



European Aviation Safety Agency

**EXPLANATORY NOTE TO  
DECISION No 2011/017/R**

RMT.0408 (ATM.022)

**Acceptable Means of Compliance  
and Guidance Material  
for the implementation and measurement  
of Safety Key Performance Indicators (SKPIs)  
(ATM performance IR)**

## EXECUTIVE SUMMARY

The purpose of this Decision is to adopt Acceptable Means of Compliance (AMC) and Guidance Material (GM) to Commission Regulation (EU) No 691/2010 (hereafter referred to as the 'performance scheme Regulation') as amended by the Commission Implementing Regulation (EU) No 1216/2011.

The performance scheme Regulation for air navigation services and network functions implements Article 11 of the framework Regulation [(EC) No 549/2004]. Annex 1 of the performance scheme Regulation lists three Safety Key Performance Indicators (SKPIs) to be developed jointly by the Commission, the Member States, EASA and EUROCONTROL and to be adopted by the Commission prior to the first reference period (1 January 2012).

The work for the development of the safety KPIs was carried out by the 'E3-Task Force' group associating the Commission, EUROCONTROL and EASA. An extensive consultation process took place, both informal and formal, with two workshops with Member States and stakeholders. The final report (Appendix 2) of the E3 group was delivered to the Commission on 30 June 2011 and it was also presented for consultation to the Single Sky Committee (SSC) at its 42nd meeting (6–7 July 2011). Based on that, the Commission adopted Regulation (EU) No 1216/2011 amending the performance scheme Regulation which was published on the 25th of November 2011 (OJ L 310, 25.11.2011, p. 3).

With Regulation (EU) No 1216/2011 and in order to facilitate the implementation and measurement of the safety KPIs, EASA — in consultation with the Performance Review Body — was tasked to adopt before the start of the first reference period the Acceptable Means of Compliance and Guidance Material for the three safety KPIs as listed in the amended performance scheme Regulation.

In order to comply with the timeframe requested by the Commission (i.e. the adoption of these AMC/GM to be made before the first reference period of the performance scheme Regulation), the Agency applied a reduced period of four (4) weeks (25 October – 18 November 2011) for the relevant NPA 2011-18 consultation.

There were no comments opposing neither the approach taken nor the content of the proposed AMC/GM. Most of the comments suggesting improvements in the AMC and GM have been accepted. Some comments requested some clarifications in relation to the content of the SKPIs or to the processes for their verification.

No substantial changes were introduced in the AMC/GM based on the comments received during the NPA consultation period. The changes introduced were mainly editorial or added more clarity to the AMC/GM. The format of some of the appendices to the AMC/GM has been changed in order to improve their readability.

During the NPA 2011-18 consultation period some stakeholders proposed that the questionnaires for assessment of the just culture should provide not only YES/NO possibilities to the answers but four or five possible levels of implementation. Since during the first reference period of the performance scheme Regulation the just culture KPI will be assessed for the first time, the Agency considers to keep the structure of the questionnaires as simple as possible (i.e. just YES/NO options). In addition, as it was already requested by different stakeholders, the Agency decided to respect the content of the E3 report as much as possible as this was already consulted several times and the changes to the just culture questionnaires requested by few stakeholders were not accepted. However, the intent is, in accordance with the spirit of the performance scheme Regulation, to evaluate the implementation of the safety KPIs during the first reference period and to further improve the safety KPIs.

In order for the Agency to comply with the timeframe for adoption of the AMC/GM established with Regulation (EU) No 1216/2011, this Decision and the Comment Response Document (CRD) to the NPA 2011-18 are published at the same time.

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## I. Introduction

1. The European legislative framework for the field of ATM/ANS consists of the following legislative package under the Single European Sky (SES) legislative initiative:
  - Regulation (EC) No 549/2004 of the European Parliament and of the Council of 10 March 2004 laying down the framework for the creation of the single European sky (the framework Regulation)<sup>1</sup>;
  - Regulation (EC) No 550/2004 of the European Parliament and of the Council of 10 March 2004 on the provision of air navigation services in the single European sky (the service provision Regulation)<sup>2</sup>;
  - Regulation (EC) No 551/2004 of the European Parliament and of the Council of 10 March 2004 on the organisation and use of the airspace in the single European sky (the airspace Regulation)<sup>3</sup>;
  - Regulation (EC) No 552/2004 of the European Parliament and of the Council of 10 March 2004 on the interoperability of the European Air Traffic Management network (the interoperability Regulation)<sup>4</sup> and their Implementing Rules (IRs).
2. These Regulations were amended by the SES II legislative package via Regulation (EC) No 1070/2009<sup>5</sup>. The SES II package amended Article 11 of the framework Regulation laying down requirements for the performance scheme for improvement of the performance of air navigation services.
3. Commission Regulation (EU) No 691/2010<sup>6</sup> on the performance scheme for air navigation services and network functions (the performance scheme Regulation) implements Article 11 of the framework Regulation. Annex 1 of the performance scheme Regulation lists three Safety Key Performance Indicators (safety KPIs or SKPIs) to be developed jointly by the Commission, the Member States, EASA and EUROCONTROL and to be adopted by the Commission prior to the first reference period (1 January 2012):
  - The first safety KPI shall be the effectiveness of safety management for air navigation service providers and national supervisory authorities respectively, as measured by a methodology based on the ATM Safety Maturity Survey Framework.
  - The second safety KPI shall be the application of the severity classification of the Risk Analysis Tool to allow harmonised reporting of severity assessment of Separation Minima Infringements, Runway Incursions and ATM Specific

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<sup>1</sup> OJ L 96, 31.3.2004, p. 1.

<sup>2</sup> OJ L 96, 31.3.2004, p. 10.

<sup>3</sup> OJ L 96, 31.3.2004, p. 20.

<sup>4</sup> OJ L 96, 31.3.2004, p. 26.

<sup>5</sup> Regulation (EC) No 1070/2009 of the European Parliament and of the Council of 21 October 2009 amending Regulations (EC) No 549/2004, (EC) No 550/2004, (EC) No 551/2004 and (EC) No 552/2004 in order to improve the performance and sustainability of the European aviation system. OJ L 300, 14.11.2009, p. 34–50.

<sup>6</sup> Commission Regulation (EU) No 691/2010 of 29 July 2010 laying down a performance scheme for air navigation services and network functions and amending Regulation (EC) No 2096/2005 laying down common requirements for the provision of air navigation services. OJ L 201, 3.8.2010, p. 1.

Technical Events at all Air Traffic Control Centres and airports (yes/no value). Member States may decide not to apply the method at airports with less than 50 000 commercial air transport movements per year<sup>7</sup>.

- The third European Union-wide safety KPI shall be the reporting of the just culture.
4. No European Union-wide targets for the above safety KPIs (SKPIs) are required by Commission Regulation (EU) No 691/2010 for the first reference period (RP1, 2012–2014). During RP1, the Commission shall use the data collected to validate these SKPIs and assess them to ensure that safety risk is adequately identified, mitigated and managed. On that basis, the Commission shall adopt new safety KPIs for the second reference period (RP2) if necessary, through the revision of Commission Regulation (EU) No 691/2010. Moreover, it is the intention to use the data collected during RP1 to establish the performance targets for the following reference period.
  5. The work for the development of the SKPIs was carried out by the E3 group associating the Commission, EUROCONTROL and EASA. An extensive consultation process took place, both informal and formal, with two workshops in particular (13 May 2011 for the Member States, and 17th of June 2011 for all stakeholders). The final report (Appendix 2) of the E3 group work was delivered to the Commission on 30 June 2011 and it was presented for consultation to the Single Sky Committee during its 42nd meeting on the 6th and 7th of July 2011.
  6. Based on the E3 final report, the Commission developed and adopted Regulation (EU) No 1216/2011 amending the performance scheme Regulation. The Commission Regulation (EU) No 1216/2011 requested EASA — in consultation with the Performance Review Body (PRB) — to adopt before the start of the first reference period Acceptable Means of Compliance and Guidance Material in accordance with the procedure adopted under Article 52 of Regulation (EC) No 216/2008 (hereafter referred to as the 'Basic Regulation')<sup>8</sup>.
  7. The purpose of this Decision is to adopt Acceptable Means of Compliance (AMC) and Guidance Material (GM) to Commission Regulation (EU) No 691/2011 as amended by the Commission Implementing Regulation (EU) No 1216/2011.

## II. Scope

8. The scope of the AMS/GM is defined in Article 1 of the Commission Regulation (EU) No 691/2010 (the performance scheme Regulation).
9. The legal basis for the Agency to adopt these AMC/GM is Annex I, section 2, point 1e) of Regulation (EU) No 691/2010 as amended by Regulation (EU) No 1216/2011.
10. Regulation (EU) No 1216/2011 defined the safety KPIs as follows:
 

*'(a) The first national/FAB safety KPI for the first reference period shall be the effectiveness of safety management as measured by a methodology based on the ATM Safety Framework Maturity Survey.'*

<sup>7</sup> As amended with the adoption of Commission Regulation (EU) No 1216/2011.

<sup>8</sup> Regulation (EC) No 216/2008 of the European Parliament and the Council of 20 February 2008 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency, and repealing Council Directive 91/670/EEC, Regulation (EC) No 1592/2002 and Directive 2004/36/EC (OJ L 79, 19.3.2008, p. 1), as last amended by Regulation (EC) No 1108/2009 (OJ L 309, 24.11.2009, p. 51).

*With regard to Member States and their national supervisory authorities and air navigation service providers, certified to provide air traffic services or communication, navigation and surveillance services, this KPI shall be measured by the level of implementation of the following Management Objectives:*

- *Safety policy and objectives;*
- *Safety risk management;*
- *Safety assurance;*
- *Safety promotion;*
- *Safety Culture.*

*(b) The second national/FAB safety KPI for the first reference period shall be the application of the severity classification below based on the Risk Analysis Tool methodology to the reporting of, as a minimum, three categories of occurrences: Separation Minima Infringements, Runway Incursions and ATM-specific occurrences at all Air Traffic Control Centres and at airports. Member States may decide not to apply the method at airports with less than 50 000 commercial air transport movements per year.*

*When reporting the above occurrences Member States and air navigation service providers shall use the following severity classes:*

- *Serious incident*
- *Major incident*
- *Significant incident*
- *No safety effect*
- *Not determined; for example insufficient information available, or inconclusive or conflicting evidence precluded such determination.*

*Reporting on the application of the method shall be done for individual occurrences.*

*(c) The third national/FAB safety KPI for the first reference period shall be the reporting by the Member States and their air navigation service providers through a questionnaire established in accordance with paragraph (e), which measures the level of presence and corresponding level of absence of just culture.'*

11. Because the Decision contains AMC and GM that will be used to show compliance with the performance scheme Regulation, the scope of the Decision and its Annex are related to the scope of the Regulation.

### III. Process

This Decision is the result of the following EASA rulemaking task and related process documents:

<b>Rulemaking Task No</b>	<b>Title</b>	<b>Terms of Reference</b>	<b>NPA (No and date)</b>	<b>CRD No (No and date)</b>
RMT.0408 (ATM.022)	Acceptable Means of Compliance and Guidance Material for the implementation and measurement of Safety Key Performance Indicators (SKPIs) (ATM performance IR)	18/08/2011	2011-18 (25/10/11)	2011-18 (16/12/2011)

12. The EASA (hereafter referred to as the 'Agency') developed this rule in line with Article 52 of Regulation (EC) No 216/2008 and the Rulemaking Procedure established by the Management Board<sup>9</sup>.
13. The scope of this rulemaking activity was outlined in the Terms of Reference (ToR) ATM.022 (RMT.0408). Based on these ToRs, the Agency developed the Notice of Proposed Amendment (NPA) 2011-18.
14. The Notice of Proposed Amendment (NPA) 2011-18<sup>10</sup> that contained the proposed rules was published on the Agency's website on the 25th of October 2011.
15. By the closing date of 18th November 2011, the Agency had received 95 comments from national authorities, ANSPs, professional organisations and other entities.
16. All comments received have been acknowledged and incorporated, wherever feasible and appropriate. The details of the Comment Response Document can be found in the Annex.
17. There were no comments opposing either the approach taken or the content of the proposed AMC/GM. Most of the comments suggesting improvements in the AMC and GM have been accepted. Some comments requested some clarifications in relation to the content of the SKPIs or to the processes for their verification.
18. The following section includes a summary of the most important reactions to the NPA and full details can be found in the Appendix 1 to this Explanatory Note.

#### **IV. Overview of the changes introduced by this Decision**

19. The purpose of this Decision is to adopt Acceptable Means of Compliance (AMC) and Guidance Material (GM) to Commission Regulation (EU) No 691/2011 as amended by Regulation (EU) No 1216/2011 which explicitly requires the Agency to adopt such AMC/GM.

##### **Effectiveness of Safety Management KPI**

20. In some of the comments received during the NPA public consultation (e.g. comments No 29, 61, 67 ... for more details look at the Annex), it was considered that the content of the AMC 1 SKPI and AMC 2 SKPI is an introduction rather than means of compliance to a specific requirement in the IR. These comments have been accepted by the Agency and the content of the AMC 1, AMC 2 and GM 1 (as they were numbered in the NPA) was combined and now it is GM 1 SKPI 'General'. The rest of the AMC are renumbered accordingly.
21. GM 1 SKPI 'General' explains that AMC provide the means of compliance but not the only means of measurement of the SKPIs. This GM explains that if a Member State wishes to use different means of compliance with the performance scheme Regulation, it should inform the Agency and demonstrate by means of evidence that the outcome of the application of this alternative means of compliance is comparable with this AMC.

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<sup>9</sup> The Agency is bound to follow a structured rulemaking process as required by Article 52(1) of the Basic Regulation. Such process has been adopted by the Agency's Management Board and is referred to as the 'Rulemaking Procedure'. See Management Board Decision concerning the procedure to be applied by the Agency for the issuing of opinions, certification specifications and guidance material (Rulemaking Procedure), EASA MB 08 2007, 13.6.2007.

<sup>10</sup> See Rulemaking Archives at <http://easa.europa.eu/rulemaking/r-archives.php#npa>.

22. GM 1 SKPI also contains the 'Definitions and Abbreviations' of terms used in AMC/GM to facilitate their implementation.
23. AMC 1 to 3 (AMC 3 to 5 as they were numbered in the NPA) and GM 2 to 4 describe how the effectiveness of the safety management SKPIs (EoSM SKPI) should be measured, evaluated and verified at State and at ANSPs level.
24. AMC 1 SKPI 'Measurement of Effectiveness of Safety Management SKPI — General' describes how the EoSM SKPI should be measured by verified responses to questionnaires at State/competent authority and at service provision level. It explains that when answering the questions, one of the following levels of implementation should be selected:
  - Level A which is defined as 'Initiating';
  - Level B which is defined as 'Planning/Initial implementation';
  - Level C which is defined as 'Implementing';
  - Level D which is defined as 'Managing & measuring'; and
  - Level E which is defined as 'Continuous improvement'.

Based on the responses, the following scores should be derived:

- The overall effectiveness score;
  - An effectiveness score for each Management Objective.
25. GM 2 SKPI 'Measurement of Effectiveness of Safety Management SKPI — General' describes that Management Objective (MO) has been derived for each of the elements of the ICAO State Safety Programme (SSP) and Safety Management System (SMS).
  26. GM 2 SKPI also provides guidance for honest replies to the questionnaires for EoSM and the relation of the EASA standardisation inspections and NSA audits with the completed questionnaires.
  27. AMC 2 SKPI 'Measurement of Effectiveness of Safety Management SKPI — State level' contains:
    - A. Components, elements and management objectives;
    - B. Scoring and numerical analysis;
    - C. Mechanism for verification.
  28. AMC 3 SKPI 'Measurement of Effectiveness of Safety Management SKPI — ANSP level' contains:
    - A. Components, elements and management objectives;
    - B. Mapping between management objectives, study areas and questions;
    - C. Scoring and numerical analysis;
    - D. Mechanism for verification.
  29. The questionnaires themselves, the weighting factors and some guidance material for the competent authorities and ANSPs to help the verification of the ANSPs by the competent authorities are provided in the following appendices:
    - Appendix 1 to AMC 1 SKPI — Questionnaire for Measurement of Effectiveness of Safety Management SKPI — State level;
    - Appendix 2 to AMC 1 SKPI — List of Weightings for Evaluation of Effectiveness of Safety Management Questionnaire — State level;

- Appendix 1 to AMC 2 SKPI — Questionnaire for Measurement of Effectiveness of Safety Management Questionnaire — ANSP level;
  - Appendix 2 to AMC 2 SKPI — List of Weightings for Evaluation of Effectiveness of Safety Management Questionnaire — ANSP level;
  - Appendix 1 to GM 4 SKPI Verification of ANSP EoSM by NSA/competent authority.
30. The appearance of the appendices was changed in order to improve the readability and to be as close as possible to the appearance already used by EUROCONTROL in their Safety Framework Maturity Survey and thus to be more familiar to the stakeholders. No substantial changes in the content were made.
31. The content of section 1 of Appendix 2 to AMC 3 SKPI 'List of Weightings for Evaluation of Effectiveness of Safety Management Questionnaire — ANSP level' was slightly changed in order to correct some typographical errors in the NPA.
32. Some weightings in Appendix 2 to AMC 2 and in section 2 of Appendix 2 to AMC 3 were slightly corrected — rounded up to the third decimal place instead to the second.

### **Severity classification based on the Risk Analysis Tool Methodology**

33. The application of the Risk Analysis Tool (RAT) severity classification methodology supports and allows for harmonised reporting of the severity classification of occurrences. Therefore, the concept of this indicator, as required by the amendment to the performance scheme Regulation, is to prescribe the common methodology for occurrence severity classification by defining detailed criteria and specifications for the assessment of occurrences.
34. The Acceptable Means of Compliance and Guidance Material for the RAT severity classification methodology SKPI are specified in AMC 4 to 8 SKPI and GM 5 to 10 SKPI.
35. AMC 6 SKPI 'Severity Classification Based on the Risk Analysis Tool Methodology — General' provides general description of the methodology which is based on the evaluation of the severity of several criteria. Each criterion has limited number of options to be selected. For each selected option a certain predefined score should be allocated. The overall score is the sum of the scores for each applicable criterion.
36. Further guidance on AMC 4 SKPI is provided in GM 5 SKPI 'Severity Classification Based on the Risk Analysis Tool Methodology — Methodology for Separation Minima Infringements — General Description' where the process for the evaluation of occurrence severity is presented as a diagram. In addition, different occurrence scenarios from those used in EUROCONTROL RAT tool are presented.
37. AMC 5 SKPI 'Severity Classification Based on the Risk Analysis Tool Methodology — Methodology for Separation Minima Infringements' describes the severity classification of Separation Minima Infringements, calculated as the sum of the scores totalled in each of the two main criteria: risk of collision and controllability.
38. Section A of AMC 5 SKPI — Risk of collision determination by the sum of the scores for the following two sub-criteria:
- Separation — based solely on the minimum distance achieved between aircraft or between aircraft and obstacles.
  - Rate of closure — based on the vertical and horizontal speed, measured at the moment the separation minimum is infringed.

39. The table for determining the scores of the criteria 'separation' and 'rate' is provided.
40. Section B of AMC 5 SKPI 'Controllability', the second major criterion describes the 'level of control' maintained over the situation [Air Traffic Controllers (ATCOs) and pilots supported by Safety Nets]. The controllability score should be defined by the following sub-criteria:
- Conflict detection,
  - Planning,
  - Execution,
  - Ground safety nets (STCA),
  - Recovery,
  - Airborne safety nets (TCAS),
  - Pilot execution of TCAS RA.

For each of the above sub-criteria a table is provided for determining their scores, based on the available options.

41. Based on comment No 42 to the NPA and in order to align the content of the AMC 5 SKPI to the recent developments of the RAT methodology made by EUROCONTROL, some changes were introduced mainly in the description of the criterion 'Ground safety nets (STCA)'.
42. Section C of AMC 5 SKPI provides the table for the final score and severity classification of separation minima infringement occurrences.
43. Section D of AMC 5 SKPI 'Reliability Factor' gives guidance for establishing if the data considered for the evaluation of the severity of an occurrence is enough for a reliable classification. Every criterion of the methodology should have its own importance for the evaluation of severity. If there is no information for the evaluation of a certain criterion or if the information available is ambiguous or the scoring panel cannot agree on the choice that should be made, then these should be identified as missing elements from the methodology.
44. Each criterion has a predefined value for its reliability factor (RF) which is presented in the tables in section B of AMC 5 SKPI. Furthermore, the way of the RF value allocation is described in case a certain criterion is not applicable or there is not enough information for its evaluation. In such cases the score for the criterion should be 'zero' if not applicable and 'blank' when it cannot be evaluated. The overall value of RF should be the sum of the RF for each criterion and if the overall RF has a value less than 70, the occurrence should be classified as 'Not determined'.
45. GM 6 SKPI 'Severity Classification Based on the Risk Analysis Tool Methodology — Methodology for Separation Minima Infringements — Risk of Collision Score Determination' describes an example for determining the score of 'Risk of Collision' and GM 7 SKPI to 'Severity Classification Based on the Risk Analysis Tool Methodology — Methodology for Separation Minima Infringements — Controllability Score Determination' gives an example for scoring the 'Controllability'.
46. GM 8 SKPI 'Severity Classification Based on the Risk Analysis Tool Methodology — Methodology for Separation Minima Infringements — Final Scores' provides an example for final score determination based on the examples in GM 6 and 7 SKPI together with demonstrating the possibility to distinguish the ATM overall score and severity and ATM ground score and severity.

47. AMC 6 SKPI 'Severity Classification Based on the Risk Analysis Tool Methodology — Methodology for Runway Incursions' provides acceptable means of compliance for the severity classification methodology for Runway Incursions. The severity should be calculated as the sum of the total scores in each of the two main criteria: risk of collision and controllability.
48. Section A 'Risk of Collision' of AMC 6 SKPI describes the methodology for the Risk of Collision severity determination as a sum from the severities of 'Separation' and 'Rate of Closure'. In this case 'Separation' should be interpreted as 'safety margin infringed' with predefined options in a table. The moderation panel/investigators should, based on experts' judgment, choose a score.
49. Section B 'Controllability' of AMC 6 SKPI describes that the logic and elements when evaluating the Controllability of Runway Incursion occurrence are the same as in the Separation Infringements with the following exceptions:
  - STCA is not appropriate for this encounter, hence it should be replaced by more general aerodrome ground safety nets, such as RIMCAS (Runway Incursion Monitoring and Collision Avoidance System);
  - Airborne Safety Nets (TCAS) is not normally available when Runway Incursions occur, therefore only pilot see-and-avoid action should be considered. Lack of see-and-avoid should be scored in the case of low visibility and IMC conditions.
  - All other sections are identical with the previous scenario, with the exception of the Safety Nets where A-SMGCS (Advanced Surface Movement Guidance & Control System) should be considered, and the see-and-avoid part where driver action should also be taken into account, alongside that of the pilot.
50. Sections C 'Final scores' and D 'Reliability Factor' of AMC 6 SKPI are identical in all aspects with section C and D of AMC 5 SKPI.
51. GM 10 SKPI 'Severity Classification Based on the Risk Analysis Tool Methodology — Methodology for ATM-specific occurrences' contains three sections:
  - A 'Examples of some criteria for evaluating ATM-specific occurrences';
  - B 'Look-up table';
  - C 'Examples for ATM-specific occurrences'.
52. Section A of GM 10 SKPI describes several criteria listed in section A of AMC 9 SKPI.
53. Section B of GM 10 SKPI describes the look-up table which may be used for the severity classification of an ATM-specific occurrence. The look-up table has a column for each criterion and consists of all possible combinations of options which may be chosen for each criterion. For each combination of options the look-up table provides a predefined severity in its column 'Severity'. The unrealistic combinations of options are marked with 'X' in the 'Severity' column. The look-up table is presented as Appendix 1 to GM 10 SKPI.
54. Section C of GM 10 SKPI provides three typical examples of ATM-specific occurrences severity classification.
55. AMC 8 SKPI 'RAT methodology — verification mechanism' is in accordance with Regulation (EU) No 1216/2011 'Reporting on the application of the method shall be done for individual occurrences'. The points of contact in the Member States, established in accordance with Directive 2003/42/EC and Commission Regulation (EC) No 1330/2007, should collect and verify the information regarding the application of the RAT methodology for all reported occurrences. In addition, MS

should report the percentage of occurrences whose severity has been evaluated by the use of the RAT methodology.

56. Some of the comments (No 47, 85, 91) expressed concern about gathering information for evaluating the overall score of the occurrences. The Agency considers that arrangements to collect the data needed for severity classification of occurrences to be out of the scope of the AMC/GM.

### **Just culture**

57. As required in the amendment to the performance scheme Regulation, the third national/FAB safety KPI for the first reference period shall be the reporting by the Member States and their air navigation service providers through a questionnaire as referred to in paragraph (e), which measures the level of presence and corresponding level of absence of just culture.
58. The content of the AMC and GM includes the questionnaire and the approach already included in the E3 report. It is important to highlight that due to the novelty of this SKPI, a very modest approach has been taken in general. The experience gained during RP1 will be used to propose an enhancement of it for RP2.
59. GM 11 SKPI 'Just culture — General' provides some explanation for the reference made to 'State level' instead of 'NSA' and the nature of the questionnaires which should be used for the just culture measurement.
60. AMC 9 SKPI 'Just Culture Measurement at State Level' — Appendix 1 to AMC 9 SKPI contains the questionnaire which should be answered for the evaluation of JC at State level. The format which should be used when States report on the just culture indicator is presented in section A 'Measurement' of this AMC.
61. As already mentioned above, the appearance of the appendices was changed in order to improve the readability and to be as close as possible to the appearance already used by EUROCONTROL in their Safety Framework Maturity Survey and thus to be more familiar to the stakeholders. No substantial changes in the content were made.
62. Some stakeholders (comments 50 and 92) proposed that the questionnaires for the assessment of the just culture should provide not only YES/NO possibilities to the answers but four or five possible levels of implementation. Since during the first reference period of the performance scheme Regulation the just culture KPI will be assessed for the first time, the Agency considers to keep the structure of the questionnaires as simple as possible (i.e. just YES/NO options). In addition, as it was already requested by different stakeholders, the Agency decided to respect the content of the E3 report as much as possible as this was already consulted several times and the changes to the just culture questionnaires which were requested by few stakeholders were not accepted. However, the intent is, in accordance with the spirit of the performance scheme Regulation, to evaluate the implementation of the safety KPIs during the first reference period and to further improve the safety KPIs.
63. Section B 'Verification' of AMC 9 SKPI refers to AMC 2 SKPI, section C since the verification mechanism for EoS and JC SKPIs at State level is the same.
64. GM 12 SKPI 'Verification of Just Culture Measurement at State Level' — Appendix 1 to GM 12 SKPI contains the questions used in Appendix 1 to AMC 10 SKPI also formatted as a table with an additional column which gives some additional explanation and examples for possible justification which could be provided by the State/competent authority for the answers.
65. AMC 10 SKPI 'Just Culture Measurement at ANSP Level' — Appendix 1 to AMC 10 SKPI contains the questionnaire which should be answered for the evaluation of JC

at ANSP level. The format which should be used when ANSP report on the just culture indicator is presented in section A 'Measurement' of this AMC.

66. Section B 'Verification' of AMC 10 SKPI refers to AMC 3 SKPI, section D since the verification mechanism for EoS and JC SKPIs at ANSP level is the same.
67. GM 13 SKPI 'Verification of Just Culture Measurement at ANSP Level' — Appendix 1 to GM 13 SKPI contains the questions used in Appendix 1 to AMC 11 SKPI also formatted as a table with an additional column which gives some additional explanation and examples for possible justification which could be provided by ANSP for the answers.
68. See Appendix 1 for further details on the comments received.

## V. Summary of the Regulatory Impact Assessment

As explained in NPA 2011-18, a Regulatory Impact Assessment for the AMC/GM to the performance scheme Regulation has not been undertaken.

## VI. Appendix 1: Individual Comment Response Document (CRD) to NPA 2011-18

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

1. **Accepted** — The Agency agrees with the comment and any proposed amendment is wholly transferred to the revised text.
2. **Partially accepted** — The Agency either agrees only partly with the comment or agrees with it, but the proposed amendment is only partially transferred to the revised text.
3. **Noted** — The Agency acknowledges the comment but no change to the existing text is considered necessary.
4. **Not accepted** — The comment or proposed amendment is not shared by the Agency.

This CRD is prepared by the Agency in coordination with experts from the Commission and EUROCONTROL.

### CRD table of comments and responses

The Agency appreciates the comments provided by the stakeholders to the NPA 2011-18. It has been noted that those comments were generally constructive — however, quite often requesting clarifications and proposing changes. Due to the tight timescales, as the AMC/GM need to be adopted by the Agency's Executive Director before the end of the year, it has not been possible to address positively all of them.

Pragmatic improvements have already been accepted by the Agency in order to enhance understanding and use of the AMC/GM such as:

- Renumbering the AMC/GM to make it more user-friendly;
- The full report of the group that developed the concept for the SKPI has been attached to the CRD as it provides useful background information;
- User-friendly templates for the Effectiveness of Safety Management and Just Culture Questionnaires will be published on the Agency's website.

In addition, after the adoption of the AMC/GM, the Agency will develop the following strategy to further improve these AMC/GM by organising a workshop and a dry run in

cooperation with the Commission, PRB and EUROCONTROL during 2012 (open to all stakeholders and National Authorities) to better explain the implementation of the AMC/GM.

The Agency, in cooperation with the PRB, will review the lessons learned from the implementation of these SKPIs and will propose appropriate changes to the AMC/GM during the first reference period. This will be done in full consultation with the stakeholders.

**(General Comments)**

-

comment 1 comment by: *Cessna Aircraft Company*

Cessna Aircraft Company has no comment on this issue at this time.

response *Noted*comment 2 comment by: *Senior Head SQS*

I think that what was achieved in Europe with the ESP Plus (Eurocontrol Safety Maturity Survey) should be applied and used as it is. The ESP Plus is a progression of continuous improvement based on years of evaluation and best practices. To re-invent what is already in place and providing the desired result is considered wasteful. All the NPA should do is take on board the ESP Plus.

About Just culture, I think that blanket decisions without taking on board regional cultures and evaluating based on different backgrounds will give a distorted picture of reality. It is an issue based on subjectivity which can cause difference of opinions and understanding, treacherous waters in my opinion.

response *Noted*

The safety KPIs, except just culture measurement, are based on existing and well known EUROCONTROL tools such as the ATM Safety Framework Maturity Survey and RAT.

The just culture KPI will be further assessed and refined during RP1 and probably during the next RP as well.

comment 3 comment by: *Mats Törnvall, Swedish Transport Agency***General**

What we miss is a clear picture of what that really are supposed to be measured, and how. The document cites a number of different terms such as 'Effectiveness', 'implementation', "reporting", etc. Key words and elements of security work, but we find it hard to understand and see how a survey should achieve this. Surveys are valuable, but usually when assessing psychosocial aspects and different cultures (eg, just culture) research shows very often that the surveys should be complemented with studies / analysis is based on more

ethnographic approaches, ie. to seek understanding, knowledge (eg on efficacy) through one / several dialogue (s) with the organization.

A dialogue and to create an overall picture of such approved provider's safety culture is something that we already work with, although there is room for improvement, we learn new approaches all the time, but we are working from such a methodology, which is in our opinion very important. The day we fully rely on surveys, I think we limit ourselves a lot, especially when we are aiming for a risk-based oversight. It would be interesting if the document included some suggestions and methods that work with JC in such a perspective.

The document creates good conditions for starting or refreshing a debate within the aviation industry (and us) about JC and how we work with risk and safety associated with the organizational culture and above all the safety culture. Interestingly, the document not only gives us that authority mandated to look at JC and safety, but also gives us a great responsibility to continue to work with different elements / phenomena related to the concept of safety culture.

#### **Compliance vs performance**

You should make a more distinct difference between compliance and performance-based supervision. If we connect the two expressions to evaluate the effectiveness of SM, when and where is the distinction between compliance and performance clarified? Regarding compliance, we think that this only checks regulatory requirements, whilst performance aims more at how a system really works, ie. its effectiveness. This is not specific in the document.

response

*Noted*

See the response to comment No 2. The verified responses to the questionnaires (e.g. Just culture) will provide a good basis for identifying potential issues which could justify the launch of a study to address the issues.

