USOAP Continuous Monitoring Approach (CMA) Workshop

Overview of the USOAP CMA

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November 2017

Outline

1) Monitoring and Oversight (MO)
2) Critical Elements (CEs) of a State's 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) Report on USOAP CMA Results: Jan 2013 – Dec 2015
6) States' main obligation 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 –xxx] — 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)** [**ACTING**: M. Marin] — 8080
- **Cargo Safety (CSS)** [K. Rooney] — 8099
- **Programmes Coordination and Implementation (PCI)** [E. Lassooij] — 6718
- *Prog. Manager – Crises and Rapid Response (PM-CRR)* [M. Fox] — 6757
- *Prog. Coordinator – Safety Management (PC-SM)* [E. Gnehm] — 6220

Air Navigation Capacity and Efficiency [DD/AN – R. Macfarlane] — 6712

- **Globally Integrated Systems (GIS)** [S. Da Silva] — 5872
- **Integrated Planning Unit (IPU)** [TBD]
- 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: 01/01/2017

Monitoring & Oversight (MO)

Continuous Monitoring (Online Framework)

Planning and Scheduling

On-site Activities

Off-site Activities
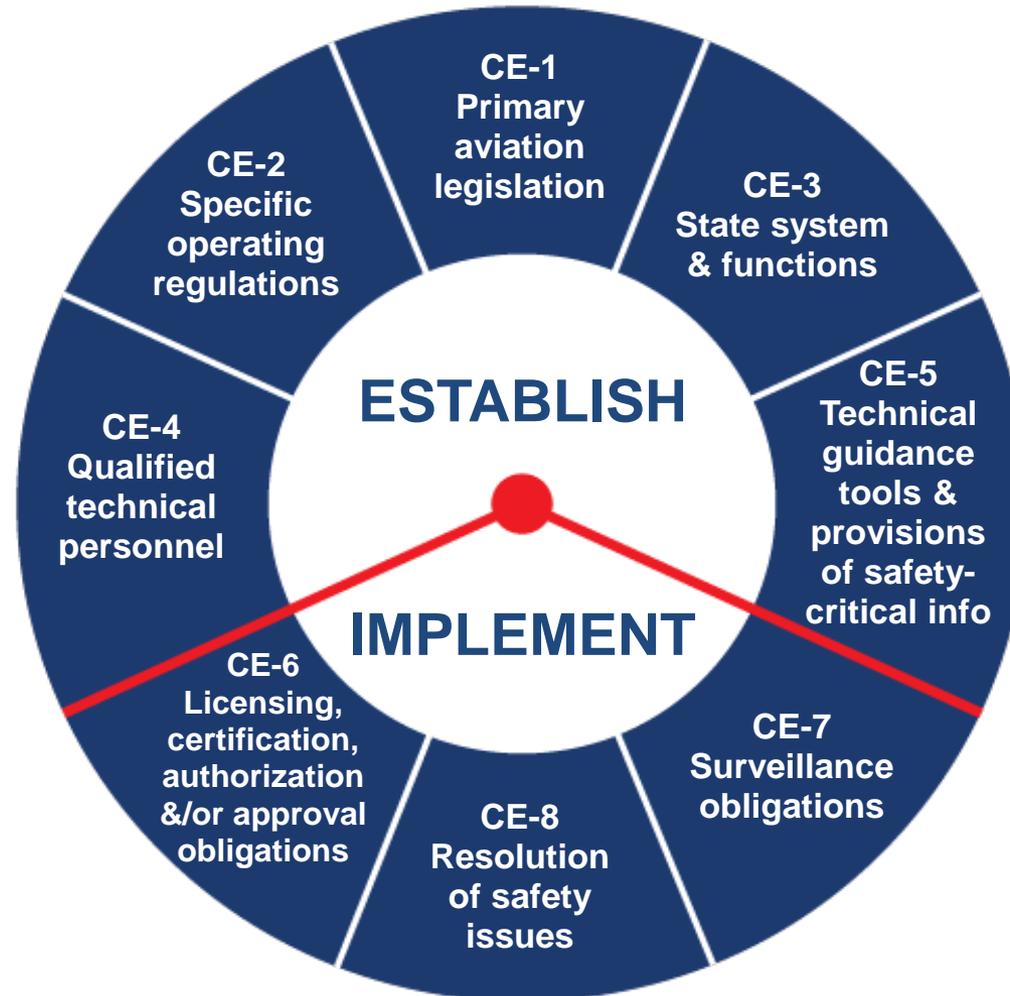
Reports, Analyses and Working Papers

