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Tools to Support Safety Management and Oversight

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ICAO NACC Regional Office/13 August 2019





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Objectives

- ✈️ Raise awareness and provide guidelines to select tools to support safety management activities and oversight.



Scalability

- ✈ The organization's SMS, including the policies, processes and procedures, should reflect the size and complexity of the organization and its activities. It should consider:
 - a) the organizational structure and availability of resources;
 - b) size and complexity of the organization (including multiple sites and bases); and
 - c) complexity of the activities and the interfaces with external organizations.
- ✈ The service provider should carry out an analysis of its activities to determine the right level of resources to manage the SMS.
 - ✈ This should include the determination of the organizational structure needed to manage the SMS. This would include considerations of who will be responsible for managing and maintaining the SMS, what safety committees are needed, if any, and the need for specific safety specialists.





Scalability

Safety risk considerations

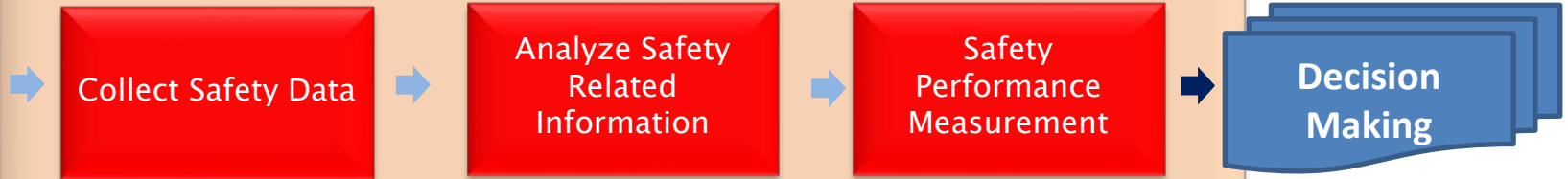
- ✦ Regardless of the size of the service provider, scalability should also be a function of the inherent safety risk of the service provider's activities. Even small organizations may be involved in activities that may entail significant aviation safety risks. Therefore, safety management capability should be commensurate with the safety risk to be managed.

Safety data and safety information and its analysis

- ✦ For small organizations, the low volume of data may mean that it is more difficult to identify trends or changes in the safety performance. This may require meetings to raise and discuss safety issues with appropriate experts. This may be more qualitative than quantitative but will help identify hazards and risks for the service provider.
- ✦ Collaborating with other service providers or industry associations can be helpful, since these may have data that the service provider does not have. For example, smaller service providers can exchange with similar organizations/operations to share safety risk information and identify safety performance trends. Service providers should adequately analyse and process their internal data even though it may be limited.
- ✦ Service providers with many interactions and interfaces will need to consider how they gather safety data and safety information from multiple organizations. This may result in large volumes of data being collected to be collated and analysed later. These service providers should utilize an appropriate method of managing such data. Consideration should also be given to the quality of the data collected and the use of taxonomies to help with the analysis of the data.