The concerns about compliance vs performance are addressed in GM 2 SKPI 'Measurement of Effectiveness of Safety Management KPI — General'.

comment

6

comment by: *Swiss International Airlines / Bruno Pfister*

SWISS Intl Air Lines is of the opinion that the document shows a mature understanding of the problem that lies before the regulator and it is in line with our general understanding of SPI. However, we are skeptical if this philosophy can still be applied at this level; there will be much more work for both ANSP and National regulators.

As described in detail in the document, such a complex task is linked to quite a complicated metric which will likely need lot of training to implement.

Hence, this proposal seen as being too academic and questionable to work in practice. We are also against the foreseeable cost increase for the ANSP which will again fall back on the operators in the form of increased charges.

response

*Noted*

The safety KPIs, except just culture measurement, are based on existing and well known EUROCONTROL tools such as the ATM Safety Framework Maturity Survey and RAT. The ANSPs and the competent authorities are familiar with these tools for several years.

comment

7

comment by: *Silvano Manera*

## IATA Comments

## GENERAL

Iata recognise the importance of implementing performance methods and tools in all the Civil Aviation domain. In doing this two main principles should be strictly followed: **Harmonization** and **"Ownership"**.

**Harmonization** means to synthesize common regulatory elements across all sectors (Flight, Ground, Airport, Maintenance, ATM and Training Operations) in order to maintain a univoque, clear and effective language.

**Ownership** means, in an harmonized regulatory environment, to identify amongst all the "Actors" who is in real charge of the whole oversight process (the **Authority**).

IATA comments bring the views of world airlines operating in one global system where the two aforesaid principles become a "survival" factor.

In this context SES strategic decisions are coherent and carry the right message.

For that reasons IATA express his concern on the NPA for:

- The Complex Cross-Reporting/Decision making process that will not generate the efficiency and cost saving expected and needed
- The lenght of the rulemaking activity
- the lack of defined targets in the "*performance scheme*" up to the end of RP1 (2015)
- The uncertainty on "the Performance model" applied to the whole system
- The complexity of th interfaces "shadows" the line of control/responsibility and live space for delays in reaching a Single Sky
- The EASA competency extention is not clear without adequate resources and competency transfer from other Agencies.

And because Air Transport industry need a clear and direct interface with one Authority.

response

*Noted*

In accordance with the Performance Regulation [(EC) No 691/2010] there are targets for the KPIs such as Cost-effectiveness and Capacity which are expected to bring benefits to the airspace users. The safety KPIs are also defined in Regulation (EC) No 691/2010 and this NPA is a complementary

measure to the Performance Regulation.

In the amending Regulation ((EC) No 1216/2011), Article 1(2)(a) says: '... With regard to Member States and their national supervisory authorities and air navigation service providers, certified to provide air traffic services or communication, navigation and surveillance services, this KPI shall be measured by ...'.

Article 1(2)(b) says:

'... When reporting the above occurrences Member States and air navigation service providers shall use the following severity classes: ...'.  
However this KPI should be reported through the contact point (AMC 8).

Article 1(2)(c) says:

'...The third national/FAB safety KPI for the first reference period shall be the reporting by the Member States and their air navigation service providers through a questionnaire established ...'.

It has been considered that the above provisions should ensure disaggregated reporting on the SKPIs by the MS, NSAs and ANSPs.

The rulemaking exercise has been reduced in order to achieve the required deadlines.

The EASA competences are clearly defined in the EU legislation.

comment

18

comment by: UK CAA

**Page No:** N/A

**Paragraph No:** General

**Comment:** Notwithstanding the similarities of the proposed questionnaires, with the EUROCONTROL Safety Maturity Survey Framework and the assertion from EASA that these changes are a 'modest approach' (para 68), no Regulatory Impact Assessment has been conducted and insufficient time has been granted to states to conduct a full appraisal of the proposals. There is likely to be significant regulatory burden imposed on NSAs by these changes, especially if the scope is widened to units with 50,000 commercial air traffic movements per year, and there may yet be unforeseen difficulties with both the questionnaires, particularly the new NSA element and the RAT methodology. It is therefore essential that the EC and EASA remain receptive to proposals to amend, modify or evolve the questionnaires and KPIs in the light of experience that will be gained during RP1 and the UK CAA wishes to continue to work with and support EASA on this matter

**Justification:** Short period for consultation, no RIA and immature state of the NSA questionnaire.

response

*Noted*

The scope of this NPA is defined in Regulation (EC) No 691/2010 as it is amended by Regulation (EC) No 1216/2011 and that is why the RIA was not performed; please, refer to NPA paragraphs 8 and 76–81. The AMC/GM to the Regulation cannot change its scope. The time for adoption of the safety KPI is also defined in the Performance Regulation.

It is in the spirit of Regulation (EU) No 691/2011 that the experience from the previous RPs shall be used for KPI/targets improvement. EASA remains receptive to proposals for SKPI improvements.

PRB and EASA intend to conduct a dry run for the measurement of EoSM and JC in early 2012 to identify possible improvements to the yearly measurements as foreseen in Regulation (EU) No 1216/2011.

comment

25

comment by: NATS

The difficulty with setting targets at any level other than at the organisational or state level is that the targets would have to be apportioned in a meaningful way (especially within a FAB). Even at the State level apportionment may need to take place, although the accountable NSA should presumably be in a position to understand the risks within the State and apportion targets accordingly.

Setting safety targets needs to be considered carefully in the context of an organisation's Safety Management System whereby organisations (or FABs) should be continuously seeking safety performance improvement and targets may, perversely, discourage safety performance improvement once a target has been achieved.

response

*Noted*

No targets for the safety KPIs are foreseen during RP1 in accordance with the Performance Regulation.

comment

26

comment by: NATS

### **Whole Document**

The numbering scheme does not readily relate AMC/GM back to the regulatory requirements. It is thus hard to tell what relates to what as the AMC and GM numbering does not match (e.g. AMC3 and GM2 are on the same topic). In keeping with other draft EASA-developed AMC/GM we suggest the numbering scheme explicitly identifies the number of the individual regulatory requirement, rather than grouping them all together as "SKPI".

response

*Noted*

It is true that the numbering of these AMC and GM does not follow the same standards of style as the rest of the EASA AMC/GM. This was due to the fact that the structure of Regulation 691 is different from that of EASA regulations. The majority of the AMC and GM in this document refer to the same paragraph/point of Annex II to Regulation 691 as amended by Regulation No 1216/2011. Therefore it was considered that it would be better to follow a different numbering style, which would make the reading of the AMCs/GMs easier.

comment 27 comment by: *NATS*

**Whole Document**

“SKPI” is sometimes mis-typed as “SPI” (e.g. pages 22 and 38).

response *Accepted*

The typographical mistakes will be corrected.

comment 47 comment by: *CANSO*

The CANSO European Safety Group agreed on the following general comments:

With regards to the SMS effectiveness measurement and the survey, CANSO welcomes the facility given in the AMC to the competent authority to allocate the detailed verification task to a qualified entity or other entity. CANSO would like to stress the importance of the independence of the entity to collect ANSP answers and conduct interviews to validate survey answers. The outcome would be then sent to EASA.

- With regards to the indicator on Just Culture, the surveys should not be collected by the NSA and should be analysed by an independent entity. Indeed, in some cases there may be a conflict of interest since the NSA will oversee the Just Culture KPI of its state. The Just Culture questionnaire needs to be further worked on. CANSO wishes to be consulted on any future activity.

With regards to the RAT, very few ANSPs can provide scores for the ATM overall: very few ANSPs do the airborne part. ANSPs should therefore only be required to provide the ATM ground score. The NSA should make the appropriate arrangements as to how the ATM overall is to be scored and notified.

response *Noted*

The Performance Regulation and its amendment do not foresee any restrictions to the NSA/competent authority to delegate the verification of the measurement of the Safety KPIs to other entity. However, it should be noted that the responsibility for the correctness of the measurement stays with the NSA/competent authority.

The reporting and verification mechanism is established by the EU legislation.

CANSO as well as the other stakeholders will be consulted on any further developments of the Agency in the field of the Safety KPI.

The Member States should ensure that arrangements are in place for the ATM overall severity score to be reported. The AMC 6 SKPI was amended accordingly.

comment

58

comment by: CAA-NL

### **Comment 1 on NPA 2011-18**

#### **VII General Comments**

##### Background of the regulatory framework

Our feeling is, that a good explanation of the history and background of the KPI's would be helpful for the reader, specifically for a reader with a limited background in safety or ATM safety. Although AMC/GM will not be introduced into the Regulation, such explanation could be most beneficial if introduced into the Regulation itself as considerations. In some cases these could be related to specific articles.

#### **VIII**

Due to a minimum of experience, the on going development in working procedures, AMCs and GM and pending the amendment of EC 691/2010 [SKPIs]our comments and suggestions are given from the perspective of a learning organisation. As already stated we expect that on the basis of experiences gained in RP1, not only the SKPIs in force in RP1, but also the AMCs and GM will be updated/adapted

The Netherlands advises to promote next to EASA workshops, the establishment of a training course related to the introduction of this framework for safety KPI's. This training may be performed by IANS.

response

*Noted*

Providing explanation for the history and background of the Safety KPIs is outside the scope of this NPA. However, the contextual and background information may be found in the E3 Report, presented to the SSC 42nd meeting on 29th June 2011.

The E3 report is attached to the Decision's Explanatory Note.

Moreover, this report is referred to in recital (4) of Regulation (EU) No 1216/2011.

See also the response to comment No 18 'It is in the spirit of Regulation (EU) No 691/2010 that the experience from the previous RP shall be used for KPI/targets improvement. EASA remains receptive to proposals for SKPI improvement'.

The EC, EUROCONTROL and EASA intend to organise a workshop on SKPI implementation in 2012.

comment

67

comment by: *DSAC (FR NSA)*

Due to a minimum of experience, the on-going development in working procedures, AMCs and GM and waiting on the amendment of EC 691/2010 [SKPIs], our comments and suggestions are given from an attitude of a learning organisation. As already stated we expect that on the basis of experiences due to RP1, not only the SKPIs in force in RP1, but also the AMCs and GM will be updated.

The French NSA advises to promote next to EASA workshops, the establishment of a training course related to the introduction of this framework for safety KPI's. This training may be performed by IANS.

It is not clear why the text of AMC 1 and AMC 2 is proposed as AMC material. In our view such text does not describe the way to comply with the requirement of the regulation but contains the purpose of an AMC and the objective to the Annex.

One of the most important prerequisites of harmonisation are common used definitions. Putting these definitions as GM 1 SKPI [non-binding material providing an explanation of the requirements in the BR or the IRs] could be rather weak. We suggest to developed and publish a Definition document as AMC within the overall aviation domain.

response

*Partially accepted*

Noted.

See the response to comment No 58.

Noted.

The EC, EUROCONTROL and EASA intend to organise a workshop on SKPI implementation in 2012.

Accepted.

AMC 1 and 2 will be converted to GM.

During the drafting phase of the SKPIs IR and AMC/GM, the placement of the definitions was thoroughly discussed by the E3 group. It was considered that in order to make the definitions binding they should be placed in the IR.

However, the majority of the terms in the AMC/GM definitions are not used in the IR but in the AMC/GM themselves and it was therefore decided that the definitions should be placed in the GM as guidance in understanding and implementing the AMC.

comment 87

comment by: *Civil Aviation Directorate - Transport Malta*

The following are small comments made by the Civil Aviation Directorate (Transport Malta) in regard to the NPA on the AMC/GM for the Safety KPIs of the Performance Scheme:

(a) Malta is in favour of using the Risk Assessment Tool methodology for severity classification and welcomes a common methodology for the classification of severity for all types of occurrences;

(b) The measurement of Just Culture is a complicated issue and cannot be taken, whilst verification of its existence is possible. This is a culture that needs investment in time, patience and maturity of all involved, none of which can be quantified;

(c) Most of the material in the NPA has been established for quite some time and this is mostly a modification of existing principles;

(d) The existing EUROCONTROL Safety Maturity Survey is considered adequate, at least in Malta's case, and it has been in use for quite some time, whilst also undergoing continuous change towards improvement.

response *Noted*

#### **A. Explanatory Note – IV. Content of the draft Decision – a) Background and regulatory framework**

p. 5-7

comment 11

comment by: *STASA - Italy*

Ref. 13 - We do not deem so appropriate to use RP1 data gathering to propose a revision of Regulation 691/2010 at the least till the completion of actions foreseen for RP3. It is quite impossible to validate data collected in the absence of a mature legislative process spread at the European level able to demonstrate that reporting is opened to all stakeholders/front line involved and no prosecution is undertaken against reporters. Moreover the RP1 data collected could be understood only for actual events without any added value with regard to potential risk not ranked in the classification methodology due to the fact these are not reported because no protection is foreseen. Therefore the validation activity should be subject to the RP3 process outcome.

response

*Noted*

The comment is not understood.

comment

19

comment by: *UK CAA***Page No:** 6**Paragraph No:** 13

**Comment:** There is some confusion arising here due to the proposed amendment of Regulation 691/2010 regarding traffic levels. Do the KPIs apply to units with more than 50,000 or 150,000 movements per annum?

**Justification:** It is necessary to know as soon as possible the scope of what units the regulation applies to.

response

*Noted*

The scope of the Performance Regulation is defined in Article 1 of Regulation (EU) No 691/2010. In addition, the amending Regulation (EU) No 1216/2011 changes just the scope of the application of the second KPI (RAT methodology), stating that Member States 'may decide not to apply the method for airports with less than 50 000 commercial air transport movements per year'.

comment

20

comment by: *UK CAA***Page No:** 7**Paragraph No:** 21

**Comment:** The CAA supports this paragraph in the light of the limited consultation period and accepts that the RAT methodology should be GM.

response

*Noted*

comment

48

comment by: *Mats Törnvall, Swedish Transport Agency*

13, EoSM: What has been put in the concept / term effectiveness? Is it defined somewhere, we can't find any. My first reflection is whether one can evaluate a system's / program's effectiveness simply by use of surveys / questionnaires. There is nothing in the document that makes use of results from various

dialogues between the state and provider, for example through results of the ongoing oversight programme in the different states, where you can find lots of data on the effectiveness of the SMS, the presence of just culture, etc.

13, JC: Is it correct that the ANSP simply can write down its just culture policy, report it to the regulator/state and then everything is fine? The AMC/GM makes use of various terms such as "Implemented", "Effectiveness", "reporting", etc. Sometimes it's unclear what is intended to measure.

response *Noted*

The Safety KPIs and their basis were already defined in the Performance Regulation [Regulation (EU) No 691/2010]. The purpose of the draft AMCs and GM proposed with this NPA is not to re-define the SKPIs.

The JC SKPI aims at measuring the level of presence and corresponding level of absence of just culture at State level and at ANSP level. The metrics have been constructed to respond to the criteria of: clearly defined, auditable, verifiable, repeatable and indicative of the level of just culture being implemented.

**A. Explanatory Note — IV. Content of the draft Decision — b) Content of AMC/GM — ii. Effectiveness of Safety Management (EoSM)**

p. 8

comment 88

comment by: *DSNA/MSQS*

ii. Effectiveness of safety management

With regards to the SMS effectiveness measurement and the survey, DSNA welcomes the facility given in the AMC to the competent authority to allocate the detailed verification task to a qualified entity or other entity. DSNA would like to stress the importance of the independence of the entity to collect ANSP answers and conduct interviews to validate survey answers. The outcome would be then sent to EASA.

response *Noted*

The Performance Regulation and its amendment do not foresee any restrictions to the NSA/competent authority to delegate the verification of the measurement of the Safety KPIs to other entity. However, it should be noted that the responsibility for the correctness of the measurement stays with the NSA/competent authority.

**A. Explanatory Note — IV. Content of the draft Decision — b) Content of AMC/GM — ii. Effectiveness of Safety Management (EoSM) (27)**

p. 8-9

comment 12 comment by: STASA - Italy

Ref. 29 - It should be better to involve directly the National Safety Investigation Authority in charge within the pre-visit standardization iter, even with regard to the verification of any possible constraint/overlap between safety Vs. judicial investigation able to support the AMC-GM documentation on best way to achieve independency and transparency in accordance with Regulation CE 996/2010. Moreover it seems not so clear the intent behind the questionnaire, is it aimed also to verify the NSA capability to be compliance with ICAO Annex transposed at the national level?

response *Noted*

The explanation given in paragraph 29 is about the EASA standardisation visits and their questionnaires, templates, visits etc. Comments on Regulation (EU) No 996/2010 are considered not to be pertinent to the NPA.

The SKPI were already defined in Regulation (EU) No 691/2010. The purpose of the AMCs and GM proposed is to describe them further and to propose means of compliance with the Regulation.

comment 68 comment by: DSAC (FR NSA)

The French NSA supports the approach of EASA for efficiency of the Standardisation visits. At the same time we feel that a pragmatic approach would be useful to support a quick solution to improve the situation. Specifically the ATM KPIs and related self assessment could result into the desire of NSAs/CAAs to improve on the situation, based on the results of the same.

response *Noted*

Your support is noted. Honest answers to the questions will result in identifying the areas for improvements both at ANSP and State level.

comment 69 comment by: DSAC (FR NSA)

The French NSA considers that for the first reference period a requirement to correct a score is not acceptable, although the NSA may decide to do so, based on the review by EASA. In the first place the score is the self assessment of the NSA.

response *Not accepted*

If it is identified during the standardisation inspection that the score is incorrect, it needs to be corrected.

**A. Explanatory Note — IV. Content of the draft Decision — b) Content of AMC/GM — ii. Effectiveness of Safety Management (EoS) (31)**

p. 9

comment 51 comment by: *Mats Törnvall, Swedish Transport Agency*

32: It is assumed that a high level of implementation means a corresponding high level of effectiveness? For us, effectiveness, among other things, is how a safety policy actually works in the organization's daily tasks, how it has transformed the fine words into real action, etc. We do not think that a survey can fully show us that, there is a need for dialogue and perhaps a little "detective work" by the regulator and EASA to verify the results of the questionnaire.

response *Noted*

The SKPI and the basis for it were already defined in Regulation (EU) No 691/2010. The purpose of this AMCs/GM is to propose a means to comply with the regulation which is based on a practice carried out by EUROCONTROL during the last years. The SKPIs will be evaluated during the RP1 and they will be amended as necessary for RP2.

comment 52 comment by: *de Causemacker eric*

Item 29 : Pre-visit standardisation questionnaires and checklists availability will be highly appreciated (10 weeks in advance as proposed is a minimum, the sooner the better)

response *Noted*

The proposed mechanism would follow the same procedure that standardisation inspections do.

comment 54 comment by: *de Causemacker eric*

Item 30 : the correction of a score by the State shall be clearly justified, for that the scope of the standardisation visits shall also be clearly identified, especially for high level questions and possible interpretations.

response

*Accepted*

The correction of a score will be justified based on the outcome of the verification process. As required by Regulation (EU) No 1216/2011: 'In the context of its standardisation inspections the EASA shall monitor the implementation and measurement of the safety KPIs by national supervisory authorities, in accordance with the working methods referred to in Article 24 of Regulation (EC) No 216/2008.'

comment

89

comment by: *DSNA/MSQS*

32. Based on the responses, the following scores should be derived:

The overall effectiveness score ([in percentage](#))

[The overall level based on the lowest response](#)

An effectiveness score for each management objective ([in percentage](#))

[An effectiveness level based on the lowest level for each management objective](#)

response

*Partially accepted*

The overall effectiveness score as well as the effectiveness score for each MO in percentage are part of the NPA.

The Agency considers that additional scores should be evaluated during RP1 and further assessed for possible implementation in the next RP.

**A. Explanatory Note — IV. Content of the draft Decision — b) Content of AMC/GM — ii. Effectiveness of Safety Management (EoS) (36)**

p. 10-11

comment

21

comment by: *UK CAA*

**Page No:** 10

**Paragraph No:** 36

**Comment:** We recommend that the original ICAO based statement should stand as we have not had sight of CANSO's submission which leads to an inconsistency with ICAO.

**Justification:** Inconsistency with ICAO

response

*Not accepted*

The comment made by CANSO during the 2nd workshop in which the industry and Member States participated was the following: 'In some instances the Management Objectives, in referring to ICAO and 2096/2005, have changed the generally recognised intent from 2096/2005. For example ANSP Management Objective 1.3 requires definition of the safety manager and the supporting text states that this is a 2096/2005 requirement, yet 2096/2005 itself requires that a safety management function is required and not a safety manager.' The comment was accepted because it reflects also EU legislation, in particular the common requirements Regulation [Regulation (EC) No 2096/2005 as amended by Regulation (EU) No 1035/2011].

comment

59

comment by: CAA-NL

Comment 2 on NPA 2011-18  
ii Effectiveness of Safety Management (EoSM)

Item 29 and 30: We support the approach of EASA for efficiency of the Standardisation visits. At the same time we feel that a pragmatic approach would be useful to support a quick solution to improve the situation. Specifically the ATM KPI's and related self assessment could result in the desire of NSA's/CA's to improve on the situation, based on the results of self assessment .

For Item 30 we have the opinion that for the first reference period a requirement to correct a score is not acceptable, although the NSA may decide to do so, based on the review by EASA. In the first place the score is the self assessment of the NSA.

response

*Noted*

See the responses to comments 68 and 69.

comment

60

comment by: CAA-NL

Comment 3 on NPA 2011-18  
ii Effectiveness of Safety Management (EoSM), also AMC 5 item c. And GM3

We suggest EASA to consider [page 10 no 38 and 39] also to submit easy tools [e.g. an excel-sheet] for the determination / calculation of the scoring for SPI#1 and if needed SPI#3. More importantly we would suggest to introduce a score for each component measured to promote a good understanding of the elements to be improved by the NSA/ANSP. We believe that for RP1 that laying emphasis on the improvement of EoSM has more

	added value than having an indication of the overall situation.
response	<p><i>Accepted</i></p> <p>As it is mentioned in paragraph 38 of the NPA, the Agency's intention is to publish all the questionnaires user-friendly templates for EoSM and just culture SKPIs in electronic format on its website.</p> <p>Effectiveness score for each MO in percentage is part of the NPA.</p>

comment	<p>70 <span style="float: right;">comment by: <i>DSAC (FR NSA)</i></span></p> <p>The French NSA suggests EASA to consider [page 10 no 38 and 39] also to submit easy tools [e.g. an excel-sheet] for the determination / calculation of the scoring for SPI#1 and if needed SPI#3.</p>
response	<p><i>Accepted</i></p> <p>See the response to comment No 60.</p>

**A. Explanatory Note — IV. Content of the draft Decision — b) Content of AMC/GM — iii. Severity classification based on the Risk Analysis Tool Methodology**

p. 11

comment	<p>22 <span style="float: right;">comment by: <i>UK CAA</i></span></p> <p><b>Page No:</b> General Comment</p> <p><b>Paragraph No:</b> 47 illustrates</p> <p><b>Comment:</b> The AMC, GM and regulation numbering should be aligned in common with other EASA regulations.</p> <p><b>Justification:</b> To align with other EASA documentation and ease of reference.</p>
response	<p><i>Noted</i></p> <p>It is true that the numbering of these AMC and GM does not follow the same standards of style as the rest of the EASA AMC/GM. This was due to the fact that the structure of Regulation (EU) No 691/2010 is different from that of the EASA regulations. The majority of the AMC and GM in this document refers to the same paragraph/point of Annex II to Regulation (EU) No 691/2011 as</p>

amended by Regulation (EU) No 1216/2011. Therefore it was considered that it would be better to follow a different numbering style, which would make the reading of the AMC/GM easier.

<b>A. Explanatory Note — IV. Content of the draft Decision — b) Content of AMC/GM — iii. Severity classification based on the Risk Analysis Tool Methodology (48)</b>	p. 11-12
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comment	<p>90</p> <p>50.</p> <p>Ground safety nets (i.e. STCA)</p> <p>Airborne safety nets (i.e. TCAS)</p> <p>Pilot execution of TCAS-RA <a href="#">pilot action</a></p>	comment by: <i>DSNA/MSQS</i>
response	<p><i>Noted</i></p> <p>Naming the sub-criterion as 'pilot action' is considered quite generic and may create confusion. However, please note that when this sub-criterion is described in the AMC 7 (now named AMC 5), B is also noted that it includes application of see-and-avoid pilots decision (in the absence of TCAS).</p>	

<b>A. Explanatory Note — IV. Content of the draft Decision — b) Content of AMC/GM — iii. Severity classification based on the Risk Analysis Tool Methodology (60)</b>	p. 13-14
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comment	<p>13</p> <p>Ref. 66 - RAT methodology should be clarified: is it mandatory or not? Member State should be able to understand if measurement are aligned on the same parameters in order to avoid to jeopardize the data collection effectiveness also with regard to common taxonomy and data base harmonization.</p>	comment by: <i>STASA - Italy</i>
response	<p><i>Noted</i></p> <p>The nature of an AMC (the case with the RAT methodology) is not binding.</p> <p>This is described in paragraph 22 of the NPA.</p>	

comment	23	comment by: UK CAA
	<p><b>Page No:</b> 14</p> <p><b>Paragraph No:</b> 66</p> <p><b>Comment:</b> Ambiguity in this paragraph. Should the statement require <b>all incidents</b> to be verified, rather than <b>a sample</b>, then this could impose an unacceptable burden on NSAs as detailed in the UK CAA's main comment above. Clarification of the meaning of this paragraph is required.</p> <p><b>Justification:</b> Verification of all incidents would create a significant regulatory burden. The UK CAA processes in the order of 14-15,000 mandatory occurrence reports a year.</p>	
response	<p><i>Accepted</i></p> <p>The AMC 10 (now named AMC 8) and related explanatory material is reworded to better reflect the intent. Furthermore, it should be noted that this NPA shall be considered in the light of the Performance Regulation scope for the application of RAT methodology (separation minima infringement, runway incursions and ATM specific occurrences).</p>	

**A. Explanatory Note — IV. Content of the draft Decision — b) Content of AMC/GM — iv. Just culture**

p. 14

comment	14	comment by: STASA - Italy
	<p>Ref. 69 - This is a very sensitive issue, in fact should be important to highlight the essence of the difference between "State Level involvements" instead of "NSA involvement". It Should be forbidden to give a formal feedback by only the NSA on behalf of the State. Moreover, it should be an added value to obtain information on what was the impact of Judicial Court decisions on the investigation iter, with special regard to so called <i>honest mistakes Vs. just culture principles</i>. We suggest to include such topic within the questionnaire even identifying the reference period of observation (e.g. list of Court Decisions taken at the national level – if any - during the last two years and any possible conflicting with Just Culture principles).</p>	
response	<p><i>Noted</i></p> <p>In accordance with Regulation (EU) No 1216/2011 the reporting of just culture is the State's responsibility. This NPA provides acceptable but not the only means of compliance to report just culture SKPI.</p>	

comment	<p>44 <span style="float: right;">comment by: <i>Mats Törnvall, Swedish Transport Agency</i></span></p> <p>67: The question here is whether we (EASA) believe we can "measure" just culture through surveys. It's something you should consider, and to include interviews as a natural part of the measurement of the EoSM.</p> <p>68: Here there is an awareness of the complexity of the concept of just culture, which is good. But to then begin the process of measuring only through surveys may be likely to create diffuse and inadequate pictures and status of the ANS just culture.</p>
response	<p><i>Noted</i></p> <p>Safety culture and just culture are measured through surveys in other industries (Oil and Gas, Nuclear, etc.).</p> <p>This safety KPI is intended to measure the level of presence and corresponding level of absence of just culture.</p> <p>The AMCs and GM proposed in this NPA will be further evaluated during RP1 and will be improved where possible for RP2.</p>

comment	<p>94 <span style="float: right;">comment by: <i>MOT Austria</i></span></p> <p>A1) Comment:</p> <p>Incorrect usage of the term 'Just Culture' in NPA No 2011-18. Page 14. Chapter iv. Paragraph 67:</p> <p>.....through a questionnaire as referred to in paragraph (e), which measures the level of presence and corresponding level of absence of just culture.</p> <p>A2) Justification:</p> <p>The questionnaire suggested is assessing the organizational requirements that need to be in place to support a Just Culture such as policy and training, Just investigations and legal arrangements. It does not measure whether a Just Culture is in place or not; i.e. if the organizational requirements in place are effective or not. In order to be able to measure Just Culture a Safety Climate Survey, Interviews, Focus Groups, behavior observations or any other quantitative or qualitative data assessment method that considers the people working in an organization would have to be implemented.</p> <p>A3) Proposal:</p> <p>.....which measures the level of presence and corresponding level of absence of organizational requirements that support a just culture.</p>
response	<p><i>Not accepted</i></p>

Your proposal implies changing the wording of the Performance Regulation (as amended by Regulation (EU) No 1216/2011) which establishes the third safety KPI as 'The third national/FAB safety KPI for the first reference period shall be the reporting by the Member States and their air navigation service providers through a questionnaire established in accordance with paragraph (e), which measures the level of presence and corresponding level of absence of just culture.'

**B. Draft Annex (v0.4) AMC & GM SKPIs — I General — AMC 1 SKPI — Purpose**

p. 19

comment	28	comment by: <i>NATS</i>
	This material appears to be introduction rather than an explicit means of compliance to a specific requirement in the IR. We therefore suggest it should not be numbered as an AMC.	
response	<i>Accepted</i>	
	This AMC has been converted to GM.	

comment	61	comment by: <i>CAA-NL</i>
	Comment 4 on NPA 2011-18 It is not clear why the text of AMC 1 and AMC 2 is proposed as AMC material. In our view such text does not describe the way to comply to the requirement of the regulation but contains the purpose of an AMC and the objective of the Annex.	
response	<i>Accepted</i>	
	These two AMCs have been converted to GM.	

**B. Draft Annex (v0.4) AMC & GM SKPIs — I General — AMC 2 SKPI — Objective**

p. 19

comment	29	comment by: NATS
	This material appears to be introduction rather than an explicit means of compliance to a specific requirement in the IR. We therefore suggest it should not be numbered as an AMC.	
response	<i>Accepted</i>	
	This AMC has been converted to GM.	

comment	74	comment by: Romanian CAA
	<b>AMC 2 SKPI – Objective</b>	
	Point a)	
	<p><b>Comment:</b> The reference to the Regulation (EU) .../... assumes the reference to the Draft Commission Regulation in Appendix I to the NPA. We would like to draw your attention that Article 1 of this Draft Commission Regulation refers to the further item (g) Point(1) of Section 2 of Annex I to Regulation 691/2010 as amended indicates <b>NSA as responsible to the KPI measurement</b> which might create a problem in relation with other “<b>national authorities</b>” like Investigation body of accidents and incidents, or the State authority which might have responsibilities within EoSM questionnaire – State level.</p>	
	<p><b>Proposal:</b> <i>This article to make reference to Regulation 691/2010 as amended and not to the Draft Commission Regulation. According to article 1 point (7) of the Regulation 691/2010 “national authorities” are responsible to ensure the data to be provided.</i></p>	
response	<i>Noted</i>	
	The comment is more relevant to the Performance Regulation than to the NPA. However, proper coordination needs to be established between the different national authorities within the Member States in order to address the SKPI in all aspects.	

