



2018

ICAO'S FIRST iUG Meeting

SAFE TRAVELS

*Committed to leave
no one behind*

ICAO's Agenda for SAFETY

Catalin Radu

*Deputy Director, Aviation
Safety*

Air Navigation Bureau - ICAO

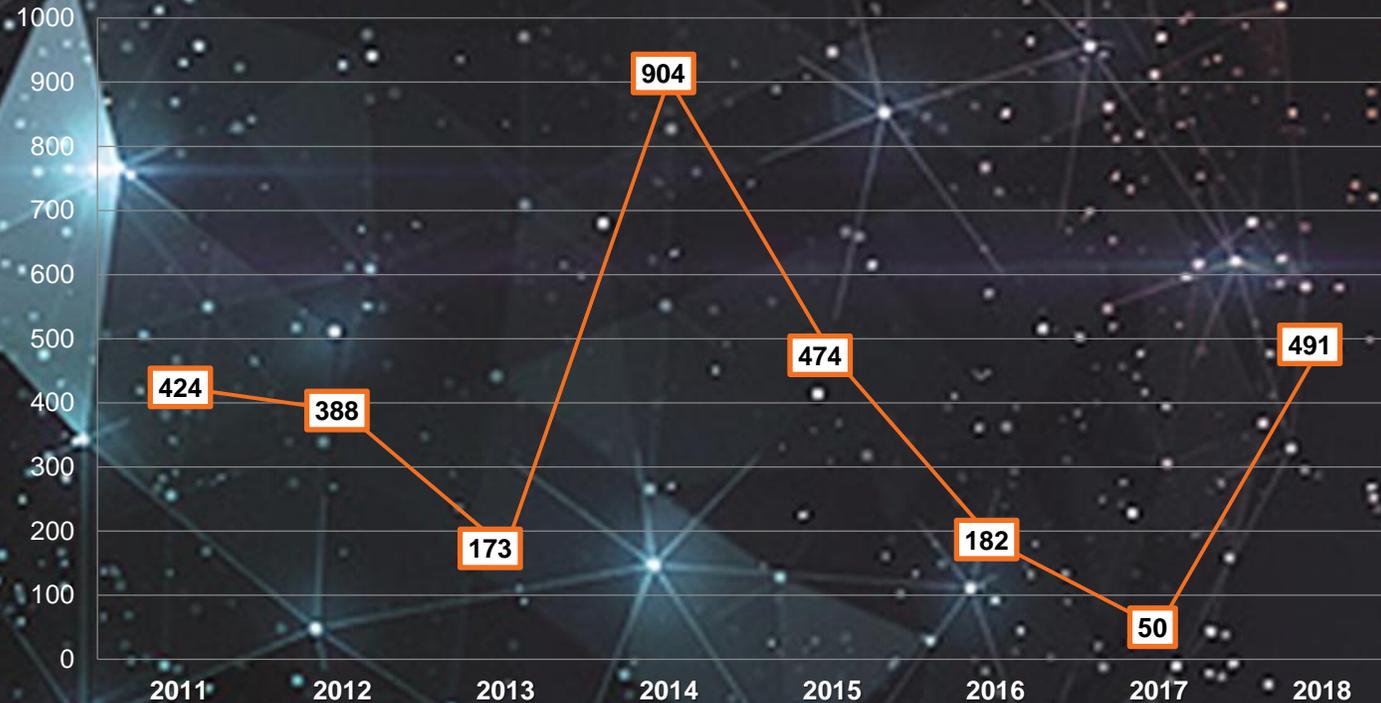
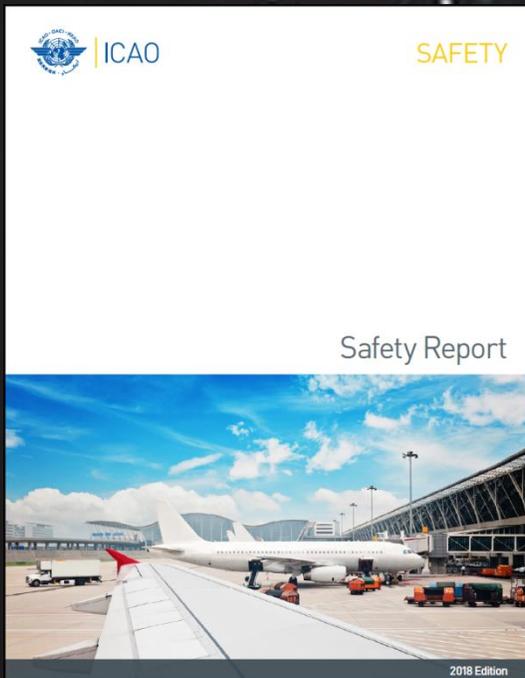




**Our Aspirational
Safety Goal**

ZERO FATALITIES

Fatalities Trend for Scheduled Commercial Flights (2011 – 2018)



Estimate

4.4 Bill Pax

We are not that far...

90% countries with Zero Fatalities

Regional Accident Statistics: 2015

RASG	Estimated Departures (in millions)	Number of accidents	Accident rate (per million departures)	Fatal accidents	Fatalities
AFI	0.8	6	7.3	0	0
APAC	9.8	24	2.5	3	98
EUR	8.1	24			
MID	1.2	3			
PA	13	34			
WORLD	33	92			

Regional Accident Statistics: 2016

RASG	Estimated Departures (millions)	Number of Accidents	Accident Rate (per million departures)	Fatal Accidents	Fatalities
AFI	0.9	1	1.2	1	1
APAC	10.7	19	1.8	2	50
			2.8	2	64
			2.3	2	67
			2.1	0	0
			2.1	7	182

For 2018 (non validated results)

AFI (WACAF/ESAF)

ZERO fatalities

Regional Accident Statistics: 2017

RASG	Estimated Departures (millions)	Number of Accidents	Accident rate (per million departures)	Fatal accidents	Fatalities
AFI	1.3	7			
APAC	11.8	20	1.7	1	2
EUR	8.7	12	1.4	3	47
MID	1.3	2	1.6	0	0
PA	13.5	47	3.5	1	1
WORLD	36.6	88	2.4	5	50

In the past, some regions have already achieved zero fatalities



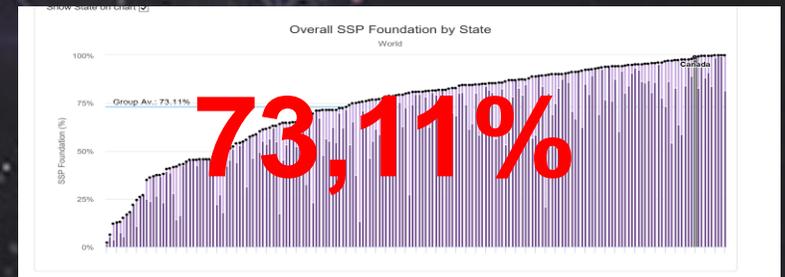
Challenges of **new technologies**

Air traffic is predicted to **double** by 2030

How can we ensure the **safe** realization of this growth?

