



CANSO STANDARD OF EXCELLENCE IN SAFETY MANAGEMENT SYSTEMS

2024 Edition

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CANSO STANDARD OF EXCELLENCE IN SAFETY MANAGEMENT SYSTEMS

Safety is the aviation industry's number one priority. Air traffic management (ATM) faces many challenges including increasing traffic demand; the implementation of new technology; new entrants to airspace such as remotely piloted aircraft systems; and increasing automation – and the ATM industry must address these while maintaining and improving safety.

The CANSO Safety Standing Committee (SSC) oversees CANSO's Safety Programme and aims to continually improve safety performance in ATM operations; further enhance safety management and culture among CANSO members; and provide global leadership on safety management issues. CANSO's Safety Programme helps air navigation service providers (ANSPs) improve safety by offering guidance on safety management systems, best practices and benchmarking.

➤ Find out more at canso.org/safety.

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CONTENTS

EXECUTIVE SUMMARY	4
1 CONTEXT	5
4 UTILITY AND BENEFITS	7
5 OUTLINE OF THE <i>CANSO SOE IN SMS</i>	8
6 SMS MATURITY PATHWAY	10
7 A PHASED APPROACH TO SMS IMPLEMENTATION	11
8 EVOLUTION OF THE STANDARD	12
11 ALIGNMENT MAPPING TO ICAO ANNEX 19 SECOND EDITION (2016): SAFETY MANAGEMENT	14
A ENABLER AND ELEMENTS: SAFETY OBJECTIVES AND MATURITY LEVEL DESCRIPTORS	19
1 Development of a Positive and Proactive Safety Culture	21
2 Safety Policy (ICAO Element 1.1)	24
3 Safety Accountabilities (ICAO Elements 1.2 and 1.3)	25
4 SMS Documentation (ICAO Element 1.5)	26
5 Safety Interfaces	27
6 Safety Risk Management (ICAO Elements 2 and 3.1.1)	29
7 Fatigue-related Risk Management	31
8 Safety Reporting, Investigation and Improvement (ICAO ELEMENT 1.1.1.C)	32
9 Coordination of Emergency Response Plan (ICAO Element 1.4)	34
10 Operational Safety Surveys and SMS Audits (ICAO Elements 3.2 and 3.3)	35
11 Management of Change (ICAO Element 3.2)	37
12 Training and Education (ICAO Element 4.1)	38
13 Safety Communication (ICAO Element 4.2)	40

EXECUTIVE SUMMARY

In 2009, the Civil Air Navigation Services Organisation (CANSO) published the first edition of the *CANSO Standard of Excellence in Safety Management Systems (SoE in SMS)* in collaboration with EUROCONTROL. The *SoE in SMS* drew on the experiences of CANSO members to develop a framework that would help air navigation service providers (ANSPs) continually improve their efforts to manage safety.

This version of the *SoE in SMS* has extensively revised following a detailed review between CANSO, EUROCONTROL and participating ANPS. Changes have been made to:

1. Align with the International Civil Aviation Organization's (ICAO's) Annex on Safety Management (Annex 19) 2nd Edition.
2. Address feedback received from ANSPs and other industry bodies.
3. Incorporate the latest developments in safety management thinking and practice.

These changes bring the *SoE in SMS* in line with international rulemaking and best practice.

The *SoE in SMS* details a pathway that ANSPs can follow to build an SMS that is compatible with (and even exceeds) current international regulatory requirements as laid out in ICAO's Annex 19. It also gives ANSPs the flexibility to build SMS that fit their size and operational complexity.

The *SoE in SMS* is measured annually by completion of the *SoE in SMS Measurement questionnaire*. The questionnaire is moderated by EUROCONTROL assessors and is strictly confidential in nature. Participation in the process allows ANSPs to benchmark themselves against a global baseline and to access information from other ANSPs, who are willing to share their knowledge, in order to improve their own SMS.

The *SoE in SMS* supports a clear message expressed in the *Global Aviation Safety Plan (GASP)* and the *ICAO Safety Management Manual*: achieving the highest level of SMS maturity is a long-term process that must proceed in a deliberate, step-by-step manner.

The *SoE in SMS* is built on an SMS model that consists of a system enabler (Safety Culture) and a framework of four components addressing 12 further elements. The structure of that model is presented below:



1 CONTEXT

- 1.1** ANSPs play a vital role in the aviation industry. That role requires that they minimise the risk of collision between aircraft and between aircraft and the ground, while providing efficient services. For all ANSPs – regardless of whether they are operated by a state or by commercial organisation – safety must come first when delivering air traffic management (ATM) services.
- 1.2** ANSP management must ensure that risks to operational service delivery are minimised. This requires a formal and proactive approach to identifying hazards, analysing risks and implementing appropriate control measures. This approach requires organisational structures, policies, practices and culture to be in place.
- 1.3** The need for a framework within which ANSPs can manage safety has been recognised at an international level and in a growing number of domestic regulations. ICAO Annex 19 is intended to provide general statements against which compliance can be tested; it does not provide a pathway that ANSPs can use to drive a culture of continual improvement.
- 1.4** The coming years will present many challenges for aviation in general and for ANSPs in particular. These challenges will include increased traffic demands, prevalence of remotely piloted aircraft, environmental issues and security considerations. ANSP management must address these challenges while maintaining (and, wherever possible, improving on) current safety levels. To accomplish this, ANSP management must continually work to improve the ways they identify risks and manage safety.
- 1.5** Although international harmonisation efforts are underway, ANSPs operate for the most part in isolation. In addition, they use different technologies from one another and often rely on secondary organisations to provide integral services such as communication links via land lines or satellite. This makes learning from each other more difficult and makes integrating safety management activities more complex yet all the more important.
- 1.6** Across the industry, ANSPs are at different stages of SMS development. Some have very mature SMS that are fully integrated into their operations; others are just starting to build formalised safety management practices and a culture that prioritises safety.
- 1.7** While guidance material covering the implementation of an SMS is available, ensuring compliance with existing or proposed regulations is often challenging. There are two main reasons for this: 1) guidance material and regulations may vary across ANSPs, and 2) lessons learned are not always shared among ANSPs.
- 1.8** Maturing an SMS can be challenging and resource intensive. Sharing, and where appropriate leveraging, best safety management practices already developed by other ANSPs supports ANSPs to continually improving their SMS despite these challenges.

2 STATUS OF THE *CANSO SoE IN SMS*

- 2.1** The *SoE in SMS* promoted by CANSO, as the industry body for ANSPs, does not supersede either domestic or international regulations on safety management.
- 2.2** The *SoE in SMS* is intended as a help for ANSPs to achieve the relevant ICAO Annex 19 standards and recommended practices. (See section 11 below). The *SoE in SMS* is intended to lead the industry in developing best practices in safety management and goes beyond the requirements of Annex 19.
- 2.3** The *SoE in SMS* draws on the experiences of CANSO members and aims to complement existing standards rather than mirror any particular standard.
- 2.4** This *SoE in SMS* provides a pathway for ANSPs to move beyond simply complying with regulations and instead focus on continuous improvement.
- 2.5** CANSO recommends – but does not require – that members use the *SoE in SMS* as guidance.
- 2.6** The *SoE in SMS* is a collaboration between CANSO, EUROCONTROL, and the participating ANSPs, who exchange lessons learned, best practices and the knowledge required to produce it.

3 OBJECTIVES

3.1 The purpose of this *SoE in SMS* is to:

- Encourage improvement within the industry
- Transfer learning across the industry
- Help members demonstrate alignment (though NOT compliance) with the SMS aspects of ICAO Annex 19 Second Edition (see section 11)
- Allow each member to build an SMS that fits the size and complexity of its operation
- Provide a path for continuous improvement beyond the requirements set by international and domestic regulators
- Reflect and share industry best practices
- Provide a means for ANSP management, and safety managers in particular, to directly and deliberately plan for safety at a corporate, group and project level, thereby ensuring that risks to operational service delivery are minimised
- It is important to note that the *SoE in SMS* is NOT compliance audit as the review team are not able to review documentation to test compliance. As such completion of the *SoE in SMS* maturity questionnaire cannot guarantee a successful audit.

3.2 The *SoE in SMS* complements and supports the intent of both ICAO Annex 19 and the *Global Aviation Safety Plan (GASP)*, which is to develop harmonised, consistent and coherent safety management processes that support the evolution of modern ATM. The *SoE in SMS* provides the means by which ANSPs can work toward this common objective.

4 UTILITY AND BENEFITS

- 4.1** The *SoE in SMS* is a planning tool. It emphasises the phased, step-by-step implementation of an SMS. It enables ANSP management, and safety managers in particular, to prioritise their safety efforts and to initially focus on the fundamental elements of their SMS (elements that deliver immediate safety benefits), while planning to implement the more sophisticated elements in the future.
- 4.2** Safety culture is the enabler; it integrates the various other SMS elements into a coherent system. The *SoE in SMS* provides a framework through which an organisation can improve its safety culture.
- 4.3** The *SoE in SMS* allows for better measurement and communication. It aims to enable ANSP management, and safety managers in particular, to measure and understand SMS maturity in their organisation. It also allows each SMS to be measured against an industry standard.
- 4.4** The *SoE in SMS* promotes safer and more effective processes across the Flight Information Regions. All ANSPs must interact with other service providers; consistent language and approaches make these interactions more effective.
- 4.5** ANSPs can use the *SoE in SMS* as a self-assessment tool or pre-audit checklist to ensure that all aspects of their SMS are developed.
- 4.6** The *SoE in SMS* aims to contribute to increased cost-effectiveness by enabling ANSPs to develop standardised training courses, safety promotion campaigns and mentoring programmes.
- 4.7** The *SoE in SMS* is an industry-led effort that is focused on continual performance improvement rather than regulatory compliance. Significant efforts have been made to ensure consistency with ICAO Annex 19.
- 4.8** The *SoE in SMS* is measured annually by completion of the *SoE in SMS Measurement questionnaire*. The questionnaire is moderated by EUROCONTROL assessors and is strictly confidential in nature. Participation in the process allows ANSPs to benchmark themselves against a global baseline and to access information from other ANSPs, who are willing to share their knowledge, in order to improve their own SMS.