Training and Workshops

Critical Elements of a State's 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)

CE-1
Primary aviation legislation

CE-2
Specific operating regulations

CE-3
State system & functions

CE-4
Qualified technical personnel

CE-5
Technical guidance tools & provisions of safety-critical info

CE-6
Licensing, certification, authorization &/or approval obligations

CE-7
Surveillance obligations

CE-8
Resolution of safety issues

ESTABLISH

IMPLEMENT

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

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

Note.— An advance unedited English version of Doc 9734, Part A has been published in October 2017 to reflect Amendment 1 of Annex 19, Appendix 1.

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

| 1997 | 1998 | 1999 | 20 | | | | | | | | 2010 | 2011 | 2012 | 2013+ |

STATES

1997: Voluntary As
Fully Confidential (

199
to

PUBLIC

English | Français   ICAO Store

ICAO SAFETY

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ICAO / Safety / Safety Audit Results: USOAP interactive viewer

Safety Audit Information
USOAP Results Report: 2013-2016
About CMA
USOAP CMA Flyer
Frequently Asked Questions
USOAP CMA Computer-based Training
CMA News
USOAP recertified to ISO 9001:2008
Archive
ICAO Journal Article on CMA
HLSC Presentation
Newsletter
Other Useful Websites
ISTARS - restricted
USOAP CMA Online Framework - restricted
Contact USOAP CMA

Safety Audit Results: USOAP interactive viewer

Please select a country from the list below the viewer to see its audit 'Effective Implementation' (EI) score presented for the various categories covered under ICAO's Universal Safety Oversight Audit Programme (USOAP). Multiple countries may be selected at once to compare their respective performance, and users may also compare a country or countries against the current global average in each category.

Developers may also wish to consider accessing the EI data via the iSTARS API Data Service.

Effective Implementation (%)

Legislation, Organization, Licensing, Operations, Airworthiness, Accident Investigation, Air Navigation Services, Aerodromes

● Global average

SSCs published on the USOAP CMA online framework

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

2014

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

USOAP
with
45% of

USOAP CMA Audit Areas and Protocol Questions (PQs)

USOAP CMA Audit Areas

Primary aviation legislation and civil aviation regulations (LEG)

Civil aviation organization (ORG)

Personnel licensing and training (PEL)
Annexes 1 and 19

Aircraft operations (OPS)
Annexes 6, 9, 18, 19 and PANS-OPS

Airworthiness of aircraft (AIR)
Annexes 6, 7, 8, 16 and 19

Aircraft accident and incident investigation (AIG)
Annexes 13 and 19

Air navigation services (ANS)
Annexes 2, 3, 4, 5, 10, 11, 12, 15, 19 and PANS-ATM

Aerodromes and ground aids (AGA)
Annexes 14 and 19

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 will 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 organ... applicant re... a) duties, re... clearly defi... b) functional tasks and lines of reporting are clearly delineated and duly documented?	1) V... insp... etc. implemented. 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

CE number associated with PQ

Examples of evidence to be presented by Sta...

PQ asked by auditor

ICAO References

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.