**B. Draft Annex (v0.4) AMC & GM SKPIs – I General – GM1 SKPI –  
Definitions and Abbreviations – Definitions**

p. 19-21

comment	30	comment by: NATS
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	Should "relating to safety" be added to the end of the definition of "safety culture" for clarity?
response	<p><i>Not accepted</i></p> <p>It is not considered that adding 'relating to safety' to the safety culture definition will add more clarity.</p>
comment	<p>62 <span style="float: right;">comment by: CAA-NL</span></p> <p>Comment 5 on NPA 2011-18 GM1 Definitions</p> <p>One of most important prerequisites of harmonisation are common , harmonised definitions. Putting these definitions as GM 1 SKPI [non-binding material providing an explanation of the requirements in the BR or the IRs] could be rather weak. We suggest to developed and publish a Definition document as AMC within the overall aviation domain.</p>
response	<p><i>Noted</i></p> <p>During the drafting phase of the SKPIs IR and AMC/GM, the placement of the definitions was thoroughly discussed by the E3 group. It was considered that in order to make the definitions binding they should be placed in the IR. However, the majority of the terms in the AMC/GM definitions are not used in the IR but in the AMC/GM themselves and it was therefore decided that the definitions should be placed in the GM as guidance in understanding and implementing the AMC.</p>
comment	<p>75 <span style="float: right;">comment by: Romanian CAA</span></p> <p><b>GM1 SKPI – Definitions</b></p> <p><b>Comment:</b> "ATM Specific occurrences" – This definition is not used in other Regulations, Directives or ICAO documents. We would like to draw attention on the fact that Directive 2003/42 need to be revised by 31 December 2011 and it might contain definition in this regard.</p>
response	<p><i>Noted</i></p> <p>The AMC/GM may be amended to ensure consistency with other legislative material when adopted.</p>

**B. Draft Annex (v0.4) AMC & GM SKPIs – II Effectiveness of Safety**  
**Management KPI – GM 2 SKPI – Measurement of Effectiveness of Safety** p. 22-23  
**Management KPI – General**

comment 63 comment by: CAA-NL

Comment 6 on NPA 2011-18  
GM2 SKPI measurement...

The one but last sentence of the GM seems not to be in line with item 30, where the NSA is required to correct the score. Furthermore we feel that if the objective of standardisation is to improve on the situation, the score should be in line with the actual situation also when this is more positive.

response *Noted*

Current legislation related to standardisation is based on findings which reflect lack of compliance with applicable requirements. This process run in parallel to the SKPIs verification mechanism and therefore the sentence is formulated in such a way in order to ensure that the two processes are independent as this was one of the main comments made during the different consultations.

From the common sense's point of view your comment is correct. However, it is considered that the score should not be improved based on the outcome of the audits/inspections because in this way further improvements will be encouraged (e.g. if the ANSP scored lower it means that they have identified by themselves room for improvement).

comment 71 comment by: DSAC (FR NSA)

One sentence of the GM seems not to be in line with item 30, where the NSA is required to correct the score. Furthermore the French NSA considers that the objective of standardisation is to improve on the situation, the score of such should be in line with the improvement of the situation if such improvement happens.

response *Noted*

See the response to comment 63.

comment 77 comment by: Romanian CAA

**GM 2 SKPI – Measurement of Effectiveness of Safety Management KPI  
– General**

**Comment 1:** It is unclear how the RAT verification mechanism will function. It was expected that the current AST vehicle will be used, so that the impact is minimal, but the current text is missing that. NSAs should not be required to do any additional work if it is not really necessary or if it can be avoided. The resources are already stretched and any additional work will not help.

**Comment 2:** It is not clear from the AMC/GM who should actually use the RAT within the State. A clarification will be welcomed otherwise some States will be confronted with a situation where the responsibility is passed between various organizations (e.g. Investigation body, NSA, ANSP?).

response

*Noted*

Comment 1.

The mechanism which each Member State applies for ensuring that the indication is correct depends on the national conditions.

The means of compliance for reporting of RAT methodology application are provided in AMC 10 (now named AMC 8) SKPI.

Comment 2.

The actual use of the RAT methodology may vary in each Member State based on the established national flow of occurrences information. The AMC/GM are focused on the end result when reporting occurrences at EU level.

**B. Draft Annex (v0.4) AMC & GM SKPIs – II Effectiveness of Safety  
Management KPI – AMC 4 SKPI – Measurement of Effectiveness of Safety p. 23-26  
Management KPI – State level**

comment

53

comment by: *Mats Törnvall, Swedish Transport Agency*

*"evidence to justify their answer"*

How is the "justification" reported in practical terms? Where in the questionnaire will we justify any deviations or higher levels of implementation? We do not really understand how this is supposed to work. Could it be so simple that states and ANPS's can specify their reasons / answers in free text format in addition to the questionnaire?

response

*Noted*

The questionnaire has a placeholder/column for justification/evidence where the stakeholders will describe in free text what is the rationale of their score and will list a number of evidences that could be requested or challenged

during the verification process (interviews/visits), etc.

comment 78 comment by: Romanian CAA

**AMC 4 SKPI – Measurement of Effectiveness of Safety Management KPI – State level**

**Comment:** A. Component 1 Element 1.5 - This is a difference towards the ICAO Doc 9859 and it is not clear why we need such related management objectives for this additional element.

response *Noted*

This was explained in the E3 report as follows:

'Although this is not directly covered in the ICAO SSP/SMS framework, in the EU context and in accordance with Regulation (EC) No 216/2008, Article 13 and Annex V, as well as Article 3 and Annex I of Regulation 550/2004 set provisions for the qualified entities which shall be ensured by the National competent authorities. When cooperating with other Competent authorities as stipulated in Article 2 of Regulation No 550/2004 proper arrangements and interfaces with the other Competent authorities shall also be established. The involvement of the stakeholders in accordance with Article 10 of Regulation No 549/2004 also implies proper management of the interfaces with the stakeholders.'

comment 80 comment by: Romanian CAA

**AMC 4 SKPI, Component 4, Element 4.1 (page 26/71 NPA 2011-18) & Appendix 1 to AMC 4 SKPI «Questionnaire for Measurement of EoSM KPI – State level» (page 7/8)**

**related to element 4.1 “Internal training, communication and dissemination of safety information” under Component 4: “State Safety promotion”**

**Comment 1:** It is nor clear if the current MO 4.1a and MO 4.1b cover or not the training of NSA personnel about SSP and/or about European Aviation Safety Plan, where applicable.

response *Noted*

The Q4.1 question at state questionnaire, level of implementation 'C' says:

'There are adequate and trained staff who are certified/licensed where required, according to the requirements of their role.'

There is a training plan in place to ensure on-going competency and qualification of staff.'

This implies compliance with Article 4 of Regulation (EC) No 549/2004 which requires the states to ensure that national supervisory authorities have the necessary resources and capabilities to carry out the tasks assigned to them, and compliance with the training requirements for the NSA are also provided in Article 12 of Regulation (EC) No 1034/2011.

Providing curriculum for NSA staff training is not within the scope of this NPA.

comment

81

comment by: *Romanian CAA*

***AMC 4 SKPI, Component 4, Element 4.2 (page 26/71 NPA 2011-18) & Appendix 1 to AMC 4 SKPI «Questionnaire for Measurement of EoS M KPI – State level» (page 7/8)***

**Related to element 4.2 “External training, communication and dissemination of safety information” under Component 4: “State Safety promotion”**

**Comment 1:** It is not clear if the current MO 4.2a covers or not the training of ANSP and ATCO training organizations personnel about SSP and/or about European Aviation Safety Plan, where applicable.

**Comment 2:** The current MO 4.2b related to this element is: „Promotion of awareness of safety information and communication and dissemination of safety-related information with external stakeholders”.

Taking into account the related questions 4.2 and 4.3, it is unclear if in the framework of Art. 5a of Regulation (EU) No. 691/2010 (as amended by Regulation (EU) No 677/2011), a NSA/Competent Authority should have in place or not a formal process for the external dissemination of safety information to and from the Network Manager.

response

*Noted*

Comment 1

It is expected by the NSA to ensure that ANSPs personnel including ATCOs are trained adequately including safety management process training. Providing curriculum for NSA staff training is not within the scope of this NPA.

Comment 2

Interpretation of Article 5a of Regulation (EU) No 691/2010 is not in the scope of this NPA.

**B. Draft Annex (v0.4) AMC & GM SKPIs — II Effectiveness of Safety Management KPI — AMC 4 SKPI — Measurement of Effectiveness of Safety Management KPI — State level — B. Scoring and Numerical Analysis** p. 26-27

comment 31 comment by: NATS

**Page 27 AMC4 SKPI Section B**

- 1) In the equation, all "j" and "k" should be in subscript.
- 2) In the second bullet, " $r_{ki}$ " should be " $r_{kj}$ ".
- 3) The sixth bullet is not entirely clear. Please clarify exactly how the Management Objective effectiveness score is calculated for States.

response *Accepted*

- 1 and 2: corrected.
- 3: the text has been clarified.

comment 45 comment by: Mats Törnvall, Swedish Transport Agency

5.1/5.2: This is very interesting and gratifying! What this means is, in fact, we now have a responsibility not only to "verify" just culture in the organizations, regulators are also expected to work with and evaluate their own safety!

response *Noted*

The scope and applicability of the SKPIs are already regulated in the performance scheme implementing rule. The proposed AMC/GM do not change this scope and applicability but provide a means of compliance.

comment 64 comment by: CAA-NL

Comment 7 on NPA 2011-18  
AMC 4: C. Mechanism for Verification

The authorities participating in a FAB may combine their efforts to improve their safety management systems. In such cases scores may be made visible between the authorities and knowledge and practices may be shared, focused at improvements. We propose to introduce this option into the AMC.

response *Noted*

Your comment is correct. However, there is no need to change AMC 4 (now named AMC 2), C because its current wording does not prevent the MS to combine their efforts and even to have a single point of contact at FAB level.

**B. Draft Annex (v0.4) AMC & GM SKPIs — II Effectiveness of Safety Management KPI — AMC 4 SKPI — Measurement of Effectiveness of Safety p. 27-28 Management KPI — State level — C. Mechanism for Verification**

comment 32

comment by: *NATS*

**Page 28 AMC4 SKPI Section C Figure 1**

- 1) The wording does not all fit within the boxes.
- 2) The term "SI" is not defined in the document.

response *Accepted*

- 1) Text boxes will be reformatted.
- 2) SI stands for Standardisation Inspections. This is added into GM 1 'Definitions and abbreviations'

comment 55

comment by: *Mats Törnvall, Swedish Transport Agency*

We don't really understand how the verification of the results at state level are supposed to be performed? There is very little text/description on this, and we think there is a need for a clarification on this area. At EASA level the verification is better described, but it also needs to be well described at state level.

response *Noted*

As it is stated in Regulation (EU) No 1216/2011 (amendment of the Performance Regulation): '... NSAs shall monitor the correct implementation and measurement of the safety KPIs by ANSPs, in accordance with the procedures for safety oversight ...'

comment 72

comment by: *DSAC (FR NSA)*

The authorities participating in a FAB may combine their efforts to improve their safety management systems, where scores may be made visible between the authorities and knowledge and practice may be shared, focused at improvements.

response *Noted*

The current wording does not prevent the MS to combine their efforts and even to have a single point of contact at FAB level.

**B. Draft Annex (v0.4) AMC & GM SKPIs — II Effectiveness of Safety Management KPI — AMC 5 SKPI — Measurement of Effectiveness of Safety Management KPI — ANSP level** p. 28-33

comment

33

comment by: *NATS*

**Page 28 AMC5 SKPI**

Should "ICAO Safety Management Framework" be "ICAO Safety Management System"?

response

*Not accepted*

The title of Appendix 6 to ICAO Annex 11 'Framework for Safety Management Systems' was generalised in this expression to cover ANSP and State levels.

comment

34

comment by: *NATS*

**Page 29 AMC5 SKPI Section A Component 1 Management Objective 1.1**

The reference to 2096/2005 should be updated to 1035/2011.

response

*Accepted*

At the time of the drafting of the NPA, Regulation (EU) No 1035/2011 had not entered into force yet.

comment

83

comment by: *Romanian CAA*

**AMC 5 SKPI Component 1, Element 1.1, MO 1.1 (page 29/71 NPA 2011-18)**

**Comment:** Regarding the above mentioned MO 1.1 the reference to the Regulation (EC) No 2096/2005 should be replaced with Commission Implementing Regulation (EU) No 1035/2011 laying down common requirements for the provision of ANS and amending Regulations (EC) No 482/2008 and (EU) No 691/2010.

response *Accepted*

At the time of the drafting of the NPA, Regulation (EU) No 1035/2011 had not entered into force yet.

comment 84

comment by: *Romanian CAA*

**AMC 5 SKPI Component 2 „Safety risk management“ (page 30/71 NPA 2011-18) and Appendix 1 to AMC 5 SKPI SA6 (page 7/14)**

**Comment:** In accordance with ICAO Doc 9859, Chapter 8, Section 8.3, ICAO SMS framework comprise for the component 2 „Safety risk management“ two elements, as follows:

- 2.1 Hazard identification; and
- 2.2 Risk assessment and mitigation.

Regarding hazard identification, taking into account also the provisions of Section 2.1, Appendix I to Chapter 8, ICAO Doc 9859, an ANSP shall develop and maintain a formal process that ensures that hazards in operation are identified. Hazard identification should be based on a combination of reactive, proactive and predictive methods of safety data collection.

In Art. 2 of Commission Implementing Regulation (EU) No 1035/2011 are defined the terms „hazard“ (point 6) and, respectively, „risk“ (point 9).

Having in view the meanings of these terms as well as the content of SA 6-1 in Appendix 1 to AMC 5 SKPI it is unclear why in AMC 5 SKPI the element „Hazard identification“ is missing from the Component 2.

response *Noted*

During the E3 consultation with the stakeholders it was strongly recommended that the EoSM at ANSP level should stay as it was in EUROCONTROL's SFMS. That recommendation which was accepted and which was reflected in the final E3 report has been strictly followed in the development of this NPA.

comment 86

comment by: *Romanian CAA*

**AMC 5 SKPI – Measurement of Effectiveness of Safety Management KPI – ANSP level**

**Comment 1:** That NSA should not be limited when examining the EoSM scoring of an ANSP. It is up to the NSA to push this score up or down, so such a statement in the AMC is pointless.

**Comment 2:** The verification mechanism for “just culture” is not entirely needed. This is largely the perception of the ANSP and the NSA is not in the position to evaluate or even more, to sanction that. By asking the ANSP to submit their responses to the NSA some may withhold the entire information. This should be sent directly to EASA/EUROCONTROL for evaluation in confidence, in true spirit of just culture.

response *Noted*

Comment 1 is not understood.

Comment 2: Please see response to comment No 87.

**B. Draft Annex (v0.4) AMC & GM SKPIs – II Effectiveness of Safety Management KPI – AMC 5 SKPI – Measurement of Effectiveness of Safety Management KPI – ANSP level – C. Scoring and Numerical Analysis** p. 33-34

comment 35

comment by: *NATS*

**Page 33 AMC5 SKPI Section C**

- 1) In the equation, all “i” “j” and “k” should be in subscript.
- 2) In the equation the denominator is not fully readable.
- 3) The final bullet (page 34) is not entirely clear. Please clarify exactly how the Management Objective effectiveness score is calculated for ANSPs.

response *Accepted*

1 and 2: corrected.

3: text has been clarified.

**B. Draft Annex (v0.4) AMC & GM SKPIs – II Effectiveness of Safety Management KPI – AMC 5 SKPI – Measurement of Effectiveness of Safety Management KPI – ANSP level – D. Mechanism for Verification** p. 35

comment	<p>56 <span style="float: right;">comment by: <i>Mats Törnvall, Swedish Transport Agency</i></span></p> <p>The verification mechanism needs to be better described!</p> <p>We think there is a risk concerning the possibility to "allocate the detailed verification task to a qualified entity" - there is a clear purpose/win in that the regulator should perform the verification.</p> <p>If someone else than the regulator/NSA performs the verification the NSA can't make use of the results of the survey in its ongoing oversight and risk based analysis. It seems wrong to let someone else do the verification!</p>
response	<p><i>Noted</i></p> <p>The possibility to use qualified entities for verification purposes is left exclusively to the NSA/competent authorities to decide. This is in accordance with the requirement of some stakeholders who wish to make use of this possibility. However, it shall be noted that the responsibility for the correct outcome of the verification process relies on the NSA/competent authorities.</p>

**B. Draft Annex (v0.4) AMC & GM SKPIs – II Effectiveness of Safety**  
**Management KPI – GM 3 SKPI – Measurement of Effectiveness of Safety** p. 35-38  
**Management KPI – ANSP level – Scoring and numerical analysis**

comment	<p>36 <span style="float: right;">comment by: <i>NATS</i></span></p> <p><b>Page 36 GM3 SKPI 3<sup>rd</sup> bullet</b></p> <p>It is disputed that applying the lowest score for each management objective is necessarily best practice. Please delete text in brackets.</p>
response	<p><i>Not accepted</i></p> <p>This is just one possibility given as an example in the GM. The evaluation of the safety KPIs at FAB level is up to the participating Member States.</p>
comment	<p>37 <span style="float: right;">comment by: <i>NATS</i></span></p> <p><b>Page 37 GM3 SKPI Table 1</b></p> <p>It would be most helpful if the Weightings were added to this table in an</p>

additional column.

#### Page 37 GM3 SKPI Equation

The equation is not fully readable and the terms "i" "j" and "k" should be in subscript.

#### Page 37 GM3 SKPI Calculation

1) "S1" should be capital S, subscript 1

2) It would be easier to read the calculation if the nested brackets were included,

e.g.  $S_1 = 100 * ((0 * 5) + (4 * 5) + \dots)$

response *Partially accepted*

Comment on page 37, GM3 SKPI Table 1: Not accepted.

Adding the weighting in additional columns will make it very complicated and unreadable.

Comment on page 37, GM3 SKPI Equation and calculation 1): Accepted.

Comment on page 37, GM3 SKPI calculation 2): Not accepted.

The proposal has been tested but it is not considered to improve clarity.

comment 38

comment by: *NATS*

#### Page 38 GM3 Equations

The equations are not fully readable and the terms "i" "j" and "k" should be in subscript.

response *Accepted*

**B. Draft Annex (v0.4) AMC & GM SKPIs — III Severity Classification Based on the Risk Analysis Tool Methodology — AMC 6 SKPI — Severity Classification Based on the Risk Analysis Tool Methodology — General**

p. 39

comment 39

comment by: *NATS*

**Page 39 AMC6 SKPI 1<sup>st</sup> para**

Missing word? Should "risk analysis methodology" be "risk analysis tool methodology"?

response

*Accepted*

Text amended.

comment

65

comment by: CAA-NL

Comment 8 on NPA 2011-18

1. AMC 6 General

We support that the severity of occurrences reported should be the ATM Overall severity.

The authorities participating in a FAB may combine their efforts to improve their safety management systems. In such cases scores may be made visible between the authorities and knowledge and practices may be shared, focused at improvements. We propose to introduce this option into the AMC.

Additionally, we advise to extend the scope from ATM Overall to all ATC related occurrences.

In our view the original text used in the introduction to the RAT tool would give a good view on the general setting for the assessment procedure. We propose to introduce the following text:

**ASSESSMENT PROCEDURE**

**The severity marksheets are to be seen as a guide to severity and risk or recurrence assessment.**

**Scoring marksheets is NOT a system that, through calculations, will determine a definite severity and risk**

**for any type of occurrence. There is a need for additional procedures, such as moderation panels to ensure**

**adjustments and smoothing of results based on the operational experience of the investigators. By using the**

**marksheets and its barrier model, the subjectivity of the final assessment will be reduced. Consistent, objective**

**and harmonised assessments will be achieved by investigators from various stakeholders with different**

**backgrounds and cultures (e.g. where appropriate: ANSPs, REGs, airlines, AAIBs).**

response *Noted*

The scope of the NPA is to provide a means of compliance for the occurrences severity classification. The occurrences, which are under this safety KPI, are defined in Regulation (EU) No 691/2010 as amended by Regulation (EU) No 1215/2011. Nothing prevents the stakeholder from applying the RAT methodology to all ATC-related occurrences. Furthermore, nothing prevents the competent authorities to combine their efforts in the analysis and exchange of safety data. We do not consider the need to amend the AMC/GM in this respect.

comment 85

comment by: *Romanian CAA*

***AMC 6 – Severity Classification – Severity Classification based on the Risk Analysis Tool Methodology – General***

**Comment:** There is no description of a mechanism that has to be in place in order to gather data in relation to ATM Airborne criteria for enabling the reporting of the ATM overall severity. The assumption is that some data can be obtained only from the Aircraft Operator.

response *Noted*

It is up to the Member States to establish a mechanism for collecting the data needed in order to calculate the ATM overall score.

**B. Draft Annex (v0.4) AMC & GM SKPIs – III Severity Classification Based on the Risk Analysis Tool Methodology – GM 5 SKPI – Severity Classification Based on the Risk Analysis Tool Methodology – Methodology for Separation Minima Infringements – General Description**

p. 39-41

comment 40

comment by: *NATS*

**Page 39 GM5 SKPI**

The title of this GM appears to relate to AMC7 not AMC6. If so, it should be placed after AMC7 to be consistent with the rest of the document.

response *Accepted*

GM 5 will be replaced.

**B. Draft Annex (v0.4) AMC & GM SKPIs — III Severity Classification Based on the Risk Analysis Tool Methodology — AMC 7 SKPI — Severity Classification Based on the Risk Analysis Tool Methodology — Methodology for Separation Minima Infringements**

p. 41-43

comment 17

comment by: STASA - Italy

In general terms we agree with the intent; nevertheless the risk is to understand the "message" as a too much conservative methodology aimed at only rank States by a mean of scoring system applicable on their capability to be safe without any other further requirements able to support Just Culture principles and therefore without improving the number and analysis of "grey area events" (e.g. detected by voluntary reporting system protected by law). For these reasons we suggest to have a prudent approach on the RP1 implementation in the light of Just Culture enforcement foreseen only in the third period.

response *Noted*

The RP1 approach is 'prudent'. Just culture implementation in RP1 is being thought a major enabler in RP1 for further developments.

comment 41

comment by: NATS

**AMC7 Tables (all)**

The symbol "÷" is used throughout to indicate a range. In some countries this symbol means "divide by" and therefore results in the ATM Overall component always being zero. Please replace "÷" with "to".

**AMC7 SKPI Table Page 43**

Replace "Separation + 75% minimum" with "Separation > 75% minimum"

**First para after table Page 43:**

To add clarity, remove second sentence and add "(not both)" to the end of the first sentence.

response *Accepted*

Accepted. Symbol corrected.

Accepted. It is one way to be clearer; symbol corrected.

Accepted. Sentence corrected.

**B. Draft Annex (v0.4) AMC & GM SKPIs — III Severity Classification Based on the Risk Analysis Tool Methodology — AMC 7 SKPI — Severity Classification Based on the Risk Analysis Tool Methodology — Methodology for Separation Minima Infringements — B. Controllability**

p. 43-47

comment

42

comment by: *NATS*

**Page 45 STCA**

What happens when STCA triggers correctly? It is not clear from the bullets.

response

*Accepted*

When the STCA triggers correctly, then it worked as per design and a zero (0) should be scored. Also look at the conflict detection sub-criterion. The text of the AMC is slightly amended to improve the clarity and to align with the recent developments in the RAT methodology made by EUROCONTROL.

**B. Draft Annex (v0.4) AMC & GM SKPIs — III Severity Classification Based on the Risk Analysis Tool Methodology — AMC 7 SKPI — Severity Classification Based on the Risk Analysis Tool Methodology — Methodology for Separation Minima Infringements — D. Reliability Factor**

p. 48-49

comment

24

comment by: *UK CAA*

**Page No:** 48

**Paragraph No:** D

**Comment:** The concept of the RAT appears sound; however there are concerns that the level of data required to answer the RAT questions might not be available for many occurrences that come within the scope of the Regulation. This will result in low 'Reliability Factor' scores, in which case the relevant AMC material instructs the occurrences to be categorised as 'Not Determined', regardless of the severity indicated by the application of the RAT

methodology. The concern is that there could be a high proportion of occurrences categorised as 'Not Determined', which would have limited usefulness for analysis purposes. Experience gained throughout RP1 will show what proportion of relevant occurrences are categorised as 'Not Determined' and the results could then inform future 'goals' to improve data collection/quality.

**Justification:** There could be a high proportion of occurrences categorised as 'Not Determined'.

response *Noted*

From current experience, e.g. FAA, SAFREP TF (DFS, NATS DSNA, etc.), there are very few occurrences where the severity part is 'Not Determined'.

**B. Draft Annex (v0.4) AMC & GM SKPIs – III Severity Classification Based on the Risk Analysis Tool Methodology – AMC 9 SKPI – Severity Classification Based on the Risk Analysis Tool Methodology – Methodology for ATM-specific occurrences**

p. 54-57

comment 10

comment by: AENA-EG

The RAT ATM Specific Occurrences part of the tool/methodology is not yet closed. In the document is included the look-up table, but that table in itself is not fully populated. In the document it seems the table is ready for use, but it is not the case, and the table is basic for severity assessment.

response *Noted*

The look-up table is fully populated in terms of criteria and related options as well as of the severity related to all these combinations.

comment 43

comment by: NATS

**Page 57 AMC 9 SKPI Section B para 7**

What happens when duration = T1? (see also page 61)

response *Accepted*

Change the option 'greater than T1' to 'greater than or equal to T1'.

**B. Draft Annex (v0.4) AMC & GM SKPIs — III Severity Classification Based on the Risk Analysis Tool Methodology — GM 10 SKPI — Severity Classification Based on the Risk Analysis Tool Methodology — Methodology for ATM-specific occurrences** p. 59-60

comment 91 comment by: *DSNA/MSQS*

GM 10 SKPI – severity classification based on the risk analysis tool methodology

Figure 4 – when printed the page shows three black boxes instead of three antennas

With regards to the RAT, very few ANSPs can provide scores for the ATM overall: very few ANSPs do the airborne part. ANSPs should therefore only be required to provide the ATM ground score. The NSA should make the appropriate arrangements as to how the ATM overall is to be scored and notified.

With regards to the indicator on Just Culture, the surveys should not be collected by the NSA and should be analysed by an independent entity. Indeed, in some cases there may be a conflict of interest since the NSA will oversee the Just Culture KPI of its state. The Just Culture questionnaire needs to be further worked on a few points where the questions seem to refer to a specific way of organizing things which may not be the best nor the only one for all ANSPs : for example, organization of CISM, organization in place to make a distinction between honest errors and unacceptable mistakes. DSNA wishes to be consulted on any future activity.

response *Noted*

The Members States arrangements for obtaining the ATM overall score may vary.

See also the response to comment 47.

**B. Draft Annex (v0.4) AMC & GM SKPIs — III Severity Classification Based on the Risk Analysis Tool Methodology — GM 10 SKPI — Severity Classification Based on the Risk Analysis Tool Methodology — Methodology for ATM-specific occurrences — Criterion ‘Duration’** p. 60-63

comment

9

comment by: AENA-EG

In the criterion "Duration", the concept of T1 is not mature enough to be included as a criterion. The reasons are:

- To provide a T1 for each service, by each ANSP and seemingly per site it's a complex task, and probably not feasible for all Service-Site combinations. It should be clearly stated if the implicit workload in assigning T1 to each service provides to be worthy
- There is not a criteria to define T1. It is based on the definition of operational consequences for ATCOs and Pilots, but a seamless and agreed definition of operational impact is yet to be provided. Without that agreement, T1 concept is, de facto, meaningless. In practical terms, it's more useful to define an agreed and thorough operational impact definition, rather than search for a T1 figure.
- Duration is in the last position in RAT, but it decides if RAT should be used or not. Duration is not the last criterion, but the first one.

response

*Partially accepted*

The ANSPs do not have the obligation to define T1 for all possible combinations, it is not necessary. The evaluation of the duration can be done even if a T1 is not predefined (by evaluating the actual or potential operational consequences of that particular occurrence).

In order to clarify it:

a. The sentence 'The value of T1 should be predefined by each ANSP based on inputs provided by the ATCOs and/or pilots.' is moved from the AMC to GM.

b. The sentence has been modified as follows: 'Some of the values of T1 may be predefined, for example when they are part of the SLA between the technical and operational units (departments) or when they are part of the ATS unit safety case. When the value of T1 is predefined by the ANSP, it should be done based on inputs provided by the ATCOs and/or pilots. Alternatively, if a T1 is not predefined at the moment of the investigation, the evaluation of the duration criterion may be done by determining if a particular occurrence/failure triggered actual or potential operational consequences (the criterion should be scored greater than or equal to T1).'

The duration should be the last one because the value of T1 can differ based on the chosen options of the other criteria. However, the methodology doesn't require answering criteria in a certain order, so duration can be the first one to be answered.

**B. Draft Annex (v0.4) AMC & GM SKPIs — III Severity Classification Based on the Risk Analysis Tool Methodology — AMC 10 SKPI — RAT methodology — Verification mechanism**

p. 66

comment	73	comment by: <i>DSAC (FR NSA)</i>
	<p>If states have decided to draft their performance plan on FAB-level [as FABEC did] there could be some difficulties with AMC 10, where is stated that the Member States point of contact in accordance of D 2003/42/EC and EC 1330/2007 should collect and verify the information regarding the application of the RAT methodology. It is suggested to extent this AMC with a paragraph how to deal with this issue on a FAB-level.</p>	
response	<i>Noted</i>	
	<p>It is considered that Member States should have their points of contact as required by the applicable legislation mentioned. This NPA does not prevent any arrangements for safety data collection and dissemination at FAB level. However, it is not considered to be within the scope of this NPA to define such arrangements.</p>	

**B. Draft Annex (v0.4) AMC & GM SKPIs – IV Just culture – GM 11 SKPI –  
Just culture – General**

p. 67

comment	46	comment by: <i>Mats Törnvall, Swedish Transport Agency</i>
	<p>We find it gratifying that the Agency-level work focuses on the concept of just culture. In the intext to the last chapter, we see signs that you are aware of the complex and difficult challenge in measuring the just culture by surveys, but by choosing one "simple way" ie, simple questions with a simple table that ultimately does not describe much of the complex compound for either "state" or "ANSP". With that said, we'll probably see this as a living document that will surely be refined and updated as our / their knowledge increases.</p>	
response	<i>Noted</i>	
	<p>The experience gained in RP1 will serve to improve the JC KPI development and monitoring in RP2.</p>	

**B. Draft Annex (v0.4) AMC & GM SKPIs – IV Just culture – AMC 11 SKPI –  
Just culture reporting at State level**

p. 67

comment	50	comment by: <i>de Causemacker eric</i>
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The YES or NO value is not sufficient to establish a clear view of the Just Culture. The scoring might even be difficult if based on such a binary value, in some states a "YES" might be as well justified as a "NO" and vice versa. In general, questions are high level questions leaving the door open to interpretations. It might be more effective to use the Eurocontrol type - 4 levels answers (to be initiated - initiated - blocked - in force).

response *Not accepted*

There were long discussions in the E3 group with regard to the 'YES/NO' value in the JC questionnaire. It was considered to keep the questionnaire as simple as possible at the beginning of the just culture measurement.

Such improvements will be considered during RP1 and might be implemented in the next RP.

**B. Draft Annex (v0.4) AMC & GM SKPIs — IV Just culture — GM 12 SKPI —  
Just culture — Reporting and Verification at State level**

p. 67-68

comment 57

comment by: *Mats Törnvall, Swedish Transport Agency*

Maybe there should be a small addition to also consider alternative methods of assessment and not just more / new survey questions - one might develop the work of JC even more? One must allow for monitoring, evaluation and improvement of the questionnaires, but above all, the **methodology** we choose to make use of to evaluate the Just Culture.

**Questionnaire:**

We understand what you mean by the just culture policy, but to evaluate you must see how well the policy works and is implemented and adopted within the organisation. As the text is formulated today, you can actually interpret it as that as long as there is a policy that all is well. As far as we know this can in fact mean the opposite. One should seek answers to the policy effectiveness/performance and how it is translated into real action and positive impact on the overall safety culture within the organization.

**Questions regarding just culture:**

Who decides what is acceptable / unacceptable? It is impossible to establish a clear "documented" format what is acceptable versus unacceptable. One solution would be interviews rather than questionnaires.

response *Noted*

The questionnaires may be accompanied by interviews.

**B. Draft Annex (v0.4) AMC & GM SKPIs — V Appendices — 1. Appendix 1 to  
AMC 4 SKPI — Questionnaire for Measurement of Effectiveness of Safety  
Management KPI — State level**

p. 70

comment

15

comment by: STASA - Italy

**AMC 4 SKPI**

**Q 1.2 (There are adequate financial and competent resources in place to carry out all phases of safety regulatory processes): it is better to include a specific question on manpower (how many ) involved in Safety Regulatory process and related organizational structure**

**Q 1.6 (There is a competent authority established to be responsible for safety in ATM/ANS supported by appropriate and adequate technical and nontechnical staff with safety policies, regulatory functions, roles, responsibilities and objectives in place.) :**

**to add on the question if the competent Authority has delegated regulatory tasks to staff coming from an external organization (e.g. Military Air Force, or others)**

**Q 3.8 (The State is implementing a just culture**

**Climate): to much generic question**

response

*Noted*

Noted.

