have been simplified and streamlined.</p>
comment	<p>5 comment by: <i>GdF</i></p> <p>GdF objects to the negative branding ‘Conventional tower’, which sounds inferior and condescending.</p> <p>GdF suggests the neutral term: ‘OTW-Tower’ and would like to see the term ‘Conventional tower’ to be replaced throughout the document. OTW (out-the-window) means a view of the areas of responsibility of the aerodrome ATS unit from a conventional tower, obtained via direct visual observation. Another possible name would be "local tower", which seems to be used by SESAR.</p>
response	<p>Not accepted</p> <p>EASA sees the term ‘conventional tower’ as being neutral.</p>
comment	<p>191 comment by: <i>IFATCA</i></p> <p>Change proposal</p> <p>conventional Tower</p>

response	<p>Out-the-window tower (OTW)</p> <p>Justification</p> <p>Conventional tower is a negative branding and shall be avoided in EASA documents.</p> <p>Not accepted</p> <p>EASA sees the term ‘conventional tower’ as being neutral.</p>
comment	<p>770 comment by: UK CAA</p> <p>Page No: 17 Paragraph No: Definition of ‘conventional tower’ Comment: A definition of conventional tower is not necessary. An explanation of what the guidelines mean by a ‘conventional tower is better placed in the text in the guidelines placed in parenthesis upon first use of the term. Justification: Risk associated with a definition at this stage in development. Proposed Text: At first use of the term ‘conventional tower’ add ‘(i.e. what has to date been understood as an on-site control tower building’.</p>
response	<p>Not accepted</p> <p>The ‘definition’ for ‘conventional tower’ is kept to make its intended meaning when used in the Guideline document fully clear to readers. It is seen as beneficial to have it presented next to the definition for ‘remote tower’ in the list of definitions, in order to provide the comparison between the two. In addition, a definition in guidelines has no regulatory implication as in the case for a definition in an implementing rule. Definitions in guidelines/GM are rather to improve the readability of the document than for providing legal certainty.</p>
comment	<p>51 comment by: ENAV</p> <p>"Remote tower", with reference to the wording "...element contained...", It is not clear what the term element stands for, this has implications on the concept of aerodrome control service and AFIS</p> <p>Find below a proposal, given that the first option is to remove the definition because it is not needed.</p> <p>Remote tower’ means a facility from which aerodrome ATS can be provided to aerodrome traffic through <u>the use of a real-time visual presentation system providing electronic visual presentation of traffic and any other information necessary to maintain situational awareness at an aerodrome and in its vicinity. of the elements contained in its area of responsibility (manoeuvring area and vicinity of the aerodrome) together with other elements that support the operation. (It is to be seen as a generic term, equivalent in level to a conventional tower).</u></p>



response	Partially accepted The definition for 'remote tower' has been amended for simplification.
comment	771 comment by: UK CAA Page No: 17 Paragraph No: Definition of 'remote tower' Comment: The definition only states real-time visual presentation, however this doesn't necessarily mean the visual presentation is by electronic means. One could argue that a conventional tower view acquired by means of having a glass window tower is also a form of a visual presentation. Justification: Clarity Proposed Text: Amend to read as follows: 'remote tower' means a facility from which aerodrome ATS can be provided to aerodrome traffic through real-time visual presentation by electronic means of the elements contained in its area of responsibility (manoeuvring area and vicinity of the aerodrome, together with other elements that support the operation where the ATS is provided from a location different from where the view on the visual presentation is acquired from.'
response	Partially accepted The definition for 'remote tower' has been amended for simplification and clarification.
comment	401 comment by: NATS <p style="text-align: center;"><u>Definitions Page 17</u></p> <p><u>RT, RTM, RTC, CWP</u></p> <p><i>Remote Tower – seems an unnecessary term – a remote Tower Centre would have Remote Tower modules in it, - so where does Remote Tower fit? Seems the use of the term Remote starts to create confusion – especially where the technology is used non remote While accept the idea of Module vs CWP – we don't differentiate within a Area centre now that a CWP doesn't include the Radar screen, Module is constraining to a specific layout/setup (i.e single panoramic view etc.)</i></p> <p><u>Impact</u> Constrains concept and adds confusion. Contingency towers exist now(Heathrow) that are "remote," contain no visuals but allow provision of "remote ATS" present definitions don't encompass this, they cant be a RTC, or RTM.</p> <p><u>Suggested Resolution</u> Change Remote Tower to Digital Tower – and change RTC to just Tower Centre, Change CWP to include elements of RTM.</p>



	<p>'Means the ATCO/AFISO workstation, which includes the ATS systems/functions as necessary for the service provision, which may include the visual presentation, one or more CWP maybe utilised together.</p> <p>Allows for wider scope of deployment – a Centre facility may include Area, Approach and Tower services in the future, separate and combined, so why would it be an RTC?</p>
response	<p>Not accepted</p> <p>Changing 'remote tower centre' to 'tower centre' would not change the terminology issue raised related to centres containing also e.g. area or approach services.</p> <p>For the other commented aspects, see the response to comment 392.</p>
comment	<p>772 comment by: UK CAA</p> <p>Page No: 17 Paragraph No: Definition of 'controller working position (CWP)' Comment: The definition describes a ATCO/AFISO workstation as a 'CWP'; however, an AFISO is not a controller, therefore it is a misnomer to term this a CWP. It should therefore be described as a workstation. This will further require the removal and replacement of the term CWP from all other text. Justification: Inclusivity of EU regulatory materials. Proposed Text: Amend to read as follows: "Workstation – means the ATCO/AFISO working position, which includes the ATS systems/functions as necessary for the service provision, but excludes the visual presentation."</p>
response	<p>Partially accepted</p> <p>The definition has been removed and the wording used throughout the document has been changed to '(ATCO/AFISO) workstation'.</p>
comment	<p>402 comment by: NATS</p> <p>Definitions Page 17 Single Mode, Multimode Remove Module - - mutli mode could be done from a conventional tower and using "Digital" technology for a second aerodrome</p> <p><u>Suggest</u> 'Single mode of operation' means the provision of ATS from one Digital tower for one aerodrome at a time. 'Multiple mode of operation' means the provision of ATS from one Digital tower for two or more aerodromes at the same time (i.e. simultaneously).</p>
response	<p>Not accepted</p> <p>See the Notes in Sections 3.2 and 3.3. See also the response to comment 392.</p>



comment	<p>194</p> <p style="text-align: right;">comment by: IFATCA</p> <p>Change proposal:</p> <p>‘Multiple mode of operation’ means the provision of ATS from one remote tower module for two or more aerodromes at the same time (i.e. simultaneously)</p> <p>Justification</p> <p>IFATCA policy ATCOs shall not be required to provide a Remote and Virtual tower service for more than one aerodrome simultaneously (ADME 2.15 TPM 2017).</p> <p>Multiple mode of operation can be misleading. Degraded and or restricted mode can be a multiple mode of operation.</p> <p>Multiple mode of operation could also lead to the request to have a license for each of the mode (as per definition of a ATS unit)</p>
response	<p>Not accepted</p> <p>As regards the IFATCA policy, see e.g. the response to comment 184.</p> <p>As regards the second paragraph of the ‘Justification’, this part is not understood.</p> <p>As regards the last paragraph, in accordance with AMC1 ATCO.B.020(a), an ATCO should hold a unit endorsement for each aerodrome provided with service.</p>
comment	<p>715</p> <p style="text-align: right;">comment by: DTA</p> <p>DGAC underlines that definitions of single and multiple mode should take more into account specific context of the aerodrome circulation around airports.</p> <p>For example where two aerodromes are part of the same CTR (the most probably encountered context should be one airport and one helistation), there is only one airspace and the controller has only one traffic scheme in mind. Hence, this is much more similar to controlling two runways at one airport than controlling two airports in two different CTR. Thus it is closer to single mode than multiple mode. Therefore, this specific case should not be treated as "multiple mode".</p> <p>It is suggested to introduce a third mode, which would be single CTR mode, where ATCOs may provide service to several aerodromes inside a single CTR.</p>
response	<p>Not accepted</p> <p>As the comments suggest, there are examples where, within the CTR of an aerodrome, or within the airspace where AFIS for an aerodrome is provided, also other aerodromes are situated but for which no aerodrome ATS (aerodrome control service or AFIS) is provided (on ground).</p> <p>For example, in the case of a heliport inside the horizontal limits of a CTR of an aerodrome (but located away from that aerodrome), the heliport itself is not provided with aerodrome control service as defined by ICAO Annex 11 and by</p>



relevant EU legislation (e.g. Regulation (EU) 923/2012 'SERA'), since the heliport's traffic on the manoeuvring area is not provided with the service. The traffic/helicopters flying in/out of the heliport however need a clearance to fly through/in the CTR. This clearance obviously needs to be provided by the ATCO providing ATC in the particular CTR. To conclude, this example is outside the scope of the definitions for both single and multiple mode of operation, as they refer to 'provision of aerodrome ATS'. (**Note:** a definition for the term 'aerodrome ATS' has been added to Chapter 2, in order to clarify its meaning.)

There are also (less common) examples where two aerodromes provided with (full) aerodrome ATS share the same CTR/airspace. In such cases, the ATS is traditionally provided by separate ATS units/towers situated at each aerodrome, with the CTR/airspace divided into subsectors between the ATS units. Should ATS be provided to such aerodromes (sharing the same CTR/airspace) simultaneously from one RTM, it would fall under the 'multiple mode of operation' definition. It can be noted that traffic at those two aerodromes may conflict with each other, thus likely making this operational scenario more complex and operationally challenging than 'multiple mode of operation' for geographically separated aerodromes (not sharing the same CTR/airspace).

comment

9

comment by: GdF

'**Direct visual observation**' means observation through direct eyesight of objects situated within the line of sight of the observer, possibly enhanced by external **optical** elements (e.g. binoculars).

External does not give a definition to the elements. Optical would rule out electronic equipment, as it should.

(see No. 2)

IFATCA policy is:

Visual observation in ATM is defined as: Observation through direct eyesight of objects situated within the line of sight of the observer possibly enhanced by binoculars.

The (remote) tower cab shall be constructed as to provide aerodrome controllers the capability to maintain a continuous watch on all flight operations on and in the vicinity of the aerodrome as well as vehicles and personnel on the manoeuvring area.

Watch shall be maintained by visual observation, augmented by radar or other approved surveillance systems when available.

The controller shall be provided with at least the same level of surveillance as currently provided by visual observation.

The introduction of Aerodrome Control Service Concepts shall be subject to a full safety analysis and relevant safety levels shall be met.

response

Noted



Definition removed as it is deemed to be superfluous. (The understanding of ‘direct visual observation’ is deemed to be clear to readers without the need of a specific definition.)

comment

192

comment by: IFATCA

Change proposal:

‘Direct visual observation’ means observation through direct eyesight of objects situated within the line of sight of the observer, possibly enhanced by external optical elements (e.g. binoculars).

Justification:

External does not give a definition to the elements. Optical would rule out electronic equipment, as it should.

(see No. 2)

IFATCA policy is:

Visual observation in ATM is defined as: Observation through direct eyesight of objects situated within the line of sight of the observer possibly enhanced by binoculars.

The (remote) tower cab shall be constructed as to provide aerodrome controllers the capability to maintain a continuous watch on all flight operations on and in the vicinity of the aerodrome as well as vehicles and personnel on the manoeuvring area.

Watch shall be maintained by visual observation, augmented by radar or other approved surveillance systems when available.

The controller shall be provided with at least the same level of surveillance as currently provided by visual observation.

The introduction of Aerodrome Control Service Concepts shall be subject to a full safety analysis and relevant safety levels shall be met.

response

Noted

See the response to comment 9.

comment

52

comment by: ENAV

"Out of the windows (OTW) view" - with reference to the wording "areas of responsibility", plural does not seem to be appropriate, we propose "area of responsibility"

response

Accepted

comment

353

comment by: CANSO



response	<p>"Out of the windows (OTW) view" - with reference to the wording "areas of responsibility", plural does not seem to be appropriate, we propose "area of responsibility"</p> <p>Accepted</p>
comment	<p>53 comment by: ENAV</p> <p>"visual presentation system" - The ICAO proposal for a different text encompass different elements</p>
response	<p>Accepted</p> <p>The term and the definition have been amended in line with the latest ICAO Doc 4444 (PANS-ATM) amendments.</p>
comment	<p>91 comment by: GdF</p> <p>"visual presentation system"</p> <p>In our opinion EASA should not deviate from ICAO definitions - especially in GM. We request, that EASA follows the ICAO definitions, which is "visual surveillance system" at the moment.</p>
response	<p>Accepted</p> <p>The term and the definition have been amended in line with the latest ICAO Doc 4444 (PANS-ATM) amendments.</p>
comment	<p>773 comment by: UK CAA</p> <p>Page No: 18 Paragraph No: Definition of "Visual presentation system" Comment: Suggest adoption of the ICAO definition of 'visual surveillance system' as proposed in state letter AN 7/63.1.1-17/23 and what we believe to be the current ANC position regarding adoption. Pending notification of ICAO's decision in this regard the UK CAA recommends delaying publication of revised EASA guidance until all are certain of what ICAO has adopted. EASA's proposed text is useful guidance so could be merged into the proposed ICAO text. Justification: For alignment with ICAO terms and definitions. Proposed Text: Amend to read as follows: 'Visual surveillance system' means an electro-optical system providing an electronic visual presentation of traffic and any other information necessary to maintain situational awareness at an aerodrome and its vicinity. A visual surveillance system will normally consist of numerous integrated elements, including sensor(s), data transmission links, data processing systems and situation displays.'</p>
response	<p>Accepted</p>



The term and the definition have been amended in line with the latest ICAO Doc 4444 (PANS-ATM) amendments.

comment

774

comment by: UK CAA

Page No: 18**Paragraph No:** Definition of “Detect/Detection”

Comment: We disagree with the need for the definition of detect/detection. UK CAA proposes the deletion of the definition of detection. Users of the words detect/detection would apply the common understanding of the dictionary definition.

Justification: Detection cannot be limited to visual acuity. There is the possibility of confusion when comparing this definition with the dictionary definition of detect/detection.

Proposed Text: Delete text. However, if EASA remains minded to include the definition, it is more appropriate for it to read:

‘Detect/Detection’ means the ability to determine the presence of an object in the optical field of view for a human eye or for an optical sensor, or the ability to determine the presence of an object by means of electronic signal processing for a non-optical electronic surveillance sensor that uses radio signals.

This is considered more appropriate as it captures visual and non-visual means of detection.

response

Not accepted

There is a need to define the term ‘detect/detection’, in order to clarify its difference with the terms ‘recognise’ and ‘identify’ and in order to precisely make clear its meaning when used in the document. It is crucial to understand these terms in the context of defining operational and technical requirements for a visual surveillance system (used for the provision of ATS). The terms ‘detect’ and ‘recognise’ are based on the so-called Johnson’s criteria model used for military applications, whereas ‘identify’ is not based on the Johnson’s criteria for ‘identification’, since identification in an ATS context is very different to its meaning stated in Johnson’s criteria. Again, therefore it is crucial to define all three of these terms for the purpose and understanding of the Guideline document. Furthermore, these terms are coordinated with the terminology used by EUROCAE WG-100 and used in the EUROCAE ED-240/ED-240A publications (Minimum Aviation System Performance Standards for Remote Tower Optical Systems).

comment

775

comment by: UK CAA

Page No: 18**Paragraph No:** Definition of “Recognise/Recognition”

Comment: The UK CAA ‘does not support incorporation of the definition of ‘recognise/recognition’. Users of the words recognise/recognition should apply the common dictionary meaning of the word.

Justification: No need to define ‘recognise/recognition’.



response	<p>Proposed Text: Delete text. However, if EASA remains minded to include the definition, it is more appropriate for it to read:</p> <p>‘Recognise/Recognition’ means the ability to determine the class, category or type of an object by means of the human eye or an optical sensor, or by means of image processing or radio signal processing capabilities and algorithms.</p> <p>This is considered more appropriate as it captures visual and non-visual means of recognition.</p>
comment	<p>Not accepted</p> <p>See the response to comment 774, which applies also for the term ‘recognise/recognition’.</p>
comment	<p>10 comment by: GdF</p> <p>‘Identify/identification’ means the ability to couple a detected or recognised object with a specific individual aircraft/vehicle. This may be done via e.g. visual means (e.g. by reading the registration mark of an aircraft), by applying probability theory (e.g. ‘the aircraft/object currently on final must be the same aircraft as I have on my flight strip as there are no other flight strips and no other known aircraft in the aerodrome vicinity’), by system support providing the call-sign or squawk code (or upon squawk ident request), by aircraft position reports, by requesting aircraft turns/movement/flashing lights to identify.</p> <p>GdF rejects the term probability theory. Expecting one flight and matching this to one flight approaching is not probability theory.</p> <p>For remote towers GdF thinks the following ICAO paragraph is applicable: “8.10.2.3 IDENTIFICATION OF AIRCRAFT Where an ATS surveillance system is used, aircraft may be identified by one or more of the following procedures: a) by correlating a particular position indication with: i) an aircraft position visually observed by the controller; ii) an aircraft position reported by the pilot; or iii) an identified position indication displayed on a situation display; b) by transfer of identification when authorized by the appropriate ATS authority; and c) by automated identification procedures when authorized by the appropriate ATS authority.”</p> <p>While the NPA refers to this in ch 6.6, this does not take possible automatic labelling and tracking into consideration, which is possible and probable in a remote tower. Any system that mimics the features of surveillance systems should be treated as such.</p>
response	<p>Accepted</p> <p>The definition has been significantly shortened for simplification, including removal of the text indicated as strikethrough in this comment.</p>

Concerning the last paragraph of this comment about ‘automatic labelling and tracking’, note that this ‘feature’ is listed as one of the technical enablers (referred to as ‘commonly referred to as ‘radar tracking’’) under Sections 3.5. and 5.2.5., together with related considerations. In fact, this is main reason for the inclusion of the term ‘identify/identification’ and its definition in Chapter 2.

comment 54 comment by: ENAV

"Identify/identification" - this gives the idea that methods for establishing identification in the context of "visual control" by the ATCO are defined and make difference

response Noted

This comment is not fully understood. However, note that the definition has been significantly shortened for simplification.

comment 65 comment by: EUROCONTROL

2. Definitions - Page 18

'Identify/identification'

The explanation given refers to the notion of probability theory. The EUROCONTROL Agency would like to suggest that the term 'deduction' would be more appropriate. In this case the text 'by applying probability theory' would simply read: 'by deduction'.

response Noted

EASA thanks EUROCONTROL for this comment, which would have been accepted; however, the commented text has been removed in order to simplify the definition.

comment 92 comment by: GdF

“‘Identify/identification’ means the ability to couple a detected or recognised...”

In ATC the verb “to couple” is normally not used in this context. It is normally used to define the use of multiple frequencies, as done in the NPA itself.

In our experience the verb link should be used in the context of identification, as it is being used already (e.g. link-line).

response Accepted

The word ‘couple’ has been replaced by ‘correlate’.

comment 193 comment by: IFATCA

Change proposal:



	<p>'Identify/identification' means the ability to couple a detected or recognised object with a specific individual aircraft/vehicle. This may be done via e.g. visual means (e.g. by reading the registration mark of an aircraft), by applying probability theory (e.g. 'the aircraft/object currently on final must be the same aircraft as I have on my flight strip as there are no other flight strips and no other known aircraft in the aerodrome vicinity'), by system support providing the call-sign or squawk code (or upon squawk ident request), by aircraft position reports, by requesting aircraft turns/movement/flashing lights to identify.</p> <p>Justification: ICAO paragraph is applicable: "8.10.2.3 IDENTIFICATION OF AIRCRAFT Where an ATS surveillance system is used, aircraft may be identified by one or more of the following procedures: a) by correlating a particular position indication with: i) an aircraft position visually observed by the controller; ii) an aircraft position reported by the pilot; or iii) an identified position indication displayed on a situation display; b) by transfer of identification when authorized by the appropriate ATS authority; and c) by automated identification procedures when authorized by the appropriate ATS authority."</p>
response	<p>Accepted</p> <p>See the response to comment 10.</p>

comment	<p>733 comment by: <i>Federal Aviation Administration</i></p> <p>Regarding definition 'Identify/identification'!... "applying probability theory (e.g. 'the aircraft/object currently on final must be the same aircraft as I have on my flight strip as there are no other flight strips and no other known aircraft in the aerodrome vicinity'), by system support providing the call-sign or squawk code (or upon squawk ident request), by aircraft position reports, by requesting aircraft turns/movement/flashing lights to identify." This definition for Identification does not match the ICAO standard definition.</p>
response	<p>Accepted</p> <p>The definition has been significantly shortened for simplification, including removal of the text indicated in this comment. The shortened definition is better in line with the ICAO Doc 4444 definition as well as ICAO Doc 4444 provisions (e.g. 8.10.2.3); however, adapted to the remote tower/visual presentation context, to serve the purpose and need of the definition in the Guideline document.</p>

comment	<p>776 comment by: <i>UK CAA</i></p> <p>Page No: 18 Paragraph No: Definition of 'identify/identification'</p>
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response	<p>Comment: The definition of 'Identify/identification' is not necessary. Users of the words Identify/identification can apply the common understandings of each.</p> <p>Justification: There is the possibility of confusion when comparing this definition with the common understanding of the term.</p> <p>Proposed Text: Delete text</p> <p>Partially accepted</p> <p>The definition has been significantly shortened for simplification. See also the response to comment 774, which partially applies also for the term 'identify/identification'.</p>
comment	<p>11 comment by: <i>GdF</i></p> <p>'Aircraft movement' means an aircraft take-off or landing or taxiing at an aerodrome.</p>
response	<p>Noted</p> <p>This definition was removed as it was deemed to be superfluous. The term is already well established.</p>
comment	<p>195 comment by: <i>IFATCA</i></p> <p>Change proposal</p> <p>'Aircraft movement' means an aircraft take-off or landing or taxiing at an aerodrome.</p>
response	<p>Noted</p> <p>This definition was removed as it was deemed to be superfluous. The term is already well established.</p>
comment	<p>287 comment by: <i>German NSA (BAF)</i></p> <p>page 18: 'Aircraft movement' means an aircraft take-off or landing at an aerodrome.</p> <p>Aircraft movements encompasses also taxiing</p> <p>s. page 30, 5.2, para 1, sentence 2: 'It provides a presentation enabling the ATCO/AFISO to maintain a continuous watch on all flight operations on and in the vicinity of an aerodrome as well as vehicles and personnel on the manoeuvring area'. The manoeuvring area is defined in Doc 4444 [14] as: 'that part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, excluding aprons'.</p> <p>Proposal:</p> <p>'Aircraft movement' means an aircraft take-off or landing and taxiing at an aerodrome.</p>

response

Noted

This definition was removed as it was deemed to be superfluous. The term is already well established.

comment

403

comment by: NATS

Definitions page 18 Aircraft Movement

What about taxiing? Not sure the relevance of this definition, which is already defined elsewhere?

Suggest remove

response

Accepted

comment

732

comment by: Federal Aviation Administration

Aircraft movement also includes taxiing and other aircraft movements(e.g., overflights). Expand the definition of aircraft movement.

response

Noted

This definition was removed as it was deemed to be superfluous. The term is already well established.

comment

68

comment by: DFS Deutsche Flugsicherung GmbH

Definitions should be added for:

“traffic density” (e.g. number of simultaneous movements),

“traffic volume” (e.g. number of movements per hour) and

“traffic complexity” (e.g. mix of IFR and VFR traffic).

response

Not accepted

The suggested definition for ‘traffic density’ is conflicting with the ICAO definition for ‘aerodrome traffic density’. The ICAO definition for ‘aerodrome traffic density’ is closer to the suggested definition for ‘traffic volume’, even if not identical. The document has been amended to consistently use ‘traffic volume/density’, as for every occasion used, it could be either the number of simultaneous movements or the number of movements per hour which are considered important/critical, subject to the assessment of the ATS provider. The term ‘traffic complexity’ is only used a few times in the document, mostly along with examples to illustrate its meaning.

comment

79

comment by: BMVBS



response	<p>Definitions should be added for: “traffic density” (e.g. number of simultaneous movements), “traffic volume” (e.g. number of movements per hour) and “traffic complexity” (e.g. mix of IFR and VFR traffic).</p> <p>Not accepted</p> <p>See the response to comment 68.</p>
comment	<p>69 comment by: <i>DFS Deutsche Flugsicherung GmbH</i></p> <p>Definitions should be added for low/small and medium density aerodromes. There is no definition available from SESAR 1 but there is a new approach for a definition in SESAR 2020.</p> <p>Independent of this the proposal is:</p> <ul style="list-style-type: none"> - small aerodromes (mainly one movement at a time) - medium aerodromes (2 and more movements at a time)
response	<p>Not accepted</p> <p>The expressions ‘low-density aerodromes’ as well as ‘medium-density aerodromes’ are used in the document when referring to SESAR results because SESAR has used this terminology in their results from SESAR 1. Their meanings are described in the introductory text of Chapter 4. There is no need for further related definitions for the purpose of the Guideline document.</p>
comment	<p>80 comment by: <i>BMVBS</i></p> <p>Definitions should be added for low/small and medium density aerodromes. There is no definition available from SESAR 1 but there is a new approach for a definition in SESAR 2020.</p> <p>Independent of this the proposal is:</p> <ul style="list-style-type: none"> - small aerodromes (mainly one movement at a time) - medium aerodromes (2 and more movements at a time)
response	<p>Not accepted</p> <p>See the response to comment 69.</p>
comment	<p>650 comment by: <i>ATCEUC</i></p> <p>ATCEUC thinks that “Low density aerodromes”, “Medium density aerodromes”, “aerodrome complexity” definitions should be clearly stated. ATCEUC thinks that any definition of the above not coming from EASA cannot be accepted</p>
response	<p>Not accepted</p> <p>See the response to comment 69.</p>

3.1. Draft guidelines - 3. Introduction to remote aerodrome ATS

p. 19

comment	777	comment by: UK CAA
	<p>Page No: 19 Paragraph No: Section 3 title: Introduction to remote aerodrome ATS Comment: We believe the title does not encapsulate the scope of the subsequent text to the extent that it should. In addition, Section 1 is also titled 'Introduction'. Justification: The draft would be enhanced by a better section title. Proposed Text: Amend title to read: 'The remote aerodrome ATS concept and modes of operation'</p>	
response	Accepted	
comment	778	comment by: UK CAA
	<p>Page No: 19 Paragraph No: Section 3 sub-paragraphs 4 and 6 Comment: We believe the text is better placed in Section 1 'Introduction'. Justification: Better placing of text.</p>	
response	Not accepted	
comment	779	comment by: UK CAA
	<p>Page No: 19 Paragraph No: Section 3 sub-paragraph 5 Comment: The text merely provides historical background with no bearing on the Guidelines, and we recommend should be removed. Justification: Text appears to serve no purpose.</p>	
response	Not accepted	
comment	780	comment by: UK CAA
	<p>Page No: 19 Paragraph No: Section 3 sub-paragraph 7 Comment: The text merely provides generic historical background with no bearing on the Guidelines, and we recommend should be removed. Justification: Text appears to serve no purpose.</p>	
response	Not accepted	
comment	13	comment by: GdF
	<p>In-adequate & non-existent</p> <p>Typo: should be inadequate and non-existent</p>	
response	Accepted	



comment	<p>55 comment by: ENAV</p> <p>By reading SESAR validation reports, it seems that the V3 maturity level has been reached often on the basis of significant assumptions; among these there are the use of surveillance systems or the non-applicability of visual separation; this kind of assumption have a major impact on the current operating methods.</p> <p>There is no guidance for the implementation leading the different solutions based on the outcome of SESAR validation process.</p> <p>Example from VALR SESAR solution 71: Conclusions: [...]</p> <p>ATCOs rated the overall picture quality as very good. Feedback suggests a large improvement compared to VP-056 in terms of quality (definition) and frame rate. There are still some issues regarding the ability to judge depth, distance and separation using only the main visual reproduction.</p> <p>Procedural workarounds were suggested by the ATCOs for dealing with situations where depth and separation could not be accurately judged, primarily when using the Basic System. The Advanced system and the inclusion of radar surveillance and Advanced Visual Features overcame some of these issues. Feedback on the Advanced Visual Features (additional camera viewpoints and label overlays) was very positive from all ATCOs.[..]</p> <p>[...]</p> <p>when aerodromes and/or scenarios became more complex, then the added value of the Advanced System became apparent due to traditional tools such as radar and newer enablers such as Advanced Visual Features.[...]</p>
response	<p>Noted</p> <p>The SESAR Solutions has been an important input for the production of the Guidelines. However, this has been complemented with inputs based on:</p> <ul style="list-style-type: none"> — experiences also from other research/validation activities, such as those performed in the USA (the FAA was represented in the EASA rulemaking group) and within the SESAR Large Scale Demonstrations; — operational experiences collected through our consultation rounds with stakeholders that have already implemented remote aerodrome ATS.
comment	<p>152 comment by: Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)</p> <p>Same comment as on the EASA position.</p> <p>Reading the document it is evident that there are limited experience on the concept and on especially multiple operations as defined in the NPA. It would then be preferable if the GM took on a more neutral standpoint collecting and presenting the information on the subject currently available. EASA should take specific care not to lead implementers or stakeholders to believe that hurdles can be overcome by just</p>

	adding another feature to the technical system. Nor should the GM make (false) statements on the potential of the concept or on future development.
response	Noted Same response as that to comment 151.
comment	153 comment by: <i>Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)</i> The approval process in Sweden did not review that change to move ATS units to the RTC against Doc 9426.
response	Noted
comment	178 comment by: <i>AESA/DSANA</i> <u>Comment</u> Could system elements mentioned be used to provide enhanced situational awareness in case of low visibility procedures in conventional towers? If so, could those systems elements cancel those low visibility procedures in cases of bad weather and ATCO could perform their duties as in good weather conditions? <u>Justification</u> The systems related with remote towers could be used to enhanced ATCO situational awareness in bad weather conditions in conventional tower or those systems could only be used to provide remote tower services. Clarification needed.
response	Noted Indeed, system elements such as hot 'spot/gap filler' or infrared cameras could support ATCO/AFISO situational awareness in a conventional tower as in a remote tower, but could not on its own 'cancel low visibility procedures', as this depends on meteorological conditions as well as the visibility for pilots (pilots ability to see). Information on the potential benefits with such cameras is provided in Section 5.2.5.
comment	196 comment by: <i>IFATCA</i> In-adequate & non-existent Typo: should be inadequate and non-existent
response	Accepted
comment	272 comment by: <i>AESA/DSANA</i> <u>Comment</u> Guidance material is open to all kind of traffic density.

response	<p><u>Justification</u> SESAR solutions are related to low and medium traffic density. There is no research about other types of traffic density.</p> <p>Not accepted</p> <p>It is not clear what the aim/suggestion with this comment is, if any. EASA understands this comment as a request to limit the scope of the Guidelines to a specific operational context/traffic density. The aim with RMT.0624 Phase 2 has been to provide generic guidelines, i.e. not limited to any specific operational context/applications, and the document has intentionally been written following this logic. The Guidelines provided are applicable for any kind of remote aerodrome ATS implementation, regardless of the size of aerodrome/traffic level/density, etc. The fact that existing research/validation data (e.g. SESAR) and operational experiences have been used as an important input for the production of these Guidelines does not mean that operational context/applications could not be extended in the future, as further research data and operational experiences become available. A continuous development is ongoing within Europe (SESAR 2020, local implementations, etc.), the USA and worldwide.</p>
comment	<p>404 comment by: NATS</p> <p><i>Quite a lot of duplication, this has been explained in several parts already with much of the same text, but each time slight variation, , suggest consolidating(removing from elsewhere) and rewording taking into account the confusion created by the use of the word remote – this section a good example of where remote doesn’t really work</i></p> <p>“A remote tower can be located away from the aerodrome it is providing a service to, or it can be located in a building on or close to the aerodrome but without an adequate direct view of the area of responsibility. System elements of the concept of remote aerodrome ATS could also be introduced in a conventional tower, in order to enhance/complement situational awareness or to provide a visual presentation of parts of the aerodrome or its vicinity which is otherwise either inadequate or non-existent.</p> <p><u>Issue</u> Same text repeated – makes document unnecessarily long, and not consistent in message</p> <p><u>Suggestion</u> Consolidate and reword to remove duplication/variation and confusions.</p> <p>Partially accepted</p> <p>The wording has been slightly adjusted for simplification.</p>
comment	<p>847 comment by: air traffic controller</p>



	Note that the experience from live traffic is limited as ESNO and ESNN are the only R-ATS in operation yet. Larger airports with more complex traffic need more validation.
response	<p>Noted</p> <p>Concerning ‘larger airports with more complex traffic’, trials and validations have been conducted for several years e.g. for Budapest airport and for Leesburg Executive airport, Virginia, USA, to name a few. Experiences from these trials and validations have been considered in the production of the EASA Guidelines. Yet, the recommendations provided refer mainly to the published SESAR Solutions and the operational experiences available at the time of publication.</p>

3.1. Draft guidelines - 3.1. Concept overview
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p. 19-20

comment	<p>781 comment by: UK CAA</p> <p>Page No: 19 Paragraph No: Paragraph 3.1 title: Concept overview Comment: The title does not encapsulate the scope of the subsequent text and should be renamed ‘Modes of operation’ Justification: The draft would be enhanced by a better section title. Proposed Text: Amend title to read: ‘Modes of operation’</p>
response	Accepted
comment	<p>426 comment by: LfV</p> <p>3.1 Concept overview</p> <p>Should "contingency operations" be mentioned here also? It might be good since there probably is two different operational environments regarding technical enablers and maybe also different operational procedures between conventional TWR and "Contingency TWR). Mentioned in 4.1.4 below.</p>
response	<p>Accepted</p> <p>The use of a remote tower as a contingency facility for a conventional tower is seen as an application of the ‘single mode of operation’ and is therefore listed as such under Section 3.2. Nevertheless, text has been added to mention it also in Section 3.1.</p>
comment	<p>578 comment by: HIAL</p> <p>Optional temporary use of RT could be used to justify gradual introduction as part of our ATM Strategy over a transition period to satisfy safety requirements and evidence “proof of concept”.</p>



response	Noted
comment	<p>782 comment by: UK CAA</p> <p>Page No: 20 Paragraph No: 3.1, 2nd sub-paragraph Comment: We believe the second sub-paragraph is unnecessary – it does not provide any meaningful insight - and should be removed. Justification: Unnecessary text.</p>
response	Not accepted
comment	<p>783 comment by: UK CAA</p> <p>Page No: 20 Paragraph No: 3.1, Final sub-paragraph Comment: We believe the final sub-paragraph in unnecessary and should be removed. Justification: Unnecessary text.</p>
response	Accepted

3.1. Draft guidelines - 3.2. Single mode of operation	p. 20
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comment	<p>57 comment by: ENAV</p> <p>First bullet, the sentence in brackets "(by one o more ATCO(s)/AFISO(s))" does not seem to be relevant</p>
response	<p>Accepted</p> <p>The text in brackets has been deleted.</p>
comment	<p>148 comment by: EASA Focal Point for AustroControl ANSP-issues</p> <p>Author: Austro Control</p> <p>Observation: 2nd Bullet: The provision of ATS to more than one aerodrome from one RTM, however, not simultaneously, by providing service to one aerodrome, then change service provision to another aerodrome (i.e. still providing service to only one aerodrome at a time).</p> <p>Suggested Resolution: Austro Control is concerned about this definition as a “single RTC”. Such an operation as stated here, does require - multiple ATCO-endorsements - multiple HMI’s and screen-views It is to be handles as a safety hazard to mismatch locations/procedures/HMI’s if this scenario is not explicitly addressed as a “multiple RTC”.</p>



response

Not accepted

It is correctly assumed that more than one unit endorsements would be required/needed (refer to AMC1 ATCO.B.020(a) to Regulation (EU) 2015/340) for this scenario; however, it would not necessarily imply a need for several HMIs/screen views (as service is provided to only one aerodrome at a time). As the bullet could be misunderstood and as the particular scenario is in fact already covered by the first bullet in Section 3.2., this (second) bullet has been deleted. It should be noted that this specific scenario is described in Section 4.1.3. (similar scenarios are also described in Section 4.2.3., as aerodrome switching is not unique to 'single mode of operation'), and that related human factors considerations are provided at the end of Section 6.2.1.

See also the responses to comments 96 and 503.

comment

149

comment by: EASA Focal Point for AustroControl ANSP-issues

Author: Austro Control

Observation:

Chapter 3.2 of the proposed Guidelines on Remote Aerodrome Air Traffic Services describes applications, which typically would fall under the remit of the single mode of operation category. Amongst others, the provision of ATS to distant areas of an aerodrome from which the view from an existing aerodrome tower is inadequate or non-existent by implementing remote tower system elements into the existing aerodrome tower, **is such a listed use case.**

Suggested Resolution:

For this use case the clarification is needed, if the implementation of remote tower system elements into a conventional tower cab for purposes of gap-filling or improvement of sight, **is deemed to be a remote tower per se or not.**

Operating a remote tower concerns ATCO licensing aspects. As proposed in AMC/GM to Commission Regulation (EU) 2015/340, unit endorsements should indicate the working position(s) (conventional and/or remote tower) from which the licence holder is authorised to provide the service.

Subsequently this may also affect unit endorsement courses.

response

Accepted

Based on the definitions of 'remote tower' and 'conventional tower' in Chapter 2 of the Guidelines, it is clear that this operational application/example is not regarded as a remote tower. Instead, it falls within the definition of a conventional tower (supported by remote tower system elements, i.e. a visual presentation/surveillance system).

The use of remote tower system elements does not create a need for a separate unit endorsement as such. However, depending on the local implementation, there could be other reasons for the establishment of a specific unit endorsement for the working position in question. When it comes to the unit endorsement course for a



conventional tower position using remote tower system elements, some of the items listed in GM3 ATCO.D.060(c) are relevant (as all equipment used for ATS provision needs to be addressed by the unit endorsement course), subject to the local implementation and technical solution.

The text in the Note to this operational application/example has been amended to clarify accordingly.

comment 150 comment by: *EASA Focal Point for AustroControl ANSP-issues*

Author: Austro Control

Observation:

Also certification aspects will be concerned by such an implementation, as it could be seen as a remote tower or as visual surveillance system.

Suggested Resolution:

A simply quotation of this use case as an example for "single mode of operation of a remote tower" without comments for clarification, leaves the door open for redundant discussions in the certification process.

response Noted

The comment is not understood as it is not fully clear which text it refers to and also because there is no EU certification scheme for ATM/ANS equipment. Nevertheless, EASA hopes that the response to comment 149 resolves also this comment.

comment 427 comment by: *LFV*

- The provision of ATS during planned or unplanned contingency situations, as a dedicated backup solution for an existing aerodrome ATS,

Reference to comment #426.

Will affect unit endorsement to be included and competence assured.

response Noted

Contingency procedures should be part of the normal unit endorsement course.

comment 495 comment by: *European Transport Workers Federation - ETF*

"The provision of ATS to more than one aerodrome from one RTM, however, not simultaneously, by providing service to one aerodrome, then change service provision to another aerodrome (I.E still providing service to only one aerodrome at a time)"

ETF strongly suggests more detail on this scenario: how close can the two operations be without it being considered as multiple operations? There are limitations as to how humans can switch from one operational environment to the next without



confusing the two, yet no guidance to mitigate those effects are provided (for ETF, 'switch' here can mean either operating different aerodromes in sequence from the same RTM or move from one RTM to the next in a short period of time). Pilots are forbidden to operate different aircraft types on the same day, this is a similar scenario; therefore, why not transpose what exists for pilots to ATCOs on this topic? EASA claims that there is no difference in the service provision yet today close 'switching' from one aerodrome environment to the next is impossible. At the very least the following needs to be considered:

- the consequences on fatigue and mental availability, and to define mitigation measures
- adequate management of operational difficulties (including publication of service availability) of defining the correct moment for 'switching' (e.g. will the switch be delayed if traffic is delayed? If so how will airspace users be informed about it on both aerodromes? etc.)
- define maximum number of switches for a single ATCO/AFISO over a defined period of time
- define the minimum time between service provision termination of one aerodrome and beginning of service provision of another aerodrome.

ETF considers it is a shortcoming of this NPA.

response

Partially accepted

As regards the bullets listed in this comment:

- The two first were already covered by the last segment of Section 6.2.1.
- The 3rd and 4th are deemed to be covered by new text in Sections 4.1.3. and 4.2.3.
- Regarding specifically the 3rd, the justification for such a limitation is unclear; no similar limitations exist in ACC/APP operations today for the switching between different sectors. In addition, the implementation of such a limitation may even pose a negative impact on safety (maximum number of aerodrome switching reached, not allowing for another switch in case of emergency situation or technical failure).

See also the responses to comments 96, 148, 503 and 657.

comment

496

comment by: *European Transport Workers Federation - ETF*

"The provision of ATS to distant areas of an aerodrome from which the view from an existing aerodrome tower is inadequate or non-existent, by implementing remote tower system elements into the existing aerodrome tower.

and

Page 20: 3.3, second bullet point "

ETF opposes strongly any interpretation of this sentence to define as a single mode of operation a simultaneous service provision from a conventional tower to both an



response	<p>aerodrome by conventional methods, and to a remote location (e.g. a heliport in the control zone).</p> <p>Accepted</p> <p>Note: The bullet in Section 3.2. is considered in this response, whereas the bullet in Section 3.3 is considered in the comment (same comment number) further below in the CRD.</p> <p>The bullet text in Section 3.2. refers to distant areas of the aerodrome concerned, i.e. the same aerodrome as where the conventional tower is located. (A typical real-world example would be the so-called Polderbaan runway at the Schiphol Airport, which cannot be sufficiently observed by direct visual observation from the primary/main tower). The text has been slightly adjusted to avoid any other interpretation than what is described here.</p>
comment	<p>505 comment by: Heathrow airport</p> <p>We do <i>not</i> believe that it is <i>always</i> necessary to provide an out of the window (OTW) view in order to provide remote ATS safely and effectively. When alternative methods of assuring location of aircraft, vehicles, and other items of interest is provided, and when hazards and risks are demonstrated to be mitigated, there may be no need for direct reproduction of OTW view.</p> <p>We agree that it <i>can</i> be advantageous to replicate an out of the window view (section 4.1.4), and that in most cases this would mitigate hazards and risks most effectively, however we acknowledge alternates are available, and are in fact in operational use in Europe and other locations today. This should be reflected throughout the guidance including, that visual presentation of out of the window view is listed as a basic feature, and therefore a default feature, in 12.4).</p> <p>Where an out of the window view is provided as the chosen method, the <i>minimum</i> requirements and recommendations for visual presentation and the extent of the coverage should not exceed those possible from ideally located conventional tower(s) that they replace.</p>
response	<p>Not accepted</p> <p>Appendix 4 (Guidelines Section 12.4.) is solely a presentation of the typical division used by SESAR JU in SESAR 1 and SESAR Large Scale Demonstrations.</p> <p>According to ICAO PANS ATM/Doc 4444 (Section 7.1.1.2 and the Note to Section 8.10.1.4) the basis for aerodrome control service is the visual observation of the aerodrome and its vicinity. During our consultation rounds with stakeholders that have already implemented remote aerodrome ATS, we were informed that one of the main principles applied was ‘minimum changes in the way ATS is provided’. In addition, it seems unlikely without the visual observation to be able to identify some hazards, for example wild life on the runway, smoke from the engine, thunderstorms/cumulonimbus.</p>

Concerning minimum requirements and recommendations for a visual surveillance system, refer to Guidelines Sections 5.2. and 5.3. (Note that Section 5.3. has been merged into Section 5.2. in the final version of the Guidelines.)

comment

651

comment by: ATCEUC

3.2 The provision of ATS to more than one aerodrome from one RTM, however, not simultaneously, by providing service to one aerodrome, then change service provision to another aerodrome (I.E still providing service to only one aerodrome at a time)

ATCEUC thinks this case should be carefully investigated. We think that is quite difficult for an ATCO/FISO to switch from the provision of ATS in an aerodrome to the provision of the service to a different one where different layouts (Runway orientation, position of taxiways, position of obstacles, different meteo phenomena) can easily be encountered.

ATCEUC thinks that, as it is for commercial pilots, once the shift has started, it won't be allowed to switch, for the same ATCO/AFISO from one provision to another one.

Moreover, it should be clearly indicated how to handle abnormal situations in one of those aerodromes, both when it is "actively served" and when it is "stand-by"

3.2 The provision of ATS to distant areas of an aerodrome from which the view from an existing aerodrome tower is inadequate or non-existent, by implementing remote tower system elements into the existing aerodrome tower.

Whilst ATCEUC agrees on this kind of implementation, we think this should be carefully assessed. To control in the same moment an aerodrome using simultaneously conventional and remote systems by the same ACO/AFISO can lead to an excessive workload for him/her and to potentially harm the safety of operations.

response

Noted

Regarding the first part of the comment:

The bullet text has been removed as the particular scenario is in fact already covered by the first bullet in Section 3.2 (and because it could lead to misunderstandings, see e.g. comment 148). Please note that this specific scenario is anyhow described in Section 4.1.3. (similar scenarios are also described in Section 4.2.3, as aerodrome switching is not unique to 'single mode of operation'), and that related human factors considerations are provided at the end of Section 6.2.1. Furthermore,



Sections 4.1.3. and 4.2.3. have been extended to include recommendations for the ATS provider to develop appropriate procedures, including a reference to the related human factors considerations listed in Section 6.2.1. See also the response to comment 657.

Regarding the first part of the comment: Noted.

3.1. Draft guidelines - 3.3. Multiple mode of operation

p. 20-21

comment 496 ❖ comment by: *European Transport Workers Federation - ETF*

"The provision of ATS to distant areas of an aerodrome from which the view from an existing aerodrome tower is inadequate or non-existent, by implementing remote tower system elements into the existing aerodrome tower.

and

Page 20: 3.3, second bullet point "

ETF opposes strongly any interpretation of this sentence to define as a single mode of operation a simultaneous service provision from a conventional tower to both an aerodrome by conventional methods, and to a remote location (e.g. a heliport in the control zone).

response Accepted

Note: The bullet in Section 3.3. is considered in this response, whereas the bullet in Section 3.2. is considered in the comment (same comment number) further up in the CRD.

The operational application example (second bullet in Section 3.3.) has been deleted.

comment 515 comment by: *Heathrow airport*

See comment 505

response Not accepted

See the response to comment 505.

comment 754 comment by: *European Cockpit Association*

"Multiple mode of operation"

Multiple mode operation is not supported by ECA, see above remark on 2.5.

response Noted

See the response to comment 749.



comment	784	comment by: UK CAA
	<p>Page No: 20 Paragraph No: 3.3, 2nd sub-paragraph Comment: The text as presented seems unnecessarily wordy. Justification: Unnecessary text. Proposed Text: Amend to read as follows: ‘Operational applications include, but are not limited to:’</p>	
response	Accepted	
comment	837	comment by: Think Research
	<p>Section 3.3 P20</p> <p>Paragraph 5 (bullet point 3) states that a clearance delivery position being provided remotely would not constitute a remote tower, or an RTM. It is suggested that it <i>would</i> constitute an RTM, from which a Remote Aerodrome ATS is provided- in this case, to multiple airports.</p>	
response	<p>Noted</p> <p>The definitions for remote tower/remote tower module assume the use/inclusion of a visual surveillance system/visual presentation. The existing text is therefore seen as appropriate as is (still leaving the possibility to consider the clearance delivery application example as ‘remote aerodrome ATS’).</p>	

3.1. Draft guidelines - 3.4. Remote Tower Centre (RTC)

p. 21

comment	109	comment by: Naviair
	<p>Any guidelines on positioning the individual RTMs in the RTC? Separate rooms/large rooms? “Back to back” CWP? Requirements for soundproofing?</p>	
response	<p>Not accepted</p> <p>These aspects are regarded to be outside the scope of EASA as well as outside the scope of these EASA Guidelines, and need to be addressed on the local implementation level. High-level considerations concerning such aspects are however provided in Section 5.13 and refer to national regulations for office establishments.</p>	
comment	154	comment by: Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)
	<p>This section addresses the composition of an RTC, one could argue that it is not solely a decision for the ATS provider but rather a decision that needs to be influenced by the views of the Airports and Airspace users.</p>	



response	Accepted The text has been amended.
comment	182 comment by: AESA/DSANA <u>Comment</u> Taking SESAR Solution #52 "Remote tower for two low density aerodromes" as an example, maybe this approach seems too ambitious or complicated. This solution was just for two aerodromes, and with low-density traffic, and maybe without changing from single to multiple mode. In this paragraph, there is no limit neither for the number of aerodromes nor for the traffic volume, and it even allows changing the allocation of aerodromes between RTMs. Such operation is not as easy as the one in Solution #52, it is much more ambitious and complicated, and it should be more firmly supported. <u>Justification</u> 2nd paragraph in 3.4 (RTC)
response	Noted The aim of Chapter 3 is to give a general introduction of the remote aerodrome ATS concept to readers, in order to create a broader picture (e.g. to put the multiple mode of operation into a broader context) and to facilitate understanding of what could be the possibilities — before going into more detailed guidelines/recommendations in the following chapters of the document. SESAR 1 and SESAR Solution #52 did look into e.g. the merging/splitting of aerodromes in an RTM to some extent, and this research is now ongoing within SESAR 2020 (solution/project PJ.05-03. as regards the allocation of aerodromes to RTMs in an RTC). However, it is not reasonable to believe that SESAR will be able to look into, and solve, every possible aspect. Some aspects will always need to be treated on the local implementation level. Nevertheless, please note that specific recommendations on e.g. the merging/splitting of aerodromes, the number of simultaneous aerodromes, traffic volume/complexity, etc. is provided in Chapter 4 (mainly, but also elsewhere) and also note that these recommendations have been further developed to some extent in the final version of the document (published by the ED Decision), compared with the NPA version.
comment	497 comment by: European Transport Workers Federation - ETF This NPA has stated on page 1 that it will not deal with social aspects, in contravention of the ideals of SES and the work being done on the ground by representatives of CANSO, ETF and ATCEUC known as ASPReT. The details of the text here have the potential to have huge social consequences on staff. Indeed, on page 29 of the document it states that ATCO/AFISO confidence and trust in the system is of vital importance for the implementation of remote aerodrome ATS. Where this is



response	<p>the case and the users bring safety to the system, it is incumbent upon EASA to address social aspects immediately.</p> <p>Noted</p> <p>This wording has been removed in those instances where it was used in the Guideline document. Social aspects have been addressed during the production of this NPA through the involvement of staff/union representation in the rulemaking group of RMT.0624 as well as through the NPA public consultation.</p>
comment	<p>519 comment by: <i>Heathrow airport</i></p> <p>We believe that further development of the remote tower capability has the potential to evolve in the future to enable more flexible and advantageous roles and layouts of RTM positions than a complete replication of current conventional tower roles and responsibilities, which could lead to additional enhancements in safety, capacity, and service. ‘ATS responsibilities should remain the same as if the service would be provided from a conventional tower’ – if safety cases can be found for alternatives, why would they not be included? In addition, the requirements and need for supervisors and technical supervision role will be based upon the local need and local safety assessment.</p>
response	<p>Not accepted</p> <p>This comment seems to be related to Section 4.3.5.</p> <p>Section 4.3.5. has been amended to more clearly reflect that the ATCO/AFISO ATS responsibilities, according to ICAO and EU regulations, are to be the same from a remote tower as from a conventional tower, depending on the type of service provided.</p>
comment	<p>734 comment by: <i>Federal Aviation Administration</i></p> <p>Current Text: "An RTC can be set up as shown in Figure 1,"</p> <p>Specific Comment: The use of the word "can" could be interpreted as a recommendation.</p> <p>Proposed Text: An example of an RTC set up is shown in Figure 1,</p>
response	<p>Accepted</p> <p>The text has been adjusted to reflect the comments’ message.</p>
comment	<p>735 comment by: <i>Federal Aviation Administration</i></p> <p>Current Text: "The ability to switch aerodromes between RTMs will depend on many factors, such as ATCO/AFISO qualification and training, technical configuration of the RTMs, traffic schedule and distribution between aerodromes etc."</p>

	<p>Specific Comment: There is no specific mention here of safety or human performance related issues as being factors.</p> <p>Proposed Text: The ability to switch aerodromes between RTMs will depend on many factors, such as ATCO/AFISO qualification and training, technical configuration of the RTMs, traffic schedule, distribution between aerodromes, <u>and how these factors impact safety and human performance etc.</u></p>
response	Accepted
comment	<p>785 comment by: UK CAA</p> <p>Page No: 21 Paragraph No: 3.4 Figure 1 Comment: We believe Figure 1 does not enhance the text in paragraph 3.4 and therefore is considered unnecessary and could be removed. Justification: The graphic appears to be superfluous. Proposed Text: Delete graphic. Amend paragraph 3.4 sub-paragraph 2 to reflect deletion of graphic.</p>
response	Not accepted

3.1. Draft guidelines - 3.5. Technical enablers for remote aerodrome ATS

p. 22

comment	<p>93 comment by: GdF</p> <p>Since the ATCO is no longer able to find the direction of sight intuitively, the use of a direction finder can be a valuable tool to assist the ATCO. This was reported by ATCOs in Germany during the training for remote tower operation.</p> <p>We request to add the use of direction finder in the list of technical enablers.</p>
response	<p>Noted</p> <p>The statement that ‘the ATCO is no longer able to find the direction of sight intuitively’ seems to be a personal opinion which is neither supported by available research/validation data (e.g. SESAR) nor by operational experiences.</p> <p>The implementation of direction finder as an overlay in the visual presentation may be used for increased situational awareness subject to local implementation and local operational needs. If so, that would fit in the description of bullets 13 and 14 in the list in Section 3.5.</p>
comment	<p>155 comment by: Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)</p> <p>Is there a way to emphasis should be assessed, (perhaps in bold) ?</p>
response	Accepted



	The word 'carefully' was added.	
comment	156	comment by: <i>Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)</i>
	Remove "which may be necessary for service provision".	
response	Accepted	
comment	70	comment by: <i>DFS Deutsche Flugsicherung GmbH</i>
	In the list of bullets the one "- dedicated means to facilitate the detection, identification and automatic following of aircraft...." the word "automatic" should be deleted: "- dedicated means to facilitate the detection, identification and automatic following of aircraft...."	
response	Partially accepted The text has been amended.	
comment	81	comment by: <i>BMVBS</i>
	In the list of bullets the one "- dedicated means to facilitate the detection, identification and automatic following of aircraft...." the word "automatic" should be deleted: "- dedicated means to facilitate the detection, identification and automatic following of aircraft...."	
response	Partially accepted See the response to comment 70.	
comment	295	comment by: <i>ENAV</i>
	In the list of bullets the one "- dedicated means to facilitate the detection, identification and automatic following of aircraft...." the word "automatic" should be deleted: ENAV Suggestion:	



response	<p>"- dedicated means to facilitate the detection, identification and automatic following of aircraft...."</p> <p>Partially accepted</p> <p>See the response to comment 70.</p>		
comment	<p>354 comment by: <i>CANSO</i></p> <p>In the list of bullets, the one "- dedicated means to facilitate the detection, identification and automatic following of aircraft...." the word "automatic" should be deleted:</p>		
response	<p>CANSO Suggestion: "- dedicated means to facilitate the detection, identification and automatic following of aircraft...."</p> <p>Partially accepted</p> <p>See the response to comment 70.</p>		
comment	<p>498 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>ETF strongly request a minimum equipment list to be set out as a mandatory requirement for aerodrome ATS remote provision.</p>		
response	<p>Not accepted</p> <p>Existing regulations do not provide a list of minimum equipment for aerodrome ATS/ATC beyond communication means and the need for visual observation. The same applies for remote aerodrome ATS.</p>		
comment	<p>653 comment by: <i>ATCEUC</i></p> <table border="1"> <tr> <td>3.5 Technical enablers for remote aerodrome ATS</td> <td>ATCEUC thinks that a standardized Minimum Equipment List has to be clearly defined</td> </tr> </table>	3.5 Technical enablers for remote aerodrome ATS	ATCEUC thinks that a standardized Minimum Equipment List has to be clearly defined
3.5 Technical enablers for remote aerodrome ATS	ATCEUC thinks that a standardized Minimum Equipment List has to be clearly defined		
response	<p>Not accepted</p> <p>See the response to comment 498.</p>		
comment	<p>499 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>ETF suggests to add to this list a visual indication that ATS is being provided remotely and is (or is not) currently serviceable. Indeed, the control tower on an aerodrome is a visible building that gets airspace users to question whether ATS is available, the</p>		



response	<p>camera mast is less visible and would probably raise less awareness from the flight crew. There are also more sources of technical failures that would make ATS inoperative so visual indication would help mitigate the misunderstanding of the availability of aerodrome ATS.</p> <p>Not accepted</p> <p>ATS is provided as agreed between the aerodrome operator and the ATS provider, and the ATS hours of operation are published in the AIP/NOTAM accordingly.</p> <p>There is no difference compared to conventional tower operations, where no such visual indication is provided when in operation. It is the pilots' responsibility to check the aeronautical information products and services related to the aerodromes (e.g. AIP/NOTAMs/ATIS) pertaining to a flight. Pilots also need to transmit on/monitor the published aerodrome radio frequency. Furthermore, it is not understood how such a visual signal would be designed/provided, i.e. a lamp/beacon would likely only be visible during hours of darkness and would risk leading to confusion/conflict with other visual cues/signals at an aerodrome, such as navigation aids and obstacle lights.</p>
comment	<p>736 comment by: <i>Federal Aviation Administration</i></p> <p>Current Text: — communications, i.e. aeronautical mobile service, aeronautical fixed service and surface movement control service (Section 5.6);</p> <p>Specific Comment: Consider adding "weather (i.e., ATIS)" as a component of communications.</p> <p>Proposed Text: — communications, i.e. aeronautical mobile service, aeronautical fixed service, surface movement control service (Section 5.6), <u>and weather information</u>;</p>
response	<p>Not accepted</p> <p>The listed communication services are mandatory for aerodrome ATS/ATC provision, as part of ICAO Annex 11 Chapter 6 'Air traffic services requirements for communications'. 'Operational flight information service broadcasts', as part of Annex 11 Chapter 4.3, are optional means of communication services.</p>
comment	<p>786 comment by: <i>UK CAA</i></p> <p>Page No: 22 Paragraph No: Bullet points 13 & 14 Comment: The 13th and 14th bullets appear to distinguish between detection and tracking by image processing systems based on optical systems - visual tracking) and detection and tracking based on surveillance data - radar tracking. There are many categories of what can be considered as "surveillance data". Further, these two points do not mention "recognition" and "identification" which is also possible by "image processing" or by "radar type" processing.</p>

Justification: UK CAA would seek to expand this list further to provide greater clarity and distinction between the various means.

Proposed Text: Add:

- Dedicated means to facilitate “detection” i.e. presence of a static or moving object or for “recognition” or “identification” using image processing techniques.
- Using image processing techniques for “tracking” an object (i.e) moving object correlation. This is to establish that the detected object is correlated in position and the track is of the same object when moving from one position to another.
- Dedicated means to facilitate the “detection” and tracking in the non-optical field using radio waves such as infrared, laser or other conventional type of surveillance sensor such as primary radar, SSR, MLAT or ADS-B for position data calculation (e.g. range/bearing) of a moving object. (position data may be output in ASTERIX)
- Dedicated means for identifying objects using any conventional type ATS surveillance sensor or using conventional ATS sensor data for labelling purposes;
- Using processing algorithms for recognition of objects and distinguish between classes of objects displayed on the visual presentation,

Overlay or integration of data from conventional ATS surveillance sensors. A correlation functionality is needed to correlate the “image” on the visual presentation with the surveillance data.

response

Partially accepted

Minor amendments have been introduced for clarification; however, please note that the list in Section 3.5. is supposed to be an introduction only, in order to provide an overview of (all types of) possible technical enablers, whereas extended information on those specific technical enablers intended to enhance the ‘visual presentation’ (including the ones in bullet points 13 & 14 which are commented here) is provided in Section 5.2.5..

comment

848

comment by: *air traffic controller*

The technical enablers must be looked upon carefully. Need to have or nice to have? Gadgets and/or a risk of losing focus on what’s important?

response

Noted

EASA fully agrees with the comment.

