European Union Aviation Safety Agency

Comment-Response Document (CRD) 2014-22

RELATED NPA: 2014-22 — RELATED OPINION No 07/2022 & RELATED DECISION 2023/019/R

RMT.0281 (MDM.082)
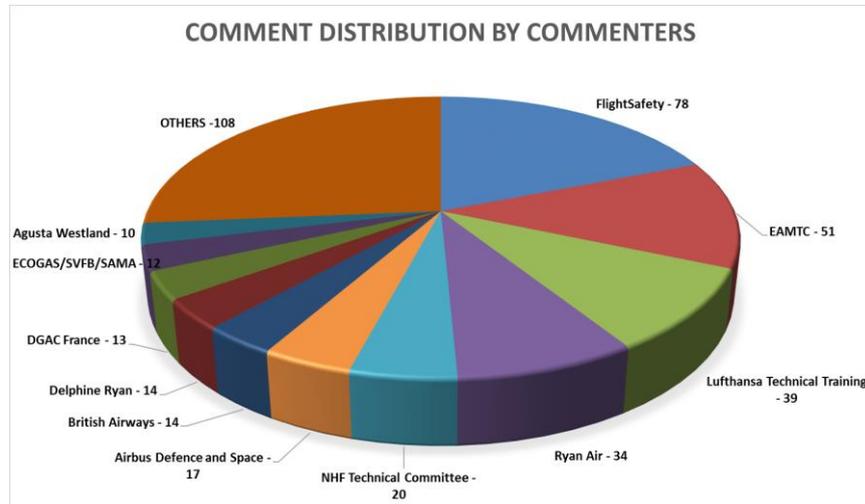'New training methods and new teaching technologies'

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1.   Summary of comments and responses

NPA 2014-22 was commented by 41 commenters. In total, 410 comments were received from interested parties, including industry (87 %), national competent authorities (7,5 %) and individuals (5,5 %).

The pie chart below shows the distribution of comments by the commenters:

The comments have been reviewed by the Review Group NPA 2014-22. In general, the vast majority of the comments support the text of the NPA and provide constructive proposals for the improvement of the individual amendments proposed by the Agency. As some of the comments are contradicting in substance, obviously not all of them could be accepted. The Agency has taken all comments thoroughly into account and accepted all those considered by the Review Group as contributive for the improvement of the proposed amendments.
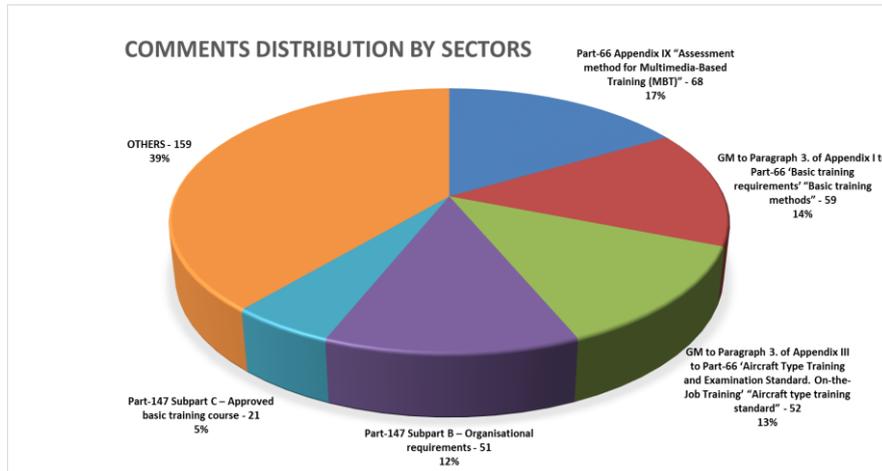
A small number of comments, provided mainly by private individuals, challenge the whole concept of the introduction of the new training methods and new teaching technologies into the training of maintenance staff. These comments have been noted, but the Agency emphasises that such comments are not in line with the objectives for the task as presented in the Terms of Reference (ToR) RMT.0281.

It is worth to note that 10 out of 41 commenters (4 competent authorities, 3 industry associations and 3 industry organisations) fully support the content of the NPA 2014-22 without significant notes for changes.

The majority of the comments received relate to Annex III (Part-66). Almost half of the total number of comments are related to the new Appendix IX to Part-66 'Assessment method for Multimedia-Based Training (MBT)' and AMC & GM to Section 3. of Appendices I and III to Part-66 'Basic training requirements' and 'Aircraft type training and examination standard'.

The pie chart below shows the distribution of the comments by sectors:

COMMENTS DISTRIBUTION BY SECTORS

Based on the comments received, Appendix IX 'Assessment method for Multimedia-Based Training (MBT)' has been thoroughly reviewed and amended accordingly. Since there was a certain level of misunderstanding regarding the purpose of this Appendix amongst some commenting stakeholders, a clear statement regarding its purpose has been inserted now at the beginning of Appendix IX. Appendix IX and the assessment table contained therein shall be used in the process of the assessment of any course that includes MBT. It is the training course to be approved by the competent authority and not the particular training method or tool itself; still the methods and tools used must fulfil the suitability criteria. The assessment table for MBT has been carefully revised and the 20 questions have been transformed into simpler statements to be easily scored. The scoring method has also been significantly adapted and now if all 20 statements are scored with score 3, the final score is on the positive side, so the course can be approved without additional improvements required. In order to facilitate the scoring process, the definition of the scores is now given.

AMC and GM to Section 3. of Appendices I and III to Part-66 underwent a number of changes based on many comments received. 'Complex and critical subjects' have been clarified. Table 1 in both appendices has been adapted and some descriptions of training methods and tools (Tables 2 and 3) have been refined. Definitions of 'instructor-centred' and 'student-centred' methods have been added, as well as the 'virtual aircraft' in Table 3. The '95 % of the completion of the content' in case of the student-centred methods used in a theoretical training course has been further explained in the CRD responses.

The most commented items in Annex IV (Part-147) relate to the knowledge examinations and the 'controlled environment' as defined in 147.A.135(d), training of the instructors, definition of the training and examination locations and to the possible amendment of the basic training course durations as stated in the new point 147.A.200(g). Some of the organisations strongly commented on the proposed amendment to AMC 147.A.105 in regard the definition of 'larger' and 'smaller' maintenance training organisations. These comments have been thoroughly considered and the AMC adapted in line with these comments.

Chapter 2 of this CRD contains the full set of individual comments on NPA 2014-22 and the EASA responses to them.

2. Individual comments and responses

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

(a) **Accepted** — The Agency agrees with the comment and any proposed amendment is wholly transferred to the revised text.

(b) **Partially accepted** — The Agency either agrees partially with the comment, or agrees with it but the proposed amendment is only partially transferred to the revised text.

(c) **Noted** — The Agency 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 the Agency.

CRD table of comments, responses and resulting text

(General Comments)	-

comment	*15*	comment by: *Ian Robinson*

It is great to see EASA looking forward in this way and only good can come from these proposals. However, student assessment was mentioned in the introduction, but not much after. In the ab-initio sector in which I work, we are only allowed to use Multi Choice Questions and Essay questions towards Part 66 licences outcomes. Will this change along with the delivery methods?

At the moment the MCQ exams are all closed book - this, in an industry which demand constant referencing to manuals whilst on the job! The skill of information selection is as important as any other.

My second suggestion concerns the essay questions. Why only a choice of 1 title in each sitting!? Consider Module 7, massive amounts of information - why not phrase the question as, *"From the list below, choose one topic, and write etc."* . This will help avoid the situation where students who have scored 90% or more in the MCQ, just happen to have a blank on the day in one very small section of the syllabus, and their essay attempt does not match their true ability.

I believe examination/assessments should be fair, valid, and flexible, and act as gateways to progress - not hurdles. Thank you.

response	Noted.

The main objective of RMT.0281 is to introduce new training methods and new teaching technologies into the training of maintenance staff. Changes in examination methods (MCQ, essay questions, closed book examinations, etc.) were not considered by the working group, hence such changes were not proposed. Such changes would require a new rulemaking task or may be discussed within RMT.0255 'Miscellaneous in Part-66'.

Regarding the skills connected with the usage of the manuals, these skills should be practised and assessed during practical training/assessment.

Your comment about the possible choice of essay question from the offered list of questions is an interesting proposal which may be discussed within the future rulemaking tasks.

| comment | 18 | comment by: Delphine RYAN |

These comments represent my own personal views and opinions as an aircraft engineer and do not represent the views and opinions of my employer.

| response | Noted. |

| comment | 54 | comment by: andy simpson |

1, By its very definition, distance learning implies a physical separation between student and instructor. This creates a challenge for students who might need or desire academic or technical support, and it can quickly become a source of frustration .Another problem facing distance-learning students is the level and type of interactivity. Similar to the issue surrounding support, the lack of face-to-face interactions between student, teacher and other classmates can be problematic .The technology required to participate in a distance-learning class must be readily available and fully functional. Furthermore, students must have or acquire a certain level of competency with the technology, including hardware, software and all related accessories, in order to be successful in the course. Technology that is unavailable or unstable quickly becomes a barrier for distance-learning students.
2. the benfits of having a good instructor have been repeatedly shown in many international studies to be cumulative and numerous, typically and specificaly to aircraft engineering, a good instructor calls upon his own particular experiences, and those of his class, to create an environment where,the classroom becomes a place of shared experience, with all the students learning from each other in terms of "hands on" time, thus providing a much more advantageous situation and DIRECTLY adding links into the safety chain
3, distance and internet learning is massively open to abuse and deception, for example just google jar66 to see how many websites exist with EASA questions on them. guys will simply learn the exam questions. when i mentioned this proposal to my current class, within 20mins they had come up a dozen ways this can and will be corrupted, and circumvented
4 the material for an engineering course is by its very nature dry and dull, and requires a good teacher to bring it alive off the page.
5, i fully agree that more computer based, instructor led (blended) class days would be advantageous

summary
, in these days of increasing complexity of aircraft, and reduced exam quality requirements for obtaining a basic licence, added to this the massively reduced licenced manpower on line and base stations and increased additional responsibilities tagged onto a licenced engineer, its vital and critical that sufficient time, and quality instruction is provided. to allow companies to make engineers study at home in their own time at their own expense with their own equipment, in a flawed system is inviting disaster at a time of heightened public concern over safety. and an increase in incident occurences. i do believe that the system needs reviewing particularly with regards to the instructors, as there are some very poor instructors around, and anyone with a 10min internet qualification can become one. it is absolutely crucial that we do not let licenced aircraft engineers go the same way

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response	Noted.

1. It is true that, by its very definition, distance learning implies a physical separation between the student and the instructor, but the course itself (as approved by the competent authority) should consist of combination of training methods, if the training method used does not fulfil the criteria given in Appendix IX and further detailed in the 'Assessment table for Multimedia-Based Training'. The 'Pedagogical strategies' section within the category 'Pedagogical quality' emphasises the necessity of interactions between the students and instructor, active engagement of the student, encouraging of learning and communication between the students. If this cannot be achieved by distance learning, then a combination of several training methods/tools shall be used to meet these objectives. In addition, the recommendation for blended training is given several times within the rules. Regarding the availability of the technology and the competency to use the technology, we consider that we have covered these issues sufficiently with our proposals (Implementing Rules and especially AMC & GM). Technology should always assist in learning and not become the barrier for effective and successful learning.

2. We agree that the good, knowledgeable, experienced, motivated instructor, able to transfer the knowledge and experience to the students, is of a great benefit for any training course. The question is: How many such instructors are really conducting classroom training courses today? Do all the students have the same prerequisites for successful learning? The technology and software used in e-learning provide similar conditions for all students. The end result, the appropriate knowledge gained through the course, will always depend on each individual student, the self-motivation for learning and the ability in acquiring new knowledge and skills. An environment for sharing knowledge and experience may also be created successfully in a virtual classroom, using a synchronous distance learning method.

3. The examination requirements as defined in Appendices I and III to Part-66 were not changed. The new requirement 147.A.135, point (d) has been added to require the examination to be conducted in a controlled environment which has been defined as well. Any abuse (cheating) by the student or examiner shall be sanctioned in accordance with the current rules. When talking about the phenomenon of learning the exam questions instead of learning the content of the course and meeting the course objectives, please note that our system has several layers of safety before a person becomes certifying staff. Demonstration of basic knowledge by examination is the first step, second step being the assessment during the practical element of basic training. Then, there are theoretical examinations during aircraft type training and practical assessment of the practical element of the type training. In addition, in thecase of the first aircraft type in the (sub)category, the student has to undergo the OJT and to pass successfully the OJT assessment. Finally, before issuing the certification authorisation to maintenance certifying staff, the Part-147 organisation has to perform the competence assessment.

4. Any training course can be dry and dull, or interesting and engaging, this depends mainly on the instructor and the way (methods, tools) the content is presented. New training methods/tools, especially blending them with classroom training, are expected to be more engaging and efficient, as many pedagogic studies confirm that the more interactive and different teaching methods are used, the better the course is at maintaining the student's attention and the more efficient the course is. In addition, it is recognised that the new generation of more computer-minded maintenance staff finds new training methods based on digital technology more appealing.

comment	171 comment by: EUROCONTROL
	The EUROCONTROL Agency does not have comments on NPA 2014-22.
response	Noted.

comment	172 comment by: Dassault Aviation
	Dassault-Aviation support all EAMTC comments
response	Noted.

comment	204 comment by: ATF - Awareness Training Fakoussa
	as we are dealing with maintenance there is a difference in their tasks and therefor in their learning and training requirements. On one side we have the pure manual skills which require a certain mindset to be achieved and than we have documents, tables and measuring that require a different mindset, as the motoric system is not involved. This automatically asks for a very different training. some very basic mindsets like awareness and decision making etc. will be similar, but when it comes to acceptable new devices for training this has to be considered.
response	Noted. The elements of your comment are already covered in human factors training, practical element of the training course and the OJT taking into account the human factors principles. We agree that the new training methods and tools (MSTDs, MTDs, virtual reality, augmented reality, etc.) should take into account human factors principles, including situational awareness and decision-making. By their very nature these devices are beneficial in practising the skills, the motoric system, raising confidence in performing the tasks, and at the same time avoiding the potential hazards and risks connected with the task performance on an operational aircraft. Performing the tasks on such devices may result in complacency, hence the role of the instructor in terms of promoting human factors principles during the task performance is crucial.

comment	209 comment by: Luftfahrt-Bundesamt
	General comment to NPA: The proposed amendments introduce the possibility to use new methods, tools etc. for the training and examination of certifying staff without defining precise requirements for these new possibilities. Furthermore the responsibility to verify that these new possibilities are adequate for the training and examination of certifying staff is more or less completely delegated to the NAAs. In our point of view this jeopardized the EASA self-defined target 'Standardisation'.
response	Noted.

The Agency considers the guidance given in the AMC & GM as sufficient. In fact, a certain level of flexibility is provided intentionally. In addition, our intention is to propose rules resistant and open to the fast development of the modern training methods, technologies and tools over the time, in order to avoid frequent amendments to adapt the rules to them, which might be necessary in case of prescriptive and excessively detailed requirements.

| comment | 261 | comment by: NHF Technical committee |

1. In general NHF does not support use of virtual environment, for learning.
Such learning environment does not support the presence of an instructor who is able to fully see and understand the bodylanguage of the students.
As well, virtual environment creates an unnatural barrier for the student to get in contact with the instructor, and other students. This can inhibit, and does not support free and open conversations. By experience we know that developing study material and designing and setting up a training aid is very costly. Especially this may be seen for training performed for aircraft with low production numbers.
If the instructor then isn't present in real time, and on the same location as the student, there may be a gap between the training material and the set standard for the module/topic to be learned.

2. Regarding adjustment of timeframe for training, NHF does not support cutting timeframes. By introducing more effective learning metods and platforms, the system will hopefully improve. NHF support this as positive. On the other hand, by cutting the timeframe of the course, the effect of improving the learning metods may be set to zero, because the total outcome may be the same as before introducing the more effetive learning metods, but then used longer period for training.

| response | Noted. |

1. Please see our reply to comment #54.

2. Regarding your observation about the adjustment of timeframe for training, please note that we did not propose any reduction of the training duration in both basic training courses (Part-147 Appendix I) and aircraft type training (Part-66 Appendix III). Instead, in the replaced point 147.A.200(g) we have introduced the following provision: '(g) Notwithstanding point (f), in order to benefit from changes in training technology and methods (theoretical training), the number of hours as established in Appendix I (Basic training course duration) may be amended provided that the syllabus content and schedule describe and justify the proposed change. A procedure shall be included in the MTOE to justify these changes.' This means that a part of the training course conducted as distance learning (student-centred, self-paced methods) may result in reduction or extension of the time spent for learning depending on the pace or need of each individual student. Hence, only the instructor-centred methods (classroom, virtual classroom, distance learning synchronous) can be expressed in hours; student-centred methods cannot, and they are rather expressed as 'completion of the content', irrespective of how long the student has spent mastering the content.

| comment | 286 | comment by: UK CAA |

Thank you for the opportunity to comment on NPA 2014-22, New training methods or new teaching technologies (Part-66/Part-147). Please be advised that there are no comments from the UK CAA.

response	Noted.

comment	292 comment by: Federal Office of Civil Aviation FOCA

As a general remark, FOCA supports the introduction of new training methods and new teaching technologies as an additional training aid.

1. However, the amendments in the present NPA may lead to a situation where the industry has enough staff but with important skills missing.
Furthermore, the NPA is too focused on efficiency and cost-effectiveness for Part-147 organisations without considering the impact on the license applicant. This could lead to the situation that the Part-66 peronnel has to study in their spare time after work in an uncontrolled environment.

2. In order to attract more personnel to civil maintenance aviation FOCA recommends to lower the experience time for skilled worker after a successful achievement of a apprenticeship in a technical trade or military aircraft experience with a duration of minimum 4 years.

3. E-learning for the theoretical part of a type rating should only be possible for license holder with a certain knowledge, skill and attitude. For example license holder which licenses are already endorsed for at least 2 similar aircraft types or for differential courses.

4. Merely virtual practical training without a real Aircraft or MSTD (for group1 AC) should not be possbile. FOCA supports virtual tasks in the cockpit on the MCDU/CMC or simple LRU tests. But we do not support that major tasks like reverser, cowl doors, flap, brake, deactivation / manipulation are virtually imparted. We would like that EASA specifies this major tasks in a list.

response	Noted.

1. We understand your concerns. However, these concerns do not apply for basic training courses, as the basic training course conducted in a Part-147 organisation typically does not involve normal maintenance duty time. Certain risk of misuse may appear in aircraft type training, but the current provision given in Part-66 Appendix III, point 3.1(d) and AMC to paragraph 3.1.(d) 5. i) represent a certain safety net. The role of the competent authority when approving the courses is crucial in preventing such practices. The training course should always follow pedagogical and human factors principles.

2. This proposal goes beyond the scope of RMT.0281, but may be considered in future rulemaking tasks.

3. Not accepted. We consider this proposal as unjustified.

4. Please see the new AMC to Section 3. of Appendix III to Part-66:

'The actual training method and the training tools should be adapted to suit the training subject, and be chosen in consideration of their intrinsic characteristics such as, but not limited to, their efficiency and the pedagogical benefits of the method/tool.

A complex or critical subject should not normally be taught solely through a student-centred method unless provisions are in place to verify the actual and progressive acquisition of knowledge of the student.

Complex and critical areas should be identified by the TNA. The complexity and criticality of the areas could differ case-by-case (i.e. areas proven to be critical by organisation's "in service events", occurrence reporting, human factors, safety, etc.), but should in any case cover the training areas with special emphasis (TASE) identified by the type certificate holder (TCH) in its operational suitability data (OSD).'

See also AMC to Paragraph 1(b) and 3.2 of Appendix III to Part-66:

'1. The practical training may include instruction in a classroom or in simulators but part of the practical training should be conducted in a real maintenance or manufacturer environment.'

comment	301	comment by: Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)
		The general conclusion is that STA agree to the proposed amendments in NPA 2014-22 and has no comments to add.
response		Noted.

comment	320	comment by: KLM UK Engineering
		Overall the working group should be congratulated for the work they have done with this NPA.
response		Noted.
		We thank you for your praise.

comment	363	comment by: DGAC France
		DGAC France supports the consideration of new technologies as part of training methods as described in this NPA. More interactive courses and blended methods would certainly be well accepted by our students and our training organisms.

DGAC has some difficulties to sort out the differences between some of those tools as defined in table 2 of GM to paragraph 3 of appendix I to Part 66: the definition are really confusing, for instance "M-learning" that is either "distance learning asynchronous" or "distance learning synchronous" or possibly "e-learning", but it does not bring any value toward 147 goals to know it is "mobile technology". Regarding some of those items such as "distance learning asynchronous ", it seems to us that it does not improve the "interactive" quest as per paragraph 2.1 of explanatory note, bullet 4.

Therefore, DGAC would suggest having clarification of those "tools". Regarding their usage, DGAC France would suggest there is flexibility for training organisations to use them, but it would not give any credit in terms of volume of hours for the training. If it is more user-friendly with those tools, students will learn more. But as there is not scientific benefit of

these tools, the usage of such tools should not be a reason to propose to diminish the level of hours of any training, before more return on experience on these methods is received. This NPA is therefore a little confusing as it introduces tools and methods to improve the level of training but also it allows reducing costs through duration reduction or distant learning.

DGAC would rather support any modification that would only introduce methods/tools for which a clear benefit is expected or a method which has proved its efficiency.

response	Noted.

Thank you for your general support.

It is true that many of the training methods and their definitions overlap, but on the other hand each of them has its own specificities. We have decided to keep all commonly used terms as training methods and tools, despite of the apparent similarities between some of them. E-learning is broadly inclusive of all forms of educational technology in learning and teaching. In general terms, e-learning is inclusive of, and is broadly synonymous with, multimedia-based learning, computer-based instruction (CBI), computer-based training (CBT), computer-assisted instruction, web-based training (WBT), virtual education, virtual learning environments (VLE) (which are also called learning platforms) and m-learning. These alternative names emphasise a particular aspect, component or delivery method. For example, m-learning is indeed distance learning (could be both synchronous and asynchronous), but it is also e-learning, it can be web-based and can be used in multimedia-based training as well. It is specific, as the student may easily change the location and he or she learns using mobile technologies, such as mobile phones and tablets.

One may argue that laptops are also mobile devices, but they are considered on the table as computers, since today in terms of system capacities and abilities there are almost no differences between computers and laptops (they may also be connected to large monitors, printers, etc.), whereas mobile devices still have some disadvantages compared to laptops and desktop computers. With the future development of computer technology and software solutions these disadvantages may disappear, as they have already disappeared between computers and laptops. Today we already have hybrids between laptops and tablets and between tablets and phones (phablets).

Flexibility is given to the training organisations to use a variety of training methods and tools with the recommendation to blend them and to the competent authorities to approve their blended usage. Of course, an analytical approach should be used when deciding upon their usage, including the evaluation of the benefits of each method/tool and their blended application with classical classroom training in order to reach the training objectives.

Regarding your observation about the adjustment of timeframe for training, please note that we did not propose any reduction of the training duration in both basic training courses (Part-147 Appendix I) and aircraft type training (Part-66 Appendix III). Instead, in the replaced point 147.A.200(g) we have introduced the following provision: '(g) Notwithstanding point (f), in order to benefit from changes in training technology and methods (theoretical training), the number of hours as established in Appendix I (Basic training course duration) may be amended provided that the syllabus content and schedule describe and justify the proposed change. A procedure shall be included in the MTOE to justify these changes.' This means that a part of the training course conducted as distance learning (student-centred, self-paced methods) may result in reduction or extension of the time spent for learning depending on

the pace or need of each individual student. Hence, only the instructor-centred methods (classroom, virtual classroom, distance learning synchronous) can be expressed in hours; student-centred methods cannot, and they are rather expressed as 'completion of the content', irrespective of how long the student has spent mastering the content.

In the case of aircraft type training, the possible reduction is already mentioned in the current AMC to paragraph 3.1(d) of Appendix III to Part-66 (TNA), where we just added that this reduction may be approved by the competent authority based on the evaluation on a case-by-case basis appropriate to the aircraft type and to the training methods and tools proposed. In addition we have provided examples of such possibilities for reduction in points 4.(b) and 4.(c). In both examples, effectiveness and efficiency of the training and transfer of knowledge are the key elements contributing to the reduction. Finally, providing the proposed amendments and guidance the current point 5.(h) becomes clear.

comment	385 comment by: FNAM (French Aviation Industry Federation)

FNAM (Fédération Nationale de l'Aviation Marchande) is the French National Professional Union / Trade Association for Air Transport, grouping as full-members:
- CSTA: French Airlines Professional Union (incl. Air France)
- GIPAG: French General Aviation Operators Professional Union
- SNEH: French Helicopters Operators Professional Union
- CSAE: French Handling Operators Professional Union
- GPMA: French Ground Operations Operators Professional Union
- EBAA France: French Business Airlines Professional Union

And as associated member:
- UAF: French Airports Professional Union

Introduction

The NPA 2014-22 introduces changes in comparison with:
- The Commission Regulation (EC) No 2042/2003, Annex III (Part-66) and Annex IV (Part-147);
- The Decision No 2003/19/M;
The comments hereafter shall be considered as an identification of some of the major issues the FNAM asks EASA to discuss with third-parties before any publication of the proposed regulation.

In consequence, the comments hereafter shall not be considered:
- As a recognition of the third-parties consultation process carried out by the European Parliament and of the Council;
- As an acceptance or an acknowledgement of the proposed regulation, as a whole or of any part of it;
- As exhaustive: the fact that some articles (or any part of them) are not commented does not mean FNAM has (or may have) no comments about them, neither FNAM accepts or acknowledges them. All the following comments are thus limited to our understanding of the effectively published proposed regulation, notwithstanding their consistency with any other pieces of regulation.

FNAM General Comments

FNAM supports the initiative taken by EASA to develop new amendment on new training methods and new teaching methodology.
The implementation of new technologies will have positive impact on the safety, the economy, the environment and the social.

Generally speaking, FNAM considers as a major issue that training programs shall be delivered as aiming at achieving a given level of competencies. Training programs shall be define competencies objectives and shall not be based on hourly minimum lesson courses.

However, few concerns are remaining due to this proposal as it will impact directly the operations of FNAM's members.
The comments are developed and explained article by article, in the further relevant sections of the CRT associated to the NPA 2014-22.

response	Noted.
	Thank you for the general support.

comment	388 comment by: ECOGAS/SVFB/SAMA
	ECOGAS represents Small and Medium Enterprises active mainly but not only in maintenance with 90% of our several hundred Enterprise's being small the reminder being major MRO's
	Remark: we will focus on Basic Training as this is the main focus of what the vast majority of our members needs.
	They are hevily decentralized, often located far from city's and and dont have limited access to classrooms.
	New training methods and new teaching technologies for Basic Training will be a welcome and valuable tool for a cost effective and high quality learning environment for independent, Small and Medium Enterprises.
	We welcome this NPA in it's entirety. We support the more detailed feedback of specialised training association EAMTC in regards to Type Training.
	(remark to Type Training: we have forwarded request in the respective NPA 2014-10 to dramatically review the allocation into group one. Only Air Carrier type aircraft as used by licensed air carriers should in general be in group one and B2 type training should be replaced by manufacturers system training (given the necessary overal experience and competence of the B2 staff in question) in such revised classification for all aircraft not in the "licensed air carrier category and/or not invovled in mass transport")

response	Noted.
	Thank you for supporting the proposal.
	Regarding the remark in relation to type training, please understand that your proposal/request is outside the scope of RMT.0281 as defined in the objectives published in the ToR for this task.

comment	400 comment by: British Airways
	Attachment #1
	Comments on behalf of British Airways
response	Noted.
	BRITISH AIRWAYS - CRD Questions for NPA-2014-22
	1. Item 2.1 - Will there be definitive guidance on what devices will be valid and how it will be incorporated?
	All training methods and tools contained in Table 1 of GM to Section 3. of Appendices I and III to Part-66 are valid and may be incorporated as explained there. Additional training methods and further use of those methods defined could be acceptable to the competent authority when demonstrated as supporting learning objectives. As stated in point 3. of Appendices I and III to Part-66, an appropriate training method, or combination of methods, shall be determined for the entire course or for each module or sub-module thereof, with regard to the scope and objectives of each training phase and in consideration of the benefits and limits of the available training methods. The actual training method and the training tools should be adapted to suit the training subject, and be chosen in consideration of their intrinsic characteristics such as, but not limited to, their efficiency and the pedagogical benefits of the method/tool.
	The choice of the methods and tools and the possible combination or blending of them is entirely at the discretion of the training organisation, but must be described in the organisation's MTOE procedures, justified and substantiated in the course syllabus/programme and, in case of aircraft type training, by the TNA. It is the prerogative of the competent authority to assess each application for the approval of such courses with the help of Appendix IX and the 'Assessment table for Multimedia-based training' contained therein and then to decide upon its approval. The whole process shall be conducted in accordance with 66.B.135 'Procedure for the approval of MBT courses'. The said procedure and its implementation will be subjected to EASA Standardisation audits.
	2. Item 2.3 – The Authority is preferring Option 2, however, from a business standpoint, British Airways would prefer Option 3 as we conduct Part-145 training. Is there any scope for allowing this or reconsideration?
	The use of distance training for Part-145 courses (such HF, FTS, EWIS, etc.) is allowed if accepted by the competent authority. Since currently there are no detailed provisions in Part-145 regarding the conduct and acceptance of such courses via distance learning and there are still different approaches present in the Member States, Option 3 has been proposed. The Working Group has finally elected Option 2 as the preferred policy option. This means that

the rules in regard to Part-145 courses did not change, meaning that the competent authority will decide about their acceptance considering the use of different training methods.

3. Does there need to be a differentiation between the devices? Instead of MTD, MSTD and FSTD, could they not just be called "Simulator Devices"?

Yes, there is the need. MTD is not a simulation device and not all FSTDs are suitable as MSTDs. Please read the definitions of the training tools in Table 3 of GM to Section 3. of Appendices I and III to Part-66 and the detailed description of MSTD in AMC to Section I of Appendix III to Part-66.

4. Item 2.4.2(3) – To enable instructors to be authorised, will they need some element of e-Train-the-Trainer?

Please see the following provisions in AMC & GM: AMC 147.A.105(f) Personnel requirements
…
'The instructors should be trained in the subject matter they are delivering, including the appropriate training methods and tools, as applicable.'
GM 147.A.105(f) Personnel requirements
'The instructor using new training technologies (i.e. e-tutor/tele-tutor/tele-trainer) should be trained in using these technologies, as well as in coaching, guiding and assisting of e-learning students. It is important that the instructor understands the electronically-based distance learning process, has the competence to evaluate learning behaviour over the distance and is able to support the learning process of e-students proactively.
The following structure provides an example of such an instructor training, as applicable:
— Changes and tendencies of today's training;
— Fundamentals in methodology and didactics;
— Basics and theory of e-learning and tele-tutoring;
— Communication in virtual environment;
— The changed role of students and instructors;
— Competence profile of a tele-tutor;
— Practical guide to support learning processes;
— Assessment of students' performance;
— The learning management system'

5. Item 2.4.2 (10) – Can you provide clarification on how exams at a remote location can be a controlled environment? Ensuring the integrity of exams will be difficult.

The examination shall be performed in a controlled environment by a Part-147organisation and described in the MTOE.
In accordance with 147.A.135(d), for examination purposes, a controlled environment shall be the one in which:
— the identity of the students,
— the conduct of the examination process,
— the integrity of the examination, and
— the security of the examination material
is established and verified.

In addition, 147.A.100 defines the facility requirement for examinations. You cannot take examinations from the remote computers (using URL) without complying with 147.A.100 'Facility requirements' as well. See also AMC 147.A.145(c).

As an example, the controlled environment can be considered the one where the Part-147 organisation's examiner/invigilator establishes and verifies the elements defined in 147.A.135(d) at an approved examination location.

The modern technologies such as:
— fingerprint identification,
— iris recognition,
— retinal scanning,
— video recording,
— video streaming,
may contribute in establishment and verification of the controlled environment requirements. In any case, such a procedure must be described in the MTOE and the competent authority shall take the responsibility of approving it.

6. Item 2.4.2 (12) – Can you ensure standardisation will be effective for NAA
Surveyors and organisations?
Standardisation will be sought using the existing processes. 66.B.135 will be audited the same way as all other competent authority procedures based on Section B 'Procedures for competent authorities'. In the European system the Member States are responsible for the implementation of the European aviation safety regulations. One of the roles of the Agency is to standardise the implementation of the rules within the Member States through standardisation inspections, standardisation meetings, workshops and similar events organised by the Agency.

7. Appendix III – The term "On-the-Job Training" has become very misleading. Our NAA continually remind us that within Part-147 and Part- 66, this doesn't exist; it is called "Work Experience". Can this be looked at to change the name to something that reflects what is carried out as training does not occur, only experience is attained?

OJT relates only to the endorsement of the first aircraft type in the Part-66 licence (sub)category.
OJT has been removed from Table 2 (Definition of training methods) in both Appendices I and III in order not to confuse it with the OJT required for the first aircraft type in the (sub)category. OJT, as currently defined in Part-66, cannot be used as a training method in basic knowledge and aircraft type training courses.