5 OUTLINE OF THE CANSO SOE IN SMS

5.1 Maintenance of the SoE in SMS

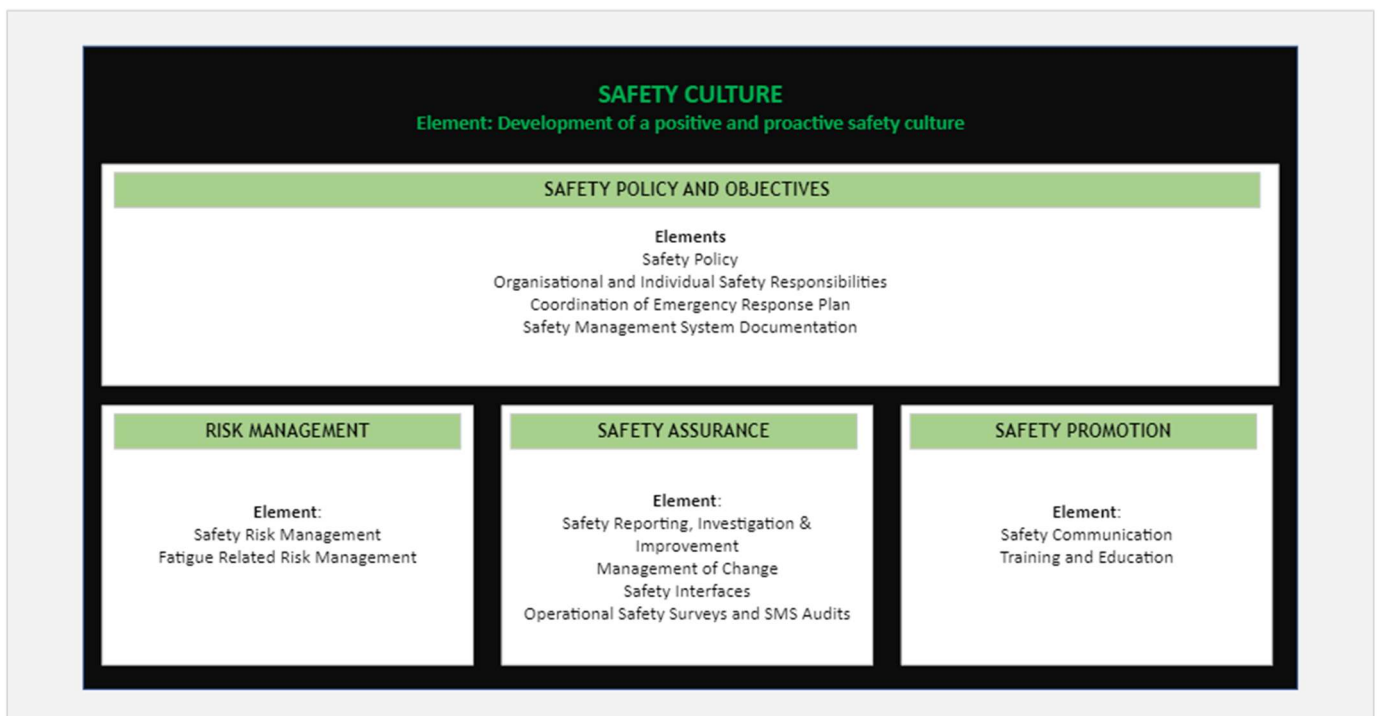
- 5.1.1 The *SoE in SMS* is updated from time to time to reflect evolving safety management thinking and practice.
- 5.1.2 As previously referenced, the *SoE in SMS* takes the ICAO Annex 19 framework but goes beyond those requirements aiming for resilience or excellence rather than basic compliance. Elements that are required by Annex 19 2nd Edition are highlighted in section 11 and Part A below.
- 5.1.3 The *SoE in SMS* consists of a system enabler (safety culture) and a framework of four components addressing 12 further elements (discussed further in below and detailed in Appendix A). The structure is presented below.
- 5.1.4 ANSPs need to integrate all elements of risk management to increase their resistance to unsafe acts and conditions.
- 5.1.5 Some ANSPs may wish to expand their SMS beyond the elements presented in the *SoE in SMS*.

5.2 Safety Culture

- 5.2.1 Effective safety management requires a genuine commitment to safety from everyone in the organisation. Culture has a strong impact on organisations.
- 5.2.2 The organisation must develop a positive and proactive safety culture in order for an SMS to be successful.
- 5.2.3 Safety culture is described in this document as a system enabler because it has the most significant influence on how SMS elements are integrated and evolve within the organisation.

5.3 Safety Policy and Objectives

- 5.3.1 The Safety Policy and Objectives component of the *SoE in SMS* consists of elements that address:
 - Safety Policy
 - Organisational and Individual Safety Responsibilities
 - Coordination of Emergency Response Plan
 - Safety Management System Documentation
- 5.3.2 Organisational and Individual Safety Responsibilities embrace two of ICAO's Annex 19 SMS elements: Safety Accountability and Responsibilities and the Appointment of Key Safety Personnel.



5.4 Risk Management

- 5.4.1 Each ANSP must develop and implement a safety risk management process which revolves around identifying hazards, assessing risks and implementing mitigations.
- 5.4.2 ANSPs must also develop and implement a Fatigue-related Risk Management system. In 2008, ICAO added FRMS to Annex 6 and provided guidance to Regulators on how to implement and oversee FRMS. [Skybrary](#) provides more detail and implementation guidance on Fatigue Risk Management Systems.

5.5 Safety Assurance

- 5.5.1 The *SoE in SMS* recommends that ANSPs use a variety of review and reporting mechanisms. These will help an ANSP understand how it is performing, whether all safety requirements are effective and how any deficiencies may be overcome. Safety Assurance elements include:

- Safety Reporting, Investigation & Improvement. *Note this sub-element is closely related to the ICAO Annex 19 Ed. 2 Safety Performance Monitoring and Measurement SARP. However, some of the safety performance monitoring requirements have been embedded in other study areas to reflect their transversal nature and the need to monitor performance of sub-sections of the SMS as well as operational safety performance.*
- The Management of Change
- Safety Interfaces
- Operational Safety Surveys and SMS Audits

5.6 Safety Promotion

- 5.6.1 Each ANSP must promote safety within its organisation. The *SoE in SMS* therefore embraces the need for training, education and safety communication.

6 SMS MATURITY PATHWAY

- 6.1 The *SoE in SMS* emphasises a phased, step-by-step approach to implementing an SMS (see below), from the most basic informal arrangements to a system setting global best practice.
- 6.2 The tables in Appendix A provide the details of the *SoE in SMS* at each level of maturity. Each of the elements is addressed with descriptions for the five SMS levels.
- 6.3 Each element, including the system enabler element (safety culture), has descriptors of requirements for each level of system maturity. The descriptors and their definitions are:

Level A – Informal: SMS processes and/or requirements have not been agreed to at the organisational level; they are either not routinely undertaken or depend on the individual assigned to the task.

Level B – Defined: SMS processes and/or requirements are defined but not yet fully implemented, documented or consistently applied.

Level C – Managed: SMS processes and / or requirements are formally documented and consistently applied. Risks are managed, there are processes in place to measure the effectiveness of the SMS for instance by using comparative analysis.

Level D – Resilient: Evidence is available to provide confidence that SMS processes and/or requirements are being applied appropriately and are delivering positive, efficient results. The ANSP is adopting best practices used within the industry, carrying out comparative analyses, and is assessing emerging risks.

Level E – Excellence: SMS processes and / or requirements set international best practice, focusing on innovation and improvement. The effectiveness of the SMS and safety improvement actions are measured and evaluated against defined improvement criteria.

The *SoE in SMS* provides some guidance on the process and requirements to achieve Level E. However, if an organisation wishes to claim Level E it is *also* required to develop and then submit a 'Best Practice' for each relevant study area for peer review by the Best Practice Review Group (BPRG). The BPRG will determine whether a 'Best Practice' has been achieved. Note that to achieve a Level E, Levels B to D must also be achieved in addition to being awarded an 'Best Practice'.

In some cases, the requirements build in a consecutive manner to deliver improved system effectiveness. In other cases, differing approaches are promoted for adoption as the system matures.

Note that it is both difficult and expensive for an ANSP to increase its maturity level and that not every ANSP would be expected to reach Levels D or E. Furthermore, robust evidence is required to justify claims for maturity Levels D and E.



7 A PHASED APPROACH TO SMS IMPLEMENTATION

7.1 The *SoE in SMS* provides a means for ANSP management, and safety managers in particular, to develop a phased plan for SMS implementation and improvement. This approach is based on the experience of CANSO members. It draws on information included in the *ICAO Safety Management Manual* (Doc 9859) and promoted in ICAO courses on SMS implementation.

7.2 The phased approach:

- Supports the clear message expressed in the ICAO GASP that achieving the highest level of SMS maturity is a long-term process that must proceed in a deliberate, step-by-step manner
- Acknowledges the need to effectively manage the workload associated with developing and implementing an SMS
- Recognises that some elements deliver more immediate safety benefits to organisations than others
- Recognises that it may be easier to implement some elements once a base of understanding has developed within an organisation
- Acknowledges that ANSPs will set their own goals with respect to advancing their SMS beyond Level C Managed

7.3 The phased approach provides a framework to plan and document the organisation's safety management goals and who is accountable for achieving those goals. The phased approach should proceed in a direct and deliberate manner. During the first phase, an organisation should develop an implementation plan containing clear deliverables and milestones.

7.4 During the second and third phases of implementation, the organisation should build on the embedded SMS framework and focus on improving its ability to measure and analyse its safety performance. This will allow the organisation to measure the gap between its current performance and its goal.