Risks/barriers to achieve our goal

- Effective Implementation of SARP's
- ICAO's Safety priorities: Operational Risks
- Current and emerging issues



All 3 are introducing risks in the system

Safe Travels: ICAO's agenda for Safety



Effective Implementation of SARPs

SSB 2018

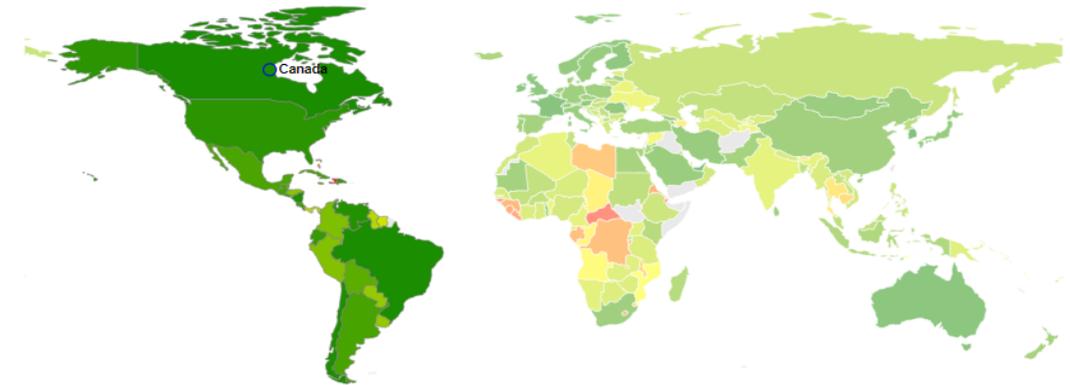
Performance Dashboard

Indicator	Target	Value	Achieved
USOAP EI <i>USOAP overall EI (%)</i>	60%	95.17%	Yes
Significant Safety Concerns (SSCs) <i>Number of SSCs</i>	0	0	Yes
Fatal Accidents <i>Number of fatal accidents in last 5 years</i>		3	⚠️
Aerodrome Certification <i>Validated status of USOAP Protocol Questions (PQ) 8.061, 8.063 and 8.068</i>	Satisfactory	Satisfactory	Yes
State Safety Programme (SSP) Foundation <i>Percentage of SSP Foundation protocol questions (PQs) validated by USOAP or submitted as completed</i>	100%	98.9%	No
State Safety Programme (SSP) <i>Level of SSP implementation</i>	Level 2	Level 3	Yes
IOSA <i>Number of IOSA certified operators</i>	>0	9	Yes
FAA IASA <i>IASA categorisation</i>	Cat 1	Cat 1	Yes
EU Safety List <i>Number of operational restrictions</i>	Unrestricted	Unrestricted	Yes
PBN <i>Percentage of International Instrument runways with PBN approaches</i>	100%	96.97%	No
Global Aviation Training Activities <i>Number of courses delivered or developed by TRAINAIR PLUS Members in the last 12 months</i>	>0	78	Yes
Corrective Action Plan Update <i>Number of updates in the last 12 months on the Online Framework (OLF)</i>	>0	5	Yes
Positive Safety Margins <i>Number of areas (Operations, Air Navigation, Support) with a positive Safety Margin</i>	3/3	3	Yes

Note: The targets are agreed global or regional performance targets, as applicable. Fatal accidents are by State of Occurrence or State of Operator on scheduled commercial flights with aircraft over 5.7t for the last 5 years.

Universal Safety Oversight Audit Programme (USOAP)

Global USOAP Results

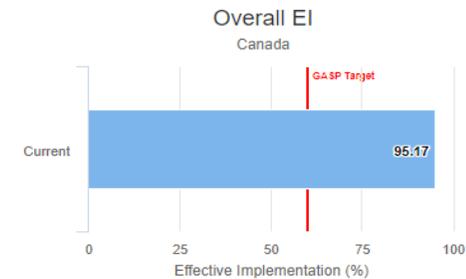


Overall EI
0% 50% 100%

Canada was audited in 2005.

The current overall result for Canada is 95.17 % EI which is above the world average of 66.56%.

✓ Canada has achieved the target of 60% EI, as suggested by the Global Aviation Safety Plan (GASP) by 2017.



Canada is ranked 1/34 in RASG-PA with respect to overall effective implementation. Within this group, 73.53% have reached the target of 60% EI with an average EI of 73.79%. Canada rates above the average of RASG-PA.



Solution Center

Report on Protocol Questions (PQ)
Findings and Guidance
for Resolutions

PQ and Guidance

Priority Criteria

SARPs and Guidance

Best Practices
(Templates, Other State's, Industry)

Training

Regional/Global Initiatives

Software tools available

States that have resolved the PQ

Resolution of Safety Concerns (CE-8) in Aerodromes (AGA) ¹

8.329 - Does the State collect and forward wildlife strike reports to ICAO?

CE-8 Aerodromes Safety procedures for aerodrome operations

Moderate | 52.73% EI in RASG-EUR

1) Review national procedure for recording wildlife strikes. 2) Review established requirements. 3) Evaluate mechanism to ensure effective implementation of the reporting and rectification action. 4) Review evidence to confirm.

Refs: STD A14, Vol I 9.4.2 GM Doc 9332 1.2.1

Available Documentation

- Annex 14: Aerodromes Volume I - Aerodrome Design and Operations Current edition (consolidated)
Email as [en](#) [zh](#) [ru](#) [es](#) [fr](#) [ar](#)
- Doc 9332: Manual on the ICAO Bird Strike Information System (IBIS) Third edition
Email as [en](#)

Best Practices shared by States and international Organizations

- OPERATIONS AT PLATEAU AIRPORTS shared by China
CAAC's approach to managing operations at plateau airports by setting out operation access conditions different from regular airports and special operational requirements for the reduction of safety risks in order to ensure safe and smooth operations at plateau airports.
- QUICK RESPONSE AFTER EARTHQUAKE shared by Japan
- CERTIFICATION OF FIRMS PROVIDING AIRCRAFT GROUND HANDLING SERVICES shared by Dominican Republic
certification requirement for aircraft ground handling service providers

Available Training

- Aerodrome Safety Management Incorporating PANS-Aerodromes by Trainair Plus
- Airport Bird Strike Management by Trainair Plus
- Communication Procedures for Airside Operations by Trainair Plus

Programs available in your region

- IATA Operational Safety Audit (IOSA) by IATA for States in World
The IATA Operational Safety Audit (IOSA) program is an evaluation system designed to assess the operational management and control systems of an airline. All IATA members are IOSA registered and must remain registered to maintain IATA membership.

Available Tools

- EMPIC-EAP by EMPIC GmbH
EMPIC-EAP® is the central software solution to manage and to check the implementation of aviation specific regulations. The aviation authority establishes a "Safety and Security Oversight Management System" when using EAP.

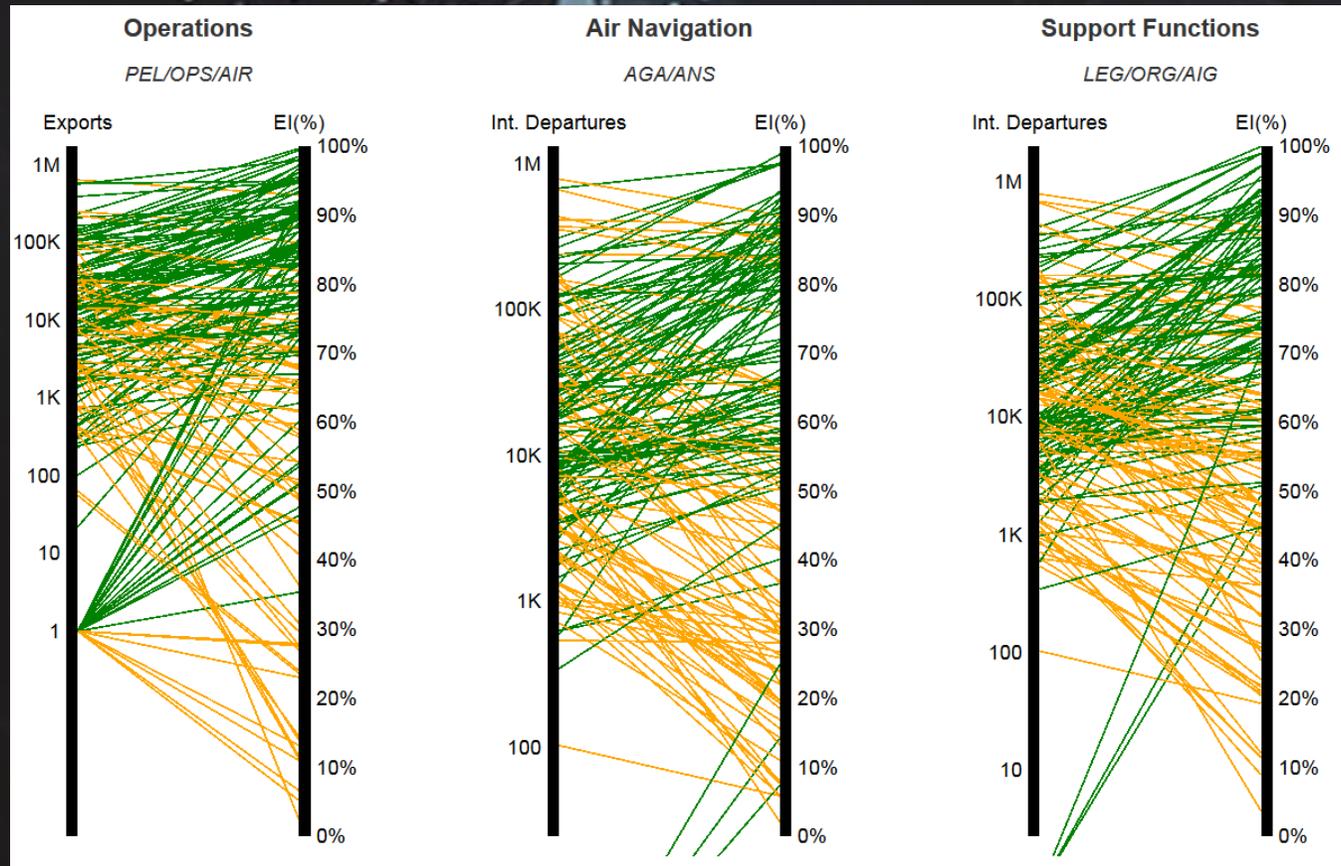
Partners

In RASG-EUR, the following States have solved this question. The States in bold have a comparable aviation activity.

