civil air navigation services organisation

Safety Management System:

[CANSO Standard of Excellence]

This CANSO Standard of Excellence in SMS is intended to provide a framework for the implementation and maturity of an appropriate Safety Management System. CANSO has endeavored to ensure the accuracy of this Standard insofar as possible. However, all recommendations are made in the context of a framework-based approach, and without any guarantee on the part of the contributors or CANSO in particular situations. CANSO disclaims any liability in connection with the use of this Standard or any aspect thereof.

The CANSO standard has been developed through the contributions of CANSO Members:

AirServices Australia

Irish Aviation Authority

ATNS

NATS

AustroControl

NAV CANADA

DFS

LVNL

DSNA

PANSA

FAA

HungaroControl

The CANSO Standard of Excellence in SMS has been developed in partnership with EUROCONTROL. The partner organisations are working together to complement and support the Global Aviation Safety Plan drive for harmonised, consistent and coherent safety management processes which reflect the nature of modern air transportation.

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Executive Summary

In mid-2008, the Civil Air Navigation Services Organisation (CANSO) member organisations agreed on a new strategic agenda. Safety was one of the three vital issues facing Air Traffic Management (ATM); as such, it was embraced by the Imagine 2010 programme. One expected output from the Imagine 2010 programme was an industry-based standard for Safety Management Systems (SMS).

The CANSO Standard of Excellence in SMS builds on the experience of the CANSO member organisations and provides a framework for continually improving the management and oversight of safety within Air Navigation Service Providers (ANSPs). The CANSO Standard of Excellence 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 CANSO Standard of Excellence 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 CANSO Standard of Excellence consists of a system enabler (Safety Culture) and a framework of four components and 10 elements. The structure is presented below:

The standard will 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 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 proactive approach to identifying hazards, analysing risks, and taking appropriate control measures. This approach requires organisational structures, policies, practises and culture to be in place.

1.3   The need to provide a framework for ANSPs within which safety can be managed has been recognised at an international, and in some cases regional and domestic, level. The regulations relating to Safety Management Systems (SMS) are, for the most part, scoped as general statements of requirement against which compliance can be tested rather than providing an evolutionary pathway which drives a culture of continual improvement.

1.4   The next decade 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   Most ANSPs are 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 only beginning to embrace the need for a formalised safety management practice 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 they need to 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   CANSO provides an ideal way to communicate best practises to ANSP management and Safety Managers in particular.

2.   Status of the CANSO Standard of Excellence in SMS

2.1   The standard promoted by CANSO, as the industry body for ANSPs, does not supersede either domestic or international regulations on safety management.

2.2   This standard draws on the experiences of CANSO members and aims to complement and supplement existing standards rather than mirror any particular standard.

2.3   This standard provides a pathway for ANSPs to transition from a purely regulatory compliance organisation to an organisation focussed on continuous improvement.

2.4   CANSO recommends the use of the standard as guidance to CANSO members, but application is not binding.

3.   Objectives

3.1   The purpose of this standard is to:

- Drive improvement within the industry;
- Transfer learning across the industry;
- 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;
- 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   The CANSO Standard of Excellence will complement and support the Global Aviation Safety Plan 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 CANSO Standard of Excellence in SMS is a planning tool. It emphasises the phased step-by-step implementation of a 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 basic 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 CANSO Standard of Excellence 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 standard will promote safer and more effective processes across the Flight Information Regions. All ANSPs must interact with other service providers. Consistent language and approaches will make interactions more effective.

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

4.6   This standard will 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   This standard provides a sound foundation on which ANSPs can build or enhance SMS.

5.1.1   The standard consists of a system enabler (Safety Culture) and a framework of four components and 10 elements (discussed further in sections 5-7 and detailed in Appendix A). The structure is presented below:

SAFETY CULTURE

• *Development of a positive and proactive safety culture*

SAFETY POLICY

Elements:

• *Organisational and individual safety responsibilities*
• *Timely compliance with international obligations*

SAFETY ACHIEVEMENT

Elements:

• *Safety Standards and Procedures*

• *Competency*

• *Risk Management*

• *Safety Interfaces*

SAFETY ASSURANCE

Elements:

• *Safety Reporting, Investigation and Improvement*

• *Safety Performance Monitoring*

• *Operational Safety Surveys and SMS Audits*

SAFETY PROMOTION

Elements:

• *Adoption and Sharing of Best Practices*

5. 1.2   No single 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. 1.3   Some ANSPs may wish to expand their SMS beyond the elements presented in this standard. For example, an ANSP may choose to include fitness-for-duty requirements, such as fatigue or drug and alcohol management, within the scope of its 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 Standard of Excellence 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

5.3.1   The Safety Policy component of the standard consists of elements which address

- Organisational and Individual Safety Responsibilities; and
- Timely Compliance with International Obligations.

5.3.2   The policy and associated statements about safety objectives define the basic approach to managing safety; in so doing the policy drives the form of the SMS and the priority of work.