8. 147.A.100(f) – With the maximum number of students carrying out practical not exceeding 15, most new aircraft groups are set up for 16 and therefore 1 seat would be going to waste. How was the number reached and could it be increased to 16 to accommodate the new set up?

Your comment relates to the requirement for practical training in an instructor-led, face-to-face environment. 'Shall not exceed 15 students' is now derogated by 147.A.100(j) for distance learning performed at a location where the Part-147 organisation has no control over the environment where the student is located.

9. Appendix III Para 3 Aircraft Type Training Standard – Would this necessitate organisations to specify the hours used on each method in the TNA?

Only the instructor-centred training (traditional classroom training, teaching in a virtual classroom, distance learning synchronous) can be expressed in hours, student-centred methods cannot; they are rather expressed as 'completion of the content', irrespective of how long the student has spent mastering the content. Consequently, the training organisation will have to specify in the TNA the duration in hours for classroom teaching, teaching in a virtual classroom and for distance learning synchronous. For the student-centred methods in a theoretical training course, the organisation will have to specify in the TNA how it controls and records the 95% completion of the content by the student. Please refer also to the current AMC to Paragraph 3.1.(d) of Appendix III to Part-66, point h), stating the following:
'h) It is acceptable to differentiate between subjects which have to be led by an instructor and subjects which may be delivered through interactive simulation training devices and/or covered by self-paced elements. Overall time of the course will be allocated accordingly.'

10. AMC to Section 1 of Appendix III Para 7 – If we have scrapped components, for example an engine, will this be approved to carry out remove/install elements of the PTR?

Please see the definition of 'aircraft component' in Table 3.Point 7. you are referring to, relates to the use of actual aircraft components as an integral part of an MSTD or MTD.

11. Subpart C Approved Basic Training Course (f) and (g) – If the hours established in Appendix I may be amended, does this mean an approved course may be less than 2400 hours?

The content of point (g) in 147.A.200 'The approved basic training course' contains a provision that provides a derogation from point (f). This means that the number of hours as established in the modified Appendix I to Part-147 (Basic Training Course Duration) may be amended by the Part-147 organisation provided it can give proper justification of the proposed change, as described in the MTOE. This change applies only to the theoretical element of the basic training course in order to take benefit of the changes in training methods and teaching technologies. In practice, this means that a
part of the training course conducted as i.e. distance learning (student-centred, self-paced methods) may result in reduction or extension of the time spent for learning depending on the pace or need of each individual student. Hence, only the instructor-centred methods (classroom, virtual classroom, distance learning synchronous) can be expressed in hours, student-centred methods cannot; they are rather expressed as 'completion of the content', irrespective how long the student has spent mastering the content.

12. Regulatory Impact Assessment Para 4.4.1 – Is there any supporting evidence
to say that young people are more attracted to computer based learning with respect to a traditional academic course?

The new generation of maintenance staff is now on the market: young people are more attracted by learning with a computer rather than attending the traditional lecture. New generation of more computer-minded maintenance staff finds new teaching methods based on digital technology more appealing. As confirmed by some pedagogic studies, the blending of teaching methods improves the efficiency of the training, therefore, a positive impact is expected as the courses would become more attractive to the students, raising their

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motivation, engagement and learning abilities. However, this greatly depends on the instructional design of the methods/tools used and their complementarity in achieving the learning objectives. Direct interaction between the aircraft and the student becomes more and more part of the learning processes and should lead to different and more attractive teaching methods. This does not mean that an excellent experienced instructor may not motivate the students and raise their attention. On the contrary, this may be achieved using examples from his or her own experience, known in-service events, human factors issues, best practices, etc. This is the reason why the Agency recommends the blending of training methods and tools. As stated in the Terms of Reference RMT.0281 (MDM.082), simulation and e-learning have their limits. Poorly developed and implemented e-learning courses would result in poor training. Simulation and e-learning will probably never eliminate the need for well-qualified human instructors. Good teaching will probably always depend on effective instructors and courses. From a tutorial point of view, the use of technology and simulation in training is not intended to entirely replace teaching and substitute traditional classroom instruction. E-learning should not be viewed as a complete replacement of classroom instruction, but simply another tool that a maintenance training organisation and an instructor possess to maximise the efficiency of the training.

13. Regulatory Impact Assessment Para 4-4.6- Can you please outline what the specific safeguards are to ensure training standards will not be lowered?

As for traditional classroom training, there are no specific safeguards guaranteeing that the training standard will not be lowered. This greatly depends on the instructional design, the content of the course and its suitability for the learning objectives to be achieved. In general, if an e-learning course is developed with instructional content identical to that of classroom-based course, one can expect no significant differences in learning outcomes between courses. Blended learning, which incorporates both e-learning and face-to-face instruction, results in better learning than either synchronous or asynchronous delivery alone. E-learning is more effective than classroom instruction for teaching declarative knowledge, and it is equally effective for procedural knowledge. Regarding the safeguards, we would like to remind you about the existing safeguards in our system. To become certifying staff, a Part-147 graduate needs an additional 2 years of practical maintenance experience on operating aircraft, plus aircraft type training theoretical and practical element with completed examinations and assessments, plus OJT for the first aircraft type rating in the category (assessment included). Finally, before granting the certification authorisation, the Part-145 AMO shall perform the competence assessment. Competence does not distinguish between classical classroom training and new training methods/tools. Either you are competent or you are not.

14.Some guidance is needed regarding combined B1/B2 type courses companies are now running. Part-66 stipulates 150 hours for B1 and 100 hours for B2,if a combined course is run, can you indicate what the minimum time required would be as 250 hours would be excessive?

Part-66 Appendix III also stipulates the following: 'Similarly, tuition hours of differences courses or other training course combinations (such as combined B1/B2 courses), and in cases of theoretical type training courses below the figures given in point 3.1(c) above, these shall be justified to the competent authority by the training needs analysis as described above.'

Consequently, the TNA performed by the training organisation will reveal how many tuition hours will be needed for a combined B1/B2 course. It is common sense that the TNA for a

combined B1/B2 course will not result in a simple addition of the stipulated hours for single B1 and B2 course, as many subjects overlap in content and level in both licence categories.

EXECUTIVE SUMMARY	p. 1

comment	21 comment by: Delphine RYAN
	The final paragraph states, "the proposed changes are expected to fulfil industry's needs for efficient and cost-effective training of maintenance certifying staff, while maintaining or increasing the level of safety".
	There is no evidence that the changes proposed in this NPA will achieve these outcomes. Current basic or type training offered by Part-147 organisations can be very cost-prohibitive for the average person who would like to become a competent aircraft maintenance engineer. There is no evidence that once the changes proposed in this NPA are approved and published, approved training organisations will change their rates or make the training more readily available.
	There is no evidence that training quality will be definitely improved by the proposed changes. Although there are some good proposals regarding training tools and methods, the use and delivery of such tools and methods will vary greatly from organisation to organisation and real success could only be measured based on the quality and competence of the engineers graduating from these schools. Those approved training organisations more concerned with profits than producing real competent graduates may introduce the tools and the new training methods, and may even tick all the boxes, but there is no guarantee with regards to the quality of delivery and final competence of graduates.
	There is no evidence that these new methods will maintain and increase the level of safety. In fact, I believe there is a risk that it will produce quite the opposite since it is quite possible that some training organisations will profit by offering distance learning courses or similar arrangements without having to really make sure the students fully understand what they are studying. The test of any good training or education should be: "Can the student successfully apply and use the knowledge that he/she has learned?" With respect to the proposed changes in this NPA, perhaps the question to ask oneself should be along the lines of "Can it be demonstrated that, as a result of the proposed changes, approved Part-147 training organisations will now graduate aircraft maintenance engineers with improved knowledge and increased competence compared to the student engineers currently graduating from these same schools under the current regulations?"
	Did the working group for this NPA research the current status quo in the EU regarding Part-66 delivery by Part-147 training schools and organisations compared to several years ago? If so, could this research be made available please.
Justification: Speculative statements with no observable evidence.
response	Noted.
We understand your comments as challenging the whole concept of introducing new training methods and tools into maintenance staff training. It seems that you are convinced that the new methods and tools will not bring additional value or that they could even possibly decrease the level of competence of the maintenance staff. We appreciate your opinion, but

we would like you to note that RMT.0281 was introduced into the Agency's 4-year Rulemaking Programme following the Regulatory Impact Assessment (RIA) and the consultation with the Advisory Bodies (SSCC, RAG/TAG). The objectives of the rulemaking task were described in the Terms of Reference (ToR) and were also agreed by the Advisory Bodies.

Regarding your comment on the training quality — there have been always good and bad classroom training courses and this will probably not change in the future. Classroom training courses always rely on the quality of the instructor, not only on his or her knowledge and experience, but mainly on the ability of transferring knowledge to the students and on the way (methods, tools) the content is presented. New training methods/tools, especially blending them with classroom training, are expected to be more engaging and efficient, as many pedagogic studies confirm that the more interactive and different teaching methods are used, the better the course is at maintaining the student's attention and the more efficient the course is. In addition, it is recognised that the new generation of more computer-minded maintenance staff finds new training methods based on digital technology more appealing.

Regarding your comment about the 'final competence of the graduates', please note that our system has several layers of safety before a person becomes certifying staff. Demonstration of basic knowledge by examination is the first step, second step being the assessment during the practical element of basic training. Then, there are theoretical examinations during aircraft type training and practical assessment of the practical element of the type training. In addition, in the case of the first aircraft type in the (sub)category the student has to undergo the OJT and to pass successfully the OJT assessment. Finally, before issuing the certification authorisation to maintenance certifying staff, the Part-147 organisation has to perform the competence assessment.

1. Procedural information   p. 3-4

comment	22 comment by: Delphine RYAN
	I would like to know who will be part of the Review Group. Who determines who takes part in the Review Group and is the Review Group independent and unbiased? Is there assurance of this? Justification: A biased or prejudiced Review Group would not permit clear and transparent examinations of the facts and the responses to the NPA.
response	Noted. The composition of the NPA 2014-22 Review Group is published on the Agency's website under this link: http://www.easa.europa.eu/document-library/npa-review-groups/new-training-methods-and-new-teaching-technologies The objective of the Review Group was to review the comments received on the content of the NPA 2014-22 and to adapt the proposed text accordingly, but not to challenge the whole concept and the objectives defined by the ToR.

2. Explanatory Note — 2.1. Overview of the issues to be addressed	p. 5

comment	262 comment by: NHF Technical committee
	Comment to paragraph 2.1: NHF does not support training away from the approved training organization location. This is justified by difficulties to control the environment who the student has for learning, and to maintain control of proper attendance. NHF support clairification of the term "MBT"
response	Noted. In accordance with the new AMC 147.A.145(c), 'when carrying out distance training, the learning location is the responsibility of the student and need not to be controlled by the training organisation.' Regarding the 'proper attendance', please see AMC 147.A.200(f), point 2. For the definition of MBT, please refer to GM to Section 3. of Appendix I and Appendix III to Part-66, Table 2. Additional information is given in the footnote of Table 2. See also our reply to comment #363.

comment	364 comment by: DGAC France
	Bullet # 4 points out an issue that is intended to be addressed about the "lack of interactivity and do not sufficiently address the efficiency of the training course". As expressed in our general comment # 363, DGAC France has some doubts that these objectives will be met regarding certain training tools like "e-learning" or "asynchronous training".
response	Noted. Please see our reply to your comment #363. In addition, please note that it is the prerogative of the competent authority to assess and score the training course with the help of the assessment table provided in Appendix IX.

comment	389 comment by: ECOGAS/SVFB/SAMA
	We agree with the description of the issues
response	Noted.

2. Explanatory Note — 2.2. Objectives	p. 6

comment	3 comment by: IDRF e.V. (association of regional airports)
	Controlling what is inside the training documentations like in textbooks or presentations is an important issue. In this NPA it seems there is a strong effort to fully analyze the content of each little part of the training material. This will lead to strong delays in the certification

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process of the new training methods. If I compare the new training methods with the old style in Classroom teaching with teacher, the main difference I see is the missing person to explain certain things. But the Material represented is the same. Most of the classroom teachers make up their own presentations anyway. So there is no or very little control on what material is actually used in the classic classroom teaching. Now with the new methods, the aim is to assess the full content (even all included questions and rate them!). I think this is to much. We have to consider who is creating these new methods. The technical assessment is absolutely necessary as a programmer might not necessarily do the right job for this subject, but the training material will and should always be created by teachers and/or experts who would have otherwise trained in a classroom. They have already been checked before they became teachers and therefore should be allowed to produce training material which is not double and triple crosschecked.

The depth of assessing new materials leeds to overregulation.

response	Noted.
	The Agency does not agree with your statement that the proposed assessment method in Appendix IX leads to overregulation. In fact, the review of the comments received reveals that it is supported by the vast majority of the competent authorities and training organisations.
	It has always been the prerogative of the competent authority to assess all elements that constitute the training course, including the training course material, when approving a new training course. The purpose of the new Appendix IX is to establish the principles and criteria for the assessment of any course that includes MBT. The assessment table is intended to serve as an objective tool to support the competent authority in the approval process of training courses comprising MBT methods. Out of 20 items arranged in 4 categories, there is no item requiring a detailed assessment of the examination questions and rating the individual questions. However, before approving the course, the competent authority has to be satisfied that the training resources (methods, tools) are suitable for the intended course. If some item within each of the categories is not considered acceptable, an alternative method/tool shall be considered in order to enhance the suitability level, or a product update, which fulfils the required suitability level, shall be requested by the competent authority.

comment	23 comment by: Delphine RYAN
	It is suggested that Part-66 and Part-147 should be reviewed with regard to, amongst other things, the introduction of practical training on virtual training devices.
	According to the Oxford Dictionary of English, the word 'practical' means 'of or concerned with the actual doing or use of something rather than with theory and ideas'. It is therefore self-contradicting to state that one could achieve practical training on a virtual training device since regardless of how fancy or technologically advanced that virtual training device is, it could not replace practical training by virtue of definitions since the virtual training device is not the actual thing itself. I can appreciate that say, a flat planel trainer, is certainly very close to the real thing, and that kind of cockpit training for the maintenance engineer would be certainly beneficial, but as is quite rightly stated in the objectives 'bearing in mind that today all experience and practical training cannot be replaced by computers and virtual devices'.

	I feel it is important to ensure that adequate, real practical training takes place in enough quantity to really be assured that the student can indeed successfully apply the data, and one must be careful not to replace real practical training with too much virtual training devices. Justification: Since the work of an aircraft maintenance engineer is very much hands-on and requires an expert understanding and handling of tools and components as well as an understanding of aircraft systems, it is dubious that practical training could be replaced by a virtual device and still make competent engineers.
response	Noted. We agree with your definition of the aircraft maintenance engineer's work. To support this, please note the following provisions from the current rules: AMC 147.A200(d) – 'At least 30 % of the practical training element should be carried out in an actual maintenance working environment' AMC to paragraph 1(b) and 3.2 of Appendix III to Part-66: 'The practical training may include instruction in a classroom or in simulators but part of the practical training should be conducted in a real maintenance or manufacturer environment'. AMC to Section 6 of Appendix III to Part-66: '2. The OJT should include one-to-one supervision and should involve actual work task performance on aircraft/components, covering line and/or base maintenance tasks'. 3. 'The use of simulators for OJT should not be allowed'. The following new provisions have been introduced: GM to Section 3. Of Appendix I to Part-66: 'Simulation cannot be eligible as a sole training or assessment tool for basic hand skills such as wiring, welding, drilling, filing, wire locking, riveting, bonding or any other skill where competence may only be achievable by performing a hands-on activity.' AMC to Section 3. of Appendix III to Part-66: 'A complex or critical subject should not normally be taught solely through a student-centred method unless provisions are in place to verify the actual and progressive acquisition of knowledge of the student.' Table 1 in both GM to Section 3. of Appendix I and III to Part-66 depicts the suitability of each training method for practical elements of basic and aircraft type training. Table 3 in both GM to Section 3. of Appendix I and III to Part-66 defines the training tools. The codification used in Table 1 shows the eligibility of individual training tool for the usage in each training method. The recommendation of blending of training methods and tools is repeated several times within the proposed amendment of the rules. Consequently, we agree that the virtual training environment and virtual training devices cannot completely replace the practical training in a real maintenance environment and consider that there are enough provisions in place to prevent this from happening. Finally, the objective stated in Appendix III, point 3.2(a) and in 147.A.200(e) shall be achieved. See also AMC 147.A.210(b).
comment	173　　　　comment by: Dassault Aviation About the § " —Introduce, in addition to the traditional training methods, new training methods such as e- learning (or any digitalized tutor devices at the training facilities), Distance Learning or Web- Based Training (WBT) (at home or remote from the training organizations),

Multimedia-Based Training (MBT), Computer-Based ,Training (CBT), practical training on virtual training devices."

Dassault-Aviation suggest an addition of the term "Web-Based Training" defined in:
· Training Methods and Tools Reference – Basic Knowledge Training Table 2 under (Training Method - Page 21)
· Training Methods and Tools Reference – Aircraft Type Training Table 2 under (Training Method - Page 27)

response	Accepted. Web-based training (WBT) added in both Table 2.

comment	175 comment by: NFO Technical Commitee Practical training during type training is short enough to day and cannot be replaced by simulation devices. Introduction and some of the theoretical training can be replaced. A good instructor and hands on training will give the best learning and better economic result for the airline.
response	Noted. Please see our reply to comment #23.

comment	205 comment by: ATF - Awareness Training Fakoussa provide a definition of these new methods ? from flight instructors and examiners it is well known, that many of the prescribed tasks and their indepth definition do not lead to the required adherence of all those definitions and means. the quality of training finally lasts on the quality of the trainer using it. so a very basic definition is here absolutly sufficient.
response	Noted. The definitions of the training methods are given in Table 3 in GM to Section 3. of Appendix I and III to Part-66.

comment	390 comment by: ECOGAS/SVFB/SAMA We agree with the objectives under 2.2 ff
response	Noted.

2. Explanatory Note — 2.3. Summary of the Regulatory Impact Assessment (RIA)   p. 7

comment	206 comment by: ATF - Awareness Training Fakoussa AMC/GM are necessary because the quality of the trainers is not in the center of anybodies attention. with a top quality trainer training (needs to be designed first) there will be no

	more need to help such an expert with AMC/GM. that is a very fundamental question that should be adressed in RIA
response	Noted.

comment	263 comment by: NHF Technical committee
	NHF support option 1 for clarification of already specified terms.
response	Noted. Option 2 includes Option 1. The Working Group has elected Option 2 as the preferred policy option.

comment	377 comment by: SEAS
	Appendix VII to Part-66 "Assessment Method for MBT Systems" is proposed to be used by the Competent Authorities and may used by Training devices manufacturers adn software developers. Should be specified in the case that a Part-147 may use the Assessment Form: can be carried out by the Training Manager, Quality Manager or by a Trainer?
response	Noted. In NPA 2014-22, point 2.4.1 (2) states: 'Part-147 organisations may also benefit from this guidance when deciding which training devices or course software to procure'.

comment	391 comment by: ECOGAS/SVFB/SAMA
	We support Option no 2 but are not sure, as was explained to us, HF, FTS,EWIS are already allowed to be trained under part 145 by new tech methods. If this is the case then option 2 is right. If this is not the case, we support option 3, as all or part of the stated HF,FTS;EWIS can be trained by distance learning with the exception of the practical part as required.
response	Noted. The use of distance training for Part-145 courses (such HF, FTS, EWIS, etc) is allowed if accepted by the competent authority. Since currently there are no detailed provisions in Part-145 regarding the conduct and acceptance of such courses via distance learning and there are still different approaches present in the Member States, Option 3 has been proposed. The Working Group has finally elected Option 2 as the preferred policy option.

2. Explanatory Note — 2.4. Overview of the proposed amendments — 2.4.1. Overview of the proposed amendments in Part-66	p. 7-10

comment	1 comment by: Paul Richardson
	2.4.1 (8) Additional correction required in table paragraph 3.1.(e) Appendix III as follows: -Correction of the mistake in '49 Auxiliary Power Units (APUs)' (missing knowledge levels in helicopters turbine).
	A number of civil helicopter types now have APU's fitted: Sikorsky S-92A (GE CT7-8) and Agusta Westland AW189 (GE CT7) for example.
response	Not accepted.
	Your proposal goes beyond the objectives of RMT.0281 and will be discussed within the RMT.0255 'Miscellaneous in Part-66'. This applies also for the table in paragraph 3.2(b).

comment	4 comment by: Royal Danish Aeroclub
	We hava no comments.
response	Noted.

comment	135 comment by: Ryanair
	The "limit" of each method should be defined. This would allow the choice of complementary method to be beneficial.
	There are situations where two "limited" methods can be used in conjunction to counteract the undesirable constraints.
response	Not accepted.
	The determination of the limits of each training method was extensively discussed in the Working Group. Finally, it was decided not to include detailed limitations, as the fast development of the training methods and tools may make these limitations obsolete and unnecessary restrict the intended flexibility. The Agency's intention is to propose rules resistant and open to the fast development of the modern training methods, technologies and tools over the time, in order to avoid frequent amendments to adapt the rules to them, which might be necessary in case of prescriptive and excessively detailed requirements.
	We agree with your comment that two or more complementary training methods with limited suitability may support each other in achieving the learning objectives.

comment	136 comment by: Ryanair
	90% is a high relative number. Does it make a difference if the % content is increased due to new methods?
	Everyone learns and registers information differently and we need to have the flexibility for this. We should be more concerned with the assessment and examination than the additional % content.
response	Noted.

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comment	183 comment by: EAMTC

para 2.4.1 item (8) and (9)

The proposed change has nothing to do with New Teaching Methods / Technologies. As the proposed change is only noted for Type Training, it is suggested that it is better to conduct a proper review of Appendices I and III under the forthcoming RMT for the "Miscellaneous of Part 66".

E.g. It is unclear as to why mistakes should only be rectified in or changes introduced into Part-66 Appendix III.
If these points are considered important they should also be considered for Basic Training.
Examples:
Module 11A, sub-module 11.8(b) Portable Fire Extinguishers is at level 1 for B1.1
Module 11B, sub-module 11.8(b) Portable Fire Extinguishers is at level 3 for B1.2
Or:
There are no (modern) Piston engine aircraft with AC-Power. Why should inverters and transformers remain in Module 11B, sub-module 11.6?
Or:
Why is Nitrogen Generating Systems not included in Module 11A, sub-module 11.10?

Also

(9) Introduction of the new ATA chapter '47 Nitrogen Generation System' and associating knowledge levels to aeroplanes turbine and avionics.
Amendment of the content of the table for practical training in paragraph 3.2.(b) of Appendix III, by:
— Addition of crossed items to chapter '49 Auxiliary Power Units (APUs)' and '71 Power Plant'; and
— Introduction of the new ATA chapter '47 Nitrogen Generation System' and associating crossed items.

The proposed changes have nothing to do with New Teaching Methods / Technologies. It is suggested that it is better to conduct a proper review of Appendices I and III under the forthcoming RMT for the "Miscellaneous of Part 66".

response	Accepted.

The Agency commits to considering all other changes mentioned in your comment within RMT.0255 'Miscellaneous in Part-66'.

comment	184 comment by: EAMTC

2.4.1. Overview of the proposed amendments in Part-66
(2) ...
......Although it is mainly intended for the competent authorities, the assessment table may also be used by training .....are at a standardised quality level to ensure they will be approved by the competent authorities....etc

Comment: -

The guidance for Competent Authorities for assessing tools is a good idea. However, for standardisation, all Competent Authority inspectors should be equally trained / certified in order to try and have tools assessed on the same basis between Competent Authorities.

response	Accepted
	The competence of the persons assessing courses comprising MBT (as per Appendix IX) is the responsibility of the competent authorities and will be standardised by the Agency.

comment	185 comment by: EAMTC
	2.4.1. Overview of the proposed amendments in Part-66
	(7) Amendment of paragraph 3.1.(d) of Appendix III by replacing 'attendance' by 'physical and/or virtual classroom attendance' and 'hours of training' by 'hours of physical and/or virtual classroom training' in order to reflect the new training methods and tools The same benefit should apply to Appendix I (Basic Training). The following is suggested: -
	AMC.147.A.200(f)
	2. The minimum participation criteria for the trainee in order to meet the objectives of the course shall not be less than 90 % of the tuition hours or 95 % completion of the content in case of the student-centred methods in a theoretical training course. Additional training may be provided by the training organisation in order for the trainee to meet the minimum participation criteria. If the minimum participation defined for the course is not met, a certificate of recognition shall not be issued.
	OR
	j) Minimum theoretical training for the issue of a Certificate of Recognition shall be not less than:
	- 90 % of the tuition hours OR - 95% completion of the course content where student-centred methods are used
	The training organisation may provide additional training in order for the trainee to meet the minimum required.
	If the minimum is not met a Certificate of Recognition shall not be issued.

response	Accepted
	AMC.147.A.200(f) point 2. has been amended in line with your proposals.

comment	207 comment by: ATF - Awareness Training Fakoussa
	Subpart B, to require competent authorities to produce a procedure for the approval of Multimedia-Based Training (MBT) courses??

would that not require first a more scientific approval of these modern techniques and methods? the scientific world is in doubr about the effectiveness of modern CBT or MBT etc. So without detailed and indepth knowledge about the effects and longterm results to ask any person of any NAA to have a PROCEDURE for the approval migth be detrimental and will be in many cases.

some scientists talk in connection with some modern tools about mental dementia. in many glass cockpits that is already the case and becomes visible and audible on CVR and FDM.

So if it is meant to tick some formal boxes accprding to a table and that is the whole procedure we will be still there where we are now. no check for quality of training tools and longlasting effetivity possible.....

every software will be built according the requested points but where is the control of effect in that procedure? this NPA is required because before its introduction ther effect on quality and longlasting effectivity was not made. so this time it might be better to agree first on what tools and methods have which quality and effectivity for the given maintenance task, manual or mental task.

response	Noted. Please note that all paragraphs in Part-66 Section B require procedures to be produced by the competent authorities. We are confident that the competent authorities do not need scientists to write procedures for them on how to implement the rules. The competent authorities are certainly the most competent to describe in detail how they apply the requirements. In fact, MBT methods are already allowed by Appendix III, Section 3. Point 3.1(f), hence the competent authorities approving training courses based on MBT methods must already have these procedures in place. MBT methods are already used in maintenance training in the last 25 years with good results. Since any guidance on the use and approval of MBT methods is missing today, MBT is used mainly for level 1 and level 2 maintenance staff training; for level 3 training, it is only used in the classroom environment.

comment	264 comment by: NHF Technical committee Page 9, item (8) and (9) NHF support the correction of mistakes.
response	Noted

comment	265 comment by: NHF Technical committee Page 10, item (12) NHF does not support reduction of minimum duration of courses. This is justified because more effective training methods and new regulations should improve the total training 'level'. By reducing the duration, the 'level' may be set back to the setting as before introduction of more effective learning methods.
response	Noted. As per Appendix III, point 3.1.(d) and related AMC, the reduction of the course duration is already possible on the case-by-case basis appropriate to the aircraft type, if justified so by the TNA and approved by the competent authority. AMC to Paragraph 3.1(d), point 5.(h), gives the possibility to "allocate the overall time of the course accordingly" in the case "interactive simulation training devices and/or web-based elements" are used in the delivery of instructions.

As proposed in the NPA 2014-22, the Agency extends this possibility to the blending of different training methods and tools. This is supported by the two examples given in AMC to Paragraph 3.1(d), point 4. It is still up to the organisation to justify the reduction of the course duration based on the combination of different training methods and tools, and up to the competent authority to assess it and accept it or not. The levels of training, as described in Appendix III, point 2., were not amended.

comment	302 comment by: Ryanair Quality Manager The 'limit' of each method should be defined. This would allow the choice of complementary method to be beneficial. There are situations where two 'limited' methods can be used in conjunction to counteract the undesirable constraints.
response	Not accepted. It was not the intent of the Working Group to define the capabilities of each existing or future training technology, therefore the 'limits' cannot be indicated. Two limited methods may be used if they in combination fulfil the training objectives and cover the syllabus. Please see also our reply to your comment #135.

comment	324 comment by: Lufthansa Technical Training GmbH A standardised procedure for all competent authorities should be produced by the agency to avoid different standards and approaches and to establish a level playing field.
response	Not accepted. It is the prerogative of the competent authority to produce working procedures detailing how they comply with Part-66 requirements. The existence and the content of the procedures and the implementation of the requirements in the Member States are under the oversight of EASA standardisation team.

comment	365 comment by: DGAC France Through the 2 examples given, it could be understood that it is acceptable to send manuals or slide show presentations to students at their home for some parts of the modules (1,2,3,4,5,8,12,14,15) at level 1 and 2 and ask them to come to a 147 organism only for lecturing (one teacher in front of a group) modules part at level 3. In these cases, it could lead to encourage certain 147 organisms to propose low cost trainings (cheaper as less personnel would be contracted), weakening 147 organisms that are more safety oriented, which is not expected.
response	Noted. The competent authority is responsible for the approval of the course. This NPA does not change the situation explained by you at all. It is the understanding of the WG that level 3 cannot be completed without instructor involvement; for level 1 and 2, it is up to the competent authority to accept or not the proposed training course program.

The blending of training methods should lead to a more efficient, effective and safety-oriented training, while the learning objectives must be achieved in any case. The role of the competent authority is essential in reaching these goals.

comment	378 comment by: SEAS

The limit of each method should be defined clearly. This would allow the choice of complementary method to be beneficial.

There are situations where two "limited" methods can be used in conjunction to counteract the undesirable constraints

response	Not accepted.

It was not the intent of the Working Group to define the capabilities of each existing or future training technology, therefore the 'limits' cannot be indicated.
Two limited methods may be used if they in combination fulfil the training objectives and cover the syllabus.
Please see also our reply to your comments #135 and #302.

comment	392 comment by: ECOGAS/SVFB/SAMA

We support the text but propose to follow the recommendations
of EAMTC in respect of (8) for a extended review of Part 66 app I and III.

response	Noted

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2. Explanatory Note — 2.4. Overview of the proposed amendments — 2.4.2. Overview of the proposed amendments in Part-147	p. 10-12

comment	5 comment by: Qatar Aeronautical College

Page 12, Para (11) If we can propose a change to the number of hours how does this impact on the ratio of Theory/Practical. For example if we can use e-learning and Asynchronous Distance Learning for Level 2 (e.g. Modules 1,2,8) Modules we can reduce the contact hours for the theory but in doing so this will incur a change in our original Theory/Practical hours ratio. How do we comply with the 60/40 split?

response	Noted.

The third column of the duration table in Appendix I to Part-147 has been amended to express the theoretical training duration in hours. The number of theoretical training hours may be amended using distance learning. The amount of these hours is left to the discretion of the competent authority approving the course depending on the proposed training methods and the justification provided by the training organisation, based on the procedure included in the MTOE. This does not apply for the remaining hours dedicated for the practical training.

comment	24 comment by: Delphine RYAN

Attachment [#2](#)

I do not agree with the sentence in 2.4.2(2) which states, "In terms of safety significance, examination and assessment are considered more relevant than the training activity itself".

I believe that this statement is misleading and puts emphasis on the wrong area.

It is a well known fact within the civil aviation maintenance engineering community (in the UK) that multiple-choice questions and answer banks for the Part-66 basic knowledge modules examinations are readily available on the internet. It is possible for a would-be aircraft maintenance engineer to acquire these answer banks and learn by rote, and then proceed to taking the Part-66 module exams and pass, without ever really having studied the subject. I cannot comment about this with other EU countries but I suspect that the situation is not too dissimilar to that of the UK.

It is highly questionable that such method of 'learning' will benefit the student in the long-run or will ensure air safety. In fact, real, well structured competency-based training adjusted to each student's needs is far more likely to produce competence in the student engineer rather than an examination approach. Examinations only demonstrate that the student can remember; it does not necessarily confirm understanding. However, it is agreed that well-structured and properly carried out practical or thoretical assessments can be used to determine how well the student is understanding the materials being learned and whether or not he is able to apply the data and actually demonstrate competence. In the realm of aircraft maintenance engineering, air safety can only be achieved by excellent practical and theory training of, and understanding by, the aircraft maintenance engineers/technicians/mechanics.

There exist first-hand stories of Part-66 basic course students in classrooms where the module is being taught only to pass the exam questions rather than it being taught for understanding, with, for example, the occasional "cough" by the lecturer to indicate special attention should be placed on the subject being discussed as it is most likely going to be in the exam, and other such subterfuges.

It should be noted that IATA is promoting competency-based training for the training of aircraft maintenance engineers and some national aviation authorities outside the EU are following suit (such as Australia and Singapore).

Justification: (1) There should be a balance of quality training and instruction, theory and practical, which produce engineers who understand and can successfully apply what they have learned. Examinations and assessments should be a secondary measure to re-confirm that the students have understood and can successfully apply the data they have learned. Examinations and assessments alone cannot be used as safety criteria.

(2) for research purposes, I undertook in January 2014 a qualitative survey of 120 licensed aircraft engineers from a random sample of the aircraft engineering community (survey results summary attached to this comment). The survey applies to the UK and is a representative sample of the UK aircraft maintenance engineering community.

