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Global Aviation Safety Roadmap

2023–2025



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AMENDMENTS

Amendments are announced in the supplements to the *Products and Services Catalogue*; the Catalogue and its supplements are available on the ICAO website at www.icao.int. The space below is provided to keep a record of such amendments.

RECORD OF AMENDMENTS AND CORRIGENDA

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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.

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

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.

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.

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 (RSOs), 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).

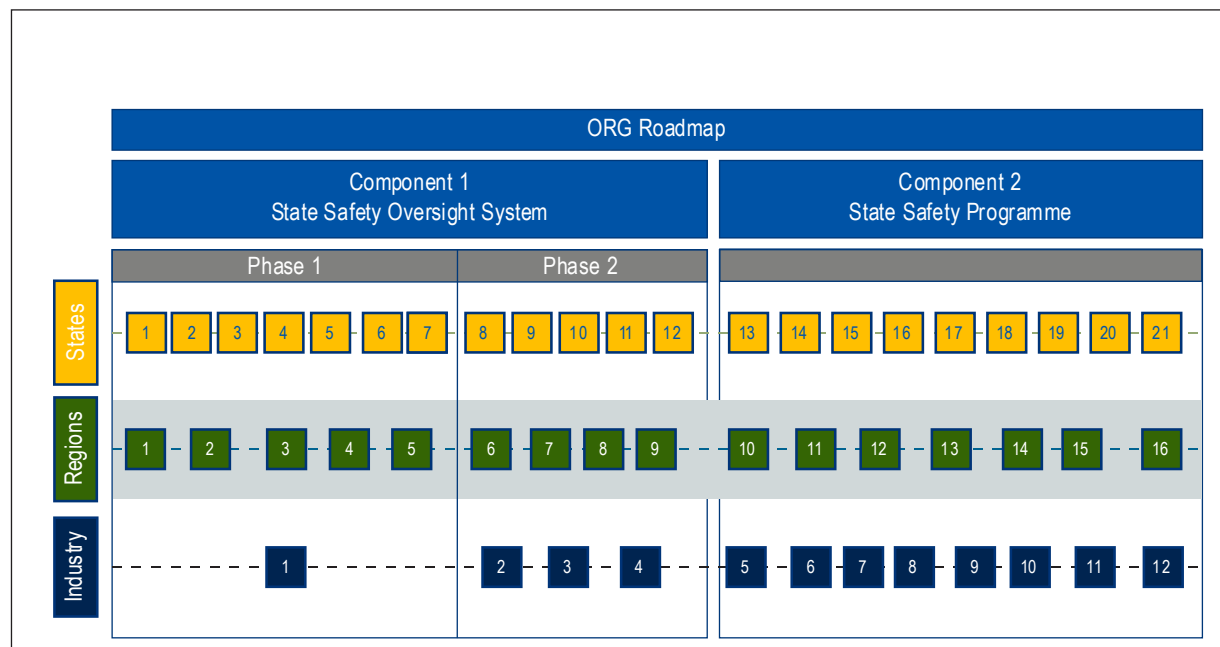


Figure 2-1. ORG roadmap diagram

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.

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.

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
Stakeholder	States
Actions	☐ 1A – Work at the national level to address Significant Safety Concerns as a priority ☐ 1B – Address all protocol questions (PQs) of the USOAP Continuous Monitoring Approach (CMA) ☐ 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) ☐ 1D – Increase the level of compliance with ICAO SARPs and the EI of CEs at the national level (CE-1 to CE-5) ☐ 1E – Establish a process for the identification of differences with ICAO SARPs (CE-2)
References	1A and 1D – Doc 9734, <i>Safety Oversight Manual, Part A – The Establishment and Management of a State Safety Oversight System</i> – Doc 9735, <i>Universal Safety Oversight Audit Programme Continuous Monitoring Manual</i> – iSTARS safety audit information (ICAO secure portal login required) 1B, 1C and 1D – Doc 9734, <i>Safety Oversight Manual, Part A – The Establishment and Management of a State Safety Oversight System</i> – Canadian Aviation Regulations