7.5 In the fourth phase, the organisation should implement the more sophisticated aspects of an SMS. These include measuring and critically evaluating Safety Performance Measurement, drawing on lessons from other organisations and furthering the organisation's commitment to continuous improvement.

7.6 The table below presents how a four-phase implementation plan may look.

7.7 When an organisation uses the phased implementation approach, there may be instances when that organisation is simultaneously at various levels in the maturity pathway. For example, the organisation may have reached Level E – Excellence, for an element such as Safety Policy, but may only have reached Level A – Informal, for an element such as Fatigue Risk Management. The organisation's overall level is only as high as its lowest level.

PHASE	GROUP	ELEMENT
1	Safety Policy and Objectives	Safety Policy Organisational and Individual Safety Responsibilities
2	Safety Assurance	Safety Reporting, Investigation and Improvement [sub-element 8.1]
	Safety Promotion	Training and Education
	Safety Culture	Development of a Positive and Proactive Safety Culture (Appendix A, sub-elements 1.1 and 1.3)
	Risk Management	Safety Risk Management
	Safety Promotion	Safety Communication
3	Safety Policy and Objectives	Safety Management System Documentation Coordination of Emergency Response Plan
	Safety Assurance	Management of Change Safety Reporting, Investigation and Improvement [sub-element 8.2] Safety Interfaces
4	Safety Assurance	Operational Safety Surveys and SMS Audits
	Safety Culture	Safety Culture (Appendix A, sub-element 1.2)
	Risk Management	Fatigue Risk Management

8 EVOLUTION OF THE STANDARD

8.1 Best Practices and Evolution Guides

As safety concepts evolve over time, ANSP best practices also continue to change and shift. Level E – Excellence, reflects an aspirational level which an ANSP is unlikely to achieve in every study area.

- In 2022, CANSO, working in collaboration with EUROCONTROL, agreed to change the descriptors in Level E to recognise that new best practices are always being developed. The Level E descriptions that were listed as global best practices in 2015 are in many cases now common practice across the industry.
- Each year CANSO and EUROCONTROL collect best practice submissions for each element and publish those best practices documented by ANSPs.
- There are instances where an ANSP has a process that fulfils the requirements of a study area question, but that in one or a small number of instances, the process has been misapplied. In these cases, the questionnaire moderation team will issue an observation on the ANSP before downgrading the ANSP to a lower level of maturity.

For example, Study Area 3 (Safety Accountabilities), question 3.3 (Managed) 'Accountability for safety in the organisation is understood by all relevant staff and contractors'. The key criteria for a positive answer to this statement is to have a robust process that is regularly reviewed.

A single or a small number of staff who are either new to the organisation or who have not understood the accountability for safety will be accepted, but an observation will be made and corrective action will be expected by the ANSP in the following year's assessment. If no improvements are made, the moderators may downgrade the ANSP to a lower level of maturity.

8.2 Transversal Study Areas

Three transversal study areas were introduced in the 2023 edition of the standard:

- Safety Performance Measurement [**SPM**],
- Human Performance [**HP**], and
- Continuous Improvement [**CI**].

A transversal study area is one where the subject matter has significant overlap with a number of other study areas and where it is more appropriate to include questions within the original study areas.

For example, a dedicated section on *Safety Performance Measurement* would ask questions on the Safety Performance Measurement of SMS documentation, Safety Risk Management, Safety Reporting, etc. thus introducing a degree of repetition within the standard.

Embedding Safety Performance Measurement questions within the existing study areas avoids that repetition. In addition, it provides the context for the Safety Performance Measurement questions within the existing study areas.

The Study Area questions in Section A are annotated with the letters **SPM**, **HP** and **CI** denoting which of the original questions are tagged to the transversal areas.

A score will be provided for each of the transversal areas in the individual and overall performance reports, but this will be minimum level achieved only [**A to E**]. Transversal areas have not been included in the pair-wise comparison weightings for the SoE in SMS questionnaire and will therefore not contribute to the overall percentage maturity score for ANSPs.

9 REFERENCES

- *ICAO Global Aviation Safety Plan (Doc 10004)*, International Civil Aviation Organization
- *ICAO Annex 19: Safety Management*, International Civil Aviation Organization, Second Edition, July 2016
- *ICAO Safety Management Manual (Doc 9859)*, International Civil Aviation Organization (4th Edition 2018)

10 TERMS AND DEFINITIONS

TERM	DEFINITION
CANSO Standard of Excellence in SMS	The <i>CANSO Standard of Excellence in SMS</i> is defined as a measure of quality that represents the ANS industry's view on the desired level of maturity and effectiveness which should be reached by all ANSPs in this area of air navigation services.
Risk Management	A systematic, explicit and comprehensive analytical approach for managing safety risk at all levels and throughout an operation or the lifecycle of a system in ATM.
Safety Audit	The testing of a process, product, people, organisation or system to ensure that it complies with the safety requirements in domestic and international regulations.
Just Culture	'Just culture' means a culture in which front-line operators or other persons are not punished for actions, omissions or decisions taken by them that are commensurate with their experience and training, but in which gross negligence, wilful violations and destructive acts are not tolerated.
Safety Culture	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.
Safety Management Function	A business unit within an organisation that is dedicated to overseeing safety and safety management.
Safety Management System	An organised approach to managing safety, including the necessary organisational structures, accountabilities, policies and procedures.
SMS Audit	The testing of processes, products and people to ensure that they comply with the standards and requirements documented in the organisation's SMS.
Operational Safety Surveys	A survey of potential safety issues identified and carried out by operational staff.

11 ALIGNMENT MAPPING TO ICAO ANNEX 19 SECOND EDITION (2016): SAFETY MANAGEMENT

Framework for Safety Management Systems (ICAO Annex 19 Appendix 2).

Note: the Tables in Part A below show where specific requirements of the *SoE in SMS* align to Annex 19 elements and components by placing the text in a highlighted box.

ICAO ANNEX 19 REF	COMPONENT / ELEMENT	REQUIREMENT	CANSO STANDARD OF EXCELLENCE IN SMS LINK
1. SAFETY POLICY AND OBJECTIVES			
1.1	Management Commitment		
1.1.1		The service provider shall define its safety policy in accordance with international and national requirements.	<ul style="list-style-type: none"> Safety Policy Objective SA2.1 C4
		The safety policy shall:	
		a. Reflect organisational commitment regarding safety, including the promotion of a positive safety culture	<ul style="list-style-type: none"> Safety Culture Objectives SA1.1 B1 and C4
		b. Include a clear statement of intent about the provision of necessary resources for the implementation of the safety policy	<ul style="list-style-type: none"> Safety Accountabilities Objective SA3.1 C5 SMS Documentation Objective SA4.1 B2a
		c. Include safety reporting procedures	<ul style="list-style-type: none"> Safety Reporting, Investigation Improvement Objective SA8.1 C2
		d. Clearly indicate which types of behaviours are unacceptable related to the service provider's aviation activities and include the circumstances under which disciplinary action would not apply	<ul style="list-style-type: none"> Safety Culture Objective SA1.3 C3
		e. Be signed by the accountable executive of the organisation	<ul style="list-style-type: none"> Safety Accountabilities Objective SA3.1 C2
		f. Be communicated, with visible endorsement, throughout the organisation	<ul style="list-style-type: none"> Safety Policy Objectives SA2.1 C1 and C3
		g. Be periodically reviewed to ensure it remains relevant and appropriate to the service provider	<ul style="list-style-type: none"> Safety Policy Objective SA2.1 C2

ICAO ANNEX 19 REF	COMPONENT / ELEMENT	REQUIREMENT	CANSO STANDARD OF EXCELLENCE IN SMS LINK
1.1.2		<p>Taking due account of its safety policy, the service provider shall define safety objectives.</p> <p>The safety objectives shall:</p> <ul style="list-style-type: none"> a. Form the basis for safety performance monitoring and measurement as required by 3.1.2 b. Reflect the service provider's commitment to maintain or continuously improve the overall effectiveness of the SMS c. Be communicated throughout the organisation d. Be periodically reviewed to ensure they remain relevant and appropriate to the service provider 	<ul style="list-style-type: none"> • Safety Policy Objective SA2.1 B1 • SMS documentation Objective SA4.1 B2 • Safety Reporting, Investigation Improvement Objective SA8.2 C2 • SMS Documentation Objectives SA4.1 C6 and C7 • SMS Documentation Objectives SA4.1 C4 • SMS Documentation Objective SA4.1 C7
1.2	Safety accountability and responsibilities	<p>The service provider shall:</p> <ul style="list-style-type: none"> a. Identify the accountable executive who, irrespective of other functions, is accountable on behalf of the organisation for the implementation and maintenance of an effective SMS b. Clearly define lines of safety accountability throughout the organisation, including direct accountability for safety on the part of senior management c. Identify accountabilities for all members of management, irrespective of other functions, as well as of employees, with respect to the safety performance of the organisation d. Document and communicate safety accountability, responsibilities and authorities through the organisation e. Define the levels of management with authority to make decisions regarding safety risk tolerability 	<ul style="list-style-type: none"> • Safety Accountabilities Objectives SA3.1 C2 • Safety Accountabilities Objectives SA3.1 C1 and C3 • Safety Accountabilities Objective SA3.1 C1 • Safety Accountabilities Objectives SA3.1 C1 • Safety Risk Management Objectives SA6.2 C6

