

CANSO Standard of Excellence in Safety Management Systems

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Appendix A - Enabler and Elements: Safety Objectives and Maturity Level Descriptors

Appendix B - CANSO Standard of Excellence in SMS Objective Mapping of Edition 1 to Edition 2

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The CANSO Standard has been developed through the contributions of CANSO Members.

CANSO Standard of Excellence in Safety Management Systems

Executive summary

In 2009, the Civil Air Navigation Services Organisation (CANSO) published *CANSO Standard of Excellence in Safety Management Systems* (SoE in SMS). This Standard was built on the experience of the CANSO Member organisations and provided a framework for continually improving the management and oversight of safety within air navigation service providers (ANSPs).

Since the first publication, the International Civil Aviation Organization (ICAO) has developed an industry wide Annex on Safety Management (Annex 19). The Standard has therefore been updated to assure it is compliant with Annex 19 while also addressing feedback received from ANSPs and other industry bodies, and evolving safety management thinking and practice. As

with the first version of the CANSO SoE in SMS, the second version goes beyond the requirements of current domestic and international regulatory practices and allows ANSPs to build a system which is appropriate to their size and operational complexity.

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

The revised SoE in SMS consists of a system enabler (Safety Culture) and a framework of five components addressing 16 elements. The structure is presented below:



The SoE in SMS will continue to be periodically reviewed so that it reflects developments in the industry.

1

Context

1.1 ANSPs play a vital role in the aviation industry. They must minimise the risk of collision between aircraft and between aircraft and the ground while providing efficient services. The primacy of safety in the delivery of services exists regardless of whether an ANSP is operated by a state or a commercial organisation.

1.2 ANSP management must assure that risks to operational service delivery are reduced as far as reasonably practicable. This requires a formal and pro-active approach to identifying hazards, analysing risks and taking 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 aviation can manage safety has been recognised at an international level and in a growing number of domestic regulations. ICAO Annex 19 and its complementary domestic regulations are, however, scoped as general statements against which compliance can be tested rather than providing an evolutionary pathway, which drives a culture of continual improvement.

1.4 The coming decades will present many challenges for aviation, and ANSPs in particular. These challenges will include increased traffic demands, unmanned aircraft, and environmental and security considerations. ANSP management must solve these while maintaining (and even improving) the current levels of safety. To accomplish this, ANSP management must continually strive to improve the ways they identify risks and manage safety.

1.5 Although efforts are being made, ANSPs are for the most part, geographically isolated from each other and use different platforms in terms of technologies. They provide services to significant numbers of customers. In addition, they often rely on secondary providers to provide services which are integral to their services, such as communication links via land lines or satellite.

1.6 Across the industry, ANSPs are at different stages of SMS development. Some have very mature systems which are fully integrated into the operations. Others are starting to build formalised safety management practices and a culture which assures the priority of safety.

1.7 While guidance material covering the implementation of an SMS is available, management may struggle to determine what it must do to comply with existing or proposed regulations. This reflects variability in the guidance material and regulations. It also reflects the fact that lessons learned are not always transferred between ANSPs.

1.8 The SoE in SMS is an excellent way for CANSO to communicate best practices to ANSP management and safety managers.

2

Status of the CANSO Standard of Excellence 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 aims to provide means through which ANSPs can comply with ICAO Annex 19 requirements for service providers (see Section 11) by achieving the 'Managed' level of maturity in the relevant areas of the Standard.

2.3 The SoE in SMS draws on the experiences of CANSO Members and aims to complement and supplement existing standards rather than mirror any particular standard.

2.4 This SoE in SMS provides a pathway for ANSPs to transition from a purely regulatory compliance organisation to an organisation focused on continuous improvement.

2.5 CANSO recommends the use of the SoE in SMS as guidance to CANSO Members, but application is not binding.

3

Objectives

3.1 The purpose of this SoE in SMS is to:

- Drive improvement within the industry
- Transfer learning across the industry
- Demonstrate compliance with the SMS aspects of ICAO Annex 19 when reaching the 'Managed' level of maturity
- Allow each Member to build a SMS which is commensurate to the size and complexity of its specific operation
- Provide a path for continuous improvement beyond that required by both international and domestic regulations

- Reflect industry best practice
- Provide a means for management, and safety managers in particular, to directly and deliberately plan for safety at a corporate, group and project level to assure that risks to operational service delivery are reduced as far as reasonably practicable

3.2 This SoE in SMS complements and supports the intent of both ICAO Annex 19 and the Global Aviation Safety Plan which is to drive for harmonised, consistent and coherent safety management processes which reflect the nature of modern air transportation. This Standard 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 implementation of the more fundamental elements that are considered to deliver immediate safety benefits while planning the implementation of the more sophisticated SMS elements for implementation in the later phases of SMS development.

4.2 Safety culture is the enabler that integrates the various SMS elements into a coherent system. This standard provides a framework through which the safety culture of each organisation can be improved.

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. In addition, it

enables each SMS to be measured against a common industry ATM standard.

4.4 This 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 As an audit tool, the SoE in SMS can be used as a management checklist. ANSP management can expect more comprehensive and possible additional safety audits in the future. The SoE in SMS enables management, and safety managers in particular, to measure and compare the status of SMS development against the reference for SMS excellence as expressed in this CANSO Standard.

4.6 The SoE in SMS aims to contribute towards increased cost-effectiveness by enabling the development of standardised training courses, safety promotion campaigns and mentoring programmes.

5

Outline of the CANSO Standard of Excellence in SMS

5.1 Maintenance of the Standard

5.1.1 Since the first publication of the SoE in SMS, ICAO has developed an industry wide Annex on Safety Management (Annex 19). The Standard has therefore been updated to assure it is compliant with Annex 19 while also addressing feedback received from ANSPs and other industry bodies and evolving safety management thinking and practice.

5.1.2 As previously referenced, the SoE in SMS goes beyond the ICAO Annex 19 requirements. Those elements which are required by Annex 19 are highlighted Section 11 and within Appendix A. Achievement of Level C 'Managed' equates to compliance with the service provider requirements for SMS within Annex 19.

5.1.3 The SoE in SMS consists of a system enabler (safety culture) and a framework of five components addressing 16 elements (discussed further in sections 5-7 and detailed in Appendix A). The structure is presented below:

Safety culture

Element: Development of a positive and proactive safety culture

Safety policy and objectives

Elements:
Safety Policy
Organisational and individual safety responsibilities
Compliance with international obligations (CANSO SoE element)
Coordination of Emergency Response Plan
Safety Management System Documentation

Safety risk management

Elements:
Risk Management Process

Safety achievement

Elements:
Safety Interfaces
Safety by Design
Fatigue-related Risk Management

Safety assurance

Elements:
Safety Performance Monitoring and Measuring
The Management of Change
Continual Improvement of the SMS
Safety Reporting Investigation and Improvement
Operational Safety Surveys and SMS Audits

Safety promotion

Elements:
Safety Communication
Training and Education

5.1.4 No single component or element will meet today's expectations for risk management. Rather, an integrated application of all elements will increase the ANSP system's 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 on the part of everyone in the organisation. Contemporary thinking is that organisations are not immune from cultural considerations.

5.2.2 The success of a SMS is completely dependent on the development of a positive and proactive safety culture in the ANSP organisation.

5.2.3 Safety culture is presented within the CANSO SoE in SMS as a system enabler in that it has the most significant influence on the overall integration and evolution of SMS elements within the ANSP organisation.

5.3 Safety Policy and Objectives

5.3.1 The Safety Policy and Objectives component of the Standard consists of elements which address:

- Safety Policy
- Organisational and Individual Safety Responsibilities
- Compliance with International Obligations
- Coordination of Emergency Response Plan
- Safety Management Documentation

5.3.2 Organisational and Individual Safety Responsibilities embrace two of ICAO's Annex 19 SMS elements these being: Safety accountabilities and the Appointment of key safety personnel.

5.4 Safety Risk Management

5.4.1 Each ANSP must develop and implement a risk management process which revolves around the identification of hazards, risk assessment and mitigation.

5.5 Safety Achievement

5.5.1 Each ANSP must undertake activities which aim to achieve and improve safety. The elements covered by the Safety Achievement component include:

- Safety Interfaces
- Safety by Design
- Fatigue-related Risk Management

5.6 Safety Assurance

5.6.1 The SoE in SMS recommends a variety of review and reporting mechanisms. These will contribute to understanding how an ANSP is performing, whether all safety requirements are effective, and how any deficiencies may be overcome. Safety assurance requirements include the need to address:

- Safety Performance Monitoring and Measurement
- Management of Change
- Continual Improvement of the SMS
- Safety Reporting, Investigation and Improvement
- Operational Safety Surveys and SMS Audits

5.7 Safety Promotion

5.7.1 Each ANSP must promote safety within its organisation. The SoE in SMS therefore embraces the need for training and education as well as safety communication.

