USOAP Continuous Monitoring Approach (CMA) Workshop

Module 2

Overview of the USOAP CMA

Objective

The objective of this module is to provide an up-to-date overview of the USOAP CMA methodology and activities.

Outline

1) Monitoring and Oversight (MO)
2) Critical Elements (CEs) of a State Safety Oversight System
3) USOAP CMA Audit Areas and Protocol Questions (PQs)
4) USOAP CMA Components
    a) Collection of Safety Information
    b) Determination of State Safety Risk Profile
    c) Prioritization and Conduct of USOAP CMA activities
    d) Update of Effective Implementation (EI) and Status of Significant Safety Concerns (SSCs)
5) Roll-out of SSP Implementation Assessments under USOAP CMA
6) USOAP CMA Computer-Based Training (CBT)
7) Report on USOAP CMA Results: Jan 2013 – Dec 2015
8) States' main obligations under the USOAP CMA

Monitoring and Oversight (MO)

ICAO UNITING AVIATION

ICAO Air Navigation Bureau (ANB)

Integrated Aviation Analysis (IAA) [M. Merens]

7138

Air Navigation Bureau
[D/ANB – S. P. Creamer]

6125

Programme Manager – Multidisciplinary Priorities (PM-MP) [Y. Fattah]

7072

Monitoring & Oversight
[DD/MO – TBD]

6421

Safety & AN Oversight Audit (OAS) [N. Rallo]

6780

Oversight Support Unit (OSU) [T. Mistos]

8211

Aviation Safety
[DD/SAF – C. Radu]

6711

Safety Imp. Planning & Support (IMP-SAF) [M. Vreedenburgh]

8157

Accident Investigation (AIG) [M. Costa]

8160

Aviation Medicine (MED) [A. Jordaan]

6088

Operational Safety (OPS) [M. Marin]

8080

Cargo Safety (CSS) [K. Rooney]

8099

Programmes Coordination and Implementation (PCI) [E. Lassooij]

6718

Prog. Coordinator – Safety Management (PC-SM) [E. Gnehm]

6220

Air Navigation Capacity and Efficiency
[DD/AN – R. Macfarlane]

6712

TBD

Globally Integrated Systems (GIS) [S. Da Silva]

5872

Integrated Planning Unit (IPU) [TBD]

Airport Operations & Infrastructure (AOI) [Y. Wang]

6330

Airspace Management & Optimization (AMO) [C. Dalton]

6710

Prog. Manager – Remotely Piloted Aircraft Systems (PM-RPAS) [L. Cary]

6190

*Effective: **01/01/2018***

Monitoring & Oversight (MO)

Continuous Monitoring
(Online Framework — OLF)

Planning and Scheduling

On-site Activities

Off-site Activities

Reports, Analyses and Working Papers

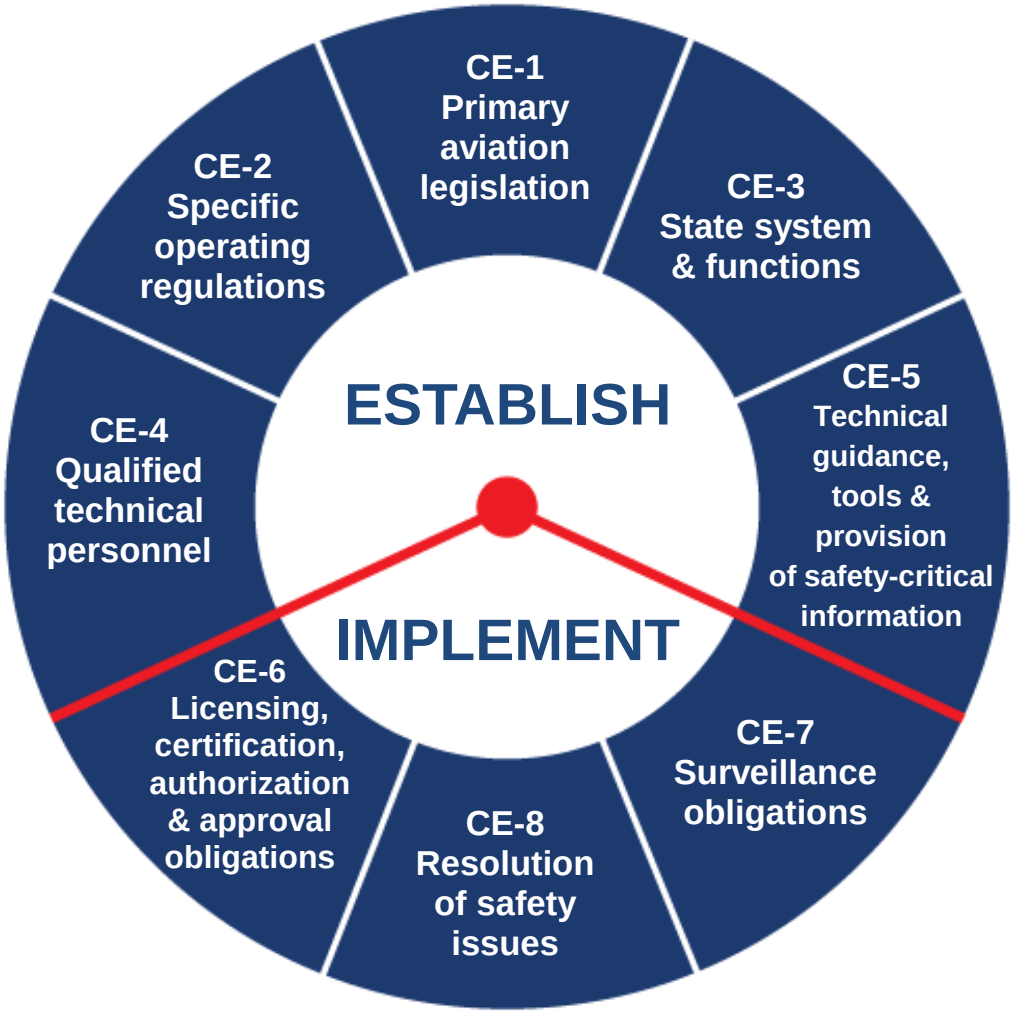
Training and Workshops

Critical Elements (CEs) of a State Safety Oversight System

ICAO carries out audits and other monitoring activities to determine the safety oversight capabilities of its Member States by:

- Assessing their effective implementation of the 8 CEs in 8 audit areas (i.e. LEG, ORG, PEL, OPS, AIR, AIG, ANS and AGA) through Protocol Questions (PQs); and
- Verifying the status of the Member States' implementation of:
  - Safety-related ICAO Standards and Recommended Practices (SARPs);
  - Associated procedures; and
  - Guidance material.

Critical Elements (CEs)



Critical Element 1

CE-1: Primary aviation legislation

- States shall promulgate a comprehensive and effective aviation law, commensurate with the size and complexity of their aviation activity and consistent with the requirements contained in the Convention on International Civil Aviation, to enable the oversight and management of civil aviation safety and the enforcement of regulations through the relevant authorities or agencies established for that purpose.

- The aviation law shall provide personnel performing safety oversight functions access to the aircraft, operations, facilities, personnel and associated records, as applicable, of individuals and organizations performing an aviation activity.

Critical Element 2

CE-2: Specific operating regulations

- States shall promulgate regulations to address, at a minimum, national requirements emanating from the primary aviation legislation, for standardized operational procedures, products, services, equipment and infrastructures in conformity with the Annexes to the Convention on International Civil Aviation.

Critical Element 3

CE-3: State system and functions

- States shall establish relevant authorities or agencies, as appropriate, supported by sufficient and qualified personnel and provided with adequate financial resources for the management of safety.
- States authorities or agencies shall have stated safety functions and objectives to fulfill their safety management responsibility.
- States shall ensure that personnel performing safety oversight functions are provided with guidance that addresses ethics, personal conduct and the avoidance of actual or perceived conflicts of interest in the performance of official duties.

Critical Element 4

CE-4: Qualified technical personnel

- States shall establish minimum qualification requirements for the technical personnel performing safety-related functions and provide for appropriate initial and recurrent training to maintain and enhance their competence at the desired level.

- States shall implement a system for the maintenance of training records for technical personnel.

Critical Element 5

CE-5: Technical guidance, tools and provision of safety-critical information

- States shall provide appropriate facilities, comprehensive and up-to-date technical guidance material and procedures, safety-critical information, tools and equipment, and transportation means, as applicable, to the technical personnel to enable them to perform their safety oversight functions effectively and in accordance with established procedures in a standardized manner.
- States shall provide technical guidance to the aviation industry on the implementation of relevant regulations.

Critical Element 6

CE-6: Licensing, certification, authorization and approval obligations

- States shall implement documented surveillance processes and procedures to ensure that individuals and organizations performing an aviation activity meet the established requirements before they are allowed to exercise the privileges of a licence, certificate, authorization or approval to conduct the relevant aviation activity.

Critical Element 7

CE-7: Surveillance obligations

- States shall implement documented surveillance processes, by defining and planning inspections, audits, and monitoring activities on a continuous basis, to proactively assure that aviation licence, certificate, authorization and approval holders continue to meet the established requirements. This includes the surveillance of personnel designated by the Authority to perform safety oversight functions on its behalf.