ICAO ANNEX 19 REF	COMPONENT / ELEMENT	REQUIREMENT	CANSO STANDARD OF EXCELLENCE IN SMS LINK
1.3	Appointment of Key Safety Personnel	<p>The service provider shall appoint a safety manager who is responsible for the implementation and maintenance of the SMS</p> <p><i>Note.— Depending on the size of the service provider and the complexity of its aviation products or services, the responsibilities for the implementation and maintenance of the SMS may be assigned to one or more persons, fulfilling the role of safety manager, as their sole function or combined with other duties, provided these do not result in any conflicts of interest.</i></p>	<ul style="list-style-type: none"> • Safety Accountabilities Objective SA3.1 C5
1.4	Coordination of Emergency Response Planning	<p>The service provider required to establish and maintain an emergency response plan for accidents and incidents in aircraft operations and other aviation emergencies shall ensure that the emergency response plan is properly coordinated with the emergency response plans of those organisations it must interface with during the provision of its products or services</p>	<ul style="list-style-type: none"> • Coordination of Emergency Response Plan Objectives SA9.1 C1 and SA9.1 C5-
1.5	SMS Documentation	<p>1.5.1 The service provider shall develop an SMS manual that describes its:</p> <ul style="list-style-type: none"> a. Safety policy and objectives b. SMS requirements c. SMS processes and procedures d. Accountability, responsibilities and authorities for SMS processes and procedures <p>1.5.2 The service provider shall develop and maintain SMS operational records as part of its SMS documentation</p> <p><i>Note.— Depending on the size of the service provider and the complexity of its aviation products or services, the SMS manual and SMS operational records may be in the form of stand-alone documents or may be integrated with other organizational documents (or documentation) maintained by the service provider.</i></p>	<ul style="list-style-type: none"> • SMS Documentation Objectives SA4.1 B2 and C1 • Safety Reporting, Investigation Improvement Objective SA8.1 C2

ICAO ANNEX 19 REF	COMPONENT / ELEMENT	REQUIREMENT	CANSO STANDARD OF EXCELLENCE IN SMS LINK
2. SAFETY RISK MANAGEMENT			
2.1	Hazard Identification	<p>2.1.1 The service provider shall develop and maintain a process to identify hazards associated with its aviation products or services</p>	<ul style="list-style-type: none"> • Safety Risk Management Objective SA6.1 C1
		<p>2.1.2 Hazard identification shall be based on a combination of reactive and proactive methods</p>	<ul style="list-style-type: none"> • Safety Risk Management Objective SA6.1 C2
2.2	Safety Risk Assessment and Mitigation	<p>The service provider shall develop and maintain a process that ensures analysis, assessment and control of the safety risks associated with identified hazards</p> <p><i>Note.— The process may include predictive methods of safety data analysis.</i></p>	<ul style="list-style-type: none"> • Safety Risk Management Objectives SA6.2 C1 and C3
3. SAFETY ASSURANCE			
3.1	Safety Performance Monitoring and Measurement	<p>3.1.1 The service provider shall develop and maintain the means to verify the safety performance of the organisation and to validate the effectiveness of safety risk controls</p> <p><i>Note.— An internal audit process is one means to monitor compliance with safety regulations, the foundation upon which SMS is built, and assess the effectiveness of these safety risk controls and the SMS. Guidance on the scope of the internal audit process is contained in the Safety Management Manual (SMM) (Doc 9859).</i></p>	<ul style="list-style-type: none"> • Safety Risk Management Objective SA6.2 C2 • Safety Reporting, Investigation Improvement Objective SA8.1 C1
		<p>3.1.2 The service provider's safety performance shall be verified in reference to the safety performance indicators and safety performance targets of the SMS in support of the organisation's safety objectives</p>	<ul style="list-style-type: none"> • Safety Reporting, Investigation Improvement Objective SA8.2 C2
3.2	The Management of Change	<p>The service provider shall develop and maintain a process to identify changes which may affect the level of safety risk associated with its aviation products or services and to identify and manage the safety risks that may arise from those changes</p>	<ul style="list-style-type: none"> • Management of Change Objectives SA11.1 C1 and C2
3.3	Continuous Improvement of the SMS	<p>The service provider shall monitor and assess its SMS processes to maintain or continuously improve the overall effectiveness of the SMS</p>	<ul style="list-style-type: none"> • SMS Documentation Objectives SA4.1 C3 and C5 • Safety Surveys and SMS Audits Objectives SA10.1 C1 and SA10.1 C3

ICAO ANNEX 19 REF	COMPONENT / ELEMENT	REQUIREMENT	CANSO STANDARD OF EXCELLENCE IN SMS LINK
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4. SAFETY PROMOTION

4.1	Training and Education	<p>4.1.1 The service provider shall develop and maintain a safety training programme that ensures that personnel are trained and competent to perform their SMS duties</p>	<ul style="list-style-type: none"> • Training and Education Objective SA12.1 C2
		<p>4.1.2 The scope of the safety training programme shall be appropriate to each individual's involvement in the SMS</p>	<ul style="list-style-type: none"> • Safety Culture Objective SA1.1 C6 • Training and Education Objectives SA12.1 C2 and C5
4.2	Safety Communication	<p>The service provider shall develop and maintain a formal means for safety communication that:</p>	<ul style="list-style-type: none"> • Safety Communication Objective SA13.1
		<p>a. Ensures personnel are aware of the SMS to a degree commensurate with their positions [SA13.1 C3]</p>	
		<p>b. Conveys safety-critical information [SA13.1 C4]</p>	
		<p>c. Explains why particular actions are taken to improve safety [SA13.1 C2]</p>	
		<p>d. Explains why safety procedures are introduced or changed [SA13.1 C3]</p>	

A ENABLER AND ELEMENTS: SAFETY OBJECTIVES AND MATURITY LEVEL DESCRIPTORS

Enabler and Elements: Safety Objectives and Maturity Level Descriptors

Notes in relation to ICAO Annex 19:

- The alignment of CANSO SMS Elements to the SMS elements in ICAO Annex 19 (Edition 2) is highlighted in the body of the Appendix with a callout box.
- The CANSO Standard of Excellence goes beyond the coverage required by Annex 19, as a number of the CANSO elements do not directly reference Annex 19.

OBJECTIVE	INFORMAL ARRANGEMENTS	DEFINED	MANAGED	RESILIENT	EXCELLENCE
<p>General SMS principles applicable to each study area</p>	<p>Safety is done in an ad-hoc manner.</p>	<p>An implementation plan exists covering all SMS elements.</p> <p>SMS components are defined but are not yet effective or fully implemented or documented.</p> <p>There is a plan in place to capture information about safety performance.</p>	<p>SMS processes and/or requirements are formally documented and consistently applied.</p> <p>Personnel are trained and competent to perform safety-related (SMS-type) duties.</p> <p>The organisation is collecting safety data under a controlled process and is responding to safety issues.</p> <p>The organisation is measuring its safety performance.</p> <p>Key safety risks are identified and objectives for risk controls and mitigations have been set.</p> <p>The organisation is looking at emerging risks (disruptive technologies, drones, climate change, urban mobility).</p> <p>The SMS and each Study Area is measured and monitored to ensure it is and effective.</p> <p>Internal comparative analysis is carried out.</p>	<p>The SMS is measured and monitored to ensure it is efficient.</p> <p>External comparative analysis is carried out for safety performance, including safety management practices.</p> <p>The organisation is systematically adopting industry best practices.</p>	<p>The focus is on achieving SMS performance driving safety improvements above industry standards.</p> <p>The organisation creates industry best practices and/or is a leader in certain Study Areas.</p> <p>The organisations SMS and safety performance is peer-reviewed.</p>

OBJECTIVE	INFORMAL ARRANGEMENTS	DEFINED	MANAGED	RESILIENT	EXCELLENCE
<p>Guidance for General SMS principles applicable to each study area</p>	<p>ANSPs must have an SMS. With this comes certain obligations. Annex 19 lays out some of these obligations. National regulators may have other obligations.</p>	<p>All SMS elements may not yet have been implemented in full.</p> <p>The plan must contain all elements, although not all planning may be ready, however implementation dates should be present - it has to be more than a simple sheet of paper.</p>	<p>ANSPs have safety performance indicators and objectives in place, which are further supported by trend analysis.</p> <p>ANSPs have processes in place to manage safety within the organisation.</p> <p>Competence staff are supported by proven procedures.</p> <p>Internal comparative analysis is carried out.</p>	<p>The SMS is resilient to changes within the organisation and the operating environment.</p> <p>The SMS is integrated into the organisation's business plan and there is a plan for investment in safety assurance (e.g., SMS).</p> <p>The organisation must be systematically investing in safety improvement activities.</p> <p>There is a performance framework, going beyond simple analysis of occurrence data.</p> <p>External comparative analysis is carried out.</p>	<p>Regular, systematic and interactive safety performance reviews with and external and independent outside perspective are carried out (for instance, recognised, reputable experts, peer reviews e.g., safety stack).</p> <p>There is a process for continuous improvement of the SMS – for instance using an ‘SMS buddy.’</p> <p>Leading-edge performance measurement, determining business decisions, investment checked for safety.</p>

OBJECTIVE	INFORMAL ARRANGEMENTS	DEFINED	MANAGED	RESILIENT	EXCELLENCE
<p>1.1</p> <p>An intelligent and effective organisational culture (is one that is responsive to the functional differences in an organisation.</p> <p>[Differing functions and roles in an organisation have different views of risk and different views about safety].</p>	<p>Employees and managers believe that safety goals will be achieved by complying solely with rules and regulations.</p> <p>People, especially front-line staff (i.e., operational staff who have a direct impact on safety) are considered to be the principal cause of accidents and incidents.</p> <p>Sanctions are applied by management when non-compliances are found.</p> <p>The organisational view is that only frontline staff are concerned with safety.</p>	<p>The organisation is developing a safety culture plan, which includes an assessment programme.</p> <p>The organisation's safety culture plan applies the concept of safety culture in both operational and support functions (i.e., throughout the entire organisation). Annex 19 1.1.1.a</p>	<p>Frontline staff are involved in safety activities such as safety risk management, investigations, secondment to safety, appointed as safety officers in units.</p> <p>Management and operational staff engage to discuss operational risks and promote a positive safety culture. [CI]</p> <p>The organisation's board level (Board of Directors / Supervisory Board or equivalent) is aware of the top operational risks and top organisational risks, "hotspots", key safety initiatives, and safety culture results and actions.</p> <p>Management's approach to safety demonstrates a commitment to promoting a positive safety culture. Annex 19 1.1.1.</p> <p>The organisation has adopted human performance-related good practices (e.g., Human Factors, CISM, FRMS, TRM). [HP]</p> <p>The organisation formally trains all levels of management on safety, safety culture and just culture. Annex 19 4.1.2.</p>	<p>The organisation's Safety Management System (SMS) has processes that encourage staff to proactively challenge procedures, practices and people to improve safety performance. [CI]</p> <p>The organisation's Head of Safety brings forward potential advancements in safety based on learnings from conferences, partnerships, research, etc.</p> <p>Recognising that safety is the responsibility of the organisation as a whole, the organisation includes the potential contribution to safety by non-operational staff in its safety planning (as appropriate).</p>	<p>The organisation has an effective Safety Champion.</p> <p>The organisation engages in safety discussions with associated airports AND other non-aviation organisations. [CI]</p> <p>The organisation has set best practices for safety management for this objective.</p>