3.1. Draft guidelines - 4. Operational context/applications and related

p. 23

comment

14

comment by: *GdF*

low density



	medium density	
	Is the recommended syntax and should be changed throughout the document.	
response	Accepted	
comment	110	comment by: Naviair
	This is correct but not seen as sufficient in all cases where a RTC is scoped to provide ATC in several locations. Here the RTC and the interaction between several RTC locations should be a part of the safety assessment.	
response	Partially accepted	
	This comment was clarified by the commentator upon request from EASA: 'It is correct that the implementation of remote aerodrome will depend on the local safety assessment. My point was that if more than one remote location is implemented the safety assessment then needs to address the interaction between the different sites as well.'	
	A new Section 6.1.1. has been added, see the response to comment 492. The interfaces and interactions between elements affected by the change as well as the interactions with the remainder of the ATM system are already specified/regulated by Regulation (EU) No 1035/2011 (refer to Annex II, Chapter 3.2.1 recital (c)) and Regulation (EU) 2017/373 (refer to Annex IV, ATS.OR.205 recital (a)(1)).	
comment	197	comment by: IFATCA
	low density medium density	
	Is the recommended syntax and should be changed throughout the document	
response	Accepted	
comment	240	comment by: AESA/DSANA
	<u>Comment</u> Shouldn't traffic mix (% VFR/IFR) / complexity of the operations be taken into account together with aerodrome density?	
	<u>Justification</u> Traffic mix (% VFR/IFR) and complexity of the operations could be a more demanding factor to ATCO/AFISO than aerodrome density.	
response	Accepted	
	The introductory text of Chapter 4. and Section 4.1.1. have been amended to include also traffic complexity/mix as a factor for consideration. (See also the response to 159.)	



comment	<p>241</p> <p style="text-align: right;">comment by: AESA/DSANA</p> <p><u>Comment</u></p> <p>Although specifying the movements "per aerodrome" maybe makes it clearer, this is redundant, and it seems not necessary. Definition is for aerodrome, and it is assumed that movements are in that aerodrome. This is not related to multiple mode of operation, where the words "per aerodrome" may be sometimes necessary.</p> <p><u>Justification</u></p> <p>At the end of the second bullet, it reads "...per aerodrome".</p>
response	<p>Accepted</p> <p>The phrase 'per aerodrome' has been removed.</p>
comment	<p>296</p> <p style="text-align: right;">comment by: ENAV</p> <p>Second sentence of the paragraph: <i>"This would not rule out the possibility for an expansion into other more challenging operational context and applications as further research and development results become available and when more operational experience from implementation is gained."</i> This sentence suggests that the possibility to try and use remote ATS technologies will only be opened later on once more R&D has been done and/or the currently operational projects have run for a longer time. This is highly restrictive and may be detrimental to the progress of the technology since SESAR already validated use cases are very limited compared to what could be done.</p> <p>ENAV suggestion:</p> <p>Replace with: "This would not rule out the possibility for an expansion into other more challenging operational context and applications, in which case experimental phases should be conducted in order to gain more operational experience before complete operational launch.</p>
response	<p>Partially accepted</p> <p>The wording has been adjusted.</p>
comment	<p>355</p> <p style="text-align: right;">comment by: CANSO</p> <p>Second sentence of the paragraph: <i>"This would not rule out the possibility for an expansion into other more challenging operational context and applications as further research and development results become available and when more operational experience from implementation is gained."</i> This sentence suggests that the possibility to try and use remote ATS technologies will only be opened later on once more R&D has been done and/or the currently operational projects have run for a longer time. This is highly restrictive and may be detrimental to the progress of the technology since SESAR already validated use cases are very limited compared to what could be done.</p> <p>CANSO suggestion:</p>

	Replace with: "This would not rule out the possibility for an expansion into other more challenging operational context and applications, in which case experimental phases should be conducted in order to gain more operational experience before complete operational launch.
response	Partially accepted The wording has been adjusted.
comment	716 comment by: DTA The sentence "This would not rule out the possibility for an expansion into other more challenging operational context and applications as further research and development results become available and when more operational experience from implementation is gained." suggests that the possibility to try and use remote ATS technologies will only be opened once more R&D has been done and/or the currently operational projects have run for a longer time. This proposal is restrictive and may be detrimental to the progress of the technology. DGAC suggested to replace the sentence with: This would not rule out the possibility for an expansion into other more challenging operational context and applications, in which case experimental phases should be conducted in order to gain more operational experience before complete operational launch.
response	Partially accepted The wording has been adjusted.
comment	413 comment by: skyguide Compliance Management regarding the density aspects, it would be helpful to have some indicative numbers e.g. less than XY movement / year of less than xy movements on average per hour.
response	Not accepted The aerodrome density terms/phrases (low-density/medium-density aerodromes) simply refer to the terminology that has been used in SESAR documentation (focusing on the number of simultaneous movements rather on the number of annual movements.)
comment	500 comment by: European Transport Workers Federation - ETF "Regardless of the operational context (aerodrome size and complexity, traffic volume/density, the number of simultaneous aerodromes, etc.) described herein, the implementation of remote aerodrome ATS will depend upon a local safety assessment, in accordance with the procedures accepted by the relevant competent authority" and with standardisation supervision from EASA. All editions proposed by ETF highlighted in yellow (this is valid throughout ETF comments).



response	<p>The significant change to ATS that remote tower operations will present is such that guidelines for ANSPs and NSAs are wholly insufficient. It is essential that there is sufficient oversight from EASA to ensure that safety, integral to the inception and maintenance of any new project or concept, is of the highest order.</p> <p>Not accepted</p> <p>It shall be noted that EASA standardisation activities focus on the verification of the competent authorities' oversight responsibilities, and not directly on the application of EU legislation by ATM/ANS service providers. Therefore, there is no need to explicitly mention such activities in Chapter 4 of the Guidelines document.</p>
comment	<p>521 comment by: <i>Heathrow airport</i></p> <p>We believe high density aerodromes could also benefit from remote tower operations as defined within the proposed amendment, and that there are examples already operational in Europe. This view is consistent with the wording in 4.1.1, however high density aerodromes are not listed in 4.0 and we request that they are also referenced here for completeness.</p>
response	<p>Not accepted</p> <p>Chapter 4 describes the operational context and applications which have been validated to date (by the SESAR JU programme and approved as SESAR solutions) as well as the operational context and applications for which 'remote aerodrome ATS', according to the definition in NPA 2017-21, have been approved for operation. Furthermore, the listed terms that this comment mentions, refer simply to terms frequently used by SESAR, aiming to provide their meaning when referring to SESAR results further on in Chapter 4. Therefore, the request to include a reference here to 'high density aerodromes' is not accepted.</p> <p>However, as already mentioned in the first paragraph of Chapter 4(0), this would not rule out the possibility for an expansion into other more challenging operational contexts and applications in the future.</p>
comment	<p>579 comment by: <i>HIAL</i></p> <p>The low density and medium density aerodromes definition needs further definition; no time periods are specified. We would suggest, for both, a time period be added:</p> <p>'Rarely reaching or exceeding two simultaneous aircraft movements per aerodrome every hour' (we presume it is not 2 simultaneous aircraft per day!). The frequency, and therefore classification of density is important since solutions are only currently available for low density aerodromes and will impact on the HIAL ATM strategy to implement aerodrome RT and RTC. The majority of HIAL Airports, despite being sighted in airspace categorised as LCLD, could be deemed medium density.</p>
response	<p>Not accepted</p>

The phrases refer to terminology used by SESAR. Additionally, the time period aspect is already inherent in their explanations.

As regards the statement ‘solutions are only currently available for low density aerodromes’, it should be noted that SESAR Solutions #12 and #13 relate to what SESAR considers to be medium-density aerodromes.

comment

655

comment by: ATCEUC

Definition of “Low Density Aerodromes” and “Medium Density Aerodromes”

ATCEUC thinks that SESAR definitions cannot be simply adopted because they were used for research purposes mainly in a non-realistic environment.
ATCEUC asks EASA to issue appropriate definitions for this giving mandatory guidelines to the relevant local authorities

Regardless of the operational context (aerodrome size and complexity, traffic volume/density, the number of simultaneous aerodromes, etc.) described herein, the implementation of remote aerodrome ATS will depend upon a local safety assessment, in accordance with the procedures accepted by the relevant competent authority.

ATCEUC thinks EASA should supervise the procedure adopted by the different NSAs

response

Noted

Concerning the first part of the comment, these phrases are used in the Guideline document simply to enhance understanding of the results published by SESAR. They are not to be understood as terms/definitions ‘adopted by EASA’ (they are e.g. intentionally not included among the definitions in Chapter 2.)

Concerning the second part of the comment, see the response to comment 500.

comment

737

comment by: Federal Aviation Administration

Current Text: aerodromes with typically a low capacity utilisation, where the prevailing traffic is mostly single aircraft movement operations, rarely reaching or exceeding two simultaneous aircraft movements per aerodrome; — ‘medium density aerodromes’ are described by SESAR as being aerodromes with typically a medium capacity utilisation, where simultaneous aircraft movement operations can be expected, frequently experiencing more than one aircraft movement simultaneously per aerodrome.

Specific Comment: Provide clarification. Please add a definition of high density airport and define whether or not you envision remote tower technology being



	utilized in all three types of aerodromes. Define the cutoff between medium density (more specific than 'frequently') and high density.
response	Not accepted See the response to comment 521.
comment	<p>787 comment by: UK CAA</p> <p>Page No: 23 Paragraph No: 4 Comment: The paragraph seems rather wordy and would benefit from being shortened. Justification: Need for brevity. Proposed Text: Replace with: 'Regardless of the operational context (aerodrome size and complexity, traffic volume/density, the number of simultaneous aerodromes, etc.), the implementation of remote aerodrome ATS will depend upon a local safety assessment, in accordance with the procedures accepted by the relevant competent authority. SESAR JU trials applied the following descriptions: — 'basic and advanced features' is a division of technical enablers to validate different equipage levels; — 'low density aerodromes' are aerodromes with typically a low capacity utilisation, where the prevailing traffic is mostly single aircraft movement operations, rarely reaching or exceeding two simultaneous aircraft movements per aerodrome; — 'medium density aerodromes' are aerodromes with typically a medium capacity utilisation, where simultaneous aircraft movement operations can be expected, frequently experiencing more than one aircraft movement simultaneously per aerodrome.'</p>
response	Partially accepted The phrase 'described herein' has been removed. (Note also that a few other amendments to this text have also been made; however, not stemming from this comment.)

3.1. Draft guidelines - 4.1. Single mode of operation

p. 23

comment	<p>157 comment by: Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)</p> <p>envisaged, potential TO BE IMPLEMENTED FOR EARODROMES OF ALL SIZES AND CONDITIONS is a statement that promises a lot, more than what there is evidence to support.</p>
response	Noted



Whichever the size and complexity of an aerodrome, the implementation of remote aerodrome ATS will need to undergo a local safety assessment, in accordance with applicable regulations and the procedures accepted by the relevant competent authority. Also note that the sentence includes the wording ‘..envisaged to have the **potential** to be implemented for..’.

See also the response to comment 159.

comment

158

comment by: *Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)*

Could this statement be clarified, *the single mode of operation is approved in one EASA member state* the approvals are according to the definitions changes to the functional system. The statement is not wrong but could be misleading towards technical approvals

response

Noted

The commented text has been removed for other reasons.

comment

198

comment by: *IFATCA*

Clarification requested

The understanding of this paragraph could benefit from some re-drafting:

Certain level - is a very vague and unprecise concept and formulation. It better definition of a certain level is needed

Update as well the number of States, stipulating which airport have been approved in single mode of operation.

response

Noted

The commented text has been removed for other reasons.

comment

501

comment by: *European Transport Workers Federation - ETF*

Can EASA clarify the certification status of Hungary's remote / contingency tower for Budapest here?

response

Noted

There is no EU certification scheme for ATM/ANS equipment, but instead for the approval of the organisations and changes to their functional systems by the respective competent authority. Therefore, this question can only be answered by the responsible competent authority.

comment

788

comment by: *UK CAA*

Page No: 23



	<p>Paragraph No: 4.1, Single mode of operation</p> <p>Comment: The paragraph seems rather wordy and would benefit from being shortened.</p> <p>Justification: Need for brevity.</p> <p>Proposed Text: Replace with: ‘Single mode of operation is, in principle, envisaged to have the potential to be implemented for aerodromes of all sizes and conditions.’</p>
response	<p>Partially accepted</p> <p>The paragraph has been shortened.</p>

3.1. Draft guidelines - 4.1.1. Traffic density under the single mode of operation

p. 23-24

comment	<p>15</p> <p>comment by: <i>GdF</i></p> <p>At the same time, it is acknowledged that</p> <p>Typo</p>
response	<p>Noted</p> <p>The sentence had already been changed for a different reason.</p>
comment	<p>58</p> <p>comment by: <i>ENAV</i></p> <p>Text:At the same time it is acknowledged that the quality of the visual presentation is important; with a high quality visual presentation the basic features (as described by SESAR, see Appendix 4) may still be sufficient.</p> <p>Comment: Performance requirements should be indicated.</p> <p>Some requirements for the “visual presentation” are defined in the technical specification (ED-240) published by EUROCAE in September 2016, nevertheless there are still many aspects left to the ANSP assessment</p>
response	<p>Noted</p> <p>Performance requirements and operational needs are extensively covered/indicated in Chapter 5. Ultimately, DRRP requirements (EUROCAE ED-240/ED-240A) and other performance requirements need to be defined locally by the ATS provider, taking into account the local operational needs and circumstances.</p>
comment	<p>159</p> <p>comment by: <i>Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)</i></p> <p>The statement may be misleading, there may be no evidence that there is a certain upper limit for the concept when it comes to traffic density and we do agree that other factors such as complexity can be more limiting factors. However, there are no</p>



	<p>evidence on the contrary to support the statement that the concept is applicable to all shapes and sizes neither. Adding technical enables is not a bulletproof solution to guarantee capacity.</p>
response	<p>Accepted</p> <p>EASA agrees that not only the traffic density could be a limiting factor but also traffic complexity. Therefore, where appropriate, the text of Section 4.1.1. has been amended to reflect this accordingly. (As a result of this, Section 4.3.2. has been deleted as it became obsolete; the aspects are now covered in Sections 4.1. and 4.2. respectively.) Moreover, the text in Section 4.1.1. has been adjusted to be a bit less indicative for the so-called advanced features (SESAR terminology) and the statement on no limiting factors (second sentence) has been removed as it was seen as not adding any substantial value. Also, a similar statement in Section 4.1.2. has been deleted for the same reason.</p>
comment	<p>183 comment by: AESA/DSANA</p> <p><u>Comment</u> Minimum performance requirements should be specified depending on the density of traffic.</p> <p><u>Justification</u> Systems performance requirements should not be the same if the service is provided in low traffic density or in medium traffic density.</p>
response	<p>Noted</p> <p>The comment is deemed to be covered by the existing text. The topic of how to define local operational/performance requirements for a visual surveillance system, and related considerations (e.g. functional), based on existing regulatory requirements, is extensively covered in Section 5.2.</p>
comment	<p>199 comment by: IFATCA</p> <p>At the same time, it is acknowledged that</p> <p>typo</p>
response	<p>Noted</p> <p>The sentence had already been changed for a different reason.</p>
comment	<p>200 comment by: IFATCA</p> <p>Change proposal</p> <p>the safety assessment should <i>shall</i> consider the traffic density related to the aerodrome when establishing the necessary functionalities of the system.</p>

response	<p>Justification there has to be an obligation and not a recommendation with regard to the traffic density - degraded modes are not mentioned here which in our view is from a legal point of view a requirement.</p> <p>Not accepted</p> <p>See the response to comment 205.</p> <p>Degraded modes are discussed in several other places of the document, e.g. Section 6.5.</p>
comment	<p>297 comment by: ENAV</p> <p>For aerodromes where traffic density exceeds the low density characteristics (as described by SESAR) validation results have shown that the need for advanced features (as described by SESAR, see Appendix 4) may be increased.</p> <p>ENAV suggestion: Rephrase the section, low density (SESAR), has been a burden and creates unnecessary discussions. Ex; For aerodromes with more complex environment validation results have shown that the need for advanced features (as described by SESAR, see Appendix 4) may be increased.</p>
response	<p>Not accepted</p> <p>See the response to comment 429.</p>
comment	<p>356 comment by: CANSO</p> <p>For aerodromes where traffic density exceeds the low density characteristics (as described by SESAR) validation results have shown that the need for advanced features (as described by SESAR, see Appendix 4) may be increased.</p> <p>CANSO suggestion: Rephrase the section, low density (SESAR), has been a burden and creates unnecessary discussions. Ex; For aerodromes with more complex environment validation results have shown that the need for advanced features (as described by SESAR, see Appendix 4) may be increased.</p>
response	<p>Not accepted</p> <p>See the response to comment 429.</p>
comment	<p>429 comment by: LfV</p>

	<p>Text in 4.1.1: "For aerodromes where traffic density exceeds the low density characteristics (as described by SESAR) validation results have shown that the need for advanced features (as described by SESAR, see Appendix 4) may be increased."</p> <p>LFV: Rephrase the section to avoid discussion of "low density". "Low density (SESAR)" is misleading and creates unnecessary discussions.</p> <p>Proposed text: "For aerodromes with more complex environment validation results have shown that the need for advanced features (as described by SESAR, see Appendix 4) may be increased."</p>
response	<p>Not accepted</p> <p>The text in 4.1.1. is referring to SESAR results. EASA is of the opinion that replacing the SESAR terminology with a non-defined term 'more complex environment' would not change the meaning of the sentence but rather make it less precise, with the risk of raising new questions.</p>
comment	<p>469 comment by: <i>Swedavia</i></p> <p>Rephrase the section, low density (SESAR), has been a burden and creates unnecessary discussions. Ex; For aerodromes with more complex environment validation results have shown that the need for advanced features (as described by SESAR, see Appendix 4) may be increased.</p>
response	<p>Not accepted</p> <p>See the response to comment 429.</p>
comment	<p>406 comment by: <i>NATS</i></p> <p>References to old SESAR work, which contains references to Low density, Small airfields etc. should be removed, These words and work have been detrimental to the deployment and acceptance of Remote Towers – It either works or doesn't, and what is meant by low density? Sn airfield could have 2000 movements a year, but if they all occurred over a few days would that be low density.</p> <p><u>Suggest removing.</u></p>
response	<p>Not accepted</p> <p>See the responses to comments 767 and 521.</p>
comment	<p>428 comment by: <i>LFV</i></p> <p>Text in 4.1.1: "The traffic density is a factor for consideration when implementing remote aerodrome ATS (as is the case when building/upgrading a conventional tower)."</p>

	<p>LFV: This text should be deleted. Sufficient to keep the last sentence in the paragraph: “The single mode of operation category is not to be seen as limited to a certain traffic density level”.</p>
response	<p>Not accepted See also the response to comment 159.</p>
comment	<p>738 comment by: <i>Federal Aviation Administration</i></p> <p>Current Text: Regarding "Validation results from the SESAR JU programme ([19], [20], [25], [35]) indicate that, in the context of low density aerodromes, the basic features (as described by SESAR, see Appendix 4) are considered to be sufficient."</p> <p>Specific Comment: Appendix 4 lists the basic features, which does not include ATS surveillance. However, when reviewing the documents and demonstration reports referenced, all of the active demonstrations included surveillance. Additionally, when examining the trial objectives and results (OBJ-0204-007 for the IAA demonstration, OBJ 06.09.03-VALP-0060.0051 for the NORACON demonstration, 6.1.3.1.14 from the Reference [35]), radar was identified as a safety benefit or performance positive.</p> <p>Describing each of the validation efforts would add a great deal of length to the documents. But these statements imply the result of the validation efforts. Therefore it might be appropriate to at least provide references to these documents and the number of operations that the validation results were based on whenever validations are referenced.</p> <p>Also, consider adding a method of surveillance as a basic feature.</p>
response	<p>Not accepted</p> <p>The references to the validation results/documents are already provided in the text. A conclusion from SESAR Solution #71 is that ATS surveillance (air/ground radar presentation) is not a mandatory equipment/enabler for ATS provision from a remote tower. The validations performed within the frame of SESAR Solution #71 (see reference [25]) were conducted both with (as part of the advanced features) and without (basic features) the ATS surveillance presentation, in order to examine this (i.e. in order to examine whether remote aerodrome ATS can be used also for airports which do not have any radar/ATS surveillance coverage, which is in fact common for many remote aerodromes in e.g. northern Europe). The inclusion of ATS surveillance presentation, where available, will of course improve the ATS provision in terms of e.g. performance/capacity, as is the case also for aerodrome ATS provided from a conventional tower. When traffic volume/density/complexity increases (see SESAR Solution #12 and references [35] & [37]), the usefulness of an ATS surveillance</p>

presentation will of course increase. This is already correctly reflected by existing text.

comment

789

comment by: UK CAA

Page No: 24**Paragraph No:** 4.1.1, Final paragraph starting ‘Nevertheless...’**Comment:** The paragraph does not allow for a simple operation at densities exceeding low. It should be recognised that at an aerodrome with a ‘simple’ operation, the basic features (potentially with additional mitigations) may be sufficient for that operation without the need for advanced features.**Justification:** Enhanced relevance of text.**Proposed Text:** Replace with:

‘Depending on the quality of the visual presentation, the basic features may be sufficient for aerodromes where traffic exceeds the low density or low complexity characteristics. However, it is recommended that ATS providers consider using the advanced features especially for medium density aerodromes.’

response

Partially accepted

The text has been amended to reflect the message of the comment.

3.1. Draft guidelines - 4.1.2. Characteristics of the aerodrome’s layout

p. 24

comment

430

comment by: LfV

Text in 4.1.2: "The aerodrome layout is a factor for consideration when implementing remote aerodrome ATS (as is the case when building/upgrading a conventional tower)."

LfV:

Delete this text as it is applicable to conventional towers as well and not specific for remote solutions.

Keep the last sentence of the paragraph:

“The single mode of operation category is not to be seen as limited to a certain traffic density level”.

response

Not accepted

comment

470

comment by: Swedavia

One key discussion that has proven to be a very difficult one is with regards to camera tower height and placement.

Swedavia would like to highlight this as a possible issue for future RTS installations – that camera tower placement must take into account a number of factors including but not limited to:

1. View over the runway and the aerodrome’s traffic pattern.
2. View over the apron and maneuvering areas.



	<p>3. Existing airport activities and operations.</p> <p>4. Existing airport buildings and airport construction.</p>
response	<p>Accepted</p> <p>As concerns the view over the runway and the aerodrome's traffic pattern, these needs are covered by existing text in Guidelines Section 5.2.1. 'Primary regulatory requirements'.</p> <p>As concerns the potential need for a view over the apron(s), this has been added to Section 5.2.3. 'Other operational needs'.</p> <p>As concerns points 3 and 4, a new section (Section 5.2.6. in the final version published by the ED Decision) titled 'Camera siting aspects' has been added, which covers these aspects.</p>
comment	<p>502 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>The objective to see the aerodrome's manoeuvring area should be clearly stated at this point. Also, there is a need to consider the different visual pattern at the aerodrome when thinking about remoting the control of the aerodrome at this stage of the NPA. The considerations one must take into account go beyond aerodrome layout.</p>
response	<p>Noted</p> <p>The topic is covered in Section 5.2. and in particular Section 5.2.1. See also the response to comment 470.</p>

3.1. Draft guidelines - 4.1.3. Aerodrome switching under single mode of operation

p. 24

comment	<p>503 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>ETF regrets the absence of any recommendation on how to make this safe. See also our comment on paragraph 3.2.</p>
response	<p>Accepted</p> <p>The text of Section 4.1.3. (as well as 4.2.3.) has been extended to include recommendations for the ATS provider to develop appropriate procedures and to include a reference to the related human factors considerations listed in Section 6.2.1.</p> <p>It can also be noted that the 4th bullet of Section 5.1 is always applicable.</p>
comment	<p>657 comment by: <i>ATCEUC</i></p> <p>ATCEUC is against this switch during the shift</p>



	ATCEUC thinks that, as it is for commercial pilots, once the shift has started, it won't be allowed to switch, for the same ATCO/AFISO from one provision to another one.
response	<p>Not accepted</p> <p>There are examples in traditional/conventional tower operations where ATCOs, holding separate unit endorsements for two geographically nearby aerodromes, may operate two aerodromes in the same day (e.g. one aerodrome in the morning and another aerodrome in the afternoon). Furthermore, existing cases of remote aerodrome ATS implementation handle this kind of switching already today. In addition, in many places where for example approach and area control units are co-located, one controller could work at APP and ACC sectors in alternation during one shift/day. The same principle applies for units where TWR and APP are co-located, one controller could work TWR and APP positions in alternation during one shift/day.</p> <p>Indeed, Regulation (EU) No 965/2012 and the associated AMC and GM set some limitations for the operation on more than one type or variant of aeroplanes. However, it should be noted that even so, AMC1 ORO.FC.240 gives some flexibility in this regard when there is a suitable procedure established. It is also not (per default) correct to assume that the requirements related to 'Air Operations' would be applicable/transferable to ATS provision and to ATCOs/AFISOs, as the context is completely different.</p> <p>How to switch aerodromes during a work shift is to be defined on the local implementation level and handled via the local operations manual/local procedures and training. Section 4.1.3. has been extended for clarification, see the response to comment 503.</p>

3.1. Draft guidelines - 4.1.4. Remote tower as backup facility

p. 24-25

comment	<p>414 comment by: <i>skyguide Compliance Management</i></p> <p>second § "The use of new technical...key factors)": correct, if the same amount of traffic shall be handled. If in case of contingency a reduced traffic (e.g. 40%) shall be handled, it might also be different to the CWP.</p>
response	Noted
comment	<p>415 comment by: <i>skyguide Compliance Management</i></p> <p>fifth §: add contingency planning to reduce the complexity.</p>
response	<p>Not accepted</p> <p>Section 4.1.4. deals solely with the use of a remote tower as a backup facility for conventional towers. The regulatory reference regarding requirements on 'contingency planning'/'contingency arrangements' is provided in the first sentence of Section 4.1.4.</p>



Contingency planning for remote towers is outlined in Section 6.5.

Note:

A clarification of this comment was provided by Skyguide, upon EASA's request: "In the doc it's written: "it is recommended to define the requirements on traffic complexity, capacity, duration of switch over". I suggest to add the "requirements for contingency planning". This would allow the different ANSP's to have a common understanding, which level of contingency is necessary during r-twr ops. E.g. redundancy, procedures etc.")

comment 504 comment by: *European Transport Workers Federation - ETF*

ETF supports this statement : "Similarity to the CWP's and the ATCO/AFISO support tools provided in the conventional tower would reduce both the ATCO/AFISO familiarisation time during the transition into contingency phase as well as the need for recurrent contingency training."

response Noted

comment 506 comment by: *European Transport Workers Federation - ETF*

~~Although the introduction of such enablers has the potential to introduce operational benefits, this should be balanced against the disadvantages caused by introducing new tools and equipment which may not be available in the existing conventional tower, as well as by adding complexity to a backup facility (for which robustness would normally be a key factor).~~
[Following paragraph]

There are distinct overtones of a concern for the economic impact on ANSPs in this statement. If EASA is not concerned with the economic impact of remote towers as it states on page 1, but is apparently concerned with the safety of the overall system, then why make a statement giving ANSPs the freedom to forego new equipment and tools which may have the potential to enhance safety?

response Not accepted

The comment is not understood. The text in Section 4.1.4. highlights possible disadvantages/risks with adding new features/technical enablers in a contingency/back-up facility and does not relate to economic aspects.

comment 507 comment by: *European Transport Workers Federation - ETF*

"Lastly, it is essential that requirements on traffic complexity (mix of aircraft and vehicles etc.), capacity, duration of service and switchover time for the backup facility are defined."

In order to introduce a remote tower operation, this is the absolute minimum that must be achieved in any initial safety statement / safety case / local safety assessment and therefore must be mandatory. ETF is in total agreement that this



	needs to be part of the essential consideration to be made on introduction of remote tower operations.
Response	Not accepted EASA sees the word 'recommended' as fit for purpose in the given context. See also the response to comment 205.
comment	508 comment by: <i>European Transport Workers Federation - ETF</i> If there is a recommendation to ensure that there are no interdependencies between the conventional tower and the remote tower used as a backup facility, then the design requirements are different and it should be stated that the remote tower designed as back-up facility shall not be used as principal means to provide the service unless properly demonstrated and approved by the competent authority.
response	Accepted The text has been adjusted accordingly.
comment	522 comment by: <i>Heathrow airport</i> We do <i>not</i> believe that it is <i>always</i> necessary to provide an out of the window (OTW) view in order to provide remote ATS safely and effectively. When alternative methods of assuring location of aircraft, vehicles, and other items of interest is provided, and when hazards and risks are demonstrated to be mitigated, there may be no need for direct reproduction of OTW view. We agree that it <i>can</i> be advantageous to replicate an out of the window view (and where used as a back-up it may be beneficial to maximise similarities, (section 4.1.4), however we also note that there can in some instances be advantages of providing a different view or alternative representation for a back-up facility in order to re-inforce the mode of operation/changes from nominal mode. Where an out of the window view is provided as the chosen method, the <i>minimum</i> requirements and recommendations for visual presentation and the extent of the coverage should not exceed those possible from ideally located conventional tower(s) that they replace.
response	Not accepted See the response to comment 505.
comment	739 comment by: <i>Federal Aviation Administration</i> Current Text: When implementing a backup facility based on the remote aerodrome ATS concept, it is recommended to define the required level of HMI commonality with respect to the conventional tower. Specific Comment: We are not sure how you do this as a conventional tower HMI is a radio and binoculars as opposed to computer I/O devices. Please provide additional clarification to this statement.

response	Not accepted The text refers to the various systems/tools used to support the provision of ATS, e.g. VCS, FDPS, etc.
comment	790 comment by: UK CAA Page No: 24 Paragraph No: 4.1.4, Footnote 23 Comment: We recommend quoting the text at Regulation (EU) 2017/373 paragraph ATM/ANS.OR.A.070 (2017/373 having now been adopted into EU law). Cross-reference to source ICAO material remains necessary given 2017/373's effective date of 2 Jan 20. Justification: Greater, and more appropriate alignment with other EU regulatory material.
response	Accepted The quotation has been added within the footnote.

3.1. Draft guidelines - 4.2. Multiple mode of operation

p. 25

comment	160 comment by: Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen) 1st section is there sufficient evidence backing the “however” statement. Why not rephrase to this GM compiles the information available to date. And exclude plans...
response	Accepted The text of Section 4.2. has been amended for improved clarity.
comment	162 comment by: Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen) 2 nd segment. This section should include airports and airspace users, the current maturity of the concept may effect regularity.
response	Partially accepted The safety assessment of a change to the functional system requires, in accordance with Regulation (EU) No 1035/2011, to take into account all affected stakeholders, including airports and airspace users. In Section 6.1.1, the term ‘aircraft operators’ has been replaced with ‘airspace users’.
comment	242 comment by: AESA/DSANA <u>Comment</u>



	<p>There is not any kind of restriction on the number of aerodromes that a RTC can manage.</p> <p><u>Justification</u></p> <p>Due to possible drawbacks, such as ATCOs/AFISOs possible lack of situational awareness and the management of abnormal/emergency situations, AESA would appreciate a guideline that specifies the number of the simultaneous aerodromes and/or the maximum movements/hour/day where the RTS provision is considered safe.</p> <p>It should be bore in mind that it is not the same provision ATS and AFIS. As in the later service, the AFISO only provides information. A certain flexibility could be introduced.</p>
response	<p>Noted</p> <p>EASA does not see any need to restrict the number of aerodromes to be provided with aerodrome ATS from an RTC.</p> <p>Regarding the number of aerodromes to be provided with ATS in multiple mode of operation (from an RTM), (or in general for any ATS provision), traffic complexity and the total ATCO/AFISO workload (which is generated by a number of various factors) is generally more important than e.g. a specific number of aerodromes/movements (see last sentence of Guidelines Section 4.2.1.). Therefore, it is not deemed to be appropriate to specify a maximum number of aerodromes/movements (as the complexity of operations can vary hugely from airport to airport, from day to day, depending on technical enablers and support tools implemented, etc.). It is also noted that the comment itself is at the same time asking both for a maximum number of aerodromes/movements and for flexibility. Thereby the response is to some extent self-evident from the comment is self.</p>
comment	<p>509 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>"It is essential that the multiple mode of operation (when provided by one ATCO/AFISO only) will be used only when the operational circumstances so allows. It is the responsibility of the ATS provider to define the suitable operational circumstances, which require careful considerations, as well as to provide sufficient evidence for an acceptable level of safety (as is always the case). "</p> <p>There must not be any opportunity for ANSPs to cut corners in their safety assessments that might allow them to make decisions with a financial aspect in mind, over that of safety.</p>
response	<p>Accepted</p> <p>The text of Section 4.2 has been amended in line with the comment.</p>
comment	<p>580 comment by: <i>HIAL</i></p>



response	<p>An EASA solution is only currently available for low density aerodromes and will impact on the HIAL ATM strategy to implement aerodrome RT and RTC. The majority of HIAL Airports, despite being sighted in airspace categorised as LCLD, could be deemed medium density. When will EASA have progressed more complex solutions?</p> <p>Noted</p> <p>The solutions referred to in the Guideline document and in particular its Chapter 4 are SESAR Solutions. So far, only one SESAR Solution related to the multiple mode of operation has been published by SESAR; however, continued research is ongoing within SESAR 2020. Additionally, the further evolution of e.g. the multiple mode of operation, may not depend solely on SESAR activities. The concept may as well evolve as a result of other research initiatives (such as those performed independently by ATS providers), by gained operational experiences, etc. The Guideline document is generic and therefore valid for any remote aerodrome ATS implementation, regardless of the operational context/application. Nevertheless, EASA aims at monitoring the continued operational experiences/evolution/development of the remote aerodrome ATS concept and, if appropriate, consider updating these Guidelines accordingly.</p>		
comment	<p>659 comment by: ATCEUC</p> <table border="1"> <tr> <td> <p><u>4.2</u> The overarching recommendation with regard to multiple mode of operation (when provided by one ATCO/AFISO only) is that it should be used only when the operational circumstances so allows. It is the responsibility of the ATS provider to define the suitable operational circumstances, which require careful considerations, as well as to provide sufficient evidence for an acceptable level of safety (as is always the case).</p> </td> <td> <p>Whilst ATCEUC is against those “multiple operations”, we don’t agree that it should be the responsibility of the ATS provider to define the suitable operational circumstances they can be used. The old idea for which ANSPs are stakeholders not intended to have profit as main task has been superseded by the reality. To have more profit or to save more money, someone somewhere could define suitable circumstances that are not.</p> </td> </tr> </table>	<p><u>4.2</u> The overarching recommendation with regard to multiple mode of operation (when provided by one ATCO/AFISO only) is that it should be used only when the operational circumstances so allows. It is the responsibility of the ATS provider to define the suitable operational circumstances, which require careful considerations, as well as to provide sufficient evidence for an acceptable level of safety (as is always the case).</p>	<p>Whilst ATCEUC is against those “multiple operations”, we don’t agree that it should be the responsibility of the ATS provider to define the suitable operational circumstances they can be used. The old idea for which ANSPs are stakeholders not intended to have profit as main task has been superseded by the reality. To have more profit or to save more money, someone somewhere could define suitable circumstances that are not.</p>
<p><u>4.2</u> The overarching recommendation with regard to multiple mode of operation (when provided by one ATCO/AFISO only) is that it should be used only when the operational circumstances so allows. It is the responsibility of the ATS provider to define the suitable operational circumstances, which require careful considerations, as well as to provide sufficient evidence for an acceptable level of safety (as is always the case).</p>	<p>Whilst ATCEUC is against those “multiple operations”, we don’t agree that it should be the responsibility of the ATS provider to define the suitable operational circumstances they can be used. The old idea for which ANSPs are stakeholders not intended to have profit as main task has been superseded by the reality. To have more profit or to save more money, someone somewhere could define suitable circumstances that are not.</p>		
response	<p>Noted</p> <p>Even when/if an ATS provider is commercially orientated, it still needs to ensure an acceptable level of safety in accordance with applicable regulations for its operation. In addition, any implementation of remote aerodrome ATS is to be approved by the competent authority. Furthermore, EASA monitors this system/principle as well as the application and uniform implementation of the EU aviation safety rules in all EASA Member States through standardisation activities (e.g. inspections, training/advice).</p>		

See also the response to comment 205.

3.1. Draft guidelines - 4.2.1. Number and size of aerodromes in multiple mode of operation

p. 26

comment 66 comment by: EUROCONTROL

4.2.1 Number and size of aerodromes in multiple mode of operation - Page 26

The text in parentheses at the end of the section implies that providing ATS to multiple aerodromes could be less challenging than to a single aerodrome, depending on traffic density and complexity. This overlooks the key considerations related to simultaneous movements discussed in the next section. For this reason the EUROCONTROL Agency would like to recommend that the text in parentheses is removed.

response Partially accepted

The text in parenthesis has been removed to make the sentence/information more stringent. However, it should be noted that the statement refers to SESAR results and is in essence correct.

comment 111 comment by: Naviair

A fixed number of maximum simultaneous airports is not relevant for this document. Safety assessment, taking traffic density, complexity and other local factors into account, should decide the suitable number of simultaneous airports

response Partially accepted

EASA agrees with the comment and believes this view is reflected by the existing text. See e.g. introductory text of Chapter 4, introductory text (first two paragraphs) of Section 4.2, first paragraph of Section 4.2.1 as well as Section 4.2.6. Nevertheless, a sentence about the safety assessment to define the suitable number of airports has been added.

(See also the responses to comments 242 and 580.)

comment 145 comment by: DFS Deutsche Flugsicherung GmbH

Second Paragraph:

By stating that, some might exclude medium airports with low traffic at some time. It doesn't help ANSP's at this stage.

Multiple operations has nothing to do about what "category" the aerodrome has. For example:



response

The IAA Large Scale Demonstration LSD 02.04 Final Report ed 00.02 Para 5.4.3 Conclusions and Recommendations concluded that:
 “The live trial exercises demonstrated that the ATS provided by the RTC for a single airport and two **medium** airports by a single Controller with ‘in sequence’ and ‘simultaneous’ aircraft operation was at least as safe as the ATS provided by the Local Towers at Cork and Shannon aerodromes”.

We therefore suggest to remove the categorisation "low density aerodrome" from the statement in second para:

*"The results of the validation exercises performed so far in the framework of the SESAR JU program ([32], [35], [37]) show that the multiple mode of operation can be applied for the simultaneous provision of ATS **to two low density aerodromes** (as described by SESAR) by a single ATCO/AFISO."*

See also our comment on the next chapter 4.2.2.

This can't be fixed for all aerodromes, nor at all times nor in all circumstances.

Not accepted

The aim of Chapter 4 is to provide an overview of existing R&D results and operational experiences together with related recommendations. The introductory text of Chapter 4 also clarifies that ‘This would not rule out the possibility for an expansion into other more challenging operational context and applications as further research and development results become available and when more operational experience from implementation is gained.’.

When referring to SESAR results (throughout Chapter 4), most trust and emphasis has been given to the results published as ‘SESAR Solutions’. The reason being that SESAR Solutions undergo a thorough review and quality assurance process by SESAR JU, before being approved and published, ensuring high quality and trust in the results. The LSD 02.04 report is not part of the SESAR Solution #52 (multiple for two low-density aerodromes) solution package, as the demonstration/validation was performed after the release of this SESAR Solution. (However, the report is part of the solution package for SESAR Solution #12 (single for medium-density aerodromes).) The results with regard to multiple mode operation outlined in the said report are somewhat ambiguous (there are also some concerns raised) and the report does not clearly specify what they mean when referring to ‘medium airports’. Furthermore, results presented in another report, the LSD 02.05 report, raise some concerns with regard to multiple mode of operation for the combination of 1 small + 1 medium airport. Hence, the results stemming from these two Large Scale Demonstration reports are not conclusive with regard to multiple mode of operation beyond the scope of SESAR Solution #52. Based on the continued R&D work within SESAR 2020, there may be results and SESAR Solutions published for operational contexts beyond the scope of Solution #52 in the future.

The commented text has been amended for clarification. The references have been updated to refer to SESAR Solution #52 related results only, and a notion about continued SESAR 2020 R&D activities has been added.



Furthermore, the introductory text of Section 4.2 has been amended to highlight that continued SESAR work to expand the multiple mode of operation concept further is ongoing and Section 4.2.6 has been slightly amended to reflect better the current situation and possible developments.

Also, note that the corresponding text in Section 4.2.2 has been deleted as it was partly a duplication of the text/information provided in Section 4.2.1.

comment 163 comment by: *Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)*

Is there sufficient evidence to support the statement that *level and flexibility of service provision can be improved through the use of advanced features*? One may argue that this represents the vision.

response Noted

The text refers to SESAR results. (Please note that advanced features include e.g. ATS surveillance (air and/or ground radar presentation) and other enablers that will enhance ATCO/AFISO situational awareness.)

comment 298 comment by: *ENAV*

“The results of the validation exercises performed so far in the framework of the SESAR JU program ([32], [35], [37]) show that the multiple mode of operation can be applied for the simultaneous provision of ATS ~~to two low density aerodromes~~ (as described by SESAR) by a single ATCO/AFISO.”

By stating that, some might exclude medium airports with low traffic at some time-again defuse SESAR statements, It doesn't help ANSP's at this stage
Multiple operations has nothing to do about what “category” the aerodrome has.

For example:

The IAA Large Scale Demonstration LSD 02.04 Final Report ed 00.02 Para 5.4.3 Conclusions and Recommendations concluded that:

“The live trial exercises demonstrated that the ATS provided by the RTC for a single airport and two **medium** airports by a single Controller with ‘in sequence’ and ‘simultaneous’ aircraft operation was at least as safe as the ATS provided by the Local Towers at Cork and Shannon aerodromes”

Delete **Yellow** and put in the “mantra”

“Not for all aerodromes-not at all times-not in all circumstances”

response Not accepted

See the response to comment 145.

comment 357 comment by: *CANSO*



“The results of the validation exercises performed so far in the framework of the SESAR JU program ([32], [35], [37]) show that the multiple mode of operation can be applied for the simultaneous provision of ATS ~~to two low density aerodromes~~ (as described by SESAR) by a single ATCO/AFISO.”

By stating that, some might exclude medium airports with low traffic at some time-again defuse SESAR statements, It doesn't help ANSP's at this stage
Multiple operations has nothing to do about what “category” the aerodrome has.

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Delete **Yellow** and put in the “mantra”

“Not for all aerodromes-not at all times-not in all circumstances”.

response

Not accepted

See the response to comment 145.

comment

405

comment by: NATS

4.2.1 & 4.2.2

Of note the document doesn't explore concepts such as a form of multimode where maybe particular disciplines are combined, such as AIR for two airports, while the GMC is for each is still provided separately – which maybe easier methods of multimode than whole aerodromes, this would equally effect what and when which aerodromes are combined, and would differ in just size etc combining just (AIR)runway operations for two “Large” airfields maybe easier than fully combining 2 small airports

The wording of this is somewhat contentious, while understanding the intent, in reality at its simplest, multimode is just a form of bandboxing, which is already in practice within towers/centres now, where AIR/GMC will be combined when workload permits, , equally level of movements isn't the only factor, complexity and other aspects should be considered.

Suggested resolution

Suggest change - It is recommended that multiple mode of operation (when provided by one ATCO/AFISO only) is mainly used when certainty exists, and workload and complexity can be managed., When operational experience is gained or further research/validation results become available, this recommendation may further evolve.

Suggest review that isn't being too solution specific and narrow.



response	<p>Equally remove references that suggest the solution is only available for certain size or density – its too constraining and is open to the large number of possibilities which may vary a different times of day where a number of towers are operated from one location – just as is done for area and TMA operations now</p> <p>Partially accepted</p> <p>Note that ‘simultaneous provision of service to a specific area or a specific function for more than one aerodrome’ is mentioned as a possible operational application in Guidelines Section 3.3 (last bullet).</p> <p>Section 4.2.2 (including the text commented in the ‘Suggested resolution’) has been amended in light of comments 146, 147, 202, 385, 511 and 752. Part of the suggested resolution of this comment has been integrated in Section 4.2.</p> <p>As for the references, see the response to comment 145.</p>
comment	<p>431 comment by: <i>LFV</i></p> <p>Text in 4.2.1: "The results of the validation exercises performed so far in the framework of the SESAR JU program ([32], [35], [37]) show that the multiple mode of operation can be applied for the simultaneous provision of ATS to two low density aerodromes (as described by SESAR) by a single ATCO/AFISO."</p> <p>LFV: By stating "...to two low density aerodromes...", some might exclude medium airports with low traffic at some time. Multiple operations have nothing to do about what "category" the aerodrome has.</p> <p>Delete the words "...to two low density aerodromes...". Add the "mantra" that multiple is "Not for all aerodromes, not at all times and not in all circumstances"</p>
response	<p>Not accepted</p> <p>See the response to comment 145.</p>
comment	<p>581 comment by: <i>HIAL</i></p> <p>Clearly states that basic equipage is adequate at low density aerodromes but cites extra factors for ANSPs to consider for advanced equipage. An overarching statement may be more appropriate along the lines of ‘ANSPs should consider the following factors to base their required equipage levels to suit the aerodrome environment’ as opposed to having basic and advanced equipage lists. Most ANSPs should automatically consider some of the advanced technical enablers as part of the safety analysis and implementation mitigations. Furthermore, in Multiple mode operation, both aerodromes should be similarly equipped to reduce the potential for HF errors regarding available features (or more specifically difference of technical enablers at each aerodrome).</p>
response	<p>Partially accepted</p>

The text of Section 4.2.1 has been amended to include a general statement about determining a suitable equipage level to support the operations.

comment

660

comment by: ATCEUC

4.2.1 “...validation results have revealed that the total traffic level and complexity potentially has a greater impact on ATCO/AFISO workload than the number of aerodromes to which services are being provided...”

ATCEUC thinks that this statement actually is wrong since, at now it does not exist any evidence and related literature supporting the contrary!

response

Noted

3.1. Draft guidelines - 4.2.2. Simultaneous aircraft movements on different aerodromes

p. 26

comment

16

comment by: GdF

It is recommended that multiple mode of operation (when provided by one ATCO/AFISO only) is mainly used when certainty exists that, based on the available traffic schedule, the instances of simultaneous aircraft movements on the different aerodromes is minimal.

We object to the multiple mode of operation, because similar mode of operation in Zürich-Centre was a major contributing factor to the Überlingen disaster.

IFATCA Policy is:

ATCOs shall not be required to provide a Remote and Virtual tower service for more than one aerodrome simultaneously.

response

Noted

The referenced text has been amended based comments 146, 147, 385, 511 and 752.

The concept of multiple mode of operation has been studied and validated, e.g. within SESAR, for many years — both in the context of ATC and AFIS. The results are clear — multiple mode of operation can be provided in a safe manner for the operational scenarios that have been tested, refer to SESAR Solution #52 (‘Remote tower for two low-density aerodromes’, published late 2015). Continued research is ongoing within SESAR 2020, evaluating the multiple mode of operation concept for more challenging operational context/environments (i.e. higher traffic volumes and increased number of simultaneous aerodromes).

As mentioned in several places in NPA 2017-21, whereas the single mode of operation is already implemented and approved for some aerodromes by the



relevant competent authorities, EASA recognises that the concept of multiple mode of operation has not yet been operationally implemented. Nevertheless, EASA considers that there is already sufficient information and data available to provide regulatory support and guidance to facilitate its safe implementation, as well as to provide a basis for its further development.

Multi-sector operations (en-route/TMA) are allowed and used today and considered safe under defined conditions in the local operations manual. The same approach would be applicable in the case of multiple mode of operation, refer to the following text in Guidelines Section 4.2.; ‘...it is to be used only when the operational circumstances so allow and when certainty exists that workload and complexity can be managed. It is the responsibility of the ATS provider to define the suitable operational circumstances, which require careful considerations, as well as to provide sufficient evidence for an acceptable level of safety (as is always the case)’.

Also note that Section 5.14.2 has been amended to indicate that all systems and information needed for the ATS provision in multiple mode of operation are to be accessible by the ATCO/AFISO from one single physical workstation.

comment

67

comment by: EUROCONTROL

4.2.2 Simultaneous aircraft movements on different aerodromes - Page 26

The first sentence of the section refers to 'multiple mode of operation (when provided by one ATCO/AFISO only)'. Has the case of multiple ATC/AFIS provision by more than one officer been also considered? The EUROCONTROL Agency is of the opinion that if this case has not been considered, then the text in parentheses should be removed.

The following operational condition 'provided that instances of simultaneous aircraft movements are minimal' should be supplemented by an explanation of what should be the minimal number of these instances.

response

Not accepted

Section 4.2.2 has been amended in light of comments 146, 147, 202, 385, 511 and 752. As a result, the first sentence was removed. (However, multiple mode of operation by more than one officer/operator has been considered by some ATS providers, see e.g. the last operational application listed in Section 3.3.).

Concerning the comment on ‘operational condition’, this sentence has been removed as it was partly a duplication of information provided in Section 4.2.1.

comment

102

comment by: CAA PL

In para 3, sentence 3 may be somewhat misleading, as it could point out that competent authority is also responsible for validation, whereas to my understanding, intention is that competent authority is only responsible for approval of the change, iaw 1034/2011. Proposal: All mechanisms implemented should be validated,



response	<p>approved (by competent authority) and documented in the operations manual (as specified by COMMISSION IMPLEMENTING REGULATION (EU) No 1035/2011 [3] Annex I, Chapter 3.3 'Operations manuals') <u>and finally approved by competent authority.</u></p> <p>Partially accepted</p> <p>See the response to comment 165.</p>
comment	<p>146 comment by: DFS Deutsche Flugsicherung GmbH</p> <p>First paragraph: If this paragraph is left with the wording the way it is i.e. <i>“simultaneous aircraft movements on the different aerodromes is minimal”</i>, any ANSP would be limited in conducting any further trials on simultaneous aircraft control not to even mention prevent any progress towards Full Operation. First "minimal" has no definition, but more importantly, this is much too restrictive. The IAA Large Scale Demonstration LSD 02.04 Final Report ed 00.02 para 5.4.3.1 Multiple Airport Simultaneous Aircraft Operations went into a lot of detail on the definition of the word "simultaneous", which is important when prescribing guidelines for the simultaneous control of two or more aircraft. E.g. two aircraft on the frequency, one on a taxiway at airport A and one on a 5 mile final for airport B is simultaneous control of two aircraft which we are sure the majority would accept is a safe and manageable situation. With that point accepted we can then talk about what is manageable from a simultaneous point of view and that is what the IAA has concluded in their report.</p> <p>We therefore suggest to replace the first paragraph by <i>"It is recommended that the probability of instances of simultaneous aircraft movements on the different aerodromes, based on the available traffic schedule, is carefully assessed and taken into account in the safety study and CONOPS before implementing multiple mode of operation."</i></p>
response	<p>Partially accepted</p> <p>The comment is supported and the first paragraph of Section 4.2.2 has been amended similarly to the text proposed in this comment.</p> <p>See also comments 202, 385 and 511 and the responses to them.</p>
comment	<p>147 comment by: DFS Deutsche Flugsicherung GmbH</p> <p>Second paragraph: This sentence is perfect, but is not in line with the paragraph immediately above which imposes a “minimal” instance of occurrences.</p> <p>To demonstrate this exact point Extract from the IAA report paragraph 5.4.3.1 the IAA concluded <i>“In a Multiple Airport Simultaneous Operations (MASO) environment and with two simultaneous arrivals into two different airports ideally the first landing aircraft should be steady on the Runway before the second arrival aircraft is 1NM from</i></p>



	<p><i>touchdown at the other aerodrome. Meeting this guideline has been identified as difficult and it could be the case that this guideline would not be accomplished due to the varying speeds of the two aircraft on final approach. Any such recommendation when implemented in the future would be supported by an additional caveat which should give the Controller the authority to exercise professional judgement with regard to the issuance of a landing clearance to the second arriving aircraft. “</i></p> <p>One of the key areas of the IAA trial was to determine the distance between two arrival aircraft in a multiple environment. This guideline distance could be made greater or reduced by procedure. When IAA wrote this section they were also conscious that this recommended distance could be achieved by the upstream Radar service OR standard Tower Controller practises such as orbit at designated point etc.</p> <p>We therefore suggest to follow our previous comment and modify the first paragraph accordingly.</p>
response	<p>Accepted</p> <p>See the responses to comments 146 and 202.</p>
comment	<p>164 comment by: Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)</p> <p>2nd section. Is there supporting evidence to back up that statement? section current training, judgement and methods is not per say sufficient when implement a new concept such as multiple. New methods needs to be developed including relation the adjacent ATS units. i.e. effecting LoA.</p>
response	<p>Noted</p> <p>The paragraph/statement stems from SESAR results (see SESAR Solution #52) and follows pure logic. However, the text which the comment refers to has been amended. See the response to comment 202.</p>
comment	<p>165 comment by: Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)</p> <p>3rd section, could the statement be clarified <i>All mechanisms implemented should be validated, approved (by the competent authority) as a part of the change to the funtional system...</i> in a way so its clear that the CA does not approve the operating manuals</p>
response	<p>Accepted</p>
comment	<p>202 comment by: IFATCA</p> <p>Change proposal</p>

	<p>It is recommended that multiple mode of operation (when provided by one ATCO/AFISO only) is mainly used when certainty exists that, based on the available traffic schedule, the instances of simultaneous aircraft movements on the different aerodromes is minimal.</p> <p>Justification</p> <p>This recommendation is very difficult to justify from a operational and legal point of view. ICAO conflict resolution layer makes the distinction between strategic, tactical and collision avoidance, in order to establish a certain level of management for ATS. The proposed recommendation is not reflecting operational reality.</p> <p>From a legal point of view ATS has to be provided in any circumstances with the same level of safety assurance. The German BFU Recommendations after the mid air collision (Ueberlingen) listed this kind of multiple mode of operation as a contributing factor.</p>
response	<p>Partially accepted</p> <p>Section 4.2.2 has been amended to clarify the strategic and tactical resolution layers.</p> <p>The particular text proposed for deletion has been amended in line with comment 146, see response to it.</p> <p>Also note that Section 5.14.2 has been amended to indicate that all systems and information needed for the ATS provision in multiple mode of operation is to be accessible by the ATCO/AFISO from one single physical workstation.</p>
comment	<p>243 comment by: AESA/DSANA</p> <p><u>Comment</u></p> <p>What is "minimal" instances? No simultaneous operations? Only one simultaneous operation (one per aerodrome)? Sometimes during the day? In certain short periods during the day in a continuous way? Where is the limit for minimal? Again, is it a service provider's decision?</p> <p><u>Justification</u></p> <p>1st Paragraph in 4.2.2 is said that "...the instances of simultaneous aircraft movements on the different aerodromes is minimal..."</p>
response	<p>Accepted</p> <p>The text has been amended. See the response to comment 146.</p>
comment	<p>299 comment by: ENAV</p> <p><i>"It is recommended that multiple mode of operation (when provided by one ATCO/AFISO only) is mainly used when certainty exists that, based on the available traffic schedule, the instances of simultaneous aircraft movements on the different aerodromes is minimal. When operational experience is gained or further</i></p>

research/validation results become available, this recommendation may further evolve.”

First "minimal" has no definition.
More importantly, this is much too restrictive.

If this paragraph is left with the wording the way it is i.e. *“simultaneous aircraft movements on the different aerodromes is minimal”*

Any ANSP would be limited in conducting any further trials on simultaneous aircraft control not to even mention prevent any progress towards Full Operation

The IAA Large Scale Demonstration LSD 02.04 Final Report ed 00.02 para 5.4.3.1 Multiple Airport Simultaneous Aircraft Operations went into a lot of detail on the definition of the word simultaneous which is important when prescribing guidelines for the simultaneous control of two or more aircraft.

e.g. two aircraft on the frequency, one on a taxiway at airport A and one on a 5 mile final for airport B is simultaneous control of two aircraft which we are sure the majority would accept is a safe and manageable situation.

With that point accepted we can then talk about what is manageable from a simultaneous point of view and that is what the IAA has concluded in their report.

ENAV suggestion:

Replace with *“It is recommended that the probability of instances of simultaneous aircraft movements on the different aerodromes, based on the available traffic schedule and the available statistics regarding VFR and IFR traffic on the different aerodromes, is carefully assessed and taken into account in the safety assessment and CONOPS before implementing multiple mode of operation.”*

response Partially accepted

See the response to comment 146.

comment 300

comment by: ENAV

“Normal ATCO working practices will allow the levels of simultaneous aircraft movements between aerodromes to be kept manageable, through the use of existing procedures and own judgement (delaying incoming traffic or holding aircraft at one aerodrome on ground while a landing/take-off at the other is handled). However, it should be noted that AFISOs cannot use such procedures. However, some form of advanced planning between the RTM and the wider ATC network may help to smooth the flow, especially for IFR traffic.”

This sentence is perfect and is not in line with the paragraph immediately above which imposes a “minimal” instance of occurrences.

To demonstrate this exact point Extract from the IAA report paragraph 5.4.3.1 the IAA concluded

*“In a Multiple Airport Simultaneous Operations (MASO) environment and **with two simultaneous arrivals into two different airports** ideally the first landing aircraft should be steady on the Runway before the second arrival aircraft is 1NM from touchdown at the other aerodrome. Meeting this guideline has been identified as*



difficult and it could be the case that this guideline would not be accomplished due to the varying speeds of the two aircraft on final approach. Any such recommendation when implemented in the future would be supported by an additional caveat which should give the Controller the authority to exercise professional judgement with regard to the issuance of a landing clearance to the second arriving aircraft. “

One of the key areas of the IAA trial was to determine the distance between two arrival aircraft in a multiple environment. This guideline distance could be made greater or reduced by procedure. When IAA wrote this section they were also conscious that this recommended distance could be achieved by the upstream Radar service OR standard Tower Controller practises such as orbit at designated point etc.

ENAV Suggestion

Keep this section as is and recommend modifying the first paragraph as indicated above.

response Accepted

See the responses to comments 146 and 202.

comment 358

comment by: CANSO

“It is recommended that multiple mode of operation (when provided by one ATCO/AFISO only) is mainly used when certainty exists that, based on the available traffic schedule, the instances of simultaneous aircraft movements on the different aerodromes is minimal. When operational experience is gained or further research/validation results become available, this recommendation may further evolve.”

First "minimal" has no definition.
More importantly, this is much too restrictive.

If this paragraph is left with the wording the way it is i.e. *“simultaneous aircraft movements on the different aerodromes is minimal”*

Any ANSP would be limited in conducting any further trials on simultaneous aircraft control not to even mention prevent any progress towards Full Operation

The IAA Large Scale Demonstration LSD 02.04 Final Report ed 00.02 para 5.4.3.1 Multiple Airport Simultaneous Aircraft Operations went into a lot of detail on the definition of the word simultaneous which is important when prescribing guidelines for the simultaneous control of two or more aircraft.

e.g. two aircraft on the frequency, one on a taxiway at airport A and one on a 5 mile final for airport B is simultaneous control of two aircraft which we are sure the majority would accept is a safe and manageable situation.

With that point accepted we can then talk about what is manageable from a simultaneous point of view and that is what the IAA has concluded in their report.