	– Civil Aviation Safety Regulations of Australia – European Aviation Safety Rules – United States Federal Aviation Administration (FAA) Regulations – ICAO reference documents – iMPLEMENT – iSTARS State safety briefings (ICAO secure portal login required) – Latin American Civil Aviation Regulations – Model Civil Aviation Regulations – Rules of the Civil Aviation Authority of New Zealand – ICAO USOAP CMA
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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>	□ 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) □ 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) □ 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)
<i>References</i>	2A – Doc 9734, <i>Safety Oversight Manual</i>, Part A – <i>The Establishment and Management of a State Safety Oversight System</i> 2B and 2C – FAA Inspector Training System – Flight Standards (International) Course – ICAO-Endorsed Government Safety Inspector Training Programme – ICAO Global Aviation Training course catalogue – ICAO Global Aviation Training – iSTARS – Ramp Inspection Programmes (Safety Assessment of Foreign Aircraft (SAFA)/Safety Assessment of Community Aircraft (SACA))

<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>	☐ 3A – Establish an independent accident and incident investigation authority, as per Annex 13 requirements (CE-1 and CE-3) ☐ 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) ☐ 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)
<i>References</i>	3A – Annex 13 – <i>Aircraft Accident and Incident Investigation</i> – Doc 9734, <i>Safety Oversight Manual, Part A – The Establishment and Management of a State Safety Oversight System</i> 3B – Doc 9734, <i>Safety Oversight Manual</i> – Doc 9756, <i>Manual of Aircraft Accident and Incident Investigation</i> – Doc 9946, <i>Manual on Regional Accident and Incident Investigation Organization</i> – Doc 9962, <i>Manual on Accident and Incident Investigation Policies and Procedures</i> – Doc 9973, <i>Manual on Assistance to Aircraft Accident Victims and their Families</i> – Doc 9998, <i>ICAO Policy on Assistance to Aircraft Accident Victims and their Families</i> – Doc 10053, <i>Manual on Protection of Safety Information, Part I – Protection of Accident and Incident Investigation Records</i> – Doc 10062, <i>Manual on the Investigation of Cabin Safety Aspects in Accidents and Incidents</i> – Cir 315, <i>Hazards at Aircraft Accident Sites</i> 3C – Cir 298, <i>Training Guidelines for Aircraft Accident Investigators</i>

<i>Safety enhancement initiative</i>	SEI-4 – Strategic allocation of resources to enable effective safety oversight
<i>Stakeholder</i>	States
<i>Actions</i>	□ 4A – Confirm executive or legislative mandate to receive financial resources from government or other external sources and expend them (CE-1) □ 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) □ 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: 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 ii) Seek assistance from more experienced States and other stakeholders in coordination with RASG/RSOO/ICAO Regional Office iii) Seek assistance from sources of financing (World Bank, African Development Bank, etc.) in coordination with RASG/RSOO/ICAO Regional Office □ 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)
<i>References</i>	– ICAO Safety Fund (SAFE) – ICAO Technical Cooperation Bureau – RASGs – RSOOs and COSCAPs – ICAO iPACK – Supporting Civil Aviation Entities in Conducting a Training Needs Analysis (TNA)

<i>Safety enhancement initiative</i>	SEI-5 – Qualified technical personnel to support effective safety oversight
<i>Stakeholder</i>	States
<i>Actions</i>	☐ 5A – Establish an effective system to identify and track qualifications and training of existing technical personnel (CE-4) ☐ 5B – Identify the gaps in qualified technical personnel and training requirements necessary to implement the oversight mandate (CE-4) ☐ 5C – Establish a compensation scheme for the attraction and retention of qualified technical personnel (CE-4) ☐ 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) ☐ 5E – Establish human resource plans to support hiring and retention of the appropriate number of qualified technical personnel required (CE-4) ☐ 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) ☐ 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)
<i>References</i>	– Doc 8335, <i>Manual of Procedures for Operations Inspection, Certification and Continued Surveillance</i> – Doc 9734, <i>Safety Oversight Manual</i> – ICAO-Endorsed Government Safety Inspector Training Programme – ICAO Global Aviation Training – ICAO iPACK – Supporting Civil Aviation Entities in Conducting a Training Needs Analysis (TNA)