OBJECTIVE	INFORMAL ARRANGEMENTS	DEFINED	MANAGED	RESILIENT	EXCELLENCE
<p>1.2</p> <p>Regular assessment of safety culture and an improvement programme.</p>	<p>The organisation does not see the need to have a safety culture assessment mechanism in place.</p> <p>It is believed that no improvement programme is necessary as there is no belief that safety culture makes a contribution to safety.</p>	<p>The organisation is developing a process for the assessment of its safety culture.</p>	<p>The safety culture assessment has the commitment and endorsement from the executive / management group.</p> <p>The organisation undertakes periodic assessments of safety culture (at least every five years). [SPM]</p> <p>The organisation develops plans to address gaps and deficiencies identified during the safety culture assessment. [CI]</p> <p>The results of the safety culture assessments are communicated throughout the organisation.</p> <p>Process[es] are in place to monitor and measure whether gaps and deficiencies in safety culture are addressed. [SPM & CI]</p>	<p>The safety culture assessments include all areas of the organisation (including all non-operational areas).</p> <p>The organisation tailors its safety culture assessment for subcultures (such as ATC, Engineering).</p> <p>The organisation includes staff in safety culture working groups with representatives from each unit and key departments including Safety, Engineering, Operations etc</p> <p>The organisation commissions an external independent review and assessment of its safety culture at least every five years.</p>	<p>The organisation shares its safety culture measurement process and results with other ANSPs. [CI]</p> <p>The organisation has set best practices for safety management for this objective.</p>

OBJECTIVE	INFORMAL ARRANGEMENTS	DEFINED	MANAGED	RESILIENT	EXCELLENCE
<p>1.3</p> <p>A just and open climate which supports open reporting and investigation of occurrences as well as giving confidence for staff to do their job effectively without fear of reprisals.</p> <p>NB: A thorough reporting and investigation process must begin with notification, data gathering, reconstruction, analysis, safety recommendation and implementation of remedial actions, resulting in final reporting, exchange of lessons learned and effective monitoring.</p>	<p>Management does not see the need for any activity or dialogue with the staff in this area.</p> <p>Individuals see low value in reporting occurrences, because the risk of consequences is high (blaming culture). Most events go unreported.</p> <p>There are no formal policies in place to protect staff reporting, or involved in, occurrences from regulatory or judicial action.</p>	<p>The need for a Just Culture Policy is recognised by management.</p> <p>The organisation is developing policies to protect and support reporters.</p> <p><i>Note, policies to protect reporters exist both with in Regulation (EU) 376/2014, and Annex 19 Appendix III. The latter states:</i></p> <p><i>2.1 States shall ensure that safety data or safety information is not used for:</i></p> <p><i>a) disciplinary, civil, administrative and criminal proceedings against employees, operational personnel or organizations;</i></p> <p><i>b) disclosure to the public; or</i></p> <p><i>c) any purposes other than maintaining or improving safety.</i></p>	<p>The organisation has a Just Culture Policy that is formally endorsed by top management and staff representatives.</p> <p>Initial and continuation training of Just Culture principles (including what is meant by 'acceptable' and 'unacceptable' behaviour) is systematically provided across the organisation.</p> <p>The organisation has a fully accepted process to arbitrate decisions around 'acceptable' and 'unacceptable' behaviour. Annex 19 1.1.1.d [HP]</p> <p>Within legal limits the organisation's safety data and individual details are sufficiently protected from external access and release.</p> <p>The acceptance of Just Culture by staff is measured on a regular basis. [SPM]</p> <p>Lessons from within the organisation are used to enhance its approach to Just Culture. [CI]</p> <p>The application of Just Culture is unaffected by changes in the organisation.</p>	<p>Lessons from other ANSPs are used to enhance the organisation's approach to Just Culture. [CI]</p> <p>The organisation has made formal preparations to engage with the state prosecution and law enforcement entities, in case the need arises.</p> <p>The organisation is using comparative analysis or external benchmarking for Just Culture measurement. [SPM]</p> <p>The organisation has a regular, open Just Culture forum for staff and management discussion. [CI]</p>	<p>Lessons from other industry sectors are used to enhance your organisation's approach to Just Culture. [CI]</p> <p>The organisation has set best practices for safety management for this objective.</p>

2 SAFETY POLICY (ICAO ELEMENT 1.1)

ICAO COMPONENT 1: SAFETY POLICY AND OBJECTIVES

OBJECTIVE	INFORMAL ARRANGEMENTS	DEFINED	MANAGED	RESILIENT	EXCELLENCE
<p>2.1</p> <p>The safety policy of the organisation presents the organisation's commitment to safety and its resourcing. The priority of safety within the organisation is also articulated.</p> <p>The safety policy addresses key attributes of the organisation's approach to safety. These attributes will most likely include safety culture and just culture, visible endorsement, communication and safety reporting.</p>	<p>The need for a safety policy has been recognised but one does not exist.</p> <p>The organisation is considering which key attributes (e.g., culture (safety and just), visible endorsement, communication, safety reporting) of its approach to safety should be included in its safety policy.</p>	<p>The way in which the organisation manages safety is reflected in its developing safety policy or related procedures. Annex 19 1.1.2. [CI]</p>	<p>The organisation's safety policy meets all regional and international safety standards. Annex 19 1.1.1.</p> <p>The safety policy has been proactively communicated to staff throughout the organisation and formally published (e.g., on the organisation's intranet). Annex 19 1.1.1.f</p> <p>If changes are made to the organisation's safety policy, the organisation has a process to ensure that the SMS is updated to meet the amended requirements of the policy.</p> <p>Updates to the safety policy are communicated throughout the organisation together with the reason why it has been updated. Annex 19 1.1.1.f & g</p>	<p>The organisation compares its safety policy to those of other ANSPs. [CI]</p> <p>The organisation actively contributes to regional and / or international dialogue to improve safety standards.</p> <p>The organisation includes safety management and safety improvement activities in the annual business planning process. [CI]</p> <p>The organisations safety policy encourages an integrated and collaborative approach to safety improvement, one that includes input from all areas of the organisation. [CI]</p>	<p>The organisation's safety policy has been published externally.</p> <p>The organisation has set best practices for safety management for this objective.</p>

OBJECTIVE	INFORMAL ARRANGEMENTS	DEFINED	MANAGED	RESILIENT	EXCELLENCE
<p>3.1</p> <p>An approved, clearly documented, and recognised system for the management of safety. Management structure, responsibilities, accountabilities and authorisations are clearly defined and documented.</p> <p>NOTE: Line management is usually responsible for implementing procedures or practices which are required by the SMS. Specific responsibility for developing and overseeing the SMS and the organisation's safety outcomes is usually assigned to safety departments, executive management and board oversight committees depending on the structure and governance of the organisation.</p>	<p>No formal designation of responsibilities, accountabilities or authorisations for the management of safety exists.</p>	<p>The organisation is identifying / defining its safety authorisations, responsibilities and accountabilities.</p> <p>The organisation has a safety management function or safety management position responsible for developing and maintaining its SMS.</p>	<p>The organisation has documented authorisations, responsibilities and accountabilities for safety management, including Human Factors. Annex 19 1.2 b & d [HP]</p> <p>The organisation has an accountable executive who has ultimate responsibility for the management of the SMS and who actively supports the SMS development, implementation, maintenance and promotion throughout the organisation (including support departments). Annex 19 1.1.e & 1.3</p> <p>The wider leadership team (who report to the accountable executive) take responsibility for the application of the SMS. Annex 19 1.2.b & 1.2c</p> <p>The safety management function or position is independent of operational line management</p> <p>The safety management function has the authority to develop and maintain an effective SMS. Annex 19 1.3</p> <p>The safety management function has access to the resources required for the proper development and maintenance of the SMS. Annex 19 1.1.b</p> <p>All relevant managers and staff have formally accepted their SMS accountabilities and responsibilities.</p> <p>The organisation reviews safety authorisations, responsibilities, and accountabilities after significant organisational changes.</p>	<p>The organisation reviews safety authorisations, responsibilities and accountabilities at least once every five years to determine whether they are suitable and effective.</p> <p>The Human Factors capability (formal HF qualification i.e., academic degree, internal / external) is tailored and proportionate to the maturity and complexity of the organisation. [HP]</p>	<p>The organisation formally and systematically assesses the capability of managers to discharge their SMS accountabilities.</p> <p>The organisation has set best practices for safety management for this objective.</p>