CANSO suggestion:

Replace with *“It is recommended that the probability of instances of simultaneous aircraft movements on the different aerodromes, based on the available traffic schedule and the available statistics regarding VFR and IFR traffic on the different*



	<p><i>aerodromes, is carefully assessed and taken into account in the safety assessment and CONOPS before implementing multiple mode of operation."</i></p>
response	<p>Partially accepted</p> <p>See the response to comment 146.</p>
comment	<p>359 comment by: <i>CANSO</i></p> <p><i>"Normal ATCO working practices will allow the levels of simultaneous aircraft movements between aerodromes to be kept manageable, through the use of existing procedures and own judgement (delaying incoming traffic or holding aircraft at one aerodrome on ground while a landing/take-off at the other is handled). However, it should be noted that AFISOs cannot use such procedures. However, some form of advanced planning between the RTM and the wider ATC network may help to smooth the flow, especially for IFR traffic."</i></p> <p>This sentence is perfect and is not in line with the paragraph immediately above which imposes a "minimal" instance of occurrences.</p> <p>To demonstrate this exact point Extract from the IAA report paragraph 5.4.3.1 the IAA concluded</p> <p><i>"In a Multiple Airport Simultaneous Operations (MASO) environment and with two simultaneous arrivals into two different airports ideally the first landing aircraft should be steady on the Runway before the second arrival aircraft is 1NM from touchdown at the other aerodrome. Meeting this guideline has been identified as difficult and it could be the case that this guideline would not be accomplished due to the varying speeds of the two aircraft on final approach. Any such recommendation when implemented in the future would be supported by an additional caveat which should give the Controller the authority to exercise professional judgement with regard to the issuance of a landing clearance to the second arriving aircraft. "</i></p> <p>One of the key areas of the IAA trial was to determine the distance between two arrival aircraft in a multiple environment. This guideline distance could be made greater or reduced by procedure. When IAA wrote this section they were also conscious that this recommended distance could be achieved by the upstream Radar service OR standard Tower Controller practises such as orbit at designated point etc.</p> <p>CANSO Suggestion</p> <p>Keep this section as is and recommend modifying the first paragraph as indicated above.</p>
response	<p>Accepted</p> <p>See the responses to comments 146 and 202.</p>
comment	<p>385 comment by: <i>René Meier, Europe Air Sports</i></p> <p>4.2.2. Simultaneous aircraft movements on different aerodromes page 26/92</p>



response	<p>We focused on the GA-typical operations conditions, we think these were a bit neglected throughout entire text proposals, so on page 26/92 in 4.2.2 Simultaneous aircraft movements on different aerodromes where we find "based on the available traffic schedule". Please clarify what is meant by "available traffic schedule".</p> <p>Rationale: "schedule" as used here is in our view a misleading term.</p> <p>Question: Who will allocate priorities? And: What about operationally imposed delays in a world where we find sayings like "hundreds of thousands of seconds of delays"?</p> <p>Partially accepted</p> <p>The text has been amended to read 'expected traffic' instead of scheduled traffic.</p> <p>Priorities of non-planned/non-scheduled traffic are to be set as in conventional tower operations.</p>
comment	<p>510 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>ETF acknowledges that it is easier for ATCOs than it is for AFISOs to reduce the number of simultaneous aircraft movements. However, we consider that the aerodrome controller cannot manage efficiently the IFR traffic so as to minimise this. It requires the approach controller to also take a part in a coordinated process which is difficult to establish (especially as the traffic density grows) without additional tools that do not exist yet. Furthermore, when the frequencies are not coupled, how may an ATCO get an aircraft to hold while he is dealing with another aerodrome and its associated traffic?</p> <p>During the drafting process, ETF suggested to include the following: 'However, to date, no technical tool to sequence traffic on different aerodromes in order to minimize the instances of simultaneous aircraft movements is available.'</p>
response	<p>Not accepted</p> <p>Coordination with adjacent sectors (approach/TMA) is already common practice/normal procedures and part of the day-to-day job, e.g. via (tools) aeronautical fixed service (telephone/interphone) or via ATC system coordination. Traffic sequencing may e.g. be based on ATS surveillance data (air situational displays) or position reports from pilots. See also the responses to comments 202 and 807.</p>
comment	<p>511 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>"It is essential that multiple mode of operation (when provided by one ATCO/AFISO only) is mainly used when certainty exists that, based on the available traffic schedule, the instances of simultaneous aircraft movements on the different aerodromes is minimal. It is essential that due cognisance is taken of the impact of</p>

	<p>VFR traffic at an aerodrome and the complexity this can add to the provision of the remote service.</p> <p>[...]</p> <p>The ATS provider shall establish procedures to manage capacity peaks or high ATCO/AFISO workload for any other reason.</p> <p>[...]</p> <p>All mechanisms implemented shall be validated, approved (by the competent authority) and documented in the operations manual (as specified by COMMISSION IMPLEMENTING REGULATION (EU) No 1035/2011 [3] Annex I, Chapter 3.3 'Operations manuals')²⁵."</p> <p>There is no good reason as to why EASA should accept the potential scenario that a multiple mode of operation will occur under conditions directly contravening its own guidelines, all be they guidelines that are 'soft', and specifically where in the same paragraph it states 'the results of the validation exercises performed so far [...] show that the multiple mode of operation can be applied for the simultaneous provision of ATS to two low density aerodromes (as described by SESAR) by a single ATCO/AFISO'.</p>
response	<p>Partially accepted</p> <p>The impact of different types/characteristics of traffic at an aerodrome, VFR traffic included, is covered by Guidelines Section 4.3.2.</p> <p>The first two paragraphs of Section 4.2.2 have been amended in line with comments 146, 202 and 385. Furthermore, the initial wording 'it is recommended' has been amended in line with the 'should principle' of the Guidelines, in order to emphasise the importance of the message. The amended text now also considers the <u>impact</u> of simultaneous aircraft movements (not only their existence/probability).</p>
comment	<p>665 comment by: ATCEUC</p> <p>While the impact both of VFR and IFR traffic cannot be evaluated in due time for the provision of services (IFR traffic can fill the flight plane with short advance, sometime really short and VFR are often exempted from this) the statement seems to be a kind of nonsense: should we admit multiple mode of operation is always safe, in every condition and amount of traffic, or not? An indication of manageable traffic in multiple scenario is tricky since an unusual situation could happen which could result in managing more traffic than expected!</p>
response	<p>Noted</p> <p>It is not clear which statement/segment the comment refers to. Nevertheless, Section 4.2.2 has been amended. See comments 146, 147, 202, 385, 494, 511 and their responses.</p> <p>See also second paragraph of Section 4.2 and the third paragraph of Section 4.2.2..</p>
comment	<p>701 comment by: ACR AB</p>

response	<p>Multiple operations should mainly be allowed when it is safe enough and that the possibility for simultaneous movements at the two airports is minimal. Will there be any difference between air movements and ground movements? For instance, will it be allowed with aircraft on final approach at one airport and simultaneous snow sweeping on the other airport?</p> <p>Noted</p> <p>It is the responsibility of the ATS provider to define the suitable operational circumstances/scenarios, as well as to provide sufficient evidence for an acceptable level of safety. The implementation is subject to a local safety assessment, in accordance with the procedures accepted by the relevant competent authority. EASA does not see any problem/challenge with the specific example given in the comment.</p> <p>Note that:</p> <ul style="list-style-type: none"> — Section 4.2.2. has been amended (see comments 146, 202, 385 and 511); and — Section 6.1. has been clarified (see comment 492).
comment	<p>702 comment by: DACTCA</p> <p>When taking actions to delay or postpone traffic, it must be ensured, that the required actions, doesn't increase the controllers workload. Holding an aircraft on the ground, will cause increase workload with flight plans. The overall workload must be lowered, with the actions taken. This has to be ensured in the established procedures.</p> <p>Also the procedures established to manage capacity, or when to open additional positions, should be clearly defined, and there should be no doubt about liability. If the procedures are not well designed, and maintained, the controllers must be free from any liability, pushing this on to the ANSPs and/or NSAs</p> <p>To date we have seen trials where everything has been sterile and timed to perfection like a clockwork. We need to see how multiple simultaneous works when things are business as usual, or even when things go differently than expected.</p>
response	<p>Noted</p> <p>Part of this comment is already covered by Section 4.2.2 (the paragraph starting with 'The ATS provider should establish procedures...'). Concerning liability, see the response to comment 348.</p>
comment	<p>714 comment by: SINCTA</p> <ol style="list-style-type: none"> 1. It is recommended that multiple mode of operation (when provided by one ATCO/AFISO) is mainly used when certainty exists that, based on the available traffic schedule, the instances of simultaneous aircraft movements on the different aerodromes is minimal" – SINCTA's opinion: This statement is purely theoretical and fails to address emergency and contingency mode of operation. An abnormal/emergency situation may require increased focus from the ATCO on the operation of one of the aerodromes, which will possibly drive to a situational awareness loss regarding the other aerodrome,

	<p>which will in turn give rise to higher safety risks. Contingency rules must exist and be contemplated in all modes of operation. SINCTA fails to see this in this NPA.</p>
response	<p>Noted</p> <p>Handling of abnormal/emergency situations is covered by Section 5.14.1.1.</p>
comment	<p>717 comment by: DTA</p> <p>Minimal contained in the following sentence is not defined and the guideline seems too restrictive: "It is recommended that multiple mode of operation (when provided by one ATCO/AFISO only) is mainly used when certainty exists that, based on the available traffic schedule, the instances of simultaneous aircraft movements on the different aerodromes is minimal."</p> <p>DGAC proposes to replace the sentence with: "It is recommended that the probability of instances of simultaneous aircraft movements on the different aerodromes, based on the available traffic schedule, is carefully assessed and taken into account in the safety study and CONOPS before implementing multiple mode of operation."</p>
response	<p>Partially accepted</p> <p>See the response to comment 146.</p>
comment	<p>752 comment by: Avinor Air Navigation Services (Avinor Flysikring AS)</p> <p>Page No: 26 Paragraph No: 4.2.2</p> <p>Comment #1: We find this recommendation to be very restrictive and thus proposing very hard limitations.</p> <p>Justification: The knowledge we have from providing ATC to two parallell RWYs from one collapsed TWR sector indicates that traffic levels way above minimal can be reached with the right training and equipment.</p> <p>Comment #2: With reference to the comment above, the reference to the validation report from Ireland is given a much too positive framing when saying 'particularly useful guidance...'</p>
response	<p>Accepted</p> <p>In response to 'Comment #1': Section 4.2.2 has been amended — see comments 146, 147, 202, 385, 511 and their responses.</p> <p>In response to Comment #2: The reference to the SESAR demonstration report has been transferred into a 'Note', not anymore using the wording 'particularly useful'.</p>



comment	791	comment by: UK CAA
	<p>Page No: 26</p> <p>Paragraph No: 4.2.2, Simultaneous aircraft movements on different aerodromes - General Comment</p> <p>Comment: Recently published SESAR Validation trials at Budapest would seem to have exceeded this provision with 3 airports working traffic at a rate of 30 per hour (<u>Validation 3 airports</u>). EASA are asked to reconsider the validity and appropriateness of the comment as presented.</p>	
response	<p>Partially accepted</p> <p>Section 4.2.2. has largely been redrafted based on the inputs of comments 67, 145, 146, 202, 385 and 511.</p> <p>It is acknowledged that continued research is ongoing within SESAR 2020 and that several validation activities have already been conducted. However, results from these activities are not yet published. Nevertheless, the first paragraph of Section 4.2 has been amended to include a reference to these ongoing SESAR 2020 activities, and Section 4.2.6 has been slightly amended to reflect better the current situation and possible developments.</p>	

3.1. Draft guidelines - 4.2.3. Aerodrome switching under multiple mode of operation	p. 27
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comment	244	comment by: AESA/DSANA
	<p><u>Comment</u></p> <p>Is any condition established for doing all the changes under this paragraph? Or is it left to provider's decision?</p> <p><u>Justification</u></p> <p>This point addresses different possibilities to switch or change service provision for aerodromes.</p>	
response	<p>Partially accepted</p> <p>The procedure needs to be developed and defined by the ATS provider subject to traffic demands or other operational or technical circumstances. The text of Section 4.2.3 has been amended and extended for clarification.</p>	
comment	512	comment by: European Transport Workers Federation - ETF
	<p>ETF proposed to add this in the drafting of the NPA: 'As described in 3.2, this type of use case is demanding especially in terms of mental resources for the ATCO/AFISO. Extra care is recommended when assessing such a use case.'</p>	
response	<p>Noted</p>	

This aspect is covered by the last segment of Section 6.2.1 together with new text in Section 4.2.3. (see response to comment 244).

3.1. Draft guidelines - 4.2.4. Service provision in multiple mode of operation

p. 27

comment 47 comment by: GdF

Technical University Berlin has conducted a study that has shown that ATCOs are prone to lose situational awareness in a multiple Airport Control Concept.

https://www.researchgate.net/publication/263921588_Challenges_of_Multiple_Airport_Control_Experimental_Investigation_of_a_Multiple_Airport_Control_Concept

response Noted

The report referenced in this comment is not publicly available. EASA has requested access to the report without success; hence, it has not been possible to review the material. However, based on the abstract of the report, available on the provided web link, it seems that the results from the study are rather positive.

SESAR results* and continued ongoing SESAR validations** as well as initiatives undertaken by individual ATS providers within EASA Member States indicate that multiple mode of operation can be feasible.

** The concept of multiple mode of operation has been studied and validated, e.g. within SESAR, for many years – both in the context of ATC and AFIS. The results are clear — multiple mode of operation can be provided in a safe manner for the operational scenarios that have been tested, refer to SESAR Solution #52 ('Remote tower for two low-density aerodromes', published late 2015).*

*** Continued research is ongoing within SESAR 2020, evaluating the multiple mode of operation concept for more challenging operational context/environments (i.e. higher traffic volumes and increased number of simultaneous aerodromes).*

comment 203 comment by: IFATCA

delete paragraph

Multiple mode of operation has to serve the operational concept of the airport and not the other way around.

Further DLR conducted a study

https://www.researchgate.net/publication/263921588_Challenges_of_Multiple_Airport_Control_Experimental_Investigation_of_a_Multiple_Airport_Control_Concept where it is outlined that ATCOs are losing situational awareness confronted with too many different services provided.

response Not accepted



The text presents pure facts.

comment 513 comment by: *European Transport Workers Federation - ETF*

"Regarding the type of ATS provision, what has been validated for multiple mode of operation is the combination of aerodromes where the same service type is provided (e.g. ATC+ATC or AFIS+AFIS). Hence, no known experience exists and no related recommendations can be given at this point regarding mixed ATC and AFIS in multiple mode of operation" **and therefore shall not occur.**

Without any guidance, EASA must ensure such an operation does not occur. Furthermore, the readability by airspace users would be impaired.

response Not accepted

EASA does not see any need to amend the text. It is the responsibility of the ATS provider to define the suitable operational circumstances/scenarios, as well as to provide sufficient evidence for an acceptable level of safety. Any implementation is subject to a local safety assessment, in accordance with the applicable regulations and the procedures accepted by the relevant competent authority.

comment 582 comment by: *HIAL*

Mixed modes of ATC/AFIS will not gain approval by the UK CAA during promulgated ATC hours without prior approval of the aircraft operator (for AFIS training purposes etc). AFIS is normally provided out of hours on a call out basis in support of Emergency Operations.

response Noted

3.1. Draft guidelines - 4.2.5. Recommended implementation and transition steps

p. 27

comment 245 comment by: *AESA/DSANA*

Comment

Is the mentioned "safety evaluation" the "local safety assessment" mentioned in previous chapters? In such a case, the same nomenclature should be used.

Justification

Keeping coherence through the document and avoiding confusion.

response Accepted

The text has been amended.

comment 584 comment by: *HIAL*



	Agreed. HIAL ATM Strategy is based on initial single mode implementation followed by multi-mode operation, with multi-mode combinations identified as part of an assessment process.
response	Noted

3.1. Draft guidelines - 4.2.6. Possible developments of multiple mode of operation

p. 27

comment	112 comment by: Naviair
	As stated in 4.2.1 “it should be noted that validation results have revealed that the total traffic level and complexity potentially has a greater impact on ATCO/AFISO workload than the number of aerodromes to which services are being provided” Safety assessment, taking traffic density, complexity and other local factors into account, should decide the suitable number of simultaneous airports.
response	Partially accepted See the response to comment 111.

comment	585 comment by: HIAL
	A reference to NPA Para 4.2.1 in terms of basic and advanced equipage should be added. Multi-mode operations should benefit from identical technical configuration and support function where possible.
response	Accepted The reference to 4.2.1 has been added.

3.1. Draft guidelines - 4.3. Common aspects applicable to both single and multiple mode of operation

p. 28

comment	417 comment by: skyguide Compliance Management
	the predictability element, which is one of the most important, is missing to successfully implement multiple operations.
response	Noted Refer to Guidelines Section 4.2.2. (which has been redrafted — see comments 146, 147, 202, 385, 511, 752, 807 and the responses to them).
comment	421 comment by: Martin Ryff
	Para 4.3. contains key elements, which must be taken into consideration to guarantee safe remote tower operations; the format of guidelines only for these aspects is neither satisfactory nor appropriate. It is therefore necessary for EASA



response

to come up with binding rules. Otherwise the success of remote tower operations will be compromised.

Noted

The reasons for the chosen regulatory level/approach are primarily the following:

- Requirements on aerodrome ATS (ATC/AFIS) provision already exist (ICAO, EU and national level) and are (still) applicable.
- Requirements related to the assessment of changes to functional systems and their oversight already exist (Regulations (EU) Nos1034/2011 and 1035/2011, and Regulation (EU) 2017/373, supplemented by an extensive set of AMC & GM to support ATS providers and their competent authorities.) and are (still) applicable.
- A stand-alone 'Guidance Material' document is therefore chosen in order to support the fulfilment of the above-mentioned requirements/regulations in a remote aerodrome ATS environment and in order to provide a single source of information encompassing all aspects. The only exception is the qualification and training of ATCOs, for which EASA has chosen to provide separate AMC and GM to Regulation (EU) 2015/340.

3.1. Draft guidelines - 4.3.1. Airspace and traffic circuit characteristics

p. 28

comment

386

comment by: *René Meier, Europe Air Sports*

4.3.1. Airspace and traffic circuit characteristics
page 28/92

We think there are too many "should" used to describe the final outcome of the rulemaking, one example: 4.3.1 Airspace and traffic circuit characteristics: No question, these characteristics **must be taken into account**, a should only will lead to poor procedures designs, and the mix of traffic (VFR-IFR, lighter-heavier aircraft, CAT vs all sorts on non-CAT...) **must be taken into account**.

Rationale:

Anything else is not acceptable. Why do I insist? I was project manager of "IFR without ATC" now operational at Grenchen/Switzerland (LSZG), where we were confronted with all sorts of "should/would/could" and "may". Very early in the preparation process we realised that only crystal-clear provisions create levels of safety required, even at an aerodrome with no CAT-ops.

Please look again at 4.3.1 ... 4.3.5, in my view these wordings are not consistent.

response

Noted

In accordance with the EU/EASA regulatory convention/policy, the use of 'shall' is reserved for the implementing rules — it cannot be used in AMC/GM/guidelines. The aim is to support ATS providers and their competent authorities to achieve an



acceptable level of safety through the implementation of these guidelines. This aim is achievable also through the use of the word 'should'.

Furthermore, the reasons for the chosen regulatory level/approach are primarily the following:

- Requirements on aerodrome ATS (ATC/AFIS) provision already exist (ICAO, EU and national level) and are (still) applicable.
- Requirements related to the assessment of changes to functional systems and their oversight already exist (Regulations (EU) Nos 1034/2011 and 1035/2011, and Regulation (EU)2017/373, supplemented by an extensive set of AMC & GM to support ATS providers and their competent authorities) and are (still) applicable.
- A stand-alone 'Guidance Material' document is therefore chosen in order to support the fulfilment of the above-mentioned requirements/regulations in a remote aerodrome ATS environment and in order to provide a single source of information encompassing all aspects. The only exception is the qualification and training of ATCOs, for which EASA has chosen to provide separate AMC and GM to Regulation (EU) 2015/340.

comment

407

comment by: NATS

4.3.1

Why? What is different between a remote service vs a conventional one?

Suggested resolution

Remove – or reword to make clear intent – the 4.3 section would be better worded to reflect that the considerations are around what/how the Digital tower could be deployed to improve/change existing issues, rather than how it infers there may be problems implementing one in some cases.

response

Partially accepted

The content of Section 4.3.1 is deemed to be useful information, as it is part of the operational environment and therefore part of the safety assessment. However, Section 4.3.1 has been amended to highlight that airspace characteristics are of the same consideration for both remote and conventional towers.

comment

703

comment by: DACTCA

Great care must be taken to ensure that no confusion would arise on either side of the microphone as a result of similar names/definitions when working different positions.

response

Noted



comment	729	comment by: <i>The Norwegian Air Sports Federation</i>
	Please see NLF's comment (# 724) regarding the need to switch controlled or AFIS airspace "on" and "off", depending on when traffic in need for ATS will be present.	
response	Noted	
	See the response to comment 724.	

3.1. Draft guidelines - 4.3.3. Aerodrome environment

p. 28

comment	756	comment by: <i>European Cockpit Association</i>
	<p>“Aerodrome environment”</p> <p>Depending on the airport layout and and the operational environment, it might necessary for ATC to provide additional information to pilots outside of its jurisdiction. This could include information on vehicles, weather occurrences (flooding, snowbanks) or other important factors even outside of the manoeuvring area that can have implications on the safe operation of aircraft or ground personnel.</p>	
response	Accepted	
	Section 4.3.3 has been amended to expand the description of the aerodrome environment to include also ‘natural phenomena’. Furthermore, Section 5.2.3 has been extended to include additional potential operational needs/requirements for the visual surveillance system, partially based on the inputs provided in this comment.	
comment	849	comment by: <i>air traffic controller</i>
	Traffic characteristics is not only the mix of aircraft (IFR+VFR). The ATCO’s workload also includes interphone, telephone and calls from UHF(vehicles). Birds and weatherconditions included.	
response	Noted	

3.1. Draft guidelines - 4.3.4. Local weather characteristics

p. 28

comment	514	comment by: <i>European Transport Workers Federation - ETF</i>
	<p>"Local weather/climate factors are another critical aspect to take into account when assessing the impact that the implementation of the concept may have on the aerodrome operations and/or ATS provision.</p> <p>[...] ANSPs shall assess these factors and include in local training.</p> <p>By its own admission, given that weather and climate factors are critical, they must be included in any operation or procedure.</p>	



response	<p>Partially accepted</p> <p>The comment is accepted with regard to the inclusion of local weather characteristics in the local training. A new item has been introduced under GM3 ATCO.D.060(c) 'Unit endorsement course' to cover this aspect.</p>
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3.1. Draft guidelines - 4.3.5. ATCO/AFISO's role	p. 28
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comment	<p>516 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>The operational responsibilities are closely linked to the operational context and the ability to split it for example, so, even if we agree that the difference between ATCO/AFISO's responsibilities in conventional towers and remote towers should be kept as low as possible to better manage it, we cannot support indication that there is none.</p> <p>Regarding ATSEPs, we would like it to be stated that the remote tower set-up both in the RTC and on the aerodromes should be maintained by ATSEPs.</p>
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response	<p>Partially accepted</p> <p>Chapter 4 of the Guidelines addresses primarily the operational aspects of 'remote aerodrome ATS', and Section 4.3.5 explicitly deals with ATCO/AFISO roles and responsibilities. The qualification and training of ATSEPs is addressed in Guidelines Section 10.3. Furthermore, it should be noted that discussions are ongoing within the framework of the EASA regular update activity of Regulation (EU) 2017/373 Annex XIII (Part-PERS) Subpart A (ATSEP).</p> <p>The following amendments have been introduced to address partially your comment:</p> <ul style="list-style-type: none"> — Section 4.3.5 has been amended to more clearly reflect that the ATCO/AFISO ATS responsibilities are to be the same from a remote tower as from a conventional tower. — An introductory text to Chapter 10 has been introduced to highlight that, in line with Regulation (EU) No 1035/2011 and Regulation (EU) 2017/373, all personnel involved in the operation and maintenance of facilities, installations and equipment enabling and supporting the remote aerodrome ATS is to be adequately trained, qualified and competent.
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comment	<p>586 comment by: <i>HIAL</i></p> <p>The view that ATS responsibilities will remain unchanged supports the licensing and training guidance at NPA Section 10 and as covered by additional AMC and GM to EU2015/340.</p>
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response	Noted
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comment	667	comment by: ATCEUC
	<p>4.3.5. Nevertheless, the ATCO's/AFISO's ATS responsibilities should remain the same as if the service would be provided from a conventional tower.</p>	<p>Nevertheless, the ATCO's/AFISO's ATS responsibilities shall remain the same as if the service would be provided from a conventional tower</p>
		<p>New technologies can lead to unexpected legal consequences for ATCOs/AFISOs. Clearly indicating that the responsibilities shall remain the same will help to reduce those consequences.</p>
response	<p>Partially accepted</p> <p>Section 4.3.5 has been amended to more clearly reflect that the ATCO/AFISO ATS responsibilities are to be the same from a remote tower as from a conventional tower, depending on the type of service provided.</p>	

3.1. Draft guidelines - 5. Operational and system considerations

p. 29

comment	205	comment by: IFATCA
	<p>When referring to technical and operational requirements all <i>should</i> should be replaced by <i>shall</i>. All the aspects mentioned in the chapter are essential to preserve safety and help the operator in the appropriate accomplishment of the tasks.</p>	
response	<p>Not accepted</p> <p>In accordance with the EU/EASA regulatory convention/policy, the use of 'shall' is reserved for the implementing rules — it cannot be used in AMC/GM/guidelines. EASA shares the view that many aspects in the chapter are essential to safety and therefore the aim is to support ATS providers and their competent authorities to achieve an acceptable level of safety through the implementation of these Guidelines. This aim is achievable also through the use of the word 'should'.</p> <p>Furthermore, the reasons for the chosen regulatory level/approach are primarily the following:</p> <ul style="list-style-type: none"> — Requirements on aerodrome ATS (ATC/AFIS) provision already exist (ICAO, EU and national level) and are (still) applicable. — Requirements related to the assessment of changes to functional systems and their oversight already exist (Regulations (EU) Nos 1034/2011 and 1035/2011, and Regulation 2017/373, supplemented by an extensive set of AMC & GM to support ATS providers and their competent authorities.) and are (still) applicable. 	



— A stand-alone ‘Guidance Material’ document is therefore chosen in order to support the fulfilment of the above-mentioned requirements/regulations in a remote aerodrome ATS environment and in order to provide a single source of information encompassing all aspects. The only exception is the qualification and training of ATCOs, for which EASA has chosen to provide separate AMC and GM to Regulation (EU) 2015/340.

comment 517 comment by: *European Transport Workers Federation - ETF*

"The human factors assessment (see 6.2) **as well as an assessment of social aspects** is fundamental to build this confidence and trust. "

In order to gain the trust of staff in the entire system and to maintain confidence in the direction that any ANSP/NSA decides to take the provision of aerodrome ANS, engagement with staff representatives is essential. Trust is an important driver for safe operations and service provision as supported in paragraph 5 of page 29. ETF proposes to add to this that there should be no system implementation without approval of the workers operating the system which is something that the competent authority should check.

response Accepted

The proposed text has been included.

comment 668 comment by: *ATCEUC*

The human factors assessment (see Section 6.2) is fundamental to build this confidence and trust.	These confidence and trust should go through direct involvement of personnel in the assessment itself: how is it possible to avoid hateful “cherry picking” in a clearer, more impartial and transparent procedures in choosing operative staff in assessment involvement
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response Partially accepted

The text in Guidelines Section 6.2 has been amended to include an involvement, in a proportionate manner, of the actors affected by the change. Also note that Regulation (EU) No 1035/2011 (‘Annex II, 3.2.1.(c)’) / 2017/373 (‘Annex IV, ATS.OR.205(a)(1)(i)’) already stipulates that the safety assessment related to changes to the functional system shall address/cover the human resources/human elements.



comment	<p>75 comment by: EUROCONTROL</p> <p>5.1. Remote aerodrome ATS procedural considerations - page 29</p> <p>The first recommendation, viz. 'the introduction of remote aerodrome ATS should be transparent to airspace users' is ambiguous. On one hand the recommendation refers to Regulation 1035/2011 within the framework of which ANSPs should publish the conditions of access to their services and regularly conduct consultations , and on the other hand, the NPA document includes a question to stakeholders (on page 9) whereby their answer could well recommend to ATCO/AFISO not to communicate to the pilot that his/her flight is under remote aerodrome ATS provision. The EUROCONTROL Agency is of the opinion that the first recommendation of section 5.1. should be therefore clearer on the transparency requirement.</p>
response	<p>Accepted</p> <p>The text has been expanded for clarity and moved to Chapter 8.</p> <p>Chapter 9 stipulates that information about remote aerodrome ATS should be provided in AIP, thereby ensuring the information to airspace users. The question included in the NPA was asked to collect stakeholders' feedback/view on whether there was deemed to be a need to indicate the remote provision also in the radio communication.</p>
comment	<p>247 comment by: AESA/DSANA</p> <p><u>Comment</u></p> <p>1st bullet addresses transparency to airspace users, and includes a reference to paragraph 8.2 in Annex I of Regulation 1035/2011. The correct reference should be point 8.1 in Annex I.</p>
response	<p>Accepted</p> <p>Corrected. (Note that this bullet has been moved to Chapter 8 — see the response to comment 75.)</p>
comment	<p>101 comment by: GdF</p> <p>Remote aerodrome ATS procedural considerations</p> <p>In a multiple mode of operation various safety critical pieces of equipment could be mixed up (crash horn for different aerodromes). Implementation of multiple mode should include a local safety assessment to avoid these mix-ups.</p>
response	<p>Accepted</p> <p>See Guidelines Section 5.14.2 (second paragraph). Additionally, a new Section 6.1.1 has been added to the Guidelines, clarifying that the safety assessment should include/cover all aerodromes and all operational modes and configurations.</p>

comment	<p>207 comment by: IFATCA</p> <p>The service provision should be uninterrupted during transfer of responsibility between RTMs</p> <p>IFATCA is opposed to any such kind of intellectual "games". If a RTM takes over a responsibility of an aerodrome control, this merits a proper NPA, as additional elements such as legal liability, technical system requirements, change of operational concepts needs to be addressed. This has never been part of any SESAR solutions and or simulation.</p>
response	<p>Not accepted</p> <p>This sentence relates to the possibility of transferring the responsibility of ATS for aerodromes between RTMs within the same RTC. This may be done due to technical (e.g. maintenance, malfunction), operational (e.g. fluctuations in traffic levels) or other reasons. As already stated in the commented bullet point, appropriate procedures should be developed and documented.</p>
comment	<p>246 comment by: AESA/DSANA</p> <p><u>Comment</u></p> <p>AESA would appreciate a commitment on the strong value of the initial Check-list (including every system) which is carried out by the ATCO/AFISO providing ATS service, prior to the start of the service.</p>
response	<p>Noted</p> <p>The comment not fully understood. The bullet starting with ‘Before initiating service provision,..’ focuses on the needed system support, not on ATCO/AFISO responsibilities, which are already regulated elsewhere (existing provisions on aerodrome ATS provision).</p>
comment	<p>301 comment by: ENAV</p> <p><i>“When ATS is provided to several aerodromes from one RTC and those aerodromes could be expected to be used by airspace users as ‘alternate aerodromes’ for each other, the ATS provider should ensure appropriate measures to avoid a situation where the use of an ‘alternate aerodrome’ for a particular flight/aerodrome is not jeopardised. Particular care should be taken with regard to an RTC potentially being a single point of failure for aerodromes which otherwise would not be interdependent. (See also Section 9 for more on this aspect.)”</i></p> <p>While we agree with the sentiment behind this section and the problem needs to be addressed. With the onset of Remote Towers it is a new problem for Aerodromes but it is a standard problem for ACCs which for many years are a “single point of failure” for the airspace. These problems are solved by redundant systems, contingency plans and contingency procedures.</p>

	<p>ENAV suggestion</p> <p>It is recommended that the wording in this section is slightly modified because looking into the future we might have a situation where there are clusters of aerodromes located in RTCs and the only solution will be either to keep one aerodrome operating at a local level just for alternate reasons OR apply other mitigations as we do for ACCs today.</p>
response	<p>Partially accepted</p> <p>The comment is accepted with regard to the notion that this situation needs to be managed by the ATS provider when setting up an RTC. However, the solutions implemented may be different from RTC to RTC and need to be defined locally. The text in Section 5.1 has been slightly amended for simplification and clarification and moved to Section 6.5 for a more appropriate document placement.</p> <p>See also comments 792 and 388 and responses to them.</p>
comment	<p>360 comment by: <i>CANSO</i></p> <p><i>“When ATS is provided to several aerodromes from one RTC and those aerodromes could be expected to be used by airspace users as ‘alternate aerodromes’ for each other, the ATS provider should ensure appropriate measures to avoid a situation where the use of an ‘alternate aerodrome’ for a particular flight/aerodrome is not jeopardised. Particular care should be taken with regard to an RTC potentially being a single point of failure for aerodromes which otherwise would not be interdependent. (See also Section 9 for more on this aspect.)”</i></p> <p>While we agree with the sentiment behind this section and the problem needs to be addressed. With the onset of Remote Towers it is a new problem for Aerodromes but it is a standard problem for ACCs which for many years are a “single point of failure” for the airspace. These problems are solved by redundant systems, contingency plans and contingency procedures.</p> <p>CANSO suggestion</p> <p>It is recommended that the wording in this section is slightly modified because looking into the future we might have a situation where there are clusters of aerodromes located in RTCs and the only solution will be either to keep one aerodrome operating at a local level just for alternate reasons OR apply other mitigations as we do for ACCs today.</p>
response	<p>Partially accepted</p> <p>See the response to comment 301.</p>
comment	<p>388 comment by: <i>Scandinavian Airlines System</i></p> <p>5.1 Airspace users need clarification regarding this matter. It is permitted to plan flights with destination and alternate aerodrome within the same RTC? Will there be any extra measures in place in case it is allowed? If adding extra fuel into the planning stage is deemed to be a mitigating measure, there will be negative impact on the environment and contribute to higher costs for airlines.</p>



response	<p>Partially accepted</p> <p>Whether or not it is possible to plan flights with destination and alternate aerodrome within the same RTC is to be published in ‘aeronautical information products and services’ (e.g. AIP and NOTAMs) based on analysis performed by the ATS provider. The text in Section 5.1 has been slightly amended for clarification and new text has been added to highlight that contingency measures are to be properly consulted and communicated with the airspace users. Furthermore, the text has been moved to Section 6.5 for a more appropriate document placement and to ensure appropriate contingency planning for RTCs.</p> <p>See also the responses to comments 301 and 700.</p>
comment	<p>669 comment by: ATCEUC</p> <p>The fifth item has to be carefully assessed. Pilots have to be clearly informed which aerodromes are provided ROT from the same RTC to avoid to use as alternate aerodromes that could be affected by the same technical contingency when this occurs into the RTC</p>
response	<p>Partially accepted</p> <p>The bullet has been introduced as part of these Guidelines to highlight the need for ATS providers to assess the risk of potentially jeopardising the use of ‘alternate aerodromes’ for a particular flight/aerodrome, and to ensure appropriate measures, as applicable. The bullet has furthermore been extended to highlight that contingency measures are to be properly consulted and communicated with the airspace users. Furthermore, the text has been moved to Section 6.5 for a more appropriate document placement and to ensure appropriate contingency planning for RTCs. Also, note that Chapter 9 stipulates that information to airspace users is to be published accordingly in the AIP for each affected aerodrome.</p>
comment	<p>757 comment by: European Cockpit Association</p> <p><i>‘Particular care should be taken with regard to an RTC potentially being a single point of failure for aerodromes which otherwise would not be interdependent.’</i> For this reason, it should be considered to not select an airport as destination alternate for the other when two airports are served by one RTC.</p>
response	<p>Noted</p> <p>The corresponding bullet in Section 5.1 has been modified for clarification. Furthermore, Section 6.5 has been expanded to emphasise that the ATS providers need to assess the feasibility of planning alternates within an RTC. As specified in Chapter 9, if the outcome of this assessment is negative, this is to be published in aeronautical information products and services (e.g. AIP and NOTAMs). Airspace users are recommended to plan accordingly. See also the response to comment 388.</p>



comment	<p>792 comment by: UK CAA</p> <p>Page No: 29 Paragraph No: 5.1, bullet 5 beginning “When ATS is provided to several...” Comment: The UK CAA is of the view that this language could be simplified and made more readily understandable. Justification: Text refinement. Proposed Text: Replace with: ‘When ATS to several aerodromes is provided from one RTC, care should be taken to ensure an RTC does not become a single point of failure for aerodromes which otherwise would not be interdependent. (See also Section 9 for more on this aspect). For example, one aerodrome at an RTC may be planned as an ‘alternate’ for destination aerodrome at the same RTC so a total failure at that RTC may mean a given flight will have no alternate available.’</p>
response	<p>Partially accepted</p> <p>The text has been modified and expanded — see the responses to comments 301 and 388. Note that the text has also been moved to Section 6.5 for a more appropriate document placement.</p>
comment	<p>518 comment by: European Transport Workers Federation - ETF</p> <p>"Such formal interfaces shall be documented in local agreements. [...] In case such tasks are to be continued to be performed by the ATS provider, following the introduction of remote aerodrome ATS, specific agreements between the ATS unit and the aerodrome operator shall be in place.³⁰ [...] Before initiating service provision, or before assuming responsibility for service provision, the ATCO/AFISO shall be able to verify the status of the aerodrome (in terms of traffic, weather situation, etc.) and its related systems and a coordination and transfer of control of operational systems should take place when needed. [...] it is essential that, insofar as possible and taking into account the potential impact of technology/HMI change from a conventional tower to that in a remote environment, RTMs within the RTC have a consistency in relation to equipment in terms of HMI to the extent possible taking into account the different aerodromes for which services are provided. "</p> <p>These are all essential to safety and must not be compromised.</p>
response	<p>Not accepted</p> <p>See the response to comment 205. The use of ‘shall’ in those instances indicated in the comment above is not supported by any requirement at implementing rule level.</p>
comment	<p>520 comment by: European Transport Workers Federation - ETF</p>



	<p>"In today's conventional tower operations, operating methods and procedures can sometimes differ between aerodromes due to local variations and practices. "</p> <p>ETF considers it is even more true when it comes to cross-border service however the NPA does not address the issues related with cross-border service provision. This is another shortcoming of this regulatory proposal.</p>
response	<p>Noted</p> <p>Cross-border ATS provision is already normal practice in Europe, including provision of aerodrome ATS, and is managed through ATS designation conditions and/or through Article 10 of Regulation (EC) 550/2004 (the so-called Service Provision Regulation).</p>
comment	<p>740 comment by: <i>Federal Aviation Administration</i></p> <p>Current Text: In today's conventional tower operations, operating methods and procedures can sometimes differ between aerodromes due to local variations and practices. When providing service to several aerodromes from an RTC, there is an opportunity to streamline and unify the operating methods and procedures for the aerodromes connected to the same RTC.</p> <p>Specific Comment: What if the local variations and practices were developed for safety purposes? Operating methods and procedures should only be streamlined safety permitting.</p> <p>Proposed Text: When providing service to several aerodromes from an RTC, there is an opportunity to streamline and unify the operating methods and procedures for the aerodromes connected to the same RTC. <u><i>Operating methods and procedures should only be streamlined if safety is not negatively impacted.</i></u></p>
response	<p>Partially accepted</p> <p>The wording ‘..there is an opportunity to streamline..’ has been amended to read ‘..there may be an opportunity to streamline..’. The local safety assessment will cover the safety aspects.</p>
comment	<p>526 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>There is an inherent contradiction between the first and the fifth item: the introduction of remote tower aerodrome is not transparent to airspace users when the freedom to select alternate aerodromes is impaired. ETF suggests to prohibit multiple mode of operations (and more generally dependence of ATS provision) for two aerodromes which are usually selected as alternate for each other.</p>
response	<p>Not accepted</p> <p>See the response to comment 669. Transparency is ensured via consultation with and information to the airspace users. Furthermore, note that this topic is not primarily</p>

related to multiple mode of operation, but to the provision of service to several aerodromes from one RTC.

comment

588

comment by: HIAL

HIAL concur with the assessment that the implementation of enhanced procedures between the RT and aerodrome operator, in the absence of an ATSA or ATCO, is critical to assuring safety overall. These procedures (or agreements) are not restricted to Safety Interfaces, task analysis or status of the aerodrome. A gap analysis of all current procedures must be analysed for weaknesses in arrangements as part of transition to RT operations, particularly multi-mode.

A reference to NPA Para 4.2.1 in terms of basic and advanced equipage should be added to augment the guidance regarding the streamlining of procedures, equipment, HMI and service provision.

response

Not accepted

The current text is deemed to sufficiently cover the aspects raised in this comment. EASA does not see the need/fit for purpose to add a reference to Section 4.2.1 (or Sections 4.1.1/4.1.4), which are already referenced from e.g. the section named 'Technical enablers for increased situational awareness'.

comment

758

comment by: European Cockpit Association

'It is recommended to unify the RTMs within the RTC in terms of HMI and equipment to the extent possible taking into account the different aerodromes for which services are provided.'

This should not be a recommendation but a requirement when considering future Multiple RTS operation.

response

Noted

The aspect raised by this comment is deemed to be covered by Section 5.14.2.

comment

759

comment by: European Cockpit Association

"When providing service to several aerodromes from an RTC, to support the flexibility of staff and RTM allocation between aerodromes, it is recommended that the RTC enables the transfer of responsibility of ATS for aerodromes between the RTMs within the RTC."

Additionally in case multiple RTCs are able to service a single airport, the relevant information is to be included in the relevant airport and AIP data sheets, as well as the time needed to transfer services from one RTC to another. Any impact this transfer would have on airport capacity (for all airports that the RTC serves) will have to be assessed.

response

Partially accepted



Section 9 specifies which information should be included in the AIP. This includes the indication that remote aerodrome ATS is provided. In addition, regulatory provisions already require contact information for ATS units be specified. With regard to the possibility of multiple RTCs serving a single airport, a new bullet has been added to Section 5.1 to address this topic explicitly.

3.1. Draft guidelines - 5.2. Visual presentation

p. 30-31

comment 17 comment by: GdF

obtained from an out-the-window view

Typo

response

Noted

The way the definition was written has been revised. This accommodates the above comment.

comment 71 comment by: DFS Deutsche Flugsicherung GmbH

The following comment is on chapters 5.2 and 5.3 in relation to the Definitions in Chapter 2:

It is understood that the “visual presentation” as defined may be gathered from components in the form of a panorama or video wall (or a combination of both) **and/or** the use of a binocular component. The view of the latter may as well be integrated in the visual presentation.

The definition of the “visual presentation system” (integration of components) supports this understanding.

However, the chapters 5.2 and 5.3 later seem to disregard this meaning.

The headlines should therefore change into: „5.2 Visual presentation – panorama function“ and „5.3 Visual presentation – binocular function“ and the significance of a PTZ, which can be used complementary with the panorama but also complementary with a non-visual ATS surveillance system (radar, MLAT, ...) should be highlighted.

In case our understanding is not correct, we suggest to clarify the definitions and chapter 5.2/5.3 exactly for the above mentioned purpose (visual presentation can be seen as a combination of the panorama and the binocular functions).

response

Not accepted

The definition ‘visual presentation-system’ has been changed to read ‘visual **surveillance** system’, to be in lined with the latest ICAO Doc 4444 (PANS-ATM) amendments. Furthermore, Sections 5.2 and 5.3 have been rearranged (e.g. Section 5.3. was merged into 5.2.) and amended to make clear the intent that a visual surveillance system comprise both a visual presentation part and a binocular functionality part. Remote aerodrome ATS implementations comprising the



binocular functionality (PTZ) part only are not foreseen. The visual presentation would be needed in order to get an overview image of the aerodrome and its vicinity. The use of a binocular functionality (PTZ) only is not deemed sufficient to enable a 'continuous watch'.

See also the response to comment 505.

comment

82

comment by: *BMVBS*

The following comment is on chapters 5.2 and 5.3 in relation to the Definitions in Chapter 2:

It is understood that the "visual presentation" as defined may be gathered from components in the form of a panorama or video wall (or a combination of both) **and/or** the use of a binocular component. The view of the latter may as well be integrated in the visual presentation.

The definition of the "visual presentation system" (integration of components) supports this understanding.

However, the chapters 5.2 and 5.3 later seem to disregard this meaning.

The headlines should therefore change into: „5.2 Visual presentation – panorama function“ and „5.3 Visual presentation – binocular function“ and the significance of a PTZ, which can be used complementary with the panorama but also complementary with a non-visual ATS surveillance system (radar, MLAT, ...) should be highlighted.

In case our understanding is not correct, we suggest to clarify the definitions and chapter 5.2/5.3 exactly for the above mentioned purpose (visual presentation can be seen as a combination of the panorama and the binocular functions).

response

Not accepted

See the response to comment 71.

comment

113

comment by: *Navair*

Should this not be stronger: May use -> Shall use the ED240 process or equivalent. It must be well documented how the particular installation needs to perform.

response

Partially accepted

Text has been amended to read '..the ATS provider ~~may~~ **should** use the process described by ED-240, **or equivalent**,..'

comment

204

comment by: *IFATCA*

obtained from an out-the-**l** window view

typo

response

Noted



The way the definition was written has been revised. This accommodates the above comment.

comment

206

comment by: IFATCA

Change proposal

~~The visual presentation may take different forms and designs depending on the specific technical solution. A common design used for implementations to date comprise a wide angle display that presents a wide field of view image (similar to the OTW view obtained from a conventional tower) derived from a central location on the aerodrome (typically a ‘camera tower’ comprising one or several cameras). This design is commonly known as a ‘panorama’ or ‘panoramic’ view. (This ‘panorama’/‘panoramic’ view may also be supported by additional ‘hot spot/gap filler’ cameras as need be.) Another design that has emerged is the so-called ‘video wall’ view, where several sensors from various locations around the aerodrome are stitched together in a combined view, hence presenting different view images from different locations around the aerodrome in a combined manner on this ‘video wall’. This set-up using a distributed camera system may e.g. be fit for use at larger multiple runway aerodromes, to support situational awareness also when distances are large.~~

The presentation must cover the most possible of 360° view from the tower.

Justification

With a 360° view, the ATCO/AFISO has a perception of airport that might be closer to the OTW tower. A wider coverage might help the transition period and adaptation from physical to remote tower environment.

That way the operator might have a permanent reference, according to his position of fixed point of the manouvering area or the ATZ.

The same references are also shared likewise by all personnel working in the same RTM.

Also, in case of 2 or more ATCOs in the same RTM (i.e. ground and tower), they need to monitor different parts of the airport at the same time and a panning tool could make this uncomfortable

response

Not accepted

The removal of text as proposed by this comment is not accepted.

Coverage requirements/needs are per default covered by Section 5.2.1 (in NPA version, Section 5.2.3 in final ED Decision version). Also note that new text has been added (in Section 5.2.1. in final ED Decision version) stating/clarifying that the purpose of the visual presentation is to provide an overview view of the aerodrome and its vicinity (area of responsibility). Binocular functionality considerations in case of several workstations/positions in the same RTM are covered by existing text in Section 5.3. (NPA version).

comment

248

comment by: AESA/DSANA



	<p><u>Comment</u></p> <p>End-to-end delay. Realize 1 sec =100 m. It should be the same delay for both sound and visual presentation.</p> <p>The visual presentation, regarding to daylight/darkness conditions, the ATCO/AFISO perception should be as close to the current situation, for the correct estimation of the true conditions by the ATCO/AFISO.</p> <p>AESA appreciates the possible advantages of the multiple displays regarding the visual information, but it would imply a lack of situational awareness where multiple windows with multiple overlaid information to cope with are open. AESA would appreciate a safety assessment on this subject.</p>
response	<p>Not accepted</p> <p>Responses to the paragraphs of this comment as follows:</p> <p><u>First paragraph:</u></p> <p>See the response to comment 25.</p> <p><u>Second paragraph:</u></p> <p>In order to be able to see better than in real life, an ATS provider may want to use cameras that deliberately do not reproduce the daylight/darkness conditions ‘as is’ at the aerodrome (e.g. infrared cameras).</p> <p><u>Third paragraph:</u></p> <p>Each ATS provider intending to implement ‘remote aerodrome ATS’ will need to perform a safety assessment according to Commission Implementing Regulations (EU) No 1034/2011[2] (oversight) and No 1035/2011 [3] (service provision). The safety assessment will need to take into account the specificities of the system being implemented. Regarding the use of multiple displays, guidelines on this can be found e.g. in Sections 5.2.4.1, 6.2.1 and 6.2.2.</p>
comment	<p>302 comment by: ENAV</p> <p>The following comment is on chapters 5.2 and 5.3 in relation to the Definitions in Chapter 2:</p> <p>It is understood that the “visual presentation” as defined may be gathered from components in the form of a panorama or video wall (or a combination of both) and/or the use of a binocular component. The view of the latter may as well be integrated in the visual presentation.</p> <p>The definition of the “visual presentation system” (integration of components) supports this understanding.</p> <p>However, the chapters 5.2 and 5.3 later seem to disregard this meaning.</p> <p>The headlines should therefore change into: „5.2 Visual presentation – panorama function“ and „5.3 Visual presentation – binocular function“ and the significance of a PTZ, which can be used complementary with the panorama but also complementary with a non-visual ATS surveillance system (radar, MLAT, ...) should be highlighted.</p>

response	<p>ENAV suggestion In case our understanding is not correct, we suggest to clarify the definitions and chapter 5.2/5.3 exactly for the above mentioned purpose (visual presentation can be seen as a combination of the panorama and the binocular functions).</p> <p>Not accepted</p> <p>See the response to comment 71.</p>
comment	<p>361 comment by: <i>CANSO</i></p> <p>The following comment is on chapters 5.2 and 5.3 in relation to the Definitions in Chapter 2:</p> <p>It is understood that the “visual presentation” as defined may be gathered from components in the form of a panorama or video wall (or a combination of both) and/or the use of a binocular component. The view of the latter may as well be integrated in the visual presentation.</p> <p>The definition of the “visual presentation system” (integration of components) supports this understanding.</p> <p>However, the chapters 5.2 and 5.3 later seem to disregard this meaning.</p> <p>The headlines should therefore change into: „5.2 Visual presentation – panorama function“ and „5.3 Visual presentation – binocular function“ and the significance of a PTZ, which can be used complementary with the panorama but also complementary with a non-visual ATS surveillance system (radar, MLAT, ...) should be highlighted.</p> <p>CANSO suggestion In case our understanding is not correct, we suggest to clarify the definitions and chapter 5.2/5.3 exactly for the above mentioned purpose (visual presentation can be seen as a combination of the panorama and the binocular functions).</p>
response	<p>Not accepted</p> <p>See the response to comment 71.</p>
comment	<p>524 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>There is no requirement/guidance on how to establish the height of the camera mast. ETF suggested the following: ‘to add a recommendation to have a minimal angle of sight over the manoeuvring area of at least 1% to the furthest point of this area.’</p>
response	<p>Partially accepted</p> <p>Although the height/location of the camera(s) will indirectly be a result of the regulatory requirements referred to in Section 5.2.1, text has been included in a new section (Section 5.2.6. in the final version published by the ED Decision) titled ‘Camera siting aspects’ which covers the need for a coordination activity between</p>



the ATS provider and the aerodrome operator in order to establish the appropriate location and height of cameras.

comment 527 comment by: *European Transport Workers Federation - ETF*

"video wall view, where several sensors from various locations around the aerodrome are stitched together in a combined view"

The current video wall type of presentation does not stitch together images from multiple sources, it presents it in a juxtaposed manner. ETF considers it is important to have hard-law type of regulation about what is mandatory to see on the aerodrome with a remote tower setup.

response Partially accepted

The wording has been adjusted. Concerning 'what is mandatory to see', refer to Guidelines Sections 5.2.1 (primarily), 5.2.2 and 5.2.3.

comment 793 comment by: *UK CAA*

Page No: 30

Paragraph No: Last paragraph

Comment: We believe it is inappropriate to state that "the visual presentation is based on a visible spectrum sensor-based solution". EASA has previously – and appropriately - stated that thermal or infrared is a non-visible spectrum but the NPA refers in section 3.5 to "use of infrared cameras outside of the visible spectrum". UK CAA believes that this means that the primary means of capturing the replicated image on the visual presentation system is via optical camera sensors.

The term "visual cameras" should more correctly read "cameras"; the term is considered too vague and all cameras are 'visual' regardless of the spectrum(s) in which they operate

Justification: Need for more precise text.

Proposed Text: Amend to read:

"For the purposes of this document, it is assumed that the video image displayed on the visual presentation is primarily based on an optical sensor-based solution (where cameras in the visible spectrum capture the image at the aerodrome and the image is relayed to the ATCO's/AFISO's screens), possibly enhanced by optical sensors from the non-visible spectrum, such as thermal or infrared etc."

response Partially accepted

The text has been amended for clarification, now including a notion that visible spectrum sensors/cameras is assumed to be the **primary** (but not only) type of cameras/sensors. Note that EUROCAE ED-240A describes 'optical sensors' as being the global term, encompassing visible spectrum sensors as well as beyond visible spectrum sensors. Thus EASA is using the term 'optical' with this global meaning, and using the language visible/non-visible (or beyond visible) spectrum when there is a need to differentiate/specify between the two.



comment	850	comment by: <i>air traffic controller</i>
	Every object in the Visual presentation seems much smaller than irl. The PTZ in this case is not the solution. Methods have likely to be changed to fit the system.	
response	Noted	
	See the text in third paragraph of Guidelines Section 5.2, stating that the visual surveillance system needs to support the operational requirements specific to every remote aerodrome ATS implementation.	

3.1. Draft guidelines - 5.2.1. Primary regulatory requirements

p. 31-32

comment	408	comment by: <i>NATS</i>
	This ICAO text is due to be changed.	
	<u>Suggest</u> - flag that this text needs to be updated	
response	Accepted	
	The text has been updated in line with the latest ICAO Doc 4444 amendments.	

comment	523	comment by: <i>Heathrow airport</i>
	We propose that the requirements should refer back to the local hazards and local operational and safety requirements in order to provide safe service, which would identify the areas to survey and suitable methods for survey which may be different at each site.	
response	Not accepted.	
	Operational needs and requirements on the visual surveillance system are deemed to be sufficiently covered by Section 5.2, with its subsections.	

comment	528	comment by: <i>European Transport Workers Federation - ETF</i>
	"As these guidelines provided in Doc 9426 may be valid in the case of a single centrally located camera tower installation at an aerodrome, they may on the other hand not be relevant in the case of a visual presentation system comprising several camera installations on various locations around the aerodrome."	
	The NPA does not provide any guidance on the case of a visual presentation system comprising several camera installations on various locations around the aerodrome. This is another shortcoming of this NPA.	
response	Noted	
	Sections 5.2.1, 5.2.2, 5.2.3 and 5.2.4. are applicable regardless of the technical setup.	



3.1. Draft guidelines - 5.2.2. Regulatory requirements indirectly related to the visual presentation

p. 32-33

comment	<p>99</p> <p style="text-align: right;">comment by: <i>ISAVIA ohf.</i></p> <p>Item 5.2.2 page 32 refers to PANS-ATM Chapter 7.1.1.1 which states that; ‘Aerodrome control towers shall issue information and clearances to aircraft under their control to achieve a safe, orderly and expeditious flow of air traffic on and in the vicinity of an aerodrome with the object of preventing collision(s) between: e) aircraft on the manoeuvring area and obstructions on that area.’</p> <p>PANS-ATM 7.4.1.4.1. states that: „Animals and flocks of birds may constitute an obstruction with regard to runway operations.“ And PANS-ATM 7.5.2 states that: „Essential information on aerodrome conditions shall include information relating to the following: f) other temporary hazards, including parked aircraft and birds on the ground or in the air;“.</p> <p>Birds that land close to the runway can be difficult or impossible to see with the naked eye and probably even more difficult with cameras only. If the ATCO does not see where a flock of birds lands because he is switched to another airport, it may be difficult for him to see the birds once he switches to that airport and therefore he will have little possibility to warn aircraft of the flock of birds or have ground staff scare them away.</p> <p>The NPA should give possible solutions to this potential problem.</p>
response	<p>Accepted</p> <p>The ICAO provisions mentioned in this comment have been added. Concerning the detection of birds/flocks of birds, the SESAR validations have shown ‘visual tracking’ to be a useful tool to support this. This information was added in a ‘Note’.</p>
comment	<p>525</p> <p style="text-align: right;">comment by: <i>Heathrow airport</i></p> <p>We agree that local cases should set the requirements. Further guidance would be welcomed as to <i>how</i> to determine the sizes of visual obstructions that should be able to be identified. Setting standardised methods may provide further safety assurance for deployments across Europe.</p>
response	<p>Noted</p> <p>Such aspects are partially covered by EUROCAE ED-240A.</p>
comment	<p>529</p> <p style="text-align: right;">comment by: <i>European Transport Workers Federation - ETF</i></p> <p>"Hence, it shall be considered, as part of the local safety assessment, whether the visual presentation needs to enable the ATCO/AFISO to visually detect/recognise aircraft abnormal configurations or conditions, such as landing gear not or only partly extended or unusual smoke emissions from any part of the aircraft.</p>



	<p>[...] Therefore, as part of the local implementation and safety assessment, it shall be considered whether and to what extent the visual presentation needs to enable the ATCO/AFISO to visually detect/recognise obstructions on the manoeuvring area.</p> <p>[...] As a consequence, an implementer of remote provision of ATS shall consider, as part of the local safety assessment, whether and to what extent this should form operational requirements driving the technical requirements of the implementation."</p> <p>These are essential to safety and must not be compromised.</p> <p>We recommend to set minimum requirements based on EUROCAE ED-240 as hard regulation concerning the visual presentation without using additional tools (e.g. PTZ) especially on medium-sized aerodromes. The reasoning behind this is that ATCOs would simply not be able to rely on them if there are simultaneous movements.</p>
response	<p>Not accepted</p> <p>Concerning the use of words 'should/shall', see the response to comment 205.</p> <p>Concerning the last paragraph of the comment, EUROCAE ED-240A describes a process for defining technical/performance requirements on the visual surveillance system, based on the operational requirements, which need to be defined on the local implementation level, taking into account the specificities of the operational context, conditions and needs. The 'minimum (regulatory) requirements' are provided in Section 5.2.1.</p>
comment	<p>530 comment by: <i>Heathrow airport</i></p> <p>Are the 'significant' weather conditions referred to in 5.2.2 those weather conditions listed in 5.2.3? It may be important to be explicit in order to achieve the aims of consistent and safe deployments, whereas the word significant is open to different interpretations.</p>
response	<p>Noted</p> <p>ICAO describes the intended meaning with the term 'significant meteorological conditions' (in a note to Doc 4444 Chapter 7.4.1.2.2). This description is for clarity included in a footnote of Guidelines Section 5.2.2. The use of the expression 'weather conditions' in Guidelines Section 5.2.3 could be seen as a more broad term (which may include some of the 'significant meteorological conditions' listed by ICAO, but may as well include other weather conditions in a broader sense).</p>
comment	<p>531 comment by: <i>European Transport Workers Federation - ETF</i></p>



	<p>EASA may wish to consider the detection of runway contamination / surface state as part of this section. Detection of runway surface states and their changes may be a requirement upon ATC in some Member States as one example.</p>
<p>response</p>	<p>Accepted</p> <p>This aspect has been added to Section 5.2, still reflecting that the responsibility to monitor the condition of the movement area and to report to the relevant ATS provider is with the aerodrome operator (ADR.OPS.B.015 of Regulation (EU) No 139/2014.)</p>

<p>comment</p>	<p>670</p> <p style="text-align: right;">comment by: ATCEUC</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%; padding: 5px; vertical-align: top;"> <p>Hence, it should be considered, as part of the local safety assessment, whether the visual presentation needs to enable the ATCO/AFISO to visually detect/recognise aircraft abnormal configurations or conditions, such as landing gear not or only partly extended or unusual smoke emissions from any part of the aircraft. [...] Therefore, as part of the local implementation and safety assessment, it should be considered whether and to what extent the visual presentation needs to enable the ATCO/AFISO to visually detect/recognise obstructions on the manoeuvring area. [...] As a consequence, an implementer of remote provision of ATS should consider, as part of the local safety assessment, whether and to what extent this should form operational requirements</p> </td> <td style="width: 33%; padding: 5px; vertical-align: top;"> <p>Hence, it shall be considered, as part of the local safety assessment, whether the visual presentation needs to enable the Therefore, as part of the local implementation and safety assessment, it shall be considered whether and to what extent the visual presentation needs to enable the As a consequence, an implementer of remote provision of ATS shall consider, as part of the local safety assessment, whether and to what extent this should form operational requirements driving the technical requirements of the implementation.</p> </td> <td style="width: 33%; padding: 5px; vertical-align: top;"> <p>This rule, contained in ICAO DOC 4444 (PANS-ATM), is completing part of ATCO tasks: occurrence of an accident on the runaway by an aircraft, for instance after landing or during take-off, MUST be promptly detected by the ATCO, it's not an "expectation on the service" (pag 24 of NPA): that's the service!...there's serious risk to lose definitely bases for a safe and right standardization!</p> </td> </tr> </table>	<p>Hence, it should be considered, as part of the local safety assessment, whether the visual presentation needs to enable the ATCO/AFISO to visually detect/recognise aircraft abnormal configurations or conditions, such as landing gear not or only partly extended or unusual smoke emissions from any part of the aircraft. [...] Therefore, as part of the local implementation and safety assessment, it should be considered whether and to what extent the visual presentation needs to enable the ATCO/AFISO to visually detect/recognise obstructions on the manoeuvring area. [...] As a consequence, an implementer of remote provision of ATS should consider, as part of the local safety assessment, whether and to what extent this should form operational requirements</p>	<p>Hence, it shall be considered, as part of the local safety assessment, whether the visual presentation needs to enable the Therefore, as part of the local implementation and safety assessment, it shall be considered whether and to what extent the visual presentation needs to enable the As a consequence, an implementer of remote provision of ATS shall consider, as part of the local safety assessment, whether and to what extent this should form operational requirements driving the technical requirements of the implementation.</p>	<p>This rule, contained in ICAO DOC 4444 (PANS-ATM), is completing part of ATCO tasks: occurrence of an accident on the runaway by an aircraft, for instance after landing or during take-off, MUST be promptly detected by the ATCO, it's not an "expectation on the service" (pag 24 of NPA): that's the service!...there's serious risk to lose definitely bases for a safe and right standardization!</p>
<p>Hence, it should be considered, as part of the local safety assessment, whether the visual presentation needs to enable the ATCO/AFISO to visually detect/recognise aircraft abnormal configurations or conditions, such as landing gear not or only partly extended or unusual smoke emissions from any part of the aircraft. [...] Therefore, as part of the local implementation and safety assessment, it should be considered whether and to what extent the visual presentation needs to enable the ATCO/AFISO to visually detect/recognise obstructions on the manoeuvring area. [...] As a consequence, an implementer of remote provision of ATS should consider, as part of the local safety assessment, whether and to what extent this should form operational requirements</p>	<p>Hence, it shall be considered, as part of the local safety assessment, whether the visual presentation needs to enable the Therefore, as part of the local implementation and safety assessment, it shall be considered whether and to what extent the visual presentation needs to enable the As a consequence, an implementer of remote provision of ATS shall consider, as part of the local safety assessment, whether and to what extent this should form operational requirements driving the technical requirements of the implementation.</p>	<p>This rule, contained in ICAO DOC 4444 (PANS-ATM), is completing part of ATCO tasks: occurrence of an accident on the runaway by an aircraft, for instance after landing or during take-off, MUST be promptly detected by the ATCO, it's not an "expectation on the service" (pag 24 of NPA): that's the service!...there's serious risk to lose definitely bases for a safe and right standardization!</p>		



driving the technical requirements of the implementation.		
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response

Not accepted

Requirements for safety assessment and assessments of changes are already part of the EU regulatory framework (i.e. Regulations (EU) Nos1034/2011 and 1035/2011, to be replaced by Regulation (EU) 2017/373 as of 2 January 2020) and hence it is not considered necessary to be repeated in this guidance material.