5.3.3   A Safety Policy may take different forms, but will typically include statements concerning the priority of safety in the organisation and the specific safety objective of the organisation, for example: *"As an integral part of the management of its services, the organisation has in place a Safety Management System (SMS) which ensures that the achievement of safety in air traffic services shall be afforded the highest priority."*

5.3.4   Generally, the *Safety Objective* statement explicitly defines the desired outcome of the SMS. For example: *"The overall objective is to assure that risks to operational service delivery are reduced as far as reasonably practicable."*

5.3.5   The SMS safety policy statements can also be used in a retrospective way, with the organisation continually measuring itself against the requirements within the policy.

5.4   Safety Achievement

5.4.1   Each ANSP must undertake activities which aim to achieve and improve safety. The elements covered by the Safety Achievement component include:
- Safety Standards and Procedures;
- Competency;
- Risk Management; and
- Safety Interfaces.

5.5   Safety Assurance

5.5.1   This standard 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 Reporting, Investigation and Improvement;
- Safety Performance Monitoring; and
- Operational Safety Surveys and SMS Audits.

5.6   Safety Promotion

5.6.1   Each ANSP must promote safety within its organisation. As an ANSP matures the sharing of information extends from an internal focus to one which engages with those who use its services and external sources of *international* best practice in ATM. A Safety Promotion element that addresses the 'Adoption and sharing of Best Practice' is therefore included in this standard.

6.   SMS Maturity Pathway

6.1   This standard emphasises a phased step-by-step implementation of SMS (see below) from an initiating level to one of continuous improvement.
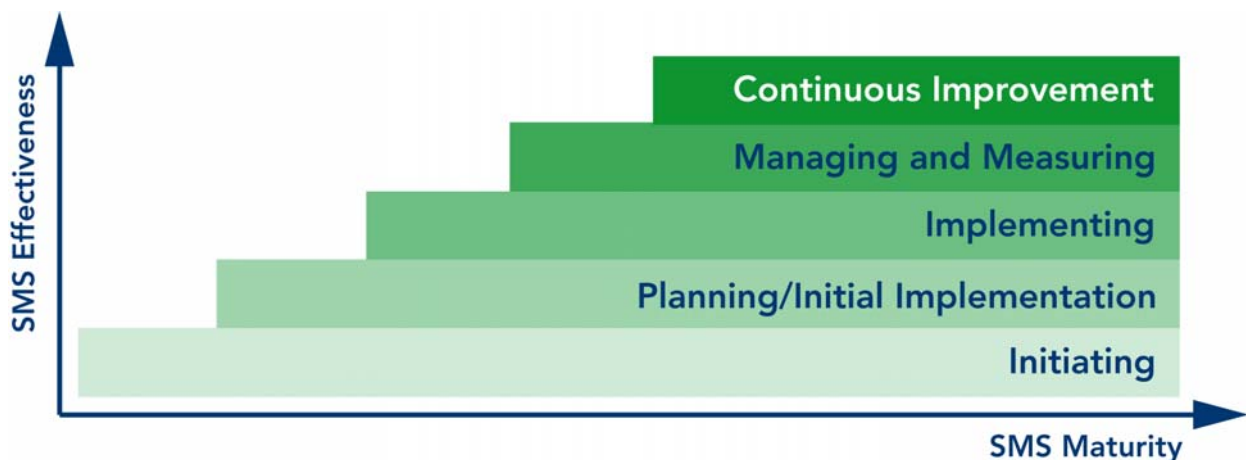
6.2   Tables in Appendix A provide the detail of the standard. Each of the elements which underpin the five components is addressed.

6.3   The system enabler and each element has:
- At least one safety objective;
- Descriptors of requirement at each of the five levels of system maturity.

6.4   The descriptors and their definitions are:

6.4.1   Initiating: The SMS framework is very immature or non-existent in the organisation.

6.4.2   Planning/Initial Implementation: The SMS framework is not yet effective and does not yet meet the required regulatory standard.

6.4.3   Implementing: SMS framework meets the required regulatory standard.

6.4.4   Managing and Measuring: The SMS framework is functioning and is effective in achieving the overall safety policy and objectives of the organisation.

6.4.5   Continuous Improvement: The SMS framework is regularly reviewed and enhanced to achieve excellence in ATM safety management. This step, as the name suggests, is a continual process recognising that planning for safety should never cease within an ANSP. Ongoing planning must assure that safety management activities are integrated and drive priorities for operational safety improvement.

6.5   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   This standard provides a means for ANSP management, and Safety Managers in particular, to develop a phased plan to enable the step-wise implementation of SMS system 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 coming from the Global Aviation Safety Plan 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 a SMS within ANSPs;
- recognises that some elements deliver more immediate safety benefits to organisations; and
- 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 would 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 would 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	Safety Policy
		Organisational and Individual Safety Responsibilities
2	Safety Assurance	Safety Reporting, Investigation and Improvement
	Safety Achievement	Competency
	Safety Culture	Development of a positive and proactive safety culture (Appendix A: Sub-element 1.1 and 1.2)
	Safety Achievement	Safety Standards and Procedures
	Safety Promotion	Adoption and Sharing of Best Practises within the ANSP
3	Safety Achievement	Risk Management
	Safety Assurance	Safety Performance Monitoring
	Safety Achievement	Safety Interfaces
	Safety Policy	Timely Compliance with International Obligations
4	Safety Assurance	Operational Safety Surveys and SMS Audits
	Safety Promotion	Adoption and Sharing of Best practises with external stakeholders
	Safety Culture	Safety Culture (Appendix A, Sub-element 1.2)

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 the Continuous Improvement level for elements such as Organisational and Individual Safety Responsibilities but may be initiating development 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 practises will change and shift. This standard will be updated periodically to reflect the continuous development of safety management.