Critical Element 8

CE-8: Resolution of safety issues

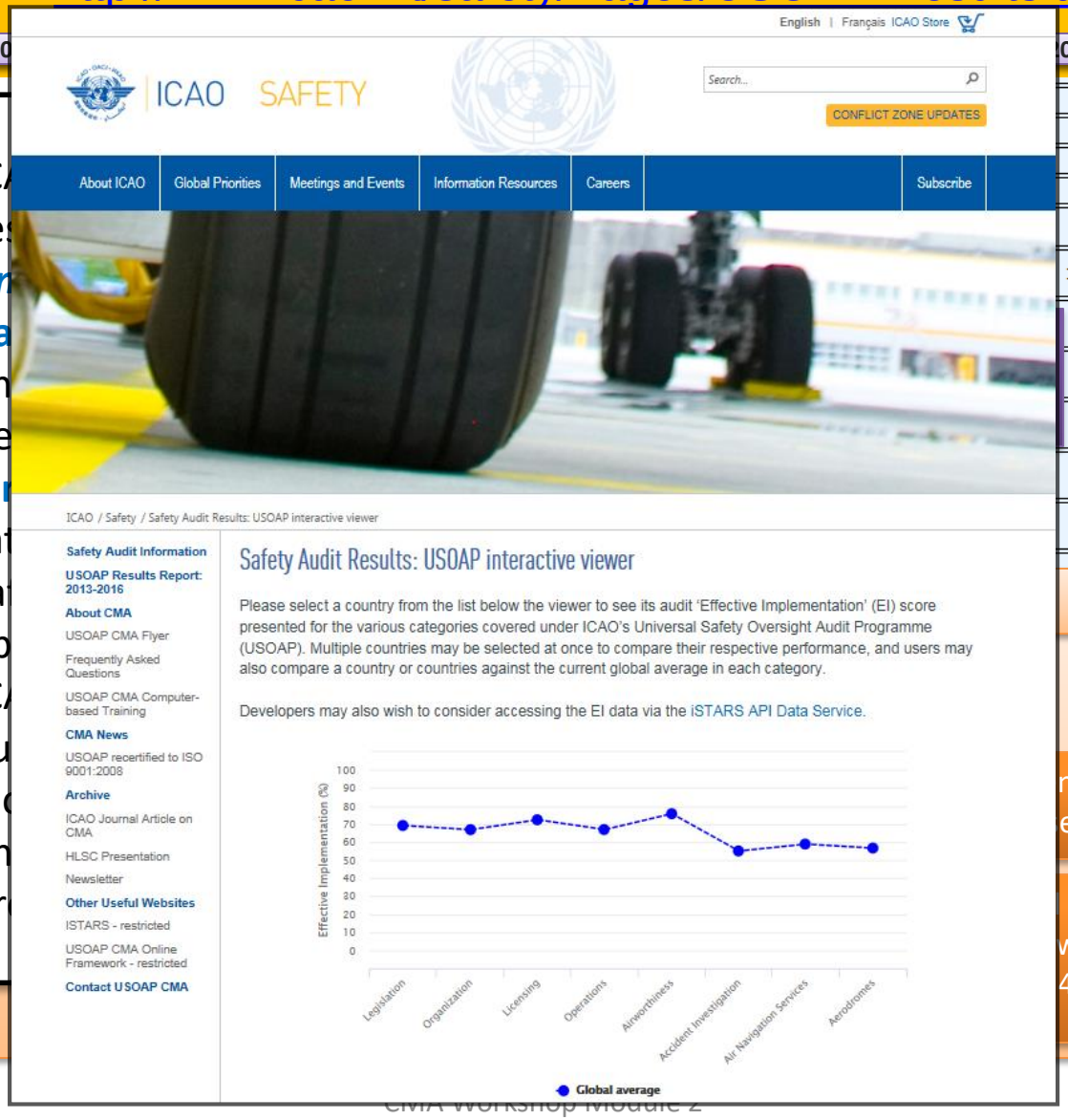
- States shall use a documented process to take appropriate actions, up to and including enforcement measures, to resolve identified safety issues.
- States shall ensure that identified safety issues are resolved in a timely manner through a system which monitors and records progress, including actions taken by individuals and organizations performing an aviation activity in resolving such issues.

The definitions of the eight CEs of a State safety oversight system are found in Annex 19 — *Safety Management*, Appendix 1 (2nd edition, July 2016).

Guidance on the eight CEs is provided in Doc 9734 — *Safety Oversight Manual*, Part A — *The Establishment and Management of a State Safety Oversight System*.

Note.— The English version of the third edition of Doc 9734, Part A is available on the ICAO-NET and the CMA Library on the OLF.

As of January 2013, safety oversight information is available on the ICAO public website:
URL: http://www.icao.int/safety/Pages/USOAP-Results.aspx



1997 | 1998 | 1999 | 20 | 010 | 2011 | 2012 | 2013+

STATES

1997: Voluntary As
Fully Confidential (

SSCs published on the USOAP CMA online framework

Proposed layout of the SSCs for the public to receive State feedback

PUBLIC

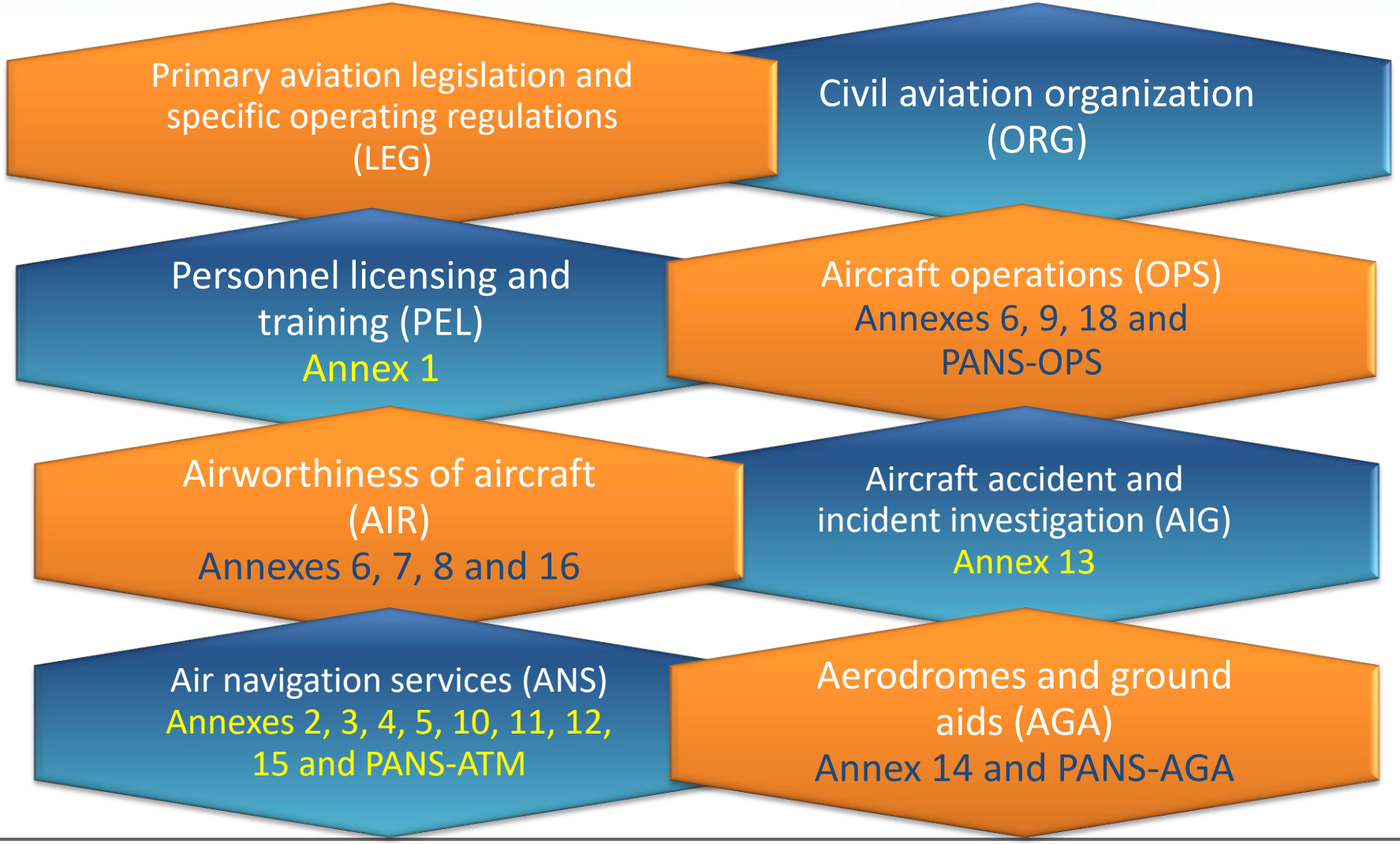
USOAP with 45% of

2014

Unresolved SSCs to be made available to the public in format and conditions approved by Council

USOAP CMA Audit Areas and Protocol Questions (PQs)

USOAP CMA Audit Areas



Protocol Questions (PQs)

- Primary tool used to assess States' safety oversight capabilities, for each CE.
- Enable standardization in the conduct of USOAP CMA activities.
- Percentage of "Satisfactory" PQs is reflected in the EI.
- Evidence-based approach:
  - **Show me.**
  - **Lack of evidence or lack of sufficient evidence = PQ status becomes or remains N/S.**
- N/S PQ generates a finding and since 2014, each finding is PQ-specific.

