ICAO UNITING AVIATION

Operation of Aircraft Workshop

Becoming Risk-Based

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Discussion points

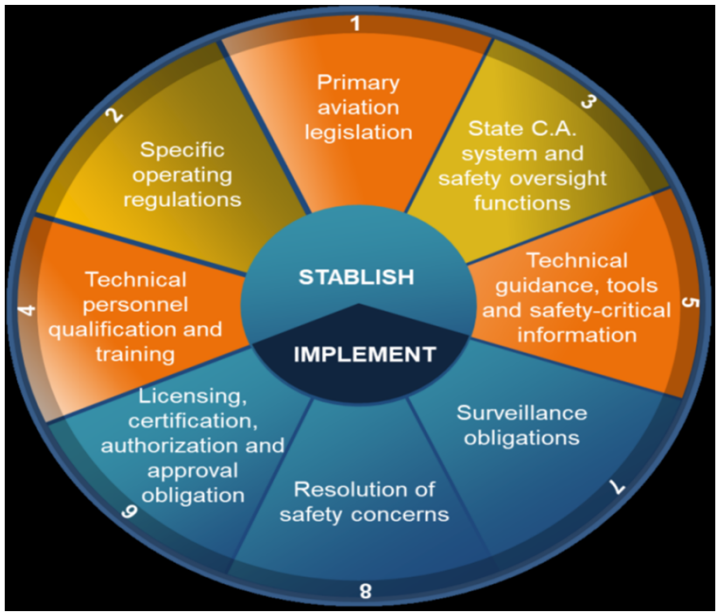
1. Familiarity with regulatory provisions
2. Prioritizing surveillance activities
3. Safety Risk profile
4. iSTARS Risk-based surveillance application
5. Safety Information Monitoring System

1. Familiarity with regulatory provisions

Annex 19 - Applicability

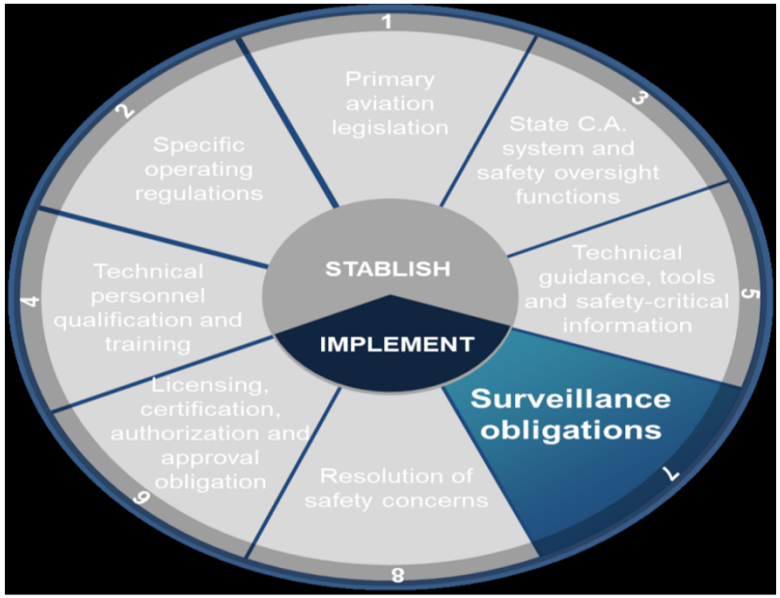
- Annex 19 requires States to establish and maintain an SSP that is commensurate with the size and complexity of the State's civil aviation system.
- As part of implementing SSP, States shall require that the following service providers to implement an SMS:
  1. **Approved training organizations in accordance with Annex 1 that are exposed to safety risks related to aircraft operations during the provision of their services;**;
  2. **Operators of aeroplanes or helicopters** authorized to conduct international **commercial air transport**;
  3. **Approved maintenance organizations** providing services to Operators of aeroplanes or helicopters authorized to conduct international commercial air transport;
  4. Organizations responsible for the **type design** or **manufacture** of aircraft, engines and propellers in accordance with Annex 8; ;
  5. **Air traffic services (ATS) providers** in accordance with Annex 11 and;
  6. **Operators of certified aerodromes** in accordance with Annex 14, Volume I .
- State shall also require international general aviation operators of large or turbojet aeroplanes to implement SMS.