The results showed, amongst other results, that "58% of respondents considered that the training standards have declined through Part-147 colleges/training institutions which only teach would-be engineers to pass exams with little or no hand skills, rote learning of EASA Part 66 module exam answers (available on-line) in order to pass exams but not necessarily

understanding the basics, lack of real apprenticeships and even falsification of training achievements in some observed cases. This results in Part-147 organisations churning out graduates who have only data, but no experience."

Also, "55% of respondents considered MCQs (multiple choice questions) to be an ineffective way of gauging the student engineer's understanding of the data."

Perhaps it could be a productive and enlightening exercise for EASA to survey the aircraft maintenance engineering workforce across each EU country to find out what are the opinions, experiences and views of a representative sample of such workforce with respect to Part-66 training and Part-147 training organisations in their respective country. This survey could also be used to find out trends in the quality of the training and current delivery compared to several years ago. This exercise may help to bring to light weak areas that may not have been considered before and thus allow for something to be done about it for the better. Alernatively, such exercise may demonstrate that all is well and there is no need to change regulations.

response	Noted.
	The Agency thanks you for your efforts in proving that the current European training and examination system is not perfect. You are surely not alone in advocating for the competency-based training (CBT) in the training of aircraft maintenance staff. The introduction of CBT certainly deserves a wider debate and a dedicated rulemaking task, but in the context of RMT.0281 your comment goes far beyond the objectives of this task.

Regarding your comment on the sentence in 2.4.2 (2): The knowledge must be demonstrated by examination; skills and attitude must be demonstrated by assessment. It is clear that a good training is one of the main factors resulting in a successful pass of an examination and/or assessment. The other major factor is the learning. In the case of a bad training course, the student may compensate it with individual efforts invested in learning, resulting in a successful pass of the examination/assessment. On the other hand, there could be a high-quality training, but the student, for any reason, does not learn and consequently fails the examination/assessment. At the end, the learning objectives should be achieved. |

comment	30 comment by: Interactive Training Solutions
	2.4.2 (6) ..... 'third party providers' computer systems and services : the use of "cloud" solutions is already a part of the today's provider's offers and is expected to be even greaterin the next future.

The AMC 147.A.115(a) could be strict on the requirements expected but flexible about technical solutions |
| response | Not accepted.
The criteria are already given.
The content of the contract with the third party is under the responsibility of the organisation. By intention, the intention of the Working Group was to keep it flexible, bearing in mind future possible technology development.
This does not mean that for every internet connection there must be a contract for a Part-147 organisation. |

comment	31 comment by: Interactive Training Solutions
	2.4.2 (10).... In practice, this means that the training course and/or the knowledge examination may be conducted by logging on the organisation's server via a secured connection with an individual password from any place where the controlled environment, as defined in 147.A.135 (d), can be ensured.

A secured (as organisation's server), third party server should be allowed (cloud solution) |
| response | Accepted.

It is allowed. Please see the new AMC 147.A.145(c). |

comment	32 comment by: own name
	item 10, examination from locations which my be URL, How does a 147 organisation ensure that the student answered the question, it could be another already type rated engineer answering the questions, How can we be responsible for ensuring the level has been met by the student when we cnnot see that the student himself has answered the question.
Item 12. Who will provide the training to senior management staff and at what cost (the manufacturer possibly) who could ensure the training cost is so high that no one can get their staff approved for e training, and therefore the manufacturers would have the monopoly for all e training. Surely this gives them an unfair advantage which i believe it not inline with European law.
response	Noted.

The controlled environment is clearly defined in 147.A.135(d).

In addition, 147.A.100 defines the facility requirements for examinations. You cannot take examinations from the remote computers (using URL) without complying with 147.A.100 as well.
Regarding item 12: This is regulated by the market and is not within the scope of RMT.0281. |

comment	137 comment by: Ryanair
	This is a very good point.

With everyone learning in different ways and having preferences towards different training methods - the robustness needs to be built into the examinations and assessments. |
| response | Noted. |

comment	138 comment by: Ryanair
	There is a lot of focus on the training organisation providing "proper justification" but nothing about "proper refusal".

	Many competent authorities take different stances due to interpretation - justification to one competent authority may not be accepted by another.
response	Noted. The approval of the training organisation and training courses is the prerogative of the competent authority. Before granting the approval, the competent authority must be satisfied that all relevant requirements are met. The Agency standardises these processes through standardisation inspections of the NCAs.

comment	176 comment by: AIRBUS PARAGRAPH / SECTION THE COMMENT IS RELATED TO: page 11 2.4.2. Overview of the proposed amendments in Part-147, paragraph (8) PROPOSED TEXT / COMMENT: Replace " …that the student has the appropriate means of accessing such material …" by "... has the appropriate access to such material ...." RATIONALE / REASON / JUSTIFICATION: Provision of means for access in responsibility of trainees organisation.
response	Not Accepted. 'Means' is a broader term.

comment	182 comment by: AIRBUS PARAGRAPH / SECTION THE COMMENT IS RELATED TO: page 12 § 2.4.2, paragraph (10) PROPOSED TEXT / COMMENT: This paragraph should be split in 2 different § to protect this possibility of having 2 different contexts. Proposal: · Training course activities could be done from very "open" environment (e.g. at home / hotel / standard office / …), even though some requirements for effective learning need to be considered/proposed · Knowledge examination could require a more controlled environment (e.g. to make sure that the right person is running the exam …) RATIONALE / REASON / JUSTIFICATION:

	Reason: very likely the requirements on the "controlled environment" should not be the same for the training course activities and for the knowledge examination activities
response	Accepted. 'Controlled environment' applies only for examinations. The learning environment of the student is not controlled by the training organisation. In a virtual classroom (distance learning synchronous) certain requirements defined by the organisations should be fulfilled, but this should not be confused with the 'controlled environment' as defined for examinations. Examination can only be run: In a controlled environment (147.A.135(d)), and Complying with facility requirements (147.A.100).

comment	186 comment by: EAMTC 2.4.2. Overview of the proposed amendments in Part-147 There appears to be a mis-match in the NPA between the overview at 2.4.2 and the proposed change mentioned in section 3, Proposed Amendments. The overview quotes that the "Part-147 organization is responsible to ensure that the student has ….etc" Whilst the proposed amendment says - 147.A.120 Maintenance training material (a) … (b) … (c) Access to the maintenance training material relevant to basic or type training courses can be provided in any media (hard copy or electronic) provided the student has the appropriate means of accessing such material at any given time during the entire course duration. The proposed amendment is acceptable.
response	Noted. The proposed amendment is kept as acceptable.

comment	187 comment by: EAMTC 2.4.2. Overview of the proposed amendments in Part-147 (9) Introduction of a new point (d) in 147.A.135 'Examinations' in order to determine the examination to be performed in a controlled environment by the Part-147 organisation. Point (d) provides the definition of 'controlled environment' and stipulates the examination to be described in the MTOE. "Controlled environment", as proposed, would raise problems due to "guaranteeing". A more "workable" paragraph is suggested: - 147.A.135 Examinations (a) …

(b) ...

(c) ...

(d) The examination shall be performed in a controlled environment by a Part-147 organisation and described in the MTOE.

For examination purposes, a controlled environment is one in which the identity of the students is known and that the MTOE procedures are fully implemented for the conduct of the examination process. Further, the integrity of the examination and the security of the examination material shall be ensured.

response	Accepted. 'Guaranteed' removed from the final text.

comment	208 comment by: ATF - Awareness Training Fakoussa it might be better if EASA first defines all available methods and tools in one big table and describes their effectivity in the different areas of maintenance training. once the training areas are defined and selected and combined in that table it is much easier for the organisation, the trainer and the NAA to see if the formal criteria can be matched . and in a second and following process the organisation can test the chosen way and report to the NAA. Quote: "In terms of safety significance, examination and assessment are considered more relevant than the training activity itself." that is strange, the momentum picture of an assessment is of more importance for safetry than the training as such? the training is supposed to lay a longterm foundation to more safety and certsainly not the ticking of a box for formal usage only. peoples nervousity in tests, checks and exams are not beking taken into account at all in such an "assessment" by phrasing such a sentence-.
response	Noted. The intention of the Working Group was to keep it as open as possible and to allow flexibility. Regarding the second part of your comment, please see our reply to comment #24.

comment	266 comment by: NHF Technical committee Page 12 (11) NHF does not support reduction of minimum duration of courses. This is justified because more effetive training metods and new regulations should improve the total training "level". By reducing the duration, the "level" may be set back to the setting as before introduction of more effetive learning metods.
response	Noted. Regarding your comment about the reduction of the minimum duration of the training, please note that we did not propose any reduction of the training duration in basic training courses (Part-147 Appendix I). Instead, in the replaced point 147.A.200(g) we have introduced the following provision: '(g) Notwithstanding point (f), in order to benefit from changes in training technology and methods (theoretical training), the number of hours as established in Appendix I (Basic training course duration) may be amended provided that the syllabus content and schedule describe and justify the proposed change. A procedure shall be included in the MTOE to justify these changes.'

This means that a part of the training course conducted as distance learning (self-paced methods, student-centred methods) may result in reduction or extension of the time spent for learning depending on the pace or need of each individual student. Hence, only the instructor-centred training (traditional classroom training, teaching in a virtual classroom, distance learning synchronous) can be expressed in hours, student-centred methods cannot; they are rather expressed as 'completion of the content', irrespective of how long the student has spent mastering the content.

comment	366	comment by: DGAC France

Bullet points 9 and 10: DGAC is confused by this approach, as it allows for some flexibility that is opposite to what is told generally by EASA during standardisation visits about issues with "examination without training" process and the fact EASA has detected numerous cheating and fraud cases.

response	Noted.

Complying with the controlled environment as defined in 147.A.135(d) addresses this concern. Facility requirements as defined in 147.A.100 shall be observed as well. This is not in conflict with 'examination anti-fraud' measures introduced by the Agency.

comment	367	comment by: DGAC France

Bullet point 11: DGAC France does not support at all the concept of duration reduction for the moment until we have more feedbacks on the actual benefit of these changes (unless all training tools were already actually tested at large scale and enough representative positive feedback received)

response	Noted.

Please see our replies to comments #5, #261, #265 and #363.

comment	393	comment by: ECOGAS/SVFB/SAMA

(2) Personnel req: we support the differentiation in large and small, maybe the term complex non complex would be more adequate.

Non complex meaning that all processes can be controlled with the required quality by one person. Eventually the meaning of 50 students per year should be defined unambiguous. It could mean 50 any year taking the examination.

We have asked in other NPA's that monopolizing training into part 147 for the non mass transport aircraft sector, has a negative effect. Training of young staff to get into Small and Medium Enterprises has dramatically decreased.

The same is true with the exclusive possibility of examinations within Part 147.

There had been many systems of successful examinations before EASA on aircraft not involved in mass transport.

All examinations B3 or lower should not be limited to part 147 training facilites. For cost reasons and for more opportunites, examinations must be possible without the costly requirements of part 147 institutions as far as aircraft not involved in mass transport are concerned. (proportionate approach).

The FAA system where the question data base is transparent to all interested parties would solve many discrepancies of todays 32 * x differing question databases.

I am afraid this remarks are more in the interest of future trainees than in the interest of training institutions.

response	Noted. Selecting different examination approaches is not within the scope of this task. 'Larger' and 'smaller' maintenance training organisation are now clarified in AMC 147.A.105.

comment	394 comment by: ECOGAS/SVFB/SAMA competent authority side note to this term the more ECOGAS and their member enterprises are working with the term competent authority, the more we are in doubt. Not about specific competencies, but there is an ever growing disparity of how the 32 competent authorities implement. It seems all have their own way which creates surprising differences how thing are done, how much effort may be required for simple things. Our remark to this does include that it must be possible if something works simpler with one competent authority, may be she is the truly competent one and not the one who makes it more difficult ? (12) in this respect we support this and may remind that proportionality is a high EU principle to be seriously used at all times in oversight by all competent authorities.
response	Noted. In the European system the Member States are responsible for the implementation of the European aviation safety regulations. One of the roles of the Agency is to standardise the implementation of the rules within the Member States through standardisation inspections, standardisation meetings, workshops and similar events organised by the Agency.

3. Proposed amendments — 3.1. Draft Regulation (Draft EASA Opinion) — Part-66 — Annex III   p. 13

comment	25 comment by: Delphine RYAN

Although there are provisions for the competent authority to ensure compliance with Appendix I and III when approving courses based on MBT methods etc., there is no provision for the competent authority to be able to physically check the final product of the course, that is to say actually see that a graduate is competent and/or can demonstrate that he can apply and use the knowledge that he/she has learned. Examinations pass rates cannot demonstrate competence.

Justification: it is important to not forget that the goal of Part-147 approved maintenance training organisations is to honestly train individuals on a basic Part-66 approved course or type training course so that he/she can successfully apply the data that he/she has learned and be competent with it. That is their final product and there should be a way to measure and examine the product quality. This is not achieved by examinations.

response	Noted.
	Only the required knowledge level is demonstrated by examination, not the competence, which consists of knowledge, skills and attitude. There are several levels of competence assessment prior to become certifying staff. The Part-145 maintenance organisation is responsible for the competence of their certifying staff.

comment	40 comment by: FlightSafety International
	For 66.B.135 change to read: "The competent authority shall ensure the aircraft basic training and aircraft type training comply with Appendix I and Appendix III, respectively whenever approving courses based on MBT courses. Such procedure shall take into account the principles and criteria described in Appendix VII to this Annex (Part-66) 'Assessment method for Multimedia-Based Training (MBT) systems'." This is much more direct way to get the same meaning.
response	Accepted. 'Respectively' added.

comment	139 comment by: Ryanair
	The word either gives the impression that only one or other method can be used. The use of and/or provides more flexibility to use multiple methods.
response	Accepted. 'Respectively' added.

comment	169 comment by: M. de Klerk
	As rule 66.B.135 is only applicable to Appendix 1+3, this means that task training is fully excluded.

	I think that especially task training (limited number of task) is interessting to offer in e-learning systems. Because Task training can be offered by Part-145 and Part-147 approved organisations, is it the intend of EASA to allow new training techniques offered by Part-147 and not by Part-145's?
response	Accepted. A new AMC 147.A.300 is added as follows: AMC 147.A.300 Aircraft type/task training 5. For task training, MBT methods may be used.

comment	210 comment by: Luftfahrt-Bundesamt
	66.B.135: Each NAA will create its own procedure. How will standardisation be achieved? What will happen when one NAA approves e.g. an MBT and another NAA does not approve the identical MBT because the procedures differ in the requirements? Note: According to 66.1 the competent NAA is the one issuing the licence. This amendment should be moved to Part-147. If it stays in Part-66 mutual recognition is not possible. Better create an independent approval for MBTs etc. like the existing FSTD approval for pilots.
response	Not accepted. The resource itself does not bear an approval. It is the course that is approved. It is not the intention of the Agency to certify the products to be used in maintenance training. 66.B.135 cannot be moved to Part-147 as type training courses may get a one-off approval outside Part-147 organisations. Standardisation will be sought using the existing processes. 66.B.135 will be audited the same way as all other competent authority procedures based on Section B 'Procedures for competent authorities'.

comment	247 comment by: EAMTC
	66.B.135 Procedure for the approval of Multimedia-Based Training (MBT) courses When approving courses that use MBT methods, student-centred or blended training methods, in a physical or a virtual environment, the competent authority shall ensure that - aircraft basic training complies with Appendix I and - aircraft type training complies with Appendix III and that the principles and criteria described in Appendix VII to this Annex (Part-66) 'Assessment method for Multimedia-Based Training (MBT) systems' are used. OR The competent authority shall ensure the aircraft basic training and aircraft type training comply with Appendix I and Appendix III respectively whenever approving courses based on MBT methods, student-centred or blended training methods, either in a physical or a virtual environment. Such procedure shall take into account the principles and criteria described in Appendix VII to this Annex (Part-66) 'Assessment method for Multimedia-Based Training (MBT) systems'.

A further paragraph is suggested to cover Task Training (Category A) :

For aircraft task training, the competent authority shall take into account the principles and criteria described in Appendix VII to this Annex (Part-66) 'Assessment method for Multimedia-Based Training (MBT) systems'.

response	Accepted.

'Respectively' added.

A new AMC 147.A.300 is added as follows:
AMC 147.A.300 Aircraft type/task training
5. For task training, MBT methods may be used.

comment	250 comment by: AIRBUS DEFENCE & SPACE

The heading of new point 66.B.135 "Procedure for the approval of Multimedia-Based Training (MBT) courses" is considered not to be in line with the corresponding text, as no procedure for such approval is included in the text.

The use of the term "Multimedia-Based Training (MBT) courses" may drive to confusion, as there is no definition of such type of courses.

We suggest to:

harmonise the use of the terminology. MBT courses, MBT methods and MBT systems terms are used in the paragraph
re-write the heading:e.g. "Approval of courses using Multimedia-Based Training (MBT) systems"
review the text under the new point in accordance with the real purpose: e.g. " The competent authority shall ensure the aircraft basic training and aircraft type training comply with Appendix I and Appendix III whenever approving courses based on MBT systems,student-centred or blended training, either in a physical or a virtual environment.Such procedure shall take into account the principles and criteria described in Appendix VII to this Annex (Part-66) 'Assessment Method for Multimedia-Based Training (MBT) systems'

response	Partially accepted.

66.B.135 is in line with the logic of the whole Section B, Subpart B. 66.B.10(c) requires the NAA to establish documented procedures detailing how compliance with Part-66 is accomplished. The articles in Section B, Subpart B, provide the criteria for the procedures.

66.B.135 has been reworded and now partially reflects the meaning of your comment. 'MBT systems' is not used in the final text.

comment	267 comment by: NHF Technical committee

	66.B.135: A requirement for the NAA to perform a practical test of the course should be established. Only by this kind of test, could the NAA ensure that the MBT course is satisfying in accordance to set standards and regulations.
response	Not accepted. The current regulation requires the NCA to audit every aspect of the organisation's scope of approval. This includes a product delivery sample of MBT methods proposed by the organisation.

comment	303 comment by: Ryanair Quality Manager The word either gives the impression that only one or other method can be used. The use of and/or provides more flexibility to use multiple methods.
response	Accepted. 'Respectively' added.

3. Proposed amendments — 3.1. Draft Regulation (Draft EASA Opinion) — Part-66 — Annex III — Appendix I	p. 13

comment	41 comment by: FlightSafety International Consolodate 3. Basic Knowledge training standard paragraphs into a single paragraph for continuity of the information.
response	Not accepted. The format is acceptable as it is.

comment	140 comment by: Ryanair By defining MBT in this section and later defining it as one of many training methods - there is the chance some authorities will only allow MBT and not the other training methods. Suggest re-wording, example as follows: An appropriate training method, or combination of methods, (....) The training may be carried out in a physical and/or virtual environment and is subject to the acceptance of the competent authority approving the training course."
response	Partially accepted. 'or combination of methods' added.

comment	189 comment by: EAMTC Appendix I Basic knowledge requirements

3. Basic knowledge training standard
An appropriate training method shall be determined for the entire course or for each module or sub-module thereof, with regard to the scope and objectives of each training phase and in
consideration of the benefits and limits of the available training methods.

Multimedia-based Training (MBT) methods may be used in order to achieve the training objectives either in a physical or in a virtual controlled environment.

As all courses are subject to the approval of the competent authority there is no need to continually state it.

response	Accepted. The unnecessary part of the sentence has been removed.

comment	251 comment by: AIRBUS DEFENCE & SPACE The heading of paragraph "3. Basic Knowledge training standard" should be reviewed as no real detailed standard is defined in the text. The use of Multimedia Based Training method and Multimedia Based Training sytem terminology should be coherent along the NPA. We suggest to: re-write the heading:e.g. "Basic knowledge training methods" review the text under the new paragraph to make it more understandable:e.g. second paragraph "Subject to the acceptance of the competent authority approving the course, Multimedia Based Training (MBT) systems may be used, either in a physical or in a virtual controlled environment, in order to achieve the training objectives".
response	Partially accepted. The heading reworded into 'Basic training methods'. The unnecessary part of the sentence has been removed. The sentence is now simpler and more understandable.

comment	325 comment by: Lufthansa Technical Training GmbH The standard for determination should be based on a common basic-training-TNA.
response	Noted. The TNA for basic training is not suitable since Appendix I provides the syllabus for basic training and Part-147 Appendix I defines the minimum duration of the course. We agree that the determination of appropriate training methods should be done following an analysis conducted by the organisation. Such a method of determination should be described in the MTOE and acceptable to the competent authority. In accordance with 147.A.200(g), the determination of training methods will define which part of the course will eventually be

conducted in the classroom or virtual classroom (instructor-centred) and which part of the course will be held using self-paced (student-centred) methods.

comment	326 comment by: Lufthansa Technical Training GmbH

Any standard approved by a competent authority should be an AMC for any other approved 147 organisation.

response	Not accepted.

Your proposal is not within the scope of RMT.0281 and not in line with the current definition of AMC.

comment	395 comment by: ECOGAS/SVFB/SAMA

B3 should be possible off part 147, as the complexity of part 147 requirements makes it uneconomical.

This in turn leads to lack of B3 trained staff.

B3 should be cheap, flexible available, examinations under a trusted vigilante not necessarily within a 147.

response	Noted.

Your proposal is not within the scope of the task as defined by the Terms of Reference (ToR).

3. Proposed amendments — 3.1. Draft Regulation (Draft EASA Opinion) — Part-66 — Annex III — Appendix III	p. 14-16

comment	14 comment by: HOP!REGIONAL _ MTO

During training and examinations,some confusion can be induce as there are two chapters 27A in the Appendix III _ 3.1 (e) and 3.2 (b) tables.
It would be better to rename the 27A "Airframe Structure" with 57A.

response	Not accepted.

The objectives of RMT.0281 are defined in the ToR for the rulemaking task. Your proposal is outside the scope of the task

comment	42 comment by: FlightSafety International

Comment 1
1.(b)(iv)
Change to read: "Shall include demonstrations using equipment, components, other training devices
Maintenance Simulation Training Devices, Maintenance Training Devices, or aircraft."

This is more appropriate grammer.

response	Partially accepted.
	1.(b)(iv) reads now: 'Shall include demonstrations using equipment, components, Maintenance Simulation Training Devices (MSTD), Maintenance Training Devices (MTD), or aircraft.'

comment	43 comment by: FlightSafety International
	3. Aircraft type training standard Consolidate the 2nd and 3rd paragraph into a single paragraph for continuity of the information.
response	Not accepted.
	The Agency does not recognise the benefit of the proposed change.

comment	124 comment by: AgustaWestland Training Academy
	1.(b) (iv) Shall include demonstrations using a combination of equipment, components, Maintenance Simulation Training Devices, other Maintenance Training Devices or real aircraft
response	Partially accepted.
	'real' added.
	'a combination of' is not accepted, as it would introduce necessary restrictions. Without stating explicitly 'a combination of', the combination of equipment, components, etc. may still be used.

comment	141 comment by: Ryanair
	By defining MBT in this section and later defining it as one of many training methods - there is the chance some authorities will only allow MBT and not the other training methods.
	Suggest re-wording, example as follows:
	An appropriate training method, or combination of methods, (....)
	The training may be carried out in a physical and/or virtual environment and is subject to the acceptance of the competent authority approving the training course."
response	Partially accepted.
	'or combination of methods' added.

comment	143 comment by: Ryanair

This can cause restrictions in an aviation training environment that are not in a regular training environment.

Could this mean that, in a virtual scenario, if someone completes 95% of the content but does some of that outside the maximum number of hours - it cannot be counted?

In almost all school, university or short-term courses - the number of physical hours in a classroom are maxed at 8. Independent study, carried out by the student following this in either a virtual or physical environment is at the student's own discretion. If we are defining 90% attendance and 95% content - an additional restriction of the number hours is going to hinder certain students. It should be a recommendation.

Again - the assessment and examination is where the restrictions and robustness needs to be built.

| response | Partially accepted.

95% of the completion of the content in the case of student-centred method is contained in AMC to Paragraph 3.1(d) of Appendix III to Part-66, point 5.j) and repeated in AMC 147.A.200(f), point 2. AMC by definition are the so-called 'soft law'. Other means of compliance may be acceptable to the competent authorities.

By definition, self-paced learning methods (student-centred methods) imply that the student learns at his or her own pace and at the time of his or her preference. This may not be limited to the maximum hours of learning per day. |

| comment | 170   comment by: M. de Klerk

By definition (being the title) of Appendix III, aircraft Task training is excluded.
Can EASA clarify which training techniques are allowed in Task Training and what is not? It appears strange that all aspect of Part-66 training is covered except the less popular Task Training. Keeping in mind that the rule Part-66.B.135 is excluding task training.
It would make sense that also a TNA is required for aircraft task training, and task training is added to Appendix III.
This would result in the fact that Part-145's and Part-147's would have to create TNA's (inlcuding theory and practical element).
It would seem unfair that Part-147 must provide a theoretical training and examination and Part-145 organisations do not. By not solving this problem, the disbalance of offered T3 Task Trainings remains. |

| response | Partially accepted.

A new AMC 147.A.300 is added as follows:
AMC 147.A.300 Aircraft type/task training
5. For task training MBT, methods may be used.

The introduction of the requirement to produce the TNA for task training outside Part-147 organisations is outside the scope of RMT.0281.

Currently, the acceptance of the training methods to be used in task training is at the discretion of the competent authority approving such training. As the new AMC 147.A.300 is |

added, the Agency does not have any objection to the use of MBT in task training conducted by Part-145 organisations.

comment	177 comment by: AIRBUS

PARAGRAPH / SECTION THE COMMENT IS RELATED TO: page 15

3.1. Theoretical element
Paragraph (d) - Justification of course duration

PROPOSED TEXT / COMMENT:

Replace "… physical and/or virtual classroom …" by " … presential and / or distance learning attendance .."

RATIONALE / REASON / JUSTIFICATION:

Reason; "Virtual classroom" is an expression that might be obsolete in some years so the rule should be more general

response	Not accepted.

Physical attendance in the classroom and attendance in a virtual classroom (synchronous learning) should be measured in hours. Distance learning may also be asynchronous (student-centred), where the number of hours spent for learning is not relevant; instead, the completion of the content should be recorded.

The definition of virtual classroom (Table 3): 'A virtual, appropriate location where synchronous learning takes place'.

comment	195 comment by: EAMTC

Appendix III
Aircraft Type Training and Examination Standard - On-the-Job Training

1. General

(b) Practical training and assessment shall comply with the following requirements:

(iv) Shall include demonstrations using any or all of the following:
equipment
components
Maintenance Simulation Training Devices
other Maintenance Training Devices
aircraft

The above is recommended for clarity

response	Not accepted. The Agency considers the current text clear. The use of different training tools (combination of) should be beneficial. See also our reply to comment #124.

comment	196 comment by: EAMTC Appendix III Aircraft Type Training and Examination Standard - On-the-Job Training 3. Aircraft type training standard Although aircraft type training includes both theoretical and practical elements, courses can be approved for the theoretical element, the practical element or for a combination of both. An appropriate training method shall be determined for the entire course or for each part thereof, with regard to the scope and objectives of each training phase and in consideration of the benefits and limits of the available training methods. Multimedia-based Training (MBT) methods may be used in order to achieve the training objectives either in a physical or in a virtual controlled environment. As courses must be approved by the competent authority there is no purpose in re-stating it here. It will also remove the notion that the competent authority may be approving the tool itself rather than the course (of which the tool is an element of the method of course delivery).
response	Accepted.

comment	252 comment by: AIRBUS DEFENCE & SPACE The heading of paragraph "3.Aircraft type training standard" should be reviewed as no real detailed standard is defined in the text. The use of Multimedia Based Training method and Multimedia Based Training system terminology should be coherent along the NPA. We suggest to: re-write the heading: e.g. "Aircraft type training methods" review the text under the new paragraph to make it more understandable:e.g. for the third paragraph "Subject to the acceptance of the competent authority approving the course, Multimedia Based Training (MBT) systems may be used, either in a physical or in a virtual controlled environment, in order to achieve the training objectives".
response	Partially accepted.

First bullet — The current heading of paragraph '3. Aircraft type training standard' has not been changed by the amendments introduced with RMT.0281. In fact, there is no justification for its amendment, as the text included in this paragraph actually describes the standard.

Second bullet — The unnecessary part of the sentence has been removed. The sentence is now simpler and more understandable.

comment	253	comment by: AIRBUS DEFENCE & SPACE

"3. Aircraft type training standard". "3.1. Theoretical element" Paragraph "(e) Content" and "3.2 Practical Element" Paragrpah "(b) Content".

ATA 47 practical element requirements are incoherent with ATA 47 theoretical element requirements. The ATA47 theoretical element needs to be covered up to type rating training level 3 for B1 maintenance certifying staff and only up to type rating training level 2 for B2 maintenance certifying staff. However the practical element training required for both B1 and B2 is exactly the same.

We suggest to reduce the types of ATA47 practical tasks required for the B2 deleting the crosses from the TS and R/I types in the "3.2 Practical Element" Paragrpah "(b) Content" table (page 16).

response	Noted.

Please see our reply to your comment #255.

comment	255	comment by: AIRBUS DEFENCE & SPACE

ATA47 element has not been considered in the Risk Impact Assessment. The insertion of the ATA47 in the regulation will have an obvious impact on the Part 147 maintenance training organisations.

response	Accepted.

ATA 47 is an important aircraft system having an impact on fuel tank safety. It is currently excluded from the Part-66 aircraft type training syllabus. However, due to several comments received and due to the fact that such changes are not covered by the objectives stated in the ToR RMT.0281, the Agency has withdrawn its inclusion from the Opinion and commits to further discuss its introduction within RMT.0255 'Miscellaneous in Part-66'.

comment	268	comment by: NHF Technical committee

1.(b) (iv) NHF support the clarification, but the use of MTD should be limited, in favor of training on real aircraft of components. MTD will never be the same as real aircraft or components.

response	Not accepted.

The intention of the Working Group was to avoid restrictions and to allow flexibility.

comment	287	comment by: Virgin Atlantic

I have been working for Virgin Atlantic for just a short while and have been responsible for the development and creation of the Boeing 787-9 aircraft type training approval. The real issue is having the capability to deliver the Practical Training element with limited availability of an aircraft to carry out the required tasks. it is refreshing to see that with the availability of utilising new training technologies such as Multimedia Line Operated Scenarios, the students can complete tasks that would not be available on a live aircraft. I feel that we are now in a position to utilise this technology to compliment aircraft hands on activity and address some of the constraints placed upon airlines in having aircraft available for downtime.

response	Noted.

See also current AMC to paragraph 1(b) and 3.2 of Appendix III to Part-66:
'1. The practical training may include instruction in a classroom or in simulators but part of the practical training should be conducted in a real maintenance or manufacturer environment.'

comment	295	comment by: ATF - Awareness Training Fakoussa

"(iv) Shall include demonstrations using equipment, components, other training devices" despite the fact that this part was deleted... TO TRAIN AWARENESS ON THE JOB there are several possibilities which do NOT require special "maint. devices". the pure technical training rewuires naturally "maint. trng. dev." but as we all know, safety has little to do with TECHNICAL TRAINING: this requires a separation of the intention of the training.

response	Noted.

Appendix III to Part-66, point 1.(b)(iv) now reads: 'Shall include demonstrations using equipment, components, Maintenance Simulation Training Devices (MSTD), Maintenance Training Devices (MTD), or real aircraft'.

This provision puts the emphasis on training tools to be used in aircraft type training. Non-technical skills, attitude, behaviour, safety awareness, situational awareness and other human factors issues should also be observed, as described in the training objectives, during the training and in particular during the assessment.

comment	316	comment by: Ryanair Quality Manager

This can cause restrictions in an aviation training environment that are not in a regular training environment.
Could this mean that, in a virtual scenario, if someone completes 95% of the content but does some of that outside the maximum number of hours - it cannot be counted?
In almost all school, university or short-term courses - the number of physical hours in a classroom are maxed at 8. Independent study, carried out by the student following this in either a virtual or physical environment is at the student's own discretion. If we are defining 90% attendance and 95% content - an additional restriction of the number hours is going to hinder certain students. It should be a recommendation.

		Again - the assessment and examination is where the restrictions and robustness needs to be built.
response		Partially accepted. 95 % of the completion of the content in the case of student-centred method is contained in AMC to Paragraph 3.1(d) of Appendix III to Part-66, point 5.j) and repeated in AMC 147.A.200(f), point 2. AMC by definition are so-called soft law. Other means of compliance may be acceptable to the competent authorities. By definition, self-paced learning methods (student-centred methods) imply that the student learns at his or her own pace and at the time of his or her preference. This may not limit the maximum hours of learning per day.

comment	327	comment by: Lufthansa Technical Training GmbH The standard for determination should be based on a common type-training-TNA.
response		Noted. The TNA for basic training is not suitable since Appendix I provides the syllabus for basic training and Part-147 Appendix I defines the minimum duration of the course. We agree that the determination of appropriate training methods should be done following an analysis conducted by the organisation. Such a method of determination should be described in the MTOE and acceptable to the competent authority. In accordance with 147.A.200(g), the determination of training methods will define which part of the course will eventually be conducted in the classroom or virtual classroom (instructor-centred) and which part of the course will be held using self-paced (student-centred) methods.

comment	328	comment by: Lufthansa Technical Training GmbH Any standard approved by a competent authority should be an AMC for any other approved 147 organisation.
response		Not accepted. Your proposal is not within the scope of RMT.0281 and not in line with the current definition of AMC.

comment	329	comment by: Lufthansa Technical Training GmbH The table revision (e.g by this ATA topic) should be part of RMT0255 "Review of Part-66".
response		Accepted. The review of the tables in Appendix III to Part-66, points 3.1(e) and 3.2(b) will be performed within RMT.0255 'Miscellaneous in Part-66.'