PQ — Example

PQ No.	Protocol Question	Guidance for Review of Evidence	ICAO References	CE
4.129	Has the State promulgated regulations for AOC applicants to establish procedures to ensure that the flight manual is updated by implementing changes made mandatory or approved by the State of Registry?	Verify the establishment and implementation of: a) relevant State regulations; b) applicable certification process; and c) operations inspectors' procedures.	STD A6 Part I, 11.1 Part III, Section II, 9.1 GM A6 Part I, Att. E Part III, Att.	CE-2
4.103	Is the orga applicant r a) duties, r clearly defi b) functional tasks and lines of reporting are clearly delineated and duly documented?	1) V insp etc. impl 2) Review exchange of letters with applicant. 3) Verify that the safety management, quality assurance management and emergency management systems have been: a) established; b) documented; and c) implemented.	STD A6 GM Doc 8335 Part II, C2 Part III, C5	CE-6

PQ asked by auditor

Examples of evidence to be presented by Sta

ICAO References

CE number associated with PQ

PQ Amendment

- MO revises and updates PQs on a periodic basis to:
  a) reflect the latest changes in ICAO provisions; and
  b) harmonize and improve PQ references and content.

- Revision of PQs incorporates inputs from:
  a) States;
  b) ICAO ANB;
  c) ICAO ROs;
  d) USOAP mission team members; and
  e) external stakeholders.

2016 Edition of the PQs

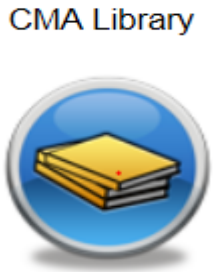
- The 2016 edition of the PQs was posted in November 2016 in the “CMA Library” on the OLF. (*See EB 2016/70, 30 November 2016.)*

- The Library copy for each audit area includes an Introduction, Guidelines and Summary of Amendments.
- The 2016 edition has been applicable for all USOAP CMA activities starting after 1 June 2017.

2017 Edition of the PQs

- With the roll-out of Amendment 1 to Annex 19, a 2017 edition of the PQs has been developed on the basis of the 2016 edition and excludes aspects related specifically to the State Safety Programme (SSP).
- This 2017 edition of the PQs is posted in the “CMA Library” on the OLF.

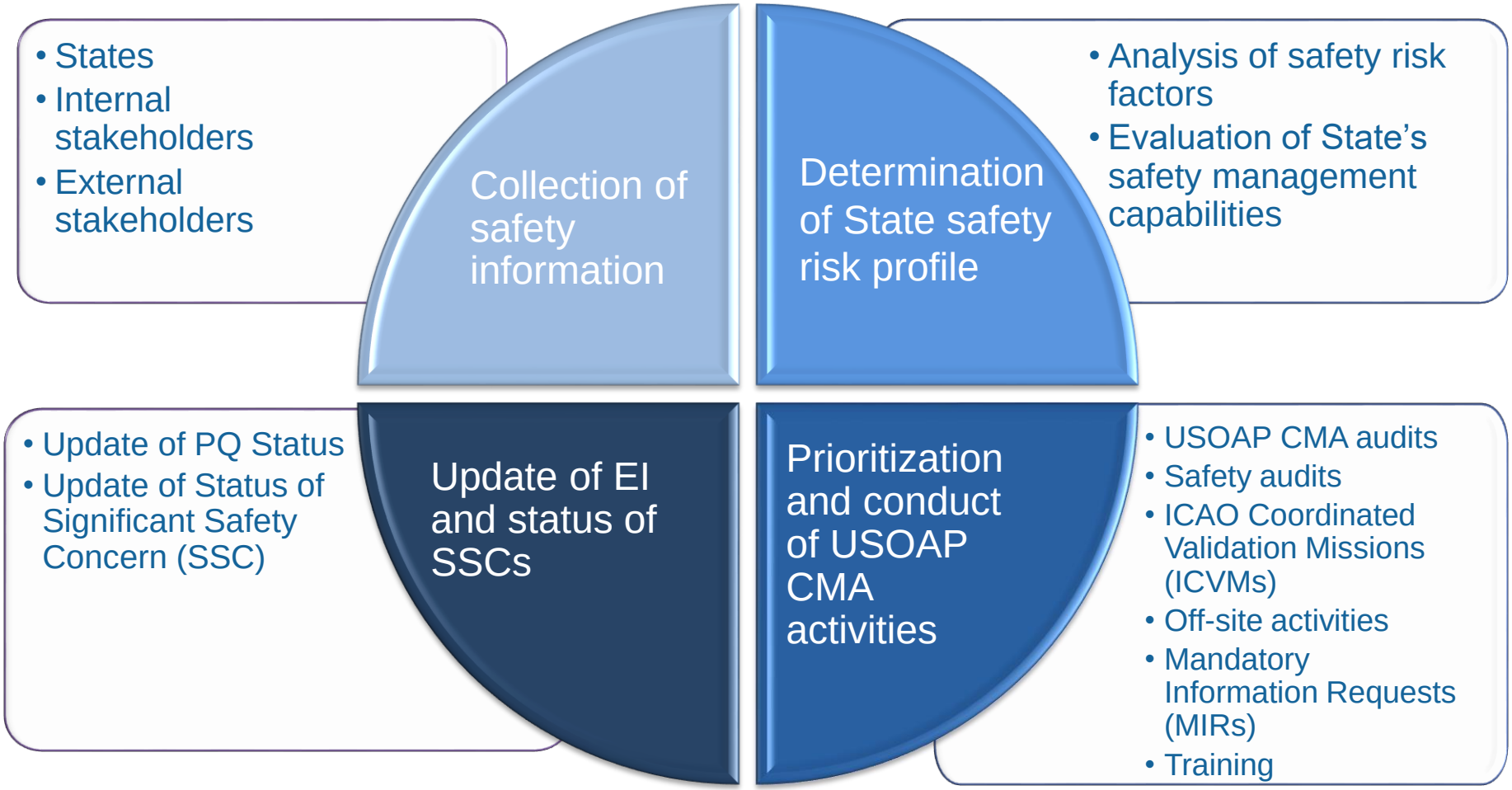
  (*See EB 2018/4, 19 January 2018.)*



- The 2017 edition will be applicable for all USOAP CMA activities **starting after 1 June 2018**.

USOAP CMA Components

USOAP CMA Components



USOAP CMA Components

Collection of Safety Information

States provide:

1) State Aviation Activity Questionnaire (SAAQ);
2) Compliance Checklists (CCs) on the Electronic Filing of Differences (EFOD) system;
3) Self-assessment; and
4) Updated Corrective Action Plans (CAPs).

Collection of Safety Information

Internal stakeholders include:

1) ICAO Secretariat Bureaus/Sections; and
2) Regional Offices (ROs).

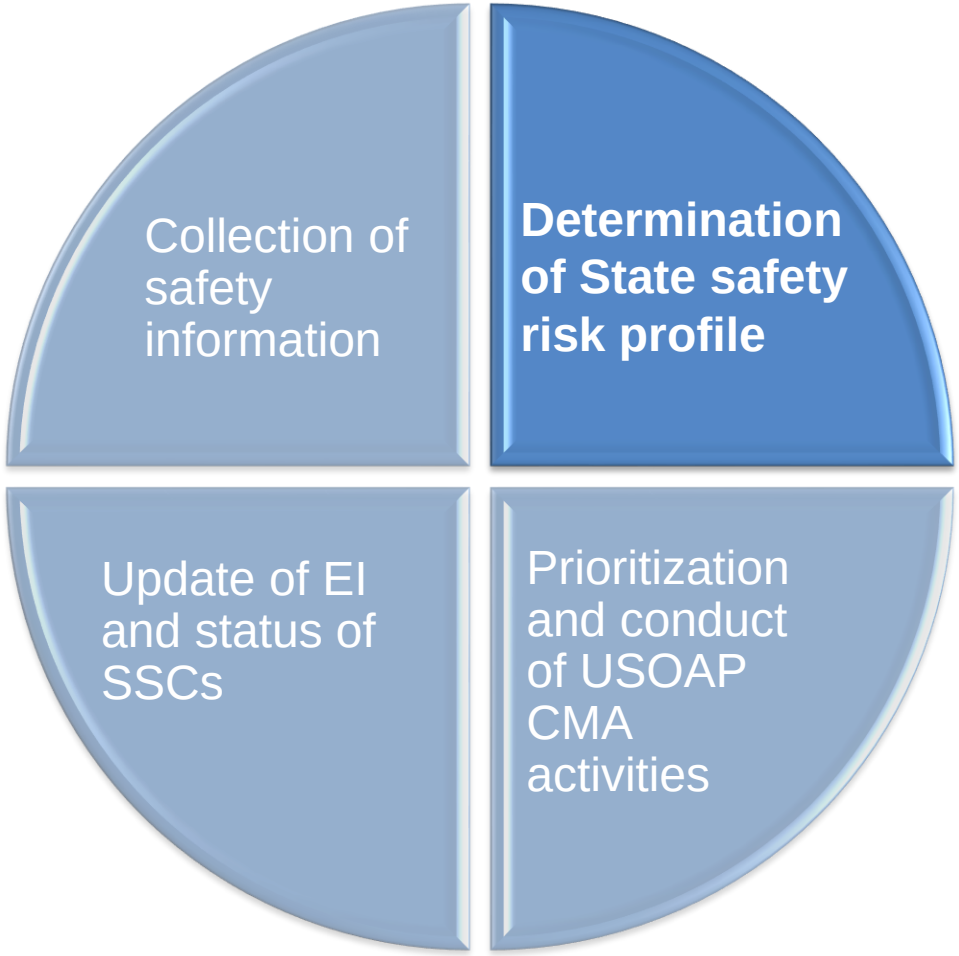
Collection of Safety Information

External stakeholders include:

1) State civil aviation authorities (e.g. FAA);
2) Regional Safety Oversight Organizations (RSOOs) (e.g. EASA); and
3) International organizations (e.g. IATA).

