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Doc 10161

# Global Aviation Safety Roadmap

2023–2025



Approved by and published under the authority of the Secretary General

INTERNATIONAL CIVIL AVIATION ORGANIZATION





| ICAO

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## FOREWORD

The *Global Aviation Safety Plan* (GASP, Doc 10004) presents the global strategy for the continuous improvement of aviation safety. The purpose of the GASP is to continually reduce fatalities, and the risk of fatalities, by guiding the development of a harmonized aviation safety strategy. A safe, resilient and sustainable aviation system contributes to the economic development of States and their industries. The GASP promotes the effective implementation of a State safety programme, including a State's safety oversight system, a risk-based approach to managing safety as well as a coordinated approach to collaboration between States, regions (i.e. a group of States and/or entities working together to enhance safety within a geographic area) and industry. It provides a framework in which regional and national aviation safety plans (RASP and NASP) are developed and implemented.

The global aviation safety road map previously included in the GASP, was updated in line with the 2023-2025 edition of the GASP and is now contained in this stand-alone manual –*Global Aviation Safety Roadmap* (Doc 10161). The road map serves as an action plan to assist the aviation community in developing RASPs and NASPs, in line with the GASP goals, through a structured, common frame of reference for all relevant stakeholders. The global aviation safety road map outlines specific safety enhancement initiatives (SEIs) associated with the GASP goals and targets, as well as the global high-risk categories of occurrences (G-HRCs). Each SEI includes a set of actions that stakeholders may use to develop and implement specific action plans. Regions and States, in collaboration with industry, should use the roadmap to support or complement, as applicable, regional and national safety management activities and develop specific SEIs to support the strategy presented in their RASPs and NASPs, respectively. The use of the global aviation safety roadmap as the basis for RASPs and NASPs enhances coordination, thus reducing inconsistencies and duplication of effort.

This manual should be used in conjunction with the *Global Aviation Safety Plan* (Doc 10004), the *Manual on the Development of Regional and National Aviation Safety Plans* (Doc 10131) and the *Manual on Monitoring Implementation of Regional and National Aviation Safety Plans* (Doc 10162).

The content of this manual was developed with inputs from experts from civil aviation authorities, industry, as well as regional and international organizations, and thereafter submitted for extensive peer review, taking into account feedback from the expert community. ICAO gratefully acknowledges the contributions of the ICAO Global Aviation Safety Plan Study Group (GASP-SG) and individual experts who provided support, advice and input for this manual.





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# GLOSSARY

**Adequate.** The state of fulfilling minimal requirements; satisfactory; acceptable; sufficient.

**Audit.** A systematic, independent and documented process for obtaining evidence and evaluating it objectively to determine the extent to which requirements and audit criteria are fulfilled.

**Audit area.** One of eight audit areas pertaining to the Universal Safety Oversight Audit Programme (USOAP), i.e. primary aviation legislation and civil aviation regulations (LEG), civil aviation organization (ORG); personnel licensing and training (PEL); aircraft operations (OPS); airworthiness of aircraft (AIR); aircraft accident and incident investigation (AIG); air navigation services (ANS); and aerodromes and ground aids (AGA).

**Critical elements (CEs).** The critical elements of a safety oversight system encompass the whole spectrum of civil aviation activities. They are the building blocks upon which an effective safety oversight system is based. The level of effective implementation of the CEs is an indication of a State's capability for safety oversight.

**Effective implementation (EI).** A measure of the State's safety oversight capability, calculated for each critical element, each audit area or as an overall measure. The EI is expressed as a percentage.

**Hazard.** A condition or an object with the potential to cause or contribute to an aircraft incident or accident.

**Operator.** The person, organization or enterprise engaged in or offering to engage in an aircraft operation.

**Safety.** The state in which risks associated with aviation activities, related to, or in direct support of the operation of aircraft, are reduced and controlled to an acceptable level.

**Safety data.** A defined set of facts or set of safety values collected from various aviation-related sources, which is used to maintain or improve safety.

*Note.* — *Such safety data is collected from proactive or reactive safety-related activities, including but not limited to:*

- a) accident or incident investigations;
- b) safety reporting;
- c) continuing airworthiness reporting;
- d) operational performance monitoring;
- e) inspections, audits, surveys; or
- f) safety studies and reviews.

**Safety enhancement initiative (SEI).** One or more actions to eliminate or mitigate operational safety risks or to address an identified safety issue.

**Safety information.** Safety data processed, organized or analysed in a given context so as to make it useful for safety management purposes.

**Safety management system (SMS).** A systematic approach to managing safety, including the necessary organizational structures, accountability, responsibilities, policies and procedures.

**Safety oversight.** A function performed by a State to ensure that individuals and organizations performing an aviation activity comply with safety-related national laws and regulations.

**Safety performance.** A State or a service provider's safety achievement as defined by its safety performance targets and safety performance indicators.

**Safety performance indicator.** A data-based parameter used for monitoring and assessing safety performance.

**Safety performance target.** The State or service provider's planned or intended target for a safety performance indicator over a given period that aligns with the safety objectives.

**Safety risk.** The predicted probability and severity of the consequences or outcomes of a hazard.

**Significant safety concern (SSC).** Occurs when the State allows the holder of an authorization or approval to exercise the privileges attached to it, although the minimum requirements established by the State and by the Standards set forth in the Annexes to the Convention are not met, resulting in an immediate safety risk to international civil aviation.

**State safety programme (SSP).** An integrated set of regulations and activities aimed at improving safety.

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## ABBREVIATIONS AND ACRONYMS

ACI	Airports Council International
ANS	Air navigation services
ANSP	Air navigation services provider
APV	Approaches with vertical guidance
ASIAP	Aviation Safety Implementation Assistance Partnership
ATM	Air traffic management
ATS	Air traffic service
BARS	Basic aviation risk standard
BBB	Basic building block
CANSO	Civil Air Navigation Services Organisation
CAP	Corrective action plan
CAST	Commercial Aviation Safety Team
CE	Critical element
CFIT	Controlled flight into terrain
CICTT	CAST/ICAO Common Taxonomy Team
CMA	Continuous monitoring approach
COSCAP	Cooperative Development of Operational Safety and Continuing Airworthiness Programme
EASA	European Union Aviation Safety Agency
EI	Effective implementation
EUROCONTROL	European Organisation for the Safety of Air Navigation
FAA	United States Federal Aviation Administration
FSF	Flight Safety Foundation
GANP	Global Air Navigation Plan
GASP	Global Aviation Safety Plan
GASP-SG	Global Aviation Safety Plan Study Group
G-HRC	Global high-risk category of occurrence
HRC	High-risk category of occurrence
IATA	International Air Transport Association
IBAC	International Business Aviation Council
ICCAIA	International Coordinating Council of Aerospace Industries Associations
IOSA	IATA Operational Safety Audit
ISAGO	IATA Safety Audit for Ground Operations
IS-BAO	International Standard for Business Aircraft Operations
ISSG	Industry Safety Strategy Group
iSTARS	integrated Safety Trend Analysis and Reporting System
LOC-I	Loss of control in-flight
MAC	Mid-air collision
NASP	National aviation safety plan
N-HRC	National high-risk category of occurrence
OLF	Online framework
PANS	Procedures for Air Navigation Services
PIRG	Planning and implementation regional group
PQ	Protocol question
RAIO	Regional Accident and Incident Investigation Organization
RASG	Regional aviation safety group
RASP	Regional aviation safety plan

R-HRC	Regional high-risk category of occurrence
RE	Runway excursion
RI	Runway incursion
RSOO	Regional Safety Oversight Organization
SAFE	Safety Fund
SARPs	Standards and Recommended Practices
SDCPS	Safety data collection and processing system
SEI	Safety enhancement initiative
SM ICG	Safety Management International Collaboration Group
SMS	Safety management system
SPI	Safety performance indicator
SSC	Significant Safety Concern
SSP	State safety programme
UN	United Nations
USOAP	Universal Safety Oversight Audit Programme

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# Chapter 1

## INTRODUCTION

### 1.1 BACKGROUND

1.1.1 In May 2005, a meeting with industry identified the need to broaden the Global Aviation Safety Plan (GASP) to provide a common frame of reference for all stakeholders. Such a plan would allow a more proactive approach to aviation safety and help coordinate and guide safety policies and initiatives worldwide to reduce the accident risk for commercial aviation. It was then decided that industry representatives from the Industry Safety Strategy Group (ISSG) would work together with ICAO to develop a common approach for aviation safety. The global aviation safety roadmap, developed by the ISSG, provided the foundation upon which the GASP 2007 edition was based. In March 2006, ICAO held the Directors General of Civil Aviation Conference (DGCA/06) on a global strategy for aviation safety, which welcomed the development of the global aviation safety roadmap and recommended that ICAO develop an integrated approach to SEIs, based on the roadmap. The global aviation safety roadmap would provide a global framework for the coordination of safety policies and initiatives.

1.1.2 In 2013, during its 38th Session, the Assembly urged ICAO to complete the development of a global aviation safety roadmap in support of the GASP. The second High-level Safety Conference held in 2015 (HLSC 2015) agreed on the need for ICAO to develop a global aviation safety roadmap in support of the GASP, in collaboration with States, regional aviation safety groups (RASGs), aviation safety partners and industry.

1.1.3 In 2015, ICAO established the Global Aviation Safety Plan Roadmap Group (GASPRG) to undertake necessary actions to assist ICAO in updating the GASP, particularly in relation to the development of a new global aviation safety roadmap that would support the implementation of the GASP. The GASPRG was composed of subject matter experts from States, regions and industry. It included participation by all the organizations previously involved in the ISSG. The 2017-2019 edition of the GASP included the introduction of the new global aviation safety roadmap, developed by the GASPRG, to assist the aviation community in achieving the objectives presented in the GASP. It provided a structured, common frame of reference for all relevant stakeholders from States, regions and industry.

1.1.4 The 2020-2022 edition of the GASP included a new set of goals, targets and indicators, in line with the United Nations' 2030 Agenda for Sustainable Development. The global aviation safety roadmap was maintained and expanded to encompass organizational challenges and operational safety risks. The 2020-2022 edition of the GASP was developed through the efforts of the GASP Study Group (GASP-SG), a joint industry-regulatory expert group established by ICAO, as the successor to the GASPRG, to ensure that the plan and its content reflect the needs of the aviation community at the international, regional and national levels.

1.1.5 Based on feedback received, for the 2023-2025 edition of the GASP, the global aviation safety roadmap was migrated to a standalone manual, with an ICAO document number and edition number. This change was made to provide two different documents: the *Global Aviation Safety Plan* (GASP, Doc 10004), as a high-level document containing the global safety strategy, and the *Global Aviation Safety Roadmap* (Doc 10161), as detailed guidance for the development of an action plan, with specific safety enhancement initiatives (SEIs), for inclusion in regional and national aviation safety plans (RASPs and NASPs).

1.1.6 For this first edition, the global aviation safety roadmap was updated through the work of the GASP-SG, to revise its content in line with the revised GASP goals and targets. It reflects the content of the 2023-2025 edition of the GASP. The revision included an update to the SEIs to ensure that they provide actions in support of each of the GASP goals and targets, as well as the global high-risk categories of occurrences (G-HRCs).

## 1.2 PURPOSE

1.2.1 The GASP presents the global strategy for the continuous improvement of aviation safety. The global aviation safety roadmap serves as an action plan to assist the aviation community in developing RASPs and NASPs, in line with the GASP goals, through a structured, common frame of reference for all relevant stakeholders.

1.2.2 The global aviation safety roadmap presents an action plan and defines how the goals and targets outlined in the strategy will be achieved. The global aviation safety roadmap outlines specific SEIs associated with the GASP goals and targets, as well as the G-HRCs. Each SEI includes a set of actions that stakeholders may use to develop and implement specific action plans. Regions and States, in collaboration with industry, should use the roadmap to support or complement, as applicable, regional and national safety management activities and develop specific SEIs to support the strategy presented in their RASPs and NASPs, respectively.

1.2.3 The use of the global aviation safety roadmap, as the basis for regional and national safety action plans, enhances coordination, thus reducing inconsistencies and duplication of effort.

1.2.4 This manual should be used in conjunction with the *Global Aviation Safety Plan* (Doc 10004), the *Manual on the Development of Regional and National Aviation Safety Plans* (Doc 10131) and the *Manual on Monitoring Implementation of Regional and National Aviation Safety Plans* (Doc 10162). The GASP presents a suite of guidance material and tools that complement the plan and support the development and implementation of RASPs and NASPs. More information on GASP-related guidance material and tools can be found on the ICAO website at [www.icao.int/gasp](http://www.icao.int/gasp).

## 1.3 APPLICABILITY

The content of this manual is presented as guidance and should not be considered as the sole means to develop and implement SEIs as part of regional and national aviation safety plans. States should consult specific requirements within their region and align their efforts with their respective RASP and regional SEIs, where applicable.

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## Chapter 2

# GLOBAL AVIATION SAFETY ROADMAP

### 2.1 STRUCTURE OF THE ROADMAP

2.1.1 The global aviation safety roadmap outlines specific SEIs associated with the GASP goals and targets, as well as the G-HRCs. Each SEI is supported by a set of actions. The roadmap includes specific SEIs directed to three different sets of stakeholders: individual States; regions; and industry. Successful achievement of the SEIs found in the roadmap relies upon the close collaboration and cooperation of all key aviation stakeholders. Key aviation stakeholders include, but are not limited to, ICAO, States, regional aviation safety groups (RASGs), regional safety oversight organizations (RSOOs), regional accident and incident investigation organizations (RAIOs), Cooperative Development of Operational Safety and Continuing Airworthiness Programmes (COSCAPs) and industry. The planning and implementation regional groups (PIRGs) also play a key role, coordinating with the RASGs.

*Note 1.– In the context of the GASP and the roadmap, the term “region” refers to a group of States and/or entities working together to enhance safety within a geographic area.*

*Note 2.– In the context of the GASP and the roadmap, the term “industry” refers to service providers, such as: operators of aeroplanes or helicopters; approved maintenance organizations; organizations responsible for the type design or manufacture of aircraft, engines or propellers; approved training organizations; air traffic services (ATS) providers; and operators of aerodromes, as well as non-governmental organizations (e.g. international organizations) and other entities that form part of the aviation industry, as appropriate.*

2.1.2 The global aviation safety roadmap is composed of two parts:

- a) *Organizational challenges.* This part of the roadmap (referred to as the ORG roadmap, presented in Appendix A) provides SEIs to meet GASP goals (and associated targets) related to States’ safety oversight capabilities and the implementation of State safety programmes (SSPs), as well as industry’s implementation of SMS, and contains two distinct components, in line with the GASP goals, to address safety management responsibilities:
  - 1) State safety oversight system; and
  - 2) SSP, including service providers’ SMS.
- b) *Operational safety risks.* This part of the roadmap (referred to as the OPS roadmap, presented in Appendix B) provides SEIs to meet the GASP goal (and associated target) related to a continuous reduction of operational safety risks, as well as actions to address the G-HRCs presented in the GASP.

*Note. — Although the roadmap does not contain SEIs to address emerging issues, these should be noted as part of the RASP or NASP. Additional guidance on emerging issues is presented in the GASP.*

2.1.3 The goals and targets of the 2023-2025 edition of the GASP are presented in Appendix C, for ease of reference.

## 2.2 ORGANIZATIONAL CHALLENGES (ORG) ROADMAP

2.2.1 The ORG roadmap comprises two components to facilitate its use and is divided into three horizontal streams, each with specific SEIs aimed at States, regions and industry, as presented in Figure 2-1. The SEIs are laid out in a sequence and should be accomplished in chronological order. As stakeholders accomplish each SEI, represented by a numbered box in the diagram, they advance through the roadmap thus helping to achieve the different GASP goals. Each SEI has a number, which links it to a detailed description of the corresponding initiative, found in a roadmap template (refer to 2.5).

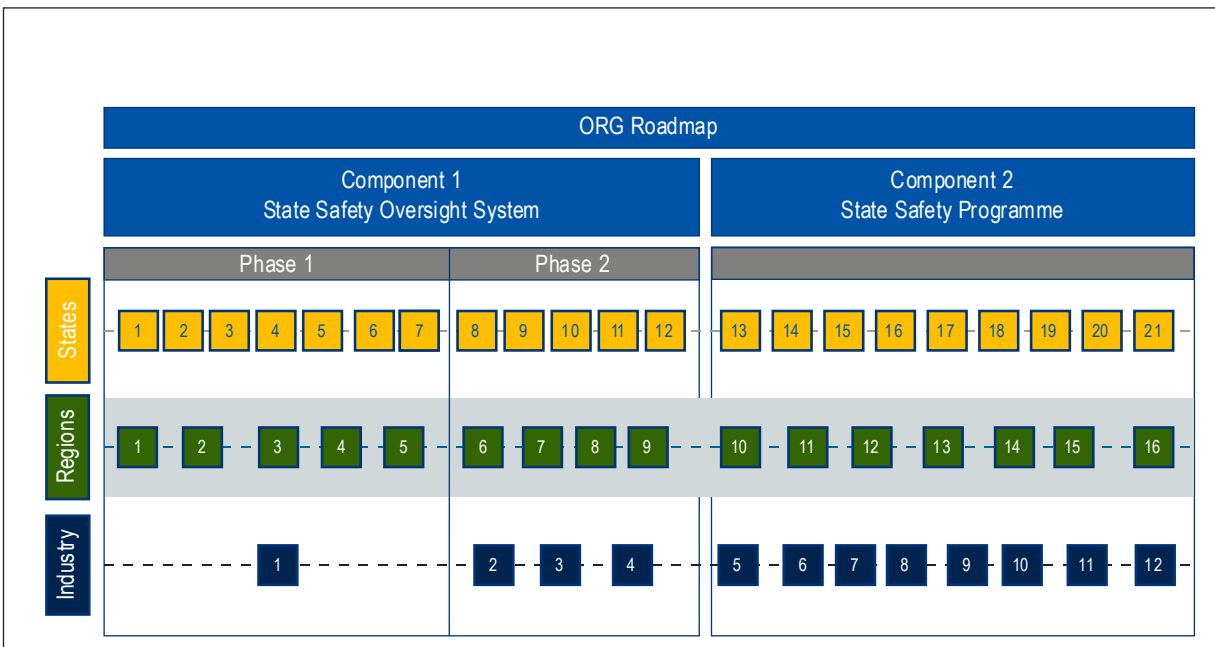


Figure 2-1. ORG roadmap diagram

2.2.2 The component of the roadmap related to a State safety oversight system is divided into two phases: Phase 1 focuses on the establishment of an effective safety oversight framework, as per critical elements (CEs) CE-1 to CE-5; and Phase 2 focuses on the implementation of an effective safety oversight system, as per CE-6 to CE-8. In each of the roadmap templates, CEs in parenthesis refer to the CE(s) which are addressed by a specific action.

2.2.3 States should have basic elements of Phases 1 and 2 in place to ensure effective safety oversight before pursuing the second component of safety management, which focuses on SSP and SMS implementation. However, some of the steps to implement an SSP may have been started in Component 1, as part of the establishment of an effective safety oversight system (i.e. the foundation of an SSP). Despite the breakdown of the roadmap into components, the SEIs should not be viewed as stand-alone activities. In many cases, they are interrelated and serve to meet several goals simultaneously. Therefore, the SEIs in the ORG roadmap may be linked to multiple GASP goals and targets. Appendix D provides tables listing the ORG roadmap SEIs and the GASP targets they support.

## 2.3 OPERATIONAL SAFETY RISKS (OPS) ROADMAP

2.3.1 The OPS roadmap addresses operational safety risks and is based on the G-HRCs identified in the GASP. It contains examples of specific SEIs to address each of the five G-HRCs: controlled flight into terrain; loss of control in-flight; mid-air collision; runway excursion; and runway incursion. States, regions and industry should use this part of the OPS roadmap to assist them in developing a plan to mitigate the risks associated with these G-HRCs, when adapting them as national and regional HRCs (N-HRCs and R-HRCs). Unlike the ORG roadmap, the OPS roadmap is not divided into components or steps. SEIs can be accomplished in parallel. All the SEIs in the OPS roadmap contribute directly to the achievement of GASP Goal 1, which aims to achieve a continuous reduction of operational safety risks by targeting the G-HRCs. As such, unlike the ORG roadmap, there are no links to identify between the OPS roadmap SEIs and GASP targets.

2.3.2 The SEIs presented in the OPS roadmap are considered global safety enhancements, applicable to all States, regions and industry. They should be implemented to mitigate the risks associated with the G-HRCs. The OPS roadmap identifies the SEIs for each G-HRC. This is not an exhaustive list. Stakeholders should verify the latest version of the RASP for R-HRCs applicable to their region. Stakeholders should also conduct analyses of data and reports to validate the effectiveness of the implemented SEIs. In order to develop data collection and analysis capabilities, SSP and SMS should be implemented (refer to the SEIs in the ORG roadmap). Stakeholders can then derive contributing factors through data analysis. The OPS roadmap gives specific examples of potential contributing factors. These are not exhaustive and may not be applicable to all stakeholders or operational contexts. Based on the analysis, stakeholders may need to develop and implement further SEIs to mitigate any additional risks. Stakeholders should assess the effectiveness of the SEIs and may need to refine them in response to changes that may introduce new hazards. SEIs related to the R-HRCs or N-HRCs and other operational safety risks of a region or State should be included in the action plan that forms part of the RASP or NASP.

2.3.3 The OPS roadmap is not a substitute for the safety risk management activities that need to be conducted by individual States as part of their SSP and by service providers through their SMS. A safety management approach to targeting the N-HRCs or R-HRCs can result in successful mitigation strategies. Once the SSP and SMS are implemented in accordance with Annex 19 – *Safety Management* and have reached a certain maturity level in terms of safety data analysis, stakeholders can refine their SEIs in relation to the G-HRCs suitable to their operational context. The OPS roadmap is supported by the ORG roadmap component related to SSP and SMS, which enables safety risk management and safety assurance processes to be implemented.