The 'how many' part was not incorporated in the questionnaire as one size does not fit all and during the different consultations it has been clearly stated that the NSAs did not want to have a specific value which is difficult to set unique for everyone. If required, additional information may be provided in the column 'Justification for selected answer'.

Noted.

As per above. This information can be provided in the column 'Justification for selected answer'. The question is about the establishment of a certain entity with certain responsibilities which may be delegated.

Noted.

comment

79

comment by: Romanian CAA

**Appendix 1 to AMC 4 SKPI «Questionnaire for Measurement of EoSM KPI – State level» related to element 1.2 “State Safety responsibilities and accountabilities” under Component 1: “State Safety policy and objectives”**

**Comment 1:** In ICAO Doc 9859, Chapter 11, Appendix 1, in relation with component 1, element 1.2 is mentioned:

**“ 1.2 State safety responsibilities and accountabilities**

*The State has identified, defined and documented the requirements, responsibilities and accountabilities regarding the establishment and maintenance of the SSP. This includes the directives to plan, organize, develop, maintain, control and continuously improve the SSP in a manner that meets the State’s safety objectives. It also includes a clear statement about the provision of the necessary resources for the implementation of the SSP.”*

Consequently, in relation to the above mentioned element is a clear obligation to include in the SSP a statement about the provision of the necessary resources for the implementation of the SSP. This seems to be a duplication of the last sentence included in the MO1.2 („The national safety plan should include the state policy to ensure the necessary resources“)

**Comment 2:** There is no clear understanding or GM about the meaning of „national safety plan“ in the framework of SSP and/or National Performance Plan.

**related to element 1.4 “Enforcement Policy” under Component 1: “State Safety policy and objectives”**

**Comment 1:** The meaning of the term „other effective penalties“ is not clear, taking into account also the possible influences on „just culture“ KPI

**Comment 2:** There is no reference to the principles about enforcement measures setting as referred in the ICAO Doc.9859, Chapter 11, Appendix 4, including the exceptions

**related to element 4.1 “Internal training, communication and dissemination of safety information” under Component 4: “State Safety promotion”**

**Comment 1:** The scope of this Management Objective is not defined. For instance, there are States having only one NSA responsible for safety matters.

**Comment 2:** This MO does not cover the promotion of awareness of safety information, communication and dissemination of safety data at FAB level, mainly if there is a Performance Plan established for a FAB.

response *Partially accepted*

Comment 1:

MO1.2 as worded is considered to provide clarity. Moreover the fulfilment of this objective will guarantee also the fulfilment of the mentioned ICAO element

1.2.

Comment 2:

The scope of this NPA is not to provide guidance on how to establish national safety plan coherent with the European Aviation Safety Plan. This guidance is needed and will be provided by the Agency in relation to other activities under the EASP umbrella.

1.4 Comments 1 and 2:

The purpose of this NPA is not to provide guidance for establishment of enforcement measures. Such guidance is under development by the Agency as GM to Regulation (EU) No 1034/2011.

4.1

Comments 1 and 2:

Accepted.

MO4.1b reworded by replacing NSA with aviation authorities.

comment 80 ❖

comment by: Romanian CAA

**AMC 4 SKPI, Component 4, Element 4.1 (page 26/71 NPA 2011-18) & Appendix 1 to AMC 4 SKPI «Questionnaire for Measurement of EoSM KPI – State level» (page 7/8)**

**related to element 4.1 “Internal training, communication and dissemination of safety information” under Component 4: “State Safety promotion”**

**Comment 1:** It is not clear if the current MO 4.1a and MO 4.1b cover or not the training of NSA personnel about SSP and/or about European Aviation Safety Plan, where applicable.

response *Noted*

The Q4.1 question at state questionnaire, level of implementation ‘C’ says:

‘There are adequate and trained staff who are certified/licensed where required, according to the requirements of their role.

There is a training plan in place to ensure on-going competency and qualification of staff.’

This implies compliance with Article 4 of Regulation (EC) No 549/2004 which requires the states to ensure that National Supervisory Authorities have the necessary resources and capabilities to carry out the tasks assigned to them, and compliance to the training requirements for the NSA are also provided in Article 12 of Regulation (EU) No 1034/2011.

Providing curriculum for NSA staff training is not within the scope of this NPA.

comment

81 ❖

comment by: *Romanian CAA*

**AMC 4 SKPI, Component 4, Element 4.2 (page 26/71 NPA 2011-18) & Appendix 1 to AMC 4 SKPI «Questionnaire for Measurement of EoSM KPI – State level» (page 7/8)**

**Related to element 4.2 “External training, communication and dissemination of safety information” under Component 4: “State Safety promotion”**

**Comment 1:** It is not clear if the current MO 4.2a covers or not the training of ANSP and ATCO training organizations personnel about SSP and/or about European Aviation Safety Plan, where applicable.

**Comment 2:** The current MO 4.2b related to this element is: „Promotion of awareness of safety information and communication and dissemination of safety-related information with external stakeholders”.

Taking into account the related questions 4.2 and 4.3, it is unclear if in the framework of Art. 5a of Regulation (EU) No. 691/2010 (as amended by Regulation (EU) No 677/2011), a NSA/Competent Authority should have in place or not a formal process for the external dissemination of safety information to and from the Network Manager.

response

*Noted*

Comment 1

It is expected by the NSA to ensure that ANSPs personnel including ATCOs are trained adequately including safety management process training. Providing curriculum for NSA staff training is not within the scope of this NPA.

Comment 2

Interpretation of Article 5a of Regulation (EU) No 691/2010 is not in the scope of this NPA.

comment

95

comment by: *MOT Austria*

B1) Comment:

Incorrect usage of the term ‘climate’ in Appendix 1 to AMC 4 SKPI Questionnaire for Measurement of Effectiveness of Safety Management KPI – State level

B2) Justification:

The word ‘climate’ refers to attitudes and perceptions of employees at a moment in time. The KPI should measure the implementation of a just culture

as part of the overall safety culture in the organization.

B3) Proposal:

Q3.8. The State is implementing a just culture.

response *Not accepted*

The word 'climate' reflects a long term condition and it is not indicative of the situation in an organisation with relatively short duration.

**B. Draft Annex (v0.4) AMC & GM SKPIs — V Appendices — 3. Appendix 1 to AMC 5 SKPI — Questionnaire for Measurement of Effectiveness of Safety Management KPI — ANSP level**

p. 70

comment

83 ❖

comment by: *Romanian CAA*

**AMC 5 SKPI Component 1, Element 1.1, MO 1.1 (page 29/71 NPA 2011-18)**

**Comment:** Regarding the above mentioned MO 1.1 the reference to the Regulation (EC) No 2096/2005 should be replaced with Commission Implementing Regulation (EU) No 1035/2011 laying down common requirements for the provision of ANS and amending Regulations (EC) No 482/2008 and (EU) No 691/2010.

response

*Accepted*

At the time of the drafting of the NPA, Regulation (EU) No 1035/2011 had not entered into force yet.

comment

84 ❖

comment by: *Romanian CAA*

**AMC 5 SKPI Component 2 „Safety risk management“ (page 30/71 NPA 2011-18) and Appendix 1 to AMC 5 SKPI SA6 (page 7/14)**

**Comment:** In accordance with ICAO Doc 9859, Chapter 8, Section 8.3, ICAO SMS framework comprise for the component 2 „Safety risk management“ two elements, as follows:

2.1 Hazard identification; and

2.2 Risk assessment and mitigation.

Regarding hazard identification, taking into account also the provisions of

Section 2.1, Appendix I to Chapter 8, ICAO Doc 9859, an ANSP shall develop and maintain a formal process that ensures that hazards in operation are identified. Hazard identification should be based on a combination of reactive, proactive and predictive methods of safety data collection.

In Art. 2 of Commission Implementing Regulation (EU) No 1035/2011 are defined the terms „hazard“ (point 6) and, respectively, „risk“ (point 9).

Having in view the meanings of these terms as well as the content of SA 6-1 in Appendix 1 to AMC 5 SKPI it is unclear why in AMC 5 SKPI the element „Hazard identification“ is missing from the Component 2.

response *Noted*

During the E3 consultation with the stakeholders it was strongly recommended that the EoS at ANSP level should stay as it was in EUROCONTROL's SFMS. That recommendation which was accepted and which was reflected in the final E3 report has been strictly followed in the development of this NPA.

**B. Draft Annex (v0.4) AMC & GM SKPIs — V Appendices — 5. Appendix 1 to AMC 11 SKPI — Just Culture Questionnaire — State level**

p. 70

comment 16

comment by: STASA - Italy

**AMC 11 SKPI – Just Culture (state level questionnaire)**

**Under question:** “Judicial procedures and specific aviation legislation” - to add two more questions such as:

**-ST.L X - “ in the case of a judicial procedure is there any difficulties in maintaining the prevalence of ICAO Rules/Standard in favor of front line tasks against any penal code interpretation or prosecution?**

**-ST.L Y –“ is there any national law able to assign to NSA power/autonomy to issue effective orders/regulations with the force of law in the field of ATM/CNS procedures/rules?**

response *Not accepted*

The purpose of this NPA is not to interfere with issues related to national penal law.

**B. Draft Annex (v0.4) AMC & GM SKPIs — V Appendices — 6. Appendix 1 to AMC 12 SKPI — Just Culture Questionnaire — ANSP level**

p. 70

comment	8	comment by: <i>AENA-EG</i>
	<p>Questions L.2 and L.3 are out of an ANSP responsibilities, and they are not measuring Just Culture in the organization. These items should be measured at State level.</p>	
response	<p><i>Not accepted</i></p> <p>It is considered that nothing prevents ANSPs from answering the questions whether they have formal agreements with judicial authorities. It is the same with having formal agreements with the competent authorities. If for whatever reason the ANSPs cannot establish such arrangements, the relevant justification could be added in the column for possible evidences.</p>	

comment	92	comment by: <i>DSNA/MSQS</i>
	<p><b>Appendix 1 to AMC 12 SKPI - Just Culture Questionnaire - ANSP level</b></p> <p>Beyond the first requested answers (Yes/No) DSNA suggests to take under consideration a second level of questions - which will allow an other display/picture of the results and a better access to the breaches - with the following answers to select: "to be initiated", "initiated", "dead lock", "in force" or "irrelevant".</p>	
response	<p><i>Not accepted</i></p> <p>See answer to comment No 50.</p>	

<p><b>B. Draft Annex (v0.4) AMC &amp; GM SKPIs — V Appendices — 8. Appendix 1 to GM 10 SKPI — Look-up Table for Severity Classification of ATM-specific occurrences</b></p>	<p>p. 70</p>
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comment	49	comment by: <i>de Causemacker eric</i>
	<p>Guidance Material as defined are non binding material. A key point in the harmonization of the Safety assessment is the harmonization of the definitions of occurrences. Non binding materials on such a topic is not sufficient to ensure the expected objective.</p>	
response	<p><i>Noted</i></p> <p>During the drafting phase of the SKPIs IR and AMC/GM, the placement of the definitions was thoroughly discussed by the E3 group. It was considered that in</p>	

order to make the definitions binding they should be placed in the IR. However, the majority of the terms in the AMC/GM definitions are not used in the IR but in the AMC/GM themselves and it was therefore decided that the definitions should be placed in the GM as guidance in understanding and implementing the AMC.

**B. Draft Annex (v0.4) AMC & GM SKPIs — V Appendices — 10. Appendix 1 to GM 13 SKPI — Just Culture — ANSP level — possible justification**

p. 70

comment 66

comment by: CAA-NL

Comment 10 on NPA 2011-18  
Appendix to AMC/GM 11 etc on Just culture.

The questions are formulated in a very formal manner. We feel that the subjective experience of management and employees is most important as well. After all this is about culture and not about systems. Additional questions to address this are needed. We suggest to have a look at the TCA tool under the following link :

<http://www.tc.gc.ca/eng/civilaviation/publications/tp13844-menu-275.htm>

Some example questions for an ANSP could be like

**REPORTING ENCOURAGED:** Policies are in place to **encourage everyone** to raise safety-related issues (one of the defining characteristics of a pathological culture is that messengers are “shot” and whistleblowers dismissed or discredited).

**TRUST:** The organization recognises the critical dependence of a safety management system on the **trust of the workforce**—particularly in regard to reporting systems. A safe culture—that is, an informed culture—is the product of a reporting culture that, in turn, can only arise from a just culture.

**QUALIFIED INDEMNITY:** Policies relating to near-miss and incident reporting systems make clear the organization’s stance regarding qualified indemnity against sanctions, confidentiality, and the organizational separation of the data-collecting department from those involved in disciplinary proceedings.

**BLAME:** Disciplinary policies are based on an **agreed (i.e., negotiated) distinction between acceptable and unacceptable behaviour**. It is recognized by all staff that a small proportion of unsafe acts are indeed reckless and warrant sanctions but that the large majority of such acts should not attract punishment. The key determinant of blameworthiness is not so much the act itself—error or violation—as the nature of the behaviour in which it was embedded. Did this behaviour involve deliberate unwarranted risk-taking or a course of action likely to produce avoidable errors? If so, then the act would be culpable regardless of whether it was an error or a violation.

**FEEDBACK:** The organization has in place rapid, useful and intelligible **feedback channels to communicate the lessons learned** from both the

reactive and proactive safety information systems. Throughout, the emphasis is upon generalizing these lessons to the system at large.

**ACKNOWLEDGE ERROR:** The **organization has the will** and the resources to acknowledge its errors, **to apologize for them** and to reassure the victims (or their relatives) that the lessons learned from such accidents will help to prevent their recurrence.

For the questions to States a similar transition could be made.

response *Noted*

Adding more questions will make the questionnaire very long. The examples mentioned by the CAA-NL could be used for the future development and improvement of this SKPI for RP2. However, it is considered that all the points are already covered at high level in the questionnaire.

comment 93

comment by: *DSNA/MSQS*

**Appendix 1 to GM 13 – Just Culture – ANSP level - possible justifications**

ANSP P – 5

Critical Incident Stress Management (CISM) is the structured assistance for a normal reaction to an abnormal event. A CISM programme can help the controllers see that incidents are “normal”, that they can help the organisation improve and that they can happen to everybody. Use of CISM is considered as an indication that the organisation is not intending to “punish” staff but to provide support to those involved in occurrences and thus is aiming to implement a “just culture”.

From DSNA point of view this only possible justification is too much oriented. The CSIM process is not in the core of ANSP activities. Therefore it should be possible to subcontract/entrust an external structure to endorse this task for the benefit of all our employees.

This other option should be consider in the possible justifications list.

response *Accepted*

The GM should be amended to provide an example with the outsourced CISM.

**VII. Appendix 2: E3 Final report**

E3 Task Force

**Metrics  
for Safety Key Performance Indicators  
for the Performance Scheme**

*Version 3.0*

*Date 29/06/2011*

*Final issue*

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# Report

## *Metrics for Safety Key Performance Indicators for the Performance Scheme*

Document ref.	Status	Date
V3.0	Final issue	29/06/2011
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	Name	Signature	Date
<b>Prepared</b>	E3 Task Force		01/11/2010- 29/06/2011
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	Source	Pages	Date
<b>V1.0</b>	Proposed versions sent to the EC and PRB for consultation with the Member States and industry	-	29/04/2011

**Metrics for Safety Key Performance Indicators for the Performance Scheme**

<b>V2.0</b>	SSC workshop for State Representatives 13 May 2011	9-12, 19, 30, 41-44, 46, 48, 55, 63-68 (new Annex)	01/06/2011
<b>V3.0</b>	SSC workshop 17 June 2011 and formal comments	8-12, 14, 31-33, 42, 46, 47, 49, 57  Updated annex for EoSM State	29/06/2011

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# Part I

# Executive Summary

## Executive Summary

### a. Purpose of the Document

This document is the result of the technical work of the E3 Task Force (EC, EASA, EUROCONTROL) developing proposals for the metrics of the three Safety KPIs as mandated by the Commission Regulation (EU) No 691/2010 (Performance Regulation). This proposal is addressed to the European Commission and served as the basis for their formal Stakeholder Consultation process. Upon the conclusion of this consultation and the respective changes to this document, the document served as the basis for developing an amendment to the Performance Regulation and associated Acceptable Means of Compliance (AMCs) and Guidance Material (GM), which needs to be adopted by the Commission before the first reference period (RP1) commencing 2012.

### b. Legal Background

Commission Regulation (EU) No 691/2010 on the performance scheme for air navigation services and network functions implements Article 11 of the Framework regulation (EC No 549/2004) and defines the key performance indicators (KPI) for the four key performance areas (KPA): capacity, cost-efficiency, environment and safety. For the safety performance assessment the Regulation defines three safety KPIs:

- a) The first safety KPI shall be the effectiveness of safety management for air navigation services providers and national supervisory authorities (NSAs) respectively, as measured by a methodology based on the ATM Safety Maturity Survey Framework.
- b) The second safety KPI shall be the application of the severity classification of the Risk Analysis Tool to allow harmonised reporting of severity assessment of Separation Minima Infringements, Runway Incursions and ATM Specific Technical Events at all Air Traffic Control Centres and airports with more than 150 000 commercial air transport movements per year (yes/no value).
- c) The third European Union-wide safety key performance indicator shall be reporting of the just culture.

No European Union-wide targets for the above safety KPIs are required by Regulation (EC) No 691/2010 for the first reference period (RP1, 2012-2014). During RP1, the Commission will use the data collected to validate these KPIs and assess them to ensure that safety risk is adequately identified, mitigated and managed. On this basis, the Commission shall adopt new safety KPIs for RP2 if necessary, by revision of Regulation (EC) No 691/2010. Moreover, it is the intention to use the data collected during the RP1 to establish the performance targets for the following reference period.

The safety performance indicators as required in the Regulation (EC) No 691/2010 shall be developed on the basis of two mentioned tools developed by EUROCONTROL (ATM Safety Framework Maturity Surveys (SFMS) and the Risk Analysis Tool (RAT)).

### c. Effectiveness of Safety Management (EoSM)

**EoSM KPI: Definition of general management objectives at State and ANSP level based on EUROCONTROL ATM SFMS considering EU legislative framework, ICAO SARPs and European Aviation Safety Programme and measured through questionnaires. Assists in identification of safety management areas where improvement is needed.**

The Key Performance Indicator 'Effectiveness of Safety Management' is designed to measure on both State level and Service Provision level the capability of the States to manage its SSP and Service Providers to manage an effective SMS respectively. Starting point is the ICAO SSP and SMS framework consisting of several components and elements. Additional components and elements have been added to better reflect the European context.

The resulting framework consists of five main components. The first four components were identified in the ICAO material and are aligned with EU legislation: Safety policy and objectives, Safety risk management, Safety assurance, and Safety promotion. The fifth component, Safety Culture, although not specifically identified either in ICAO SARPs or in EU legislation but being part of the current SFMS, is considered to be necessary to measure EoSM. For all five components, for both State and ANSP levels, general management objectives (MOs) are defined.

The EoSM indicator will be measured by verified responses to questionnaires on State and Service Provision level, based on the EUROCONTROL SFMS. For every question the respondent is required to indicate the level of implementation, varying from 'Initiating' (level 1) to 'Continuous Improvement' (level 5), characterising the level of performance of the respective organisation.

This proposed methodology for measurement of the EoSM for the **State** resulted in substantial changes to the SFMS questionnaire. Applying the same methodology to measure the EoSM of **ANSPs** did not result in substantial changes to the present SFMS questionnaire.

#### ***Mechanism for measurement – State level***

The questionnaires completed by the NSA/national competent authorities shall be delivered to EASA and PRB before 1st of January each year during the RP1.

This questionnaire is designed maintaining the structure of the SFMS (Study Areas) with several new questions added in order to fully cover the state obligations relevant to the SSP. For each question States shall provide information on the level of implementation and evidence to justify its answer.

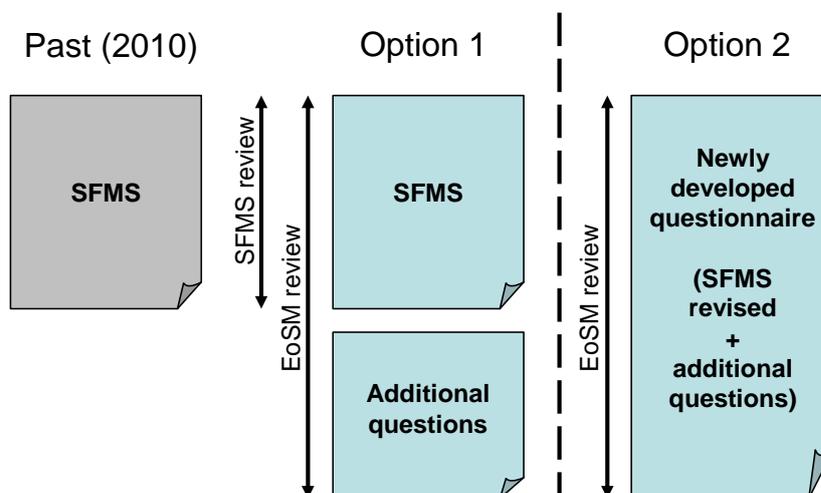
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As part of the methodology each of the questions is associated with a weighting factor to compute the overall level of effectiveness. To recognise the achievement of the SFMS so far, two possible options are identified:

**Option 1:** Use of the current SFMS questionnaire including the proposed revisions of specific questions with addition of a section added to cover the newly identified set of questions.

The advantage of such an approach is the possibility for continuation of the SFMS part of 2010 as the quantification of the existing questions can be maintained. The quantification of the answers given to the new questions can be done separately. The disadvantage is that the evaluation process for each of the respective MOs is less obvious.

**Option 2:** Use of one single newly developed questionnaire, which includes the revised set of SFMS questions as well as the new questions and a new way of quantifying them. The advantage of this approach is that the questionnaire is specifically tailored to address the MOs. The disadvantage is that the continuation from the preceding SFMS exercise in 2010 is not provided for.



For any of the finally selected options weighting factors for the evaluation of the MOs need to be developed before the start of RP1.

**During the consultation process, Stakeholders clearly indicated their preferences for Option 2. Therefore, the development of the amendment to the performance scheme regulation (Regulation (EC) No 691/2010) and associated AMCs and GMs will take this into account.**

**Mechanism for verification – State level**

The results of the States’ self assessment will be verified by means of EASA standardisation inspections, which will also be used for the dispatch and collection of the questionnaires. Standardisation inspections are to be performed in accordance with Regulation 736/2006, which is going to be amended to be able to achieve the objectives of the safety performance monitoring as required in Regulation (EC) No 691/2010. The answers of the self-assessment questionnaires shall be verified by EASA using all the safety-related information available in the Agency. If necessary, EASA shall collect additional safety information from the respective State, or it shall undertake standardisation inspection of the respective NSA to amend the results accordingly. The PRB may request EASA to address during standardisation visits specific issues identified by the PRB.

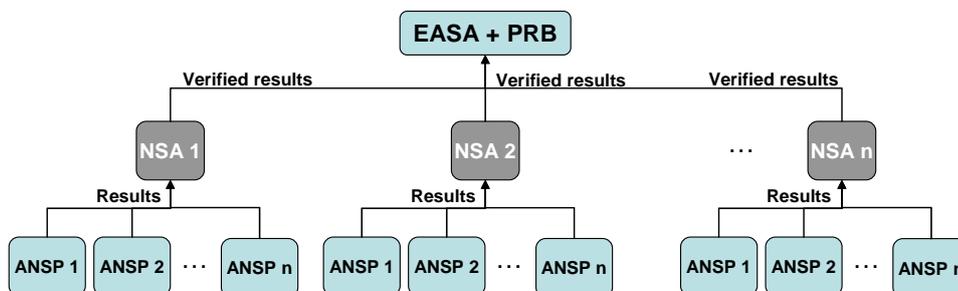
**Mechanism for measurement – Service provider level**

This indicator addresses EU ANSPs providing ATS and/or CNS services, certified in accordance with regulation (EC) No 2096/2005 (common requirements for the provision of air navigation services). The questionnaires completed by the ANSPs and verified by the NSA/national competent authorities shall be delivered to EASA and PRB before 1st of January each year during the RP1.

The current SFMS questionnaire can be used to measure the MOs with only minor editorial enhancements to the questions, which do not change either the content of the five possible levels of implementation nor the associated weighting factors for the SFMS Study Areas. Similar to the State part, justification and evidences shall be provided by the ANSPs to justify their answers.

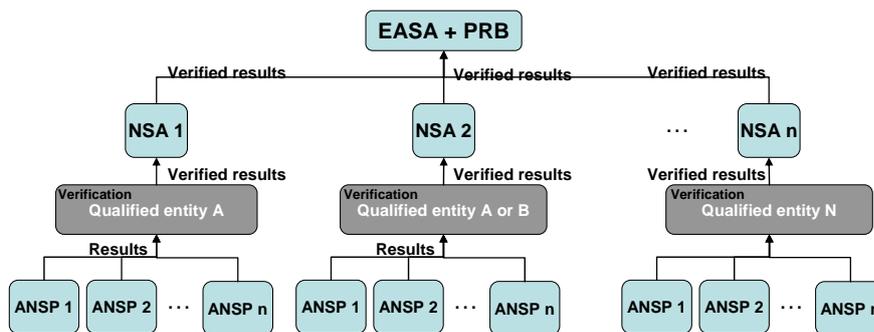
**Mechanism for verification –Service provider level**

The NSA/national competent authority is responsible for the performance oversight and the verification of the ANSP questionnaires. This verification should take place before the questionnaires and their results are submitted to EASA and PRB.



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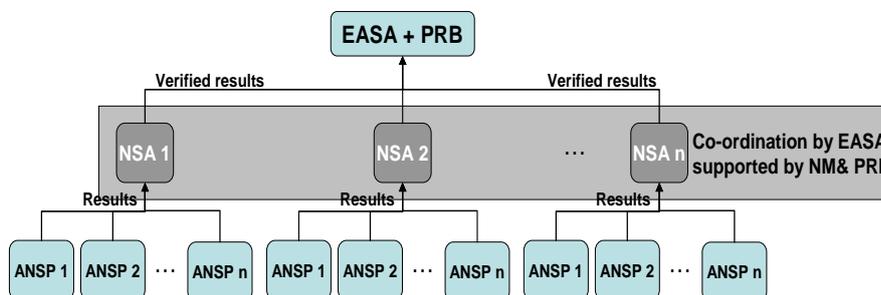
The current European regulatory framework article 10 of Regulation (EC) No 1315/2007 and article 11 of draft safety oversight regulation published with EASA Opinion No 02/2011) already creates the possibility for the NSA/national competent authority to allocate the detailed verification task to a qualified entity. This qualified entity shall mean a body complying with the requirements defined in the regulations to which a specific task may be allocated by and under the supervision and the responsibility of the NSA.



The implementation of the verification process shall be standardised through the EASA standardisation inspections mechanism.

During the consultation process, the stakeholders requested to have the possibility for better coordination between the NSAs in the verification process in order to achieve consistent and comparable results. Such coordination was proposed to be coordinated by EASA, supported by PRB and the NM. One potential solution could be the extension of the terms of reference of the NSA Coordination Platform (NCP) in the field of harmonisation of the verification mechanism of the safety KPIs at ANSP level.

Notwithstanding the above, the responsibility for verification of the safety KPI measurement at ANSP level stays with the overseeing NSA but the amended Regulation No 691 shall not prevent the establishment of a co-ordination mechanism.



For both the State level and Service Provider level, EASA and PRB will monitor the performance regarding this indicator based on the received answers and on the results of the verification process by the States and by EASA.

It is important to highlight that there is a difference between performance monitoring and compliance monitoring and also between performance monitoring and the process for

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issuing, renewal, suspending, revoking certificates for ANSPs. In the case of the safety KPI 'Effectiveness of Safety Management', the measurement should provide an indication of how effective the safety management processes within the State and within the ANSPs are, and it is to be seen separate from the process to check compliance with the SMS requirements (Common Requirements) or safety oversight regulation.

**d. Application of the severity classification methodology of the Risk Analysis Tool (RAT) to allow harmonised reporting**

**RAT severity classification methodology KPI: Application of the severity classification methodology of the RAT. To be measured on the individual occurrence level as yes/no value of application of the RAT methodology for severity classifications of occurrences with category A (serious incidents), B (major incidents) or C (significant incidents) for all separation minima infringements, runway incursions and ATM specific technical events at Air Traffic Control Centres and airports with more than 150 000 commercial air transport movements per year.**

The application of the RAT severity classification *methodology* supports and allows for harmonised reporting of the severity classification of occurrences. Therefore, the concept of this indicator is to prescribe the common methodology for occurrence severity classification by defining detailed criteria and specifications for assessment of occurrences.

The way to implement the RAT severity classification methodology is left up to States. The EUROCONTROL Risk Analysis Tool is a possible means of compliance. The RAT tool is being maintained by EUROCONTROL and made available, free of charge, to States and Organisations. In case a State wishes to use a different tool, it has to demonstrate that their tool complies with the defined criteria and specifications.

***Mechanism for measurement***

The second safety KPI is proposed to be measured as yes/no value of application of the RAT methodology for severity classifications of occurrences with category A (serious incidents), B (major incidents) or C (significant incidents), as a minimum to be used for the occurrence types defined in Regulation No 691/2010. Reporting on application is to be done at individual occurrence level by the assigned state entity. For the reporting of the yes/no value of application of the RAT severity classification methodology, it is proposed to use the EUROCONTROL Annual Summary Template (AST) forms. The European Central Repository (ECR) will remain the central source of safety information in the EU. Therefore, compatibility with the ECCAIRS system, the software tool used for the ECR, is an important criteria.

***Mechanism for verification***

Verification will be performed by means of EASA standardisation inspections in order to be consistent with the verification mechanism proposed for the other KPIs. Standardisation inspections are to be performed in accordance with Regulation 736/2006 including follow up activities as data and responses analysis by PRB and EASA. In addition, the validation of the data will be done by EASA and PRB in cooperation with EUROCONTROL DSS/OVS/SAF.

**e. Just Culture**

**Just Culture KPI: Two separate questionnaires to assess level of implementation of Just Culture within a State and within service providers.**

Just Culture is the cornerstone of any incident reporting system as it should be designed to guarantee that safety relevant information may be reported without fear of retribution. This is needed to ensure that the safety feedback loop of the aviation industry works efficiently towards the constant improvement of safety performance.

The Just Culture KPI aims at measuring the level of presence and corresponding level of absence of Just Culture at State level and at ANSP level. The Just Culture KPI is defined through three main areas:

- ❑ Policy and its implementation – assessing the existence of a Just Culture policy within organisations (regulatory/supervisory and service provision). The policy is to be measured for effectiveness and not just its mere existence;
- ❑ Legal / Judiciary – assessing whether the national legal environment is supportive or not of Just Culture;
- ❑ Occurrence Reporting – assessing policies and practices of occurrence reporting.

The metric for the Just Culture KPI has been constructed to respond to the criteria of being clearly defined, auditable, verifiable, repeatable and indicative of the level of Just Culture being implemented. In addition, two separate sets of metrics for assessment of the extent of implementation of Just Culture were developed. One to assess level of implementation within a State (which includes questions on legislation, policing, and regulatory/supervisory authorities) and the other within its ANSPs (separate set of metrics for the service provision).

