EASA
European Union Aviation Safety Agency

This project is funded by the European Union and implemented by EASA

Effective Aviation Safety Occurrence Reporting Systems: Implementation and Use in SSP/SMS

EU-Africa Safety in Aviation (EU-ASA) Project

Dates: 15–18 July

Online: Zoom

Pablo Hernández-Coronado Quintero

Your safety is our mission.

An Agency of the European Union

This project is funded by the European Union and implemented by EASA

DAY 4 – ANALYSIS, SAFETY RISK MANAGEMENT, SAFETY PERFORMANCE, INFORMATION SHARING AND WRAP-UP

ANALYSIS

SAFETY RISK MANAGEMENT

SAFETY PERFORMANCE

INFORMATION SHARING

WRAP-UP

EASA

Module 12: Occurrence Investigation, Safety Risk Management & Follow-up (SSP & SMS)

- → National and EU levels
- → Tools for reporting, analysis, follow-up and mitigation actions
- → Practical examples and case studies
- → Strategies for safety risk management

National and EU levels

This project is funded by the European Union and implemented by EASA

→ Applicable Regulation: Regulation (EU) No376/2014: Article 13

Internal Process for Organisations

Each organisation established in a Member State shall develop a process to analyse occurrences to identify the safety hazards associated with them.

Based on that analysis each organisation shall determine any appropriate corrective or preventive action required to improve aviation safety and:

a) implement that action in a timely manner; and

b) establish a process to monitor the implementation and effectiveness of the action.

National and EU levels

This project is funded by the European Union and implemented by EASA

→ Applicable Regulation: Regulation (EU) No376/2014: Article 13

Internal Process for Organisations

Each organisation established in a Member State shall regularly provide its employees and contracted personnel with information concerning the analysis of, and follow-up on, occurrences for which preventive or corrective action is taken.

Here the process is divided regarding the competent authority:

1) Organizations certified or approved by an authority of a Member State.
2) Organizations certified or approved by EASA.

National and EU levels

This project is funded by the European Union and implemented by EASA

→ Applicable Regulation: Regulation (EU) No376/2014: Article 13

1) Organisations certified or approved by national authorities:

Shall transmit to the competent authority of the appropriate Member State, within 30 days from the date of notification of the occurrence by the reporter:

a) the preliminary results of the analysis performed, if any; and

b) any action to be taken.

The organisation shall report the results of the analysis, where required, as soon as they are available and, in principle, no later than three months from the date of notification of the occurrence.

National and EU levels

This project is funded by the European Union and implemented by EASA

→ Applicable Regulation: Regulation (EU) No376/2014: Article 13

2) Organisations certified or approved by EASA:

Shall transmit to EASA, within 30 days from the date of notification of the occurrence by the reporter:

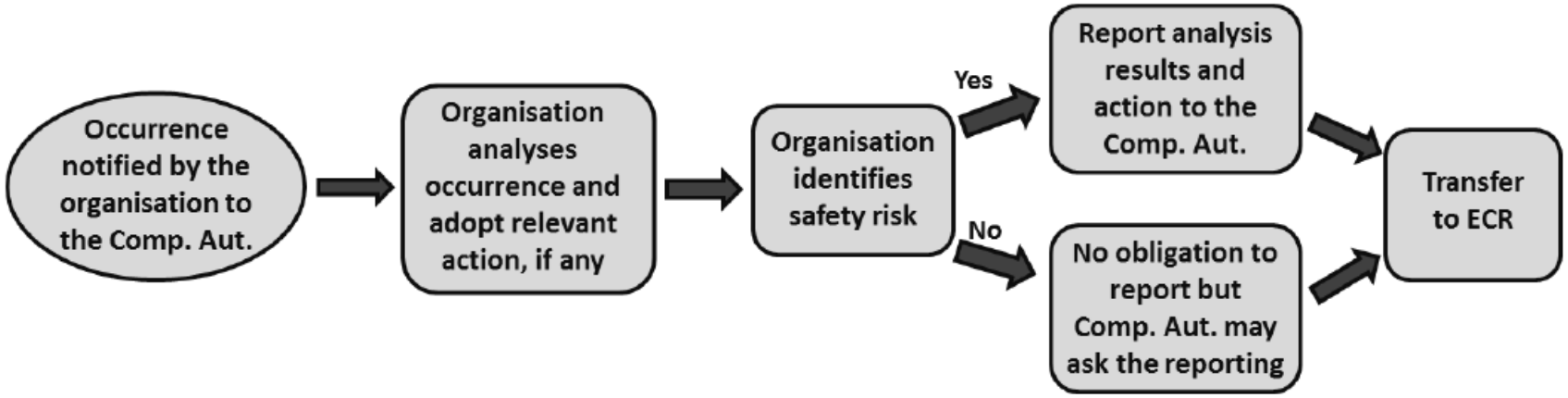
a) the preliminary results of the analysis performed, if any; and
b) any action to be taken.

The organisation shall report the results of the analysis, where required, as soon as they are available and, in principle, no later than three months from the date of notification of the occurrence.

National and EU levels

This project is funded by the European Union and implemented by EASA

→ Applicable Regulation: Regulation (EU) No376/2014: Article 13



All occurrences collected by the organisation (MOR and VOR) are subject to analysis (analysis of occurrences or group of occurrences) and follow-up requirements. However, not all of them are subject to further reporting obligations.

Key principle

Analysis and follow-up related information of reportable occurrences is required to be transferred only if it has revealed an actual or potential aviation safety risk (*Article 13(4) and (5)*).

National and EU levels

This project is funded by the European Union and implemented by EASA

→ Applicable Regulation: Regulation (EU) No376/2014: Article 13

Competent authority (Member State or EASA)

- May request organisations to transmit to it the preliminary or final results of the analysis of any occurrence of which it has been notified but in relation to which it has received no **follow-up** or only the preliminary results.

- Shall develop a process to analyse the information relating to occurrences which are directly reported to it to identify the safety hazards associated with those occurrences. Based on that analysis, they shall determine any appropriate corrective or preventive action required to improve aviation safety.

National and EU levels

This project is funded by the European Union and implemented by EASA

→ Applicable Regulation: Regulation (EU) No376/2014: Article 13

Competent authority (Member State or EASA)

- If it identifies any appropriate corrective or preventive action required to address actual or potential aviation safety deficiencies, it shall:
  - a) implement that action in a timely manner; and
  - b) establish a process to monitor its implementation and effectiveness.

- Shall have access to the analysis made and shall appropriately monitor any action taken by the organisations for which it is respectively responsible.

National and EU levels

This project is funded by the European Union and implemented by EASA

→ Applicable Regulation: Regulation (EU) No376/2014: Article 13

Competent authorities (Member State or EASA)

- If the actions are ineffective shall demand the organization to apply appropriate ones.
- The information gathered in these exercises shall be stored in the ECR no later than two months after their storage in the national database.
- The use of this information shall be used within each national authority State Safety Programme.

National and EU levels

This project is funded by the European Union and implemented by EASA

→ Applicable Regulation: Regulation (EU) No376/2014: Article 13

Competent authorities (Member State or EASA)

- Inform the public at least once a year with a safety review. The safety review shall:
  a) contain aggregated and anonymised information
  b) identify trends;
  c) identify the action it has taken.

- Member States may also publish anonymised occurrence reports and risk analysis outcomes.

National and EU levels

This project is funded by the European Union and implemented by EASA

→ Applicable Regulation: Regulation (EU) No376/2014: Article 14

The Network of Safety Analysts:

1. Is the group through which the Commission, EASA and the Competent National Authorities shall cooperate and collaborate.
2. Operates within the European Aviation Safety Programme and the European Safety Plan.
3. Will be supported by EASA.

Tools for reporting, analysis, follow-up

This project is funded by the European Union and implemented by EASA

→ Applicable Regulation: Regulation (EU) No376/2014: Article 13

Necessity of an analysis process

Each organisation established in a Member State shall develop a process to analyse occurrences (or groups of occurrences) to identify the safety hazards associated with identified occurrences or groups of occurrences.

It should also provide its employees and contracted personnel with information regarding the follow-up analysis of occurrences.

Result of the process

Implement preventive actions and monitor their effectiveness.

Tools for reporting, analysis, follow-up

This project is funded by the European Union and implemented by EASA

The Follow-Up from an authority:

A Follow-Up is a process by the authority to gather the analyses that organisations must carry out on events or groups of events that have previously been identified as "relevant" in terms of associated risk or safety impact.

This process involves the continuous submission of safety analyses by organisations to the authority.