## 2.4 APPROPRIATE INFRASTRUCTURE TO SUPPORT SAFE OPERATIONS

The GASP Goal 6, related to the need for appropriate infrastructure to support safe operations, should be addressed through coordination between PIRGs and RASGs. This goal can be achieved by criteria defined through the Basic Building Block (BBB) framework, as described in the *Global Air Navigation Plan* (GANP, Doc 9750). Therefore, no specific SEIs are presented in the global aviation safety roadmap, in relation to this goal.

*Note.* — Additional information on the BBB framework is found in the Global Air Navigation Plan, (GANP, Doc 9750) as well as on the ICAO website at <https://www4.icao.int/ganpportal>.

## 2.5 ROADMAP TEMPLATE

All the SEIs of the roadmap are presented in a standardized “roadmap template” format, which covers the following points:

- a) *SEI*. A description of the specific safety enhancement initiative;
- b) *Stakeholder*. The entity to which the SEI is addressed (States, regions or industry);
- c) *Actions*. A description of the tasks required for the implementation of an SEI; and
- d) *References*. Documents, tools, training courses and other sources of information that may assist stakeholders in implementing the SEIs and associated actions.

## 2.6 HOW TO USE THE ROADMAP TO DEVELOP AN ACTION PLAN AS PART OF THE RASP OR NASP

2.6.1 Guidance related to the use of the global aviation safety roadmap for the development of an action plan, as part of a RASP or NASP, is provided in the *Manual on the Development of Regional and National Aviation Safety Plans* (Doc 10131). The manual is found on the ICAO website at: [www.icao.int/gasp](http://www.icao.int/gasp).

2.6.2 Chapter 2 of Doc 10131 provides guidance for the NASP development process that may be used to:

- a) establish a development process for the aviation safety plan, including methods to identify SEIs for the RASP or NASP;
- b) address the relationship between the NASP and the SSP;
- c) monitor the implementation and effectiveness of the plan; and
- d) report on safety performance measurements, including reporting methods for individual States to the RASGs.

2.6.3 Steps 6 and 7 of the NASP development process (see Doc 10131, Chapter 2) describe the conduct of a gap analysis to identify SEIs derived from the global aviation safety roadmap and the development of a prioritized list of SEIs, which will form the action plan to achieve the national or regional safety goals (and associated targets) of the RASP or NASP. It is recommended to review that chapter prior to using the roadmap.

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## Appendix A

# ORGANIZATIONAL CHALLENGES (ORG) ROADMAP

### PART 1. STATES

#### COMPONENT 1 – STATE SAFETY OVERSIGHT SYSTEM

#### PHASE 1 – ESTABLISHMENT OF A SAFETY OVERSIGHT FRAMEWORK (CE-1 TO CE-5)

Safety enhancement initiative	SEI-1 – Consistent implementation of ICAO SARPs at the national level
<i>Stakeholder</i>	States
<i>Actions</i>	<ul style="list-style-type: none"> <li><input type="checkbox"/> 1A – Work at the national level to address Significant Safety Concerns as a priority</li> <li><input type="checkbox"/> 1B – Address all protocol questions (PQs) of the USOAP Continuous Monitoring Approach (CMA)</li> <li><input type="checkbox"/> 1C – Establish primary aviation law and regulations, to empower the competent authority to conduct regulatory oversight, this includes separation of oversight functions and service provision functions (CE-1 and CE-2)</li> <li><input type="checkbox"/> 1D – Increase the level of compliance with ICAO SARPs and the EI of CEs at the national level (CE-1 to CE-5)</li> <li><input type="checkbox"/> 1E – Establish a process for the identification of differences with ICAO SARPs (CE-2)</li> </ul>
<i>References</i>	<p>1A and 1D</p> <ul style="list-style-type: none"> <li>– Doc 9734, <i>Safety Oversight Manual, Part A – The Establishment and Management of a State Safety Oversight System</i></li> <li>– Doc 9735, <i>Universal Safety Oversight Audit Programme Continuous Monitoring Manual</i></li> <li>– <a href="#">iSTARS</a> safety audit information (ICAO secure portal login required)</li> </ul> <p>1B, 1C and 1D</p> <ul style="list-style-type: none"> <li>– Doc 9734, <i>Safety Oversight Manual, Part A – The Establishment and Management of a State Safety Oversight System</i></li> <li>– <a href="#">Canadian Aviation Regulations</a></li> </ul>

	<ul style="list-style-type: none"><li>- <a href="#">Civil Aviation Safety Regulations of Australia</a></li><li>- <a href="#">European Aviation Safety Rules</a></li><li>- <a href="#">United States Federal Aviation Administration (FAA) Regulations</a></li><li>- <a href="#">ICAO reference documents</a></li><li>- <a href="#">iMPLEMENT</a></li><li>- <a href="#">iSTARS</a> State safety briefings (ICAO secure portal login required)</li><li>- <a href="#">Latin American Civil Aviation Regulations</a></li><li>- <a href="#">Model Civil Aviation Regulations</a></li><li>- <a href="#">Rules of the Civil Aviation Authority of New Zealand</a></li><li>- <a href="#">ICAO USOAP CMA</a></li></ul>
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<i>Safety enhancement initiative</i>	SEI-2 – Development of a comprehensive regulatory oversight framework
<i>Stakeholder</i>	States
<i>Actions</i>	<ul style="list-style-type: none"> <li data-bbox="451 386 1430 485">□ 2A – Establish and maintain an independent regulatory oversight authority, which includes separation of oversight functions from service provision functions where these exist within the authority (CE-3)</li> <li data-bbox="451 516 1430 615">□ 2B – Develop an effective system to promulgate technical guidance and tools, and provide safety-critical information needed for technical personnel to effectively perform their safety oversight functions (CE-5)</li> <li data-bbox="451 646 1430 745">□ 2C – Establish an effective system to attract, recruit, train and retain qualified and sufficient technical personnel to support regulatory oversight (see SEI-5) (CE-3 and CE-4)</li> </ul>
<i>References</i>	<p data-bbox="451 768 483 800">2A</p> <ul style="list-style-type: none"> <li data-bbox="451 831 1430 894">– Doc 9734, <i>Safety Oversight Manual, Part A – The Establishment and Management of a State Safety Oversight System</i></li> </ul> <p data-bbox="451 926 565 957">2B and 2C</p> <ul style="list-style-type: none"> <li data-bbox="451 989 1268 1020">– <a href="#">FAA Inspector Training System – Flight Standards (International) Course</a></li> <li data-bbox="451 1052 1211 1083">– <a href="#">ICAO-Endorsed Government Safety Inspector Training Programme</a></li> <li data-bbox="451 1115 1008 1146">– <a href="#">ICAO Global Aviation Training course catalogue</a></li> <li data-bbox="451 1178 821 1209">– <a href="#">ICAO Global Aviation Training</a></li> <li data-bbox="451 1241 586 1272">– <a href="#">iSTARS</a></li> <li data-bbox="451 1304 1398 1367">– <a href="#">Ramp Inspection Programmes (Safety Assessment of Foreign Aircraft (SAFA)/Safety Assessment of Community Aircraft (SACA))</a></li> </ul>

<i>Safety enhancement initiative</i>	SEI-3 – Establishment of an independent accident and incident investigation authority, consistent with Annex 13 – <i>Aircraft Accident and Incident Investigation</i>
<i>Stakeholder</i>	States
<i>Actions</i>	<ul style="list-style-type: none"> <li data-bbox="451 384 1421 447">□ 3A – Establish an independent accident and incident investigation authority, as per Annex 13 requirements (CE-1 and CE-3)</li> <li data-bbox="451 478 1421 573">□ 3B – Develop an effective system to promulgate technical guidance and tools, and provide safety-critical information needed for technical personnel to effectively conduct accident and incident investigations (CE-5)</li> <li data-bbox="451 604 1421 699">□ 3C – Establish an effective system to attract, recruit, train and retain qualified and sufficient technical personnel to support accident and incident investigations (see SEI-5) (CE-3 and CE-4)</li> </ul>
<i>References</i>	<p data-bbox="451 737 483 762">3A</p> <ul style="list-style-type: none"> <li data-bbox="451 800 1081 825">– <i>Annex 13 – Aircraft Accident and Incident Investigation</i></li> <li data-bbox="451 863 1421 919">– <i>Doc 9734, Safety Oversight Manual, Part A – The Establishment and Management of a State Safety Oversight System</i></li> </ul> <p data-bbox="451 957 483 982">3B</p> <ul style="list-style-type: none"> <li data-bbox="451 1020 881 1045">– <i>Doc 9734, Safety Oversight Manual</i></li> <li data-bbox="451 1083 1179 1108">– <i>Doc 9756, Manual of Aircraft Accident and Incident Investigation</i></li> <li data-bbox="451 1146 1349 1171">– <i>Doc 9946, Manual on Regional Accident and Incident Investigation Organization</i></li> <li data-bbox="451 1209 1369 1234">– <i>Doc 9962, Manual on Accident and Incident Investigation Policies and Procedures</i></li> <li data-bbox="451 1272 1336 1297">– <i>Doc 9973, Manual on Assistance to Aircraft Accident Victims and their Families</i></li> <li data-bbox="451 1335 1390 1360">– <i>Doc 9998, ICAO Policy on Assistance to Aircraft Accident Victims and their Families</i></li> <li data-bbox="451 1398 1414 1455">– <i>Doc 10053, Manual on Protection of Safety Information, Part I – Protection of Accident and Incident Investigation Records</i></li> <li data-bbox="451 1493 1369 1549">– <i>Doc 10062, Manual on the Investigation of Cabin Safety Aspects in Accidents and Incidents</i></li> <li data-bbox="451 1587 951 1612">– <i>Cir 315, Hazards at Aircraft Accident Sites</i></li> </ul> <p data-bbox="451 1650 483 1675">3C</p> <ul style="list-style-type: none"> <li data-bbox="451 1713 1154 1738">– <i>Cir 298, Training Guidelines for Aircraft Accident Investigators</i></li> </ul>



<i>Safety enhancement initiative</i>	SEI-4 – Strategic allocation of resources to enable effective safety oversight
<i>Stakeholder</i>	States
<i>Actions</i>	<ul style="list-style-type: none"> <li data-bbox="451 386 1430 449">□ 4A – Confirm executive or legislative mandate to receive financial resources from government or other external sources and expend them (CE-1)</li> <li data-bbox="451 480 1430 606">□ 4B – Establish a process for the resource planning and allocation in alignment with the organizational structure of a competent authority, which is required to conduct effective safety oversight (CE-2 and CE-3). SEI-1 and SEI-5 could be used to identify resource requirements (CE-1 to CE-5)</li> <li data-bbox="451 638 1430 1052">□ 4C – Obtain a sustainable and stable source of financing through commitments from the national and agency leadership and other stakeholders (CE-1 to CE-3). For small scope short-term improvements: <ul style="list-style-type: none"> <li data-bbox="500 764 1382 858">i) Utilize the ICAO Safety Fund (SAFE), Technical Cooperation Bureau, or other means to acquire technical and financial assistance in coordination with RASG/RSOO/ICAO Regional Office</li> <li data-bbox="500 890 1325 953">ii) Seek assistance from more experienced States and other stakeholders in coordination with RASG/RSOO/ICAO Regional Office</li> <li data-bbox="500 984 1373 1052">iii) Seek assistance from sources of financing (World Bank, African Development Bank, etc.) in coordination with RASG/RSOO/ICAO Regional Office</li> </ul> </li> <li data-bbox="451 1083 1411 1178">□ 4D – Develop a process for assessing changing resource requirements and sustain necessary coordination with resource stakeholders for safety oversight improvements, as outlined in Component 1 of this roadmap (CE-1 to CE-3)</li> </ul>
<i>References</i>	<ul style="list-style-type: none"> <li data-bbox="451 1213 781 1245">– <a href="#">ICAO Safety Fund (SAFE)</a></li> <li data-bbox="451 1276 889 1308">– <a href="#">ICAO Technical Cooperation Bureau</a></li> <li data-bbox="451 1339 581 1371">– <a href="#">RASGs</a></li> <li data-bbox="451 1402 751 1434">– <a href="#">RSOOs and COSCAPs</a></li> <li data-bbox="451 1465 1349 1528">– <a href="#">ICAO iPACK – Supporting Civil Aviation Entities in Conducting a Training Needs Analysis (TNA)</a></li> </ul>

<i>Safety enhancement initiative</i>	SEI-5 – Qualified technical personnel to support effective safety oversight
<i>Stakeholder</i>	States
<i>Actions</i>	<ul style="list-style-type: none"> <li data-bbox="451 386 1430 449">□ 5A – Establish an effective system to identify and track qualifications and training of existing technical personnel (CE-4)</li> <li data-bbox="451 480 1430 543">□ 5B – Identify the gaps in qualified technical personnel and training requirements necessary to implement the oversight mandate (CE-4)</li> <li data-bbox="451 575 1430 638">□ 5C – Establish a compensation scheme for the attraction and retention of qualified technical personnel (CE-4)</li> <li data-bbox="451 669 1430 764">□ 5D – Make use of RSOOs, RAIOS, or equivalent means, to secure qualified technical personnel to perform those functions which cannot be performed by the State acting on its own (CE-4)</li> <li data-bbox="451 795 1430 858">□ 5E – Establish human resource plans to support hiring and retention of the appropriate number of qualified technical personnel required (CE-4)</li> <li data-bbox="451 890 1430 1058">□ 5F – Implement training policies and programmes for technical personnel and verify that the type and frequency of training successfully completed (i.e. initial, recurrent, specialized and on-the-job training) are sufficient to acquire/maintain the required qualifications and level of competence corresponding to the assigned duties and responsibilities of technical personnel (CE-4)</li> <li data-bbox="451 1089 1430 1173">□ 5G – Develop a process for assessing changing needs for qualified technical personnel requirements and develop procedures to update hiring, retention and training of personnel needs, in coordination with SEI-4B (CE-4)</li> </ul>
<i>References</i>	<ul style="list-style-type: none"> <li data-bbox="451 1213 1430 1276">– Doc 8335, <i>Manual of Procedures for Operations Inspection, Certification and Continued Surveillance</i></li> <li data-bbox="451 1308 1430 1339">– Doc 9734, <i>Safety Oversight Manual</i></li> <li data-bbox="451 1371 1430 1402">– <a href="#">ICAO-Endorsed Government Safety Inspector Training Programme</a></li> <li data-bbox="451 1434 1430 1465">– <a href="#">ICAO Global Aviation Training</a></li> <li data-bbox="451 1497 1430 1560">– <a href="#">ICAO iPACK – Supporting Civil Aviation Entities in Conducting a Training Needs Analysis (TNA)</a></li> </ul>

<i>Safety enhancement initiative</i>	SEI-6 – Strategic collaboration with key aviation stakeholders to enhance safety in a coordinated manner
<i>Stakeholder</i>	States
<i>Actions</i>	<ul style="list-style-type: none"> <li><input type="checkbox"/> 6A – Based on the identified hazards and safety deficiencies, establish a mechanism to identify key aviation stakeholders and develop an action plan for the resolution of those safety issues (CE-1 to CE-5)</li> <li><input type="checkbox"/> 6B – Use a regional safety oversight mechanism, or the services of another competent State or organization to support a State that does not expect to meet GASP Goals 2 and 3</li> <li><input type="checkbox"/> 6C – Provide assistance via States, regions and industry to other States for primary aviation legislation development (in coordination with SEI-1B) (CE-1)</li> <li><input type="checkbox"/> 6D – Provide assistance via States, regions and industry to other States for the development of national regulations (CE-2)</li> <li><input type="checkbox"/> 6E – Establish a process via RASG and/or RSOO for a mentoring/collaboration system, including providing State/industry assistance as well as sharing of best practices and internal follow-up actions (CE-1 to CE-5, emphasis on CE-3)</li> <li><input type="checkbox"/> 6F – Collaborate with RASG and/or RSOO, other States, ICAO, industry joint programmes and/or technical school partnerships to attract, recruit and train qualified and sufficient technical personnel and develop a strategy for their retention (CE-4)</li> <li><input type="checkbox"/> 6G – Establish and implement a process for the development and promulgation of technical guidance, tools and the provision of safety-critical information, in collaboration with other States, RSOO, ICAO and/or other stakeholders, with the understanding that these materials need to be tailored to the national regulations and operational environments (CE-5) of each State</li> <li><input type="checkbox"/> 6H – While working to improve safety oversight, work with RASG and/or RSOO to address national high-risk categories of occurrences</li> </ul>
<i>References</i>	<p>6A to 6G</p> <ul style="list-style-type: none"> <li>– Doc 9734, <i>Safety Oversight Manual</i></li> <li>– <a href="#">ICAO Technical Cooperation Bureau</a></li> <li>– <a href="#">RASGs</a></li> <li>– <a href="#">RSOOs and COSCAPs</a></li> </ul> <p>6H</p> <ul style="list-style-type: none"> <li>– Appendix B – <i>OPS Roadmap</i></li> <li>– <a href="#">GASP Library – Regional Aviation Safety Plans</a></li> </ul>

<i>Safety enhancement initiative</i>	SEI-7 – Provision of the primary source of safety information to ICAO by completing, submitting and updating all relevant documents and records
<i>Stakeholder</i>	States
<i>Actions</i>	<ul style="list-style-type: none"> <li><input type="checkbox"/> 7A – Update USOAP corrective action plan items</li> <li><input type="checkbox"/> 7B – Complete and submit the self-assessment checklist based on USOAP CMA PQs</li> <li><input type="checkbox"/> 7C – Complete and submit the State aviation activity questionnaire</li> <li><input type="checkbox"/> 7D – Complete and submit the compliance checklists on electronic filing of differences system</li> <li><input type="checkbox"/> 7E – Update documents and records, as required, in a timely manner</li> </ul>
<i>References</i>	<ul style="list-style-type: none"> <li>– Doc 9735, <i>Universal Safety Oversight Audit Programme Continuous Monitoring Manual</i>, sections 2.8, 2.14 and 2.15</li> <li>– <a href="#">iSTARS</a></li> <li>– <a href="#">USOAP CMA Computer-based Training</a></li> <li>– <a href="#">USOAP CMA Online Framework</a></li> <li>– <a href="#">USOAP CMA Workshops</a></li> <li>– <a href="#">ICAO iPACK – Preparing for ICAO USOAP CMA Activities</a></li> </ul>

**PHASE 2 – IMPLEMENTATION OF A SAFETY OVERSIGHT SYSTEM (CE-6 TO CE-8)**

<i>Safety enhancement initiative</i>	SEI-8 – Consistent implementation of ICAO SARPs at the national level
<i>Stakeholder</i>	States
<i>Actions</i>	<input type="checkbox"/> 8A – Work at the national level to address Significant Safety Concerns as a priority <input type="checkbox"/> 8B – Increase the level of compliance with ICAO SARPs and the EI of CEs at the national level (all CEs, emphasis on CE-6 to CE-8)
<i>References</i>	<ul style="list-style-type: none"> <li>– Doc 9735, <i>Universal Safety Oversight Audit Programme Continuous Monitoring Manual</i></li> <li>– <a href="#">ISTARS</a> safety audit information (ICAO secure portal login required)</li> </ul>

<i>Safety enhancement initiative</i>	SEI-9 – Continued implementation of and compliance with ICAO SARPs at the national level
<i>Stakeholder</i>	States
<i>Actions</i>	<input type="checkbox"/> 9A – Implement licensing, certification, authorization and approval processes (CE-6) <input type="checkbox"/> 9B – Implement regulatory oversight and enforcement processes (CE-7 and CE-8) <input type="checkbox"/> 9C – Establish a system to resolve safety issues identified via accident and incident investigations, surveillance activities, safety reports and other means (CE-8)
<i>References</i>	<p>9A</p> <ul style="list-style-type: none"> <li>– Doc 8335, <i>Manual of Procedures for Operations Inspection, Certification and Continued Surveillance</i></li> </ul> <p>9B</p> <ul style="list-style-type: none"> <li>– Doc 9756, <i>Manual of Aircraft Accident and Incident Investigation</i></li> </ul> <p>9C</p> <ul style="list-style-type: none"> <li>– Annex 13 – <i>Aircraft Accident and Incident Investigation, Attachment C – List of examples of serious incidents</i></li> </ul>

<i>Safety enhancement initiative</i>	SEI-10 – Strategic allocation of resources to enable effective safety oversight
<i>Stakeholder</i>	States
<i>Actions</i>	<ul style="list-style-type: none"><li><input type="checkbox"/> 10A – Use SEI-1 and SEI-5 to identify resource requirements (CE-6 to CE-8)</li><li><input type="checkbox"/> 10B – Leverage regional groups such as the RASG to identify additional resources</li></ul>
<i>References</i>	<ul style="list-style-type: none"><li>– <a href="#">ICAO Fund for Aviation Safety (SAFE)</a></li><li>– <a href="#">ICAO Technical Cooperation Bureau</a></li><li>– <a href="#">RASGs</a></li><li>– <a href="#">ICAO iPACK – Supporting Civil Aviation Entities in Conducting a Training Needs Analysis (TNA)</a></li></ul>