9. References

"A practical guide to implementation of Safety Management Systems": Civil Air Navigation Services Organisation (2006)

"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 Safety Management Manual (Doc 9859-AN/460): International Civil Aviation Organization (2006)

Procedures for Air Navigation Services, Document 4444 ATM 501, Chapter 2, ATS Safety Management: International Civil Aviation Organization (2007)

Annex 11 to the Convention on International Civil Aviation: Air Traffic Services Chapter 2: International Civil Aviation Organization (2001)

10. Terms and Definitions

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.

11. Indicative ICAO Compliance Matrix

International Civil Aviation Organization Annex 11, Chapter 2 (2008 amendment)

ICAO Annex 11 Ref	Requirement	CANSO Standard of Excellence in SMS Link
2.27.1	States shall establish a safety programme, in order to achieve an acceptable level of safety in the provision of ATS.	Assumes that the "state" not the ANSP will establish the programme. The CANSO standard does however provide a benchmark against which the ANSP can develop a SMS if domestic regulations are not available.
2.27.2	The acceptable level of safety to be achieved shall be established by the State(s) concerned.	Assumes that the "state" not the ANSP will establish the programme. The CANSO standard does however provide a Safety Performance Monitoring element.
2.27.3	States shall require, as part of their safety programme, that an air traffic services provider implements a safety management system acceptable to the State that, as a minimum:	Assumes that the "state" not the ANSP will establish the programme. The CANSO standard does however provide a benchmark against which the ANSP can develop a SMS if domestic regulations are not available.
	(a) identifies safety hazards;	Risk Management Operational Safety Surveys and SMS Audits Safety Reporting, Investigation and Improvement
	(b) ensures that remedial action necessary to maintain an acceptable level of safety is implemented;	Safety Reporting, Investigation and Improvement
	(c) provides for continuous monitoring and regular assessment of the safety level achieved;	Safety Performance Monitoring
	(d) aims to make continuous improvement to the overall level of safety.	CANSO Standard of Excellence in SMS promotes continuous improvement via the five step system SMS maturity model. Development of a Positive and Proactive Safety Culture Organisational and Individual Safety Responsibilities
2.27.4	A safety management system shall clearly define lines of safety accountability throughout the air traffic services provider, including a direct accountability for safety on the part of senior management.	Organisational and Individual Safety Responsibilities Safety Interfaces
2.27.5	Any significant safety-related change to the ATC system, including the implementation or a reduced separation minimum or a new procedure, shall only be effected after a safety assessment has demonstrated that an acceptable level of safety will be met and users have been consulted. Where appropriate, the responsible authority shall ensure that adequate provision is made for post-implementation monitoring to verify that the defined level of safety continues to be met.	Risk Management Safety Performance Monitoring

International Civil Aviation Organisation PANS-ATM Chapter 2 (2007 amendment)

ICAO PANS-ATM Ref	Requirement	CANSO Standard of Excellence in SMS Link
2.1.1	States shall ensure that the level of air traffic services (ATS) and communications, navigation and surveillance, as well as ATS procedures applicable to the airspace or aerodrome concerned, are appropriate and adequate for maintaining an accepted level of safety in the provision of ATS.	Assumes that the "state" not the ANSP will establish the programme. The CANSO standard does however provide a benchmark against which the ANSP can develop a SMS if domestic regulations are not available.
2.1.2	The requirements in respect to services, systems and procedures applicable to airspaces and aerodromes shall be established on the basis of regional air navigation agreement in order to facilitate the harmonization of ATS in adjacent airspace.	CANSO Standard of Excellence in SMS provides an industry benchmark which will work at both the regional and global level to assure harmonization of safety management process and ATS provision.
2.1.3	To ensure that safety in the provision of ATS is maintained, the appropriate ATS authority shall implement safety management systems (SMS) for the air traffic services under its jurisdiction. Where appropriate ATS SMS should be established on the basis of a regional air navigation agreement.	The CANSO Standard of Excellence in SMS provides an industry benchmark against which the ANSP can develop and implement a SMS.
2.3.1	An ATS SMS should include, inter alia, the following with respect to the provision of air traffic services:	
	(a) monitoring of overall safety levels and detection of adverse trend;	Safety Performance Monitoring
	(b) safety reviews of ATS units	Operational Safety Surveys and SMS Audits
	(c) safety assessments in respect of planned implementation of airspace reorganisations, the introduce of new equipment systems of facilities, and new or changed ATS procedures; and	Risk Management
	(d) a mechanism for identifying the need for safety enhancing measures.	Safety Reporting, Investigation and Improvement Adoption and Sharing of Best Practises Timely Compliance with International Obligations
2.3.2	All activities undertaken in an ATS SMS shall be fully documented. All documentation shall be retained for such period of time as is specified by the appropriate authority.	Safety Standards and Procedures
2.4.1.1	Data for use in safety monitoring programmes shall be collected from as wide a range of sources as possible, as the safety	Safety Reporting, Investigation and Improvement Adoption and Sharing of Best Practises
2.4.1.2	The appropriate ATS authority shall establish a formal incident reporting system for ATS personnel to facilitate the collection of information on actual or potential safety hazards or deficiencies related to the provision of ATS, including rout structures, procedures, communications, navigation and surveillance systems and other safety significant systems and equipments as well as controller workloads.	Safety Reporting, Investigation and Improvement