Bosnia and Herzegovina, Spain, Turkey, Latvia, Netherlands, Tunisia, Denmark, Republic of Moldova, Belgium, United Kingdom of Great Britain and Northern Ireland, Sweden, Italy, Czech Republic, Poland, France, Austria, Norway, Switzerland, Greece, Armenia, Germany, Finland, Georgia, Israel, Bulgaria, Morocco, Uzbekistan, Luxembourg, Ireland

SAMPLE

Evolution of Analysis: Safety Margins



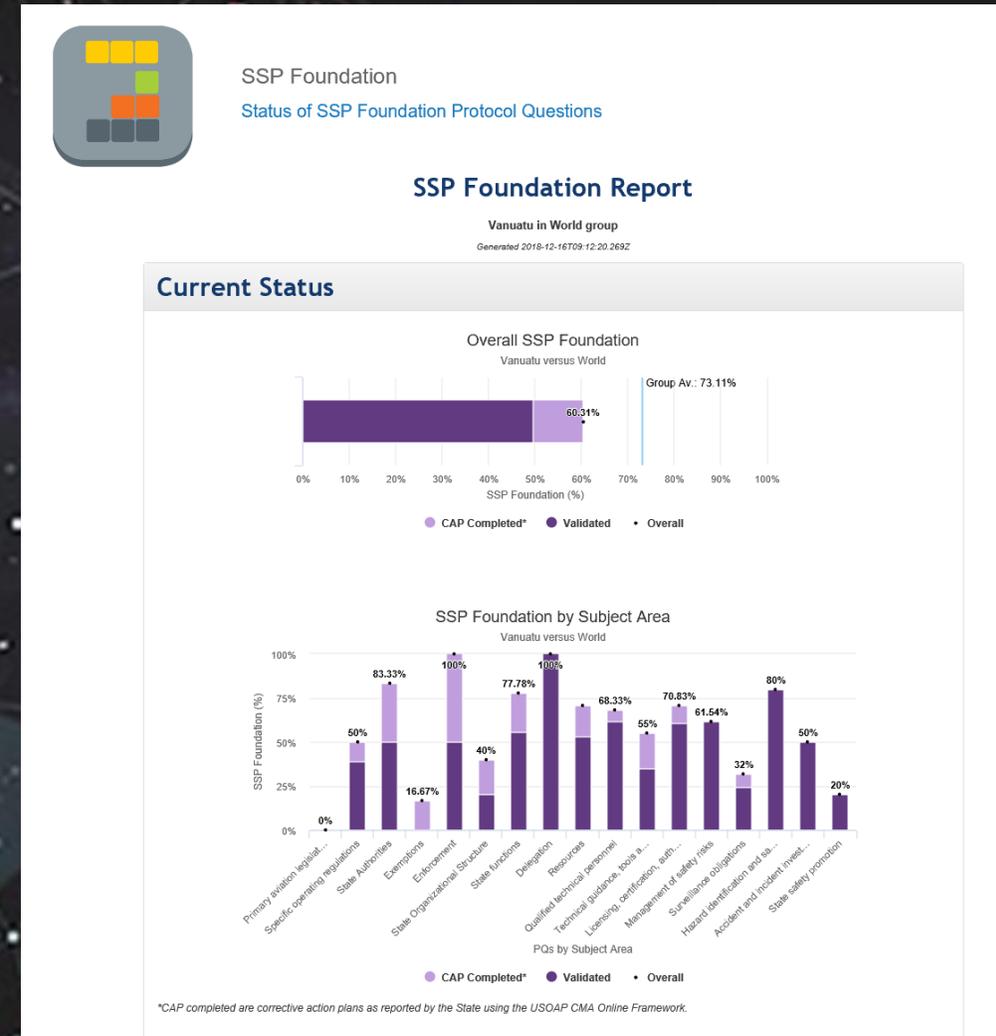
Safety Margin

Risk-based prioritization model based on a State's Traffic and the level of Effective Implementation (EI) in the related technical areas at risk (Operations, Air Navigation, Support Functions)

SSP pre-requisites

Identifies pre-requisites to an effective and sustainable SSP implementation

A subset of ~300 USOAP PQs in 19 areas with more granularity than the 60% EI threshold;



Evolving Safety Performance

- **iMPLEMENT** is a data-driven decision making process that:
 - **Assesses the current status** of aviation (*Safety Briefings*)
 - **Identifies the best solutions** in order to maintain or improve the aviation capability of the State (*Solution Center*)
 - **Evaluates the needs of the aviation system** (money, people, infrastructure) (*CAA HR Tools, PAINT/iAID, etc.*)
 - **Identifies resources** through existing national, regional, or global mechanisms (*ASIAP, SAFE Fund, etc.*)
 - **Showcases the real added value of air transport** and the socio-economic return on investment of aviation

A 'NO COUNTRY LEFT BEHIND' Initiative:

iMPLEMENT

Facilitating Data-Driven Decisions for Aviation



State Safety Briefing



Regional Safety Briefing



Aerodrome Briefing



Solution Center

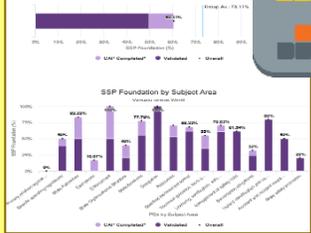


Identify Risks

	LEG	ORG	PEL	OPS	AIR	AIG	ANS	AGA
CE-1	9					4		
CE-2	4		2	6	8	9	4	7
CE-3		1	1	2	2	1	1	3
CE-4			4	4	5	3	6	1
CE-5			1	2	1	19		5
CE-6			3	15	2		3	10
CE-7			6	5	3		5	9
CE-8			1	2	2	4		

State Safety Briefing

SSP Foundation



Reporting on current State risks



Prioritize and Offer Solutions

Solution Center

	LEG	ORG	PEL	OPS	AIR	AIG	ANS	AGA
CE-1	9					4		
CE-2	4		2	6	8	9	4	7
CE-3		1	1	2	2	1	1	3
CE-4			4	4	5	3	6	1
CE-5			1	2	1	19		5
CE-6			3	15	2		3	10
CE-7			6	5	3		5	9
CE-8			1	2	2	4		

Prioritizing risks & providing corrective actions



Identifying the needs



Providing practical solutions to prioritized risks



Resourcing the needs

RESOURCING THE NEEDS

ASIAP

Aviation Development Funds

CASI

Technical Cooperation Assistance

Aviation Benefits

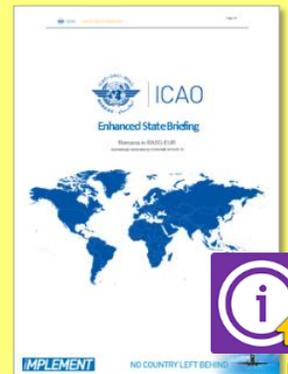
SOCIO-ECONOMIC BENEFITS OF AVIATION

	LEG	ORG	PEL	OPS	AIR	AIG	ANS	AGA
CE-1	9					4		
CE-2	4		2	6	8	9	4	7
CE-3		1	1	2	2	1	1	3
CE-4			4	4	5	3	6	1
CE-5			1	2	1	19		5
CE-6			3	15	2		3	10
CE-7			6	5	3		5	9
CE-8			1	2	2	4		