<i>Safety enhancement initiative</i>	SEI-11 – Strategic collaboration with key aviation stakeholders to enhance safety in a coordinated manner
<i>Stakeholder</i>	States
<i>Actions</i>	<ul style="list-style-type: none"> <li data-bbox="451 386 1438 485">□ 11A – Based on the identified hazards and safety deficiencies, establish a mechanism to identify key aviation stakeholders and develop an action plan for the resolution of those safety issues (CE-6 to CE-8)</li> <li data-bbox="451 512 1438 575">□ 11B – Use an RSOO or other competent State or organization to support a State that does not expect to meet GASP Goals 2 and 3</li> <li data-bbox="451 602 1438 665">□ 11C – Provide assistance via RASG and/or RSOO to other States for the conduct of surveillance activities (CE-7)</li> <li data-bbox="451 693 1438 798">□ 11D – Use technical guidance, tools and safety-critical information, developed in collaboration with other States, RSOO, ICAO and/or other stakeholders, to enable technical personnel to perform their safety oversight functions effectively (CE-6 to CE-8)</li> <li data-bbox="451 825 1438 888">□ 11E – While working to improve safety oversight, continue to work with RASG and/or RSOO to address national high-risk categories of occurrences</li> </ul>
<i>References</i>	<p data-bbox="451 930 574 951">11A to 11D</p> <ul style="list-style-type: none"> <li data-bbox="451 989 581 1020">– <a href="#">RASGs</a></li> <li data-bbox="451 1052 748 1083">– <a href="#">RSOOs and COSCAPs</a></li> </ul> <p data-bbox="451 1115 496 1136">11E</p> <ul style="list-style-type: none"> <li data-bbox="451 1178 808 1209">– Appendix B – <i>OPS Roadmap</i></li> <li data-bbox="451 1241 1000 1272">– <a href="#">GASP Library – Regional Aviation Safety Plans</a></li> </ul>

<i>Safety enhancement initiative</i>	SEI-12 – Continued provision of the primary source of safety information to ICAO by updating all relevant documents and records as progress is made
<i>Stakeholder</i>	States
<i>Actions</i>	<ul style="list-style-type: none"> <li><input type="checkbox"/> 12A – Update USOAP corrective action plan items</li> <li><input type="checkbox"/> 12B – Update and submit the self-assessment checklist based on USOAP CMA PQs</li> <li><input type="checkbox"/> 12C – Update and submit the State aviation activity questionnaire (SAAQ)</li> <li><input type="checkbox"/> 12D – Update and submit the compliance checklists (CCs) on the electronic filing of differences (EFOD) system</li> </ul>
<i>References</i>	<ul style="list-style-type: none"> <li>– Doc 9735, <i>Universal Safety Oversight Audit Programme Continuous Monitoring Manual</i>, sections 2.8, 2.14 and 2.15</li> <li>– <a href="#">iSTARS</a></li> <li>– <a href="#">ICAO iPACK – Preparing for ICAO USOAP CMA Activities</a></li> </ul>



### COMPONENT 2 – STATE SAFETY PROGRAMME

<i>Safety enhancement initiative</i>	SEI-13 – Start of SSP implementation at the national level
<i>Stakeholder</i>	States
<i>Actions</i>	<ul style="list-style-type: none"> <li><input type="checkbox"/> 13A – Secure State-level commitment to improve safety</li> <li><input type="checkbox"/> 13B – Conduct initial SSP gap analysis (checklist) then the detailed SSP self-assessment</li> <li><input type="checkbox"/> 13C – Establish an SSP implementation team</li> <li><input type="checkbox"/> 13D – Develop an implementation plan for the SSP</li> <li><input type="checkbox"/> 13E – Issue SMS regulations for service providers and verify SMS implementation</li> <li><input type="checkbox"/> 13F – Identify and share safety management best practices</li> </ul>
<i>References</i>	<p>13A, 13B and 13D</p> <ul style="list-style-type: none"> <li>– Annex 19 – <i>Safety Management</i>, Chapter 3</li> <li>– Doc 9859, <i>Safety Management Manual</i></li> <li>– <a href="#">Safety Management Implementation Website</a></li> <li>– <a href="#">ICAO USOAP CMA Online Framework</a></li> <li>– <a href="#">iSTARS</a> SSP gap analysis (ICAO secure portal login required)</li> <li>– Safety Management International Collaboration Group (SM ICG), <a href="#">10 Things You Should Know About SMS</a></li> </ul> <p>13A, 13C and 13E</p> <ul style="list-style-type: none"> <li>– SM ICG, <a href="#">The Frontline Manager's Role in SMS</a></li> <li>– SM ICG, <a href="#">The Senior Manager's Role in SMS</a></li> </ul> <p>13E</p> <ul style="list-style-type: none"> <li>– SM ICG, <a href="#">SMS Evaluation Tool</a></li> <li>– <a href="#">CANSO Standard of Excellence in Safety Management Systems</a></li> </ul> <p>13F</p> <ul style="list-style-type: none"> <li>– SM ICG, <a href="#">How to Support a Successful SSP and SMS Implementation – Recommendations for Regulators</a></li> </ul>

<i>Safety enhancement initiative</i>	SEI-14 – Strategic allocation of resources to start SSP implementation
<i>Stakeholder</i>	States
<i>Actions</i>	<ul style="list-style-type: none"> <li data-bbox="451 426 1429 489">□ 14A – Establish a process for planning and allocation of resources to enable SSP implementation and identify areas where resources are needed</li> <li data-bbox="451 520 1429 583">□ 14B – Obtain resources from national and appropriate authorities' leadership and stakeholders within the State to support SSP implementation</li> <li data-bbox="451 615 1429 709">□ 14C – Work with the ICAO Regional Office to make use of available means (e.g. Technical Cooperation Bureau) to acquire assistance needed for SSP implementation</li> <li data-bbox="451 741 1429 835">□ 14D – Work with RSOO, other States and other organizations, as appropriate to train qualified technical personnel to fulfil their duties and responsibilities regarding SSP implementation</li> </ul>
<i>References</i>	<p data-bbox="451 867 597 898">14A and 14B</p> <ul style="list-style-type: none"> <li data-bbox="451 930 963 961">– Annex 19 – <i>Safety Management</i>, Chapter 3</li> <li data-bbox="451 993 922 1024">– Doc 9859, <i>Safety Management Manual</i></li> <li data-bbox="451 1056 1352 1119">– <a href="#">ICAO iPACK – Supporting Civil Aviation Entities in Conducting a Training Needs Analysis (TNA)</a></li> </ul> <p data-bbox="451 1150 508 1182">14C</p> <ul style="list-style-type: none"> <li data-bbox="451 1213 1109 1245">– <a href="#">ICAO Technical Cooperation Bureau</a> regional coordinator</li> </ul> <p data-bbox="451 1276 508 1308">14D</p> <ul style="list-style-type: none"> <li data-bbox="451 1339 1011 1371">– SM ICG, <a href="#">SMS Inspector Competency Guidance</a></li> </ul>

<i>Safety enhancement initiative</i>	SEI-15 – Strategic collaboration with key aviation stakeholders to start SSP implementation
<i>Stakeholder</i>	States
<i>Actions</i>	<ul style="list-style-type: none"> <li>□ 15A – Identify areas where collaboration/support is needed as part of the SSP implementation plan (see SEI-14)</li> <li>□ 15B – Identify relevant key aviation stakeholders from key aviation stakeholders, including other States that are implementing or have implemented an SSP</li> <li>□ 15C – Develop an action plan to address the elements identified as missing or deficient during the SSP gap analysis (see SEI-13B)</li> <li>□ 15D – Establish a process via RASG and/or RSOO for a mentoring system, including providing assistance to States/industry, as well as sharing of best practices to support SSP implementation</li> <li>□ 15E – Develop a process to provide training on SSP to relevant staff, in collaboration with RSOO and/or other States (e.g. initial, recurrent and advanced) (see SEI-14D)</li> <li>□ 15F – Establish and implement a process for sharing technical guidance, tools and safety-critical information related to SSP (e.g. advisory circulars, staff instructions, safety performance indicators), in collaboration with other States, RASG, RSOO, ICAO and/or other stakeholders</li> </ul>
<i>References</i>	<p>15A to 15C</p> <ul style="list-style-type: none"> <li>– Annex 19 – <i>Safety Management</i>, Chapter 3</li> <li>– Doc 9859, <i>Safety Management Manual</i></li> <li>– <a href="#">ICAO USOAP CMA Online Framework</a></li> <li>– <a href="#">iSTARS</a> SSP gap analysis (ICAO secure portal login required)</li> <li>– <a href="#">SM ICG, SSP Assessment Tool</a></li> </ul> <p>15D to 15F</p> <ul style="list-style-type: none"> <li>– <a href="#">Aviation Safety Implementation Assistance Partnership (ASIAP)</a></li> <li>– <a href="#">ICAO Technical Cooperation Bureau</a> (Regional coordinator)</li> </ul> <p>15F</p> <ul style="list-style-type: none"> <li>– <a href="#">Safety Management Implementation Website</a></li> </ul>

<i>Safety enhancement initiative</i>	SEI-16 – Strategic collaboration with key aviation stakeholders to complete SSP implementation
<i>Stakeholder</i>	States
<i>Actions</i>	<ul style="list-style-type: none"> <li data-bbox="451 386 1430 449">□ 16A – Work with key aviation stakeholders (identified in SEI-15) to execute the action plan for implementation</li> <li data-bbox="451 480 1430 512">□ 16B – Work with key aviation stakeholders on establishing and updating SSP elements</li> <li data-bbox="451 543 1430 606">□ 16C – Establish a system for the continuous improvement of the SSP, in collaboration with all key aviation stakeholders</li> <li data-bbox="451 638 1430 669">□ 16D – Serve as a champion State to promote best practices among other States</li> </ul>
<i>References</i>	<p data-bbox="451 705 500 737">16B</p> <ul style="list-style-type: none"> <li data-bbox="451 768 837 800">– SM ICG, <a href="#">SSP Assessment Tool</a></li> </ul> <p data-bbox="451 831 500 863">16D</p> <ul style="list-style-type: none"> <li data-bbox="451 894 1175 926">– <a href="#">Aviation Safety Implementation Assistance Partnership (ASIAP)</a></li> <li data-bbox="451 957 1133 989">– <a href="#">ICAO Technical Cooperation Bureau</a> (Regional coordinator)</li> <li data-bbox="451 1020 1195 1052">– <a href="#">No Country Left Behind initiative safety implementation resources</a></li> <li data-bbox="451 1083 1256 1146">– SM ICG, <a href="#">How to Support a Successful SSP and SMS Implementation – Recommendations for Regulators</a></li> </ul>

<i>Safety enhancement initiative</i>	SEI-17 – Availability of safety data and safety information to support safety management activities at the national level (step 1)
<i>Stakeholder</i>	States
<i>Actions</i>	<ul style="list-style-type: none"> <li><input type="checkbox"/> 17A – Establish national laws, regulations and policies protecting safety data, safety information and related sources, in accordance with Appendix 3 of Annex 19 – <i>Safety Management</i>:</li> <li style="padding-left: 20px;">i) Ensure that the protection of safety data, safety information and related sources does not interfere with the proper administration of justice or with maintaining or improving safety</li> <li style="padding-left: 20px;">ii) Ensure that safety data, safety information and related sources are protected</li> <li style="padding-left: 20px;">iii) Specify the conditions under which safety data, safety information and related sources qualify for protection, including principles of exception and authoritative safeguards, such as de-identification of data</li> <li style="padding-left: 20px;">iv) Ensure that safety data and safety information remain available for the purpose of maintaining or improving aviation safety</li> <li><input type="checkbox"/> 17B – Establish a State mandatory occurrence reporting system</li> <li><input type="checkbox"/> 17C – Establish safety data collection and processing systems (SDCPS) to capture, store, aggregate and enable the analysis of safety data and safety information to support their safety performance management activities</li> <li><input type="checkbox"/> 17D – Establish and maintain a process to identify hazards from collected safety data</li> <li><input type="checkbox"/> 17E – Establish and utilize a process to ensure the assessment of safety risks associated with identified hazards</li> <li><input type="checkbox"/> 17F – Establish a State confidential voluntary safety reporting system providing data to the safety database</li> </ul>
<i>References</i>	<p>17A to 17F</p> <ul style="list-style-type: none"> <li>– Annex 19 – <i>Safety Management</i></li> <li>– Doc 9859, <i>Safety Management Manual</i></li> <li>– <a href="#">Safety Management Implementation website</a></li> </ul> <p>17B to 17D</p> <ul style="list-style-type: none"> <li>– <a href="#">Commercial Aviation Safety Team (CAST)/ICAO Common Taxonomy Team (CICTT)</a></li> <li>– <a href="#">ICAO Accident/Incident Data Reporting (ADREP) Taxonomy</a></li> <li>– SM ICG, <a href="#">Development of a Common Hazard Taxonomy</a></li> </ul>

	<ul style="list-style-type: none"><li>- SM ICG, <a href="#">Hazard Taxonomy Examples</a></li></ul> <p>17E</p> <ul style="list-style-type: none"><li>- SM ICG, <a href="#">Risk-based decision-making principles</a></li></ul>
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<i>Safety enhancement initiative</i>	SEI-18 – Availability of safety data and safety information to support safety management activities at the national level (step 2)
<i>Stakeholder</i>	States
<i>Actions</i>	<ul style="list-style-type: none"> <li><input type="checkbox"/> 18A – Establish the safety objectives to be achieved through the SSP</li> <li><input type="checkbox"/> 18B – Develop safety performance measurement methodologies, aligned with the regional safety metrics, using the established safety risk management process (see SEI-17E)</li> <li><input type="checkbox"/> 18C –Develop safety performance indicators and safety performance targets using the established safety risk management process</li> <li><input type="checkbox"/> 18D – Ensure the establishment of mandatory safety reporting systems by service providers</li> <li><input type="checkbox"/> 18E – Encourage establishment of voluntary safety reporting systems as part of service providers’ SMS</li> <li><input type="checkbox"/> 18F – Promote safety awareness and the two-way communication, sharing and exchange of safety-relevant information within the aviation organizations of the State and encourage sharing of safety information with industry within the State</li> <li><input type="checkbox"/> 18G – Contribute information on operational safety risks, including SSP safety performance indicators and emerging issues to the RASG</li> </ul>
<i>References</i>	<p>18A to 18F</p> <ul style="list-style-type: none"> <li>– Doc 9859, <i>Safety Management Manual</i></li> </ul> <p>18A to 18D</p> <ul style="list-style-type: none"> <li>– SM ICG, <a href="#">A Systems Approach to Measuring Safety Performance – The Regulator Perspective</a></li> <li>– SM ICG, <a href="#">Measuring Safety Performance Guidelines for Service Providers</a></li> </ul> <p>18E and 18F</p> <ul style="list-style-type: none"> <li>– <a href="#">RASG</a> regional safety reports</li> </ul> <p>18G</p> <ul style="list-style-type: none"> <li>– <a href="#">Secure Portal on Operational Safety Risks and Emerging Issues</a></li> </ul>

<i>Safety enhancement initiative</i>	SEI-19 – Acquisition of resources to increase the proactive use of risk modelling capabilities
<i>Stakeholder</i>	States
<i>Actions</i>	<ul style="list-style-type: none"> <li>□ 19A – Identify resources needed to support safety intelligence collection and processing, advanced data analysis, risk modelling and information-sharing capabilities</li> <li>□ 19B – Attract, recruit, train and retain qualified technical personnel to specialize in risk modelling</li> <li>□ 19C – Ensure that the Civil Aviation Safety Inspector workforce is trained to perform safety oversight of service providers that have implemented SMS</li> </ul>
<i>References</i>	<p>19B and 19C</p> <p>– <a href="#">ICAO iPACK – Supporting Civil Aviation Entities in Conducting a Training Needs Analysis (TNA)</a></p>



<i>Safety enhancement initiative</i>	SEI-20 – Strategic collaboration with key aviation stakeholders to support the proactive use of risk modelling capabilities
<i>Stakeholder</i>	States
<i>Actions</i>	<ul style="list-style-type: none"> <li data-bbox="451 386 1427 485">□ 20A – Identify areas where collaboration/support is needed to ensure that stakeholders understand and foster a positive safety culture that creates a high degree of trust and respect between personnel and management and promotes safety reporting</li> <li data-bbox="451 516 1427 642">□ 20B – Establish a process via RASG and/or RSOO (or other regional bodies) for a mentoring system, including providing assistance to States/industry, as well as the sharing of best practices, to support positive safety culture development and the proactive use of risk modelling</li> <li data-bbox="451 674 1427 772">□ 20C – Foster and participate in public-private partnerships similar to the commercial/general aviation safety teams’ concept to identify and implement system safety enhancements</li> <li data-bbox="451 804 1427 930">□ 20D – Collaborate with key aviation stakeholders to establish a mechanism for the regular sharing and exchange of safety information, analyses, safety risk discoveries/lessons learned and best practices within a confidential and non-punitive environment</li> </ul>
<i>References</i>	<p data-bbox="451 963 500 995">20A</p> <ul style="list-style-type: none"> <li data-bbox="451 1026 1146 1058">– <a href="#">CANSO Safety Culture Definition and Enhancement Process</a></li> <li data-bbox="451 1089 878 1121">– SKYbrary <a href="#">Safety Culture</a> in Aviation</li> </ul> <p data-bbox="451 1152 500 1184">20C</p> <ul style="list-style-type: none"> <li data-bbox="451 1215 862 1247">– <a href="#">Commercial Aviation Safety Team</a></li> <li data-bbox="451 1278 954 1310">– <a href="#">General Aviation Joint Steering Committee</a></li> <li data-bbox="451 1341 889 1373">– <a href="#">International Helicopter Safety Team</a></li> <li data-bbox="451 1404 581 1436">– <a href="#">RASGs</a></li> </ul> <p data-bbox="451 1470 500 1501">20D</p> <ul style="list-style-type: none"> <li data-bbox="451 1533 1045 1564">– ICAO Safety Information Monitoring System (SIMS)</li> </ul>

<i>Safety enhancement initiative</i>	SEI-21 – Advancement of safety risk management at the national level
<i>Stakeholder</i>	States
<i>Actions</i>	<ul style="list-style-type: none"> <li data-bbox="451 386 1430 512">□ 21A – Establish data sharing connectivity and integration among the aviation safety databases of the State, including the mandatory occurrences reporting system, voluntary safety reporting systems, safety audit reports and aviation system statistics (traffic volume, weather information, EI scores, etc.)</li> <li data-bbox="451 543 1430 606">□ 21B – Develop risk modelling capabilities to support monitoring system safety issues and accident/incident prevention</li> <li data-bbox="451 638 1430 669">□ 21C – Encourage information-sharing with industry</li> </ul>
<i>References</i>	<p data-bbox="451 705 594 737">21A and 21B</p> <ul style="list-style-type: none"> <li data-bbox="451 768 1146 800">– <a href="#">EUROCONTROL Voluntary ATM Incident Reporting (EVAIR)</a></li> <li data-bbox="451 831 1321 863">– <a href="#">European Authorities Coordination Group on Flight Data Monitoring (EAFDM)</a></li> <li data-bbox="451 894 1170 926">– <a href="#">FAA Aviation Safety Information Analysis and Sharing Program</a></li> <li data-bbox="451 957 967 989">– <a href="#">FAA Aviation Voluntary Reporting Programs</a></li> <li data-bbox="451 1020 862 1052">– <a href="#">IATA Flight Data eXchange (FDX)</a></li> <li data-bbox="451 1083 1430 1146">– <a href="#">IATA Safety Trend Evaluation, Analysis and Data Exchange System (STEADES) Global Aviation Safety Data Sharing Program</a></li> <li data-bbox="451 1178 643 1209">– <a href="#">iMPLEMENT</a></li> </ul>

## PART 2. REGIONS

## COMPONENT 1 – STATE SAFETY OVERSIGHT SYSTEM

## PHASE 1 – ESTABLISHMENT OF A SAFETY OVERSIGHT FRAMEWORK (CE-1 TO CE-5)

Safety enhancement initiative	SEI-1 – Consistent implementation of ICAO SARPs at the regional level
Stakeholder	Regions
Actions	<ul style="list-style-type: none"> <li><input type="checkbox"/> 1A – Work together with States at the regional level to assist States with low EI and/or Significant Safety Concerns: <ul style="list-style-type: none"> <li>– Provide support toward shortfalls in safety enhancement initiatives found in multiple States to increase cost effectiveness</li> <li>– Adopt best practices for identifying cost-effective types of support that lead to sustained safety oversight improvements and adjust regional resource priorities (in coordination with SEI-3B)</li> <li>– Coordinate assistance to States that have taken temporary measures to address potential Significant Safety Concerns.</li> </ul> </li> <li><input type="checkbox"/> 1B – Increase the level of compliance with ICAO SARPs and the EI of CEs within the region (CE-1 to CE-5).</li> <li><input type="checkbox"/> 1C – Develop harmonized regulations, technical guidance and tools for promulgation by States, and develop a process for the provision of safety-critical information in the region, consistent with ICAO SARPs (CE-2 and CE-5)</li> <li><input type="checkbox"/> 1D – Develop training requirements to harmonize competencies of technical personnel needed to support effective safety oversight at the regional level (CE-4)</li> <li><input type="checkbox"/> 1E – Work regionally through RASG, RSOO and ICAO Regional Office to enhance safety in a sustainable manner</li> </ul>
References	<ul style="list-style-type: none"> <li>– Doc 9734, <i>Safety Oversight Manual, Part B – The Establishment and Management of a Regional Safety Oversight Organization</i></li> <li>– Doc 9868, <i>Procedures for Air Navigation Services – Training (PANS-TRG)</i></li> <li>– Doc 10002, <i>Cabin Crew Safety Training Manual</i></li> <li>– Doc 10134, <i>Manual on Civil Aviation Cabin Safety Inspectors</i></li> <li>– <a href="#">iMPLEMENT</a></li> <li>– <a href="#">No Country Left Behind initiative safety implementation resources</a></li> </ul>