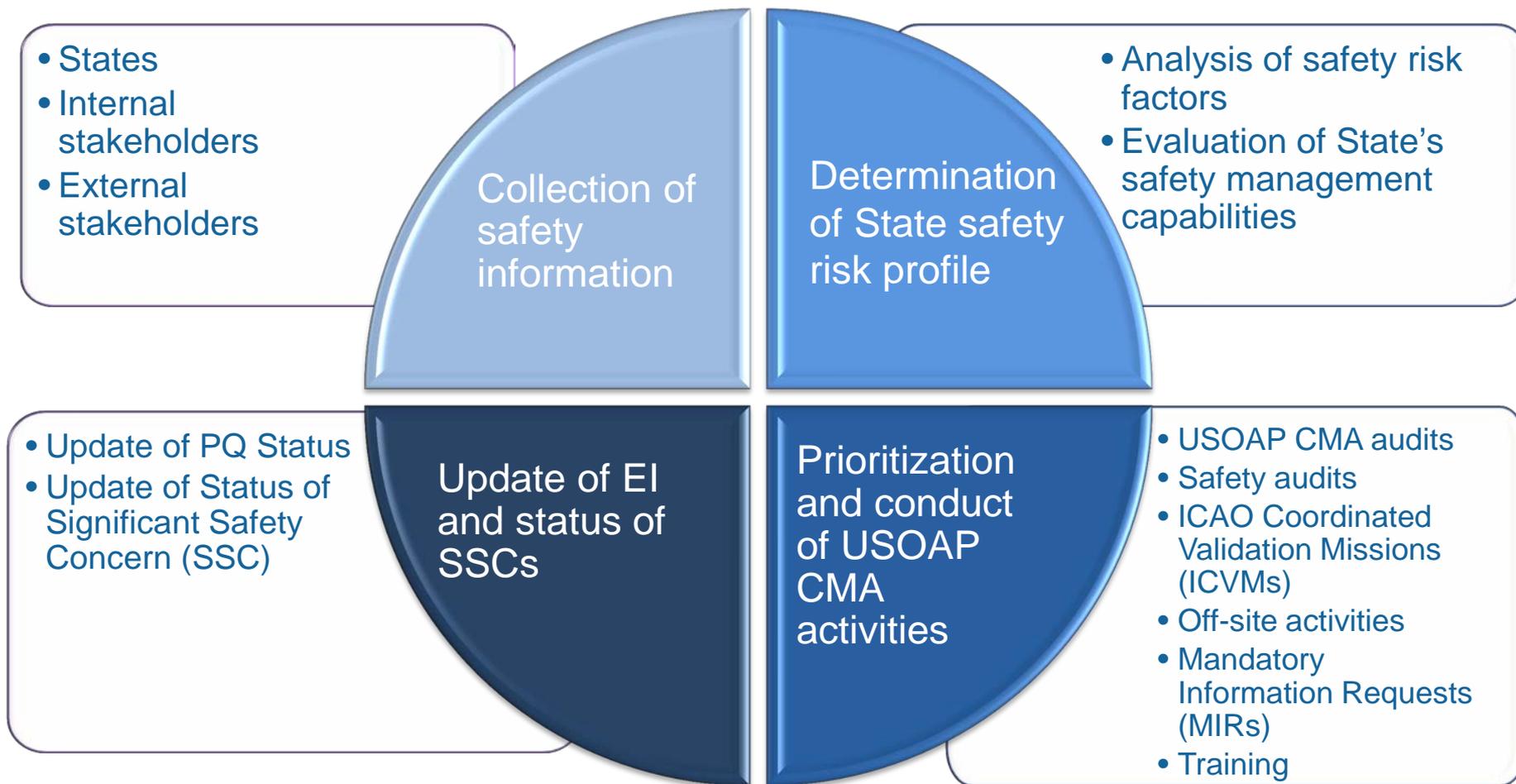- The 2016 edition is applicable for all USOAP CMA activities starting 1 June 2017.

CMA Library

USOAP CMA Components

USOAP CMA Components

- States
- Internal stakeholders
- External stakeholders

Collection of safety information

Determination of State safety risk profile

- Analysis of safety risk factors
- Evaluation of State's safety management capabilities

- Update of PQ Status
- Update of Status of Significant Safety Concern (SSC)

Update of EI and status of SSCs

Prioritization and conduct of USOAP CMA activities

- USOAP CMA audits
- Safety audits
- ICAO Coordinated Validation Missions (ICVMs)
- Off-site activities
- Mandatory Information Requests (MIRs)
- Training

USOAP CMA Components

Collection of safety information

Determination of State safety risk profile

Update of EI and status of SSCs

Prioritization and conduct of USOAP CMA activities

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 information used as indicators for the USOAP CMA.