6

SMS Maturity Pathway

6.1 The SoE in SMS emphasises a phased step-by-step implementation of SMS (see below) from Level A 'Informal Arrangements' to Level E 'Optimised'.

6.2 Tables in Appendix A provide the details of the Standard. Each of the elements which underpin the five components is addressed.

6.3 The system enabler and each element has at least one safety objective and descriptors of requirements at each of the five levels of system maturity. The descriptors and their definitions are:

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

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

6.3.3 **Level C – Managed:** The SMS framework meets the required regulatory standard and complies with the SMS requirements of ICAO Annex 19. SMS processes and/or requirements are

formally documented and consistently applied.

6.3.4 **Level D – Assured:** Evidence is available to provide confidence that SMS processes and/or requirements are being applied appropriately and are delivering positive, measured results.

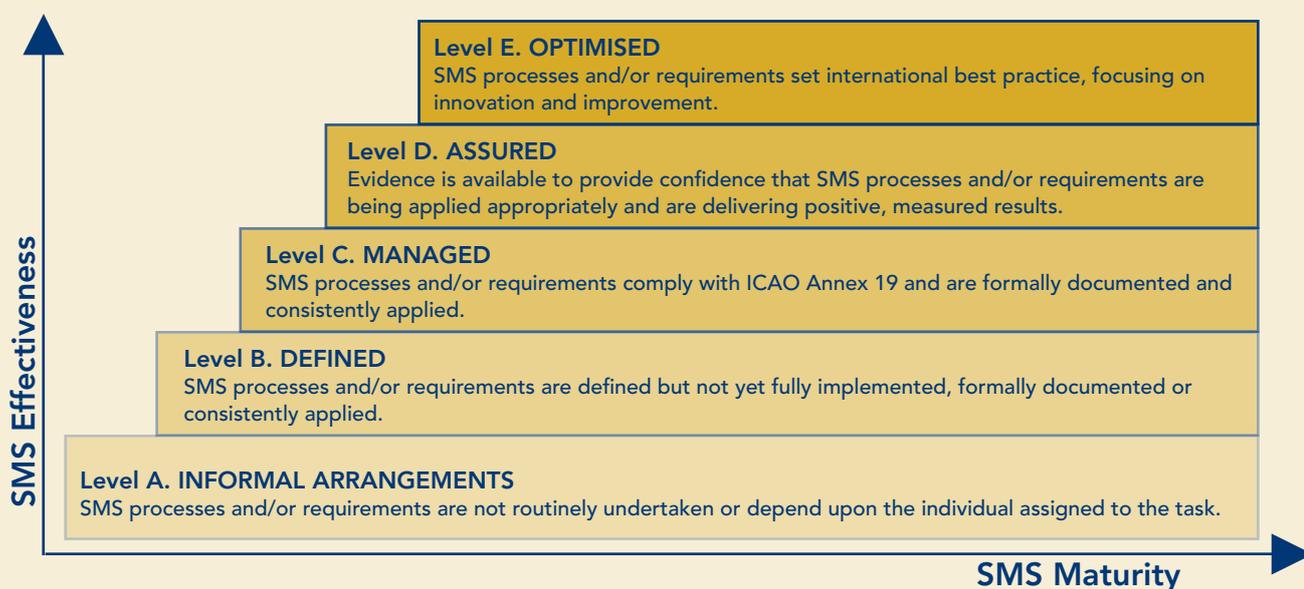
6.3.5 **Level E – Optimised:** SMS processes and/or requirements set international best practice, focusing on innovation and improvement. The effectiveness of the SMS and safety improvement actions are measured and evaluated against defined improvement criteria.

6.4 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.

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 to enable the step-wise implementation of SMS elements. This approach is based on the experience of the CANSO Members. It draws on information which is 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 of the ICAO Global Aviation Safety Plan (GASP) that achievement of the highest level of SMS maturity is a long-term process that must proceed in a very deliberate step-wise manner
- Acknowledges the need to effectively manage the workload associated with the development and implementation of an SMS within ANSPs
- Recognises that some elements deliver more immediate safety benefits to organisations
- Recognises that implementation of some elements is easier once a base of understanding has developed within an organisation

7.3 The phased approach provides a framework to plan and document what the organisation is aspiring to achieve in safety management, and who is accountable for delivering this aspiration. The phased approach

should proceed in a direct and deliberate manner, and the first phase should be to set out an implementation plan containing clear deliverables and milestones.

7.4 The second and third phases of implementation should build upon the embedded SMS framework and focus on improving the organisational capability in the measurement and analysis of safety performance. This will enable the organisation to measure the gap between current performance standards and what it aspires to in its stated safety policy goals and targets.

7.5 In the final phase, the organisation should look to implement the more sophisticated aspects of SMS. These enable the ANSP to measure and critically evaluate its safety improvement performance and draw on lessons from other organisations to further its commitment to continuous improvement.

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

Phase	Group	Element
1	Safety Policy and Objectives	Safety Policy
		Organisational and Individual Safety Responsibilities
2	Safety Assurance	Safety Reporting, Investigation and Improvement
	Safety Promotion	Training and Education
	Safety Culture	Development of a Positive and Proactive Safety Culture (Appendix A: Sub-element 1.1 and 1.2)
	Safety Policy and Objectives	SMS Documentation
		Coordination of Emergency Response Plan
Safety Promotion	Safety Communication	
3	Safety Risk Management	Risk Management Process
	Safety Assurance	Management of Change
		Safety Performance Monitoring and Measurement
		Continuous improvement of the SMS
	Safety Achievement	Safety Interfaces
Safety Policy	Timely Compliance with International Obligations	
4	Safety Assurance	Operational Safety Surveys and SMS Audits
	Safety Culture	Safety Culture (Appendix A, Sub-element 1.2)
	Safety Achievement	Safety by Design
		Fatigue-related Risk Management

7.7 The phased implementation approach may result in an organisation being at various levels in the maturity pathway. For example, an organisation may have reached Level E 'Optimised' for elements such as Organisational and Individual Safety Responsibilities but may only have informal arrangements in areas such as Adoption and Sharing of Best Practice.

8

Evolution of the Standard

8.1 Safety concepts evolve over time. Therefore, ANSP best practices will change and shift. The CANSO Standard will be updated periodically to reflect the continuous development of safety management.

9References

Global Aviation Safety Plan, International Civil Aviation Organization (2007)

Global Aviation Safety Road Map Part 1 – A Strategic Action Plan for Future Aviation Safety: Industry Strategy Safety Group (2006)

Global Aviation Safety Road Map Part 2
Implementing the Global Aviation Safety Roadmap:
Industry Strategy Safety Group (2006)

ICAO Annex 19: Safety Management, International Civil Aviation Organization (2013)

ICAO Safety Management Manual (Doc 9859),
International Civil Aviation Organization (3rd Edition
May 2013)

10Terms and Definitions

See table below.

Term	Definition
CANSO Standard of Excellence	The CANSO Standard of Excellence in SMS is defined as a measure of quality deemed to represent the ANS industry's view on the aspirational 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 the entire scope of an operation or the lifecycle of a system in ATM.
Safety Audit	Testing of process, product, people, organisation or system to assure that safety requirements embedded in domestic and international regulations are complied with.
Just Culture	An atmosphere of trust in which people are encouraged for providing essential safety-related information, but in which they are also clear about where the line must be drawn between acceptable and unacceptable behaviour.
Safety Culture	Safety culture refers to the enduring value, priority and commitment placed on safety by every individual and every group at every level of the organisation. Safety culture reflects the individual, group and organisational attitudes, norms and behaviours related to the safe provision of air navigation services.
Safety Management Function	A business unit within an organisation which is dedicated to the oversight of safety and its management.
Safety Management System	An organised approach to managing safety, including the necessary organisational structures, accountabilities, policies and procedures.
SMS Audit	Testing of process, product and people to assure that standards and requirements as documented in the organisation's SMS are complied with.
Operational Safety Surveys	Programmes which provide organisations with an understanding of the threats or opportunities which exist to improve safety performance or compliance with domestic or international safety regulations. Programmes which provide organisations with an understanding of the threats or opportunities which exist to improve safety performance or compliance with domestic or international safety regulations.