<i>Safety enhancement initiative</i>	SEI-2 – Establishment of an independent regional accident and incident investigation process, consistent with Annex 13 – <i>Aircraft Accident and Incident Investigation</i>
<i>Stakeholder</i>	Regions
<i>Actions</i>	<ul style="list-style-type: none"> <li>□ 2A – Establish a RAIO, if necessary (see SEI-1B) (CE-3)</li> <li>□ 2B – Identify champion States, via the RASGs, to assist in building the accident and incident investigation capabilities of States which require assistance (CE-3 to CE-4)</li> <li>□ 2C – Provide resources for accident and incident investigation (including, but not limited to, personnel and technical support) to perform those functions which cannot be performed by the State acting on its own (see SEI-1A) (CE-3 and CE-4)</li> </ul>
<i>References</i>	<p>2A</p> <ul style="list-style-type: none"> <li>– Doc 9946, <i>Manual on Regional Accident and Incident Investigation Organization</i></li> </ul> <p>2C</p> <ul style="list-style-type: none"> <li>– Annex 13 – <i>Aircraft Accident and Incident Investigation</i></li> <li>– Doc 9734, <i>Safety Oversight Manual, Part A – The Establishment and Management of a State Safety Oversight System and Part B – The Establishment and Management of a Regional Safety Oversight Organization</i></li> <li>– Doc 9756, <i>Manual of Aircraft Accident and Incident Investigation</i></li> <li>– Doc 9962, <i>Manual on Accident and Incident Investigation Policies and Procedures</i></li> <li>– Doc 9973, <i>Manual on Assistance to Aircraft Accident Victims and their Families</i></li> <li>– Doc 9998, <i>ICAO Policy on Assistance to Aircraft Accident Victims and their Families</i></li> <li>– Doc 10062, <i>Manual on the Investigation of Cabin Safety Aspects in Accidents and Incidents</i></li> <li>– Cir 298, <i>Training Guidelines for Aircraft Accident Investigators</i></li> <li>– Cir 315, <i>Hazards at Aircraft Accident Sites</i></li> </ul>

<i>Safety enhancement initiative</i>	SEI-3 – Regional safety enhancement initiatives to support consistent coordination of regional programmes in establishing adequate safety oversight capabilities
<i>Stakeholder</i>	Regions
<i>Actions</i>	<ul style="list-style-type: none"> <li data-bbox="451 386 1437 449">□ 3A – Identify resources that are available to support safety enhancement initiatives for States in the region (all CEs, emphasis on CE-1 to CE-5)</li> <li data-bbox="451 480 1437 669">□ 3B – Use the global aviation safety roadmap and RASG- and/or RSOO-specific analyses of relevant safety-critical information to determine regional safety issues and resources that can be used to assist States. Due to the scarce human and financial resources, any planned actions should be targeted at those safety risks which can be sustainably addressed and have the highest impact in terms of improving safety (all CEs, emphasis on CE-1 to CE-5)</li> <li data-bbox="451 701 1437 858">□ 3C – Facilitate the provision of financial and technical assistance among regional resourced entities (RASG, RSOO, ICAO Regional Office, champion States, development banks, regional economic communities and other regional aid programmes) and give priority to States requiring assistance (in alignment with State SEI-4) (all CEs, emphasis on CE-1 to CE-5)</li> <li data-bbox="451 890 1437 953">□ 3D – Establish an RSOO or equivalent means, to perform those functions which cannot be performed by the State acting on its own</li> <li data-bbox="451 984 1437 1016">□ 3E – Strengthen existing RSOO (CE-1 to CE-5)</li> </ul>
<i>References</i>	<ul style="list-style-type: none"> <li data-bbox="451 1058 1437 1121">– Doc 9734, <i>Safety Oversight Manual, Part B – The Establishment and Management of a Regional Safety Oversight Organization</i></li> <li data-bbox="451 1152 1437 1180">– Aviation Safety Implementation Assistance Partnership (ASIAP)</li> </ul>

<i>Safety enhancement initiative</i>	SEI-4 – Strategic collaboration with key aviation stakeholders to enhance safety in a coordinated manner
<i>Stakeholder</i>	Regions
<i>Actions</i>	<ul style="list-style-type: none"> <li data-bbox="451 386 1429 485">□ 4A – Based on the identified hazards and safety deficiencies, establish a mechanism to identify key aviation stakeholders and develop and execute an action plan for the resolution of those safety issues (CE-1 to CE-5)</li> <li data-bbox="451 512 1429 575">□ 4B – Provide assistance via States, regions and industry to States for primary aviation legislation development (in coordination with State SEI-1B) (CE-1)</li> <li data-bbox="451 602 1429 665">□ 4C – Provide assistance via States, regions and industry to States for the development of national regulations (CE-2)</li> <li data-bbox="451 693 1429 798">□ 4D – Establish a process via RASG and/or RSOO for a mentoring/collaboration system, including providing State/industry assistance as well as sharing of best practices and internal follow-up actions (CE-3)</li> <li data-bbox="451 825 1429 930">□ 4E – Collaborate with RASG and/or RSOO, States, ICAO, industry joint programmes and/or technical school partnerships to attract, recruit and train qualified and sufficient technical personnel and develop a strategy for their retention (CE-4)</li> <li data-bbox="451 957 1429 1115">□ 4F – Establish and implement a process for the development and promulgation of technical guidance, tools and the provision of safety-critical information, in collaboration with States, RSOO, ICAO and/or other stakeholders, with the understanding that these materials need to be tailored to the national regulations and operational environment (CE-5) of each State</li> <li data-bbox="451 1142 1429 1205">□ 4G – While working to improve safety oversight, work with RASG and/or RSOO to address regional high-risk categories of occurrences</li> </ul>
<i>References</i>	<p data-bbox="451 1247 548 1268">4A to 4F</p> <ul style="list-style-type: none"> <li data-bbox="451 1310 878 1331">– Doc 9734, <i>Safety Oversight Manual</i></li> <li data-bbox="451 1373 889 1394">– <a href="#">ICAO Technical Cooperation Bureau</a></li> <li data-bbox="451 1436 639 1457">– <a href="#">iMPLEMENT</a></li> <li data-bbox="451 1499 581 1520">– <a href="#">RASGs</a></li> <li data-bbox="451 1562 748 1583">– <a href="#">RSOOs and COSCAPs</a></li> </ul> <p data-bbox="451 1625 488 1646">4G</p> <ul style="list-style-type: none"> <li data-bbox="451 1688 808 1709">– Appendix B – <i>OPS Roadmap</i></li> <li data-bbox="451 1751 997 1772">– <a href="#">GASP Library – Regional Aviation Safety Plans</a></li> <li data-bbox="451 1814 997 1835">– <a href="#">GASP Library – National Aviation Safety Plans</a></li> </ul>

<i>Safety enhancement initiative</i>	SEI-5 – Provision of the regional safety information to ICAO by asking States to complete, submit and update all relevant documents and records
<i>Stakeholder</i>	Regions
<i>Actions</i>	<ul style="list-style-type: none"> <li><input type="checkbox"/> 5A – Assess if States in the region have provided the information in 5B to 5E to ICAO</li> <li><input type="checkbox"/> 5B – Solicit States in the region to complete and submit their USOAP corrective action plan</li> <li><input type="checkbox"/> 5C – Solicit States in the region to complete and submit their self-assessment checklist based on USOAP CMA PQs</li> <li><input type="checkbox"/> 5D – Solicit States in the region to complete and submit their SAAQ</li> <li><input type="checkbox"/> 5E – Solicit States in the region to complete and submit their CCs on the EFOD system</li> <li><input type="checkbox"/> 5F – Make use of the RASGs, regional organizations or other regional fora to collect and share safety information, in order to assess the level of implementation of ICAO SARPs at the regional level</li> </ul>
<i>References</i>	<ul style="list-style-type: none"> <li>– Doc 9735, <i>Universal Safety Oversight Audit Programme Continuous Monitoring Manual</i></li> <li>– <a href="#">iSTARS</a></li> <li>– <a href="#">USOAP CMA Computer-based Training</a></li> <li>– <a href="#">USOAP CMA Online Framework</a></li> <li>– <a href="#">USOAP CMA Workshops</a></li> </ul>

**PHASE 2 – IMPLEMENTATION OF A SAFETY OVERSIGHT SYSTEM (CE-6 TO CE-8)**

<i>Safety enhancement initiative</i>	SEI-6 – Continued implementation of and compliance with ICAO SARPs at the regional level
<i>Stakeholder</i>	Regions
<i>Actions</i>	<ul style="list-style-type: none"> <li><input type="checkbox"/> 6A – Work together with States in the region to assist States with low EI and/or Significant Safety Concerns: <ul style="list-style-type: none"> <li>– Provide support toward shortfalls in safety enhancement initiatives found in multiple States to increase cost effectiveness</li> <li>– Adopt best practices for identifying cost-effective types of support that lead to sustained safety oversight improvements and adjust regional resource priorities continuously (in coordination with SEI-7B)</li> </ul> </li> <li><input type="checkbox"/> 6B – Increase the level of compliance with ICAO SARPs and the EI of CEs within the region (CE-6 to CE-8)</li> <li><input type="checkbox"/> 6C – Work with States’ competent authorities and their enforcement oversight processes, to address safety issues regarding foreign operators, in a timely manner (CE-6 to CE-8)</li> <li><input type="checkbox"/> 6D – Work with stakeholders to resolve safety issues identified via accident and incident investigations, safety reports and other means (CE-8)</li> <li><input type="checkbox"/> 6E – Continue work on the regional high-risk categories of occurrences</li> </ul>
<i>References</i>	<p>6A to 6C</p> <ul style="list-style-type: none"> <li>– Doc 8335, <i>Manual of Procedures for Operations Inspection, Certification and Continued Surveillance</i></li> <li>– Doc 9735, <i>Universal Safety Oversight Audit Programme Continuous Monitoring Manual</i></li> </ul> <p>6D</p> <ul style="list-style-type: none"> <li>– Doc 9756, <i>Manual of Aircraft Accident and Incident Investigation</i></li> </ul> <p>6E</p> <ul style="list-style-type: none"> <li>– Appendix B – <i>OPS Roadmap</i></li> <li>– <a href="#">GASP Library – Regional Aviation Safety Plans</a></li> <li>– <a href="#">GASP Library – National Aviation Safety Plans</a></li> </ul>



<i>Safety enhancement initiative</i>	SEI-7 – Regional safety enhancement initiatives to support consistent coordination of regional programmes in implementing adequate safety oversight capabilities
<i>Stakeholder</i>	Regions
<i>Actions</i>	<ul style="list-style-type: none"> <li>□ 7A – Identify resources that are available to support safety enhancement initiatives for States in the region (all CEs, emphasis on CE-6 to CE-8)</li> <li>□ 7B – Use the global aviation safety roadmap and regional analysis of relevant safety-critical information to determine regional priorities and resources that can be used to assist States. Due to the scarce human and financial resources, any planned actions should be targeted at those safety risks which can be sustainably addressed and have the highest impact in terms of improving safety (all CEs, emphasis on CE-6 to CE-8)</li> <li>□ 7C – Facilitate the provision of financial and technical assistance among regional resourced entities (RASG, RSOO, ICAO Regional Office, champion States, development banks and other regional aid programmes) and give priority to States requiring assistance, in alignment with SEI-10 (all CEs, emphasis on CE-6 to CE-8)</li> <li>□ 7D – Strengthen existing RSOO, if necessary (CE-6 to CE-8)</li> </ul>
<i>References</i>	– <a href="#">Aviation Safety Implementation Assistance Partnership (ASIAP)</a>

<i>Safety enhancement initiative</i>	SEI-8 – Strategic collaboration with key aviation stakeholders to enhance safety in a coordinated manner
<i>Stakeholder</i>	Regions
<i>Actions</i>	<ul style="list-style-type: none"> <li data-bbox="451 386 1429 485">□ 8A – Based on the identified hazards and safety deficiencies, establish a mechanism to identify key aviation stakeholders and develop an action plan for the resolution of those safety issues (CE-6 to CE-8)</li> <li data-bbox="451 512 1429 575">□ 8B – Provide assistance via RASG and/or RSOO to States for the conduct of surveillance activities (CE-7)</li> <li data-bbox="451 602 1429 701">□ 8C – Use technical guidance, tools and safety-critical information, developed in collaboration with States, RSOO, ICAO and/or other stakeholders, to assist in safety oversight functions (CE-6 to CE-8)</li> <li data-bbox="451 728 1429 791">□ 8D – Resolve safety issues identified via accident and incident investigations, safety reports and other means (CE-8)</li> <li data-bbox="451 819 1429 882">□ 8E – While working to improve safety oversight, continue to work with RASG and/or RSOO to address regional high-risk categories of occurrences</li> </ul>
<i>References</i>	<p data-bbox="451 930 548 951">8A to 8C</p> <ul style="list-style-type: none"> <li data-bbox="451 989 581 1020">– <a href="#">RASGs</a></li> <li data-bbox="451 1052 748 1083">– <a href="#">RSOOs and COSCAPs</a></li> </ul> <p data-bbox="451 1119 483 1140">8D</p> <ul style="list-style-type: none"> <li data-bbox="451 1178 1179 1209">– Doc 9756, <i>Manual of Aircraft Accident and Incident Investigation</i></li> </ul> <p data-bbox="451 1245 483 1266">8E</p> <ul style="list-style-type: none"> <li data-bbox="451 1304 808 1335">– Appendix B – <i>OPS Roadmap</i></li> <li data-bbox="451 1367 1000 1398">– <a href="#">GASP Library – Regional Aviation Safety Plans</a></li> <li data-bbox="451 1430 992 1461">– <a href="#">GASP Library – National Aviation Safety Plans</a></li> </ul>

<i>Safety enhancement initiative</i>	SEI-9 – Continued provision of the primary source of regional safety information to ICAO by asking States to update all relevant documents and records as progress is made
<i>Stakeholder</i>	Regions
<i>Actions</i>	<ul style="list-style-type: none"> <li data-bbox="451 384 1438 447">□ 9A – Assess if States in the region have updated their primary source of safety information to ICAO</li> <li data-bbox="451 478 1438 541">□ 9B – Solicit States in the region to complete and submit their USOAP corrective action plan</li> <li data-bbox="451 573 1438 636">□ 9C – Solicit States in the region to update and submit their self-assessment checklist based on USOAP CMA PQs</li> <li data-bbox="451 667 1438 699">□ 9D – Solicit States in the region to update and submit their SAAQ</li> <li data-bbox="451 730 1438 762">□ 9E – Solicit States in the region to update and submit their CCs on the EFOD system</li> <li data-bbox="451 793 1438 856">□ 9F – Continue to encourage States in the region to update documents and records, as required, in a timely manner</li> <li data-bbox="451 888 1438 982">□ 9G – Continue to make use of the RASGs, regional organizations or other regional fora to collect and share safety information, in order to assess the level of implementation of ICAO SARPs at the regional level</li> </ul>
<i>References</i>	<ul style="list-style-type: none"> <li data-bbox="451 1024 1438 1056">– Doc 9735, <i>Universal Safety Oversight Audit Programme Continuous Monitoring Manual</i></li> <li data-bbox="451 1087 1438 1119">– <a href="#">iMPLEMENT</a></li> <li data-bbox="451 1150 1438 1182">– <a href="#">iSTARS</a></li> <li data-bbox="451 1213 1438 1245">– <a href="#">ICAO iPACK – Preparing for ICAO USOAP CMA Activities</a></li> </ul>

## COMPONENT 2 – STATE SAFETY PROGRAMME

<i>Safety enhancement initiative</i>	SEI-10 – Start of promotion of SSP implementation at the regional level
<i>Stakeholder</i>	Regions
<i>Actions</i>	<ul style="list-style-type: none"> <li><input type="checkbox"/> 10A – Identify an entity in the region who will guide and support SSP implementation at the regional level (RASG, RSOO, ICAO Regional Office, etc.)</li> <li><input type="checkbox"/> 10B – Guide and support SSP implementation by States: <ul style="list-style-type: none"> <li>– Collect SSP gap analyses and implementation plans of States</li> <li>– Identify common deficiencies</li> <li>– Develop regional strategies, including collaboration and resources, to assist States with implementation</li> <li>– Identify and promote safety management best practices in coordination with States and/or other regions</li> <li>– Follow-up on progress and attain updated gap analysis and implementation plans</li> <li>– Use the global aviation safety roadmap to align priorities of the RASG</li> </ul> </li> <li><input type="checkbox"/> 10C – Engage States at the regional level and focus activities in line with the global aviation safety roadmap</li> <li><input type="checkbox"/> 10D – Continue work on the regional high-risk categories of occurrences</li> </ul>
<i>References</i>	<p>10A and 10B</p> <ul style="list-style-type: none"> <li>– Annex 19 – <i>Safety Management</i>, Chapter 3</li> <li>– Doc 9859, <i>Safety Management Manual</i></li> <li>– <a href="#">Safety Management Implementation Website</a></li> <li>– <a href="#">ICAO USOAP CMA Online Framework</a></li> <li>– SM ICG, <a href="#">How to Support a Successful SSP and SMS Implementation – Recommendations for Regulators</a></li> </ul> <p>10D</p> <ul style="list-style-type: none"> <li>– Appendix B – <i>OPS Roadmap</i></li> <li>– <a href="#">GASP Library – Regional Aviation Safety Plans</a></li> <li>– <a href="#">GASP Library – National Aviation Safety Plans</a></li> </ul>

<i>Safety enhancement initiative</i>	SEI-11 – Regional safety enhancement initiatives to support consistent coordination of regional programmes for SSP implementation
<i>Stakeholder</i>	Regions
<i>Actions</i>	<ul style="list-style-type: none"> <li data-bbox="451 405 1435 499">□ 11A – Identify resources that are available to support SSP implementation by States in the region</li> <li data-bbox="451 510 1435 604">□ 11B – Use updates provided by States on the status of their SSP implementation to determine regional priorities and resources that can be used to assist individual States in the region</li> <li data-bbox="451 615 1435 709">□ 11C – Work with the ICAO Regional Office to facilitate the provision of technical assistance needed for SSP implementation</li> <li data-bbox="451 720 1435 814">□ 11D – Monitor the progress of SSP implementation (via iSTARS) and adjust regional resource priorities continuously</li> </ul>
<i>References</i>	<p data-bbox="451 825 1435 877">11B to 11D</p> <ul style="list-style-type: none"> <li data-bbox="451 888 1435 940">– Annex 19 – <i>Safety Management</i>, Chapter 3</li> <li data-bbox="451 951 1435 1003">– Doc 9859, <i>Safety Management Manual</i></li> <li data-bbox="451 1014 1435 1066">– <a href="#">Safety Management Implementation Website</a></li> </ul> <p data-bbox="451 1077 1435 1129">11C</p> <ul style="list-style-type: none"> <li data-bbox="451 1140 1435 1234">– Doc 9734, <i>Safety Oversight Manual</i>, Part B – <i>The Establishment and Management of a Regional Safety Oversight Organization</i></li> <li data-bbox="451 1245 1435 1297">– <a href="#">Aviation Safety Implementation Assistance Partnership (ASIAP)</a></li> <li data-bbox="451 1308 1435 1360">– <a href="#">ICAO Technical Cooperation Bureau</a> regional coordinator</li> </ul> <p data-bbox="451 1371 1435 1423">11D</p> <ul style="list-style-type: none"> <li data-bbox="451 1434 1435 1476">– <a href="#">iSTARS</a> SSP gap analysis (ICAO secure portal login required)</li> </ul>

<i>Safety enhancement initiative</i>	SEI-12 – Strategic collaboration with key aviation stakeholders to support SSP implementation
<i>Stakeholder</i>	Regions
<i>Actions</i>	<ul style="list-style-type: none"> <li>□ 12A – Identify areas where collaboration/support is needed as part of States' SSP implementation plans (see SEI-14)</li> <li>□ 12B – Identify relevant key aviation stakeholders from the key aviation stakeholders, including States implementing or having implemented an SSP</li> <li>□ 12C – Develop and implement a consistent and harmonized strategy to address the common elements identified as missing or deficient during the SSP gap analysis of States in the region</li> <li>□ 12D – Establish and implement a process via RASG and/or RSOO for a mentoring system, including providing assistance to States/industry, as well as sharing of best practices to support SSP implementation</li> <li>□ 12E – Develop and implement a process to provide training on SSP to relevant staff, in collaboration with RSOO and/or other States (e.g. initial and recurrent)</li> <li>□ 12F – Establish and implement a process for sharing technical guidance, tools and safety-critical information related to SSP (e.g. advisory circulars, staff instructions, safety performance indicators), in collaboration with States, RASG, RSOO, ICAO and/or other stakeholders</li> <li>□ 12G – Work with States in the region to ensure that all elements of their SSPs are present and effective, and promote continuous improvement</li> </ul>
<i>References</i>	<p>12A to 12C</p> <ul style="list-style-type: none"> <li>– Doc 9859, <i>Safety Management Manual</i></li> <li>– <a href="#">ICAO USOAP CMA Online Framework</a></li> <li>– <a href="#">iSTARS</a> SSP gap analysis (ICAO secure portal login required)</li> </ul> <p>12D to 12G</p> <ul style="list-style-type: none"> <li>– <a href="#">ICAO Technical Cooperation Bureau</a> regional coordinator</li> </ul> <p>12F</p> <ul style="list-style-type: none"> <li>– <a href="#">Safety Management Implementation Website</a></li> <li>– SM ICG, <a href="#">SSP Assessment Tool</a></li> </ul> <p>12G</p> <ul style="list-style-type: none"> <li>– SM ICG, <a href="#">How to Support a Successful SSP and SMS Implementation – Recommendations for Regulators</a></li> </ul>