See also the response to comment 205.

3.1. Draft guidelines - 5.2.3. Other operational needs

p. 33

comment

208

comment by: IFATCA

Change proposal:**ADD:**

An adjustment in operational procedures is necessary in order to have clear procedures in case of changes. ATCOs/FISOs will be facing sudden changes and complications due to weather conditions.

Justification

See the general statement of IFATCA for further requirements with regard to weather observations.

response

Not accepted

Meteorological observation is not a core ATS task. If the ATS provider performs meteorological observation, it is done on a contractual basis. It is highlighted in other parts of the Guideline document that the ATS provider needs to review task distribution/change of tasks when implementing remote aerodrome ATS, see Section 5.1. (2nd bullet), Section 7.1.1, and Section 12.1 (Appendix 1, 8th bullet).

Regardless of this, ATCOs/AFISOs are trained to deal with weather changes as part of their ATS qualification (and are dealing with weather changes as part of their day-to-day job). This does not differ between a remote and a conventional tower. Based on our consultation rounds with stakeholders that have already implemented remote aerodrome ATS, no specific need for adjustments of operational procedures in this regard could be identified.

See also the responses to comments 186, 505 and 514.



comment	327	comment by: <i>René Meier, Europe Air Sports</i>
	5.2.3 Other operational needs page 33/92	
	Replace "should" by "shall".	
	Rationale: "should" will lead to a decrease in safety.	
response	Not accepted	
	See the response to comment 205.	

3.1. Draft guidelines - 5.2.4. Functional requirements

p. 33

comment	328	comment by: <i>René Meier, Europe Air Sports</i>
	5.2.4 Functional requirements page 33/92	
	5.2.4.1 Visual presentation setup and layout page 34/92	
	5.2.4.2 End-to-end delay/video latency page 34/92	
	Replace "should" by "shall".	
	Rationale: "should" will lead to a decrease in safety. Today's technical solutions allow for this more demanding requirement.	
response	Not accepted	
	See the response to comment 205.	

comment	532	comment by: <i>European Transport Workers Federation - ETF</i>
	"In addition to the regulatory requirements described above, factors related more directly to system performance shall be considered when moving to a 'remote' environment, as such factors will affect the performance of the visual presentation and subsequently also the operational capabilities of the ATS unit. [...] Because of this complexity, as already mentioned under Section 5.2, it is essential that the visual presentation be operationally validated against the perceived total image quality, rather than against specific image quality factors." These are essential to safety and must not be compromised.	



response	Partially accepted The text in Section 5.2.4 has been amended to emphasise even more the importance of operationally validating the total image quality.
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3.1. Draft guidelines - 5.2.4.1 Visual presentation setup and layout	p. 34
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comment	<p>533 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>"Also, the risk of potential loss of information between images (e.g. when combining images from different sensors) shall be thoroughly assessed as part of the implementation, and if such information loss can be detected, appropriate mitigation means should be introduced. [...] If this is regarded as a potential risk factor for a particular implementation, it is essential that regular checks are introduced as part of the overall maintenance programme. "</p> <p>These are essential to safety and must not be compromised.</p>
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response	Not accepted See the response to comment 205.
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3.1. Draft guidelines - 5.2.4.2 End-to-end delay/video latency	p. 34
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comment	<p>18 comment by: <i>GdF</i></p> <p>It is recommended that this value is as low as possible and as constant as possible. Long delays will undoubtedly negatively affect the ATCO's/AFISO's situational awareness, with a potential safety impact. The ATS provider should demonstrate that the end-to-end delay does not exceed the established maximum end-to-end delay value.</p> <p>Video delay must be constant. Non-constant delay would by definition result in skipped frames, slow-downs or speed-ups.</p> <p>IFATCA policy is: A safety net is an airborne and / or ground based function, the sole purpose of which is to alert the pilot or controller of the imminence of collision of aircraft, aircraft and terrain / obstacles, as well as penetration of dangerous airspace.</p>
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response	Not accepted It is technically unlikely to be able to achieve a constant delay 100 % of the time (would be dependent on a tolerance limit).
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comment	<p>88 comment by: <i>DTCA</i></p>
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	<p>Para 5.2.4.2 (page 34), End-to-end delay/video latency</p> <p>Danish Transport, Construction and Housing Authority (DTCA) is of the opinion that the EASA guideline for the end-to-end delay/video latency should be a maximum delay of 1 second for the visual presentation, unless another value is justified through a local assessment. By stating the 1 second as a commonly agreed guideline, this would also be in line with "EUROCAE ED-240 [18] (REQ 01)".</p>
response	<p>Partially accepted</p> <p>The text has been amended to refer to the recommendations stemming from EUROCAE and SESAR; however, still giving the possibility for an alternative maximum video latency value if supported by the local safety assessment. In this regard, it is acknowledged that an absolute maximum of 1 second for the video latency may not be the optimum value for all implementations/operational contexts. (1.1 second may equally be fit for purpose for some implementations, whereas 1.0 second may not be sufficient for other implementations.).</p>
comment	<p>114 comment by: <i>Naviair</i></p> <p>Why does EASA not like to set 1 second as the universal value? Would it be envisaged that this value could be loosened (more than one second), or is the fear that less than one second could prove to be necessary? Having a recommended value of maximum 1 second delay would be easier to work with than this very loose sentence. Further it would make moving ATCOs between instances more easy, since a maximum delay is always known.</p>
response	<p>Noted</p> <p>See the response to comment 88.</p>
comment	<p>210 comment by: <i>IFATCA</i></p> <p>Change Proposal</p> <p>It is recommended that this value is as low and constant as possible.</p> <p>Rephrase. This value <i>is to be</i> a maximum of 1 second (refer EUROCAE ED-240) and as constant as possible.</p>
response	<p>Not accepted</p> <p>See the response to comment 88.</p>
comment	<p>249 comment by: <i>AESA/DSANA</i></p> <p><u>Comment</u></p>



	<p>How shall the end-to-end delay be measured? Is it subject to a continuous performance monitoring? Shall there be an alarm in the cases the end-to-end-delay exceeds certain values?</p> <p><u>Justification</u> EUROCAE ED-240 [18] (REQ 01) stipulates a maximum end-to-end delay of 1 second for the visual presentation.</p>
response	<p>Partially accepted</p> <p>Failure detection is covered in Guidelines Section 5.2.4.7. A 'note' referring to the EUROCAE ED-240A requirement for 'video failure notification time' has been added.</p>
comment	<p>250 comment by: AESA/DSANA</p> <p><u>Comment</u> Eurocae ED-240 should be recognized as a Community Specification in the Interoperability domain.</p> <p><u>Justification</u> A Declaration of verification of the systems related would be issued and Community Specifications would be needed in order to guarantee harmonised implementation and interoperability.</p>
response	<p>Noted</p> <p>The Guideline document contains numerous references to ED-240A where relevant and applicable, this Section (5.2.4.2.) included.</p> <p>It should be noted that the Community Specifications are established by Regulation (EC) No 552/2004, which is repealed by Regulation (EU) 2018/1139.</p>
comment	<p>534 comment by: European Transport Workers Federation - ETF</p> <p>"Long delays will undoubtedly negatively affect the ATCO's/AFISO's situational awareness, with a definite safety impact. "</p> <p>Anything negatively affecting situational awareness is likely to have a safety impact.</p>
response	<p>Accepted</p> <p>The wording has been adapted in line with the comment's message.</p>
comment	<p>535 comment by: European Transport Workers Federation - ETF</p> <p>"Note: Validation activities performed so far (and known to EASA) have indicated a recommended maximum end-to-end delay to be 1 second (refer to SESAR OSED [23] (REQ-06.09.03-OSED-VC03.1105) & SESAR Technical Specification [24] (REQ-12.04.07-TS-0110.0007)) This shall be considered for the purposes of all RTO safety assessments as a minimum to be achieved. however, this should be seen in the</p>

~~context of the specific conditions (operational and technical) that were validated and hence should may not be universally fit for purpose. The visual presentation end-to-end delay is therefore recommended to be evaluated and defined for each implementation."~~

It is unclear why EASA would not wish to enforce as a bare minimum the recommendations from the SESAR trial in the interests of safety.

response Not accepted

See the response to comment 88.

comment 589 comment by: HIAL

The EUROCAE ED240 (18) (REQ01) stipulates a maximum "end-to-end" delay of 1 second for the visual presentation. HIAL agree that this should serve as a basic guideline for the technical specifications of any proposed system, and will be crucial for the success of island based aerodromes.

response Noted

See also the response to comment 88.

comment 671 comment by: ATCEUC

5.2.4.2 *"The visual presentation end-to-end delay (+ video update rate (ed. note)) is therefore recommended to be evaluated and defined for each implementation"*

Also in this statement we record a lack of standardization! How can we build bases for present and future Safety if each ANSP goes forward as it pleases? Main task of such Organizations like EASA and ICAO is to clearly establish "minimum and sure standards" below which should not possible to come!.

response Noted

See the response to comment 88.

comment 741 comment by: Federal Aviation Administration

Current Text: The ATS provider should demonstrate that the end-to-end delay does not exceed the established maximum end-to-end delay value.

Specific Comment: Should the end-to-end delay be the same (or very close to the same) across all cameras being displayed on the same view? For example, camera view 1 on the panoramic view has a delay of 0.1 seconds, and camera view 2 on the same panoramic view has a delay of 0.8 seconds. Same question applies to the frame rate. Please provide clarification.



response	<p>Noted</p> <p>The operational requirement is that ‘The maximum allowable video latency, including its variation in time, should be determined by the local safety assessment, with the aim that it should not negatively affect the ATCO’s/AFISO’s ability to perform the ATS.’</p> <p>How this is precisely implemented may vary depending on the specific technical solution, but it needs to be supported by the local safety assessment in all cases.</p>
comment	<p>762 comment by: <i>Avinor Air Navigation Services (Avinor Flysikring AS)</i></p> <p>Page No: 34 Paragraph No: 5.2.4.2, Note</p> <p>Comment: We think this reference to ED 240 should be clearer as to point out that ED 240 is actually referencing EASA in this respect. From the note it looks as the EASA recommendation is based upon ED 240 and not the other way around.</p>
response	<p>Noted</p> <p>There is no information in ED-240 indicating this was the case. In the recently published ED-240A, the reference is now made to ‘existing ground surveillance sensor standards’.</p>
comment	<p>794 comment by: <i>UK CAA</i></p> <p>Page No: 34 Paragraph No: 5.2.4.2, Notes 1 & 2</p> <p>Comment: We propose that text in both notes is combined for clarity as it appears the first note is contradictory to the second.</p> <p>Proposed Text: Replace with: ‘Note: EUROCAE ED-240 [18] (REQ 01) stipulates a maximum end-to-end delay of 1 second for the visual presentation. However, this should be seen in the context of the specific operational and technical conditions applicable to the site to which aerodrome ATS is provided remotely. Therefore, subject to the submission to and acceptance by the Competent Authority (CA) of an appropriate safety case, an alternative maximum end-to-end delay period may be applied.’</p>
response	<p>Partially accepted</p> <p>The separate notes have been kept as they refer to different sources of information (EUROCAE, which represents an industry agreed requirement + SESAR, which represents a recommendation based on the conditions for the specific R&D activities). However, part of the text proposed by this comment has been introduced into the main text of the section. Overall, the section has been amended in line with the message of this comment.</p>



3.1. Draft guidelines - 5.2.4.3 Video update rate

p. 35

comment	76	comment by: EUROCONTROL
	5.2.4.3 Video update rate - Page 35	
	Since a siren is a sound-emitting device the EUROCONTROL Agency believes that in the third bullet 'emergency vehicles sirens' should be replaced by 'emergency vehicles lights'.	
response	Accepted	
comment	115	comment by: Naviair
	While the video frame rate can be discussed and determined in individual cases, there should be a requirement, that the selected video frame rate is CONSTANT – that is – the CODEC and compression used should not allow a dynamic framerate. If the user can not trust the update rate on the displays, the detection of movement and acceleration will be very difficult. Further – uneven frame rates will lead to fatigue.	
response	Partially accepted	
	The text has been amended to read that also the variability in time of the video update rate should be assessed in the local safety assessment; however, without indicating a strict need for it to be constant. This may be technically challenging to achieve for 100 % of the time — but more importantly, there may be implementations which intentionally would make use of different frame rates in different parts of the picture or even a dynamic frame rate that e.g. increases when and where there is movement. These types of technical solutions should not be hindered as long as it is ensured that the ATCO/AFISO can see (detect/recognise) what is operationally needed, and if supported by the local safety and human factors assessments.	
comment	288	comment by: German NSA (BAF)
	<u>Regarding:</u>	
	<i>'Note: Validation activities performed so far (and known to EASA) have indicated a recommended video update rate to be 30 frames per second (refer to SESAR OSED [23] (REQ-06.09.03-OSED-VC03.1104) & SESAR Technical Specification [24] (REQ-12.04.07-TS-0110.0006)), however, this should be seen in the context of the specific conditions (operational and technical) that were validated and hence may not be universally fit for purpose. It is also acknowledged that defining a recommended video update rate is complex due to the capabilities and nature of the human eye, the influence of motion blur and due to inherent dependency of many system parameters (e.g. contrast, video compression, bandwidth, codex) (refer to ED-240 [18]). The video update rate is therefore recommended to be evaluated and defined for each implementation.'</i>	



response	<p><u>Proposal:</u> Add: 'The evaluation should be considered in the local safety assessment and also in the declaration of verification (Reg (EU) No 552/2004).'</p> <p>Not accepted</p> <p>From the proposal: 'The evaluation should be considered in the local safety assessment..' <u>Response:</u> This is already covered by the text in Section 5.2.4.3.</p> <p>From the proposal: '..and also in the declaration of verification (Reg (EU) No 552/2004).'</p> <p><u>Response:</u> Explicit mention of all applicable regulations and standards was not considered appropriate. Please note the last paragraph of Guidelines Section 1.2. The local safety assessment should always consider requirements for systems and constituents, including applicable interoperability requirements (Regulation (EU) No 1035/2011 and Regulation (EU) 2017/373).</p>
comment	<p>410 comment by: <i>NATS</i></p> <p>The note on validation activities should be removed – suggesting 30fps – actual deployments have superseded this with lower frame rates – equally other studies have shown that Jitter, and resolution have higher impact. The Note is misleading and out of date</p> <p>Suggest Remove this Note</p>
response	<p>Partially accepted</p> <p>The Note, has been amended as follows:</p> <p>The reference to the available and published SESAR results has been kept and is complemented with a reference to a recently published empirical study on lower frame rates.</p> <p>Further to this, the text in Section 5.2.4.3 has been rearranged and amended to put more emphasis on the complexity and the many factors surrounding this area, including jitter and the need to compromise frame rate against image resolution.</p>
comment	<p>536 comment by: <i>Heathrow airport</i></p> <p>We note that determining requirements for the video update rate is a 'complex task'. Can generic methods be found in order to provide guidance for implementation, for example by extrapolating based upon methods used in the SESAR safety assessments? This may be important to efficiently achieve the aims of consistent and safe deployments in a harmonised manner.</p>
response	<p>Not accepted</p> <p>The operational needs and considerations related to the video update rate are provided in Section 5.2.4.3, with references to available research/validation data in</p>



the related Note. Ultimately, the required video update rate will be an outcome of the local safety and human factors assessments.

See also the response to comment 410.

comment 537 comment by: *European Transport Workers Federation - ETF*

Note: Validation activities performed so far (and known to EASA) have indicated a recommended video update rate to be 30 frames per second (refer to SESAR OSED [23] (REQ-06.09.03-OSED-VC03.1104) & SESAR Technical Specification [24] (REQ-12.04.07-TS-0110.0006)), which shall be considered as a minimum. ~~however, this should be seen in the context of the specific conditions (operational and technical) that were validated and hence may not be universally fit for purpose.~~

It is unclear why EASA would not wish to enforce as a bare minimum the recommendations from the SESAR trial in the interests of safety.

response Not accepted

See comment 410 and the response to it, as well as the response to comment 536.

comment 591 comment by: *HIAL*

The video update rate (frames per second) will be impacted by the quality of connectivity and will be a crucial element for any Safety Risk Assessment. This requirement is also impacted by the Binocular Function requirements at NPA para 5.3. Validation has recommended an update of 30 frames per second. However, this should be stipulated as a minimum requirement.

response Not accepted

See comment 410 and the response to it, as well as the response to comment 536.

comment 795 comment by: *UK CAA*

Page No: 35

Paragraph No: 5.2.4.3, 2nd Note, final sentence

Comment: The final sentence in the 2nd Note states: *'The video update rate is therefore recommended to be evaluated and defined for each implementation'*. UK CAA believes that a minimum video update rate should be set, if not by EASA then locally by the competent authority.

Proposed Text: Replace with:

'While the video update rate can be defined for each different implementation, the Competent Authority can set a universal minimum refresh rate should they choose to do so.'

response Not accepted

The commented sentence has been moved from the Note to the main text of the section and extended to emphasise that every aerodrome is unique (depending e.g.



on the type/level of service provided and local traffic levels) and will have its own operational needs and conditions.

See also comment 410 and the response to it, as well as the response to comment 536.

3.1. Draft guidelines - 5.2.4.4 Difference in daylight/darkness perception

p. 35

comment	19 real-world Typo	comment by: <i>GdF</i>
response	Accepted	
comment	116 It would be preferred if this document states guidelines for monitoring/determining “real life” light conditions. To increase situational awareness for ATCO and confirmation of correct light settings (AGL), visual targeting possibilities for pilots etc. This might be a special spot in the OTW, monitoring “HiFi” darkness conditions.	comment by: <i>Naviair</i>
response	Not accepted The text already provides guidelines by raising the potential issue and by stating that a mitigation should be put in place, if applicable. The design of a potential technical mitigation solution is beyond the scope of EASA regulatory/guidance material (would be better handled on product/implementation design level).	
comment	117 It would be preferred if this document states guidelines for monitoring/determining “real life” light conditions. To increase situational awareness for ATCO and confirmation of correct light settings (AGL), visual targeting possibilities for pilots etc. This might be a special spot in the OTW, monitoring “HiFi” darkness conditions.	comment by: <i>Naviair</i>
response	Not accepted See the response to comment 116.	
comment	209 real-world Typo	comment by: <i>IFATCA</i>



response	Accepted					
comment	<p>539 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>"If there is a difference in the perception of daylight/darkness conditions between the visual presentation and the reality, the ATCO/AFISO shall have access to information about the current daylight/dusk/darkness/dawn condition at the remote aerodrome as well as the expected time for the transitioning between these phases."</p> <p>This is essential to safety and must not be compromised. Indeed, later in the same paragraph it states, <i>'Although this can be seen as a benefit from the situational awareness perspective, it could also be considered as a disadvantage as it may impose new operational risks.'</i></p>					
response	<p>Not accepted</p> <p>See the response to comment 672.</p>					
comment	<p>672 comment by: <i>ATCEUC</i></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%; padding: 5px;"> If there is a difference in the perception of daylight/darkness conditions between the visual presentation and the reality, the ATCO/AFISO should have access to information about the current daylight/dusk/darkness/dawn condition at the remote aerodrome as well as the expected time for the transitioning between these phases. </td> <td style="width: 33%; padding: 5px;"> If there is a difference in the perception of daylight/darkness conditions between the visual presentation and the reality, the ATCO/AFISO shall have access to information about the current daylight/dusk/darkness/dawn condition at the remote aerodrome as well as the expected time for the transitioning between these phases. </td> <td style="width: 33%; padding: 5px;"> The perception from a camera is different from the reality, ATCOs/AFISOs can be misled from this different perception so the daily daylight/darkness timetable has to be easily accessible in any moment </td> </tr> </table>			If there is a difference in the perception of daylight/darkness conditions between the visual presentation and the reality, the ATCO/AFISO should have access to information about the current daylight/dusk/darkness/dawn condition at the remote aerodrome as well as the expected time for the transitioning between these phases.	If there is a difference in the perception of daylight/darkness conditions between the visual presentation and the reality, the ATCO/AFISO shall have access to information about the current daylight/dusk/darkness/dawn condition at the remote aerodrome as well as the expected time for the transitioning between these phases.	The perception from a camera is different from the reality, ATCOs/AFISOs can be misled from this different perception so the daily daylight/darkness timetable has to be easily accessible in any moment
If there is a difference in the perception of daylight/darkness conditions between the visual presentation and the reality, the ATCO/AFISO should have access to information about the current daylight/dusk/darkness/dawn condition at the remote aerodrome as well as the expected time for the transitioning between these phases.	If there is a difference in the perception of daylight/darkness conditions between the visual presentation and the reality, the ATCO/AFISO shall have access to information about the current daylight/dusk/darkness/dawn condition at the remote aerodrome as well as the expected time for the transitioning between these phases.	The perception from a camera is different from the reality, ATCOs/AFISOs can be misled from this different perception so the daily daylight/darkness timetable has to be easily accessible in any moment				
response	<p>Not accepted</p> <p>Concerning the use of words 'should/shall', see the response to comment 205.</p>					

3.1. Draft guidelines - 5.2.4.5 Other image quality factors	p. 35-36
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comment	118	comment by: <i>Navair</i>
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	Thoughts should be made on possible guidance on the timely re-calibration at intervals of the display and sensor systems, since these may/will change/degrade over time.
response	Noted The topic is covered by Guidelines Section 5.2.4.1. Details such as time intervals of regular checks/re-calibration, if applicable, would be best identified on the local implementation level in cooperation with the system manufacturer, as it will depend on technical solution, local environmental factors, etc.

comment	418 comment by: <i>skyguide Compliance Management</i> a "heartbeat" function (indicating the screen has not frozen - is live) would be good for each screen
response	Noted Failure detection is covered by Section 5.2.4.7, now also including the aspect of 'maximum video failure notification time' (see the response to comment 249). It is acknowledged that some/many implementations use a kind of 'heartbeat function' to support detection of live/frozen image; however, the exact design of failure detection/notification systems is outside the scope of EASA regulatory/guidance material, as this is best handled on local implementation/product design level.

3.1. Draft guidelines - 5.2.4.6 Environmental protection

p. 36

comment	329 comment by: <i>René Meier, Europe Air Sports</i> 5.2.4.6 Environmental protection page 36/92 Please change this title. Rationale: This text has nothing to do with environmental protection, it's requirements do not protect wildlife, they protect the installations, and the ATCO's using them.
response	Accepted The title has been amended.

3.1. Draft guidelines - 5.2.4.7 Failure detection

p. 36

comment	119 comment by: <i>Naviair</i> History has shown that this is a key safety element and needs to be designed into the operational concept.
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	This question should always be answered: How is the visual system state recognized and presented to the ATCO?
response	Noted (In a perfect world/system, the ATCO/AFISO would only be informed when there is a problem (to reduce the amount of distracting information.))
comment	330 comment by: René Meier, Europe Air Sports 5.2.4.7 Failure detection page 36/92 "Failure detection" and "should" is not acceptable, we think. Rationale: This does not fit! Failure detection must work, without delay. Compromises are acceptable.
response	Noted See the response to comment 205. ICAO Doc 4444 Chapter 4.14 is proposed for transposition as ATS.OR.140 to 'Part-ATS' (EASA Opinion No 03/2018). Hence, there is no need for this Guideline document to have a repetition of provisions already proposed in the draft IR.

3.1. Draft guidelines - 5.2.5. Technical enablers for increased situational awareness	p. 36-38
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comment	20 comment by: GdF The visual presentation may include tools and functionalities aiming at increasing the ATCO/AFISO situational awareness and enabling the ATCO/AFISO to increase the time spent for 'looking out the windows' on maintaining a continuous watch on all flight operations on and in the vicinity of the aerodrome. The original phrase sounds degrading and is rejected by GdF. We suggest to replace it with the action that is actually performed. IFATCA Policy is: The tower cab shall be constructed as to provide aerodrome controllers the capability to maintain a continuous watch on all flight operations on and in the vicinity of the aerodrome as well as vehicles and personnel on the manoeuvring area. Watch shall be maintained by visual observation, augmented by radar or other approved surveillance systems when available.
response	Partially accepted See comment 211 and the EASA response to it. The solution/proposal provided in comment 211 was preferred and (partially) implemented. The reason was that the ATCO/AFISO may/will need to perform a wide range of other visual observation tasks



related to the service in addition to the continuous watch of flight operations, such as observation and follow-up on weather changes, observation and follow-up on the existence of obstructions/birds/animals, etc.

comment 120 comment by: Naviair
 It would be interesting with official guidance and/or recommendations regarding these enhanced technical enablers providing better situational awareness vs. Multiple Airport Operations.

response Noted
 Some high-level recommendations derived from the SESAR validation results are presented in Section 4.2.1. Furthermore, generic recommendations related to system design/HMI in multiple mode of operation are presented in Section 5.14.2. In addition, specific recommendations regarding technical enablers in multiple mode of operation, derived from the SESAR results, are presented in the Notes of Section 5.14.4.

comment 211 comment by: IFATCA
Change proposal

The visual presentation may include tools and functionalities aiming at increasing the ATCO/AFISO situational awareness and enabling the ATCO/AFISO to increase the time spent for ‘looking out the windows’ on scanning the area of responsibility.

Justification
 IFATCA suggests to replace it with the action that is actually performed to avoid a negative conotation.
 IFATCA Policy is:
 The tower cab shall be constructed as to provide aerodrome controllers the capability to maintain a continuous watch on all flight operations on and in the vicinity of the aerodrome as well as vehicles and personnel on the manoeuvring area. Watch shall be maintained by visual observation, augmented by radar or other approved surveillance systems when available.

response Partially accepted
 The proposed text was added as an addition to the existing text, in order to complement it with the actual task performed.

comment 251 comment by: AESA/DSANA
Comment



	<p>There is no reference to any kind of maintenance activities to systems of the RTM (hardware presentation or CWP...)</p> <p><u>Justification</u> Maintenance tasks have been mentioned for the cameras installed in the aerodrome but not for systems in the RTM or RTC.</p>
response	<p>Noted</p> <p>Requirements for maintenance of automated tools used for ATS are already covered by Regulation (EU) 2018/1139 (Annex VIII in particular) and in Regulation (EU) 2017/373.</p>
comment	<p>252 comment by: AESA/DSANA</p> <p><u>Comment</u> AESA would appreciate further guidelines on the uses of surveillance information (i.e. RADAR) from different sources where multiple mode of operation is implemented. (Two TWRs, two different radars?).</p>
response	<p>Not accepted</p> <p>The number and type of ATS surveillance/radar sensors to be used for each aerodrome depends on local circumstances such as operational needs, the availability of such sensors, their coverage, geographical and topographical aspects, cost benefit analysis, etc. This is not unique for remote aerodrome ATS (also relevant for en-route/TMA operations as well as for many conventional towers today).</p>
comment	<p>289 comment by: German NSA (BAF)</p> <p><u>Regarding:</u> <i>Overlaid symbols and labels associated with and highlighting objects capable of movement and relevant for the service provision, such as aircraft, vehicles, personnel, obstructions or animals/birds on the manoeuvring area and in the vicinity of the aerodrome. (Objects not relevant for the service provision would include e.g. vehicles outside of the aerodrome premises.) Such symbols and labels can be based on: [...]</i></p> <p><u>Proposal:</u> Add following note: 'In case of movements of several aircraft it should be ensured that the labels displayed are connected to the correct object.'</p>
response	<p>Not accepted</p> <p>This comment seems to relate to the 'radar tracking' bullet/segment, for which technical standards are under development by EUROCAE WG-100 (ED-240B, expected for publication end of 2020).</p>
comment	<p>541 comment by: European Transport Workers Federation - ETF</p>



	<p>"When implementing additional sensors intended to improve the visual range, care should be taken to mitigate the potential risk induced by ATCOs/AFISOs having a different perception of visibility compared to pilots (e.g. the ATCO/AFISO might 'forget' that the pilot operates in a reduced horizontal visibility if he/she sees the aerodrome clearly)."</p> <p>There is a risk that systems so enhanced will 'improve' the image provided and distort the integrity of the visual service being provided.</p> <p>Additionally, new kinds of safety nets such as runway incursion warning system are not addressed here. Additionally, EASA must define the status of overlaid information potentially available to staff and their subsequent responsibility in the use or not alongside the provision of a visual service.</p> <p>See also comment to 6.6</p>
response	<p>Partially accepted</p> <p>Improved visibility (compared to real-life conditions) is essentially something positive, with a potential for increased safety, efficiency as well as capacity of operations. However, there could also be risks associated with this, which need to be managed by the ATS provider, as outlined in the commented text/paragraph.</p> <p>Runway incursion prevention is mentioned in the list of tools/functionalities (second last bullet from the bottom of the listed items) in Section 5.2.5.</p> <p>The beginning of Section 5.2.5 explains that the aim of the tools/functionalities listed is solely to increase the ATCO/AFISO situational awareness. For the 'radar tracking' segment, a reference to ICAO Doc 4444 has been added.</p>
comment	<p>635 comment by: <i>Flughafen Berlin Brandenburg GmbH</i></p> <p>It would be beneficial that those proposed tools (e.g. overlaid framings, overlaid added information, etc.) are in line with the requirements of regulation EU no 73/2010 and/or NPA 2016-02, as appropriate, in terms of accuracy, formatting, and data origin.</p>
response	<p>Noted</p> <p>Explicit mention of all applicable regulations and standards was not considered appropriate. Please note the last paragraph of Section 1.2 of the Guidelines.</p>
comment	<p>796 comment by: <i>UK CAA</i></p> <p>Page No: 37 Paragraph No: 5.2.5, 1st and 2nd bullets 2 beginning 'visual information from...' and 'Surveillance information from..' Comment: The words visual and surveillance at the start of these bullets are redundant. Justification: Need for improved text.</p>

	<p>Proposed Text: Amend to read: information from optical sensors, i.e system detection of moving objects (including also non-cooperative targets) or in the visual field of view (commonly referred to as “visual tracking”). information from ATS surveillance sensors such as radars, ADS-B etc., targeting primarily cooperative targets (commonly referred to as ‘radar tracking’);</p>
response	Accepted
comment	<p>797 comment by: UK CAA</p> <p>Page No: 37 Paragraph No: 5.2.5, 4th bullet beginning ‘Overlaid framings/symbols...’ Comment: The text describes the overlays being used ‘specifically’ in low visibility or bad weather. However, an operator may wish to use these overlays at any time. We recommend ‘specifically’ should read ‘especially’. Proposed Text: Amend to read: “especially in darkness and during low visibility conditions”.</p>
response	Accepted
comment	<p>798 comment by: UK CAA</p> <p>Page No: 37 Paragraph No: 5.2.5, Considerations when implementing visual presentation technical enablers Comment: This text is considered repetitive – the reader could be referred directly to 4.1.1, 4.1.4 and 4.2.1. We believe no additional text is required Proposed Text: Replace with: ‘Guidance is given in Sections 4.1.1, 4.1.4 and 4.2.1’.</p>
response	<p>Not accepted</p> <p>Section 5.2.5 contains mainly new information.</p>

3.1. Draft guidelines - 5.3. Binocular functionality

p. 38-39

comment	<p>21 comment by: GdF</p> <p>Emulates & ‘picture-in-picture’ Typos</p>
response	Accepted
comment	<p>22 comment by: GdF</p> <p>[...] preferably by the means of optical zoom (as opposed to digital zoom).</p>



response	<p>By definition a digital zoom does not increase the amount of information (add pixels). Therefore, GdF rejects the use of a digital zoom feature.</p> <p>Accepted</p> <p>The text of Section 5.3 has been amended accordingly, the notion of the digital zoom feature has been removed.</p>
comment	<p>77 comment by: EUROCONTROL</p> <p>5.3. Binocular functionality - Page 38 and 39</p> <p><u>3rd paragraph - Page 38</u></p> <p>The EUROCONTROL Agency believes that 'fixed optical zoom' should be replaced by 'fixed optical magnification' since a 'zoom' is, by definition and design, a variable-magnification optical system.</p> <p><u>Note - Page 39</u></p> <p>A maximum end-to-end delay/video latency of 750ms is stipulated, by EUROCAE, for the binocular functionality. This is shorter than the 1.000ms end-to-end delay specified for the overall video presentation (see first Note on page 34). The EUROCONTROL Agency would therefore like to raise the following question: isn't there not a risk of desynchronization? This could deserve a verification with EUROCAE beforehand.</p>
response	<p>Accepted</p> <p>The first part of the above comment is accepted.</p> <p>Concerning the second part of the above comment, the requirement in EUROCAE ED-240 for a maximum 750 millisecond time delay for the PTZ image was removed in the EUROCAE ED-240A due to a logical error. As a result, this Note in the EASA Guidelines has also been removed.</p>
comment	<p>212 comment by: IFATCA</p> <p>Emulates & 'picture-in-picture' typo</p>
response	<p>Accepted</p>
comment	<p>213 comment by: IFATCA</p> <p>Change proposal</p> <p>[...] preferably by the means of optical zoom (as opposed to digital zoom).</p>



	<p>Justification</p> <p>A digital zoom does not increase the amount of information. Therefore the digital zoom feature shall be discarded.</p>
response	<p>Accepted</p> <p>See the response to comment 22.</p>
comment	<p>419 comment by: <i>skyguide Compliance Management</i></p> <p>4th § "In order ... such as": shall also be used as spare camera in case of a failure of the main cameras</p>
response	<p>Not accepted</p> <p>The binocular functionality may indeed be used as a mitigation mean for partial/full loss of visual presentation, which is already covered by other text in the same section. This would however need to be a local design decision.</p>
comment	<p>542 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>"In order to increase its usability, the binocular functionality may also include functionalities such as: [...]"</p> <p>These functionalities should be related back to 5.2.2.</p>
response	<p>Accepted</p> <p>Sections 5.2 and 5.3 have been merged and rearranged (see the response to comment 71). This change accommodates this comment.</p>

3.1. Draft guidelines - 5.4. Signalling lamp

p. 39

comment	<p>254 comment by: <i>AESA/DSANA</i></p> <p><u>Comment</u></p> <p>AESA would appreciate in more detail the technical and performance requirements of the signalling lamp as well as the system maintenance.</p>
response	<p>Not accepted</p> <p>The function and performance of a signalling lamp, which is not specific to remote aerodrome ATS, is already governed by the referenced ICAO and EU provisions.</p>
comment	<p>432 comment by: <i>LFV</i></p>



	<p>Text in 5.4: "In accordance with ICAO Annex 14 Volume I [17] Chapter 5.1.346, the remote tower infrastructure should allow the ATCO/AFISO to communicate via a signaling lamp..."</p> <p>LFV: AFIS is not covered by ICAO Annex 14. The sentence must be rephrased, with maintained requirement for ATCO.</p>
response	<p>Partially accepted</p> <p>ICAO Circular 211-AN/128 from 1988, under the heading 'Accommodation and Equipment', paragraph 26 states that that 'The equipment in the AFIS unit should, to the extent possible, be similar to the equipment required for the aerodrome control tower at an aerodrome with low traffic density.' and under the heading of 'Visual Ground Signals', paragraph 29 states that 'Visual ground signals listed in Annex 2, Appendix A, 4.2 may be displayed by an AFIS unit as specified by the appropriate ATS authority.'</p> <p>Furthermore, the EUROCONTROL Manual for AFIS, under Sections 3.6.7 and 4.2.2.3 also implies the use of a signalling lamp.</p> <p>Therefore, the text of Section 5.4 has been amended to include references to the ICAO Circular as well as to the EUROCONTROL Manual for AFIS (with a maintained AFISO reference).</p>
comment	<p>654 comment by: <i>Flughafen Berlin Brandenburg GmbH</i></p> <p>Please change wording into "in the AIP, so that pilots and vehicle drivers know from where to expect the signals."</p> <p>Rationale: While the AIP aims at flight crew, vehicle drivers might use the contained information for their own purposes as well.</p>
response	<p>Not accepted</p> <p>The drivers take the information in accordance with which they operate from the aerodrome manual. The AIP simply reflects the content of the aerodrome manual and not vice versa.</p>

3.1. Draft guidelines - 5.5. Aerodrome sound

p. 39

comment	<p>23 comment by: <i>GdF</i></p> <p>[...] relays it to the ATCO/AFISO could may be introduced [...]</p> <p>'could' is an undefined term in the ATS-context and should be replaced.</p>
response	<p>Accepted</p>



comment	<p>24 comment by: <i>GdF</i></p> <p>If implemented, the volume should be adjustable and possible to turn off by the ATCO/AFISO. This possibility would support the needs of individual ATCOs/AFISOs to minimise disturbing background noise when/if needed.</p> <p>The use of aerodrome sound in a RTC has to be carefully accessed.</p>
response	<p>Accepted</p> <p>The text has been expanded to include also the RTC aspect.</p>
comment	<p>25 comment by: <i>GdF</i></p> <p>Further to this, a maximum allowable end-to-end delay for the aerodrome sound should be determined by the local safety assessment, taking into account the corresponding end-to-end delay of the visual presentation and a possible synchronisation with the same.</p> <p>Video and audio need to be synchronized.</p> <p>There is a need of an overall risk assessment for all hazards. Partial safety cases or risk assessment will not prove that an overall safety case is still achieving positive values.</p>
response	<p>Not accepted</p> <p>If aerodrome sound is implemented, it may on one hand be technically challenging to synchronise the aerodrome sound with the video (different data streams), and on the other hand potentially not even preferred. For instance, if the video is delayed by 1 second and the aerodrome sound only by 0.1 second, it would seem counterproductive to introduce the same delay also for the sound, when instead it could provide valuable situational awareness to the ATCO/AFISO, as compensation for the video delay.</p> <p>Furthermore, a safety case cannot be ‘partial’. It shall always take into account the full change of the functional system (addressing the equipment, procedures and human resources of the ATM functional system and the interactions between these elements and the interactions between the constituent part under consideration and the remainder of the ATM functional system), ref. Regulation (EU) No 1035/2011 and Regulation (EU) 2017/373.</p>
comment	<p>593 comment by: <i>HIAL</i></p> <p>Notwithstanding technical aspects, any sound fed to a RT should acoustically align with the end to end delay of visual presentation provided to the ATCO. As per 5.2.4.2 a maximum “end-to-end” delay of 1 second should be stipulated.</p>
response	<p>Not accepted</p> <p>See the response to comment 25.</p>

comment	<p>463</p> <p>comment by: <i>René Meier, Europe Air Sports</i></p> <p>5.5. Aerodrome sound page 39/92</p> <p>In our view creating a precise aerodrome sound environment per installation served is a very challenging and costly undertaking. We think only "real-time sound transmission" is feasible. Not too much means should be invested in such scenarii.</p> <p>Rationale: "sound" and "picture" must necessarily fit, otherwise msleading perceptions will be created.</p>
response	<p>Not accepted</p> <p>According to industry representatives (inter alia the ASD observers of the EASA RMT.0624 rulemaking group), aerodrome sound reproduction is not a cost-driving feature of a remote tower implementation. Furthermore, R&D/validation activities as well as operational experiences have shown that it could be a valuable component in increasing ATCO/AFISO sense of presence and situational awareness.</p> <p>As concerns time synchronisation of (the delay of) 'sound' vs 'picture', see the response to comment 25.</p>
comment	<p>95</p> <p>comment by: <i>ISAVIA ohf.</i></p> <p>Field of view and noise (item 5.5 page 39). If the ATCO is in a real tower he has 360° view and can also to some extent look upwards. When only with cameras that would normally provide little upwards view he would have difficulty spotting gliders, drones and even unexpexted aircraft coming from behind or from a direction where he did not expect anything. Being „on site“ he can also hear traffic noise and spot if it is coming from an unexpected direction. Hearing reproduced sound is probably useful but not the same as being on site. This differences between normal tower experience and remote tower could be better explained in the NPA.</p> <p>As explained in 5.2 page 30 it is not feasible nor possible to replicate the ATCO/AFISO visual performance obtained from an out-the-window view. Therefore it may be difficult for the ATCO to spot birds or other animals and also to follow stormclouds and predict precipitation and associated downdrafts in order to warn aircraft. This could be better explained in the NPA.</p>
response	<p>Partially accepted</p> <p>A sentence was added to capture that aerodrome sound could potentially raise awareness of traffic being outside the visual field of view.</p> <p>Concerning difference in experience between a normal/conventional tower and a remote tower, it would probably not make a huge impact regardless how much text the Guideline document would contain on this. This is something which is best experienced in real life. Furthermore, it hugely depends on the specific technical</p>

solution/implementation. For instance, the vertical view in a remote tower may well be similar to the vertical view obtained in a conventional tower, depending on the technical setup, such as the number and type of cameras used. It is also worth to note that the binocular functionality (PTZ) seen in most implementation cases provides the possibility to look 'straight up', something which in fact is not possible from a conventional tower (unless it would be equipped with a glass roof). Also, experience from some implementations reveal that it is easier to spot and follow up e.g. clouds through the visual presentation than through the OTW in a conventional tower. Another experience from operational implementations providing the 360 degree view in a U-shape (instead of circular) is that this makes it easier to 'see behind' (no need to turn around). And, based on validation experiences, with the support of new technical enablers such as visual tracking, it will likely be easier to spot e.g. the existence of birds than it is from a conventional tower.

comment	214	comment by: IFATCA
	<p>Change proposal</p> <p>[...] relays it to the ATCO/AFISO could may be introduced [...]</p> <p>Justification</p> <p>'could' is an undefined term in the ATS-context and should be replaced.</p>	
response	Accepted	
comment	215	comment by: IFATCA
	<p>Further work needs to be carried out</p> <p>If implemented, the volume should be adjustable and possible to turn off by the ATCO/AFISO. This possibility would support the needs of individual ATCOs/AFISOs to minimise disturbing background noise when/if needed.</p> <p>The use of aerodrome sound in a RTC has to be carefully assessed</p>	
response	Accepted	
	The text has been expanded to include also the RTC aspect.	
comment	544	comment by: European Transport Workers Federation - ETF
	<p>"Therefore, the need for an aerodrome sound reproduction functionality shall be assessed as part of the local safety assessment, taking into account the particulates of the operational context."</p>	



response	<p>It states earlier in the same paragraph, ‘Such functionality has shown to be valuable particularly for smaller aerodromes where sound could play an important role in the ATCO’s/AFISO’s job, attracting his/her attention to arising occurrences.’</p> <p>Partially accepted</p> <p>EASA does not see any contradiction in this. The complete section provides plenty of arguments in favour of implementing aerodrome sound, but leaves the decision with the ATS provider based on the outcome of the safety assessment. Nevertheless, the wording has been slightly adjusted.</p>		
comment	<p>673 comment by: ATCEUC</p> <table border="1" style="width: 100%;"> <tr> <td style="width: 50%; padding: 5px;"> Therefore, the need for an aerodrome sound reproduction functionality should be assessed as part of the local safety assessment, taking into account the particulates of the operational context. </td> <td style="width: 50%; padding: 5px;"> Therefore, the need for an aerodrome sound reproduction functionality shall be assessed as part of the local safety assessment, taking into account the particulates of the operational context. </td> </tr> </table>	Therefore, the need for an aerodrome sound reproduction functionality should be assessed as part of the local safety assessment, taking into account the particulates of the operational context.	Therefore, the need for an aerodrome sound reproduction functionality shall be assessed as part of the local safety assessment, taking into account the particulates of the operational context.
Therefore, the need for an aerodrome sound reproduction functionality should be assessed as part of the local safety assessment, taking into account the particulates of the operational context.	Therefore, the need for an aerodrome sound reproduction functionality shall be assessed as part of the local safety assessment, taking into account the particulates of the operational context.		
response	<p>Not accepted</p> <p>See the response to comment 205.</p>		
comment	<p>704 comment by: DACTCA</p> <p>If sound is important, it should not be possible to disable it. If it is believed to have a good impact on the controllers situational awareness, why would we create a system that allow for disabling it. It is also imperative that sound and image are 100% synced. Any delay between sound and image should be prohibited.</p>		
response	<p>Not accepted</p> <p>The local safety assessment should determine the need for the implementation of aerodrome sound.</p> <p>As concerns time synchronisation of (the delay of) ‘sound’ v. ‘image’, see the response to comment 25.</p>		
comment	<p>838 comment by: Think Research</p> <p>Section 5.5</p> <p>We would recommend that this section start with the statement “The need for an aerodrome sound reproduction functionality should be assessed as part of the local safety assessment, taking into account the particulates of the operational context” (note this text is currently in section 5.5. paragraph 2, line 5). This enables the primary message of this section to be clear. There is a risk that some of the</p>		



	<p>subjective information within this section becomes the focus and the primary message is lost. For example, EASA would not want to infer that all small airports require sound, or that sound always increases situational awareness.</p> <p>Line 1. Suggested textual update “When providing a Remote ATS at a location where the ATCO/AFISO is unable to detect the naturally occurring sounds of the aerodrome, a function that captures and relays aerodrome sound may be required. The requirement for such aerodrome sound reproduction functionality should be assessed as part of the local safety assessment”.</p>
response	<p>Partially accepted</p> <p>The text in Section 5.5 has been rearranged in line with the comments’ message.</p>

3.1. Draft guidelines - 5.6. Communications

p. 40-41

comment	<p>121 comment by: <i>Naviair</i></p> <p>There are already some recommendation for different delays e.g. for visual presentation.</p> <p><i>EUROCAE ED-240 [18] (REQ 01) stipulates a maximum end-to-end delay of 1 second for the visual presentation.</i></p> <p>There should be also at least recommendation for voice delay. Perhaps from ED-136 standard?</p> <p>6 [REQ RADIO PERFORMANCE] 130ms max Ground Transmission Voice delay The voice delay for ground transmission components SHALL be a maximum of 130ms. Given: Voice delay in the ground transmitter is 10ms and this is included in the 130ms.</p>
response	<p>Partially accepted</p> <p>The text has been adjusted to include a reference to applicable standards and recommended practises, e.g. ICAO Annex 10 ‘Aeronautical Telecommunications’, Volume III ‘Communication Systems’, ICAO Doc 9896 ‘Manual on the Aeronautical Telecommunication Network (ATN) using Internet Protocol Suite (IPS) Standards and Protocol’ and EUROCAE ED136-138 technical standards.</p>
comment	<p>122 comment by: <i>Naviair</i></p> <p>Backup/emergency radios should also be installed in different location than main radios.</p>
response	<p>Accepted</p> <p>Text has been inserted/added in the end of the section.</p>
comment	<p>255 comment by: <i>AESA/DSANA</i></p>



	<p><u>Comment</u> Latency requirements: How are those requirements aligned with the video latency requirements? Is Annex 10 envisaged to include any additional requirement/modify the existing one with regards to RTS needs?</p> <p><u>Justification</u> Requirements to be set for: * Latency and synchronization * Bandwidth * Data compression/filtering/processing * Integrity, availability and continuity of service * (Ciber) security</p>
<p>response</p>	<p>Partially accepted</p> <p>The text has been adjusted to include a reference to applicable standards and recommended practises, e.g. ICAO Annex 10 ‘Aeronautical Telecommunications’, Volume III ‘Communication Systems’, ICAO Doc 9896 ‘Manual on the Aeronautical Telecommunication Network (ATN) using Internet Protocol Suite (IPS) Standards and Protocol’ and EUROCAE ED136-138 technical standards.</p> <p>Furthermore, it is considered that the voice communication latency does not have a direct relationship with the video latency. It is considered that the voice communication latency will be significantly lower than the video latency.</p>
<p>comment</p>	<p>545 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>"The remote tower infrastructure shall enable the ATCO/AFISO to establish voice/data link communication detailed below. [...] In addition to the communication with the units and entities prescribed by ICAO Annex 11 Chapter 6.2 (as listed above), the remote tower infrastructure shall also enable the ATCO/AFISO to establish voice/data link communication with aerodrome personnel and/or any other entities as need be for the coordination and communication between the remote ATS unit and the aerodrome (and as documented in local agreements, see Sections 5.1 and 7)."</p> <p>It states subsequently in the text, ‘According to ICAO Annex 11 Chapter 6.2, an aerodrome control tower ‘shall be connected to; [...]’.</p> <p>Additionally, ICAO Annex 11, chapters 6.1, 6.2 and 6.3 referred to in the text itself detail the requirement of these as ‘shall’ be provided.</p>
<p>response</p>	<p>Partially accepted</p> <p><u>1st instance of the word ‘should’ (proposed by this comment to be replaced with ‘shall’):</u></p> <p>The text has been amended to reflect the mandatory nature of ICAO Annex 11 Chapters 6.1, 6.2, 6.3 (which all are proposed for transposition into the EU regulatory framework as Implementing Rules).</p>



2nd instance of the word ‘should’ (proposed by this comment to be replaced with ‘shall’):
 The text refers to communication with personnel/entities **other** than those already prescribed by ICAO Annex 11 Chapter 6.2 (hence, it goes beyond the scope of ICAO Annex 11 Chapter 6.2.), therefore the use of ‘should’ is appropriate in this instance and is kept.

comment	<p>742 comment by: <i>Federal Aviation Administration</i></p> <p>Current Text: As regards the differentiation between ATC provision and AFIS provision with respect to visual presentation, no significant differences that may affect the implementation of remote aerodrome ATS at a certain aerodrome have been identified. Instead, it is rather the traffic density and operational complexity (as opposed to the type of service, ATC/AFIS, provided) that should be considered when defining the exact operational and functional/technical requirements on the visual presentation (and the binocular functionality).</p> <p>Specific Comment: Consider adding weather dissemination as a function of communications.</p>
response	<p>Not accepted</p> <p>See the response to comment 736.</p>

3.1. Draft guidelines - 5.7. Voice and data recording	p. 41
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comment	<p>26 comment by: <i>GdF</i></p> <p>airground</p> <p>Typo</p>
response	<p>Noted</p> <p>This appears correct in document.</p>

comment	<p>216 comment by: <i>IFATCA</i></p> <p>airground</p> <p>typo</p>
response	<p>Noted</p> <p>This appears correct in document.</p>

comment	<p>839 comment by: <i>Think Research</i></p> <p>Section 5.7</p>
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	<p>Line 7. “For the case of remote aerodrome ATS, the recording functionality should be extended to include systems data that is specific to remote tower operations, such as the visual presentation data, the binocular functionality data and the aerodromes sound data.” Suggest removing aerodrome sound data or reword as follows “and other technical support system such as aerodrome sound data”</p>
response	<p>Accepted</p> <p>The wording has been adjusted accordingly.</p>
comment	<p>303 comment by: ENAV</p> <p>Voice and data recording</p> <p>ENAV comment If an ANSP introduces overlaid/augmented information and it shall have on/off functionality, a “screen recording” functionality shall be mandatory since that will show what the ATCO actually saw on the screens at a certain time. Ensure security for ATCO/AFISO in an investigation situation-What did I see?</p>
response	<p>Accepted</p> <p>In light of Amendment 8 to ICAO Doc 4444, the text has been amended to reflect that ‘screen recording’ is considered mandatory.</p>
comment	<p>362 comment by: CANSO</p> <p>5.7 Voice and data recording</p> <p>CANSO comment If an ANSP introduces overlaid/augmented information and it shall have on/off functionality, a “screen recording” functionality shall be mandatory since that will show what the ATCO actually saw on the screens at a certain time. Ensure security for ATCO/AFISO in an investigation situation-What did I see?</p>
response	<p>Accepted</p> <p>In light of Amendment 8 to ICAO Doc 4444, the text has been amended to reflect that ‘screen recording’ is considered mandatory.</p>
comment	<p>433 comment by: LfV</p> <p>LfV: If an ANSP introduces overlaid/augmented information and it shall have on/off functionality, a “screen recording” functionality shall be mandatory since that will show what the ATCO actually saw on the screens at a certain time. This is to ensure security for ATCO/AFISO in an investigation situation - What did I see?</p>

response	Accepted In light of Amendment 8 to ICAO Doc 4444, the text has been amended to reflect that 'screen recording' is considered mandatory.
comment	705 comment by: DACTCA It is important that not only the data for the video feed are recorded, but also what is actually presented at the working positions (screen recording). The views presented to the controllers, not just the data, that has be presented should be recorded. This will catch any irregularities in the presentation, eg glitch in compression, short failure in displays ect.
response	Noted This was the intention with the existing text, which has been slightly adjusted for clarification.
comment	434 comment by: LfV The recording of raw data might not be possible in new advanced camera sensors which comprises internal encoding functionality. LfV proposal: ...remove "raw" in (i.e. the raw data recorded and obtained by the sensors). Image processing is often handled within the cameras, thus the raw information is not available and the wording could be misleading.
response	Accepted
comment	166 comment by: Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen) Is that statement true? " should therefore be determined and specified by the competent authority, taking into account the aspects described herein." Could this be perscribed by the CA?
response	Noted The commented/quoted text has been deleted, as it became superfluous following the introduction of 'Amendment 8' to ICAO Doc 4444.
comment	546 comment by: European Transport Workers Federation - ETF "The exact requirements for the recording and retention of this data (e.g. what data to be recorded and the time/number of days that the data is to be retained) should therefore be determined and specified by the competent authority, taking into account the aspects described herein and must be no different from those as used in a conventional tower setting."

response	<p>There is no reason to allow for a differentiation of the rules for one type of ATS provision. Also, very important to note is that it should be taken into account the ability to record the visual representation and who may and may not have access to this type of data, for example non-ATS personnel such as the aerodrome authority requesting access for their own records. Will all personnel on the airfield be aware that they are being recorded? Will national regulation have an impact on this? Is it wise to introduce a differentiation between voice recording requirements and visual presentation recording requirements? These are things that must be considered here.</p> <p>ETF suggested in the drafting process to include the following: ‘It is recommended that staff representatives are consulted before defining the recording requirements.’</p> <p>Noted</p> <p>The quoted text has been deleted, as it became superfluous following the introduction of ‘Amendment 8’ to ICAO Doc 4444.</p> <p>A reference to ICAO Doc 4444, 7.1.1.2.1, Note 1, has been introduced, which by itself clarifies that it is mandatory to record the visual surveillance system data. The text of Section 5.7 has been updated to reflect this accordingly.</p> <p>Regarding national regulation/legislation, this is covered by existing text.</p>
comment	<p>594 comment by: HIAL</p> <p>Whilst HIAL concur with the recording requirement set out in the NPA, National legislation will determine the extent to which ATS Units and HIAL at Corporate level will have to develop procedures and agreements related to recordings of data deemed personal, particularly where the data is shared.</p>
response	<p>Noted</p>
comment	<p>799 comment by: UK CAA</p> <p>Page No: 41 Paragraph No: Final sentence of paragraph 5.7, 2nd sub-paragraph, beginning “The exact requirements for the recording...” Comment: This could be interpreted as contradicting the ICAO text referenced at the beginning of paragraph 5.7. NSAs may simply use the existing ICAO 30 day requirements as the benchmark, despite the significant cost associated with that amount of storage. Justification: Accuracy of EU Regulatory materials. Proposed Text: Replace with: “The exact requirements for the recording and retention of systems data specific to remote tower operations should be determined and specified by the CA, taking into account the aspects described herein.”</p>
response	<p>Noted</p> <p>The commented/quoted text has been deleted, as it became superfluous following the introduction of ‘Amendment 8’ to ICAO Doc 4444.</p>

comment	256	comment by: AESA/DSANA
	<p><u>Comment</u></p> <p>AESA would appreciate further clarification and/or guideline of who has the responsibility of the data storage and the number of days that image data should be stored. In addition, a guideline of whether a certain type of image compression is allowed or not would be welcome.</p>	
response	<p>Partially accepted</p> <p>As for the number of days the data is to be stored, following the introduction of 'Amendment 8' to ICAO Doc 4444 and the clarification provided in Note 1 to 7.1.1.2.1, the requirements in ICAO Annex 11, 6.4.1, apply.</p> <p>As for the responsibility of the data recording and retention, a Note has been introduced which refers to EASA Opinion No 03/2018. (EASA Opinion No 03/2018 proposes that the responsibility for data recording and retention of 'aeronautical mobile service', 'aeronautical fixed service', 'surface movement control service' and 'aeronautical radio navigation service' lies within the ATS provider.)</p>	

3.1. Draft guidelines - 5.8. Meteorological information

p. 41-42

comment	547	comment by: European Transport Workers Federation - ETF			
	<p>"The remote tower infrastructure shall support and provide:..."</p> <p>This is essential to safety and must not be compromised.</p>				
response	<p>Accepted</p> <p>The wording has been adjusted to reflect the existing regulatory framework.</p>				
comment	674	comment by: ATCEUC			
	<table border="1"> <tr> <td>The remote tower infrastructure should support and provide:</td> <td>The remote tower infrastructure shall support and provide:</td> <td>All the meteo data have to be available when providing Aerodrome ATS</td> </tr> </table>		The remote tower infrastructure should support and provide:	The remote tower infrastructure shall support and provide:	All the meteo data have to be available when providing Aerodrome ATS
The remote tower infrastructure should support and provide:	The remote tower infrastructure shall support and provide:	All the meteo data have to be available when providing Aerodrome ATS			
response	<p>Accepted</p> <p>The wording has been adjusted to reflect the existing regulatory framework.</p>				

3.1. Draft guidelines - 5.9. Management of aerodrome assets

p. 42

comment	471	comment by: Swedavia
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	The aerodrome operator should be informed automatically when there is a problem with the aerodrome assets listed in 5.9.
response	<p>Noted</p> <p>The intent of the proposed guidance is not to introduce new requirements related to the automatic provision of such information to the aerodrome operator other than the ones, stemming from the currently applicable aerodrome-related regulations. Therefore, in case there is a problem with any of the related systems, the aerodrome operator should be informed in the same way as it would be in the case of a conventional tower.</p>

3.1. Draft guidelines - 5.9.1. Aeronautical ground lights

p. 42

comment	<p>217</p> <p style="text-align: right;">comment by: <i>IFATCA</i></p> <p>Change proposal</p> <p>The implementation of this function should <i>shall</i> provide the means to ensure that this remote operation is effectively performed.</p> <p>Justification</p> <p>The use and control of aeronautical lights is highly important for the accomplishment of the tasks the operator is required.</p>
response	<p>Noted</p> <p>The quoted text has been removed. See the response to comment 800. See also the response to comment 205.</p>
comment	<p>549</p> <p style="text-align: right;">comment by: <i>European Transport Workers Federation - ETF</i></p> <p>"The remote tower infrastructure shall enable the ATCO/AFISO to operate and monitor aeronautical ground lights, in accordance with ICAO Doc 4444 [14] Chapter 7.15. [...] The implementation of this function shall provide the means to ensure that this remote operation is effectively performed. [...] The remote tower infrastructure should support such automatic information relay, according to the recommendations given chapter 8.3 of ICAO Annex 14 Volume I, whenever necessary subject to the needs of the particular aerodrome. Where this is not provided, the aerodrome controller shall visually observe such lighting as can be seen from the aerodrome control tower and use information from other sources such as visual inspections or reports from aircraft to maintain awareness of the operational status of the visual aids."</p>



	<p>Notwithstanding footnote 61 to NPA 2017-21, ICAO 4444, 7.5.2 (g) stipulates that <i>‘failure or irregular operation of part or all of the aerodrome lighting system; comprises part of essential aerodrome information’</i>, and therefore this information must be made available to ATC.</p> <p>This is a requirement of ICAO 4444, 7.15.9.2</p>
response	<p>Noted</p> <p>The quoted text has been removed. See the response to comment 800.</p>
comment	<p>760 comment by: <i>European Cockpit Association</i></p> <p>“Aeronautical ground lights”</p> <p>As a contingency measure in case of datalink loss between the controller working position and the ground lighting system at the respective airport, it is proposed to include a default approach and ground lighting setting to enable the safe continuation of flights until communication has been restored.</p>
response	<p>Noted</p> <p>The quoted text has been removed. See the response to comment 800.</p>
comment	<p>800 comment by: <i>UK CAA</i></p> <p>Page No: 42 Paragraph No: 5.9.1, beginning ‘The remote tower infrastructure ...’ Comment: The premise of the ‘remote tower’ is that essentially the operational aspect remains unchanged, therefore this paragraph is considered superfluous and the management of aerodrome assets should not change in remoting the service Proposed Text: Replace with: ‘The remote tower infrastructure should enable the ATCO/AFISO to operate and monitor all pre-existing assets which will remain the responsibility of the remotod service provider.’</p>
response	<p>Accepted</p> <p>The suggestion has been implemented, with the addition of references to applicable (example) ICAO provisions.</p>
<p>3.1. Draft guidelines - 5.9.2. Management of navigation aids p. 42</p>	

comment	<p>27 comment by: <i>GdF</i></p> <p>According to ICAO Annex 11 Chapter 7.3⁶³ [16], the <i>ATS units shall be kept currently informed of the operational status of radio navigation services and visual aids essential for take-off, departure, approach and landing procedures within their area of responsibility and of those radio navigation services and visual aids essential for surface movement</i>. In the remote tower system, the information about the status of</p>
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these radio navigation services and visual aids should be collected and presented to the ATCO/AFISO. The remote tower should ensure that the integrity of this information is preserved throughout this process. If the ATS unit is tasked to also operate any such radio navigation services or visual aids, the remote tower infrastructure should offer the means to ensure that its operation can be effectively performed, and should also offer the means for the ATCO/AFISO to detect any potential failure in this operation. This information and operation may require the use of a data network (e.g. WAN).