Tools for reporting, analysis, follow-up

This project is funded by the European Union and implemented by EASA

If actual or potential aviation safety deficiencies are identified, the organisation must submit to the authority:

Within 30 days of having noticed the safety issue:

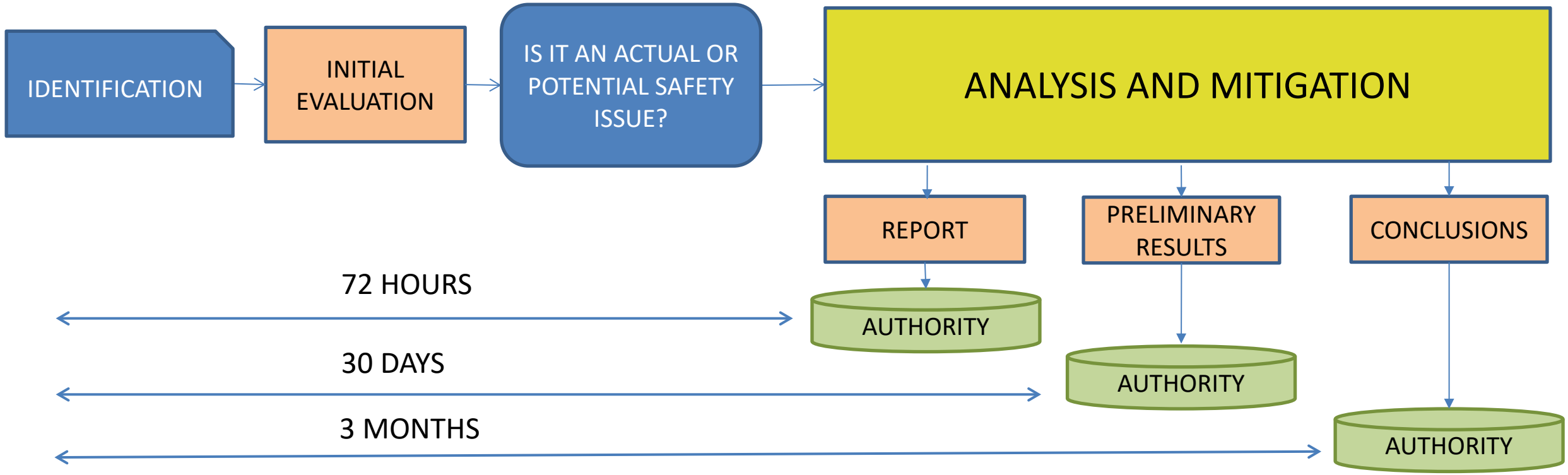
- The first results of the analysis
- Any action that has been taken

As soon as possible, with a maximum period of 3 months (unless justified):

- The results of the analysis, including any actions that have been taken and are planned to be taken.

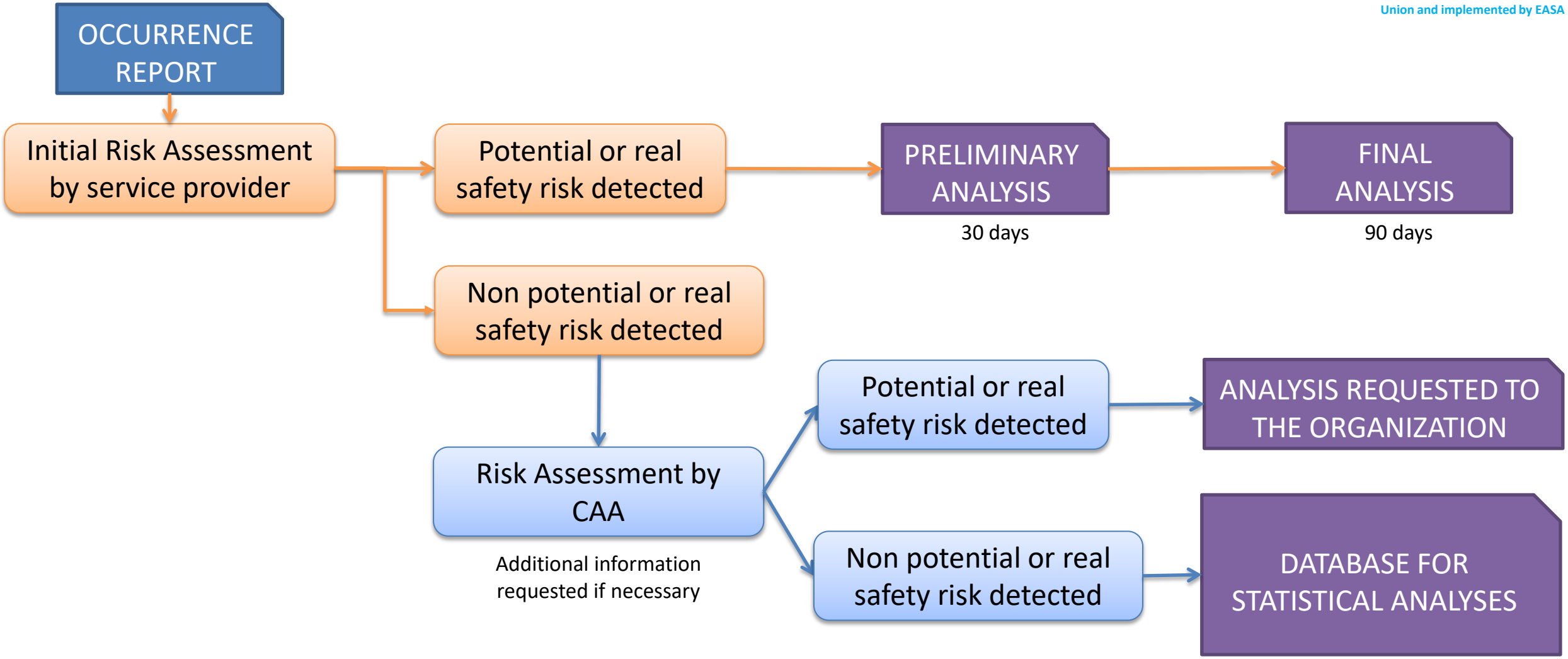
Tools for reporting, analysis, follow-up

This project is funded by the European Union and implemented by EASA



Tools for reporting, analysis, follow-up

This project is funded by the European Union and implemented by EASA



Tools for reporting, analysis, follow-up

This project is funded by the European Union and implemented by EASA

The organisation must inform the authority of:

1) **Internal Follow-Up reports** of occurrences that, after the analysis carried out by the organisation, reach a high severity or risk assessment:
   - Accidents
   - Major or Serious incidents (according to the ADREP taxonomy)
   - "AA", "A" or "B" incidents (according to the RAT methodology)
   - High or Unacceptable Risk Levels (according to risk classification schemes such as ARMS, ERCS, ICAO matrix, etc.)

Tools for reporting, analysis, follow-up

This project is funded by the European Union and implemented by EASA

The organization must inform the authority of:

2) Follow-Up reports of occurrences **from which mitigating measures are derived**, systemic or organisational, **beyond a specific corrective action**, such as:
    - Establishing a training action for a group
    - Review of a system/part of an entire fleet
    - Substantial change of a procedure
    - Workforce Management Strategies

3) Cases in which the risk assigned by the organisation's SMS is low or does not meet any of the above requirements should not be sent to the authority, except when expressly required.

Tools for reporting, analysis, follow-up

This project is funded by the European Union and implemented by EASA

Answering a FU request sent by the authority:

- If possible, include the response directly in the original occurrence notification, or attach the relevant reports to it.
- The authority expects to receive the **safety analysis reports** conducted by the organisation's **Safety Management System (SMS).**
    - If no analysis has been conducted yet, it must be carried out before responding.
- ⚠️ **Do not** reply with:
    - Screenshots of systems
    - Unstructured or informal content (e.g. free-text explanations within an email body)

All responses must be **clear, structured, and based on SMS investigation or risk assessment processes.**

Tools for reporting, analysis, follow-up

This project is funded by the European Union and implemented by EASA

Answering a FU request sent by the authority:

The formats for submitting analyses are the same as for reporting (ECCAIRS compatible).

The main fields for analysis are:

1) Analysis/Follow-Up:
Text field in which the relevant content of the analysis will be included reconstructing the events of the occurrence according to the information gathered by the organisation's SMS.
A safety analysis that allows to explain those causal factors that, by action or omission, may have generated the occurrence.

Tools for reporting, analysis, follow-up

This project is funded by the European Union and implemented by EASA

Answering a FU request sent by the authority:

2) Conclusions:

Text field in which the conclusions of the analysis carried out will be included containing the results from the analysis carried out that identify the causal and/or contributing factors to the event.

3) Corrective Actions:

Text field in which contains the measures to prevent recurrence and/or mitigate the consequences of such an event, including implementation deadlines and those responsible for them.

Tools for reporting, analysis, follow-up

This project is funded by the European Union and implemented by EASA

Answering a FU request sent by the authority:

4) Risk Analysis:

- Risk classification according to the schemes adopted by the organisation, including tolerability criteria.
- Classification of the estimated risk following the implementation of safety improvement measures.

