

# Annex 4



## APPENDIX xx to Doc 9859

# GUIDANCE ON THE DEVELOPMENT OF AN SMS GAP ANALYSIS FOR SERVICE PROVIDERS

### 1. Background

In accordance with the Standards and Recommended Practices (SARPs) contained in ICAO Annex 6 — Operation of Aircraft, Part I — International Commercial Air Transport — Aeroplanes, and Part III — International Operations — Helicopters, ICAO Annex 11 — Air Traffic Services, and ICAO Annex 14 — Aerodromes, Volume I — Aerodrome Design and Operations, service providers are responsible for the implementation of a Safety Management System (SMS). An SMS is a systematic approach to managing safety, including the necessary organisational structures, accountabilities, policies and procedures.

### 2. Gap analysis

The implementation of an SMS requires a service provider to conduct an analysis of its system to determine which components and elements of an SMS are currently in place and which components and elements must be added or modified to meet the implementation requirements. This analysis is known as gap analyses, and it involves comparing the SMS requirements against the existing resources in the service provider.

This guidance provides, in checklist format, information to assist in the evaluation of the components and elements that comprise the ICAO SMS framework and to identify the components and elements that will need to be developed. Once the gap analysis is complete and documented, it will form one basis of the SMS implementation plan.

The gap analysis form included in this guide can be used as a template to conduct a gap analysis. Each question is designed for a “yes” or “no” response. A “yes” answer indicates that the service provider already has component or element of the ICAO SMS framework in question incorporated into its organizational processes, whether it matches or exceeds the requirement. A “no” answer indicates that a gap exists between the component/element of the ICAO SMS framework and the organizational processes of the service provider.

**Note.** – Within the context of this guidance the term “service provider” refers to any organization providing aviation services. The term includes approved training organizations, aircraft operators, maintenance organizations, organizations responsible for type design and/or assembly of aircraft, air traffic services providers and certified aerodrome operators, as applicable.

### **3 ICAO SMS framework**

The ICAO SMS framework consists of four components and thirteen elements, and its implementation shall be commensurate with the size of the organization and the complexity of the services provided.

#### **1. Safety policy and objectives**

- 1.1 – Management commitment and responsibility
- 1.2 – Safety accountabilities of managers
- 1.3 – Appointment of key safety personnel
- 1.4 – SMS implementation plan
- 1.5 – Coordination of emergency response planning
- 1.6 – Documentation

#### **2. Safety risk management**

- 2.1 – Hazard identification process
- 2.2 – Risk assessment and mitigation process

#### **3. Safety assurance**

- 3.1 – Safety performance monitoring and measurement
- 3.2 – The management of change
- 3.3 – Continuous improvement of the SMS

#### **4. Safety promotion**

- 4.1 – Training and education
- 4.2 – Safety communication

### SMS gap analysis for service providers

ICAO reference	Aspects to be analyzed or question to be answered	Answer	Status of implementation
<b>Component 1 – SAFETY POLICIES AND OBJECTIVES</b>			
<b>Element 1.1 – Management commitment and responsibility</b>			
	Is a safety management system with defined components established, maintained and adhered to?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Is the safety management system appropriate to the size and complexity of the service provider?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Is there a safety policy in place?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Has the service provider based its safety management system on the safety policy?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Is the safety policy approved and promoted by the accountable executive?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Is the safety policy reviewed periodically?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Is there a formal process to develop a coherent set of safety objectives?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Are the safety objectives linked to the safety performance indicators, safety performance targets and safety requirements?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Are the safety objectives publicized and distributed?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Is there a policy in place that ensures effective safety reporting of safety deficiencies, hazards or occurrences including the conditions under which protection from disciplinary and /or administrative action applies?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Element 1.2 – Safety accountabilities of managers</b>			
	Has the service provider identified an accountable executive who shall have ultimate responsibility and accountability, on behalf of the service provider, for the implementation and maintenance of the SMS?	<input type="checkbox"/> Yes <input type="checkbox"/> No	

ICAO reference	Aspects to be analyzed or question to be answered	Answer	Status of implementation
	Does the accountable executive have responsibility for ensuring that the safety management system is properly implemented and performing to requirements in all areas of the service provider?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Does the accountable executive have full control of the financial resources required for the operations authorized to be conducted under the operations certificate?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Does the accountable executive have full control of the human resources required for the operations authorized to be conducted under the operations certificate?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Does the accountable executive have final authority over operations authorized to be conducted under the operations certificate?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Element 1.3 – Appointment of key safety personnel</b>			
	Has a qualified person been appointed to manage and oversee the day-to-day operation of the SMS?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Does the person overseeing the operation of the SMS fulfil the required job functions and responsibilities?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Are the safety authorities, responsibilities and accountabilities of personnel at all levels of the organization defined and documented?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Element 1.4 – SMS implementation plan</b>			
	Has the service provider developed an SMS implementation plan that ensures that the SMS will meet the organization's safety needs?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Has the SMS implementation plan been developed by a person or a planning group which comprises an appropriate experience base?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Has the person or planning group received enough resources (including time for meetings) for the development of the SMS implementation plan?	<input type="checkbox"/> Yes <input type="checkbox"/> No	