Is the remote tower system being meant?

The use of automation and networking means that cybersecurity needs to be considered. The implementation of cybersecurity has arrived late in aviation but the concept can no longer be ignored. Security is not only based in programming but also in the users being aware of the need to protect the information and be alert against vulnerabilities and social engineering.

IFATCA Provisional Policy is:

Compromised cyber security poses a significant risk to safety in aviation. IFATCA considers intentional cyber-attacks to be a form of unlawful interference.

response

Noted

The sentence in question has been removed, as integrity aspects are covered by ATM/ANS Common Requirements (Regulation (EU) No 1035/2011 and Regulation (EU) 2017/373).

The topic of cybersecurity is discussed in the Guidelines Section 6.4..

comment

218

comment by: IFATCA

Clarification:

According to ICAO Annex 11 Chapter 7.3⁶³ [16], the *ATS units shall be kept currently informed of the operational status of radio navigation services and visual aids essential for take-off, departure, approach and landing procedures within their area of responsibility and of those radio navigation services and visual aids essential for surface movement*. In the remote tower system, the information about the status of these radio navigation services and visual aids should be collected and presented to the ATCO/AFISO. The remote tower should ensure that the integrity of this information is preserved throughout this process. If the ATS unit is tasked to also operate any such radio navigation services or visual aids, the remote tower infrastructure should offer the means to ensure that its operation can be effectively performed, and should also offer the means for the ATCO/AFISO to detect any potential failure in this operation. This information and operation may require the use of a data network (e.g. WAN).

Is the remote tower system being meant?

The use of automation and networking means that cybersecurity needs to be considered. The implementation of cybersecurity has arrived late in aviation but the concept can no longer be ignored. Security is not only based in programming but also



response	<p>in the users being aware of the need to protect the information and be alert against vulnerabilities and social engineering.</p> <p>IFATCA Provisional Policy is: Compromised cyber security poses a significant risk to safety in aviation. IFATCA considers intentional cyber attacks to be a form of unlawful interference.</p> <p>Noted</p> <p>See the response to comment 27.</p>
comment	<p>257 comment by: AESA/DSANA</p> <p><u>Comment</u> "the remote tower should ensure that the integrity of information preserved throughout the process". There is no recommendation of how this should be done.</p>
response	<p>Noted</p> <p>The referenced sentence has been removed, as integrity aspects are covered by ATM/ANS Common Requirements (Regulation (EU) No 1035/2011 and Regulation (EU) 2017/373).</p>
comment	<p>258 comment by: AESA/DSANA</p> <p><u>Comment</u> Will the monitoring equipment be required to enable supervision and control of the navigation aids?</p> <p><u>Justification</u> Systems used for the monitoring of navigation aids (supervision only) are excluded from the scope of Reg. 552/2004 and, therefore, would not be subject of the splitting into constituents.</p>
response	<p>Noted</p> <p>A monitoring equipment is by definition used for monitoring purposes only. The existing ICAO/EU requirements apply, as for conventional towers.</p> <p>See also the response to comment 471.</p>
comment	<p>551 comment by: European Transport Workers Federation - ETF</p> <p>"In the remote tower system, the information about the status of these radio navigation services and visual aids shall be collected and presented to the ATCO/AFISO. The remote tower shall ensure that the integrity of this information is preserved throughout this process. If the ATS unit is tasked to also operate any such radio navigation services or visual aids, the remote tower infrastructure shall offer the means to ensure that its operation can be effectively performed, and should also offer the means for the ATCO/AFISO to detect any potential failure in this operation."</p>

response	<p>Earlier in the same paragraph it states, ‘According to ICAO Annex 11 Chapter 7.3 [16], the ATS units shall be kept currently informed of the operational status of radio navigation services and visual aids essential for take-off, departure, approach and landing procedures within their area of responsibility and of those radio navigation services and visual aids essential for surface movement.’</p> <p>Noted</p> <p>The quoted text has been removed. See the response to comment 800.</p>		
comment	<p>596 comment by: HIAL</p> <p>This paragraph should be expanded to stipulate that agreements will have to be reached with the Aerodrome Operator where the switching of Navigation Aid channels etc. is done so manually on site.</p>		
response	<p>Not accepted</p> <p>The requirements for coordination between the aerodrome operator and the ATS provider already exist in Regulation (EU) No 139/2014. Please also note the second bullet of Section 5.1.</p>		
comment	<p>675 comment by: ATCEUC</p> <table border="1"> <tr> <td> <p>In the remote tower system, the information about the status of these radio navigation services and visual aids should be collected and presented to the ATCO/AFISO. The remote tower should ensure that the integrity of this information is preserved throughout this process. If the ATS unit is tasked to also operate any such radio navigation services or visual aids, the remote tower infrastructure should offer the means to ensure that its operation can be effectively performed, and should also offer the means for the ATCO/AFISO to detect any potential failure in this operation.</p> </td> <td> <p>In the remote tower system, the information about the status of these radio navigation services and visual aids shall be collected and presented to the ATCO/AFISO. The remote tower shall ensure that the integrity of this information is preserved throughout this process. If the ATS unit is tasked to also operate any such radio navigation services or visual aids, the remote tower infrastructure shall offer the means to ensure that its operation can be effectively performed, and should also offer the means for the ATCO/AFISO to detect any potential failure in this operation.</p> </td> </tr> </table>	<p>In the remote tower system, the information about the status of these radio navigation services and visual aids should be collected and presented to the ATCO/AFISO. The remote tower should ensure that the integrity of this information is preserved throughout this process. If the ATS unit is tasked to also operate any such radio navigation services or visual aids, the remote tower infrastructure should offer the means to ensure that its operation can be effectively performed, and should also offer the means for the ATCO/AFISO to detect any potential failure in this operation.</p>	<p>In the remote tower system, the information about the status of these radio navigation services and visual aids shall be collected and presented to the ATCO/AFISO. The remote tower shall ensure that the integrity of this information is preserved throughout this process. If the ATS unit is tasked to also operate any such radio navigation services or visual aids, the remote tower infrastructure shall offer the means to ensure that its operation can be effectively performed, and should also offer the means for the ATCO/AFISO to detect any potential failure in this operation.</p>
<p>In the remote tower system, the information about the status of these radio navigation services and visual aids should be collected and presented to the ATCO/AFISO. The remote tower should ensure that the integrity of this information is preserved throughout this process. If the ATS unit is tasked to also operate any such radio navigation services or visual aids, the remote tower infrastructure should offer the means to ensure that its operation can be effectively performed, and should also offer the means for the ATCO/AFISO to detect any potential failure in this operation.</p>	<p>In the remote tower system, the information about the status of these radio navigation services and visual aids shall be collected and presented to the ATCO/AFISO. The remote tower shall ensure that the integrity of this information is preserved throughout this process. If the ATS unit is tasked to also operate any such radio navigation services or visual aids, the remote tower infrastructure shall offer the means to ensure that its operation can be effectively performed, and should also offer the means for the ATCO/AFISO to detect any potential failure in this operation.</p>		
response	<p>Noted</p> <p>The quoted text has been removed. See the response to comment 800.</p>		

3.1. Draft guidelines - 5.9.3. Alerting service and alarm management p. 42-43



comment	<p>553 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>"If such procedures include e.g. the monitoring and triggering of accident, incident and distress alarms, the remote tower infrastructure shall support the need to remotely manage the corresponding alarms as applicable to the aerodrome. [...] Additionally, to support ICAO Doc 4444 chapter 7.1.2.165 [14], the remote tower system shall ensure that relevant aerodrome service/personnel can contact the ATCO/AFISO, [...]"</p> <p>Earlier in the same paragraph it states, '<i>ICAO Doc 4444 Chapter 7.1.2.264 [14] stipulates that 'Procedures concerning the alerting of the rescue and fire fighting services shall be contained in local instructions. Such instructions shall specify the type of information to be provided to the rescue and fire fighting services, including..'</i></p> <p>ICAO 4444, 7.1.2.1 states that this is the responsibility of the aerodrome control tower.</p>
response	<p>Noted</p> <p>The quoted text has been removed as it was deemed not relevant for this section/context.</p>

comment	<p>676 comment by: <i>ATCEUC</i></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;"> <p>If such procedures include e.g. the monitoring and triggering of accident, incident and distress alarms, the remote tower infrastructure should support the need to remotely manage the corresponding alarms as applicable to the aerodrome. [...] Additionally, to support ICAO Doc 4444 chapter 7.1.2.165 [14], the remote tower system should ensure that relevant aerodrome service/personnel can contact the ATCO/AFISO, [...]</p> </td> <td style="width: 50%; padding: 5px;"> <p>If such procedures include e.g. the monitoring and triggering of accident, incident and distress alarms, the remote tower infrastructure shall support the need to remotely manage the corresponding alarms as applicable to the aerodrome. [...] Additionally, to support ICAO Doc 4444 chapter 7.1.2.165 [14], the remote tower system shall ensure that relevant aerodrome service/personnel can contact the ATCO/AFISO, [...]</p> </td> </tr> </table>		<p>If such procedures include e.g. the monitoring and triggering of accident, incident and distress alarms, the remote tower infrastructure should support the need to remotely manage the corresponding alarms as applicable to the aerodrome. [...] Additionally, to support ICAO Doc 4444 chapter 7.1.2.165 [14], the remote tower system should ensure that relevant aerodrome service/personnel can contact the ATCO/AFISO, [...]</p>	<p>If such procedures include e.g. the monitoring and triggering of accident, incident and distress alarms, the remote tower infrastructure shall support the need to remotely manage the corresponding alarms as applicable to the aerodrome. [...] Additionally, to support ICAO Doc 4444 chapter 7.1.2.165 [14], the remote tower system shall ensure that relevant aerodrome service/personnel can contact the ATCO/AFISO, [...]</p>
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response	<p>Noted</p> <p>The quoted text has been removed as it was deemed not relevant for this section/context.</p>			



3.1. Draft guidelines - 5.9.4. Management of other aerodrome assets

p. 42-43

comment 801 comment by: UK CAA

Page No: 43**Paragraph No:** 5.9.4, Final sentence beginning 'As the monitoring and manoeuvring of such assets are not ATS tasks, ...'**Comment:** At many aerodromes these are routinely, ATS tasks.**Proposed Text:** Replace with:

"In cases where the monitoring and manoeuvring of such assets are ATS tasks and will continue to be, or at aerodromes where such assets are not ATS tasks...,,"

response Partially accepted

The text of Section 5.9.4 has been amended for clarification.

comment 840 comment by: Think Research

Section 5.9.4

Is this section required within this document? It does not seem to add much information or value to the text.

response Noted

The section is deemed to provide useful information/guidance.

3.1. Draft guidelines - 5.10. RTC/RTM–aerodrome communication aspects

p. 43

comment 44 comment by: GdF

RTC/RTM–aerodrome communication aspects



Usually in ATM/ATS communication (COM) refers to voice communication (Voice COM) only. Other transfer of data would be some other kind of data link. Spectrum Protection refers to the management of the radio-frequency spectrum in order to protect particular interests. The spectrum includes not only communications and datalink applications, but also navigation and other uses. Aviation is just one of the many users of the spectrum.

IFATCA Policy is:

The radio-frequency spectrum must be managed in a manner that at all times ensures the safety of current aviation activity and allows for future safety-of-flight applications.

Existing spectrum allocations for exclusive aviation use must not allow other uses until it is thoroughly proven that aviation safety will not be compromised by the shared use of the spectrum allocation.

Prior to aviation use of shared spectrum allocations, it must be thoroughly proven that safety-critical aviation requirements are not compromised.

Adequate protection against harmful interference to aviation spectrum use must be ensured.

response Accepted

The title of Section 5.10 has been changed and the text within the section adjusted accordingly.

comment

238

comment by: IFATCA

Clarification

RTC/RTM–aerodrome **communication** aspects

Usually in ATM/ATS communication (COM) refers to voice communication (Voice COM) only. Other transfer of data would be some other kind of data link. Spectrum Protection refers to the management of the radio-frequency spectrum in order to protect particular interests. The spectrum includes not only communications and datalink applications, but also navigation and other uses. Aviation is just one of the many users of the spectrum.

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The radio-frequency spectrum must be managed in a manner that at all times ensures the safety of current aviation activity and allows for future safety-of-flight applications.

Existing spectrum allocations for exclusive aviation use must not allow other uses until it is thoroughly proven that aviation safety will not be compromised by the shared use of the spectrum allocation.

Prior to aviation use of shared spectrum allocations, it must be thoroughly proven that safety-critical aviation requirements are not compromised.



response	<p>Adequate protection against harmful interference to aviation spectrum use must be ensured.</p> <p>Accepted</p> <p>The title of Section 5.10 has been changed and the text within the section adjusted accordingly.</p>		
comment	<p>259 comment by: AESA/DSANA</p> <p><u>Comment</u> Does the aeronautical mobile service, as stated in the first paragraph, really rely on the COMM link between the remote facility and the aerodrome? Couldn't it be provided by means of antennas, systems, etc. located in the remote facility?</p>		
response	<p>Not accepted</p> <p>Yes, the aeronautical mobile service is relying on a communication link between the remote facility and the aerodrome, as is the case for a conventional tower (between the tower cabin and the transmitter/receiver equipment used).</p>		
comment	<p>554 comment by: European Transport Workers Federation - ETF</p> <p>"When the ATS provider relies on third-party providers (e.g. network or telecom service providers), it shall ensure that the appropriate safety requirements are incorporated into the Service Level Agreements (SLAs) with such third-party providers, and [...]"</p> <p>This is essential to safety and must not be compromised.</p>		
response	<p>Noted</p> <p>The text has been removed and replaced with a reference to the applicable regulations.</p>		
comment	<p>677 comment by: ATCEUC</p> <table border="1"> <tr> <td> <p>When the ATS provider relies on third-party providers (e.g. network or telecom service providers), it should ensure that the appropriate safety requirements are incorporated into the Service Level Agreements (SLAs) with such third-party providers, and [...]</p> </td> <td> <p>When the ATS provider relies on third-party providers (e.g. network or telecom service providers), it shall ensure that the appropriate safety requirements are incorporated into the Service Level Agreements (SLAs) with such third-party providers, and [...]</p> </td> </tr> </table>	<p>When the ATS provider relies on third-party providers (e.g. network or telecom service providers), it should ensure that the appropriate safety requirements are incorporated into the Service Level Agreements (SLAs) with such third-party providers, and [...]</p>	<p>When the ATS provider relies on third-party providers (e.g. network or telecom service providers), it shall ensure that the appropriate safety requirements are incorporated into the Service Level Agreements (SLAs) with such third-party providers, and [...]</p>
<p>When the ATS provider relies on third-party providers (e.g. network or telecom service providers), it should ensure that the appropriate safety requirements are incorporated into the Service Level Agreements (SLAs) with such third-party providers, and [...]</p>	<p>When the ATS provider relies on third-party providers (e.g. network or telecom service providers), it shall ensure that the appropriate safety requirements are incorporated into the Service Level Agreements (SLAs) with such third-party providers, and [...]</p>		
response	<p>Noted</p>		



The text has been removed and replaced with a reference to the applicable regulations.

comment 802 comment by: UK CAA

Page No: 43

Paragraph No: 5.10, RTC/RTM–aerodrome communication aspects

Comment: This paragraph highlights a critical element of the remote tower concept and we believe, runs the risk of being lost in background noise in its current place in the NPA and should therefore be more prominent. We suggest placing the paragraph earlier in the document.

response Not accepted

Although EASA understands the rationale behind this comment, it is considered that the placement of this section within Chapter 5 is logical and appropriate.

3.1. Draft guidelines - 5.11. Technical supervision

p. 43-44

comment 45 comment by: GdF

The system and its constituents should include monitoring functions that **continuously monitors the technical status** and provide: [...]

Because different providers could be responsible for individual technical components, this would create a need for interoperability and a common standard.

response Not accepted

The text refers to monitoring which does not necessarily require the need for interoperability and common standards.

comment 239 comment by: IFATCA

Incomplete:

The system and its constituents should include monitoring functions that **continuously monitors the technical status** and provide: [...]

Reasoning

Because different providers could be responsible for individual technical components, there is a need for a common standard securing the interoperability and compatibility. Both at the individual constituent, at the systemic

response Not accepted



See the response to comment 45.

comment	<p>538 comment by: <i>Heathrow airport</i></p> <p>We believe that further development of the remote tower capability has the potential to evolve in the future to enable more flexible and advantageous roles and layouts of RTM positions than a complete replication of current conventional tower roles and responsibilities, which could lead to additional enhancements in safety, capacity, and service. ‘ATS responsibilities should remain the same as if the service would be provided from a conventional tower’ – if safety cases can be found for alternatives, why would they not be included? In addition, the requirements and need for supervisors and technical supervision role will be based upon the local need and local safety assessment.</p>
response	<p>Partially accepted</p> <p>The text has been adjusted to clarify that the requirements/need for a technical supervision role are/is to be based on the local need and safety assessment.</p>

comment	<p>555 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>"The system and its constituents shall include monitoring functions that continuously monitors the technical status and provide:"</p> <p>These should be considered as a bare minimum for monitoring of system availability and equipment serviceability.</p> <p>Furthermore, ETF considers it would be necessary to establish stringent regulation as to how to certify the systems for operations with introduction of a requirement on system availability and/or failure rate. For CAT II and III approaches, a system exists to qualify the category of ILS available for use for that type of operation (the time of availability of the ILS is set as a condition to operate this), ETF suggests to include this type of requirement for the visual presentation.</p>
response	<p>Not accepted</p> <p>See the responses to comment 205 and 330. Introduction of remote aerodrome ATS is a change to the functional system, which is governed in the ATM/ANS domain by the ATM/ANS Common Requirements (i.e. Regulation (EU) No 1035/2011 and Regulation (EU) 2017/373).</p>

comment	<p>678 comment by: <i>ATCEUC</i></p> <table border="1" style="width: 100%;"> <tr> <td style="width: 50%; padding: 5px;"> <p>The system and its constituents should include monitoring functions that continuously monitors the technical status and provide:</p> </td> <td style="width: 50%; padding: 5px;"> <p>The system and its constituents shall include monitoring functions that continuously monitors the technical status and provide:</p> </td> </tr> </table>	<p>The system and its constituents should include monitoring functions that continuously monitors the technical status and provide:</p>	<p>The system and its constituents shall include monitoring functions that continuously monitors the technical status and provide:</p>
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response Not accepted
See the response to comment 555.

comment 803 comment by: UK CAA

Page No: 44

Paragraph No: 5.11, Part way through final sentence beginning 'In case of severe failures ...'

Comment: The requirement for monitoring technical systems is laid down elsewhere, so should simply be referenced here. The final sentence talks about closing down the service yet, there should be mitigations in place for systems failures.

Proposed Text: Replace with:

"for the ATCO/AFISO to call for the technical supervisory specialist, close down the service or implement pre-arranged contingency plans".

response Accepted

3.1. Draft guidelines - 5.12. Other ATS systems/functions

p. 44

comment 260 comment by: AESA/DSANA

Comment

In case those systems/functions are provided by different ANSP, the provider in charge of ATC/AFIS shall establish the appropriate agreements.

Justification

The provider responsible for the ATC/AFIS service should guarantee that the other ATS systems/functions are operated and maintained properly and the SLAs are in place.

response Noted

Indeed, and these aspects are governed by the existing ATM/ANS Common Requirements.

comment 556 comment by: European Transport Workers Federation - ETF

"These systems or functions, that shall be available to the ATCO/AFISO, are:"

Earlier in the same paragraph it states, '*This subsection lists systems/functions which are needed for the ATS provision, but which are not necessarily affected or changed due to the service being provided remotely.*' Irrespective of whether or not they are affected or changed due to the service being provided as the text goes on to state, they must still be available to the ATCO/AFISO.



response Partially accepted

The availability/requirement for such listed functions are governed by other existing regulations, e.g. ICAO. Regardless of the use of 'shall/should' in the Guideline document, the applicability and regulatory level/importance of the regulations governing ATS provision remains unaffected. See Guidelines Section 1.4 stating that 'ATS providers or aerodrome operators considering implementation of remote aerodrome ATS are responsible for ensuring compliance with the international standards and EU/national requirements as may be applicable to individual operations.'

Nevertheless, the text has been adjusted to avoid the use of the word 'should'.

comment 679 comment by: ATCEUC

These systems or functions, that should be available to the ATCO/AFISO, are:

These systems or functions, that shall be available to the ATCO/AFISO, are:

response Partially accepted

See the response to comment 556.

comment 804 comment by: UK CAA

Page No: 44

Paragraph No: 5.12, Other ATS systems/functions

Comment: As these systems will remain unchanged, we recommend that they are not mentioned, as to do so could confuse the reader.

Proposed Text: Delete paragraph.

response Not accepted

These systems/functions are intentionally listed to indicate that they have been assessed during the development of these Guidelines, with the conclusion that they are typically not affected by the introduction of remote aerodrome ATS.

3.1. Draft guidelines - 5.13. Working environment

p. 44-45

comment 28 comment by: GdF

It should be possible to adjust the lighting conditions in the RTC/RTM in order to adapt to the daylight conditions at the (possibly remote) aerodrome(s). E.g. during hours of darkness at the aerodrome(s), the lighting conditions in the RTM/RTC will probably need to be darker (compared to during hours of daylight at the aerodrome(s)). If several RTMs are co-located in an RTC, it is recommended that it is



	<p>possible to control/adjust the light conditions individually for each RTM, as the daylight conditions may differ between the aerodromes connected to different RTMs.</p> <p>The whole paragraph is full of speculation. Modern ATC-Centres have close to daylight (300 Lux) lighting and do not dial it down during the night. In a remote tower centre there would not be a need to reduce lighting during the night, because the outside-view is not directly perceived. GdF suggest, that EASA encourages more study into this subject.</p>
response	<p>Partially accepted</p> <p>The text has been adjusted and shortened.</p>
comment	<p>219 comment by: IFATCA</p> <p>Clarify or delete</p> <p>It should be possible to adjust the lighting conditions in the RTC/RTM in order to adapt to the daylight conditions at the (possibly remote) aerodrome(s). E.g. during hours of darkness at the aerodrome(s), the lighting conditions in the RTM/RTC will probably need to be darker (compared to during hours of daylight at the aerodrome(s)). If several RTMs are co-located in an RTC, it is recommended that it is possible to control/adjust the light conditions individually for each RTM, as the daylight conditions may differ between the aerodromes connected to different RTMs.</p> <p>The whole paragraph is full of speculation. Modern ATC-Centres have close to daylight (300 Lux) lighting and do not dial it down during the night. In a remote tower centre there would not be a need to reduce lighting during the night, because the outside-view is not directly perceived.</p> <p>For IFATCA this paragraph is immature and needs further studies to be encouraged by EASA before proceeding any further with this suggestion.</p>
response	<p>Partially accepted</p> <p>The text has been adjusted and shortened.</p>
comment	<p>304 comment by: ENAV</p> <p>Comment: chapter 5.14.7 on multiple mode operations uses the correct expression to our view: “The lighting conditions in the RTM should support the possibility of different daylight/darkness conditions at the different aerodromes connected to a RTM in a multiple-mode-of-operation environment.”</p> <p>We suggest to change (insert yellow, delete strikethrough) the sentence of 5.13 as follows:</p> <p>ENAV suggestion</p>



response	<p>It is recommended that the working environment permits daylight/darkness conditions equal/similar to ordinary office establishments. One justification for this (apart from an overall good working environment and well-being) would be that ATCOs/AFISOs, used to working in conventional towers, are accustomed to daylight such conditions.</p> <p>Alternatively we suggest to delete the second sentence fully.</p>
	<p>Accepted</p> <p>The second sentence has been deleted.</p>
comment	<p>305 comment by: ENAV</p> <p>E.g. during hours of darkness at the aerodrome(s), the lighting conditions in the RTM/RTC will probably need to be darker</p> <p>ENAV suggestion Not fully correct - assumption, adds no value. Delete</p>
response	<p>Accepted</p> <p>The text has been deleted.</p>
comment	<p>363 comment by: CANSO</p> <p>Comment: chapter 5.14.7 on multiple mode operations uses the correct expression to our view: “The lighting conditions in the RTM should support the possibility of different daylight/darkness conditions at the different aerodromes connected to a RTM in a multiple-mode-of-operation environment.”</p> <p>We suggest to change (insert yellow, delete strikethrough) the sentence of 5.13 as follows:</p> <p>CANSO suggestion</p> <p>It is recommended that the working environment permits daylight/darkness conditions equal/similar to ordinary office establishments. One justification for this (apart from an overall good working environment and well-being) would be that ATCOs/AFISOs, used to working in conventional towers, are accustomed to daylight such conditions.</p> <p>Alternatively we suggest to delete the second sentence fully.</p>
response	<p>Accepted</p> <p>The second sentence has been deleted.</p>
comment	<p>364 comment by: CANSO</p>



	<p>E.g. during hours of darkness at the aerodrome(s), the lighting conditions in the RTM/RTC will probably need to be darker</p> <p>CANSO suggestion Not fully correct - assumption, adds no value. Delete</p>
response	<p>Accepted</p> <p>The text has been deleted.</p>
comment	<p>435 comment by: LfV</p> <p>Present test in 5.13: "It is recommended that the working environment permits daylight conditions equal/similar to ordinary office establishments. One justification for this (apart from an overall good working environment and well-being) would be that ATCOs/AFISOs, used to working in conventional towers, are accustomed to daylight conditions."</p> <p>LfV: Delete "One justification for this (apart from an overall good working environment and well-being) would be that ATCOs/AFISOs, used to working in conventional towers, are accustomed to daylight conditions." Sentence is not necessary. What about nights and winter in northern Europe?</p>
response	<p>Accepted</p> <p>The sentence has been deleted.</p>
comment	<p>456 comment by: LfV</p> <p>Text in paragraph 5.13: "E.g. during hours of darkness at the aerodrome(s), the lighting conditions in the RTM/RTC will probably need to be darker."</p> <p>LfV: Not fully correct - assumption, adds no value. Delete.</p>
response	<p>Accepted</p> <p>The text has been deleted.</p>
comment	<p>464 comment by: René Meier, Europe Air Sports</p> <p>5.13. Working environment page 44/92</p> <p>Second last line: "mental illness", question: Is this a problem in the ATCO's world requiring our attention within the scope of these "guidelines"? We are not "shocked" by the appearance of this strong medical term, but slightly confused...</p>
response	<p>Accepted</p>



The wording has been removed.

comment 557 comment by: *European Transport Workers Federation - ETF*

"A dedicated analysis of the working environment and ergonomics of the facilities used for remote aerodromes ATS shall be conducted by the ATS provider, as this is as an essential aspect for a successful ATS provision and e.g. for the ATCO/AFISO overall system trust.

[...]

The physical working environment (noise, temperature, lighting etc.) shall be in accordance with national regulations for normal office establishments."

It is either an essential aspect for a successful ATS provision as the text goes on to state or it is not. Additionally, in paragraph 5, it states, '*The human factors assessment (see Section 6.2) is fundamental to build this confidence and trust.*'

These are either national regulations or they are not.

response Accepted

The wording has been adjusted.

comment 600 comment by: *HIAL*

Human factor considerations such as screen fatigue, simultaneous operations, combined roles, traffic levels and operational complexity etc. will almost definitely necessitate a move away from the UK based Fatigue Risk Management System (FRMS) guided under CAP 382 (Scheme for Regulation of ATCO Hours (SRATCOH)) towards a more appropriate model as per the Critical Incident and Stress Management (CISM) requirement of EU Regulation 2017/373. The NPA does not clarify whether RT operations such as combined roles or concurrent operations, would be enabled or restricted, or detail how this can be done in practice, and under what circumstances. These are all aspects of remote tower operations that could significantly affect operational costs and, by association, the feasibility of introducing remote towers at some locations.

response Noted

EASA understands the term 'concurrent operations' to mean multiple mode of operation. The Guideline document Sections 3.3, 4.2, 5.14, 6.1.1, 6.2.2, 6.5, etc. as well as GM4 ATCO.D.060(c) to Regulation (EU) 2015/340 deal with this topic extensively.

comment 680 comment by: *ATCEUC*

A dedicated analysis of the working environment and ergonomics of the facilities used for remote aerodromes ATS should be conducted by the ATS

A dedicated analysis of the working environment and ergonomics of the facilities used for remote aerodromes ATS shall be conducted by the ATS



	<p>provider, as this is as an essential aspect for a successful ATS provision and e.g. for the ATCO/AFISO overall system trust. [...] The physical working environment (noise, temperature, lighting etc.) should be in accordance with national regulations for normal office establishments.</p>	<p>provider, as this is as an essential aspect for a successful ATS provision and e.g. for the ATCO/AFISO overall system trust. [...] The physical working environment (noise, temperature, lighting etc.) shall be in accordance with national regulations for normal office establishments.</p>
response	<p>Accepted</p> <p>The wording has been adjusted.</p>	
comment	<p>805 comment by: UK CAA</p> <p>Page No: 44 Paragraph No: 5.13, Working environment Comment: We believe this paragraph is too detailed. It refers to a poor working environment and state-of-the-art ergonomic design. All of this is considered superfluous, while each application may want to consider these aspects, cost will be the main driver. Proposed Text: Delete paragraph.</p>	
response	<p>Partially accepted</p> <p>The section has been shortened.</p>	

3.1. Draft guidelines - 5.14. Additional considerations for multiple mode of operation p. 45

comment	<p>558 comment by: European Transport Workers Federation - ETF</p> <p>Multiple mode of operations will increase human errors as it increases the complexity of the work. Until when does this remain acceptable?</p>
response	<p>Not accepted</p> <p>Multiple mode of operation could increase human errors if it is poorly implemented. The concept of multiple mode of operation has been studied and validated, e.g. within SESAR, for many years — both in the context of ATC and AFIS. The results are clear — multiple mode of operation can be provided in a safe manner for the operational scenarios that have been tested, refer to SESAR Solution #52 ('Remote tower for two low-density aerodromes', published late 2015). Continued research is ongoing within SESAR 2020, evaluating the multiple mode of operation concept for more challenging operational context/environments (i.e. higher traffic volumes and</p>



increased number of simultaneous aerodromes). As mentioned in several places in NPA 2017-21, whereas the single mode of operation is already implemented and approved for some aerodromes by the relevant competent authorities, EASA recognises that the concept of multiple mode of operation has not yet been operationally implemented. Nevertheless, EASA considers that there is already sufficient information and data available to provide regulatory support and guidance to facilitate its safe implementation, as well as to provide a basis for its further development.

It is essential to consider human factors aspects as part of any aerodrome ATS implementation. This is why extensive guidance on human factors assessment is provided in Guidelines Section 6.2, with specific attention to multiple mode of operation presented in Section 6.2.2. Furthermore, Section 4.2 clarifies that ‘multiple mode of operation is to be used only when the operational circumstances so allow and when certainty exists that workload and complexity can be managed. It is the responsibility of the ATS provider to define the suitable operational circumstances, which require careful considerations, as well as to provide sufficient evidence for an acceptable level of safety (as is always the case).’

comment

681

comment by: ATCEUC

ATCEUC is against multiple mode of operations and thinks that those unexpected events are the normal events occurring daily on airports.

response

Noted

In case there are unexpected events normally occurring daily on an airport, this airport is likely not suitable for multiple mode of operation. Multiple mode of operation is ‘not for all, not all the time and not in all circumstances’, see the overarching recommendation in Guidelines Section 4.2.

Furthermore, the concept of multiple mode of operation has been studied and validated, e.g. within SESAR, for many years — both in the context of ATC and AFIS. The results are clear — multiple mode of operation can be provided in a safe manner for the operational scenarios that have been tested, refer to SESAR Solution #52 (‘Remote tower for two low-density aerodromes’, published late 2015). Continued research is ongoing within SESAR 2020, evaluating the multiple mode of operation concept for more challenging operational context/environments (i.e. higher traffic volumes and increased number of simultaneous aerodromes). As mentioned in several places in NPA 2017-21, whereas the single mode of operation is already implemented and approved for some aerodromes by the relevant competent authorities, EASA recognises that the concept of multiple mode of operation has not yet been operationally implemented. Nevertheless, EASA considers that there is



already sufficient information and data available to provide regulatory support and guidance to facilitate its safe implementation, as well as to provide a basis for its further development.

3.1. Draft guidelines - 5.14.1.1 Handling of abnormal and emergency situations in multiple mode of operation

p. 45

comment

261

comment by: AESA/DSANA

Comment

AESA would appreciate further guidelines and/or the establishment of a priority Check List on this issue. It could be mitigated in RTCs with multiple positions, which implies more flexibility, but at the same time it could introduce more constraints about qualification and training of ATCOs/AFISOs

response

Not accepted

The text in this section already clarifies: 'The ATS provider should put in place procedures and contingency plans that clearly define how to deal with unexpected events,..'. Such plans and procedures need to be developed locally, taking into account the operational context and the local conditions. Conditions and circumstances differ between different EASA Member States/providers/aerodromes, etc.

comment

559

comment by: European Transport Workers Federation - ETF

"The ATS provider shall put in place procedures and contingency plans that clearly define how to deal with unexpected events, such as an emergency situation at one of the aerodromes significantly increasing the ATCO/AFISO workload and affecting her/his capability to continue to provide ATS to all aerodromes under responsibility. Such procedures and situations shall be adequately and recurrently trained. Where the splitting of multiple modes of operation is unable to be achieved safely e.g. when an emergency situation is occurring at one aerodrome, procedures shall be established to permit the ATCO/AFISO the ability to safely cease the provision of a service at the other aerodrome."

We have already raised misgivings about the provision of a remote service to multiple aerodromes simultaneously. We therefore see this as an absolute minimum to maintain the safety of the system.

response

Partially accepted

The wording has been adjusted to partially address this comment. The content of the second paragraph in the comment above (text starting with 'Where the splitting



of...') is already covered by the listed examples. In general, concerning the use of 'should/shall', see the response to comment 205.

comment 656 comment by: *Flughafen Berlin Brandenburg GmbH*

Prior to the development and implementation of contingency procedures, the ATS provider should consult with affected aerodrome operators the procedures and contingency plans and their subsequent impacts on aerodrome operations. This is particularly relevant if those plans and procedures for one aerodrome would result in delayed traffic or reduced operations at other aerodromes.

response Noted

Your comment is correct. However, EASA does not find it necessary to explicitly mention such coordination in the Guideline document, since the legal obligations for coordination between aerodrome operators and ATS providers are already in place.

comment 682 comment by: *ATCEUC*

Request another ATCO/AFISO to support safe operations request time to allow this to have a full situational awareness, It can't be done in emergency when the acting ATCO/AFISO has to be fully dedicated o handle the abnormal situation

response Noted

The situation would be similar to requesting support from a colleague in a conventional tower today. The supporting ATCO/AFISO would need to be up to date and trained in the applicable operating environment and equipment (holding a valid unit endorsement). Nevertheless, the exact procedures and contingency plans for how to deal with unexpected events/emergencies need to be defined locally by the ATS provider. The listed items solely provide some examples for guidance.

comment 706 comment by: *ACR AB*

When one ATCO is working two aerodromes in a multiple mode and an abnormal situation occurs it is said that another ATCO should be "called in" to handle the other aerodrome so that "ATCO nr one" can focus on the abnormal situation. This means that an ANSP performing multiple remote operations should always have two ATCOS available at all times for every airport. Will this be a demand in the future regulatory framework?

response Noted

The exact procedures and contingency plans for how to deal with unexpected events/emergencies need to be defined locally by the ATS provider. The listed items solely provide examples for guidance. Whether there is a need for the availability of additional ATCOs/AFISOs will depend on factors such the category of airports



provided with ATS, the amount and characteristics of traffic at these airports, service continuity requirements, etc.

comment

806

comment by: UK CAA

Page No: 45**Paragraph No:** 5.14.1.1, Handling of abnormal and emergency situations in multiple mode of operation**Comment:** This paragraph refers to ABES training which is mandated elsewhere. Each application will need to consider its own mitigation methods; therefore, the cited examples are unnecessary. While multiple mode is a new operation, there should be no significant difference in the emergency procedures. Also, the paragraph would benefit from some minor restructuring.**Proposed Text:** Amend the first sub-paragraph to read as follows:

‘The ATS provider should put in place procedures and contingency plans that clearly define how to deal with unexpected events, such as an emergency at one of the aerodromes significantly increasing ATCO/AFISO workload and affecting their ability to continue to provide ATS to all aerodromes under their responsibility. Such procedures and situations require adequate and recurrent training. Each application for multiple mode of operation will require careful consideration for potentially exacerbated emergency situations and therefore the potential exists for enhanced training and mitigations.’

response

Partially accepted

The first paragraph has been amended as proposed; however, the listed examples have been kept. EASA believes that the examples provide useful guidance and give an idea of how such situations could be handled in multiple mode of operation. This is deemed to be particularly important in a situation where the concept is being heavily questioned and criticised by some stakeholders.

comment

807

comment by: UK CAA

Page No: 45**Paragraph No:** 5.14.1.1, 1st bullet beginning “temporarily delay...”**Comment:** An AFISO cannot issue delaying or other actions. We therefore recommend that some text will need to be developed to highlight the actions available to AFISO in these circumstances.**Justification:** Consistency of EU Regulatory materials with ICAO provisions.

response

Partially accepted

In fact, an AFISO could impose delays or other actions to some extent, through the coordination with other/adjacent ATS units or the aerodrome operator/owner. A clarification of the bullet has been added. In addition, a similar clarification has been added in Section 4.2.2.

comment

808

comment by: UK CAA



	<p>Page No: 45</p> <p>Paragraph No: 5.14.1.1, Note: An RTC Supervisor may support the ATCO/AFISO to apply these procedures.</p> <p>Comment: The purpose and meaning of this note is not clear and needs to be reworded.</p> <p>Justification: Unclear text.</p>
response	<p>Accepted</p> <p>The note/text has been removed.</p>

3.1. Draft guidelines - 5.14.1.2 Communication procedural aspects in multiple mode of operation	p. 46-47
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comment	<p>29 comment by: GdF</p> <p>If treated separately, the ATCO/AFISO would be able to hear all transmissions for all aerodromes</p> <p>In addition, the ATCO/AFISO would need to select the correct transmitter/frequency, which would lead to the possibility of a mix-up of transmitters/frequencies.</p>
response	<p>Accepted</p> <p>The text has been amended to include also this aspect.</p>
comment	<p>30 comment by: GdF</p> <p>Cross-coupling On the other hand, confusion may arise from pilots hearing transmission(s) at other aerodromes.</p> <p>GdF explicitly agrees.</p> <p>IFATCA policy is:</p> <p>If a controller is providing ATS for two or more areas, the relevant channels must be located on the Controller Working Position being used.</p> <p>If more than one RTF channel is being used, then suitable 'retransmit' facilities must be provided to enable all users to receive all transmissions. The ability to enable or disable 'retransmit' facilities should be provided.</p> <p>Future systems should include technology that warns the controller in the event of a crossed transmission.</p> <p>Independent backup equipment should be provided.</p>
response	<p>Noted</p> <p>This is covered by Guidelines Sections 5.14.2 and 5.14.3.</p>
comment	<p>31 comment by: GdF</p>



response	<p>If this procedure is to be implemented, it should be published in the AIP for the particular aerodrome, together with any other specific communication methods as deemed necessary.</p> <p>SERA may have to be changed.</p> <p>Noted</p> <p>These procedures are additional to the procedures stipulated in SERA. EASA will consider their introduction into SERA as part of the regular updating procedures, subject to future operational experiences.</p>
comment	<p>32 comment by: <i>GdF</i></p> <p>For aerodromes provided with (or to potentially be provided with) multiple mode of operation, it is recommended to consider to introduce the introduction of different-call sign/number series for the vehicles and taxiways should be different at the respective aerodrome.</p> <p>To avoid possible mix-ups vehicles and taxiways shall have unique names.</p>
response	<p>Not accepted</p> <p>The naming of airport taxiways typically follows certain naming conventions in order to achieve a streamlined naming of airport taxiways across different aerodromes. Additionally, there could be other aspects specific to the local aerodrome impacting the naming of taxiways. Changing the names of taxiways as suggested by this comment would also imply a considerably complex change process affecting the aerodrome operator as well as its users, e.g. including the need to change signs, update AIP information, etc. Moreover, the comment seems to assume that multiple mode of operation is based on a static combination of aerodromes, which may not necessarily be the case. (A new/different combination of aerodromes may again lead to replication of taxiway names across the aerodromes concerned.)</p> <p>In conclusion, it is not feasible/recommended to customise taxiway naming solely based on multiple mode of operation considerations.</p> <p>The use of digitally overlaid information in the visual presentation (refer to Guidelines Sections 3.5. and 5.2.5.), presenting the various taxiway (and runway and apron) designators to the ATCO/AFISO, could be a way to support situational awareness in multiple mode of operation (this has been tested with good results e.g. within the SESAR validations).</p>
comment	<p>123 comment by: <i>Naviair</i></p> <p>When performing multiple mode of operation there should also be an indication from which airport the radio transmission is originating.</p>
response	<p>Noted</p>



Indeed, the inclusion of such digitally overlaid information in the visual presentation (if that is what the comment refers to) may be a possible solution/technical enabler, pending to further gained validation/operational experiences.

comment

124

comment by: *Naviair*

It is quite common practise to use "assymetric" cross-coupling for surface movement control. This means that the vehicles can hear the pilot and the ATCO/AFSO, but pilot cannot hear the vehicles. However, it may be beneficial to have "normal" cross-coupling between the vehicles on different airports and ATCO/AFISO to minimize the risk of simultaneous transmissions of vehicle drivers.

As it's commonly used way of communication today, it would be good to investigate possiblilty, to use the function also on multiple mode operation.

response

Noted

comment

167

comment by: *Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)*

[Is this proposals in accordance with section 14 in SERA?](#)

response

Noted

These procedures are additional to the procedures stipulated in SERA. EASA will consider their introduction into SERA as part of the regular updating procedures, subject to future operational experiences.

comment

220

comment by: *IFATCA*

Further explanation needed

If treated **separately**, the ATCO/AFISO would be able to hear all transmissions for all aerodromes

In addition, the ATCO/AFISO would need to select the correct transmitter/frequency, which would lead to the possibility of a mix-up of transmitters/frequencies.

response

Accepted

See the response to comment 29.

comment

221

comment by: *IFATCA*

Change proposal

Cross-coupling



	<p>On the other hand, confusion may arise from pilots hearing transmission(s) at other aerodromes. Based on the SESAR JU programme validation results ([32], [35], [37]), the preferred method seems to be frequency cross-coupling across the aerodromes.</p> <p>Justification</p> <p>this is speculation based on a sterile validation exercise, whereas operational reality has proven that this is the only way to go.</p> <p>IFATCA policy is:</p> <p>If a controller is providing ATS for two or more areas, the relevant channels must be located on the Controller Working Position being used.</p> <p>If more than one RTF channel is being used, then suitable ‘retransmit’ facilities must be provided to enable all users to receive all transmissions. The ability to enable or disable ‘retransmit’ facilities should be provided.</p> <p>Future systems should include technology that warns the controller in the event of a crossed transmission.</p> <p>Independent backup equipment should be provided.</p>
response	<p>Not accepted</p> <p>The removal of text as indicated in this comment is not accepted. There is indeed a risk that pilots could be confused by transmissions related to other aerodromes. To the knowledge of EASA and of the rulemaking group Members, there is not any operational experience. The future operational implementation and subsequent gained experience may lead to changes to this aspect of the GM.</p> <p>Concerning the IFATCA policy, see also the response to comment 30.</p>

	<p>222 comment by: IFATCA</p> <p>Suggestion</p> <p>If this procedure is to be implemented, it should be published in the AIP for the particular aerodrome, together with any other specific communication methods as deemed necessary.</p> <p>SERA may have to be changed.</p>
response	<p>Noted</p> <p>These procedures are additional to the procedures stipulated in SERA. EASA will consider their introduction into SERA as part of the regular updating procedures, subject to future operational experiences.</p>

	<p>223 comment by: IFATCA</p> <p>Change proposals:</p> <p>For aerodromes provided with (or to potentially be provided with) multiple mode of operation, it is recommended to considered to introduce the introduction of</p>
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response	<p>different-call sign/number series for the vehicles and taxiways should be different at the respective aerodrome.</p> <p>To avoid possible mix-ups vehicles and taxiways shall have unique names</p> <p>Not accepted</p> <p>See the response to comment 32.</p>
comment	<p>262 comment by: AESA/DSANA</p> <p><u>Comment</u> About aerodrome mobile service (air-ground communications) AESA appreciates the use of cross-coupled communications, but this should be set only to a certain extent of simultaneous aerodromes and/or maximum movements/hour/day.</p>
response	<p>Noted</p> <p>The exact arrangements would depend on various factors, such as local operational circumstances and the outcome of the safety assessment and should be defined locally. They may also vary with time (i.e. not necessarily fixed for all times).</p>
comment	<p>263 comment by: AESA/DSANA</p> <p><u>Comment</u> It seems that situational awareness may be compromised by the use of frequency cross-coupling. Maybe the use of multiple mode of operation should be restricted to aerodromes where no simultaneous ground-to-air communications take place, so frequencies can be handled separately and pilots won't transmit when the frequency is occupied. This may change once aircrews are familiar with this new scenario.</p>
response	<p>Not accepted</p> <p>Frequency cross-coupling is already common practice in today's en-route/TMA operations.</p>
comment	<p>391 comment by: Scandinavian Airlines System</p> <p>5.14.12. Our recommendation is that pilots only hear transmissions for their "own" aerodrome, otherwise there might be unnecessary confusion over the radio.</p>
response	<p>Noted</p>
comment	<p>477 ❖ comment by: Air Navigation Services Finland Oy</p> <p>The provision of remote aerodrome ATS unit should be indicated to pilots somehow; this could be included in the ATIS broadcast and possible changes on the service provision type could be broadcast on the relevant ATS frequencies. However, in multiple mode of operations it would be beneficial to change the ATS unit call sign</p>



response	<p>to just "remote tower", leaving out the name of the aerodrome. The aerodrome name should, however, be included in all runway clearances in accordance with section 5.14.1.2.</p> <p>Not accepted</p> <p>The provision of remote aerodrome ATS is to be indicated in the 'aeronautical information products and services', see Guidelines Chapter 9. This does not exclude the possibility to additionally indicate the same in ATIS broadcasts, should they be available and should this be deemed beneficial.</p> <p>The change of the ATS unit call sign in multiple mode of operation is not supported. The use of standard ATS unit call signs, including aerodrome names, is seen as a tool/reminder for the ATCO/AFISO of which aerodrome frequency they are currently transmitting on.</p>
comment	<p>560 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>"The ATS provider shall conduct an in-depth evaluation of the communication aspects of any multiple mode of operation implementation, as part of the local safety assessment. The related operational procedures shall be designed and established and the necessary system support should be defined accordingly."</p> <p>The multiple mode of operation carries many more inherent risks by its nature, making this essential to safety and must not be compromised.</p>
response	<p>Not accepted</p> <p>See the response to comment 205.</p>
comment	<p>561 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>The guidelines laid down here are troubling in many regards. They highlight the inherent risks involved with multiple mode of operation with regards to communication procedural aspects yet go on to encourage the use of either of the two possibilities available for handling such an operation – separately or with cross-coupling.</p> <p>Furthermore, in 4.2.2 of the NPA it states that, '<i>It is recommended that multiple mode of operation (when provided by one ATCO/AFISO only) is mainly used when certainty exists that, based on the available traffic schedule, the instances of simultaneous aircraft movements on the different aerodromes is minimal.</i>' Notwithstanding the use of the ambiguous word 'minimal', this paragraph then goes on to discuss the myriad of problems that might arise when multiple mode of operation is required to control operations at different aerodromes similarly. It is incumbent upon EASA to take a firmer approach to these issues in the interests of aviation safety, something unlikely to be achieved through 'soft' guidelines.</p>
response	<p>Not accepted</p>

The referenced text of Section 4.2.2 has been amended (based on comments 146, 147, 385, 511 and 752) and no longer includes the word ‘minimal’.

The reasons for the chosen regulatory level/approach are primarily the following:

- Requirements on aerodrome ATS (ATC/AFIS) provision already exist (ICAO, EU and national level) and are (still) applicable.
- Requirements related to the assessment of changes to functional systems and their oversight already exist (Regulations (EU) Nos 1034/2011 and 1035/2011, and Regulation (EU) 2017/373, supplemented by an extensive set of AMC & GM to support ATS providers and their competent authorities) and are (still) applicable.

A stand-alone ‘Guidance Material’ document is therefore chosen in order to support the fulfilment of the above-mentioned requirements/regulations in a remote aerodrome ATS environment and in order to provide a single source of information encompassing all aspects. The only exception is the qualification and training of ATCOs, for which EASA has chosen to provide separate AMC and GM to Regulation (EU) 2015/340.

As far as multiple mode of operation is concerned, whereas the single mode of operation is already implemented and approved for some aerodromes by the relevant competent authorities, EASA recognises that the concept of multiple mode of operation has not yet been operationally implemented. Nevertheless, EASA considers that there is already sufficient information and data available to provide regulatory support and guidance to facilitate its safe implementation, as well as to provide a basis for its further development.

comment

719

comment by: DTA

DGAC underlines that the above reference suggests that multiple-mode should be handled via frequency cross-coupling while only stating benefits and disadvantages of each communication mode (cross coupling or separation) and leaving the choice to the ATS provider.

The proposal as stated may be confusing (it may be understood that the preferred method of the SESAR JU programme is not the one of the guideline) and should be precised in order to clearly indicate the most suitable guideline for communication solution in multiple-mode.

response

Noted

As indicated in the first paragraph of Section 5.14.1.2, the precise operational procedures for the handling of aerodrome frequencies in multiple mode of operation need to be defined locally by the ATS provider, taking into account the specificities of operational context and the local implementation. The text in Section 5.14.1.2 continues with a discussion on the two different methods and their respective



benefits and drawbacks and presents preferences based on the SESAR validation results. EASA believes that the text is clear on these aspects.

comment

809

comment by: UK CAA

Page No: 46**Paragraph No:** 5.14.1.2, Communication procedural aspects in multiple mode of operation, 3rd sub-paragraph

Comment: UK CAA does not believe that such a detailed description of cross-coupling is required, given the common application of this practice in most (if not all) ATS disciplines as and when circumstances permit/require. The individual applications should submit their cross-coupling proposals as a part of their safety submission and each application should be judged on the individual operational requirement.

Proposed Text:Replace 3rd sub-paragraph with:

‘Each individual application of remote ATS in a multiple mode of operation will need to consider any frequency cross coupling requirements for their operations and submit the relevant safety considerations, mitigation and operational functionality to their Competent Authority for consideration and approval.’

response

Not accepted

The topic described in Section 5.14.1.2 (re-numbered as 5.13.1.2) has raised numerous concerns and questions by commentators. EASA therefore believes that the third paragraph provides useful information to some readers. Even if the text may seem to be somehow overexplaining compared to some others, the content itself is correct and does not create any harm.

3.1. Draft guidelines - 5.14.2. CWP/RTM design considerations in multiple mode of operation

p. 47

comment

562

comment by: European Transport Workers Federation - ETF

"When performing multiple mode of operation, the ATCO/AFISO shall be provided with all systems and data/information required (to perform the ATS) for all aerodromes under their responsibility.

Furthermore, the system design shall support the ATCO/AFISO to distinguish to which aerodrome any single set of displays and functionalities are linked.

The technical system shall support and reduce ATCO/AFISO workload by system integration to the level where the ATCO/AFISO can focus on task performance in the new working environment."

These are essential to safety and must not be compromised.

response

Not accepted

See the response to comment 205.



comment	<p>810</p> <p>comment by: UK CAA</p> <p>Page No: 47</p> <p>Paragraph No: 5.14.2, CWP/RTM design considerations in multiple mode of operation</p> <p>Comment: Considering the level of detail some aspects have been attributed to in the NPA, we consider that this lacks detail. No mention is made of the potential for variable equipage at sites. It may be that sites have differing equipage levels so it is questioned how that is managed when multiple aerodromes are being controlled at the same time. In a basic sense, how does one control the lights independently at 2 or more aerodromes? This equally applies to flight progress strips, they represent the aircraft and are separated in their respective bays, especially the runway bay. How does one create and manage 2 or more runway bays and which aircraft is in which, and when? A bespoke runway bay may be required for the various configuration of runway bays</p> <p>Proposed Text:</p> <p>We recommend that all such areas need to be carefully considered and moderated. We would suggest the following as an exemplar starting point;</p> <p>Propose new sub paras for:</p> <ul style="list-style-type: none"> • Variable equipage; • Guidance on the simultaneous use of multiple runway bays; • Potential hazards of multiple switching i.e. can runway lights at multiple aerodromes be operated simultaneously? If so, brilliance requirements can, for a variety of reasons be different in each location so individual control will still be required (to be considered as part of the design phase). <p>Variable equipage – control systems must allow for different levels of equipage at different aerodromes being controlled simultaneously. While the objective will be to have the minimum number of control ‘switches’ and these should be ‘shared’ as much as possible, it is inevitable that there will be a requirement for some independent controls specific to certain equipage levels. Where one aerodrome in the multi-mode module has an approved enhancement or overlay that the other(s) do not, that enhancement must be only applicable to that operation and disabled for the others.</p>
response	<p>Not accepted</p> <p>Regarding possible solutions on how to deal with e.g. lights or flight progress strips for different aerodromes in a multiple mode of operation setup, refer e.g. to SESAR validation reports (see the ‘References’ chapter of the Guideline document for a presentation of available SESAR validation reports). Technically, these aspects are not an issue and are rather a topic for product design (specification), hence fall beyond the scope of EASA guidelines.</p>

3.1. Draft guidelines - 5.14.3. Communication technical aspects in multiple mode of operation

p. 47

comment

168

comment by: *Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)*



	Is this proposals in accordance with section 14 in SERA?
response	Noted See the response to comment 167.
comment	264 comment by: AESA/DSANA <u>Comment</u> Proper interoperability requirements shall be established between the Voice/Data Communication Management Systems and the communication systems themselves. <u>Justification</u> Interfaces, SLAs and safety/security requirements should be established. It is specially important in case the RTS relays in multiple telecommunication service providers and when the communication network is shared with other services (priorization criteria).
response	Not accepted The requirements on the infrastructure supporting a specific case of remote aerodrome ATS implementation depend on several factors such as the operational concept, the capacity demand as well as safety requirements derived from the safety assessment process. In the case where an ANSP is implementing remote aerodrome ATS, the specific safety requirements derived from the safety assessment (as well as security requirements) apply regardless if the transmission is provided in-house or by a third-party service provider. This is not unique for remote aerodrome ATS, it is applicable e.g. also for some en-route communication solutions. If the ANSP is relying on a third-party provider, this has to be regulated in the agreement, i.e. the SLA. This situation is covered by the requirements in Regulation (EU) No 1035/2011 and Regulation (EU) 2017/373.
comment	306 comment by: ENAV Sentence: "The communication system should also enable aeronautical mobile service transmissions to be retransmitted/relayed between all aerodromes (often referred to as frequency cross-coupling) being served by one RTM." This sentence suggests that multiple-mode should be handled via frequency cross-coupling whereas previous chapter 5.14.1.2 was stating the benefits and disadvantages of each possibility (cross coupling or separation) and letting the choice to the ATS provider. ENAV comment Clarification is required.
response	Accepted



Section 5.14.3 has been deleted as it was deemed to be superfluous and could be interpreted as conflicting with the discussion in Section 5.14.1.2., which was not the intention. Technical requirements on communications are already, by default, covered by Sections 5.6. (referring to the ICAO provisions) and 5.14.2. (stating that 'When performing multiple mode of operation, the ATCO/AFISO should be provided with all systems and data/information required (to perform the ATS) for all aerodromes under their responsibility,...').

comment

365

comment by: *CANSO*

Sentence: "The communication system should also enable aeronautical mobile service transmissions to be retransmitted/relayed between all aerodromes (often referred to as frequency cross-coupling) being served by one RTM."

This sentence suggests that multiple-mode should be handled via frequency cross-coupling whereas previous chapter 5.14.1.2 was stating the benefits and disadvantages of each possibility (cross coupling or separation) and letting the choice to the ATS provider.

CANSO comment

Clarification is required.

response

Accepted

See the response to comment 306.

comment

563

comment by: *European Transport Workers Federation - ETF*

"When performing multiple mode of operation, the communication system shall enable the ATCO/AFISO to:"

If a service is being provided to multiple operations as the text suggests, it is the responsibility of the ATCO/AFISO to maintain a listening watch on all notified frequencies.

response

Accepted

The section has been deleted. See the response to comment 306. See also the response to 545.

comment

718

comment by: *DTA*

The guideline should be clarified in order to be consistent with 5.14.1.2.

response

Accepted

See the response to comment 306.