3. Proposed amendments — 3.1. Draft Regulation (Draft EASA Opinion) — Part-66 — Annex III — Appendix VII	p. 16-18

comment	2 comment by: IDRF e.V. (association of regional airports)
	appendix VII, letter b) The Assessment of reliability and relevance: Seems to be an overmotivated regulation. Does a Textbook used in a Course with Classroom teaching get asessed in the same way? If you are using a online-presentation the Data presented are often taken from a textbook. Has this also to be assessed? Or is there a need to assess teacher with every classroom-unit also? letter c) Once again. I dont think it is bad to check on some of the training material available. But if you check the Content of Media Training now so thoroughly, it should be done the same way on normal text books available and used by flight or maintenance schools. The difference of course is that with the textbook you have a teacher explaining it. So control Yes, but how strong? letter e) passage ...the competent person... Rate each Question? A flight or maintenacne school running this kind of training will have a question database of at least 500 questions for several courses. To do them all will greatly extend the period of time required to certify such a course. This is not Required and not Economic. A Random selection of X% is the way to go.
response	Partially accepted. Table adapted to apply to any training. Part-147 already requires the organisations to ensure that the instructors and every training element are compliant with the rules and the competent authority shall satisfy itself by sampling. The title of the table changed into 'Assessment table for Multimedia-Based Training.' The title of Appendix IX changed to 'Assessment method for Multimedia-Based Training.' 'Questions' is related only to the questions contained in the assessment table, and not related to examination questions. The questions have been reviewed and transformed into statements. The scoring in the assessment table is introduced for standardisation purposes. Please see also the extensive reply to your comment #2.

comment	6 comment by: CAE

The competent person performing the assessment shall put himself/herself in the position of the student or the end-user and rate each question in the attached form on a rating scale from 0 to 5, whereas...

0 = None existent

1 = Exists but is considered unsatisfactory / inadequate in terms of supporting the criteria being assessed

2 = Exists but is considered to have some minor deficiencies in terms of supporting the criteria being assessed

3 = Exists and is considered satisfactory / adequate in terms of supporting the criteria being assessed

4 = Exists and is considered to be more than satisfactory / adequate in terms of supporting the criteria being assessed

5 = Exists and is considered a best practice in terms of supporting the criteria being assessed

The final grade shall be calculated according to the sum of scores.

The following principle shall should be observed: If only a single item within the categories is rated equal or below 3, an alternative learning process shall should be considered in order to enhance the quality level or a product update, which fulfils the required quality level, shall be requested.

response	Partially accepted. Definition of scores: 1 – Not acceptable. Does not meet the required criteria. 2 – Partially acceptable, but improvements needed to meet the required criteria. 3 – Acceptable. Meets the required criteria. 4 – Good. Meets the required criteria with enhancements made. 5 – Excellent. Exceeds the required criteria. 'only a single' deleted. The text reads now 'If one or more statements within the categories is rated below 3,…' Change from 'shall' to 'should' not accepted. 'Shall' is to be used in the implementing rules'; the use of 'should' is reserved for AMC and GM.

comment	16 comment by: Aeroservis The scoring approach is not flexible enough. Authorities would not be inclined to give a mark of 5 out of 5, because no organisation is deemed to be perfect. This means, essentially, that the highest total score could be no more than 80. Bearing in mind that the lowest score per question is fixed at 3, it means that the Authority practically has a choice of a scoring range from 4 (being equal to acceptable) to 3 (being basically unacceptable and with serious reservations) lower than 3, which essentially means fail, i.e. only three levels: acceptable, partially acceptable and fail. A much better approach would be to score each of the 20 questions out of 100, with a minimum of 60 for each one. The final total score could easily be adjusted back to a percentage.

The second, more fatal, reservation is that there are no objective criteria set from which the Authority might operate as basis. It is not acceptable to merely state that "objectivity is a difficult question" or that objectivity should not be specified because Authorities must have unfettered discretion to deal with "fast money one man shows". The Authority must act subject to delegated administrative power and no official should ever have the power (even tacitly) to level stricter requirements on particular organisations based on a subjective opinion that such organisations may show tendencies of "fast money one man shows". The actual objective is one of safety. A small organisation which generates a good profit is not necessarily synonymous with safety problems. The safety objective must be achieved by objective professional criteria, not by witch hunts. To the end of achieving objectivity which must transcend cultural differences, it is imperative that the terms in each of the 20 headings be more clearly defined and explained.

response	Noted.
	The proposed scoring method is not accepted. The scoring has been reviewed and adapted to better suit its purpose.
	The scoring improves objectivity. It is always the competent authority that issues the approval; hence, the competent authority must always be satisfied that the training organisation complies with the requirements and the authority's procedures.

comment	28 comment by: Delphine RYAN
	1. Point (c) Category 'pedagogical quality', Pedagogical formulation: this section emphasises the quality of simplification...
	I would like to see advocated the provision and utililisation of lists of acronyms as well as complete and comprehensive glossaries as part of study materials on offer by course providers.
	The aviation world and aircraft engineering/manufacturing industry is teeming with acronyms and abbreviations which are not always defined. One often sees a 'glossary' which has in fact a list of acronyms stating what the acronym stands for but not actually defining it.
	The word 'glossary' means 'an alphabetical list of words relating to a specific subject, text, or dialetc, with explanations; a brief dictionary.'
	A list of acronyms and a glossary are often used interchangeably which is incorrect.
	Justification: One of the many ways of improving the quality of simplification, is to ensure that the study materials provided contain clear lists of acronyms for all acronyms used in the text as well as ensuring that an adequate glossary is also provided which defines those acronyms and any other related technical words. In this fashion, the students are encouraged to look up any word or acronym they do not understand which in turn will help them better understand the information and gain clearer knowledge.
	2. Point (d) Category 'didactic quality'

An agency of the European Union

The syntax is incorrect. The first line reads, "Does the content refer to real problems that could possibly the student face in the 'real' world?

The words 'the student' are in the wrong place in the sentence. In correct English, the sentence should read:

"Does the content refer to real prolems that the student could possibly face in the 'real' world?"

Justification: language error

3. Page 18, Pedagogical strategies, point #12

The question reads: "Are there any problem-solving tasks fostering conductive learning?

There are no definitions of the word 'conductive' in the Oxford English Dictionary which matches the context of this sentence. This is a possible language error. The principal definition of conductive relates to having the property of conducting something (especially heat or electricity). Moreover, conductive education refers to a system of training for people with motor disorders, especially children. It is clear that the above question does not refer to this.

I am inclined to think that the question in point #12 was intended to read something like: " Are there any problem-solving tasks which are conducive to learning?"

Conducive in this case meaning "making a certain situation or outcome likely or possible".

Conductive and conducive are often readily confused and therefore I would recommend reviewing this sentence to ensure the correct intent and meaning is communicated with the right language.

However, if 'conductive learning' is indeed a specifically defined type of learning, then there should be a clear reference as to what it is and where it can be found explained, since current dictionaries do not seem to provide such a definition and a search on Google returns the definition of 'conductive education' above (type of training for motor disorders sufferers).

Justification: language error

response	Point 1: Noted.
	The list of acronyms, list of abbreviations, glossaries, etc, is used by many training organisations for years and handed over to the students at the beginning of the course as a supplement to the training material. Similarly, most of the CBT courses already contain such lists and glossaries. There is no reason to doubt that the e-learning training course developers will not use the similar logic and implement such list of abbreviations and glossaries into their software solutions.
	Point 2: Accepted. Language error corrected. In addition, the question has been transformed into statement.

Point 3: Partially accepted. The proposed question has been completely reworded and transformed into statement. The term 'conductive learning' is not used in the new developed statement, which now reads: 'Problem-solving tasks encourage learning.'

comment	44 comment by: FlightSafety International Change: "The assessment criteria shall comprise the evaluation, teaching, monitoring and students' support, as well as exercises and tests." To: "The following defines how MBT systems will be evaluated for acceptance by the competent authority. The assessment shall comprise the following sections:" This needs to be rewritten for more clarity.
response	Partially accepted. The text adapted in order to enhance the clarity about the purpose and intention of this Appendix. The purpose of Appendix IX is now clearly stated.

comment	45 comment by: FlightSafety International Delete the section (a) Product identification and its definition. This is not necessary in order to understand how to populate the top portion of the evaluation table.
response	Partially accepted. Product identification section and its definition have been simplified.

comment	46 comment by: FlightSafety International Change the section (b) "Information reliability — Is the information reliable, in compliance with current regulation, accurate and error free? Is information security guaranteed and is the information sustainable over time?" To: "Information reliability - The information is secure, sustainable, and relatively free of errors. The information is compliant with current regulatory requirements." These are intended to be defintions, not questions. This is the reason for the suggested change in language.
response	Accepted. Questions transformed into statements and wording simplified to improve clarity.

comment	47 comment by: FlightSafety International Change: "Information relevance — Is the information workable and usable? Does the information support the student in gaining learning objectives? "

	To: "Information relevance - The information is relevant to the training objectives defined for the course." This is intended to be a definition and not questions.
response	Accepted. Questions transformed into statements and wording simplified to improve clarity. Information relevance – 'The information is relevant to the learning objectives defined for the course. It supports the student in achieving the learning objectives.'
comment	48 comment by: FlightSafety International Change: "Does the system support the student in order to construct the required knowledge and is there an emphasis in active and student-centred activities which promote the development of knowledge and skills? The main criteria for each product are related to three aspects" To: "The system has emphasis on active and student-centered activities which promote development of required knowledge and skills. The main criteria for each product are related to two aspects" This is intended to be a definition and not a question. Also suggest the change from three aspects to two. I have a comment which recommends the removal of pedagogical formulation as the questions in the table have comments which lead to the complete removal of this definition.
response	Accepted. Question transformed into statement and wording simplified to improve clarity. 'The system emphasises activities which promote development of required knowledge and skills'.
comment	49 comment by: FlightSafety International Delete the section "Pedagogical formulation" and its definition. This section is too similar to the other two sections. In the evaluation table, i have commented on questions 3 and 4. Question 3 is too subjective and questions 4 is basically the same as question 5. With those other comments, there is no need to define this section if the other comments are accepted as it would completely remove this section from the assessment form.
response	Partially accepted. Section 'Pedagogical formulation' merged with section 'Pedagogical construction'. Questions transformed into statements and reworded. Statement No.3 clarified.
comment	50 comment by: FlightSafety International

	Change: "Assessment methods, such as exercises and tests, shall be implemented."
	To: "Assessment Methods - methods to measure the successful achievement of training objectives are implemented."
response	Partially accepted.
	Student assessment methods — methods to measure the successful achievement of training objectives are implemented. 'Student' added.
	Student assessment methods is the fourth element in category 'pedagogical quality'.

comment	51 comment by: FlightSafety International
	Change header from: "Assessment table of the quality of a digital learning resource"
	To: "Assessment table of Multimedia-Based Training System"
	This change is consistent with the language used throughout the rest of the changes.
response	Partially accepted.
	Header title changed into 'Assessment table for Multimedia-Based Training'.

comment	52 comment by: FlightSafety International
	Change "Name:" To "Evaluator Name:"
	This is to make it clear on who's name should be in the forms header section.
response	Not accepted. 'Name' refers to the person who is responsible for production of the resource. This is already explained in Appendix IX.

comment	53 comment by: FlightSafety International
	Eliminate "Author:" from the header section as it is not relevant to the evaluation of the system. Also, there is most likely going to many authors.
response	Accepted.

comment	55 comment by: FlightSafety International
	Question 1:
	Change to: "1. Is the information reliable?"
	Recommend deleting the word "presented" as it can be limiting.

response	Partially accepted.
	Question transformed into statement 'The information is reliable'.

comment	56 comment by: FlightSafety International
	Question 2:
	Change to: "2. Is the information relevant?"
	Recommend deleting the word "presented" as it can be limiting.
response	Partially accepted.
	Question transformed into statement 'The information is relevant'.

comment	57 comment by: FlightSafety International
	Recommend question 3 be deleted as it is too subjective and there is no good way to rewrite it
response	Not accepted.
	Question transformed into statement 'The quality of the resource simplification is adequate'.

comment	58 comment by: FlightSafety International
	Recommend deleting question 4 as it is basically the same as question 5.
response	Not accepted.
	Question transformed into statement 'The educational resource presents appropriate number of overviews and summaries.'

comment	59 comment by: FlightSafety International
	Based on the recommendation to Delete question 3 (too subjective) and Delete question 4 (same as question 5), recommend the section "Pedagogical Formulation" be deleted from the form.
response	Not accepted.

comment	60 comment by: FlightSafety International
	Recommed deleting question 9 - The MBT may be a self paced system where no instructor interface is necessary or desired and therefore this questions should be deleted.
response	Not accepted.
	Question transformed into statement 'The resource creates interactions between student and instructor.'

comment	65 comment by: FlightSafety International
	For question 13:
	Option 1: Deleted question: The MBT may be a self-paced system where no student to student interaction is necessary or desired.
	Option 2: Rewrite to: "Are interactions between students present and active, if applicable?"
response	Not accepted. Question transformed into statement 'The resource enables communication between students.'

comment	66 comment by: FlightSafety International
	For question 12:
	Option 1: Deleted question: There may be courses developed to meet lessor mastery levels which are not conducive for problem-solving tasks and therefore this question should be eliminated.
	Option 2: Rewrite to: "Are problem-solving tasks fostering conductive learning, if applicable?"
response	Partially accepted.
	Question transformed into statement and reworded for clarity based on several comments from other commenters.
	It reads now 'Problem-solving tasks encourage learning'.

comment	67 comment by: FlightSafety International
	Recommend rewriting question 11 to: "Is student-centered learning present?"
	This is a clearer way to write the question.
response	Partially accepted.
	Question transformed to statement and reworded for clarity 'Student-centred learning is present'.

comment	68 comment by: FlightSafety International
	Recommend question 10 be changed to: "Is the active engagement of the student fostered within the tool?"
	This is a clearer way to ask the question.

response	Partially accepted.
	Question transformed to statement and reworded for clarity 'Active engagement of the student is fostered'.

comment	69 comment by: FlightSafety International
	Recommed deleting question 9 - The MBT may be a self paced system where no instructor interface is necessary or desired and therefore this questions should be deleted.
response	Not accepted.
	Question transformed into statement for clarity 'The resource creates interactions between student and instructor'.

comment	70 comment by: FlightSafety International
	Question 16:
	Change to: "Is training content based on real world activities?"
response	Partially accepted.
	Question transformed to statement and reworded for clarity 'The content refers to real situations that the student could possibly face in an actual maintenance environment'.

comment	71 comment by: FlightSafety International
	Question 19:
	Change to: "Are navigation methods clear, consistent, and intuitive?"
response	Partially accepted.
	Question transformed to statement and reworded for clarity 'Navigation methods are clear, consistent and intuitive'.

comment	72 comment by: FlightSafety International
	Change the column "Score (0-5)" To: "(Yes or No)"
	The scoring system is too subjective and no definition of what consititues each of the values is provided. Also, the evaluation of MBTs should be compliant/noncompliant, hence Yes/No recommendation. If a system is given a low rating on a required element, it should not be allowed to be used but in the current system, it is possible for this to occur. I will be putting an additional comment to recommend the deleting of all the value definitions.
response	Partially accepted.

	The scoring method has been further refined and changed to scores 1-5.	
comment	73 comment by: FlightSafety International Change "Final Score:" to "Final Evaluation:". This is based on the comment to eliminate the value scales in the form to a yes/no for compliant/non-compliant. If all questions are answered with yes or n/a, then the tool should be accepted for use.	
response	Not accepted. The scores are only a part of the final evaluation.	
comment	125 comment by: AgustaWestland Training Academy Table Title - Assessment table of the quality of a digital learning resource MBT System	
response	Partially accepted. Title changed to 'Assessment table for Multimedia-Based Training'.	
comment	142 comment by: Ryanair Contains grammatical errors.	
response	Accepted. The grammatical errors have been corrected.	
comment	144 comment by: Ryanair This should be reworded as if just one 3 is given - an alternative learning method needs to be considered. If the scale is 0 - 5; 3 is on the positive side of the scale and should not have negative effects.	
response	Partially accepted. The scoring method has been changed and now it complies with your proposal. 3 is now neutral and does not require alternative methods to be considered. The scoring has been refined. The scores range now from 1 to 5.	
comment	145 comment by: Ryanair Research has been done which defines how questionnaires and scales should be defined. [Krosnick // Maritz //Sudman & Bradman]. The most straight forward explanation is at the following url : http://www.quirks.com/articles/a2004/20041004.aspx	

The assessment table to the left should be a "balanced bi-polar" style scale, meaning it should have no predetermination of the outcome. Bi-Polar scales "include a middle category unless there are persuasive reasons not to do so"

The scale is not defined in this questionnaire but anything up to and including 3 results in a negative outcome. A scale should always be defined and there should be a neutral point.

response	Partially accepted. The scoring method has been changed and now it complies with your proposal. 3 is now neutral and does not require alternative methods to be considered. The scale has been defined. The scores range from 1 to 5.

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comment	146 comment by: Ryanair

Undefined Scale will result in subjective marking.

As a natural inclination, people will tend to shy away from extremes (0 or 5). This leaves scores 1 - 4; without a definition of what each of these scores mean the result will be subjective.

Propose defining them, for instance:
1 - Does not meet training requirements : level 1 findings : issues to be addressed immediately
2 - Does not fully meet training requirements : level 2 findings - issues to be addressed by x date
3 - Meets Training Requirements : minor observations
4 - Meets Training Requirements with enhancements made
5 - Exceeds Training Requirements

response	Partially accepted. The scoring method has been changed and now it complies with your proposal. 3 is neutral and does not require alternative methods to be considered. The scale has been defined. The definition of scores added. Definition of scores: 1 – Not acceptable. Does not meet the required criteria. 2 – Partially acceptable, but improvements needed to meet the required criteria. 3 – Acceptable. Meets the required criteria. 4 – Good. Meets the required criteria with enhancements made. 5 – Excellent. Exceeds the required criteria.

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comment	198 comment by: EAMTC

Attachment #3

A number of simplifications are suggested: -

1. Appendix VII Assessment method for Multimedia-Based Training (MBT) systems

2. (b) Category 'academic quality'

This section shall evaluate the quality of the information presented in the digital learning resource.

Two essential criteria shall be assessed:

Information reliability — Is the information reliable, in compliance with current regulation, accurate and error free? Is information security guaranteed and is the information sustainable over time?

Information relevance — Is the information relevant to the subject and usable? Does the information support the student to achieve the learning objectives?

It is incongruous to use "relevance" with "workable". It may be more relevant to refer to "relevance" in the following text. Also, the second sentence is changed to make it easier to understand.

3. (c) Category 'pedagogical quality'

Does the system support the student in order to construct the required knowledge? Are there active and student-centred activities to help the student to achieve the desired knowledge and skills?

A simpler form of wording is proposed.

4. (d) Category 'didactic quality'

Does the content refer to problems that the student could face in the 'real' world?

Does the content address the training objectives for the target audience?

A simpler form of wording is proposed.

5. (e) Category 'technical quality'

Technological aspects — Multimedia techniques aim to combine and exploit the capacities of any new technologies in education to enhance the knowledge transfer. Therefore, the system shall favour the use of animations, simulations or any other interactive elements. For the assessment process, each of above-mentioned aspects shall be dealt with separately.

The competent person performing the assessment shall put himself/herself in the position of the student or the end-user and rate each question in the attached form on a rating scale from 0 to 2.

Any item scoring 0 disqualifies the product. It must be re-worked or improved.

A score of 1 indicates that the product is satisfactory but an additional alternative learning process(es) must be used to support and fully address the area(s) in which the score of 1 is allocated

A score of 2 means that the product may be used as it is.

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Without prejudicing the outcome of the assessment, "Not Applicable", N/A, may be used where appropriate and / or where the competent person performing the assessment cannot or is unable to apply a mark to a given item.

6. The scores should be simplified to 0 to 2 with guidance provided.

The text following the table in the NPA should be deleted in the light of the above.

A simplified version of the form is suggested (attached)

The tool / resource itself does not bear an approval. It is the course that is approved. How such tools / resources are used within a course is part of the course approval.

The table is for classroom and distance learning

response	1. Partially accepted.

1. Partially accepted.

New title: 'Assessment table for Multimedia-Based Training'

2. Partially accepted.

New text: Information reliability — The information is reliable, current, and relatively free of errors. The information is compliant with current regulatory requirements.
Information relevance — The information is relevant to the learning objectives defined for the course. It supports the student in achieving the learning objectives.

3. Accepted.

Changed into:
'The system emphasises activities which promote development of required knowledge and skills.'

4. Accepted.

Changed into:
'The content refers to real situations that the student could possibly face in an actual maintenance environment. The content is adequate to meet the learning objectives.'

5. Not accepted.

Scoring scale changed to '1-5'.

6. Partially accepted.

A clarification is included at the beginning of Appendix IX a to explain the purpose of the Appendix. It reads:

'The purpose of this Appendix is to establish the principles and criteria for the assessment of any course that includes MBT. It may be used for the assessment of other training courses, as appropriate. The assessment table is intended to serve as an objective tool to support the competent authority in the approval process of training courses comprising MBT methods. The assessment criteria shall comprise the evaluation, teaching, monitoring and students' support, as well as exercises and tests.'

Your proposal becomes redundant now, as within the new introduced text it is further emphasised that it is the course (and not the tool or resource itself) to be approved.

comment	254 comment by: AIRBUS DEFENCE & SPACE

New Appendix VII.

We suggest either to use a common term for all that is meant to be the same or to define the different terms: e.g. Multimedia Based Training system, digital educational resource, digital learning resource.

The criteria to assess information reliability is considered too subjective. We also propose to differentiate information "security" as a separate aspect that has no relation with reliability.

Limits between "pedagogical formulation" and "pedagogical construction" are considered unclear. We suggest considering only one matter under those two.

References to "constructivism" as a theory for the conception of training and education should be avoided in Part 66, or otherwise clearly explained in the context of aircraft maintenance training. The scope of constructivism is too wide to be referenced for the specific evaluation of MBT systems as a mean to deliver training content. Constructivism seems more appropriate to address the suitability of a complete training system rather than to evaluate one specific type of training media.

response	Accepted.

1st paragraph: Accepted
2nd paragraph: Accepted – Questions transformed into simpler statements: Information reliability – The information is reliable, current and relatively free from errors. The information is compliant with current regulatory requirements.
3rd paragraph: Accepted – pedagogical formulation and pedagogical construction merged
4th paragraph: Accepted – 'constructivism' removed to avoid misunderstandings.

comment	256 comment by: AIRBUS DEFENCE & SPACE

Related to the sentence "For the assessment process, each of the above-mentioned aspects shall be dealt with separately".

We suggest to avoid this type of cross-reference in the NPA and to clearly list the aspects in one sentence.

response	Accepted.

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'above-mentioned' removed. The text now reads:
'For the assessment process, each of the aspects shall be dealt with separately.'

comment	257	comment by: AIRBUS DEFENCE & SPACE

Assessment table of the quality of a digital learning resource.

We consider that the assessment table include questions too open that may drive to different ratings depending on questions' interpretation. In other words, the assessment may be too subjective.

It would be appreciated to have a guidance material to interpret in a standardised manner the scoring (0-5).Many questions, as formulated in the proposed table, would drive to a "Yes"/"No" answer, and therefore to a 0 or 5 score, which is considered not convenient.

We consider that the questions should be formulated in a simpler language.

response	Accepted.

The questions transformed to statements with simpler language.
Scoring refined and changed to '1-5'.
The scores are now defined in a standardised manner.

Definition of scores:
1 – Not acceptable. Does not meet the required criteria.
2 – Partially acceptable, but improvements needed to meet the required criteria.
3 – Acceptable. Meets the required criteria.
4 – Good. Meets the required criteria with enhancements made.
5 – Excellent. Exceeds the required criteria.

comment	258	comment by: AIRBUS DEFENCE & SPACE

Assessment table of the quality of a digital learning resource.

We have issues with some definitions and ambiguity of questions:

Question 1: "reliable"
Question 2:"relevant"
Question 3: What is "resource simplification"
Question 5 and 6: should be in line with details provided in (c) Category 'pedagogical quality', also including specific questions as per the meaning provided under the text explaining what is pedagogical "construction"
Question 8: What type of stimuli? We suggest to be more specific.
Question 10: What is meant by "active mental engagement"?
Question 18: It is addressing "Browsing" instead of "Design"
Questions 19 and 20 are apparently the same. Please,clarify the difference between these questions.

| response | Partially accepted.

The questions have been revised and transformed into statements using simpler language. |

| comment | 259   comment by: AIRBUS DEFENCE & SPACE

Assessment table of the quality of a digital learning resource.

If "constructivism" is to be called at the time of building the assessment table, its structure should be reviewed to consider:

The individual construction of knowledge/skills/attitudes by the student
The collective construction of knowledge/skills/attitudes by the group of students and the instructors.
The incorporation of socio-cultural and linguistic aspects to the training activities
The balance or unbalance in the relations between the three components of the "interactive triangle":trainee-content-instructor. This being critical when designing,planning and executing teaching and learning activities in the context of an specialized (aeronautical) training centre. |

| response | Partially accepted.

The term 'constructivism' has been removed. |

| comment | 260   comment by: AIRBUS DEFENCE & SPACE

Assessment table of the quality of a digital learning resource.

We have concerns with some aspects in the assessment table that may be "not applicable" to the MBT system under evaluation. How to manage the total scoring when that "non applicability" happens? |

| response | Partially accepted.

Questions revised and transformed into statements. The statements are now applicable to all training resources to be assessed.

If one or more statements within the categories is rated below 3, an alternative learning process shall be considered in order to enhance the suitability level, or a product update, which fulfils the required suitability level, shall be requested. |

| comment | 280   comment by: AIRBUS DEFENCE & SPACE

Assessment table of the quality of a digital learning resource.

We suggest not to talk about "Quality" level for the assessment of the system as such quality may be dependant of the context (e.g. type of course, environment,use of the system by instructor) in which training is delivered using the assessed system. |

	We suggest to consider other than "quality" when referring to final rating, and to put it in relation with the "suitability level" to conduct instructor-centred,student-centred or blended training.
response	Accepted. 'Quality' replaced with 'suitability'. The final score relates to the suitability of the training resources.

comment	294 comment by: Airbus Helicopters Training Academy Assessment category 'academic quality' (Information reliability and Information relevance) must include a reference to OEM documentation to guarantee an appropriate standard of the MBT. Suggestion: MBT contents must be based on effective OEM documentation.
response	Not accepted. The content requirements for type training are defined in Part-66 Appendix III. In addition, Appendix III to Part-66, points 1.(a)(ii) and 1.(b)(ii), refer to OSD in accordance with Regulation (EU) No 748/2012.

comment	305 comment by: Ryanair Quality Manager This should be reworded as if just one 3 is given - an alternative learning method needs to be considered. If the scale is 0 - 5; 3 is on the positive side of the scale and should not have negative effects.
response	Accepted. The scoring method has been changed and now it complies with your proposal. 3 is neutral and does not require alternative methods to be considered. The scale ranges from 1 to 5. The scale has been defined. Definition of scores: 1 – Not acceptable. Does not meet the required criteria. 2 – Partially acceptable, but improvements needed to meet the required criteria. 3 – Acceptable. Meets the required criteria. 4 – Good. Meets the required criteria with enhancements made. 5 – Excellent. Exceeds the required criteria.

comment	306 comment by: Ryanair Quality Manager The scale is not defined in this questionnaire but anything up to and including 3 results in a negative outcome. A scale should always be defined and there should be a neutral point. Undefined Scale will result in subjective marking.

As a natural inclination, people will tend to shy away from extremes (0 or 5). This leaves scores 1 - 4; without a definition of what each of these scores mean the result will be subjective.

Propose defining them, for instance:
1 - Does not meet training requirements : level 1 findings : issues to be addressed immediately
2 - Does not fully meet training requirements : level 2 findings - issues to be addressed by x date
3 - Meets Training Requirements : minor observations
4 - Meets Training Requirements with enhancements made
5 - Exceeds Training Requirements

response	Partially accepted.

The scoring method has been changed and now it complies with your proposal. 3 is neutral and does not require alternative methods to be considered. The scale ranges from 1 to 5. The scale has been defined.

Definition of scores:
1 – Not acceptable. Does not meet the required criteria.
2 – Partially acceptable, but improvements needed to meet the required criteria.
3 – Acceptable. Meets the required criteria.
4 – Good. Meets the required criteria with enhancements made.
5 – Excellent. Exceeds the required criteria.

comment	313 comment by: BCAA

(e) Category 'technical quality'

This category should also address functionality of software for example is it applicable on every platform? Can the student see the correct presentation of the training?

response	Not accepted.

These requirements are already provided in 147.A.120(c), 147.A.115 and AMC 147.A.115(a), and they are audited separately.

comment	323 comment by: Prestwic Aircraft Maintenance

An alternative learning method needs to be considered.
If the scale is 0 - 5; 3 is on the positive side of the scale and should not have negative effects.

response	Accepted.

The scoring method has been changed and now it complies with your proposal. 3 is neutral and does not require alternative methods to be considered. The scale ranges from 1 to 5. The scale has been defined.

comment	330 comment by: Lufthansa Technical Training GmbH

	The questions in the table are not appropriate for a quantitative assessment/scoring. The "closed type" questions in the table can be answered with "yes" or "no" only.
response	Not accepted. The questions have been transformed to statements with simplified wording. Scoring refined and scoring definitions given.

comment	331 comment by: Lufthansa Technical Training GmbH Please create an "anchored rating scale" in order to ensure interrater-reliability.
response	Not accepted. The questions have been transformed to statements with simplified wording. Scoring refined and scoring definitions given.

comment	332 comment by: Lufthansa Technical Training GmbH A scoring for (e.g.) MSTDs like complex full simulations of an entire aircraft cockpit can not be done (assessed) properly by this table.
response	Not accepted. The working group considers the assessment table suitable for MSTD assessment within a given training scenario. The primary purpose of the table is not to assess a discrete (stand-alone) device, but it is intended to assess the training course.

comment	333 comment by: Lufthansa Technical Training GmbH The person or group of persons being "responsible for production" is usually not the "author". Please use consistent terms.
response	Accepted. 'Author' removed.

comment	334 comment by: Lufthansa Technical Training GmbH Once an approval of a learning resource is given a change in version should not necessarily require a re-assessment of the whole resource.
response	Not accepted. New versions of the training resource are not intended to be reassessed by the competent authority. It is the responsibility of the Part-147 organisation to ensure that the revisions do not affect the compliance. This is the responsibility of the Part-147 quality system.

comment	335 comment by: Lufthansa Technical Training GmbH
	By example of this question, the questions 1 to 20 are all closed type questions which normally can be answered with yes or no only. To score them between 0-5 is impossible and leads to discrepancies and non-uniform or shared views between applicant/developer and rater/authority. The same will occur between EASA members/nations.

response	Partially accepted.
	The questions have been transformed to statements with simplified wording.
	The scoring method has been changed. 3 is neutral and does not require alternative methods to be considered. The scale ranges from 1 to 5. The scale has been defined.
	Definition of scores:
	1 – Not acceptable. Does not meet the required criteria.
	2 – Partially acceptable, but improvements needed to meet the required criteria.
	3 – Acceptable. Meets the required criteria.
	4 – Good. Meets the required criteria with enhancements made.
	5 – Excellent. Exceeds the required criteria.

comment	336 comment by: Lufthansa Technical Training GmbH
	Except of question no. 7, 12 and 14 none of the assessment questions in the "pedagogical strategies" section can be judged in an objective/neutral way. Again, and apart from the non-helpful closed type style, a clear guidance like an "rating anchor" is missing.

response	Not accepted.
	The questions have been transformed to statements with simplified wording.
	The scoring method has been changed. The scale ranges from 1 to 5. The scale has been defined and the definition of scores given.

comment	337 comment by: Lufthansa Technical Training GmbH
	WBT (non-interactive) for example will never be able to fullfill the requirement.
	An example for WBT is "human factors" currently/already being taught by WebBased products (self-study programs). These products are widely accepted (e.g.) for Part-145 Continuation Training but would be doomed when it comes to amalgamate such WBT in approved courses (Module M9).
	The unequivocal treatment of Part-145 and Part-147 entities in that context is difficult to understand or to accept.

response	Not accepted.
	The assessment table has been revised to match with all training resources.
	The proposed changes are oriented to Part-147 organisations imposing higher training standards than the courses required by Part-145.