Safety oversight vs Surveillance



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 oversight vs Surveillance



Surveillance: The State activities through which the State proactively verifies through inspections and audits that aviation license, certificate, authorization or approval holders continue to meet the established requirements and function at the level of competency and safety required by the State.

Surveillance obligation

ANNEX 19	DOC. 9859	DOC. 8335
3.4.1.2 Recommendation. States should establish procedures to prioritize inspections, audits and surveys towards those areas of greater safety concern or need.	A SRBS approach enables prioritization and allocation of a State's safety management resources commensurate with the safety risk profile of each sector or individual service provider.	Inspections should also be planned on the basis of a risk assessment exercise so that aspects of the operation that involve the greatest risk should receive more frequent attention.

2. Prioritizing surveillance activities

Prioritizing Surveillance Activities

- Does your State have UNLIMITED resources that can be assigned to surveillance activities?

Prioritizing Surveillance Activities

- If you answered no, then:
- you need a means to prioritize...

  …and make the best use of your limited resources

Prioritizing Surveillance Activities

How do you prioritize your surveillance activities

Prioritizing Surveillance Activities

- A safety risk-based surveillance (SRBS) approach **enables prioritization** and **allocation of** State's safety management **resources** commensurate with the **safety risk profile** of each sector or individual service provider.

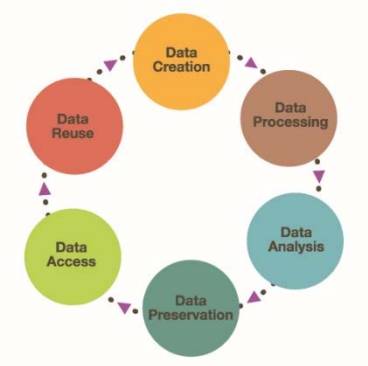
- States **gain** experience and **familiarity** with each service provider by **monitoring** the steadily developing **maturity** of their safety assurance process, and in particular, their **management of safety performance**.

- The State may choose to **amend the scope and/or frequency** of surveillance as their **confidence** and evidence of the service provider's **safety capability** develops.

Prioritizing Surveillance Activities (cont'd)

- The foundation of effective SRBS is **reliable** enough and **meaningful data**. Without reliable and meaningful data, it is difficult to defend adjustments to the surveillance scope or frequency.

- States should develop or **reinforce their data management capabilities** to ensure they have reliable and comprehensive data upon which to base their (data-driven) decisions.



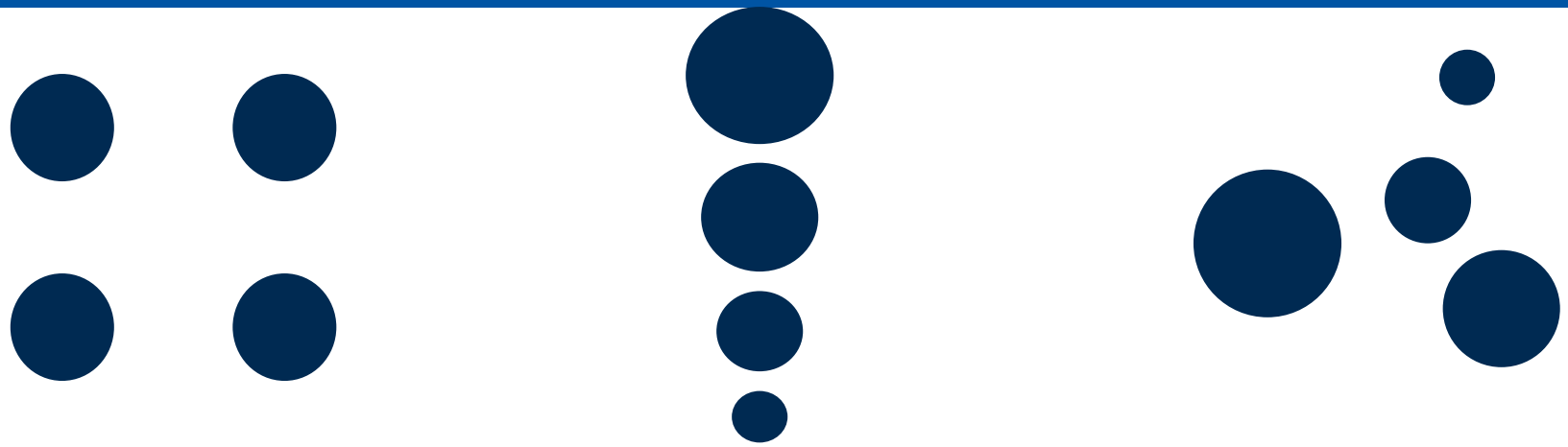
Prioritizing Surveillance Activities (cont'd)