Tools for reporting, analysis, follow-up

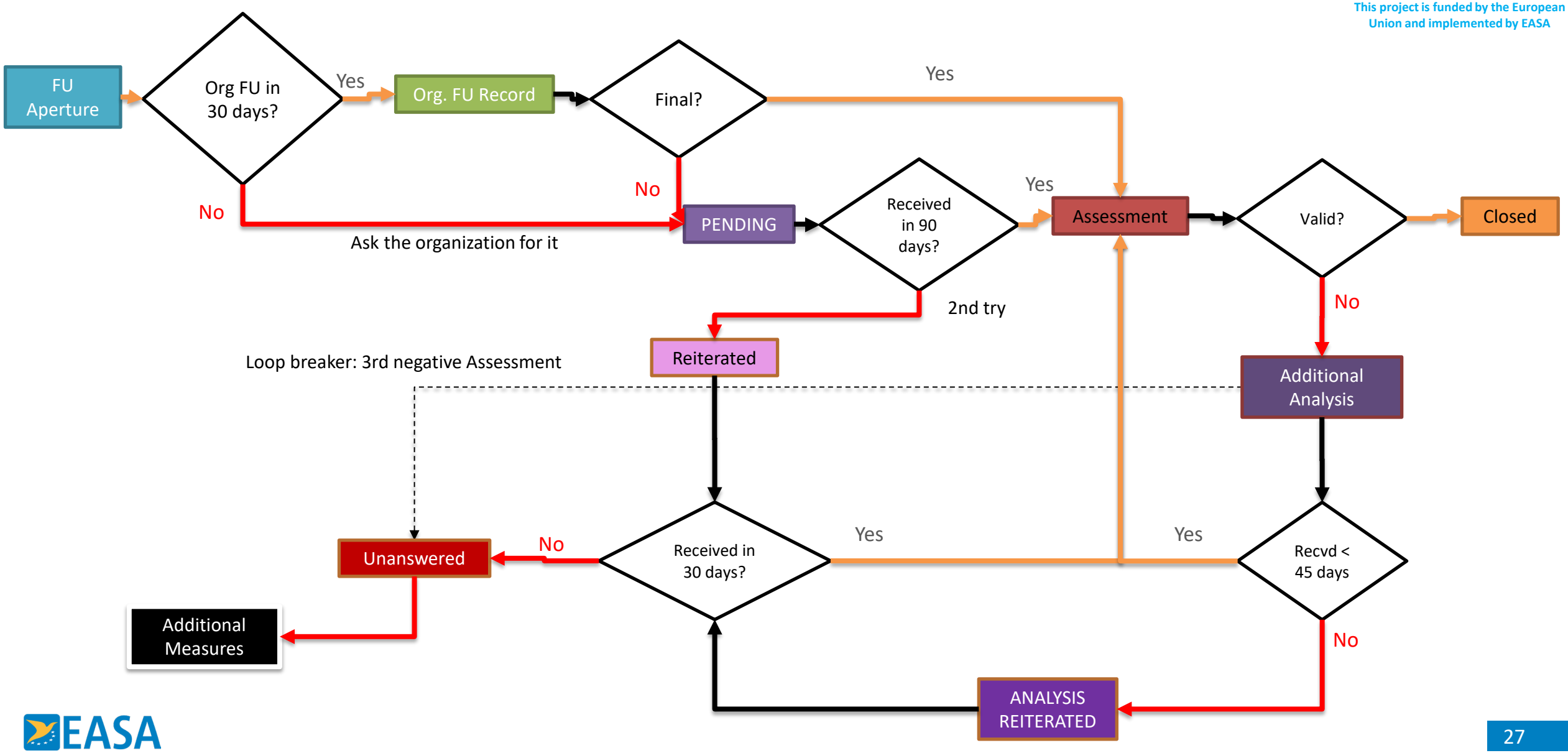
This project is funded by the European Union and implemented by EASA

Follow-Ups are governed by the same principle of just culture in which the notification of events is framed, both within the organization and within the authority.

The authority will record the information corresponding to the Follow-Up applying the principles of protection and confidentiality associated with all processes related to the notification of events.

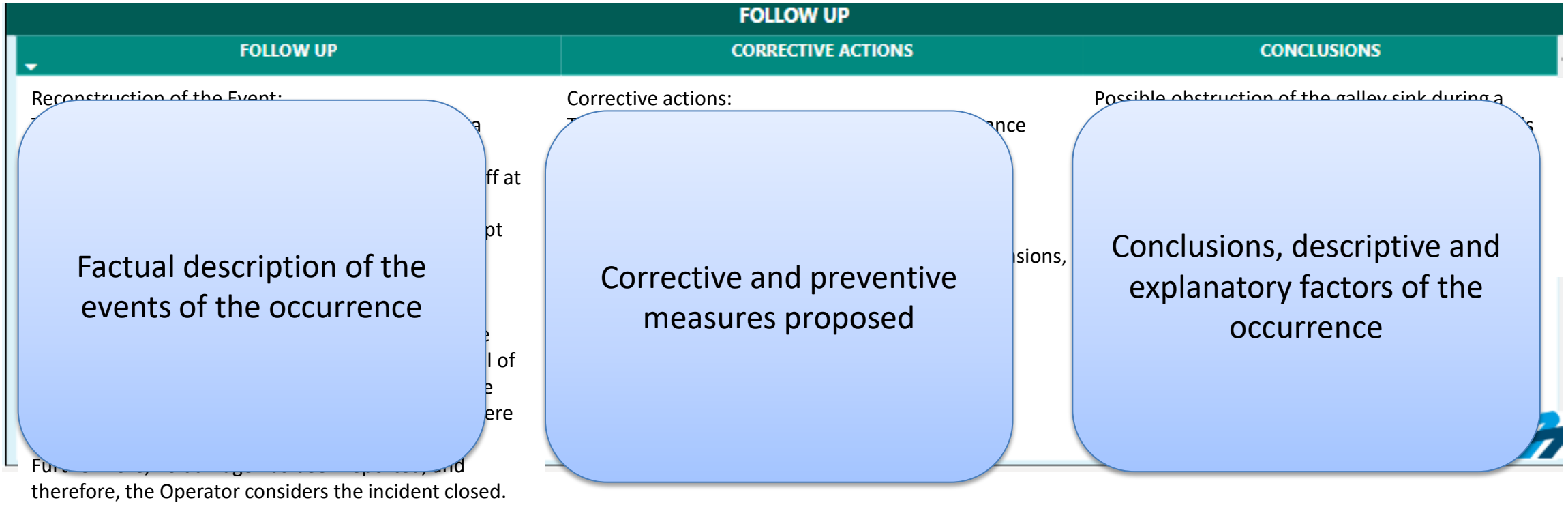
Tools for reporting, analysis, follow-up

This project is funded by the European Union and implemented by EASA



Practical examples and case studies

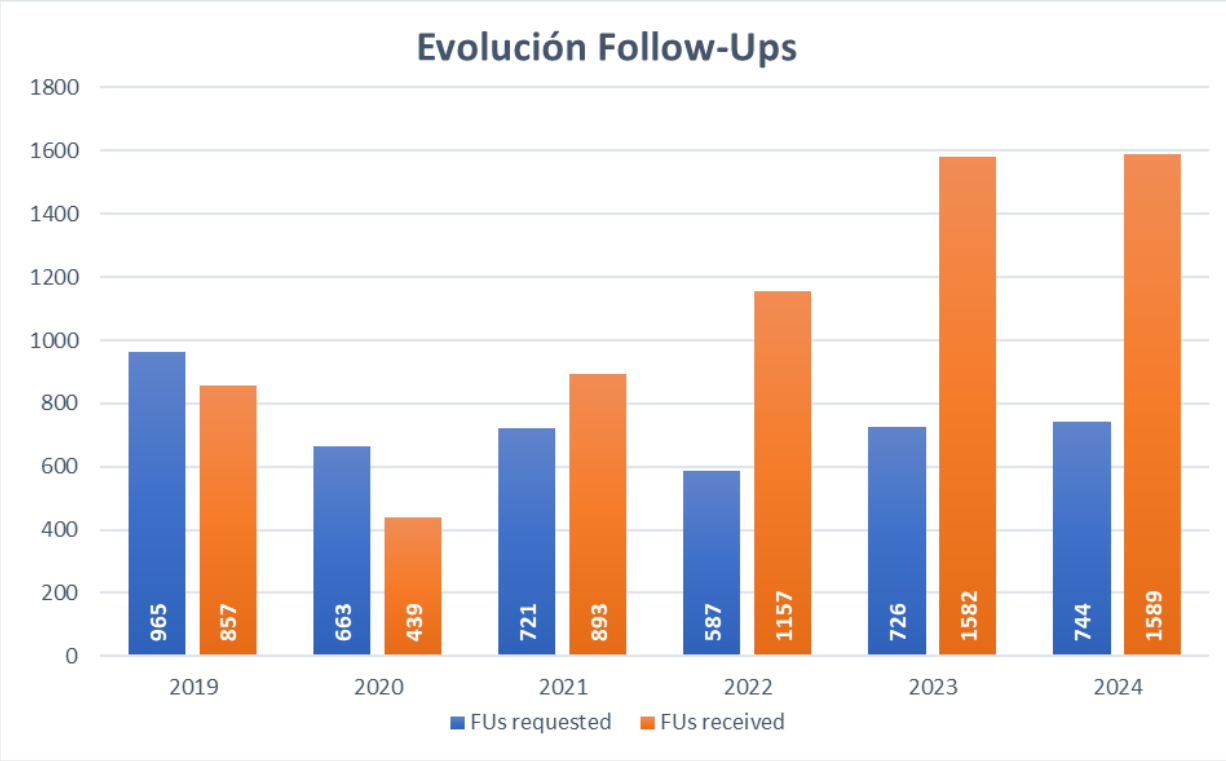
This project is funded by the European Union and implemented by EASA