***Mechanism for measurement***

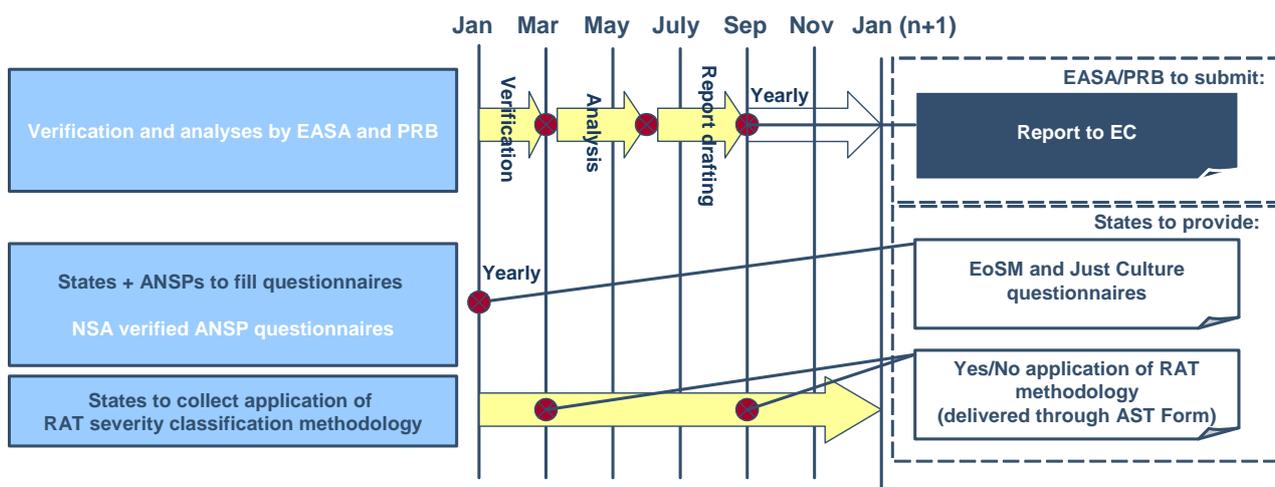
Questionnaires are designed separately for State and ANSP level containing questions to cover each of the three main areas.

***Mechanism for verification***

Questionnaires are proposed to be dispatched together with those for the EoSM following the same validation and verification processes.

**f. General Timeline**

The figure below shows the proposed timeframe for the monitoring process for each year during the RP together with the main “deliverable” dates (KPI reporting and submission of the performance monitoring report to the EC).



The work of the E3 Task Force has been constrained by the contents of Regulation 691/2010, which defines the three safety KPIs, and by the start of the first reference period on 01/01/2012. The report defines the concepts for the safety KPIs and the corresponding mechanisms for measurement and verification. RP1 will put in place the fundamentals for performance monitoring and reporting.

The work on the safety KPIs for RP2 is starting now and this opens the possibility to develop more elaborated KPIs for safety leading to effective safety improvements.

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# **Part II**

# **Technical Part**

## Introduction

### Legal basis

The European legislative framework for the field of ATM/ANS consists on the following legislative package under the single European Sky (SES) legislative initiative:

- The Framework regulation (EC No 549/2004) - laying down the framework for the creation of the Single European Sky;
- The Service provision regulation (EC No 550/2004) - on the provision of air navigation services in the Single European Sky;
- The Airspace regulation (EC No 551/2004) - on the organisation and use of airspace in the Single European Sky;
- The Interoperability regulation (EC No 552/2004) - on the interoperability of the European Air Traffic Management network;

and their Implementing Rules (IR).

These regulations were amended by the SES II legislative package via Regulation (EC) 1070/2009. The SES II package amended Article 11 of Framework regulation laying down requirements for performance scheme for improvement of the performance of air navigation services.

Commission Regulation (EU) No 691/2010 on the performance scheme for air navigation services and network functions implements Article 11 of the Framework regulation and defines the key performance indicators for the four performance areas: capacity, economic, environment and safety. This regulation defines the following safety key performance indicators:

- a) The first safety KPI shall be the effectiveness of safety management for air navigation services providers and national supervisory authorities respectively, as measured by a methodology based on the ATM Safety Maturity Survey Framework.
- b) The second safety KPI shall be the application of the severity classification of the Risk Analysis Tool to allow harmonised reporting of severity assessment of Separation Minima Infringements, Runway Incursions and ATM Specific Technical Events at all Air Traffic Control Centres and airports with more than 150 000 commercial air transport movements per year (yes/no value).
- c) The third European Union-wide safety key performance indicator shall be reporting of the just culture.

It is stated in the Regulation that the indicators shall be developed jointly by the Commission, the Member States, EASA and EUROCONTROL and adopted by the Commission prior to the first reference period.

It is important to highlight that the Performance regulation does not require European Union-wide targets for the above key performance indicators in the first reference period (2012-2014). During the first reference period, the Commission shall use the data collected to validate these key performance indicators and assess them with a view to

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ensuring that safety risk is adequately identified, mitigated and managed. On this basis, the Commission shall adopt new safety key performance indicators if necessary, by revision of the Annex of Regulation 691/2010. It is the intention to use the data collected during the first reference period to establish the performance targets for the following reference periods.

In the EU, the safety legislative framework is promulgated through the adoption of the EASA Basic Regulation (Regulation (EC) No 216/2008), its Essential Requirements and its associated Implementing Rules. The safety objectives to be met for each field of civil aviation are defined at the political level in the Basic Regulation and its Essential Requirements.

The safety pillar of the SES II package extended the EASA system to the field of ATM/ANS safety. Therefore, Regulation (EC) No 216/2008 was amended by Regulation (EC) 1108/2009.

The Basic Regulation and its Essential Requirements are adopted by the European Parliament and Council following a proposal of the European Commission, based on an EASA Opinion. These safety objectives have been established to mitigate unacceptable risks. In order to guarantee the implementation of these safety objectives in a uniform manner, the legislator has established that implementing measures (such as Implementing Rules, Certification Specifications, Acceptable Means of Compliance and Guidance Material) have to be developed. Additionally, industry standards are also developed to facilitate the achievement of these safety objectives.

Certifications specifications, acceptable means of compliance and guidance material are nonbinding material adopted by the Executive Director of the Agency through a Decision.

The implementing rules are measures designed to amend non-essential elements of the articles of the Basic Regulation by supplementing the Essential Requirements. The implementing rules are adopted by the European Commission, following an EASA opinion, under procedures established in accordance with the treaties. In addition the BR provides means for ensuring harmonised implementation of safety requirements through standardisation inspections in the member states carried out by EASA.

**The present system**

Before the SES II package, there were no mandatory safety performance indicators within the European legal framework. Each Member State and each ANSP established, as applicable, their own performance indicators at the national level. The need to do so is reflected at the international level, through the ICAO State Safety Programme framework for States and also through the Safety Management Systems framework for the providers. Also, within the EUROCONTROL context some safety performance indicators were developed and published.

However, it has to be highlighted that not all Member States have systematically followed the same approach.

**Metrics for Safety Key Performance Indicators for the Performance Scheme**

Before the SES II package, European initiatives in the field of ATM such as the EUROCONTROL Safety Framework Maturity Surveys demonstrated to be a useful tool to help in understanding how well State Regulators and ANSPs thought they were implementing ATM Safety Requirements. This tool is presently based on a self-assessment done by State Regulators and ANSPs on how well the safety requirements are met. The self-assessment is complemented by telephone interviews.

EUROCONTROL Risk Analysis Tool is also a tool aimed to harmonise the way Member States and ANSPs classify and analyse ATM safety occurrences.

Today both these tools are voluntary for Member States and ANSPs to use and the results are not disclosed publicly.

These tools have been very useful in a scenario in which the requirements for ATM performance scheme were not yet in force. They were also developed before the total aviation safety system was covered under the same umbrella, the EASA system.

The safety performance indicators as required in the performance scheme regulation (Regulation 691/2010) shall be developed on the basis of the above mentioned tools. However, taking into account the changing of environment (very demanding performance targets for the key performance areas of environment, capacity and economic), it was recognised that in order to ensure that safety performance levels in the field of ATM are not degraded and to take into account the fact the ATM field is part of the safety system of civil aviation and therefore is part of the EASA system, there is a need to enhance at least the EUROCONTROL Safety Framework Maturity Surveys. There is also a need to define a more robust process for its monitoring and verification.

**The need for enhancement**

As already recognised during the adoption of the Regulation (EC) 691/2010, there is a need to modify the EUROCONTROL Safety Framework Maturity Surveys methodology in order to be applied as safety performance indicator 'effectiveness of safety management' for Member States and for ANSPs.

Although this decision was already taken by the European Commission and by the Single European Sky Committee when they adopted the Regulation (EC) 691/2010 (because the regulation request that SPI effectiveness of safety management to be measured by a methodology *based on* the safety maturity framework), it is important to highlight the reasons why there is need for this enhancement. This justification will help to understand the process followed and the approach taken.

As already explained, the new performance based framework is very demanding in terms of performance targets for key performance areas capacity, economic and environment. The safety performance indicator 'effectiveness of safety management' needs to ensure that while achieving these performance targets, the safety performance levels of the present ATM system are not degraded. Therefore, a self-assessment methodology and a subjective verification mechanism are not sufficient and need to be replaced by a more robust and objective verification mechanism. This verification mechanism should also be compatible with other verification systems for other fields of aviation and should be

**Metrics for Safety Key Performance Indicators for the Performance Scheme**

designed to avoid duplication of verification processes. This is necessary to have a more efficient and effective aviation system and therefore a more efficient and effective ATM system. In this report, it is proposed to make use of the EASA Standardisation Inspections mechanism as the verification mechanism of the data provided by the competent authorities/National Supervisory Authorities for two reasons: because it is a robust mechanism of verification and because it is important to avoid duplication of processes to make the system more efficient.

To allow this to take place, the European Commission, assisted by EASA, is working on an amendment to the Standardisation regulation (Regulation (EC) No 736/2006 on new working methods of the European Aviation Safety Agency for conducting standardisation inspections) to adapt the present working methods for conducting standardisation inspections to be able to accomplish the objective required by the performance regulation for the safety performance indicators.

The standardisation inspections are to be used as verification mechanism for all safety performance indicators in order to ensure consistency.

As it was already recognised during the adoption process of the performance regulation, the effectiveness of safety management for the Member States can not be dissociated from the implementation of the State Safety Programme as required by ICAO. Moreover, this can not be dissociated from EASA system for safety in civil aviation and from the European Safety Strategy as adopted by EASA Management Board which established a European Aviation Safety Programme and which has resulted in the first European Aviation Safety Plan at the end of 2010.

Therefore, in order to measure how effective is the safety management of Member States, there is a need to ensure a consistent approach for the entire aviation system. To do so and to comply with the performance regulation, the methodology for measuring the effectiveness of safety management have been developed starting from the ICAO State Safety Programme in order to extract the main principles that need to be measured (named management objectives) and mapping them with the Study Areas of the EUROCONTROL Safety Framework Maturity Surveys to be able to make as much use as possible of the present methodology. This is explained in chapter 4.

By doing so, there will be consistency across the entire civil aviation system regarding safety management and it is ensured maximum possible use of the existing EUROCONTROL Safety Framework Maturity Surveys.

Moreover, this will also guarantee consistency with the existing rulemaking initiatives under the EASA umbrella to enhance and integrate the existing European safety regulatory framework (Regulation (EC) No 1315/2007 on safety oversight in the field of ATM) in the EASA system<sup>11</sup>.

Regarding the methodology for measuring the effectiveness of safety management for the ANSPs, it has to be highlighted that the present EUROCONTROL Safety Framework Maturity Surveys is very much linked to existing European regulatory framework for Safety (it can be linked to the requirements for safety management system (SMS) for ATS and CNS providers in Regulation (EC) No 2096/2005 or Common Requirements). However, it is important to highlight that as such, it can only be applied to ANSPs which are required by the European Safety Regulations to establish and maintain a SMS (ATS and CNS providers).

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<sup>11</sup> EASA Rulemaking task ATM.004 and EASA Opinion No 02/2010  
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**Metrics for Safety Key Performance Indicators for the Performance Scheme**

It is important to highlight that as in the case of the Member States, there is a need to take into account the current developments to enhance and integrate the ATM field in the EASA system for safety in civil aviation<sup>12</sup>. As required by the EASA Basic Regulation, there is a need to amend the present Common Requirements for ANSPs to require management systems for all ANSPs and therefore the methodology for measuring the effectiveness of safety management shall be developed with this in mind so as to ensure that the safety performance indicators are stable and consistent during the 1<sup>st</sup> reference period.

For this reason, the approach followed to develop the methodology for the ANSPs has been the same than in the case of Member States. However, the end result is much closer to the EUROCONTROL Safety Framework Maturity Surveys (only few amendments to questions have been necessary in this case) than in the case of the Member States.

Finally it shall be recognised that, while the methodology for measuring the effectiveness of safety management for Member States and ANSPs does not ensure regulatory compliance, it is very much linked to the safety requirements because it measures how well the safety management requirements (State Safety Programme and Safety Management Systems requirements) are implemented and therefore how effective the safety management is. As highlighted by EUROCONTROL in its ATM Safety Framework Maturity Survey report<sup>13</sup>, the EUROCONTROL Safety Framework Maturity Surveys was indeed a "useful tool in understanding how well State Regulators and ANSPs thought they were implementing ATM Safety Requirements".

**Content of report**

Taking into account the above legislative framework, this report further describes the safety performance indicators as required in the Regulation (EC) 691/2010 and the process followed to develop them for the first reference period of the ATM performance scheme.

Chapters 2, 3 and 4 develop the metrics for the three KPIs. Chapter XI provides the details of an implementation plan from now until early 2012. Annex A lists relevant acronyms. Annex B and C provide more background information on the EUROCONTROL RAT tool and on the detailed criteria for Separation Minima Infringements. Annex D presents background information on dismissed items for the Just Culture indicator.

It is important to clarify the way the safety performance indicators can be applied in FAB context. As defined today, the safety performance indicators are to be applied for each State, competent authority and ANSPs within each Member State. But there is nothing preventing Member States and ANSPs to apply them within the FAB.

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<sup>12</sup> EASA Rulemaking task ATM.001 and EASA Opinion No 02/2010

<sup>13</sup>

[http://www.eurocontrol.int/safety/gallery/content/public/library/Safrep/ATM\\_Safety\\_FrameworkANSP.pdf](http://www.eurocontrol.int/safety/gallery/content/public/library/Safrep/ATM_Safety_FrameworkANSP.pdf)

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As each State and each ANSP in a FAB has different contributions to the service provided within the FAB and therefore it is expected that they have different contributions to the respective combined KPI, weighting factors will need to be applied to reflect their respective contribution to the KPI. It should also be noted that States involved in a FAB may designate only one competent authority responsible for the safety oversight of all the ANSPs involved in that FAB and also that all the ANSPs involved in a FAB may decide to have a combined SMS. The safety performance indicators should take into account these arrangements.

## VIII. Effectiveness of safety management

### a. *Concept Description*

The Key Performance Indicator 'Effectiveness of Safety Management' is designed to measure the capability of a Member State to manage the safety of ATM/ANS within the area of responsibility.

The performance 'effectiveness of safety management' of States/ competent authority should not be measured for the field of ATM/ANS in isolation. The measurement of effectiveness of safety management of State/competent authority shall be done in the context of the entire aviation system. To do so and to comply with the performance regulation, the methodology for measuring the effectiveness of safety management has been developed starting from the ICAO State Safety Programme in order to extract the main principles that need to be measured.

ICAO requires the contracting Member States to establish a State Safety Programme (SSP) and Service Providers to establish a Safety Management System (SMS) to manage and improve safety. The effectiveness of safety management on State level and Service Provision level largely corresponds to the capability of the States to manage its SSP and Service Providers to manage an effective SMS respectively, in the context of the national SSP. Moreover in accordance with the provisions of Regulation (EC) No 2096/2005 the ANSPs shall be compliant in their working methods and operating procedures with the standards in ICAO Annexes 2, 3, 11, 15 etc.

The four components of safety management – being similar for the States and the Service Providers - and their related elements as defined in ICAO Doc 9859 'Safety Management Manual'<sup>14</sup> are used as a basis to define the concept of the effectiveness of safety management indicator, see **Table VIII-1**. Components and elements in *italic* have been added to the ICAO framework to better reflect the European context.

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<sup>14</sup> ICAO Doc 9859: For State level see Appendix 1 to Chapter 11, and for Service Provision level see Appendix 1 to Chapter 8

## Metrics for Safety Key Performance Indicators for the Performance Scheme

State level	Service Provision level
<p><b>1. State safety policy and objectives:</b></p> <p>1.1 State safety legislative framework</p> <p>1.2 State safety responsibilities and accountabilities</p> <p>1.3 Accident and incident investigation</p> <p>1.4 Enforcement policy</p> <p>1.5 <i>Management of related interfaces</i></p>	<p><b>1. ANSP safety policy and objectives</b></p> <p>1.1 Management commitment and responsibility</p> <p>1.2 Safety accountabilities – <i>Safety responsibilities</i></p> <p>1.3 Appointment of key safety personnel</p> <p>1.4 Coordination of emergency response planning / <i>contingency plan</i></p> <p>1.5 SMS documentation</p> <p>1.6 <i>Management of related interfaces</i></p>
<p><b>2. State safety risk management:</b></p> <p>2.1 Safety requirements for the service provider's SMS</p> <p>2.2 Agreement on the service provider's safety performance</p>	<p><b>2. ANSP safety risk management</b></p> <p>2.1 Hazard identification</p> <p>2.2 Risk assessment and mitigation</p>
<p><b>3. State safety assurance:</b></p> <p>3.1 Safety oversight</p> <p>3.2 Safety data collection, analysis and exchange</p> <p>3.3 Safety-data-driven targeting of oversight of areas of greater concern or need</p>	<p><b>3. ANSP safety assurance</b></p> <p>3.1 Safety performance monitoring and measurement</p> <p>3.2 The management of change</p> <p>3.3 Continuous improvement of the SMS</p> <p>3.4 <i>Occurrence reporting, investigation and improvement</i></p>
<p><b>4. State safety promotion:</b></p> <p>4.1 Internal training, communication and dissemination of safety information</p> <p>4.2 External training, communication and dissemination of safety information</p>	<p><b>4. ANSP safety promotion</b></p> <p>4.1 Training and education</p> <p>4.2 Safety communication</p>
<p><b>5. State safety culture</b></p> <p>5.1 <i>Establishment and promotion</i></p> <p>5.2 <i>Measurement and improvement</i></p>	<p><b>5. ANSP safety culture</b></p> <p>5.1 <i>Establishment and promotion</i></p> <p>5.2 <i>Measurement and improvement</i></p>

Table VIII-1: Components of safety management and respective elements

These components represent the overarching safety management processes required to manage an SSP and an SMS respectively. Each component is subdivided into elements, which encompass sub-processes, activities or tools specific to the State in the context of its SSP and to the service providers in the context of their SMSs.

In order for the safety management to work effectively, the State and the Service Providers' elements should not be treated in isolation but as related. Requirements promulgated at State level should correspond to the implementation of Service Providers' elements.

The KPI 'Effectiveness of Safety Management' can reach different levels of complexity in the context of ATM/ANS, as it may expand to several ATM/ANS providers in a national

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context, and to more than one State grouped in a Functional Airspace Block (FAB). In these cases the KPI 'Effectiveness of Safety Management' may need to measure the combined capability of service providers in a national context and that of the corresponding States to manage safety within the FAB (only related to air navigation service provision) and respectively the capability of the corresponding FAB service providers to manage the safety of their activities within that FAB.

It should also be noted that all Service Providers involved in a FAB may decide to have a combined SMS. In this case the KPI 'Effectiveness of Safety Management' at Service Provision level should take into account the performance of the said combined SMS.

In order to develop the metrics 'Effectiveness of Safety Management' the following process has been employed:

- ❑ The starting point for the definition of 'Effectiveness of Safety Management' is the ICAO SSP and its four main components, subdivided in a number of elements for the State level and the Service Provision level as laid out above. Components and elements have been added where required to better reflect the European context.
- ❑ For each element a Management Objective (MO) is defined, adapted to the European ATM context, with the appropriate references to both ICAO and EU legislation. This is done separately for State level and Service Provision level.
- ❑ The 'Effectiveness of Safety Management' will then be measured by the responses on State level and Service Provision level to questionnaires, which are developed as part of this document.
- ❑ At this stage the existing 'Safety Framework Maturity Survey' (SFMS) is introduced. The objective is to make use of existing material, achieve for the Stakeholders a high recognition factor of the questionnaires developed within this document in comparison to those questionnaires being used in the past for the SFMS.
- ❑ Each MO is mapped to the existing 'Safety Framework Maturity Survey' (SFMS) Study Areas (SAs) and associated questions, in a way that is clear and functions both ways. Given this mapping, at any point a translation from Management Objective to Study Area and vice versa is possible.
- ❑ Basis for the questionnaires developed within this document - and from here onwards called the 'Effectiveness of Safety Management Questionnaires' - are the adapted/revised SFMS questionnaires for States (regulators) and Service Providers (ANSP). Some SFMS questions required adaptation and some questions were added. However, this adaptation strived to make optimum use of the current SFMS questionnaires in order to ensure a high recognition factor with the Stakeholders, easing acceptability and practical implementation.
- ❑ The revised questionnaires (with all above elements now included), look very similar to the current SFMS questionnaires (including the grouping by Study Areas) and respond to the needs of Regulation 691/2010.

**b. SSP/SMS Components, Elements and Management Objectives**

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The following section describes the SSP/SMS components and elements to be measured in order to assess the effectiveness of safety management at State and respectively at Service Provision level. These descriptions are based on ICAO Doc 9859 as referred to above and are being brought into the context of the existing EU legislation.

For each element, one or more Management Objectives are defined that will need to be implemented at State and Service Provision level respectively. Where applicable, the appropriate references to both ICAO and applicable EU legislation (mainly to present Regulations (EC) No 2096/2005 or 'common requirements' and Regulation (EC) 1315/2007) are provided.

It has to be noted that Regulation 2096/2005 and 1315/2007 will be repealed in the near future by new commission regulations and all the references to these regulatory document will have to be changed accordingly.

**c. State Level**

## i. Management Objectives

**Component 1 – Safety policy and objectives****Element 1.1 – State safety legislative framework**ICAO:

*"The State has promulgated a national safety legislative framework and specific regulations, in compliance with international and national standards, that define how the State will conduct the management of safety in the State. This includes the participation of State aviation organizations in specific activities related to the management of safety in the State, and the establishment of the roles, responsibilities and relationships of such organizations. The safety legislative framework and specific regulations are periodically reviewed to ensure they remain relevant and appropriate to the State."*

EU context in the field of ATM/ANS:

The political environment in Europe is complex and not fully covered by the ICAO principles. Many of the competences for the safety management approach that is described in the ICAO documentation have been transferred from the MS to the Union.

The SES packages, the BR and their implementing rules, as well as some other legislation (Directive 23/2003, Regulation 996/2010 etc.) form the EU safety legislative and regulatory framework.

**Management objective**

1.1 - Implement the EU safety legislative and regulatory framework, including where necessary, by aligning the national framework.

**Element 1.2 -State safety responsibilities and accountabilities**ICAO:

*The State has identified, defined and documented the requirements, responsibilities and accountabilities regarding the establishment and maintenance of safety. This includes the directives to plan, organize, develop, maintain, control and continuously improve safety in a manner that meets the State's safety objectives. It also includes a clear statement about the provision of the necessary resources for the implementation of the SSP.*

EU context in the field of ATM/ANS:

In the EU, the State shall also define the interfaces between the States and EASA with the implementation of the European Aviation Safety Programme and its respective plan and it shall also ensure that the European Aviation safety objectives are met.

**Management objective**

1.2 – Establish national safety responsibilities and maintain the national safety plan in line with the European Aviation Safety Plan, where applicable. The national safety plan shall include the state policy to ensure the necessary resources.

**Element 1.3 - Accident and incident investigation**ICAO:

*"The State has established an independent accident and incident investigation process, the sole objective of which is the prevention of accidents and incidents, and not the apportioning of blame or liability. Such investigations are in support of the management of safety in the State. In the operation of the SSP, the State maintains the independence of the accident and incident investigation organization from other State aviation organizations."*

EU context in the field of ATM/ANS:

Through the approval of Regulation (EU) No 996/2010 EU Member States have agreed to establish independent accident and incident investigation process at European level, the sole objective of which is the prevention of accidents and incidents, and not the apportioning of blame or liability. Such investigations are in support of the management of civil aviation safety in the European Union. Each EU Member State maintains the independence of its civil aviation safety investigation authority from other State aviation

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organisations (e.g. national competent authorities, air operators, aerodrome operators and ANSPs).

<b>Management objective</b>
1.3a – Establish and maintain the independence of the civil aviation safety investigation authorities, including necessary resources.
1.3b – Establish means to ensure that appropriate safety measures are taken after safety recommendations have been issued by a civil aviation safety investigation authority.
1.3c – Ensure that civil aviation safety investigation authorities use subject matter expertise from the ATM/ANS domain.

**Element 1.4 - Enforcement policy**ICAO:

*“The State has promulgated an enforcement policy that establishes the conditions and circumstances under which service providers are allowed to deal with, and resolve, events involving certain safety deviations, internally, within the context of the service provider’s safety management system (SMS), and to the satisfaction of the appropriate competent authority. The enforcement policy also establishes the conditions and circumstances under which to deal with safety deviations through established enforcement procedures, including suspension and revocation of certificates”.*

EU context in the field of ATM/ANS:

Through the ratification of the EU Treaty, EU Member States have agreed the conditions and circumstances under which they will implement ATM/ANS safety regulations to the satisfaction of the competent body of the European Commission through established EU enforcement procedures.

The Article 68 of EASA Basic Regulation and Article 9 of the framework regulation (Regulation (EC) No 549/2004) requires the establishment of appropriate enforcement measures by the States including the request for Member States to lay down penalties for infringement of the Basic Regulation and its implementing rules. The penalties shall be effective, proportionate and dissuasive.

Therefore, EU Member States have agreed to establish enforcement procedures at national level under which service providers will implement EU safety regulations to the satisfaction of the national competent authority responsible for safety oversight of air navigation service providers. This agreement establishes the conditions and circumstances under which competent authorities may apply enforcement procedures based on national legislation, including suspension and revocation of certificates. These principles are reflected in the Regulation (EC) 2096/2005 and Regulation (EC) No 1315/2007.

**Management objective**

1.4 - Establish appropriate, transparent and proportionate enforcement procedures, including for the suspension, limitation and revocation of licenses and certificates and the application of other effective penalties.

**Element 1.5 – Management of related interfaces**

For better describing the relevant management objectives, the term interfaces is used as a means for achieving communication and interaction.

Although this is not directly covered in the ICAO SSP/SMS framework, in the EU context and in accordance with Regulation (EC) No 216/2008, Article 13 and Annex V, as well as Article 3 and Annex I of Regulation 550/2004 set provisions for the qualified entities which shall be ensured by the National competent authorities. When cooperating with other Competent authorities as stipulated in Article 2 of Regulation No 550/2004 proper arrangements and interfaces with the other Competent authorities shall also be established. The involvement of the stakeholders in accordance with Article 10 of Regulation No 549/2004 also implies proper management of the interfaces with the stakeholders.

Examples of related interfaces on State level:

- internal interfaces with different departments/units in the NSA/national competent authority e.g. Operations, Inspectorate, Airworthiness, Licensing)
- external interfaces of the NSA/national competent authority with different entities e.g. MoT, other regulatory bodies)

**Management objective**

1.5a - Ensure adequate management of the internal interfaces within the NSA.

1.5b - Ensure adequate management of the external interfaces with relevant stakeholders.

**Component 2 – Safety risk management****Element 2.1 - Safety requirements for the air navigation service provider's SMS**ICAO:

*"The State has established the controls which govern how service providers will identify hazards and manage safety risks. These include the requirements, specific operating regulations and implementation policies for the service provider's SMS. The requirements, specific operating regulations and implementation policies are periodically reviewed to ensure they remain relevant and appropriate to the service providers."*

**Metrics for Safety Key Performance Indicators for the Performance Scheme**EU context in the field of ATM/ANS:

The State has established the controls which govern how service providers will identify hazards and manage safety risks. These control mechanisms shall be aligned with the European regulations and operating procedures and where these are not existing, then the States shall promulgate the relevant national requirements, specific operating regulations and implementation policies for the service provider's SMS. The associated regulations are EASA Basic Regulation and Regulations (EC) No 2096/2005 and 1315/2007.

There is a link with safety oversight activities, addressed in element 3.1 as well.

**Management objective**

2.1 - Establish controls which govern how service providers' safety management systems (SMS) will identify hazards and manage safety risks.

**Element 2.2 - Agreement on the service provider's safety performance**ICAO:

*"The State has agreed with individual service providers on the safety performance of their SMS. The agreed safety performance of an individual service provider's SMS is periodically reviewed to ensure it remains relevant and appropriate to the service providers."*

EU context in the field of ATM/ANS:

In accordance with Regulation (EC) No 549 (Article 10), Regulation No 691 (Article 10), the State has agreed with individual air navigation service providers on the safety performance. The agreed safety performance of an individual service provider's SMS is periodically reviewed to ensure it remains relevant and appropriate to the service provided. In the accordance with Regulation No 2096 (Annex II) each air navigation service provider is required to define its own safety performance indicators and targets consistent with the ones contained in the national/FAB performance plans.

**Management objective**

2.2 - Agree on safety performance of an individual, national or FAB service provider.

**Component 3 - Safety assurance****Element 3.1 – Safety oversight**ICAO:

*"The State has established mechanisms to ensure effective monitoring of the eight ICAO critical elements of the safety oversight function. The State has also established*

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*mechanisms to ensure that the identification of hazards and the management of safety risks by service providers follow established regulatory controls (requirements, specific operating regulations and implementation policies). These mechanisms include inspections, audits and surveys to ensure that regulatory safety risk controls are appropriately integrated into the service provider's SMS, that they are being practised as designed, and that the regulatory controls have the intended effect on safety risks."*

EU context in the field of ATM/ANS:

In accordance with Regulation (EC) No 1315/2007 the National supervisory authorities shall exercise safety oversight as part of their supervision of requirements applicable to air navigation services as well as to ATFM and ASM, in order to monitor the safe provision of these activities and to verify that the applicable safety regulatory requirements and their implementing arrangements are met. In accordance with the Regulation No 2096 (Annexes II and V) the requirements for the establishment of SMS are limited to the provision of ATS and CNS. Based on that, the safety KPI for the effectiveness of safety management should be evaluated where certified ATS and CNS providers are overseen.

National supervisory authorities, or recognised organisations as delegated by them, shall conduct safety regulatory audits.

<b>Management objective</b>
3.1a - Attribution of powers to the NSA responsible for safety oversight of air navigation service providers.
3.1b - Establishment of a national safety oversight system and programme to ensure effective monitoring of the air navigation service provider's (ANSP) compliance with the applicable regulations and of the safety oversight function.

**Element 3.2 - Safety data collection, analysis and exchange**ICAO:

*"The State has established mechanisms to ensure the capture and storage of data on hazards and safety risks at both an individual and aggregate State level. The State has also established mechanisms to develop information from the stored data, and to actively exchange safety information with service providers and/or other States as appropriate."*

EU context in the field of ATM/ANS:

The EU has issued Directive 2003/42 on occurrence reporting in civil aviation for EU Member States. This Directive requires Member States to establish a mandatory occurrence reporting system so that hazardous or potentially hazardous events can be recorded. The aim of the Directive is to collect occurrences so that these can be analysed, that trends can be monitored and that appropriate corrective actions can be taken so that accidents in the future may be prevented. Articles 6 and 7 of the same directive require establishment of proper measures for exchange and dissemination of information. As a result, according to Regulation 1321/2007 Member States occurrence information is

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required to be submitted to a European Central Repository so that it can be available for exchange to the competent authorities of the EU Member States and the Commission. Also, information so collected can be disseminated to any entity entrusted with regulating civil aviation safety or with investigating accidents and incidents within the EU. Further on, Article 15 of Regulation No 996/2010 establishes provisions for communication of information as well as Regulation 1330/2007 for the dissemination to interested parties of information on civil aviation occurrences.

The element of safety communication is also covered under component 4.

**Management objective**

3.2 - Establishment of mechanisms to ensure the capture and storage of data on hazards and safety risks and analysis of that data at ANSP and State levels as well as its dissemination and exchange.

**Element 3.3 - Safety-data-driven targeting of oversight of areas of greater concern or need**ICAO:

*"The State has established procedures to prioritize inspections, audits and surveys towards those areas of greater safety concern or need, as identified by the analysis of data on hazards, their consequences in operations, and the assessed safety risks."*

EU context in the field of ATM/ANS:

In accordance with Regulation (EC) No 1315/2007 the national supervisory authorities shall establish and update at least annually a programme of safety regulatory audits in order to cover all the areas of potential safety concern, with a focus on those areas where problems have been identified. They shall establish a risk based oversight programme.