Note.— Some of these organizations conduct audit activities that generate safety information used as indicators for the USOAP CMA.

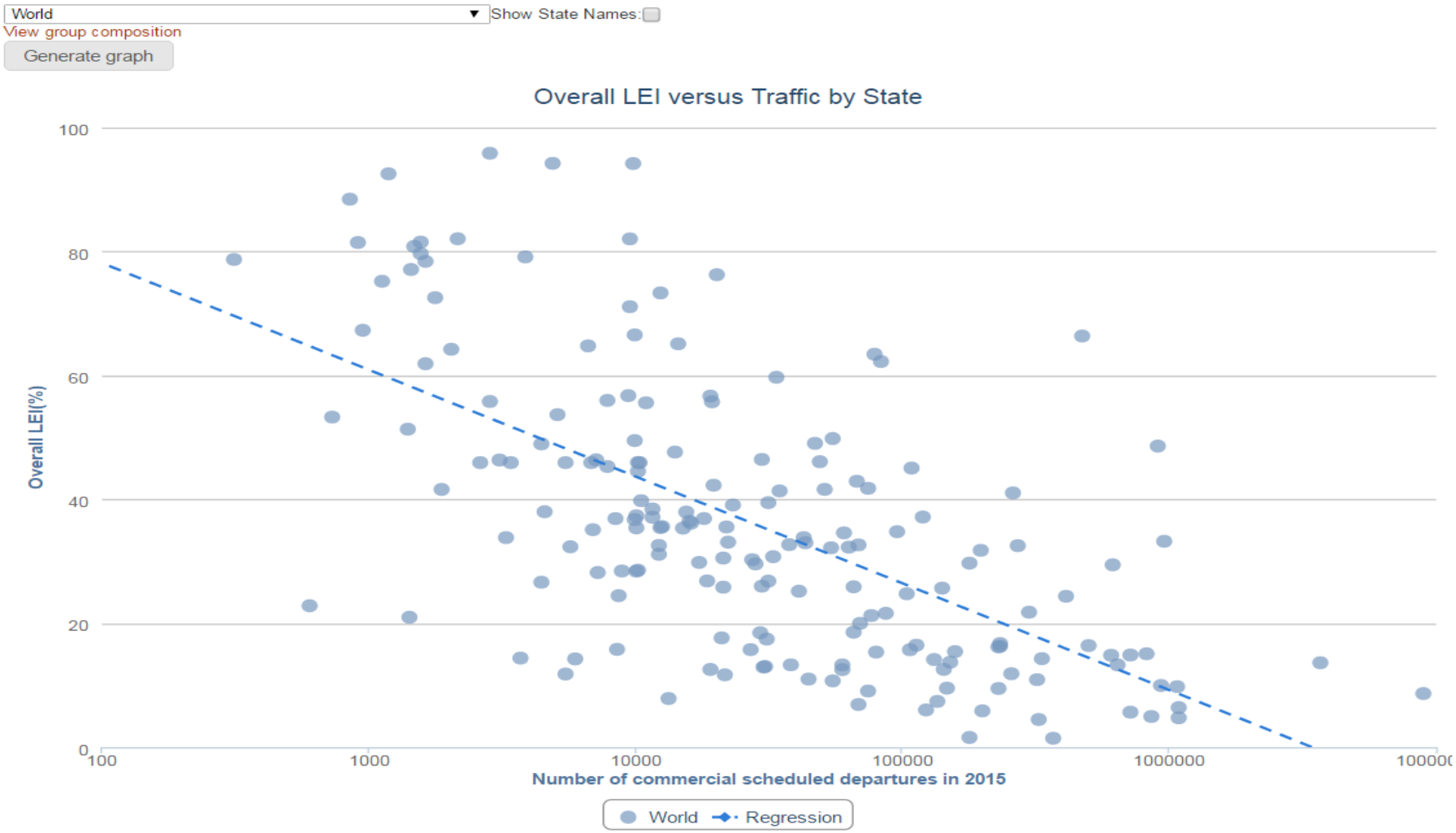
USOAP CMA Components



Main Factors for Determining State Safety Risk Profile

a) EI (determined through previous USOAP CMA activity);
b) Existence of SSC(s);
c) Level of aviation activities in the State for each audit area;
d) Projected growth of air traffic and aviation activities;
e) State's capability to submit CAPs acceptable to ICAO;
f) Level of progress made by State in implementing CAPs;
g) Major changes in organizational structure of State's CAA;
h) Ongoing or planned assistance projects;
i) State's progress in achieving GASP objective on safety management;
j) Air navigation deficiencies; and
k) Regional Office (RO) mission reports.

First Review: LEI versus Traffic



Other iSTARs Applications Used

Safety Margins

Risk-based prioritization for operations, air navigation and support functions

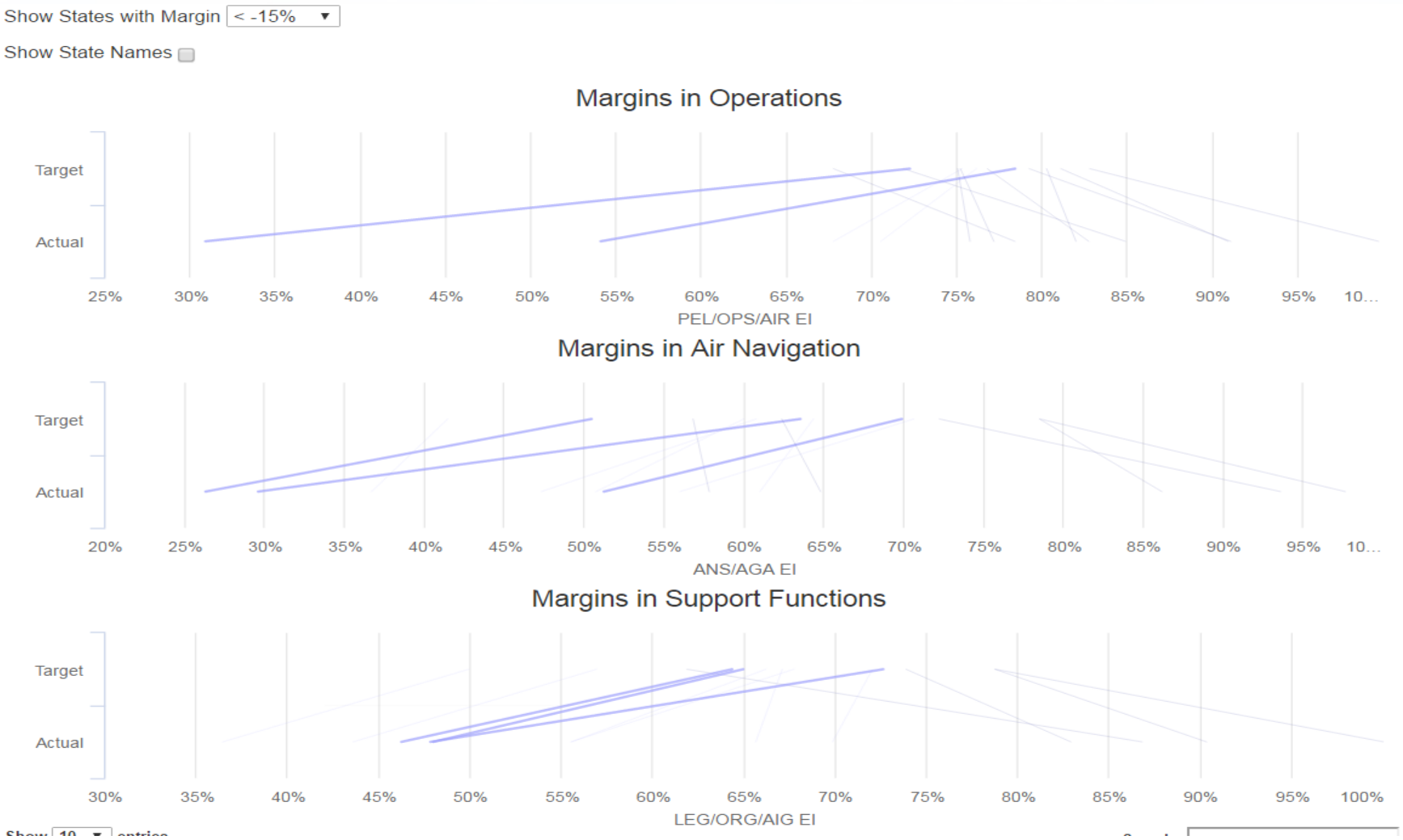
The below application allows to perform a risk-based prioritizes of operational, air navigation and support related USOAP areas.