3.1. Draft guidelines - 5.14.4. Visual presentation in multiple mode of operation

p. 47-48

comment	<p>33 comment by: GdF</p> <p>The visual presentation(s) should display each aerodrome simultaneously.</p> <p>Because the ATCO/AFISO would have to scan not 360°, but 720° or possibly more, the workload would increase at least by a factor of two. Should there be an analysis?</p> <p>IFATCA Policy is: ATCOs shall not be required to provide a Remote and Virtual tower service for more than one aerodrome simultaneously.</p>
response	<p>Not accepted</p> <p>See the response to comment 100. Also, note the second paragraph of Guidelines Section 4.2 which states that multiple mode of operation ‘is to be used only when the operational circumstances so allow and when certainty exists that workload and complexity can be managed.’.</p> <p>As concerns workload and human performance in a multiple mode of operation setup, a human factors assessment forms a crucial part of any implementation. For this reason, the Guidelines have been developed with a view to putting high emphasis on the human factors assessment, and extensive guidance on human factors assessment is provided in Section 6.2, with specific attention to multiple mode of operation in Section 6.2.2.</p> <p>Furthermore, with new technical enablers such as digitally overlaid information in the visual presentation, it is likely to believe that the ATCO/AFISO ‘head down time’ could be reduced, by reducing the number of places/presentation screens needed to be scanned.</p>
comment	<p>224 comment by: IFATCA</p> <p>Clarification:</p> <p>The visual presentation(s) should display each aerodrome simultaneously.</p> <p>Because the ATCO/AFISO would have to scan not 360°, but 720° or possibly more, the workload would increase at least by a factor of two.</p> <p>Is this statement made based on any kind of study or assessment, or does it come out of the blue?</p> <p>IFATCA Policy is: ATCOs shall not be required to provide a Remote and Virtual tower service for more than one aerodrome simultaneously.</p>
response	<p>Not accepted</p> <p>See the response to comment 33.</p>



comment	34	comment by: <i>GdF</i>
	layout of aerodrome traffic circuit(s), the sun's position on the horizon	
	To avoid sun glare, a shade filter needs to be implemented to block out the sun.	
response	Noted	
	The protection against natural external influences such as direct sunlight/sun glare is covered by Guidelines Section 5.2.4.6.	
comment	225	comment by: <i>IFATCA</i>
	Change proposal:	
	layout of aerodrome traffic circuit(s), the sun's position on the horizon (...)	
	ADD	
	To avoid sun glare, a shade filter needs to be implemented to block out the sun	
response	Noted	
	The protection against natural external influences such as direct sunlight/sun glare is covered by Guidelines Section 5.2.4.6.	
comment	72	comment by: <i>DFS Deutsche Flugsicherung GmbH</i>
	5.14.4.: For more clarity please add the following: 'The visual presentation should display each aerodrome simultaneously, alternatively the visual presentation of an aerodrome can also be temporarily be compressed or fully hidden'.	
response	Partially accepted	
	Section 5.14.4 has been amended in line with the comment. For instance, the commented sentence now reads 'The visual presentation(s) should be accessible for each aerodrome at all times.'.	
comment	83	comment by: <i>BMVBS</i>
	5.14.4.: For more clarity please add the following: 'The visual presentation should display each aerodrome simultaneously, alternatively the visual presentation of an aerodrome can also be temporarily be compressed or fully hidden'.	
response	Partially accepted	
	See the response to comment 72.	

comment	<p>308 comment by: ENAV</p> <p>5.14.4.: For more clarity please add the following: 'The visual presentation should display each aerodrome simultaneously, alternatively the visual presentation of an aerodrome can also be temporarily be compressed or fully hidden'.</p>
response	<p>Partially accepted</p> <p>See the response to comment 72.</p>
comment	<p>367 comment by: CANSO</p> <p>5.14.4.: For more clarity please add the following: 'The visual presentation should display each aerodrome simultaneously, alternatively the visual presentation of an aerodrome can also be temporarily be compressed or fully hidden'.</p>
response	<p>Partially accepted</p> <p>See the response to comment 72.</p>
comment	<p>125 comment by: Naviair</p> <p>There are no recommendation for visual presentation of VCS HMI i.e enhanced information for the ATCO/AFISO to reduce possibility of confusion about the frequency used e.g.:</p> <ol style="list-style-type: none"> 1) HMI layout <ul style="list-style-type: none"> - naming of the frequencies - different background colour for different airport frequencies - grouping the frequencies on HMI by the airport 2) "Last used channel indication" If the ATCO/AFISO did not see which frequency was used for incoming call, radio button could be highlight with the colour until the ATCO/AFISO answers the call or another radio call appears on the the other channel. This could be usefull information, especially if the cross-coupling is not used. 3) Coupling of the frequencies between different airports. Clear indication for the ATCO/AFISO to see origination of call. This could be indicated by the different colour of the squelsh-field compare to the other squelshes caused by the retransmission (cross-coupling).
response	<p>Noted</p> <p>EASA appreciates the comment and the thoughts on system support as regards the handling of multiple aerodrome frequencies in a multiple mode of operation setup.</p>

At the same time, it is acknowledged that the available data on these aspects, from e.g. SESAR publications or operational experiences, so far is limited. Furthermore, it is believed that these aspects will be highly dependent upon e.g. the specific VCS system used and other specificities of the local implementation. In conclusion, at this stage EASA considers that the design of such support tools/functionalities is best handled by local implementation or product design level.

comment

307

comment by: ENAV

“The provision of ATS to more than one aerodrome simultaneously would be made possible by visual presentation(s) that allow for the constant monitoring of each aerodrome, enabling ATCO/AFISOs to ‘maintain a continuous watch on all flight operations on and in the vicinity of an aerodrome as well as vehicles and personnel on the manoeuvring area’72. The visual presentation(s) should display each aerodrome simultaneously. To allow ATCO/AFISO to fulfil the duty of continuous watch, the delay to see any part of the area of interest on any aerodrome being under the responsibility of the ATCO/AFISO should not be higher than the delay it would take in a conventional tower (e.g. by turning around to see behind, or to use binoculars), or indeed not higher than the delay experienced in a single mode of operation set-up.”

We understand the sentiment behind this section and agree that the Controller must be able to see the aircraft or vehicle that is being controlled as well as its immediate environs but in a multiple airport set up in some cases it might be more advantageous that the display is allowed to be changed not to see an area of the tower surrounding airspace that is not in use at that time only on the condition that where necessary that the view could be changed in a time that would not be higher than the time it would take to turn around in a chair.

If this sentence allows for that case then we agree. i.e. a continuous picture of the entire aerodrome and surrounding airspace is not required 100% of the time.

ENAV comment

Clarification requested.

response

Accepted

See the response to comment 72.

comment

366

comment by: CANSO

“The provision of ATS to more than one aerodrome simultaneously would be made possible by visual presentation(s) that allow for the constant monitoring of each aerodrome, enabling ATCO/AFISOs to ‘maintain a continuous watch on all flight operations on and in the vicinity of an aerodrome as well as vehicles and personnel on the manoeuvring area’72. The visual presentation(s) should display each aerodrome simultaneously. To allow ATCO/AFISO to fulfil the duty of continuous watch, the delay to see any part of the area of interest on any aerodrome being under the responsibility of the ATCO/AFISO should not be higher than the delay it would



take in a conventional tower (e.g. by turning around to see behind, or to use binoculars), or indeed not higher than the delay experienced in a single mode of operation set-up.”

We understand the sentiment behind this section and agree that the Controller must be able to see the aircraft or vehicle that is being controlled as well as its immediate environs but in a multiple airport set up in some cases it might be more advantageous that the display is allowed to be changed not to see an area of the tower surrounding airspace that is not in use at that time only on the condition that where necessary that the view could be changed in a time that would not be higher than the time it would take to turn around in a chair.

If this sentence allows for that case then we agree. i.e. a continuous picture of the entire aerodrome and surrounding airspace is not required 100% of the time.

CANSO comment

Clarification requested.

response Accepted

See the response to comment 72.

comment 565 comment by: *European Transport Workers Federation - ETF*

"The visual presentation(s) shall display each aerodrome simultaneously.

[...]

To allow ATCO/AFISO to fulfil the duty of continuous watch, the delay to see any part of the area of interest on any aerodrome being under the responsibility of the ATCO/AFISO shall not be higher than the delay it would take in a conventional tower (e.g. by turning around to see behind, or to use binoculars), or indeed not higher than the delay experienced in a single mode of operation set-up."

This paragraph is written under the context that a multiple service is being provided for which the ATCO/AFISO is responsible, therefore this is essential.

This is essential to safety and must not be compromised.

response Not accepted

See the response to comment 205. Furthermore, the use of ‘should’ at this instance follows the principle undertaken for the transposition of ICAO Doc 4444 Chapter 7.1.1.2 into the EU regulatory framework (ICAO Doc 4444 Chapter 7.1.1.2 is proposed for transposition into the EU regulatory framework at AMC level).

comment 811 comment by: *UK CAA*

Page No: 48 and 49

Paragraph No: 5.14.4, 5.14.5, 5.14.7

Comment: The ability to independently control all the required equipment at multiple aerodrome simultaneously is not mentioned. There is a level of technical complexity to the management of a variety of equipment, which may vary in



	design, control and presentation from site to site. This must be considered in any application considering multiple mode operations. Justification: Incomplete guidance
response	Accepted Although this aspect was covered by Section 5.14.2 (sentence reading ‘When performing multiple mode of operation, the ATCO/AFISO should be provided with all systems and data/information required (to perform the ATS) for all aerodromes under their responsibility,..’, the existing text has been expanded to encompass this comment.

3.1. Draft guidelines - 5.14.5. Aerodrome sound in multiple mode of operation

p. 48

comment	35 For multiple mode of operation, if aerodrome sound is implemented, the volume should be adjustable and possible to turn off by the ATCO/AFISO <u>individually for each aerodrome</u> . (As for single mode of operation, this possibility would support the needs of individual ATCOs/AFISOs and would enable to minimise disturbing background noise when/if needed.) Sound is not attributable in a multiple mode of operation environment and must be avoided to avoid confusion. IFATCA Policy is: ATCOs shall not be required to provide a Remote and Virtual tower service for more than one aerodrome simultaneously.	comment by: <i>GdF</i>
response	Not accepted See the response to comment 226.	
comment	226 Change proposal: For multiple mode of operation, if aerodrome sound is implemented, the volume should be adjustable and possible to turn off by the ATCO/AFISO <u>individually for each aerodrome</u>. (As for single mode of operation, this possibility would support the needs of individual ATCOs/AFISOs and would enable to minimise disturbing background noise when/if needed.) Sound is not attributable in a multiple mode of operation environment and must be avoided to avoid confusion. IFATCA Policy is:	comment by: <i>IFATCA</i>



	ATCOs shall not be required to provide a Remote and Virtual tower service for more than one aerodrome simultaneously.
response	<p>Not accepted</p> <p>The comment is not supported by the results/findings of the validation activities and human factors assessment performed in the framework of the SESAR JU programme — see first paragraph of Section 5.14.5. Furthermore, the remaining text of Section 5.14.5 provides recommendations on how the aerodrome sound can be reproduced in multiple mode of operation to avoid potential confusion.</p> <p>Nevertheless, text has been added to Section 5.14.5, indicating that the reproduction of the aerodrome sound in multiple mode of operation needs to be carefully assessed within the local safety and human factors assessments.</p>
comment	<p>265 comment by: AESA/DSANA</p> <p><u>Comment</u> AESA does not appreciate the advantages of the sound activation where multiple mode operation is set. AESA appreciates the possibility of manual controlling by the ATCO.</p> <p><u>Justification</u> Aerodrome sound in multiple mode of operation may be useful in some situations, but very distracting in others. If a sudden loud noise comes from one of the aerodromes when an ATCO/AFISO is managing a critical situation, it may reduce her/his focus and lead to a dangerous situation. This should be carefully assessed.</p>
response	<p>Partially accepted</p> <p>Section 5.14.5 has been amended to more clearly link the manual individual controlling of aerodrome sound as a means to avoid disturbing noises. Furthermore, text about carefully assessing the reproduction of the aerodrome sound in multiple mode of operation as part of the local safety and human factors assessments has been added.</p>
comment	<p>566 comment by: European Transport Workers Federation - ETF</p> <p>"If implemented, it is essential that the aerodrome sound playbacks are linked in a directional manner according to the visual presentation of aerodromes, as this was found to be a contributing factor to optimal situational awareness."</p> <p>If it is a contributing factor to optimal situational awareness then it is essential to safety and must not be compromised.</p>
response	<p>Not accepted</p> <p>See the response to comment 205.</p>

3.1. Draft guidelines - 5.14.6. Other ATS systems/functions in multiple mode of operation

p. 48-49

comment	420	comment by: <i>skyguide Compliance Management</i>
	Radio communication shall be open all the time during multiple ops for all airports.	
response	Noted	
	The comment is fully agreed. This is also implicitly covered by the ICAO Annex 11 Chapter 6 requirements referenced in Guidelines Section 5.6.	

3.1. Draft guidelines - 6. Management of change

p. 50

comment	465	comment by: <i>René Meier, Europe Air Sports</i>
	6. Management of change pages 50.../92	
	Based on experiences with a project "IFR without ATC" and now with "how to introduce an FIZ" we think that managing the change is the most demanding task, much more complex than installing new equipment or establishing new procedures. We wish good luck and wise decisions to all persons involved in these assessments.	
	6.2.Human factors assessment We would put "human factors assessment" first, in the end, ATS is "made of people" to a much higher degree than of technical constituents. A "human factors assessment" is not a "should" task.	
	Rationale: Without proper consideration and integration of these often soft factors remote tower operations will probably not produce the expected results.	
response	Not accepted	
	The first paragraph of this comment is noted.	
	The suggestion in the second paragraph, to put the 'human factors assessment' part first in Chapter 6 is not accepted, although EASA fully agrees that human factors aspects are essential. Safety requirements for ATM/ANS are governed by the so-called ATM/ANS Common Requirements (Regulations (EU) 1034/2011 and 1035/2011, and Regulation (EU) 2017/373) and include the human resources/human elements of the functional system. It is therefore natural to begin Chapter 6 with the 'safety assessment' part, by referring to the said regulations. Also, note that already in the last paragraph of Section 6.1, a reference to the human factors assessment is made, to highlight its importance.	

comment	812	comment by: <i>UK CAA</i>
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	<p>Page No: 50 Paragraph No: Chapter 6 Comment: The management of change is well documented elsewhere (1035/2011) so it is questioned why this is detailed here as well. We recommend simply referring to the source text.</p>
response	<p>Not accepted</p> <p>Following a bilateral dialogue, the UK CAA withdrew this comment. However, the UK CAA suggested to incorporate the footnote in Section 6.1 directly into the body text. This suggestion has been implemented.</p>
comment	<p>763 comment by: <i>daa</i></p> <p>Page No: 50 Section/Chapter: Section 6; Management of change Paragraph No: N/A Comment: It is of utmost importance that engagement by ATS providers with Aerodrome Operators in relation to management of change occurs at an early stage of the process to ensure that aerodrome concerns and associated risks are identified and addressed in a timely manner.</p>
response	<p>Noted</p> <p>EASA fully agrees.</p>

3.1. Draft guidelines - 6.1. Safety assessment methodology

p. 50

comment	<p>36 comment by: <i>GdF</i></p> <p>non-exhaustive</p> <p>Typo</p>
response	<p>Noted</p> <p>This appears correct in the text.</p>
comment	<p>126 comment by: <i>Naviair</i></p> <p>One could add 2017/373 (which is also referred to in other sections, especially when considering that e.g. safety support assessments will be introduced when 2017/373 enters into force which is a new concept/methodology not included in 1034/2011 or 1035/2011 as referred to here.</p>
response	<p>Accepted</p> <p>The reference to Regulation (EU) 2017/373, which was provided in a footnote, has been included directly in the main body text.</p>



comment	227 non-exhaustive typo	comment by: IFATCA
response	Noted This appears correct in the text.	
comment	266 <u>Comment</u> The section “6.1 Safety assessment methodology” states “These hazards may be considered as an initial input by the ATS provider, but needs to be adapted appropriately taking into account the local conditions and the operational application and context of the particular implementation and the addition of potential system hazards.”. AESA finds the expression “system hazards” is misleading and needs clarification.	comment by: AESA/DSANA
response	Accepted The text has been amended for clarification.	
comment	267 <u>Comment</u> Although references to Regulation (EU) 2017/373 are included, AESA finds that the guidelines in section “6.1 Safety assessment methodology” are mostly aligned with the current regulatory framework (R 1035/2011 and R 1034/2011). Guidance material on some important topics of the Regulation 2017/373 (e.g.: safety support assessments, safety criteria, etc.) is missing. <u>Justification</u> Though Regulation (EU) 2017/373 is not in force yet, some guidance material concerning safety support assessments, safety criteria... is needed for a standardised application of the regulation.	comment by: AESA/DSANA
response	Not accepted Guidance on the implementation (and standardised application) of Regulation (EU) 2017/373 is outside the scope of the Guideline document, which deals specifically with remote aerodrome ATS implementation aspects. However, for all references in the text to Regulations (EU) Nos 1035/2011 and 1034/2011, footnotes providing the equivalent requirement of Regulation (EU) 2017/373 are included in order to support the reader.	
comment	270	comment by: AESA/DSANA

	<p><u>Comment</u></p> <p>The section “6.1 Safety assessment methodology” states “It is also highlighted that the results of the human factors and security assessments (see Chapter 6.2 and 6.4) form important inputs to the safety assessment.”.</p> <p>AESA supports the comment on the importance of the human factors assessment and the security assessments for the implementation of remote aerodrome ATS.</p> <p>AESA would appreciate further clarification of the reasons why it is recommended that the human factor assessment and security assessments results should feed the safety assessment. It could be done in different ways (e.g.: human factors assessment, security assessment and safety assessment are conducted at the same time and all of them are direct inputs to support a final decision on the implementation of the remote tower.).</p>
response	<p>Noted</p> <p>The text has been amended to indicate that the integration can be done in different ways.</p>
comment	<p>567 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>ETF and ATCEUC argue that the implementation of remote aerodrome ATS is more than a change to the functional system as publicised before and in our letter to EASA Executive Director dated 24/07/17.</p>
response	<p>Not accepted</p> <p>Implementation of remote aerodrome ATS is by definition a change to the functional system in accordance with Commission Regulations (EU) Nos 1034/2011 and 1035/2011, and Regulation (EU) 2017/373. The change process stipulated by these regulations encompasses as well the introduction of new functional systems (e.g. setting up new ATS units).</p>
comment	<p>568 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>"In order to facilitate the safety assessment, Appendix 1 of this document summarises (in a non-exhaustive list, to be considered as reference only) the elements which are deemed to be the main elements for consideration when implementation remote aerodrome ATS. The list in Appendix 1 shall be used as a check list by the ATS provider and the competent authority, but should be adjusted as necessary taking into account the local implementation aspects of the operational context and the particularities of the selected technical solution."</p> <p>If this list is considered as a list of the main elements for consideration in order to facilitate the safety assessment, then they must be considered, especially as it is only a checklist of items not to be overlooked but may be considered and disregarded (where not applicable) by any subsequent safety assessment, which would be acceptable.</p>



response	Not accepted See the response to comment 205.
comment	683 comment by: ATCEUC Attachment #3 ATCEUC, together with ETF, argue that the implementation of remote aerodrome ATS is more than a change to the functional system as publicised before and in our letter to EASA Executive Director dated 24/07/17.
response	Not accepted See the response to comment 567.

3.1. Draft guidelines - 6.1.1. Dependencies and interfaces

p. 50

comment	393 comment by: Scandinavian Airlines System 6.1.1 SAS welcomes the fact that EASA recognizes aircraft operators as a vital entity within the management of change in this NPA. It is very important from a safety perspective and from airspace users operational view that we are included in and a part of the safety assessment.
response	Noted EASA fully agrees. See also the response to comment 746, which relates to this comment.
comment	583 comment by: European Transport Workers Federation - ETF Notwithstanding EASA's assertion here of the potential impact this will have on staff, it still goes on to wash its hands of any responsibility to look at the social impact of this NPA as stated on page 1. It is incumbent upon EASA to immediately address these concerns. Commission Implementing Regulation EU (1035/2011) states: <i>Within the operation of the SMS, providers of air traffic services shall ensure that hazard identification as well as risk assessment and mitigation are systematically conducted for any changes to those parts of the ATM functional system and supporting arrangements within their managerial control, in a manner which addresses: [...]</i> <i>the equipment, procedures and human resources of the ATM functional system, the interactions between these elements and the interactions between the constituent part under consideration and the remainder of the ATM functional system.</i> Commission Implementing Regulation EU (2017/373) states : ATM/ANS.OR.C.005 Safety support assessment and assurance of changes to the functional system (a) For any change notified in accordance with point



ATM/ANS.OR.A.045(a)(1), the service provider other than the air traffic services provider shall: (1) ensure that a safety support assessment is carried out covering the scope of the change which is: (i) the equipment, procedural and human elements being changed; (ii) interfaces and interactions between the elements being changed and the remainder of the functional system; (iii) interfaces and interactions between the elements being changed and the context in which it is intended to operate; (iv) the life cycle of the change from definition to operations including transition into service; (v) planned degraded modes; (2) provide assurance, with sufficient confidence, via a complete, documented and valid argument that the service will behave and will continue to behave only as specified in the specified context. (b) A service provider other than an air traffic services provider shall ensure that the safety support assessment referred to in point (a) comprises: (1) verification that: (i) the assessment corresponds to the scope of the change as defined in point (a)(1); (ii) the service behaves only as specified in the specified context; (iii) the way the service behaves complies with and does not contradict any applicable requirements of this Regulation placed on the services provided by the changed functional system; and (2) specification of the monitoring criteria necessary to demonstrate that the service delivered by the changed functional system will continue to behave only as specified in the specified context.

And:

ATS.OR.205 Safety assessment and assurance of changes to the functional system (a) For any change notified in accordance with point ATM/ANS.OR.A.045(a)(1), the air traffic services provider shall: (1) ensure that a safety assessment is carried out covering the scope of the change, which is: (i) the equipment, procedural and human elements being changed; (ii) interfaces and interactions between the elements being changed and the remainder of the functional system; (iii) interfaces and interactions between the elements being changed and the context in which it is intended to operate; (iv) the life cycle of the change from definition to operations including transition into service; (v) planned degraded modes of operation of the functional system; and (2) provide assurance, with sufficient confidence, via a complete, documented and valid argument that the safety criteria identified via the application of point ATS.OR.210 are valid, will be satisfied and will remain satisfied. (b) An air traffic services provider shall ensure that the safety assessment referred to in point (a) comprises: (1) the identification of hazards; (2) the determination and justification of the safety criteria applicable to the change in accordance with point ATS.OR.210; (3) the risk analysis of the effects related to the change; (4) the risk evaluation and, if required, risk mitigation for the change such that it can meet the applicable safety criteria; (5) the verification that: (i) the assessment corresponds to the scope of the change as defined in point (a)(1); (ii) the change meets the safety criteria; (6) the specification of the monitoring criteria necessary to demonstrate that the service delivered by the changed functional system will continue to meet the safety criteria.

response

Noted

The wording referred to on NPA page 1 has been removed in those instances where it was used in the Guideline document. Social aspects have been addressed during the production of this NPA through the involvement of staff/union representation in the rulemaking group of RMT.0624 as well as through the NPA public consultation. Socio-economic aspects should additionally be addressed independently at



implementation level (as conditions often differ hugely between different states/providers/units and every implementation case will be unique in terms of these aspects).

As stated in Guidelines Section 6.1 and in several places in the NPA, the requirements related to the assessment of changes to the functional system (the so-called ATM/ANS common requirements, i.e. Regulations 1034/2011 and 1035/2011, and Regulation (EU) 2017/373) apply (including the requirements quoted in the comment above). In order to support the assessment of the change to the functional system in case of a remote aerodrome ATS implementation, as concerns the human resources part of the functional system, the Guideline document in fact contains a dedicated section on human factors assessment, extensively covering human factors/resources aspects.

comment

813

comment by: UK CAA

Page No: 50**Paragraph No:** 6.1.1, Dependencies and interfaces**Comment:** The second paragraph of paragraph 6.1.1 contains the word "... shall ..." as follows:

'In reference to Commission Implementing Regulation (EU) No 1035/2011 [3], Annex II, recital 3.2.1(c)⁷⁵, these dependencies shall be taken into account by the ATS provider when conducting the safety assessment.'

The purpose of the document is to "... provides guidance ..." (paragraph 1.1, page 14 refers), therefore the use of the word "shall" is inconsistent with the purpose of the document. The inclusion of the word "shall" should be restricted to the replication of text taken directly from other documents.

Proposed Text: Replace as follows:

'Any dependencies are required to be taken into account by the ATS provider when conducting the safety assessment in accordance with Commission Implementing Regulation (EU) No 1035/2011 [3], Annex II, recital 3.2.1(c)⁷⁵.'

response

Accepted

3.1. Draft guidelines - 6.1.2. Identification of hazards

p. 50-51

comment

268

comment by: AESA/DSANA

Comment

AESA agrees that NPA 2017-21 should focus on the specific considerations of the remote tower concept, and in general, the NPA manages to focus on those specific considerations.

However in the section "6.1.2 Identification of hazards", the specific considerations of the implementation of remote aerodrome ATS like the causes or the probability of occurrence of those hazards are only mentioned, but we think that they should be



	<p>developed further. We would appreciate guidelines regarding how the additional elements in ATM functional system derived from the provision of ATS from a “Remote TWR” affect each hazard (causes or probability) in comparison with ATS provision from a “conventional TWR”.</p>
response	<p>Noted</p> <p>As stated in 6.1.2, the ATS provider has to perform a hazard identification (in accordance with applicable regulations). The ATS provider can use the list presented in Appendix 2/3 as a starting point. The list of hazards, their causes, their probability, their mitigations, etc. will depend on local factors and the specific technical implementation. It is therefore not possible for EASA to give further guidance.</p> <p>(See also comment 814.)</p>
comment	<p>814 comment by: UK CAA</p> <p>Page No: 50 Paragraph No: 6.1.2, Identification of hazards Comment: We believe that there is too much detail here and recommend that it should remain as a high-level reference to the source text. In addition, paragraph 6.1.2 contains the word “... shall ...”. Replacement text is proposed below. Justification: The purpose of the document is to “... provides guidance ...” (paragraph 1.1, page 14), therefore the use of the word “shall” is inconsistent with purpose of the document. The inclusion of the word “shall” should be restricted to the replication of text taken directly from other documents. Proposed Text: Replace with: In accordance with Commission Implementing Regulation (EU) No 1035/2011[3], Annex II, Sections 3.2.1 and 3.2.476, an ATS provider is required to perform a hazard identification.</p>
response	<p>Partially accepted</p> <p>In the text of 6.1.2, the word ‘shall’ has been replaced by the proposed text. Furthermore, this principle has been adopted throughout the document.</p> <p>Regarding the other part of this comment, the text of 6.1.2 has been kept as is. (See also comment 268, requesting more guidance.)</p>

3.1. Draft guidelines - 6.2. Human factors assessment

p. 52

comment	<p>127 comment by: Naviair</p> <p>To my knowledge only a few ANSP`s are able to fulfill this requirement stating that you should have a stat-of-the-art process in human factors assessment in place. What should all the rest do to manage this?</p>
response	<p>Partially accepted</p>



The use of the wording ‘state-of-the art process’ is intended to stress the importance of the human factors assessment. In any case, the ATS provider needs to be compliant with the applicable relevant regulation (Regulation (EU) No 1035/2011 Annex II, 3.2, later on Regulation (EU) 2017/373, ATS.OR.205). This regulatory link has been clarified in the text.

comment 169 comment by: *Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)*

In accordance with current regulation we can easily fit ATCO, AFISO and ATSEP within the context of functional system. MET officer not as easy to include in with current regulation.

response Accepted

MET officers has been removed from the listed examples.

comment 228 comment by: *IFATCA*

It also ~~should~~ *shall* cover, in a proportionate manner, those actors (ATCO, AFISO, ATSEP, MET officers, etc.) affected by the change.

The involvement of all operators affected by the new concept is necessary to create a robust and mutually reliable joint system

response Partially accepted

The text in Guidelines Section 6.2 has been amended to include an involvement, in a proportionate manner, of the actors affected by the change. Regarding the use of ‘should/shall’, see the response to comment 205. Furthermore, the scope of the change assessment, including human resources/elements, is given on implementing rule level by Regulation (EU) No 1035/2011 (‘Annex II, 3.2.1.(c)’) and Regulation (EU) 2017/373 (‘Annex IV, ATS.OR.205(a)(1)(i)’), for which a reference has been added.

comment 269 comment by: *AESA/DSANA*

Comment

The section “6.2 Human factors assessments” addresses in more detail human factors aspects that should be considered for the implementation of remote aerodrome ATS. AESA welcomes the guidelines included in this section and would appreciate more guidance material on this subject (e.g.: provide ANSP and competent authorities with remote tower operations generic human factors assessment or examples in order to facilitate their local human factors assessments).

response Noted

Section 6.2 is already well elaborated and it is not possible for EASA to provide further guidance at this stage. For specific remote aerodrome ATS human factors assessment examples, this could be a topic for the planned EASA implementation support action,



but would be subject to the ATS providers and their suppliers being willing to share their assessments with a broader audience (regulators, other providers).

comment

273

comment by: AESA/DSANA

Comment

The section “6.2. Human factor assessment” states “Some sections in this document already state the need for a human factors assessment. This section addresses in more detail human factors aspects that should be considered for the implementation of remote aerodrome ATS. The assessment is recommended to be performed independently but should in any case be presented with the details as part of Regulation 1035/2011 [3] Annex II, 3.2.1(c)77.”.

AESA would appreciate further clarification of the reason why the human factor assessment is recommended to be performed independently.

response

Noted

The recommendation for an independent execution of the human factors assessment stems from the idea to keep the unity of the material, namely that human factors specialists can run the process in a thorough and efficient manner.

Note also that the quoted text of 6.2 has been amended. See the response to comment 127.

comment

336

comment by: René Meier, Europe Air Sports

6.2. Human factors assessment
page 52/92

Question:

- transition factors (competencies, training, acceptance). What is meant by "acceptance", is it the acceptance of the fact that changes will occur, are im place or are imminent, influencing personal working conditions?

response

Accepted

The text has been amended for clarification.

comment

409

comment by: skyguide Compliance Management

The social aspects also need to be taken into account

response

Accepted

A reference to the need for an assessment of the social aspects has been introduced in the introductory text of Guidelines Chapter 5. Furthermore, the introductory text of Section 6.2 has been extended to mention that social aspects should also be considered in relation to the human factors assessment.



comment	<p>587 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>"The human factors assessment shall be conducted with an active involvement of staff affected by the change and their representatives."</p> <p>We see this as an important guidance to implementers.</p> <p>also ETF's input during drafting period: 'we would like to see in this section a paragraph about the system suitability/acceptability to the operators needs to perform the service intended to be provided.' We would like to have this included as well.</p>
response	<p>Partially accepted</p> <p>The text in 6.2 has been amended to include an involvement, in a proportionate manner, of the actors affected by the change.</p> <p>See also the changes introduced as a response to comment 336.</p>
comment	<p>590 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>"The introduction into service of the remote aerodrome ATS has direct human factors implications as it will influence the capability of the ATCO/AFISO to accomplish their allocated tasks in a safe and efficient manner. "</p> <p>There has been no evidence to prove that remote tower operations are simply the provision of the same service using a new technology is not evidenced.</p>
response	<p>Partially accepted</p> <p>In response to the first part of this comment, the first paragraph of Section 6.2 has been amended for increased clarity.</p>
comment	<p>592 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>"This section addresses in more detail human factors aspects that shall be considered for the implementation of remote aerodrome ATS. [...] It shall also cover, in a proportionate manner, those actors (ATCO, AFISO, ATSEP, MET officers, etc.) affected by the change."</p> <p>Earlier in the paragraph it says, '<i>Some sections in this document already state the need for a human factors assessment.</i>' No change should be implemented without the collaboration with the affected parties, especially where the NPA has already stated that those affected are the actors whose '<i>confidence and trust in the system is of vital importance for the implementation of remote aerodrome ATS.</i>' (paragraph 5)</p>
response	<p>Partially accepted</p>

See the response to comment 228.

comment	684	comment by: ATCEUC
	All the professionals affected by the change should be involved through their Organizations, giving them more freedom in evaluating Human factors aspects	
response	Partially accepted	
	See the response to comment 587.	

3.1. Draft guidelines - 6.2.1. Remote aerodrome ATS related human factors elements/aspects

p. 52-55

comment	96	comment by: ISAVIA ohf.
	<p>Item 6.2.1 page 55: "adequately manage the operational difficulties; such as publication of service availability, defining the correct moment for switching (e.g. will the switch be delayed if traffic is delayed, if so, how will airspace users be informed about it on both aerodromes)."</p> <p>Aircraft are not always on schedule and certainly not private aircraft. The ATCO would need flexibility as to when to switch between airports.</p> <p>Is it acceptable to hold an aircraft in flight because the controller supposed to provide ATS service for its intended airport of landing is busy serving another airport? Should pilots plan for this eventuality and carry extra fuel? What if the aircraft holding suddenly has an emergency situation and needs to land urgently? Is the ATCO able to attend to that emergency right away if also serving another airport? What if VFR aircraft needs to file an IFR plan to land at the airport not serviced at the moment, will that flight plan be rejected? This could be clarified further in the NPA.</p>	
response	Accepted	
	<p>Switching of aerodromes should only be done when circumstances so allow, typically in conjunction with opening/closing of ATS (in accordance with the AIP/NOTAM published ATS hours of operation) for the aerodromes concerned. The procedures and conditions for this are to be defined by the ATS provider and detailed in the operations manual. The commented bullet text has been amended and expanded for increased clarity and for the provision of more generic guidelines, and it has been moved to Sections 4.1.3 and 4.2.3 (duplicated) to give the message a more prominent position in the document. Furthermore, additional text has been added to Sections 4.1.3. and 4.2.3 to promote clarity and provide further guidance.</p> <p>For guidance on the handling of capacity peaks and emergency situations in 'multiple mode of operation', see Sections 4.2.2 and 5.14.1.1 respectively.</p>	



comment	229	comment by: IFATCA
	arrangement of screens for the visual presentation and screens for other ATS systems/functions (e.g. amount number of screens and their functions, angles of screens);	
	English language	
response	Accepted	
comment	309	comment by: ENAV
	<ul style="list-style-type: none"> - - system monitoring capabilities; and - - maintenance procedures. 	
	<p>ENAV comment: How can these two lines be a technical element, what are the idea about this?</p> <p>Add; HP assessment due to fallback procedures, system degradation instead</p>	
response	<p>Partially accepted</p> <p>Of the three categories (technical elements, human factors elements, other aspects), the technical elements category is considered as the most suitable.</p> <p>‘Fallback and system degradation procedures’ have been added to the list.</p>	
comment	368	comment by: CANSO
	<ul style="list-style-type: none"> - system monitoring capabilities; and - maintenance procedures. 	
	<p>CANSO comment: How can these two lines be a technical element, what are the idea about this?</p> <p>Add; HP assessment due to fallback procedures, system degradation instead</p>	
response	<p>Partially accepted</p> <p>See the response to comment 309.</p>	
comment	436	comment by: LFV
	Paragraf 6.2.1: Add to the list of “technical elements”: HP assessment due to fallback procedures and system degradation	
response	<p>Accepted</p> <p>See the response to comment 309.</p>	
comment	310	comment by: ENAV



	<p>.. the ATS provider should perform human factors assessments including the following technical elements:</p> <p>ENAV suggestion Suggest;the ATS provider should perform human factors assessments considering best practices and proper involvement of operational staff including the following technical elements:</p>	
response	Partially accepted	These aspects are covered by the introductory section of 6.2. See comments 127 and 587.
comment	369	comment by: <i>CANSO</i>
	<p>page 53 - 1st para</p> <p>.. the ATS provider should perform human factors assessments including the following technical elements:</p> <p>CANSO suggestion Suggest;the ATS provider should perform human factors assessments considering best practices and proper involvement of operational staff.</p>	
response	Partially accepted	These aspects are covered by the introductory section of 6.2. See comments 127 and 587.
comment	437	comment by: <i>LFV</i>
	<p>Paragraph 6.2.1: Suggest to rephrase “...the ATS provider should perform human factors assessments including the following technical elements:...” to</p> <p>"...the ATS provider should perform human factors assessments considering best practices and proper involvement of operational staff including the following technical elements:"</p>	
response	Partially accepted	These aspects are covered by the introductory section of 6.2. See comments 127 and 587.
comment	311	comment by: <i>ENAV</i>
	3 rd Bullet ;	



response	<p>— potential confusion over the different views that an ATCO/AFISO could suffer from having images originated from different cameras with different locations and angles of view on the maneuvering area (e.g. positioning cameras on both sides of a runway);</p> <p>ENAV suggestion Delete this item as it should be addressed and identified very early in the design process. Anticipation that a Human Performance case first iteration will identify such an issue if any. The item is also strongly connected to training and human flexibility, the flexibility needed to cover up for bad or inconsistent design will however consume capacity.</p> <p>Not accepted</p> <p>Human factors assessment is an iterative process. If it is captured in the first iteration, the process is functioning properly. This is an important aspect to consider as part of the human performance assessment, and therefore the bullet is kept.</p>
comment	<p>370 comment by: <i>CANSO</i></p> <p>page 54 - 3rd Bullet: — potential confusion over the different views that an ATCO/AFISO could suffer from having images originated from different cameras with different locations and angles of view on the manoeuvring area (e.g. positioning cameras on both sides of a runway);</p> <p>CANSO suggestion Delete this item as it should have been addressed and identified very early in the design process. Anticipation that a Human Performance case first iteration will identify such an issue if any. The item is also strongly connected to training and human flexibility, the flexibility needed to cover up for bad or inconsistent design will however consume capacity.</p>
response	<p>Not accepted</p> <p>See the response to comment 311.</p>
comment	<p>439 comment by: <i>LFV</i></p> <p>Bullet in paragraph 6.2.1: "— potential confusion over the different views that an ATCO/AFISO could suffer from having images originated from different cameras with different locations and angles of view on the maneuvering area (e.g. positioning cameras on both sides of a runway);"</p> <p>Propose to delete this item as it should have been addressed and identified very early in the design process. Anticipation is that a Human Performance case first iteration will identify such an issue if any. The item is also strongly connected to training and human flexibility, the flexibility needed to cover up for bad or inconsistent design will however consume capacity.</p>

response	Not accepted See the response to comment 311.
comment	312 comment by: ENAV — partial obstruction of visual detection during sunrise or sunset; ENAV Comment: Clarification is requested
response	Accepted The text has been amended for clarification.
comment	371 comment by: CANSO Page 54 — partial obstruction of visual detection during sunrise or sunset; CANSO Comment: Clarification is requested
response	Accepted The text has been amended for clarification.
comment	440 comment by: LFV Bullet in paragraph 6.2.1: "— partial obstruction of visual detection during sunrise or sunset; " Propose to replace "obstruction" with "infliction" or "influence".
response	Partially accepted The text has been changed.
comment	744 comment by: Federal Aviation Administration Current Text: Regarding human factors element "panel obstruction of visual detection during sunrise or sunset". Specific Comment: Panel obstruction should be examined at all times - not just sunrise and sunset.
response	Accepted The text has been amended.

comment	<p>313 comment by: ENAV</p> <p>capability of the cameras to capture and transmit blinking beacon images in all circumstances;</p> <p>ENAV comment: Clouds, fog? Delete 'in all circumstances' The only thing that effects this is FPS</p>
response	Accepted
comment	<p>372 comment by: CANSO</p> <p>Page 54</p> <p>capability of the cameras to capture and transmit blinking beacon images in all circumstances;</p> <p>CANSO comment: Clouds, fog? Delete 'in all circumstances' The only thing that effects this is FPS</p>
response	Accepted
comment	<p>457 comment by: LFV</p> <p>Bullet in paragraph 6.2.1: "- capability of the cameras to capture and transmit blinking beacon images in all circumstances;"</p> <p>LFV: Delete "...in all circumstances". What about situations with clouds and fog? The only relevant characteristic is frame rate (FPS).</p>
response	Accepted
comment	<p>314 comment by: ENAV</p> <p><i>"Apart from the above-mentioned elements, some other aspects not related to the replacement of direct visual observation need to be considered in the human factors assessment. At least the following aspects should be reflected":</i></p> <p>ENAV suggestion: Delete all section because it's NOT for Remote-ATS. This is things that an ANSP consider anyhow and also for conventional TWR. At the end we can keep the sentence;</p> <p><i>"for the case when ATCOs/AFISOs will switch service provision between aerodromes under the same shift (may be applicable to the single mode of application as well as to the multiple mode of application, see Sections 4.1.3 and 4.2.3), it is recommended</i></p>

response	<p>for ATS providers to carefully consider the consequences on fatigue and mental availability and define mitigation measures as suitable”</p> <p>Not accepted</p> <p>Even if the list is not addressing remote aerodrome ATS aspects specifically, it contains procedural and other aspects relevant when considering remote aerodrome ATS. EASA has taken the opportunity to review the list and has amended its introductory text for clarification.</p>
comment	<p>373 comment by: CANSO</p> <p>Page 54</p> <p><i>“Apart from the above-mentioned elements, some other aspects not related to the replacement of direct visual observation need to be considered in the human factors assessment. At least the following aspects should be reflected”:</i></p> <p>CANSO suggestion: Delete all section because it’s NOT for Remote-ATS. This is things that an ANSP consider anyhow and also for conventional TWR. At the end we can keep the sentence;</p> <p><i>“for the case when ATCOs/AFISOs will switch service provision between aerodromes under the same shift (may be applicable to the single mode of application as well as to the multiple mode of application, see Sections 4.1.3 and 4.2.3), it is recommended for ATS providers to carefully consider the consequences on fatigue and mental availability and define mitigation measures as suitable”</i></p>
response	<p>Not accepted</p> <p>See the response to comment 314.</p>
comment	<p>442 comment by: LfV</p> <p>Text in paragraph 6.2.1: <i>“Apart from the above-mentioned elements, some other aspects not related to the replacement of direct visual observation need to be considered in the human factors assessment. At least the following aspects should be reflected”:</i></p> <p>Delete all section because it is also applicable for conventional tower and not specific for remote ATS. These are issues that an ANSP consider anyhow.</p> <p>The following sentence can be kept:</p> <p><i>“- for the case when ATCOs/AFISOs will switch service provision between aerodromes under the same shift (may be applicable to the single mode of application as well as to the multiple mode of application, see Sections 4.1.3 and 4.2.3), it is recommended for ATS providers to carefully consider the consequences on fatigue and mental availability and define mitigation measures as suitable”</i></p>



response	Not accepted See the response to comment 314.
comment	315 comment by: ENAV adequately manage the operational difficulties; such as publication of service availability, defining the correct moment for switching (e.g. will the switch be delayed if traffic is delayed, if so, how will airspace users be informed about it on both aerodromes). ENAV Suggestion Why do we need to inform airspace users when we split or merge aerodromes since we are doing it when it is appropriate and safe? Creates more confusion. Delete the text.
response	Accepted The commented bullet point has been amended; the notion of the need to inform airspace users has been removed. See also the response to comment 96.
comment	374 comment by: CANSO Page 55 adequately manage the operational difficulties; such as publication of service availability, defining the correct moment for switching (e.g. will the switch be delayed if traffic is delayed, if so, how will airspace users be informed about it on both aerodromes). CANSO Suggestion Why do we need to inform airspace users when we split or merge aerodromes since we are doing it when it is appropriate and safe? Creates more confusion. Delete the text.
response	Accepted See the response to comment 315.
comment	411 comment by: NATS Page 55 Why do we need to inform airspace users when we split or merge aerodromes since we are doing it when it is appropriate and safe? See this as having potential to create confusion. <u>Suggest Remove.</u>
response	Accepted

See the response to comment 315.

comment 458 comment by: LFV

Bullet in paragraph 6.2.1:
"- adequately manage the operational difficulties; such as publication of service availability, defining the correct moment for switching (e.g. will the switch be delayed if traffic is delayed, if so, how will airspace users be informed about it on both aerodromes)."

LFV:
Delete text. Why do we need to inform airspace users when we split or merge aerodromes since we are doing it when it is appropriate and safe? Creates more confusion.

response Accepted

See the response to comment 315.

comment 340 comment by: René Meier, Europe Air Sports

6.2.1. Remote aerodromes ATS related human factors...
page 53/92

We would like to add
- emergency measures/handling advice
to this list.

Rationale:
The high technicality of such an installation requires mental preparedness to all kinds of incidences that may occur. We think all these risks should be addressed before any implementation.

response Accepted

A new item has been added to the list of 'procedural and other aspects'.

comment 341 comment by: René Meier, Europe Air Sports

6.2.1. Remote aerodromes ATS related human factors...
page 54/92

mid page: seawater splash? Well, living near the Alps, it is difficult to imagine was this could be...

Question: Where do such risks exist? And then, subsequent question: What about corrosion control, favourite topic training sessions attended some years back?

response Noted



These are European guidelines. The specific example of seawater splash was a finding from validation activities performed on Værøy island in northern Norway, a heliport with camera installations next to the sea.

comment

438

comment by: LfV

Suggest to reword

"— other types of fatigue induced (e.g. occupational fatigue);"

to

"— other types of fatigue induced (e.g. occupational, technical or organisational fatigue);"

response

Partially accepted

This bullet has been removed, as it was partially a duplication of the bullet before. Instead, the bullet before it has been expanded with one additional example.

comment

540

comment by: Heathrow airport

We do not believe that it is *always* necessary to provide an out of the window view in order to provide remote ATS safely, if alternative methods of assuring location of aircraft and vehicles is provided, and other hazards and risks are demonstrated to be mitigated. We agree it can be advantageous to replicate an out of the window view as in most cases this would mitigate hazards and risks most effectively, however we acknowledge alternates are available, and are in operational use today. This should be reflected **throughout** the guidance including that visual presentation of out of the window view is listed as a basic feature in 12.4). Where an out of the window view is provided as the chosen method, the *minimum* requirements and recommendations for visual presentation and the extent of the coverage should not exceed those possible from ideally located conventional tower(s) that they replace.

response

Not accepted

See the response to comment 505.

comment

595

comment by: European Transport Workers Federation - ETF

"For multiple mode operation, particular care and considerations shall be taken with regard to the interaction between aerodromes and the increased complexity when providing multiple mode of operation."

The NPA already refers to increased complexity of providing multiple mode of operation, therefore it is essential to safety and must not be compromised.

response

Not accepted



Regarding the use of 'should/shall', see the response to comment 205.

comment	597	comment by: <i>European Transport Workers Federation - ETF</i>
	"Before implementing the technology, the ATS provider shall perform human factors assessments including the following technical elements:"	
	See previous comments.	
response	Not accepted	
	Regarding the use of 'should/shall', see the response to comment 205.	

comment	598	comment by: <i>European Transport Workers Federation - ETF</i>
	"At least, the following human factors elements shall be taken into consideration as a consequence of the replacement of direct visual observation with visual presentation systems:"	
	Where these elements are considered to be the minimum, they must be taken into consideration.	
response	Not accepted	
	Regarding the use of 'should/shall', see the response to comment 205.	

comment	599	comment by: <i>European Transport Workers Federation - ETF</i>
	"At least the following aspects shall be reflected:"	
	It states in the previous sentence, ' <i>Apart from the above-mentioned elements, some other aspects not related to the replacement of direct visual observation need to be considered in the human factors assessment.</i> '	
response	Not accepted	
	Regarding the use of 'should/shall', see the response to comment 205.	

comment	743	comment by: <i>Federal Aviation Administration</i>
	Current Text: "image quality factors (contrast, brightness, sharpness, focus, dynamic range, resolution, jitter and motion blur, etc.) for the area of interest;"	
	Specific Comment: Consider adding visual angle subtended by aircraft presentation.	
response	Not accepted	
	The bullet point and its examples of various image quality factors is non-exhaustive and considered sufficient.	

comment	745	comment by: <i>Federal Aviation Administration</i>
	For the human factors element list, consider adding bullet regarding workspace ergonomics.	
	Proposed Bullet: ATCO/AFISO workspace ergonomics (e.g., seated versus standing, distance for desk to screens).	
response	Accepted	

3.1. Draft guidelines - 6.2.2. Additional human factors elements/aspects related to multiple mode of operation

p. 55-56

comment	274	comment by: <i>AESA/DSANA</i>
	<u>Comment</u>	
	In the list of Human Factors elements, in the eighth bullet it could also be included the potential confusion over the views from different aerodromes. That seems to be the most critical aspect. To avoid confusion between aerodromes, runways, taxiways, procedures, frequencies, etc.	
response	Partially accepted	
	This was the intention with the next bullet, which has been amended (shortened) for clarification.	

comment	37	comment by: <i>GdF</i>
	arrangement of screens for the visual presentation and screens for other ATS systems/functions (e.g. amount number of screens and their functions, angles of screens);	
	Translation mistake	
response	Accepted	

comment	98	comment by: <i>ISAVIA ohf.</i>
	Item 6.2.2 page 56: „ATCO/AFISO ability to ‘maintain a continuous watch on all flight operations on and in the vicinity of an aerodrome as well as vehicles and personnel on the manoeuvring area’82 for all aerodromes under responsibility; „ and then refers to PANS-ATM 7.1.1.2 which states: "Aerodrome controllers shall maintain a continuous watch on all flight operations on and in the vicinity of an aerodrome as well as vehicles and personnel on the manoeuvring area."	
	If the ATCO has to serve two airports and switch between them, it is difficult to see how he can follow PANS-ATM 7.1.1.2. and maintain a continuous watch at both of them. This should be explained further.	



response	Accepted Guidelines Section 5.14.4 has been expanded with reasoning concerning ‘continuous watch’ in multiple mode of operation (see the response to comment 100).
comment	128 comment by: <i>Naviair</i> This could also have the opposite effect raising the possibilities to mix up the aerodromes.
response	Accepted Note: <i>Following a bilateral dialogue the commentator clarified that this comment relates to the two last sub-bullets (text beginning with ‘specific camera configuration..’ and ‘specific screen requirements..’) under the bullet/element reading ‘specific requirements needed for safety reasons, such as:’, NPA page 56.</i> The two sub-bullets have been deleted as their implementation in fact could be counterproductive, as indicated by this comment. The topic is anyhow deemed to be covered by the bullets/elements listed under ‘Technology/Human factors elements’.
comment	275 comment by: <i>AESA/DSANA</i> <u>Comment</u> In the list of Human Factors elements, in the fifth bullet instead of "(metrological conditions)" should be "(meteorological conditions)".
response	Accepted
comment	466 comment by: <i>René Meier, Europe Air Sports</i> 6.2.2. Additional human factors... page 56/92 Human factors elements: - differentiation between the different aerodromes (met conditions): In combining aerodromes being "combinable" we see a mitigation measure. Rationale: We think quite a high number of aerodromes situated in modestly undulated terrain only could easily be combined, this will not work for aerodromes situated in different, more or less narrow valleys.
response	Partially accepted See Section 4.2.1, discussing ‘selection of the appropriate combination of aerodromes’ in multiple mode of operation. This text has been expended to also mention the surrounding terrain of the aerodromes as a factor for consideration.



comment	<p>543 comment by: <i>Heathrow airport</i></p> <p>We do not believe that it is <i>always</i> necessary to provide an out of the window view in order to provide remote ATS safely, if alternative methods of assuring location of aircraft and vehicles is provided, and other hazards and risks are demonstrated to be mitigated. We agree it can be advantageous to replicate an out of the window view as in most cases this would mitigate hazards and risks most effectively, however we acknowledge alternates are available, and are in operational use today. This should be reflected throughout the guidance including that visual presentation of out of the window view is listed as a basic feature in 12.4).</p> <p>Where an out of the window view is provided as the chosen method, the <i>minimum</i> requirements and recommendations for visual presentation and the extent of the coverage should not exceed those possible from ideally located conventional tower(s) that they replace.</p>
response	<p>Not accepted</p> <p>See the response to comment 505.</p>
comment	<p>601 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>"In reference to the introductory paragraph of Section 6.2.1, when considering the implementation of the multiple mode of operation, the elements listed in this section shall be assessed with particular care. "</p> <p>These are essential to safety and must not be compromised.</p>
response	<p>Not accepted</p> <p>Regarding the use of 'should/shall', see the response to comment 205.</p>
comment	<p>602 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>There is no reference to spatial disorientation induced by difference in the orientation of the various visual presentations (e.g. where is north?) and any implications in 'switching' of service. This is typically what would fit as a task for the safety promotion group to be establish (as proposed in notes to page 91).</p>
response	<p>Partially accepted</p> <p>'Spatial disorientation' was added as a factor for consideration within the listed human factors elements. Also, the text of 'Note 2' in Section 5.14.4 has been adjusted to make the use/example of indicating compass directions (as overlaid information) in the visual presentation more prominent.</p> <p>The comment about 'implications in <i>switching</i> of service is not understood, as in multiple mode of operation service is to be provided to all aerodromes (aerodrome traffic) at all times.</p>
comment	<p>815 comment by: <i>UK CAA</i></p>

	<p>Page No: 56 Paragraph No: 6.2.2, 6th bullet Comment: There is a typo in the 6th bullet point on page 56 – ‘AFIOs’ rather than ‘AFISOs’ Proposed Text: ‘AFISOs’</p>
response	Accepted

3.1. Draft guidelines - 6.3. Transition/implementation plan
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p. 57

comment	<p>73 comment by: <i>DFS Deutsche Flugsicherung GmbH</i></p> <p>A chapter similar to chapter 6.3.1 should be added for Transition from single to multiple mode:</p> <p>Proposal: copy/paste chapter 6.3.1 and substitute ‘conventional tower’ by ‘single remote tower position’ and ‘remote tower’ by ‘multiple remote tower position.’</p>
response	<p>Not accepted</p> <p>Multiple mode of operation cannot be seen as a permanent mode; it has to remain flexible enough to accommodate changes in operational demands and workload, meaning that there might be times when multiple mode of operation is not suitable or feasible. Refer to the second paragraph of Section 4.2 which states that that multiple mode ‘is to be used only when the operational circumstances so allow’, e.g. not for all aerodromes, not at all times, nor for all situations. Hence, it is not appropriate to duplicate Section 6.3.1 for the purpose of transitioning from single to multiple mode, as that could be understood as multiple mode being a permanent state.</p>
comment	<p>84 comment by: <i>BMVBS</i></p> <p>A chapter similar to chapter 6.3.1 should be added for Transition from single to multiple mode:</p> <p>Proposal: copy/paste chapter 6.3.1 and substitute ‘conventional tower’ by ‘single remote tower position’ and ‘remote tower’ by ‘multiple remote tower position.’</p>
response	<p>Not accepted</p> <p>See the response to comment 73.</p>
comment	<p>230 comment by: <i>IFATCA</i></p> <p>The ATS provider should <i>shall</i>, in coordination with the aerodrome operator and other affected stakeholders as need be, establish a transition/implementation plan, as appropriate, for the introduction into service of remote aerodrome ATS, regardless if migrating service from a conventional tower or if setting up a new ATS</p>



	<p>unit. The transition/implementation plan should be documented and included in the safety assessment. This is a necessary condition in the migration from the conventional concept to the remote one. Transition implications affect all the operators concerned.</p>
response	<p>Not accepted</p> <p>Regarding the use of 'should/shall', see the response to comment 205.</p>
comment	<p>276 comment by: AESA/DSANA</p> <p><u>Comment</u> No reference to minimum content of the transition/implementation plan.</p> <p><u>Justification</u> It should be described minimum content of the transition/implementation plan (coordination between stakeholder, tasks....).</p>
response	<p>Partially accepted</p> <p>The introductory text of Section 6.3 has been expanded to highlight that the transition/implementation plan should cover those tasks, steps, resources and coordination activities with stakeholders as deemed necessary for a successful transition/implementation.</p>
comment	<p>316 comment by: ENAV</p> <p>A chapter similar to chapter 6.3.1 should be added for Transition from single to multiple mode:</p> <p>ENAV Suggestion Proposal: copy/paste chapter 6.3.1 and substitute 'conventional tower' by 'single remote tower position' and 'remote tower' by 'multiple remote tower position.'</p>
response	<p>Not accepted</p> <p>See the response to comment 73.</p>
comment	<p>375 comment by: CANSO</p> <p>A chapter similar to chapter 6.3.1 should be added for Transition from single to multiple mode:</p> <p>CANSO Suggestion Proposal: copy/paste chapter 6.3.1 and substitute 'conventional tower' by 'single remote tower position' and 'remote tower' by 'multiple remote tower position.'</p>
response	<p>Not accepted</p> <p>See the response to comment 73.</p>



comment	<p>394 comment by: <i>Scandinavian Airlines System</i></p> <p>6.3 Are airspace users considered to be affected stakeholders in this process?</p>
response	<p>Noted</p> <p>This is to be ultimately determined by the ATS operator; see the response to comment 276. However, note paragraph 8.1 in Annex I to Regulation (EU) No 1035/2011 and see the response to comment 746. Furthermore, see Guidelines Chapter 9 and the last three bullets/sub-bullets ('Information on implementation plans and milestones.').</p>
comment	<p>603 comment by: <i>HIAL</i></p> <p>Management of change. Compared to NPA 2015-04 (first phase RMT), NPA 2017-21 (second phase RMT) is expanded for the purpose of multi-mode RT operations. However, guidance provided by EASA within ED Decisions 2015/014/R and 2015/015/R following NPA 2015-04 was generally high level and HIAL are pleased to observe the management of change is extensively outlined within the NPA. Moreover, whilst Safety Assessment, Human Factors and the Transition to Remote Services has detailed proposals, the guidance in respect of contingency measures, particularly since reversion to conventional tower services may not be possible, provides a broad base for assessment.</p>
response	<p>Noted</p> <p>EASA thanks HIAL for their supportive comment.</p>
comment	<p>605 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>"The ATS provider shall, in coordination with the aerodrome operator and other affected stakeholders as need be, establish a transition/implementation plan, as appropriate, for the introduction into service of remote aerodrome ATS, regardless if migrating service from a conventional tower or if setting up a new ATS unit. "</p> <p>This is essential to safety and must not be compromised. This must also be done in collaboration with professional staff organisations, something that could achieve what EASA should be implementing regarding the social impact of this NPA.</p>
response	<p>Partially accepted</p> <p>Regarding the use of 'should/shall', see the response to comment 205.</p> <p>Regarding the 'collaboration with professional staff organisations', the introductory text of Section 6.3 has been expanded to highlight that the transition/implementation plan should cover those tasks, steps, resources and coordination activities with stakeholders as deemed necessary for a successful transition/implementation.</p>

comment	685	comment by: ATCEUC
	<p>The ATS provider should, in coordination with the aerodrome operator and other affected stakeholders as need be, establish a transition/implementation plan, as appropriate, for the introduction into service of remote aerodrome ATS, regardless if migrating service from a conventional tower or if setting up a new ATS unit.</p>	<p>The ATS provider shall, in coordination with the aerodrome operator and other affected stakeholders as need be, establish a transition/implementation plan, as appropriate, for the introduction into service of remote aerodrome ATS, regardless if migrating service from a conventional tower or if setting up a new ATS unit.</p>
response	<p>Not accepted</p> <p>Regarding the use of 'should/shall', see the response to comment 205.</p>	

3.1. Draft guidelines - 6.3.1. Transitioning from a conventional tower to a remote tower

p. 57

comment	38	comment by: GdF
	<p>Transfer of-control Typo</p>	
response	<p>Noted</p> <p>The hyphens have been removed for consistency.</p>	

comment	231	comment by: IFATCA
	<p>Transfer of-control Typo</p>	
response	<p>Noted</p> <p>The hyphens have been removed for consistency.</p>	

comment	342	comment by: René Meier, Europe Air Sports
	<p>6.3.1. Transitioning from a conventional tower to a remote tower page 57/92</p> <p>mid page: "The transition between states....": Question: Would "mode" or the latin plural of "stati" not fit better and enhance understanding?</p>	



response	<p>Not accepted</p> <p>The use of the word ‘mode’ may be confused with its use elsewhere in the document, e.g. the definitions of single/multiple mode of operation. Using ‘stati’ would be equally confusing as it is not a commonly used/understood word in English.</p>
comment	<p>548 comment by: <i>Heathrow airport</i></p> <p>This paragraph is written as permanent transition, however if used as a contingency facility, the transition period may not allow for the conventional tower to remain operational for a period (depending on reasons for moving to the contingency).</p>
response	<p>Noted</p> <p>Indeed, the scope of Section 6.3 is a permanent/full implementation of remote aerodrome ATS (which may include a transition from a conventional to a remote tower). The use of a remote tower as a back-up facility for limited time periods of temporary nature for a conventional tower (for which considerations/guidance is outlined in Section 4.1.4.), falls under the standard contingency arrangements/plans of the ATS unit, as stipulated by ICAO Annex 11 Chapter 2.31 / Regulation (EU) No 1035/2011, Annex I, Chapter 8.2.</p>
comment	<p>606 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>"For the case when the service is migrated from a conventional tower to a remote tower, a transition plan shall be developed with the collaboration of ATSEP and should define the different phases to be followed (and the associated transition criteria), including fall-back procedures for how to revert the ATS to the conventional tower in case of unexpected events or problems."</p> <p>This is essential for safety and must not be compromised, as well as important in terms of human factors. This should also be done in collaboration with professional staff organisations representing the staff affected by the transition.</p>
response	<p>Partially accepted</p> <p>Regarding the use of ‘should/shall’, see the response to comment 205.</p> <p>Regarding the ‘collaboration with professional staff organisations’, the introductory text of Section 6.3 has been expanded to highlight that the transition/implementation plan should cover those tasks, steps, resources and coordination activities with stakeholders as deemed necessary for a successful transition/implementation.</p>
comment	<p>816 comment by: <i>UK CAA</i></p> <p>Page No: 57 Paragraph No: 6.3.1, 6th bullet point</p>



	<p>Comment: There is a typo in the 6th bullet point on page 57, 'AFIOS' should read 'AFISOs'</p> <p>Proposed Text: 'AFISOs'</p>
response	Accepted

3.1. Draft guidelines - 6.3.2. Setting up a new ATS unit

p. 57

comment	<p>39</p> <p>an implementation</p> <p>Typo</p>	comment by: <i>GdF</i>
response	Accepted	

comment	<p>232</p> <p>an implementation</p> <p>Typo</p>	comment by: <i>IFATCA</i>
response	Accepted	

comment	<p>607</p> <p>"When the introduction into service of remote aerodrome ATS is performed at an aerodrome where no conventional tower exists (and therefore no associated ATS is provided), a implementation plan for the implementation of the new ATS unit shall be developed with the collaboration of ATSEP, taking into consideration the different elements contained in this document and the specific conditions of the target aerodrome."</p> <p>The introduction of a new ATS service will require some sort of implementation plan. This is essential to safety and must not be compromised.</p>	comment by: <i>European Transport Workers Federation - ETF</i>
response	<p>Partially accepted</p> <p>Regarding the use of 'should/shall', see the response to comment 205.</p> <p>Regarding the collaboration with ATSEP, the introductory text of Section 6.3. has been expanded to highlight that the transition/implementation plan should cover those tasks, steps, resources and coordination activities with stakeholders as deemed necessary for a successful transition/implementation.</p>	

3.1. Draft guidelines - 6.3.3. Common aspects for a transition/implementation plan

p. 58

comment	<p>609</p>	comment by: <i>European Transport Workers Federation - ETF</i>
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	<p>"Regardless if migrating from a conventional tower or if setting up a new ATS unit at an aerodrome, the aspects below shall be covered by the transition/implementation plan made by ATSEP. Airspace users, relevant ATS units (e.g. those in charge of adjacent sectors), and respective aerodrome units shall be notified without undue delay when ATS is provided from the remote tower, or when ATS from the remote tower is planned to be terminated. This notification process shall be applied through the aeronautical products and services (e.g. Notice to Airmen (NOTAM)), see Section 9.</p> <p>When the introduction into service of the remote aerodrome ATS is completed, the following requirements should be met:"</p> <p>These are essential to safety and must not be compromised.</p>
response	<p>Not accepted</p> <p>Regarding the use of 'should/shall', see the response to comment 205.</p>
comment	<p>610 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>"ATCO/AFISO (or the responsible person designated by the ATS provider) providing ATS from a remote tower should apply the relevant remote tower start-up procedure before providing the ATS. This start-up procedure should include the confirmation of the remote tower's capability to provide the ATS." ATSEP are responsible for providing this confirmation.</p>
response	<p>Not accepted</p> <p>The commented text has been removed for other reasons. However, the comment as such is not accepted, as such confirmation could likewise be system generated.</p>
comment	<p>720 comment by: <i>DTA</i></p> <p>Information is missing: aeronautical information products and services seems more appropriate.</p>
response	<p>Accepted</p>
comment	<p>817 comment by: <i>UK CAA</i></p> <p>Page No: 58 Paragraph No: 6.3.3, Common aspects for a transition/implementation plan Comment: We believe there is nothing here which would not equally apply to a conventional tower other than the speed at which the tower will transition to an unplanned termination. We recommend that the text should be consolidated and referenced to source.</p>
response	<p>Accepted</p> <p>The text has been significantly shortened.</p>

3.1. Draft guidelines - 6.4. Information and cyber security

p. 59

comment	129	comment by: <i>Naviair</i>
	This could potential be an issue in a RTC with multi ATC where you have personnel only authorized to one of several ATC. How can a safeguard be in place preventing interaction with the wrong ATC.	
response	Noted	
	If there is a need for such restrictions, it needs to be solved locally depending on specific local security or access restriction requirements.	
comment	130	comment by: <i>Naviair</i>
	It could be envisaged, that requirements for full encryption of all data exchanges would be necessary to prevent undetected changes.	
response	Noted	
comment	131	comment by: <i>Naviair</i>
	A security risk analysis normally has 3 components. CIA (confidentiality, Integrity, Availability) only the integrity and the Availability results could typically have a safety impact. considerations regarding Confidentiality should also be considered.	
	One could be more specific on how the security risk analysis be should linked to the safety assessment.	
response	Noted	
	The link between the results from the security risk analysis and the safety assessment is mentioned in the fourth paragraph of Section 6.4 and in the last paragraph of Section 6.1.	
comment	132	comment by: <i>Naviair</i>
	This is not in line with the definition of a security risk. A security risk is always intentional.	
response	Noted	
	The description of a 'security threat' follows the text/description given in 'GM1 ATM/ANS.OR.D.010(d) (Security management)' to Regulation (EU) 2017/373.	
comment	612	comment by: <i>European Transport Workers Federation - ETF</i>



	<p>"The results of this security risk analysis shall be considered as input to the safety assessment. ATSEPs shall be trained to detect and counter the cyber security threats as identified in this assessment."</p> <p>Having previously stated in the same paragraph that ANSPs shall establish a security management system etc., and that remote aerodrome ATS relies on IT infrastructure for various types of support, making it vulnerable to potential security threats, a security risk analysis is therefore essential.</p>
response	<p>Not accepted</p> <p>The requirement for a security risk assessment, in accordance with Regulation (EU) No 1035/2011, is clear, and is also correctly reflected by the existing text. However, Regulation (EU) No 1035/2011 Annex I, Chapter 4 also reads 'The safety, quality and security management systems may be designed and operated as an integrated management system.'</p> <p>See also the response to comment 205.</p>
comment	<p>818 comment by: UK CAA</p> <p>Page No: 59 Paragraph No: 6.4, Information and cyber security Comment: The 4th paragraph of paragraph 6.4 contains the word "... shall ..." as follows:</p> <p><i>'Consequently, the introduction of remote aerodrome ATS may affect the security risk assessment and these security vulnerabilities may have an impact on safety. For this reason, these security vulnerabilities may add new causes to the existing safety hazards (e.g. possible corruption of navigation aids information, loss of visual presentation data) or may add new hazards (e.g. complete loss of the provision of ATS). Based on these considerations, the ATS provider shall (in reference to Regulations 1035/2011 and 2017/373, see above) conduct a dedicated security risk analysis and take the necessary measures to protect its systems and constituents against information and cyber security threats. The results of this security risk analysis should be considered as input to the safety assessment.'</i></p> <p>Justification: The purpose of the document is to "... provides guidance ..." (paragraph 1.1, page 14 refers), therefore the use of the word "shall" is inconsistent with purpose of the document. The inclusion of the word "shall" should be restricted to the replication of text taken directly from other documents.</p> <p>Proposed Text: Replace with:</p> <p><i>'Consequently, the introduction of remote aerodrome ATS may affect the security risk assessment and these security vulnerabilities may have an impact on safety. For this reason, these security vulnerabilities may add new causes to the existing safety hazards (e.g. possible corruption of navigation aids information, loss of visual presentation data) or may add new hazards (e.g. complete loss of the provision of ATS). Based on these considerations, the ATS provider is required in accordance with Commission Implementing Regulation</i></p>



(EU) No 1035/2011 and 2017/373 to conduct a dedicated security risk analysis and take the necessary measures to protect its systems and constituents against information and cyber security threats. The results of this security risk analysis should be considered as input to the safety assessment.'

response Accepted

3.1. Draft guidelines - 6.5. Contingency planning

p. 60-61

comment 74 comment by: *DFS Deutsche Flugsicherung GmbH*
 '... situations for which contingency procedures should be applied..'
 Replace "should" by "may" as it depends heavily on the whole environment and situation on whether to apply contingency procedures or not.