OBJECTIVE	INFORMAL ARRANGEMENTS	DEFINED	MANAGED	RESILIENT	EXCELLENT
<p>4.1</p> <p>Clearly defined and documented safety policies, standards and processes.</p>	<p>There is no SMS in place.</p> <p>There may be deviations from safety regulatory requirements.</p> <p>The need for an SMS Implementation Plan is recognised.</p>	<p>The organisation has an approved and funded SMS implementation plan, which includes requirements for:</p> <ul style="list-style-type: none"> • Safety policy and objectives • SMS requirements • SMS processes and procedures • Accountabilities, responsibilities and authorities [HP] <p>Annex 19 1.1.1.b, 1.5.1 a-d</p> <p><i>Note: this list is not exhaustive; there may be other items in an organisation's implementation plan).</i></p> <p>The organisation has started to implement its SMS.</p>	<p>The organisation has completed all work required by its SMS Implementation Plan. Annex 19 1.5.1</p> <p>All safety management documentation is readily available to appropriate staff.</p> <p>The organisation monitors its SMS processes and output regularly to identify any problems staff may be having in applying the SMS. Annex 19 3.3 [SPM]</p> <p>The SMS contains Human Factors related principles and also indicates where and when it needs to be considered, e.g., in investigation, risk assessment activities and new project developments. [HP]</p> <p>Relevant staff are informed when safety actions or safety management procedures are introduced or changed, and why. Annex 19 1.1.2c</p> <p>The organisation conducts formal reviews of any organisational changes that could affect safety and / or the safety management framework. Annex 19 3.3 [SPM]</p> <p>The organisation has a formal process for updating its SMS documentation. Annex 19 1.1.2.b</p> <p>The organisation regularly reviews and updates its SMS using identified and formal processes. Annex 19 1.1.1g, 1.1.2 b & d</p>	<p>The organisation formally measures the usability and accessibility of its SMS processes and documents. [SPM]</p> <p>The organisation measures the effectiveness of the SMS documentation update process. [SPM]</p>	<p>The organisation has set best practices for safety management for this objective.</p>

5 SAFETY INTERFACES

OBJECTIVE	INFORMAL ARRANGEMENTS	DEFINED	MANAGED	RESILIENT	EXCELLENCE
<p>5.1</p> <p>INTERNAL INTERFACES</p> <p>Effectively managed safety-related internal interfaces (e.g., operations and engineering service level agreements).</p>	<p>The various internal interfaces operate in isolation.</p>	<p>The organisation is developing processes to manage internal safety-related interfaces.</p>	<p>The organisation's safety-related internal interfaces are managed through formal interface agreements? (Letters of agreement (LOAs), memoranda of understanding (MOUs), service-level agreements (SLAs), approved common procedures etc.).</p> <p>The organisation regularly evaluates the performance of its interface agreements (LOAs/MOUs/SLAs/approved common procedures, etc.) through a formal process. [SPM]</p> <p>The organisation has a process in place to improve safety management interaction between departments and professional fields. [CI]</p>	<p>Human Factors is active within programmes, Communications, Nav aids and Surveillance [CNS] and operations across the organisation. [HP]</p> <p>The organisation carries out external comparative analysis for LOAs / MOUs / SLAs / approved common procedures, etc. [SPM & CI]</p>	<p>The organisation has set best practices for safety management for this objective.</p>

OBJECTIVE	INFORMAL ARRANGEMENTS	DEFINED	MANAGED	RESILIENT	EXCELLENCE
<p>5.2</p> <p>EXTERNAL INTERFACES</p> <p>The effective management of external interfaces with a safety impact (e.g., military, airspace users, airports).</p> <p>Formalised processes and procedures for managing external agreements, services, and supplies (e.g., cross-border letters of agreement).</p>	<p>Safety-related external interfaces are managed on an informal basis.</p>	<p>The organisation is developing contractual arrangements for all safety-related external interfaces.</p>	<p>Activities for all safety-related external interfaces and relationships are coordinated and managed through documented agreements.</p> <p>Safety requirements and human factors requirements (especially of equipment and user interfaces) are specified and documented in the appropriate agreements. [HP]</p> <p>Safety performance indicators are used to monitor the effectiveness of the external safety-related interface agreements. [SPM]</p> <p>The organisation regularly involves external suppliers or delivery service partners in safety-related activities.</p>	<p>The organisation systematically reviews and revises safety requirements and human factors requirements within contractual agreements. [HP]</p> <p>The organisation systematically reviews the performance of its critical external service providers and suppliers against the contract, and takes action as appropriate. [SPM & CI]</p>	<p>The organisation has a formal integrated approach to safety management, which includes all relevant external stakeholders.</p> <p>The organisation has set best practices for safety management for this objective.</p>

OBJECTIVE	INFORMAL ARRANGEMENTS	DEFINED	MANAGED	RESILIENT	EXCELLENCE
<p>6.1</p> <p>Hazards to operations are reported and assessed.</p> <p>NOTE 1: ICAO Doc 9859 – Part 5.1.3 states: “Annex 19 requires that service providers develop and maintain a formal process to collect, record, act on and generate feedback on hazards in their activities, based on a combination of reactive and proactive methods of safety data collection.”</p> <p>NOTE 2: FOR ECAC MEMBERS: Regulation EU 2017/373 – ATS. OR.200 Safety Management System states (2) Safety risk management</p> <p>(i) A process to identify hazards associated to its services which shall be based on a combination of reactive, proactive and predictive methods of safety data collection.</p>	<p>Hazards to operations are not assessed by either managers or staff. However, risks to operations are recognised.</p>	<p>The organisation is developing processes to assist in the identification of hazards.</p> <p>The organisation is developing processes to document the existence of hazards.</p> <p>The organisation is developing processes to assess the risk that hazards pose to operations.</p>	<p>The organisation has approved hazard identification processes in place. Annex 19 2.1.1</p> <p>The organisation's hazard identification processes are based on a combination of reactive, proactive and predictive methods of safety data collection. Annex 19 2.1.2</p> <p>The organisation has a sufficient number of trained or qualified staff or contractors to assist in the identification and assessment of hazards and in hazard management.</p> <p>The organisation regularly includes stakeholders in its identification and assessment processes.</p> <p>The organisation has taken reasonable steps to identify all hazards affecting its operations.</p> <p>The organisation reviews and updates its hazard identification processes at least once every five years.</p> <p>The organisation monitors whether the hazard identification process is appropriately applied. [SPM]</p>	<p>The organisation uses metrics to track the status of all identified hazards. [SPM]</p> <p>The organisation carries out ongoing reviews of lessons learned from occurrence reports and safety surveys to improve its hazard identification processes to ensure that the processes are effective. [CI]</p> <p>The organisation uses safety II principles to determine the effectiveness of hazard identification processes. [SPM]</p>	<p>The organisation has set best practices for safety management for this objective.</p>

OBJECTIVE	INFORMAL ARRANGEMENTS	DEFINED	MANAGED	RESILIENT	EXCELLENCE
<p>6.2</p> <p>Assessed risks are mitigated or controlled.</p> <p>Risk controls are monitored for effectiveness, and remedial action is taken if controls are not working effectively.</p>	<p>There is limited understanding of the need to mitigate or control risk, even when risks are recognised.</p> <p>There is little understanding of what constitutes a risk control at either a system or local level.</p>	<p>The organisation is developing processes to identify and control or mitigate existing operational risks.</p>	<p>The organisation has formally documented its risk control and mitigation processes in an approved safety management system. Annex 19 2.2</p> <p>The level of analysis, assessment, mitigation and control of risk being undertaken is proportionate to the risk. Annex 19 2.2 & 3.1.1</p> <p>Staff and contractors where appropriate are educated and trained in risk and risk management.</p> <p>The organisation has defined the level of operational risk it can tolerate.</p> <p>The organisation documents and enforces the level of risk its managers can accept up to the design risk baseline. Annex 19 1.2e</p> <p>The organisation addresses identified risks as part of its process to improve safety performance.</p>	<p>The organisation reviews level of operational risk that can be tolerated reviewed at least once every five years.</p> <p>The organisation has a process to assure that improvements in safety, which address identified key risks, are planned for and appropriately budgeted.</p> <p>The organisation analyses the human contribution to risk (both positive and negative) [HP]</p> <p>The organisation is regularly monitoring the effectiveness of risk controls and mitigations. [SPM]</p> <p>The organisation is identifying performance deviations and deficiencies to establish a safety error margin from the level of operational risk it can tolerate. [SPM & CI]</p>	<p>The organisation has set best practices for safety management for this objective.</p>

7 FATIGUE-RELATED RISK MANAGEMENT

OBJECTIVE	INFORMAL ARRANGEMENTS	DEFINED	MANAGED	RESILIENT	EXCELLENCE
<p>7.1</p> <p>A data-driven means of continuously monitoring and managing fatigue-related safety risk that aims to ensure relevant personnel are performing at adequate levels of alertness.</p>	<p>Fatigue-related risk is not recognised as a safety risk which needs to be managed.</p>	<p>The organisation has informal methods in place that address fatigue-related risk.</p>	<p>The organisation has defined the responsibilities of management and staff for the control of fatigue-related risk.</p> <p>The organisation has formal processes and procedures by which fatigue is managed. [HP]</p> <p>The organisation provides training on the control of fatigue-related risk. [HP]</p> <p>The organisation assesses ongoing compliance with fatigue-related risk processes and procedures. [SPM]</p> <p>The organisation communicates the importance of measuring and reporting fatigue-related risk to all staff.</p> <p>The organisation has processes to measure and improve the management of fatigue-related risk based on internally collected data. [HP, SPM & CI]</p>	<p>The organisation uses occurrence data to better understand the fatigue profile of its workforce. [HP, SPM & CI]</p> <p>The organisation measures the effectiveness of its fatigue-risk management process. [HP & SPM]</p> <p>The organisation uses comparative analysis or data and information from external sources to improve the management of fatigue-related risk. [CI]</p>	<p>The organisation measures and reviews its fatigue-risk baseline using sleep science principles. [CI]</p> <p>The organisation has set best practices for safety management for this objective.</p>