ENHANCED SAFETY

3.4% of global GDP
58.1 million jobs supported by aviation activities

ECONOMIC DRIVER



GASOS (RSOO+)



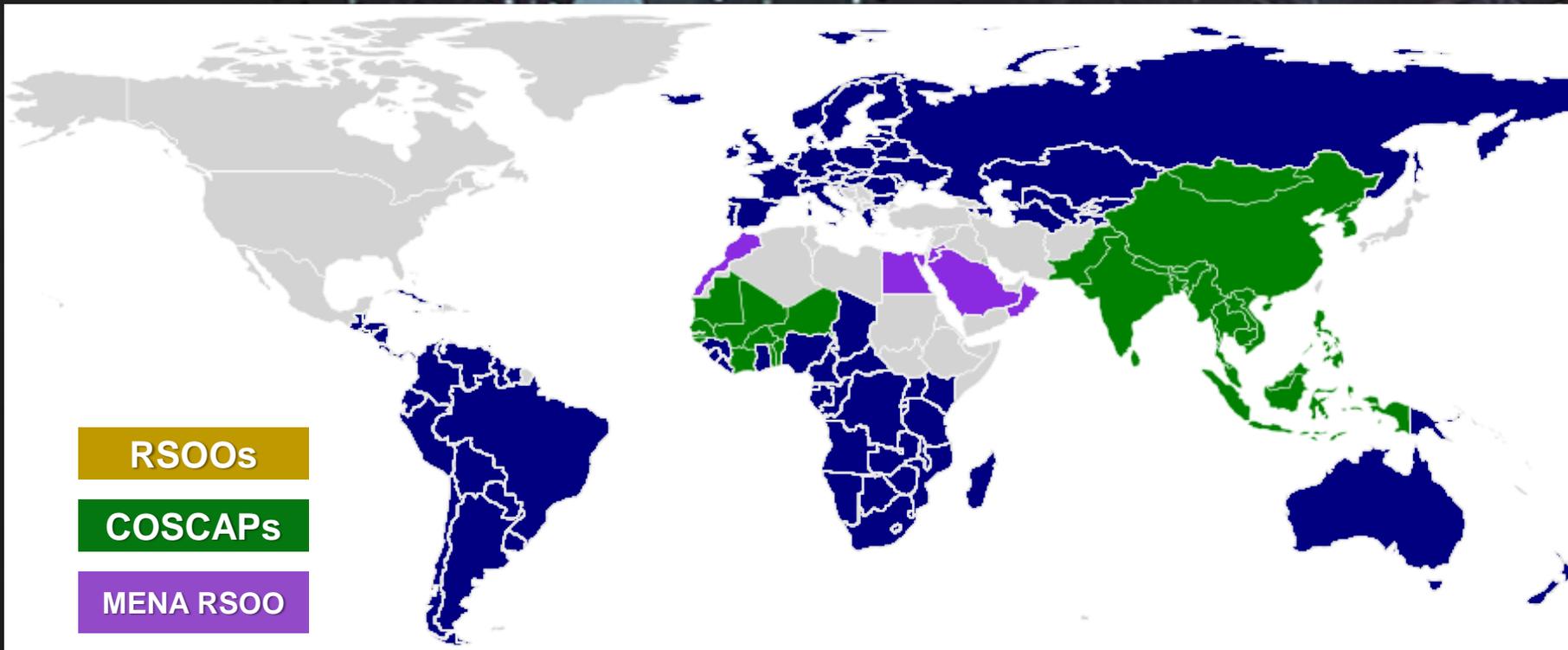
Forum



SAFETY

On Regional Safety Oversight
Organisations (RSOOs) For Global Aviation Safety

22 - 24 March 2017, Ezulwini, Swaziland



**161 Member States
(84%)**

Global EI > 95%

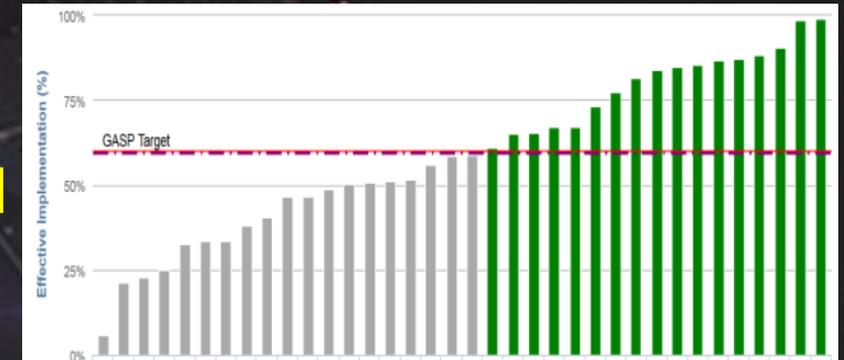
Evolution of RASGs

- RASGs as the **leaders for the management of regional operational risk environment**, as reflected in the Global Aviation Safety Plan (GASP)



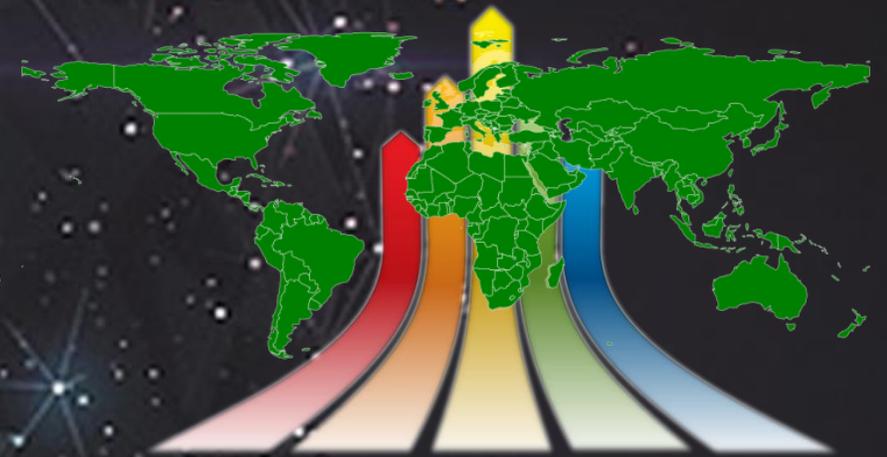
Evolution of RASGs

- RASGs as the **leaders for the management of regional operational risk environment**, as reflected in the Global Aviation Safety Plan (GASP)
- RASGs to assist States in **identifying hazards and defining their own specific targets**
 - From 60% EI to an **acceptable Safety Margin** for each State
 - Mapping the risk



Evolution of RASGs

- RASGs as the **leaders for the management of regional operational risk environment**, as reflected in the Global Aviation Safety Plan (GASP)
- RASGs to assist States in **identifying hazards and defining their own specific targets**
 - From 60% EI to an **acceptable Safety Margin** for each State
 - Mapping the risk
- RASGs to **harmonize and avoid overlaps**
 - Between States
 - Between RASGs