<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>	☐ 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) ☐ 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 ☐ 6C – Provide assistance via States, regions and industry to other States for primary aviation legislation development (in coordination with SEI-1B) (CE-1) ☐ 6D – Provide assistance via States, regions and industry to other States for the development of national regulations (CE-2) ☐ 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) ☐ 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) ☐ 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 ☐ 6H – While working to improve safety oversight, work with RASG and/or RSOO to address national high-risk categories of occurrences
<i>References</i>	6A to 6G – Doc 9734, <i>Safety Oversight Manual</i> – ICAO Technical Cooperation Bureau – RASGs – RSOOs and COSCAPs 6H – Appendix B – <i>OPS Roadmap</i> – GASP Library – Regional Aviation Safety Plans

<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>	☐ 7A – Update USOAP corrective action plan items ☐ 7B – Complete and submit the self-assessment checklist based on USOAP CMA PQs ☐ 7C – Complete and submit the State aviation activity questionnaire ☐ 7D – Complete and submit the compliance checklists on electronic filing of differences system ☐ 7E – Update documents and records, as required, in a timely manner
<i>References</i>	– Doc 9735, <i>Universal Safety Oversight Audit Programme Continuous Monitoring Manual</i>, sections 2.8, 2.14 and 2.15 – iSTARS – USOAP CMA Computer-based Training – USOAP CMA Online Framework – USOAP CMA Workshops – ICAO iPACK – Preparing for ICAO USOAP CMA Activities

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>	☐ 8A – Work at the national level to address Significant Safety Concerns as a priority ☐ 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>	– Doc 9735, <i>Universal Safety Oversight Audit Programme Continuous Monitoring Manual</i> – ISTARS safety audit information (ICAO secure portal login required)

<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>	☐ 9A – Implement licensing, certification, authorization and approval processes (CE-6) ☐ 9B – Implement regulatory oversight and enforcement processes (CE-7 and CE-8) ☐ 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>	9A – Doc 8335, <i>Manual of Procedures for Operations Inspection, Certification and Continued Surveillance</i> 9B – Doc 9756, <i>Manual of Aircraft Accident and Incident Investigation</i> 9C – Annex 13 – <i>Aircraft Accident and Incident Investigation</i>, Attachment C – <i>List of examples of serious incidents</i>

<i>Safety enhancement initiative</i>	SEI-10 – Strategic allocation of resources to enable effective safety oversight
<i>Stakeholder</i>	States
<i>Actions</i>	☐ 10A – Use SEI-1 and SEI-5 to identify resource requirements (CE-6 to CE-8) ☐ 10B – Leverage regional groups such as the RASG to identify additional resources
<i>References</i>	– ICAO Fund for Aviation Safety (SAFE) – ICAO Technical Cooperation Bureau – RASGs – ICAO iPACK – Supporting Civil Aviation Entities in Conducting a Training Needs Analysis (TNA)

<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>	☐ 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) ☐ 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 ☐ 11C – Provide assistance via RASG and/or RSOO to other States for the conduct of surveillance activities (CE-7) ☐ 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) ☐ 11E – While working to improve safety oversight, continue to work with RASG and/or RSOO to address national high-risk categories of occurrences
<i>References</i>	11A to 11D – RASGs – RSOOs and COSCAPs 11E – Appendix B – OPS Roadmap – GASP Library – Regional Aviation Safety Plans

<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>	☐ 12A – Update USOAP corrective action plan items ☐ 12B – Update and submit the self-assessment checklist based on USOAP CMA PQs ☐ 12C – Update and submit the State aviation activity questionnaire (SAAQ) ☐ 12D – Update and submit the compliance checklists (CCs) on the electronic filing of differences (EFOD) system
<i>References</i>	– Doc 9735, <i>Universal Safety Oversight Audit Programme Continuous Monitoring Manual</i>, sections 2.8, 2.14 and 2.15 – iSTARS – ICAO iPACK – Preparing for ICAO USOAP CMA Activities