Proposal: '... situations for which contingency procedures ~~should~~ **may** be applied..'

response Accepted

comment 85 comment by: *BMVBS*
 '... situations for which contingency procedures should be applied..'
 Replace "should" by "may" as it depends heavily on the whole environment and situation on whether to apply contingency procedures or not.

Proposal: '... situations for which contingency procedures ~~should~~ **may** be applied..'

response Accepted

comment 133 comment by: *Naviair*
 What is significant; please provide an example or an indication in percentage.

response Noted

The text is a direct quotation of the requirement in Regulation (EU) 2107/373. The ATS provider needs to define what is to be considered as 'significant', taking into account the specificities of the local operational context and environment.

comment 285 comment by: *AESA/DSANA*

Comment

AESA would appreciate a list of operational procedures for the possible loss/degradation of every system

response Not accepted

The specific operational/contingency procedures need to be developed locally, taking into account the technical implementation and the specificities of the local operational context.



comment	<p>604 comment by: HIAL</p> <p>Management of change. Compared to NPA 2015-04 (first phase RMT), NPA 2017-21 (second phase RMT) is expanded for the purpose of multi-mode RT operations. However, guidance provided by EASA within ED Decisions 2015/014/R and 2015/015/R following NPA 2015-04 was generally high level and HIAL are pleased to observe the management of change is extensively outlined within the NPA. Moreover, whilst Safety Assessment, Human Factors and the Transition to Remote Services has detailed proposals, the guidance in respect of contingency measures, particularly since reversion to conventional tower services may not be possible, provides a broad base for assessment.</p>
response	<p>Noted</p> <p>EASA thanks HIAL for their supportive comment.</p>
comment	<p>614 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>"With regard to remote aerodrome ATS, the contingency procedures shall be adapted/adjusted to the specific local conditions, taking into consideration elements such as: [...] In case the ATS provision is affected by a system degradation, the remote tower system shall be able to fulfil the following requirements: — Remote aerodrome ATS shall be terminated in case of inadequate capability of the remote tower system elements to provide the service. — Airspace users, relevant and adjacent ATS units, and respective aerodrome services units shall be notified without undue delay in case the ATS cannot be provided (unplanned termination of the ATS provision due to system failures). For these cases, the remote aerodrome ATS shall be appropriately (safely) terminated. [...]"</p> <p>Paragraph 6.5 already states, 'As stipulated by point 8.2 in Annex I of Regulation (EU) No 1035/201184 [3], a service provider – and therefore also the ATS provider – shall have in place contingency plans for all the services it provides in the case of events which result in significant degradation or interruption of its operations.'</p>
response	<p>Not accepted</p> <p>See the response to comment 205.</p>
comment	<p>615 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>"In case of multiple mode of operation, contingency procedures shall take into account the effect of degraded mode situations for all aerodromes connected to one RTM and how failures may interfere between the aerodromes. "</p>
response	<p>Not accepted</p> <p>See the response to comment 205.</p>

comment	<p>658 comment by: Flughafen Berlin Brandenburg GmbH</p> <p>Additionally, it might be beneficial during regular operations of the remote aerodrome ATS to provide a continuous (positive) feedback on the operational status of the remote ATS to affected operational partners, and particularly to the aerodrome operator.</p>
response	<p>Noted</p> <p>ATS hours of operations are normally published in AIP/NOTAMs in agreement with the aerodrome operator.</p>

comment	<p>686 comment by: ATCEUC</p>		
	<p>With regard to remote aerodrome ATS, the contingency procedures should be adapted/designed to the specific local conditions, taking into consideration elements such as: [...] In case the ATS provision is affected by a system degradation, the remote tower system should be able to fulfil the following requirements: — Remote aerodrome ATS should be terminated in case of inadequate capability of the remote tower system elements to provide the service. — Airspace users, relevant and adjacent ATS units, and respective aerodrome services units should be notified without undue delay in case the ATS cannot be provided (unplanned termination of the ATS provision due to system failures). For these cases, the remote aerodrome ATS should be</p>	<p>With regard to remote aerodrome ATS, the contingency procedures shall be adapted/designed to the specific local conditions, taking into consideration elements such as: [...] In case the ATS provision is affected by a system degradation, the remote tower system shall be able to fulfil the following requirements: — Remote aerodrome ATS shall be terminated in case of inadequate capability of the remote tower system elements to provide the service. — Airspace users, relevant and adjacent ATS units, and respective aerodrome services units shall be notified without undue delay in case the ATS cannot be provided (unplanned termination of the ATS provision due to system failures). For these cases, the remote aerodrome ATS shall be</p>	<p>Paragraph 6.5 already states, ‘As stipulated by point 8.2 in Annex I of Regulation (EU) No 1035/201184 [3], a service provider – and therefore also the ATS provider – shall have in place contingency plans for all the services it provides in the case of events which result in significant degradation or interruption of its operations.’</p>



	<p>appropriately (safely) terminated. [...] In case of multiple mode of operation, contingency procedures should take into account the effect of degraded mode situations for all aerodromes connected to one RTM and how failures may interfere between the aerodromes.</p>	<p>appropriately (safely) terminated. [...] In case of multiple mode of operation, contingency procedures shall take into account the effect of degraded mode situations for all aerodromes connected to one RTM and how failures may interfere between the aerodromes.</p>	
response	<p>Not accepted</p> <p>See the response to comment 205.</p>		
comment	<p>698 comment by: <i>Scandinavian Airlines System</i></p> <p>6.5 “Airspace users... should be notified without undue delay...” We question the wording “should”, and prefer “shall”, since it is vital information in the event ATS cannot be provided.</p>		
response	<p>Not accepted</p> <p>See the response to comment 205.</p>		
comment	<p>819 comment by: <i>UK CAA</i></p> <p>Page No: 60 Paragraph No: 6.5, Contingency planning Comment: There appears to be an inconsistency of formatting of text replicated from Implementing Regulations. We believe the 1st paragraph replicated below should be italicised. Justification: The standard appears to be that text taken from other documents and replicated within the NPA are italicised. Proposed Text: <i>‘As stipulated by point 8.2 in Annex I of Regulation (EU) No 1035/201184 [3], a service provider – and therefore also the ATS provider – shall have in place contingency plans for all the services it provides in the case of events which result in significant degradation or interruption of its operations.’</i></p>		
response	<p>Accepted</p>		
comment	<p>820 comment by: <i>UK CAA</i></p> <p>Page No: 60 Paragraph No: 6.5, Contingency planning</p>		



	<p>Comment: Section 5.1 paragraph 5 refers to RTC and of the need to exercise caution if an alternate aerodrome is lost because the RTC itself, as a single point of failure, is lost. Paragraph 6.5 should include the requirement for contingency plans to be available in the event of such an occurrence. We therefore recommend that a new sub-paragraph is added to address ‘Failure of RTC’</p>
response	<p>Accepted</p> <p>Additional text has been included to cover this aspect.</p>

3.1. Draft guidelines - 6.6. Remote tower system constituents
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p. 62-63

comment	<p>177 comment by: AESA/DSANA</p> <p><u>Comment</u> In order to align the terms and definitions with Reg. 552/2004, and taking into consideration the systems put into service to date, we consider it to be more convenient if the Remote Tower Infrastructure is said to be composed of multiple systems (composed of multiple constituents themselves).</p> <p><u>Justification</u> The definition considering a unique RT system might not suit the reality when multiple services providers (and therefore multiple systems) are involved. For instance, the functional blocks described in ED-240 might be constituents of different systems (and providers), depending of the implementation selected. This issue may gain special importance if some of the functional blocks are to be integrated in existing systems (e.g. RTS control HMI into ATS HMI).</p>
response	<p>Noted</p> <p>The comment seems to be already reflected by the existing text. Moreover, independently of the architecture, it is to be noted that a reference to a single system is identified in Regulation (EU) 2018/1139 for the provision of the ATM/ANS services. Then, a reference to ‘system’ is considered as a better option.</p>
comment	<p>258 ❖ comment by: AESA/DSANA</p> <p><u>Comment</u> Will the monitoring equipment be required to enable supervision and control of the navigation aids?</p> <p><u>Justification</u> Systems used for the monitoring of navigation aids (supervision only) are excluded from the scope of Reg. 552/2004 and, therefore, would not be subject of the splitting into constituents.</p>
response	<p>Noted</p> <p>Existing ICAO/EU requirements apply, as for conventional towers. (ICAO Doc 4444 Chapters 4.14 and 7.1.3, proposed for transposition into the EU Regulatory</p>



framework by 'EASA Opinion No 03/2018' as ATS IR ATS.OR.140 to Regulation (EU) 2017/373.)

comment 290 comment by: *German NSA (BAF)*

Regarding: Table 1 Remote tower system constituents
'surface movement control service'

The presentation of surface movements is covered by ATS equipment (e.g. ASMGCS-Screen). Therefore, this is not CNS.

Proposal:

Replace 'surface movement control service' by 'surface movement detection'

response Not accepted

The surface movement control service refers to 'communications for the control of vehicles other than aircraft on manoeuvring areas at controlled aerodromes', in accordance with ICAO Annex 11 Chapter 6.3. The text has been amended for clarification.

comment 343 comment by: *René Meier, Europe Air Sports*

6.6. Remote tower system constituents
pages 62 and 63/92

General remark: That is really not binding what we read here. Question: Would it not be helpful to provide more demanding provisions for the sake of clarity, precision, and acceptance?

As regards Table 1: We would replace "management" in the lowermost segment by "activation" or "operation", "managment" is slightly exaggerated.

response Noted

Concerning the regulatory level/approach, please refer to the response to comment 205.

Concerning the term 'management', this is the term used throughout the document, with the broader meaning, including e.g. monitoring/operating/activating/etc. as applicable depending on the particular system/asset. See e.g. the title of Section 5.9. 'Management of aerodrome assets'.

comment 550 comment by: *Heathrow airport*

Overall we agree with the rationale for the ground infrastructure considered as ATS constituents, will there be a need to break down further? (e.g. when considered in detail, some elements may be best treated differently?). Can the wording reflect this possibility at a local level?



response Noted

The current wording is making an initial proposal but the final determination of the split of the system into constituents remains at local/implementation level, depending e.g. on the specific system architecture and the contracted suppliers.

comment 617 comment by: *European Transport Workers Federation - ETF*

"It shall be used primarily for the 'detection' and 'recognition' of aircraft (as well as for other objects and purposes, e.g. vehicles, personnel, obstructions, animals, occurrences at the aerodrome, weather follow up, etc.) and normally not used for the 'identification' of aircraft for the purpose of ATS surveillance services provision."

Earlier in the paragraph it states, *'The image captured by the cameras/optical sensors is used to replace the 'out of the window view' with a 'visual presentation'. It is not intended for provision of ATS surveillance services, nor does it provide the necessary means and information for that purpose.'*

response Partially accepted

The wording has been adjusted to read 'It is to be used primarily..'

comment 619 comment by: *European Transport Workers Federation - ETF*

"Following this analysis, it has been concluded that the ground infrastructure at the aerodrome for capturing images and surrounding sound shall be considered as ATS constituents (or part of it)."

There is no mention of the responsibilities of staff in terms of using overlaid information to 'supplement' the provision of a visual service. Neither does EASA address the status of such information as overlaid. This is a shortcoming of the NPA.

response Not accepted

Regarding the use of should/shall, see the response to comment 205.

Regarding the status of overlaid information, see the response to comment 486.

comment 821 comment by: *UK CAA*

Page No: 62

Paragraph No: 6.6, Remote tower system constituents

Comment: Reference is made to the interoperability regulation EC 552/2004, and it is later concluded that that the ground infrastructure for capturing images and sound should be considered as ATS, not CNS, which aligns with UK CAA policy. However currently there are no specific requirements for ATS within Part B of EC 552/2004 for visual presentation except Human-machine and new concepts of operation. If this understanding is correct, then we suggest the proposed text below should be included.



	<p>Justification: Clarity required of the specific requirements for visual presentation, binocular functionality and aerodrome sound.</p> <p>Proposed Text: Additional item to be added under ‘The following is noted:’ on page 63: ‘Specific requirements as defined in Part B of Regulation (EC) No 552/2004 for Visual Presentation, binocular functionality and aerodrome sound are limited to ‘Human-machine interface systems’ and ‘Support for new concepts of operation’.</p>
response	<p>Noted</p> <p>The aspect raised by the commenter is not valid any longer, as the Essential Requirements in Regulation (EC) No 552/2004 have been repealed by Regulation (EU) 2018/1139. In this context, the source of Essential Requirements should be Annex VIII to Regulation (EU) 2018/1139 where the identified issue is not applicable.</p>

3.1. Draft guidelines - 7. Aerodrome related aspects	p. 64
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comment	<p>40 comment by: GdF</p> <p>An advantage of providing the aerodrome ATS from the aerodrome itself (be it either from a ‘conventional tower’ or from a ‘remote tower’) is the possibility of direct personal contact with the aerodrome operator, which can be beneficial particularly during special events/accidents or incidents.</p> <p>GdF agrees explicitly.</p>
response	<p>Noted</p>

comment	<p>233 comment by: IFATCA</p> <p>Comment</p> <p>An advantage of providing the aerodrome ATS from the aerodrome itself (be it either from a ‘conventional tower’ or from a ‘remote tower’) is the possibility of direct personal contact with the aerodrome operator, which can be beneficial particularly during special events/accidents or incidents.</p> <p>SESAR Studies have shown that in single remote tower system the overall benefits for the whole value chain is negative. As the additional tasks carried out by some of the ATCO/AFISO had to be replaced by new staff. Additional coordination and management processes have increased the overall cost. As the support staff cost are already amounting to 70% of the OPEX in Europe, economically speaking the Single Remote Tower is not a cost efficient mode of operations. It is believed (without any study) that multiple remote towers will be cost efficient for the ANSPs but not for the whole value chain, as the observed trends in single remote tower will be observed as well in the case of multiple remote tower operations.</p>
response	<p>Noted</p>



The decision for a potential remote aerodrome ATS implementation lies within the individual providers/operators/organisations concerned. Furthermore, it is noted that the comment does not include any reference to the claimed SESAR study.

comment

344

comment by: *René Meier, Europe Air Sports*

7. Aerodrome related aspects
page 64/92

Still bearing in mind my discussions with with my competent authority at LSZG, as airport manager or as project manager "IFR without ATC", the Certification Specifications have to be as precise as possible, this in order to fulfil the requirement of "with regards to aerodromes, and irrespective of the regulatory framework that an aerodrome falls under, the following aspects should be taken into consideration to meet this objective". Should is too weak, replace it by "have to".

Rationale:

Certification specifications, albeit being "soft law", are not part of a wishlist.

response

Not accepted

In accordance with the EU/EASA regulatory convention/policy, the use of 'shall' is reserved for the implementing rules — it cannot be used in AMC/GM/guidelines. The aim of the Guideline document and its Chapter 7 in particular is to provide guidance for the implementation of remote aerodrome ATS and to support the fulfilment of existing aerodrome-related requirements. Therefore, EASA does not share the view that the use of the word 'should' may endanger the safe implementation.

comment

764

comment by: *daa*

Page No: 64

Section/Chapter: Section 7; Aerodrome related aspects

Paragraph No: N/A

Comment: daa is of the opinion that further clarity should be included in section 7 in relation to the specific points listed below. These are of particular importance to daa given the geographical nature of Cork Airport, and the scale and dispersed nature of Dublin Airport.

- It is of the utmost importance that Aerodrome Operators are consulted at an early stage of the proposed change to facilitate effective and timely risk identification and mitigation, and documentation preparation.
 - Aerodrome manual - Updating of AIS - Procedures for the transition of ATS
- Effective coordination between the Aerodrome Operator and the ATM/ANS providers in the event of system failure is critical, requiring clarity on responsibilities & necessary COA.
- Aerodrome safeguarding & security (and associated responsibilities)



	<ul style="list-style-type: none"> ○ System redundancy is of particularly interest to daa to ensure sufficient back up is provided to address any potential system or equipment failure & potential cyber-attack. Detail on the requirements for dual feeds for power, network, and dual systems should be included. ● Standards for reliability of equipment and systems (for example Safety Integrity Levels specified of equipment and systems such as LAN WLAN WI-FI) should be specified. ● In the context of management of change for remote aerodrome ATS provider and Aerodrome Operator, there is a need to mandate the review, update and timely implementation of training requirements for aerodrome personnel arising either from reassignment/ enhancement, or amendment of the aerodrome procedures.
response	<p>Noted</p> <p>The existing rules regarding change management already address the aspects raised in the first three as well as the last bullet in comment above.</p>

<p>3.1. Draft guidelines - 7.1. Certification 7.1.1. Documentation to be provided by the aerodrome applicant at the initial aerodrome certification</p>	<p>p. 64-65</p>
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comment	<p>170 comment by: <i>Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)</i></p> <p>Is this compliant with current ADR rules?</p>
response	<p>Noted</p> <p>This an update of the existing guidelines that was published with ED Decision 2015/014/R of 3 July 2015, aiming at facilitating the safe implementation of remote aerodrome ATS and to support the competent authority in their assessment. These generic Guidelines are complementing the existing ADR rules.</p>
comment	<p>564 comment by: <i>Heathrow airport</i></p> <p>Please note that should Heathrow require certification for a remote tower, as can be the case for other certifications today, some elements of the requested information for certification would be required to be kept confidential for security reasons. We would also request a short and time limited process for certification.</p>
response	<p>Noted</p>
comment	<p>608 comment by: <i>HIAL</i></p>



	<p>ANSPs will benefit greatly from the guidance and considerations within the NPA which serve as a foundation upon which to build applications for regulatory approval. The guidance, whereby a 'checklist' of component parts of a safety case could be agreed through coordination with the competent authority, reduces unnecessary non-compliances in the application process whilst at the same time increasing the likelihood of obtaining approval without having to incur long delays, it would also cut down on unnecessary workload and associated cost for both the UK CAA and HIAL as an ANSP and could ease the burden, in some respects, of implementing the HIAL ATM Strategy.</p>		
response	<p>Noted</p> <p>EASA thanks HIAL for their supportive comment.</p>		
comment	<p>620 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>"The documentation for the initial certification of the aerodrome shall include information regarding the provision of ATM/ANS at the aerodrome, including: [...] When remote aerodrome ATS is provided, the submitted documentation (apart from the necessary arrangements between the aerodrome operator and the ATS provider) shall clearly identify: [...] The submitted drawings showing the design of the aerodrome shall contain information regarding: [...] Moreover, information shall be provided regarding the technical solutions employed for:"</p> <p>All of these are to do with the designation, delineation and demarcation of responsibilities and thus are essential to safety and must not be compromised.</p>		
response	<p>Not accepted</p> <p>In accordance with the EU/EASA regulatory convention/policy, the use of 'shall' is reserved for the implementing rules — it cannot be used in AMC/GM/guidelines. The aim of the Guideline document and its Chapter 7 in particular is to provide guidance for the implementation of remote aerodrome ATS and to support the fulfilment of existing aerodrome-related requirements. Therefore, EASA does not share the view that the use of the word 'should' may endanger the safe implementation.</p>		
comment	<p>687 comment by: <i>ATCEUC</i></p> <table border="1"> <tr> <td> <p>The documentation for the initial certification of the aerodrome should include information regarding the provision of ATM/ANS at the aerodrome, including: [...]</p> </td> <td> <p>The documentation for the initial certification of the aerodrome shall include information regarding the provision of ATM/ANS at the aerodrome, including: [...]</p> </td> </tr> </table>	<p>The documentation for the initial certification of the aerodrome should include information regarding the provision of ATM/ANS at the aerodrome, including: [...]</p>	<p>The documentation for the initial certification of the aerodrome shall include information regarding the provision of ATM/ANS at the aerodrome, including: [...]</p>
<p>The documentation for the initial certification of the aerodrome should include information regarding the provision of ATM/ANS at the aerodrome, including: [...]</p>	<p>The documentation for the initial certification of the aerodrome shall include information regarding the provision of ATM/ANS at the aerodrome, including: [...]</p>		

	<p>When remote aerodrome ATS is provided, the submitted documentation (apart from the necessary arrangements between the aerodrome operator and the ATS provider) should clearly identify: [...]</p> <p>The submitted drawings showing the design of the aerodrome should contain information regarding: [...]</p> <p>Moreover, information should be provided regarding the technical solutions employed for:</p>	<p>When remote aerodrome ATS is provided, the submitted documentation (apart from the necessary arrangements between the aerodrome operator and the ATS provider) shall clearly identify: [...]</p> <p>The submitted drawings showing the design of the aerodrome shall contain information regarding: [...]</p> <p>Moreover, information shall be provided regarding the technical solutions employed for:</p>
response	<p>Not accepted</p> <p>In accordance with the EU/EASA regulatory convention/policy, the use of ‘shall’ is reserved for the implementing rules — it cannot be used in AMC/GM/guidelines. The aim of the Guideline document and its Chapter 7 in particular is to provide guidance for the implementation of remote aerodrome ATS and to support the fulfilment of existing aerodrome-related requirements. Therefore, EASA does not share the view that the use of the word ‘should’ may endanger the safe implementation.</p>	
comment	711	comment by: DTA
	<p>DGAC underlines that relevant and applicable regulation for the initial certification of aerodrome referred to, should be precised; no reference is made to Commission regulation (EU) n°139/2014 or national regulation.</p>	
response	<p>Noted</p> <p>References to applicable regulations are provided in the introductory text of Chapter 7.</p>	

3.1. Draft guidelines - 7.1. Certification 7.1.2. Aerodrome manual

p. 65-66

3.1. Draft guidelines - 7.1. Certification 7.1.2. Aerodrome manual

comment

621

comment by: *European Transport Workers Federation - ETF*

"In case of remote aerodrome ATS where the ATS provision is not done by the aerodrome operator, the aerodrome manual shall additionally contain relevant information including, but not limited to:"



response	<p>All of the details in the list are essential to safety and must not be compromised.</p> <p>Not accepted</p> <p>The proposed inclusion of text is not accepted as the aerodrome manual should always contain the relevant information, irrespectively of which organisation is providing the service.</p> <p>Moreover, in accordance with the EU/EASA regulatory convention/policy, the use of 'shall' is reserved for the implementing rules — it cannot be used in AMC/GM/guidelines. The aim of the Guideline document and its Chapter 7 in particular is to provide guidance for the implementation of remote aerodrome ATS and to support the fulfilment of existing aerodrome-related requirements. Therefore, EASA does not share the view that the use of the word 'should' may endanger a safe implementation.</p>
comment	<p>661 comment by: <i>Flughafen Berlin Brandenburg GmbH</i></p> <p>Most of the aspects listed in section 7.1.2 are already covered / stipulated by regulation no 139/2014 and related soft law: E.g. AMC 3 ADR.OR.E.005 refers to procedures for low visibility/extreme weather situations.</p> <p>Hence, a simple cross reference to that specific AMC may be sufficient.</p> <p>Furthermore, it should be clearly differentiated which tasks, procedures and responsibilities are attributed to the aerodrome operator and which to the ATS provider.</p> <p>E.g. in cases where a transition of ATS from a conventional tower to a remote one, and vice versa is foreseen, only those tasks and procedures should be included within the aerodrome manual that have to be performed by the aerodrome operator.</p> <p>Other issues may have a rather internal character and may be performed within the organisation of the ATS provider without external participation.</p> <p>As a conclusion, the aerodrome manual should not contain internal ATS procedures that might be covered by an operations manual of an ATS provider - e.g. comparable with / according to ATM/ANS.OR.B.035</p>
response	<p>Noted</p> <p>The proposed material neither overlaps with existing material under Regulation (EU) No 139/2014, nor intends to transfer material from ATS procedures into the aerodrome manual.</p>
comment	<p>662 comment by: <i>Flughafen Berlin Brandenburg GmbH</i></p> <p>Clearly, the aerodrome operator may facilitate on-site visits, but it is the responsibility of the ATS provider to define the curriculum and training for own staff. Hence, details</p>

	<p>regarding training intervals (and frequency of study visits) should be documented within the ATS provider's documentation system - e.g. training manual. This is particularly true for cases where ATS provider and aerodrome operator are separate entities with different competent authorities.</p>		
response	<p>Noted</p> <p>EASA shares the view that that it is the responsibility of the ATS provider to define the curriculum and ensure the proper training of its own personnel.</p>		
comment	<p>688 comment by: ATCEUC</p> <table border="1" style="width: 100%;"> <tr> <td style="width: 50%;"> <p>In case of remote aerodrome ATS, the aerodrome manual should additionally contain relevant information including, but not limited to:</p> </td> <td style="width: 50%;"> <p>In case of remote aerodrome ATS the aerodrome manual shall additionally contain relevant information including, but not limited to:</p> </td> </tr> </table>	<p>In case of remote aerodrome ATS, the aerodrome manual should additionally contain relevant information including, but not limited to:</p>	<p>In case of remote aerodrome ATS the aerodrome manual shall additionally contain relevant information including, but not limited to:</p>
<p>In case of remote aerodrome ATS, the aerodrome manual should additionally contain relevant information including, but not limited to:</p>	<p>In case of remote aerodrome ATS the aerodrome manual shall additionally contain relevant information including, but not limited to:</p>		
response	<p>Not accepted</p> <p>In accordance with the EU/EASA regulatory convention/policy, the use of 'shall' is reserved for the implementing rules — it cannot be used in AMC/GM/guidelines. The aim of the Guideline document and its Chapter 7 in particular is to provide guidance for the implementation of remote aerodrome ATS and to support the fulfilment of existing aerodrome-related requirements. Therefore, EASA does not share the view that the use of the word 'should' may endanger the safe implementation.</p>		
comment	<p>713 comment by: DTA</p> <p>DGAC underlines that AMC3 ADR.OR.E.005 of Commission regulation (UE) n°139/2014 addressing aerodrome manual doesn't require information described in 7.1.2 applicable to ATS provision.</p>		
response	<p>Noted</p> <p>The aim of the Guideline document and its Chapter 7 in particular is to provide guidance for the implementation of remote aerodrome ATS and to support the fulfilment of the existing aerodrome-related requirements. These generic Guidelines are complementing the existing ADR rules.</p>		
comment	<p>822 comment by: UK CAA</p> <p>Page No: 65 Paragraph No: 7.1.2, Aerodrome manual Comment: Aerodrome manual inclusion will differ from application to application and from ANSP to ANSP for different applications, and the list may not be as</p>		

	<p>comprehensive as necessary. For example, there is no mention of interacting with wildlife management, airside work parties and/or direct pilot briefings, which the UK CAA sees as being essential considerations.</p> <p>Justification: More comprehensive list of examples.</p> <p>Proposed Text: The following bullets should be added:</p> <ul style="list-style-type: none"> — Interaction with wildlife management — Interaction and briefing of working parties — Conduct of aerodrome briefings
<p>response</p>	<p>Partially accepted</p> <p>The text has been adjusted to include wildlife management and airside work as examples for coordination.</p>
<p>comment</p>	<p>823 comment by: UK CAA</p> <p>Page No: 65</p> <p>Paragraph No: 7.1.2. Aerodrome manual</p> <p>Comment: The UK CAA is uncomfortable with such detailed lists however, if they must exist, they should include as many examples as possible and in this instance, Bullet 3 refers to 'co-ordination'; clarification of what co-ordination means in the context is requested.</p> <p>Justification: Need for clarification</p>
<p>response</p>	<p>Noted</p> <p>The third bullet has been amended. See the response to comment 822. This should resolve also this comment.</p>

3.1. Draft guidelines - 7.1. Certification 7.1.3. Local agreement between aerodrome and ATM/ANS providers	p. 66
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<p>comment</p>	<p>611 comment by: HIAL</p> <p>HIAL concur with the assessment that the implementation of enhanced procedures between the RT and aerodrome operator, in the absence of an ATSA or ATCO, is critical to assuring safety overall. These procedures (or agreements) are not restricted to Safety Interfaces, task analysis or status of the aerodrome. A gap analysis of all current procedures must be analysed for weaknesses in arrangements as part of transition to RT operations, particularly multi-mode.</p>
<p>response</p>	<p>Noted</p>
<p>comment</p>	<p>622 comment by: European Transport Workers Federation - ETF</p> <p>"A local agreement between the aerodrome operator and the ATS provider defining responsibilities and addressing coordination needs and means shall be in place. In case of remote aerodrome ATS this agreement shall additionally cover the elements contained in Section 7.1.2."</p>



response	<p>See comments to 7.1.1.</p> <p>Not accepted</p> <p>In accordance with the EU/EASA regulatory convention/policy, the use of ‘shall’ is reserved for the implementing rules — it cannot be used in AMC/GM/guidelines. The aim of the Guideline document and its Chapter 7 in particular is to provide guidance for the implementation of remote aerodrome ATS and to support the fulfilment of existing aerodrome-related requirements. Therefore, EASA does not share the view that the use of the word ‘should’ may endanger the safe implementation.</p>		
comment	<p>689 comment by: ATCEUC</p> <table border="1" style="width: 100%;"> <tr> <td> <p>A local agreement between the aerodrome operator and the ATS provider defining responsibilities and addressing coordination needs and means should be in place. In case of remote aerodrome ATS this agreement should additionally cover the elements contained in Section 7.1.2.</p> </td> <td> <p>A local agreement between the aerodrome operator and the ATS provider defining responsibilities and addressing coordination needs and means shall be in place. In case of remote aerodrome ATS this agreement shall additionally cover the elements contained in Section 7.1.2.</p> </td> </tr> </table>	<p>A local agreement between the aerodrome operator and the ATS provider defining responsibilities and addressing coordination needs and means should be in place. In case of remote aerodrome ATS this agreement should additionally cover the elements contained in Section 7.1.2.</p>	<p>A local agreement between the aerodrome operator and the ATS provider defining responsibilities and addressing coordination needs and means shall be in place. In case of remote aerodrome ATS this agreement shall additionally cover the elements contained in Section 7.1.2.</p>
<p>A local agreement between the aerodrome operator and the ATS provider defining responsibilities and addressing coordination needs and means should be in place. In case of remote aerodrome ATS this agreement should additionally cover the elements contained in Section 7.1.2.</p>	<p>A local agreement between the aerodrome operator and the ATS provider defining responsibilities and addressing coordination needs and means shall be in place. In case of remote aerodrome ATS this agreement shall additionally cover the elements contained in Section 7.1.2.</p>		
response	<p>Not accepted</p> <p>In accordance with the EU/EASA regulatory convention/policy, the use of ‘shall’ is reserved for the implementing rules — it cannot be used in AMC/GM/guidelines. The aim of the Guideline document and its Chapter 7 in particular is to provide guidance for the implementation of remote aerodrome ATS and to support the fulfilment of existing aerodrome-related requirements. Therefore, EASA does not share the view that the use of the word ‘should’ may endanger the safe implementation.</p>		

<p>3.1. Draft guidelines - 7.2. Operational aspects 7.2.1. Coordination between the aerodrome operator and the ATM/ANS providers in the event of system failure</p>	<p>p. 66</p>
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comment	<p>623 comment by: European Transport Workers Federation - ETF</p> <p>"In the event of failure of any of the facilities, installations and equipment enabling and supporting remote aerodrome ATS (locally or remotely), timely coordination between the aerodrome operator and the ATS unit shall take place about the cause and impact of the failure on the operations and NOTAMs should be issued, as necessary."</p> <p>This is essential to safety and must not be compromised.</p>
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response Not accepted

In accordance with the EU/EASA regulatory convention/policy, the use of ‘shall’ is reserved for the implementing rules — it cannot be used in AMC/GM/guidelines. The aim of the Guideline document and its Chapter 7 in particular is to provide guidance for the implementation of remote aerodrome ATS and to support the fulfilment of existing aerodrome-related requirements. Therefore, EASA does not share the view that the use of the word ‘should’ may endanger the safe implementation.

comment 690 comment by: ATCEUC

In the event of failure of any of the facilities, installations and equipment enabling and supporting remote aerodrome ATS (locally or remotely), timely coordination between the aerodrome operator and the ATS unit should take place about the cause and impact of the failure on the operations and NOTAMs should be issued, as necessary.

In the event of failure of any of the facilities, installations and equipment enabling and supporting remote aerodrome ATS (locally or remotely), timely coordination between the aerodrome operator and the ATS unit shall take place about the cause and impact of the failure on the operations and NOTAMs should be issued, as necessary.

response Not accepted

In accordance with the EU/EASA regulatory convention/policy, the use of ‘shall’ is reserved for the implementing rules — it cannot be used in AMC/GM/guidelines. The aim of the Guideline document and its Chapter 7 in particular is to provide guidance for the implementation of remote aerodrome ATS and to support the fulfilment of existing aerodrome-related requirements. Therefore, EASA does not share the view that the use of the word ‘should’ may endanger the safe implementation.

3.1. Draft guidelines - 7.2. Operational aspects 7.2.2. Aerodrome safeguarding

p. 66

comment 134 comment by: Naviair

Why only non-visible radiation? What about lasers blinding pilots and/or cameras?

response Accepted

The text has been amended.

comment 624 comment by: European Transport Workers Federation - ETF



response	<p>"In case of remote aerodrome ATS, the aerodrome operator shall ensure that:"</p> <p>The items are essential to safety and must not be compromised.</p>		
response	<p>Not accepted</p> <p>In accordance with the EU/EASA regulatory convention/policy, the use of ‘shall’ is reserved for the implementing rules — it cannot be used in AMC/GM/guidelines. The aim of the Guideline document and its Chapter 7 in particular is to provide guidance for the implementation of remote aerodrome ATS and to support the fulfilment of existing aerodrome-related requirements. Therefore, EASA does not share the view that the use of the word ‘should’ may endanger the safe implementation.</p>		
comment	<p>663 comment by: Flughafen Berlin Brandenburg GmbH</p> <p>Please clarify if this requirement includes / covers arrangements where (e.g. by national law) authorities perform those tasks.</p> <p>The current division of tasks between authorities and aerodrome operator should be maintained, and this part of the proposed guidance material should not stipulate a transfer of tasks / responsibilities from an authority to the airport operator.</p>		
response	<p>Noted</p> <p>The proposed text does not intend to amend the existing responsibilities prescribed in Regulation (EU) No 139/2014, but to elaborate on the areas/activities that need to be taken into account for safeguarding purposes.</p>		
comment	<p>666 comment by: Flughafen Berlin Brandenburg GmbH</p> <p>Please clarify if the described actions to be taken by aerodrome operators are already covered by regulation no 73/2010. (here: article 9 & Annex VI).</p>		
response	<p>Noted</p> <p>The proposed text does not intend to amend the existing responsibilities prescribed in Regulation (EU) No 139/2014, but to elaborate on the areas/activities that need to be taken into account for safeguarding purposes.</p>		
comment	<p>691 comment by: ATCEUC</p> <table border="1"> <tr> <td>In case of remote aerodrome ATS, the aerodrome operator should ensure that:</td> <td>In case of remote aerodrome ATS, the aerodrome operator shall ensure that:</td> </tr> </table>	In case of remote aerodrome ATS, the aerodrome operator should ensure that:	In case of remote aerodrome ATS, the aerodrome operator shall ensure that:
In case of remote aerodrome ATS, the aerodrome operator should ensure that:	In case of remote aerodrome ATS, the aerodrome operator shall ensure that:		
response	<p>Not accepted</p>		

In accordance with the EU/EASA regulatory convention/policy, the use of ‘shall’ is reserved for the implementing rules — it cannot be used in AMC/GM/guidelines. The aim of the Guideline document and its Chapter 7 in particular is to provide guidance for the implementation of remote aerodrome ATS and to support the fulfilment of existing aerodrome-related requirements. Therefore, EASA does not share the view that the use of the word ‘should’ may endanger the safe implementation.

comment	<p>824 comment by: UK CAA</p> <p>Page No: 66 Paragraph No: 7.2.2, Aerodrome safeguarding Comment: Safeguarding is universal, we believe there is no need to reference it here, other than as proposed below. Proposed Text: Replace with: ‘Aerodrome safeguarding – There are no anticipated additional impacts on aerodrome safeguarding procedures as a result of remote towers.’</p>
response	<p>Noted</p> <p>Although safeguarding procedures are implemented at all aerodromes, it should be recognised that so far they are meant to cover ‘traditional’ hazards. Therefore, there is a need to ensure that safeguarding addresses the additional systems that are installed at the aerodrome to enable the provision of remote ATS, given that in the case of remote aerodrome ATS, the impact on the services from e.g. intentional disruption of the visual surveillance system may be quite significant.</p>

3.1. Draft guidelines - 7.2. Operational aspects 7.2.3. Maintenance of the remote tower system facilities	p. 67
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comment	<p>171 comment by: Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)</p> <p>When it comes to content we have no objections to what should be achieved. But the section is misplaced and the reader is misled to believe that this is the responsibility of the aerodrome operator. Maintenance of the remote tower system facilities is the responsibility of the certified ATS provider. (or CNS provider for CNS equipment specific to the remote ATS capability such as VHF or UHF radios) Could this segment be clarified so it states that the maintenance of the remote tower system facilities is the responsibility of the certified provider?</p>
response	<p>Noted</p>



The purpose of this Guidance material is not to assign responsibilities between organisations, but to facilitate the implementation of remote aerodrome ATS. Relevant responsibilities are already defined in the relevant regulations.

comment

234

comment by: IFATCA

Where remote aerodrome ATS is provided, the maintenance programme of the remote tower systems at the aerodrome ~~should~~ *shall* cover the maintenance needs of the facilities, installations and equipment, including electrical systems, which enable and support the remote aerodrome ATS.

Preventive and routine maintenance plans as well a continuous monitor of the whole technological implementation is a precondition being it the primary source of information to provide the service.

response

Not accepted

In accordance with the EU/EASA regulatory convention/policy, the use of 'shall' is reserved for the implementing rules — it cannot be used in AMC/GM/guidelines. The aim of the Guideline document and its Chapter 7 in particular is to provide guidance for the implementation of remote aerodrome ATS and to support the fulfilment of existing aerodrome-related requirements. Therefore, EASA does not share the view that the use of the word 'should' may endanger a safe implementation.

comment

277

comment by: AESA/DSANA

Comment

Please clarify responsibilities among aerodrome operator and ANSPs related to maintenance tasks.

Justification

On the one hand, there are systems deployed in the aerodrome that should be maintained, and on the other hand, there are systems deployed in the RTM y RTC that should be maintained too and ground communications between them. Responsibilities should be clear among aerodrome operator and ANSPs.

response

Noted

The purpose of the Guidelines is not to assign responsibilities between organisations, but to facilitate the implementation of remote aerodrome ATS. Relevant responsibilities are already defined in the relevant regulations.

comment

625

comment by: European Transport Workers Federation - ETF

"Where remote aerodrome ATS is provided, ATSEP should create a maintenance programme of the remote tower systems at the aerodrome which cover the maintenance needs of the facilities, installations and equipment, including electrical systems, which enable and support the remote aerodrome ATS.



	<p>A preventive maintenance programme should be established and implemented by ATSEP. Such a programme should contain information related to scheduled maintenance work in order to prevent a failure or degradation of such facilities, installations and equipment."</p> <p>ETF regrets that this section is a low-level technical requirement with limited hardware orientation. There is no software, cybersecurity nor competence of technical staff requirement.</p> <p>Paragraph 5.11 on technical supervision should be more elaborated and mention ATSEP activities, responsibilities and competence.</p>
response	<p>Not accepted</p> <p>The Guideline document contains already a section dedicated to cybersecurity and a section which clarifies the EU regulatory framework concerning the qualification and training of ATSEP. For clarification, Chapter 10 has been extended with an introductory text stipulating that all personnel involved in the operation and maintenance of facilities, installations and equipment enabling and supporting the remote aerodrome ATS is to be adequately trained, qualified and competent (in line with Regulation (EU) No 1035/2011 and Regulation (EU) 2017/373).</p>

3.1. Draft guidelines - 7.2. Operational aspects 7.2.4. Management of the change to remote aerodrome

p. 67-68

comment	<p>172 comment by: <i>Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)</i></p> <p>The Norwegian colleagues introduced the term FREEZE which we think is a good recommendation to the ANSP.</p>
response	<p>Noted</p>
comment	<p>279 comment by: <i>AESA/DSANA</i></p> <p><u>Comment</u> Second bullet of technical solutions applied at the aerodrome, addressing the location/installation of cameras, could also include sound microphones.</p> <p><u>Justification</u> Where will the sound of the aerodrome come from? From a single point in the aerodrome? Which one? Near the place where a conventional tower would be placed? It would be chosen with the same criteria?</p>
response	<p>Accepted</p> <p>The text has been amended to include sound microphones (if applicable).</p>
comment	<p>626 comment by: <i>European Transport Workers Federation - ETF</i></p>



"At aerodromes where ATS is provided from a conventional tower and the introduction of remote aerodrome ATS is planned, or at aerodromes where no ATS is provided but is planned to be introduced via the introduction of remote aerodromes ATS, due care and time shall be taken for the adequate preparation of the transition/implementation plan before the change/introduction is introduced. Due to the significance of the change, a competent authority approval shall be required. Therefore, the aerodrome operator and the ATS provider shall communicate intentions and plans to the appropriate competent authority in due time before the planned introduction of the new operating concept in order to avoid unnecessary delays.

As part of the aerodrome operator’s processes and procedures for managing safety, including changes, a safety assessment, including human factors aspects, shall be submitted by the aerodrome operator to its competent authority prior to the introduction of the change. This assessment shall be properly coordinated with the ATS provider and all other interfacing organisations that may be affected by the change.

Although each aerodrome’s unique characteristics (based on its complexity, types of operations, organisational arrangements, etc.) may have an effect on both the content and the outcome of the safety assessment, it is expected that this process shall at least include the following areas:"

The paragraph already notes that the change itself is significant in the second sentence. The paragraph itself deals to a large extent with managing safety and safety assessments. Therefore, these elements are essential to safety and must not be compromised.

response

Not accepted

In accordance with the EU/EASA regulatory convention/policy, the use of ‘shall’ is reserved for the implementing rules — it cannot be used in AMC/GM/guidelines. The aim of the Guideline document and its Chapter 7 in particular is to provide guidance for the implementation of remote aerodrome ATS and to support the fulfilment of existing aerodrome-related requirements. Therefore, EASA does not share the view that the use of the word ‘should’ may endanger the safe implementation.

comment

692

comment by: ATCEUC

At aerodromes where ATS is provided from a conventional tower and the introduction of remote aerodrome ATS is planned, or at aerodromes where no ATS is provided but is planned to be introduced via the introduction of remote aerodromes ATS, due care and time should be taken for the adequate preparation of the transition/implementation plan before the change/introduction is introduced.

At aerodromes where ATS is provided from a conventional tower and the introduction of remote aerodrome ATS is planned, or at aerodromes where no ATS is provided but is planned to be introduced via the introduction of remote aerodromes ATS, due care and time shall be taken for the adequate preparation of the transition/implementation plan before the change/introduction is introduced.



Due to the significance of the change, a competent authority approval may be required. Therefore, the aerodrome operator and the ATS provider should communicate intentions and plans to the appropriate competent authority in due time before the planned introduction of the new operating concept in order to avoid unnecessary delays.

As part of the aerodrome operator's processes and procedures for managing safety, including changes, a safety assessment, including human factors aspects, should be submitted by the aerodrome operator to its competent authority prior to the introduction of the change. This assessment should be properly coordinated with the ATS provider and all other interfacing organisations that may be affected by the change.

Although each aerodrome's unique characteristics (based on its complexity, types of operations, organisational arrangements, etc.) may have an effect on both the content and the outcome of the safety assessment, it is expected that this process should at least include the following areas:

Due to the significance of the change, a competent authority approval **shall** be required. Therefore, the aerodrome operator and the ATS provider **shall** communicate intentions and plans to the appropriate competent authority in due time before the planned introduction of the new operating concept in order to avoid unnecessary delays.

As part of the aerodrome operator's processes and procedures for managing safety, including changes, a safety assessment, including human factors aspects, **shall** be submitted by the aerodrome operator to its competent authority prior to the introduction of the change. This assessment **shall** be properly coordinated with the ATS provider and all other interfacing organisations that may be affected by the change.

Although each aerodrome's unique characteristics (based on its complexity, types of operations, organisational arrangements, etc.) may have an effect on both the content and the outcome of the safety assessment, it is expected that this process **shall** at least include the following areas:

response Not accepted

In accordance with the EU/EASA regulatory convention/policy, the use of 'shall' is reserved for the implementing rules — it cannot be used in AMC/GM/guidelines. The aim of the Guideline document and its Chapter 7 in particular is to provide guidance for the implementation of remote aerodrome ATS and to support the fulfilment of existing aerodrome-related requirements. Therefore, EASA does not share the view that the use of the word 'should' may endanger the safe implementation.

comment 825

comment by: UK CAA

Page No: 67

Paragraph No: 7.2.4, Management of the change to remote aerodrome ATS — Aerodrome operator



	Comment: Management of change is addressed in chapter 6. We recommend paragraph 7.2.4 should be incorporated into chapter 6.
response	Noted Although EASA agrees that in practice the deployment of the remote aerodrome ATS is a single change concerning both the ATS provider and the aerodrome operator, the current structure of the document intends to ‘functionally’ separate the issue in order to address the specificities and needs of each domain.

3.1. Draft guidelines - 7.2. Operational aspects 7.2.5. Power supply at aerodromes

p. 69

comment 173 comment by: *Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)*

Could it be clarified that power supply requirements on ATS equipment is not regulated and that any such requirements, in essence will be risk mitigations.

response Noted

Section 1.3 of Annex VII (essential requirements for aerodromes) to Regulation (EU) 2018/1139 addresses the subject of power supply provision.

comment 278 comment by: *AESA/DSANA*

Comment

There is no mention to power supply and air conditioning requirements to RTMs, RTCs or related systems deployed in RTMs and RTCs.

Justification

There should be power supply and air conditioning requirements to RTMs and RTCs.

response Accepted

Considerations for power supply needs and measures for the remote tower/facility have been added to Section 5.10 (for which the title has been changed to ‘Technical architecture and redundancy aspects’).

comment 627 comment by: *European Transport Workers Federation - ETF*

"Apart from the applicable power supply infrastructure requirements, aerodromes provided with remote aerodromes ATS, shall also meet the power supply measures listed below."

See comments to 7.2.5.1.

response Not accepted



In accordance with the EU/EASA regulatory convention/policy, the use of 'shall' is reserved for the implementing rules — it cannot be used in AMC/GM/guidelines. The aim of the Guideline document and its Chapter 7 in particular is to provide guidance for the implementation of remote aerodrome ATS and to support the fulfilment of existing aerodrome-related requirements. Therefore, EASA does not share the view that the use of the word 'should' may endanger the safe implementation.

3.1. Draft guidelines - 7.2. Operational aspects 7.2.5.1 electrical power supply systems for the remote aerodrome ATS

p. 69

comment

41

comment by: *GdF*

Cameras and related facilities enabling and supporting the remote aerodrome ATS and located at an aerodrome, should be provided with a secondary power supply capable of supplying power when there is a failure of the primary power supply. Electric power supply connections to such cameras and related facilities should be so arranged that they are automatically connected to the a secondary power supply when the primary power supply fails.

The secondary power could be a different power supply, than used for other systems.

response

Noted

The text does not require its connection to the secondary power supply of other systems, as the previous sentence refers to 'a' secondary power supply.

comment

135

comment by: *Naviair*

Considerations regarding traffic restrictions when the camera system are only on secondary power supply should be written into the operational procedures.

response

Noted

Appropriate contingency/degraded mode procedures should be developed by the ATS provider for each implementation, taking into account e.g. the operational context and the technical architecture — this topic is covered by Guidelines Section 6.5. Operating on secondary power does not by default lead to a need for traffic restrictions, subject to the design/technical architecture of the secondary power supply and given that continuous/uninterrupted power supply is foreseen for such systems.

Procedures that would be applicable in case the ATS unit is established at a conventional tower should be equally applicable when established at a remote tower (given that the same power supply is provided).

comment

235

comment by: *IFATCA*

response	<p>Cameras and related facilities enabling and supporting the remote aerodrome ATS and located at an aerodrome, should be provided with a secondary power supply capable of supplying power when there is a failure of the primary power supply. Electric power supply connections to such cameras and related facilities should be so arranged that they are automatically connected to the a secondary power supply when the primary power supply fails.</p> <p>The secondary power could be a different power supply, then used for other systems.</p> <p>Noted</p> <p>The text does not require its connection to the secondary power supply of other systems, as the previous sentence refers to ‘a’ secondary power supply.</p>
comment	<p>628 <i>comment by: European Transport Workers Federation - ETF</i></p> <p>"— Cameras and related facilities enabling and supporting the remote aerodrome ATS and located at an aerodrome, shall be provided with adequate primary power supply."</p> <p>Having an adequate primary power supply is the minimum that any facility must have.</p>
response	<p>Not accepted</p> <p>In accordance with the EU/EASA regulatory convention/policy, the use of ‘shall’ is reserved for the implementing rules — it cannot be used in AMC/GM/guidelines. The aim of the Guideline document and its Chapter 7 in particular is to provide guidance for the implementation of remote aerodrome ATS and to support the fulfilment of existing aerodrome-related requirements. Therefore, EASA does not share the view that the use of the word ‘should’ may endanger the safe implementation.</p>
comment	<p>629 <i>comment by: European Transport Workers Federation - ETF</i></p> <p>"— The power supply for cameras and related facilities mentioned above shall be continuous/uninterrupted."</p> <p>This is essential to safety and must not be compromised.</p>
response	<p>Not accepted</p> <p>In accordance with the EU/EASA regulatory convention/policy, the use of ‘shall’ is reserved for the implementing rules — it cannot be used in AMC/GM/guidelines. The aim of the Guideline document and its Chapter 7 in particular is to provide guidance for the implementation of remote aerodrome ATS and to support the fulfilment of existing aerodrome-related requirements. Therefore, EASA does not share the view that the use of the word ‘should’ may endanger the safe implementation.</p>

3.1. Draft guidelines - 8. Possible impact on airspace users

p. 70

comment	<p>97 comment by: ISAVIA ohf.</p> <p>Item 8 on page 70 states that „remote aerodrome ATS should not negatively impact airspace users.“</p> <p>There is no further explanation. In light of the above (comment to Item 6.2.1 page 55 above), it is obvious that remote aerodrome ATS could negatively impact airspace users because of delays etc.</p>
response	<p>Partially accepted</p> <p>The text has been amended to include the notion of the operations manual for any mitigation measures implemented to limit the delay for airspace users. The aim of the local procedures should be that there is no/limited impact on airspace users. See also the response to comment 96.</p> <p>Furthermore, Chapter 8 has been extended to highlight the ATS provider responsibilities with regard to ‘open and transparent provision of services’ as stipulated by Regulation (EU) No 1035/2011 and Regulation (EU) 2017/373, including, inter alia, the establishment of a consultation process with the users of the services.</p>
comment	<p>280 comment by: AESA/DSANA</p> <p><u>Comment</u></p> <p>There is a word missing in the sentence: Airspace users are informed through the aeronautical *information* products and services...</p>
response	<p>Accepted</p>
comment	<p>317 comment by: ENAV</p> <p>the ATS provider should analyze any possible impacts on airspace users when conducting the safety assessment and propose appropriate mitigation measures, if needed.</p> <p>ENAV Suggestion</p> <p>If all visual presentation is downgraded, ATS can theoretically continue operations as LVP but it might be strange since it can be CAVOK at the airport.</p> <p>Suggestion: Create a procedure as a LVP but call it something else, like technical reduced visibility procedures (TRVP) so that the airspace users understand why and we can continue operations during repair. Publish the procedure in AIP.</p>
response	<p>Noted</p> <p>Contingency plans, including degraded mode procedures, are to be developed by the ATS provider on the local implementation level; refer to Guidelines Section 6.5. (Note</p>

that Section 6.5. has been partially redrafted as well as extended in its final version, compared to the NPA version.)

comment 345 comment by: *René Meier, Europe Air Sports*

8. Possible impact on airspace users
page 70/92

You write "remote aerodrome ATS should not negatively impact airspace users". May we kindly add that we would not accept negative impacts e.g. as operational restrictions for VFR traffic, shortened opening hours, excessive PPR, delays?

Rationale:

In once sentence: Those not needing ATC must not suffer from those needing ATC.

response Noted

See the response to comment 722.

Additionally, the text in Chapter 8 has been extended to highlight the ATS provider responsibilities with regard to 'open and transparent provision of services' as stipulated by Regulation (EU) No 1035/2011 and Regulation (EU) 2017/373, including, inter alia, the establishment of a consultation process with the users of the services.

comment 376 comment by: *CANSO*

the ATS provider should analyze any possible impacts on airspace users when conducting the safety assessment and propose appropriate mitigation measures, if needed.

CANSO Suggestion

If all visual presentation is downgraded, ATS can theoretically continue operations as LVP but it might be strange since it can be CAVOK at the airport.

Suggestion: Create a procedure as a LVP but call it something else, like **technical reduced visibility procedures (TRVP)** so that the airspace users understand why and we can continue operations during repair.