Safe Travels: ICAO's agenda for Safety

Operational Risk

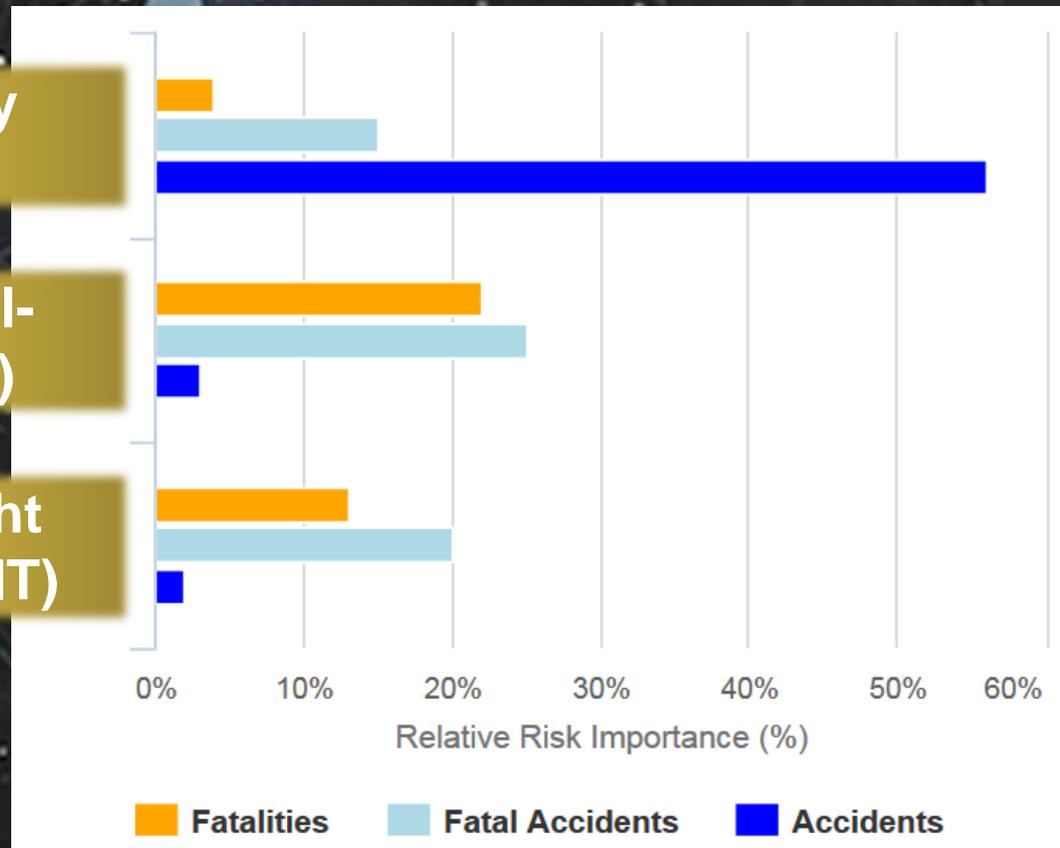


Safety Priorities: Operational Risks

Runway Safety related (RS)

Loss of Control-Inflight (LOC-I)

Controlled Flight Into Terrain (CFIT)



Other accident priorities? (i.e. by Region)

