

RASG-PA/01-IP/03
09/10/08

GSI/7 - Consistent Use of Safety Management Systems (SMS)
• Review results from the Global Aviation Safety Roadmap (GASR) Workshop

(Presented by the Secretariat)

This working paper provides information regarding Global Aviation Safety Roadmap (GASR) GSI/7 - *Consistent Use of Safety Management Systems (SMS)* to achieve consistent use of safety management systems (SMS) by air navigation service providers and the gap analysis that will be conducted by the Global Aviation Safety Roadmap (GASR) Workshop in Costa Rica, using the methodologies of the Global Aviation Safety Roadmap best practices.

- Global Aviation Safety Plan (GASP)
- Global Aviation Safety Roadmap (GASR)
- Report of the Global Aviation Safety Roadmap Workshop (Bogota, Colombia, 19 to 23 May 2008)

This working paper is related to Strategic Objective A - Safety.

The Global Aviation Safety Roadmap (GASR) that was developed by the ISSG provided the foundation upon which the Global Aviation Safety Plan is based. From a practical point of view, the GASP can be seen as the ICAO strategy for States, regions and industry to address the focus areas identified in the GASR. The GASP also establishes a coordination mechanism to ensure that the GASR and the GASP are kept up-to-date in a coordinated effort.

Need for association

1.2 A proactive approach to aviation safety requires that all concerned stakeholders are involved. The very close relationship between the Global Aviation Safety Plan and the Global Aviation Safety Roadmap is an example of the stakeholder partnership that should permeate all safety initiatives. Although both the GASR and the GASP identify a primary stakeholder for each focus area, it needs to be emphasized that this grouping is not intended to be exclusive. The GASR and the GASP are built on the principle of partnership, and as such, it is essential that all relevant stakeholders are involved in the development and implementation of any activities aimed at improving focus area safety. This commitment is fundamental for success in improving safety.

1.3 Together with ICAO, the chief stakeholders in the civil aviation sector are States, airlines/operators, airports, air navigation service providers, aircraft and equipment manufacturers, maintenance and repair organizations, regional organizations, international organizations, and industry representatives.

2. Planning process

2.1 The objective of the planning process is to collaboratively develop an action plan that defines specific activities that should take place in order to improve safety.

2.2. Planning begins with an analysis of the current situation and then compares it to where the organization would like it to be. This “gap analysis” identifies specific steps that can be taken to reach the desired goal. The developers of the plan then decide what specific actions will be taken and in what order; in other words, generating a prioritized action list. From that list, an action plan is developed, which in addition to identifying the actions to be taken, determines who is responsible for them. The process is illustrated in the flow chart presented in **Appendix A** to this working paper.

3. Global Strategic Initiative # 7 -GSI/ 7 – Consistent Use of Safety Management Systems (SMS)

3.1 Global Strategic Initiative # 7 (GSI/7) of the GASP, also called Focus Area 7 in the GASR, is oriented towards high levels of safety performance using Safety Management Systems (SMS).

3.2 The GASR emphasizes that systematic management of the risks associated with flight operations, ground operations, air traffic management, aircraft engineering or maintenance activities is essential in achieving high levels of safety performance.

3.3 A Safety Management System (SMS) is a systematic approach to managing safety and includes the necessary organizational structure, responsibilities, accountability, policies and procedures to implement it. In order to maintain the safety of the whole aviation system, it is important to ensure consistency in the use of SMS across all sectors and disciplines of the aviation industry.

3.4 Guidance material for implementation of SMS in the different industry sectors is available from many sources. This material is consistent, but is tailored to the particular requirements of the different sectors.

3.5 The strategy of the GASP with respect to SMS is as follows:

- i.* Establish the SMS mandate across all sectors and disciplines of the industry.
- ii.* Develop a plan for incorporation of SMS into audit processes.
- iii.* Develop audit processes to assess operation of SMS function.
- iv.* Implement review of SMS during audits.
- v.* Define interface points between industry focus areas and develop a plan for SMS programme integration across all interfaces.

3.6 The first step of this strategy is aimed at the publication of standards to mandate SMS implementation and as a second step to the audit processes to verify its correct implementation.

3.7 One of the basic rules of any formal audit process is that it should be based on a standard through which effective implementation is demonstrated through the collection of objective evidence.