USOAP CMA Components

- Collection of safety information
- **Determination of State safety risk profile**
- Update of EI and status of SSCs
- Prioritization and conduct of USOAP CMA activities

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
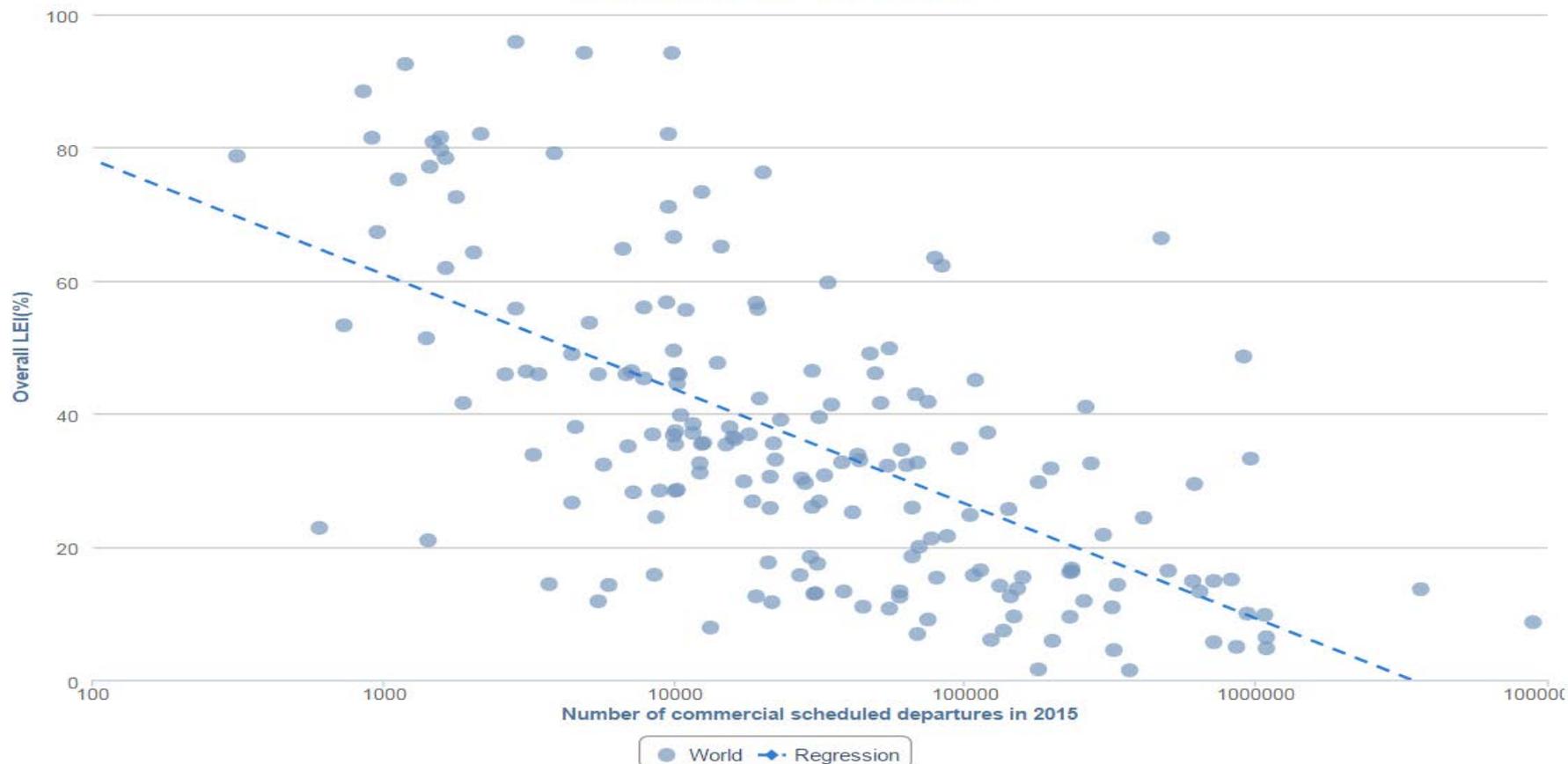
Other iSTARs Applications Used