- **Safety risk-based surveillance may not** necessarily **reduce the amount of surveillance conducted or the resources**, however, **the quality** of the surveillance and the quality of the interaction between the regulator and the service provider will **improve greatly**.

Prescriptive Surveillance

3 most common methods of resource allocation

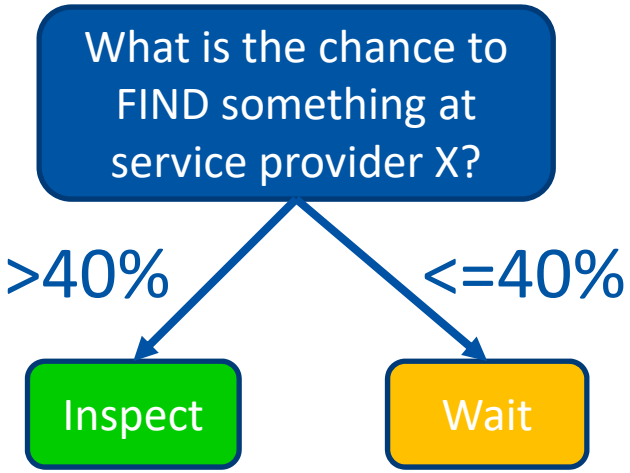
One size fits all	Based on size of S/P	Completely random



Probabilistic approach

Dynamic Risk Model

Past findings, risk profile, traffic etc.



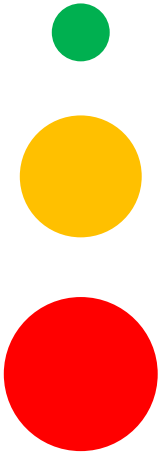
Probabilistic approach

One size fits all

Based on size

Completely random

Risk Based



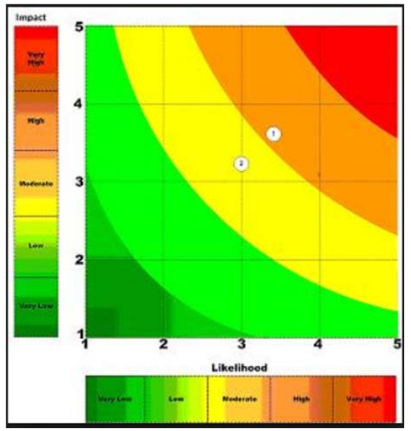
3. Safety risk profile

Develop risk profiles

Service provider organizational safety risk profiles

States may wish to develop organizational safety risk profiles using information that may already be available for service providers including:

a) the financial health of the organization;
b) number of years in operation;
c) turnover rate of the key personnel such as the accountable executive and safety manager;
d) competence and performance of the accountable executive;
e) competence and performance of the safety manager;
f) results of previous audits;
g) timely and effective resolution of previous findings;
h) measures of relative level of activity (exposure to safety risk);
i) indicators of the relative scope and complexity of the activities being performed;
j) maturity of the hazard identification and safety risk assessment process; and
k) measures of safety performance from State safety data analysis and performance monitoring activities.