In each of the 3 functional areas, a State is given a target effective implementation score which is calculated based on a global linear regression of traffic versus effective implementation of all ICAO Member States. A State with a positive safety margin would be considered to have sufficient regulatory controls in place to cover its existing traffic volume. A State with a negative safety margin would be considered to have an insufficient oversight system taking into consideration its traffic volume.

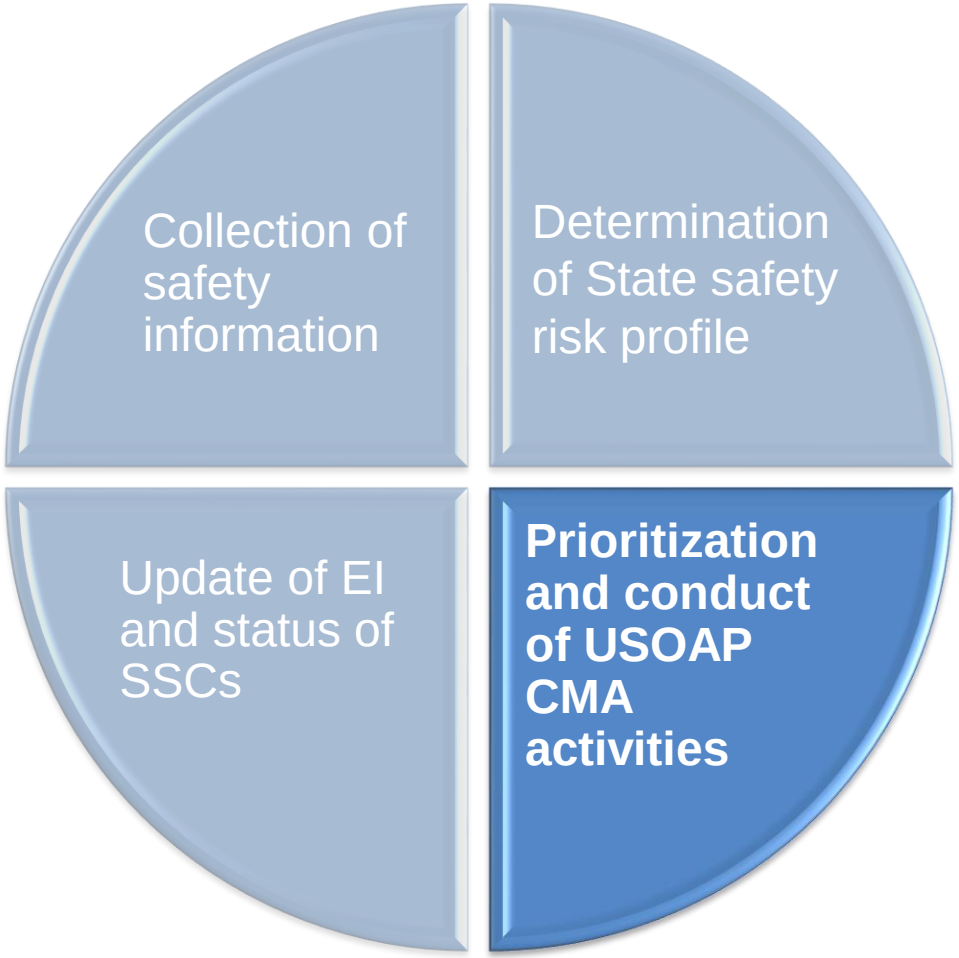
The operational safety margins are calculated taking into consideration only flights performed by carriers from the State, whereas the other margins are calculated using all departures from the State.

Safety margins are best used in conjunction with the Solution Center which provides solutions for the various USOAP areas.

Indicators from “Safety Margins” App



USOAP CMA Components



Main Activities under USOAP CMA

- **CMA audit**: On-site, to conduct a systematic and objective assessment of a State's safety oversight system. Can be a full scope or limited scope audit.

- **ICVM**: On-site, to collect and assess evidence of a State's effective correction of previously identified findings (**in one or more audit areas**). Collected evidence is reviewed and validated at ICAO HQ.

- **Off-site validation activity**: to assess a State's effective corrective actions addressing previously identified findings related to PQs *not* requiring an on-site activity.

A More Recent Type of Validation Activity…

- Off-site validation report resulting from on-site reviews.

- A USOAP CMA limited scope on-site activity, integrated within a scheduled mission in a State by ICAO or its safety partners. During an Integrated Validation Activity (IVA), SMEs sample, collect and assess evidence provided by the State for identified PQs demonstrating effective implementation of corrective actions to address findings previously identified by ICAO. ICAO validates the collected evidences and information.

- Safety partner: Organization which may provide technical support to USOAP CMA activities on the basis of a formal agreement with ICAO (e.g. EASA).

Prioritization and Conduct of USOAP CMA Activities

MO prioritizes CMA activities in States based on:

a) State's safety risk profile;

b) Approved MO budget; and

c) Available MO resources.

Criteria Used to Select a State for:

CMA Audit	ICVM
State's safety risk profile	
Information submitted by State through PQ self-assessment	
Recommendations from RO or ANB sections	
Information shared by recognized international organizations	
Regional balance	
Date of last audit	State's readiness (via reported progress in CAP implementation)
Significant changes in any audit area within State's civil aviation system	State's progress in resolving identified SSCs

Criteria Used to Select a State for an *Off-Site Validation Activity*

1) State has PQ findings associated with eligible PQs (most of the PQs from CEs 1 to 5);
2) Most (about 75%) of the State's corresponding CAPs, for the audit area considered, meet the following three conditions:
   a) CAPs fully address the corresponding PQ findings;
   b) CAPs are reported by the State as fully implemented; and
   c) The State has submitted all relevant evidence for the corresponding PQs through the OLF; and
3) Information submitted by State through PQ self-assessment.

Conduct of USOAP CMA Activities — *Scope*

Factors determining scope	ICVM	CMA Audit
Level of aviation activity in the State	✓	✓
Any changes to the State's system		✓
Acceptability of CAPs	✓	
Level of progress reported by the State in CAP implementation	✓	
State's self-assessment, including submitted evidence	✓	✓
Request by State (cost-recovery activity)	✓	✓
Availability of resources	✓	✓

Conduct of USOAP CMA Activities — *Duration and Team Composition*

Factors determining duration and team composition	ICVM	CMA Audit
Scope	✓	✓
Complexity of the State's system	✓	✓
Number of Not-Satisfactory PQs to be addressed	✓	
Other factors, such as State's official language	✓	✓

Six Criteria for a Good CAP ("RCDSRC")

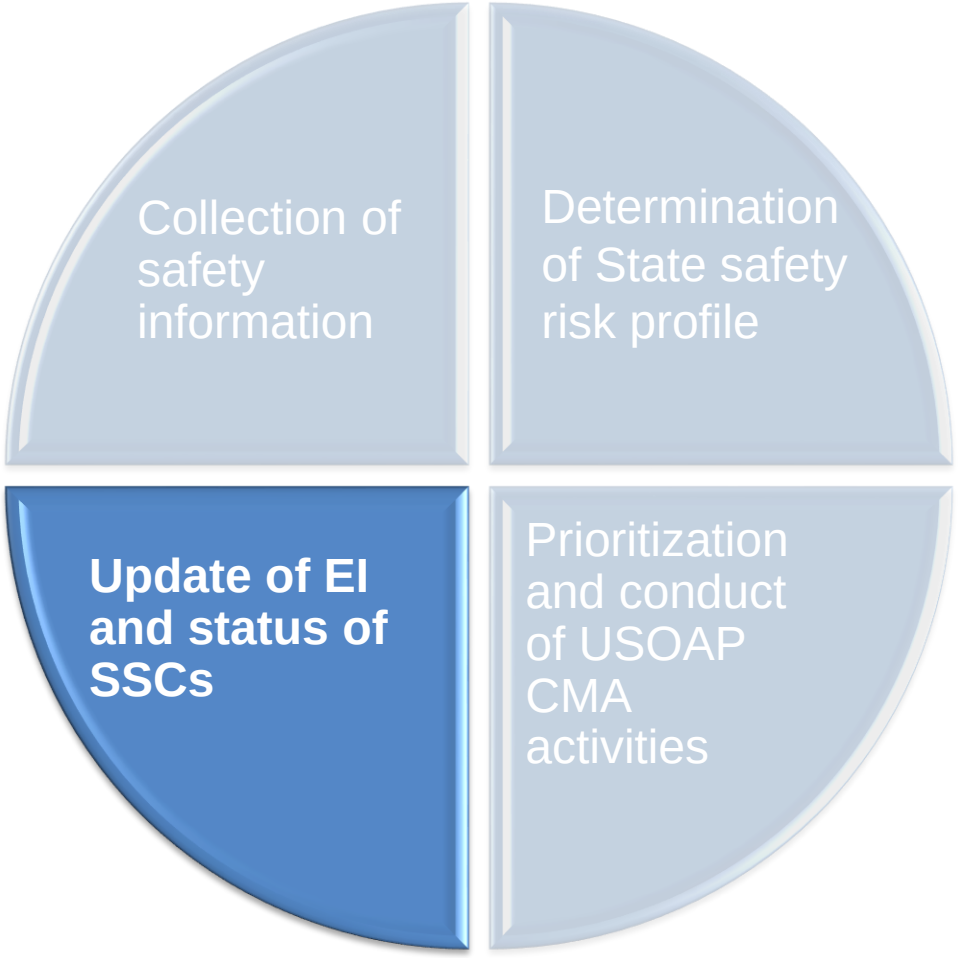
1) **R**elevant: CAP addresses the ***issues*** and ***requirements*** related to the finding and corresponding PQ and CE.
2) **C**omprehensive: CAP is ***complete*** and includes ***all elements or aspects*** associated with the finding.
3) **D**etailed: CAP outlines implementation process using ***step-by-step approach***.
4) **S**pecific: CAP identifies ***who will do what, when*** and in coordination with other entities, if applicable.
5) **R**ealistic: In terms of ***contents*** and ***implementation timelines***.
6) **C**onsistent: In relation to ***other CAPs*** and with the ***State's self-assessment***.