integrated Safety Trend Analysis and Reporting System

MY APPS | CATALOGUE | GROUP MANAGER | SPACE-EXCHANGE | WORKSHOP | NEWS | MY ACCOUNT | CONTACT US | PROFILE

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.
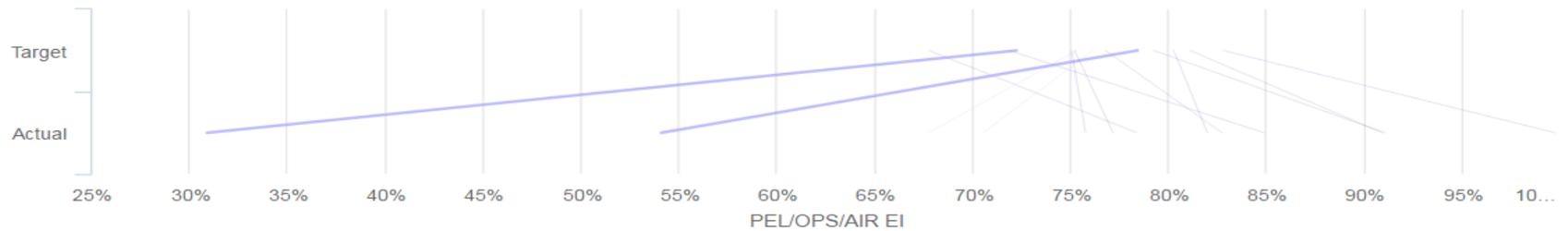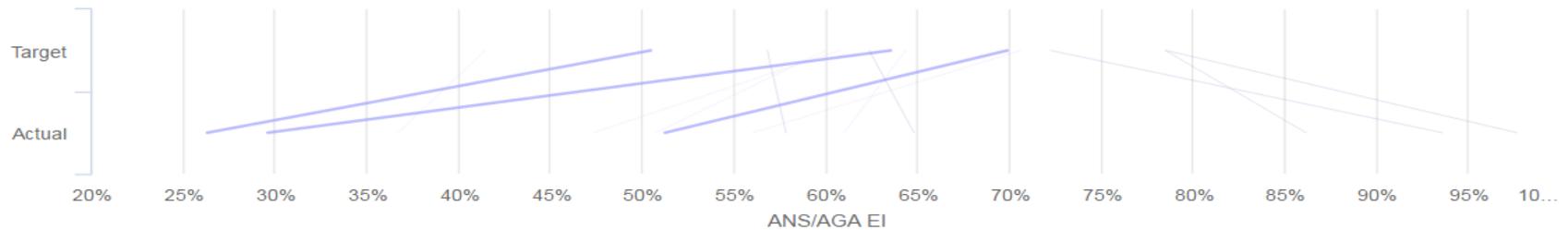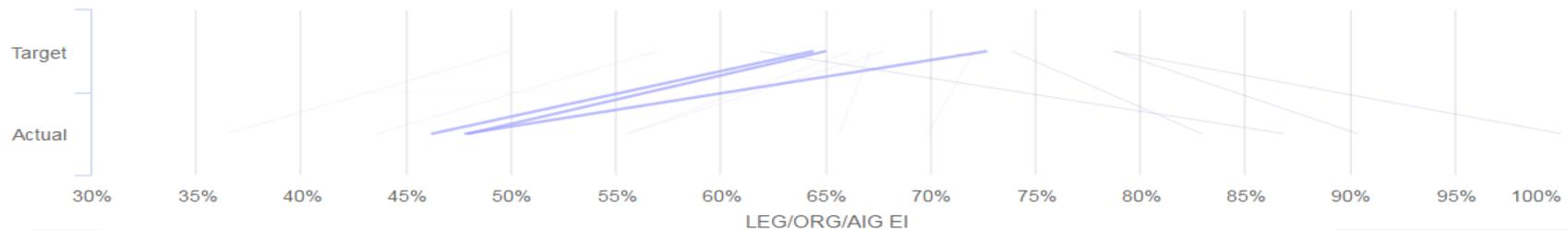
Indicators from "Safety Margins" App

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 <u>PQs not requiring an on-site activity</u>.

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 IVA, SMEs sample, collect and assess evidences 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: Organizations 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*