Safety Management Strategic Processes

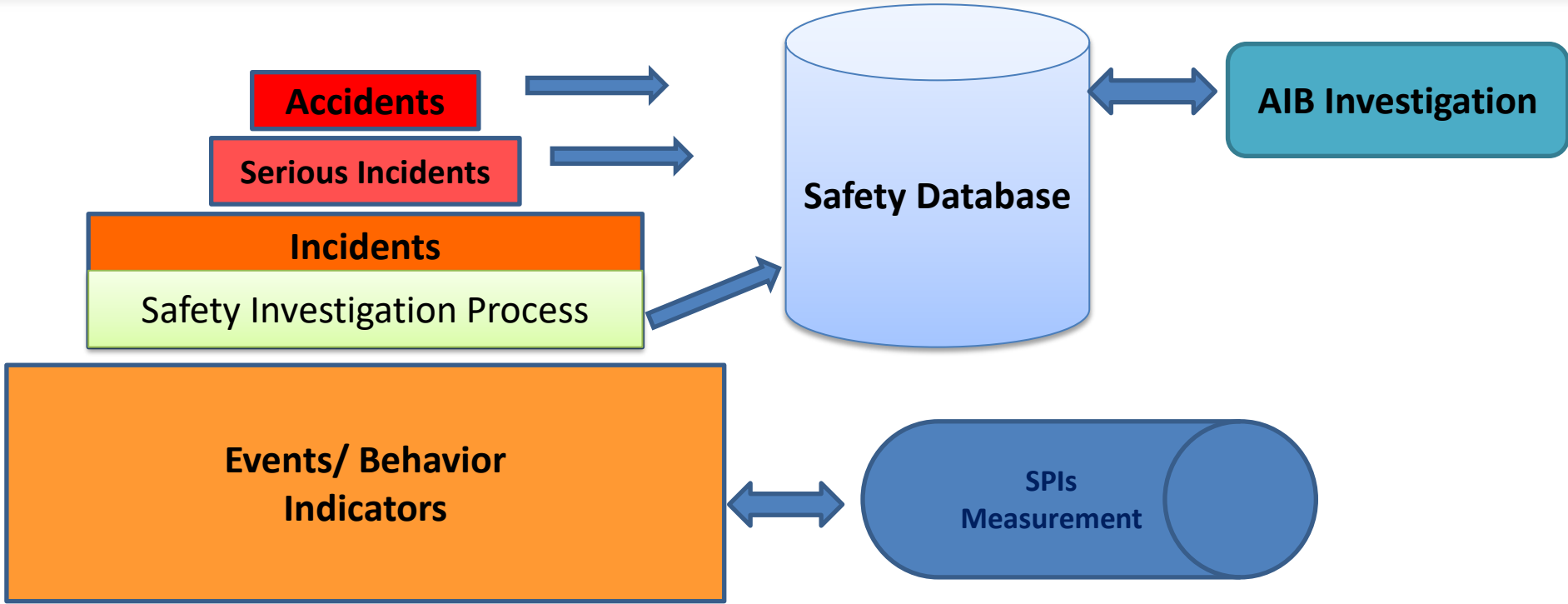




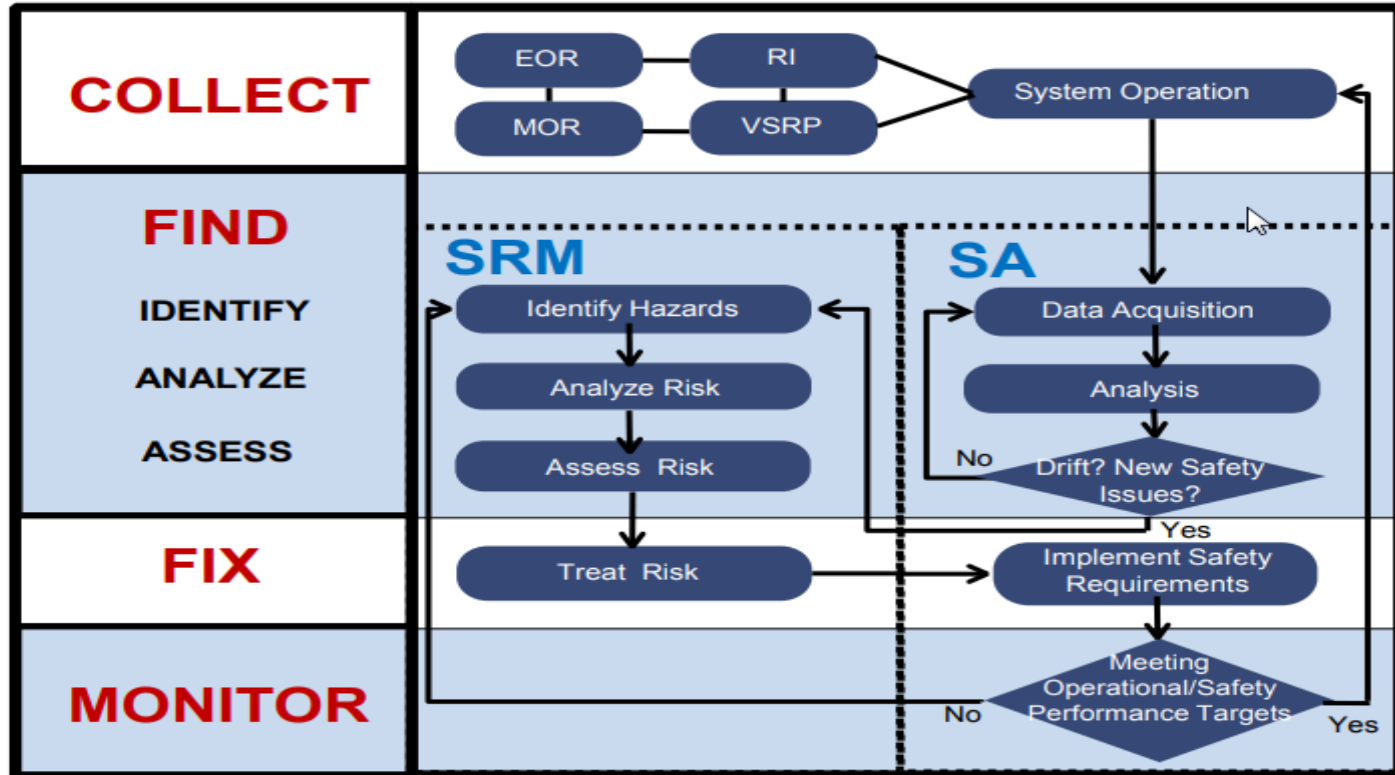
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Collect – Find – Fix – Monitor