3.8 ICAO State Letter Ref. AN 12/51-07/74, dated 07 December 2007, contained a proposal for the amendment of Annex 1, Annex 6, Parts I and III, Annex 8, Annex 11, Annex 13 and Annex 14, Volume I, to harmonize and extend provisions relating to safety management. The proposal includes an appendix describing a framework for a service provider's SMS to be included in Annexes 1, 6, Parts I and III, 8, 11 and 14, Volume I.

3.9 The framework aims at achieving consensus regarding standardization of SMS, by providing a principled guide for the implementation of SMS by service providers, as well as to develop guidance on SMS regulation by ICAO and national SMS regulation by States. The framework was developed on the basis of analysis of best industry practices, and developments in States, and the feedback from representatives of States through more than 55 SMS training courses delivered between May 2006 and November 2007.

3.10 The proposal for amendment was recently reviewed and approved by ICAO Air Navigation Commission, applicable on November 2010.

3.11 On the other hand, States are developing standards to incorporate SMS requirements in air operators and maintenance organizations. These standards should be based on four components and elements teach in ICAO SMS training courses.

3.12 ICAO has provided an extensive programme on SMS. The current task is to ensure consistent implementation; however, it is necessary to define implementation standards to ensure consistency.

3.13 ICAO Bulletin: AN/12-EB/07/38 dated 24 December 2007, shown in **Appendix B** to this paper, informed that revision of Doc 9859 – *Safety Management Manual* will incorporate, among other things, all pertinent definition of frameworks for a service provider SMS and for State safety programmes, guidance for the development of State SMS regulations and the development of State safety programmes (SSPs), examples of gap analyses and system descriptions for the implementation of SMS and SSPs, and guidance on the phased development of an SMS implementation plan. The SMS phase implementation is proposed as a way of managing the workload associated with SMS implementation as a function related to the size of the organization and the complexity of operations.

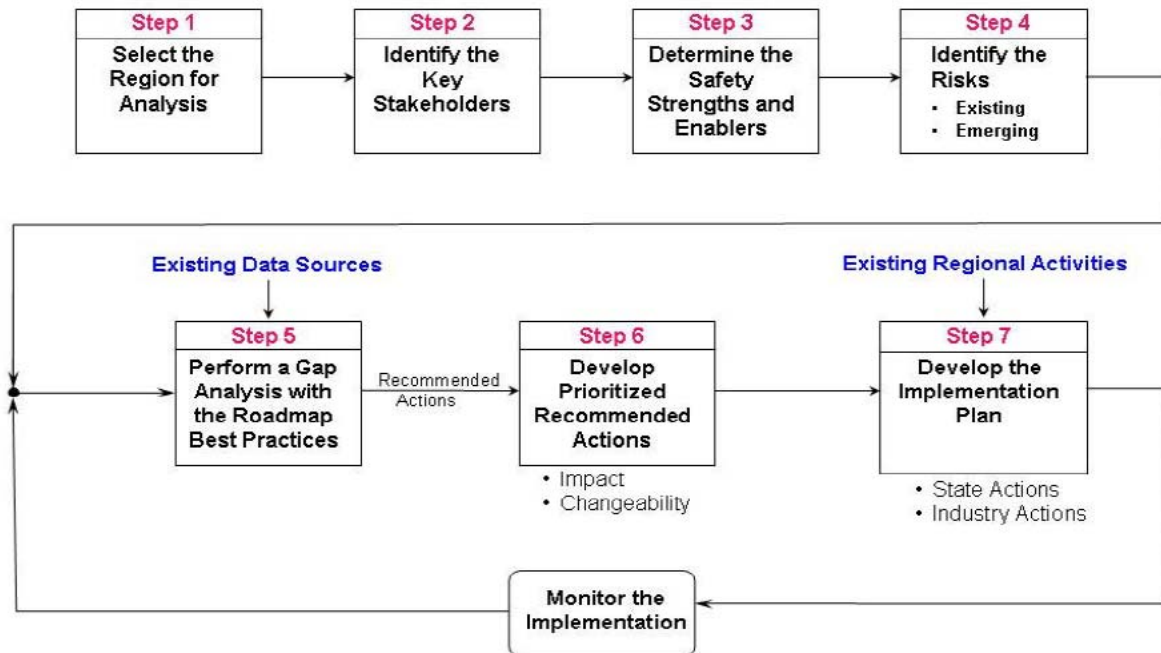
3.14 **Appendix C** to this working paper includes the complete text from the GASR on Focus Area 7 – *Inconsistent use of Safety Management Systems (SMS)*, including its objectives, best practices and maturity model.