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Regarding Human Factors training (M9), nothing prevents the Part-147 organisation to blend it, if the competent authority accepts it.

comment	338 comment by: Lufthansa Technical Training GmbH An assessor will not be able to measure the "active mental engagement".
response	Not accepted. The authority is not required to verifies the actual engagement, only to verify that stimulating actions are incorporated.

comment	339 comment by: Lufthansa Technical Training GmbH Student centered (self-learning) methods do hardly or never fulfill the requirement/question no. 13.
response	Accepted. Question 13 has been revised and transformed into statement. Please note that the whole course is to be assessed and not each individual method used in the particular course.

comment	368 comment by: DGAC France This appendix will be very useful and is supported by DGAC France.
response	Noted. Thank you for the support.

comment	369 comment by: DGAC France Within the assessment table, for consistency, it is suggested to replace "digital learning resource" by "Multimedia-Based Training (MBT) resource".
response	Partially accepted. The table title changed and table revised.)

comment	379 comment by: SEAS This should be reworded as if just one 3 is given - an alternative learning method needs to be considered. If the scale is 0 - 5; 3 is on the positive side of the scale and should not have negative effects.
response	Accepted. The scoring has been refined. Definitions are given for scores 1-5. Now rating 3 does not have negative effects.

comment	380 comment by: SEAS

The scale is not defined in this questionnaire but anything up to and including 3 results in a negative outcome. A scale should always be defined and there should be a neutral point.

An undefined Scale will result in subjective marking.

As a natural inclination, people will tend to shy away from extremes (0 or 5). This leaves scores 1 - 4; without a definition of what each of these scores mean the result will be subjective.

Propose defining them, for instance:
1 - Does not meet training requirements : level 1 findings : issues to be addressed immediately
2 - Does not fully meet training requirements : level 2 findings - issues to be addressed by x date
3 - Meets Training Requirements : minor observations
4 - Meets Training Requirements with enhancements made
5 - Exceeds Training Requirements

response	Partially accepted.

The scoring method has been changed and now it complies with your proposal. 3 is neutral and does not require alternative methods to be considered. The scale ranges from 1 to 5. The scale has been defined.

Definition of scores:
1 – Not acceptable. Does not meet the required criteria.
2 – Partially acceptable, but improvements needed to meet the required criteria.
3 – Acceptable. Meets the required criteria.
4 – Good. Meets the required criteria with enhancements made.
5 – Excellent. Exceeds the required criteria.

comment	386 comment by: FNAM (French Aviation Industry Federation)

In the case of the section list those questions are too subjective. FNAM wants to prevent misunderstanding between national authorities and training organisations by having more objective questions on that part.

response	Partially accepted.

The table has been revised. The questions have been transformed to statements with simplified wording.

comment	396 comment by: ECOGAS/SVFB/SAMA

We support the assessment requirements

response	Noted.

Thank you for the support.

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3. Proposed amendments — 3.1. Draft Regulation (Draft EASA Opinion) — Part-66 — Annex III — Appendix VII p. 19

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comment	7 comment by: CAE

Although the overall rating level may fulfil the required criteria, it shall be checked if there is no a single rating within the categories that is equal or below 3.
In this case an alternative learning process shall should be considered or a product update which fulfils the required quality level(s) shall should be requested. In the event that a alternative learning process is not available or a product update is not feasible, substantiating justification should be provided as to why the use of the chosen process or product is deemed NOT detrimental to the learning process.

response	Partially accepted.

The text has been reworded and now reads: 'If one or more statements within the categories is rated below 3, an alternative learning process shall be considered in order to enhance the suitability level, or a product update, which fulfils the required suitability level, shall be requested.'
'Although the final score is equal or above 60, it shall be checked if there is no single rating within the categories that is below 3.'

Change from 'shall' to 'should' not accepted. 'Shall' is to be used in the implementing rules'; the use of 'should' is reserved for AMC and GM.

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comment	75 comment by: FlightSafety International

Recommend deleting the entire section on values. Delete all section from 0 to 100. This comment is based on other comments made to the form.

| response | Not accepted.

Please see the justifications in our replies to your other comments. |
|---|---|

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comment	76 comment by: FlightSafety International

Change:

"Although the overall rating level may fulfil the required criteria, it shall be checked if there is no single rating within the categories that is equal or below 3.
In this case an alternative learning process shall be considered or a product update which fulfils the required quality level(s) shall be requested."

To:

"For each of the evaluated sections, all sections must be evaluated as "yes" in order for the method to be considered acceptable

In cases where "No" is indicated, the evaluated system must be altered to correct the deficiency or alternative delivery methods, which do meet all requirements, must be used."

This supports the transition to a "yes/no" evaluation standard instead of the subjective 0-5 scale.

response	Not accepted. Please see the justifications in our replies to your other comments.

comment	147 comment by: Ryanair The results scale does not match the 0 - 5 single answer scale. Below a score of 80 has negative connotations that match those of a score of 61? The overall flow of the assessment allows too many subjective rather than informed grading decisions.
response	Partially accepted. The scoring method has been changed and now it complies with your proposal. 3 is neutral and does not require alternative methods to be considered. The scale ranges from 1 to 5. The scale has been defined. 100 – 80: Excellent learning resource. It offers different functionalities and meets the required suitability criteria. 79 – 60:The learning resource meets the required suitability criteria. 59 – 40: The learning resource does not allow a sufficiently worthy educational use. It can be used for 'informal' training only. 39 – 20: The learning resource is below the average. It does not meet several required suitability criteria. Definition of scores: 1 – Not acceptable. Does not meet the required criteria. 2 – Partially acceptable, but improvements needed to meet the required criteria. 3 – Acceptable. Meets the required criteria. 4 – Good. Meets the required criteria with enhancements made. 5 – Excellent. Exceeds the required criteria.

comment	148 comment by: Ryanair Propose rewording. This suggests that if there are no scores of 3 or below - check it anyway.

	If the grades are all 4's and 5's and it is an "excellent educational resource"; why would you need to check it anyway.
response	Partially accepted. Please see our replies to your previous comments.

comment	307 comment by: Ryanair Quality Manager The results scale does not match the 0 - 5 single answer scale. Below a score of 80 has negative connotations that match those of a score of 61? The overall flow of the assessment allows too many subjective rather than informed grading decisions.
response	Partially accepted. Please see our reply to your comment #147.

comment	308 comment by: BCAA Appendix VII Assessment method for Multimedia- Based Training MBT (systems). In the Assessment table a score from 0-5 is necessary for every category but when there is a score of 3 or below a product update or an alternative learning process is necessary. The score between 0 and 3 is pointless because the result is the same. A clear description for every score (0 to 5) is necessary to get an objective assessment method for the MBT system.
response	Partially accepted. The scoring method has been changed and now it complies with your proposal. 3 is neutral and does not require alternative methods to be considered. The scale ranges from 1 to 5. The scale has been defined. 100 – 80: Excellent learning resource. It offers different functionalities and meets the required suitability criteria. 79 – 60:The learning resource meets the required suitability criteria. 59 – 40: The learning resource does not allow a sufficiently worthy educational use. It can be used for 'informal' training only. 39 – 20: The learning resource is below the average. It does not meet several required suitability criteria. Definition of scores: 1 – Not acceptable. Does not meet the required criteria. 2 – Partially acceptable, but improvements needed to meet the required criteria. 3 – Acceptable. Meets the required criteria.

4 – Good. Meets the required criteria with enhancements made.
5 – Excellent. Exceeds the required criteria.

comment	**315** comment by: Ryanair Quality Manager Propose rewording. This suggests that if there are no scores of 3 or below - check it anyway. If the grades are all 4's and 5's and it is an "excellent educational resource"; why would you need to check it anyway
response	Accepted. Please see our replies to your previous comments.

comment	**322** comment by: Prestwic Aircraft Maintenance The results scale does not match the 0 - 5 single answer scale. Below a score of 80 has negative connotations that match those of a score of 61? The overall flow of the assessment allows too many subjective rather than informed grading decisions.
response	Partially accepted. The scoring method has been changed and now it complies with your proposal. 3 is neutral and does not require alternative methods to be considered. The scale ranges from 1 to 5. The scale has been defined. 100 – 80: Excellent learning resource. It offers different functionalities and meets the required suitability criteria. 79 – 60:The learning resource meets the required suitability criteria. 59 – 40: The learning resource does not allow a sufficiently worthy educational use. It can be used for 'informal' training only. 39 – 20: The learning resource is below the average. It does not meet several required suitability criteria. Definition of scores: 1 – Not acceptable. Does not meet the required criteria. 2 – Partially acceptable, but improvements needed to meet the required criteria. 3 – Acceptable. Meets the required criteria. 4 – Good. Meets the required criteria with enhancements made. 5 – Excellent. Exceeds the required criteria.

comment	**340** comment by: Lufthansa Technical Training GmbH 20x rating score = 80. Why is the resource then rated as "containing weaknesses"? Just because one out of 20 is not rated "5"? Which one is the critical item (question) that is deemed to be "5" under all circumstances?
response	Partially accepted.

comment	341 comment by: Lufthansa Technical Training GmbH

What is the use of theses rating scores / intervals?
As we learn from the next sentences, even a single rating that is equal or below will trigger that an "alternative learning process" or "product update" shall be considered.

As a result the provision of interval 80-61 makes little sense as it is contradictive: Its written definition marks the resource/product as "meeting required quality", and hence not asking for abandoning or revising it.

response	Accepted.

comment	381 comment by: SEAS

The results scale doesn't match the 0 -5 single answer scale.

Below a score of 80 has negative connotations that match those of a score of 61?

Overall flow of the assessment allows too many subjective rather than informed grading decisions

response	Partially accepted.

The scoring method has been changed and now it complies with your proposal. 3 is neutral and does not require alternative methods to be considered. The scale ranges from 1 to 5. The scale has been defined.

100 – 80: Excellent learning resource. It offers different functionalities and meets the required suitability criteria.
79 – 60: The learning resource meets the required suitability criteria.
59 – 40: The learning resource does not allow a sufficiently worthy educational use. It can be used for 'informal' training only.
39 – 20: The learning resource is below the average. It does not meet several required suitability criteria.

Definition of scores:
1 – Not acceptable. Does not meet the required criteria.
2 – Partially acceptable, but improvements needed to meet the required criteria.
3 – Acceptable. Meets the required criteria.
4 – Good. Meets the required criteria with enhancements made.
5 – Excellent. Exceeds the required criteria.

3. Proposed amendments — 3.2. Draft Acceptable Means of Compliance and Guidance Material — Part-66 (Draft EASA Decision) — AMC to Paragraph 3. of Appendix I to Part-66 'Basic knowledge requirements' p. 19

comment	33 comment by: Delphine RYAN
	The sentence "a complex or critical subject should normally not be taught through a student-centred method....." would probably read more smoothly as "a complex or critical subject should not normally be taught through a student-centred method...."
	But this is just my opinion.
	Justification: language issue.
response	Accepted.

comment	126 comment by: AgustaWestland Training Academy
	AMC to Paragraph 3. of Appendix I to Part-66 "Basic knowledge requirements" - in the last paragraph Definitions of complex or critical subject is not clear for basic knowledge)
response	Accepted.
	The AMC has been revised to improve clarity.
	'Complex and critical systems' has been replaced by 'Basic training modules 7, 9, 11, 12, 13, 15, 16 and 17'. In addition, it has been made clear that these modules cannot be taught solely using student-centred methods unless provisions are in place to verify the actual and progressive acquisition of knowledge, skills and attitude of the student.
	Complexity and criticality removed also from the preceding sentence.

comment	199 comment by: EAMTC
	GM to Paragraph 3. of Appendix I to Part-66 - 'Basic knowledge requirements' -
	Basic knowledge training standard
	A combination, or blending, of several training methods/tools is recommended in order to benefit from the advantages of each method to increase the overall efficiency of the training.
	A simpler form of wording is suggested
response	Not accepted.
	The use of the word 'blending' adds to the complexity. The Agency considers the current wording simpler.

comment	200 comment by: EAMTC
	GM to Paragraph 3. of Appendix I to Part-66 - 'Basic knowledge requirements' -

Basic knowledge training standard

Simulation is not an eligible training tool for teaching basic hand skills such as wiring, welding, drilling, filing, wire locking, riveting, bonding or any other skill where competence can only be achieved by performing a hands-on physical activity.

This may be in the wrong place as the title is "Knowledge Training" whilst in the para of which we speak we refer to Hand-skills training. It may be more appropriate in AMC 147.A.200 (d) with the following suggested in order to cater for any future technology developments at the level of the aircraft and the training for its maintenance.

Whilst simulation may be able to assist with hand-skills training and assessing, it can not be eligible as the sole training or assessment tool for basic hand skills such as wiring, welding, drilling, filing, wire locking, riveting, bonding or any other skill where competence may only be achievable by performing physical hands-on activity.

response	Partially accepted.

The essence of your proposed text is accepted, but left in the same AMC. (Not transferred to 147.A.200(d).

New text: 'Simulation cannot be eligible as a sole training or assessment tool for basic hand skills such as wiring, welding, drilling, filing, wire-locking, riveting, bonding or any other skill where competence may only be achievable by performing a hands-on activity.'

comment	201 comment by: EAMTC

GM to Paragraph 3. of Appendix I to Part-66 - 'Basic knowledge requirements' -

Basic knowledge training standard

The following table presents the combination of training methods and tools in reference to training
elements and learning objectives and indicates their benefits and limits to be taken in to account when selecting the actual training method(s) for basic knowledge training.

The table may be incorrectly described as it does not state any benefits etc. It also includes some practical elements. A simpler form of wording is suggested

The following table presents the combination of training methods and tools that may be taken into account when selecting them for basic training.

response	Accepted.

New text: 'The following table presents the combination of training methods that may be taken into account when selecting them for theoretical and practical basic training.'

comment	281 comment by: AIRBUS DEFENCE & SPACE
	The use of terms "complex","complexity","critical","criticality","efficiency" should be clearly defined to avoid subjective interpretation or misinterpretation. Guidance Material should be provided about what is under the scope of such terms.
response	Accepted. In AMC to Section 3. of Appendix I to Part-66 'Basic knowledge requirements – Basic training standard', 'complex or critical subjects' has been replaced by 'basic training modules 7, 9, 11, 12, 13, 15, 16 and 17'. In AMC to paragraph 3. of Appendix III to Part-66 'Aircraft type training and examination standard', new text has been added to improve clarity: 'Complex and critical areas should be identified by the TNA. The complexity and criticality of the areas could differ case-by-case (i.e. areas proven to be critical by organisation's "in service events", occurrence reporting, human factors, safety, etc.), but should in any case cover the training areas with special emphasis (TASE) identified by the type certificate holder (TCH) in its operational suitability data (OSD).'

comment	342 comment by: Lufthansa Technical Training GmbH
	Please provide a definition of instructor- and student centered and blended training.
response	Accepted. Definitions added in the footnote of Table 2 in Appendix I and III, as follows: (1) Instructor-centred means that the instructor is responsible for teaching the student. (2) Student-centred means that the student is responsible for the learning progress. (3) Blended training includes different instructional methods and tools, different delivery methods, different scheduling (synchronous/asynchronous) or different levels of guidance. Blended training allows the integration of a range of learning opportunities.

comment	343 comment by: Lufthansa Technical Training GmbH
	Please provide a definition of the term "complexity" and "critical subject". Please give examples of "critical tasks".
response	Accepted. In AMC to Section 3. of Appendix I to Part-66 'Basic knowledge requirements – Basic training standard', 'complex or critical subjects' has been replaced by 'basic training modules 7, 9, 11, 12, 13, 15, 16 and 17'. In AMC to paragraph 3. of Appendix III to Part-66 'Aircraft type training and examination standard', new text has been added to improve clarity: 'Complex and critical areas should be identified by the TNA. The complexity and criticality of the areas could differ case-by-case (i.e. areas proven to be critical by organisation's "in service events", occurrence reporting, human factors, safety, etc.), but should in any case

cover the training areas with special emphasis (TASE) identified by the type certificate holder (TCH) in its operational suitability data (OSD).'

3. Proposed amendments — 3.2. Draft Acceptable Means of Compliance and Guidance Material — Part-66 (Draft EASA Decision) — GM to Paragraph 3. of Appendix I to Part-66 'Basic knowledge   p. 19-23 requirements'

comment	8 comment by: CAE
	Simulation is not an eligible training tool for teaching basic hand skills should not be considered as an eligible training tool for teaching basic hand skills such as wiring, welding, drilling, filing, wire locking, riveting, bonding or any other skill where competence can only be achieved by performing a hands-on physical activity, unless it can be demonstrated that the simulation can effectively support and fully satisfy the learning objective.
response	Partially accepted.

The text has been reworded and now it partially reflects the intention of your proposal. New text: 'Simulation cannot be eligible as a sole training or assessment tool for basic hand skills such as wiring, welding, drilling, filing, wire-locking, riveting, bonding or any other skill where competence may only be achievable by performing a hands-on activity.' |

comment	9 comment by: CAE
	(1) Limited functionality. It means Potentially limited functionality. If so, it means that the respective training method can be used but with limited results, thus requiring the support of a complementary training method to fulfil the learning objectives.
response	Not accepted.

'Potentially' may cause additional ambiguities.
'Limited functionality' has been replaced with 'Limited suitability'. |

comment	10 comment by: CAE
	'Suitable' means an aircraft of the type or license category (if the license category aircraft is outfitted with the same equipment subject to the particular lesson module(s) and is sufficiently similar so that the lesson objective(s) can be satisfactorily accomplished) for type training, or an aircraft representative of the licence category for basic training, and excludes 'virtual aircraft'.
response	Accepted.

comment	29 comment by: Interactive Training Solutions
	How it is possible to say that simulation is not an eligible tool for training for teaching hand skills, when, for exemple, the national training institute of welding is using simulators for the basic / continuous training of high qualified welder. As a matter of fact we agree that

hand skills must be achieved by performing a hands-on physical activity but it can not be the only means to get competencies. Some simulators could have such HMI that they could be conviniant for a part of the basic handskills training.

| response | Accepted.

The text has been reworded and now it partially reflects the intention of your proposal. New text: 'Simulation cannot be eligible as a sole training or assessment tool for basic hand skills such as wiring, welding, drilling, filing, wire-locking, riveting, bonding or any other skill where competence may only be achievable by performing a hands-on activity.' |
|---|---|

| comment | 34   comment by: Delphine RYAN

1) Page 21, last paragraph, section 'OJT'

The article 'a' is missing from the sentence: "It may or may not use structured learning process...." I believe it ought to read: "It may or may not use a structured learning process".

Justification: language issue.

2) Page 22, last paragraph, section 'MSTD'

The written definition for MSTD appears to be grammatically inadequate and thus questionable, as well as being different from the same definition given on page 24, #7 (the word 'component' is missing).

3) The definition given on page 22 reads: "Device that is intended to be used in the maintenance training, examination, assessment for a system or an entire aircraft."

This definition, as it is written above, means that the device is intended to be used in:
the maintenance training; or
examination; or
assessment for a system; or
an entire aircraft
This meaning is different to the meaning on page 24 and if the above is the intended meaning, then the article "the" should not be in the sentence. However, it is a very ambiguous definition leaving the door open to various questions such as, "the examination of what exactly?", "what is assessment for a system?" and what does it mean "to be used in an entire aircraft?"

On the other hand, the defiinition of MSTD found on page 24, #7, is not only different but equally grammatically deficient.

It reads: "A maintenance simulation training device (MSTD) is a training device that is intended to be used in the maintenance training, examination, assessment for a component, system or an entire aircraft....."

There is most probably a missing conjunction as the above definitions means that an MSTD is a training device that is intended to be used in:
the maintenance training; or |
|---|---|

examination; or
assessment for a component; or
system; or
an entire aircraft
I do not believe that this is the intent of the definition as it does not really make sense such as "a training device that is intended to be used in a system". It doesn't make sense.

However, could it be that the intended definition of the MSTD read as follows: "A maintenance simulation training device (MSTD) is a training device that is intended to be used in the maintenance training, examination, and/or assessment for/of a component, system or entire aircraft." (deleting the conjunction and preposition which is not needed).

This would give a completely different meaning with maintenance training, examination and/or assessment being one set of nouns related to the second set of nouns component, system or entire aircraft.

With this definition, we then have maintenance training for a component, maintenance training for a system, maintenance training for an entre aircraft, and same with examination and assessment.

Justification: It is very important that there should be some clarification with the authors of the above definitions to decide what is exactly meant by an MSTD and write the definition in such a way that it clearly communicates the intended concept in clear English. The current definition on page 22 and 24 grammatically give a completely different meaning to that which would exist should the conjunctions be used. The current definitions do not make sense, especially with the word "component" missing from one definition and with "assessment for a component" in one definition and "assessment for a system" in the other.

Moreover, there should be clarity with the word "examination" as it could be referring to the physical examination of component or system, or being examined (tested) on some part of the training.

response	Accepted. 1) Accepted. 2) Accepted. 'Component' added. The definition in Table 3 corrected in line with your proposal and aligned with the definition in AMC to Section 1 of Appendix III to Part-66. 3) Accepted. Definition changed as follows: 'Device that is intended to be used in the maintenance training, examination and assessment, and/or assessment for a component, system or entire aircraft.'

comment	77 comment by: FlightSafety International Recommend the following be DELETED: "Simulation is not an eligible training tool for teaching basic hand skills such as wiring, welding, drilling, filing, wire locking, riveting, bonding or any other skill where competence can only be achieved by performing a hands-on physical activity." Delete this statement as it assumes something is not possible. In fact there are very good simulations for these competencies available today.

response	Not accepted. The text is not deleted; instead, it is reworded and now it partially reflects the intention of your proposal. New text: 'Simulation cannot be eligible as a sole training or assessment tool for basic hand skills such as wiring, welding, drilling, filing, wire-locking, riveting, bonding or any other skill where competence may only be achievable by performing a hands-on activity.'

comment	78 comment by: FlightSafety International Recommend changing: "The following table presents the combination of training methods and tools in reference to training elements and learning objectives and indicates their benefits and limits to be taken in to account when selecting the actual training method(s) for basic knowledge training." To: "The following table presents a list of those methods which could be acceptable for delivering theory and practical training. The table is intended to support potential delivery methods but is not considered comprehensive. Additional training methods and further use of those methods defined could be acceptable by the competent authority when demonstrated as meeting learning objectives." This comment is in support of other comments to eliminate some of the detail in the table as they can create unneccessary limitations on possiblities in the MBT area.
response	Partially accepted. The content of the sentence has been changed ('benefits' and 'limits' removed). GM does not exclude the usage of additional training methods that can be justified to the competent authority to meet the learning objectives. In fact, the following text has been added preceding the GM to Sections 3. of Appendix I and III to Part-66: 'The table is intended to support potential delivery methods. Additional training methods and further use of those methods defined could be acceptable to the competent authority when demonstrated as supporting learning objectives.'

comment	79 comment by: FlightSafety International Recommend deleting the columns associated with "Learning Objectives" "Knowledge" "Skills" "Attitude" These columns are not supportive to the intent of the table which is to define the theory and practical applications for training methods.
response	Not accepted. The reference table allows better understanding of the application of the training methods if it clearly shows which learning objective each of the training method supports.

comment	80 comment by: FlightSafety International

	Delete the Row: "Theoretical Training" and all of its content. Thoery is a type of training, not a training method and therefore should not be defined as a method.
response	Accepted.

comment	81 comment by: FlightSafety International Delete the Row: "Practical Training" and all of its content. Practical is a type of training, not a training method and therefore should not be defined as a method.
response	Accepted.

comment	82 comment by: FlightSafety International Change the training method "Assisted learning (mentoring)" to read "OJT". Assisted learning and OJT have the same basic definitions in the following table 2 and therefore can be consolidated into a single definition. Recommending OJT as it is a familiar term. Also, Assisted learning is not a deliverable which can truely be done by the part 147.
response	Not accepted. OJT removed from Table 2 (Definition of training methods) in both Appendices I and III in order not to confuse it with the OJT required for the first aircraft type in the (sub)category. OJT, as currently defined in Part-66, cannot be used as a training method in basic knowledge and aircraft type training courses. Assisted learning refers to both theoretical and practical training.

comment	83 comment by: FlightSafety International Delete the row "e-learning" from the table 1. E-learning is a generic term used to define many different training methods and is not a particular method itself
response	Not accepted. E-learning may include other training methods described in the table, but has been retained, because it is a more general term. It does not encompass the same elements as distance learning. See also our reply to comment #363.

comment	84 comment by: FlightSafety International Delete the row "Multimedia-based training" from the table 1.

	This is a generic term deployed by EASA for general e-learning and can mean many different training methods. Therefore, this row and its content should be removed from the table.
response	Not accepted. MBT may include other training methods described in the table, but has been retained, because it is a more general term. It does not encompass the same elements as e-learning. See also our reply to comment #363

comment	85 comment by: FlightSafety International Delete the row "M-Learning" from the table 1. M-Learning is defined in Table 2 with the same basic definition as "Distance Learning". Therefore, M-Learning should be eliminated from the Table 1 and its definition removed from Table 2.
response	Not accepted. M-learning is considered a specific form of e-learning, indicating the use of mobile electronic devices. It can be used at any location of the student's choice. See also our reply to comment #363.

comment	86 comment by: FlightSafety International Table 1, Row "Demonstration" Remove the "(1)" limitation for theory mastery level 3. Demonstration is second only to actually performing the task first hand. Therefore, we should not put limitations on demonstration for level 3 tasks as we want students to see demonstrations, if there is no possiblities to actually perform the task first hand.
response	Not accepted. 'x1' refers only to theoretical limitation and not to the practical element. If demonstration is used in theoretical training for Level 3, an additional training method should be selected, such as lecturing.

comment	87 comment by: FlightSafety International Table 2 Delete the row associated with "Assisted Learning (mentoring) Eliminate this method as it likens to OJT and is not a measurable or deliverable method for a part 147. Recommended in table 1 that Assisted Learning be changed to OJT which is defined below in table 2.

response	Not accepted. It has not been deleted from Table 1; as a consequence, it cannot be deleted from Table 2. The same justification as for Table 1 applies. See also the answer to your comment No 82.

comment	88 comment by: FlightSafety International Table 2 Delete the row associated with "E-learning" This is a generic term used for many different types of electronic delivery methods and therefore should not be used.
response	Not accepted. It has not been deleted from Table 1; as a consequence, it cannot be deleted from Table 2. The same justification as for Table 1 applies. See also the answer to your comment No 83.

comment	89 comment by: FlightSafety International Table 2 Delete the row associated with "M-Learning" This is the same basic definition as what is provided for distance learning.
response	Not accepted. It has not been deleted from Table 1; as a consequence, it cannot be deleted from Table 2. The same justification as for Table 1 applies. See also the answer to your comment No 85.

comment	90 comment by: FlightSafety International Table 2 Delete the row associated with "Multimedia-based Training" Multimedia Based Training is the term EASA is using for the category of "E Learning" which is a general term and therefore should not be a training method. Therefore this should be eliminated from the table.
response	Not accepted. It has not been deleted from Table 1; as a consequence, it cannot be deleted from Table 2. The same justification as for Table 1 applies. See also the answer to your comment No 84.

comment	91 comment by: FlightSafety International Table 2 Delete the row associated with "Practical Training"

	Practical Training is a type of training and not a method. This is implied also by the table 1 which has "Practical elements" as a column header. Therefore, delete this row from the table.
response	Accepted. 'Practical training' deleted, as it does not fit into the table as the training method. It is rather the training type (like theoretical training) encompassing the training methods listed in the table.

comment	92 comment by: FlightSafety International Table 2 Delete the row associated with "Theoretical Training" Theoretical Training is a type of training and not a method. This is implied also by the table 1 which has "Theory elements" as a column header. Therefore, delete this row from the table.
response	Accepted. 'Theoretical training' deleted, as it does not fit into the table as the training method. It is rather the training type (like practical training) encompassing the training methods listed in the table.

comment	93 comment by: FlightSafety International Table 2 Note (2) Delete the Table 2 Note (2) as MBT is also recommended to be removed from the table of definitions. It is a generic term used to define many different methods and is not a specific method itself.
response	Not accepted. MBT has not been removed from Table 2 as training method, hence additional information regarding MBT has been retained as a footnote in Table 2. It became footnote (4), as the definitions of instructor-centred and student-centred methods have been added as (1) and (2).

comment	127 comment by: AgustaWestland Training Academy Table 3 - not clear the the definition of MSTD. This causes a not clear difference between MSTD and MTD
response	Partially accepted. The definition of MSTD has been reworded and made consistent with the detailed explanation of MSTD given in AMC to Section 1 of Appendix III to Part-66. The table clearly distinguishes between MSTD and MTD defining MTD as 'any training device other than an MSTD used for maintenance and/or examination and/or assessment.'

comment	149 comment by: Ryanair
	Propose softening the wording from "is not an eligible training" to "may not"
	Simulation / CBT could be used for blended learning in basic hand skills.
	The theoretical and safety aspects could be covered through e-learning. Videos are a particularly useful tool when highlighting the hazards of machinery.
response	Partially accepted.
	The text has been reworded and now it partially reflects the intention of your proposal. New text: 'Simulation cannot be eligible as a sole training or assessment tool for basic hand skills such as wiring, welding, drilling, filing, wire-locking, riveting, bonding or any other skill where competence may only be achievable by performing a hands-on activity.'

comment	151 comment by: Ryanair
	Propose changing to Potential for limited functionality.
	It can be used as a warning of the limits of certain methods but should not be as restrictive as it is.
	The restrictions need to be put into the examinations; not the training.
response	Not accepted.
	'Potentially' may cause additional ambiguities. 'Limited functionality' has been replaced with "Limited suitability".

comment	152 comment by: Ryanair
	It would be beneficial if the "limited results" were defined so that the most appropriate complementary training method can be chosen.
response	Not accepted.
	The determination of the limits of each training method was extensively discussed in the Working Group. Finally, it was decided not to include detailed limitations, as the fast development of the training methods and tools may make these limitations obsolete and unnecessary restrict the intended flexibility. The Agency's intention is to propose rules resistant and open to the fast development of the modern training methods, technologies and tools over the time, in order to avoid frequent amendments to adapt the rules to them, which might be necessary in case of prescriptive and excessively detailed requirements.
	Two or more complementary training methods with limited suitability may support each other in achieving the learning objectives.

comment	153 comment by: Ryanair
	This table is too subjective. It was stated at the workshop that lecturing cannot be done in a virtual environment and attitude can only be changed/taught in person.
	Virtual Learning There are many industries and situations where a different view on this is taken. Open University and Coursera for instance are excellent examples of how distance learning can be achieved where lecturing is virtual and "face to face" can occur on different continents.
	Attitude No matter how many times you're told the dangers of human error - nothing demonstrates that point more than viewing one of the many documentaries on aircraft crashes.
response	Noted.
	Generally speaking, lecturing can be done in a classroom, virtual classroom or can be recorded. GM to Section 3. of Appendix I and III to Part-66 defines lecturing as face-to-face delivery of training and learning material between an instructor and students. 'Lecturing' in a virtual environment falls under distance learning synchronous. If the lecture is recorded, it falls under distance learning asynchronous, MBT or any other self-paced method, but may also be used as demonstration. The same GM in Table 1 defines which of the training methods may be used for training the attitude and which of them are partially suitable for this objective.

comment	158 comment by: Ryanair
	PC means "personal computer" and includes desktop units and laptop units. Anything that can be done on a desktop unit, can also be done on a laptop.
	Excluding laptops in this instance does not seem to add any benefit.
response	Accepted.
	Table 3 adapted to address your comment.

comment	159 comment by: Ryanair
	Mobile Devices are defined as portable computing devices such as a smart phone or tablet.
	These devices tend to have slightly less functionality than a PC.
	Putting a laptop in this, more restrictive section, does not make sense.
response	Accepted.
	Table 3 adapted to address your comment.

comment	163 comment by: Ryanair
	Suggest combining these two training tools.

	There should be just one "Classroom" tool which can be either physical or virtual.
response	Not accepted. The separated definition has been retained because of the codification used to define which of the training tools is suitable for each particular training method (see Table 1).

comment	173 ❖ comment by: Dassault Aviation About the § " —Introduce, in addition to the traditional training methods, new training methods such as e- learning (or any digitalized tutor devices at the training facilities), Distance Learning or Web- Based Training (WBT) (at home or remote from the training organizations), Multimedia-Based Training (MBT), Computer-Based ,Training (CBT), practical training on virtual training devices." Dassault-Aviation suggest an addition of the term "Web-Based Training" defined in: · Training Methods and Tools Reference – Basic Knowledge Training Table 2 under (Training Method - Page 21) · Training Methods and Tools Reference – Aircraft Type Training Table 2 under (Training Method - Page 27)
response	Accepted.

comment	178 comment by: AIRBUS PARAGRAPH / SECTION THE COMMENT IS RELATED TO: page 20 3.2. Draft Acceptable Means of Compliance and Guidance Material — Part-66 (Draft EASA Decision) Table 1 PROPOSED TEXT / COMMENT: - e-learning can target attitude (limited) à set X(1) - distance learning, asynchronous, can target skills (limited, e.g. procedural skills)à X(1) and attitude (limited) à X(1) - distance learning, synchronous, can target skills (limited, e.g. procedural skills)à X(1) and attitude (limited) à X(1) RATIONALE / REASON / JUSTIFICATION: Changes in table 1: Experience based recommendation, related to other training & learning areas. ACT (Airbus competence training), accepted as practical element, targets today also attitude
response	Accepted.

Table 1 has been amended accordingly.