Compliance Mapping to ICAO Annex 19: Safety Management

Framework for Safety Management Systems (Appendix 2)

ICAO Annex 19 Ref	Element	Requirement	CANSO Standard of Excellence in SMS Link
1	Safety Policy and Objectives		
1.1	Management Commitment and Responsibility	The service provider shall define its safety policy in accordance with international and national requirements. The safety policy shall:	Possible link to Compliance with International Obligations Objective 6.1
		a) reflect organisational commitment regarding safety	Safety Policy Objective 2.1
		b) include a clear statement of intent about the provision of necessary resources for the implementation of safety policy	Safety Policy Objective 2.1
		c) include safety reporting procedures	Safety Policy Objective 2.2, Safety Reporting, Investigation and Improvement Objective 11.1
		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	Safety Policy Objective 2.2, Safety Culture Objectives 1.1 and 1.3
		e) be signed by the accountable executive of the organisation	Safety Policy Objective 2.1
		f) be communicated, with visible endorsement, throughout the organisation,	Safety Policy Objective 2.2
		g) be periodically reviewed to ensure it remains relevant and appropriate to the service provider	Safety Policy Objective 2.1, SMS Documentation, Continuous Improvement of the SMS
1.2	Safety Accountabilities	The service provider shall:	
		a) identify the accountable executive who, irrespective of other functions, has ultimate responsibility and accountability, on behalf of the organisation, for the implementation and maintenance of the SMS	Organisational and Individual Safety Responsibilities Objective 3.2

ICAO Annex 19 Ref	Element	Requirement	CANSO Standard of Excellence in SMS Link
		b) clearly defines lines of safety accountability throughout the organisation, including direct accountability for safety on the part of senior management	Organisational and Individual Safety Responsibilities Objective 3.1
		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 SMS	Organisational and Individual Safety Responsibilities Objective 3.1 and Objective 3.3, Safety Interfaces
		d) document and communicate safety responsibilities, accountabilities and authorities through the organisation	Organisational and Individual Safety Responsibilities (maturity level descriptors in Objective 3.1 and 3.2 reflect this requirement), Safety Communication, SMS Documentation
		e) define the levels of management with authority to make decisions regarding safety risk tolerability	Safety Risk Management Objective 7.1 and Management of Change 14.1
1.3	Appointment of Key Safety Personnel	The service provider shall appoint a safety manager who is responsible for the implementation and maintenance of an effective SMS	Organisational and Individual Safety Responsibilities Objective 3.2
1.4	Coordination of Emergency Response Plan	The service provider shall ensure that an 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	Coordination of Emergency Response Plan Objective 4.1
1.5	SMS Documentation	1.5.1 The service shall develop an SMS implementation plan that defines the organisation's approach to the management of safety in a manner that meets the organisation's safety objectives	SMS Documentation Objective 5.1 and Continuous Improvement of the SMS Objective 15.1
		1.5.2 The service provider shall and maintain SMS documentation that describes: a) Safety policy and objectives; b) SMS requirements; c) SMS processes and procedures;	SMS Documentation Objective 5.2 ¹

¹ Note that objective 5.1 of this standard goes further than the requirements of ICAO Annex 19.

ICAO Annex 19 Ref	Element	Requirement	CANSO Standard of Excellence in SMS Link
		d) Accountabilities, responsibilities and authorities for SMS processes and procedures; and e) SMS outputs	
		1.5.3 The service provider shall develop and maintain an SMS manual as part of its SMS documentation	SMS Documentation Objective 5.3
		d) document and communicate safety responsibilities, accountabilities and authorities through the organisation	Organisational and individual safety responsibilities (maturity level descriptors in Objective 3.1 and 3.2 reflect this requirement), Safety Communication, SMS Documentation
2	Safety Risk Management		
2.1	Hazard Identification	2.1.1 The service provider shall develop and maintain a process that ensures that hazards in associated with its aviation products or services are identified. 2.1.2 Hazard identification shall be based on a combination of reactive, proactive and predictive methods of safety data collection.	Safety Risk Management Objective 7.1 and the Management of Change 14.1
2.2	Safety Risk Assessment and Mitigation	The service provider shall develop and maintain a process that ensures analysis, assessment and control of the safety risks associated with identified hazards.	Safety Risk Management Objective 7.2
3	Safety Assurance		
3.1	Safety Performance Monitoring and Measurement	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 risk controls 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	Safety Risk Management Objective 7.3 and Safety Performance Monitoring and Measurement Objectives 13.1 and 13.2 Safety Performance Monitoring and Measurement Objectives 13.1 and 13.2
3.2	Management of Change	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.	Management of Change Objective 14.1

ICAO Annex 19 Ref	Element	Requirement	CANSO Standard of Excellence in SMS Link
3.3	Continuous Improvement of the SMS	The service provider shall monitor and assess the effectiveness of their SMS processes to enable continuous improvement of the SMS	Continuous Improvement of the SMS Objective 15.2, Operational Safety Surveys and SMS Audits Objective 12.1
4	Safety Promotion		
4.1	Training and Education	4.1 The service provider shall develop and maintain a safety training programme that ensures that personnel are trained and competent to perform their SMS duties	Training and Education Objectives 16.1 and 16.2
		The scope of the safety training programme shall be appropriate to each individual's involvement in the SMS	Training and Education Objectives 16.1 and 16.2
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"> a. ensure that personnel are aware of the SMS to a degree commensurate with their positions; b. conveys safety-critical information; c. explains why particular safety actions are taken; d. explains why safety procedures are introduced or change. 	Safety Communication Objectives 17.1 and 17.2 ²

² Note that Objectives 17.3 and 17.4 in the Standard go further than the requirements of ICAO Annex 19.

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 is highlighted in the body of the Appendix.
- Statements within the Maturity Level Descriptors presented in italics reflect mandated requirements within Annex 19.
- 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	Assured	Optimised
<p>General SMS principles applicable to each study area</p>	<p>Awareness of the need for SMS exists. No specific formal implementation actions are in place or planned. The processes for managing safety are ad hoc and/or inconsistent with the organisation's safety obligations.</p> <p>Implementation of safety management depends on the performance and efforts of individuals. Processes are unpredictable and managed reactively.</p>	<p>The SMS framework implementation and activities are not yet mature, but are based on defined plans. A gap analysis has been performed to this CANSO Standard of Excellence, and an implementation plan is underway.</p>	<p>The SMS standard processes are in use across the organisation and are producing consistent results.</p> <p>The results are being measured using qualitative techniques.</p> <p>The SMS framework meets the required regulatory standard and complies with the SMS requirements of ICAO Annex 19. Processes are defined, and performance is managed.</p>	<p>The SMS framework is effective in achieving the overall safety policy and objectives of the organisation. SMS processes are quantitatively managed.</p> <p>Quantitative safety objectives are based on customer, end user and organisational needs.</p>	<p>SMS processes set international best practice, focusing on innovation and improvement. There is recognition that planning for safety is a continual process within an ANSP.</p> <p>Safety processes/systems are firmly embedded within the organisation.</p> <p>The effectiveness of the SMS and safety improvement actions is measured and evaluated against defined improvement criteria.</p>
<p>General principles for SMS framework implementation</p>	<p>The SMS framework is immature or non-existent in the organisation.</p>	<p>An SMS implementation plan is underway though not yet completed in some major aspects. The SMS may not yet meet the required regulatory standard.</p>	<p>The SMS implementation plan is largely complete.</p>	<p>The SMS framework is complete, functioning and effective in achieving the overall safety policy and objectives of the organisation.</p>	<p>The SMS framework is regularly reviewed and enhanced to achieve excellence in ATM safety management. On-going planning ensures that safety management activities are integrated and drive priorities for operational safety improvement.</p>