Presentation content

Briefing on ICAO Safety Management tools



- 1 *iSTARS*
- 2 *SSP Foundation on iSTARS*
- 3 *SSP GAP Analysis app on iSTARS*
- 4 *Safety Information Monitoring System (SIMS)*
- 5 *Indicator Catalogue*

What is iSTARS

- Web-based system on ICAO Secure Portal
- Hosts web applications to make safety, efficiency and risk analyses
- Reports analysis results on various available data sets
- Aligned to data driven decision making



ICAO iSTARS 3.0
Integrated Safety Trend Analysis and Reporting System

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

Latest News

- 04 PDF generator service interruption [Read +](#)
- 20 REVISED: Upcoming Maintenance (29-30 July) [Read +](#)
- 19 Register your Runway Safety Team [Read +](#)

Welcome to iSTARS 3.0

You and 2 other users are currently online

Hello, Stacey-Marie! Welcome to iSTARS. You have installed 23 apps.

View the Catalogue for the full list of all iSTARS apps, which allow provide granular user access and faster response as they are connected to our cloud based Safety Intelligence Engine (SIE).

Keep in mind that some iSTARS apps are in beta (pre-release), so please contact us if you experience any problems.

View the Catalogue...

You are on a free account. Enjoy.

Most Installed Apps

Total Apps Installed: 27605 (+0 per day)

- ICAO DOCs (1571)
- ADREP et al. (1333)
- USOAP DataTables (1220)

[Go to my Apps >](#)

Analysis Workshop

Unleash all your Safety Data's Potential

Whether you have reactive (accidents) or proactive (low consequence events, audits, inspections, etc.) data, this workshop will help you make the best use out of it.

Latest Applications

[View full catalogue >](#)

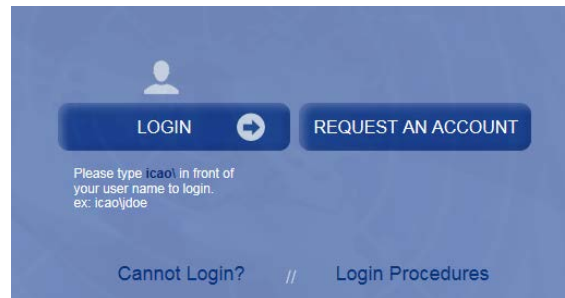
- Contingency Planning
- State Safety Briefing 2018
- Risk Based Surveillance
- Inspector Benchmarking
- Air Transport Accessibility
- SSP Foundation

Tweets by @icao



Access to iSTARS

- Access:
 - **Free of charge**
 - <http://portal.icao.int>
- Available for any category of user
 - Civil Aviation Authorities
 - Government ministries
 - Airlines
 - Service Providers