**Management objective**

3.3 - Establishment of procedures to prioritise inspections, audits and surveys towards the areas of greater safety concern or need or in accordance with the identified safety risks.

**Component 4 - Safety promotion****Element 4.1 - Internal training, communication and dissemination of safety information**ICAO:

*The State provides training on national legislative and regulatory frameworks and promotes awareness of safety risks and two-way communication of safety-relevant*

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*information to support, within the aviation authorities, the development of an organizational culture that fosters an effective and efficient SSP.*

EU context in the field of ATM/ANS:

The States provides training in EU and national legislative and regulatory framework and promotes awareness of safety risks and two-way communication of safety-related information to support the development of an organizational culture that fosters an effective and efficient SSP within the competent authority. Article 4 of Regulation No 549/2004 requires the states to ensure that national supervisory authorities have the necessary resources and capabilities to carry out the tasks assigned to them. Training requirements for the NSA are also provided in Article 11 of Regulation No 1315/2007.

<b>Management objective</b>
4.1a - Training of NSA personnel on applicable legislative and regulatory framework.
4.1b - Promotion of awareness of safety information and communication and dissemination of safety-related information amongst the NSA's within a State.

**Element 4.2 - External training, communication and dissemination of safety information**ICAO:

*The State provides education and promotes awareness of safety risks and two-way communication of safety-relevant information to support, among services providers, the development of an organizational culture that fosters an effective and efficient SMS*

EU context in the field of ATM/ANS:

The competent authority provides education and promotes awareness of safety risks and two-way communication of safety-relevant information to support, among the air navigation service providers, the development of an organizational culture that fosters an effective and efficient SMS.

<b>Management objective</b>
4.2a - Education/training of ANSP personnel and air traffic controllers (ATCO) training organisations on applicable legislative and regulatory framework.
4.2b - Promotion of awareness of safety information and communication and dissemination of safety-related information with external stakeholders.

**Component 5 - Safety culture**

Although ICAO SSP and SMS framework does not require the States to establish and promote safety culture within the organisation, safety culture refers to the enduring

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value, priority and commitment placed on safety by every individual and every group at every level of the organisation. Safety culture reflects the individual, group and organisational attitudes, norms and behaviours related to the safe provision of air navigation services.

Although there is not regulatory reference that requires the States not the competent authority to establish a safety culture, it has been considered necessary by the experts group developing the report to add it here as an essential element of the effectiveness of safety management of a State.

EUROCONTROL documents provide the following description of safety culture: *Safety Culture is the way safety is perceived, valued and prioritised in an organisation. It reflects the real commitment to safety at all levels in the organisation. Safety Culture is not something you get or buy; it is something an organisation has. Safety Culture can therefore be positive, negative or neutral. Its essence is in what people believe about the importance of safety, including what they think their peers, superiors and leaders really believe about safety's priority.*

Based on the above, it is proposed to define Safety Culture as follows: *"Safety culture is the product of individual and group values, attitudes, competencies and patterns of behaviour that determine commitment to, and the style and proficiency of, an organisation's safety management."*

The following management objectives are derived:

**Element 5.1 - Establishment and promotion of safety culture**

Management objective
5.1 - Establishment and promotion of safety culture within the NSA.

**Element 5.2 - Measurement and improvement of Safety Culture**

Management objective
5.2 - Establishment of procedures to measure and improve safety culture within the NSA.

## ii. Mapping between Management Objectives and Study Areas

**Table VIII-2** presents the mapping of the Management Objectives derived in section i to the Study Areas of the 'Effectiveness of Safety Management Questionnaire' (EoSM). This questionnaire (explained in detail in section 2.5) is derived from the EUROCONTROL ATM Safety Framework Maturity Survey (SFMS) by maintaining its structure and adapting questions where appropriate. **Table VIII-3** presents the same information, now mapping the SFMS Study Areas to the Management Objectives.

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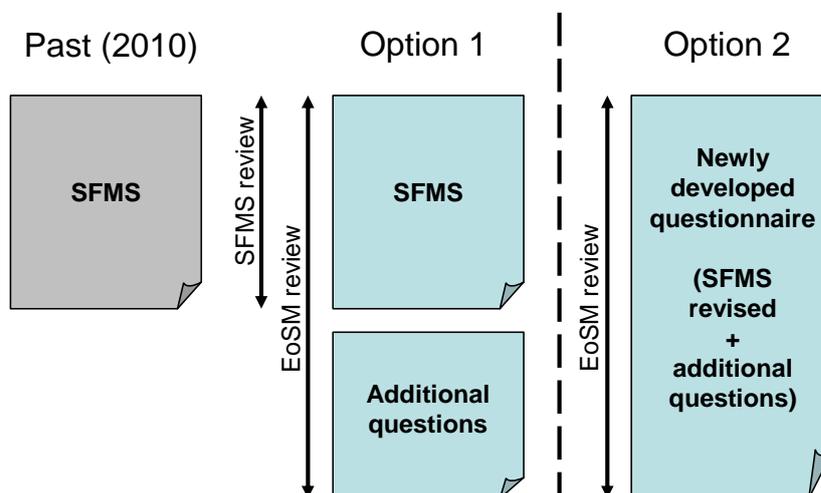
Based on mapping and the above assessment, it is important to highlight that the questionnaire for the States/competent authorities needs to be enhanced: new questions need to be introduced and several existing ones need to be considerable adapted to the new regulatory framework.

As part of the SFMS methodology each of the questions is associated with a weighting factor to compute the overall level of effectiveness. These weightings require review in the light of the changed and added questions. To recognise the achievement of the SFMS so far, two possible options are identified for the purpose of evaluating the answers provided by the States/ competent authorities.

**Option 1:** Use of the current SFMS questionnaire including the proposed revisions of specific questions with addition of a section added to cover the newly identified set of questions.

The advantage of such an approach is the possibility for continuation of the SFMS part of 2010 as the quantification of the existing questions can be maintained. The quantification of the answers given to the new questions can be done separately. The disadvantage is that the evaluation process for each of the respective MOs is less obvious.

**Option 2:** Use of one single newly developed questionnaire, which includes the revised set of SFMS questions as well as the new questions and a new way of quantifying them. The advantage of this approach is that the questionnaire is specifically tailored to address the MOs. The disadvantage is that the continuation from the preceding SFMS exercise in 2010 is not provided for.



For any of the finally selected options weighting factors for the evaluation of the MOs need to be further developed before the start of RP1. It is important to highlight that the weighting factors are NOT part of this report and will be included in the associated AMCs and GMs to the amendment to the performance scheme regulation after the delivery of the report to the Commission and based on the data provided by EUROCONTROL.

**During the consultation process, Stakeholders clearly indicated their preferences for Option 2. Therefore, the development of the amendment to the**

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performance scheme regulation (Regulation (EC) No 691/2010) and associated AMC and GMs will take this into account this.

In order to implement option 2 and the Management Objectives, the State questionnaire is likely to be reworded (including the associated maturity levels) during the AMC and GM development.

MO	SA – Q
Safety policy and objectives	
1.1	S1-1, S1-2, S1-3, S1-7
1.2	S1-4, S1-5, S1-6, S2-4
1.3a	new
1.3b	new
1.3c	new
1.4	new
1.5	S3-1, S3-2, S3-3, S3-4
Safety risk management	
2.1	-
2.2	S5-1, S5-2, S5-3
Safety assurance	
3.1a	-
3.1b	S6-1, S6-2, S6-3, S9-2
3.2	new S4-1, S4-2, S9-1
3.3	new

SA – Q	MO
State Safety Framework	
S1-1	1.1
S1-2	1.1
S1-3	1.1
S1-4	1.2
S1-5	1.2
S1-6	1.2
S1-7	1.1
Safety Resources	
S2-1	
S2-2	4.1a
S2-3	
S2-4	1.2
Safety Interfaces	
S3-1	1.5
S3-2	1.5
S3-3	1.5
S3-4	1.5
Safety reporting, Investigation and Improvement	
S4-1	3.2
S4-2	3.2
Safety Performance Monitoring	
S5-1	2.2
S5-2	2.2
S5-3	2.2

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Safety promotion	
4.1a	S2-2
4.1b	S7-1, S7-2
4.2a	new
4.2b	S7-1, S7-2
Safety Culture	
5.1	S8-1
5.2	S8-2
<b>Table VIII-2: Mapping Management Objectives to Study Areas – State level</b>	

Implementation of Safety Oversight	
S6-1	3.1b
S6-2	3.1b
S6-3	3.1b
Adoption and Sharing of Best practices	
S7-1	4.1b, 4.2b
S7-2	4.1b, 4.2b
Safety Culture	
S8-1	5.1
S8-2	5.2
Resolution of Safety Deficiencies	
S9-1	
S9-2	3.1b
<b>Table VIII-3: Mapping Study Areas to Management Objectives – State level</b>	

**d. Service Provision Level***Scope*

In accordance with regulation (EC) No 2096/2005, EU ANSPs providing ATS and/or CNS services shall implement a Safety Management System for covering their services and associated interfaces. It is important to highlight that as such, the effectiveness of safety management indicator at this stage can only be applied to ANSPs, which are required by the European Safety Regulations to establish and maintain a SMS: ANSPs providing ATS and/or CNS.

It needs also to be underlined that nevertheless some of the management objectives may be related to the Common Requirements regulation, the **process of measurement of the effectiveness of safety management is different from the process of certification of ANSP and the processes for compliance monitoring with the applicable requirements.**

## iii. Management Objectives

**Component 1 – ANSP safety policy and objectives****Element 1.1 - Management commitment and responsibility**ICAO:

*“The [organization] shall define the organization’s safety policy which shall be in accordance with international and national requirements, and which shall be signed by the Accountable Executive of the organization. The safety policy shall reflect organizational commitments regarding safety; shall include a clear statement about the provision of the necessary resources for the implementation of the safety policy; and shall be communicated, with visible endorsement, throughout the organization. The safety policy shall include the safety reporting procedures; shall clearly indicate which types of operational behaviours are unacceptable; and shall include the conditions under which disciplinary action would not apply. The safety policy shall be periodically reviewed to ensure it remains relevant and appropriate to the organization.”*

EU context in the field of ATM/ANS:

The ANSP shall define the organisation’s safety policy which shall be in accordance with section 3.1.1 of Annex II of Regulation (EC) No 2096/2005, and which shall be signed by the Accountable Executive of the ANSP. The safety policy shall reflect organisational commitments regarding safety; shall include a clear statement about the provision of the necessary resources for the implementation of the safety policy; and shall be communicated, with visible endorsement, throughout the organization. The safety policy shall be periodically reviewed to ensure it remains relevant and appropriate to the organisation. The safety objectives shall be included in the safety policy and they shall be aligned with the State/FAB safety objectives foreseen in the State Safety Plan, in the European Aviation Safety Plan as well as in the NSA performance plan as adopted by the State.

**Management objective**

1.1 - Define the ANSP’s safety policy in accordance with Regulation (EC) No 2096/2005 (Common Requirements).

**Element 1.2 - Safety accountabilities – Safety responsibilities**ICAO:

*“The [organization] shall identify the Accountable Executive who, irrespective of other functions, shall have ultimate responsibility and accountability, on behalf of the [organization], for the implementation and maintenance of the SMS. The [organization] shall also identify the accountabilities of all members of management, irrespective of other functions, as well as of employees, with respect to the safety performance of the SMS. Safety responsibilities, accountabilities and authorities shall be documented and*

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*communicated throughout the organization, and shall include a definition of the levels of management with authority to make decisions regarding safety risk tolerability."*

EU context in the field of ATM/ANS:

Today European regulations (Regulation (EC) No 2096/2005 and Regulation (EC) No 1315/2007) do not require nominating the accountable executive or accountable manager which owns the safety accountability. Therefore, the proposal for a management objective in the EU regulatory framework cannot cover this objective. Once the existing provisions are amended to regulate this ICAO requirement, the effectiveness of safety management KPI will be modified to include this aspect.

However, In accordance with section 3.1.1 of Annex II of Regulation (EC) No 2096/2005, SMS shall ensure that everyone involved in the safety aspects of the service provision has an individual safety responsibility for their own actions, that managers are responsible for the safety performance of their respective departments or divisions and that the top management of the provider carries an overall safety responsibility (safety responsibility).

**Management objective**

1.2 - Define the responsibilities of all staff involved in the safety aspects of service provision and responsibility of managers for safety performance.

**Element 1.3 - Appointment of key safety personnel**ICAO:

*"The [organization] shall identify a safety manager to be the responsible individual and focal point for the implementation and maintenance of an effective SMS."*

EU context in the field of ATM/ANS:

The ANSP management shall identify, in accordance with section 3.1.2 of Annex II to Regulation (EC) No 2096/2005, a safety manager to be the responsible and focal point for the implementation and maintenance of an effective ANSP or FAB SMS.

**Management objective**

1.3 - Define the safety manager to be the responsible and act as focal point for the implementation and maintenance of SMS.

**Element 1.4 - Coordination of emergency response planning/contingency plan**ICAO:

*"The [organization] shall ensure that an emergency response plan that provides for the orderly and efficient transition from normal to emergency operations and the return to*

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*normal operations is properly coordinated with the emergency response plans of those organizations it must interface with during the provision of its services."*

EU context in the field of ATM/ANS:

The ANSP shall establish, in accordance with chapter 8.2 of Annex I to Regulation (EC) No 2096/2005, a contingency plan for all services it provides in the case of events which result in significant degradation or interruption of its services. The contingency arrangements shall ensure an orderly and efficient transition from normal to emergency operations and that the return to normal operations is properly coordinated with the emergency response plans of those organizations it must interface with during the provision of its services.

**Management objective**

1.4 - Define a contingency plan properly coordinated with the Network Manager, other interfacing ANSPs, other relevant stakeholders and FABs.

**Element 1.5 - SMS documentation**ICAO:

*"The [organization] shall develop an SMS implementation plan, endorsed by senior management of the organization that defines the organization's approach to the management of safety in a manner that meets the organization's safety objectives. The [organization] shall develop and maintain SMS documentation describing the safety policy and objectives, the SMS requirements, the SMS processes and procedures, the accountabilities, responsibilities and authorities for processes and procedures, and the SMS outputs. Also as part of the SMS documentation, the [organization] shall develop and maintain a safety management system manual (SMSM), to communicate its approach to the management of safety throughout the organization."*

EU context in the field of ATM/ANS:

Each ANSP shall develop an SMS implementation plan, endorsed by senior management of the organisation that defines the organisation's approach to the management of safety in a manner that meets the organization's safety targets and objectives. In accordance with section 3.1.2 of Annex II to Regulation (EC) No 2096/2005, the ANSP shall develop and maintain SMS documentation containing the safety policy, establishing the safety objectives and describing the SMS requirements, the SMS processes and procedures, the accountabilities, responsibilities and authorities for processes and procedures, and the SMS outputs. Also as part of the SMS documentation, the ANSP shall develop and maintain a safety management system manual (SMM), to communicate its approach to the management of safety throughout the organization.

**Management objective**

1.5 - Develop and maintain the relevant SMS documentation that defines the ANSP's approach to the management of safety.

## Element 1.6 – Management of related interfaces

For better describing the relevant management objectives, the term interfaces is used as a means for achieving communication and interaction.

Although this is not directly covered in the ICAO SSP/SMS framework, in the EU context and in accordance with section 3.1.2 of Annex II of Regulation (EC) No 2096/2005, SMS shall ensure adequate justification of the safety of the externally provided services and supplies, having regard to their safety significance within the provision of their services (external services and supplies).

Examples of related interfaces on ANSP level:

- internal interfaces in the ANSP e.g. Operations/Engineering and Safety department.
- external interfaces of the ANSP e.g. Purchasing of externally provided services and supplies (power-supply / ICT / engineering).

Management objective
1.6a - Ensure adequate management of the internal interfaces.
1.6b - Ensure adequate management of the external interfaces which may influence directly the safety of their services.

## Component 2 – Safety risk management

### Element 2.1 – Safety risk assessment and mitigation

#### ICAO:

*"The [organisation] shall develop and maintain a formal process that ensures that hazards in operations are identified. Hazard identification shall be based on a combination of reactive, proactive and predictive methods of safety data collection. The [organization] shall develop and maintain a formal process that ensures analysis, assessment and control of the safety risks in [organization] operations."*

#### EU context in the field of ATM/ANS:

In accordance with section 3.1.2 and section 3.2.1 of Annex II to Regulation (EC) No 2096/2005, the ANSP shall develop and maintain a formal process that ensures that hazards in operations are identified. Hazard identification and safety risk analysis, assessment and mitigation shall be based on a combination of reactive, proactive and predictive methods of safety data collection.

Management objective
2.1 - Develop and maintain a formal process that ensures the management of safety

risks.

### Component 3 - Safety assurance

#### Element 3.1 - Safety performance monitoring and measurement

##### ICAO:

*"The ANSP shall develop and maintain the means to verify the safety performance of the organization and to validate the effectiveness of safety risk controls. The safety performance of the organization shall be verified in reference to the safety performance indicators and safety performance targets of the SMS."*

##### EU context in the field of ATM/ANS:

In accordance with chapter 2.2 of Annex I and section 3.1.1 of Annex II to Regulation (EC) No 2096/2005 the ANSP shall ensure that, wherever practicable, quantitative safety levels are derived and are maintained for all functional systems (quantitative safety levels). As required by the performance scheme regulation, safety targets of the ANPS need to be developed in accordance with safety targets established at the national level that also established in accordance with European wide targets whenever they exist.

#### Management objective

3.1 - Establish means to verify the safety performance of the ANSP and the effectiveness of safety risk management.

#### Element 3.2 - The management of change

##### ICAO:

*"The ANSP shall develop and maintain a formal process to identify changes within the organization which may affect established processes, procedures and services; to manage the changes, to describe the arrangements to ensure safety performance before implementing changes; and to eliminate or modify safety risk controls that are no longer needed or effective due to changes in the operational environment."*

##### EU context in the field of ATM/ANS:

In accordance with chapter 3.2 of Annex II to Regulation (EC) No 2096/2005 within the operation of the SMS, a provider of air traffic services shall ensure that hazard identification as well as risk assessment and mitigation are systematically conducted for any changes to those parts of the ATM functional system and supporting arrangements within his managerial control. This element could be considered also as part of element 2.1 but since it covers in particular:

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- the complete life cycle of the constituent part of the ATM functional system;
- the airborne, ground and, if appropriate, spatial components of the ATM functional system;
- the equipment, procedures and human resources of the ATM functional system

is placed as an element of the safety assurance. This ensures also consistency with the ICAO SMS framework.

Management objective
3.2 – Establish a formal process to identify changes and to ensure that safety risk assessment and mitigation are systematically conducted for identified changes.

**Element 3.3 - Continuous improvement of the SMS**ICAO:

*“The ANSP shall develop and maintain a formal process to identify the causes of substandard performance of the SMS, determine the implications of substandard performance of the SMS in operations, and eliminate or mitigate such causes.”*

EU context in the field of ATM/ANS:

In accordance with section 3.1.4 of Annex II to Regulation (EC) No 2096/2005 a provider of air traffic services (and also a provider of CNS) shall ensure that improvements are systematically identified. Safety surveys are carried out as a matter of routine, to recommend improvements where needed, to provide assurance to managers of the safety of activities within their areas and to confirm compliance with the relevant parts of the SMS (safety surveys).

In addition, they shall ensure that methods are in place to detect changes in functional systems or operations which may suggest any element is approaching a point at which acceptable standards of safety can no longer be met, and that corrective action is taken (safety monitoring) and that safety records are maintained throughout the SMS operation as a basis for providing safety assurance to all associated with, responsible for or dependent upon the services provided, and to the competent authority (safety records). These requirements are related to the need for continuous safety improvements.

Management objective
3.3 - Establish a formal process to systematically identify safety improvements.

**Element 3.4 – Occurrence reporting, investigation and improvement**

Although ICAO SMS/SSP does not require the ANSPs to directly to deal with the reported occurrences, the requirements come indirectly from the element 3.2 addressing the Member States.

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Moreover in accordance with section 3.1.2 of Annex II to Regulation (EC) No 2096/2005 a provider of air traffic services shall ensure that ATM operational or technical occurrences which are considered to have significant safety implications are investigated immediately, and any necessary corrective action is taken.

**Management objective**

3.4 - Ensure that ATM operational and/or technical occurrences are reported and those which are considered to have safety implications are investigated immediately, and any necessary corrective action is taken.

**Component 4 - Safety promotion****Element 4.1 - Training and education**ICAO:

*The ANSP shall develop and maintain a safety training programme that ensures that personnel are trained and competent to perform the SMS duties. The scope of the safety training shall be appropriate to each individual's involvement in the SMS.*

EU context in the field of ATM/ANS:

In accordance with paragraph 5 of Annex I and paragraph 3.1.2 of Annex II to the Regulation (EC) No 2096/2005, the ANSPs shall develop and maintain safety training programme that ensures that personnel are trained and competent to perform the SMS duties.

**Management objective**

4.1 – Establish a safety training programme that ensures that personnel are trained and competent to perform SMS related duties.

**Element 4.2 - Safety communication**ICAO:

*The ANSP shall develop and maintain formal means for safety communication that ensures that all personnel are fully aware of the SMS, conveys safety-critical information, and explains why particular safety actions are taken and why safety procedures are introduced or changed.*

EU context in the field of ATM/ANS:

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In accordance with paragraph 3.1.4 of Annex II to Regulation (EC) No 2096/2005, the ANSP shall develop and maintain means to ensure that all personnel are aware of the potential safety hazards connected with their duties (safety awareness), the lessons arising from safety occurrence investigations and other safety activities are disseminated within the organisation at management and operational levels (lesson dissemination) and that all personnel are actively encouraged to propose solutions to identified hazards, and changes are made to improve safety where they appear needed (safety improvement).

**Management objective**

4.2 - Establish formal means for safety promotion and safety communication.

**Component 5 - Safety culture**

Although ICAO SMS and SSP framework does not require the ANSPs to establish and promote safety culture within the organisation, safety culture refers to the enduring value, priority and commitment placed on safety by every individual and every group at every level of the organisation. Safety culture reflects the individual, group and organisational attitudes, norms and behaviours related to the safe provision of air navigation services.

Although there is not a regulatory reference in the SMS requirements within the European legislative framework, it has been considered necessary by the experts group developing the report to add it here as an essential element of the effectiveness of safety management of an organisation.

**Element 5.1 - Establishment and promotion of Safety culture****Management objective**

5.1 - Establish and promote safety culture within the ANSP.

**Element 5.2 - Measurement and improvement of Safety Culture****Management objective**

5.2 - Establish procedures to measure and improve safety culture within the ANSP.

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## iv. Mapping between Management Objectives and Study Areas

**Table VIII-4** presents the mapping of the Management Objectives derived in section iii to the Study Areas of the 'Effectiveness of Safety Management Questionnaire' (EoSM). This questionnaire (explained in detail in section 2.5) is derived from the EUROCONTROL Safety Framework Maturity Survey' SFMS) by maintaining its structure and adapting questions where appropriate. **Table VIII-5** provides the mapping back from the Study Areas to the Management Objectives.

MO	SA – Q
Safety policy and objectives	
1.1	SA2-3
1.2	SA2-1, SA2-4
1.3	SA2-2
1.4	SA4-3
1.5	SA4-1
1.6a	SA7-1
1.6b	SA7-2
Safety risk management	
2.1	SA6-1
Safety assurance	
3.1	SA9-1, SA9-2
3.2	SA6-1
3.3	SA3-1, SA3-2, SA10-1, SA11-2
3.4	SA1-3, SA8-1
Safety promotion	
4.1	SA5-1
4.2	SA4-2, SA8-2, SA8-3, SA9-3, SA11-1,

SA – Q	MO
Safety culture	
SA1-1	5.1
SA1-2	5.2
SA1-3	3.4
Safety Responsibilities	
SA2-1	1.2
SA2-2	1.3
SA2-3	1.1
SA2-4	1.2
Compliance with international obligations	
SA3-1	3.3
SA3-2	3.3
Safety standards and procedures	
SA4-1	1.5
SA4-2	4.2
SA4-3	1.4
Competency	
SA5-1	4.1
Risk management	
SA6-1	2.1, 3.2
Safety interfaces	
SA7-1	1.6a
SA7-2	1.6b
Safety reporting, investigation and improvement	

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	SA11-3
Safety Culture	
5.1	SA1-1
5.2	SA1-2
<b>Table VIII-4: Mapping Management Objectives to Study Areas</b>	

SA8-1	3.4
SA8-2	4.2
SA8-3	4.2
Safety performance monitoring	
SA9-1	3.1
SA9-2	3.1
SA9-3	4.2
Operational safety surveys and SMS audits	
SA10-1	3.3
Adoption and sharing of best practises	
SA11-1	4.2
SA11-2	3.3
SA11-3	4.2
<b>Table VIII-5: Mapping Study Areas to Management Objectives</b>	

Based on the mapping and based on the analysis done by the task force, it is proposed to use the questionnaire in terms of structure (SFMS Study Areas) and questions from the EUROCONTROL ATM SFMS for the case of ANSPs. The reason why this has been selected as the most suitable option is because there were no fundamental changes needed, which change neither the content of the five possible levels of implementation nor the associated weighting factors for the SFMS Study Areas. A weighting for the evaluation of the MOs needs to be developed before the start of RP1.

It has to be noted that the weighting factors are NOT included of this report and will be included in the associated AMCs and GMs after the delivery of the report to the Commission. Since no substantial changes are foreseen compared to EUROCONTROL SFMS the inclusion of the weighting factors in the relevant implementing means depends on the delivery of the relevant data by EUROCONTROL after the formal delivery of the report to the European Commission.

**e. The 'Effectiveness of Safety Management' questionnaires**

The 'Effectiveness of Safety Management' will be measured by the verified responses on State level and Service Provision level to questionnaires, which are developed as part of this document. The *effectiveness* of safety management is assessed by the level of

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implementation for each management objective with a discrete scale which contains 5 levels of effectiveness, see Table 2-6.

These 5 levels, also used in the SFMS, are adapted from the maturity levels of the CMMI model<sup>15</sup> and are used to characterize the performance of the organisation and to describe the way an organisation can achieve improvement of its processes.

Similarly as in quality models, authorities and service providers should strive to push their organisation to beyond the level of Implementing and achieve the level of Managing and Measuring and even the level of Continuous Improvement.

Level of effectiveness				
Initiating	Planning/Initial Implementation	Implementing	Managing & Measuring	Continuous Improvement
Processes are usually ad hoc and chaotic	Activities, processes and services are managed	Defined and standard processes are used for managing	Objectives are used to manage processes and performance is measured	Continually improvement of processes and process performance

**Table VIII-6: Mapping Study Areas to Management Objectives**

For every Management Objective, one or more questions (statements) are formulated. For every question in the Effectiveness of Safety Management questionnaire, examples will be given for each of the five levels. In addition, a free text column in the questionnaire is to be used to justify why a certain level was answered for that question. Evidences need also to be provided so that it demonstrate that the level answered is the real level achieved.

The Effectiveness of Safety Management questionnaire is based on the EUROCONTROL SFMS questionnaire. As already explained, some SFMS questions required adaptation and some questions were added. However, this adaptation strived to make optimum use of the current SFMS questionnaires in order to ensure a high recognition factor with the Stakeholders, easing acceptability and practical implementation.

The questionnaire is used for performance monitoring rather than compliance monitoring. It is recognised that for some questions indicating a level of 'Initiating' or 'Planning/initial implementation' could go below compliance with a specific requirement. However, in order to have a good indication of where safety improvements can be made, the full scale of effectiveness levels is being maintained for all questions. Moreover, it is important to highlight that at the present, no further material on *means* of compliance with the existing requirements exists and therefore it is needed to keep all the implementation levels.

<sup>15</sup> Reference: CMMI Product Team. *CMMI for Services, Version 1.3* (CMU/SEI-2010-TR-034).United States: Software Engineering Institute, Carnegie Mellon University, November 2010.

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The State and Service Provider questionnaire for the EoSM indicator are provided as separate documents to this report in Excel format.

The answers to the EoSM questionnaire will be evaluated using a scoring and weighting mechanism, based on the level of implementation chosen for each answer. Further material will be provided to the States and ANSPs that describes the mechanism for weighting and scoring - which has been applied by EUROCONTROL for the SFMS - in a way that supports the self assessment activities at State and ANSP level. This part of the technical work for the document is foreseen to begin in June 2011 aiming to provide mature enough outcome for the consultation with SSC in September 2011.

For RP1 there will be no European Union-wide targets on the levels of effectiveness to be achieved. The questions developed will be validated during the indicator validation process in RP1.

It is important to clarify the way the safety performance indicators can be applied in an environment where there is more than one ANSP on national level (certified for ATS and/or CNS provision) and for the FAB context. As defined today, the safety performance indicators are to be applied for each State, competent authority and ANSPs within each Member State. But there is nothing preventing Member States and ANSPs to aggregate the results for the different national ANSPs or to apply them within the FAB.

As each State and each ANSP in a FAB has different contributions to the service provided within the FAB and therefore it is expected that they have different contributions to the respective combined KPI, weighting factors will need to be applied to reflect their respective contribution to the KPI. It should also be noted that States involved in a FAB may designate only one competent authority responsible for the safety oversight of all the ANSPs involved in that FAB and also that all the ANSPs involved in a FAB may decide to have a combined SMS. The safety performance indicators should take into account these arrangements.

There can be different approaches towards aggregation and weighting of results for the EoSM indicator both on State and ANSP level within a FAB or between ANSPs providing services in the same State. Two possibilities are

- The use of weighted averages based on traffic size
- Use of average scores together with an assessment of the lowest and highest score

Since it might be difficult at this stage to decide on one single way forward, it could be suggested to use Reference Period 1 as a trial period to further test and develop weighting mechanism.

**f. Measurement and Verification flow**

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In order to make best use of existing processes and to avoid duplication of processes in the safety oversight chain, the EASA Standardisation Inspection pre-visit questionnaire mechanism will be used to distribute the State (competent authority) and Service Provision (ANSP) questionnaires to the competent authority's focal point<sup>16</sup> (**Figure VIII-1** → 1, 2).

The competent authority focal point is responsible for coordination within State authorities and for coordination with the ANSP's (**Figure VIII-1** → 3, 4, 5). He communicates the response to the questionnaires (both competent authority and ANSP, aggregated where required) to EASA (**Figure VIII-1** → 6).

***Mechanism for verification – State level***

The results of the States' self assessment will be verified by means of EASA standardisation inspections, which will also be used for the dispatch and collection of the answers to the EoS questionnaires. Standardisation inspections are to be performed in accordance with Regulation 736/2006, which is going to be amended to be able to achieve the objectives of the safety performance monitoring as required in Regulation (EC) No 691/2010. The answers of the self-assessment questionnaires shall be verified by EASA using all the safety-related information available in the Agency. If necessary, EASA shall collect additional safety information from the respective State, or it shall undertake standardisation inspection of the respective NSA to amend the results accordingly. Based on these results, EASA and the PRB shall jointly review the EoS KPI in the context of the other three key performance areas (Capacity, Environment and Cost-efficiency). The PRB may request EASA to address during standardisation visits specific issues identified by the PRB.

It is important to highlight that, once established, this verification mechanism will evolve to align with the ICAO principles for Continuous Monitoring Approach (CMA) as global system for continuous monitoring of the safety oversight capabilities of States, including the ability to monitor States' safety performance at the appropriate time. The EASA standardisation inspections are already evolving into that direction through alignment of all standardisation activities with the ICAO CMA. Therefore, it is important to have synergy between the different processes to avoid duplication of work.