Publish the procedure in AIP.

response Noted

See the response to comment 317.

comment 422 comment by: *Martin Ryff*

It must be made clear, that remote tower operations may under no circumstances lead to reduced or degraded services to VFR-traffic due to IFR-traffic.



response	<p>Noted</p> <p>See the responses to comments 97, 345 and 724.</p>		
comment	<p>443 comment by: LfV</p> <p>Text in paragraph 8: "the ATS provider should analyze any possible impacts on airspace users when conducting the safety assessment and propose appropriate mitigation measures, if needed."</p> <p>If all visual presentation is downgraded, ATS can theoretically continue operations as LVP but it might be strange since it can be CAVOK at the airport. Propose to create a procedure as a LVP but call it something else like (TRVP)-technical reduced visibility procedures so that the airspace users understand why and we can continue operations during repair.</p> <p>To be published in AIP (in AIP AD 2.22 'Flight Procedures').</p>		
response	<p>Noted</p> <p>See the response to comment 317.</p>		
comment	<p>630 comment by: European Transport Workers Federation - ETF</p> <p>"In any case, the ATS provider shall analyse any possible impacts on airspace users when conducting the safety assessment and propose appropriate mitigation measures, if needed."</p> <p>Earlier in the same paragraph it says that '<i>remote aerodrome ATS should not negatively impact airspace users</i>'. In order to ensure that this is the case, an analysis must take place to highlight any changes or impacts to the service.</p>		
response	<p>Not accepted</p> <p>See the response to comment 205.</p>		
comment	<p>693 comment by: ATCEUC</p> <table border="1"> <tr> <td> <p>In any case, the ATS provider should analyse any possible impacts on airspace users when conducting the safety assessment and propose appropriate mitigation measures, if needed.</p> </td> <td> <p>In any case, the ATS provider shall analyse any possible impacts on airspace users when conducting the safety assessment and propose appropriate mitigation measures, if needed.</p> </td> </tr> </table>	<p>In any case, the ATS provider should analyse any possible impacts on airspace users when conducting the safety assessment and propose appropriate mitigation measures, if needed.</p>	<p>In any case, the ATS provider shall analyse any possible impacts on airspace users when conducting the safety assessment and propose appropriate mitigation measures, if needed.</p>
<p>In any case, the ATS provider should analyse any possible impacts on airspace users when conducting the safety assessment and propose appropriate mitigation measures, if needed.</p>	<p>In any case, the ATS provider shall analyse any possible impacts on airspace users when conducting the safety assessment and propose appropriate mitigation measures, if needed.</p>		
response	<p>Not accepted</p>		



See the response to comment 205.

comment 721 comment by: DTA

Information is missing: aeronautical information products and services seems more appropriate.

response Accepted

comment 724 comment by: *The Norwegian Air Sports Federation*

The Norwegian Air Sports Federation would like to propose that the Agency includes further details on this extremely important topic, seen from a general aviation view point.

While "multiple mode of operation" could well facilitate the needs of commercial air transport, we definitely see a risk that general aviation movements could be significantly restricted when "multiple mode" is being introduced. As a minimum, the Guidelines should include a good selection of appropriate mitigation measures.

In Norway, a number of airports being candidates for remote ATS have a very limited number of daily movements, which actually need ATS. As little as four to six daily commercial air transport (CAT) movements are not uncommon for such small airports. At the same time, these airports may have a more significant level of general aviation (GA) traffic, including flight training, with no need for ATS. The "multiple mode" ATS could then be overloaded by GA, with the risk that GA traffic is restricted or that GA is requested to pay for a service, which it doesn't require.

In our view, one mitigation measure could be that the ANSP/aerodrome operator should arrange a flexible airspace structure/assignment, where the CTR/TIZ and TMA/TIA are "switched off" whenever scheduled traffic needing ATC (typically CAT) is not expected. The CTR/TIZ and TMA/TIA could then be "downgraded" to an RMZ (or RMZ+TMZ in case of a CTR/TMA). In effect the CTR/TIZ and TMA/TIA become "HX" airspace instead of "H24" airspace, a concept which is proposed by Eurocontrol in *Eurocontrol Manual for Airspace Planning*, ASM.ET1.ST03.4000.EAPM.02.02:

Quote:

"WHEN NECESSITATED BY OPERATIONAL REQUIREMENTS, CONSIDERATION SHOULD BE GIVEN AS TO WHETHER AND TO WHAT EXTENT, CERTAIN PARTS OF THE AIRSPACE ARE TO BE SWITCHED "ON" OR "OFF" IN ACCORDANCE WITH THE FLEXIBLE USE OF AIRSPACE CONCEPT.

To accommodate such needs, a portion of the TMA can be published with its own identifier e.g. TMA II having its own dimensions, so airspace users and controllers can easily identify that portion of the airspace which is subjected to FUA."

Such a concept could be made more practical by continuous ATIS broadcasts on dedicated frequencies, indicating whether the airspace is active or not. [The latter concept is in use e.g. in Switzerland.]



	Without such guidance and clear solutions, we believe that general aviation and air sports could be negatively affected by multiple mode of operation.
response	<p>Noted</p> <p>It is noteworthy that remote aerodrome ATS introduces new possibilities for flexible ATS hours of operation, meaning that it could also be positive for the GA community in the sense that there may be longer periods where aerodromes are not controlled.</p> <p>If ATS is ‘overloaded by GA’ in multiple mode of operation, this would typically be a case where multiple is not a suitable operational mode; refer to the introductory text of Section 4.2 stating that that multiple mode ‘is to be used only when the operational circumstances so allow and when certainty exists that workload and complexity can be managed’.</p> <p>See also the responses to comments 345 and 722.</p>

3.1. Draft guidelines - 9. Aeronautical information products and services

p. 70

comment	<p>42 comment by: <i>GdF</i></p>
	<p>The ATS provider should, together with the aerodrome operator, perform an analysis of the aeronautical information, including products and services, affected by the introduction of remote aerodrome ATS</p> <p>IFATCA Policy is:</p> <p>Remote and Virtual tower systems should be capable of providing the same service level as an aerodrome control tower; partial aerodrome control service configurations are undesirable.</p>
response	<p>Accepted</p> <p>Commas have been inserted. The reference to the IFATCA policy in this context is not understood.</p>
comment	<p>174 comment by: <i>Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)</i></p> <p>The bulletpoints will have to be revised based on previous comments regarding phraseology and conformance with section 14 in SERA</p>
response	<p>Noted</p> <p>See the response to comment 167.</p>
comment	<p>236 comment by: <i>IFATCA</i></p>



response	<p>The ATS provider should, together with the aerodrome operator, perform an analysis of the aeronautical information, including products and services, affected by the introduction of remote aerodrome ATS</p> <p>IFATCA Policy is:</p> <p>Remote and Virtual tower systems should be capable of providing the same service level as an aerodrome control tower; partial aerodrome control service configurations are undesirable.</p> <p>Accepted</p> <p>Commas have been inserted. The reference to the IFATCA policy in this context is not understood.</p>
comment	<p>281 comment by: AESA/DSANA</p> <p><u>Comment</u></p> <p>Only AIC and AIP (products) publications are mentioned in section 9. This section should also include NOTAMS and any other system providing aeronautical information to ATS operators in the remote towers.</p> <p><u>Justification</u></p> <p>NOTAMS and systems providing aeronautical information to ATS operators are missing.</p>
response	<p>Not accepted</p> <p>NOTAMS are a part of the aeronautical information products and services and should be issued as needed for temporary changes of the information included in the AIP. That is why NOTAMS are not explicitly listed in the list in Chapter 9, which is however not exclusive.</p>
comment	<p>444 comment by: LfV</p> <p>Bulet in paragraph 9: "- Any relevant actions required by the airspace users following an emergency/abnormal situation and possible contingency measures by the ATS provider in case of disruptions, if applicable (in AIP AD 2.22 'Flight Procedures')."</p> <p>Delete this bullet as it is applicable to all airports also when ATS is provided from conventional towers.</p>
response	<p>Accepted</p>
comment	<p>631 comment by: European Transport Workers Federation - ETF</p> <p>"The ATS provider shall together with the aerodrome operator perform an analysis of the aeronautical information, including products and services, affected by the introduction of remote aerodrome ATS and ensure that relevant aeronautical information is included in the appropriate products and services."</p>



response	<p>Where there is the potential that aeronautical information, including products and services might be affected by the introduction of remote aerodrome ATS, then an analysis must take place to assess that impact.</p> <p>Not accepted</p> <p>See the response to comment 205.</p>		
comment	<p>694 comment by: <i>ATCEUC</i></p> <table border="1" style="width: 100%;"> <tr> <td> <p>The ATS provider should together with the aerodrome operator perform an analysis of the aeronautical information, including products and services, affected by the introduction of remote aerodrome ATS and ensure that relevant aeronautical information is included in the appropriate products and services.</p> </td> <td> <p>The ATS provider shall together with the aerodrome operator perform an analysis of the aeronautical information, including products and services, affected by the introduction of remote aerodrome ATS and ensure that relevant aeronautical information is included in the appropriate products and services.</p> </td> </tr> </table>	<p>The ATS provider should together with the aerodrome operator perform an analysis of the aeronautical information, including products and services, affected by the introduction of remote aerodrome ATS and ensure that relevant aeronautical information is included in the appropriate products and services.</p>	<p>The ATS provider shall together with the aerodrome operator perform an analysis of the aeronautical information, including products and services, affected by the introduction of remote aerodrome ATS and ensure that relevant aeronautical information is included in the appropriate products and services.</p>
<p>The ATS provider should together with the aerodrome operator perform an analysis of the aeronautical information, including products and services, affected by the introduction of remote aerodrome ATS and ensure that relevant aeronautical information is included in the appropriate products and services.</p>	<p>The ATS provider shall together with the aerodrome operator perform an analysis of the aeronautical information, including products and services, affected by the introduction of remote aerodrome ATS and ensure that relevant aeronautical information is included in the appropriate products and services.</p>		
response	<p>Not accepted</p> <p>See the response to comment 205.</p>		
comment	<p>700 comment by: <i>Scandinavian Airlines System</i></p> <p>9. The bullet “Interdependencies of service availability...” is crucial for airspace users. It must be crystal clear what kind of restrictions an airport might have and how airspace users could be affected. For instance, if planning with alternate and destination airport not allowed within the same RTC this might have a severe impact on cost and environment (depending on airports affected).</p>		
response	<p>Partially accepted</p> <p>Your concern is well understood. The bullet has been introduced as part of these Guidelines to highlight to ATS providers the need for publishing such information in order to ensure awareness for airspace users when planning their operations.</p> <p>See also the response to comment 388.</p>		
comment	<p>761 comment by: <i>European Cockpit Association</i></p> <p><i>Aeronautical information products and services</i></p> <p>Additionally AIP AD.23 should indicate which remote tower center services an airport.</p>		



response	<p>Not accepted</p> <p>The publication of contact information for the ATS unit is already required by existing provisions (ref: ICAO PANS-AIM, Appendix 1, GEN.3.3 'Air traffic services' – proposed for transposition into EU regulatory framework in forthcoming Part-AIS (Appendix 1 – AIP –GEN 3.3). It should also be noted that ATS to an aerodrome may be provided from different locations/RTCs at different times.</p>
comment	<p>826 comment by: UK CAA</p> <p>Page No: 70 Paragraph No: 9, Aeronautical information products and services Comment: We disagree with the level of detail provided. The only change required would be to highlight that the service is provided remotely and marking the SLG on the aerodrome chart. Proposed Text: Remove all text after the 1st paragraph</p>
response	<p>Not accepted</p> <p>EASA has, supported by the rulemaking group of RMT.0624, identified some specific items related to 'remote aerodrome ATS' to be considered by the ATS provider for inclusion in the aeronautical information products and services.</p>

3.1. Draft guidelines - 10.1. Qualification and training of ATCOs

p. 71

comment	<p>282 comment by: AESA/DSANA</p> <p><u>Comment</u> The reference "under Section 3.2. of this NPA" should be changed for "under Section 3.2. of NPA 2017-21". However this reference will not make sense after the publication of the Decision.</p>
response	<p>Not accepted</p> <p>The reference will be changed when the ED Decision is published.</p>
comment	<p>613 comment by: HIAL</p> <p>The NPA outlines the context and extent of training required for licensing in accordance with Regulation EU 2015/340; it is clear that an entirely new training programme is not necessary and, in conjunction with the proposals associated with NPA 2015-04 (Technical and operational requirements for remote tower operations), has provided AMC and GM in the form of high level objectives which can be introduced as part of the UEC and which are able to facilitate refresher training and conversion training. We note the AMC and GM are in support of Regulation EU 2015/340 which already regulates the training requirement for remote aerodrome services and details the subjects, subject objectives, topics and subtopics which should be integrated into unit endorsement courses. Since a regulatory path for</p>



	licensing has been identified, the benefits of remote towers can be fully exploited; training and cross licensing can be harmonised across airports and simplified to some extent by the ability to more realistically emulate a live environment through design features and more intuitive working positions. Cross licensing enables ATCOs and AFISOs to provide ATS to various aerodromes. Hence flexible staffing may be achieved and thus costs may be reduced as ATCOs and AFISOs are not bound to one aerodrome. Remote tower technology will however introduce a range of new systems into the VCR resulting in significant change to the working environment, human factors aspects and working procedures, all of which are addressed by the NPA.
response	Noted

comment	632 comment by: <i>European Transport Workers Federation - ETF</i>
	ETF does not consider the proposals on ATCO training to adequately tackle the adaptation of EU Reg. 2015/340. We request EASA to reconsider introducing a dedicated rating endorsement to ADI and ADV for remote aerodrome ATS.
response	Not accepted See NPA 2017-21 Section 2.5 and the response to comment 487.

comment	695 comment by: <i>ATCEUC</i>
	ATCEUC request EASA to introduce a rating endorsement for remote aerodrome ATS to be added to the ADI/ADV rating
response	Not accepted See NPA 2017-21 Section 2.5 and the response to comment 487.

3.1. Draft guidelines - 10.2. Qualification and training of AFISOs

p. 71

comment	43 comment by: <i>GdF</i>
	[...] an air navigation service provider – and therefore also the AFIS provider – shall employ appropriately skilled personnel to ensure the provision of air navigation services in a safe, efficient, continuous and sustainable manner. The GdF's point of view is that this can only be ensured by introducing a remote tower endorsement. IFATCA Policy is: Provisions, training programs, separation standards and a specific Remote Tower endorsement are required for operating at Remote and Virtual Towers.
response	Noted



The comment is not understood as the commented text refers to training of AFISOs.

Concerning the point of view on a 'remote tower endorsement', see NPA 2017-21 Section 2.5 as well as the responses to comments 2 and 487.

comment

237

comment by: IFATCA

Change proposal

[...] an air navigation service provider – and therefore also the AFIS provider – shall employ appropriately skilled personnel to ensure the provision of air navigation services in a safe, efficient, continuous and sustainable manner.

IFATCA is of the opinion that without introducing a remote tower endorsement, this new business concept is undermining safety.

IFATCA Policy is:

Provisions, training programs, separation standards and a specific Remote Tower endorsement are required for operating at Remote and Virtual Towers.

response

Noted

See the response to comment 43.

comment

616

comment by: HIAL

Since much of the NPA has demonstrated similarity in the roles of AFISO and ATCO in terms of technical systems and procedural arrangements associated with RT, we deem it appropriate to adopt the additional AMC and GM to EU 2015.340 and embed the scope within AFISO Training Plans.

response

Noted

comment

633

comment by: European Transport Workers Federation - ETF

This is far too vague and needs to be extended to other safety-related jobs such as MET officer, lighting panel operator, ATS reporting office (?) which can be part of the tasks performed by the ATCO or AFISO.

ETF requests EASA to tackle competence of staff with safety-related duties in more details.

response

Accepted

Chapter 10 has been expanded with an introductory text covering 'all personnel involved in the operation and maintenance of facilities, installations and equipment enabling and supporting the remote aerodrome ATS', with reference to the applicable requirements of Regulation (EU) No 1035/2011 and Regulation (EU) 2017/373.



comment	827	comment by: UK CAA
	<p>Page No: 71</p> <p>Paragraph No: 10.2, Qualification and training of AFISOs</p> <p>Comment: There appears to be an inconsistency of formatting of text replicated from Implementing Regulations. We recommend that the text of this paragraph should be italicised as proposed below.</p> <p>Justification: The standard appears to be that text taken from other documents and replicated within the NPA are italicised.</p> <p>Proposed Text:</p> <p><i>'With regard to the qualification and training of personnel providing Aerodrome Flight Information Service (AFISOs), it should be noted that at the time of publication of this document, the EU legislation does not include a detailed regulatory framework. However, point 5 of Annex 1 in Regulation 1035/201188 [3] stipulates that an air navigation service provider – and therefore also the AFIS provider – shall employ appropriately skilled personnel to ensure the provision of air navigation services in a safe, efficient, continuous and sustainable manner. In this context, the air navigation service provider shall establish policies for the recruitment and training of personnel. It is left to the Member States to define the appropriate regulatory means to meet this requirement in accordance with the local AFIS provision. To facilitate the development of AFISO training in the case of remote aerodrome ATS, the AMC and GM for the training and qualification of ATCOs can be considered in order to derive training plans and requirements that are appropriate to the local environment.'</i></p>	
response	<p>Partially accepted</p> <p>The specific text cited from Regulation (EU) No 1035/2011 has been italicised.</p>	

3.1. Draft guidelines - 10.3. Qualification and training of ATSEPs

p. 71

comment	175	comment by: Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)
	Why no link to 373 part-PERS?	
response	<p>Noted</p> <p>Regulation (EU) 2017/373, including its Annex XIII 'Part-PERS', is applicable as of 2 January 2020. A footnote with the requested reference/link is however already provided.</p>	
comment	634	comment by: European Transport Workers Federation - ETF
	<p>"Air Traffic Safety Electronics Personnel (ATSEP) involved in the operation and maintenance of equipment, facilities and installations enabling and supporting the remote aerodrome ATS, shall be adequately trained, qualified and competent to perform their duties in accordance with the requirements laid down in Commission Implementing Regulation (EU) No 1035/2011 [3] (Annex II, point 3.389) and in</p>	



	<p>Commission Regulation (EU) No 139/2014 [7] (ADR.OR.D.015 and ADR.OR.D.017), as appropriate."</p> <p>Those personnel directly involved with the maintenance of ATS systems must be adequately trained, qualified and competent to perform their duties, irrespective of in relation to a conventional tower or a remote tower operation.</p>
response	<p>Accepted</p> <p>The wording has been adjusted to reflect the existing regulatory framework.</p>

comment	<p>696</p> <p style="text-align: right;">comment by: ATCEUC</p> <table border="1" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>Air Traffic Safety Electronics Personnel (ATSEP) involved in the operation and maintenance of equipment, facilities and installations enabling and supporting the remote aerodrome ATS, should be adequately trained, qualified and competent to perform their duties in accordance with the requirements laid down in Commission Implementing Regulation (EU) No 1035/2011 [3] (Annex II, point 3.389) and in Commission Regulation (EU) No 139/2014 [7] (ADR.OR.D.015 and ADR.OR.D.017), as appropriate.</p> </td> <td style="width: 50%; vertical-align: top;"> <p>Air Traffic Safety Electronics Personnel (ATSEP) involved in the operation and maintenance of equipment, facilities and installations enabling and supporting the remote aerodrome ATS, shall be adequately trained, qualified and competent to perform their duties in accordance with the requirements laid down in Commission Implementing Regulation (EU) No 1035/2011 [3] (Annex II, point 3.389) and in Commission Regulation (EU) No 139/2014 [7] (ADR.OR.D.015 and ADR.OR.D.017), as appropriate.</p> </td> </tr> </table>	<p>Air Traffic Safety Electronics Personnel (ATSEP) involved in the operation and maintenance of equipment, facilities and installations enabling and supporting the remote aerodrome ATS, should be adequately trained, qualified and competent to perform their duties in accordance with the requirements laid down in Commission Implementing Regulation (EU) No 1035/2011 [3] (Annex II, point 3.389) and in Commission Regulation (EU) No 139/2014 [7] (ADR.OR.D.015 and ADR.OR.D.017), as appropriate.</p>	<p>Air Traffic Safety Electronics Personnel (ATSEP) involved in the operation and maintenance of equipment, facilities and installations enabling and supporting the remote aerodrome ATS, shall be adequately trained, qualified and competent to perform their duties in accordance with the requirements laid down in Commission Implementing Regulation (EU) No 1035/2011 [3] (Annex II, point 3.389) and in Commission Regulation (EU) No 139/2014 [7] (ADR.OR.D.015 and ADR.OR.D.017), as appropriate.</p>
<p>Air Traffic Safety Electronics Personnel (ATSEP) involved in the operation and maintenance of equipment, facilities and installations enabling and supporting the remote aerodrome ATS, should be adequately trained, qualified and competent to perform their duties in accordance with the requirements laid down in Commission Implementing Regulation (EU) No 1035/2011 [3] (Annex II, point 3.389) and in Commission Regulation (EU) No 139/2014 [7] (ADR.OR.D.015 and ADR.OR.D.017), as appropriate.</p>	<p>Air Traffic Safety Electronics Personnel (ATSEP) involved in the operation and maintenance of equipment, facilities and installations enabling and supporting the remote aerodrome ATS, shall be adequately trained, qualified and competent to perform their duties in accordance with the requirements laid down in Commission Implementing Regulation (EU) No 1035/2011 [3] (Annex II, point 3.389) and in Commission Regulation (EU) No 139/2014 [7] (ADR.OR.D.015 and ADR.OR.D.017), as appropriate.</p>		
response	<p>Accepted</p> <p>The wording has been adjusted to reflect the existing regulatory framework.</p>		

comment	<p>828</p> <p style="text-align: right;">comment by: UK CAA</p> <p>Page No: 71 Paragraph No: 10.3, Qualification and training of ATSEPs Comment: Paragraph 10.3 states: <i>“Air Traffic Safety Electronics Personnel (ATSEP) involved in the operation and maintenance of equipment, facilities and installations enabling and supporting the remote aerodrome ATS, should be adequately trained, qualified and competent to perform their duties in accordance with the requirements laid down in Commission Implementing Regulation (EU) No 1035/2011 [3] (Annex II, point 3.3) ...”</i> The word “should” implies that it is optional for ATSEPs to be adequately trained, qualified and competent. Justification: EU 1035/2011 Annex II, point 3.3 states that <i>“Providers of air traffic services shall ensure that technical and engineering personnel including personnel</i></p>
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of subcontracted operating organisations who operate and maintain ATM equipment approved for their operational use have and maintain sufficient knowledge and understanding of the services they are supporting, of the actual and potential effects of their work on the safety of those services, and of the appropriate working limits to be applied.

The Regulation, which the NPA document references, uses the word “shall”. Also, 2017/373 Annex XIII (Part-PERS) mandates that all ATSEPs shall be adequately trained and competent.

Proposed Text: Replace with the following:
*“Air Traffic Safety Electronics Personnel (ATSEP) involved in the operation and maintenance of equipment, facilities and installations enabling and supporting the remote aerodrome ATS, **are required to be adequately trained, qualified and competent to perform their duties in accordance with the requirements laid down in Commission Implementing Regulation (EU) No 1035/2011 [3] (Annex II, point 3.3)...”***

response Accepted

The wording has been adjusted to reflect the existing regulatory framework.

comment 829 comment by: UK CAA

Page No: Page 71
Paragraph No: 10.3, Qualification and training of ATSEPs
Comment: Regarding ATSEP, reference is made to (EU) No 1035/2011, with Note 89 indicating replacement with (EU) No 2017/373 Annex XIII. However, within Annex XIII no provision is made for training requirements for visual presentation systems or systems providing aerodrome audio. UK CAA recommends EASA development of appropriate ATSEP training requirements.
Justification: To provide a ‘joined up’ regulatory framework.

response Noted

Discussions are ongoing in the context of the EASA regular update activity of Regulation (EU) 2017/373 Annex XIII (Part-PERS) Subpart A (ATSEP).

3.1. Draft guidelines - 11. References p. 72-74

comment 63 comment by: ENAV

Add Ref

[...] RACOON Demonstration Report (**Remark: Demonstrations performed in Italy**), SESAR JU Project LSD 02.03, Edition 01.01.00, 2016-12-09

response Accepted

comment 377 comment by: CANSO



	Add Ref
	[...] RACOON Demonstration Report (Remark: Demonstrations performed in Italy), SESAR JU Project LSD 02.03, Edition 01.01.00, 2016-12-09
response	Accepted
comment	<p>830 comment by: UK CAA</p> <p>Page No: 72 Paragraph No: 11, References Comment: This section provides a comprehensive and well-ordered list of references within the draft Guidelines and is most welcome. However, the presentation can be simplified by simply listing the reference materials and not cross-referencing them in the main body of the text. Use of numeric cross-referencing throughout the draft Guidelines (e.g. page 64 paragraph 7) is considered redundant anyway given that the titles of the referenced documents appear in full in the draft text. In addition, the reference to NPA 2016-09 'Requirements for air traffic services') is considered inappropriate given its ephemeral, non-definitive nature and requires deletion. Justification: Simpler presentation of reference material. Proposed Text: 'Delete 'referenced' from the titles of the sub-sections.</p>
response	<p>Partially accepted</p> <p>The reference to NPA 2016-09 is replaced by a reference to Opinion No 03/2018. Also, the titles of the sections have been shortened as suggested.</p>

3.1. Draft guidelines - 12. Appendices - 12.1. Appendix 1

p. 75-76

comment	<p>283 comment by: AESA/DSANA</p> <p><u>Comment</u> In the sixth element of the list, the communication link between the remote facility and aircraft could also be considered for redundancy needs. See previous comment to point 5.10 in page 43.</p> <p><u>Justification</u> The aeronautical mobile service could be provided by means of antennas, systems, etc. located in the remote facility and in that case it wouldn't be related to the link with the aerodrome.</p>
response	<p>Not accepted</p> <p>Redundancy needs/requirements for air-ground communications are not changed because of remote aerodrome ATS. The same requirements for ordinary, back up and emergency radio systems as for conventional towers apply.</p>



3.1. Draft guidelines - 12. Appendices - 12.2. Appendix 2

p. 77-79

comment	<p>60</p> <p>comment by: ENAV</p> <p>Text... Therefore, if using this list as initial input, it needs to be adapted as necessary, taking into account the local conditions and the operational application and context of the particular implementation as well as the addition of potential system hazards.</p> <p>Comment</p> <p>SESARJU docs are already available, would EASA provide for some further elaboration?</p>
response	<p>Not accepted</p> <p>Appendices 2 and 3 list the operational hazards derived by the SESAR safety work. This list may be considered as an <u>initial</u> input by the ATS provider, for the development of safety requirements, by using the own safety assessment methodology as accepted by the corresponding competent authority.</p> <p>The introductory text of Appendices 2 and 3 has been slightly amended to better clarify that the information in the tables is taken directly from SESAR publications.</p>
comment	<p>831</p> <p>comment by: UK CAA</p> <p>Page No: 77</p> <p>Paragraph No: 12.2, Table 2: List of operational hazards (SESAR safety assessment — ATC case)</p> <p>Comment: The UK CAA welcomes the list of operational hazards(OHs) in the table at paragraph 12.2 but believes additional OHs can be identified.</p> <p>Justification: The need to provide as comprehensive a list of OHs as possible.</p> <p>Proposed Text: The following additional OHs are proposed:</p> <p>OH-38: for multiple ops Remote ATS inadvertently provides information/ instructions valid for another aerodrome and not the one being controlled at that specific time, leading to confusion.</p> <p>OH-39: for multiple ops, remote ATS incorrectly identifies an aircraft at the wrong aerodrome, and issues a clearance or information to the wrong aeroplane.</p>
response	<p>Not accepted</p> <p>Appendices 2 and 3 are only listing information derived from SESAR publications. See also the response to comment 60.</p> <p>It should also be noted, in relation to the suggested ‘OH-38’ of this comment, that ATS is to be provided (‘being controlled’) to all aerodromes at all times in ‘multiple mode of operation’.</p>
comment	<p>832</p> <p>comment by: UK CAA</p> <p>Page No: 77</p>



	<p>Paragraph No: 12.2 Table</p> <p>Comment: Clarification is requested on what is meant by infringement and what is meant by tactical conflict.</p>
response	<p>Not accepted</p> <p>Appendices 2 and 3 are only listing information derived from SESAR publications. See also the response to comment 60.</p>

3.1. Draft guidelines - 12. Appendices - 12.4. Appendix 4

p. 82

comment	<p>284 comment by: AESA/DSANA</p> <p><u>Comment</u></p> <p>In the advanced features maybe other elements could be considered: aeronautical information (NOTAM, SNOWTAM, etc.), operational info (runway conditions like water, snow or mud presence, coefficient of friction, etc....)</p>
response	<p>Accepted</p> <p>The examples listed in this comment have been added in Sections 3.5 and 5.2.5 as well as in Appendix 4.</p>
comment	<p>571 comment by: Heathrow airport</p> <p>We do not believe that it is <i>always</i> necessary to provide an out of the window view in order to provide remote ATS safely, if alternative methods of assuring location of aircraft and vehicles is provided, and other hazards and risks are demonstrated to be mitigated. We agree it can be advantageous to replicate an out of the window view as in most cases this would mitigate hazards and risks most effectively, however we acknowledge alternates are available, and are in operational use today. This should be reflected throughout the guidance including that visual presentation of out of the window view is listed as a basic feature in 12.4).</p> <p>Where an out of the window view is provided as the chosen method, the <i>minimum</i> requirements and recommendations for visual presentation and the extent of the coverage should not exceed those possible from ideally located conventional tower(s) that they replace.</p>
response	<p>Not accepted</p> <p>See the response to comment 505.</p>

3.2 Draft AMC/GM

p. 85-86

comment	<p>324 comment by: ENAV</p> <p>-----</p>
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response	<p>Should there be any guidelines regarding contingency operations if mentioned as a concept and in a number of places in the document. There might be different approach depending on TWR and RATS equipment's and procedures.</p> <p>Noted</p> <p>Guidelines for the use remote tower as backup facility are provided in Section 4.1.4. Concerning ATCO training, contingency procedures should be part of the normal unit endorsement course.</p>
comment	<p>384 comment by: <i>CANSO</i></p> <p>Should there be any guidelines regarding contingency operations if mentioned as a concept and in a number of places in the document. There might be different approach depending on TWR and RATS equipment's and procedures.</p>
response	<p>Noted</p> <p>See the response to comment 324.</p>
comment	<p>455 comment by: <i>LFV</i></p> <p>LFV: Should there be any guidelines regarding contingency operations if mentioned as a concept and in a number of places in the document. There might be different approach depending on TWR and RTS equipment and procedures.</p>
response	<p>Noted</p> <p>See the response to comment 324.</p>
comment	<p>636 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>ETF is completely against the notion of allowing AMC / GM for a unit endorsement remote tower operation instead of a rating endorsement. We have previously detailed our argument in a letter to EASA Executive Director on 24/07/17 highlighting the following benefits:</p> <ul style="list-style-type: none"> • Identification of commonalities in the aerodrome control service provision using RTO • Mitigation of risks associated with RTO through appropriate training measures to raise the awareness to operators about the difficulties associated with this technology • Clarification of which ATCOs are entitled to undergo unit training in view of providing aerodrome control service using RTO • The granting of mutual recognition throughout the EU of this status

	<ul style="list-style-type: none"> • Help in achieving and maintaining a high level of safety within the task with a minimum level of safety oversight being provided through a common core content <p>We see these as essential to safety and to that end, we still maintain that the details of the information within AMC / GM for a unit endorsement should be completely transposed into more 'hard rules' (IR) and in relation to a rating endorsement.</p>
response	<p>Not accepted</p> <p>See NPA 2017-21 Section 2.5 and the response to comment 487.</p>
comment	<p>637 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>ETF does not consider the proposals on ATCO training to adequately tackle the adaptation of EU Reg. 2015/340. We request EASA to reconsider introducing a dedicated rating endorsement to ADI and ADV for remote aerodrome ATS. Furthermore, it should be made clear that the safety promotion action proposed on page 91 of the NPA will have to focus on this issue to tailor adequate competence requirements for all types of operators involved in remote tower operations.</p>
response	<p>Not accepted</p> <p>See the response to comment 632.</p> <p>Concerning competence requirements for personnel involved in the operation of remote aerodrome ATS and in the maintenance of its equipment, see Guidelines Chapter 10 (which have been extended compared to the NPA version).</p>
comment	<p>638 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>"The regulatory level for the ATCO licensing aspects of remote aerodrome ATS was concluded already as indicated in NPA 2015-0492 (refer to Section 2.2.7 of said NPA). EASA considers that the assumptions leading to the result from the assessment in that NPA have not changed."</p> <p>The scope at the time was limited, it is no longer in this NPA so we cannot accept that the assumptions are still valid when we introduce elements to advocate otherwise without being answered.</p>
response	<p>Not accepted</p> <p>The conclusions based on the assessment made for NPA 2015-04 are still valid, although the scope has been extended. This is supported by the work performed within RMT.0624 Phase 2 and the feedback provided by the rulemaking group on the 'RMT.0624 Phase 2 - RTO licensing and training questionnaire'.</p>
comment	<p>697 comment by: <i>ATCEUC</i></p>



	<p>ATCEUC request EASA to introduce a rating endorsement for remote aerodrome ATS to be added to the ADI/ADV rating</p> <p>ETF and ATCEUC are completely against the notion of allowing AMC / GM for a unit endorsement remote tower operation instead of a rating endorsement. We have previously detailed our argument in a letter to EASA Executive Director on 24/07/17 highlighting the following benefits:</p> <ul style="list-style-type: none"> • Identification of commonalities in the aerodrome control service provision using RTO • Mitigation of risks associated with RTO through appropriate training measures to raise the awareness to operators about the difficulties associated with this technology • Clarification of which ATCOs are entitled to undergo unit training in view of providing aerodrome control service using RTO • The granting of mutual recognition throughout the EU of this status • Help in achieving and maintaining a high level of safety within the task with a minimum level of safety oversight being provided through a common core content <p>We see these as essential to safety and to that end, we still maintain that the details of the information within AMC / GM for a unit endorsement should be completely transposed into more 'hard rules' (IR) and in relation to a rating endorsement.</p>
response	<p>Not accepted</p> <p>See NPA 2017-21 Section 2.5 and the response to comment 487.</p>

3.2 Draft AMC/GM - AMC1 ATCO.B.020(a)	p. 86
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comment	<p>90 comment by: <i>Gael Le Bris</i></p> <p>Proposition to add the case of construction works among the examples of the GM (bold text):</p> <p>"When this is done for shorter/limited time periods, e.g. during a validation, or for transitional purposes, or during construction works, different unit endorsements for conventional and remote tower may not be considered necessary."</p>
response	<p>Not accepted</p> <p>'Transitional purposes' is considered to cover construction works.</p>

comment	<p>346 comment by: <i>IFATCA</i></p> <p>CHANGE PROPOSAL</p> <p>GM1 to AMC1 ATCO.B.020(a) Unit endorsements</p> <p>There might be cases where, for a given aerodrome, air traffic control service is provided from a 'conventional OTW tower' (defined in EASA Guidelines on Remote Aerodrome Air Traffic Services — Issue 2) during certain time periods and from a</p>
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'remote tower' (defined in EASA Guidelines on Remote Aerodrome Air Traffic Services — Issue 2) at other times. In such cases, the unit endorsement(s) should indicate the working position(s) (conventional and/or remote tower) from which the licence holder is authorised to provide the service.

~~When this is done for shorter/limited time periods, e.g. during a validation or for transitional purposes, different unit endorsements for conventional **OTW** and remote tower may not be considered necessary.~~

JUSTIFICATION

See Ueberlingen and Sette Frattelli judgement. In any case the safety of the travelling public and the persons on the ground has to be maintained. Transitional purposes are no excuse to lower the requirements.

response

Not accepted

Concerning the replacement of 'conventional tower' with 'OTW tower', see the response to comment 5.

Concerning the last strike-through/the comment on transitional purposes, some flexibility has been left to the CA and the ATS provider for the licensing administration in case of shorter/limited time periods of temporary nature, taking into account that the ANSPs shall always ensure that personnel are adequately trained and competent for the job they are required to do (Regulation (EU) No 1035/2011, Annex II, 3.1.2. (a)).

comment

412

comment by: NATS

GM1 to AMC1 ATCO.B.020(a) Page 86

The wording is complex and not clear what is required

Contingency towers – exist now in many forms, with some not using Visuals or limited visuals and there has never been a requirement to have a separate endorsement – introducing an additional endorsement is unnecessary, especially when a "Remote Tower" with visuals in essence is a better contingency..

We are already apposed to fact that any additional ratings, endorsements should be introduced for providing aerodrome services using Digital Tower, regardless of if that's to provide remote aerodrome services or within a tower, or contingency

Impact

This could create issues for currency and licensing.

Suggested resolution

The text must state that unit endorsement for a conventional tower also includes unit endorsement in the contingency tower.

Any Training should include procedures and equipment training for when operating from a contingency operation, as it does now.



response Accepted

The text has been modified in order to clarify that contingency facilities are not in the scope of this GM. As the comment suggests, the training and use of contingency arrangements/contingency facilities are deemed to be covered by any unit endorsement.

comment 445 comment by: LfV

AMC1 ATCO.B.020(a) Unit endorsement - GENERAL

"When aerodrome control service is provided ~~from a remote location~~ by 'remote aerodrome ATS' (defined in EASA Guidelines on Remote Aerodrome Air Traffic Services — Issue 293), each aerodrome for which the service is provided should constitute its own unit endorsement."

LfV:

Even if this wording is in line with the principles in regulation (EU) 2015/340, it is too restrictive in a situation where ATS to several airports are provided from a Remote Tower Centre (RTC).

Organising ATS to several airports in one RTC is likely to lead to harmonisation of the tower layout to be the same for all airports in the RTC. Same would probably happen for the operational procedures as far as possible. There would be one "Local ATS Instruction" / "Operational handbook" for the RTC. In this situation, it would be logical to combine unit endorsements for airports that have similar layout, size etc. The regulation should allow the possibility to have one unit endorsement covering several airports. This arrangement should be reflected in the training programme for the operators.

Proposed rewording:

"... each aerodrome **or group of aerodromes** for which the service is provided should constitute its own unit endorsement."

response Not accepted

There will always be some differences between different aerodromes. Therefore, a specific unit endorsement per aerodrome is considered appropriate for the purpose of safety. This does not however mean that the common elements concerning e.g. handbooks, equipment, procedures would need to be repeated for each of the unit endorsements.

comment 446 comment by: LfV

GM1 to AMC1 ATCO.B.020(a) Unit Endorsements

"There might be cases where, for a given aerodrome, air traffic control service is provided from a 'conventional tower' (defined in EASA Guidelines on Remote Aerodrome Air Traffic Services — Issue 2) during certain time periods and from a 'remote tower' (defined in EASA Guidelines on Remote Aerodrome Air Traffic Services — Issue 2) at other times. In such cases, the unit endorsement(s) should



	<p>indicate the working position(s) (conventional and/or remote tower) from which the license holder is authorized to provide the service.</p> <p>When this is done for shorter/limited time periods, e.g. during a validation or for transitional purposes, different unit endorsements for conventional and remote tower may not be considered necessary."</p> <p>LFV: The wording is complex and it is not clear what is required when a remote tower solution is used for contingency purposes. The text must state that unit endorsement for a conventional tower also includes unit endorsement in the contingency tower</p> <p>The functional layout in the contingency tower must be as similar as possible to the conventional tower. These two working positions must be handled together in unit training. This would make moves from the conventional tower into the contingency tower as smooth and safe as possible.</p>
response	<p>Accepted</p> <p>See the response to comment 412.</p>
comment	<p>472 comment by: <i>Swedavia</i></p> <p>Even if this wording is in line with the principles in regulation (EU) 2015/340, Swedavia finds that it is too restrictive in a situation where ATS to several airports are provided from a Remote Tower Centre (RTC).</p> <p>Organising ATS to several airports in one RTC is likely to lead to harmonisation of the tower layout to be the same for all airports in the RTC. The same would probably happen for the operational procedures as far as possible. There would be one "Local ATS Instruction" / "Operational handbook" for the RTC. In this situation, it would be logical to combine unit endorsements for airports that have similar layout, size etc. The regulation should allow the possibility to have one unit endorsement covering several airports. This arrangement should be reflected in the training programme for the operators.</p> <p>Proposed rewording: "... each aerodrome or group of aerodromes for which the service is provided should constitute its own unit endorsement."</p>
response	<p>Not accepted</p> <p>See the response to comment 445.</p>
comment	<p>473 comment by: <i>Swedavia</i></p> <p>The wording is complex and it is not clear what is required when a remote tower solution is used for contingency purposes. The text must state that unit endorsement for a conventional tower also includes unit endorsement in the contingency tower</p>

response	<p>The functional layout in the contingency tower must be as similar as possible to the conventional tower. These two working positions must be handled together in unit training. This would make moves from the conventional tower into the contingency tower as smooth and safe as possible.</p> <p>Accepted</p> <p>See the response to comment 412.</p>
comment	<p>478 comment by: <i>Air Navigation Services Finland Oy</i></p> <p>Even if this wording in AMC1 ATCO.B.020(a) is in line with the principles in regulation (EU) 2015/340, it is too restrictive in a situation where ATS to several airports are provided from a Remote Tower Centre (RTC).</p> <p>Organising ATS to several airports in one RTC is likely to lead to harmonisation of the tower layout to be the same for all airports in the RTC. Same would probably happen for the operational procedures as far as possible. There would be one “Local ATS Instruction” / “Operational handbook” for the RTC. In this situation, it would be logical to combine unit endorsements for airports that have similar layout, size etc. The regulation should allow the possibility to have one unit endorsement covering several airports. This arrangement should be reflected in the training programme for the operators.</p> <p>Proposed rewording: “... each aerodrome or group of aerodromes for which the service is provided should constitute its own unit endorsement.”</p>
response	<p>Not accepted</p> <p>See the response to comment 445.</p>
comment	<p>479 comment by: <i>Air Navigation Services Finland Oy</i></p> <p>The wording in GM1 to AMC1 ATCO.B.020(a) is complex and it is not clear what is required when a remote tower solution is used for contingency purposes. The text should state that unit endorsement for a conventional tower also includes unit endorsement in the contingency tower.</p> <p>The functional layout in the contingency tower must be as similar as possible to the conventional tower. These two working positions must be handled together in unit training. This would make moving from the conventional tower into the contingency tower as smooth and safe as possible.</p>
response	<p>Accepted</p> <p>See the response to comment 412.</p>
comment	<p>708 comment by: <i>ACR AB</i></p>



	It needs to be clarified in some way whether a certificate holder with two (or more) unit endorsement is allowed to perform the duties simultaneously at both aerodromes or one at time.
response	<p>Not accepted</p> <p>This is considered to be covered by the local operating procedures, in the same manner as for working positions/sectors today. In addition, the current licence template in Regulation (EU) 2015/340 allows for the indication of additional information in the field 'Sector/position' if considered necessary.</p>

3.2 Draft AMC/GM - GM1 ATCO.D.055(a)

p. 86

comment	<p>347</p> <p>comment by: <i>IFATCA</i></p> <p>Change proposal</p> <p>GM1 ATCO.D.055(a) Unit training plan — UNIT TRAINING PLAN FOR A REMOTE TOWER CENTRE ATC UNIT FOR AERODROME CONTROL FROM A REMOTE TOWER</p> <p>For the purpose of establishing a unit training plan, a 'Remote Tower Centre' (RTC) (defined in the EASA Guidelines on Remote Aerodrome Air Traffic Services — Issue 2) may be considered as one Air Traffic Control (ATC) unit. Shall establish per aerodrome a unit training plan.</p> <p>The unit training plan of a RTC should include the list of the unit endorsement courses for all aerodromes which the RTC is providing service to.</p> <p>Justification</p> <p>It is not because two airports are operated from the same RTC that they suddenly are equal and that from a training point of view a standard could be introduced. This currently with the same OTW not the case - what is the reasoning to bandbox the training for different aerodrome?</p>
response	<p>Not accepted</p> <p>A unit training plan is considered to be a framework document that defines how the training is to be arranged. The actual training content is defined in the unit endorsement courses.</p>

3.2 Draft AMC/GM - GM3 ATCO.D.060(c)

p. 86-87

comment	<p>318</p> <p>comment by: <i>ENAV</i></p> <p>technical capabilities and limitations of a 'visual presentation system'</p> <p>ENAV suggestion Add; seasonal settings</p>
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response	Accepted
comment	<p>319 comment by: ENAV</p> <p>Set-up and characteristics of the local equipment at the aerodrome,</p> <p>ENAV suggestion Add; Power supply; including main, standby and UPS. These are systems important for fall-back/degraded modes. Operational experience</p>
response	<p>Not accepted</p> <p>Different levels of power supply are not deemed to be specific to remote aerodrome ATS.</p>
comment	<p>320 comment by: ENAV</p> <p>Procedures for degraded modes, e.g.;</p> <p>ENAV suggestion Add; Power failure, different modes and effects</p>
response	<p>Not accepted</p> <p>‘Degraded modes’ here refers to the loss of a specific function, which could indeed be caused by a power failure, thereby inherently already covered. Furthermore, power failures are not deemed to be specific to remote aerodrome ATS.</p>
comment	<p>321 comment by: ENAV</p> <p>Loss or degradation of the ‘binocular functionality’</p> <p>ENAV comment Loss of SLG is more critical since ICAO mandate the airport to have, as we understand, not binocular-only recommendation</p>
response	<p>Not accepted</p> <p>The listed examples are non-exclusive (indicative examples only). Furthermore, the signalling lamp is not unique to remote aerodrome ATS.</p>
comment	<p>378 comment by: CANSO</p> <p>technical capabilities and limitations of a ‘visual presentation system’</p> <p>CANSO suggestion Add; seasonal settings</p>
response	Accepted

comment	379	comment by: <i>CANSO</i>
	Set-up and characteristics of the local equipment at the aerodrome,	
	CANSO suggestion Add; Power supply; including main, standby and UPS. These are systems important for fall-back/degraded modes. Operational experience	
response	Not accepted See the response to comment 319.	
comment	380	comment by: <i>CANSO</i>
	Procedures for degraded modes, e.g.;	
	CANSO suggestion Add; Power failure, different modes and effects	
response	Not accepted See the response to comment 320.	
comment	381	comment by: <i>CANSO</i>
	Loss or degradation of the ‘binocular functionality’	
	CANSO comment Loss of SLG is more critical since ICAO mandate the airport to have, as we understand, not binocular-only recommendation	
response	Not accepted See the response to comment 321.	
comment	447	comment by: <i>LFV</i>
	Bullet in GM3 ATCO.D.060(c) Unit endorsement course "- technical capabilities and limitations of a ‘visual presentation system’"	
	Propose to add “seasonal settings”.	
response	Accepted	
comment	448	comment by: <i>LFV</i>
	Bullet in GM3 ATCO.D.060(c) Unit endorsement course "- Set-up and characteristics of the local equipment at the aerodrome,"	
	Propose to add: “Power supply; including main, standby and UPS.” These are systems important for fall-back/degraded modes.	

response	Not accepted See the response to comment 319.
comment	449 comment by: <i>LFV</i> Billet in GM3 ATCO.D.060(c): "- Procedures for degraded modes, e.g.;" Propose to add "Power failure, different modes and effects."
response	Not accepted See the response to comment 320.
comment	450 comment by: <i>LFV</i> Bullet in GM3 ATCO.D.060(c) Unit endorsement course: "- Loss or degradation of the 'binocular functionality'" LFV: Loss of SLG is more critical since ICAO mandate the airport to have, as we understand, not binocular-only recommendation. Propose to add SLG.
response	Not accepted See the response to comment 321.
comment	480 comment by: <i>Air Navigation Services Finland Oy</i> There is very little value with visits to the physical airport. Even in the case of conventional tower located at an airport, ATCOs/AFISOs very seldom visit the airport area (apart from the tower building). It can be safely assumed that the ATCOs/AFISOs could be familiarised with the aerodrome environment and stakeholders via other means (e.g. classroom study, e-learning, on-the-job training). We are proposing to remove the words "via study visit(s)".
response	Not accepted For the initial unit endorsement course, this GM represents best practices that may be used, but the objective may also be achieved by different means subject to the approval of the competent authority.
comment	618 comment by: <i>HIAL</i> Training ATCOs/Unit Endorsement – Human Factors – Concentrates on HMI and does not address or appear to value local airport knowledge and Custom & Practice



response	<p>particular to the individual airport. Speaks only of “to acquire knowledge...of the characteristics of the operating environment”. The GM should be expanded to include the same guidance as within GM1 ATCO.D.080 (b) Refresher Training, specifically, ‘the training should include familiarisation with the physical aerodrome environment and the different stakeholders via study visit(s)’.</p> <p>Noted</p> <p>This is included as a separate sub-bullet/item under ‘operating environment’.</p>
comment	<p>639 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>We strongly suggest to add a training item on the limitations of ATS provision performed remotely. The potential “wouahou” effect of this new technology can impair individuals from identifying the limitations of the service being provided remotely : we are requesting that people are trained to take this into account. The principles of this training should be established according to one or more of the methods and groups as listed on page 91.</p>
response	<p>Noted</p> <p>Technical capabilities and limitations with a ‘visual surveillance system’ are already included in the commented GM.</p>

3.2 Draft AMC/GM - GM4 ATCO.D.060(c)	p. 88-89
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comment	<p>322 comment by: <i>ENAV</i></p> <p>Multiple mode Different weather conditions at different aerodromes</p> <p>ENAV suggestion Add; light conditions(day/night), difference depending on geographic location.</p>
response	<p>Partially accepted</p> <p>Light conditions have bene added (without the text in parentheses).</p>
comment	<p>323 comment by: <i>ENAV</i></p> <p>Human limitations with regard to the simultaneous handling of more than one aerodrome and distribution of attention.</p> <p>ENAV suggestion Not only limitations maybe, there might be a positive HP affect since you/ATCO are more active during multiple operations. ATCO are trained to be proactive and not reactive. Experience from simulations and validations. Write in an little more positive way(limitations) “Human capabilities to maintain situational awareness with.....</p>



response	Partially accepted The text has been amended to include both ‘capabilities’ and ‘limitations’
comment	<p>348 comment by: IFATCA</p> <p>change proposal GM4 ATCO.D.060(c) Unit endorsement course MULTIPLE MODE OF OPERATION When performing ‘multiple mode of operation’ (defined in Sections 2, 3 and 4 of the EASA Guidelines on Remote Aerodrome Air Traffic Services — Issue 2), in addition to GM3 ATCO.D.060(c), the following items should also be considered:</p> <ul style="list-style-type: none"> — Use of communication facilities (e.g. aeronautical mobile service, aeronautical fixed service and surface movement control service) for simultaneous provision of ATS in geographically separated areas of responsibility; — Applicable procedures for traffic management, such as traffic prioritisation, enabling multiple mode of operation; — Procedures for prioritising between aerodromes; — Procedures for the transferring/merging/splitting of aerodromes in a RTM (defined in the EASA Guidelines on Remote Aerodrome Air Traffic Services — Issue 2); — Different weather conditions at different aerodromes; — Human limitations with regard to the simultaneous handling of more than one aerodrome and distribution of attention. <p>IFATCA is opposed to multiple mode of operation</p> <p>If the GM 4 ATCO D.060 (e) Unit endorsement course is maintained, then there is a need to teach the ATCOs legal liability issues and negligence elements. Best is to study the ueberlingen and setti fratelli judgement and the German BFU recommendation, to make the ATCOs aware that there is a high risk that they will end up in court, for the smallest issue that does not guarantee the safety of the travelling public (in all circumstances). e.g. degraded mode, or a technical failure (unnoticed).</p>
response	Not accepted Legal liability structures are subject to individual Member States and is outside the scope of the EASA guidelines.
comment	<p>382 comment by: CANSO</p> <p>Multiple mode Different weather conditions at different aerodromes</p> <p>CANSO suggestion Add; light conditions(day/night), difference depending on geographic location.</p>
response	Accepted



comment	383	comment by: <i>CANSO</i>
	Human limitations with regard to the simultaneous handling of more than one aerodrome and distribution of attention.	
	CANSO suggestion Not only limitations maybe, there might be a positive HP affect since you/ATCO are more active during multiple operations. ATCO are trained to be proactive and not reactive. Experience from simulations and validations. Write in a little more positive way (limitations) "Human capabilities to maintain situational awareness with....."	
response	Partially accepted See the response to comment 323.	
comment	451	comment by: <i>LFV</i>
	Bullet in GM4 ATCO.D.060(c) Unit endorsement course Multiple mode "- Different weather conditions at different aerodromes"	
	Propose to add: "local light conditions (day/night), difference depending on geographic location."	
response	Accepted	
comment	452	comment by: <i>LFV</i>
	Bullet in GM4 ATCO.D.060(c) Unit endorsement course: "- Human limitations with regard to the simultaneous handling of more than one aerodrome and distribution of attention."	
	LFV: Not only limitations. There might be a positive HP affect since you/ATCO are more active during multiple operations. ATCO are trained to be proactive and not reactive. Experience from simulations and validations (MERASSA methodology) supports these assumptions.	
	Propose to rephrase to: "- Human capabilities to maintain situational awareness with regard to the simultaneous handling of more than one aerodrome and distribution of attention."	
response	Partially accepted See the response to comment 323.	

3.2 Draft AMC/GM - GM1 ATCO.D.080(b)

p. 89

comment 89

comment by: *Gael Le Bris*

response	<p>Suggestion of the term "recurrent training" instead of "refresher" for better understanding.</p> <p>Not accepted</p> <p>'Refresher training' is the term used in Regulation (EU) 2015/340.</p>
comment	<p>416 comment by: NATS</p> <p><u>GM4 ATCO.D.080(b) Page 89</u></p> <p>Should – often results in an interpretation of Shall – in many airfields now, visits by ATCO personnel are limited, and often of much value.</p> <p><u>Impact</u></p> <p>Could be costly and challenging to achieve especially in the future where within an RTC an individual ATCO may hold endorsements for multiple units, which are geographically dispersed</p> <p><u>Suggest</u></p> <p>The requirement is correctly included in GM3 ATCO.D-060(c) – Unit endorsement course.</p>
response	<p>Partially accepted</p> <p>The text has been modified to indicate 'study visit' as an example only.</p>
comment	<p>453 comment by: LFV</p> <p>Text in GM1 ATCO.D.080(b) Refresher training: "...the refresher training should include familiarisation with the physical aerodrome environment and the stakeholders via study visit(s)."</p> <p>LFV: Practice shows that this requirement ("should" is interpreted as "shall" by the NSA) is very difficult to implement in an RTC with many ATCOs/AFISOs. There is no or little value with such frequent visits to the physical airport.</p> <p>Even in the case of conventional tower located at an airport, ATCOs/AFISOs very seldom visits the airport area and there are no requirement to do so during refreshment training. Familiarisation with the airport is achieved through the OTW. Same situation applies through the video displays when aerodrome ATS is provided from a remote tower module.</p> <p>The requirement is correctly included in GM3 ATCO.D-060(c) – Unit endorsement course.</p>
response	<p>Partially accepted</p> <p>See the response to comment 416.</p>



comment	474	comment by: <i>Swedavia</i>
	<p>Practice shows that this requirement (“should” is interpreted as “shall” by the NSA) is very difficult to implement in an RTC with many ATCOs/AFISOs. There is no or little value with such frequent visits to the physical airport.</p> <p>Even in the case of conventional tower located at an airport, ATCOs/AFISOs very seldom visit the airport area and there are no requirement to do so during refreshment training. Familiarization with the airport is achieved through the OTW. Same situation applies through the video displays when aerodrome ATS is provided from a remote tower module.</p> <p>The requirement is correctly included in GM3 ATCO.D-060(c) – Unit endorsement course.</p>	
response	<p>Partially accepted</p> <p>See the response to comment 416.</p>	

comment	481	comment by: <i>Air Navigation Services Finland Oy</i>
	<p>This requirement is very difficult to implement in an RTC with many ATCOs/AFISOs and a multiple mode of operation serving numerous aerodromes. There is no or little value with such frequent visits to the physical airport.</p> <p>Even in the case of conventional tower located at an airport, ATCOs/AFISOs very seldom visit the airport area and there are no requirement to do so during refreshment training. Familiarisation with the airport is achieved through the OTW. Same situation applies through the video displays when aerodrome ATS is provided from a remote tower module.</p> <p>We are proposing to remove the words "via study visit(s)".</p>	
response	<p>Partially accepted</p> <p>See the response to comment 416.</p>	

3.2 Draft AMC/GM - GM1ATCO.D.085

p. 89

comment	286	comment by: <i>AESA/DSANA</i>
	<p><u>Comment</u></p> <p>In last paragraph, the transition from a conventional tower to a remote tower with multiple mode of operation should also be considered.</p>	
response	<p>Accepted</p>	
comment	350	comment by: <i>IFATCA</i>
	<p>EXPLANATION NEEDED</p>	



	<p>GM1 ATCO.D.085 Conversion training CONVERSION TRAINING FOR AIR TRAFFIC CONTROLLERS PROVIDING REMOTE AERODROME ATS TRAINING FOR AIR TRAFFIC CONTROLLERS PROVIDING AERODROME CONTROL SERVICE FROM A REMOTE TOWER</p> <p>In case of a transition When converting from a ‘conventional tower’ OTW (defined in the EASA Guidelines on Remote Aerodrome Air Traffic Services — Issue 2) to a ‘remote tower’ (defined in the EASA Guidelines on Remote Aerodrome Air Traffic Services — Issue 2), the conversion training for air traffic controllers providing ‘remote aerodrome ATS’ (defined in the EASA Guidelines on Remote Aerodrome Air Traffic Services — Issue 2) aerodrome control service from a remote tower should at least include the items listed subjects, subject objectives, topics and subtopics as specified in GM3 GM4 ATCO.D.060(c).</p> <p>In case of a transition When converting from a remote tower to a conventional tower, the training organisation should consider possible additional training needs, if appropriate, required by the change of operational environment.</p> <p>In case of a transition from ‘single mode of operation’ (defined in the EASA Guidelines on Remote Aerodrome Air Traffic Services — Issue 2) to ‘multiple mode of operation’ (defined in the EASA Guidelines on Remote Aerodrome Air Traffic Services — Issue 2), the conversion training for air traffic controllers should at least include the items listed in GM4 ATCO.D.060(c).</p> <p>The proposed articles reads, like that it is more difficult to transit from a RTC to a real tower than vice versa? Is this the case, and where does this opinion come from?</p>
response	<p>Partially accepted</p> <p>(The proposed replacement of ‘conventional tower’ with ‘OTW’ is not accepted.)</p> <p>As regards the observation and question presented in the two last lines of the comment:</p> <p>The purpose of GM1 ATCO.D.085 is solely to indicate possible training needs, not to value whether it is more or less difficult to convert from a conventional to a remote tower or vice versa. The word ‘additional’ has been deleted from the text, as it was misleading.</p>

4. Impact assessment (IA) p. 90

comment	<p>640 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>We are concerned that EASA has decided not to conduct a detailed impact assessment of this NPA. With a lack of proper evidence at the time of NPA 2015-04, we ask why the assumptions leading to the results from the assessment in NPA 2015-04 will prove valid in what is an NPA looking at more complex remote tower operations as well as multiple mode of operation.</p>
response	<p>Noted</p>



In addition to what is outlined in Chapter 4 of NPA 2017-21, see the response to comment 205. The EASA position is maintained.


5. Proposed actions to support implementation

p. 91


comment	<p>467 comment by: <i>René Meier, Europe Air Sports</i></p> <p>5. Proposed actions to support implementation page 91/92</p> <p>We fully support the five elements proposed by the Agency.</p> <p>Rationale: First of all, a common understanding will be reached, accompanied by a harmonized introduction, at the same time leaving room for local/regional/national specificities. Secondly, bringing together all actors will be profitable. When I first was confronted with remote tower operations I heard that for the flight crews "similar procedures" would be helpful. For this reason my request: Please integrate in your efforts all sorts of flight crews involved in the implementation of remote tower operations.</p>
response	<p>Noted</p> <p>EASA thanks for the supportive comment.</p>
comment	<p>574 comment by: <i>Heathrow airport</i></p> <p>We welcome and look forward to these actions</p>
response	<p>Noted</p> <p>EASA thanks for the supportive comment.</p>
comment	<p>641 comment by: <i>European Transport Workers Federation - ETF</i></p> <p>This action to support implementation is extremely important to us. Implementers' commitment to be actively involved in this group should be set as a condition by EASA (currently not sufficient) as to the validity of the proposed approach. Staff representative representation in this group is extremely important. Throughout ETF's comments, we have identified a number of tasks to be performed by that group.</p>
response	<p>Noted</p> <p>EASA thanks for the supportive comment, and, in the context of the future support to implementation activities, remains available to consider proposals for actions and involvement submitted by stakeholders via its Advisory Bodies.</p>



Appendix A - Attachments

 [WP 0.9 - RMT.0624 Phase 2 - RTO licensing and training questionnaire - including clarifications - ETF answer.pdf](#)

Attachment #1 to comment [#487](#)

 [WP 0.9 - RMT.0624 Phase 2 - RTO licensing and training questionnaire - including clarifications - ETF answer.pdf](#)

Attachment #2 to comment [#489](#)

 [2017 07 24 ATCEUC-ETF letter EASA Director RMT 0624 240717.pdf](#)

Attachment #3 to comment [#683](#)