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	Has the SMS implementation plan been endorsed by the senior management of the service provider?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Is the SMS implementation plan regularly reviewed by the senior management of the service provider?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Does the SMS implementation plan propose an implementation in phases?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Does the SMS implementation plan explicitly address the coordination between the service provider SMS and the SMS of other organizations the service provider must interface with during the provision of services?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Element 1.5 – Coordination of emergency response planning</b>			
	Does the service provider have an emergency response/contingency plan appropriate to the size, nature and complexity of the organization?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Have the emergency response/contingency procedures been documented, implemented and assigned to a responsible manager?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Are the emergency response/contingency procedures periodically reviewed as part of the management review of the SMS, and after key personnel and organizational change?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Does the service provider have a process to distribute and communicate the content the emergency response/contingency procedures to all personnel?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Does the service provider conduct drills and exercises with all key personnel at specified intervals?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Does the service provider coordinate its emergency response/contingency procedures with the emergency/response contingency procedures of other organizations it must interface with during the provision of services?	<input type="checkbox"/> Yes <input type="checkbox"/> No	

ICAO reference	Aspects to be analyzed or question to be answered	Answer	Status of implementation
<b>Element 1.6 – Documentation</b>			
	Has the service provider developed and does it maintain SMS documentation, in paper or electronic form?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Is the SMS documentation developed in a manner that describes the SMS and the consolidated interrelationships between all the SMS components?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Has the service provider developed a safety management system manual (SMSM) as a key instrument for communicating the organization's approach to safety to the whole organization?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Does the SMSM document all aspects of the SMS, including the safety policy, objectives, procedures and individual safety accountabilities?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Does the SMSM clearly articulate the role of safety risk management as initial design activity and the role of safety assurance as continuous activity?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Are relevant portions of SMS related documentation incorporated into approved documentation, such as Company Operations Manual, Maintenance Control/Policy Manual, Airport Operations Manual, as applicable?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Does the service provider have a records system that ensures the generation and retention of all records necessary to document and support operational requirements?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Is the service provider records system in accordance with applicable regulatory requirements and industry best practices?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Does the records system provide the control processes necessary to ensure appropriate identification, legibility, storage, protection, archiving, retrieval, retention time, and disposition of records?	<input type="checkbox"/> Yes <input type="checkbox"/> No	

ICAO reference	Aspects to be analyzed or question to be answered	Answer	Status of implementation
<b>Component 2 –SAFETY RISK MANAGEMENT</b>			
<b>Element 2.1 – Hazard identification process</b>			
	Does the service provider have a formal safety data collection and processing system (SDCPS) of effectively collecting information about hazards in operations?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Does the service provider SDCPS include a combination of reactive, proactive and predictive methods of safety data collection?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Does the service provider have reactive processes that provides for the capture of information relevant to safety and risk management?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Has the service provider developed training relevant to reactive methods of safety data collection?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Has the service provider developed communication relevant to reactive methods of safety data collection?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Is reactive reporting simple, accessible and commensurate with the size of the service provider?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Are reactive reports reviewed at the appropriate level of management?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Is there a feedback process to notify contributors that their reports have been received and to share the results of the analysis?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Does the service provider have proactive processes that actively look for the identification of safety risks through the analysis of the organization's activities?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Is there training relevant to proactive methods of safety data collection?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Has the service provider developed communication relevant to proactive methods of safety data collection?	<input type="checkbox"/> Yes <input type="checkbox"/> No	

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	Is proactive reporting simple, accessible and commensurate with the size of the service provider?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Does the service provider have predictive processes that provide the capture of system performance as it happens in real-time normal operations?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Is there training relevant to predictive methods of safety data collection?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Has the service provider developed communication relevant to predictive methods of safety data collection?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Is the predictive safety data capture process simple, accessible and commensurate with the size of the service provider?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Element 2.2 – Risk assessment and mitigation process</b>			
	Does the service provider SMS documentation clearly articulate the relationship between hazards, consequences and risks?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Is there a structured process for the analysis of the risk associated to the consequences of identified hazards, expressed in terms of probability and severity of occurrences?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Are there criteria for assessing risks and establishing risk tolerability (i.e., the acceptable level of risk the organization is willing to accept)?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Does the service provider have risk mitigation strategies that include corrective/ preventive action plans to prevent recurrence of reported occurrences and deficiencies?	<input type="checkbox"/> Yes <input type="checkbox"/> No	