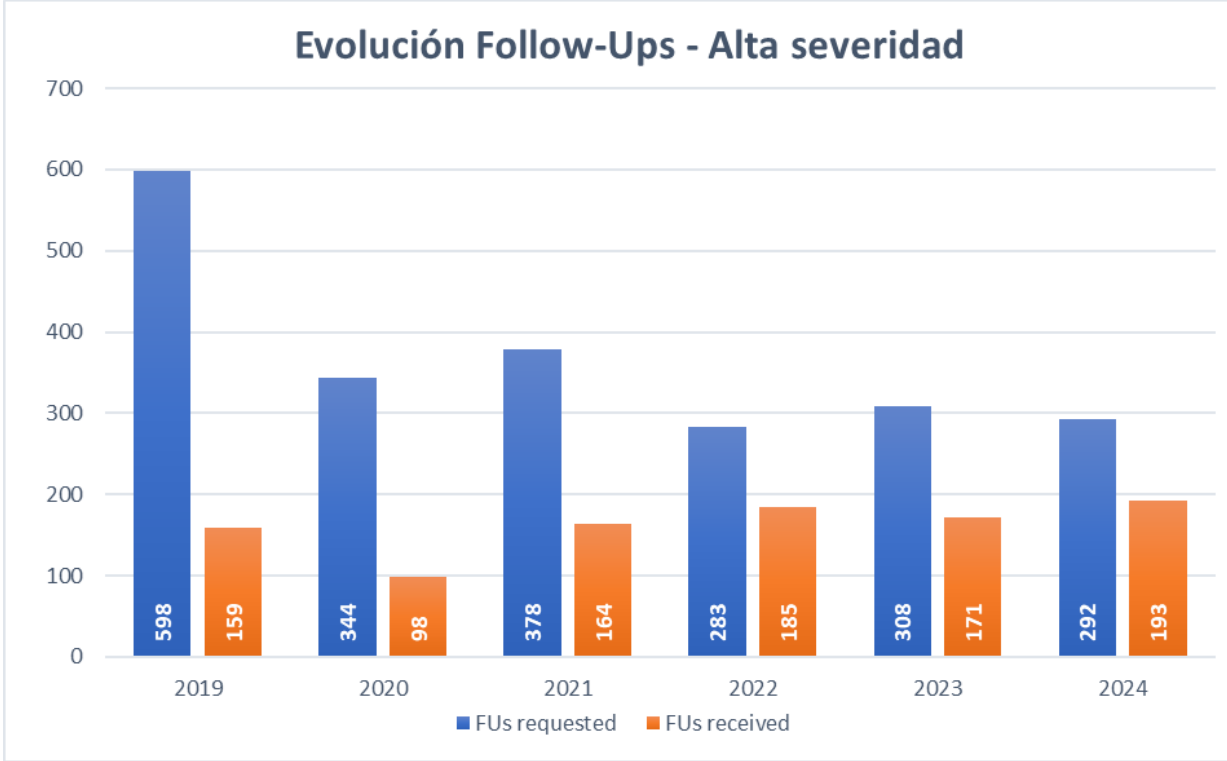


Practical examples and case studies

→ Follow-Up or Monitoring of Significant Occurrences

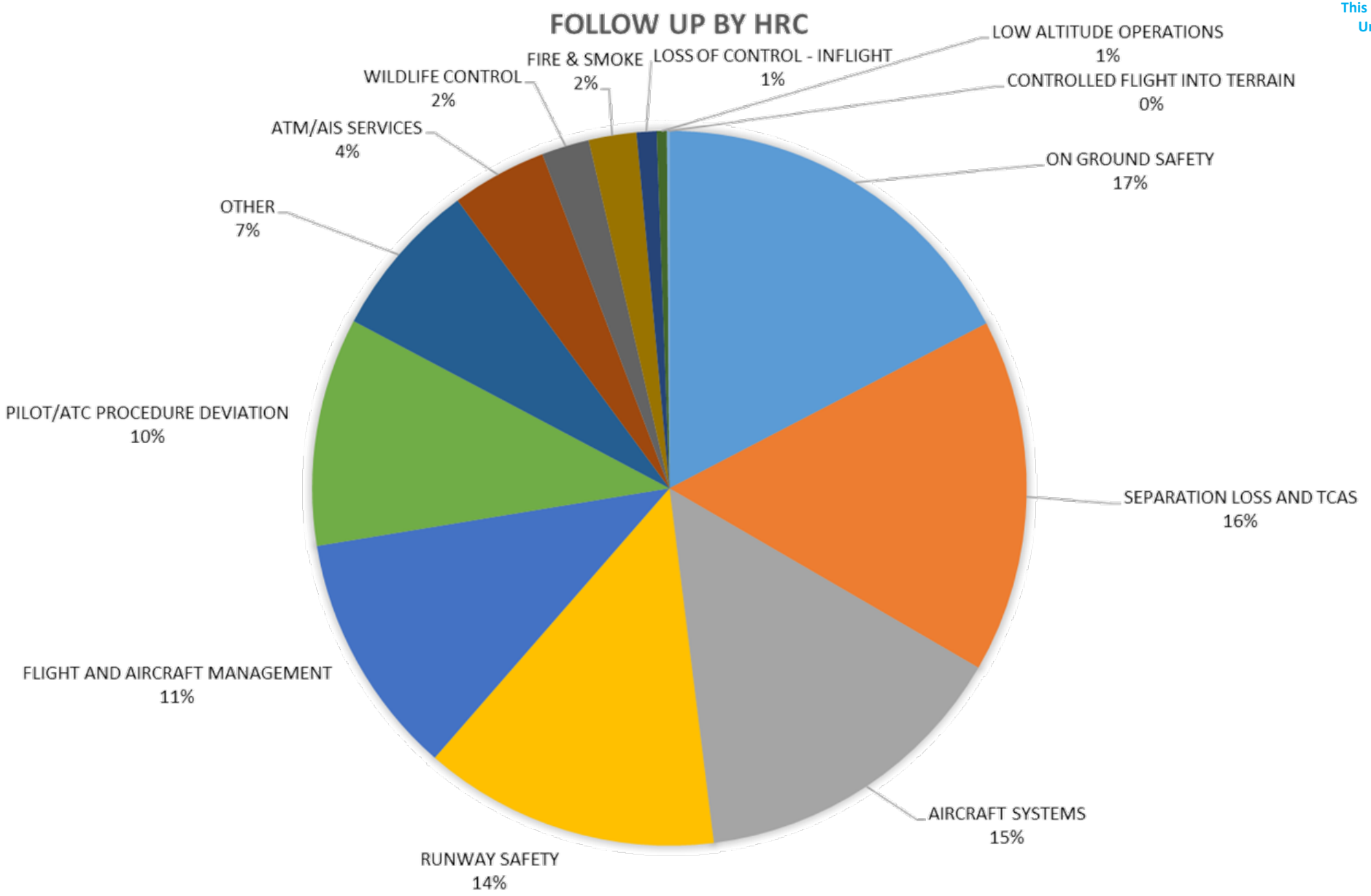
This project is funded by the European Union and implemented by EASA