ICAO PANS-ATM Ref	Requirement	CANSO Standard of Excellence in SMS Link
2.4.2.1	Safety-related reports concerning the operation of air traffic services, including air traffic incident reports, shall be systematically reviewed by the appropriate ATS authority in order to detect any adverse trend in the number and types of incidents which occur.	Safety Performance Monitoring Adoption and Sharing of Best Practises
2.4.2.2	Reports concerning the serviceability of ATS facilities and systems, such as failures and degradations of communications, surveillance and other safety significant systems and equipment, shall be systematically reviewed by the appropriate ATS authority in order to detect any trend in the operation of such systems which may have an adverse effect on safety.	Safety Reporting, Investigation and Improvement
2.5.1	Safety reviews of ATS units shall be conducted on a regular and systematic basis by personnel qualified through training, experience and expertise and having a full understanding of relevant Standards and Recommended Practices (SARPs), Procedures and Air Navigation Services (PANS), safety operating practices and Human Factors principles.	Operational Safety Surveys and SMS Audits Competency
2.5.2	The scope of ATS unit safety reviews should include at least the following issues: Regulatory issues.... Operational and technical issues .... Licensing and training issues	Operational Safety Surveys and SMS Audits
2.6.1.1	A safety assessment shall be carried out in respect of proposals for significant airspace reorganisations, for significant changes in the provision of ATS procedures applicable to an airspace or an aerodrome, and for the introduction of new equipment, system or facilities	Risk Management
2.6.1.2	Proposals shall be implemented only when the assessment has shown that an acceptable level of safety will be met.	Risk Management Safety Performance Monitoring
2.6.2	The safety assessment shall consider relevant all factors determined to be safety significant	Risk Management
2.7.1	Any actual or potential hazard related to the provision of ATS within an airspace or at an aerodrome, whether identified through an ATS safety management activity or by any other means, shall be assessed and classified by the appropriate ATS authority for its risk acceptability.	Risk Management
2.7.2	Except when the risk can be classified as acceptable, the ATS authority concerned shall, as a matter of priority and as far as practicable, implement appropriate measures to eliminate the risk or reduce the irks to a level that is acceptable.	Risk Management Organisational and Individual Safety Responsibilities
2.7.3	If it becomes apparent that the level of safety applicable to an airspace or an aerodrome is not, or may not be achieved, the appropriate ATS	Risk Management Safety Performance Monitoring

ICAO PANS-ATM Ref	Requirement	CANSO Standard of Excellence in SMS Link
	authority shall, as a matter of priority and as far as practicable, implement appropriate remedial measures.	
2.7.4	Implementation of any remedial measure shall be followed by an evaluation of the effectiveness of the measure in eliminating or mitigating a risk.	Risk Management

Appendix A

Detailed Maturity Study Areas Objectives and Associated Maturity Levels

The following tables in this Appendix provide the detailed objectives for each Study Area together with a description for each maturity level for that objective.

Once the questionnaire is completed, it becomes a confidential document and the contents are only released to the ANSP that has completed it.

SA1 Development of a positive and proactive safety culture

Objective	Initiating	Planning / Initial Implementation	Implementing	Managing & Measuring	Continuous Improvement
		All of Initiating plus:	*All of Planning / Initial Implementation plus:*	*All of Implementing plus:*	*All of Managing & Measuring plus:*
1.1 A positive and pro-active 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 are defined in Appendix 2 – Glossary)	Within the organisation, there are significant differences between what is said, what is done, and what is believed. The regulator may be regarded as being responsible for safety. The organisation determines what safety means and generates some awareness of this throughout the organisation. Individuals may have a different understanding of how their activities contribute to safety.	Individuals within the organisation have a good level of systematic safety management awareness. The organisation is starting to put processes in place for systematic safety management.	A positive safety culture is developing, although it is still immature. Individuals are starting to be involved in systematic safety management.	Staff are proactively involved in planning for and implementing systematic safety management. The organisation operates informed learning and reporting cultures, as well as a just culture with respect to errors in operations.	Individuals across the organisation are pro-actively and constantly striving to improve their approach to systematic safety management. They are supported by measurement and review processes and organisational management. Experiences are openly exchanged internally and externally. Within the organisation, there is a complete alignment between what is said, what is done, and what is believed.