CFIT
Controlled Flight Into Terrain

MME
Problem

C-I

Generate indicators



Benefits

Support

the identification of hazards and risks

Allow

monitoring of safety performance

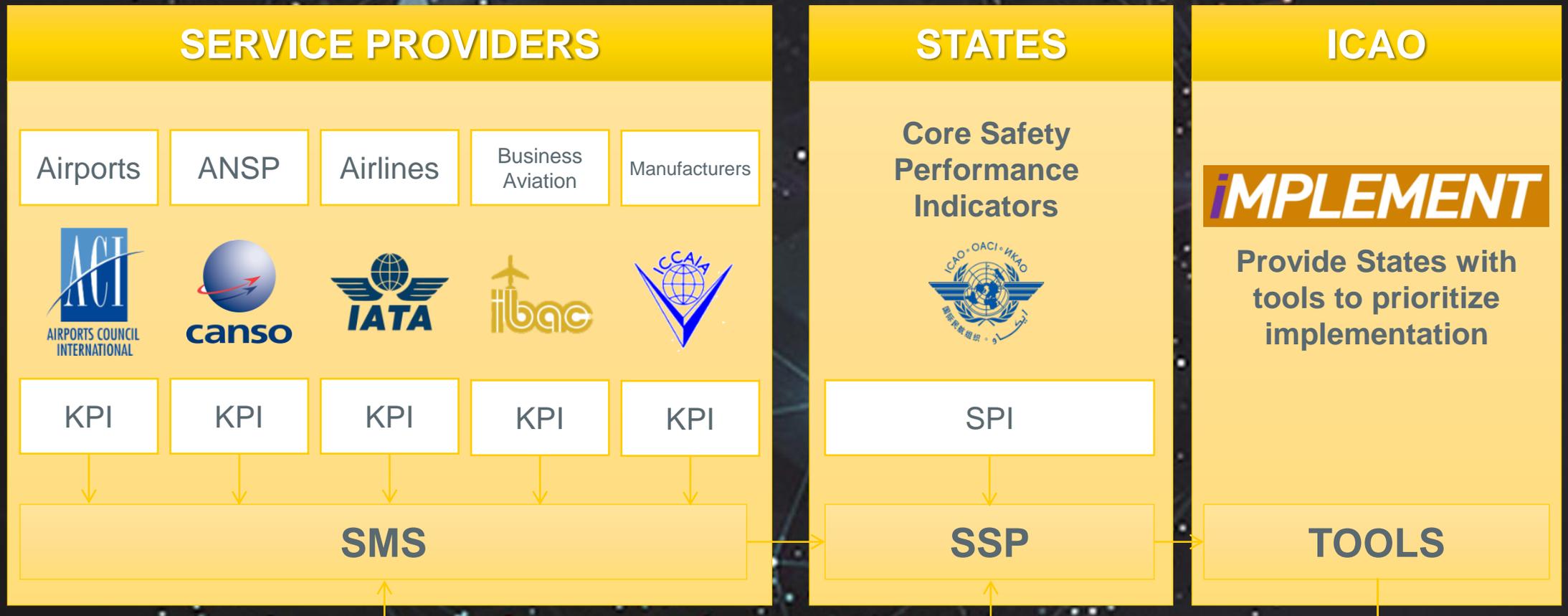
Resolve

need for in-house analytics technology

Facilitate

data-driven decision making

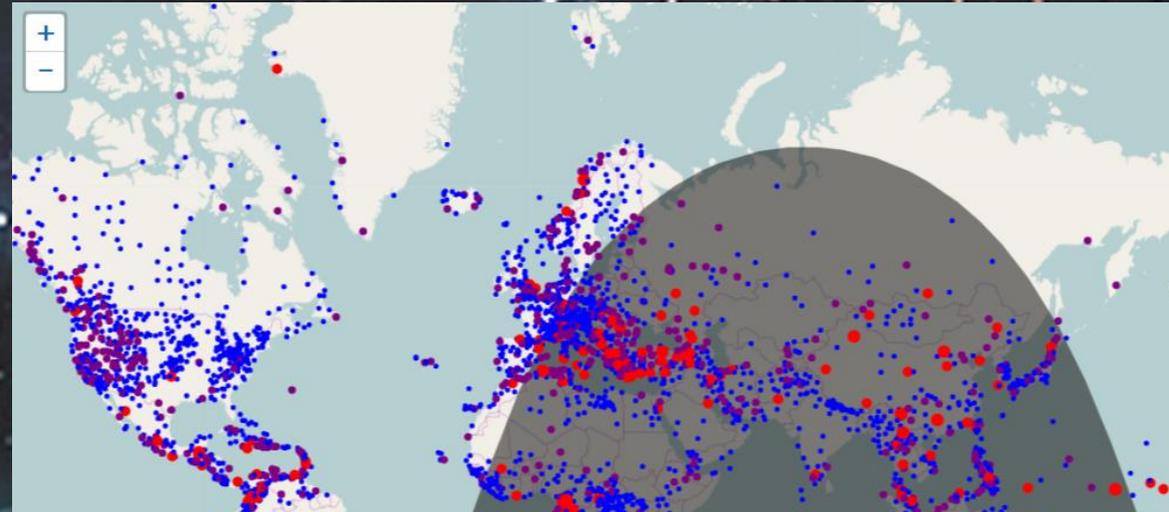
Information Sharing and Exchange



Risk Mitigation: Managing the Hazards

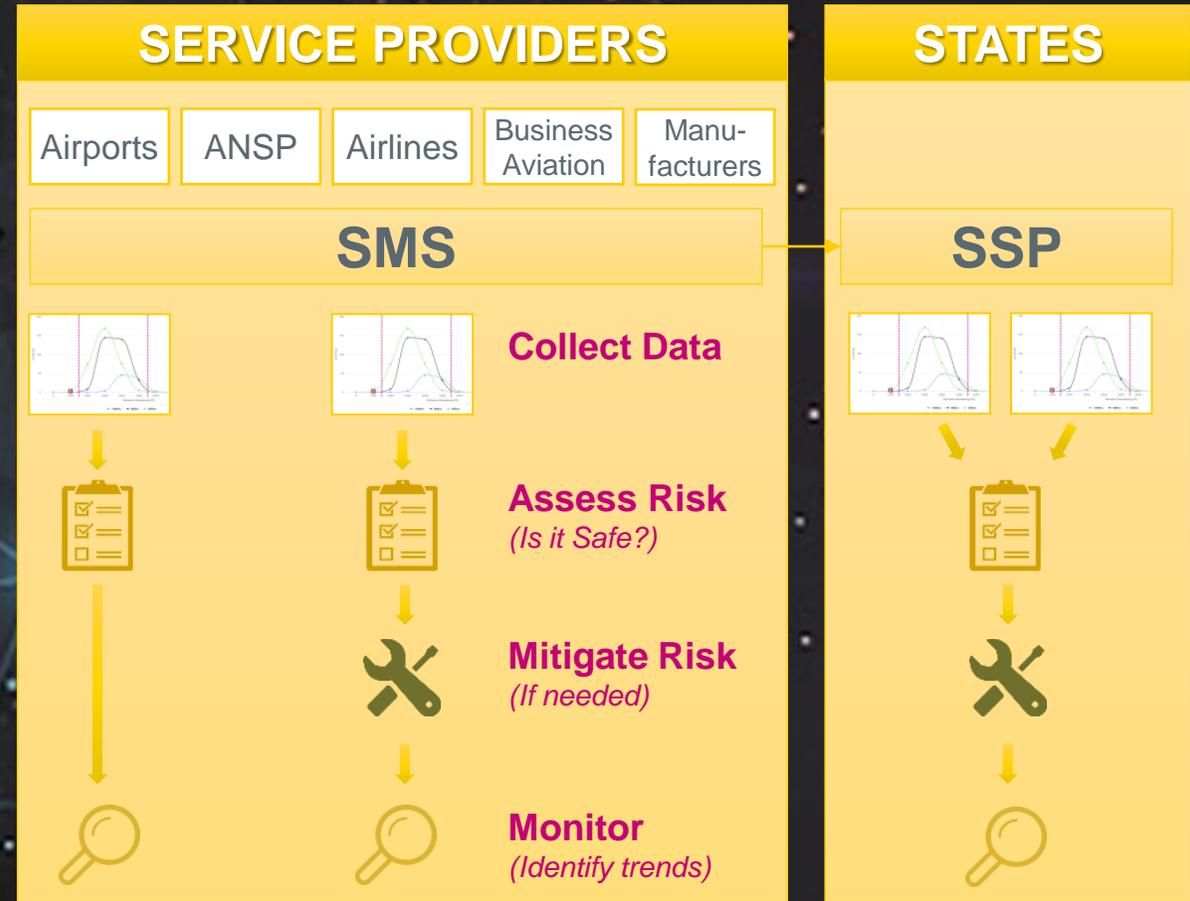
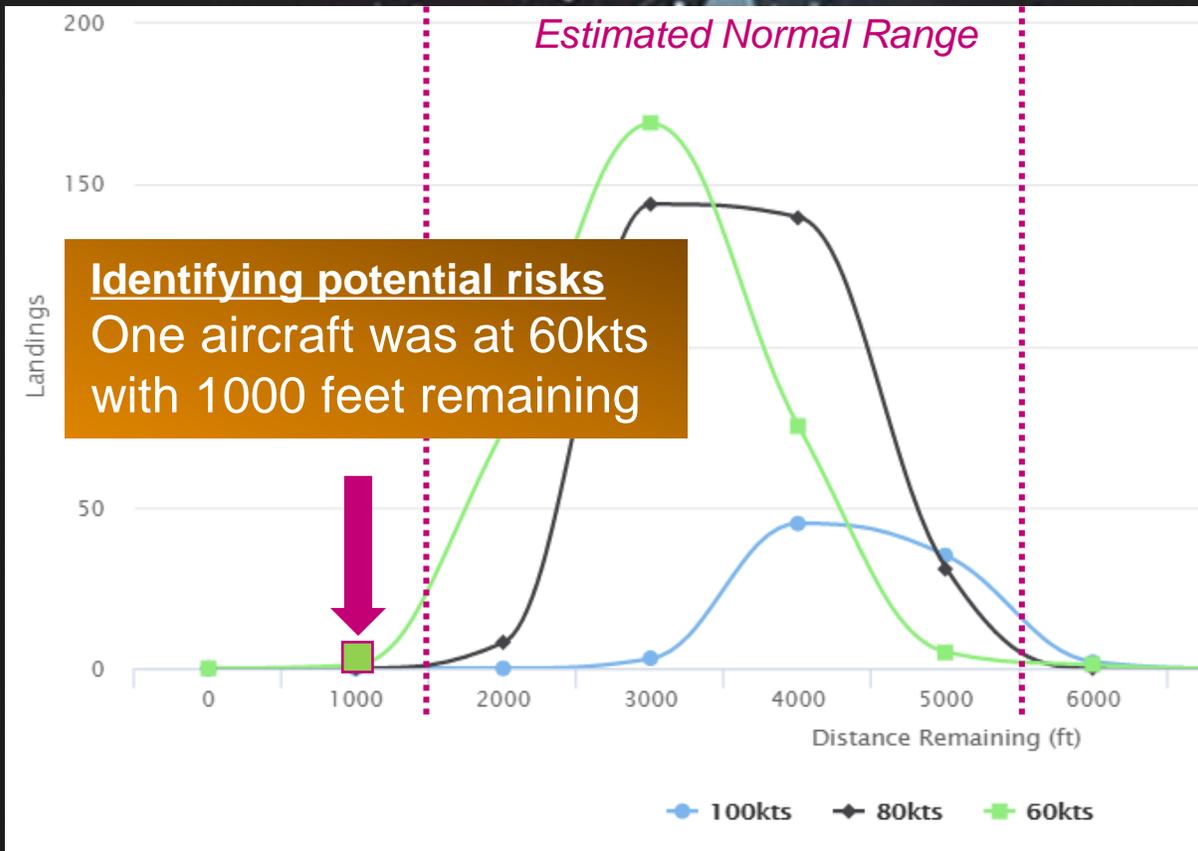


Airport Hazards (from METARs, NOTAMs, and USOAP)