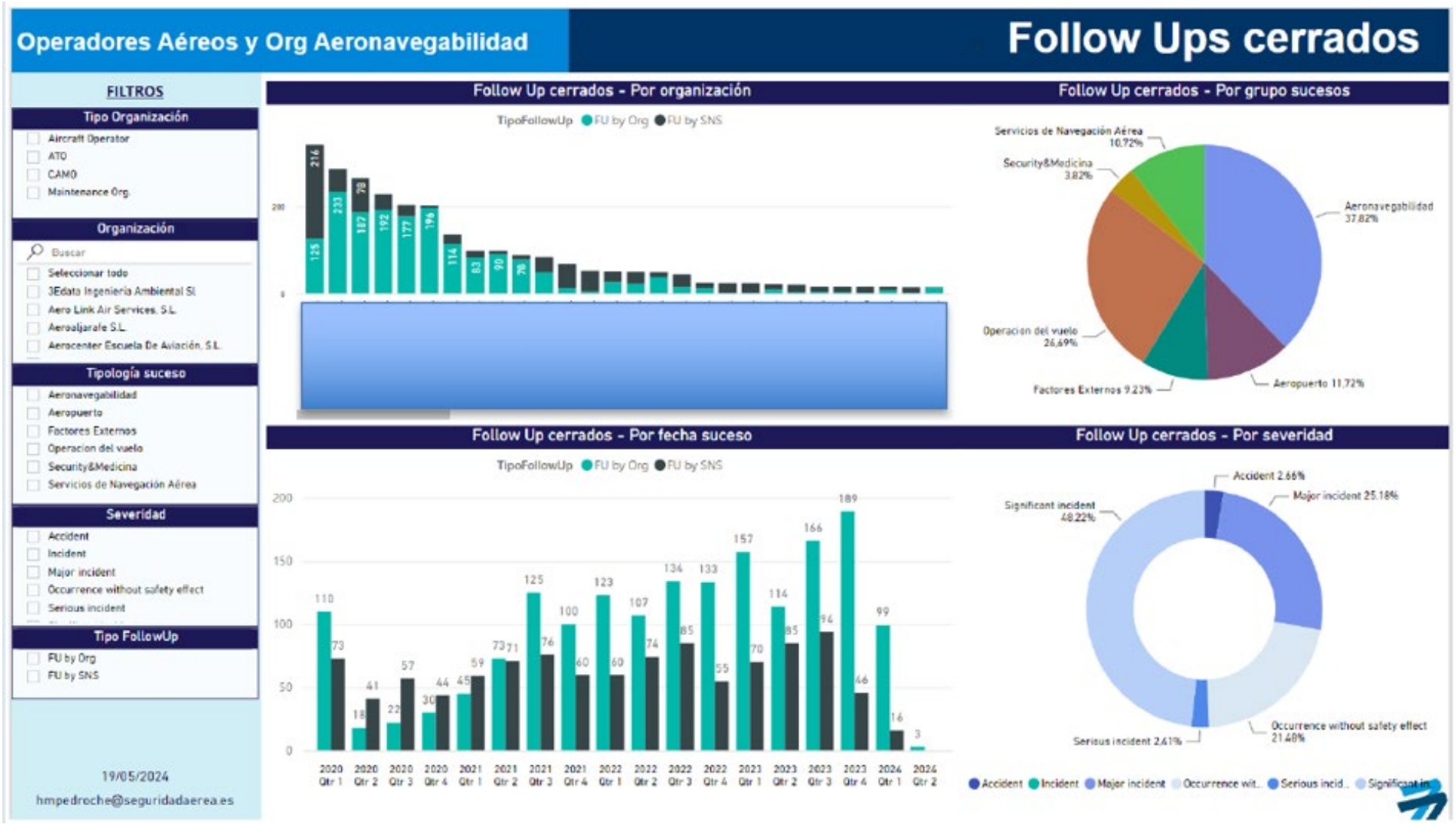
Practical examples and case studies

This project is funded by the European Union and implemented by EASA



Practical examples and case studies

This project is funded by the European Union and implemented by EASA



Practical examples and case studies

→ Follow-Up or Monitoring of Significant Occurrences

This project is funded by the European Union and implemented by EASA

Occurrence Narrative

During take-off from runway 13R at XXX, a slower-than-usual acceleration was observed under the same environmental and weight/balance conditions. The take-off was completed safely, although the aircraft's rotation occurred very close to the DER-Departure End of Runway, according to the notification report. Once in cruise phase, the crew, dissatisfied with the aircraft’s performance, reviewed the calculations and realised that the RTOW-Regulated Take-Off Weight chart used was that of YYY for runway 13R. The operation continued without further incident.

Practical examples and case studies

→ Follow-Up or Monitoring of Significant Occurrences

This project is funded by the European Union and implemented by EASA

Analysis and Follow-Up

Incorrect Take-Off Performance Calculation

The following have been identified as the probable causes of the event:
•Human Factors: Human error – The flight crew used the take-off performance chart for runway 13R at YYY instead of the required chart for runway 13R at XXX.

The following contributing factors have also been identified:
•Similarity in the layout/format of the take-off performance charts for both airports.
•Similarity between the runway designators used in the performance charts.
•Possible automation of the take-off performance calculation process by the crew.
•The take-off performance chart used in error corresponded to the destination airport.
•Possible complacency by the flight crew in cross-checking the performance figures during the Take-Off Briefing.

Practical examples and case studies

→ Follow-Up or Monitoring of Significant Occurrences

This project is funded by the European Union and implemented by EASA

Corrective and Preventive Actions

The Flight Operations Department will implement the following measures:

Modification of the take-off charts to reduce the likelihood of their use on flights to which they do not apply.

Inclusion of the event analysed in this report in the safety promotion process, so that it serves as a tool to raise awareness among operational personnel who may be involved in a similar type of event.

Practical examples and case studies

→ Follow-Up or Monitoring of Significant Occurrences

This project is funded by the European Union and implemented by EASA

Conclusions

- The flight crew (FC) did not comply with the procedures set out in the OM-B when calculating the take-off performance, as the calculations were performed using the take-off chart for runway 13R at YYY instead of the chart for runway 13R at XXX.
- The FC did not follow the standard procedures for performance cross-checking, as described in the OM-B, since the selected departure runway was validated solely by its designator, without verifying both the designator and the airport.
- The thrust setting applied for departure at XXX was significantly lower than required, as the aircraft's performance had been calculated for runway 13R at YYY, whose elevation is 8,340 ft lower than that of runway 13R at XXX, from which the actual take-off was conducted. The declared distances TORA and ASDA are respectively 623 m and 563 m longer than the equivalents at the actual runway used.
- The FC manually overwrote the performance data in the operational flight plan after realising they had made an initial performance calculation error at XXX.
- The FC was familiar with the take-off performance calculations for the XXX–YYY route, as they had previously performed such calculations on two occasions within the eight days preceding the event.

Strategies for safety risk management

This project is funded by the European Union and implemented by EASA

Core Strategies for Safety Risk Management:

- **Proactive Hazard Identification**
  - ✓ Use occurrence reports, audits, and expert input to detect potential hazards early.
  - ✓ Apply safety performance indicators (SPIs) to monitor system behaviour.
- **Structured Risk Assessment**
  - ✓ Use standardised methodologies (e.g., ARMS, RAT, Bow-Tie, ERCS) to classify and evaluate risks.
  - ✓ Assess both probability and severity
- **Risk Mitigation and Action Planning**
  - ✓ Select the most effective corrective/preventive measures.
  - ✓ Balance between quick wins and systemic improvements.
- **Monitoring & Feedback Loops**
  - ✓ Track implementation of safety actions.
  - ✓ Regularly assess effectiveness and adjust as needed

Strategies for safety risk management

This project is funded by the European Union and implemented by EASA

Enabling Conditions for Effective Risk Management:

- **SRM Process Integration**
  - ✓ Ensure alignment between the State's SSP Safety Risk Management processes and the organisation's SMS.
- **Culture of Just Culture**
  - ✓ Foster a just-culture environment to encourage reporting and openness in risk identification.
- **Data-Driven Decision Making**
  - ✓ Use aggregated and analysed data from occurrence reporting systems (e.g., ECCAIRS, Power BI).
  - ✓ Leverage trend and root cause analysis for long-term risk control.
- **Authority Follow-Up Synergy**
  - ✓ Align internal analysis with regulatory expectations.
  - ✓ Submit structured, timely analyses when follow-ups are triggered (within 30–90 days).

Module 13: Introduction to Safety Indicators and Monitoring

- Integration of safety oversight with occurrence reporting
- Service provider's risk profile and Safety Risk Based Surveillance (SRBS)/Oversight
- Using occurrence data to build and monitor SPIs
- Safety Performance Metrics and Safety Culture Indicators

Integration of safety oversight with ORS

This project is funded by the European Union and implemented by EASA

3.4 State safety assurance

3.4.1 Surveillance obligations

3.4.1.1 States shall meet the surveillance obligations in accordance with section 7 of Appendix 1.

Note.— The surveillance of the service provider takes into consideration the safety performance as well as the size and complexity of its aviation products or services.

3.4.1.2 **Recommendation.—** *States should establish procedures to prioritize inspections, audits and surveys towards those areas of greater safety concern or need.*

Note.— Organizational risk profiles, outcomes of hazard identification and risk assessment, and surveillance outcomes may provide information for the prioritization of inspections, audits and surveys.

3.4.1.3 **Recommendation.—** *States should periodically review the safety performance of an individual service provider.*

Integration of safety oversight with ORS

This project is funded by the European Union and implemented by EASA

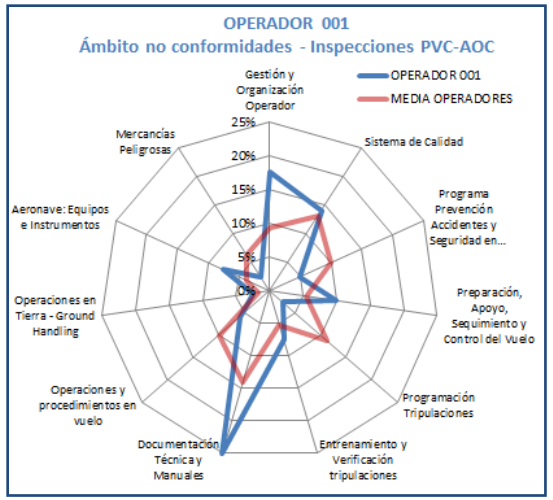
8.5.3.8 States may wish to develop organizational safety risk profiles that are consistent across each aviation sector to support the process of modifying the scope and frequency of their surveillance activities. Such tools should aim to capture and aggregate information that should already be available for service providers and may include factors such as:

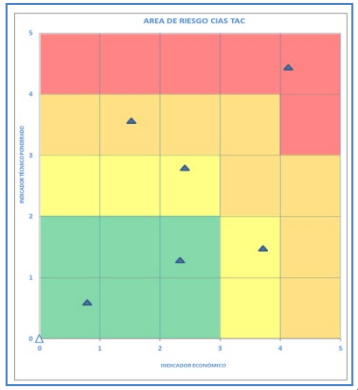
a) the financial health of the organization; b) number of years in operation; c) turnover rate of the key personnel such as the accountable executive and safety manager; d) competence and performance of the accountable executive; e) competence and performance of the safety manager; (for more information about accountable executive or safety manager competence, see Chapter 9) 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.