<i>Safety enhancement initiative</i>	SEI-13 – Availability of safety data and safety information to support safety management activities at the regional level
<i>Stakeholder</i>	Regions
<i>Actions</i>	<ul style="list-style-type: none"> <li><input type="checkbox"/> 13A – Encourage States to actively update their SSP implementation status (via iSTARS) and to provide safety information, to enable the identification of hazards and safety deficiencies, and management of safety risks in the region</li> <li><input type="checkbox"/> 13B – Develop and adopt harmonized safety reporting systems, as part of service providers' SMS within the region (e.g. voluntary reporting systems)</li> <li><input type="checkbox"/> 13C – Encourage States and industry within the region to share safety information and contribute to regional reporting and monitoring mechanisms</li> <li><input type="checkbox"/> 13D – Use regional safety performance measurement methodologies (including harmonized safety metrics) for the RASG to conduct safety risk analysis in coordination with RSOO or RAIO</li> <li><input type="checkbox"/> 13E – Encourage all States to contribute information on operational safety risks, including SSP safety performance indicators and emerging issues to the RASG</li> <li><input type="checkbox"/> 13F – Encourage all States to report safety issues via the Secure Portal on Operational Safety Risks and Emerging Issues</li> <li><input type="checkbox"/> 13G – Use harmonized metrics for the development and monitoring of safety performance indicators at the regional level (within the RASG)</li> <li><input type="checkbox"/> 13H – Establish a regional safety risk registry</li> </ul>
<i>References</i>	<p>13A</p> <ul style="list-style-type: none"> <li>– <a href="#">iSTARS</a></li> </ul> <p>13B to 13H</p> <ul style="list-style-type: none"> <li>– Doc 9734, <i>Safety Oversight Manual, Part B – The Establishment and Management of a Regional Safety Oversight Organization</i></li> <li>– Doc 9859, <i>Safety Management Manual</i></li> <li>– <a href="#">Secure Portal on Operational Safety Risks and Emerging Issues</a></li> <li>– <a href="#">RASG</a> regional safety reports</li> <li>– SM ICG, <a href="#">A Systems Approach to Measuring Safety Performance – The Regulator Perspective</a></li> <li>– SM ICG, <a href="#">Measuring Safety Performance Guidelines for Service Providers</a></li> </ul>

<i>Safety enhancement initiative</i>	SEI-14 – Regional allocation of resources to support continued development of the proactive use of risk modelling capabilities
<i>Stakeholder</i>	Regions
<i>Actions</i>	<ul style="list-style-type: none"> <li>□ 14A – Work with States and organizations to leverage available technologies and expertise within the region to enhance safety analysis and monitoring for risk analysis and mitigation strategies</li> <li>□ 14B – Identify and pool qualified auditor candidates from within the region with experience in safety oversight of service providers that have a mature SMS</li> <li>□ 14C – Work with the ICAO Regional Office(s) and donor organizations to make use of available means (e.g. Technical Cooperation Bureau) to provide assistance in developing risk modelling capabilities</li> </ul>
<i>References</i>	<ul style="list-style-type: none"> <li>– <a href="#">Safety Management Implementation Website</a></li> <li>– <a href="#">ICAO iPACK – Supporting Civil Aviation Entities in Conducting a Training Needs Analysis (TNA)</a></li> </ul>



<i>Safety enhancement initiative</i>	SEI-15 – Regional collaboration with key aviation stakeholders to support the proactive use of risk modelling
<i>Stakeholder</i>	Regions
<i>Actions</i>	<ul style="list-style-type: none"> <li data-bbox="451 386 1412 485">□ 15A – Support States in understanding and implementing positive safety culture by sharing best practices and facilitating mentoring programmes to support safety culture development and the proactive use of risk modelling</li> <li data-bbox="451 512 1412 575">□ 15B – Promote the sharing and exchange of safety information and best practices that support a positive safety culture among States and stakeholders</li> <li data-bbox="451 602 1412 701">□ 15C – Encourage and support State public-private partnerships similar to the commercial/general aviation safety teams’ concept to identify and implement system safety enhancements</li> <li data-bbox="451 728 1412 827">□ 15D – Encourage and support States’ efforts to establish mechanisms for the regular sharing and exchange of safety information, analyses, safety risk discoveries/lessons learned and best practices that support a positive safety culture</li> </ul>
<i>References</i>	<p data-bbox="451 863 591 894">15A and 15B</p> <ul style="list-style-type: none"> <li data-bbox="451 926 1143 957">– <a href="#">CANSO Safety Culture Definition and Enhancement Process</a></li> <li data-bbox="451 989 878 1020">– SKYbrary <a href="#">Safety Culture</a> in Aviation</li> </ul> <p data-bbox="451 1052 500 1083">15C</p> <ul style="list-style-type: none"> <li data-bbox="451 1115 862 1146">– <a href="#">Commercial Aviation Safety Team</a></li> <li data-bbox="451 1178 951 1209">– <a href="#">General Aviation Joint Steering Committee</a></li> <li data-bbox="451 1241 889 1272">– <a href="#">International Helicopter Safety Team</a></li> </ul> <p data-bbox="451 1304 500 1335">15D</p> <ul style="list-style-type: none"> <li data-bbox="451 1367 1045 1398">– ICAO Safety Information Monitoring System (SIMS)</li> <li data-bbox="451 1430 581 1461">– <a href="#">RASGs</a></li> </ul>

<i>Safety enhancement initiative</i>	SEI-16 – Advancement of safety risk management at the regional level
<i>Stakeholder</i>	Regions
<i>Actions</i>	<ul style="list-style-type: none"> <li data-bbox="451 386 1430 449">□ 16A – Establish data sharing connectivity and integration among States and stakeholders to enable high-level regional monitoring and analysis activities</li> <li data-bbox="451 480 1430 512">□ 16B – Identify requirements for establishing inter-regional and global data sharing</li> </ul>
<i>References</i>	<ul style="list-style-type: none"> <li data-bbox="451 548 1146 579">– <a href="#">EUROCONTROL Voluntary ATM Incident Reporting (EVAIR)</a></li> <li data-bbox="451 611 1321 642">– <a href="#">European Authorities Coordination Group on Flight Data Monitoring (EAFDM)</a></li> <li data-bbox="451 674 1305 737">– <a href="#">European Coordination Centre for Accident and Incident Reporting Systems (ECCAIRS)</a></li> <li data-bbox="451 768 1170 800">– <a href="#">FAA Aviation Safety Information Analysis and Sharing Program</a></li> <li data-bbox="451 831 862 863">– <a href="#">IATA Flight Data eXchange (FDX)</a></li> <li data-bbox="451 894 1430 957">– <a href="#">IATA Safety Trend Evaluation, Analysis and Data Exchange System (STEADES) Global Aviation Safety Data Sharing Program</a></li> </ul>

## PART 3. INDUSTRY

## COMPONENT 1 – STATE SAFETY OVERSIGHT SYSTEM

## PHASE 1 – ESTABLISHMENT OF A SAFETY OVERSIGHT FRAMEWORK (CE-1 TO CE-5)

<i>Safety enhancement initiative</i>	SEI-1 – Strategic collaboration with key aviation stakeholders to enhance safety in a coordinated manner
<i>Stakeholder</i>	Industry
<i>Actions</i>	<ul style="list-style-type: none"> <li><input type="checkbox"/> 1A – Based on the identified hazards and safety deficiencies, establish a mechanism to identify key aviation stakeholders and develop an action plan for the resolution of those safety issues (CE-1 to CE-5)</li> <li><input type="checkbox"/> 1B – Provide input to States, as applicable, for the development of national regulations (CE-2)</li> <li><input type="checkbox"/> 1C – Participate in regional activities for sharing of best practices, mentoring and conducting follow-up actions (CE-3)</li> <li><input type="checkbox"/> 1D – Address regional and national high-risk categories of occurrences, as applicable, in coordination with States and regions</li> </ul>
<i>References</i>	<p>1A to 1C</p> <ul style="list-style-type: none"> <li>– Doc 9734, <i>Safety Oversight Manual</i></li> <li>– Doc 9859, <i>Safety Management Manual</i></li> <li>– <a href="#">RASGs</a></li> <li>– <a href="#">RSOOs and COSCAPs</a></li> </ul> <p>1D</p> <ul style="list-style-type: none"> <li>– Appendix B – <i>OPS Roadmap</i></li> <li>– <a href="#">GASP Library – Regional Aviation Safety Plans</a></li> <li>– <a href="#">GASP Library – National Aviation Safety Plans</a></li> </ul>

**PHASE 2 – IMPLEMENTATION OF A SAFETY OVERSIGHT SYSTEM (CE-6 TO CE-8)**

<i>Safety enhancement initiative</i>	SEI-2 – Improvement of industry compliance with applicable regulations
<i>Stakeholder</i>	Industry
<i>Actions</i>	<ul style="list-style-type: none"> <li><input type="checkbox"/> 2A – Work together within industry to ensure compliance with applicable regulations (CE-6 to CE-8)</li> <li><input type="checkbox"/> 2B – Encourage service providers to participate in the corresponding, ICAO-recognized industry assessment programmes (CE-8)</li> <li><input type="checkbox"/> 2C – Encourage the active participation of industry in the RASGs to assist with the implementation of safety enhancement initiatives (CE-6 to CE-8)</li> </ul>
<i>References</i>	<p>2B</p> <ul style="list-style-type: none"> <li>– <a href="#">ACI Airport Excellence (APEX) in Safety</a></li> <li>– <a href="#">CANSO Standard of Excellence in Safety Management Systems</a></li> <li>– <a href="#">FSF Basic Aviation Risk Standard (BARS)</a></li> <li>– <a href="#">IATA Operational Safety Audit (IOSA)</a></li> <li>– <a href="#">IATA Safety Audit for Ground Operations (ISAGO)</a></li> <li>– <a href="#">International Business Aviation Council (IBAC) International Standard for Business Aircraft Operations (IS-BAO)</a>.</li> </ul>

<i>Safety enhancement initiative</i>	SEI-3 – Allocation of industry resources to support effective safety oversight
<i>Stakeholder</i>	Industry
<i>Actions</i>	<ul style="list-style-type: none"><li>□ 3A – Identify resources that are available to support safety enhancement initiatives for States and regions (all CEs, emphasis on CE-6 to CE-8)</li><li>□ 3B – Participate in regional and international government/industry collaborative safety enhancement initiatives</li></ul>
<i>References</i>	– <a href="#">Aviation Safety Implementation Assistance Partnership (ASIAP)</a>

<i>Safety enhancement initiative</i>	SEI-4 – Strategic collaboration with key aviation stakeholders to enhance safety in a coordinated manner
<i>Stakeholder</i>	Industry
<i>Actions</i>	<ul style="list-style-type: none"> <li data-bbox="451 386 1430 485">□ 4A – Based on the identified hazards and safety deficiencies, establish a mechanism to identify key aviation stakeholders and develop an action plan for the resolution of those safety issues (CE-6 to CE-8)</li> <li data-bbox="451 512 1430 575">□ 4B – Assist in resolving safety issues identified via accident and incident investigations, safety reports and other means (CE-8)</li> <li data-bbox="451 602 1430 665">□ 4C – Continue to work with regional groups to address regional and national high-risk categories of occurrences</li> </ul>
<i>References</i>	<p data-bbox="451 705 483 730">4A</p> <ul style="list-style-type: none"> <li data-bbox="451 768 581 793">– <a href="#">RASGs</a></li> <li data-bbox="451 831 748 856">– <a href="#">RSOOs and COSCAPs</a></li> </ul> <p data-bbox="451 894 483 919">4B</p> <ul style="list-style-type: none"> <li data-bbox="451 957 1179 982">– Doc 9756, <i>Manual of Aircraft Accident and Incident Investigation</i></li> </ul> <p data-bbox="451 1020 483 1045">4C</p> <ul style="list-style-type: none"> <li data-bbox="451 1083 808 1108">– Appendix B – <i>OPS Roadmap</i></li> <li data-bbox="451 1146 1000 1171">– <a href="#">GASP Library – Regional Aviation Safety Plans</a></li> <li data-bbox="451 1209 992 1234">– <a href="#">GASP Library – National Aviation Safety Plans</a></li> </ul>

**COMPONENT 2 – STATE SAFETY PROGRAMME**

<i>Safety enhancement initiative</i>	SEI-5 – Improvement of industry compliance with applicable SMS requirements
<i>Stakeholder</i>	Industry
<i>Actions</i>	<ul style="list-style-type: none"> <li><input type="checkbox"/> 5A – Implement a safety management system (SMS) in accordance with national regulations and the framework elements contained in Appendix 2 of Annex 19 – <i>Safety Management</i></li> <li><input type="checkbox"/> 5B – Notify competent authorities/entities in the region (States, RASG, RSOO) when there may be discrepancies in the application of SMS requirements among States in the region</li> <li><input type="checkbox"/> 5C – Utilize available guidance material (e.g. from States or non-governmental organizations) to assist with SMS implementation</li> </ul>
<i>References</i>	<p>5A to 5C</p> <ul style="list-style-type: none"> <li>– Annex 19 – <i>Safety Management</i>, Chapter 4</li> <li>– Doc 9859, <i>Safety Management Manual</i></li> </ul> <p>5A</p> <ul style="list-style-type: none"> <li>– Annex 19 – <i>Safety Management</i>, Appendix 2</li> <li>– National SMS requirements of the State</li> </ul> <p>5C</p> <ul style="list-style-type: none"> <li>– <a href="#">Safety Management Implementation Website</a></li> <li>– SM ICG, <a href="#">SMS for Small Organizations</a></li> <li>– <a href="#">CANSO Standard of Excellence in Safety Management Systems</a></li> </ul>

<i>Safety enhancement initiative</i>	SEI-6 – Resources for service providers to effectively implement SMS
<i>Stakeholder</i>	Industry
<i>Actions</i>	<ul style="list-style-type: none"> <li data-bbox="451 386 1430 449">□ 6A – Work in collaboration with the State and industry associations to advance SMS implementation and identify expectations that cannot be efficiently resourced</li> <li data-bbox="451 480 1430 543">□ 6B – Identify areas where resources are needed as part of the SMS implementation plan developed following the SMS gap analysis</li> <li data-bbox="451 575 1430 638">□ 6C – Establish a process for resource planning and allocation to enable SMS implementation, including resources which may be obtained from industry organizations</li> <li data-bbox="451 669 1430 732">□ 6D – Obtain commitment from the accountable executive within the service provider for the necessary resources to enable SMS implementation</li> <li data-bbox="451 764 1430 858">□ 6E – Encourage other service providers (e.g. interlining operators) to implement SMS within their operation by providing resources, such as qualified technical personnel to assist them</li> </ul>
<i>References</i>	<ul style="list-style-type: none"> <li data-bbox="451 894 959 926">– Annex 19 – <i>Safety Management</i>, Chapter 4</li> <li data-bbox="451 957 915 989">– Doc 9859, <i>Safety Management Manual</i></li> <li data-bbox="451 1020 976 1052">– <a href="#">Safety Management Implementation Website</a></li> <li data-bbox="451 1083 1094 1115">– <a href="#">ICAO Safety Management Training Programme (SMTP)</a></li> <li data-bbox="451 1146 1182 1178">– <a href="#">CANSO Standard of Excellence in Safety Management Systems</a></li> <li data-bbox="451 1209 987 1241">– <a href="#">IATA Safety Management for Airlines Diploma</a></li> </ul>



<i>Safety enhancement initiative</i>	SEI-7 – Strategic collaboration with key aviation stakeholders to complete SSP implementation
<i>Stakeholder</i>	Industry
<i>Actions</i>	<ul style="list-style-type: none"> <li><input type="checkbox"/> 7A – Help identify key aviation stakeholders involved in implementing SSP</li> <li><input type="checkbox"/> 7B – Work with key aviation stakeholders to support an action plan for SSP implementation</li> <li><input type="checkbox"/> 7C – Support RASG and/or RSOO efforts to establish a mentoring system, including providing assistance to States/industry, as well as sharing of best practices to support SSP implementation</li> <li><input type="checkbox"/> 7D – Provide input to the process for sharing technical guidance, tools and safety-critical information related to SSP and SMS (e.g. advisory circulars, staff instructions, safety performance indicators), in collaboration with States, RASG, RSOO, ICAO and/or other stakeholders</li> <li><input type="checkbox"/> 7E – Support continuous improvement of SSP, in collaboration with States, RASG, RSOO, ICAO and/or other stakeholders</li> <li><input type="checkbox"/> 7F – Continue to work with regional groups to address regional and national high-risk categories of occurrences</li> </ul>
<i>References</i>	<p>7A to 7E</p> <ul style="list-style-type: none"> <li>– Annex 19 – <i>Safety Management</i>, Chapter 4</li> <li>– Doc 9859, <i>Safety Management Manual</i></li> <li>– National SMS requirements of the State</li> </ul> <p>7D</p> <ul style="list-style-type: none"> <li>– <a href="#">Safety Management Implementation Website</a></li> </ul> <p>7F</p> <ul style="list-style-type: none"> <li>– Appendix B – <i>OPS Roadmap</i></li> <li>– <a href="#">GASP Library – Regional Aviation Safety Plans</a></li> <li>– <a href="#">GASP Library – National Aviation Safety Plans</a></li> </ul>

<i>Safety enhancement initiative</i>	SEI-8 – Availability of safety data and safety information to support safety management activities at the service provider level (step 1)
<i>Stakeholder</i>	Industry
<i>Actions</i>	<ul style="list-style-type: none"> <li><input type="checkbox"/> 8A – Comply with national laws, regulations and policies protecting safety data, safety information and related sources, in accordance with Appendix 3 of Annex 19 – <i>Safety Management</i></li> <li><input type="checkbox"/> 8B – Establish mandatory safety reporting systems</li> <li><input type="checkbox"/> 8C – Provide information from the service provider to the State safety data collection and processing systems (SDCPS) or safety information sharing networks, including the mandatory safety reporting system, as required</li> <li><input type="checkbox"/> 8D – Establish internal mechanisms related to the protection of safety data, safety information and related sources for the purpose of safety improvement</li> <li><input type="checkbox"/> 8E – Establish voluntary and confidential hazard/occurrence reporting systems as part of the SMS</li> <li><input type="checkbox"/> 8F – Establish and maintain a safety database for technical personnel to monitor system safety issues within the service provider</li> <li><input type="checkbox"/> 8G – Establish and utilize a safety risk management process</li> </ul>
<i>References</i>	<p>8A</p> <ul style="list-style-type: none"> <li>– Annex 19 – <i>Safety Management</i>, Appendix 3</li> </ul> <p>8B</p> <ul style="list-style-type: none"> <li>– <a href="#">Commercial Aviation Safety Team (CAST)/ICAO Common Taxonomy Team (CICTT)</a></li> <li>– <a href="#">ICAO Accident/Incident Data Reporting (ADREP) Taxonomy</a></li> <li>– SM ICG, <a href="#">Development of a Common Hazard Taxonomy</a></li> <li>– SM ICG, <a href="#">Hazard Taxonomy Examples</a></li> </ul> <p>8B to 8G</p> <ul style="list-style-type: none"> <li>– Annex 19 – <i>Safety Management</i>, Chapter 4</li> <li>– Doc 9859, <i>Safety Management Manual</i></li> <li>– National SMS requirements of the State</li> </ul>

<i>Safety enhancement initiative</i>	SEI-9 – Availability of safety data and safety information to support safety management activities at the service provider level (step 2)
<i>Stakeholder</i>	Industry
<i>Actions</i>	<ul style="list-style-type: none"> <li>□ 9A – Develop safety performance measurement methodologies, aligned with harmonized safety metrics within industry, via the established safety risk management process</li> <li>□ 9B – Develop safety performance indicators and safety performance targets, as well as associated alert settings, via the established safety risk management process</li> <li>□ 9C – Encourage the use of globally harmonized metrics for the development and monitoring of safety performance indicators, as part of the service providers' SMS</li> <li>□ 9D – Encourage sharing and use of information from within industry to identify hazards and safety deficiencies, and mitigate safety risks</li> <li>□ 9E – Encourage sharing of information from industry to the State and region to assist in the development of national and regional aviation safety plans</li> </ul>
<i>References</i>	<p>9A to 9D</p> <ul style="list-style-type: none"> <li>– Annex 19 – <i>Safety Management</i>, Chapter 4</li> <li>– Doc 9859, <i>Safety Management Manual</i></li> </ul> <p>9A and 9B</p> <ul style="list-style-type: none"> <li>– SM ICG, <a href="#">A Systems Approach to Measuring Safety Performance – The Regulator Perspective</a></li> <li>– SM ICG, <a href="#">Measuring Safety Performance Guidelines for Service Providers</a></li> </ul> <p>9B</p> <ul style="list-style-type: none"> <li>– Safety performance indicators developed by non-governmental organizations: <ul style="list-style-type: none"> <li>– <a href="#">ACI</a></li> <li>– <a href="#">CANSO</a></li> <li>– <a href="#">IATA</a></li> <li>– <a href="#">IBAC</a></li> <li>– <a href="#">International Coordinating Council of Aerospace Industries Associations (ICCAIA)</a></li> </ul> </li> </ul> <p>9E</p> <ul style="list-style-type: none"> <li>– <a href="#">ICAO iPACK – Developing a National Aviation Safety Plan (NASP)</a></li> </ul>