8 SAFETY REPORTING, INVESTIGATION AND IMPROVEMENT (ICAO ELEMENT 1.1.1C)

OBJECTIVE	INFORMAL ARRANGEMENTS	DEFINED	MANAGED	RESILIENT	EXCELLENCE
<p>8.1</p> <p>A continuing organisation-wide process to report and investigate safety occurrences and risks, supported by JC and with measurable safety improvements.</p>	<p>There is an informal system in place for reporting safety occurrences, but reports are not reviewed systematically.</p> <p>The reporting system is not organisation-wide.</p> <p>Investigation is done on an ad hoc basis with little or no feedback.</p>	<p>The organisation is developing an occurrence reporting and investigation system.</p> <p>The organisation investigates occurrence reports even if there is no formal investigation process. [SPM]</p> <p>The organisation provides informal feedback to staff on investigation findings. [SPM]</p>	<p>All reported occurrences follow a risk classification process. Annex 19 3.1.1</p> <p>The organisation systematically allocates explanatory factors to all risk-classified occurrences. [HP]</p> <p>The organisation has a formal Mandatory Operational Reporting (MOR) and Voluntary Operational Reporting (VOR) and investigation process(es). Annex 19 1.1.1.c & 1.5.2</p> <p>The organisation provides feedback directly to those who report occurrences or hazards and any corrective actions taken as a result of their report.</p> <p>The organisation checks to ensure that all required occurrences have been reported. [SPM]</p> <p>Human Factors principles are used in safety investigations, for instance using a neutral language and terms. [HP]</p>	<p>The organisation provides regular formal feedback from safety investigations findings to all relevant staff.</p> <p>The organisation works with stakeholders (such as airlines, other ANSPs or non aviation organisations) to conduct external comparative analysis of its reporting and investigation process. [HP, SPM & CI]</p> <p>The organisation measures the quality of its investigations. [SPM]</p>	<p>The organisation is actively looking to identify strengths and resilient barriers, which helps keep the system safe. [CI]</p> <p>The organisation is seeking weak signals in operations. [CI]</p> <p>The organisation has set best practices for safety management for this objective.</p>

OBJECTIVE	INFORMAL ARRANGEMENTS	DEFINED	MANAGED	RESILIENT	EXCELLENCE
<p>8.2</p> <p>An organisation-wide improvement process based on occurrence investigations, with measurable results.</p>	<p>Improvements from occurrences rarely happen, and not in a systematic way.</p> <p>Recommendations, when issued, are not followed or are systematically viewed as a nuisance.</p>	<p>The organisation is planning to develop safety recommendations following an occurrence investigation.</p>	<p>Investigations result, if necessary, in corrective action.</p> <div data-bbox="1133 300 1451 545" style="border: 1px solid black; padding: 5px;"> <p>The organisation has implemented quantitative techniques (e.g., losses of separation, runway incursions and problem reports) to measure and verify safety performance. Annex 19 3.1.2 & 1.1.2a [SPM]</p> </div> <p>Staff reporting safety occurrences also suggest ways to solve problems identified in their occurrence reports</p> <p>The organisation conducts internal comparative analysis. [SPM]</p>	<p>The organisation measures the effectiveness of its safety improvement plans. [SPM]</p> <p>The organisation routinely coordinates improvements with relevant external stakeholders. [CI]</p> <p>The organisation works with stakeholders to conduct external comparative analysis of its safety improvement process. [SPM]</p>	<p>The organisation is proactively seeking to improve its resilience.</p> <p>The organisation has set best practices for safety management for this objective.</p>

9 COORDINATION OF EMERGENCY RESPONSE PLANNING (ICAO ELEMENTS 1.4)

OBJECTIVE	INFORMAL ARRANGEMENTS	DEFINED	MANAGED	RESILIENT	EXCELLENCE
<p>9.1</p> <p>Emergency response procedures and an emergency response plan that documents the orderly and efficient transition from normal to emergency operations and the return to normal operations.</p>	<p>The organisation has sound primary air traffic management systems but does not have redundant capabilities or back-up systems.</p>	<p>The organisation has procedures and at least some redundant capabilities and resources to manage the most likely abnormal and unexpected situation.</p> <p>The organisation is developing emergency response plans for each unit.</p>	<p>Emergency response procedures have been developed, documented and distributed to the appropriate staff. Annex 19 1.4</p> <p>ALL primary systems have redundant or backup capabilities in place.</p> <p>The organisation has an approved schedule for exercising types of emergency and responses.</p> <p>The organisation rehearses desktop emergency response procedures in accordance with the approved schedule (and involves frontline controllers).</p> <p>The organisation's emergency response plan has been properly coordinated with the emergency response plans of other organisations that it must interface with during the provision of services. Annex 19 1.4</p> <p>The organisation uses performance indicators to assess the effectiveness of its emergency response procedures, as tested during the regular exercises and rehearsals. [SPM]</p>	<p>The organisation's emergency response procedures have been rehearsed through live or simulated operational exercises in accordance with the emergency plan schedule.</p> <p>The plan is regularly reviewed using the results from the simulations and/or live practice as part of safety performance monitoring. [SPM]</p> <p>All relevant internal and external stakeholders are involved in defining metrics for assessing the effectiveness of the emergency response procedures. [SPM]</p> <p>The organisation carries out lessons learning with other organisations in order to implement good practices. [SPM]</p>	<p>An external entity is used to run emergency response procedure exercises.</p> <p>The organisation has set best practices for safety management for this objective.</p>

10 OPERATIONAL SAFETY SURVEYS AND SMS AUDITS (ICAO ELEMENTS 3.2 AND 3.3)

OBJECTIVE	INFORMAL ARRANGEMENTS	DEFINED	MANAGED	RESILIENT	EXCELLENCE
<p>10.1</p> <p>Internal and independent (external) SMS audits.</p>	<p>There is no plan to conduct systematic SMS audits.</p> <p>SMS audits and gap assessments are conducted on an ad hoc basis.</p>	<p>The organisation is developing a plan to formalise how SMS audits are conducted.</p>	<p>The organisation has a formal process describing how to conduct SMS audits in a systematic way. Annex 19 3.3</p> <p>The organisation conducts SMS audits at least annually in accordance with a documented plan that assures that they are resourced and completed on schedule. [SPM]</p> <p>SMS audits result in corrective actions for findings and planned actions for improvements being identified, captured and tracked including the relevant areas of responsibility from across the organisation (e.g., SMS, operations, engineering, operational training, etc.). Annex 19 3.3 [CI]</p> <p>The organisation has established a process to analyse trends arising from SMS audits. [SPM]</p> <p>The organisation, where appropriate, conducts reassessments to confirm that any implemented recommendations arising from SMS audits have been successful. [SPM & CI]</p> <p>The organisation has a formal process in place to monitor the status of the SMS audit programme (e.g., completion of audit plan, status of findings, planned improvements etc.). [SPM]</p>	<p>The organisation follows a risk-based approach to SMS audits.</p> <p>The organisation has a formal process to regularly (at least once per audit cycle) evaluate the effectiveness of the audit programme which is monitored by the Safety Review Board/Safety Committee. [SPM & CI]</p> <p>The organisation's SMS audits include non-operational groups (e.g., Human Resources, Finance, etc.).</p> <p>The organisation has a formal process that incorporates a wide variety of information including audits, safety surveys, safety culture surveys, change management, etc. to identify opportunities for improvement. [HP & CI]</p> <p>The organisation commissions external SMS audits at least once every five years.</p> <p>The Safety Review Board / Safety Committee (or similar) monitors the status of the SMS audit programme (e.g., completion of audit plan, status of findings, planned improvements etc.).</p>	<p>The organisation has set best practices for safety management for this objective.</p>

OBJECTIVE	INFORMAL ARRANGEMENTS	DEFINED	MANAGED	RESILIENT	EXCELLENCE
<p>10.2</p> <p>Internal and independent (external) safety surveys.</p>	<p>There is no plan to conduct systematic safety surveys or safety surveys are conducted on an ad hoc basis.</p>	<p>The organisation is developing a plan to formalise how safety surveys are conducted.</p>	<p>The organisation has a formal process describing how to conduct safety surveys in a systematic way.</p> <p>The organisation has a documented plan to assure that safety surveys are resourced and completed on schedule.</p> <p>Safety surveys result in improvement plans with specific actions being identified, captured and tracked including the relevant areas / persons responsible from across the organisation (e.g., SMS, operations, engineering, operational training, etc.). [CI]</p> <p>The organisation has established a process to analyse trends arising from safety surveys. [SPM]</p> <p>The organisation has a formal process in place to monitor the status and closure of safety survey programme (e.g., completion of safety survey plan, status of findings, planned improvements etc.).</p> <p>Where appropriate the organisation conducts reassessments to confirm that any implemented recommendations arising from safety surveys have been successful. [SPM & CI]</p>	<p>The organisation has a risk-based approach to safety surveys. [CI]</p> <p>The organisation commissions external surveys at least once every five years. [CI]</p> <p>The organisation has implemented observational techniques to measure safety performance (e.g., Normal Observation Safety Survey - NOSS or Day-to-Day). [HP]</p> <p>The organisation conducts joint safety survey activities that are planned and completed across units.</p> <p>The Safety Review Board / Safety Committee (or similar) monitors the status and closure of safety survey programme (e.g., completion of safety survey plan, status of findings, planned improvements etc.). [SPM]</p>	<p>The organisation's normal operations monitoring process has reached the highest maturity level where it is resilient and continually improving. [HP & CI]</p> <p>The organisation has set best practices for safety management for this objective.</p>