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<sup>16</sup> According to Regulation (EC) 736/2006 these are the National ATM/ANS Standardisation Coordinators nominated by the Member States

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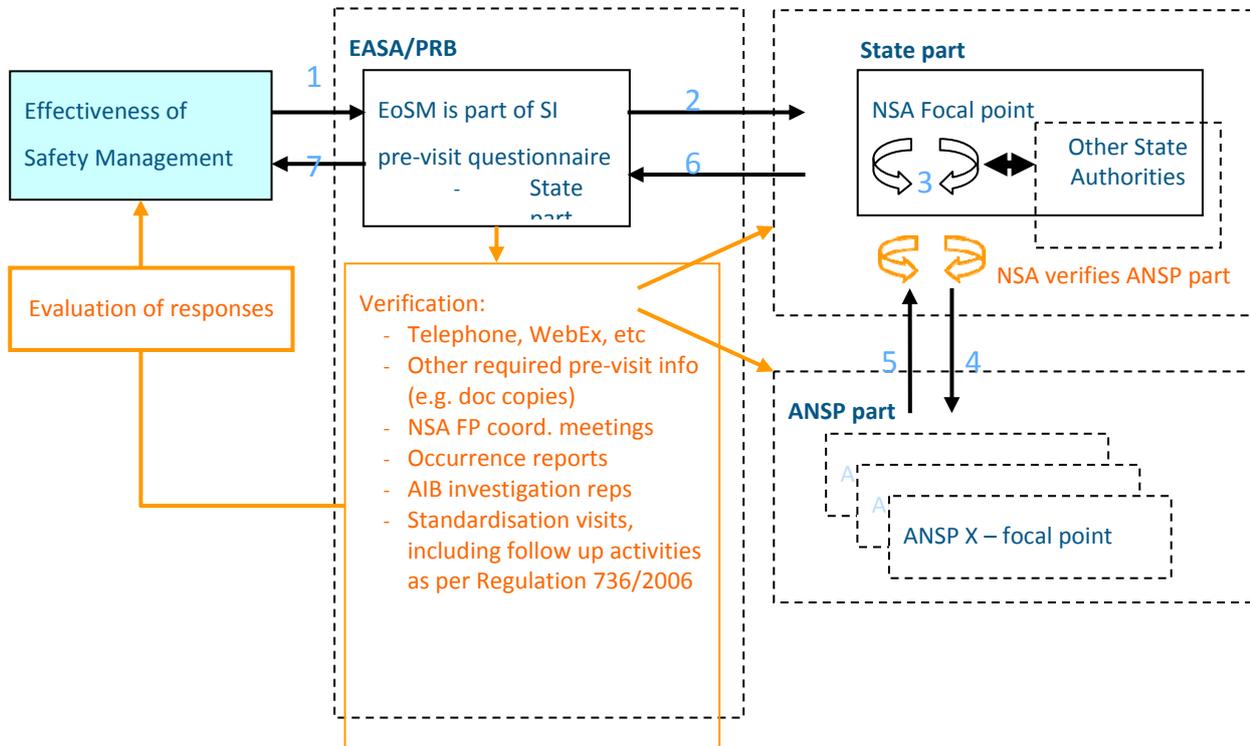
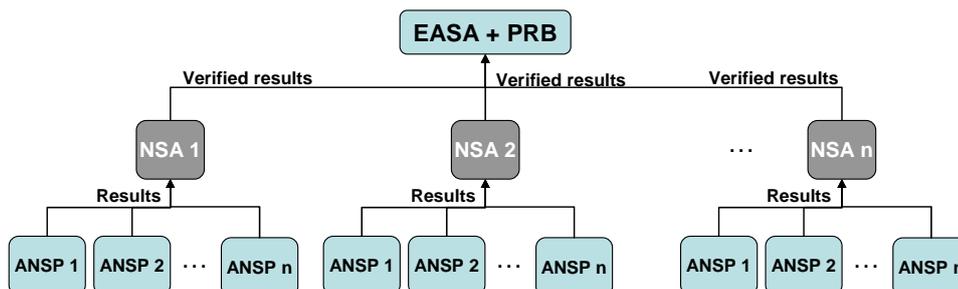


Figure VIII-1: 'Effectiveness of Safety Management' measurement and verification flow

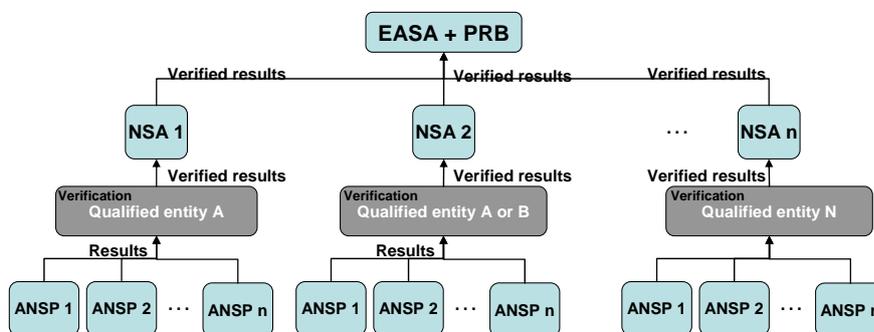
*Mechanism for verification –Service provider level*

The NSA/national competent authority is responsible for the performance oversight and the verification of the ANSP questionnaires. This verification should take place before the questionnaires and their results are submitted to EASA and PRB.



**Figure VIII-2 – Representation of verification mechanism of the ANSPs (normal procedure)**

The current European regulatory framework article 10 of Regulation (EC) No 1315/2007 and article 11 of draft safety oversight regulation published with EASA Opinion No 02/2011) already creates the possibility for the NSA/national competent authority to allocate the detailed verification task to a qualified entity. This qualified entity shall mean a body complying with the requirements defined in the regulations to which a specific task may be allocated by and under the supervision and the responsibility of the NSA.



**Figure VIII-3 – Representation of verification mechanism of the ANSPs (use of qualified entities)**

The implementation of the verification process shall be standardised through the EASA standardisation inspections mechanism.

For both the State level and Service Provider level, EASA and PRB will monitor the performance regarding this indicator based on the received answers and on the results of the verification process by the States and by EASA.

The graphic representation of this process can be found in **Figure VIII-1, 2-2, 2-3 and 2-4**.

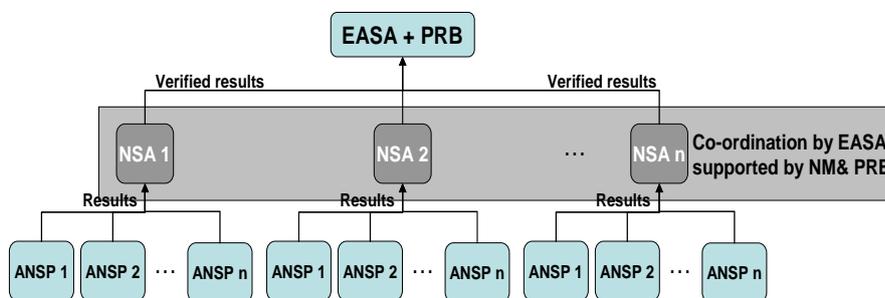
*Note: In v1.0 of this report, the E3 task force had identified three options for the verification of the ANSP's EoS self assessment (that had be verified from legal perspective in light of the drafting of the amendment of the implementing rule). As a result of the feedback received during the 13 May SSC workshop with State representatives, this was changed to the mechanism described above (previous option 1). The former option 2 included involvement of the network manager in the verification process. The former option 3 (use of qualified entities) could be covered in the existing legal framework and therefore is also mentioned above.*

During the consultation process, the stakeholders requested to have the possibility for better coordination between the NSAs in the verification process in order to achieve

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consistent and comparable results. Such coordination was proposed to be coordinated by EASA, supported by PRB and the NM. One potential solution could be the extension of the terms of reference of the NSA Coordination Platform (NCP) in the field of harmonisation of the verification mechanism of the safety KPIs at ANSP level.

Notwithstanding the above, the responsibility for verification of the safety KPI measurement at ANSP level stays with the overseeing NSA but the amended Regulation No 691 shall not prevent the establishment of a co-ordination mechanism.



**Figure VIII-4 – Representation of verification mechanism of the ANSPs**

For both the State level and Service Provider level, EASA and PRB will monitor the performance regarding this indicator based on the received answers and on the results of the verification process by the States and by EASA.

It is important to highlight that there is a difference between performance monitoring and compliance monitoring and also between performance monitoring and the process for issuing, renewal, suspending, revoking certificates for ANSPs. In the case of the safety KPI 'Effectiveness of Safety Management', the measurement should provide an indication of how effective the safety management processes within the State and within the ANSPs are, and it is to be seen separate from the process to check compliance with the SMS requirements (Common Requirements) or safety oversight regulation..

## IX. Application of severity classification of Risk Analysis Tool

### a. Concept description

The second safety KPI shall be the application of the severity classification of the Risk Analysis Tool (RAT) to allow harmonised reporting of severity assessment of Separation Minima Infringement (SMI), Runway Incursions (RI) and ATM Specific Technical Events at all Air Traffic Control Centres and airports with more than 150 000 commercial air transport movements per year within the scope of this Regulation (yes/no value). (ref. Commission Regulation (EU) 691/2010 of 29 July 2010, Safety Key Performance Indicator, Annex 1 Section 2 ref. 1.(b)).

There will be no European-wide targets for the first reference period (2012-2014) although EU Member States may set corresponding targets. NSAs will need to monitor and report on this safety KPI during RP1.

The EUROCONTROL RAT provides a method for consistent and coherent identification of severity and risk elements of ATM related occurrences. The tool comprises so-called severity and risk mark sheets which enable the appropriate scoring of severity and risk of recurrence. Regulation (EC) No 691/2010, aiming at a harmonised way of ATM occurrences reporting, provides requirements for the development and measurement of this Safety KPI only for the *severity classification* part of the RAT tool.

The severity classification scheme of the RAT methodology contains the following severities, see **Table 3-1**.

RAT methodology		Regulation (EC) No 996/2010 & ICAO Annex 13	ICAO Doc 4444 (PANS-ATM)	ATM Specific Occurrences
Severity classification	Category	Accident		Severity classification
Serious incident	A	Serious incident	AIRPROX – Cat A	Total inability to provide safe ATM services (AA)
	AA (only for ATM Specific)			Serious inability to provide safe ATM services (A)
Major incident	B	Incident	AIRPROX – Cat B	Partial inability to provide safe ATM services
Significant incident	C		AIRPROX – Cat C	Ability to provide safe but degraded ATM services
No safety effect	E		-	No effect on ATM services
Not determined	D		AIRPROX - Cat D	Not determined

**Table IX-1: Severity classification scheme**

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The application of the RAT severity classification methodology supports and allows for harmonised reporting of the severity classification of occurrences. Therefore, the concept of this indicator is to prescribe the common methodology for occurrence severity classification by defining detailed criteria and specifications for the assessment of occurrences.

The way to implement the RAT severity classification methodology is left up to States. The EUROCONTROL RAT tool is a possible means of compliance. It is being maintained by EUROCONTROL and made available, free of charge, to States and Organisations. In case a State wishes to use a different tool, it has to demonstrate that its tool complies with the defined criteria and specifications.

In order to properly measure the application of the RAT methodology for severity classification the different organisational scenarios at State level should be taken into account. In many States the severity classification of ATM occurrences is applied by the ANSPs in the process of the investigation of such occurrences. In other States the NSA or CAA is applying the severity classification after having received the ATM occurrences from ANSPs and/or civil aviation investigation authorities. In general, the RAT methodology should be applied for the relevant ATM occurrences reported by a State to the Commission through the European Central Repository. It is left up to the States how to implement on a national level the organisational arrangements regarding the use of the RAT methodology for severity classification.

For the definitions of the type of occurrences in this safety KPI, reference is made to Directive 2003/42/EC on occurrence reporting in civil aviation (ANNEX II -List of air navigation services related occurrences to be reported – and appendix). It has to be noted that the EC Directive refers to ATM Specific Occurrences instead of ATM Specific Technical Events (for the purpose of this Safety KPI these are considered to be the same).

Annex B presents more details on the RAT severity classification methodology (mark sheets and scoring system), including references to EUROCONTROL documents.

To enable and ensure further harmonisation of the reporting of ATM related occurrences, support could be given to the full use of the RAT methodology, including the repeatability risk elements, which will result in an enhanced overall view on the underlying causes.

## ***b. Measurement and Verification flow***

It is proposed to measure the application of the severity classification methodology of the RAT as follows:

- Yes/No of application of the **RAT methodology** for severity classifications of occurrences with category Serious incident (A), Major incident (B) or Significant incident (C), for all separation minima infringements, runway incursions and ATM specific technical events (ATM-specific occurrences, including category AA) in accordance with Regulation No

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691/2010. Reporting of the yes/no application is to be done at the individual occurrence level.

The scope is limited to severity assessment of the above mentioned occurrences at Air Traffic Control Centres and airports with more than 150 000 commercial air transport movements per year.

Annex C presents the detailed methodology criteria for Separation Minima Infringements. A similar description will be provided for Runway Incursions and ATM-specific occurrences. Because of the level of technical detail, a proper balance has to be found what will be mandated in the amended Implementing Rule and what will be defined through supporting material. By the time of the finalisation of this report, EUROCONTROL could not yet provide the final description of the RAT methodology for Runway Incursions and ATM-specific occurrences. That is the reason these occurrence severity classifications are not to be included in the current report. It is expected that the necessary data will be provided by EUROCONTROL before the development of the associated AMCs and GMs to the amendment to the performance scheme regulation.

The measurement of the KPI will make use of existing safety data reporting mechanisms with enhancements where needed. It is proposed that the indication of the application of the RAT severity classification methodology on individual occurrence level is included in the EUROCONTROL Annual Summary Template (AST) form. The AST template will need to be enhanced to indicate per occurrence if the RAT severity classification methodology has been applied for the severity assessment. The European Central Repository (ECR) will remain to be the central source of safety information in the EU. Therefore compatibility with the ECCAIRS system, the software tool used for the ECR, is an important criteria.

The national point of contact (EC Directive 2003/42, EC Regulation 1330/2007, Points of contact are competent authorities having the responsibility to manage the collection and exchange of information) will play a key-role to provide the required information for the measurement of the KPI. The national point of contact will collect and verify the information on State level. This is to ensure that consistency remains between the reporting mechanism described in Directive 2003/42, Regulation 1321/2007 (data integration into the European Central Repository) and the EUROCONTROL AST mechanism.

***Mechanism for verification***

Verification will be performed by means of EASA standardisation inspections in order to be consistent with the verification mechanism proposed for the other KPIs. Standardisation inspections are to be performed in accordance with Regulation 736/2006 including follow up activities as data and responses analysis by PRB and EASA. In addition, the validation of the data will be done by EASA and PRB in cooperation with EUROCONTROL DSS/OVS/SAF through its safety analysis team. The PRB and EASA will evaluate the responses and results of the described process on a regular basis.

For the purpose of pre-verification, a dedicated questionnaire could assist in clarifying the different organisational scenarios at State level regarding severity classification of ATM occurrences. This questionnaire for States could provide the information about which

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entities that are involved in investigating and classification of ATM related occurrences are applying the RAT severity classification methodology (Table IX-2).

	<b>State level point of contact</b>	
Application of the RAT methodology for severity classification	<ul style="list-style-type: none"> <li><input type="checkbox"/> Please provide a list of entities involved in the severity classification of ATM related occurrences and describe their roles.</li> <li><input type="checkbox"/> How does the State ensure that the RAT severity classification methodology is applied by all entities involved in severity classification of the relevant occurrence types as per Regulation (EC) No 691/2010?</li> <li><input type="checkbox"/> Which entities in your State apply the RAT <i>tool</i>? If another tool(s) is used to apply the severity classification methodology, please provide the evidence that it complies with the prescribed criteria for the RAT severity classification methodology.</li> </ul>	

**Table IX-2: Application of RAT methodology for severity classification - specific questionnaire**

## X. Just Culture

### a. *Concept description*

This chapter describes the concept, metrics and methodology relevant for the measurement of the third safety KPI as specified by the European Commission Regulation (EU) No 691/2010.

According to the Regulation: *The third national/FAB safety KPI shall be the reporting of just culture. This measure shall be developed jointly by the Commission, the Member States, EASA and Eurocontrol and adopted by the Commission prior to the first reference period. During this first reference period, national supervisory authorities will monitor and publish this measure, and Member States may set corresponding targets (Annex 1, Section 2, art. 1c).*

The same Regulation defines Just Culture (JC): *'Just culture' means a culture in which front line operators or others are not punished for actions, omissions or decisions taken by them that are commensurate with their experience and training, but where gross negligence, wilful violations and destructive acts are not tolerated (Art. 2k).*

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Just Culture is the cornerstone of any incident reporting system as it aims to ensure that safety relevant information may be reported without fear of retribution. This in turn will ensure that the safety feedback loop of the aviation industry works efficiently towards the constant improvement of safety performance.

The Just Culture KPI aims at measuring the level of presence and corresponding level of absence of Just Culture at State level and at ANSP level. The metrics have been constructed to respond to the criteria of: clear definition, auditable, verifiable, repeatable and indicative of the level of JC being implemented.

In order to fully assess the extent of implementation of JC within a State and its ANSPs, it is necessary to apply certain metrics to the State framework, which includes legislation, policies, regulatory/supervisory authorities, and a separate set of metrics to the service provision. Therefore, two separate sets of metrics are developed, for application at the State and Service Provision level respectively.

The concept of the JC KPI is defined through three main areas, potentially influencing each other, which can be found both at State and Service Provision level:

- ❑ Policy and its implementation – dealing with the existence or non-existence of a JC policy within organisations (regulatory/supervisory and service provision). The policy is to be measured for effectiveness and not just its mere existence.
- ❑ Legal / Judiciary – the goal is to assess whether the national legal environment is supportive or not of JC.
- ❑ Occurrence Reporting – this is related to policies and practices of occurrence reporting.

Annex D contains the elements that were reviewed and discussed by the group and after due consideration were agreed to be dismissed from the initial list of proposed draft metrics.

It should be however taken into account that it is the first time that any formal reference to the Just Culture concept is made in an European Union legislation. As a consequence, this chapter of the document breaks into new grounds and remains at a fairly general level. As provided by Regulation 691/2010, the first reporting period will be used only for monitoring and not for target setting. For this reason, the main aim of the questionnaires is not so much to identify the existence of Just Culture but rather to identify possible obstacles and impediments to its application. On the basis of the experience acquired during RP1, different objectives and deeply revised questionnaires may be proposed for the second reporting period.

For the same reason, reference is made to "State Level" instead of "NSA" level because, although a large number of questions refer to existing situation in the national authority, a limited number of others deal with elements which go beyond the field of competence of the authority and may have to be addressed at the level of other State entities.

**b. Elements indicative of the implementation of just culture**

## v. Policy and its implementation

A just culture policy is essential at the State level, as well as at the Service Provision level. Such a policy needs to demonstrate commitment for just culture by each organisation, from their top management down to all staff involved in safety-relevant activities. Just culture policy at State level applies not only to State authorities' own staff but must also apply in the relationship with the organisations they regulate to ensure that a coherent just culture policy is enforced throughout the whole safety system. It is therefore important that States put in place a policy to ensure that just culture protection afforded to the staff of a service provider will also be granted by the State authority.

The policy metric of the just culture KPI shall attempt to identify the existence or non-existence of a just culture policy within organisations (regulatory/supervisory and service provision), as well as its real effectiveness.

There are several elements defining an effective just culture policy, each element in turn with a number of sub-elements. These sub-elements are binary, i.e. the answer can only be yes or no.

## Metrics for Safety Key Performance Indicators for the Performance Scheme

	State level	Service Provision level
Policy elements related questions	<ul style="list-style-type: none"> <li><input type="checkbox"/> Is there an explicit JC policy, which is endorsed at appropriate State level and made public?</li> <li><input type="checkbox"/> Does it contain a description of what is considered to be unacceptable behaviour<sup>17</sup>?</li> <li><input type="checkbox"/> Does it refer to legal provisions which guarantee no punishment for self-reported occurrences (except for the cases defined above)?</li> <li><input type="checkbox"/> Does it provide legal support<sup>18</sup> for its own staff in case of prosecution / legal action related to a reported safety event?</li> <li><input type="checkbox"/> Does the State require a JC policy in Air Navigation Service Providers?</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Is there an explicit JC policy, which is endorsed by management and formal staff representatives and made public?</li> <li><input type="checkbox"/> Does it contain a description of what is considered to be unacceptable behaviour?</li> <li><input type="checkbox"/> Does it guarantee no disciplinary action by the service provider for self-reported occurrences (except for the cases defined above)?</li> <li><input type="checkbox"/> Does it provide legal support for its own staff in case of prosecution / legal action related to a safety occurrence?</li> <li><input type="checkbox"/> Is there an established and well known critical incident stress management?</li> <li><input type="checkbox"/> Are safety actions taken after an occurrence without impact on pay until the end of the investigation?</li> </ul>
Roles and Responsibilities clearly defined and implemented	<ul style="list-style-type: none"> <li><input type="checkbox"/> Is the role of different State authorities and ANSPs in handling safety reports and the flow of information clearly defined in the State?</li> <li><input type="checkbox"/> Is the safety investigation and/or analysis process within the State entirely independent from any judicial authority?</li> <li><input type="checkbox"/> Does the State actively strive to implement JC provisions in its legislative framework?</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Are safety investigators completely independent and separate from any line, competency or ops management?</li> <li><input type="checkbox"/> Do safety investigators have full, unimpeded access to all relevant data for investigations?</li> <li><input type="checkbox"/> Is access to safety data clearly defined and confidentiality ensured?</li> <li><input type="checkbox"/> Are the staff providing CISM clearly nominated and adequately trained?</li> </ul>
Training	<ul style="list-style-type: none"> <li><input type="checkbox"/> Is there a regulatory requirement to include elements and/or courses on JC for staff working in the competent authority and service providers (ab-initio and recurrent training)?</li> <li><input type="checkbox"/> Are qualifications and training requirements as regards JC for State safety investigators clearly defined?</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Is there regular training and/or briefings on relevant legislation for safety in the context of JC?</li> <li><input type="checkbox"/> Are the principles of JC included in all training curricula (ab-initio and recurrent training)?</li> <li><input type="checkbox"/> Are qualifications and training requirements as regards JC for ANSPs safety investigators clearly defined?</li> </ul>

<sup>17</sup> See the definition of just culture in Reg 691/2010

<sup>18</sup> E.g. counseling, court expertise etc.

**Table X-1: Questions - Policy and its implementation**

## vi. Legal / Judiciary

Just culture provisions in primary legislation:

Primary legislation often contains general provisions which may impair the implementation of Just Culture or which, on the contrary may facilitate adoption of specific measures or procedures to implement just culture.

A typical example of a legislation impairing the implementation of just culture is a "Freedom of Information Act" which requires all information submitted to a State authority/State owned legal entity to be released to the public upon request. As incident reports are usually submitted to the Civil Aviation Authority, it would be possible for the requester of the information to identify the parties to a reported incident and use the available information to "name and shame". In consequence, the mandatory provision of the information under Freedom of Information legislation may lead to legal action against the reporter or other parties involved.

Inadvertent mistakes considered under penal law as criminal offences related to variations of "endangering the safety of air traffic" may lead to prosecution of individuals for negligently endangering the lives of others (passengers or on the ground). Other provisions in both civil and penal law dealing with the liability of individuals may lead to court cases against incident reporters.

Finally, in the case of cross-border accident/incident, conflicting national laws may apply even if the EU made attempts at regulating this matter (e.g. Regulation 864/2007).

Just culture-related judicial procedures and specific aviation legislation:

Some Member States have introduced special procedures or specific aviation legislation, amongst these are the nomination of a specialised aviation prosecutor or a procedure to evaluate the "honest mistake" and a general immunity from prosecution when incidents are self-reported. Each Member State must have a legislation which protects incident reporting in accordance with Directive 2003/42.

The "aviation prosecutor" can be a person or an entity which would evaluate if a reported occurrence falls under the JC protection or, on the contrary, if there is wilful breach of the law or gross negligence which would warrant to refer the incident to the judicial authorities. The nomination of such an "aviation prosecutor" may be decided through primary legislation as well as through specific civil aviation legal measure.

It is also important to ensure that when an accident or incident occurs, Subject Matter Experts (SME) are invited to participate in all procedures linked to JC such as in the "aviation prosecutor" entity, in case of prosecution at State level or when licensing/disciplinary action is envisaged at State/Service provider level.

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Existence of a formal agreement between judiciary authorities and aviation:

Article 12.3 of EU Regulation 996/2010 provides for the establishment of advance arrangements between safety investigation authorities and other authorities likely to be involved in the activities related to the safety investigation such as the judicial authorities. Other advance arrangements addressing Just Culture principles could also be established between aviation entities and judicial authorities.

In one Member State at least, detailed instructions have been issued by the Ministry of Justice to the national prosecutor's office regarding criminal investigation and prosecution in the event of the reporting of occurrences in civil aviation.

## Metrics for Safety Key Performance Indicators for the Performance Scheme

	State level	Service provision level
Primary legislation	<input type="checkbox"/> In case there is a Freedom of Information legislation, does it provide for exemptions applicable to safety-sensitive information? <input type="checkbox"/> If an incident falls under JC policy, do general provisions referring to potential threatening the safety of the public be applicable by judicial authorities under penal law? <input type="checkbox"/> Are there provisions in the law affording protection from prosecution to individuals involved in safety events, under the principles of JC?	N/A
Judicial procedures and specific aviation legislation	<input type="checkbox"/> Is there an entity within the State, supported by SMEs, with clearly defined rules, which would decide whether relevant safety events are a matter for prosecution? <input type="checkbox"/> Is there a judicial procedure to ensure that in the case of prosecution linked to an aviation accident/incident SMEs will be involved? <input type="checkbox"/> Are the provisions of Directive 2003/42 and in particular those contained in its Article 8 (protection of information) fully and effectively implemented in the national legislation?	<input type="checkbox"/> Is the spirit of Directive 2003/42 and in particular of the provisions of its Article 8 fully transposed into internal procedures?
Formal agreement	<input type="checkbox"/> Is there an advance agreement to guarantee appropriate use of safety information? <input type="checkbox"/> Is there an agreed process to deal with incident matters between the aviation and judicial/police authorities?	<input type="checkbox"/> Is there any agreement between ANSPs and judicial/police authorities to ensure protection of data and individuals? <input type="checkbox"/> Is there an agreed process to deal with incident matters between the ANSP and its national aviation authorities?

Table X-2: Questions - Legal / Judiciary

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vii. Occurrence reporting and investigation (including automatic reporting)

This part covers the aspects of just culture within the context of occurrence reporting and investigation.

The issues to be considered at the State level relate to legislation pertaining to occurrence reporting and investigation and the protection of the information obtained or derived from it.

For both the level of the State as well as the level of each service provider, it would be important to determine the practical implementation of the just culture provisions. As it is generally agreed that the level of reporting is a good indicator, related questions were included.

	<b>State level</b>	<b>Service provision level</b>
	<ul style="list-style-type: none"> <li><input type="checkbox"/> Does the State provide regular statistical feedback to the public based on occurrence reports received (e.g. annual reports)?</li> <li><input type="checkbox"/> Are Subject Matter Experts (SMEs) involved in making the decision in cases where personnel licenses/rating could be affected?</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Is the identity of personnel involved in occurrences protected by staff regulations?</li> <li><input type="checkbox"/> Does staff subject to investigations based on occurrence reports have access to related information?</li> <li><input type="checkbox"/> Is there a requirement for staff subject to investigation to sign their agreement / disagreement with the findings of investigations?</li> <li><input type="checkbox"/> Is there a formal procedure to inform staff having reported an occurrence of the progress of the investigation?</li> <li><input type="checkbox"/> Does the ANSP provide regular feedback to staff based on occurrence reports?</li> <li><input type="checkbox"/> Does the public annual report of the service provider provide feedback on occurrence reports?</li> <li><input type="checkbox"/> Has automated reporting been accepted by staff and implemented by the service provider?</li> <li><input type="checkbox"/> Is there a separate body, involving nominated Subject Matter Experts (SMEs) making the decision on</li> </ul>

		whether a case is an “honest” mistake or it falls under the “unacceptable behaviour” category?
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**Table X-3: Questions - Occurrence reporting and investigation**

**c. Measurement and Verification flow**

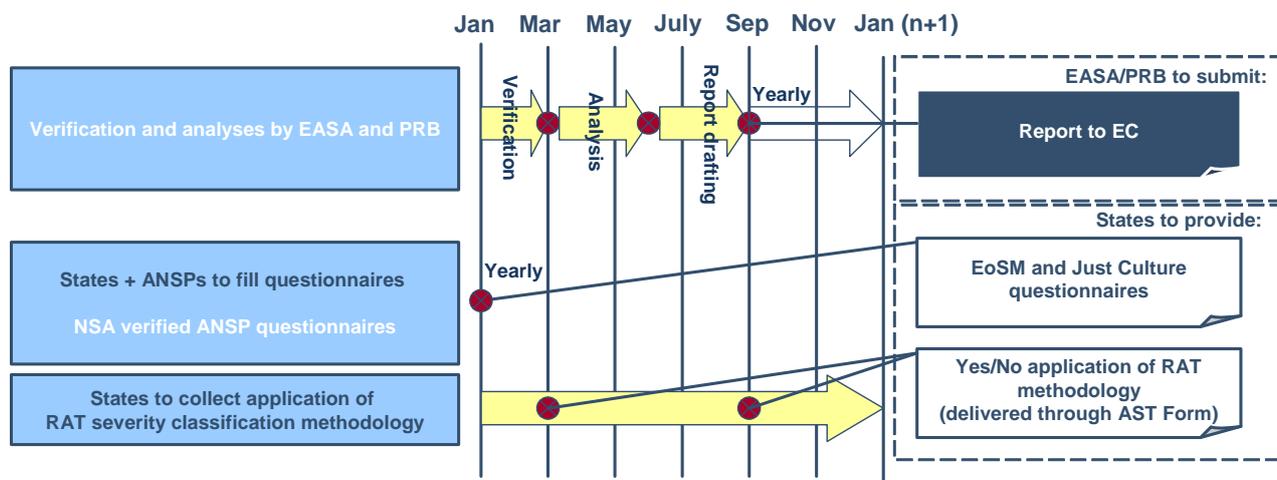
A questionnaire has been established to allow some form of measurement of the level of just culture applied at State and at Service Provision level. These questions may be replied to by Yes or No. Positive reply gives an indication of a just culture context while a negative reply indicates a potential deficit in just culture. However, it is not expected that all replies should be positive but the identification of negative elements would give indication of possible areas of improvement and should be considered as incentives for improving the just culture in a particular State/organisation.

Questionnaires are proposed to be dispatched together with those for the EoSM indicator following the same validation and verification processes.

**XI. Implementation plan**

**a. General Timeline**

The figure below shows the proposed timeframe for the monitoring process for each year during the RP together with the main “deliverable” dates (KPI reporting and submission of the performance monitoring report to the EC).



**b. Scope and first deliverables**

In addition to the technical development of the indicators, a detailed implementation plan will be developed by the PRB and EASA. The scope of the implementation plan is as it follows:

- the full safety data<sup>19</sup> set as described in the Annex IV of Regulation (EC) No 691/2010;
- Safety KPIs as indicated in EC 691/2010;
- metrics and data requirements as developed in this document.

The deliverables following this implementation plan will be:

- a database to host the safety data;
- a data validation strategy to be developed by EASA/PRB;
- the activation of a regular data flow from States to EASA/PRB;
- a process to compile the KPIs;
- a process for getting feedback from States on results;
- a report on the status of ANS safety in Europe as measured by the three KPIs and based on the full safety data set.

**c. Safety data flow**

The safety data flow is proposed to be reinforced and – where applicable - commenced by a letter from EC to States. The letter should cover the following topics:

- the list of data requirements related to the three KPIs together with a clear and explicit request to archive and provide these data from now on;
- a reminder that the data set provided by the State shall contain both the data related to the three KPIs and the other data included in Annex IV of 691/2010;
- a high level explanation how the data validation will be organised;
- the date when the data collection activity starts (September 5th 2011) and that it should be completed by the end of March 2012 for the year 2011;
- the contact point(s) for the data collection at European level;
- the contact point(s) for the safety data collection at European level as nominated by the EU NAAs/NSAs following the request<sup>20</sup> of the EASA Approvals and Standardisation Director dated 30 May 2011.

<sup>19</sup> 'Data' in the context of this paper refers to numerical data, factual information, evidences, results of survey or inspection protocols, etc.

<sup>20</sup> This letter requests the Heads of NAA/NSA to nominate a National ATM/ANS Standardisation Coordinator, normally the former ESIMS Focal Point. This would reduce the number of coordinators per State and would ensure coordinated approach to both EASA Standardisation inspections and PRB Safety performance review.