Group Subscription Request

To Subscribe

If you wish to subscribe to a group, please enter the group name: *

Please enter your group subscription justification: *

* Fields are mandatory

Continue



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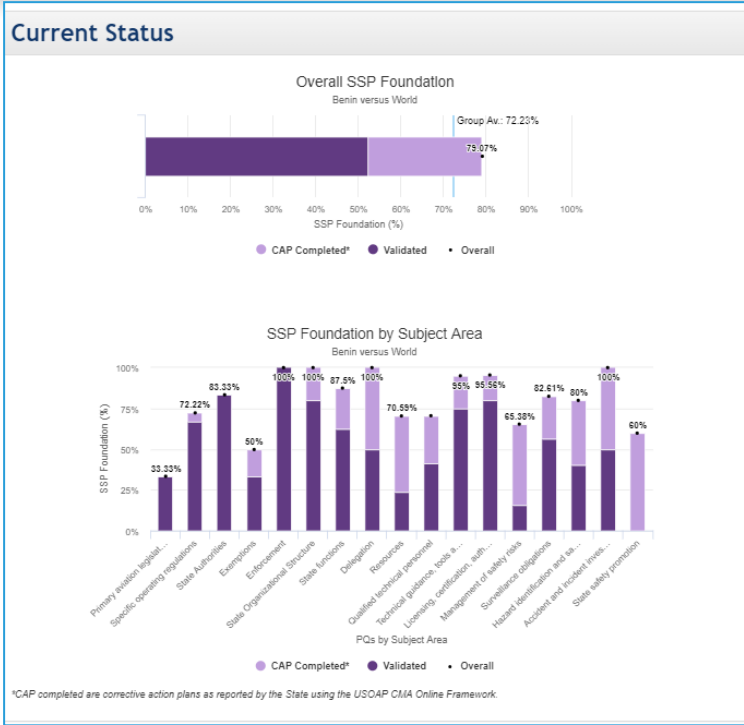
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SSP Foundation

Status of SSP Foundation Protocol Questions



- Contains a sub-set of 299 Protocol Questions (PQs) out of 1,047 questions, the foundation for a State Safety Programme (SSP) implementation.
- Addresses the need to identify the REAL GAP, the SSP Foundation Tool complements the SSP Gap Analysis; and
- Assists States to build a solid safety oversight foundation for SSP implementation



The current Status displays the overall SSP foundation of a State based on the 299 PQs grouped in 17 subjects area.

This section as well displays the completed CAP as reported by the State using the USOAP OnLine Framework and the validated PQs.

The complete list of questions by subject and status can be exported as an .xls

- the percentage of the satisfactory completed PQs and validated by ICAO
- CAP completed : as reported by the State using the USOAP On Line Framework.

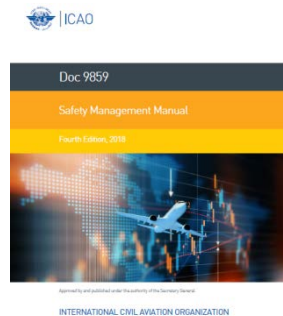
SSP GAP Analysis



SSP Gap Analysis - SMM
4th Ed.
State Safety Programmes

Questionnaire aligned to:

- 4th edition of the Safety Management Manual (SMM) (Doc 9859)
- Annex 19, 2nd Edition, July 2016



Questionnaire				
Click on a component button to display its elements and related questions.				
All Components Safety Policy and Objectives and Resources State Safety Risk Management State Safety Assurance State Safety Promotion				
Number	Question	Component	Sub heading	Status
1.1-01	Has [State] established a national aviation legislative framework that addresses the proactive management of safety in the State?	1. STATE SAFETY POLICY, OBJECTIVES AND RESOURCES	Primary aviation legislation	Implemented
1.4-03	Does the enforcement policy specify the conditions and circumstances under which SPs with an SMS are allowed to deal with, resolve events involving certain safety issues internally, within the context of SMS and to the satisfaction of the State authority?	1. STATE SAFETY POLICY, OBJECTIVES AND RESOURCES	Primary aviation legislation	Action defined but not started
1.4-05	Does the SSP enforcement policy include provision to prevent the use or disclosure of safety data for purposes other than safety improvement?	1. STATE SAFETY POLICY, OBJECTIVES AND RESOURCES	Primary aviation legislation	Implemented
1.4-08	Does the SSP enforcement policy include provision to protect the sources of information obtained from voluntary incident reporting systems?	1. STATE SAFETY POLICY, OBJECTIVES AND RESOURCES	Primary aviation legislation	Implemented
1.2-18	Does the State periodically review specific operating regulations, guidance material and implementation policies to ensure they remain relevant and appropriate?	1. STATE SAFETY POLICY, OBJECTIVES AND RESOURCES	Specific operating regulations	New question