Objective	Informal Arrangements	Defined	Managed	Assured	Optimised
General principles for performance monitoring	The organisation is not measuring or monitoring its safety performance.	The organisation has a plan to capture information on its safety performance.	The organisation is collecting safety reports under a controlled process, and is responding to safety issues identified as a result of individual incident investigations.	The organisation is quantitatively measuring safety performance. It has identified its key safety risks and has developed plans for improvement.	The organisation is managing its key safety risks in conjunction with external stakeholders and can demonstrate improved safety performance.
<p>1.1 A positive and proactive, flexible, and informed safety culture (the shared beliefs, assumptions, and values regarding safety) that supports reporting and learning led by management.</p>	<p>Employees believe that safety will be achieved by complying with rules and regulations. A view which is reinforced by management.</p> <p>No mechanisms exist via which safety issues can be highlighted to staff.</p> <p>There are no avenues for differing functions to share information or collaborate about safety issues.</p>	<p>Employees are aware of their safety roles and responsibilities within their work team.</p> <p>There is recognition that the organisation needs to commit to improve safety performance.</p> <p>Organisation systems and process are being developed which support employees share safety lessons within and across teams and functional groups.</p>	<p>Employees are being trained to acquit their safety management related duties.</p> <p>The value which safety plays in the organisation is recognised and promoted.</p> <p>Management systems and approach demonstrates a genuine interest and commitment to address the safety issues which are raised.</p> <p>There is acceptance at all levels of the organisation that optimum safety performance can only be achieved when there is cross-organisational co-operation.</p>	<p>Employees are adequately trained to perform their safety management related duties.</p> <p>The value of safety to the organisation is promoted both within and outside the organisation.</p> <p>Management systems and processes support employees in their quest to be informed of and be adequately prepared for changes that may affect safety.</p> <p>Lessons learnt are actively sought and utilised to improve safety standards and processes.</p> <p>Individuals and organisational process support sharing safety information and concerns across organisational boundaries.</p>	<p>All within the organisation openly seek and exchange safety information.</p> <p>Employees are involved in the on-going review of safety.</p> <p>A future vision for safety within the organisation is documented and communicated.</p> <p>Management systems and approach encourages employees to challenge procedures/practices and people in their quest to improve safety performance.</p> <p>Management cooperates and supports customers, suppliers and contractors to improve their safety standards.</p>

Objective	Informal Arrangements	Defined	Managed	Assured	Optimised
<p>1.2 A just and open climate for reporting and investigation of occurrences</p> <p>NB: Thorough reporting and investigation must include the complete process from notification, data gathering, reconstruction, analysis, safety recommendation and implementation of remedial actions, up to final reporting, exchange of lessons learned and effective monitoring.</p>	<p>Management believes there are no issues regarding the existing reporting and investigation culture and therefore does not see the need for any activity or dialogue with the staff in this area.</p>	<p>Discussions between staff and management to define a just and open reporting and investigation climate are underway. However, no agreed policy and procedures are in place yet.</p>	<p>Policy and procedures which support an open reporting climate, and Just Culture principles are in place.</p> <p>Safety data-sharing and publication policies are supported by the staff.</p> <p>Safety data are sufficiently protected from external interference within legal limits.</p>	<p>Within the organisation, the line between acceptable and unacceptable behaviours is established and is known and accepted by the all levels in the organisation.</p> <p>Just culture reporting and investigation principles and processes are systematically applied within organisation.</p>	<p>Under certain legal regimes, there is a clear and published policy on how dialogue with judicial authorities and media is established and followed.</p> <p>As the organisation changes and evolves, the organisation sustains and maintains its Just Culture approach.</p> <p>Lessons from within the organisation and different industry sector are used to enhance to organisation's approach to Just Culture.</p>
<p>1.3 Regular measurement of safety culture and an improvement programme.</p>	<p>The organisation does not see the need to have a safety culture measuring mechanism in place.</p>	<p>The organisation is aware of the need to have periodic measurements of safety culture in place, as well as an improvement plan.</p> <p>However, what will be measured, and when, is still being defined.</p>	<p>Safety culture is measured and results are available.</p> <p>An improvement plan has been documented which addresses the need for individuals to be aware of, and support, the organisations shared beliefs, assumptions and values regarding safety</p>	<p>The organisation assesses its safety culture on a regular basis and implements improvements to any identified weaknesses.</p> <p>Safety Culture enablers and barriers are identified, and solutions to reduce barriers are being implemented.</p>	<p>All personnel are proactive and committed to improving safety.</p> <p>Safety Culture Surveys confirm that within the organisation, there is a high level of alignment between what is said what is done, and what is believed.</p> <p>Organisational management approves a continuous improvement plan.</p>

Objective	Informal Arrangements	Defined	Managed	Assured	Optimised
<p>2.1 The safety policy of the organisation presents the organisation's commitment to both safety and its resourcing. The priority of safety within the organisation is also articulated.</p>	<p>The need for a safety policy has been recognised but one does not exist.</p>	<div data-bbox="692 368 1160 560" style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p><i>Draft safety policy is available which reflects the organisation's commitment to safety and its priority.</i></p> </div> <div data-bbox="692 576 1160 791" style="border: 1px solid black; padding: 5px;"> <p><i>The policy is communicated to staff throughout the organisation and visibly endorsed by an accountable executive.</i></p> </div> <p>The organisation recognises that the implemented policy needs to be signed by an accountable executive and communicated to all employees and stakeholders.</p>	<div data-bbox="1205 368 1583 727" style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p><i>The safety policy has been finalised and signed by an accountable executive. It presents the organisation's commitment to both safety and its adequate resourcing.</i></p> </div> <div data-bbox="1205 743 1583 959" style="border: 1px solid black; padding: 5px;"> <p><i>There is a periodic review of the policy to assure that it continues to be relevant and appropriate.</i></p> </div>	<p>Updates to the policy are undertaken when the accountable executive changes or if the organisation believes that the policy does not adequately address the organisation's commitment to safety.</p>	<p>The organisation benchmarks its safety policy against other ANSPs and high reliability industries. Gaps and deficiencies are addressed in the policy, and actioned through the SMS.</p>
<p>2.2 The safety policy addresses key attributes of the organisation's approach to safety. These attributes will most likely include culture, visible endorsement, communication and safety reporting.</p>	<p>The organisation is considering which key attributes of its approach to safety should be included in its safety policy.</p>	<p>The organisation's approach to safety has been agreed and is reflected in the policy.</p>	<p>The policy is beginning to drive the form of the SMS and the organisation's approach to safety.</p> <div data-bbox="1205 1150 1583 1469" style="border: 1px solid black; padding: 5px;"> <p><i>...including safety reporting, and the types of behaviours that are unacceptable and include the circumstances under which disciplinary action would not apply.</i></p> </div>	<p>Periodic reviews of the organisation's approach to safety management are being undertaken. If necessary these are reflected in updates to the safety policy.</p>	<p>The organisation continues to question its overall approach to safety and its management. It will implement change when evidence is available that the current approach can be enhanced.</p>

3. Safety Accountabilities (ICAO Reference 1.2 and 1.3)

Objective	Informal Arrangements	Defined	Managed	Assured	Optimised
<p>3.1 An approved, clearly documented, and recognised system for the management of safety. Management structure, responsibilities, accountabilities and authorities are clearly defined and documented.</p>	<p>No formal designation of authorities, responsibilities or accountabilities for the management of safety exists.</p>	<p>Safety authorities, responsibilities, and accountabilities have been identified but not yet formalised. Line managers assume responsibility for safety.</p>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p><i>Authorities, responsibilities, and accountabilities for the management of safety have been defined and documented. This includes an accountable executive who, irrespective of other functions, has ultimate responsibility and accountability, on behalf of the organisation, for the implementation and maintenance of the SMS.</i></p> </div> <p>Delineation of responsibility for the development, oversight and implementation of the SMS is clearly understood.³</p>	<p>Procedures are in place to address the need to review safety authorities, responsibilities, and accountabilities after any significant organisational change.</p>	<p>Safety authorities, responsibilities, and accountabilities are periodically reviewed to determine whether they are suitable and effective (i.e., continuous improvement of safety management).</p>

³ Line management is usually responsible for the implementation of procedures or practices which are required by the SMS, whilst specific responsibility for the development and oversight of the SMS and the organisation’s safety outcomes centre in safety departments, executive management and board oversight committees depending on the structure and governance of the organisation.