Off-Site Validation Activity

- CAPs related to the majority of PQ findings associated with CEs 6, 7 and 8 (collectively known as the “Implementation” CEs) do not qualify for an off-site validation activity.

- Such CAPs must be assessed and validated through an on-site activity.

USOAP CMA Components



Update of EI

EI calculation:

$$\text{Overall EI (\%)} = \frac{\text{Number of Satisfactory PQs}}{\text{Total Number of Applicable PQs}} \text{ X } 100$$

Update of EI

- The validation of collected safety information enables ICAO to continuously update a State's EI.
- State's EI is reported on the OLF and on iSTARS 3.0.

Mandatory Information Request (MIR)
When can a MIR be issued?

- In most cases, a MIR is issued by MO when concerns are raised by internal and/or external stakeholders regarding a State's safety oversight capabilities.

When can a MIR be issued? (cont.)

A MIR may also be issued in the following cases:

a) important information is missing in relation to the State's SAAQ, CCs and/or PQ self-assessment;

b) the State has not provided initial or amended CAPs as needed;

c) a significant change is observed in the State's organization;

d) information is needed in addition to an ICAO RO visit; or

e) information collected during a USOAP CMA activity is incomplete or insufficient.

State's Response to a MIR

- States are *required* to respond to a MIR using the "MIR" module of the OLF.

PQ Status Change

- Status of PQs may be changed through the validation process conducted by MO based on:
  - CAPs or other information received from States, supported by appropriate evidence; and
  - Information received from ICAO ROs, recognized organizations and other stakeholders.

- Status of PQs may also change based on information received from States in response to MIRs.

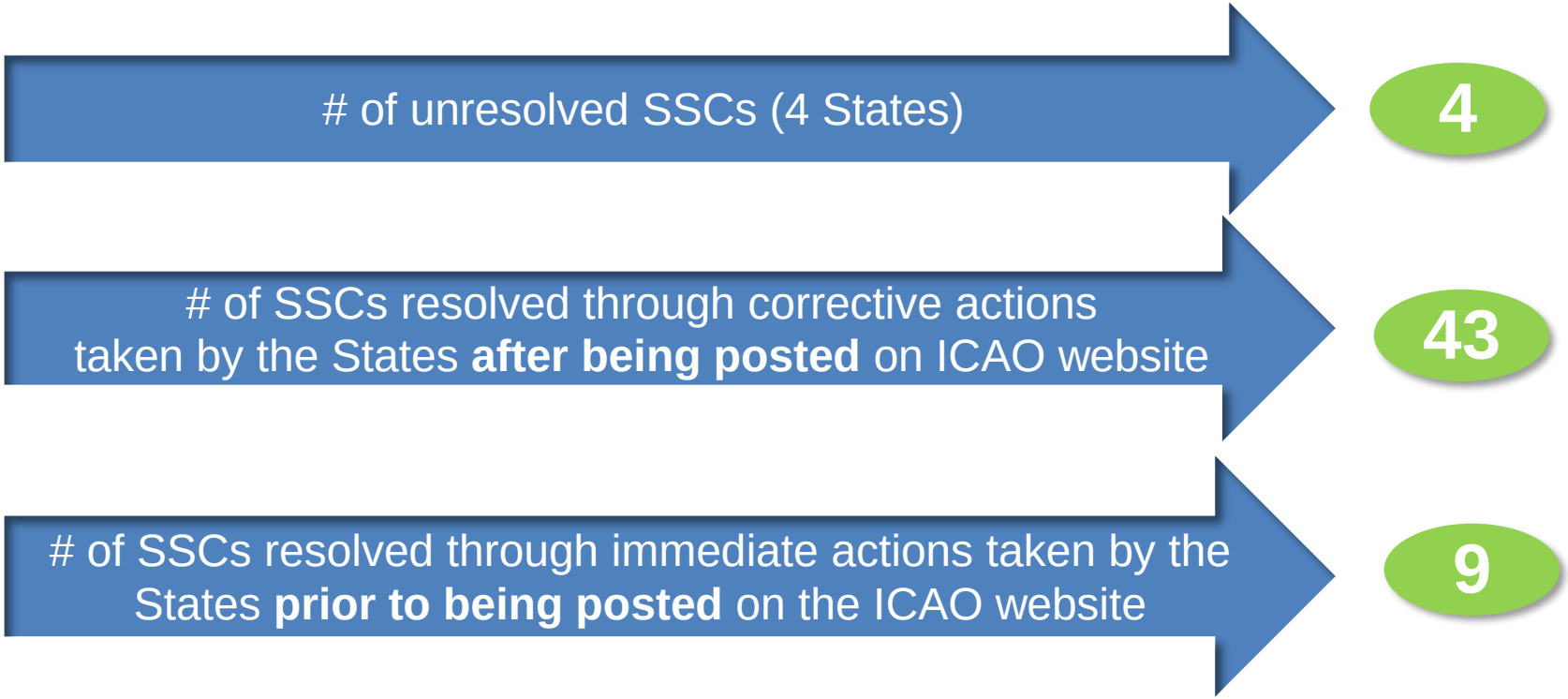
Significant Safety Concerns (SSCs)

Definition of an SSC

"An *SSC* occurs when the audited 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 Chicago Convention are not met, resulting in an immediate safety risk to international civil aviation."

Reference: *EB 2010/7* dated 19 February 2010

Status of SSCs



Note.— Numbers were last updated on 10 November 2017.

SSC Mechanism: Identification

Continuous monitoring process

Ongoing monitoring of evidence and information collected from the State and other sources