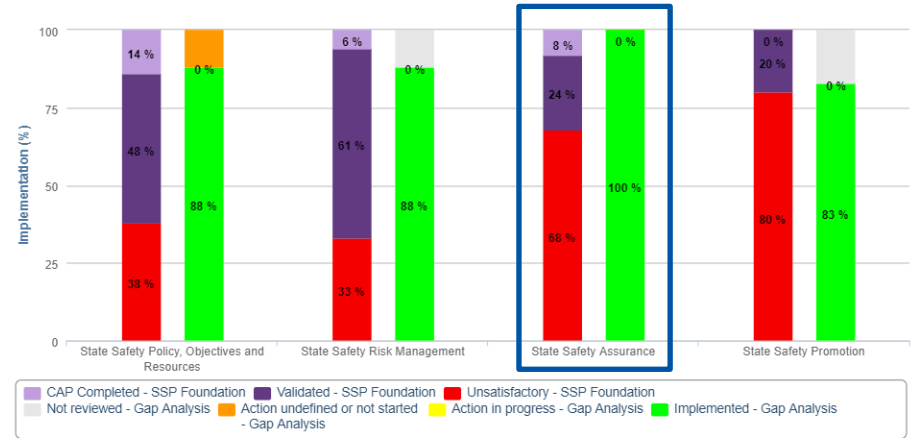
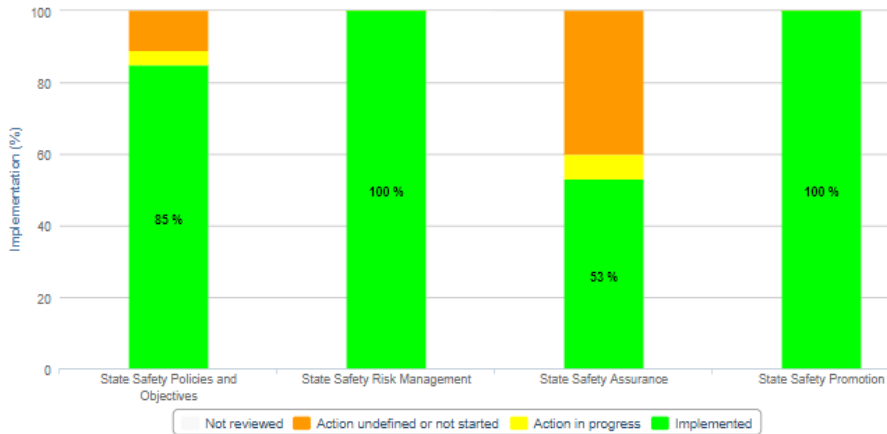


SSP GAP Analysis

Results

Addition:

- SSP Foundation results



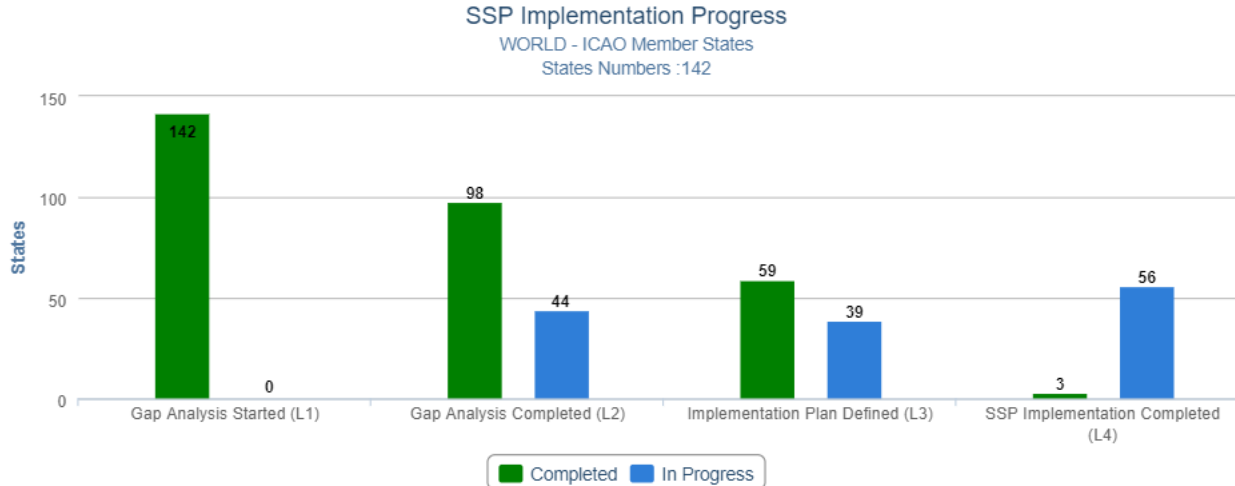
Click the bar above to show detail breakdown.