Objective	Informal Arrangements	Defined	Managed	Assured	Optimised
<p>3.2 A clearly defined safety management function/safety manager that is independent of line management.</p>	<p>A safety management function has not yet been formed to develop the SMS.</p>	<p>A safety management function has been formed to develop and maintain the SMS.</p>	<p><i>The safety management function is independent of line management and has the authority to develop and maintain an effective SMS.</i></p> <p>The safety manager has access to the resources required for the proper development and maintenance of the SMS.</p>	<p>The highest organisational level recognises its role in the SMS and actively supports the development, implementation, maintenance, and promotion of the SMS throughout the organisation (including support departments).</p>	<p>There is clear evidence that the highest organisational level plays a pro-active role in the continuous improvement of the SMS.</p>
<p>3.3 Clear understanding and acceptance of safety management accountabilities and responsibilities by all relevant staff and contractors.</p>	<p>Knowledge of the principles underpinning SMS amongst all staff and contractors is negligible.</p>	<p>All staff and contractors apply rules and procedures to their tasks in the knowledge that some of the rules and procedures need improvement.</p> <p><i>All staff and contractors are only partially aware of their roles and accountabilities in the SMS.</i></p>	<p>All staff and contractors are aware of how their actions impact the safety of the wider operation and how the actions of others impact safety.</p> <p><i>Accountability for safety in the organisation is understood by all relevant staff and contractors.</i></p>	<p>All staff and contractors across the organisation are actively promoting and improving safety. All staff and contractors take proactive day-to-day action to have rules and procedures changed where they identify a safety benefit by the change.</p>	<p>The organisation regularly reviews and assesses documented safety management responsibilities.</p>

4. Coordination of Emergency Response Plan (ICAO Reference 1.4)

Objective	Informal Arrangements	Defined	Managed	Assured	Optimised
<p>4.1 Emergency response procedures and an emergency response plan that documents the orderly and efficient transition from normal to emergency operations and 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>There are procedures and some redundant capabilities and resources to cope with abnormal and unexpected situations.</p>	<p>All primary systems have redundant capabilities, and emergency response procedures have been developed, documented, and distributed to appropriate staff.</p> <div data-bbox="952 758 1355 1098" style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><i>The emergency response plan is properly co-ordinated with the emergency response plans of those organisations it must interface with during the provision of its services. (Annex 11 – 1.4)</i></p> </div>	<p>Primary air traffic management systems are reliable and have redundant capabilities and back-up systems.</p> <p>The emergency response plan and procedures have been rehearsed through desktop or operational exercises.</p>	<p>The emergency response planning processes and emergency procedures and plans are regularly exercised and revised to keep them up-to-date.</p>

Objective	Informal Arrangements	Defined	Managed	Assured	Optimised
<p>5.1 A formal SMS that meets all applicable safety and regulatory requirements.</p>	<p>There is no SMS in place. There may be deviations from safety regulatory requirements.</p> <p><i>The need for an SMS Implementation Plan is recognised [see section 15.1]</i></p>	<p>The SMS is partially implemented, but it is not yet effective; it does not yet meet the standards established through safety regulatory requirements.</p> <p><i>A compliance gap analysis has been performed and a SMS Implementation Plan developed to meet the applicable safety regulatory requirements.</i></p>	<p>The essential parts of the SMS are implemented, and the organisation meets the standards established through safety regulatory requirements.</p> <p><i>The requirements expressed in the SMS Implementation Plan have been completed.</i></p>	<p>The SMS is fully implemented and effective. SMS processes and outputs are monitored regularly to identify deviations.</p>	<p>Where applicable, the organisation is committed to going beyond compliance and operating at the highest international safety standard.</p>
<p>5.2 Clearly defined and documented safety standards and procedures.</p>	<p>Operations manuals do not contain any specific safety management procedures.</p>	<p><i>The documentation of SMS processes and procedures has started and is progressing according to the SMS Implementation Plan containing as a minimum:</i></p> <ul style="list-style-type: none"> <i>a. Safety policy and objectives;</i> <i>b. SMS requirements;</i> <i>c. SMS processes and procedures;</i> <i>d. Accountabilities, responsibilities and authorities for SMS processes and procedures; and</i> <i>e. SMS outputs.</i> 	<p>The documentation of the essential parts of the SMS processes and procedures is complete. The processes and procedures ensure that the organisation is compliant with all applicable safety and regulatory requirements.</p>	<p>There is clear evidence that the safety and safety management documentation is readily available to all personnel in the organisation. This documentation details safety and safety management processes and procedures that meet or exceed the applicable safety and regulatory requirements.</p>	<p>Processes are in place and are being applied to give effect to the organisation commitment to continuously improve safety and safety management processes and procedures.</p>

Objective	Informal Arrangements	Defined	Managed	Assured	Optimised
<p>5.3 Safety management documents are regularly reviewed, assessed, and maintained.</p>	<p>There is no formal process that maintains the SMS, nor is there an identified authority (or authorities) responsible for the updates.</p>	<p>A process to maintain all safety and safety management procedures exists.</p> <div data-bbox="683 502 1198 614" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p><i>Procedures are kept up-to-date on an ad hoc basis.</i></p> </div> <p>The authority (or authorities) responsible for the updates are partially identified.</p>	<div data-bbox="1232 430 1500 790" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p><i>The process to maintain a manual of all safety and safety management procedures is documented and practised.</i></p> </div>	<p>There is a formal process in place to periodically review safety and safety management procedures and ensure that they remain relevant, consistent with industry practice and effective.</p> <p>The authority (or authorities) responsible for the updates are clearly identified.</p> <p>All safety-related procedures are documented in an appropriate manner and are known by the staff.</p>	<p>Changes within the organisation that could affect safety and/or the safety management framework are subjected to formal review.</p>

Objective	Informal Arrangements	Defined	Managed	Assured	Optimised
<p>6.1 An organisation that takes into account the need to ensure, in a timely manner, that there are no inconsistencies with regional/ international safety standards.</p>	<p>There is little awareness of the regional or international safety standards.</p>	<p>There is an awareness of the regional and international safety standards. Work has started in some areas.</p>	<p>Regional and international safety standards are known and met as required.</p>	<p>There is a process in place to address the need for timely and consistent compliance with regional or international safety standards.</p>	<p>The organisation has a structured mechanism to address the need for ongoing and consistent compliance with regional or international safety standards. It contributes to a regional or international dialogue to improve these standards.</p>

Objective	Informal Arrangements	Defined	Managed	Assured	Optimised
<p>7.1 Hazards to operations are reported and assessed.</p>	<p>Hazards to operations are not highlighted by either managers or staff. There is a however a recognition that risks to operations do exist.</p>	<p><i>Processes are being developed with aim to assist the organisation;</i></p> <ul style="list-style-type: none"> – <i>Identify and report hazards</i> – <i>Assess the risk which these hazards pose to operations</i> – <i>Document the existence of the hazard and its risk level.</i> <p>The number of processes by which hazards are identified are likely to limited.</p>	<p>There is a growing number of staff who are able to assist in the identification and assessment of hazards. The organisation is continuing to expand the number of hazards that it assesses. Consequence and likelihood tables are now well understood by relevant staff.</p> <p><i>Hazard identification is based on a combination of reactive, proactive and predictive methods of safety data collection.</i></p>	<p>Hazard identification and analysis process are continually refined on the basis of internal experience and growing knowledge in the safety management practitioners.</p> <p>More hazard identification techniques are being used, and more quantitative analysis techniques are being adopted in relevant scenarios.</p> <p>The organisation recognises the increasing need to include stakeholders in both the identification and assessment process.</p>	<p>Documentation and practice reflect the use of both proactive and predictive methods to inform the organisation about inherent risk levels. Improvement activities focuses on:</p> <ul style="list-style-type: none"> – Recording and dissemination of risk information – Use of risk information as performance metrics

Objective	Informal Arrangements	Defined	Managed	Assured	Optimised
<p>7.2 Assessed risks are mitigated or controlled.</p>	<p>There is little understanding of the need to mitigate or control risk, even when risks are recognised.</p>	<p>The need to mitigate and control risks is acknowledged. Processes are being put in place to document how this occurs, how appropriate mitigators and controls should be selected, and who is required to sign off if residual risk levels are over certain thresholds.</p> <p>Risk tolerability sign off levels for managers have been proposed.</p>	<p><i>Analysis, assessment, mitigation and control of risk is being undertaken, based on the severity of the risk outcome.</i></p> <p><i>The risk levels which managers can accept is well known, and being applied.</i></p>	<p>An increased range of risk controls are being considered for implementation to address gaps or deficiencies.</p> <p>Formal risk management schemes can be replaced by ALARP (as low as reasonably practicable) assessments based on proactive and predictive methods of safety data collection.</p>	<p>The organisation uses hierarchy of controls to assure that risks are well managed.</p>
<p>7.3 Risk controls are monitored for effectiveness, and remedial action taken if controls are not working effectively.</p>	<p>There is little understanding of what constitutes a risk control at either a system or local level.</p> <p>No monitoring of the effectiveness of these controls is undertaken.</p>	<p>There is growing appreciation of what constitutes a risk control at both a system and local level.</p> <p>Processes are being developed as to how risk controls can be identified (at both a system and local level), and how their effectiveness can be assessed.</p>	<p><i>Processes are documented and are being practically implemented which allow the organisation to identify, document and monitor risk controls.</i></p>	<p>Processes and practices are being refined to assure that the organisation understands its risk baseline, the controls which are in place, and any performance deviations or deficiencies.</p> <p>An increased range of risk controls are being considered for implementation to address gaps or deficiencies.</p>	<p>The organisation works to improve the performance and existing controls where they are found to be deficient, introduce new controls where gaps are identified and increase the integrity of the risk control framework through capital expenditure programmes.</p>