<i>Safety enhancement initiative</i>	SEI-10 – Allocation of industry resources to support continuous improvement of SSP and SMS
<i>Stakeholder</i>	Industry
<i>Actions</i>	<ul style="list-style-type: none"> <li><input type="checkbox"/> 10A – Ensure competent technical personnel are allocated, at the service provider level, to support the requirements of the SSP infrastructure</li> <li><input type="checkbox"/> 10B – Provide safety analysis results from service providers to support the SSP</li> </ul>
<i>References</i>	<p>10A</p> <ul style="list-style-type: none"> <li>– <a href="#">ICAO iPACK – Supporting Civil Aviation Entities in Conducting a Training Needs Analysis (TNA)</a></li> </ul> <p>10B</p> <ul style="list-style-type: none"> <li>– <a href="#">Safety Management Implementation Website</a></li> </ul>

<i>Safety enhancement initiative</i>	SEI-11 – Strategic collaboration with key aviation stakeholders to support the proactive use of risk modelling capabilities
<i>Stakeholder</i>	Industry
<i>Actions</i>	<ul style="list-style-type: none"> <li><input type="checkbox"/> 11A – Work with key aviation stakeholders to leverage best practices with safety information analysis</li> <li><input type="checkbox"/> 11B – Share safety risk identification with stakeholders for mitigation and monitoring strategies</li> <li><input type="checkbox"/> 11C – Actively participate with States and organizations engaged in risk modelling</li> </ul>
<i>References</i>	<ul style="list-style-type: none"> <li>– <a href="#">Commercial Aviation Safety Team</a></li> <li>– <a href="#">General Aviation Joint Steering Committee</a></li> <li>– <a href="#">International Helicopter Safety Team</a></li> <li>– <a href="#">RASGs</a></li> </ul>

<i>Safety enhancement initiative</i>	SEI-12 – Advancement of safety risk management at the service provider level
<i>Stakeholder</i>	Industry
<i>Actions</i>	<ul style="list-style-type: none"> <li><input type="checkbox"/> 12A – Verify that a legal framework related to the protection of safety data, safety information and other related sources is implemented and effective</li> <li><input type="checkbox"/> 12B – Develop risk modelling capabilities to support the monitoring of system safety issues and accident/incident prevention</li> <li><input type="checkbox"/> 12C – Monitor safety information exchange networks for continuous improvements</li> </ul>
<i>References</i>	<p>12A</p> <ul style="list-style-type: none"> <li>– <a href="#">FAA Aviation Safety Information Analysis and Sharing Program</a></li> <li>– <a href="#">IATA Flight Data eXchange (FDX)</a></li> <li>– <a href="#">IATA Safety Trend Evaluation, Analysis and Data Exchange System (STEADES) Global Aviation Safety Data Sharing Program</a></li> </ul>

## Appendix B

### OPERATIONAL SAFETY RISKS (OPS) ROADMAP

*Note 1.— The State may opt to delegate or seek assistance on portions of the OPS roadmap to regional organizations or other State(s).*

*Note 2.— The term “industry” in the OPS roadmap refers to any organization providing aviation products and/or services.*

*Note 3.— The regional aviation safety plans (RASPs) contain the latest regional high-risk categories of occurrences (R-HRCs) and safety enhancement initiatives (SEIs) applicable to each region. The latest versions of the RASPs are available in the GASP Library at [www.icao.int/RASP](http://www.icao.int/RASP).*

#### 1. CONTROLLED FLIGHT INTO TERRAIN (CFIT)

<i>Safety enhancement initiative</i>	Mitigate contributing factors to the risk of CFIT
<i>Stakeholder</i>	States
<i>Actions</i>	<ol style="list-style-type: none"><li>1. Implement the following CFIT safety actions:<ol style="list-style-type: none"><li>a) Ensure aircraft are equipped with terrain awareness and warning system (TAWS) in accordance with Annex 6 – <i>Operation of Aircraft</i></li><li>b) Promote the wider use of TAWS beyond the requirements of Annex 6</li><li>c) Issue a Safety Advisory to increase adherence to TAWS warning procedures</li><li>d) Promote greater awareness of approach risks</li><li>e) Consider the implementation of continuous descent final approaches (CDFA)</li><li>f) Consider the implementation of minimum safe altitude warning (MSAW) systems</li><li>g) Ensure the timeliness of updates and accuracy of Electronic Terrain and Obstacle Data (eTOD)</li><li>h) Promote the use of GPS-derived position data to feed TAWS</li></ol></li></ol>

	<ol style="list-style-type: none"> <li>2. Validate the effectiveness of the safety enhancement initiatives (SEIs) presented in this roadmap through the analysis of mandatory occurrence reporting (MORs) and voluntary occurrence reporting systems (VORs) and accident/incident investigations (apply safety management methodologies)</li> <li>3. Identify additional contributing factors, for example: <ol style="list-style-type: none"> <li>a) Flight in adverse environmental conditions</li> <li>b) Approach design and documentation (e.g. approaches with vertical guidance (APV) or localizer performance with vertical guidance (LPV) approaches)</li> <li>c) Phraseology used (standard vs. non-standard)</li> <li>d) Pilot fatigue and disorientation</li> </ol> </li> <li>4. Develop and implement further SEIs to mitigate the risk of the identified contributing factors, if any, for CFIT</li> <li>5. Conduct continuous evaluations of the performance of the SEIs</li> </ol>
References	<ul style="list-style-type: none"> <li>– Annex 6 – <i>Operation of Aircraft</i></li> <li>– <a href="#">ICAO Safety Report</a></li> <li>– <a href="#">RASGs</a></li> <li>– <a href="#">Commercial Aviation Safety Team</a> – Safety enhancements for CFIT</li> <li>– <a href="#">IATA CFIT</a></li> <li>– <a href="#">IATA Safety Report</a></li> <li>– <a href="#">FSF ALAR Toolkit</a></li> <li>– <a href="#">Skybrary</a></li> <li>– <a href="#">EUROCONTROL</a></li> </ul>



<i>Safety enhancement initiative</i>	Mitigate contributing factors to CFIT accidents and incidents
<i>Stakeholder</i>	Regions
<i>Actions</i>	<ol style="list-style-type: none"> <li>1. Implement the following CFIT safety actions: <ol style="list-style-type: none"> <li>a) Support the adoption of TAWS in accordance with Annex 6 – <i>Operation of Aircraft</i></li> <li>b) Promote the wider use of TAWS beyond the requirements of Annex 6</li> <li>c) Promote the adherence to TAWS warning procedures</li> <li>d) Promote greater awareness of approach risks</li> <li>e) Promote the implementation of CDFA</li> <li>f) Promote the implementation of MSAW systems</li> <li>g) Promote the timeliness of updates and accuracy of eTOD</li> <li>h) Promote the use of global positioning system (GPS)-derived position data to update TAWS</li> </ol> </li> <li>2. Validate the effectiveness of the SEIs presented in this roadmap in the region using data provided by States and industry (apply safety management methodologies)</li> <li>3. Identify additional contributing factors, for example: <ol style="list-style-type: none"> <li>a) Flight in adverse environmental conditions</li> <li>b) Approach design and documentation</li> <li>c) Phraseology used (standard vs non-standard)</li> <li>d) Pilot fatigue and disorientation</li> </ol> </li> <li>4. Develop and implement further SEIs to mitigate the risk of the identified contributing factors, if any, for CFIT</li> <li>5. Conduct continuous evaluation of the performance of the SEIs</li> </ol>
<i>References</i>	<ul style="list-style-type: none"> <li>– Annex 6 – <i>Operation of Aircraft</i></li> <li>– <a href="#">ICAO Safety Report</a></li> <li>– <a href="#">RASGs</a></li> <li>– <a href="#">Commercial Aviation Safety Team</a> – Safety enhancements for CFIT</li> <li>– <a href="#">IATA CFIT</a></li> </ul>

	<ul style="list-style-type: none"><li>- <a href="#">IATA Safety Report</a></li><li>- <a href="#">Flight Safety Foundation ALAR Toolkit</a></li><li>- <a href="#">Skybrary</a></li><li>- <a href="#">EUROCONTROL</a></li></ul>
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<i>Safety enhancement initiative</i>	Mitigate contributing factors to CFIT accidents and incidents
<i>Stakeholder</i>	Industry
<i>Actions</i>	<ol style="list-style-type: none"> <li>1. Implement the following CFIT safety actions: <ol style="list-style-type: none"> <li>a) Equip aircraft with TAWS</li> <li>b) Increase adherence to TAWS warning procedures</li> <li>c) Develop greater awareness of approach risks</li> <li>d) Promote CDFA</li> <li>e) Utilize MSAW systems</li> <li>f) Utilize up-to-date eTOD</li> <li>g) Utilize GPS-derived position data to feed TAWS</li> </ol> </li> <li>2. Validate the effectiveness of the SEIs presented in this roadmap through the analysis of flight data monitoring (FDM)* and pilot reports** (apply safety management methodologies)</li> <li>3. Identify additional contributing factors, for example: <ol style="list-style-type: none"> <li>a) Flight in adverse environmental conditions</li> <li>b) Approach design and documentation</li> <li>c) Phraseology used (standard vs non-standard)</li> <li>d) Pilot fatigue and disorientation</li> </ol> </li> <li>4. Develop and implement further SEIs to mitigate the risk of the identified contributing factors, if any, for CFIT</li> <li>5. Conduct continuous evaluation of the performance of the SEIs</li> </ol> <p>*TAWS cautions and warnings, and pilot responses to TAWS warnings.  **Flight planning - failure to comply with minimum safe altitude (MSA) or military operations area (MOA) restrictions.</p>
<i>References</i>	<ul style="list-style-type: none"> <li>– Annex 6 – Operation of Aircraft</li> <li>– <a href="#">ICAO Safety Report</a></li> <li>– <a href="#">RASGs</a></li> <li>– <a href="#">Commercial Aviation Safety Team</a> – Safety enhancements for CFIT</li> </ul>

	<ul style="list-style-type: none"><li>- <a href="#">IATA CFIT</a></li><li>- <a href="#">IATA Safety Report</a></li><li>- <a href="#">Flight Safety Foundation ALAR Toolkit</a></li><li>- <a href="#">Skybrary</a></li><li>- <a href="#">EUROCONTROL</a></li></ul>
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## 2. LOSS OF CONTROL IN-FLIGHT (LOC-I)

<i>Safety enhancement initiative</i>	Mitigate contributing factors to LOC-I accidents and incidents
<i>Stakeholder</i>	States
<i>Actions</i>	<ol style="list-style-type: none"> <li>1. Implement the following LOC-I safety actions:             <ol style="list-style-type: none"> <li>a) Require upset prevention and recovery training in all full flight simulator type conversion and recurrent training programmes</li> <li>b) Require more time devoted to training for the pilot monitoring role</li> </ol> </li> <li>2. Validate the effectiveness of the SEIs in the industry through MORs and VORs systems and accident/incident investigations (apply safety management methodologies)</li> <li>3. Identify additional contributing factors, for example:             <ol style="list-style-type: none"> <li>a) Distraction</li> <li>b) Adverse weather</li> <li>c) Complacency</li> <li>d) Inadequate standard operating procedures (SOPs) for effective flight management</li> <li>e) Insufficient height above terrain for recovery</li> <li>f) Lack of awareness of or competence in procedures for recovery from unusual aircraft attitudes</li> <li>g) Inappropriate flight control inputs in response to a sudden awareness of an abnormal bank angle</li> </ol> </li> <li>4. Develop and implement further SEIs to mitigate the risk of the identified contributing factors, if any, for LOC-I, for example:             <ol style="list-style-type: none"> <li>a) Increase the effectiveness of regulatory oversight</li> <li>b) Improve regulations</li> </ol> </li> <li>5. Conduct continuous evaluations of the performance of the SEIs</li> </ol>
<i>References</i>	<ul style="list-style-type: none"> <li>– Annex 1 – <i>Personnel Licensing</i></li> <li>– Doc 10011, <i>Manual on Aeroplane Upset Prevention and Recovery Training</i></li> <li>– <a href="#">ICAO Safety Report</a></li> <li>– <a href="#">ICAO LOC-I</a></li> </ul>

	<ul style="list-style-type: none"><li>- <a href="#">RASGs</a></li><li>- <a href="#">Commercial Aviation Safety Team</a> – Safety enhancements for LOC-I</li><li>- <a href="#">IATA LOC-I</a></li><li>- <a href="#">IATA Safety Report</a></li><li>- <a href="#">Flight Safety Foundation</a></li><li>- <a href="#">Skybrary</a></li><li>- <a href="#">EUROCONTROL</a></li></ul>
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<i>Safety enhancement initiative</i>	Mitigate contributing factors to LOC-I accidents and incidents
<i>Stakeholder</i>	Regions
<i>Actions</i>	<ol style="list-style-type: none"> <li>1. Implement the following LOC-I safety actions: <ol style="list-style-type: none"> <li>a) Promote upset prevention and recovery training in all full flight simulator type conversion and recurrent training programmes</li> <li>b) Promote more time devoted to training for the pilot monitoring role</li> </ol> </li> <li>2. Validate the effectiveness of the SEIs in the region using data provided by States and industry (apply safety management methodologies)</li> <li>3. Identify additional contributing factors, for example: <ol style="list-style-type: none"> <li>a) Distraction</li> <li>b) Adverse weather</li> <li>c) Complacency</li> <li>d) Inadequate SOPs for effective flight management</li> <li>e) Insufficient height above terrain for recovery</li> <li>f) Lack of awareness of or competence in procedures for recovery from unusual aircraft attitudes</li> <li>g) Inappropriate flight control inputs in response to a sudden awareness of an abnormal bank angle</li> </ol> </li> <li>4. Develop and promote further SEIs to mitigate the risk of the identified contributing factors, if any, for LOC-I, for example: <ol style="list-style-type: none"> <li>a) Organize safety seminars or workshops</li> <li>b) Facilitate regional technical assistance projects</li> </ol> </li> <li>5. Conduct continuous evaluations of the performance of the SEIs</li> </ol>
<i>References</i>	<ul style="list-style-type: none"> <li>– Annex 1 – <i>Personnel Licensing</i></li> <li>– Doc 10011, <i>Manual on Aeroplane Upset Prevention and Recovery Training</i></li> <li>– <a href="#">ICAO Safety Report</a></li> <li>– <a href="#">ICAO LOC-I</a></li> <li>– <a href="#">RASGs</a></li> </ul>

	<ul style="list-style-type: none"><li>- <a href="#">Commercial Aviation Safety Team</a> – Safety enhancements for LOC-I</li><li>- <a href="#">IATA LOC-I</a></li><li>- <a href="#">IATA Safety Report</a></li><li>- <a href="#">Flight Safety Foundation</a></li><li>- <a href="#">Skybrary</a></li><li>- <a href="#">EUROCONTROL</a></li></ul>
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<i>Safety enhancement initiative</i>	Mitigate contributing factors to LOC-I accidents and incidents
<i>Stakeholder</i>	Industry
<i>Actions</i>	<ol style="list-style-type: none"> <li>1. Implement the following LOC-I safety actions: <ol style="list-style-type: none"> <li>a) Aircraft upset prevention recovery training in all full flight simulator type conversion and recurrent training programmes</li> <li>b) More time devoted to training multi-crew pilots for the monitoring role</li> <li>c) Promote bank angle alerting systems into all multi-engine aircraft</li> <li>d) Training on manual aircraft handling of approach to stall and stall recovery (including at high altitude)</li> <li>e) Recurrent training on flight mechanics</li> <li>f) Simulator fidelity</li> </ol> </li> <li>2. Validate the effectiveness of the SEIs through the analysis of FDM and pilot reports (apply safety management methodologies)</li> <li>3. Identify additional contributing factors, for example: <ol style="list-style-type: none"> <li>a) Distraction</li> <li>b) Adverse weather</li> <li>c) Complacency</li> <li>d) Inadequate SOPs for effective flight management</li> <li>e) Insufficient height above terrain for recovery</li> <li>f) Lack of awareness of or competence in procedures for recovery from unusual aircraft attitudes</li> <li>g) Inappropriate flight control inputs in response to a sudden awareness of an abnormal bank angle</li> </ol> </li> <li>4. Develop and implement further SEIs to mitigate the risk of the identified contributing factors, if any, for LOC-I</li> <li>5. Conduct continuous evaluations of the performance of the SEIs</li> </ol>
<i>References</i>	<ul style="list-style-type: none"> <li>– Annex 1 – <i>Personnel Licensing</i></li> <li>– Doc 10011, <i>Manual on Aeroplane Upset Prevention and Recovery Training</i></li> </ul>

	<ul style="list-style-type: none"><li>- <a href="#">ICAO Safety Report</a></li><li>- <a href="#">ICAO LOC-I</a></li><li>- <a href="#">RASGs</a></li><li>- <a href="#">Commercial Aviation Safety Team</a> – Safety enhancements for LOC-I</li><li>- <a href="#">IATA LOC-I</a></li><li>- <a href="#">IATA Safety Report</a></li><li>- <a href="#">Flight Safety Foundation</a></li><li>- <a href="#">Skybrary</a></li><li>- <a href="#">EUROCONTROL</a></li></ul>
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### 3. MID-AIR COLLISION (MAC)

<i>Safety enhancement initiative</i>	Mitigate contributing factors to MAC accidents and incidents
<i>Stakeholder</i>	States
<i>Actions</i>	<ol style="list-style-type: none"> <li>1. Implement the following MAC safety actions: <ol style="list-style-type: none"> <li>a) Establish guidance and regulations to ensure aircraft are equipped with airborne collision avoidance system (ACAS), in accordance with Annex 6 – <i>Operation of Aircraft</i></li> <li>b) Ensure adherence to ACAS warning procedures</li> <li>c) Promote the improvement of air traffic control (ATC) systems, procedures and tools to enhance conflict management</li> <li>d) Promote the improvement of communications systems and procedures, such as controller-pilot datalink</li> </ol> </li> <li>2. Validate the effectiveness of the SEIs through the analysis of MORs and VORs and accident/incident investigations (apply safety management methodologies)</li> <li>3. Identify additional contributing factors, for example: <ol style="list-style-type: none"> <li>a) Traffic conditions - traffic density, complexity, mixture of aircraft types and capabilities, etc.</li> <li>b) ATC performance related to workload, competence, teamwork, procedures, commitment, etc., as well as the influence of air navigation services providers' (ANSP) safety management</li> <li>c) Flight crew training and corporate culture with workload, competence, teamwork, procedures, commitment, etc., and the influence of the aircraft operator's safety management</li> <li>d) ATC systems - flight data processing, communication, short term conflict alert (STCA), etc., as well as the interaction with the human operators and the aircraft systems, and the procurement policy of the ANSP</li> <li>e) Aircraft equipment - autopilots, transponders and ACAS, but also aircraft performance (e.g. rate-of-climb) and their physical size</li> <li>f) Navigation infrastructure - both coverage and quality</li> <li>g) Surveillance - both coverage and quality</li> <li>h) Flight plan processing - efficiency and reliability of flight plan submission, approval and distribution</li> </ol> </li> </ol>

	<ul style="list-style-type: none"> <li>i) Airspace - complexity of airspace design, route layout, extent of controlled or uncontrolled airspace, proximity of military operational or training areas, etc.</li> <li>j) Flight in adverse environmental conditions that may influence conflict management and collision avoidance</li> </ul> <p>4. Develop and implement further SEIs to mitigate the risk of the identified contributing factors, if any, for MAC</p> <p>5. Conduct continuous evaluations of the performance of the SEIs</p>
References	<ul style="list-style-type: none"> <li>- Annex 6 – <i>Operation of Aircraft</i></li> <li>- Annex 8 – <i>Airworthiness of Aircraft</i></li> <li>- Annex 19 – <i>Safety Management</i></li> <li>- Doc 8168, <i>Procedures for Air Navigation Services – Aircraft Operations (PANS-OPS)</i></li> <li>- Doc 9868, <i>Procedures for Air Navigation Services – Training (PANS-TRG)</i></li> <li>- Doc 9859, <i>Safety Management Manual</i></li> <li>- <a href="#">iSTARS</a></li> <li>- <a href="#">ICAO Safety Report</a></li> <li>- <a href="#">CAST/ICAO Common Taxonomy Team</a></li> <li>- <a href="#">RASGs</a></li> <li>- <a href="#">Commercial Aviation Safety Team</a> – Safety enhancements for MAC</li> <li>- <a href="#">IATA Safety Report</a></li> <li>- <a href="#">Flight Safety Foundation</a></li> <li>- <a href="#">Skybrary</a></li> <li>- <a href="#">EUROCONTROL</a></li> </ul>

<i>Safety enhancement initiative</i>	Mitigate contributing factors to MAC accidents and incidents
<i>Stakeholder</i>	Regions
<i>Actions</i>	<ol style="list-style-type: none"> <li>1. Implement the following MAC safety actions: <ol style="list-style-type: none"> <li>a) Promote guidance and regulations to ensure aircraft are equipped with ACAS, in accordance with Annex 6 – <i>Operation of Aircraft</i></li> <li>b) Promote adherence to ACAS warning procedures</li> <li>c) Promote the improvement of ATC systems, procedures and tools to enhance conflict management.</li> <li>d) Promote the improvement of communications systems and procedures, such as controller-pilot datalink.</li> </ol> </li> <li>2. Validate the effectiveness of the SEIs in the region using data provided by States and industry (apply safety management methodologies)</li> <li>3. Identify additional regional contributing factors, for example: <ol style="list-style-type: none"> <li>a) Traffic conditions - traffic density, complexity, mixture of aircraft types and capabilities, etc.</li> <li>b) ATC performance related to workload, competence, teamwork, procedures, commitment, etc., as well as the influence of ANSPs' safety management.</li> <li>c) Flight crew training and corporate culture related to workload, competence, teamwork, procedures, commitment, etc., and the influence of the aircraft operator's safety management</li> <li>d) ATC systems - flight data processing, communication, STCA, etc., as well as the interaction related to the human operator and the aircraft systems, and the procurement policy of the ANSP</li> <li>e) Aircraft equipment - autopilots, transponders and ACAS, but also aircraft performance (e.g. rate-of-climb) and their physical size</li> <li>f) Navigation infrastructure - both coverage and quality</li> <li>g) Surveillance -both coverage and quality</li> <li>h) Flight plan processing - efficiency and reliability of flight plan submission, approval and distribution</li> <li>i) Airspace - complexity of airspace design, route layout, extent of controlled or uncontrolled airspace, proximity of military operational or training areas, etc.</li> </ol> </li> </ol>