Objective	Initiating	Planning / Initial Implementation	Implementing	Managing & Measuring	Continuous Improvement
		All of **Initiating** plus:	All of **Planning / Initial Implementation** plus:	All of **Implementing** plus:	All of **Managing & Measuring** plus:
1.2 Regular measurement of safety culture and an improvement programme.	The organisation does not see the need to have a safety culture measuring mechanism in place.	The organisation is aware of the need to have periodic measurements of safety culture in place, as well as an improvement plan. However, what will be measured, and when, is still being defined.	Safety culture is measured and results are available. An improvement plan addresses the need for individuals to be aware of, and support, the organisation's shared beliefs, assumptions and values regarding safety.	The organisation assesses its safety culture on a regular basis and implements improvements to any identified weaknesses. Safety Culture enablers and barriers are identified, and solutions to reduce barriers are being implemented.	All personnel are pro-active and committed to improving safety. 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. Organisational management approves a continuous improvement plan.
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.	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.	Discussions between staff and management to define an open reporting and investigation climate are underway. However, there is no agreed policy in place yet.	Safety data-sharing and publication policies are supported by the staff. Safety data are sufficiently protected from external interference within legal limits.	Within the organisation, the line between acceptable and unacceptable mistakes is established and known by the staff. Just reporting and investigation culture principles are in place and systematically applied within the organisation.	Under certain legal regimes, there is a clear and published policy on how dialogue with judicial authorities and media is established and followed.

Safety Policy

SA2 Organisational and individual safety responsibilities

Objective	Initiating	Planning / Initial Implementation	Implementing	Managing & Measuring	Continuous Improvement
		All of **Initiating** plus:	All of **Planning / Initial Implementation** plus:	All of **Implementing** plus:	All of **Managing & Measuring** plus:
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.	No formal designation of authorities, responsibilities or accountabilities for the management of safety exists.	Safety authorities, responsibilities, and accountabilities have been identified but not yet formalised. Line managers assume responsibility for safety.	Authorities, responsibilities, and accountabilities for the management of safety have been defined and documented. Delineation of responsibility for the development, oversight and implementation of the SMS is clearly understood.[1]	Procedures are in place to address the need to review safety authorities, responsibilities, and accountabilities after any significant organisational change.	Safety authorities, responsibilities, and accountabilities are periodically reviewed to determine whether they are suitable and effective (i.e., continuous improvement of safety management).
2.2 A clearly defined safety management function that is independent of line management.	A safety management function has not yet been appointed to develop the SMS..	A safety management function has been appointed to develop and maintain the SMS.	The safety management function is independent of line management and develops and maintains an effective SMS. The safety manager has access to the resources required for the proper execution and maintenance of the SMS.	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).	There is clear evidence that the highest organisational level plays a pro-active role in the continuous improvement of the SMS.

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[1] Line management is usually responsible for the implementation of procedures or practices which are required by the SMS, whilst specific responsibilities for the development and oversight of the SMS and the organisation's safety outcomes lie withcentre in safety departments, executive management and board committees depending on the structure and governance of the organisation.

Objective	Initiating	Planning / Initial Implementation	Implementing	Managing & Measuring	Continuous Improvement
		All of Initiating plus:	*All of Planning / Initial Implementation plus:*	*All of Implementing plus:*	*All of Managing & Measuring plus:*
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.	An ad hoc or non existent safety planning process is utilised by the organisation. Safety goals and objectives have not been identified or documented for the implementation of a safety management system.	Identification of an appropriate SMS has been identified. A compliance gap analysis has been performed and a SMS Implementation Plan developed to meet the applicable safety regulatory requirements.	The requirements expressed in the SMS Implementation Plan have been completed. The SMS meets the regulatory standard, but may not incorporate best practices.	A Corporate Safety Plan is published on a periodic basis with specific accountable and measurable safety management goals and targets.	The Corporate Safety Plan goals and objectives are developed and prioritized 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.
2.4 Clear understanding and acceptance of safety management responsibilities by all staff and contractors. Commitment to continuous improvement to safety.	Knowledge of the principles underpinning SMS amongst all staff and contractors is negligible.	All staff and contractors apply rules and procedures to their tasks in the knowledge that some of the rules and procedures need improvement. All staff and contractors are only partially aware of their roles in the SMS.	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.	All staff and contractors across the organisation are actively promoting and improving safety. All staff and contractors take pro-active day-to-day action to have rules and procedures changed where they identify a safety benefit by the change.	The organisation regularly reviews and assesses documented safety management responsibilities.

SA3 Timely compliance with international obligations.

Objective	Initiating	Planning / Initial Implementation	Implementing	Managing & Measuring	Continuous Improvement
		All of Initiating plus:	*All of Planning / Initial Implementation plus:*	*All of Implementing plus:*	*All of Managing & Measuring plus:*
3.1 A formal SMS that meets all applicable safety regulatory requirements.	There is no SMS in place. There may be deviations from safety regulatory requirements.	The SMS is partially implemented, but it is not yet effective; it does not yet meet the standards established through safety regulatory requirements.	The essential parts of the SMS are implemented, and the organisation meets the standards established through safety regulatory requirements.	The SMS is fully implemented and effective. Operations are monitored regularly to identify deviations.	Where applicable, the organisation is committed to going beyond compliance and operating at the highest international safety standard.
3.2 An organisation that strives to go beyond compliance, takes into account the need to ensure, in a timely manner, that there are no inconsistencies with regional/international safety standards.	There is little awareness of the regional or international safety standards.	There is an awareness of the regional and international safety standards. Work has started in some areas.	Regional and international safety standards are known and met as required.	There is a process in place to address the need for timely and consistent compliance with regional or international safety standards.	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.