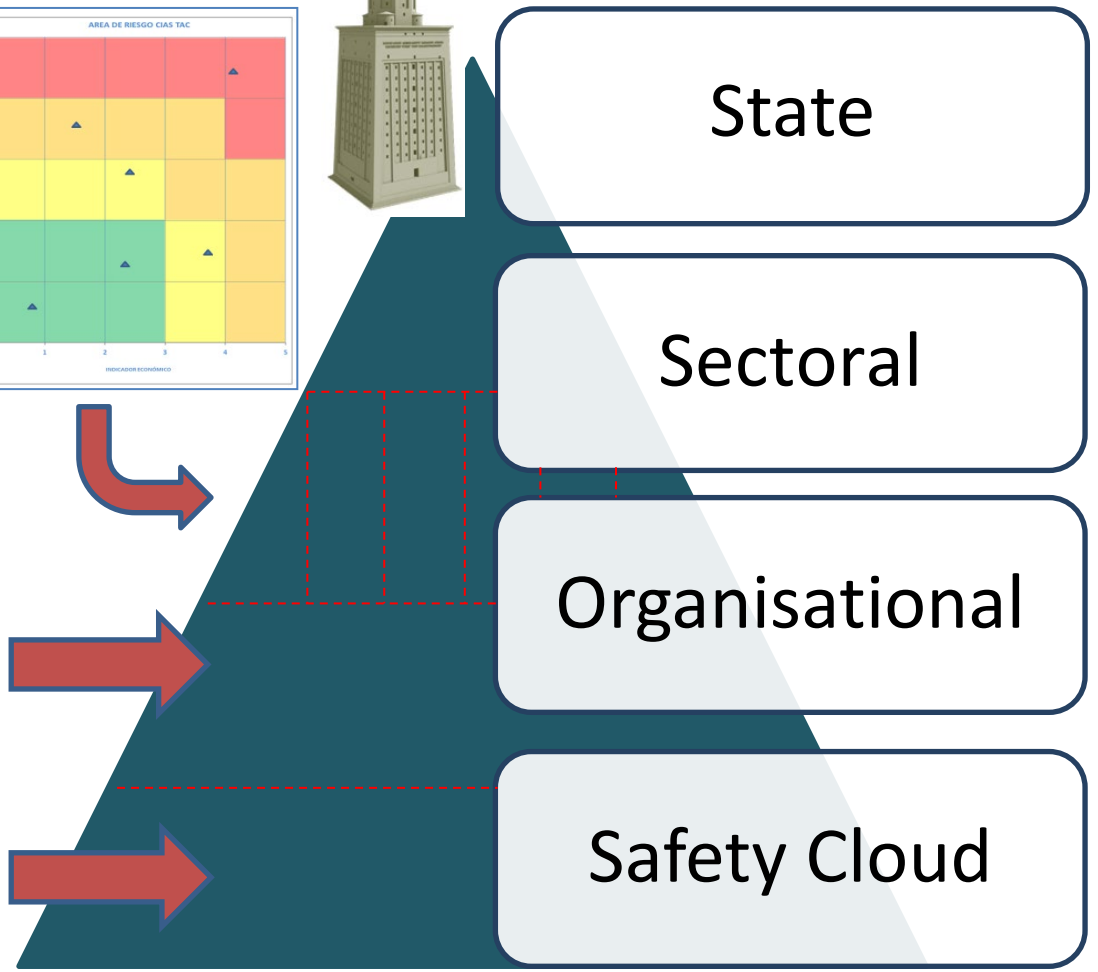
Service provider's risk profile and SRBS

This project is funded by the European Union and implemented by EASA

- Different levels of analysis :







Service provider's risk profile and SRBS

This project is funded by the European Union and implemented by EASA

TECHNICAL INDICATORS - SURVEILLANCE AND SAFETY OCCURRENCES		
INDICATOR		**SUB-INDICATOR**
TECHNICAL INDICATORS *Lagging indicators*	**OPERATIONS SURVEILLANCE PROGRAMME** *AMC1 ARO.GEN.305 (a)(b)(d)(d1) (c)*	Management System
		Operations
		Training
		FTL
	CAMO SURVEILLANCE PROGRAMME *AMC1 ARO.GEN.305 (a)(b)(d)(d1) (c)*	Management System
		Manuals and Records
		Airworthiness
	RAMP INSPECTIONS PROGRAMME *AMC1 ARO.GEN.305 (a)(b)(d)(d1) (c)*	SANA
		SAFA
	OCCURRENCES *AMC1 ARO.GEN.305(c) ORO.GEN.160*	Occurrences - Operations
		Occurrences - Airworthiness
		Occurrences - Other

Service provider's risk profile and SRBS

This project is funded by the European Union and implemented by EASA

ORGANISATIONAL INDICATORS - COMPLEXITY NATURE OF THE ORG.			
INDICATOR			**SUB-INDICATOR**
ORGANISATIONAL INDICATORS *Leading indicators*	**COMPLEXITY** *ARO.GEN.305(b)* ☐ Complex operator ☐ Non-complex operator	**FLEET** *ARO.GEN.305(b)*	Fleets diversity
			Fleet age
			Leasing
		RISK EXPOSURE *ARO.GEN.305(b)*	Risk exposure
		OPERATIONAL SITES *ARO.GEN.305(b)*	Operational bases
			Geographical areas
		OPERATIONAL APPROVALS *ARO.OPS.200-240* *Part SPA*	Specific operational approvals
	POSTHOLDERS *ARO.GEN.305(b)* *AMC1 ORO.GEN.200(b)*		Rotation of postholders
			Dedication of postholders
			Experience and qualification of postholders
	ECONOMIC-FINANCIAL *ARO.GEN.305(b)* *GM1 ARO.GEN.305(b)*		Economic
			Financial
			Organisational risk
	REPORTING CULTURE *AMC1 ARO.GEN.305(c)* *ORO.GEN.160*		Own notification rate
			Ratio of self-reported occurrences
	SAFETY PERFORMANCE *AMC1 ARO.GEN.305(c)*		Alerts PISO-OPS
			Alerts PISO-AIW

Service provider's risk profile and SRBS

This project is funded by the European Union and implemented by EASA

DEFINITION OF INDICATORS

1.- Name
2. -Description
3.- Type
4.- Frequency
5.- Scope
6.- Range
7.- Formula

OCCURRENCE SEVERITY INDICATOR

Acronym	Definition
i_{sev}	Index that quantifies the severity of the events and occurrences suffered by an operator, taking into account its volume of operations.

Calculation

The occurrences and events that occur to each operator in a reference period are selected and are related to their number of cycles during that reference period. For its calculation it is taken into account:

- **Number of cycles**: number of landing-take off cycles during the reference period officially reported by the operator.
- **Severity coefficient:** depending on the severity category of each event:
  - Accident - Severity coefficient = 10
  - Serious incident - Severity coefficient = 5
  - Major incident - Severity coefficient = 1
  - Significant incident – Severity coefficient = 0.05
- **Elapsed-Time coefficient:** this coefficient is defined to dissipate the penalty of the events over time. Each event is considered for three years, and the weight of its penalty is distributed according to the following function:

$$\text{Coef}_{E-T} = \frac{(\text{Years since the event} - 3)^2}{1{,}8}$$

Finally, when the indicator value reaches more than 10, an asymptote is calculated so that in no case the value 15 is exceeded.