USOAP CMA on-site activity

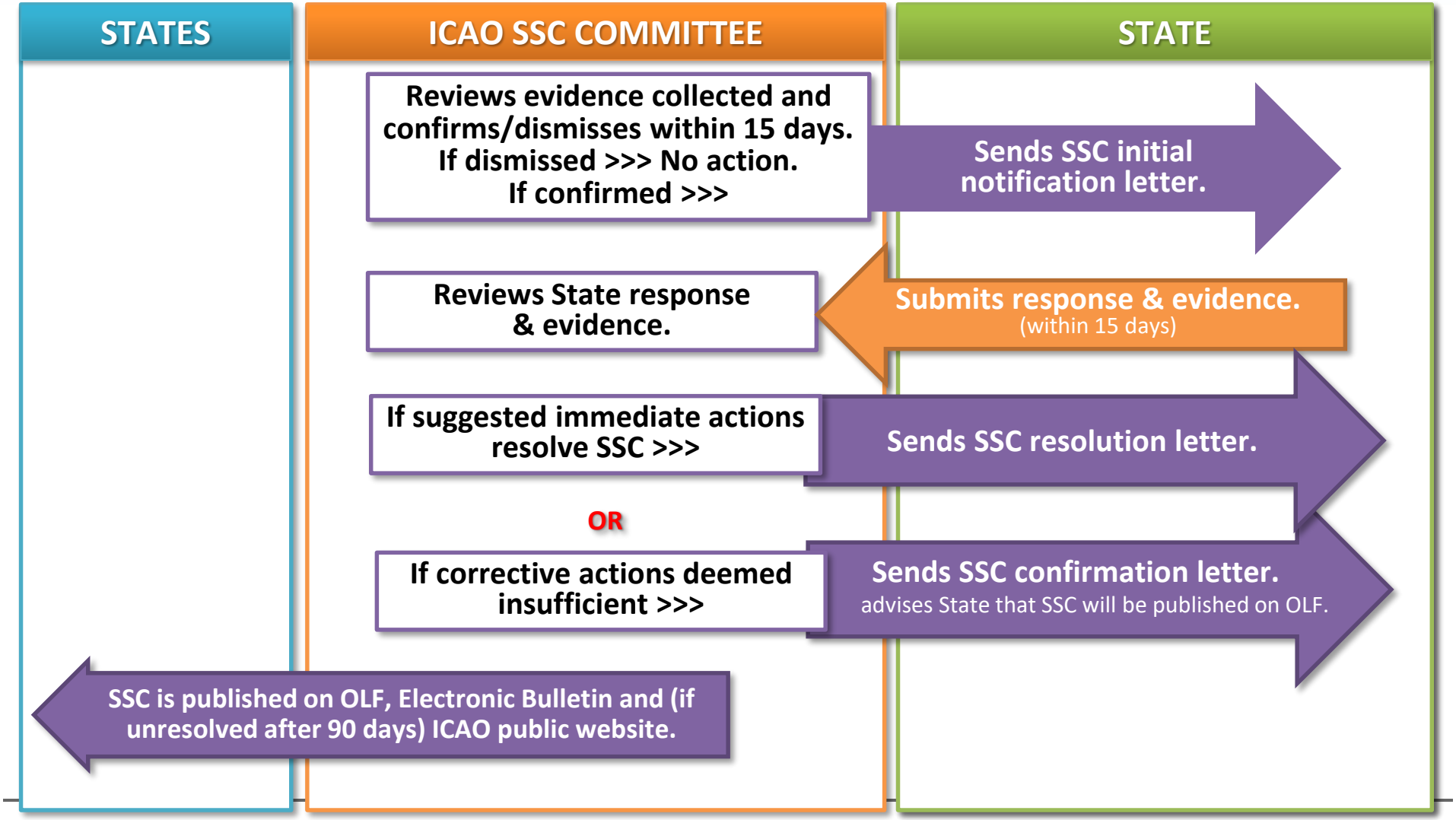
Evidence collected points to an SSC

- Team leader brings it to the attention of the State as soon as it is discovered.
- State may initiate corrective actions immediately.
- Team leader provides all relevant information to C/OAS.