4. iSTARS risk-based surveillance app

iSTARS risk-based surveillance app

- is one of the application in the iSTARS
- It allows building risk-based/Data-driven inspection schedules for operations
- By choosing an operator and filling out a questionnaire based on areas such as safety management and flight ops the following can be calculated:
  - safety performance level
  - operational complexity level
  - surveillance intensity level
  - risk-based inspection schedule

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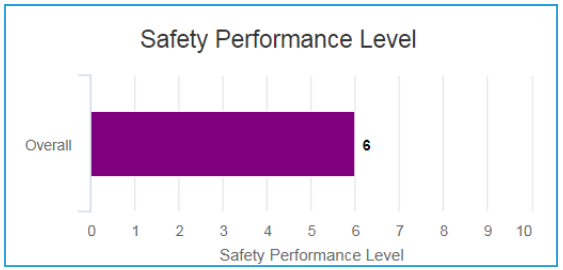
Risk-based surveillance planning

ICAO iSTARS 3.0
integrated Safety Trend Analysis and Reporting System

Risk Based Surveillance



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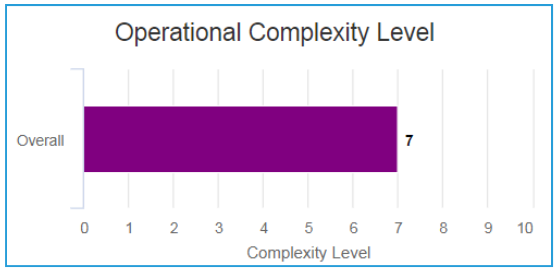

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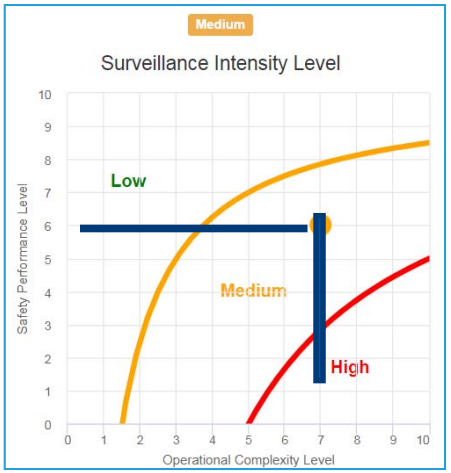

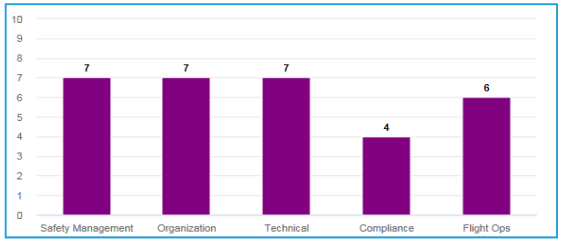

iSTARS risk-based surveillance app

Schedule

The schedule is defining a sample size for each inspection type based on the actual number of elements to be inspected.

	Aircraft	Stations	Check Pilots
Population Size	26-50 *	26-50 *	2-8 *

The sample size is defined using the ISO sampling model. The base inspection is unique and is period only depends on the intensity.

Activity Type	Related Population	Minimum Activities	Peridiocity
Route Inspection - Cabin	Stations	8	2 months
Route Inspection - Flight Deck	Stations	8	2 months
Ramp Inspections	Aircraft	8	2 months
Station Inspections	Stations	8	2 months
Check Pilot Inspections	Check Pilots	2	6 months
Base inspection	-	1	18 months

5.Safety Information Monitoring System

- Safety Information Monitoring System (SIMS) is an ICAO web-based information system comprised of different applications, which generates indicators in support of State Safety Programme (SSP) and Safety Management System.

- It is a platform for States to exchange and share safety data and information.

- Currently SIMS contains six applications such as Ramp Inspections Applications, Airspace Monitoring Applications (Horizontal Flight Efficiency), Approach Monitoring Applications (Vertical Flight Efficiency), Occurrences Application, Runway Safety Application and . ADS-B Coverage Application.

Ramp inspection application

- The ramp inspections sharing application allows for ICAO Member States participating in SIMS to monitor and share foreign air operator surveillance (ramp inspection) data on this secured platform with each other and within their respective Regional Aviation Safety Groups (RASGs) in support of Safety Management.
- States will be able to prioritize their ramp inspections and monitor their air operators' compliance by checking the number of inspections and seriousness of findings per inspection in two different capacities, either as State of operator or as State of inspection.

Summary

1. Regulatory provisions
2. How do we prioritizing surveillance activities
3. Safety Risk profiling of Service provider
4. iSTARS Risk-based surveillance application
5. Safety Information Monitoring System, ICAO Portal

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THANK YOU