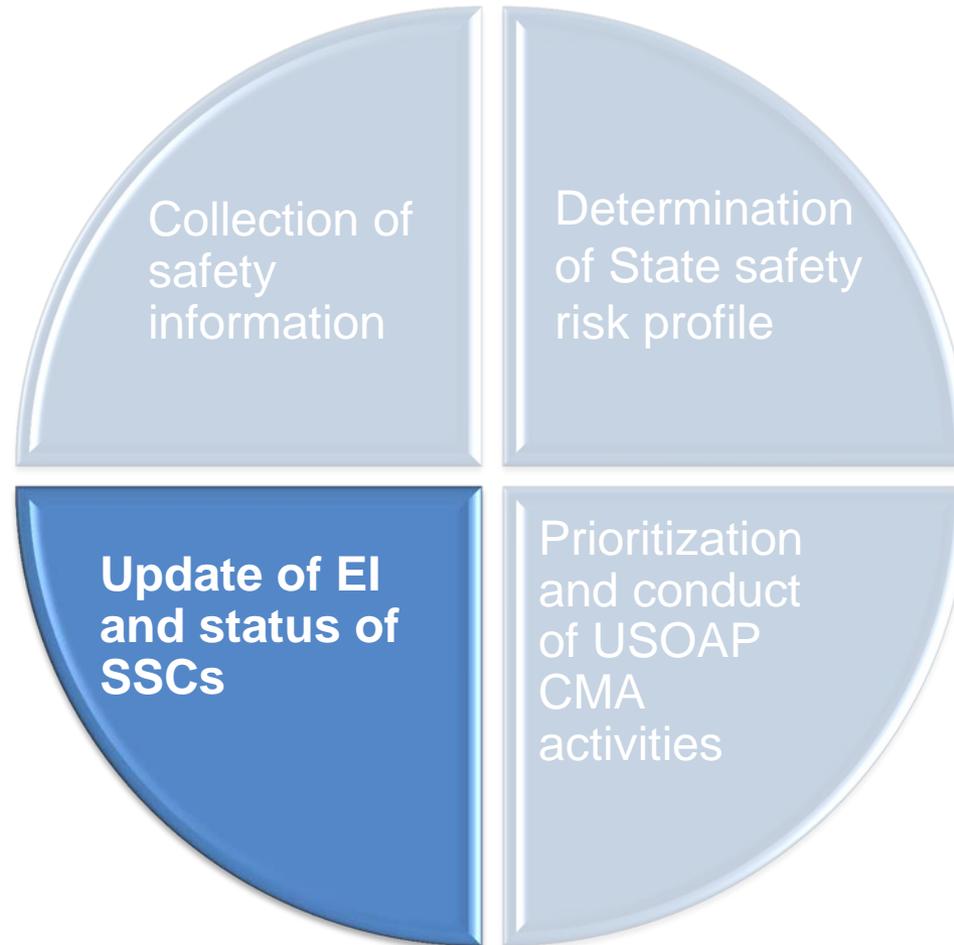| Factors determining duration and team composition	ICVM	CMA Audit
Scope	✔	✔
Complexity of the State's system	✔	✔
Number of Not-Satisfactory PQs to be addressed	✔	
Other factors, such as State's official language	✔	✔

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

Collection of safety information

Determination of State safety risk profile

Update of EI and status of SSCs

Prioritization and conduct of USOAP CMA activities

Update of EI

EI calculation:

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

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 Online Framework (OLF) and on iSTARS 3.0, i.e. SPACE.

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/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) a 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.