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The letter should be sent out as early as possible in order to allow States for archiving and providing the data required under the safety data flow.

d. Safety data analyses

Once the data validation is completed, EASA/PRB will prepare a draft report containing the main results and conclusions which emerge from the analysis of year 2011 safety data. The safety data analyses phase should start in February 2012 and it should be completed by mid July 2012, followed by a feedback phase with the purpose of exposing the draft report to the States (see Gantt Chart Figure XI-1). It needs to be decided in which way States will be invited to provide their feedback. The feedback phase should start at the beginning of September 2012 and it should be completed by the end of October 2012. After the reception of the feedback, the draft report will be updated and published.

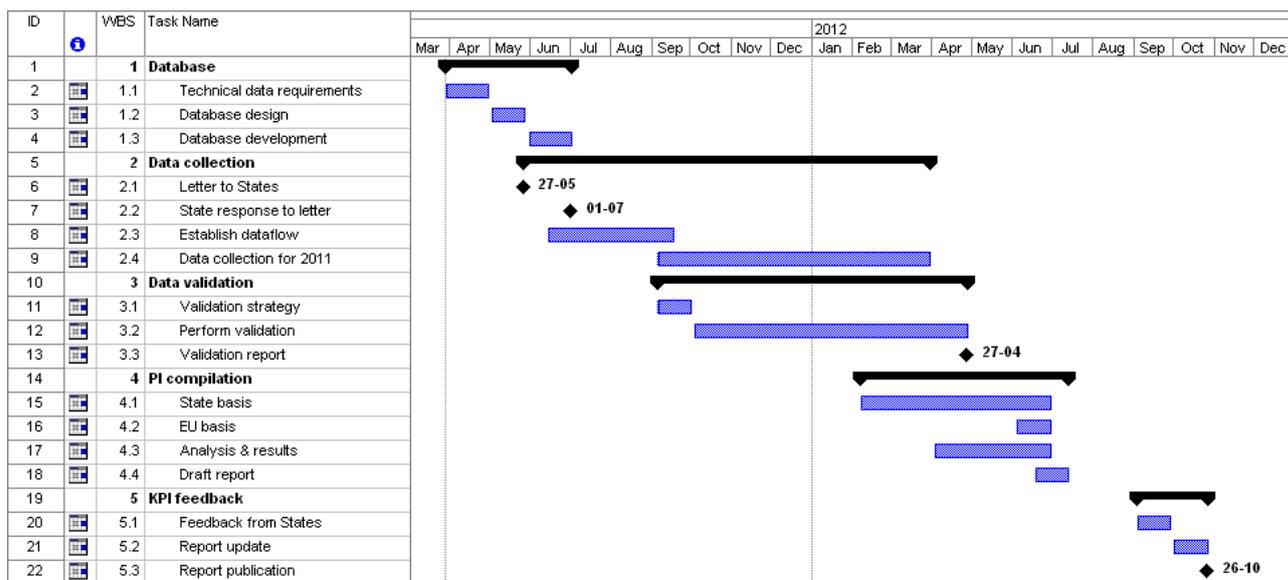


Figure XI-1: Gantt Chart Safety Data Flow and Analyses

**Annex A: Acronyms**

EoSM	Effectiveness of Safety Management
FAB	Functional Airspace Block
JC	Just Culture
KPI	Key Performance Indicator
MO	Management Objective
RAT	Risk Analysis Tool
RI	Runway Incursion
SA	Study Area
SFMS	Safety Framework Maturity Survey
SMI	Separation Minima Infringement
SMS	Safety Management System
SSP	State Safety Programme

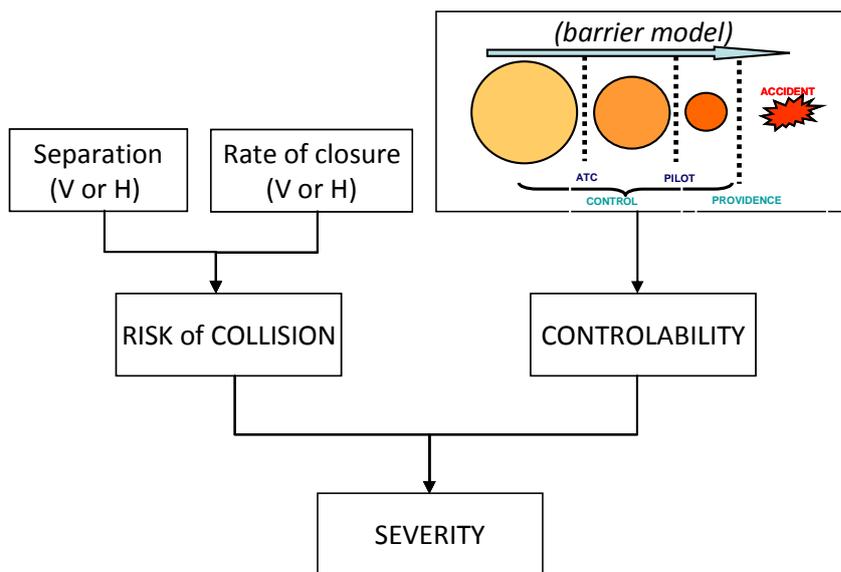
**Annex B: RAT methodology – Technical Description**

The EUROCONTROL Risk Analysis Tool (RAT) provides a method, based on the Barrier model, for consistent and coherent identification of risk elements. By applying a prescribed methodology to come to a severity assessment of an occurrence, introduction of inadvertent bias in the occurrence classification is minimized. By using the same criteria for this severity assessment across Europe, aggregation of such occurrence data becomes far more meaningful.

A (adapted) version of the Barrier model is shown below:



The relationships of the elements of the concept for severity classification are expressed in the figure below:



The different severity mark sheets of the RAT methodology allow the analysis of a single occurrence. The overall severity of one occurrence is built up from the risk of

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collision/proximity (separation and rate of closure) and the degree of controllability over the incident (both by Air Traffic Controllers and Pilots). The different mark sheets and criteria for the different type of occurrences assist the persons analysing the occurrence to score all the severity aspects resulting in a severity categorisation for that specific occurrence. Depending on the type of occurrence, different criteria and specifications are to be applied.

## ***The Scoring System***

The objective of the safety occurrence severity classification exercise is to produce a severity assessment for safety occurrences. The methodology is based on the principles of a question-based scoring system and it provides an objective basis for investigators judgement and, in addition, is easy to use.

In the RAT methodology the scores for the criteria in assessing Severity and Risk are representative for each individual criterion. There is no intention to quantify the importance of each criterion in comparison to others. No hierarchy between criteria and no trade-off shall be done between them. The information to score the criteria shall come from the investigation process and not vice-versa. This is a tool to support the investigator in classifying the safety occurrence in an objective manner. Whenever there is not enough information available to score a criterion or there are disagreements between investigators, the disputed criterion should be left un-scored. This will automatically affect the Reliability Factor for the incident.

## ***The Assessment Procedure***

The methodology is to be seen as a guide to severity assessment. Scoring points is not a system that, through calculations, will determine a definite severity and risk for any type of occurrence. There is a need for additional procedures, such as moderation panels to ensure adjustments and smoothing of results based on the operational experience of the investigators. But by using the methodology, the subjectivity of the final assessment will be reduced. Consistent, objective and harmonised assessments will be achieved by investigators from various stakeholders with different backgrounds and cultures (e.g. where appropriate: ANSPs, REGs, airlines, AAIBs).

The methodology provides possibilities for both Quantitative analysis of an ATM occurrence and for Qualitative analysis. In cases where more than one controller and/or more than one pilot crew were involved in the incident with different performances, there is generally a large preference noted from the practice, to use the Quantitative methodology.

There is also a specific methodology to enable the scoring of ATM Specific Technical Events/ ATM Specific Occurrences (i.e. technical incidents affecting the capability to provide safe air traffic services) where the severity is looked at differently i.e. it considers the failure criticality, the coverage of the failure and the required time to restore the ATM function affected or to fail-safe to a degraded mode by introducing contingency measures.

More details on the RAT tool can be found in:

[https://www.eurocontrol.int/safety/gallery/content/public/library/Safrep/Risk\\_Analysis\\_Tool.pdf](https://www.eurocontrol.int/safety/gallery/content/public/library/Safrep/Risk_Analysis_Tool.pdf)

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Example Annual Summary Template (AST) form including the severity column:

OCC Reference Number	Date	Type of ATM Incident	Notification Reports	ATM Contribution	Status	Airspace Restriction	Class of airspace	Phase of Flight	Flight Rules	Type of Operations	Type of Flight	Severity	Category of Causes	List of Causes (HEIDI)	List of Causes (National)
INCID 001		Inadequate separation	AIRPROX	Indirect	Investigated	Not applicable	A	Taxiing	IFR	GAT	GA	C	Aerodrome layout and infrastructure	Ground/ground -> Phraseology	Cause 1 (replace with your own national cause)
		Runway Incursion Runway Incursion where no avoiding action was necessary	Human ATC Human ATC					Take-off	IFR	GAT	CA		Operational ATC procedures	Aerodrome layout and infrastructure LAHSO	

Separation Minima Infringement - Severity Marksheet: More than one aircraft involved

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## A. SEVERITY

1. Risk of collision	ATM ground	ATM airborne	ATM overall
Minimum separation achieved	0	0	
Separation + 75% minimum	1	1	
Separation >50%, <=75% minimum	3	3	
Separation >25%, <=50% minimum	7	7	
Separation <=25% minimum	10	10	
<b>Total separation (a)</b>			<b>0</b>
Rate of closure NONE	0	0	
Rate of closure LOW (<=85knots, <=1000ft/mn)	1	1	
Rate of closure MEDIUM (>85 and <=205 knots, >1000 and <=2000 ft/mn)	2	2	
Rate of closure HIGH (>205 and <=700 knots, >2000 and <=4000 ft/mn)	4	4	
Rate of closure VERY HIGH (>700knots, >4000ft/mn)	5	5	
<b>Total rate of closure (b)</b>			<b>0</b>
<b>TOTAL (1-ATM) Risk of Collision (a)+(b)</b>	<b>0</b>		
<b>TOTAL (1-ATM Ground) Risk of Collision (a)+(b)</b>	<b>0</b>		

2. Controllability	ATM ground	ATM airborne	ATM overall
Conflict detected	0	0	
Conflict detected late	3	0	
Conflict NOT detected	5	0	0
Plan CORRECT	0	0	
Plan INADEQUATE	3	0	
NO plan	5	0	0
Execution CORRECT	0	0	
Execution INADEQUATE	3	5	
NO execution	5	10	0
Loss of separation detected because of STCA	3	0	
No detection (including by STCA)	5	0	0
Recovery CORRECT	0	0	
Recovery INADEQUATE	5	6	
NO recovery or the ATM ground actions for recovery have worsened the situation or ATM airborne has worsened the situation	10	15	0
TCAS triggered (useful RAs only to be considered) or see and avoid pilot decision (in the absence of TCAS)	10	0	
NO TCAS RA	0	10	0
Pilot(s) followed RA (or, in absence of RA, took other effective action, as a result of see and avoid decision)	0	0	
Pilot(s) INSUFFICIENTLY followed RA	0	10	
Pilot(s) INCORRECTLY followed RA (or, in the absence of RA, took other inadequate action)	0	15	0
<b>TOTAL (2-ATM Ground)</b>	<b>0</b>		
<b>TOTAL (2-ATM Airborne)</b>		<b>0</b>	

<b>TOTAL SEVERITY :</b>	
SEVERITY ATM =(1) + (2-ATM)	<b>0</b>
SEVERITY ATM Ground = (1) + (2-ATM Ground)	<b>0</b>

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## Runway Incursion - Severity Marksheet: Aircraft – Aircraft Tower

## A. SEVERITY

1. Risk of collision	ATM ground	ATM airborne	ATM overall
Safety margin achieved	0	0	
Safety margin infringed minor	1-3	1-3	
Safety margin infringed medium	4-6	4-6	
Safety margin infringed significant	7-9	7-9	
Safety margin infringed critical	10	10	
<b>Total safety margin (a)</b>			<b>0</b>
Rate of closure NONE	0	0	
Rate of closure LOW (<=20knots)	1	1	
Rate of closure MEDIUM (>20 and <=40knots)	2	2	
Rate of closure HIGH (>40 and <=80 knots)	4	4	
Rate of closure VERY HIGH (>80knots)	5	5	
<b>Total rate of closure (b)</b>			<b>0</b>
<b>TOTAL (1-ATM) Risk of Collision (a)+(b)</b>	<b>0</b>		<b>0</b>
<b>TOTAL (1-ATM Ground) Risk of Collision (a)+(b)</b>	<b>0</b>		<b>0</b>
2. Controllability	ATM ground	ATM airborne	ATM overall
Conflict detected	0	0	
Conflict detected late	3	0	
Conflict NOT detected	5	0	0
Plan CORRECT	0	0	
Plan INADEQUATE	3	0	
NO plan	5	0	0
Execution CORRECT	0	0	
Execution INADEQUATE	3	5	
NO execution	5	10	0
Loss of separation detected because of Ground safety net (e.g. A-SMGCS Level 2 safety net)	3	0	
No detection (including by Ground safety net)	5	0	0
Recovery CORRECT	0	0	
Recovery INADEQUATE	5	6	
NO recovery or the ATM ground actions for recovery have worsened the situation or ATM airborne has worsened the situation	10	15	0
See and avoid pilot or driver decision	10	0	
No see and avoid action possible	0	10	0
Pilot/ Driver took other effective action, as a result of see and avoid decision	0	0	
Pilot/ Driver took INSUFFICIENT action as a result of see and avoid	0	10	
Pilot/ Driver INCORRECTLY took other action or NO pilot action with no further ATM ground controllability margin	0	15	0
<b>TOTAL (2-ATM Ground)</b>	<b>0</b>		<b>0</b>
<b>TOTAL (2-ATM Airborne)</b>		<b>0</b>	<b>0</b>
<b>TOTAL SEVERITY :</b>			
<b>SEVERITY ATM =(1) + (2-ATM)</b>			<b>0</b>
<b>SEVERITY ATM Ground = (1) + (2-ATM Ground)</b>			<b>0</b>

**ATM Specific Technical Event - Severity Marksheet: ATM Specific Occurrences**

**A. SEVERITY**

	<b>1. Failure criticality</b>	
Generic Function		
Specific Function		
Failure		
	<b>TOTAL (1)</b>	<b>0</b>
	<b>2. Extension of the area affected</b>	
ATM Unit(s)/Service Affected		
Extension		
	<b>TOTAL (2)</b>	<b>0</b>
	<b>3. Duration until contingency measures are in place or until the occurrences is terminated by itself, before the contingency measures can be effective</b>	
Duration of failure		
	<b>TOTAL (3)</b>	<b>0</b>
	<b>TOTAL SEVERITY :</b>	
	<b>SEVERITY = (1) + (2) + (3)</b>	<b>0</b>

## Annex C: RAT methodology – Criteria for Separation Minima Infringements

The severity part of the risk assessment methodology of the EUROCONTROL RAT follows the principle of evaluating several criteria and allocating a number of points to each criterion, depending on how severe each criterion is evaluated to be.

Each criterion has a limited number of options, each of which has an allocated mark. Certain criteria have an ATM Ground and an ATM Airborne component, therefore both can be counted. Other criteria are only relevant for ATM Ground or ATM Airborne.

The score for severity is then the sum of the scores of such individual criteria.

The overall severity of one occurrence is built up from the **risk of collision/proximity** (itself a combination of separation and rate of closure) and the degree of **controllability** over the incident. For ATM Specific Occurrences (i.e. technical incidents affecting the capability to provide safe ATM services) elements to be considered are the failure criticality, the coverage of the failure and the required time to restore the ATM function affected or to fail-safe to a degraded mode by introducing contingency measures.

As ATM has a ground and an airborne segment, both segments must be evaluated for their specific contributions (except for ATM Specific Occurrences, which are ATM Ground only). Thus, an ATM overall and an ATM Ground severity can be calculated.

In the Controllability section the ATM Airborne part is used to record the pilot execution and the effectiveness of the airborne safety nets.

The result for ATM Overall is represents the overall score for both ATM Ground and ATM Airborne for each criteria being scored. In essence, the severity is calculated as the sum of the scores totalled in each of the two main parts:

1. risk of collision – based on the geometry of the encounter;
2. controllability – based on the barrier model.

Each of the two main parts has further sub-parts, as follows:

1. Risk of collision
  - a. Separation – based solely on the minimum distance achieved between aircraft or aircraft and obstacles. The greatest value between the horizontal and vertical in percentage of the standard separation is to be considered.
  - b. Rate of closure – based on the vertical and horizontal speed, measured at the moment the separation is infringed. The greatest of the pre-defined intervals for each of the horizontal and vertical speeds are to be considered for the evaluation.

## Metrics for Safety Key Performance Indicators for the Performance Scheme

1. Risk of collision		ATM ground	ATM airborne	ATM overall	RF weight
separation	Minimum separation achieved	0	0	0 ÷ 10 ATM Ground <b>OR</b> ATM airborne	
	Separation + 75% minimum	1	1		
	Separation >50%, <=75% minimum	3	3		
	Separation >25%, <=50% minimum	7	7		
	Separation <=25% minimum	10	10		
rate of closure	Rate of closure NONE	0	0	0 ÷ 5 ATM Ground <b>OR</b> ATM airborne	
	Rate of closure LOW (<=85knots, <=1000ft/mn)	1	1		
	Rate of closure MEDIUM (>85 and <=205 knots, >1000 and <=2000 ft/mn)	2	2		
	Rate of closure HIGH (>205 and <=700 knots, >2000 and <=4000 ft/mn)	4	4		
	Rate of closure VERY HIGH (>700knots, >4000ft/mn)	5	5		

The risk of collision mark<sup>21</sup> is the sum of the marks resulting from the two components:

**Separation + Rate of Closure.**

Example:

- minimum separation achieved was 60% horizontally and 30% vertically;
- rate of closure at separation loss was 160kts and 3000ft/min;
- ATC was providing radar separation.
- Then:
  - i. ATM Gnd is scored 3 for separation (greatest of the two separations)
  - ii. ATM Gnd is scored 4 for rate of closure (greatest of the two possible marks);
  - iii. Total for Risk of Collision is 7.

**Controllability** is the second major sub-criterion of Severity and describes the “level of control” maintained over the situation (ATCOs and pilots supported by Safety Nets). Both total aviation and ATM ground segments have to be considered from the perspective of control over the situation. The purpose of this step is to balance (positively or negatively) the result of the proximity evaluation in the light of the amount of control that ATC exhibited.

<sup>21</sup> NB: Either ATM Ground or ATM Airborne is to be scored, **never both**. The ATM Airborne is to be used only in cases where ATC is not responsible for providing separation (i.e. certain classes of airspaces - e.g. close encounter between IFR and VFR flights in Class E airspace).

**Metrics for Safety Key Performance Indicators for the Performance Scheme**

This facilitates an evaluation of the amount of hazard or entropy. If the situation is controlled, even if separation is lost, it is nevertheless recovered by the ATM system and not by chance. For this step it is proposed to follow the typical defence barriers as they apply chronologically.

The first part evaluates whether and how ATC worked the conflict situation between the aircraft later involved in the actual incident. It is important to consider the global picture and not only purely the two aircraft between which separation was lost. In certain cases while trying to work an aircraft pair, ATC could generate an incident between another pair. All aircraft relevant to the incident under analysis must be considered.

**Conflict detection** refers to ATM ground detection, therefore ATM Overall will inherit the same score as ATM Ground. ATM Airborne is not scored here. There are three possible scenarios:

- 'Conflict DETECTED' includes cases where conflict is detected but ATC decided to accept the situation. It also includes detection made with the support of a predictive STCA (Short Term Conflict Alert) warning that gives sufficient time to execute a plan.
- 'Conflict detected LATE' should not be scored automatically whenever separation is lost; consideration should be taken with regard to the circumstances involved. This criterion should be scored if the conflict was detected late, but there was still time to form a plan and execute it. In units with predictive STCA, the conflict is detected due to the predictive STCA.
- 'Conflict NOT detected' should NOT be scored in cases such as level busts or other incidents where ATC cannot form a prior plan. Thus, conflict detection is not applicable and a zero should be scored to maintain the Reliability Factor tracked.

		ATM ground	ATM airborne	ATM overall	RF weight
<b>Detection</b>	Conflict detected	0		0 ÷ 5 ATM ground	
	Conflict detected late	3			
	Conflict NOT detected	5			

**Planning** refers to the ATM Ground plan and therefore ATM Overall will inherit the same score as ATM Ground. The performance, the timing and efficiency of that planning should be assessed. The plan refers to the first plan developed by ATC to solve the detected hazardous/conflict situation. This plan will be referred to in the subsequent Execution steps but not necessarily in the Recovery step.

- When the planning is either late or does not lead to a timely and effective resolution of the conflict then 'Plan INADEQUATE' should be scored.
- When 'Conflict NOT detected' is scored, then 'NO plan' should also be scored.
- Whenever Conflict detection is not applicable (such as Level bust cases) then Planning sub criterion is not applicable and a zero should be marked.

## Metrics for Safety Key Performance Indicators for the Performance Scheme

		ATM ground	ATM airborne	ATM overall	RF weight
Planning	Plan CORRECT	0		0 ÷ 5 ATM ground	
	Plan INADEQUATE	3			
	NO plan	5			

**Execution** refers in general to ATM Ground execution in accordance with the developed plan and therefore in case of no pilot deviation from the instructed plan, ATM Overall will inherit the same score as ATM Ground. Pilot execution will be scored as ATM Airborne. Execution refers to the execution of the first plan developed by ATC to solve the detected hazardous/conflict situation.

- When assessing the execution, the time and efficiency of that execution should be assessed.
- ATM Ground execution is INADEQUATE when it is not timely or not effective. It refers to the same plan developed in the 'Planning' criterion, prior to the system excursion of the safety envelope. It includes the cases when it is contrary to any prior good planning. The pilot execution is scored separately as ATM Airborne.
- When no conflict is detected, 'NO plan' and 'NO execution' apply. No execution also comprises cases when there is detection and a plan but this is not implemented at all.
- Whenever Conflict detection and Planning are not applicable such as deviation from ATC clearance (e.g. runway incursion due to pilot deviation from ATC clearance) then the Execution criterion for ATM Ground is also not applicable and it's scored as 0.

		ATM ground	ATM airborne	ATM overall	RF weight
Execution	Execution CORRECT	0	0	0 ÷ 15 ATM ground + ATM airborne	
	Execution INADEQUATE	3	5		
	NO Execution	5	10		

**STCA** (Short Term Conflict Alert or other similar ground safety net) should be scored when the ATCO failed to detect the conflict without the safety net's support and consequently failed to plan and execute a correct resolution (the conflict has been observed due to safety nets - useful safety nets warning). Cases of false/nuisance alerts should be disregarded.

- When the conflict is detected by the ATCO then a zero should be scored.
- STCA usage in the unit needs careful consideration when scoring this criterion. It needs to make a difference between predictive and current STCA – parameterisation is important. A large time warning in advance will bring warnings that will potentially be nuisances.
- 'No STCA warning' should be scored when the conflict was not detected or detected late by the ATM Ground and STCA should have been triggered according to its implemented logic, but it failed to function. Hence the ground safety net barrier did not work.

## Metrics for Safety Key Performance Indicators for the Performance Scheme

		ATM ground	ATM airborne	ATM overall	RF weight
STCA	Loss of separation detected because of STCA	0		0 ÷ 3	
	No detection (including by STCA)	3		ATM ground	

**Recovery** from the actual incident is the phase requiring immediate action to restore the safety margins (e.g. separation) or at least to confine the hazard. Recovery starts from the moment the safety margins have been breached (potentially due to an inadequate or missing initial plan to solve the hazardous situation). This sub-criterion applies to both ATM Ground and ATM Airborne. Therefore, ATM Overall will inherit the sum of the Ground and Airborne values.

Scoring 'Recovery INADEQUATE' indicates that the ATM reaction, after the actual incident is declared, had not improved the situation.

- When scoring 'NO recovery', consideration should be given as to whether a TCAS RA or pilot "see and avoid" action was triggered, as this could be the reason to not follow the ATC instructions. In this case, there should be no penalty on the ATM airborne part.
- When the aircraft are already diverging, then the Recovery should be scored as 'Not Applicable' and a zero should be given.
- From this step the plan is a new one and is different from the first plan established in the detection/planning phase. It is seeking the performance of bringing the system back within its safety envelope (such as re-establishment of the separation minima). Recovery might include, depending on type of occurrence (e.g. airspace in which it occurred and services to be provided), cases where traffic information or avoiding actions were issued by ATC.

		ATM ground	ATM airborne	ATM overall	RF weight
Recovery	Recovery CORRECT	0	0		
	Recovery INADEQUATE	5	6	0 ÷ 25	
	NO recovery or the ATM ground actions for recovery have worsened the situation or ATM airborne has worsened the situation	10	15	ATM ground + ATM airborne	

**Airborne Safety Nets** – The TCAS sub-criterion should be scored only for useful TCAS RAs (as per ICAO definitions). A similar logic applies for see-and-avoid environments where TCAS does not function.

- The 'No TCAS RA' option should be used in situations when the geometry of the encounter would require a TCAS RA (based on ICAO TCAS logic) and that did not occur.

**Metrics for Safety Key Performance Indicators for the Performance Scheme**

- 'TCAS triggered.....' should be scored as not applicable (i.e. a score of zero should be given) if adequate ATC instructions are issued before the pilot reaction due to TCAS RA.
- For cases where TCAS has saved the day, 'TCAS triggered....' will be scored. The score will be assigned to ATM Ground to reflect that the ground barrier has failed and because TCAS is considered to be an integrated component of ATM Airborne and ATM Overall.
- In cases of Runway events, lack of see and avoid should be scored in the case of low visibility and IMC conditions (or during night time), or if the ATM airborne barrier, see and avoid, is not functioning any more in low visibility.

		ATM ground	ATM airborne	ATM overall	RF weight
TCAS	TCAS triggered (useful RAs only to be considered) or see and avoid pilot decision (in the absence of TCAS)	10	0	0 or 10 ATM airborne	
	NO TCAS RA	0	10		

**Pilot execution of TCAS RA** (or application of see-and-avoid in cases where TCAS is not applicable) and recovery is a criterion to gather the complementary performance to ATM ground.

- 'Pilot(s) INSUFFICIENTLY followed RA' applies when pilot action is not reacting fully in accordance with the TCAS RA, but ATM ground has enough control over the situation.
- 'Pilot(s) INCORRECTLY followed RA (or, in the absence of RA, took other inadequate action)' is scored whenever the pilot actions were either missing or contradictory (e.g. did not follow the RA). A contradictory reaction or non-reaction to a TCAS RA should be considered as the worst possible case.

## Metrics for Safety Key Performance Indicators for the Performance Scheme

		ATM ground	ATM airborne	ATM overall	RF weight
<b>Pilot action</b>	Pilot(s) followed RA (or, in absence of RA, took other effective action, as a result of see and avoid decision)		0	0 ÷ 15 ATM airborne	
	Pilot(s) INSUFFICIENTLY followed RA		10		
	Pilot(s) INCORRECTLY followed RA (or, in the absence of RA, took other inadequate action)		15		

**The controllability mark is the sum of the marks resulting from its components:  
Detection + Planning + Execution + STCA + Recovery + TCAS RA + Pilot Action**

Example:

Conflict detected, planning inadequate, execution inadequate by ATC, correct by pilot, STCA not applicable, recovery correct by ATC and pilot, TCAS RA needed but not triggered, pilot response not applicable:

	Detection	Planning	Execution	STCA	Recovery	TCAS RA	Pilot Action	Total
Ground	Yes	Inadequate	Inadequate	N/A	Correct	N/A		6
	0	3	3	0	0	0		
Airborne			Correct		Correct	No	N/A	10
			0		0	10	0	

ATM Overall Controllability = ATM Ground Controllability + ATM Airborne controllability = 16

## FINAL SCORES

Once all criteria have been evaluated and scored accordingly, the final score for severity is:

**Severity = Risk of Collision + Controllability**

For ATM Ground and for ATM Overall respectively.

**Metrics for Safety Key Performance Indicators for the Performance Scheme**

Example: Severity ATM Ground = 7 + 6 = 13

Severity ATM Overall = 13 + 10 = 23

**NOTE:** Any criterion that cannot be scored due to lack of data or lack of clarity of the details in the investigation report must be left blank. Any criterion positively known to be not applicable to the particular situation under consideration should be scored as 0 (zero).

Finally, once the overall scores have been calculated as above, the equivalence with the severity for ATM Ground and Overall is as follows:

ATM Ground Value	Severity class
Between 0-9	E
Between 10-17	C
Between 18-30	B
Higher than 31	A

ATM Overall Value	Severity class
Between 0-9	E
Between 10-17	C
Between 18-30	B
Higher than 31	A

Example: Severity class ATM Ground for score 13 = C

Severity class ATM Overall for score 23 = B

Whenever there is not enough information, (Reliability Factor under 70%), the incident should be classified as class D. (Not determined)

### Reliability Factor

If a value is recorded for a specific criterion, the RF weight is added to the RF value as follows:

- A. ATM Ground - the Full weight is added to the RF
- B. ATM Overall
  - a. For the Separation, Rate of Closure, Detection, Ground safety nets, full weight added if the ATM ground value is recorded
  - b. For Execution, Recovery, TCAS half of the weight is added if the ATM ground value is recorded value and half of the weight if the ATM airborne value is recorded
  - c. For Pilot reaction, full weight added if the ATM airborne is recorded

**Annex D: Just Culture – Dismissed items**

**Summary description of non-policy related elements** for the draft metrics development on the measurement of the “JC” Safety KPI by the E3 TF.

In the development of draft metrics for the measurement of the “Just Culture” Safety KPI a number of elements were reviewed and discussed based on available documentation and on the outcome of a recent SAFREP TF “brainstorming” session on the subject.

(EU) No 691/2010 Art.2 **Definitions** (k):

“**Just culture**” means a culture in which front line operators or others are not punished for actions, omissions or decisions taken by them that are commensurate with their experience and training, but where gross negligence, wilful violations and destructive acts are not tolerated.

The following elements were reviewed and discussed by the group and after due consideration agreed to be dismissed from the initial list of proposed draft metrics:

- The group reached an overall agreement on the issue of safety reporting in general. It was recognised that safety reporting is for the purpose of improving safety; however it is not to be used as a performance indicator.
- To monitor the safety reporting trends on a continuous basis and, in addition, to assess possible changes in the reporting pattern as a result of accidents, serious incidents and other events, was abandoned for reasons of being considered as unworkable.
- With respect to ensuring confidentiality of reported safety information at EU level, more specifically the confidentiality of data in/from the ECCAIRS system, including the aspects related to the European Central Repository (ECR) has been achieved through EC regulation.
- With respect to training issues and JC symposiums, workshops and conferences for different entities such as CAA, ANSP, AIB, NSA, common training was considered as possibly useful, (note: Eurocontrol addresses “JC” in its courses at IANS/Luxemburg) however difficult to manage, measure and verify and therefore was abandoned.
- The element related to the ANSP’s needing to be confident on the subject of not being prosecuted for corporate liability issues and/or corporate killing, in order to ensure and allow its staff to report and be protected, was abandoned as it is unrealistic vis-à-vis the limitations of the aviation sector in relation to national penal law.
- The element of measuring the track record of personnel in relation to possible suspensions/revocation of licenses, re-training (e.g. resulting from occurrences investigation) or even sackings was abandoned. This for reasons of the assumed difficulties for its implementation, and the existing possibilities for having false records, potential cheating etc, which could easily result in misleading indications.
- With respect to a draft metric in relation to reporting data through mandatory or voluntary mechanisms the discussions concluded and agreed that e.g. a high ratio of voluntary over mandatory could indicate mistrust in the organisation, but could also be manipulated quite easily, therefore this draft metric was dismissed.
- For ANSPs to ensure the accessibility of data for safety assurance is an existing legal obligation under the EU regulatory framework and as such needs to be complied with.

***Metrics for Safety Key Performance Indicators for the Performance Scheme***

Therefore the mere fact of ensuring such accessibility is not necessarily an appropriate indicator for measuring Just Culture.