4. Suggested action

4.1 The First Regional Aviation Safety Group – Pan America Meeting (RASP-PA/01) is encouraged to:

- a) take note of the information provided in this working paper;
- b) use the GASR planning process to determine the maturity level of GSI/7 in the Regions and the actions recommended to develop an action plan to reach the next corresponding maturity level.

APPENDIX A





International
Civil Aviation
Organization

Organisation
de l'aviation civile
internationale

Organización
de Aviación Civil
Internacional

Международная
организация
гражданской
авиации

منظمة الطيران
المدني الدولي

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航空组织

Tel.: +1 (514) 954-8219 ext. 6381

Ref.: AN 12/46-EB/07/38

24 December 2007

Subject: Implementation of Safety Management
Systems (SMS) in States

Action required: Note the information

Sir/Madam,

1. I have the honour to draw your attention to State letter AN 12/46-06/52, dated 30 June 2006, outlining the programme of “train-the-trainers” safety management systems (SMS) courses. The ICAO SMS course has been conceived to assist States in developing the internal resources required for SMS implementation, in accordance with the requirements in Annex 6 – *Operation of Aircraft*, Part I — *International Commercial Air Transport — Aeroplanes* and Part III — *International Operations — Helicopters*, Annex 11 — *Air Traffic Services*, and Annex 14 — *Aerodromes*, Volume I — *Aerodrome Design and Operations*.

2. I am pleased to inform you that, as of 1 December 2007, “train-the-trainers” courses have been delivered to 46 States who indicated interest in response to State letter AN 12/46-06/52. In addition, the programme of seven regional SMS training courses completed between May 2006 and September 2007, four regional SMS training courses delivered at the European and North Atlantic Office in Paris during 2007, and the series of four standardization SMS training courses held at ICAO Headquarters between July 2006 and August 2007, have allowed ICAO to acquire important feedback regarding best practices on SMS development and implementation.

3. The initial development of the ICAO SMS course was based on *Safety Management Manual (SMM)* (Doc 9859). In order to reflect the feedback on best practices discussed in paragraph 2 above, a revision of Doc 9859 is underway. It is expected that a draft version of Doc 9859 will be available to States by mid-2008. The document will be posted on the ICAO SMS website (www.icao.int/anb/safetymanagement), and will replace the existing version. I would like to take this opportunity to inform you that the latest version of the ICAO SMS course is permanently available to States on the ICAO SMS website.

4. The revision of Doc 9859 referred to in paragraph 3 above will incorporate all pertinent aspects of the feedback acquired by ICAO during SMS training delivery. These aspects include, inter alia, the definition of frameworks for a service provider SMS and for a State's safety programme, guidance for the development of a State's SMS regulation and for the development of a State's safety programme, examples of gap analyses and system descriptions for the implementation of SMS and the State's safety programme, and guidance on the development of an SMS implementation plan in phases. The phased SMS implementation is proposed as one way of managing the workload associated with SMS implementation, as a function of the size of the organization and the complexity of its operations.

5. I should like to draw your attention to the fact that while the amendment of Doc 9859 is under development, you may note inevitable eventual discrepancies between the existing version of Doc 9859 and the ICAO SMS course posted on the SMS website. In this respect, please note that the ICAO SMS course posted in the ICAO SMS website represents at all times the latest information regarding SMS development and implementation. Therefore, whenever discrepancies in information between Doc 9859 and the ICAO SMS course are observed, the ICAO SMS course posted in the SMS website should be considered as the primary source.

Accept, Sir/Madam, the assurances of my highest consideration.

Taïeb Chérif
Secretary General

2.3.2. Focus Area 7 – Inconsistent use of Safety Management Systems (SMS)

A systematic management of the risks associated with flight operations, ground operations, Air Traffic Management and Aircraft Engineering or maintenance activities is essential to achieve high levels of safety performance.

A Safety Management System (SMS) is a systematic approach to managing safety, and includes the necessary organizational structure, responsibilities, accountabilities, policies and procedures to implement it. In order to maintain the safety of the whole aviation system, it is important to ensure consistency in the use of SMS across all sectors and disciplines of the aviation industry.

Guidance material on the implementation of SMS in the different sectors of the industry is available from many sources. This material is consistent at the highest level but is tailored to the particular requirements of the different sectors.