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comment | 179   comment by: AIRBUS

PARAGRAPH / SECTION THE COMMENT IS RELATED TO: page 21

3.2. Draft Acceptable Means of Compliance and Guidance Material — Part-66 (Draft EASA Decision)
Table 2

PROPOSED TEXT / COMMENT:

- e-learning; replace existing definition by: "Training based on multimedia technology with or without support of instructor, in physical premise or as distance learning."

- Virtual reality; delete "… with a person"

RATIONALE / REASON / JUSTIFICATION:

Changes in table 2:
- E-learning definition; better coherence
- Virtual training definition; who else can join as a person then a person?

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response | Partially accepted.

1st bullet – not accepted. The Working Group agreed on the current definition.
2nd bullet – accepted. 'With a person' deleted from the definition.

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comment | 190   comment by: EAMTC

Attachment #4

GM to Paragraph 3. of Appendix I to Part-66 - 'Basic knowledge requirements' -

It is suggested to change the title of table 1 to avoid confusion. Confusion could arise due to the Appendix being for basic knowledge training and the inclusion of practical training in the table etc.

Para 3.2, Table I

Part-66 Appendix I refers to Basic knowledge Levels, which per definition includes theoretical and practical aspects (for level 2 and 3). The definitions of the levels already provide sufficient guidance on the theoretical and the practical element. Therefore a revised, simplified table 1 is proposed. (See attached)

The columns relating to learning objectives (KSA) serve little purpose. It is suggested to simplify the table as per the attached.

	It is suggested to include e-learning, computer based training, m-learning, distance learning synchronous and distance learning asynchronous as WBT methods (to avoid confusion). * May also be known as Web Based Training
response	Partially accepted. The title of Table 1 changed to 'Basic training' ('knowledge' removed). Since a different approach has been taken by the WG, your proposal for the 'simplified table' becomes redundant. Web-based training (WBT) has been added to the training methods definitions in Table 2 and included into Table 1.

comment	191 comment by: EAMTC
	Para 3.2, Table I It is suggested to include a note for instructor (human) involvement in Modules 9A/9B. Instructor (human) involvement should be considered in Modules 9A / 9B.
response	Accepted.

comment	192 comment by: EAMTC
	Para 3.2 Table II OJT should be removed as it is not applicable to a Basic Training course.
response	Accepted.

comment	193 comment by: EAMTC
	Para 3.2 Table III The Training Tools 6+7 are copy-paste from Type Training and the use of such tools is not sufficiently covered for Basic Training. For Type Training AMC section 1 to Appendix III (Page24) provides an explanation for Type Training. A similar paragraph is suggested for Basic Training. AMC 147.A.200 (d) 1. The theoretical and practical training should be complementary and may be: - Integrated or split - Supported by the use of training tools, such as trainers, virtual aircraft, aircraft components, maintenance simulation training devices (MSTD) and maintenance training devices (MTD).

2. Maintenance simulation training devices (MSTD) and maintenance training devices (MTD) integration and usage in Basic Training (theoretical and/or practical) should consider the following:

The use of actual aircraft components should be allowed for any MSTD or MTD (even if the components are in a non-airworthy condition, provided that this condition has no impact on the related geometrical, operational or functional characteristics for which they are used in the maintenance training, examination or assessment).

A maintenance simulation training device (MSTD) is a training device that is intended to be used in the maintenance training, examination, assessment for a component, system or an entire aircraft. The MSTD may consist of hardware and software elements. The complexity and degree of simulation may vary and support Basic Training elements that address a component, a system or the whole aircraft. Based on their characteristics and capabilities, the MSTD may be:

a training device capable of providing for a component or system, the representation of aircraft location, access, layout and servicing with an acceptable level of accuracy and limited simulation; or

a training device capable of providing for a component or system, the representation of aircraft location, access, layout with sufficient accuracy and with interactive simulation for: servicing and the applicable maintenance data for operational and functional test elements including Built-in test (BIT) initiation and monitoring from outside the cockpit. Such a representation should have the capability to accommodate some trouble-shooting scenarios; or

a training device capable of providing for a component or system, the representation of on board — flight deck/cockpit or cabin — indication and controls with an acceptable level of accuracy and limited interactive simulation; or

a training device capable of providing for a component or system, the representation of on board —flight deck/cockpit or cabin — indication and controls with sufficient accuracy and with interactive simulation for: servicing and the applicable maintenance data for operational and functional test elements including built-in test (BIT) initiation and monitoring. Such a representation should have the capability to accommodate some troubleshooting scenarios; or

any combination of the above.

Flight simulation training devices (FSTD) may be used as MSTD whenever their characteristics and capabilities are considered appropriate for, and supportive of, the delivery of the respective maintenance training element(s).

A maintenance training device (MTD) is any training device other than an MSTD used for maintenance training and/or examination and/or assessment. Mock-ups or the aircraft may be considered as examples of an MTD.

| response | Partially accepted.

Note 2 has been added at the bottom of Table 3. |

| comment | 203   comment by: EAMTC

GM to Paragraph 3. of Appendix I to Part-66 - 'Basic knowledge requirements' -

Table 2 |

	Demonstration is only listed as Instructor Centred however, it could be blended with other methods, e.g. "This is how you do it" - demonstration – followed by, "Now, you do it / you try it"... All of the training methods listed have their merits and could logically be used in conjunction with any other training method. It would be beneficial if rather than excluding any methods from blended training that all methods were permitted. It is suggested that an "X" be placed for all methods in the "Blended Training" column.
response	Accepted.

comment	211 comment by: Luftfahrt-Bundesamt
	GM to Paragraph 3. of Appendix I to Part-66 Is there any limit for the use of CBT/MBT for practical training?
response	Noted. Yes, there is. Please see Table 1 'Training methods and tools reference table – Basic training'.

comment	218 comment by: EAMTC
	GM to Paragraph 3. of Appendix I to Part-66 - 'Basic knowledge requirements' - Table 2 OJT and Practical Training could be considered as "student centred" if the students are performing the tasks It is suggested to place an "X" in the "Student centred" column for these elements.
response	Not accepted. OJT and practical training have been removed from Table 2. Please see the justification provided in our reply to comment #82.

comment	219 comment by: EAMTC
	GM to Paragraph 3. of Appendix I to Part-66 - 'Basic knowledge requirements' - Table 2 Note 2 It is suggested to remove the indefinite article in order for the sentence to make sense. Multimedia-based training by definition uses various media to achieve its objective, thus, none of the single media listed is per se a complete solution for training.
response	Accepted.

comment	220 comment by: EAMTC
	GM to Paragraph 3. of Appendix I to Part-66 - 'Basic knowledge requirements' -
	This definition may be extended to include "virtual aircraft" which is not mentioned elsewhere in the tables
	MSTD — Maintenance simulation training device Device that is intended to be used in the maintenance training, examination, assessment for a system or an entire aircraft (Virtual Aircraft). The MSTD may consist of hardware and software elements.
response	Not accepted.
	Virtual aircraft is now included in Table 3 as an eligible training tool with its own definition.

comment	221 comment by: EAMTC
	GM to Paragraph 3. of Appendix I to Part-66 - 'Basic knowledge requirements' -
	Table 3
	A more grammatically correct sentence is suggested, for clarity.
	Virtual reality A computer-generated three-dimensional (3D) environment which can be explored and with which a person may interact.
response	Accepted.

comment	222 comment by: EAMTC
	GM to Paragraph 3. of Appendix I to Part-66 - 'Basic knowledge requirements' -
	Table 3
	Embedded training....
	It is suggested that an example would be helpful in order to better understand the meaning of the phrase
	Embedded training - A maintenance training function that is originally integrated into the aircraft component's design (e.g. a Centralised Fault Display System)
response	Accepted.

comment	237 comment by: EAMTC

The following may be added to avoid confusion with the proposed GM to Paragraph 3. of Appendix I to Part-66 - 'Basic knowledge requirements' - Basic knowledge training standard

Whilst simulation may be able to assist with hand-skills training and assessing, it can not be eligible as the sole training or assessment tool for basic hand skills such as wiring, welding, drilling, filing, wire locking, riveting, bonding or any other skill where competence may only be achievable by performing physical hands-on activity.

response	Partially accepted.

The text has been reworded and now it partially reflects the intention of your proposal. New text: 'Simulation cannot be eligible as a sole training or assessment tool for basic hand skills such as wiring, welding, drilling, filing, wire-locking, riveting, bonding or any other skill where competence may only be achievable by performing a hands-on activity.'

comment	296 comment by: ATF - Awareness Training Fakoussa

in "basic knowledge" there is no connection to the psychological part called safety. despite te fact we are dealing with pure manual skills it should be part of any basic training to include the psychology of safety. it is known, that any training once finished and examined and licenced is very difficult to overcome. that is why acquiring a licence and thereafter being trained in awareness does not really work. here is the chance to start breaking new ground.

none of the following tables mentiones anywhere the word safety and awareness, consciouness etc.

response	Noted.

The main objective of RMT.0281 is to introduce new training methods and tools for the training of maintenance staff. Non-technical skills, attitude, behaviour, safety awareness, situational awareness and other human factors issues should also be observed, as described in the training objectives, during the theoretical and practical training, and in particular during the assessment.

The elements of your comment are already covered in human factors training (M9), maintenance practices (M7), practical element of the training course and the OJT, taking into account the human factors and safety awareness principles. We agree that the new training methods and tools (MSTDs, MTDs, virtual reality, augmented reality, etc.) should take into account human factors principles, including situational awareness, consciousness and decision-making. By its very nature these devices are beneficial in practising the skills, the motoric system, raising confidence in performing the tasks, while at the same time avoiding potential hazards and risk connected with the task performance on an operational aircraft. Performing the tasks on such devices may result in complacency, hence the role of the instructor in terms of promoting human factors principles during the task performance is crucial.

comment	344 comment by: Lufthansa Technical Training GmbH

	Fully agreed! Under no circumstances an opening clause should be considered.
response	Noted.

comment	345 comment by: Lufthansa Technical Training GmbH
	The given terms can not be declared as 'training methods'. Some are indeed methods, others are rather scopes or matters (e.g. "theoretical training" which is a scope as it refers to theoretical aspects or "knowledge" in contrary to "skills". A "method" would be "upfront teaching). The wording 'definition of terms' or "glossary" should be used instead.

Furthermore there are many overlaps in the aledged methods as "lecturing" is "theoretical" or "practical training at the same time".
M-learning, distance learning, CBT....overlaps and confusion all over the place (for the users). |
| response | Partially accepted.

Theoretical training, practical training and OJT removed from Table 2, as they are actually training types and not training methods.

For the rest of your comment, please read our replies already given to your previous comments and similar comments from other commenters. |

comment	346 comment by: Lufthansa Technical Training GmbH
	The term 'computer-based training' is an unclear and wide-range definition. E. g. a simulator can be CBT as well. Please provide clarification.
response	Noted.

It is true that many of the training methods and their definitions overlap, but on the other hand each of them has its own specificities. We have decided to keep all commonly used terms as training methods and tools, despite of the apparent similarities between some of them. E-learning is broadly inclusive of all forms of educational technology in learning and teaching. In general terms, e-learning is inclusive of, and is broadly synonymous with, multimedia-based learning, computer-based instruction (CBI), computer-based training (CBT), computer-assisted instruction, web-based training (WBT), virtual education, virtual learning environments (VLE) (which are also called learning platforms) and m-learning. These alternative names emphasise a particular aspect, component or delivery method. For example, m-learning is indeed distance learning (could be both synchronous and asynchronous), but it is also e-learning, it is web-based and can be used in multimedia-based training as well. It is specific, as students may easily change the location and they learn using mobile technologies, such as mobile phones and tablets.

While CBT is a training method, simulator (MSTD), in our understanding, is a training tool. Not every training using a computer is CBT. By definition, CBT must be characterised by interactivity and pedagogically and technically structured content.

Flexibility is given to the training organisations to use a variety of training methods and tools with the recommendation to blend them, and to the competent authorities to approve their |

blended usage. Of course, an analytical approach should be used when deciding upon their usage, including the evaluation of the benefits of each method/tool and their blended application with classical classroom training in order to reach the training objectives.

comment	347 comment by: Lufthansa Technical Training GmbH
	Please provide a definition of 'interactive'. A presentation with the function 'click next to continue' should not be considered as 'interactive'.
response	Not accepted. The Agency considers 'interactive' a well known, recognised and commonly accepted term, especially in the training community, hence we consider it as unnecessary to define it within the rules. Certainly, interactivity has different levels. We agree that 'click next to continue' is probably not 'the level of interactivity' that the competent authority approving the course would expect from a training resource and we doubt it would score this element with 3 or above.

comment	348 comment by: Lufthansa Technical Training GmbH
	'Practical training' is rather a scope than a 'training method'.
response	Accepted. Theoretical training, practical training and OJT removed from Table 2, as they are actually training types and not training methods.

comment	349 comment by: Lufthansa Technical Training GmbH
	'Theoretical training' is a scope and not a 'training method'.
response	Accepted. Theoretical training, practical training and OJT removed from Table 2, as they are actually training types and not training methods.

comment	350 comment by: Lufthansa Technical Training GmbH
	Please delete highlighted part of the sentence. This is a preliminary and premature judgement potentially based on a very personal opinion.
response	Noted. It is not clear from your comment which part of the sentence you consider a very personal opinion.

comment	351 comment by: Lufthansa Technical Training GmbH
	The definition of 'virtual aircraft' is missing in this table. Please add a definition of 'virtual aircraft'.

response	Accepted. Virtual aircraft are now included in Table 3 as an eligible training tool with its own definition.

comment	370 comment by: DGAC France GM to §3 of appendix I to Part 66, table 1 (page 20 or 26): DGAC France finds this table very confusing, as the first column is mixing: - Types of training: "theoretical training, practical training" - Organisational way of training: "face to face" or "computer assisted at distance" - Means of training: "e-learning, computer-based, distance-learning, etc. M-learning is not adding anything compared to other rows, so it should be deleted. Also, most of these "distance training" or "e-learning" also use computer technology, so the line "CBT" seems not really useful.
response	Partially accepted. 1st bullet — Theoretical training and practical training have been removed from Table 1. We agree that they are primarily training types and not training methods. 2nd bullet — Please see our reply to comment #153. 3rd bullet — Please see our replies to comments #346 and #363.

comment	371 comment by: DGAC France GM to §3 of appendix I to Part 66, table 2 (page 21 or 27): - As per comment on table 1, adjust accordingly the necessary "methods" - OJT: OJT cannot be instructor-centred. Instructor is not in charge of OJT's. It's the responsibility of supervisor or tutor.
response	Accepted. Theoretical training, practical training and OJT have been removed from the Table 1 and Table 2.

3. Proposed amendments — 3.2. Draft Acceptable Means of Compliance and Guidance Material — Part-66 (Draft EASA Decision) — AMC to Section 1 of Appendix III to Part-66 'Aircraft Type Training and Examination Standard. On-the- Job Training'   p. 24-25

comment	35 comment by: Delphine RYAN Page 24, definition of MSTD, #7 Please see previous comment. Page 24, next to last paragraph

Incorrect punctuation and missing conjunction and preposition making the sentence ambiguous and grammatically dubious.

It reads: "a training device capable of providing for the respective component or system the representation of aircraft location, access, layout with sufficient accuracy and with interactive simulation for: servicing and the applicable maintenance data for operational (O) and functional (F) test elements including built-in test (BIT)......."

The colon in the middle of the sentence is unnessary and the conjunction 'and' is missing from the first line of the sentence. It should read:

"a training device capable of providing for the respective component or system the representation of aircraft location, access and layout with sufficient accuracy and with interactive simulation for servicing, and the applicable maintenance data for operational (O) and functional (F) test elements including built-in test (BIT)......."

This would communicate that the training device should be capable of providing for the respective component or system (1) the representation of aircraft location, access and layout with accuracy and with interactive simulation for servicing and (2) the applicable maintenance data for.....

Justification: There is ambiguity with the existing definition with an unnecessary colon in the text, a missing comma and a missing conjunction. I feel it is essential that the intent of the definitions are written in accurate and plain English so that there may be no confusion to the reader. Failing to do so may open the door to misconstructions and misunderstandings.

Page 25, top paragaph

Same as page 24, last paragraph, just for the colon and comma.

response	Accepted.

comment	94 comment by: FlightSafety International

DELETE the 5 bullets under the "7. maintenace simulation training device (MSTD) paragraph." These bullets are unnecessary definitions. The bullets will be limiting to what developments are done with MSTDs.

response	Not accepted. The WG selected a different approach, not considering the bullets as limiting for the future development of the MSTDs.

comment	223 comment by: EAMTC

AMC to Section 1 of Appendix III to Part-66 'Aircraft Type Training and Examination Standard. On-the- Job Training' - Aircraft Type Training

7. Maintenance simulation training devices (MSTD) ....

This definition may be extended to include "virtual aircraft" which is not mentioned elsewhere

— A maintenance simulation training device (MSTD) is a training device that is intended to be used in the maintenance training, examination, assessment for a component, system or an entire aircraft. The MSTD may consist of hardware and software elements. The complexity and degree of simulation may vary and support type training elements that address a component, a system or the whole aircraft (Virtual Aircraft). Based on their characteristics and capabilities, the MSTD may be:

response	Not accepted.
	'Entire aircraft' should not be confused with 'virtual aircraft'.

comment	224 comment by: M. de Klerk
	"The theoretical and practical trainig should be complementary and may be:"
	When it's possible to be indepedently approved for only the Practical Element, it should be possible by offering only the practical element according Appendix III, paragraph 3.2. Per definition this practical element should then be complementary to the theoretical element. With new training techniques, it makes sence that more theoretical and practical aspects become integrated or blended (which is good), but I think the option should remain that a MTO can be indepedently approved for only the practical element, which is only covering par 3.2 from Appendix III of Part-66. Potentially some practical aspects with be doubled (less efficient), but it should remain possible to be indepedently approved for only the Practical Element.
	I would like to replace the sentence, with the following sentence: "The theoretical and practical trainig may be:"
response	Not accepted.
	The term 'complementary' has not been introduced by NPA 2014-22. It is present in the current AMC to Section 1 of Appendix III to Part-66. The statement 'theoretical and practical training should be complementary' does not exclude the option that theoretical and practical training course may be independently approved. The Part-147 organisation may be approved for theoretical training only, practical training only, or both theoretical and practical training. However, even if theoretical training course has been completed in one Part-147 organisation and the practical training course in another, both training elements should be complementary.

comment	246 comment by: EAMTC
	Part 66 Appendix III
	4. Type training examination and assessment standard

4.1. Theoretical element examination standard

(f)....

An AMC is proposed to Part 66 Appendix III

4. Type training examination and assessment standard

4.1 Theoretical element examination standard (f)

When MBT has been used for an ATA chapter or part thereof the number of questions should be at equal to at least 1 question per hour of a course conducted by conventional instruction.

Whilst it is accepted that the subject matter of questions may be the same, questions used as part of the MBT learning programme shall not be used in course or phase examinations.

response	Partially accepted.
	Point 4.1.(f) of Appendix III to Part-66 has been replaced.
	New point 4.1.(j) has been added.

comment	318 comment by: KLM UK Engineering
	GM to Para 3 of Appendix 1. Suggest change the wording here from "Simulation is not an eligible tool" to "Simulation may not be an.." to allow for technological advances that might be introduced in the future. Table 1 Why state that elearning / distance learning etc could not be used for level 3 theoretical elements? Suggest that the regulation provides more flexibility here, in line with the general light touch approach in the rest of the NPA. Training providers will have to demonstrate the effectiveness of the training and competent authorities will have scope to restrict the use of these methods if they don't feel that they are suitable. Why can a virtual classroom not provide the same interaction as a traditional classroom setting? Existing software allows for visual contact, quizzes, polls, group work etc? These comments apply to both basic and type training
response	Partially accepted. The text has been reworded and now it reflects the intention of your comment. New text: 'Simulation cannot be eligible as a sole training or assessment tool for basic hand skills such as wiring, welding, drilling, filing, wire-locking, riveting, bonding or any other skill where competence may only be achievable by performing a hands-on activity.' Table 1

All training methods listed in the table may be used for level 3 theoretical elements. Some of the methods, including these you have mentioned in the comment, are not fully suitable without the support of a complementary training method in order to fulfil the learning objectives (limited suitability). The acceptance of the combination of two or more training methods is under the responsibility of the competent authority.

comment	352 comment by: Lufthansa Technical Training GmbH
	The given definitions are not suitable to reduce the already given range of interpretations and confusions existing in the industry and NAAs alike. Please revise / improve or delete them.
response	Partially accepted.

Some definitions have been revised and improved, some have been deleted, some new definitions have been added.

Please see also our replies to comments #346 and #363. |

3. Proposed amendments — 3.2. Draft Acceptable Means of Compliance and Guidance Material — Part-66 (Draft EASA Decision) — AMC to Paragraph 3. of Appendix III to Part-66 'Aircraft Type Training and Examination Standard. On-the- Job Training'   p. 25

comment	36 comment by: Delphine RYAN
	Same as comment #33 on page 19.
response	Accepted.

comment	225 comment by: EAMTC
	GM to Paragraph 3. of Appendix III to Part-66 'Aircraft Type Training and Examination Standard. On-the- Job Training' - Aircraft type training standard

A simpler form of wording is suggested

A combination, or blending, of several training methods/tools is recommended in order to benefit from the advantages of each method to increase the overall efficiency of the training. |
| response | Not accepted.

The use of the word 'blending' adds to the complexity. The Agency considers the current wording simpler. |

comment	226 comment by: EAMTC

	The following table identifies ......
	The table may be incorrectly described as it does not state any benefits etc. A simpler form of wording is suggested
	The following table presents the combination of training methods and tools that may be taken into account when selecting them for aircraft type training.
response	Accepted.
	New text: 'The following table presents the combination of training methods that may be taken into account when selecting them for aircraft type training.'

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3. Proposed amendments — 3.2. Draft Acceptable Means of Compliance and Guidance Material — Part-66 (Draft EASA Decision) — GM to Paragraph 3. of Appendix III to Part-66 'Aircraft Type Training and Examination Standard. On-the- Job Training'   p. 25-29

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comment	11 comment by: CAE
	(1) Limited functionality. It means Potentially limited functionality. If so, it means that the respective training method can be used but with limited results, thus requiring the support of a complementary training method to fulfil the learning objectives.
response	Partially accepted.
	'Limited functionality' has been changed to 'Limited suitability'.

comment	12 comment by: CAE
	'Suitable' means an aircraft of the type or license category (if the license category aircraft is outfitted with the same equipment subject to the particular lesson module(s) and is sufficiently similar so that the lesson objective(s) can be satisfactorily accomplished) for type training, or an aircraft representative of the licence category for basic training, and excludes 'virtual aircraft'.
response	Accepted.

comment	37 comment by: Delphine RYAN
	Page 27, same as comment #34 referring to OJT paragraph on page 21.
response	Accepted.

comment	95 comment by: FlightSafety International
	Replace: "The following table identifies the combination of training methods and tools in reference to training elements and learning objectives and indicates their limitations to be taken into account when selecting the actual training method(s) in aircraft type training."

With: "The following table presents a list of those methods which could be acceptable for delivering theory and practical training. The table is intended to support potential delivery methods but is not considered comprehensive. Additional training methods and further use of those methods defined could be acceptable by the competent authority when demonstrated as meeting learning objectives."

response	Partially accepted. The text has been reworded.

comment	96 comment by: FlightSafety International Recommend deleting the columns associated with "Learning Objectives" "Knowledge" "Skills" "Attitude" These columns are not supportive to the intent of the table which is to define the theory and practical applications for training methods.
response	Not accepted. The reference table allows better understanding of the application of the training methods as it clearly shows which learning objective each of the training method supports.

comment	97 comment by: FlightSafety International Delete the Row: "Theoretical Training" and all of its content. Thoery is a type of training, not a training method and therefore should not be defined as a method.
response	Accepted.

comment	98 comment by: FlightSafety International Delete the Row: "Practical Training" and all of its content. Practical is a type of training, not a training method and therefore should not be defined as a method.
response	Accepted.

comment	99 comment by: FlightSafety International Change the training method "Assisted learning (mentoring)" to read "OJT". Assisted learning and OJT have the same basic definitions in the following table 2 and therefore can be consolidated into a single definition. Recommending OJT as it is a familiar term. Also, Assisted learning is not a deliverable which can truely be done by the part 147.
response	Not accepted.

OJT removed from Table 2 (Definition of training methods) in both Appendices I and III in order not to confuse it with the OJT required for the first aircraft type in the (sub)category. OJT, as currently defined in Part-66, cannot be used as a training method in basic knowledge and aircraft type training courses.

Assisted learning refers to both theoretical and practical training.

comment	100 comment by: FlightSafety International
	Delete the row "e-learning" from the table 1.
	E-learning is a generic term used to define many different training methods and is not a particular method itself
response	Not accepted.
	E-learning may include other training methods described in the table, but has been retained, because it is a more general term. It does not encompass the same elements as distance learning.
	See also our reply to comment #363.

comment	101 comment by: FlightSafety International
	Delete the row "Multimedia-based training" from the table 1.
	This is a generic term deployed by EASA for general e-learning and can mean many different training methods. Therefore, this row and its content should be removed from the table.
response	Not accepted.
	MBT may include other training methods described in the table, but has been retained, because it is a more general term. It does not encompass the same elements as e-learning.
	See also our reply to comment #363.

comment	102 comment by: FlightSafety International
	Delete the row "M-Learning" from the table 1.
	M-Learning is defined in Table 2 with the same basic definition as "Distance Learning". Therefore, M-Learning should be eliminated from the Table 1 and its definition removed from Table 2.
response	Not accepted.
	M-learning is considered as a specific form of e-learning, indicating the use of mobile electronic devices. It can be used at any location of the student's choice.
	See also our reply to comment #363.

comment	103 comment by: FlightSafety International
	Table 1, Row "Demonstration"
	Remove the "(1)" limitation for theory mastery level 3. Demonstration is second only to actually performing the task first hand. Therefore, we should not put limitations on demonstration for level 3 tasks as we want students to see demonstrations, if there is no possiblities to actually perform the task first hand.
response	Not accepted.
	'x1' refers only to theoretical limitation and not to the practical element. If demonstration is used in theoretical training for Level 3, an additional training method should be selected, such as lecturing.

comment	104 comment by: FlightSafety International
	Table 2
	Delete the row associated with "Assisted Learning (mentoring)
	Eliminate this method as it likens to OJT and is not a measurable or deliverable method for a part 147. Recommended in table 1 that Assisted Learning be changed to OJT which is defined below in table 2.
response	Not accepted.
	It has not been deleted from Table 1, as a consequence it cannot be deleted from Table 2. The same justification as for Table 1 applies. See also the answer to your comment No 82.

comment	105 comment by: FlightSafety International
	Table 2
	Delete the row associated with "E-learning"
	This is a generic term used for many different types of electronic delivery methods and therefore should not be used.
response	Not accepted.
	It has not been deleted from Table 1, as a consequence it cannot be deleted from Table 2. The same justification as for Table 1 applies. See also the answer to your comment No 83.

comment	106 comment by: FlightSafety International
	Table 2
	Delete the row associated with "M-Learning"
	This is the same basic definition as what is provided for distance learning.
response	Not accepted.

It has not been deleted from Table 1, as a consequence it cannot be deleted from Table 2. The same justification as for Table 1 applies. See also the answer to your comment No 85.

comment	107 comment by: FlightSafety International

Table 2
Delete the row associated with "Multimedia-based Training"

Multimedia Based Training is the term EASA is using for the category of "E Learning" which is a general term and therefore should not be a training method. Therefore this should be eliminated from the table.

response	Not accepted.

It has not been deleted from Table 1, as a consequence it cannot be deleted from Table 2. The same justification as for Table 1 applies. See also the answer to your comment No 84.

comment	108 comment by: FlightSafety International

Table 2
Delete the row associated with "Practical Training"

Practical Training is a type of training and not a method. This is implied also by the table 1 which has "Practical elements" as a column header. Therefore, delete this row from the table.

response	Accepted.

'Practical training' deleted, as it does not fit into the table as the training method. It is rather the training type (like theoretical training) encompassing the training methods listed in the table.

comment	109 comment by: FlightSafety International

Table 2
Delete the row associated with "Theoretical Training"

Theoretical Training is a type of training and not a method. This is implied also by the table 1 which has "Theory elements" as a column header. Therefore, delete this row from the table.

response	Accepted.

'Theoretical training' has been deleted, as it does not fit into the table as the training method. It is rather the training type (like practical training) encompassing the training methods listed in the table.

comment	110 comment by: FlightSafety International

	Table 2 Note (2) Delete the Table 2 Note (2) as MBT is also recommended to be removed from the table of definitions. It is a generic term used to define many different methods and is not a specific method itself.
response	Not accepted. MBT has not been removed from Table 2 as a training method, hence additional information regarding MBT has been retained as a footnote in Table 2. It became footnote (4), as the definitions of instructor-centred and student-centred methods have been added as (1) and (2).

comment	128 comment by: AgustaWestland Training Academy Table 1 (row Computer-based training, column Practical elements) - Add following note (2): Limited to subject defined in to OSD as not TASE (Training Areas Special Emphasis)
response	Partially accepted. The intention of your comment is now covered by AMC to paragraph 3. of Appendix III to Part-66 'Aircraft type training and examination standard (complex and critical subjects/areas)'.

comment	129 comment by: AgustaWestland Training Academy Practical training - Practical training refers to gaining competence, using structured learning process, instructor led, in a classroom, simulation, on aircraft or in shops environment. It does not necessarily result in physical removal/installation maintenance actions on real aircraft (removal/installation).
response	Not accepted. Your comment becomes now obsolete, as 'practical training' has been removed from Table 1 and Table 2.

comment	154 comment by: Ryanair This table is too subjective. It was stated at the workshop that lecturing cannot be done in a virtual environment and attitude can only be changed/taught in person. Virtual Learning There are many industries and situations where a different view on this is taken. Open University and Coursera for instance are excellent examples of how distance learning can be achieved where lecturing is virtual and "face to face" can occur on different continents. Attitude No matter how many times you're told the dangers of human error - nothing demonstrates that point more than viewing one of the many documentaries on aircraft crashes.

response	Noted. Generally speaking, lecturing can be done in a classroom, virtual classroom or can be recorded. GM to Section 3. of Appendix I and III to Part-66 defines lecturing as face-to-face delivery of training and learning material between an instructor and students. 'Lecturing' in a virtual environment falls under distance learning synchronous. If the lecture is recorded, it falls under distance learning asynchronous, MBT or any other self-paced method, but may also be used as demonstration.

comment	155 comment by: Ryanair Propose changing to Potential for limited functionality. It can be used as a warning of the limits of certain methods but should not be as restrictive as it is. The restrictions need to be put into the examinations; not the training.
response	Not accepted. 'Potentially' may cause additional ambiguities. 'Limited functionality' has been replaced with 'Limited suitability'.

comment	156 comment by: Ryanair It would be beneficial if the "limited results" were defined so that the most appropriate complementary training method can be chosen.
response	Not accepted. The determination of the limits of each training method was extensively discussed in the Working Group. Finally, it was decided not to include detailed limitations, as the fast development of the training methods and tools may make these limitations obsolete and unnecessary restrict the intended flexibility. The Agency's intention is to propose rules resistant and open to the fast development of the modern training methods, technologies and tools over time, in order to avoid frequent amendments to adapt the rules to them, which might be necessary in case of prescriptive and excessively detailed requirements. Two or more complementary training methods with limited suitability may support each other in achieving the learning objectives.

comment	160 comment by: Ryanair PC means "personal computer" and includes desktop units and laptop units. Anything that can be done on a desktop unit, can also be done on a laptop. Excluding laptops in this instance does not seem to add any benefit.
response	Accepted. Table 3 adapted to address your comment.

comment	161 comment by: Ryanair
	Mobile Devices are defined as portable computing devices such as a smart phone or tablet.
	These devices tend to have slightly less functionality than a PC.
	Putting a laptop in this, more restrictive section, does not make sense.
response	Accepted.
	Table 3 adapted to address your comment.

comment	162 comment by: Ryanair
	Suggest combining these two training tools.
	There should be just one "Classroom" tool which can be either physical or virtual.
response	Not accepted.
	The separated definition has been retained because of the codification used to define which of the training tools is suitable for each particular training method (see Table 1).

comment	164 comment by: Ryanair
	Demonstration can be done as on-the-job training. There are many shadowing / mentoring programs that run while on the job and prove invaluable as a learning tool, particularly when the opportunity arises to demonstrate an uncommon tasks.
response	Accepted.

comment	165 comment by: Ryanair
	There is a lot of overlap and contradictions due to training methods and training devices all being classified as methods.
	A method is a way of conducting something. A device is how the method is conducted.
	For instance e-learning is defined as learning conducted via electronic media. Method : E-learning Device : M-Learning
response	Not accepted.
	Both e-learning and m-learning are training methods. As explained in many replies to the comments in this document, there are some partial overlapping in training methods (i.e. e-learning and m-learning), still retaining certain specificities. We consider that there is no overlapping between training methods and training tools.

comment	166　　　　　　　　comment by: Ryanair
	E-learning should not be restricted for level 3.
	If it is restricted, a definition as to why should be included.
response	Not accepted.
	The Working Group considered that the learning objectives for level 3, as stated in Appendix III to Part-66, point 2, cannot be achieved solely through e-learning (distance learning). Further justification is given in the new AMC to Section 3. of Appendix III to Part-66 (ref. to complex or critical subjects/areas).

comment	173 ❖　　　　　　　comment by: Dassault Aviation
	About the § " —Introduce, in addition to the traditional training methods, new training methods such as e- learning (or any digitalized tutor devices at the training facilities), Distance Learning or Web- Based Training (WBT) (at home or remote from the training organizations), Multimedia-Based Training (MBT), Computer-Based ,Training (CBT), practical training on virtual training devices."
	Dassault-Aviation suggest an addition of the term "Web-Based Training" defined in: ·　　Training Methods and Tools Reference – Basic Knowledge Training Table 2 under (Training Method - Page 21) ·　　Training Methods and Tools Reference – Aircraft Type Training Table 2 under (Training Method - Page 27)
response	Accepted.

comment	202　　　　　　　　comment by: EAMTC
	GM to Paragraph 3. of Appendix III to Part-66 'Aircraft Type Training and Examination Standard. On-the- Job Training' Aircraft type training standard
	Table 1 An asterisk (*) should be given in the training method column at Computer Based Training, e-Learning, M-Learning, Distance Learning Asynchronous and Distance Learning Synchronous.
	The explanation at the bottom of the table should say: - * May also be known as Web Based Training
	Note 1 should be removed. A limit is not defined and an all encompassing limit may not be definable. The TNA should include details of training methods used. Use of future innovations would be precluded by the imposition of limits.
response	Not accepted.