OBJECTIVE	INFORMAL ARRANGEMENTS	DEFINED	MANAGED	RESILIENT	EXCELLENCE
<p>11.1</p> <p>Documentation and reporting mechanisms are in place to ensure that internal and external stakeholders understand how safety risks introduced during and/or following implementation of change are managed and mitigated.</p>	<p>There are no change management processes in place even though the organisation recognises that impacts of change must be managed.</p>	<p>The organisation is developing change management processes to assess and quantify the risks of change.</p> <p>The organisation recognises that change impacts human performance and that human performance should be identified in the change process. [HP]</p>	<p>The organisation has a formal change management process in place that aims to include safety and human factor aspects in the management of change. Annex 19 3.2 [HP]</p> <p>The organisation assesses the safety impact of changes and associated mitigations before they are introduced. Annex 19 3.2</p> <p>The change management processes are tailored for importance and the resources needed for the change.</p> <p>When designing new procedures, airspace or equipment, the organisation has formal processes for addressing failures that have been identified through occurrences, investigations or safety surveys. [HP]</p> <p>The organisation's change management processes involve all relevant internal stakeholders.</p> <p>The organisation's change management processes involve all relevant external stakeholders (including the regulator).</p> <p>Operational trade-offs in decision-making are considered for effects and consequences on risk.</p>	<p>The organisation measures the effectiveness of the change management process. [SPM & CI]</p> <p>Lessons are learnt on human performance fed back into design activities to reduce the likelihood of reoccurrence. [HP & CI]</p> <p>There is a function or role in place that manages and monitors the potential impact of multiple changes (from a programme view) on human performance. [HP & SPM]</p> <p>The organisation engages in cross-comparison and sharing of change management processes with other ANSPs/industries. [SPM & CI]</p>	<p>Emerging or changing trends in human performance are identified. [HP]</p> <p>The organisation has set best practices for safety management for this objective.</p>

12 TRAINING AND EDUCATION (ICAO ELEMENT 4.1)

ICAO COMPONENT 4: SAFETY PROMOTION

OBJECTIVE	INFORMAL ARRANGEMENTS	DEFINED	MANAGED	RESILIENT	EXCELLENCE
<p>12.1</p> <p>Staff and contractors who directly support air navigation service provision. are educated and trained in safety and safety management, and where required, licensed.</p> <p>Note that this objective is primarily focused on ATC, engineering and senior staff who have the ability to affect, either directly or indirectly, the safety of the operational service.</p>	<p>Staff and contractors who directly support air navigation service provision, are provided with training for safety and safety management activities on an ad hoc basis.</p>	<p>The organisation is developing a plan for providing safety management training to staff and contractors who directly support air navigation service provision.</p>	<p>The organisation has a formal annual planning process for safety management training.</p> <p>The organisation's annual training plan ensures that appropriate staff and contractors who directly support air navigation service provision are aware of all safety management practices and procedures that are applicable to their role. Annex 19 4.1.1 & 4.1.2</p> <p>Staff who receive safety management training are given an opportunity to provide feedback on the effectiveness of the training. [HP]</p> <p>The safety management training programmes are updated on the basis of that feedback.</p> <p>Operational / front line staff receive training to ensure they have an understanding of the impact of human performance. Annex 19 4.1.2 [HP]</p>	<p>Relevant managers receive training on human performance impact and limitations. [HP]</p> <p>Non-operational areas of the organisation receive at least basic training to ensure they understand the impact of human performance. [HP]</p> <p>The organisation uses indicators (other than feedback mechanisms) to measure the effectiveness of its training programme. [SPM]</p> <p>Safety management training is constantly adapted to include identified risks and address shortcomings (highlighted through e.g., feedback from courses and indicators). [HP & CI]</p>	<p>The organisation has set best practices for safety management for this objective.</p>

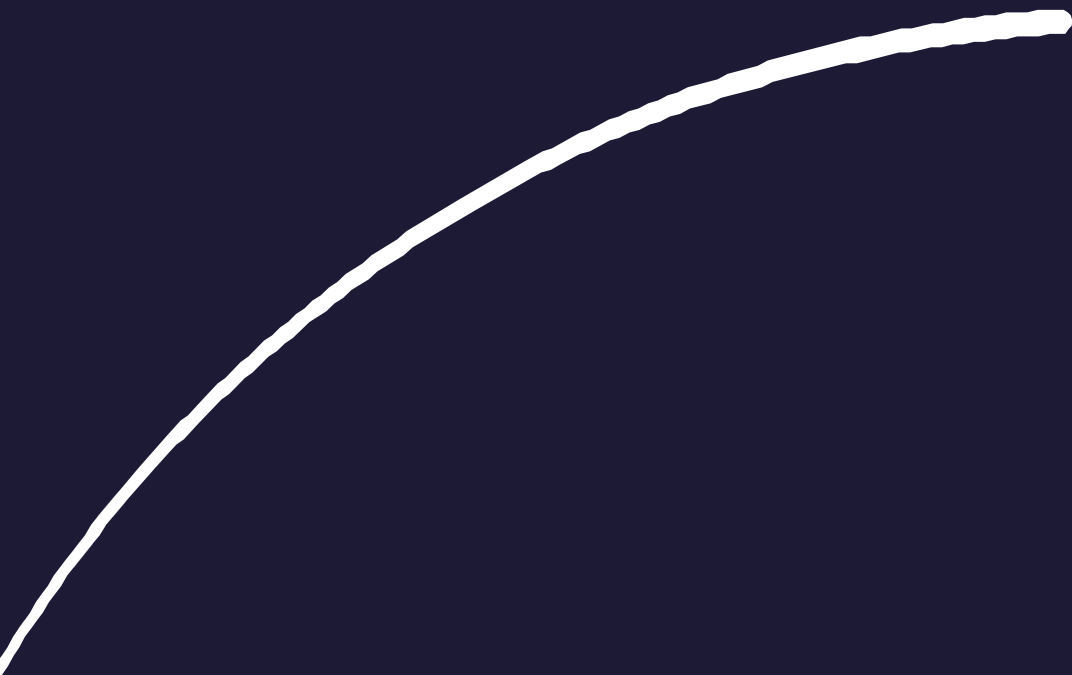
OBJECTIVE	INFORMAL ARRANGEMENTS	DEFINED	MANAGED	RESILIENT	EXCELLENCE
<p>12.2</p> <p>Staff are competent to conduct their obligations under the SMS.</p>	<p>There are no formal competency methods that incorporate safety management principles (including proficiency, licensing and training).</p>	<p>The organisation is developing methods to ensure that staff are competent to conduct their obligations under the SMS.</p>	<p>Competency methods are being designed and applied to ensure that staff and contractors who directly support air navigation service provision are educated, trained and competent to perform the specific duties required of them by the organisation's SMS. [HP]</p> <p>Records of competence training are kept and maintained.</p> <p>Additional training is delivered to address gaps in competence. [HP]</p>	<p>The means by which competency standards are determined are subject to review and improvement. [CI]</p> <p>The organisation carries out external reviews of its SMS competency programme. [SPM]</p>	<p>The organisation has set best practices for safety management for this objective.</p>

13 SAFETY COMMUNICATION (ICAO ELEMENT 4.2)

ICAO COMPONENT 4: SAFETY PROMOTION

OBJECTIVE	INFORMAL ARRANGEMENTS	DEFINED	MANAGED	RESILIENT	EXCELLENCE
<p>13.1</p> <p>Staff are informed about the safety lessons, safety-critical information and safety management policies and standards relevant to their positions.</p>	<p>Staff have limited knowledge of SMS processes and procedures.</p> <p>Safety-relevant information is not routinely shared.</p>	<p>The organisation issues internal staff communications that focus on safety and safety management.</p>	<p>Safety is a key focus of internal communications.</p> <div data-bbox="1133 357 1453 568" style="border: 1px solid black; padding: 5px;"> <p>The organisation has a formal process for systematically sharing operational safety lessons learned including human performance aspects. Annex 19 4.2.c</p> </div> <div data-bbox="1133 580 1453 730" style="border: 1px solid black; padding: 5px;"> <p>The organisation tailors its safety communications to meet the recipients' needs. Annex 19 4.1.2.a & 4.2.d</p> </div> <div data-bbox="1133 743 1453 893" style="border: 1px solid black; padding: 5px;"> <p>The organisation disseminates safety-critical information to all appropriate staff. Annex 19 4.2.b</p> </div>	<p>The organisation quantitatively measures the effectiveness of its communication on a regular basis and address any deficiencies.</p> <p>Staff are given the appropriate means to react on the communications process and to alert the organisation of any perceived problems.</p> <p>The organisation carries out external comparative analysis with other ANSPs or industries to assess the effectiveness of its safety communication activity.</p> <p>The organisation involves frontline relevant staff in the development of safety-related communication.</p> <p>The organisation has safety representatives in all units who are responsible for ensuring that safety communication between the safety department and relevant staff is effective.</p> <p>The organisation helps managers communicate difficult safety-related subject matter.</p>	<p>The organisation has set best practices for safety management for this objective.</p>

OBJECTIVE	INFORMAL ARRANGEMENTS	DEFINED	MANAGED	RESILIENT	EXCELLENCE
<p>13.2</p> <p>Appropriate safety information and knowledge is shared with industry stakeholders.</p> <p>Information disclosure complies with agreed publication and confidentiality policies / agreements.</p>	<p>Safety data and information are treated as confidential.</p> <p>There are no plans to disseminate it to any industry stakeholders.</p>	<p>The organisation shares safety data and information externally using informal processes.</p>	<p>The organisation shares safety data and information nationally (e.g., with airlines, airports and other service providers). [CI]</p> <p>The organisation shares safety data and information with international bodies. [CI]</p>	<p>Human performance issues/lessons are shared nationally (e.g. with airlines, airports and other service providers) [HP]</p> <p>The organisation actively shares safety data and Human Performance Data with international bodies to drive safety improvement. [CI]</p> <p>The organisation has established a formal process to receive and act on safety data and information exchanged with external stakeholders. [CI]</p>	<p>The organisation has set best practices for safety management for this objective.</p>
<p>13.3</p> <p>A general public knowledgeable of the ANSP's performance through routine publication of achieved safety levels and trends.</p> <p>(Information disclosure complies with the requirements of ICAO Annex 13, Attachment E)</p>	<p>Safety-related performance information is not made available to the public under any circumstances.</p>	<p>The organisation has a plan to share safety-related information with the public.</p>	<p>The organisation makes high-level safety-related performance information publicly available.</p>	<p>The organisation measures the effectiveness of communications with the general public.</p> <p>The organisation makes safety performance information available to the general public beyond what is required by regulation.</p>	<p>The organisation has set best practices for safety management for this objective.</p>



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