Safety Achievement

SA4 Safety standards and procedures

Objective	Initiating	Planning / Initial Implementation	Implementing	Managing & Measuring	Continuous Improvement
		All of **Initiating** plus:	All of **Planning / Initial Implementation** plus:	All of **Implementing** plus:	All of **Managing & Measuring** plus:
4.1 Clearly defined and documented safety standards and procedures.	Some safety and safety management procedures exist, but they are not complete. Operations manuals do not contain any specific safety management procedures.	The documentation of SMS processes and procedures has started and is progressing as planned.	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.	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.	Processes are in place and are being applied to give effect to the organisation's commitment to continuously improve safety and safety management processes and procedures. .
4.2 Staff know about the safety and safety management standards, which are regularly reviewed, assessed, and maintained.	Staff have limited knowledge of SMS processes and procedures. There is no formal process that maintains the SMS, nor is there an identified authority (or authorities) responsible for the updates.	A process to maintain all safety and safety management procedures exists, but its initial implementation is ad-hoc and not fully effective. The authority (or authorities) responsible for the updates are partially identified.	The process to maintain all safety and safety management procedures is documented and practised. Procedures are kept up-to-date on an ad-hoc basis.	There is a formal process in place to periodically review safety and safety management procedures and ensure that they remain relevant, up-to-date, and effective. The authority (or authorities) responsible for the updates are completely identified. All safety-related procedures are	Changes within the organisation that could affect safety and/or the safety management framework are subjected to formal review.

Objective	Initiating	Planning / Initial Implementation	Implementing	Managing & Measuring	Continuous Improvement
		*All of **Initiating** plus:*	*All of **Planning / Initial Implementation** plus:*	*All of **Implementing** plus:*	*All of **Managing & Measuring** plus:*
				documented in an appropriate manner and are known by the staff.	
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.	The organisation has sound primary Air Traffic Management systems but does not have redundant capabilities or back-up systems.	There are procedures and some redundant capabilities and resources to cope with abnormal and unexpected situations.	All primary systems have redundant capabilities, and emergency response procedures have been developed, documented, and distributed to appropriate staff. The emergency response plan is properly coordinated with the emergency response plans of those organisations it must interface with during the provision of its services. (Annex 11 – 1.4)	Primary Air Traffic Management systems are reliable and have redundant capabilities and back-up systems. The emergency response plan and procedures have been rehearsed through desktop or operational exercises.	The Emergency Response planning processes and Emergency Procedures and Plans are regularly exercised and revised to keep them up-to-date.

SA5 Competency

Objective	Initiating	Planning / Initial Implementation	Implementing	Managing & Measuring	Continuous Improvement
		*All of **Initiating** plus:*	*All of **Planning / Initial Implementation** plus:*	*All of **Implementing** plus:*	*All of **Managing & Measuring** plus:*
5.1 Staff, and contractors (where appropriate) are trained, competent in safety and safety management, and where required, licensed.	Competent staff and contractors (where appropriate) are provided on an ad-hoc basis for safety and safety management activities. There are no formal competency methods (including proficiency, licensing, and training).	Competent staff, and contractors (where appropriate) are provided and allocated based on limited planning and only for a limited number of positions related to operations and safety management activities. Competency methods are being developed.	Competency methods have been designed and are applied. An annual planning process for training is in place.	There is a process for the training providers(s) to receive feedback on the effectiveness of training programmes; based on feedback, the training programmes are revised to improve effectiveness.	Competency methods (including proficiency, licensing, and training) are periodically reviewed and improved with industry best practices adopted. Training plans cover safety and SMS activities and allow for the improvement of staff skills and competency.

SA6   Risk management

Objective	Initiating	Planning / Initial Implementation	Implementing	Managing & Measuring	Continuous Improvement
		All of Initiating plus:	*All of Planning / Initial Implementation plus:*	*All of Implementing plus:*	*All of Managing & Measuring plus:*
6.1 A continuing risk management process that identifies, assesses, classifies, and controls all identified safety risks within the organisation, including potential future risks.	There is no formal risk management process in place.	The principles of risk management are documented and understood. There is an approved plan in place to implement the risk management process.	There is an approved and structured process in place for the assessment of current and potential safety risks, but it is not yet mature. Training in risk assessment is ongoing.	There is clear evidence that safety risk management is embedded within the organisation and identified safety risks are managed and controlled.	Methods are in place to predict future safety risks and to mitigate these risks. The risk management processes are reviewed and improved on a periodic basis. The organisation develops best practice guidelines that it shares with other ANSPs.

SA7　Safety interfaces

Objective	Initiating	Planning / Initial Implementation	Implementing	Managing & Measuring	Continuous Improvement
		*All of **Initiating** plus:*	*All of **Planning / Initial Implementation** plus:*	*All of **Implementing** plus:*	*All of **Managing & Measuring** plus:*
7.1 Effectively managed safety-related internal interfaces (e.g. quality management system, security, and environment).	The relationships between various different internal interfaces are defined; however, the interfaces operate in isolation.	Internal safety-related interfaces are managed on an informal or ad-hoc basis.	Internal safety-related interfaces are managed with a solid understanding of the boundaries and relationships between the interfaces.	Safety-related internal interfaces are coordinated, and relationships are managed through interface agreements (e.g., Letters of Agreement (LoAs), Memoranda of Understanding (MoUs), Service-Level Agreements (SLAs)).	A process is in place to regularly identify weaknesses in agreed interface arrangements (LoAs/MoUs/SLAs etc)
7.2 The effective management of external interfaces with a safety impact (e.g., MIL, 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).	There are a limited number of agreements in place.	Safety-related external interfaces are managed on an informal or ad-hoc basis. Draft contractual arrangements are being prepared and negotiated for all safety-related external interfaces. Some elements are already formalised and implemented.	Safety requirements are specified and documented in appropriate agreements.	Activities with safety-related external interfaces are coordinated and relationships are managed through documented agreements. Safety requirements within contractual agreements are systematically reviewed and revised as necessary.	External services and suppliers are surveyed/audited and systematically monitored to identify deviations from the documented arrangements.