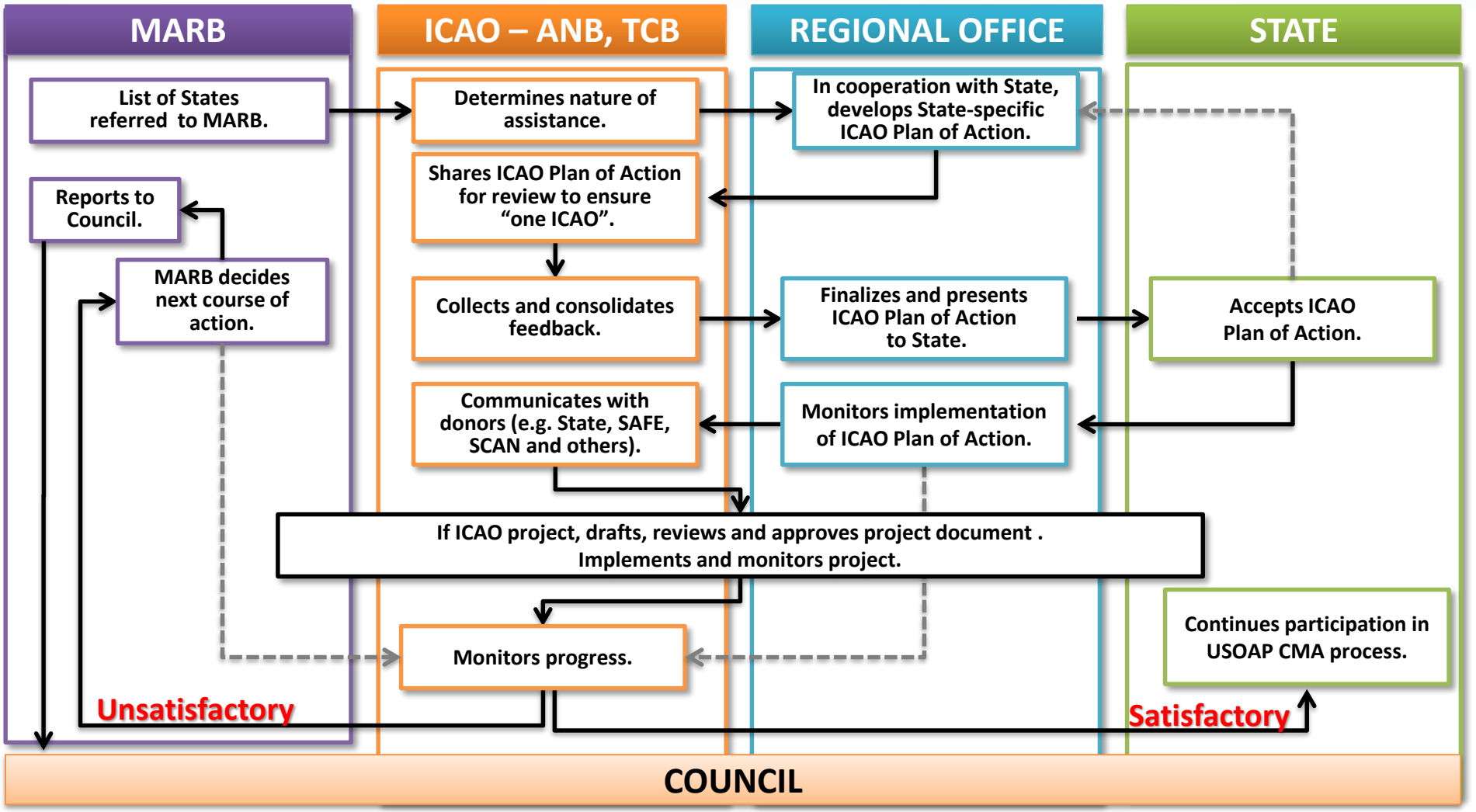
Preliminary SSC is identified

ICAO SSC Committee is convened to validate

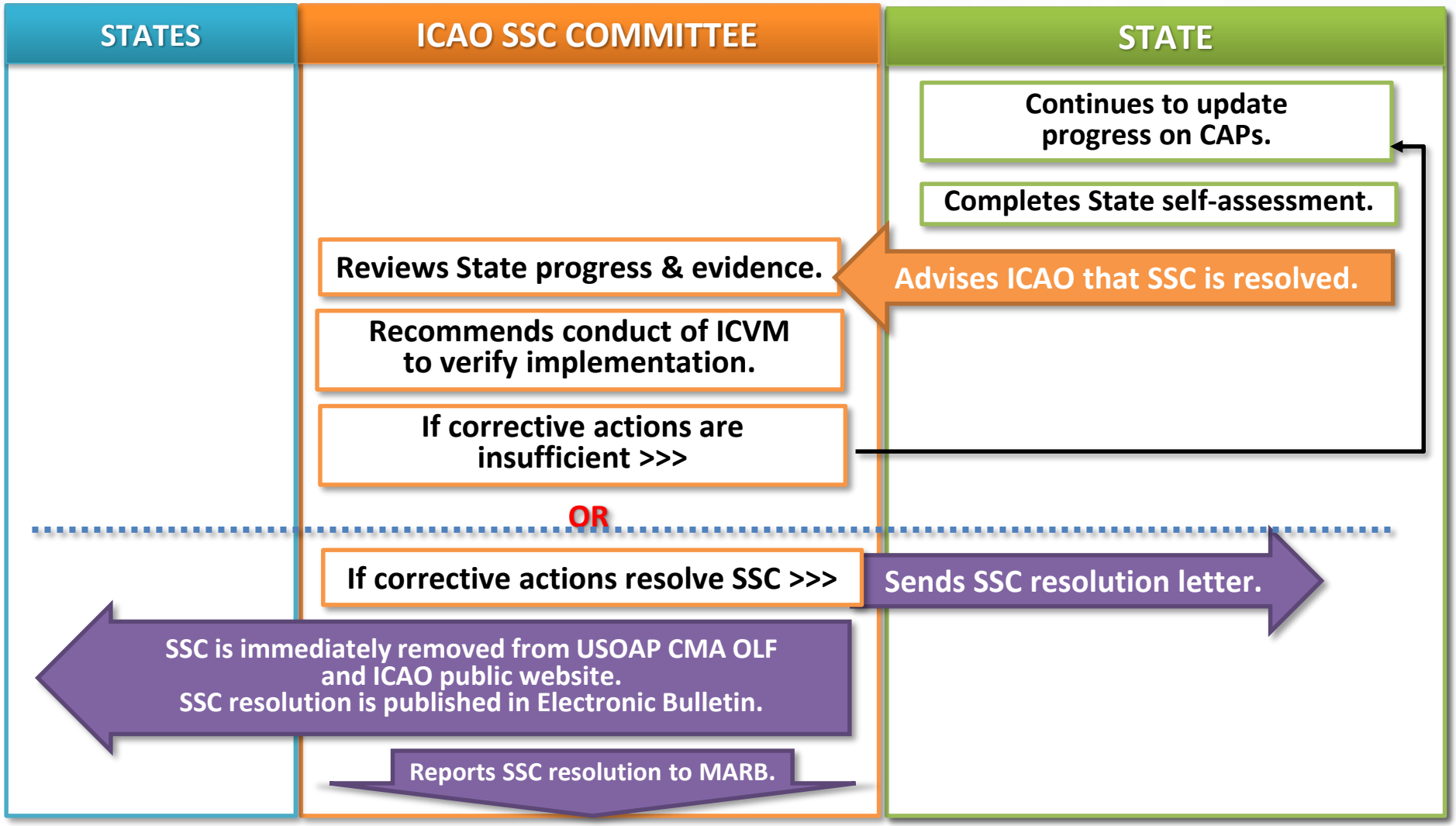
SSC Mechanism: Notification



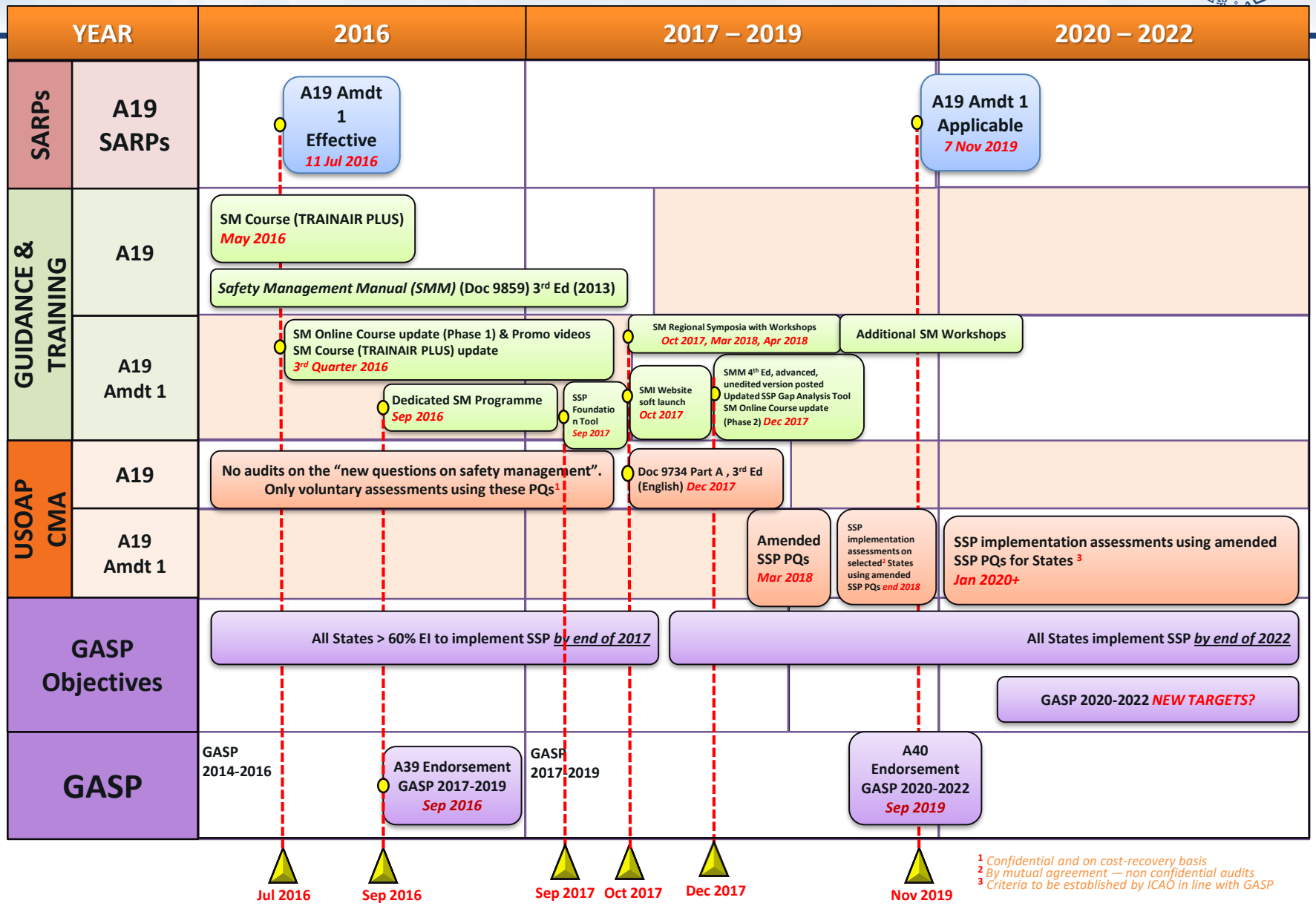
SSC Mechanism: ICAO Plan of Action



SSC Mechanism: Resolution



Roll-out of SSP Implementation Assessments under USOAP CMA



[1] Confidential and on cost-recovery basis
[2] By mutual agreement — non confidential audits
[3] Criteria to be established by ICAO in line with GASP

March 2018:
Amended SSP-Related PQs

Amended SSP-related PQs:

- Will *reflect* Annex 19 Amdt 1, *Safety Management Manual* (SMM) (Doc 9859, 4th edition) and lessons learnt from the voluntary assessments conducted.
- Will *form* a dedicated list of PQs (complementing the PQs on "core" safety oversight and investigation functions).
- Will *not be linked to CEs,* but to the applicable SSP component (e.g. State Safety Risk Management, State Safety Assurance and State Safety Promotion).
- Will *not be assessed* as "satisfactory/non-satisfactory", but in terms of *"level of progress achieved"*.
- Will *be supported by references* (from Annexes and Guidance Material).
- Will *be broken down into 7 areas*: GEN (SSP Establishment and Operation – including LEG/ORG aspects), PEL, OPS, AIR, ANS, AGA & SDI (Safety Data Collection and Processing System (SDCPS) + Accident and Incident Investigation).

SSP Implementation Assessments – Phase 1: 2018 – 2019

SSP implementation assessments will:

- *Complement*, and *not impact*, the State's Effective Implementation (*EI*) score.
- Not generate findings, nor require the State to submit a "corrective action plan" (CAP).
- Be conducted by a *limited pool of auditors*, to ensure consistency.
- Use the SSP-related PQs in selected audit areas (e.g. GEN + AGA + SDI).

SSP implementation assessment reports will:

- Reflect the *level of progress achieved* by the State in SSP implementation, rather than a measurement.
- Will be *shared* with other States on the USOAP CMA Online Framework, contributing to the exchange of experience and best practices.

Examples and tools of effective implementation may also be identified, and States will be invited to share them with ICAO for publication on the ICAO Safety Management Implementation website.

Preparation for Phase 2: Starting 2020 (Tentative)

In 2019, provided sufficient guidance has been developed to support determination of levels of maturity (0: not present and not planned, 1: not present but planned, 2: present, 3: present and effective, 4: effective for years and in continuous improvement) for each PQ, a new amendment of SSP-related PQs may be developed (to be applicable in 2020) to enable a quantitative measurement of the “level of progress achieved” by the State.

Draft ICAO criteria for determining a State's eligibility to receive an SSP implementation assessment

- Evidence of a *robust* and *sustainable* safety oversight system and aircraft accident/serious incident investigation system (including implementation aspects);
- Evidence of *effective* mandatory incident reporting system, aircraft accident and incident database and safety analyses; and
- Satisfactory completion of PQ self-assessment.

USOAP CMA CBT

USOAP CMA CBT

As per EB 2011/44, the computer-based training (CBT) was launched to:

- Provide participants with a thorough understanding of the USOAP CMA methodologies and the essential knowledge required to participate in USOAP CMA activities; and
- Serve as an opportunity for States to enhance the competencies of their aviation safety personnel in the areas addressed by USOAP CMA.

USOAP CMA CBT

- Per Assembly Resolution A37-5, States and recognized organizations are called upon to nominate experts for secondment to ICAO on a long- or short-term basis to support USOAP CMA.
- For State-nominated experts who meet stated qualifications and experience criteria for the various audit areas (per *SL AN19/34-15/35*, 13 May 2015), ICAO will waive their CBT fees.
- More information available at:

  https://www.icao.int/safety/CMAForum/Pages/USOAPCMA-CBT.aspx.

REPORT ON USOAP CMA RESULTS: Jan 2013 – Dec 2015

USOAP CMA Report: Jan 13 – Dec 15

- Covers the period from 1 January 2013 (launch of the USOAP CMA) to 31 December 2015.
- Based on data collected through USOAP CMA and stored in the CMA OLF and iSTARS.
- Contains statistical data on USOAP activities and results (EIs) globally and by “Region” (ICAO RO accreditation areas).
- Also highlights issues identified in the 8 audit areas where EI is still low and where more efforts at global, regional and national levels are needed.
- Now available in the “CMA Library” on the OLF at https://www.icao.int/usoap and on the ICAO public website http://www.icao.int.

States' Main Obligations under the USOAP CMA

As per the USOAP CMA MOU and by using the OLF, States shall, in particular:

- Continuously update their SAAQ and CCs/EFOD;
- Continuously update their CAPs and PQ status (self–assessment), providing all related evidence; and
- Reply promptly to MIRs sent by ICAO.

Review

1) Monitoring and Oversight (MO)
2) Critical Elements (CEs) of a State Safety Oversight System
3) USOAP CMA Audit Areas and Protocol Questions (PQs)
4) USOAP CMA Components
   a) Collection of Safety Information
   b) Determination of State Safety Risk Profile
   c) Prioritization and Conduct of USOAP CMA activities
   d) Update of Effective Implementation (EI) and Status of Significant Safety Concerns (SSCs)
5) Roll-out of SSP Implementation Assessments under USOAP CMA
6) USOAP CMA Computer-Based Training (CBT)
7) Report on USOAP CMA Results: Jan 2013 – Dec 2015
8) States' main obligations under the USOAP CMA

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THANK YOU