Objective	Informal Arrangements	Defined	Managed	Assured	Optimised
<p>Design addresses the whole system, people, procedures, airspace and equipment.</p> <p>Systems contain features to ensure they operate safely and support the operator's decision-making process.</p> <p>Equal weight is given to the success and failure case approaches.</p>	<p>Safety is not explicitly addressed in the design process.</p>	<p>Safety addresses the failure case only and focuses on the reliability of equipment.</p>	<p>Success and failure cases are considered during the design process. Safety features are designed using an ad-hoc rather than data driven process.</p>	<p>A robust process using objective data is followed to identify safety features which can be implemented in new and existing system designs.</p> <p>The success and failure cases are given equal importance during the design process.</p>	<p>Causal factors are used as leading indicators to inform a continuous safety performance improvement process.</p>

Objective	Informal Arrangements	Defined	Managed	Assured	Optimised
<p>9.1 Effectively managed safety-related internal interfaces (e.g, quality management system, security, and environment).</p>	<p>The various different internal interfaces operate in isolation.</p>	<p>Internal safety-related interfaces are managed on an informal or <i>ad hoc</i> basis.</p>	<p>Internal safety-related interfaces are managed with a solid understanding of the boundaries and relationships between the interfaces.</p>	<p>Safety-related internal interfaces are coordinated, and relationships are managed through interface agreements (e.g., letters of agreement (LOA), memoranda of understanding (MOU), service-level agreements (SLA)).</p>	<p>A process is in place to regularly identify weaknesses in agreed interface arrangements (LOA/MOU/SLA etc.).</p>
<p>9.2 The effective management of external interfaces with a safety impact (e.g., military, airspace users, airports).</p> <p>Formalised processes and procedures dealing with external agreements, services, and supplies (e.g., cross-border letters of agreement).</p> <p>(NB: For certain organisations MET, CNS and/or AIS are internal interfaces of the organisation).</p>	<p>There are a limited number of agreements in place.</p>	<p>Safety-related external interfaces are managed on an informal or <i>ad hoc</i> basis.</p> <p>Draft contractual arrangements are being prepared and negotiated for all safety-related external interfaces.</p> <p>Some elements are already formalised and implemented.</p>	<p>Safety requirements are specified and documented in appropriate agreements.</p>	<p>Activities with safety-related external interfaces are coordinated and relationships are managed through documented agreements.</p> <p>Safety requirements within contractual agreements are systematically reviewed and revised as necessary.</p>	<p>External services and suppliers are surveyed/audited and systematically monitored to identify deviations from the documented arrangements.</p>

10. Fatigue-related Risk Management

Objective	Informal Arrangements	Defined	Managed	Assured	Optimised
<p>10.1 A data-driven means by 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>Fatigue-related risk is considered as an operational hazard, but there is no formal risk based system by which to manage it.</p> <p>Policy has been developed which recognises the need for a formal risk based approach to fatigue-related risk</p>	<p>A formal risk based system which focuses on fatigue-related risk is being implemented which addresses:</p> <ul style="list-style-type: none"> • Responsibilities of both management and operational personnel • Methods for assessing and managing fatigue risk 	<p>Compliance with fatigue-related risk procedures is continually assessed.</p> <p>Processes are in place to assess and continually improve approaches to fatigue-risk management.</p>	<p>The organisation uses the data and information from internal and external sources to continually improve its approach to managing fatigue-related safety risk.</p>

Objective	Informal Arrangements	Defined	Managed	Assured	Optimised
<p>11.1 A continuing organisation-wide process to report and investigate safety occurrences and risks.</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 <i>ad hoc</i> basis and with little or no feedback.</p>	<p>The reporting system is widespread but does not yet cover the whole organisation. Feedback is given on <i>ad hoc</i> basis.</p> <p>There is a plan to formalise the existing reporting and investigation system.</p> <p>There is commitment from management to allocate resources to implement this system.</p>	<p>The system in place is commensurate with the size of the organisation</p> <div data-bbox="1086 486 1438 774" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p><i>The organisation has a complete and formal system that records all reported information relevant to the SMS, including incidents and accidents.</i></p> </div> <p>Corrective and preventive actions are taken in response to event analysis.</p>	<p>Identified safety-related risks and deficiencies are actively and continuously monitored and reviewed for improvement.</p>	<p>Personnel who report safety occurrences, risks and problems are empowered to suggest corrective actions, and there is a feedback process in place.</p>

Objective	Informal Arrangements	Defined	Managed	Assured	Optimised
<p>12.1 Internal and independent (external) operational safety surveys and SMS audits.</p>	<p>There is no plan to conduct systematic operational safety surveys and SMS audits.</p> <p>Operational safety surveys, SMS audits, and gap assessments are conducted on an <i>ad hoc</i> basis (e.g., when deficiencies in the system or in working arrangements are found).</p>	<p>There is a plan in place to formalise the conduct of systematic operational safety surveys and SMS audits.</p> <p>A limited number of surveys and audits have been carried out.</p>	<p>Internal operational safety surveys and SMS audits are conducted on a periodic basis.</p> <div data-bbox="1070 523 1424 879" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p><i>Based on the output of operational safety surveys and SMS audits, a process is in place that requires the development and implementation of appropriate improvement plans.</i></p> </div>	<p>Internal or external operational surveys and SMS audits are carried out in a systematic way. There is a process in place to monitor, analyse trends, and identify areas that require follow-up safety surveys or audits.</p> <p>Follow-up surveys, audits, and gap assessments are conducted in all areas affecting operational safety and the SMS.</p>	<p>Independent (external) operational safety surveys and SMS audits are periodically conducted.</p> <p>The outputs from operational safety surveys and SMS audits are incorporated as appropriate into operations or the SMS.</p> <p>There is a process in place that requires external data (e.g, pilot performance trend information) to be considered when selecting areas to be subject to operational safety surveys and SMS audits.</p>

Objective	Informal Arrangements	Defined	Managed	Assured	Optimised
<p>13.1 An established and active monitoring system that uses and tracks suitable safety indicators and associated targets (e.g., lagging and leading indicators).</p>	<p>There are no indicators, thresholds, or formal monitoring system in place to measure safety achievements and trends.</p>	<p>There is a plan to implement a monitoring system. A limited set of indicators has been implemented.</p>	<p><i>The safety monitoring system has been implemented and documented.</i></p> <p><i>Indicators and targets have been set: limited to meeting the safety regulatory requirements to verify the safety performance of the organisation.</i></p>	<p>Additional indicators are also defined and monitored to meet both organisational and local safety requirements.</p> <p>All indicators are tracked against thresholds/targets on a regular basis.</p> <p>Trends are analysed for safety improvement purposes.</p>	<p>Safety indicators covering all aspects of the system/operations are mature and used to measure safety improvement.</p> <p>There are comprehensive metrics in place to measure and monitor indicators and thresholds throughout the system.</p>
<p>13.2 Methods to measure safety performance, which is compared within and between ANSPs.</p>	<p><i>Ad hoc</i> safety performance data related to individual incidents is available, but there is no systematic approach for measuring safety performance.</p>	<p>The implementation of some qualitative and quantitative safety performance techniques in certain parts of the organisation has started. However, there is insufficient data to analyse.</p>	<p><i>Qualitative techniques are in place, and the implementation of quantitative techniques has started to verify the safety performance of the organisation and to validate the effectiveness of risk controls.</i></p>	<p>Safety performance is measured using statistical and other quantitative techniques. Internal comparative analysis is done, and external comparative analysis has begun.</p> <p>Results are used to drive further safety improvements across the organisation.</p>	<p>The reporting, operational safety survey and SMS auditing programmes are integral parts of the management and operational processes.</p> <p>Internal and external comparative analysis is well-established.</p>

14. Management of Change (ICAO Reference 3.2)

Objective	Informal Arrangements	Defined	Managed	Assured	Optimised
<p>14.1 Documentation and reporting mechanisms are in place to assure that internal and external stakeholders are provided with assurance about the means by which safety risks which may be introduced during and/or following implementation of change are managed and mitigated.</p>	<p>No change management processes are in place, although the organisation recognises that impacts of change do need to be managed.</p>	<p><i>Change management processes are being developed to address:</i></p> <ul style="list-style-type: none"> — <i>How the impact of change can be assessed from a risk perspective</i> — <i>How to involve stakeholders</i> — <i>How to document and quantify the impacts</i> — <i>Who will determine whether a change is authorised or not</i> 	<p>Change management practices are being implemented. Stakeholders including the regulator have been briefed on the process, and their role in the process.</p> <p>Changes are being assessed for impact ahead of the change and the impacts of the controls and mitigators are being assessed after the change has occurred.</p>	<p>Change management practices are refined on the basis of experience within the organisation.</p> <p>More formalised assessed on the performance of controls and mitigators is being introduced.</p>	<p>The organisation continually looks to refine its approach to change management. Efforts will revolve around to better:</p> <ul style="list-style-type: none"> — Define and report on transitional risks — Address differing scales of change within processes — Involve internal stakeholders.