	<p>j) Flight in adverse environmental conditions that may influence conflict management and collision avoidance</p> <p>4. Develop and implement further SEIs to mitigate the risk of the identified contributing factors, if any, for MAC</p> <p>5. Conduct continuous evaluation of the performance of SEIs</p>
References	<ul style="list-style-type: none"> <li>– Annex 6 – <i>Operation of Aircraft</i></li> <li>– Annex 8 – <i>Airworthiness of Aircraft</i></li> <li>– Annex 19 – <i>Safety Management</i></li> <li>– Doc 8168, <i>Procedures for Air Navigation Services – Aircraft Operations (PANS-OPS)</i></li> <li>– Doc 9868, <i>Procedures for Air Navigation Services – Training (PANS-TRG)</i></li> <li>– Doc 9859, <i>Safety Management Manual</i></li> <li>– <a href="#">iSTARS</a></li> <li>– <a href="#">ICAO Safety Report</a></li> <li>– <a href="#">CAST/ICAO Common Taxonomy Team</a></li> <li>– <a href="#">RASGs</a></li> <li>– <a href="#">Commercial Aviation Safety Team</a> – Safety enhancements for MAC</li> <li>– <a href="#">IATA Safety Report</a></li> <li>– <a href="#">Flight Safety Foundation</a></li> <li>– <a href="#">Skybrary</a></li> <li>– <a href="#">EUROCONTROL</a></li> </ul>

<i>Safety enhancement initiative</i>	Mitigate contributing factors to MAC accidents and incidents
<i>Stakeholder</i>	Industry
<i>Actions</i>	<ol style="list-style-type: none"> <li>1. Implement the following MAC safety actions: <ol style="list-style-type: none"> <li>a) Equip aircraft with ACAS</li> <li>b) Consider equipping aircraft with auto-pilot/flight director ACAS response</li> <li>c) Increase adherence to ACAS warning procedures</li> <li>d) Consider the implementation of STCA, including STCA suitable for terminal areas</li> <li>e) Improve reliability and consistency of safety nets to provide early and dependable warning, and to reduce nuisance alerts</li> <li>f) Improve aircraft systems to alert pilots to any non-availability of transponders and ACAS</li> <li>g) Improve ATC systems, procedures and tools to enhance conflict management - this can include predictability of aircraft trajectories, so that conflicts can be predicted and resolved at an earlier stage, using medium-term conflict detection (MTCD) and similar systems</li> <li>h) Improve communications systems and procedures, such as controller-pilot datalink</li> </ol> </li> <li>2. Validate the effectiveness of the SEIs through the analysis of FDM*, pilot and ATC reports** (apply safety management methodologies)</li> <li>3. Identify additional contributing factors, for example: <ol style="list-style-type: none"> <li>a) Traffic conditions – traffic density, complexity, mixture of aircraft types and capabilities, etc.</li> <li>b) ATC performance related to workload, competence, teamwork, procedures, commitment, etc., as well as the influence of ANSPs' safety management</li> <li>c) Flight crew training and corporate culture related to workload, competence, teamwork, procedures, commitment, etc., and the influence of the aircraft operator's safety management</li> <li>d) ATC systems – flight data processing, communication, STCA, etc., as well as the interaction related to human operators and the aircraft systems, and the procurement policy of the ANSP</li> <li>e) Aircraft equipment – autopilots, transponders and ACAS, but also aircraft performance (e.g. rate-of-climb) and their physical size</li> <li>f) Navigation infrastructure – both coverage and quality</li> </ol> </li> </ol>

	<p>g) Surveillance – both coverage and quality</p> <p>h) Flight plan processing – efficiency and reliability of flight plan submission, approval and distribution</p> <p>i) Airspace – complexity of airspace design, route layout, extent of controlled or uncontrolled airspace, proximity of military operational or training areas, etc.</p> <p>j) Flight in adverse environmental conditions that may influence conflict management and collision avoidance</p> <p>4. Develop and implement further SEIs to mitigate the risk of the identified contributing factors, if any, for MAC</p> <p>5. Conduct continuous evaluations of the performance of the SEIs</p> <p><i>*Traffic alert and collision avoidance system resolution advisories (TCAS-RA), TCAS traffic advisories (TCAS-TA).</i></p> <p><i>**Separation and airspace infringement, level busts, aircraft proximity (AIRPROX), gross navigation errors (GNE) and large height deviations (LHD).</i></p>
References	<ul style="list-style-type: none"> <li>– Annex 6 – <i>Operation of Aircraft</i></li> <li>– Annex 8 – <i>Airworthiness of Aircraft</i></li> <li>– Annex 19 – <i>Safety Management</i></li> <li>– Doc 8168, <i>Procedures for Air Navigation Services – Aircraft Operations (PANS-OPS)</i></li> <li>– Doc 9868, <i>Procedures for Air Navigation Services – Training (PANS-TRG)</i></li> <li>– Doc 9859, <i>Safety Management Manual</i></li> <li>– <a href="#">iSTARS</a></li> <li>– <a href="#">ICAO Safety Report</a></li> <li>– <a href="#">CAST/ICAO Common Taxonomy Team</a></li> <li>– <a href="#">RASGs</a></li> <li>– <a href="#">Commercial Aviation Safety Team</a> – Safety enhancements for MAC</li> <li>– <a href="#">IATA Safety Report</a></li> <li>– <a href="#">Flight Safety Foundation</a></li> <li>– <a href="#">Skybrary</a></li> <li>– <a href="#">EUROCONTROL</a></li> </ul>



#### 4. RUNWAY EXCURSION (RE)

<i>Safety enhancement initiative</i>	Mitigate contributing factors to RE accidents and incidents
<i>Stakeholder</i>	State
<i>Actions</i>	<ol style="list-style-type: none"> <li>1. Implement the following RE safety actions: <ol style="list-style-type: none"> <li>a) Ensure the establishment and implementation of a State runway safety programme and runway safety teams</li> <li>b) Promote the establishment of policy and training on rejected landings, go-arounds, crosswind and tailwind landings (up to the maximum manufacturer-demonstrated winds)</li> <li>c) Promote equipage of runway overrun awareness and alerting systems on aircraft</li> <li>d) Ensure effective and timely reporting of meteorological and aerodrome conditions (e.g. runway surface condition in accordance to the ICAO global reporting format in Annex 14 – <i>Aerodromes</i>, Volume I – <i>Aerodrome Design and Operations</i> braking action and revised declared distances)</li> <li>e) Certify aerodrome in accordance with ICAO Annex 14, Volume I, as well as PANS-Aerodromes (Doc 9981)</li> <li>f) Promote the installation of arresting systems if runway end safety area (RESA) requirements cannot be met</li> <li>g) Ensure that procedures to systematically reduce the rate of unstabilized approaches to runways are developed and used</li> </ol> </li> <li>2. Validate the effectiveness of the SEIs through the analysis of MORs, VORs and accident/incident investigations (apply safety management methodologies)</li> <li>3. Identify additional contributing factors, for example: <ol style="list-style-type: none"> <li>a) Ineffective SOPs</li> <li>b) Failure to adhere to the appropriate SOPs</li> <li>c) Long/floated/bounced/firm/off-centre/crabbed landing</li> <li>d) Inadequate approach procedures design</li> <li>e) Inadequate regulatory oversight</li> </ol> </li> <li>4. Develop and implement further SEIs to mitigate the risk of the identified contributing factors, if any, for RE</li> <li>5. Conduct continuous evaluations of the performance of the SEIs</li> </ol>

References	<ul style="list-style-type: none"><li>- Annex 14 – <i>Aerodromes</i>, Volume I – <i>Aerodrome Design and Operations</i></li><li>- Doc 8168, <i>Procedures for Air Navigation Services – Aircraft Operations</i> (PANS-OPS)</li><li>- Doc 9981, <i>Procedures for Air Navigation Services – Aerodromes</i> (PANS-Aerodromes)</li><li>- Doc 9859, <i>Safety Management Manual</i></li><li>- <a href="#">ICAO Global Runway Safety Action Plan</a></li><li>- <a href="#">ICAO Runway Safety Team Handbook</a></li><li>- <a href="#">ICAO Runway Safety IKit</a></li><li>- <a href="#">RASGs</a></li><li>- <a href="#">EASA Safety Promotion</a></li><li>- <a href="#">European Action Plan for the Prevention of Runway Excursions (EAPPRE)</a></li><li>- <a href="#">Commercial Aviation Safety Team</a> – Safety enhancements for RE</li><li>- <a href="#">RSOOs</a></li><li>- <a href="#">iSTARS</a></li><li>- <a href="#">ICAO Safety Report</a></li><li>- <a href="#">CAST/ICAO Common Taxonomy Team</a></li><li>- <a href="#">IATA Safety Report</a></li><li>- <a href="#">IATA Runway Safety</a></li><li>- <a href="#">Skybrary</a></li><li>- <a href="#">Flight Safety Foundation ALAR Toolkit</a></li><li>- <a href="#">Global Action Plan for the Prevention of Runway Excursions (GAPPRE)</a></li></ul>
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<i>Safety enhancement initiative</i>	Mitigate contributing factors to RE accidents and incidents
<i>Stakeholder</i>	Regions
<i>Actions</i>	<ol style="list-style-type: none"> <li>1. Implement the following RE safety actions: <ol style="list-style-type: none"> <li>a) Promote the establishment and implementation of a State runway safety programme and runway safety teams</li> <li>b) Promote the establishment of policy and training on rejected landings, go-arounds, crosswind and tailwind landings (up to the maximum manufacturer-demonstrated winds)</li> <li>c) Promote equipage of runway overrun awareness and alerting systems on aircraft</li> <li>d) Promote effective and timely reporting of meteorological and aerodrome conditions (e.g. runway surface condition in accordance to the ICAO global reporting format in Annex 14 – <i>Aerodromes</i>, Volume I – <i>Aerodrome Design and Operations</i> braking action and revised declared distances)</li> <li>e) Promote the certification of aerodromes in accordance with ICAO Annex 14, Volume I, as well as PANS-Aerodromes (Doc 9981)</li> <li>f) Promote the installation of arresting systems if RESA requirements cannot be met</li> <li>g) Promote the establishment of procedures to systematically reduce the rate of unstabilized approaches to runways</li> </ol> </li> <li>2. Validate the effectiveness of the SEIs in the region using data provided by States and industry (apply safety management methodologies)</li> <li>3. Identify additional contributing factors, for example: <ol style="list-style-type: none"> <li>a) Ineffective SOPs</li> <li>b) Failure to adhere to the appropriate SOPs</li> <li>c) Long/floated/bounced/firm/off-centre/crabbed landing</li> <li>d) Inadequate approach procedures design</li> <li>e) Inadequate regulatory oversight</li> </ol> </li> <li>4. Develop and implement further SEIs to mitigate the risk of the identified contributing factors, if any, for RE</li> <li>5. Conduct continuous evaluation of the performance of the SEIs</li> </ol>

<i>References</i>	<ul style="list-style-type: none"><li>- Annex 14 – <i>Aerodromes</i>, Volume I – <i>Aerodrome Design and Operations</i></li><li>- Doc 8168, <i>Procedures for Air Navigation Services – Aircraft Operations</i> (PANS-OPS)</li><li>- Doc 9981, <i>Procedures for Air Navigation Services – Aerodromes</i> (PANS-Aerodromes)</li><li>- Doc 9859, <i>Safety Management Manual</i></li><li>- <a href="#">ICAO Global Runway Safety Action Plan</a></li><li>- <a href="#">ICAO Runway Safety Team Handbook</a></li><li>- <a href="#">ICAO Runway Safety IKit</a></li><li>- <a href="#">RASGs</a></li><li>- <a href="#">EASA Safety Promotion</a></li><li>- <a href="#">European Action Plan for the Prevention of Runway Excursions (EAPPRE)</a></li><li>- <a href="#">Commercial Aviation Safety Team</a> – Safety enhancements for RE</li><li>- <a href="#">RSOOs</a></li><li>- <a href="#">iSTARS</a></li><li>- <a href="#">ICAO Safety Report</a></li><li>- <a href="#">CAST/ICAO Common Taxonomy Team</a></li><li>- <a href="#">IATA Safety Report</a></li><li>- <a href="#">IATA Runway Safety</a></li><li>- <a href="#">Skybrary</a></li><li>- <a href="#">Flight Safety Foundation ALAR Toolkit</a></li><li>- <a href="#">Global Action Plan for the Prevention of Runway Excursions (GAPPRE)</a></li></ul>
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<i>Safety Enhancement Initiative</i>	Mitigate contributing factors to RE accidents and incidents
<i>Stakeholder</i>	Industry
<i>Actions</i>	<ol style="list-style-type: none"> <li>1. Implement the following RE safety actions: <ol style="list-style-type: none"> <li>a) Active participation in runway safety programmes and runway safety teams</li> <li>b) Policy and training on rejected landings, go-arounds, crosswind and tailwind landings (up to the maximum manufacturer-demonstrated winds)</li> <li>c) Equip the aircraft with runway overrun awareness and alerting systems</li> <li>d) Effective and timely reporting of meteorological and aerodrome conditions (e.g. runway surface condition in accordance with the ICAO global reporting format in Annex 14 – <i>Aerodromes</i>, Volume I – <i>Aerodrome Design and Operations</i> braking action and revised declared distances)</li> <li>e) Comply with runway-related provisions in ICAO Annex 14, Volume I as well as PANS-Aerodromes (Doc 9981)</li> <li>f) Consider an arresting system if RESA requirements cannot be met</li> <li>g) Procedures to systematically reduce the rate of unstabilized approaches to runways</li> </ol> </li> <li>2. Validate the effectiveness of the SEIs through the analysis of FDM* and pilot reports** (apply safety management methodologies)</li> <li>3. Identify additional contributing factors, for example: <ol style="list-style-type: none"> <li>a) Ineffective SOPs</li> <li>b) Failure to adhere to the appropriate SOPs</li> <li>c) Long/floated/bounced/firm/off-centre/crabbed landing</li> <li>d) Inadequate approach procedures design</li> <li>e) Inadequate regulatory oversight</li> </ol> </li> <li>4. Develop and implement further SEIs to mitigate the risk of the identified contributing factors, if any, for RE</li> <li>5. Conduct continuous evaluations of the performance of the SEIs</li> </ol> <p><i>*For example, long landings, excessive height and speed at threshold, aircraft configuration at 1 000 ft above aerodrome level (AAL), speed at 1 000 ft AAL, tailwind, heading deviation during final approach, use of retardation devices (spoilers, reverse thrust, autobrakes)</i></p> <p><i>**Braking action, adverse weather, navigational aid (navaid) malfunctions</i></p>

<i>References</i>	<ul style="list-style-type: none"><li>- Annex 14, <i>Aerodromes</i>, Volume I – <i>Aerodrome Design and Operations</i></li><li>- Doc 8168, <i>Procedures for Air Navigation Services – Aircraft Operations</i> (PANS-OPS)</li><li>- Doc 9981, <i>Procedures for Air Navigation Services – Aerodromes</i> (PANS-Aerodromes)</li><li>- Doc 9859, <i>Safety Management Manual</i></li><li>- <a href="#">ICAO Global Runway Safety Action Plan</a></li><li>- <a href="#">ICAO Runway Safety Team Handbook</a></li><li>- <a href="#">ICAO Runway Safety IKit</a></li><li>- <a href="#">RASGs</a></li><li>- <a href="#">EASA Safety Promotion</a></li><li>- <a href="#">European Action Plan for the Prevention of Runway Excursions (EAPPRE)</a></li><li>- <a href="#">Commercial Aviation Safety Team</a> – Safety enhancements for RE</li><li>- <a href="#">RSOOs</a></li><li>- <a href="#">iSTARS</a></li><li>- <a href="#">ICAO Safety Report</a></li><li>- <a href="#">CAST/ICAO Common Taxonomy Team</a></li><li>- <a href="#">IATA Safety Report</a></li><li>- <a href="#">IATA Runway Safety</a></li><li>- <a href="#">Skybrary</a></li><li>- <a href="#">Flight Safety Foundation ALAR Toolkit</a></li><li>- <a href="#">Global Action Plan for the Prevention of Runway Excursions (GAPPRE)</a></li></ul>
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## 5. RUNWAY INCURSION (RI)

<i>Safety Enhancement Initiative</i>	Mitigate contributing factors to RI accidents and incidents
<i>Stakeholder</i>	States
<i>Actions</i>	<ol style="list-style-type: none"> <li>1. Implement the following RI safety actions: <ol style="list-style-type: none"> <li>a) Ensure the establishment and implementation of a State runway safety programme and runway safety teams</li> <li>b) Promote the establishment of policy, procedures and training that supports situational awareness for controllers, pilots and airside vehicle drivers</li> <li>c) Ensure effective use of suitable technologies to assist the improvement of situational awareness, such as improved resolution airport moving maps (AMM), electronic flight bags (EFBs), enhanced vision systems (EVS) and head-up displays (HUD), advanced-surface movement guidance and control systems (A-SMGCS), stop bars and runway incursion warning systems (ARIWS)</li> <li>d) Certify aerodrome in accordance with ICAO Annex 14 – <i>Aerodromes</i>, Volume I – <i>Aerodrome Design and Operations</i>, as well as PANS-Aerodromes (Doc 9981)</li> <li>e) Ensure the use of standard phraseologies in accordance with applicable State regulations and ICAO provisions (e.g. Doc 9432, <i>Manual of Radiotelephony</i>)</li> <li>f) Ensure the identification and publication in the aeronautical information publication (AIP) of hot spots at aerodromes</li> <li>g) Ensure that suitable strategies to remove hazards or mitigate risks associated with identified hot spots are developed and executed</li> </ol> </li> <li>2. Validate the effectiveness of the SEIs through the analysis of MORs, VORs and accident/incident investigations (apply safety management methodologies)</li> <li>3. Identify additional contributing factors, for example: <ol style="list-style-type: none"> <li>a) Operations in low visibility conditions</li> <li>b) Complex or inadequate aerodrome design</li> <li>c) Complexity of traffic (multiple simultaneous line-ups)</li> <li>d) Conditional clearances</li> <li>e) Simultaneous use of intersecting runways</li> <li>f) Late issue of or late changes to departure clearances</li> <li>g) Phraseology use (e.g. non-standard vs. standard, call-sign confusion)</li> </ol> </li> </ol>

	<ul style="list-style-type: none"> <li>h) Concurrent use of more than one language for ATC communications</li> <li>i) English language competence despite the introduction by ICAO of a system of validating competence in aviation English</li> <li>j) Inadequate manoeuvring area driver training and assessment programme</li> </ul> <p>4. Develop and implement further SEIs to mitigate the risk of the identified contributing factors, if any, for RI</p> <p>5. Conduct continuous evaluations of the performance of the SEIs</p>
References	<ul style="list-style-type: none"> <li>– Annex 14 – <i>Aerodromes</i>, Volume I – <i>Aerodrome Design and Operations</i></li> <li>– Doc 8168, <i>Procedures for Air Navigation Services – Aircraft Operations</i> (PANS-OPS)</li> <li>– Doc 9981, <i>Procedures for Air Navigation Services – Aerodromes</i> (PANS-Aerodromes)</li> <li>– Doc 9432, <i>Manual of Radiotelephony</i></li> <li>– Doc 9859, <i>Safety Management Manual</i></li> <li>– Doc 9870, <i>Manual on the Prevention of Runway Incursions</i></li> <li>– <a href="#">ICAO Global Runway Safety Action Plan</a></li> <li>– <a href="#">ICAO Runway Safety Team Handbook</a></li> <li>– <a href="#">ICAO Runway Safety IKit</a></li> <li>– <a href="#">RASGs</a></li> <li>– <a href="#">EASA Safety Promotion</a></li> <li>– <a href="#">Commercial Aviation Safety Team</a> – Safety enhancements for RI</li> <li>– <a href="#">RSOOs</a></li> <li>– <a href="#">iSTARS</a></li> <li>– <a href="#">ICAO Safety Report</a></li> <li>– <a href="#">CAST/ICAO Common Taxonomy Team</a></li> <li>– <a href="#">IATA Safety Report</a></li> <li>– <a href="#">IATA Runway Safety</a></li> </ul>