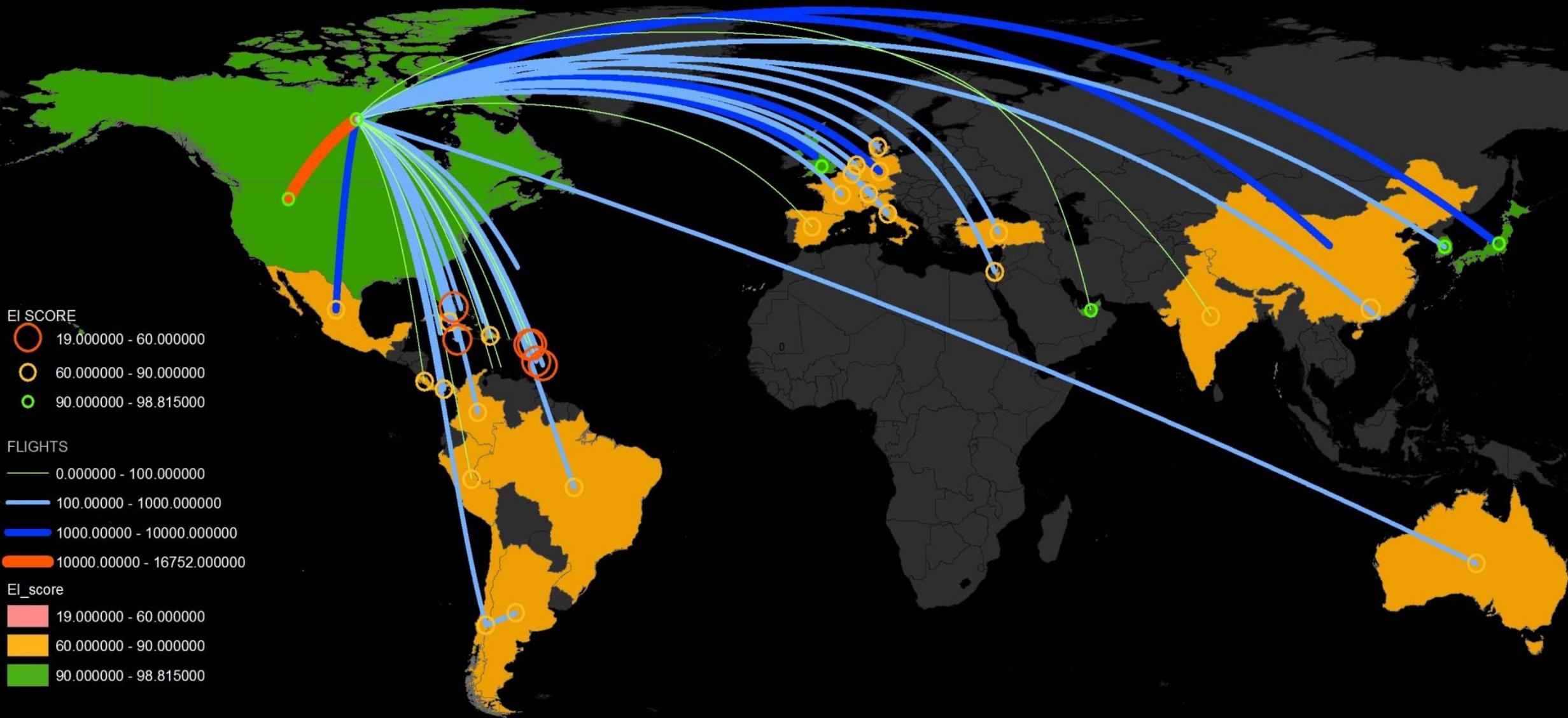


Data driven decision making processes using data from States, Industry, and other stakeholders

Real-Time Monitoring Aviation's Health



Evolution of Analysis – seeing the Big Picture



Analysis to manage the hazards



ICAO iSTARS 3.0

Integrated Safety Trend Analysis and Reporting System

OVER 30

Applications for safety analysis and Information

MORE THAN 3000+

Registered users

www.icao.int/safety/ISTARS

The image displays the iSTARS IMPLEMENT interface. At the top, there is a banner with an airplane on a tarmac, the ICAO logo, and the text "iSTARS IMPLEMENT". Below the banner is a grid of eight application icons, each with a corresponding label:

- State Safety Briefing (Yellow icon with a document and flag)
- Solution Center (Purple icon with a lightbulb)
- CAA HR Benchmark (Blue icon with three people)
- Economic Dev. Indicators (Pink icon with a bar chart and upward arrow)
- Dashboards (Grey icon with a pie chart and bar chart)
- Regional Safety Briefing (Yellow icon with a globe and document)
- Approach Paths (Blue icon with a stylized 'S' and location pin)
- Airport Briefing (Blue icon with a document and airport terminal)

Safe Travels: ICAO's agenda for Safety

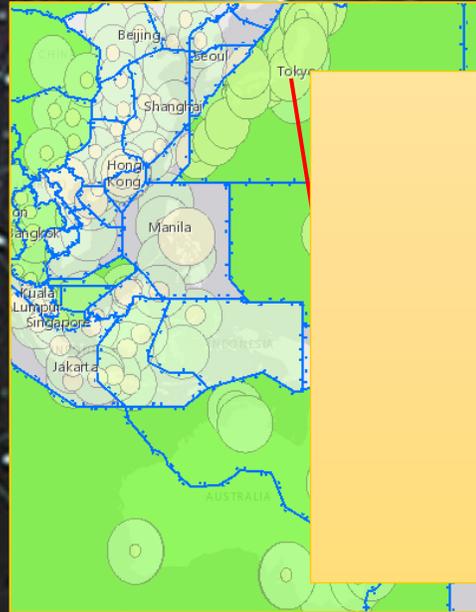
Current and Emerging Issues



Current and Emerging Issues



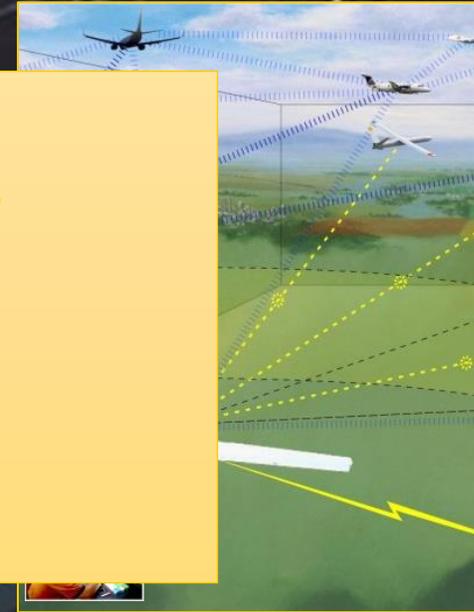
Conflict Zones



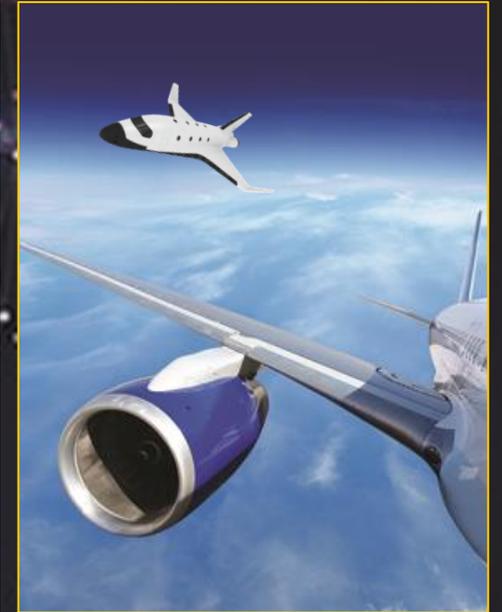
Global Tracking



Cyber Safety



RPAS



Space
Transportation

What next?

Mental Health

GPS interruption

Drones

Supersonic aircraft

Safe Travels: ICAO's agenda for Safety

Summary

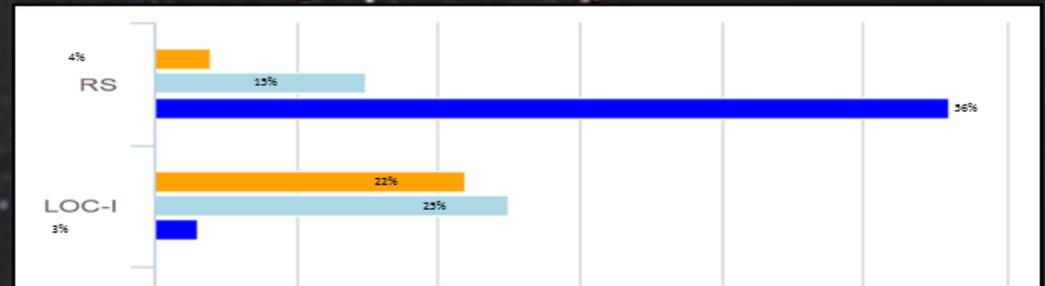
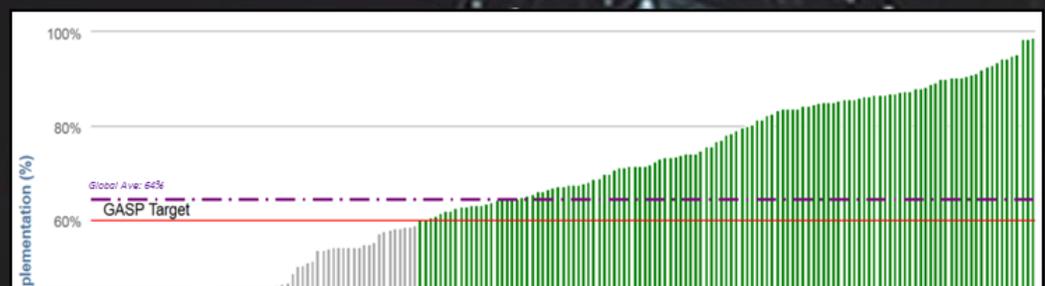