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Please see our replies to comments #346 and #363 regarding the partial overlapping of the training methods.

'Limited functionality' has been replaced by 'limited suitability'. The training methods marked with 'x1' should be combined (or blended) with other training method(s) to fulfil the learning objectives. The WG decided not to define the limitations because they might quickly become obsolete due to the fast development of the training methods and tools. It is the responsibility of the competent authority to accept the training methods proposed by the organisation.

comment	227	comment by: EAMTC

GM to Paragraph 3. of Appendix III to Part-66 'Aircraft Type Training and Examination Standard. On-the- Job Training' - Aircraft type training standard

It is suggested to simplify the title of table 1

Training Methods and Tools Reference Table – Aircraft Type Training

Aircraft Type Training Methods and Tools Reference Table

response	Not accepted.

comment	228	comment by: EAMTC

GM to Paragraph 3. of Appendix III to Part-66 'Aircraft Type Training and Examination Standard. On-the- Job Training' - Aircraft type training standard

Table 2

Assisted learning (mentoring) is listed as Instructor Centred and Blended training, however, as mentoring is usually a combination of efforts and dialogue between instructor and student there are points in the process where the activity is student centred. It is suggested that rather than totally exclude mentoring from being considered as student centred, that an "X" be placed in the student centred column.

response	Accepted.

comment	229	comment by: EAMTC

GM to Paragraph 3. of Appendix III to Part-66 'Aircraft Type Training and Examination Standard. On-the- Job Training' - Aircraft type training standard

Table 2

Demonstration is only listed as Instructor Centred however, it could be blended with other methods, e.g. "This is how you do it" - demonstration – followed by, "Now, you do it / you try it"...

	All of the training methods listed have their merits and could logically be used in conjunction with any other training method. It would be beneficial if rather than excluding any methods from blended training that all methods were permitted. It is suggested that an "X" be placed for all methods in the "Blended Training" column.
response	Accepted. 'x' placed for all training methods in the 'Blended training' column.

comment	230 comment by: EAMTC GM to Paragraph 3. of Appendix III to Part-66 'Aircraft Type Training and Examination Standard. On-the- Job Training' - Aircraft type training standard Table 2 Note (2) ...... It is suggested to remove the indefinite article in order for the sentence to make sense. Multimedia-based training by definition uses various media to achieve its objective, thus, none of the single media listed is per se a complete solution for training.
response	Accepted.

comment	231 comment by: EAMTC GM to Paragraph 3. of Appendix III to Part-66 'Aircraft Type Training and Examination Standard. On-the- Job Training' - Aircraft type training standard Table 3....MSTD — This definition may be extended to include "virtual aircraft" which is not mentioned elsewhere in the tables MSTD — Maintenance simulation training device - Device that is intended to be used in the maintenance training, examination, assessment for a system or an entire aircraft (Virtual Aircraft). The MSTD may consist of hardware and software elements.
response	Not accepted. 'Entire aircraft' should not be confused with 'virtual aircraft'.

comment	232 comment by: EAMTC

GM to Paragraph 3. of Appendix III to Part-66 'Aircraft Type Training and Examination Standard. On-the- Job Training' - Aircraft type training standard

Table 3....Embedded training - .....

It is suggested that an example would be helpful in order to better understand the meaning of the phrase

Embedded training - A maintenance training function that is originally integrated into the aircraft component's design (e.g. a Centralised Fault Display System)

| response | Accepted. |

| comment | 282 comment by: AIRBUS DEFENCE & SPACE |

We suggest to be coherent at the time of using the term "training method". This should be in line with the proposal under "AMC to Paragraph 3 of Appendix I to Part-66 'Basic knowledge requirements' Basic Knowledge training standard" in which the training methods are categorised as 'instructor-centred','student-centred' and 'blended training'.

We suggest to include clear definitions in order to be able to understand the scope of each term.

We suggest to review the so called "Training Methods" to have a more solid construction, also in line with the previous paragraphs;e.g.:

The terms "theoretical training" and "practical training" are more addressing the type of training content, rather than the training method itself.
Computer-based Training is considered more a tool than a method.

| response | Partially accepted.

The definitions for 'instructor-centred methods', 'student-centred methods' and 'blended training' are now given in the footnote of Table 2.

'Theoretical training' and 'practical training' have been removed from Table 1.

Computer-based training is a training method; computer is a training tool. Please see the definitions in Table 2 and Table 3. |

| comment | 283 comment by: AIRBUS DEFENCE & SPACE |

Table 3.

Computer (Desktop PC) and Mobile devices are considered more hardware supporting content (slides, manuals,video, interactive elements,simulation,etc) rather than training tools.

	"Classroom" and "Virtual Classroom" are not supporting any content. Please, consider if they can be training tools.
response	Not accepted.

comment	284 comment by: AIRBUS DEFENCE & SPACE
	Table 3.
	Please, clarify if a Virtual Aircraft is classified as a MSTD or as a Virtual Reality tool
response	Accepted.
	'Virtual aircraft' has been added with its definition to the training tools in Table 3 and consequently included in Table 1. This means 'virtual aircraft' is neither an 'MSTD' nor a 'virtual reality' tool.

comment	297 comment by: ATF - Awareness Training Fakoussa
	the usage of MTD and MSTD for consciousness and awareness training are again not mentioned. this will be interpreted by the students of the future that awareness and decision making is NOT part of maintenance work. and also the instructors will neither have the knowledge nor the skills to combine the manual skills training with safety and awareness.
response	Noted.
	The main objective of RMT.0281 is to introduce new training methods and tools for the training of maintenance staff. Non-technical skills, attitude, behaviour, safety awareness, situational awareness and other human factors issues should also be observed, as described in the training objectives, during the theoretical and practical training, and in particular during the assessment.
	The elements of your comment are already covered in human factors training (M9), maintenance practices (M7), practical element of the training course and the OJT, taking into account the human factors and safety awareness principles. We agree that the new training methods and tools (MSTDs, MTDs, virtual reality, augmented reality, etc.) should take into account human factors principles, including situational awareness, consciousness and decision-making. By its very nature these devices are beneficial in practising the skills, the motoric system, raising confidence in performing the tasks, while at the same time avoiding potential hazards and risk connected with the task performance on an operational aircraft. Performing the tasks on such devices may result in complacency, hence the role of the instructor in terms of promoting human factors principles during the task performance is crucial.

comment	310 comment by: Ryanair Quality Manager
	Propose changing to Potential for limited functionality.
	It can be used as a warning of the limits of certain methods but should not be as restrictive as it is.

	The restrictions need to be put into the examinations; not the training. It would be beneficial if the "limited results" were defined so that the most appropriate complementary training method can be chosen.
response	Not accepted. 'Potentially' may cause additional ambiguities. 'Limited functionality' has been replaced with 'Limited suitability'.

comment	311 comment by: Ryanair Quality Manager Demonstration can be done as on-the-job training. There are many shadowing / mentoring programs that run while on the job and prove invaluable as a learning tool, particularly when the opportunity arises to demonstrate an uncommon tasks
response	Accepted.

comment	314 comment by: BCAA GM to Paragraph 3. of Appendix III to Part-66 'Aircraft Type Training and Examination Standard. On-the Job Training' For following training methods: Lecturing (instructor-led / face to face); Assisted learning (mentoring) and Demonstration the use of a Computer (desktop PC) (3) is allowed as training tool but the use of a mobile device (such as a laptop) (4) isn't allowed. In our opinion a laptop should also be allowed because it is also a Computer. Even tablets should be considered at the same level, as the difference between tablet and laptop become difficult to see for some products. The difference should be done by the size of the display (screen).
response	Accepted. Laptop is now defined as computer (same as desktop PC). Table 3 has been adapted accordingly. One may argue that laptops are also mobile devices, but they are considered on the table as computers, since today in terms of system capacities and abilities there are almost no differences between computers and laptops (they may also be connected to large monitors, printers, etc.), whereas mobile devices still have some disadvantages compared to laptops and desktop computers. With the future development of computer technology and software solutions these disadvantages may disappear, as they have already disappeared between computers and laptops. Today we already have hybrids between laptops and tablets and between tablets and phones (phablets).

comment	353 comment by: Lufthansa Technical Training GmbH Example for (some) pointless definitions: "OJT is good for OJT!?" Suggest to erase complete column for OJT. OJT should be defined in Part-145 and/or Part-M, Subpart F.
response	Partially accepted. OJT has been deleted as a training method from Table 1 and Table 2 for aircraft type training.

comment	354 comment by: Lufthansa Technical Training GmbH
	Please add a definition of 'workshop'.
response	Not accepted.

'Workshop' is neither a training method nor a training tool. We do not see your justification or reasoning why and where the definition of 'workshop' should be given. |

comment	382 comment by: SEAS
	It can be used as a warning of the limits of certain methods but should not be as restrictive as it is.

The restrictions need to be put into the examinations; not the training.

It would be beneficial if the "limited results" were defined so that the most appropriate complementary training method can be chosen.

Just one "Clasroom" tool should be which can be either physical or virtual |
| response | Not accepted.

We consider the restrictions for examinations solid (see the definition of the 'controlled environment' for examinations).

The determination of the limits of each training method was extensively discussed in the Working Group. Finally, it was decided not to include detailed limitations, as the fast development of the training methods and tools may make these limitations obsolete and unnecessary restrict the intended flexibility. The Agency's intention is to propose rules resistant and open to the fast development of the modern training methods, technologies and tools over time, in order to avoid frequent amendments to adapt the rules to them, which might be necessary in case of prescriptive and excessively detailed requirements.

Two or more complementary training methods with limited suitability may support each other in achieving the learning objectives. |

3. Proposed amendments — 3.2. Draft Acceptable Means of Compliance and Guidance Material — Part-66 (Draft EASA Decision) — AMC to Paragraph 3.1(d) of Appendix III to Part-66 'Aircraft Type Training and Examination Standard. On-the- Job Training'	p. 30-31

comment	111 comment by: FlightSafety International
	4.(b) - Change "TNA for a GA aircraft course could demonstrate that a course of a shorter duration satisfies the requirements.

TO: "The TNA can demonstrate that a course of a shorter duration satisfies the requirements." |

	The revised texts removed "for a GA aircraft course". Delete this text as it closes the door for aircraft other GA to use TNA to demonstrate content and duration based on TNA.
response	Partially accepted. The sentence 'TNA for a GA aircraft course could demonstrate that a course of a shorter duration satisfies the requirements' is already contained in the current AMC and is given just as an example for a shorter course duration in the case of GA. The new points b) and c) are given as examples where the reduction of the duration may be acceptable for large aircraft (Group 1) as well. Consequently, we consider that the final proposal meets the intention of your comment.

comment	112 comment by: FlightSafety International 4.(c) - Change "(i.e. flat panel trainer)" TO: "(see GM to Paragraph 3 of Appendix III of Part 66, Table 3)" This is a better reference for providing context to the statement as it ties back to the appropriate table.
response	Not accepted. 'Flat panel trainer' in the brackets is just given as an example of an MSTD. Of course, any other device falling under the definition of MSTD given in Table 3 and also in AMC to Section 1 of Appendix III to Part-66 is equally acceptable.

comment	113 comment by: FlightSafety International 5. (j) - Make both attendance and content the same. Option 1 - Make both 90% Option 2 - Make both 95% This is necessary as content is a reflection of duration and the same is true for duration being a reflection of content. With that said, the 2 requirements should be the same.
response	Not accepted. Increasing the classroom attendance to 95 % would be imposing new (stricter) requirement which cannot be justified. In the case of asynchronous distance learning, normally the full content of the material should be completed, because the student controls his or her learning time and pace. The problem that might occur is that in some Learning Managements Systems (LMR), even in the case of completing the full content, may record only 98 % or 99 %. For that reason, the buffer of 5% is given. Please note that the provision on 90 % of the physical attendance and 95 % completion of the content are contained in the AMC. Consequently, it is not a strict requirement and lower attendance and less completion of the content may be acceptable to the competent authority in certain cases justified by the student (i.e. illness proved by a medical certificate).

comment	130 comment by: AgustaWestland Training Academy
	AMC to Paragraph 3.1 of Appendix III to Part-66 - 4 (c) - The use of an MSTD (i.e. flat panel trainer) comprising actual aircraft software or other new training delivery tools may result in the duration of the training being reduced due to a more effective transfer of knowledge, using the multimedia-based training (or blending the training methods) may improve the efficiency of training and, consequently, contribute to a reduction of the overall time needed to achieve the learning objectives.
response	Not accepted. Giving an example of MSTD does not exclude other new training methods and training tools. The acceptance of any method and/or tool for the purpose of the reduction of the training duration is under the responsibility of the competent authority.

comment	180 comment by: AIRBUS
	PARAGRAPH / SECTION THE COMMENT IS RELATED TO: page 31 AMC to Paragraph 3.1(d) of Appendix III to Part-66 'Aircraft Type Training and Examination Standard. On-the-Job Training' Training Needs Analysis for the Theoretical Element of the Aircraft Type Training Paragrap j PROPOSED TEXT / COMMENT: replace "95 % of the content" by "95 % of the learning units" RATIONALE / REASON / JUSTIFICATION: Practicability
response	Not accepted. 'Learning unit' is not defined.

comment	194 comment by: EAMTC
	AMC to para 3.1(d) of Appendix III to Part-66 (4)(c) Please remove the wording "comprising actual aircraft software" as everything can be simulated. This phrase would only incur added cost. The wording "comprising aircraft type specific software" is proposed.. We are aware that this is only an example. The use of an MSTD (i.e. flat panel trainer) comprising aircraft type specific software may result in the duration of the training being reduced due to a more effective transfer of knowledge, using the multimedia-based training (or blending the training methods) may

	improve the efficiency of training and, consequently, contribute to a reduction of the overall time needed to achieve the learning objectives.
response	Accepted.

comment	269 comment by: NHF Technical committee j) NHF support the change of minimum participation time from 90 to 95%.
response	Noted.

comment	285 comment by: AIRBUS DEFENCE & SPACE Training Need Analysis for the Theoretical Element of the Aircraft Type Training. paragraph 4 (c). MSTDs can be based in different type of software: actual aircraft software, aircraft retrofit software, accurate aircraft systems simulation models,etc. We suggest to replace Paragraph 4(c) with the following text: "4(c) 'The use of an MSTD (i.e. flat panel trainer) comprising aircraft type software...'".
response	Accepted. 'Aircraft type specific software' is now used in the final proposal instead of 'actual aircraft software'.

comment	355 comment by: Lufthansa Technical Training GmbH Please provide a rule for making up 'time' and a rule for making up 'content'.
response	Partially accepted. Since currently the classroom training is the only option for basic training and aircraft type training, it is obvious that the 90 % as minimum refers only to the physical attendance of the trainee in the classroom. As the new training methods are introduced with RMT.0281, all asynchronous distance learning (self-paced, student-centred) methods cannot be expressed any more with the 'time attended in the classroom'. These training methods can only be measured with the 'completion of the content', defined as 95 %. In the final proposal '95% of the content' has been replaced by '95% completion of the content'.

comment	373 comment by: DGAC France Bullet point 4 b): DGAC France is always in favour of simplifying requirements for General Aviation. Nevertheless in this specific NPA, and as stated in § 4.4.5, "There are no proportionality issues identified. " Therefore, DGAC France is a little puzzled by this sentence and would like to be explained what is meant by the Agency.

| response | Noted.

As the Working Group did not identify any negative impact of the proposed amendments on SMEs and GA, it did noy treat them differently and no additional alleviations were proposed.

In fact, the SMEs and GA associations, based on the comments received, support the content of the NPA. |
|---|---|

| comment | 374   comment by: DGAC France

Bullet point 5 j): 95 % of the content in case of student-centred method. To be consistent with the 90 % attendance requirement, indicate also 90 %, otherwise indicate 100 %. |
|---|---|
| response | Not accepted.

Please see our reply to comment #355. |

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3. Proposed amendments — 3.2. Draft Acceptable Means of Compliance and Guidance Material — Part-66 (Draft EASA Decision) — AMC to Paragraph 4.1 of Appendix III to Part-66 'Aircraft Type Training and Examination Standard. On-the- Job Training'   p. 31

| comment | 131   comment by: AgustaWestland Training Academy

AMC to Paragraph 4.1 of Appendix III to Part-66 - Written MCQ examinations may be computer….. |
|---|---|
| response | Partially accepted.

The new text now reads: 'Examinations may be computer-based or hard copy-based, or a combination of both.' |

| comment | 150   comment by: Ryanair

Propose removing the word written. |
|---|---|
| response | Accepted. |

| comment | 157   comment by: Ryanair

Propose removing the word written. |
|---|---|
| response | Accepted. |

| comment | 197   comment by: EAMTC

AMC to par 4.1 of Appendix III: Type training examination and assessment standard |
|---|---|

We note that the AMC relating to computer based examinations is only applicable to Type Training and not to Basic Training. This leaves the rule 147.A.135(d) unsupported by an AMC/GM. It is suggested to attach this AMC directly to the rule 147.A.135 (d).

response	Not accepted. AMC 147.A.135 already contains the following provision: 'Examinations may be computer- or hard-copy-based or a combination of both.'

comment	233 comment by: EAMTC AMC to Paragraph 3.1(d) of Appendix III to Part-66 'Aircraft Type Training and Examination Standard. On-the-Job Training' Improved text is suggested. 5. When developing the TNA, the following should be considered: j) The minimum participation criteria for the trainee in order to meet the objectives of the course shall not be less than 90 % of the tuition hours or 95 % completion of the content in case of the student-centred methods in a theoretical training course. Additional training may be provided by the training organisation in order for the trainee to meet the minimum participation criteria. If the minimum participation defined for the course is not met, a certificate of recognition shall not be issued. OR j) Minimum theoretical training for the issue of a Certificate of Recognition shall be not less than: - 90 % of the tuition hours OR - 95% completion of the course content where student-centred methods are used The training organisation may provide additional training in order for the trainee to meet the minimum required. If the minimum is not met a Certificate of Recognition shall not be issued.
response	Partially accepted. 'The minimum participation criteria for the trainee in order to meet the objectives of the course should not be less than 90 % of the tuition hours or 95 % completion of the content in the case of the student-centred methods in a theoretical training course. Additional training may be provided by the training organisation in order for the trainee to meet the minimum participation criteria. If the minimum participation defined for the course is not met, a certificate of recognition should not be issued.' Please note that 'shall' cannot be used in AMC & GM — it is reserved for the implementing rules. The provision of 90 % of the physical attendance and 95 % completion of the content are contained in the AMC. Consequently, it is not a strict requirement and lower attendance

and less completion of the content may be acceptable to the competent authority in certain cases, if properly justified by the student (i.e. illness proved by a medical certificate).

comment	234 comment by: EAMTC
	AMC to Paragraph 4.1 of Appendix III to Part-66 'Aircraft Type Training and Examination Standard. - On-the-Job Training' - Type training examination and assessment standard
	Written examinations may be computer-based or hard copy-based, or a combination of both as approved by the competent authority. Refer to AMC 147.A.135.
	As the exams in question are MCQ it is suggested to simplify the wording. Also, as all course elements must be approved by the competent authority it is superfluous to keep writing it in the regulations, AMC and GM: -
	MCQ examinations may be computer-based or hard copy-based, or a combination of both. Refer to AMC 147.A.135.
response	Partially accepted.
	The wording has been simplified as follows: 'Examinations may be computer-based or hard copy-based, or a combination of both. Refer to AMC 147.A.135.'

comment	291 comment by: Federal Office of Civil Aviation FOCA
	· The possibility to perform basic as well as type training examination over distance as mentioned under 147.A.135 should be prevented except an examiner is actually present (avoiding a mentor being on the other side of the world) Otherwise this leads to ample possibilites of cheating.
response	Accepted.
	Complying with the controlled environment as defined in 147.A.135(d) addresses this concern. Facility requirements as defined in 147.A.100 shall be observed as well. The details of the controlled environment shall be described in the MTOE. It is understood that the competent authority will not approve the MTOE procedure, if not satisfied that the conduct of the examination process, the integrity of the examination and the security of the examination cannot be established and verified.

3. Proposed amendments — 3.2. Draft Acceptable Means of Compliance and Guidance Material — Part-66 (Draft EASA Decision) — AMC to Section 6 of Appendix III to Part-66 'Aircraft Type Training and Examination Standard. On-the- Job Training'	p. 31

comment	167 comment by: Ryanair
	Where a device provides the same functionality as a real aircraft, its use for OJT should be permitted.

	There is the possibility of a system being made tech for the purpose of training, when the same knowledge could be gained in a different environment.
	Alternatively - there could be students throughout the network without the opportunity to perform certain tasks due to their base.
	A certain percentage should be allowed so there is some flexibility available.
response	Not accepted. Please see the preceding point of AMC to Section 6. of Appendix III to Part-66: '2. The OJT should include one to one supervision and should involve actual work task performance on aircraft/components, covering line and/or base maintenance tasks.'

comment	270 comment by: NHF Technical committee
	3. NHF support the clarification and adding the MSTD and MTD to the text. NHF does not see any benefit of deleting "simulators" from the text, and proposes that "simulators" are not deleted. As well, this text should be moved to IR, to prevent misunderstandings, as the text has a clear definition and a clear statement.
response	Noted. As per AMC to Section 1 of Appendix III to Part-66, point 6., flight simulation training devices (FSTD) may be used as MSTD whenever their characteristics and capabilities are considered appropriate for, and supportive of, the delivery of the respective maintenance training element.

comment	298 comment by: ATF - Awareness Training Fakoussa
	Quote: "The use of an MSTD (i.e. flat panel trainer) .... may improve the efficiency of training and, consequently, contribute to a reduction of the overall time needed to achieve the learning objectives." this is only true for the pure technical knowledge transfer. the efficiency of working in a safe and aware way is reduced if not part of the training scenario right from the start.
response	Noted.

comment	312 comment by: Ryanair Quality Manager
	Where a device provides the same functionality as a real aircraft, its use for OJT should be permitted. There is the possibility of a system being made tech for the purpose of training, when the same knowledge could be gained in a different environment. Alternatively - there could be students throughout the network without the opportunity to perform certain tasks due to their base. A certain percentage should be allowed so there is some flexibility available.
response	Not accepted.

Please see the preceding point of AMC to Section 6. of Appendix III to Part-66:
'2. The OJT should include one to one supervision and should involve actual work task performance on aircraft/components, covering line and/or base maintenance tasks.'

comment	321 comment by: Prestwic Aircraft Maintenance
	Where a device provides the same functionality as a real aircraft, its use for OJT should be permitted provided the device is not deemed unserviceable.
response	Not accepted.

Please see the preceding point of AMC to Section 6. of Appendix III to Part-66:
'2. The OJT should include one to one supervision and should involve actual work task performance on aircraft/components, covering line and/or base maintenance tasks.' |

comment	356 comment by: Lufthansa Technical Training GmbH
	A real aircraft can, per previous definitions in the tables above, also be a "MTD". Please change the sentence to the following: 'The use of training devices other than real aircraft in operation for OJT should not be allowed.'
response	Not accepted.

The Agency does not agree with your interpretation. Real aircraft should fulfil the 'Condition'" criteria. MTD may include mock-ups which are defined as 'scaled or full-sized replica of a component, system or entire aircraft.' |

comment	383 comment by: SEAS
	Where devices provides the same functionality as a real aircraft, its use for OJT should be permitted.

There is the possibility of a system being made tech for the purpose of training, when the same knowledge could be gained in a different environment.

Alternatively - there could be students throughout the network without the opportunity to perform certain tasks due to their base.

A certain percentage should be allowed so there is some flexibility available |
| response | Not accepted.

Please see the preceding point of AMC to Section 6. of Appendix III to Part-66:
'2. The OJT should include one to one supervision and should involve actual work task performance on aircraft/components, covering line and/or base maintenance tasks.' |

3. Proposed amendments — 3.3. Draft Regulation (Draft EASA Opinion) — Part-147 — SUBPART B — ORGANISATIONAL REQUIREMENTS	p. 32-34

comment	17	comment by: Aeroservis

This is completely unacceptable. No Part-147 organisation can be expected to make such a guarantee. This cannot be done effectively without authority to collect biometric data and authority to obtain access to the data of international governmental organisations from which to compare collected biometric data. To make this provision less draconian, the words "…and guaranteed." should be replaced with "…as far as is objectively reasonably possible." If the reasonability test (i.e. objectivity) is left out, then by its very nature, it implies an unreasonable burden.

response	Accepted.

'And guaranteed' has been deleted.

comment	114	comment by: FlightSafety International

147.A.100 Facility Requirement (b)

Change: "Fully enclosed appropriate accommodation separate from other facilities shall be provided for the
delivery of training and the conduct of knowledge examinations.

Recommend: "Fully enclosed appropriate accommodations shall be provided for
the delivery of training and the conduct of knowledge examinations."

This recommended statment is more direct and clear. The words "separate from other facilities" means that no other use for the building with be allowed and that closes the door on a lot of appropriate options.

response	Partially accepted.

The sentence has been reworded as follows: 'Fully enclosed appropriate accommodation separate from other facilities shall be provided for the delivery of theoretical training and the conduct of knowledge examinations.'

Theoretical training and knowledge examinations shall be conducted in dedicated appropriate facilities (i.e. classrooms) described in the MTOE and approved by the competent authority. The intention of the rule is to prevent the theoretical training and knowledge examinations from being conducted in inappropriate and non-approved facilities (i.e. office, canteen, hotel lobby, etc.)

comment	115	comment by: FlightSafety International

147.A.100 Facility Requirements (b)(1)

Current - "The maximum number of students undergoing knowledge training during any training course shall not exceed 28."
Recommend changing to - "The maximum student to instructor ratio shall not exceed 28:1 for any theoretical training course."

This is a more clear way to indicate the requirement.

response	Not accepted. Your comment relates to the requirement whose change has not been proposed in NPA 2014-22.

comment	116 comment by: FlightSafety International 147.A.100 Facility requirements (f) Current - "The maximum number of students undergoing practical training during any training course shall not exceed 15 per supervisor instructor of assessor." Recommend - "The maximum student to instructor/assessor ratio during practical training shall not exceed 15:1." The is a more clear way of indicating the requirement.
response	Not accepted. Your comment relates to the requirement whose change has not been proposed in NPA 2014-22.

comment	117 comment by: FlightSafety International 147.A.100 Facility Requirement (j) Recommend deleting the entire paragraph. Communicating this information is good but is should not be in the basic regulation. Consider moving the paragraph to GM.
response	Not accepted. The new point (j) is the derogation to points (a) and (d) and as such cannot be moved to GM.

comment	118 comment by: FlightSafety International 147.A.105 Personnel requiremnts (c) Current - "The maintenance training organisation shall contract sufficient staff to plan/perform theoretical and practical training, conduct knowledge examinations and practical assessments in accordance with the approval." Recommend changing to - "The maintenance training organisation shall contract sufficient staff to plan/perform the activities as defined by the scope of the organisations approval." This is a more concise way to state the requirement and is more sustainable language.
response	Not accepted.

	Your comment relates to the requirement whose change has not been proposed in NPA 2014-22.
	The intended change is only to replace 'knowledge and practical training' with 'theoretical and practical training'.

comment	119 comment by: FlightSafety International
	147.A.135 Examinations (d)
	Current - "For examination purposes, a controlled environment is one in which the identity of the students, the conduct of the examination process, the integrity of the examination and the security of the examination material shall be established, verified and guaranteed."
	Recommend changing to - "For examination purposes, a controlled environment is one in which the identity of the examinee can be confirmed, the examination process is controlled, and the security and integrity of the examination and exam materials are secure."
	This is a more clear way to write the requirement.
response	Partially accepted.
	'And guaranteed' has been removed.

comment	120 comment by: FlightSafety International
	147.A.145 Privileges of the maintenance training organisation (b)
	Recommend DELETING the new text for this part. The text is similar to 147.A.145(c) and therefore it is redundant. See recommend comment on 147.A.145(c).
response	Accepted.
	The new text has been deleted from 147.A.145(b). It has been reworded and included in the new AMC 147.A.145(c).
	(c) concerns locations which are not approved (not in the approval certificate), while (b) concerns approved locations defined in the MTOE.

comment	121 comment by: FlightSafety International
	147.A.145(C) Add - "Training and knowledge examination may be conducted using a URL (Universal Resource Locator) provided the requirements of 147.A.100 and 147.A.135 are maintained."
response	Not accepted.
	Only URLs approved through MTOE can be considered as virtual locations of the organisation. The approved URL may be accessed from any physical location where internet is available.

The new AMC 147.A.145(c) provides now more information regarding training and knowledge examinations conducted via URL.

comment	132 comment by: AgustaWestland Training Academy 147.A.100 (h) - Secure storage facilities shall be provided for examination papers and training records hard and/or soft copy. The storage environment shall be such that documents remain in good condition for the retention period as specified in 147.A.125. The storage facilities and office accommodation may be combined, subject to adequate security. Storage facility shall allow the organization to recover the stored files in a reasonable time
response	Not accepted. Your comment is valid, but outside the scope of RMT.0281.

comment	181 comment by: AIRBUS PARAGRAPH / SECTION THE COMMENT IS RELATED TO: page 32 147-A-100 (b) 1The maximum number of students undergoing knowledge training during any training course shall not exceed 28. (f) The maximum number of students undergoing practical training during any training course shall not exceed 15 per supervisor or assessor. PROPOSED TEXT / COMMENT: Add a note: For distance learning the maximum number of trainees may be higher subject to authority approval. RATIONALE / REASON / JUSTIFICATION: Those limitation are not representative of distance learning, e-learning methodology
response	Partially accepted. Point (b) is already covered by the derogation in point (j). 147.A.100 (j) has been amended to include the derogation for point (f) as well. This is due to the possibility that a part of practical training could be performed as distance learning.

comment	188 comment by: EAMTC "Controlled environment", as proposed, would raise problems due to "guaranteeing". A more "workable" paragraph is suggested: - 147.A.135 Examinations (a) ... (b) ...

	(c) ... (d) The examination shall be performed in a controlled environment by a Part-147 organisation and described in the MTOE. For examination purposes, a controlled environment is one in which the identity of the students is known and that the MTOE procedures are fully implemented for the conduct of the examination process. Further, the integrity of the examination and the security of the examination material shall be ensured.
response	Accepted. 'Guaranteed' removed, text rephrased and moved to AMC.)

comment	212 comment by: Luftfahrt-Bundesamt
	147.A.100 (j): Distance learning: Has the training organisation to verify the suitability of the learning location (maybe by sample checks)? Has the student to sign a formal obligation for the suitability of the learning location?
response	Noted. Suitability depends on the training provided and is considered the sole responsibility of the student. Please see AMC 147.A.145(c): 'When carrying out distance training, the learning location is the responsibility of the student and need not to be controlled by the training organisation'. No spot check by the organisation or signature of the student is required.

comment	213 comment by: Luftfahrt-Bundesamt
	147.A.135 (d): Controlled environment: The regulation should clearly define how to prove that the defined requirements („established, verified and guaranteed") are fulfilled. In our point of view this is not in line with 147.A.145 (b) [see also comment to 147.A.145 (b)]. From our point of view only 147.A.145 (c) is applicable.
response	Partially accepted. 'Guaranteed' has been removed and text reworded.

comment	214 comment by: Luftfahrt-Bundesamt
	147.A.145 (b): A network (e.g. the internet) is a tool/technology/system which maybe uses amongst other things URL (Uniform [not Universal] Resource Locator, see http://www.ietf.org/rfc/rfc3986.txt) to provide the exam questions to the student. But an URL (or even the internet) is not the location where training and/or examinations take place.

Nobody will call a question sheet the location where the examination takes place!

In our point of view the location of the training/examination is the place where the student is situated during the examination.

| response | Accepted.