MIR

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

of unresolved SSCs (5 States) — **5**

# of SSCs resolved through corrective actions taken by the States **after being posted** on ICAO website — **42**
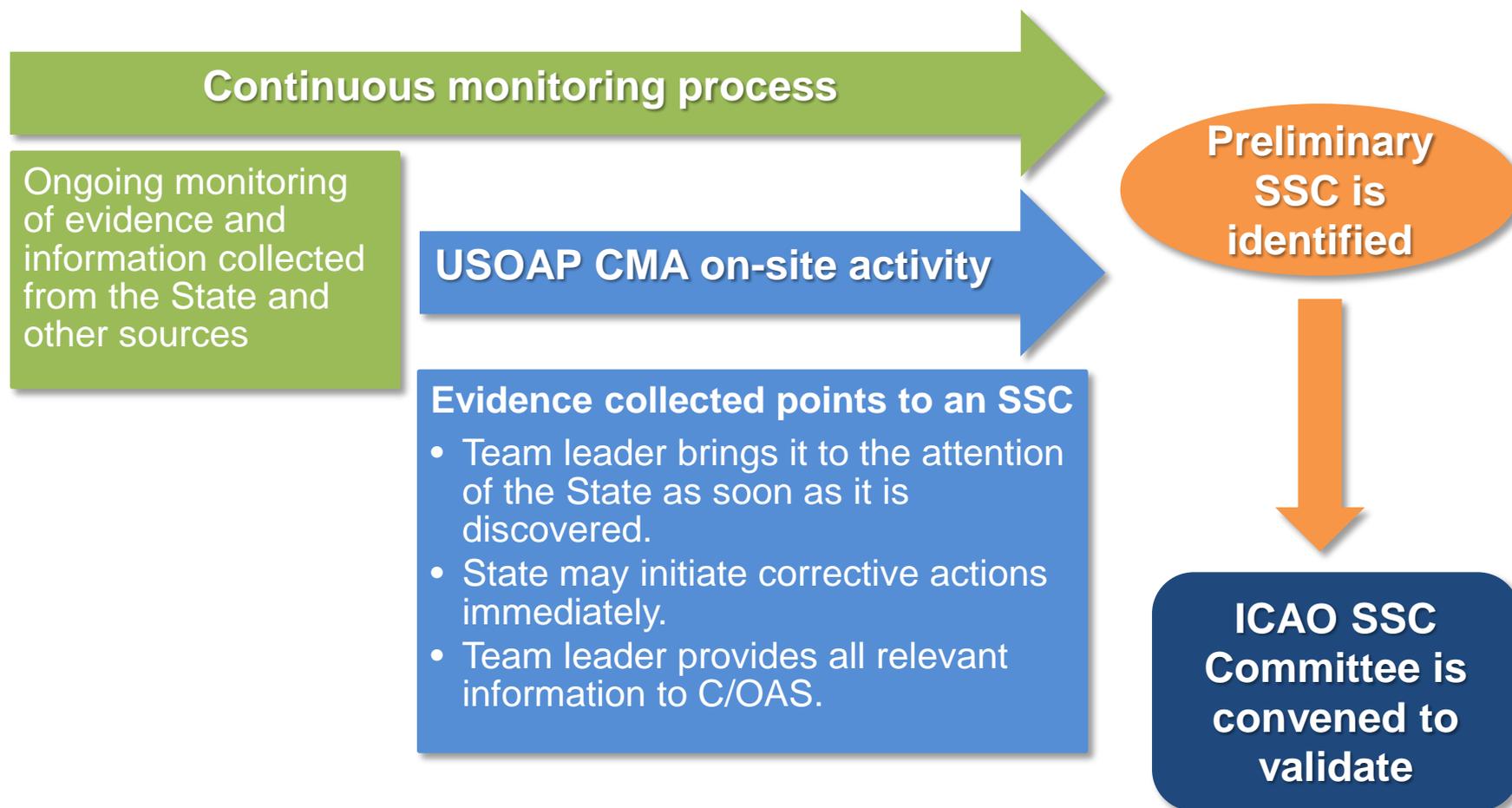
# of SSCs resolved through immediate actions taken by the States **prior to being posted** on the ICAO website — **9**

Note.— Numbers were last modified on 12 October 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

Preliminary SSC is identified

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.

ICAO SSC Committee is convened to validate

SSC Mechanism: Notification

STATES	ICAO SSC COMMITTEE	STATE

**Reviews evidence collected and confirms/dismisses within 15 days.
If dismissed >>> No action.
If confirmed >>>**

Sends SSC initial notification letter.

Reviews State response & evidence.

Submits response & evidence.
(within 15 days)

If suggested immediate actions resolve SSC >>>

Sends SSC resolution letter.

OR

If corrective actions deemed insufficient >>>

Sends SSC confirmation letter.
advises State that SSC will be published on OLF.

SSC is published on OLF, Electronic Bulletin and (if unresolved after 90 days) ICAO public website.

SSC Mechanism: Resolution

STATES	ICAO SSC COMMITTEE	STATE
		Continues to update progress on CAPs.
		Completes State self-assessment.
	Reviews State progress & evidence.	**Advises ICAO that SSC is resolved.**
	Recommends conduct of ICVM to verify implementation.	
	If corrective actions are insufficient >>>	

OR

	If corrective actions resolve SSC >>>	**Sends SSC resolution letter.**
SSC is immediately removed from USOAP CMA OLF and ICAO public website. **SSC resolution is published in Electronic Bulletin.**		
	Reports SSC resolution to MARB.	

REPORT ON USOAP CMA ACTIVITIES & 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 SPACE.

- 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 the related relevant evidence; and
- reply promptly to MIRs sent by ICAO.

Review

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