2.3.2.1. *Objective 7a – ICAO SMS standards published. Confirm need for formal (mandated) SMS across all sectors and disciplines of the industry.*

This objective addresses the need for all sectors and disciplines across the industry to implement a formal safety management system. ICAO Annexes 6, 11 and 14 require that Aircraft Maintenance, Flight Operators, Air Navigation Service Providers (ANSPs) and Airports implement formal SMS. This requirement does not yet extend to all sectors and disciplines of the industry such as, AIS and Meteorology. In order to improve the whole system, it is important to ensure the use of SMS across all sectors and disciplines of the aviation industry.

Table 7a –Best Practices	Metrics
<p>BP 7a-1 – <u>Organizations within all sectors and disciplines of the aviation industry have their own formal SMS.</u></p> <ul style="list-style-type: none"> The SMS of the Organization includes the suppliers of goods and services that impact upon aviation safety 	<p>a. Existence of organization's SMS as per ICAO requirement.</p>

2.3.2.2. *Objective 7b – Develop a plan for incorporation of SMS into audit processes.*

Objective 7c – Develop audit processes to assess operation of SMS function.

Objective 7d – Implement review of SMS during audits.

Objectives 7b, 7c and 7d are addressed together.

In order to test the implementation and application of SMS, it is preferable to use available audit mechanisms that are internationally recognized and accepted wherever possible.

Proactive auditing programs such as the ICAO USOAP and the IATA IOSA processes test the implementation of ICAO Standards and Recommended Practices and industry safety best practices.

Table 7b –Best Practices	Metrics
<p>BP 7b-1 – <u>Audit processes drive consistency in use of SMS both within and across industry sectors and disciplines.</u></p> <p>a. The ICAO USOAP audits implementation and application of SMS to drive consistency in application amongst states.</p> <p>b. The IOSA audits implementation and application of SMS to drive consistency within and across industry sectors and regions.</p> <p>c. Other recognized audit programs audit implementation and application of SMS and drive consistency in their use.</p>	<p>a. Modified USOAP.</p> <p>b. IOSA Standards Manual 2nd Edition, Effective March 2007.</p> <p>c. Tailored audit processes in place.</p>

2.3.2.3. Objective 7e – Define interface points between industry focus areas and develop a plan for SMS program integration across all interfaces.

In practice, an SMS cannot operate in isolation. To be truly effective, the interface with other SMS must also be recognized and managed.

Table 7e –Best Practices	Metrics
<p>BP 7e-1 – <u>An organization’s SMS recognizes external interfaces and contains the necessary procedures to manage them effectively.</u></p> <ul style="list-style-type: none"> a. Processes should be established within the SMS to ensure that regular communications take place between the different sectors and disciplines to address safety issues across the interface. b. Procedures should be established within the SMS to ensure that risk assessment of change takes place in an integrated manner. 	<ul style="list-style-type: none"> a. Communication processes in place. b. Procedures in place.

2.3.2.4. Focus Area 7 Maturity Model – Table 7d contains the maturity model for this focus area.

Table 7d – Maturity Model for Focus Area 7 – Use of Safety Management Systems (SMS)

Maturity Level	Capability
Level 1 – Developing	<ul style="list-style-type: none"> • States – Current ICAO SMS requirements are not implemented and are not communicated to industry. • Industry – SMS not implemented.
Level 2 – Areas Identified for Improvement	<ul style="list-style-type: none"> • States – Current ICAO SMS requirements are communicated to industry sectors / disciplines. • Industry – SMS implemented in those sectors and disciplines for which it is currently mandated.
Level 3 – Evolving – Changes in work	<ul style="list-style-type: none"> • States – National legislation / regulations require all sectors and disciplines to implement an SMS. • Industry – SMS implementation programs are developed for sectors and disciplines not previously covered by SMS requirements.
Level 4 – Highly Evolved	<ul style="list-style-type: none"> • States – <ul style="list-style-type: none"> ○ ICAO USOAP audit process covers the topic of SMS. ○ SMS is regulated according to ICAO provisions and industry best practices. ○ States and Regulatory Authorities facilitate the sharing of SMS best practice as it evolves. • Industry – <ul style="list-style-type: none"> ○ Organizations within all sectors and disciplines of the aviation industry, including suppliers of goods and services that impact upon aviation safety, have their own formal SMS. ○ Both internal and independent Audits of the SMS take place. ○ All sectors and disciplines work together effectively in an integrated manner to manage risk across boundaries. ○ SMS best practice is shared across sectors as it evolves.