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>	☐ 13A – Secure State-level commitment to improve safety ☐ 13B – Conduct initial SSP gap analysis (checklist) then the detailed SSP self-assessment ☐ 13C – Establish an SSP implementation team ☐ 13D – Develop an implementation plan for the SSP ☐ 13E – Issue SMS regulations for service providers and verify SMS implementation ☐ 13F – Identify and share safety management best practices
<i>References</i>	13A, 13B and 13D – Annex 19 – <i>Safety Management</i>, Chapter 3 – Doc 9859, <i>Safety Management Manual</i> – Safety Management Implementation Website – ICAO USOAP CMA Online Framework – iSTARS SSP gap analysis (ICAO secure portal login required) – Safety Management International Collaboration Group (SM ICG), 10 Things You Should Know About SMS 13A, 13C and 13E – SM ICG, The Frontline Manager's Role in SMS – SM ICG, The Senior Manager's Role in SMS 13E – SM ICG, SMS Evaluation Tool – CANSO Standard of Excellence in Safety Management Systems 13F – SM ICG, How to Support a Successful SSP and SMS Implementation – Recommendations for Regulators

<i>Safety enhancement initiative</i>	SEI-14 – Strategic allocation of resources to start SSP implementation
<i>Stakeholder</i>	States
<i>Actions</i>	☐ 14A – Establish a process for planning and allocation of resources to enable SSP implementation and identify areas where resources are needed ☐ 14B – Obtain resources from national and appropriate authorities' leadership and stakeholders within the State to support SSP implementation ☐ 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 ☐ 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
<i>References</i>	14A and 14B – Annex 19 – <i>Safety Management</i>, Chapter 3 – Doc 9859, <i>Safety Management Manual</i> – ICAO iPACK – Supporting Civil Aviation Entities in Conducting a Training Needs Analysis (TNA) 14C – ICAO Technical Cooperation Bureau regional coordinator 14D – SM ICG, SMS Inspector Competency Guidance

<i>Safety enhancement initiative</i>	SEI-15 – Strategic collaboration with key aviation stakeholders to start SSP implementation
<i>Stakeholder</i>	States
<i>Actions</i>	☐ 15A – Identify areas where collaboration/support is needed as part of the SSP implementation plan (see SEI-14) ☐ 15B – Identify relevant key aviation stakeholders from key aviation stakeholders, including other States that are implementing or have implemented an SSP ☐ 15C – Develop an action plan to address the elements identified as missing or deficient during the SSP gap analysis (see SEI-13B) ☐ 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 ☐ 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) ☐ 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
<i>References</i>	15A to 15C – Annex 19 – <i>Safety Management</i>, Chapter 3 – Doc 9859, <i>Safety Management Manual</i> – ICAO USOAP CMA Online Framework – iSTARS SSP gap analysis (ICAO secure portal login required) – SM ICG, SSP Assessment Tool 15D to 15F – Aviation Safety Implementation Assistance Partnership (ASIAP) – ICAO Technical Cooperation Bureau (Regional coordinator) 15F – Safety Management Implementation Website

<i>Safety enhancement initiative</i>	SEI-16 – Strategic collaboration with key aviation stakeholders to complete SSP implementation
<i>Stakeholder</i>	States
<i>Actions</i>	☐ 16A – Work with key aviation stakeholders (identified in SEI-15) to execute the action plan for implementation ☐ 16B – Work with key aviation stakeholders on establishing and updating SSP elements ☐ 16C – Establish a system for the continuous improvement of the SSP, in collaboration with all key aviation stakeholders ☐ 16D – Serve as a champion State to promote best practices among other States
<i>References</i>	16B – SM ICG, SSP Assessment Tool 16D – Aviation Safety Implementation Assistance Partnership (ASIAP) – ICAO Technical Cooperation Bureau (Regional coordinator) – No Country Left Behind initiative safety implementation resources – SM ICG, How to Support a Successful SSP and SMS Implementation – Recommendations for Regulators