GASP 2020-2022

Effective Implementation

BBBs

Operational Risks



States that need support in areas with safety margins below zero, to use a RSOO mechanism	All States to improve their score for the effective implementation (EI) of the critical elements (CEs) of the State's safety oversight system as follows: By 2022 – 75%	All States to reach a positive safety margin, in all categories	All States to implement the foundation of a State Safety Programme (SSP)	All States to implement an Effective SSP, as appropriate to their aviation system complexity	All States to implement the air navigation and airport core infrastructure	Maintain a decreasing trend of global accident rate	Increase the number of service providers participating in the corresponding, ICAO-recognized industry programmes	All service providers to use globally harmonized SPIs, as part of their safety management systems (SMS)	All States to contribute information on safety risks, including SSP safety performance indicators (SPIs), to their respective Regional Aviation Safety	All States with a positive safety margin, and an Effective SSP, to actively engage in RASG/ safety management
TARGET 4.1	TARGET 2.1	TARGET 2.2	TARGET 3.1	TARGET 3.2	TARGET 6.1	TARGET 1.1	TARGET 5.1	TARGET 5.2	TARGET 4.2	TARGET 4.3
ICAO Recognized functions	Implement Safety Oversight	Positive Safety Margin	Sustainable SSP	Effective SSP	Appropriate Infrastructure	Reduced Accident rate	INDUSTRY assessment programmes	Harmonized KPIs in SMS	Safety risk information to RASG	RASG Risk mgmt. activities
2020	2022+	2022	2022	2025	2022	Yearly	2020	2022	2022	2022

Effective Implementation

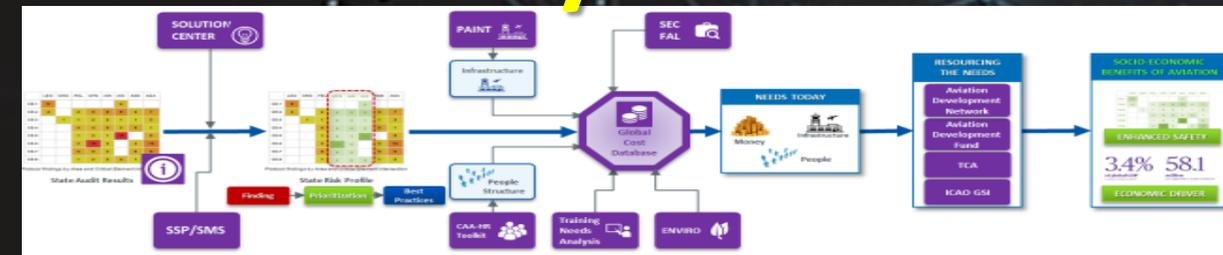
Effective safety oversight	SSP implementation	Predictive risk management
RASGs and other fora: mechanisms for sharing of safety information	RASGs: mature regional monitoring and safety management programmes	
States with EI > 60%: SSP implementation	All States: SSP implementation	All States: implement advanced safety oversight systems and predictive risk management
All States: achieve 60% EI of CEs		
2017 (near term)	2022 (mid term)	2028 (long term)

60% → Safety Margin

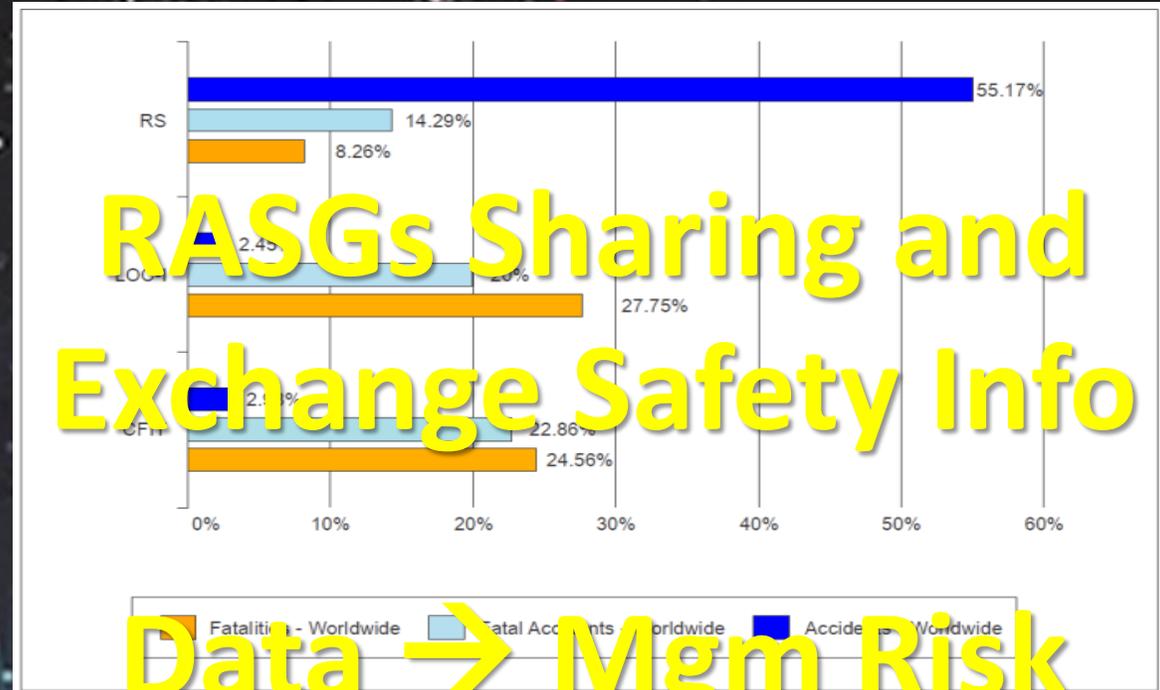
SSP Pre-requisites



RSOO/GASOS



Safety Priorities



RASGs Sharing and Exchange Safety Info

Data → Mgm Risk

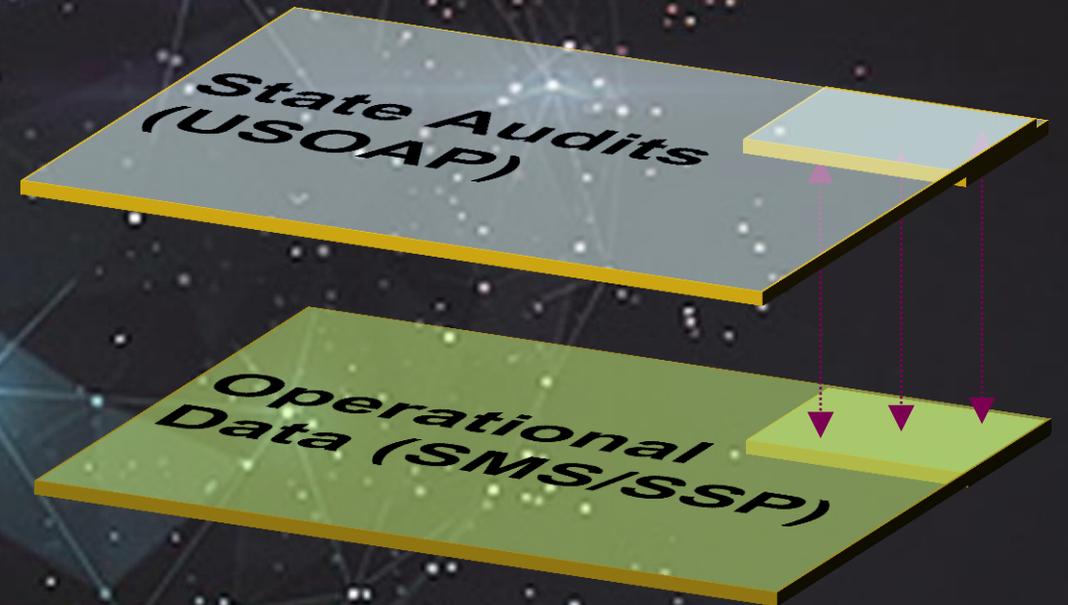
Figure 3-1. High-risk accident categories worldwide (2010–2014)



Real-Time Monitoring Aviation's Health

Combining State audits with State/Industry operational data

- Through SMS and SSP
- Protection of information/operational data through Amendment 1 to Annex 19



Our Aspirational **Safety** Goal

*SAFE
TRAVELS*

*Passengers
First*



ZERO FATALITIES