SSP GAP Analysis

Statistics

Select Group WORLD - ICAO Member States ▼ Consider only State's with USOAP EI above:
None ▼
[View group composition](#)





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SIMS

Safety Information
Monitoring
System



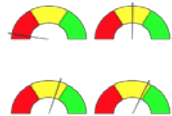
SIMS

Safety Information Monitoring System



Connect

(data, States, service providers)



Monitor

(performance, indicator,
improvement)



Identify

(hazards, risks)



Share

(safety information)



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Who connects to SIMS

ICAO Member State

Service Providers

Air traffic
services
(ATS)
providers

Air
operators

Operators of
certified
aerodromes

Type design or
manufacture of
aircraft, engines
or propellers

Approved
Training
Organizations

Approved
maintenance
organizations

SIMS data processing



<https://www.icao.int/safety/Pages/Indicator-Catalogue.aspx>



SIMS Applications



Airspace Monitoring

The application allows for the monitoring of performance through horizontal flight efficiency (HFE) indicators. Indicators are calculated by FIR, using ADS-B positioning data.

The application also contains indicators related to airspace occurrences such as TCAS alerts.



Approach Monitoring

The purpose of this application is to monitor vertical flight efficiency such as continuous descent operations (CDO).

For each airport, the application also monitors approach related events such as missed approaches.



Occurrences

This application is using occurrences reported to States through their mandatory and voluntary reporting systems.

Indicators include number of severe occurrences as well as a reporting index.



Runway Safety

The application monitors landings with tailwind exceeding 5 knots as well as other runway safety related leading indicators.



Ramp Inspections

This application uses foreign ramp inspection data collected from inspecting States. The application allows for prioritization of ramp inspections and monitoring of air operator's compliance.



ADS-B Coverage

This application allows for selection of any airspace and airport and determines the current ADS-B coverage of that zone. It is used to evaluate if an airspace or airport is suitable to be monitored under SIMS.

SIMS Applications projects



Airspace Monitoring

The application allows for the monitoring of performance through horizontal flight efficiency (HFE) indicators. Indicators are calculated by FIR, using ADS-B positioning data.

The application also contains indicators related to airspace occurrences such as TCAS alerts.

- ICAO initiates project for LHD monitoring with CARSAMMA on SIMS
- RMACG meeting agreed for RVSM airspace monitoring application on SIMS
- Under development TCAS-RA hotspots map for NACC and SAM region