Safety Assurance

SA8 Safety reporting, investigation and improvement

Objective	Initiating	Planning / Initial Implementation	Implementing	Managing & Measuring	Continuous Improvement
		All of Initiating plus:	*All of Planning / Initial Implementation plus:*	*All of Implementing plus:*	*All of Managing & Measuring plus:*
8.1 A continuing organisation-wide process to report and investigate safety occurrences and risks.	There is an informal system in place for reporting safety occurrences and risks, but reports are not reviewed systematically. The reporting system is not organisation-wide. Investigation is done on an ad-hoc basis and with little or no feedback.	There is a plan to formalise the existing reporting and investigation system. There is commitment from management to allocate resources to implement this system. The reporting system is wide-spread but does not yet cover the whole organisation. Feedback is given on an ad-hoc basis.	The system in place is commensurate with the size of the organisation. The organisation has a complete and formal system that records all reported information relevant to the SMS, including incidents and accidents. Corrective and preventive actions are taken in response to event analysis.	Identified safety-related risks and deficiencies are actively and continuously monitored and reviewed for improvement.	Personnel who report safety occurrences, risks and problems are empowered to suggest corrective actions, and there is a feedback process in place.
8.2 An organisation-wide means to record and disseminate lessons learned.	Safety lessons learned are known only to those who experience them.	There is an intention to develop a means to record and share lessons learned. This may already happen, but only on an ad-hoc basis.	The process for sharing safety lessons learned is systematic and operational and the majority of data is shared with appropriate personnel.	All safety lessons learned are systematically shared across the organisation at all appropriate levels. Corrective actions are taken to address lessons learned.	There is clear evidence that the internal lessons learned dissemination process is embedded across the organisation at all levels and is periodically reviewed.

Objective	Initiating	Planning / Initial Implementation	Implementing	Managing & Measuring	Continuous Improvement
		*All of **Initiating** plus:*	*All of **Planning / Initial Implementation** plus:*	*All of **Implementing** plus:*	*All of **Managing & Measuring** plus:*
8.3 Appropriate safety information and knowledge is shared with Industry stakeholders. Information disclosure is compliant with agreed publication and confidentiality policies/agreements.	Safety data and information are treated as confidential. There are no plans to release it in any way to any industry stakeholders.	Safety data and information are shared internally, but the organisation is reluctant or unwilling to share data with industry stakeholders.	Safety data and information is shared internally, nationally, and with international bodies when it is required by regulation.	There is a clear and published policy that encourages the pro-active sharing of safety-related information with other parties.	Safety data and information are actively shared internally, nationally, with recognised international bodies, and with other industry stakeholders. The organisation has a process in place to receive and act on safety data and information from external stakeholders.

SA9 Safety performance monitoring

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

Objective	Initiating	Planning / Initial Implementation	Implementing	Managing & Measuring	Continuous Improvement
		*All of **Initiating** plus:*	*All of **Planning / Initial Implementation** plus:*	*All of **Implementing** plus:*	*All of **Managing & Measuring** plus:*
9.3 A general public knowledgeable of the ANSP's performance through routine publication of achieved safety levels and trends. (Information disclosure is compliant with the requirements of ICAO Annex 13, Attachment E).	Safety-related performance information is not made available to the public under any circumstances.	A limited amount of safety-related performance information is made available, but only to selected authorities.	High-level safety-related performance information is made available according to regulatory requirements.	Safety performance information not governed by regulatory requirements is also made available to the public.	The organisation voluntarily makes available appropriate safety-related performance information to the general public. The achieved safety levels and trends are transparent to the general public.

SA10   Operational safety surveys and SMS audits

Objective	Initiating	Planning / Initial Implementation	Implementing	Managing & Measuring	Continuous Improvement
		All of **Initiating** plus:	All of **Planning / Initial Implementation** plus:	All of **Implementing** plus:	All of **Managing & Measuring** plus:
10.1 Internal and independent (external) operational safety surveys and SMS audits.	There is no plan to conduct systematic operational safety surveys and SMS audits. Operational safety surveys, SMS audits, and gap assessments are conducted on an ad-hoc basis (e.g., when deficiencies in the system or in working arrangements are found).	There is a plan in place to formalise the conduct of systematic operational safety surveys and SMS audits. A limited number of operational safety surveys and SMS audits have been carried out.	Internal operational safety surveys and SMS audits are conducted on a periodic basis. 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.	Internal or external operational safety 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 operational safety surveys or SMS audits. Follow-up operational safety surveys, SMS audits, and gap assessments are conducted in all areas affecting operational safety and the SMS. Operational safety surveys and SMS audits are actively reviewed to assess opportunities for system improvement.	Independent (external) operational safety surveys and SMS audits are periodically conducted. The outputs from operational safety surveys and SMS audits are incorporated as appropriate into operations or the SMS. 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.