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	Are corrective and preventive actions generated in response to event analysis?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Component N° 3 –SAFETY ASSURANCE</b>			
<b>Element 3.1 – Safety performance monitoring and measurement</b>			
	Are regular and periodic planned reviews conducted regarding: Company safety performance? <input type="checkbox"/> Yes <input type="checkbox"/> No Internal audit reviews? <input type="checkbox"/> Yes <input type="checkbox"/> No Hazard identification and occurrence investigations? <input type="checkbox"/> Yes <input type="checkbox"/> No Hazard and occurrence analysis results? <input type="checkbox"/> Yes <input type="checkbox"/> No Internal feedback analysis/results? <input type="checkbox"/> Yes <input type="checkbox"/> No External feedback analysis/results? <input type="checkbox"/> Yes <input type="checkbox"/> No Status of corrective actions? <input type="checkbox"/> Yes <input type="checkbox"/> No Follow-up actions from previous management reviews? <input type="checkbox"/> Yes <input type="checkbox"/> No Changes that could affect safety? <input type="checkbox"/> Yes <input type="checkbox"/> No Recommendations for improvement? <input type="checkbox"/> Yes <input type="checkbox"/> No Sharing of best practices across the organization? <input type="checkbox"/> Yes <input type="checkbox"/> No		
	Is there a process to evaluate the effectiveness of corrective actions?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Are safety reports reviewed at the appropriate level of management?	<input type="checkbox"/> Yes <input type="checkbox"/> No	

ICAO reference	Aspects to be analyzed or question to be answered	Answer	Status of implementation
	Is there a feedback process to notify contributors that their reports have been received and to share the results of the analysis?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Is there a process in place to monitor and analyze trends?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Has the service provider implemented self-evaluation processes, such as regularly scheduled reviews, evaluations, surveys and audits?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Are corrective and preventive actions generated in response to hazard identification?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Are there procedures in place for the conduct of internal investigations?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Do measures exist that ensure all reported occurrences and deficiencies are investigated?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Is there a process to ensure that occurrences and deficiencies reported are analyzed to identify all associated hazards?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Are corrective and preventative actions generated in response to event investigation and risk analysis?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Does the service provider have a process for evaluating the effectiveness of the corrective/preventive measures that have been developed?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Does the service provider have a system to monitor the internal reporting process and the associated corrective actions?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Is there an audit function with the independence and authority required to carry out effective internal evaluations?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Does the audit system cover all functions, activities and organizations within the service provider?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Are there defined audit scope, criteria, frequency and methods?	<input type="checkbox"/> Yes <input type="checkbox"/> No	

ICAO reference	Aspects to be analyzed or question to be answered	Answer	Status of implementation
	Are there selection/training processes to ensure the objectivity and competence of auditors as well as the impartiality of the audit process?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Is there a procedure for reporting audit results and maintaining records?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Is there a procedure outlining requirements for timely corrective and preventive action in response to audit results?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Is there a procedure to record verification of action(s) taken and the reporting of verification results?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Does the service provider perform periodic Management reviews of safety critical functions and relevant safety issues that arise from the internal evaluations?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Element 3.2 – The management of change</b>			
	Has the service provider developed and does it maintain a formal process for the management of change?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Does the formal process for the management of change analyze changes to operations or key personnel for risks?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Does the service provider identify changes within the organization which may affect established processes and services?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Has the service provider arrangement to ensure maintenance of safety performance prior to implementing changes?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Has the service provider established a process to eliminate or modify safety risk controls that are no longer needed due to changes in the operational environment?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Element 3.3 – Continuous improvement of the SMS</b>			
	Does the organization have a process for the proactive evaluation of facilities, equipment, documentation and procedures through audits and surveys?	<input type="checkbox"/> Yes <input type="checkbox"/> No	

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	Does the organization have a process for the proactive evaluation of the individuals' performance, to verify the fulfilment of their safety responsibilities?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Does the organization have a reactive process to verify the effectiveness of the system for control and mitigation of risks?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Component N° 4 – SAFETY PROMOTION</b>			
<b>Element 4.1 – Training and education</b>			
	Is there a documented process to identify training requirements so that personnel are trained and competent to perform the SMS duties?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Is the safety training appropriate to the individual's involvement in the SMS	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Is the safety training incorporated into indoctrination training upon employment?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Is there emergency response/contingency training for affected personnel?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Is there a process that measures the effectiveness of training?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Element 4.2 – Safety communication</b>			
	Are there communication processes in place within the organization that permit the safety management system to function effectively?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Are communication processes (written, meetings, electronic, etc.) commensurate with the size and scope of the service provider?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Is information established and maintained in a suitable medium that provides direction regarding relevant SMS documents?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Is there a process for the dissemination of safety information throughout the organization and a means of monitoring the effectiveness of this process?	<input type="checkbox"/> Yes <input type="checkbox"/> No	