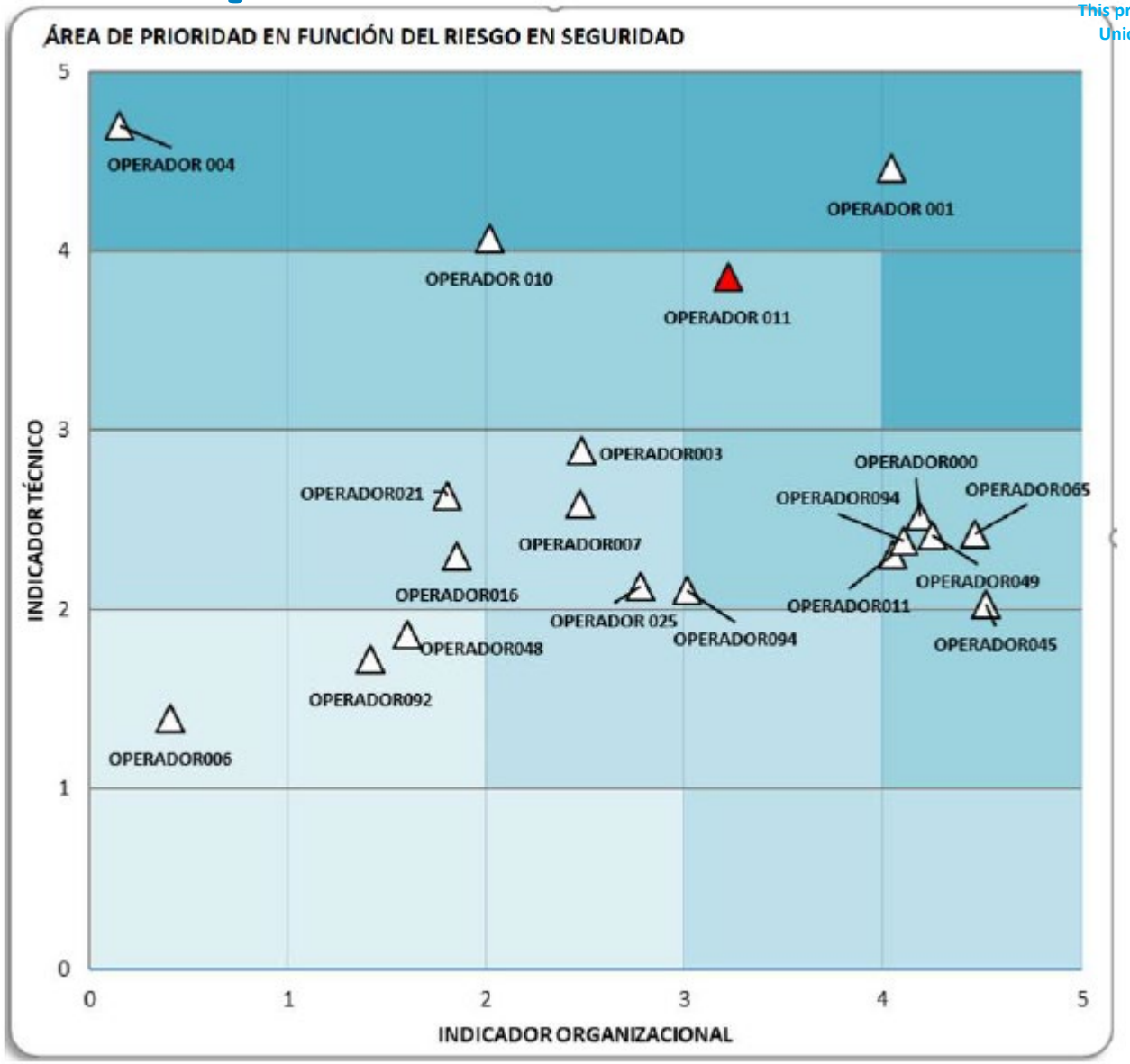
Typology	Temporality	Domain
Continuous Simple Quantitative	**Periodicity of the calculation** The indicator is calculated three times a year (depending on the periodicity of the Committee meetings) **Data selection period** Three years since the date when sub-indicator is calculated.	Safety occurrences Safety culture

Value range	Formula
0-15	$$i_{sev}{}^{calculated} = \frac{\sum_{incidents} Coef_{sev} \cdot Coef_{E-T}}{Number\ Cycles/1000}$$ $$\begin{cases} If\ i_{sev}{}^{calculated} \leq 10 & i_{sev} = i_{sev}{}^{calculated} \\ If\ i_{sev}{}^{calculated} > 10 & i_{sev} = 15 - \frac{25}{i_{sev}{}^{calculated} - 5} \end{cases}$$

Service provider's risk profile and SRBS

This project is funded by the European Union and implemented by EASA

- **Sectoral Level :**
  - High priority zone.
  - Medium-high priority zone
  - Medium-low priority zone
  - Low priority zone



Using ORS data to build and monitor SPIs

f_{airw}	0,20
f_{ops}	0,20
f_{ramp}	0,10
f_{sev}^{airw}	0,225
f_{sev}^{ops}	0,225
f_{sev}^{othr}	0,05

i_{tec}

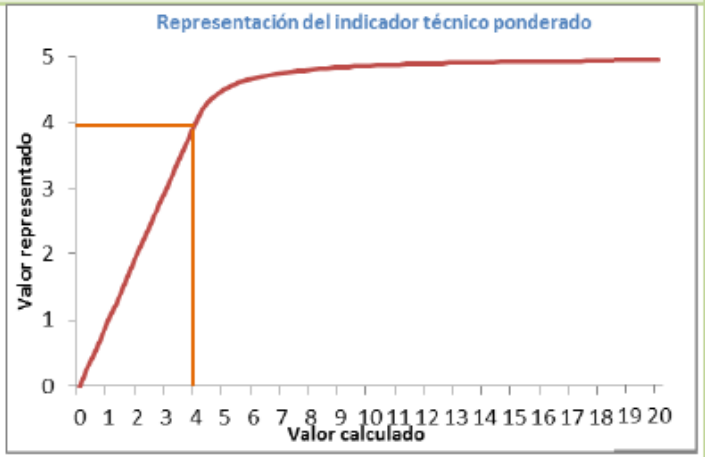
❑ Weighted Technical Indicator:

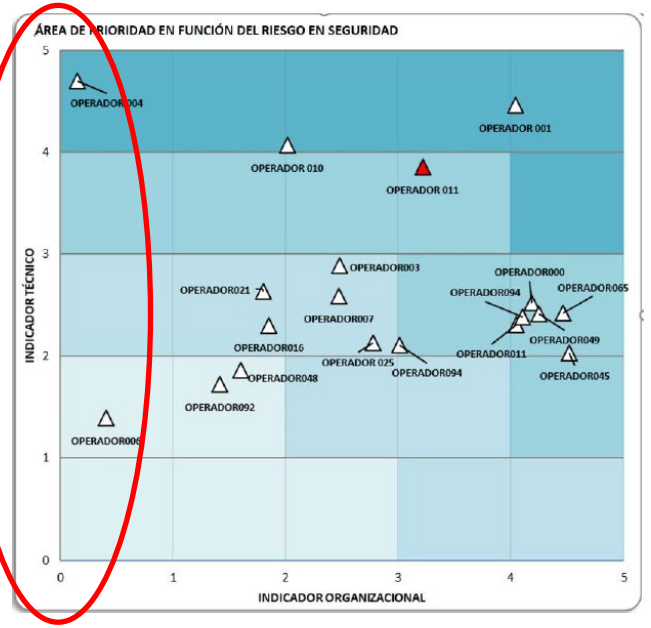
- Weighting of technical indicators with the objective of quantifying the overall technical status of an operator and representing its evolution in the priority area based on safety risk.

$$i_{tec} = f_{airw} \cdot i_{airw} + f_{ops} \cdot i_{ops} + f_{ramp} \cdot i_{ramp} + f_{sev}^{ops} \cdot i_{sev}^{ops} + f_{sev}^{airw} \cdot i_{sev}^{airw} + f_{sev}^{othr} \cdot i_{sev}^{othr}$$

Value Range
0-5

CORRECCIÓN DEL i_{tec} PARA VALORES SUPERIORES A CUATRO

FÓRMULA	REPRESENTACIÓN
Si $i_{tec} > 4$ $i_{tec}^{\ representado} = 5 - \frac{1}{i_{tec} - 3}$	



Using ORS data to build and monitor SPIs

This project is funded by the European Union and implemented by EASA

i_{sev}^{airw} i_{sev}^{ops}

Occurrence Severity Indicator:

- An operator's occurrence rate per number of take-offs (in thousands), also taking into account the potential severity of the occurrence and the time elapsed since the occurrence.
- Three indicators are defined according to the type of occurrence events: Airworthiness, Flight Operations and Other (Airports, Air Navigation, External Factors and Security & Medical).
- The number of take-offs (in thousands) reported by operators through the Safety Indicators Portal (PISO) for the reference period will be used as the exposure factor.

Value Range
0-10

$$i_{sev}^{ops,airw,othr} = Coef_{domain} \cdot Coef_{type} \frac{\sum_{occurrences}^{ops,airw,othr} (Coef_{severity} \cdot Coef_{time})}{N\ take-offs/1000}$$

SEVERITY CLASS	Coefficient
Accident	5
Serious incident	5
Major incident	1
Significant incident	0,1
Minor incident	0
No safety effect/ Not determined	0

SP Metrics and Safety Culture Indicators

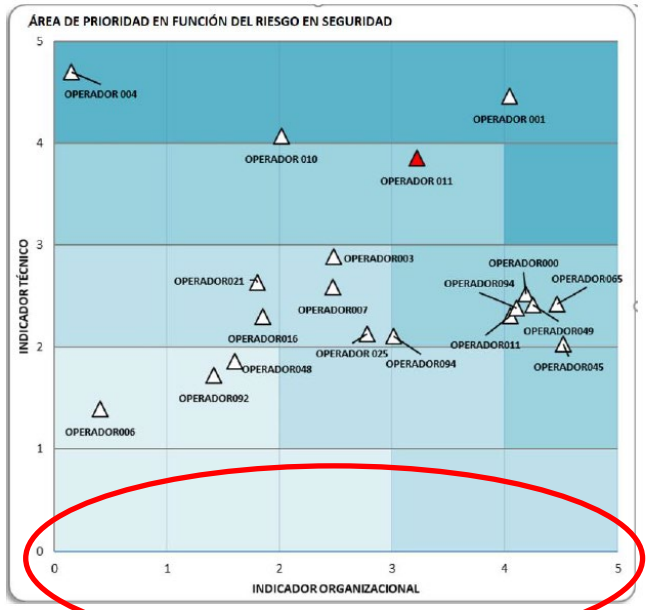
This project is funded by the European Union and implemented by EASA

i_{org}

Value Range
0-5

❑ Organisational Indicators:

- **The organisational indicators seek to measure the risk associated with the operator's organisation** in terms of safety based on the complexity of the organisation, the characteristics of its fleet or its operations, the rotation, experience and dedication of its managers, its economic-financial situation, its reporting culture, as well as any other information available to AESA concerning the organisation.
- It is **calculated as the weighting of the organisational risk indicators**.



$$i_{org} = f_{eco-fin} \cdot i_{eco-fin} + f_{cult} \cdot i_{cult} + f_{fleet} \cdot i_{fleet} + f_{posth} \cdot i_{posth}$$

$f_{eco-fin}$	0,75
f_{fleet}	0,02
f_{posth}	0,03
f_{cult}	0.20

Safety Culture Indicators

This project is funded by the European Union and implemented by EASA

i_{cult}

Reporting culture indicator:

- Analysis of the reporting culture of an operator, comparing, on the one hand, **the occurrences in which it has been involved that have been reported by the operator itself versus the occurrences in which it has been involved that have been reported by other players** in the system (airport, air traffic control, maintenance, other operators...); and on the other hand, **comparing the rate of self-reported occurrences versus an industry benchmark**.