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SIMS Applications projects

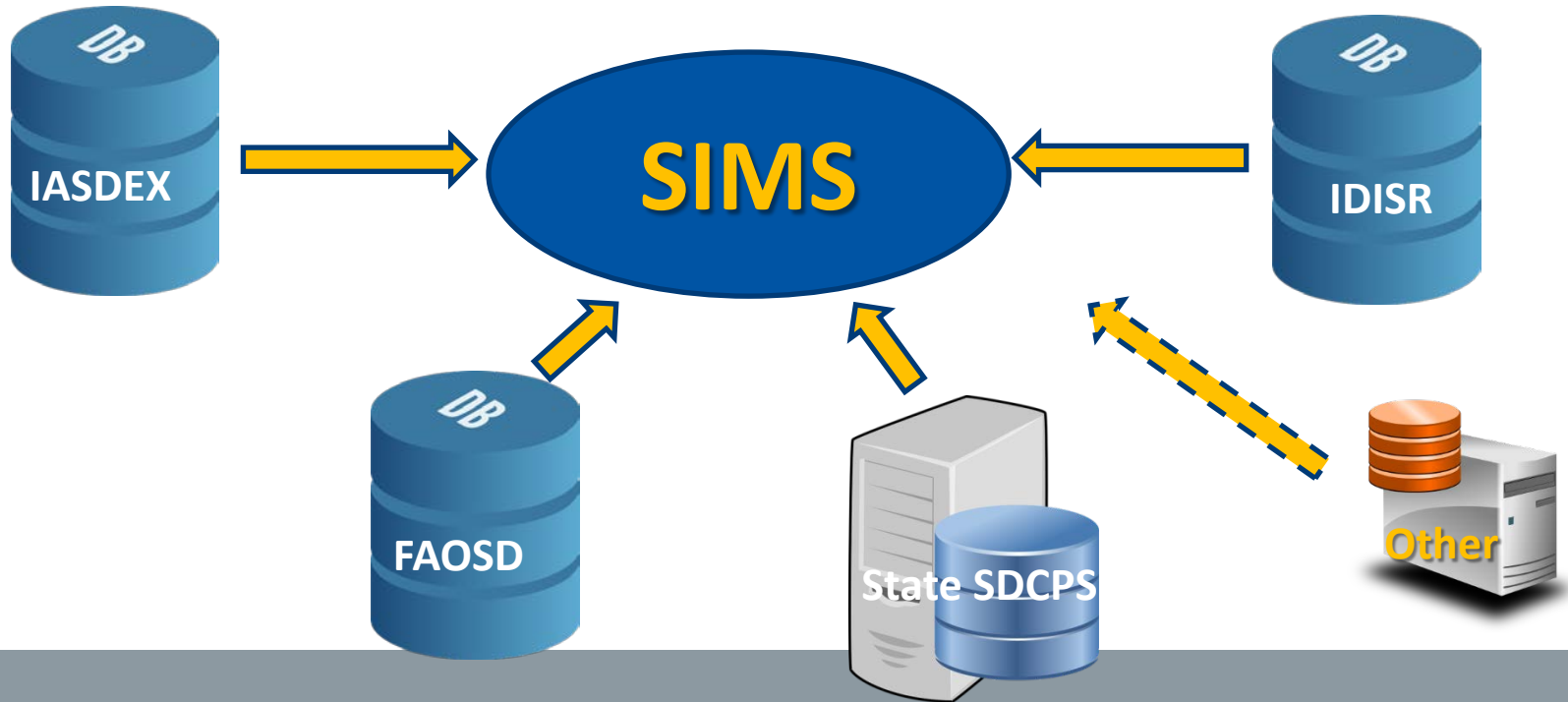


Ramp Inspections

This application uses foreign ramp inspection data collected from inspecting States. The application allows for prioritization of ramp inspections and monitoring of air operator's compliance.

- Project for RASGs. States can monitor indicators within their RASG.
- Contains foreign ramp inspections to help States with risk-based surveillance and prioritization of their inspections.
- Only State has access to this application, and only inspectors can add or modify inspections on the app.
- Aim to have a global ramp inspections application