15. Continual Improvement of the SMS (ICAO Reference 3.3)

Objective	Informal Arrangements	Defined	Managed	Assured	Optimised
<p>15.1 An integrated planning process drives the continual improvement of the SMS.</p>	<p><i>Ad hoc</i> or non-existent safety planning process is utilised by the organisation.</p> <p>Safety goals and objectives have not been identified or documented for the implementation of a safety management system.</p>	<p>The organisation is formalising the means by which its plans to improve the way it delivers and manages safety outcomes.</p>	<p>Formalising planning processes are in place, which are reviewed for effectiveness on a regular basis.</p>	<p>A plan to improve the SMS and proactively manage safety risk published on a periodic basis with specific accountable and measurable safety management goals and targets.</p>	<p>The Safety Improvement plan (or Corporate Safety Plan) goals and objectives are developed and prioritised based on corporate safety risks which have been identified through trend analysis, risk assessment processes and identified system safety deficiencies. Where appropriate (considering ANSP size and complexity), the organisation is committed to share and implement ATM safety management international best practices.</p>
<p>15.2 A structured approach to gather and share information on operational safety and SMS best practices from the industry.</p>	<p>There is no structured approach to gather best practices from the industry.</p> <p>The organisation has the capability to identify and adopt industry best practices on an <i>ad hoc</i> basis. There are no plans to release and share best practices with industry stakeholders.</p>	<p>There is an <i>ad hoc</i> structure in place to gather information on operational safety and SMS best practices.</p> <p>Some initial implementation has begun. Some internal best practices are spread across units within the organisation, but there is no systematic structure for the adoption of best practices. Sharing of best practices takes place in response to requests for assistance from industry stakeholders.</p>	<p><i>A structure has been established to identify applicable operational safety and SMS best practices from the industry to enable improvements to the SMS.</i></p> <p><i>Best practices are shared with industry stakeholders as required by regulation.</i></p>	<p>Industry best practices are periodically reviewed to provide the most current information which is then assessed for applicability, and adopted as appropriate. Sharing of safety-related best practices with industry has demonstrated improved safety performance.</p>	<p>All relevant best practices are readily accessible to appropriate personnel. The organisation actively participates in developing industry best practices.</p>

Objective	Informal Arrangements	Defined	Managed	Assured	Optimised
<p>16.1 Staff, and contractors where appropriate, that are educated and trained, in safety and safety management, and where required, licensed.</p> <p>Note this objective is primarily focused on ATC, Engineering and Senior staff who have the ability to affect the safety of the operational service.</p>	<p>Staff, and contractors where appropriate, are provided on an <i>ad hoc</i> basis with training in for safety and safety management activities.</p>	<p>Staff, and contractors where appropriate, are provided with training and education but spaces are limited and planning is <i>ad hoc</i>. Staff are therefore not fully equipped to deal with the safety management practices which they may be called on to apply. Understanding of the organisation's safety approach is lacking.</p>	<p><i>An annual planning process for training is in place. The plan assures that appropriate staff will be aware of all safety management practices which they may be called upon to apply and contribute to, and there is an understanding of the organisation's safety approach.</i></p>	<p>There is a process for the training provider(s) to receive feedback on the effectiveness of training programmes; based on feedback, the training programmes are revised to improve effectiveness.</p>	<p>Training plans cover safety and SMS activities and allow for the improvement of staff skills and competency.</p>
<p>16.2 Staff are competent to conduct their obligations under the SMS.</p>	<p>There are no formal competency methods (including proficiency, licensing, and training).</p>	<p>Competency methods are being developed.</p>	<p><i>Competency methods have been designed and are applied to ensure staff, where appropriate, are educated, trained and competent to perform the specific duties required of them by the SMS.</i></p>	<p>Means by which competency standards are determined are subject to review and refinement.</p>	<p>Competency methods (including proficiency, licensing, and training) are periodically reviewed and improved with industry best practices adopted.</p>

Objective	Informal Arrangements	Defined	Managed	Assured	Optimised
<p>17.1 Staff are informed about safety and safety management standards which are relevant to their position.</p>	<p>Staff have limited knowledge of SMS processes and procedures.</p>	<p>Limited communication is presented as to why particular safety actions have been taken and/or safety management procedures introduced.</p> <p>Internal communications within the organisation does not focus on safety and its management.</p>	<p><i>Communication strategies are being developed to ensure that staff are aware of the safety management practices which are relevant to their position. Specific communication strategies are being implemented to address situations where procedures have changed or when critical safety action has been taken.</i></p>	<p>Communication mediums are regularly assessed for effectiveness. Gaps and deficiencies are acknowledged and addressed.</p>	<p>Safety is a key focus of internal communication. The organisation is looking to increase the number of mediums through which safety messages are sent within the organisation.</p>
<p>17.2 An organisation-wide means to record and disseminate lessons learned and safety critical information.</p>	<p>Safety lessons learned are known only to those who experience them.</p>	<p>There is an intention to develop a means to record and share lessons learned, including the reasons for making change and safety-critical information. This may already happen, but only on an <i>ad hoc</i> basis.</p>	<p>The process for sharing safety lessons learned is systematic and operational and the majority of data is shared with appropriate personnel.</p> <p><i>The rationale for taking action and making changes to procedures is explained to staff. Safety-critical information is disseminated to all appropriate staff.</i></p>	<p>All safety lessons learned are systematically shared across the organisation at all appropriate levels.</p> <p>Corrective actions are taken to address lessons learned.</p>	<p>There is clear evidence that the internal lessons learned dissemination process is embedded across the organisation at all levels and is periodically reviewed.</p>

Objective	Initiating	Planning / Initial Implementation	Implementing	Managing & Measuring	Continuous Improvement
<p>17.3 Appropriate safety information and knowledge is shared with industry stakeholders.</p> <p>Information disclosure is compliant with agreed publication and confidentiality policies/ agreements.</p>	<p>Safety data and information are treated as confidential. There are no plans to release it in any way to any industry stakeholders.</p>	<p>Safety data and information are shared internally, but the organisation is reluctant or unwilling to share data with industry stakeholders.</p>	<p>Safety data and information is shared internally, nationally, and with international bodies when it is required by regulation.</p>	<p>There is a clear and published policy that encourages the proactive sharing of safety-related information with other parties.</p>	<p>Safety data and information are actively shared internally, nationally, with recognised international bodies, and with other industry stakeholders.</p> <p>The organisation has a process to receive and act on safety data and information from external stakeholders.</p>
<p>17.4 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>A limited amount of safety-related performance information is made available, but only to selected authorities.</p>	<p>High-level safety-related performance information is made available according to regulatory requirements.</p>	<p>Safety performance information not governed by regulatory requirements is also made available to the public.</p>	<p>The organisation voluntarily makes available appropriate safety-related performance information to the general public.</p> <p>The achieved safety levels and trends are transparent to the general public.</p>