Safety Promotion

SA11   Adoption and sharing of best practises

Objective	Initiating	Planning / Initial Implementation	Implementing	Managing & Measuring	Continuous Improvement
		All of Initiating plus:	*All of Planning / Initial Implementation plus:*	*All of Implementing plus:*	*All of Managing & Measuring plus:*
11.1 A structured approach exists to promote safety, its standing within the organisation and lessons learned through application of the SMS.	There is no structured approach to promote safety and its management within the organisation. The organisation has the capability to identify lessons learnt and promote them but on an ad-hoc basis.	Ad-hoc processes are in place to gather and then promote information on safety, lessons learnt and the SMS. Some initial implementation has begun. Some internal best practises are spread across units within the organisation, but there is no systematic structure for internal safety promotion.	An organisational approach has been established to promote safety, lessons learned and the SMS.	Formal methods are in place to capture safety knowledge and promote it internally. The standing of safety and its management is a consistent and expected feature in internal communication.	Staff are encouraged to share lessons learned in order that the lessons can be promoted across the organisation. Strategies to promote safety and its management are developed by senior levels in the organisation and are being implemented. Other industries' initiatives in relation to internal safety promotion are periodically reviewed with the approach being modified on the basis of the information gathered.

| Objective	Initiating	Planning / Initial Implementation	Implementing	Managing & Measuring	Continuous Improvement
		All of **Initiating** plus:	All of **Planning / Initial Implementation** plus:	All of **Implementing** plus:	All of **Managing & Measuring** plus:
11.2 A structured approach to gather information on operational safety and SMS best practises from the industry.	There is no structured approach to gather best practises from the industry. The organisation has the capability to identify and adopt industry best practises on an ad-hoc basis.	There is an ad-hoc structure in place to gather information on operational safety and SMS best practises. Some initial implementation has begun. Some internal best practises are spread across units within the organisation, but there is no systematic structure for the adoption of best practises.	A structure has been established to identify applicable operational safety and SMS best practises from the industry.	Industry best practises are periodically reviewed to provide the most current information, which is then assessed for applicability, and adopted as appropriate.	All relevant best practises are readily accessible to appropriate personnel. The organisation actively participates in developing industry best practises.
11.3 Sharing of safety and SMS-related best practises with industry stakeholders.	There are no plans to release and share best practises with industry stakeholders.	Sharing of best practises takes place in response to requests for assistance from industry stakeholders.	Best practises are shared with industry stakeholders as required by regulation.	Best practises are actively shared with industry stakeholders. Sharing of safety-related best practises with industry has demonstrated improved safety performance.	SMS-related best practises are pro-actively shared with industry stakeholders with the aim of improving SMS standards.

The following additional study areas are not used to quantify the safety maturity but are rather seeking "safety intelligence" on the enablers and disablers and on additional local/national/regional safety programmes.

SA12	**Are there any enablers that are leading to operational safety and SMS improvements within your organisation (Yes/No)?**		**If so what are they?**		
SA13	**Are there any inhibitors that are preventing improvements to operational safety and SMS within your organisation (Yes/No)?**		**If so what are they, and what mitigation actions are foreseen?**		
SA14	**If applicable, do you have safety programmes not detailed in your national or Regional Air Navigation Plans (Yes/No)?**		**If so what issues do they address?**		

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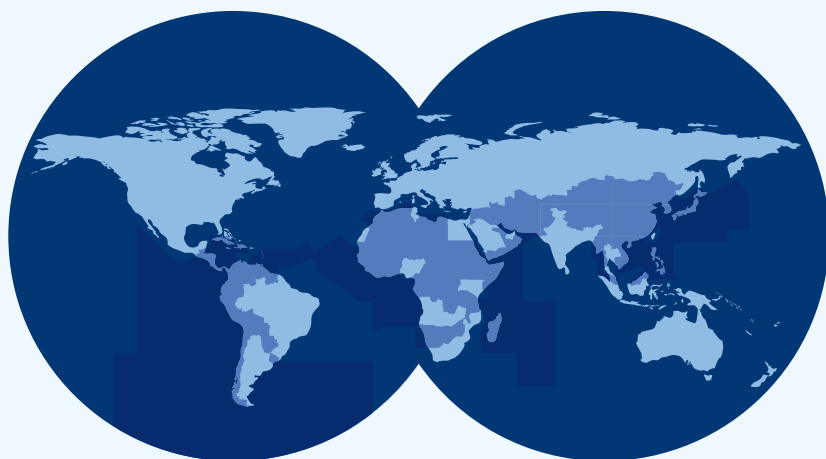
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— Iran Airports Co
— Irish Aviation Authority (IAA)
— ISAVIA Ltd
— Kazaeronavigatsia
— Kenya Civil Aviation Authority (KCAA)
— Latvijas Gaisa Satiksme (LGS)
— Letové prevádzkové Služby Slovenskej Republiky, Štátny Podnik
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— MovingDot
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