A global Ramp Sharing platform

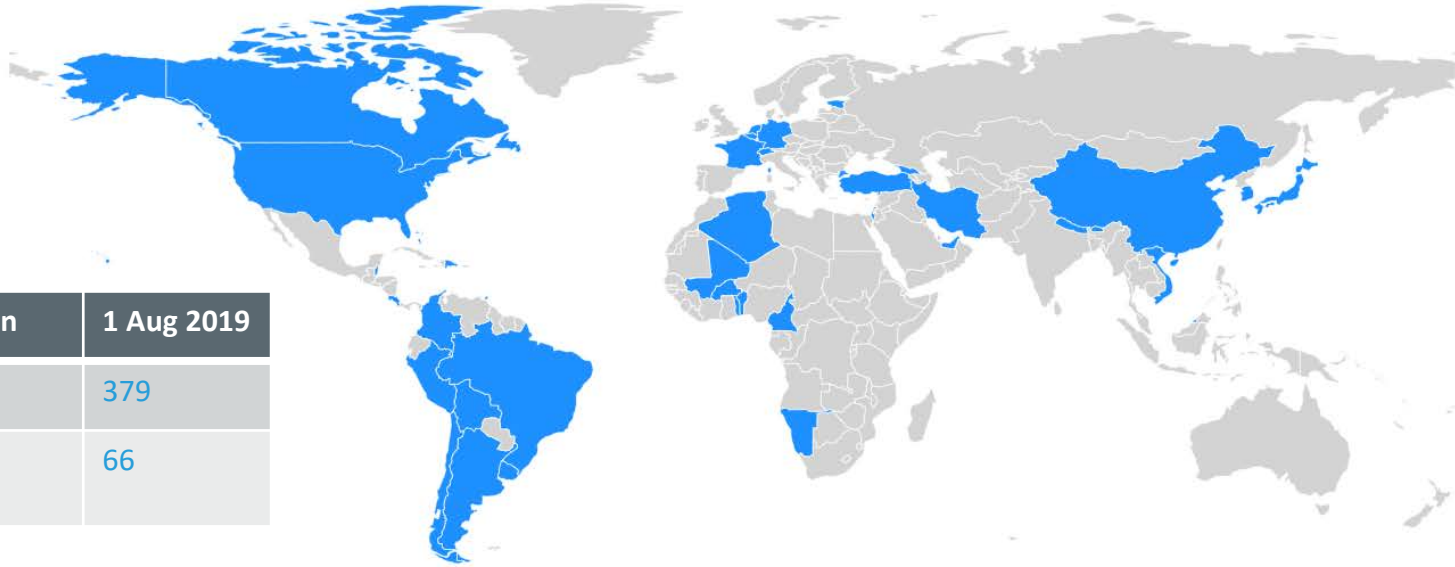




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Access to SIMS apps



Description	1 Aug 2019
Users	379
States connected	66



How to become participant and connect on SIMS

- ✈ Letter of interest via ICAO Regional Offices. Include focal point(s)
- ✈ Collaborate with service providers to join SIMS. Include focal point(s)
- ✈ Obtain access details, connect, contribute data, start monitoring
- ✈ International organizations:
 - Become member of the Research and Development group
 - Sign MoU for third parties as contributor



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Why use SIMS



Supports
the identification of
hazards and risks



Allows
monitoring of safety
performance



Resolves
need for in-house
analytics technology



Facilitates
data-driven
decision making

For more information about SIMS contact
sims@icao.int



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INDICATOR CATALOGUE

USE ICAO'S INDICATOR CATALOGUE TO
BUILD SAFETY PERFORMANCE INDICATORS
FOR YOUR ORGANIZATION

ICAO / Safety / Indicator Catalogue

Global Plans

Global Aviation Safety
Plan (GASP)

Safety Priorities

Runway Safety

Controlled Flight Into
Terrain (CFIT)

Indicator Catalogue

Indicators are metrics that provide information on the status, level, condition or change of factors that are crucial to the success of an organization or its operations. They are an essential component of data-driven decision-making and measuring the achievement of goals in various areas.



The indicator Catalogue

- Provides a framework for a harmonized approach to the development of safety and air navigation indicators.
- Helps users analyze aviation data, draw actionable information and implement data-driven decision making.



Indicator Catalogue

Supports for the effective implementation of:

- State Safety Programme (SSP);
- Safety Management System (SMS);
- goals and targets of ICAO's Global Aviation Safety Plan (GASP);
- targets of ICAO's Global Air Navigation Plan (GANP).



Indicator Catalogue

The indicators can be used as safety performance indicators (SPI), as per the requirements outlined in *Annex 19 — Safety Management* (Chapter 3 and Appendix 2).

▸ Surveillance Activities (2)

1.001 Effective implementation (EI)

1.002 Runway inspections by finding category and inspection period

▸ Occurrences (4)

1.101 Accident rate by operation type and occurrence category

1.102 Number of accidents by operation type, occurrence category, risk category and injury level

1.103 Fatality rate by operation type and occurrence category

1.104 Number of fatalities by operation type and risk category

▸ Runway Safety (5)

1.201 Runway safety occurrences by occurrence category and occurrence class

1.202 Wildlife strikes by occurrence class and flight phase

1.204 Long landings

1.205 Tailwind landings by threshold level

1.206 Runway remaining



Indicator Catalogue

few reminders

- The catalogue is not a prescriptive tool.
- Using the indicators is not mandatory.
- Users may still need to customize selected indicators to suit their needs.
- The catalogue is not all-encompassing.
- It will continue to evolve and grow.

PART A: INDICATOR IDENTIFICATION	
1. INDICATOR	
<i>Enter a name for the indicator.</i>	
2. DESCRIPTION	
<i>Enter a brief description for the indicator.</i>	
3. ICAO STRATEGIC OBJECTIVE	
<input type="checkbox"/> Safety	<input type="checkbox"/> Capacity
<input type="checkbox"/> Efficiency	<input type="checkbox"/> Security
<input type="checkbox"/> Environment	



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