Appendix B

CANSO Standard of Excellence in SMS

Objective Mapping of Edition 1 to Edition 2

Edition 1			Edition 2		
Component	Element	Objective	Component	Element	Objective
Safety Culture	Development of a Positive and Proactive Safety Culture	1.1 A positive and proactive just, flexible, and informed safety culture (the shared beliefs, assumptions, and values regarding safety) that supports reporting and learning led by management. (Safety Culture and Just Culture defined in Section 10: Terms and Definitions)	Safety Culture	Development of a Positive and Proactive Safety Culture	1.1 A positive and proactive, flexible, and informed safety culture (the shared beliefs, assumptions, and values regarding safety) that supports reporting and learning led by management. (Safety Culture and Just Culture defined in Section 10: Terms and Definitions)
		1.2 Regular measurement of safety culture and an improvement programme			1.3 Regular measurement of safety culture and an improvement programme
		1.3 An open climate for reporting and investigation of occurrences NB: Thorough reporting and investigation must include the complete process from notification, data gathering, reconstruction, analysis, safety recommendation and implementation of remedial actions, up to final reporting, exchange of lessons learned and effective monitoring.			1.2 An open climate for reporting and investigation of occurrences NB: Thorough reporting and investigation must include the complete process from notification, data gathering, reconstruction, analysis, safety recommendation and implementation of remedial actions, up to final reporting, exchange of lessons learned and effective monitoring.
Safety Policy	Organisational and Individual Safety Responsibilities	2.1 An approved, clearly documented, and recognised system for the management of safety. Management structure, responsibilities, accountabilities and authorities are clearly defined and documented.	Safety Policy and Objectives	Safety Accountabilities	3.1 An approved, clearly documented, and recognised system for the management of safety. Management structure, responsibilities, accountabilities and authorities are clearly defined and documented.
		2.2 A clearly defined safety management function that is independent of line management.	Safety Policy and Objectives	Safety Accountabilities	3.2 A clearly defined safety management function/safety manager that is independent of line management.
		2.3 An integrated safety planning process is adopted by the organisation with published and measurable safety goals and objectives which are accountable to the executive.	Safety Assurance	Continual Improvement of the SMS	15.1 An integrated safety planning process is adopted by the organisation with published and measurable safety goals and objectives.
		2.4 Clear understanding and acceptance of safety management responsibilities by all staff and contractors. Commitment to continuous improvement to safety.	Safety Policy and Objectives	Safety Accountabilities	3.3 Clear understanding and acceptance of safety management responsibilities by all staff and contractors.

Edition 1			Edition 2		
Component	Element	Objective	Component	Element	Objective
	Timely Compliance with International Obligations	3.1 A formal SMS that meets all applicable safety and regulatory requirements.	Safety Policy and Objectives	SMS Documentation	5.1 A formal SMS that meets all applicable safety and regulatory requirements.
		3.2 An organisation that strives to go beyond compliance and takes into account the need to ensure, in a timely manner, that there are no inconsistencies with regional/international safety standards.	Safety Policy and Objectives	Compliance with International Obligations	6.1 An organisation that strives to go beyond compliance and takes into account the need to ensure, in a timely manner, that there are no inconsistencies with regional/international safety standards
Safety Achievement	Safety Standards and Procedures	4.1 Clearly defined and documented safety standards and procedures.	Safety Policy and Objectives	SMS Documentation	5.2 Clearly defined and documented safety standards and procedures.
		4.2 Staff know about the safety and safety management standards, which are regularly reviewed, assessed, and maintained.	Safety Policy and Objectives	SMS Documentation	5.3 Safety management documents are regularly reviewed, assessed, and maintained.
		4.3 Emergency response procedures and an emergency response plan that documents the orderly and efficient transition from normal to emergency operations and return to normal operations.	Safety Policy and Objectives	Coordination of Emergency Response Plan	4.1 Emergency response procedures and an emergency response plan that documents the orderly and efficient transition from normal to emergency operations and return to normal operations
	Competency	5.1 Staff, and contractors where appropriate, that are trained, competent in safety and safety management, and where required, licensed.	Safety Promotion	Training and Education	16.1 Staff, and contractors where appropriate, that are trained, competent in safety and safety management, and where required, licensed
	Risk Management	6.1 A continuing risk management process that identifies, assesses, classifies, and controls all identified safety risks within the organisation, including potential future risks.	Safety Risk Management		7.1 Hazards to operations are reported and assessed
					7.2 Assessed risks are mitigated or controlled
					7.3 Risk controls are monitored for effectiveness, and remedial action taken if controls are not working effectively.

Edition 1			Edition 2		
Component	Element	Objective	Component	Element	Objective
			Safety Assurance	Management of Change	14.1 Documentation and reporting mechanisms are in place to assure that internal and external stakeholders are provided with assurance about the means by which safety risks which may be introduced during and/or following implementation of change are managed and mitigated.
	Safety Interfaces	7.1 Effectively managed safety-related internal interfaces (e.g. quality management system, security, and environment).	Safety Achievement	Safety Interfaces	9.1 Effectively managed safety-related internal interfaces (e.g. quality management system, security, and environment).
		7.2 The effective management of external interfaces with a safety impact (e.g., military, airspace users, airports).			9.2 The effective management of external interfaces with a safety impact (e.g., military, airspace users, airports).
		Formalised processes and procedures dealing with external agreements, services, and supplies (e.g., cross-border letters of agreement). (NB: for certain organisations MET, CNS and/or AIS are internal interfaces of the organisation).	Safety Achievement	Safety Interfaces	Formalised processes and procedures dealing with external agreements, services, and supplies (e.g., cross-border letters of agreement). (NB: For certain organisations MET, CNS and/or AIS are internal interfaces of the organisation).
Safety Assurance	Safety Reporting, Investigation and Improvement	8.1 A continuing organisation-wide process to report and investigate safety occurrences and risks.	Safety Assurance	Safety Reporting, Investigation and Improvement	11.1 A continuing organisation-wide process to report and investigate safety occurrences and risks.
		8.2 An organisation-wide means to record and disseminate lessons learned	Safety Promotion	Safety Communication	17.2 An organisation-wide means to record and disseminate lessons learned and safety critical information
		8.3 Appropriate safety information and knowledge is shared with industry stakeholders.	Safety Promotion	Safety Communication	17.3 Appropriate safety information and knowledge is shared with industry stakeholders.
		Information disclosure is compliant with agreed publication and confidentiality policies/agreements.			Information disclosure is compliant with agreed publication and confidentiality policies/agreements
	Safety Performance Monitoring	9.1 An established and active monitoring system that uses and tracks suitable safety indicators and associated targets (e.g., lagging and leading indicators).	Safety Assurance	Safety Performance Monitoring and Measurement	13.1 An established and active monitoring system that uses and tracks suitable safety indicators and associated targets (e.g., lagging and leading indicators).

Edition 1			Edition 2		
Component	Element	Objective	Component	Element	Objective
		9.2 Methods to measure safety performance, which is compared within and between ANSPs	Safety Assurance	Safety Performance Monitoring and Measurement	13.2 Methods to measure safety performance, which is compared within and between ANSPs
		9.3 A general public knowledgeable of the ANSP's performance through routine publication of achieved safety levels and trends. (Information disclosure complies with the requirements of ICAO Annex 13, Attachment E)	Safety Promotion	Safety Communication	17.4 A general public knowledgeable of the ANSP's performance through routine publication of achieved safety levels and trends. (Information disclosure complies with the requirements of ICAO Annex 13, Attachment E)
	Operational Safety Surveys and SMS Audits	10.1 Internal and independent (external) operational safety surveys and SMS audits.	Safety Assurance	Operational Safety Surveys and SMS Audits	12.1 Internal and independent (external) operational safety surveys and SMS audits.
Safety Promotion	Adoption and Sharing of Best Practises	11.1 A structured approach exists to promote safety, its standing within the organisation and lessons learned through application of the SMS.			<i>Objective deleted:</i> 1. Promotion and standing of safety is captured in objective 2.1 which addresses safety policy; 2. Lessons learnt is addressed objective 17.2
		11.2 A structured approach to gather information on operational safety and SMS best practices from the industry.	Safety Assurance	Continual Improvement of the SMS	15.2 A structured approach to gather information on operational safety and SMS best practices from the industry.
		11.3 Sharing of safety and SMS-related best practices with industry stakeholders.	Safety Assurance	Continual Improvement of the SMS	15.2 Sharing of safety and SMS-related best practices with industry stakeholders
			Safety Policy and Objectives	Safety Policy	2.1 The safety policy of the organisation presents the organisation's commitment to both safety and its resourcing. The priority of safety within the organisation is also articulated.
			Safety Policy and Objectives	Safety Policy	2.2 The safety policy addresses key attributes of the organisations approach to safety. These attributes will most likely include culture and safety reporting.
			Safety Achievement	Safety by Design	8.1 Design addresses the whole system, people, procedures, airspace and equipment.

Edition 1			Edition 2		
Component	Element	Objective	Component	Element	Objective
					<p>Systems contain features to ensure they operate safely and support the operator's decision-making process.</p> <p>Equal weight is given to the success and failure case approaches.</p>
			Safety Achievement	Fatigue-related Risk Management	10.1 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.

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