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	<ul style="list-style-type: none"><li>- <a href="#">Flight Safety Foundation</a></li><li>- <a href="#">Skybrary</a></li><li>- <a href="#">EUROCONTROL</a></li><li>- <a href="#">European Action Plan for the Prevention of Runway Incursions</a></li></ul>
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<i>Safety Enhancement Initiative</i>	Mitigate contributing factors to RI accidents and incidents
<i>Stakeholder</i>	Regions
<i>Actions</i>	<ol style="list-style-type: none"> <li>1. Implement the following RI safety actions: <ol style="list-style-type: none"> <li>a) Promote the establishment and implementation of a State runway safety programme and runway safety teams</li> <li>b) Promote the establishment of policy, procedures and training that supports situational awareness for controllers, pilots and airside vehicle drivers</li> <li>c) Promote the effective use of suitable technologies to assist the improvement of situational awareness, such as improved resolution AMM, EFB, EVS and HUD, A-SMGCS, stop bars and ARIWS</li> <li>d) Promote the certification of aerodromes in accordance with ICAO Annex 14 – <i>Aerodromes, Volume I – Aerodrome Design and Operations</i>, as well as PANS-Aerodromes (Doc 9981)</li> <li>e) Promote the use of standard phraseologies in accordance with applicable State regulations and ICAO provisions (e.g. Doc 9432, <i>Manual of Radiotelephony</i>)</li> <li>f) Promote the identification and publication in the AIP of hot spots at aerodromes</li> <li>g) Promote suitable strategies to remove hazards or mitigate risks associated with identified hot spots</li> </ol> </li> <li>2. Validate the effectiveness of the SEIs in the region using data provided by States and industry (apply safety management methodologies)</li> <li>3. Identify additional contributing factors, for example: <ol style="list-style-type: none"> <li>a) Operations in low visibility conditions</li> <li>b) Complex or inadequate aerodrome design</li> <li>c) Complexity of traffic (multiple simultaneous line-ups)</li> <li>d) Conditional clearances</li> <li>e) Simultaneous use of intersecting runways</li> <li>f) Late issue of or late changes to departure clearances</li> <li>g) Phraseology use (e.g. non-standard vs. standard, call-sign confusion)</li> <li>h. Concurrent use of more than one language for ATC communications</li> </ol> </li> </ol>

	<ul style="list-style-type: none"> <li>i) English language competence despite the introduction by ICAO of a system of validating competence in aviation English</li> <li>j) Inadequate manoeuvring area driver training and assessment programme</li> </ul> <p>4. Develop and implement further SEIs to mitigate the risk of the identified contributing factors, if any, for RI</p> <p>5. Conduct continuous evaluations of the performance of the SEIs</p>
References	<ul style="list-style-type: none"> <li>– Annex 14, <i>Aerodromes</i>, Volume I – <i>Aerodrome Design and Operations</i></li> <li>– Doc 8168, <i>Procedures for Air Navigation Services – Aircraft Operations</i> (PANS-OPS)</li> <li>– Doc 9981, <i>Procedures for Air Navigation Services – Aerodromes</i> (PANS-Aerodromes)</li> <li>– Doc 9432, <i>Manual of Radiotelephony</i></li> <li>– Doc 9859, <i>Safety Management Manual</i></li> <li>– Doc 9870, <i>Manual on the Prevention of Runway Incursions</i></li> <li>– <a href="#">ICAO Global Runway Safety Action Plan</a></li> <li>– <a href="#">ICAO Runway Safety Team Handbook</a></li> <li>– <a href="#">ICAO Runway Safety IKit</a></li> <li>– <a href="#">RASGs</a></li> <li>– <a href="#">EASA Safety Promotion</a></li> <li>– <a href="#">Commercial Aviation Safety Team</a> – Safety enhancements for RI</li> <li>– <a href="#">RSOOs</a></li> <li>– <a href="#">iSTARS</a></li> <li>– <a href="#">ICAO Safety Report</a></li> <li>– <a href="#">CAST/ICAO Common Taxonomy Team</a></li> <li>– <a href="#">IATA Safety Report</a></li> <li>– <a href="#">IATA Runway Safety</a></li> <li>– <a href="#">Flight Safety Foundation</a></li> <li>– <a href="#">Skybrary</a></li> <li>– <a href="#">EUROCONTROL</a></li> <li>– <a href="#">European Action Plan for the Prevention of Runway Incursions</a></li> </ul>

<i>Safety Enhancement Initiative</i>	Mitigate contributing factors to RI accidents and incidents
<i>Stakeholder</i>	Industry
<i>Actions</i>	<ol style="list-style-type: none"> <li>1. Implement the following RI safety actions: <ol style="list-style-type: none"> <li>a) Active participation in a runway safety programme and runway safety teams</li> <li>b) Policy, procedures and training that support situational awareness for controllers, pilots and airside vehicle drivers</li> <li>c) Effective use of suitable technologies to assist the improvement of situation awareness, such as improved resolution AMM, EFB, EVS and HUD, A-SMGCS, stop bars and ARIWS</li> <li>d) Comply with runway-related provisions in ICAO Annex 14 – <i>Aerodromes</i>, Volume I – <i>Aerodrome Design and Operations</i>, as well as PANS-Aerodromes (Doc 9981)</li> <li>e) Use of standard phraseologies in accordance with applicable State regulations and ICAO provisions (e.g. Doc 9432, <i>Manual of Radiotelephony</i>)</li> <li>f) Identification and publication in the AIP of hot spots at aerodromes</li> <li>g) Suitable strategies to remove or mitigate hazards associated with identified hot spots</li> </ol> </li> <li>2. Validate the effectiveness of the SEIs through the analysis of ATC data*, and reports from stakeholders (apply safety management methodologies)</li> <li>3. Identify additional contributing factors, for example: <ol style="list-style-type: none"> <li>a) Operations in low visibility conditions</li> <li>b) Complex or inadequate aerodrome design</li> <li>c) Complexity of traffic (multiple simultaneous line-ups)</li> <li>d) Conditional clearances</li> <li>e) Simultaneous use of intersecting runways</li> <li>f) Late Issue of or late changes to departure clearances</li> <li>g) Phraseology use (e.g. non-standard vs. standard, call-sign confusion)</li> <li>h) Concurrent use of more than one language for ATC communications</li> <li>i) English language competence despite the introduction by ICAO of a system of validating competence in aviation English</li> </ol> </li> </ol>

	<p>j) Inadequate manoeuvring area driver training and assessment programme</p> <p>4. Develop and implement further SEIs to mitigate the risk of the identified contributing factors, if any, for RI</p> <p>5. Conduct continuous evaluations of the performance of the SEIs</p> <p><i>*Transcripts, number of conflicts detected by SMGCS.</i></p>
References	<ul style="list-style-type: none"> <li>– Annex 14 – Aerodromes, Volume I – <i>Aerodrome Design and Operations</i></li> <li>– Doc 8168, <i>Procedures for Air Navigation Services – Aircraft Operations</i> (PANS-OPS)</li> <li>– Doc 9981, <i>Procedures for Air Navigation Services – Aerodromes</i> (PANS-Aerodromes)</li> <li>– Doc 9432, <i>Manual of Radiotelephony</i></li> <li>– Doc 9859, <i>Safety Management Manual</i></li> <li>– Doc 9870, <i>Manual on the Prevention of Runway Incursions</i></li> <li>– <a href="#">ICAO Global Runway Safety Action Plan</a></li> <li>– <a href="#">ICAO Runway Safety Team Handbook</a></li> <li>– <a href="#">ICAO Runway Safety IKit</a></li> <li>– <a href="#">RASGs</a></li> <li>– <a href="#">EASA Safety Promotion</a></li> <li>– <a href="#">Commercial Aviation Safety Team</a> – Safety enhancements for RI</li> <li>– <a href="#">RSOOs</a></li> <li>– <a href="#">iSTARS</a></li> <li>– <a href="#">ICAO Safety Report</a></li> <li>– <a href="#">CAST/ICAO Common Taxonomy Team</a></li> <li>– <a href="#">IATA Safety Report</a></li> <li>– <a href="#">IATA Runway Safety</a></li> <li>– <a href="#">Flight Safety Foundation</a></li> <li>– <a href="#">Skybrary</a></li> <li>– <a href="#">EUROCONTROL</a></li> <li>– <a href="#">European Action Plan for the Prevention of Runway Incursions</a></li> </ul>



## Appendix C

### GASP GOALS, TARGETS AND INDICATORS

*Note.— This table has been extracted from the 2023-2025 edition of the GASP (see Table 4-1).*

<i>ICAO ASPIRATIONAL SAFETY GOAL "ZERO FATALITIES BY 2030 AND BEYOND"</i>			
<i>Goal</i>	<i>Target</i>		<i>Examples of Indicators</i>
<p><b>Goal 1:</b> Achieve a continuous reduction of operational safety risks</p>	<p><b>1.1</b></p>	<p>Maintain a decreasing trend of global accident rate.</p>	<ul style="list-style-type: none"> <li>• Number of accidents</li> <li>• Number of accidents per million departures (accident rate)</li> <li>• Number of fatal accidents</li> <li>• Number of fatal accidents per million departures (fatal accident rate)</li> <li>• Number of fatalities</li> <li>• Number of fatalities per passengers carried (fatality rate)</li> <li>• Percentage of occurrences related to high-risk categories (HRCs)</li> </ul>
<p><b>Goal 2:</b> Strengthen States' safety oversight capabilities</p>	<p><b>2.1</b></p>	<p>All States to improve their score for the effective implementation (EI) of the critical elements (CEs) of the State's safety oversight system (with focus on priority PQs) as follows:</p> <p>a) by 2024 – 75 per cent EI score</p> <p>b) by 2026 – 85 per cent EI score</p> <p>c) by 2030 – 95 per cent EI score</p>	<ul style="list-style-type: none"> <li>• Number of States that met the EI score as per the timelines</li> <li>• Number of States that have fully implemented the priority PQs</li> <li>• Percentage of required corrective action plans (CAPs) submitted by States (using OLF)</li> <li>• Percentage of completed CAPs per State (using OLF)</li> </ul>
<p><b>Goal 3:</b> Implement effective State safety programmes (SSPs)</p>	<p><b>3.1</b></p>	<p>By 2023, all States to implement the foundation of an SSP.</p>	<ul style="list-style-type: none"> <li>• Number of States having implemented the SSP foundation PQs</li> <li>• Percentage of required CAPs related to the SSP foundation PQs submitted by States (using OLF)</li> </ul>

<i>ICAO ASPIRATIONAL SAFETY GOAL "ZERO FATALITIES BY 2030 AND BEYOND"</i>			
<i>Goal</i>	<i>Target</i>		<i>Examples of Indicators</i>
			<ul style="list-style-type: none"> <li>Percentage of required CAPs related to the SSP foundation PQs completed per State (using OLF)</li> </ul>
	<b>3.2</b>	By 2024, all States to publish a national aviation safety plan (NASP).	<ul style="list-style-type: none"> <li>Number of States having published their NASP</li> </ul>
	<b>3.3</b>	All States to work towards an effective SSP as follows: <ul style="list-style-type: none"> <li>a) by 2025 – Present<sup>1</sup></li> <li>b) by 2028 – Present and effective</li> </ul>	<ul style="list-style-type: none"> <li>Number of States having an SSP that is present</li> <li>Number of States having an SSP that is present and effective</li> <li>Number of States that require applicable service providers under their authority to implement an SMS</li> </ul>
<b>Goal 4:</b> Increase collaboration at the regional level	<b>4.1</b>	By 2023, States that do not expect to meet GASP Goals 2 and 3 to seek assistance to strengthen their safety oversight capabilities or facilitate SSP implementation.	<ul style="list-style-type: none"> <li>Number of States seeking assistance, by using a regional safety oversight mechanism, another State's or other safety oversight organization's ICAO-recognized functions</li> <li>Number of States that submitted a draft NASP to an ICAO Regional Office</li> <li>Number of States registered in the NASP Online Community</li> </ul>
	<b>4.2</b>	By 2023, all regions to publish an updated regional aviation safety plan (RASP), in line with the 2023–2025 edition of GASP.	<ul style="list-style-type: none"> <li>Number of regions having published an updated RASP</li> </ul>
	<b>4.3</b>	By 2025, all States to contribute information on operational safety risks, including SSP safety performance indicators (SPIs), and emerging issues, to their respective regional aviation safety group (RASG).	<ul style="list-style-type: none"> <li>Number of States registered to the Secure Portal on Operational Safety Risks and Emerging Issues</li> <li>Number of States that are sharing their SSP SPIs with RASGs</li> <li>Number of reports received via the Secure Portal on Operational Safety Risks and Emerging Issues and validated</li> <li>Number of studies/analyses conducted by RASGs based on reports received via Secure Portal on Operational Safety Risks and Emerging Issues</li> <li>Percentage of safety enhancement initiatives completed by RASGs on safety risk management</li> </ul>

1. The terms "present" and "present and effective" are based on the maturity levels established in the ICAO SSP Implementation Assessment (SSPIA).



<i>ICAO ASPIRATIONAL SAFETY GOAL "ZERO FATALITIES BY 2030 AND BEYOND"</i>			
<i>Goal</i>	<i>Target</i>		<i>Examples of Indicators</i>
			<ul style="list-style-type: none"> <li>Number of regions having a mechanism to collect and process data on operational safety risks and emerging issues</li> </ul>
<p><b>Goal 5:</b> Expand the use of industry programmes and safety information sharing networks by service providers</p>	<p><b>5.1</b></p>	<p>Maintain an increasing trend in industry's contribution in safety information sharing networks to States and regions to assist in the development of NASPs and RASPs.</p>	<ul style="list-style-type: none"> <li>Number of service providers using globally harmonized metrics for their SPIs</li> <li>Percentage of service providers participating in the corresponding ICAO-recognized industry assessment programmes</li> <li>Number of States and regions reporting increased and improved provision of safety information by industry to assist in the development of NASPs and RASPs</li> <li>Number of RASPs developed in consultation with industry</li> <li>Number of States having established safety data collection and processing systems (SDCPS) to facilitate participation in a safety information-sharing network</li> <li>Number of service providers contributing to an SDCPS or a safety information sharing network</li> </ul>
<p><b>Goal 6:</b> Ensure the appropriate infrastructure is available to support safe operations</p>	<p><b>6.1</b></p>	<p>By 2025, maintain an increasing trend of States with air navigation and aerodrome infrastructure that meet relevant ICAO Standards.</p>	<ul style="list-style-type: none"> <li>Number or percentage of infrastructure-related air navigation deficiencies by State, against the regional air navigation plans</li> <li>Number or percentage of States having implemented infrastructure-related PQs linked to the basic building blocks</li> </ul>



## Appendix D

### ROADMAP SEIs AND GASP TARGETS

This appendix presents the link between the organizational challenges (ORG) roadmap SEIs and the supported GASP targets. It is meant to assist stakeholders in selecting SEIs appropriate for each regional or national safety target. SEIs related to a region or a States' organizational challenges should be included in the action plan that forms part of the RASP or NASP.

**Table 1. Organizational challenges (ORG) roadmap – States**

<i>States Component 1 – State safety oversight system</i>	
<i>Phase 1 – Establishment of a safety oversight framework (CE-1 to CE-5)</i>	
<i>Safety enhancement initiative</i>	<i>Supported GASP targets</i>
SEI-1 – Consistent implementation of ICAO SARPs at the national level	2.1
SEI-2 – Development of a comprehensive regulatory oversight framework	2.1
SEI-3 – Establishment of an independent accident and incident investigation authority, consistent with Annex 13 – <i>Aircraft Accident and Incident Investigation</i>	1.1
	2.1
SEI-4 – Strategic allocation of resources to enable effective safety oversight	2.1
	4.1
SEI-5 – Qualified technical personnel to support effective safety oversight	1.1
	2.1
	3.2
	4.1
SEI-6 – Strategic collaboration with key aviation stakeholders to enhance safety in a coordinated manner	1.1
	2.1
	3.2
	4.1

SEI-7 – Provision of the primary source of safety information to ICAO by completing, submitting and updating all relevant documents and records	2.1
<b>Phase 2 – Implementation of a safety oversight system (CE-6 to CE-8)</b>	
SEI-8 – Consistent implementation of ICAO SARPs at the national level	2.1
SEI-9 – Continued implementation of and compliance with ICAO SARPs at the national level	1.1
	2.1
SEI-10 – Strategic allocation of resources to enable effective safety oversight	2.1
	4.1
SEI-11 – Strategic collaboration with key aviation stakeholders to enhance safety in a coordinated manner	1.1
	2.1
	3.2
	4.1
SEI-12 – Continued provision of the primary source of safety information to ICAO by updating all relevant documents and records as progress is made	2.1

<b>States Component 2 – State safety programme</b>	
<i>Safety enhancement initiative</i>	<i>Supported GASP targets</i>
SEI-13 – Start of SSP implementation at the national level	3.1
	3.2
	3.3
SEI-14 – Strategic allocation of resources to start SSP implementation	3.1
	3.3
	4.1
SEI-15 – Strategic collaboration with key aviation stakeholders to start SSP implementation	3.1
	3.3
	4.1
SEI-16 – Strategic collaboration with key aviation stakeholders to complete SSP implementation	3.1
	3.3
	4.1
SEI-17 – Availability of safety data and safety information to support safety management activities at the national level (step 1)	1.1
	3.2
	3.3
	4.3
	5.1
SEI-18 – Availability of safety data and safety information to support safety management activities at the national level (step 2)	1.1
	3.2
	4.3
	5.1
SEI-19 – Acquisition of resources to increase the proactive use of risk modelling capabilities	1.1
	3.2

	3.3
	4.3
SEI-20 – Strategic collaboration with key aviation stakeholders to support the proactive use of risk modelling capabilities	1.1
	3.2
	3.3
	4.3
	5.1
SEI-21 – Advancement of safety risk management at the national level	1.1
	3.2
	3.3
	4.3
	5.1

**Table 2. Organizational challenges (ORG) roadmap – Regions**

<i>Regions Component 1 – State safety oversight system</i>	
<i>Phase 1 – Establishment of a safety oversight framework (CE-1 to CE-5)</i>	
<i>Safety enhancement initiative</i>	<i>Supported GASP targets</i>
SEI-1 – Consistent implementation of ICAO SARPs at the regional level	2.1
	4.1
SEI-2 – Establishment of an independent regional accident and incident investigation process, consistent with Annex 13 – <i>Aircraft Accident and Incident Investigation</i>	1.1
	2.1
	4.1
SEI-3 – Regional safety enhancement initiatives to support consistent coordination of regional programmes in establishing adequate safety oversight capabilities	2.1
	4.1
	4.2
SEI-4 – Strategic collaboration with key aviation stakeholders to enhance safety in a coordinated manner	1.1
	2.1
	4.1
	4.2
SEI-5 – Provision of the regional safety information to ICAO by asking States to complete, submit and update all relevant documents and records	4.1
	4.2
<i>Phase 2 – Implementation of a safety oversight system (CE-6 to CE-8)</i>	
SEI-6 – Continued implementation of and compliance with ICAO SARPs at the regional level	1.1
	2.1
	4.1
SEI-7 – Regional safety enhancement initiatives to support consistent coordination of regional programmes in implementing adequate safety oversight capabilities	2.1
	4.1
	4.2

SEI-8 – Strategic collaboration with key aviation stakeholders to enhance safety in a coordinated manner	1.1
	2.1
	3.2
	4.1
	4.2
SEI-9 – Continued provision of the primary source of regional safety information to ICAO by asking States to update all relevant documents and records as progress is made	2.1
	4.1
	4.2



<i>Regions Component 2 – State safety programme</i>	
<i>Safety enhancement initiative</i>	<i>Supported GASP targets</i>
SEI-10 – Start of promotion of SSP implementation at the regional level	3.1
	3.2
	3.3
	4.1
	4.2
SEI-11 – Regional safety enhancement initiatives to support consistent coordination of regional programmes for SSP implementation	3.1
	3.3
	4.1
	4.2
SEI-12 – Strategic collaboration with key aviation stakeholders to support SSP implementation	3.1
	3.3
	4.1
	4.2
	4.3
SEI-13 – Availability of safety data and safety information to support safety management activities at the regional level	1.1
	3.3
	4.1
	4.2
	4.3
	5.1
SEI-14 – Regional allocation of resources to support continued development of the proactive use of risk modelling capabilities	1.1
	3.3
	4.1

	4.2
	4.3
	5.1
SEI-15 – Regional collaboration with key aviation stakeholders to support the proactive use of risk modelling	1.1
	3.3
	4.1
	4.2
	4.3
	5.1
SEI-16 – Advancement of safety risk management at the regional level	1.1
	3.3
	4.2
	4.3
	5.1

**Table 3. Organizational challenges (ORG) roadmap – Industry**

<i>Industry Component 1 – State safety oversight system</i>	
<i>Phase 1 – Establishment of a safety oversight framework (CE-1 to CE-5)</i>	
<i>Safety enhancement initiative</i>	<i>Supported GASP targets</i>
SEI-1 – Strategic collaboration with key aviation stakeholders to enhance safety in a coordinated manner	1.1
	2.1
	3.2
	5.1
<i>Phase 2 – Implementation of a safety oversight system (CE-6 to CE-8)</i>	
SEI-2 – Improvement of industry compliance with applicable regulations	2.1
	4.2
	5.1
SEI-3 – Allocation of industry resources to enable effective safety oversight	2.1
	4.2
	5.1
SEI-4 – Strategic collaboration with key aviation stakeholders to enhance safety in a coordinated manner	1.1
	2.1
	3.2
	4.1
	5.1

<i>Industry Component 2 – State safety programme</i>	
<i>Safety enhancement initiative</i>	<i>Supported GASP targets</i>
SEI-5 – Improvement of industry compliance with applicable SMS requirements	3.2
	3.3
	4.1
SEI-6 – Resources for service providers to effectively implement SMS	3.2
	3.3
	4.1
SEI-7 – Strategic collaboration with key aviation stakeholders to complete SSP implementation	1.1
	3.3
	4.1
	5.1
SEI-8 – Availability of safety data and safety information to support safety management activities at the service provider level (step 1)	1.1
	3.2
	3.3
	4.2
	4.3
	5.1
SEI-9 – Availability of safety data and safety information to support safety management activities at the service provider level (step 2)	1.1
	3.2
	3.3
	4.2
	4.3
	5.1

SEI-10 – Allocation of industry resources to support continuous improvement of SSP and SMS	1.1
	3.2
	3.3
	4.3
	5.1
SEI-11 – Strategic collaboration with key aviation stakeholders to support the proactive use of risk modelling capabilities	1.1
	3.2
	3.3
	4.3
	5.1
SEI-12 – Advancement of safety risk management at the service provider level	3.3
	5.1

— END —





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