The proposed provision in 147.A.145(b) has been deleted and rephrased in AMC 147.A.145(c). |

| comment | 235   comment by: EAMTC

AMC to Paragraph 4.1 of Appendix III to Part-66 'Aircraft Type Training and Examination Standard. - On-the-Job Training' - Type training examination and assessment standard

147.A.145 …… (b) Training, knowledge examinations, practical training and practical assessments may only be carried out at the locations identified in the approval certificate and/or at any location specified in the maintenance training organisation exposition. Training and knowledge examination location may include URL (Universal Resource Locator) addresses, provided the virtual environment is clearly described in the MTOE.
It is suggested to add the words "practical training" in order to avoid confusion or doubt on the part of Inspectors that word "training" would mean theoretical training and practical training. |

| response | Accepted.

147.A.145(b) has been reworded in line with your comment.

Please note that the sentence 'Training and knowledge examination location may include URL (Universal Resource Locator) addresses, provided the virtual environment is clearly described in the MTOE' has been removed from 147.A.145(b), reworded and included in AMC 147.A.145(c). |

| comment | 271   comment by: NHF Technical committee

147.A.100 (f) NHF fully support the change from supervisor to instructor. This is an good improvement for training quality given to the student. |

| response | Noted. |

| comment | 272   comment by: NHF Technical committee

147.A.100 (j) NHF does not support the use of location outside of control of the 147 organization. This may lead to situations were the student does not have a proper environment for learning, and the 147 organization may not be able to detect such flaw. |

| response | Not accepted.

Your comment does not fit into the concept of introduction of distance learning as a primary objective of this task. There are enough provisions introduced for the environment. In |

addition, the new AMC 147.A.145(c) now states: 'When carrying out distance training, the learning location is the responsibility of the student and need not to be controlled by the training organisation'.

Consequently, the learning environment is under the responsibility of the student. However, the organisation is obliged to raise the awareness about the suitability of the learning environment (see 147.A.100(j)).

comment	273 comment by: NHF Technical committee
	147.A.115 (a) How should the 147 organization be able to ensure that the student is able to easily read presentation text/drawings/diagrams if the presentation is presented in an uncontrolled enviroment/location. This may even be over a bad videopresentation, with bad internet connection, as the proposed text is formed now.
response	Noted.

147.A.115 concerns the instructional equipment, not the learning location. Regarding the learning location/environment, please see our reply to comment #272.

The organisation shall establish procedures covering the elements you mentioned in your comment. |

comment	293 comment by: Airbus Helicopters Training Academy
	AMC & GM have to provide a clear definition for "controlled environment" incl. assessment table providing criteria to assess/approve it.

Suggestion:
Invigilator or assessor of the Part-147 organization should be present during examination session (an external person could be proposed as invigilator by the 147 organization controlling the examination).
Identity of students should be assessed physically (ID, …) before examination starts.
Examination environment without any access to any external information should be ensured
NAAs can set up "assessment centres" that fulfil all requirements for "controlled environment" i.a.w. 147.A.135 and that can be used by PART-147 organizations |
| response | Not accepted.

The definition of the controlled environment is given in 147.A.135(d)). It is up to individual organisations to cover the details in their procedures and use an assessment table or otherwise.

The details of your comment given in bullets may be considered by the Working Group to be established for RMT.0544 Review of Part-147. |

comment	319 comment by: KLM UK Engineering
	147.a.135 Examinations

	(d) Suggest remove the word guaranteed, to leave "..the security of the examination material shall be established and verified".
response	Accepted. 'Guaranteed' has been removed.

comment	357 comment by: Lufthansa Technical Training GmbH Please delete the wording 'and guaranteed'. The process of conducting examinations, including its hardware / software aspects will already be described in the MTOE and approved by the competent authority. Any "guaranty" (in its common sense) cannot be given by any Part-147 and by no approach or tool. (e.g. we will never control the netscape of P.R. China in depth; we will never trick or block the NSA; we cannot predict or prevent web issues that lie in no-mans-land between our server facilities and our controlled examination location (potentially 10.000km away).
response	Accepted. 'Guaranteed' has been removed.

comment	397 comment by: ECOGAS/SVFB/SAMA (j) examinations off part 147 by other competent bodies such as schools, guilds, associations, for B3 should be taken into account to promote low cost, widespread opportunities for the job seeking youth.
response	Not accepted. Your proposal is not within the scope of RMT.0281. In addition, this is a Part-147 provision and it does not apply to Part-66 (direct approval of courses).

3. Proposed amendments — 3.3. Draft Regulation (Draft EASA Opinion) — Part-147 — SUBPART C — APPROVED BASIC TRAINING COURSE	p. 34

comment	133 comment by: AgustaWestland Training Academy 147.A.200 (g) - Notwithstanding point (f), in order to benefit from changes in training technology and methods (theoretical training), the number of hours as established in Appendix I (Basic training course duration) may be amended reduced provided that the syllabus content and schedule describe and justify the proposed change. A procedure shall be included in the MTOE to justify these changes
response	Not accepted. The term 'amended' already includes the notion of reduction.

comment	217 comment by: Luftfahrt-Bundesamt 147.A.200 (g):

	Has the training organisation the obligation to check the (reduced) number of hours spent by the students in the case of distance learning? For type training a minimum of 95% of the content is proposed by the amended AMC. For basic training nothing equivalent is defined.
response	Noted. No, the organisation has only to check whether the content has been completed with min. of 95%. This is usually recorded in LMS. AMC 147.A.200(f), point 2., has been amended as follows: 'The minimum participation criteria for the trainee in order to meet the objectives of the course should not be less than 90 % of the tuition hours or 95 % completion of the content in case of the student-centred methods in a theoretical training course. Additional training may be provided by the training organisation in order to meet the minimum participation criteria. If the minimum participation defined for the course is not met, a certificate of recognition should not be issued'.

comment	238 comment by: EAMTC
	147.A.200(g) Type Training organisations may benefit from the possible shortening of duration for theoretical and practical training. Whilst the proposed changes for Basic Training give the opportunity to change the theoretical training hours the following is proposed for the practical elements as Basic Training students may benefit from new technology tools in the same way as those to be used in Type training. (g) Notwithstanding point (f), in order to benefit from changes in training technology and methods (theoretical and practical training but excluding the duration in an actual maintenance environment), the number of hours as established in Appendix I (Basic training course duration) may be amended provided that the syllabus content and schedule describe and justify the proposed change. A procedure shall be included in the MTOE to justify these changes.
response	Not accepted. The practical training portion of basic training course cannot be reduced by distance learning. Minimum duration of basic training course in hours is defined in the revised Appendix I to Part-147. The remaining part of the course (theoretical) done by distance learning will be measured with 95 % completion of the content.

comment	244 comment by: EAMTC
	AMC 147.A.200 (d) .. It is suggested that that the following is added in order to prevent confusion: - AMC 147.A.200 (d)

	For MBT methods or where technology resources are used reference should also be made to AMC to Paragraph 3. of Appendix I to Part-66 'Basic knowledge requirements'
response	Not accepted. Your comment is not sufficiently justified. We do noy see a clear benefit from introducing the text proposed by you to AMC 147.A.200(d).

comment	274 comment by: NHF Technical committee 147.A.200 (g) NHF does not support reduction of minimum duration of courses. This is justified because more effetive training metods and new regulations should improve the total training "level". By reducing the duration, the "level" may be set back to the setting as before introduction of more effetive learning metods.
response	Noted. Regarding your comment about the reduction of the minimum duration of the training, please note that we did not propose any reduction of the training duration in basic training courses (Part-147 Appendix I). Instead, in the replaced point 147.A.200(g) we have introduced the following provision: '(g) Notwithstanding point (f), in order to benefit from changes in training technology and methods (theoretical training), the number of hours as established in Appendix I (Basic training course duration) may be amended provided that the syllabus content and schedule describe and justify the proposed change. A procedure shall be included in the MTOE to justify these changes.' This means that a part of the training course conducted as distance learning (self-paced methods, student-centred methods) may result in reduction or extension of the time spent for learning depending on the pace or need of each individual student. Hence, only the instructor-centred training (traditional classroom training, teaching in a virtual classroom, distance learning synchronous) can be expressed in hours, student-centred methods cannot; they are rather expressed as 'completion of the content', irrespective of how long the student has spent mastering the content.

comment	290 comment by: Federal Office of Civil Aviation FOCA · FOCA does not agree with the proposal to change 147.A.200 (f) as it leads to an unfair competition for training organizations teaching the traditional way in class rooms with the obligation to fulfill the requirement of 147.A.100 Facilities and 147.A.200 (f). FOCA doubts that students without any technical background can be equipped with extensive knowledge by limiting the learning at home on a computer-based platform without any illustrative displays.
response	Noted. There is no unfair competition, because using the traditional training methods needs less investment than implementing new technologies and the needed infrastructure in training. Everybody has the same opportunity to implement new technologies. Students without technical background simply need longer to gain the required knowledge in any system. Having the changing aircraft technology in mind, it is well needed to bring the students to a standard to cope with it.

comment	358 comment by: Lufthansa Technical Training GmbH
	Please clearly distinguish between hours and content.
response	Noted.
	Only the instructor-centred training (traditional classroom training, teaching in a virtual classroom, distance learning synchronous) can be expressed in hours, student-centred methods cannot; they are rather expressed as 'completion of the content', irrespective of how long the student has spent mastering the content.

3. Proposed amendments — 3.4. Draft Acceptable Means of Compliance and Guidance Material — Part-147(Draft EASA Decision) — AMC 147.A.100(i) Facility requirements	p. 34-35

comment	215 comment by: Luftfahrt-Bundesamt
	AMC 147.A.105: In our point of view every training organisation has the capacity to examine or assess 50 students in a 12-month period (= capacity to exam/assess one student per week). Better: "… the capacity to exam or assess 50 or more students simultaneously should appoint …"
response	Partially accepted.
	The amended AMC 147.A.105 now reads: 'Any maintenance training organisation with the capacity to train, examine or assess 50 students or more at the same time…'.

comment	239 comment by: EAMTC
	AMC147.A.100(i)(1) The term "hold and ensure reasonable access to copies of national aviation legislation" is unclear and may lead to confusion. Does it mean: - In every country where an organisation executes training? Only the country of the member state in which the principle location of the Basic MTO is based? What about Foreign Part-147? The following is proposed. For approved basic maintenance training courses: 1. For approved basic maintenance training courses this means holding and ensuring reasonable access to copies of all relevant EU Regulations and the member state's national aviation legislation, examples of typical aircraft maintenance manuals and service bulletins, Airworthiness Directives, aircraft and component records, release documentation, procedures manuals and aircraft maintenance programmes.
response	Accepted.

comment	240 comment by: EAMTC

AMC147.A.100(i)(2)
Typically the aircraft or aircraft systems in a Basic MTO are not maintained and modified to the latest aircraft specifications. The AMC requires to review and update all documents. This would result in a difference between the "hardware" of the Basic MTO's and the documentation (if this can be updated at all). This is undesirable from the training perspective as trainees would not be able to carry tasks in accordance with the AMM. Many organisations could not obtain the latest documentation for military aircraft on which basic training tasks are carried out.

If "updated" means that our documentation must "include" modern standards of aircraft and it's systems, then this is OK. However, it is unrealistic to require that documentation for, in our case: Cessna 150, Lockheed Martin F16, AgustaWestland Lynx, Boeing 707, PW JT3D, GE CF6-50 engine, etc. The following is proposed.

2. Except for the relevant EU Regulations and national aviation regulations, the remainder of the documentation should represent typical examples for both large and small aircraft and cover both aeroplanes and helicopters as appropriate. Avionic documentation should cover a representative range of available equipment.
Regulatory documentation should be reviewed and updated on a regular basis. For aircraft, systems and / or components used solely for training, the documentation may be marked as "uncontrolled", as applicable.

response	Not accepted. Although valid, your proposal is not within the scope of RMT.0281. In addition, this is already a widespread industry practice, accepted by the NCAs and EASA.

comment	275 comment by: NHF Technical committee NHF support the change in the text.
response	Noted.

comment	359 comment by: Lufthansa Technical Training GmbH Changes not related to training technologies should be adressed by RMT.0544/0545 "Review of Part-147" which is an Agency task.
response	Partially accepted. The Agency has withdrawn on some proposals from the NPA which are not directly related to the introduction of new training methods and tools. These proposals may be discussed with RMT.0255 and RMT.0544 ('Miscellaneous in Part-66' and 'Review of Part-147').

3. Proposed amendments — 3.4. Draft Acceptable Means of Compliance and Guidance Material — Part-147 (Draft EASA Decision) — GM to 147.A.100(i) Facility requirements	p. 35

comment	276 comment by: NHF Technical committee NHF support the change in the text.

response	Noted.

3. Proposed amendments — 3.4. Draft Acceptable Means of Compliance and Guidance Material — Part-147 (Draft EASA Decision) — AMC 147.A.105 Personnel requirements	p. 35

comment	277 comment by: NHF Technical committee
	NHF support the change.
response	Noted.

comment	299 comment by: ATF - Awareness Training Fakoussa
	again instructors abilities to teach right from the word go safety and awareness are not part of the text. as long as EASA believes in this being separate subjects we will keep having safety problems in future maintenance.
response	Noted. The comment is not clearly understood.

comment	360 comment by: Lufthansa Technical Training GmbH
	Changes not related to training technologies should be adressed by RMT.0544/0545 "Review of Part-147" which is an Agency task. (The new proposed text implements that even a two man show who is able to conduct 51 exams in 12 month (let´s say 51 days) in classroom with only one chair and table must have 3 Managers!
response	Partially accepted. Please see the revised AMC 147.A.105. In addition, please note that the functions may be combined.

comment	375 comment by: DGAC France
	AMC 147.A.105: DGAC France supports the clarification regarding maintenance training organisation capacity.F
response	Noted. Please note that the final proposal has been slightly reworded based on some other comments.

3. Proposed amendments — 3.4. Draft Acceptable Means of Compliance and Guidance Material — Part-147 (Draft EASA Decision) — AMC 147.A.105(f) Personnel requirements	p. 35

comment	241 comment by: EAMTC
	AMC 147.A.105 Personnel requirements
	Given that there is an imminent task to review Part 147, is it questioned as to whether to whether or not this proposal should be made here. Such a change can have a major impact on an organisation.
	The proposal definition of 'larger' / 'smaller' organisations differs from the one proposed in MDM.055 for NPA 2013-19.
	This definition will not increase safety it will only increase costs due to a requirement for additional management staff.
	The definition would mean that that there would be no small organisations. If your organisation only does 50 exams a year, the organisation may find it more economic to "buy" the training.
	During a type training course, you may have 3 to 5 exams, multiply this by the maximum of 28 students = 84 to 140 examinations. It would now make any organisation conducting one type training course a year into a large organisation.
	Please review the above under the forthcoming RMT for the review of Part 147.
response	Partially accepted.
	The amended AMC 147.A.105 now reads: 'Any maintenance training organisation with the capacity to train, examine or assess 50 students or more at the same time…'.

comment	278 comment by: NHF Technical committee
	Please specify level for the training for the instructor.
response	Not accepted.
	Please see 147.A.105(f) and the related AMC.

3. Proposed amendments — 3.4. Draft Acceptable Means of Compliance and Guidance Material — Part-147 (Draft EASA Decision) — GM 147.A.105(f) Personnel requirements	p. 35-36

comment	122 comment by: FlightSafety International
	Recommend that all of the guidance as follows be DELETED:
	The following structure provides an overview of such an instructor training:
	— Changes and tendencies of today's training;
	— Fundamentals in methodology and didactics;
	— Basics and theory of e-learning and tele-tutoring;
	— Virtual communication;
	— The changed role of students and instructors;
	— Competence profile of a tele-tutor;
	— Practical guide to support learning processes;
	— Assessment of students' performance;
	— The learning management system

Recommend the removal of this guidance as it will lock in the content of the training course. The paragraph provides enough detail to direct the training organization to conduct specific training to the instructor.

response	Not accepted.
	The proposed topics are given only as guidance.
	The wording has been slightly amended: 'The following structure provides an example of such an instructor training, as applicable:'

3. Proposed amendments — 3.4. Draft Acceptable Means of Compliance and Guidance Material — Part-147 (Draft EASA Decision) — AMC1 147.A.115(a) Instructional equipment   p. 36

comment	13 comment by: CAE
	If the Part-147 organization transfers theoretical knowledge by a virtual controlled environment (e.g. computer-based training (CBT) or multi-media based training (MBT)), the organization should ensure that appropropriate computer system requirements, such as the minimum operating system configuration, access to the training organization's virtual controlled environment, etc. are communicated to and can be accessed by are available to the end user.
response	Partially accepted.
	The text has been changed to:
	AMC 147.A.115(a) Instructional equipment If the Part-147 organisation transfers knowledge by a virtual controlled environment (e.g. distance learning, computer-based training (CBT) or multimedia-based training (MBT)), the organisation should ensure that the: computer system requirements are made known to the end user, student's activities are traceable, documented and recorded, and computer systems of any third-party providers are covered by a written agreement between both parties that includes the terms of delivery, data security and data integrity.

comment	123 comment by: FlightSafety International
	Recommend changing TO - "If the Part-147 organisation transfers knowledge by a virtual controlled environment the organisation should ensure that appropriate computer system requirements are met.
	The organisation should ensure that the student's activities are documented and recorded.
	If the organisation uses computer systems of third party providers, a written agreement between both

parties should be established covering the terms of delivery including the data security and data integrity."

- Remove "Theoretical" from the first paragraph as it excludes practical
- Removed the "(e.g. computer based training (CBT) or multimedia based training (MBT))," this is defined in other areas and is therefore not necessary here.
- Rewrote the last part of paragraph 1 to state that the computer requirements are met, this is different than forcing responsibility on the training provider to "provide the equipment" which is not realistic.
- Removed the word "Traceable" from the second paragraph. If a students activities are documented and recorded, then they must be traceable and therefore the word "traceable is not necessary.

response	Partially accepted.
	Please see also our reply to comment #13.

comment	168 comment by: Ryanair
	This is not necessarily feasible as some students will be using their own equipment.
	It would be more beneficial for both parties if there was a "Minimum Requirement List" established by the organisation which the potential student can review to ensure they have compatible equipment and software.

response	Partially accepted.
	Please see also our reply to comment #13.

comment	216 comment by: Luftfahrt-Bundesamt
	AMC 147.A.115 (a):
	What about practical training?

response	Accepted.
	'Theoretical' has been deleted.

comment	236 comment by: EAMTC
	AMC1 147.A.115(a) Instructional equipment
	If the Part-147 organisation transfers theoretical knowledge by a virtual controlled environment (e.g. computer-based training (CBT) or multimedia-based training (MBT)), the organisation should ensure that appropriate computer system requirements are made known to the end user.
	The organisation should ensure that the student's activities are traceable, documented and recorded.

	If the organisation uses computer systems of third party providers, a written agreement between the parties should be established covering the terms of delivery including data security and data integrity.
response	Accepted.

Please see also our reply to comment #13. |

| comment | 242 comment by: EAMTC

AMC 147.A.115 (a) Instructional equipment

…

Clarity is needed as to what "appropriate computer system requirements are available to the end user" means. The following is suggested.

If the Part-147 organisation transfers theoretical knowledge by a virtual controlled environment (e.g. computer-based training (CBT) or multimedia-based training (MBT)), the organisation should ensure that the:

- computer system requirements are made known to the end user
- student's activities are traceable, documented and recorded
- computer systems of any third party providers are covered by a written agreement between both parties that includes the terms of delivery, data security and data integrity |
|---|---|
| response | Accepted. |

| comment | 279 comment by: NHF Technical committee

Please specify how the 147 organization control that the system requirements are fulfilled if the training takes place outside a controlled location. |
|---|---|
| response | Not accepted.

Please see our reply to comment #13. |

| comment | 361 comment by: Lufthansa Technical Training GmbH

This point can only refer to the obligation of the Part-147 to make available a list or technical description of the system requirements to the end user/participant.
The 147 organisation can not be obliged to A) ensure that the end user actually meets all the requirements or B) to make available (provide) the potentially missing features or software. |
|---|---|
| response | Accepted.

This is the responsibility of the end user. The final proposal has been reworded for clarity. Please see our reply to comment #13. |

comment	362 comment by: Lufthansa Technical Training GmbH
	This requirement shall not effect or violate the protection of data privacy.
response	Noted.

comment	376 comment by: DGAC France
	AMC 147.A.115a): the mention "theoretical knowledge transfer" could be replaced by "competence transfer" as practical part is also concerned
response	Partially accepted.
	'Theoretical' has been deleted. 'Competence transfer' leads to confusion.

comment	384 comment by: SEAS
	As the students could use their own equipment It would be more beneficial for both parties if there was a "Minimum Requirement List" established by the organisation which the potential student can review to ensure they have compatible equipment and software.
response	Partially accepted.
	Please see also our reply to comment #13.

comment	387 comment by: FNAM (French Aviation Industry Federation)
	On that section the definition of the third party must be clarified. On the case of a Part-147 selling a training to a company, which computer specificities the part-147 must be carry out is not enough specified if the company provides the computer or if the student use his computer.
response	Not accepted.
	Third party is neither the training organisation nor the student.

3. Proposed amendments — 3.4. Draft Acceptable Means of Compliance and Guidance Material — Part-147 (Draft EASA Decision) — GM to 147.A.115(a),(d) Instructional equipment	p. 36

comment	243 comment by: EAMTC
	GM to 147.A.115(a), (d) Instructional equipment 1. Refer to GM to Paragraph 3. of Appendix III to Part 66 for a description and to point 7. of AMC to Section 1 of Appendix III to Part 66 for definitions. A reference to new technology devices should also be included for Basic Training. Further, 147.A.115(a) is applicable to both Basic and Type training organisations. The following is proposed:

	GM to 147.A.115(a)
	1. For Basic Training organisations, refer to GM to Paragraph 3 of Appendix I to Part-66 - 'Basic knowledge requirements'
	2. For Type Training organisations, refer to GM to Paragraph 3 of Appendix III to Part 66 for a description and to point 7. of AMC to Section 1 of Appendix III to Part 66 for definitions.
	GM to 147.A.115 (d) Instructional equipment
	1. Refer to GM to Paragraph 3 of Appendix III to Part 66 for a description and to point 7. of AMC to Section 1 of Appendix III to Part 66 for definitions.
response	Partially accepted.
	GM 147.A115(a), (d) refers to the use of MSTDs. The description of MSTD is the same in both Tables 3 (Appendix I and Appendix III). The detailed definition of the MSTD is given only in AMC to Section 1 of Appendix III to Part-66., hence the reference to Appendix III is valid for both basic training and aircraft type training.
	In addition, please note that in the final proposal we have introduced a new footnote (Note 2) in Table 2 of GM to Section 3 of Appendix I (Basic training)

3. Proposed amendments — 3.4. Draft Acceptable Means of Compliance and Guidance Material — Part-147 (Draft EASA Decision) — AMC 147.B.10(b) Competent authority	p. 36

comment	245 comment by: EAMTC
	147.A.300
	A new AMC paragraph is proposed in order to cover Task Training (Category A)
	AMC.147.A.300
	(5) For Task training MBT methods may be used.
response	Accepted.

4. Regulatory Impact Assessment (RIA) — 4.2. Objectives	p. 40

comment	248 comment by: EAMTC
	Page 40: Table 1 Safety Risk Matrix. The risk assessments for NPA2013-19 and NPA 2014-022 may need to be reviewed.
response	Noted.

4. Regulatory Impact Assessment (RIA) — 4.3. Policy options	p. 41

comment	398 comment by: ECOGAS/SVFB/SAMA
	We support Option no 2 but are not sure, as was explained to us, HF, FTS,EWIS are already allowed to be trained under part 145 by new tech methods. If this is the case then option 2 is right.
	If this is not the case, we support option 3, as all or part of the stated HF,FTS;EWIS can be trained by distant learning with the exception of the practical part as required.
response	Noted.
	The Working Group has chosen Option 2. Part-145 training courses are not affected by RMT.0281. These courses may be conducted through distance learning if accepted by the competent authority

4. Regulatory Impact Assessment (RIA) — 4.4. Analysis of impacts   p. 41-43

comment	38 comment by: Delphine RYAN
	Although there are certainly added benefits to introducing new tools and teaching methods to keep in line with evolving technology, it is very uncertain whether this will have positive effects on safety. This could only be determined after the new systems have been implemented and the Part-66 and Part-147 system would have been re-evaluated a few years down the line, with actual research, study and survey of the existing landscape at the time.
	As mentioned in an earlier comment, the problem of the multiple choice questions for the basic training with answers being available on-line does not instill confidence that air safety will be improved.
	There is a risk that some Part-147 training schools may deliver most of their basic knowledge courses or type training courses in a virtual environment or on CBT and other such media as a means to save on educator or trainer fees i.e. have students do most of the knowledge studies on a self-study basis. Such system may not work at all times as not all students are self-learners. There are people who happily study on their own, but when learning such a complex subject as aircraft, it is very important to be able to be in a class or in a study environment where the student can talk to a qualified teacher/trainer when the student finds himself/herself stuck on something or not understanding a particular concept.
	Justification: For financial reasons, Part-147 organisations may arrange the training to tick the boxes but have it in such a way that a lot of the knowledge study is done by self-study. This may not work for every student. Such institutions may also still charge the same price for the course even though the student is now required to do a lot of the knowledge study by himself rather than in a classroom. There may be wide differences in terms of standards between training schools.
response	Noted.

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Please note that the responsibility for the approval of the training organisations, their courses, training methods and tools to be used, lies with the competent authorities. We are confident that the competent authorities will take into account those and similar concerns stated in your comment. The EASA Standardisation Section, by conducting standardisation inspections of the competent authorities, will do their best to standardise the competent authorities' procedures and the implementation of the Implementing Rules in the Member States. In addition, we are confident, and this is confirmed by the majority of the commenters, that the proposed amendments will fulfil the objectives stated in the ToR and bring the training of maintenance staff to a higher quality and safety level. The proposed amendments of the Implementing Rules (Part-66 and Part-147) and the provisions introduced in AMC & GM contain enough safeguards to prevent negative extremes.

comment	288	comment by: Virgin Atlantic

Very well structured and informative document. No adverse comments.

response	Noted.

Many thanks for your support.

comment	300	comment by: ATF - Awareness Training Fakoussa

Quote: "The introduction of the new training methods and new teaching technologies into the implementing rules
(Part-66 & Part-147) is expected to have positive effects on safety."
this expectation is based on new technology with some pedagogics but without basics of HF which are the main problem in aviation.
therefor your expectation will not be fulfilled.

response	Noted.

There is no reason to believe that HF issues will not be taken into account in the design of the software and hardware of the training methods and tools, in the design and approval of the training courses. Today, everybody involved in aviation (including maintenance staff training) is well aware about the importance of human factors. We all together should concentrate our efforts on further promoting HF principles and demonstrating by example the importance of taking human factors seriously into account in our day-to-day work. The more believers in HF we have, the less prescriptive rules we need. Overruling HF could result in a reversing effect.

comment	399	comment by: ECOGAS/SVFB/SAMA

4.4.5 we support this statement.

It would be even get more power, if at least for B3 examination, cost effective solutions could be found.

Problem: the modular examinatin part involves a lot of direct cost by the present modular examination,
as controlled room, vigilante all sum up for the high number of examination required.

It would be very beneficial in each decentralized, low participant numbers environment, if examination could be controlled off part 147 with the required security.

response	Noted.
	Regarding B3 examinations, we have already replied on this topic in one of your similar comments.

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4. Regulatory Impact Assessment (RIA) — 4.5. Comparison and conclusion   p. 44-47

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comment	39 comment by: Delphine RYAN
	I cannot agree with the statement on page 46 that, "attractiveness of the new methods and technologies leads to higher motivation and engagement of the students for learning".
	If this statement were true, then one could deduce that since most of the developed Western world now use such new technologies in their school system, then the standards of education would be on a steep increase with whole populations of children and young person being highly motivated and engaged at school. This is however not the case as evidenced by UK and world educational statistics.
	The above statement, I feel, is not backed up by concrete evidence and is merely an opinion rather than fact.
	It also says that the training could become more affordable for maintenance staff. If Part-147 schools have profit in mind, it is unlikely that the cost of training will go down and become more affordable to would-be engineers.
	Justification: No evidence to support statement.
response	Noted.
	It is not realistic to expect that every statement written in the NPA would be 100% accepted by all readers. We appreciate all your comments, as they open a different perspective, which may have positive impacts on the process of implementation of the new training methods and teaching technologies.

comment	174 comment by: NFO Technical Commitee
	Page 45: Option2. Redused aircraft visits / hands on training will have negativ impact on safety, aircraft downtime and economic aspect for the airline, this as a result of degraded type training.
	Safety: Increased risk for damage on personel and aircraft due to less hands on training.The student will not be able to idenifye buttons, handles, moving objects and so on after completet type training.

	AMO will have no economic benefit due to less competent personel without hands on training in a controlled enviroment (with instructor present and no time pressure) Human factor.
response	Noted.

comment	289 comment by: NHF Technical committee
	Page 47: NHF support that HF, EWIS, FTS and CT courses, should be better regulated for 145 organisations.
response	Noted.

comment	317 comment by: FlightPath International
	Option 2 - This is the preferred method. Amend the implementing rules (Part-66 & 147) to introduce new training methods and teaching technologies and providing guidance (AMC/GM). A limit MUST be set to the Distance Learning component of the training (approximately 20%).
	Option 2 - Safety - Additional Cons - The training of a Technician/AME has several safety aspects;
	1. 1. Safety of the student during the learning process:
	The student should not be exposed to any safety risks that would exceed the norm that would be present in their normal work environment. Shielding the student from the normal work environment and its safety risks is detrimental to the learning process.
	2. 2. Safety of the student when they return to the work environment:
	It is of the highest importance that when a student returns to their work environment that the safety risks they will need to deal with have been fully comprehended.
	Example: Child 1 is shown, pictures, animations and provided with explanations on how to safely cross a busy road. Child 2 is escorted out to a busy road and has explained to them how to safely cross the road and then they are escorted through the process of crossing the road. Child 3 is given both forms of instruction above. Now rate which training you would want for your child before letting them cross the road on their own outside your control and observation.
	3. 3. Safety of Aeronautical Products (S.M.S.)
	During the learning process for a Technician/AME safety of the aeronautical product is covered, there are the basic safety items and there are unique safety items pertaining to aircraft type. The benefit of actual contact with the aircraft to learn these safety items and how they affect the safety of the product cannot be minimized, being in the environment

where the work takes place with the distractions, noise and odors, is all part of the learning and retention experience.

I strongly suggest a mandatory, minimum amount of time during the practical be spent on the aeronautical product, 20% would be a percentage that I would recommend. The percentage of practical time for actual interface with the aircraft should be in the regulation not left up to the discretion of the AMTOs, Surveyors or NAA's.

Option 2 - Additional Economic - Pros - The economics of training and the quality of the end product (Technician/AME).

Aircraft Type Training

Blended learning using mentoring, CBT, e-learning, Lecture and simulation greatly enhances the learning experience and the retention of information and skills. The quality of Technician/AME that is produced through this form of training significantly increases the likely hood of cost efficient and safe operation of the aircraft they will be working on.Option 2 - Additional Economic - Cons -
Distance learning negates a significant part of the benefits gained by the blended learning mentioned above. When an instructor is in front of a classroom teaching, his body language is communicating to the student, also the body language of the student is communicating to the instructor. The figure most often used when communicating face to face is 55% body language. Distance learning removes the student body language from the learning experience and may also remove the instructor body language, depending on the distance learning setup.

Example: Instructor asks if the students understood the operation of the pack control valve. All students reply yes, the awkward closed body language of a few students suggest that they are not sure. This prompts the instructor to ask questions or explain using a different method to gain understanding.

When body language is removed the ability to ascertain student understanding is severely impacted.
By allowing distance learning, the economic benefits will out weight the quality received in blended learning with instructor and students in the same classroom. As 1 AMTO offers distance learning with the short term cost benefits, other AMTO's will be forced
to follow to be able to stay in business even though they realize the product that is being delivered will not produce the quality of Technician/AME that provides the best possibility of safe and cost efficient operation of the aircraft being taught.

response	Noted.

Limiting distance learning or any other training method to 20% is against the intended flexibility. Every Part-147 organisation is free to choose which training courses it would like to provide and offer on the market, which training methods and training tools it will use in its courses. The training organisation will have to describe all elements of the training course, including the training methods and tools to be used, in the syllabus and in the MTOE procedures. In aircraft type training, the duration of the course, the use of different methods and tools, will have to be explained and justified by the TNA. The training organisation has to convince the competent authority responsible for the approval that the elements of the course all together fulfil the training objectives to be achieved. Blending of complementary

methods and tools would probably have the best chances to reach the objectives and finally to be approved by the competent authority.

comment	372	comment by: SEAS

Training courses for 145 Maintenance Orgasation (HF, FTS and EWIS) should be amended to be aligned with Part-66 and Part-147 with the new Training methods.

response	Noted.

Part-145 training courses are not affected by RMT.0281. These courses (at least their theoretical element) may be conducted through distance learning if accepted by the competent authority.

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3.   Appendix — Attachments

CRD Questions for NPA 2014-22.pdf
1.

Attachment #1 to comment #400

2. survey results with notes 30.01.14.pdf

Attachment #2 to comment #24

3. Simplified Table.pdf

Attachment #3 to comment #198

4. Basic Training Table 1.pdf

Attachment #4 to comment #190