Value Range
0-10

$$i_{cult} = fp_{ratio}^{cult} \cdot i_{ratio}^{cult} + fp_{rate}^{cult} \cdot i_{rate}^{cult}$$

Safety Culture Indicators

This project is funded by the European Union and implemented by EASA

i_{cult}

- **Reporting culture indicator:**

GROUP	CATEGORY
AIRPORT	HANDLING
	INFRAESTRUCTURE AND AIRPORT MANAGEMENT
	AIRCRAFT DAMAGE ON GROUND
	ANIMAL INCURSION
AIR OPERATIONS	SPECIAL AIRCRAFTS
	FLIGHT AND AIRCRAFT MANAGEMENT
	UNSTABILIZED APPROACH
	ABNORMAL RUNWAY CONTACT
	RUNWAY EXCURSION
	(CUASI) COLLISION AGAINST TERRAIN/OBSTACLES
	AERIAL WORKS
	LOSS OF CONTROL
AIR NAVIGATION SERVICES	SEPARATION LOSS AND TCAS
	RUNWAY INCURSION
	ATM/AIS SERVICES
	AIR NAVIGATION SERVICES
AIRWORTHINESS	FUEL
	FIRE/SMOKE
	AIRCRAFT SYSTEMS
	MAINTENANCE
	CABIN EQUIPMENT
SECURITY AND MEDICAL	SECURITY
	MEDICAL
EXTERNAL FACTORS	METEOROLOGICAL CONDITIONS
	BIRDS
	EXTERNAL CONDITIONS

Safety Culture Indicators

This project is funded by the European Union and implemented by EASA

i_{ratio}^{cult}

Sub-Indicator own notification ratio

- **Comparison of the occurrences in which it has been involved that have been reported by the operator itself versus the total number of occurrences in which it has been involved**, including those reported by other agents in the system (airport, air traffic control, maintenance, other operators...).
- In addition, these events are assigned **different weights depending on their typology**, so as to reduce the weight of events not directly related to airworthiness or operations (Airport, Navigation, External Factors and Security&Medicine), which are more likely to be non-reportable by air operators.

Value Range
0-10

$$i_{ratio}^{cult} = 10 \cdot \frac{\sum_{occurrences}^{No\ notified} Coef_{type}^{cult}}{\sum_{occurrences}^{total} Occurrences}$$

Safety Culture Indicators

This project is funded by the European Union and implemented by EASA

i_{rate}^{cult}

Sub-Indicator rate of self-reported occurrences:

- **Comparison of the self-reported occurrence rate against a reference value** calculated for the sector. The following events are taken into account in this ratio:
  - Occurrences with **severity greater than or equal to a minor event**
  - Occurrences **occurring in the reference period** and reported by the operator itself
- These occurrences are adimensionalised as a function of the number of take-offs (in thousands) during the reference period.
- The resulting own notification rate value is compared with a reference value calculated for the scope of analysis, assigning value to the sub-indicator in a linear way from highest notification to lowest.
- The final value of this sub-indicator will be limited to 10, except in cases with less than 1000 operations during the reference period, where its value will be limited proportionally to the value of the operations.

Value Range
0-10

$$i_{rate}^{cult} = 10 \cdot \frac{0,75 \cdot Ref_{sector}^{cult} - \left(\sum_{occurrences}^{notified} Occurrences \Big/ \frac{Nº take-offs}{1000} \right)}{(0,75 \cdot Ref_{sector}^{cult} - 0,10 \cdot Ref_{sector}^{cult})}$$

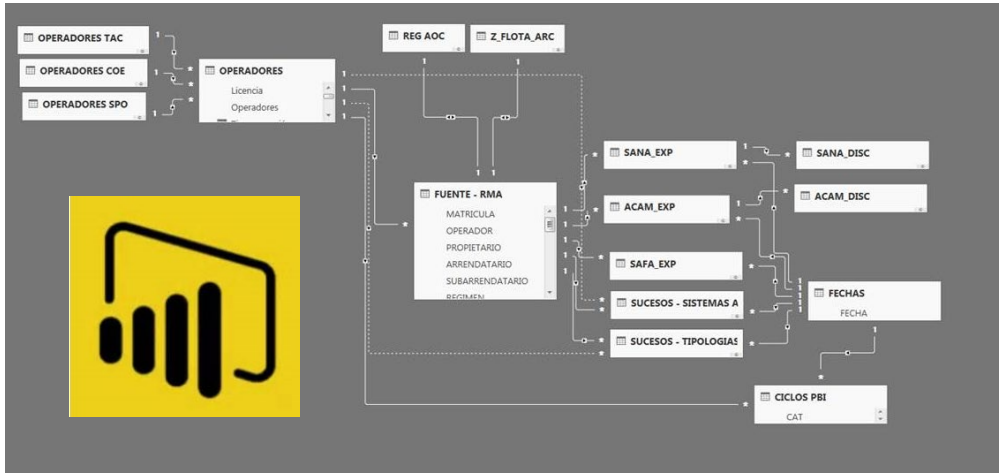
Module 14: Data Analysis & Visualisation

This project is funded by the European Union and implemented by EASA

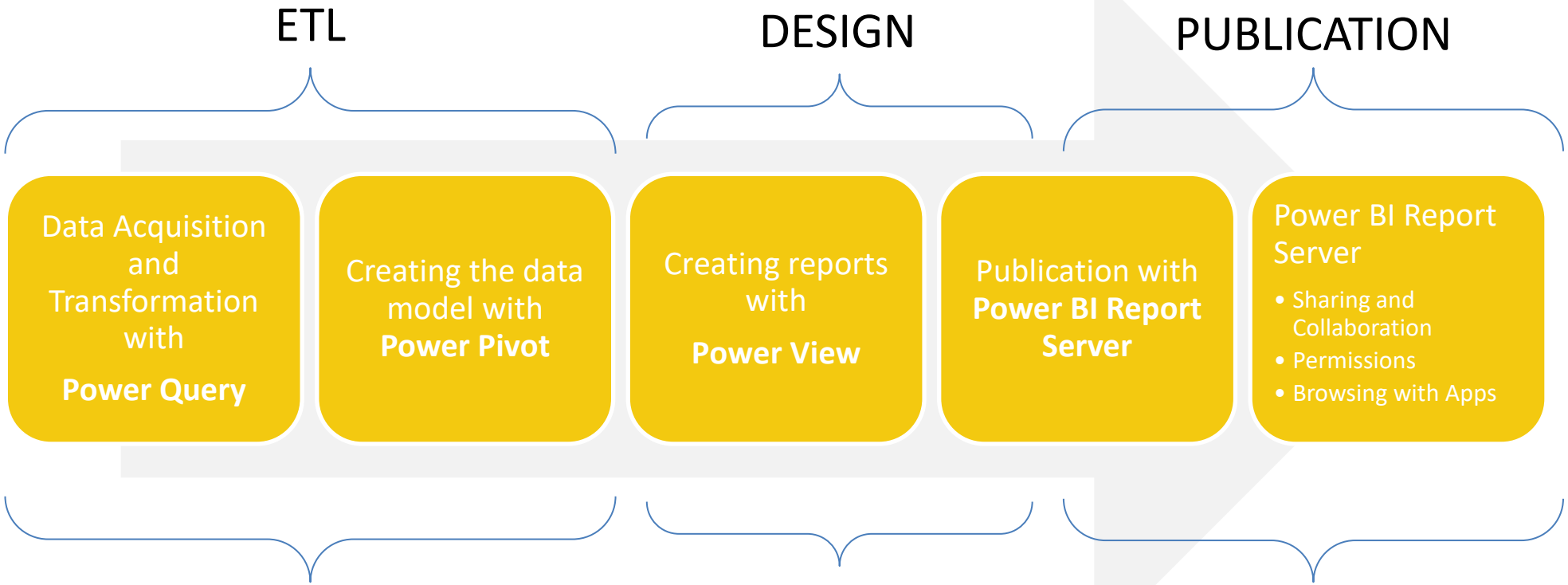
- Visualisation of information stored in the national database
- Effective dashboards and communication tools
- Transforming data into actionable insights: SSP top safety issues

Visualisation

- Data processing systems
  - ✓ Microsoft Power BI



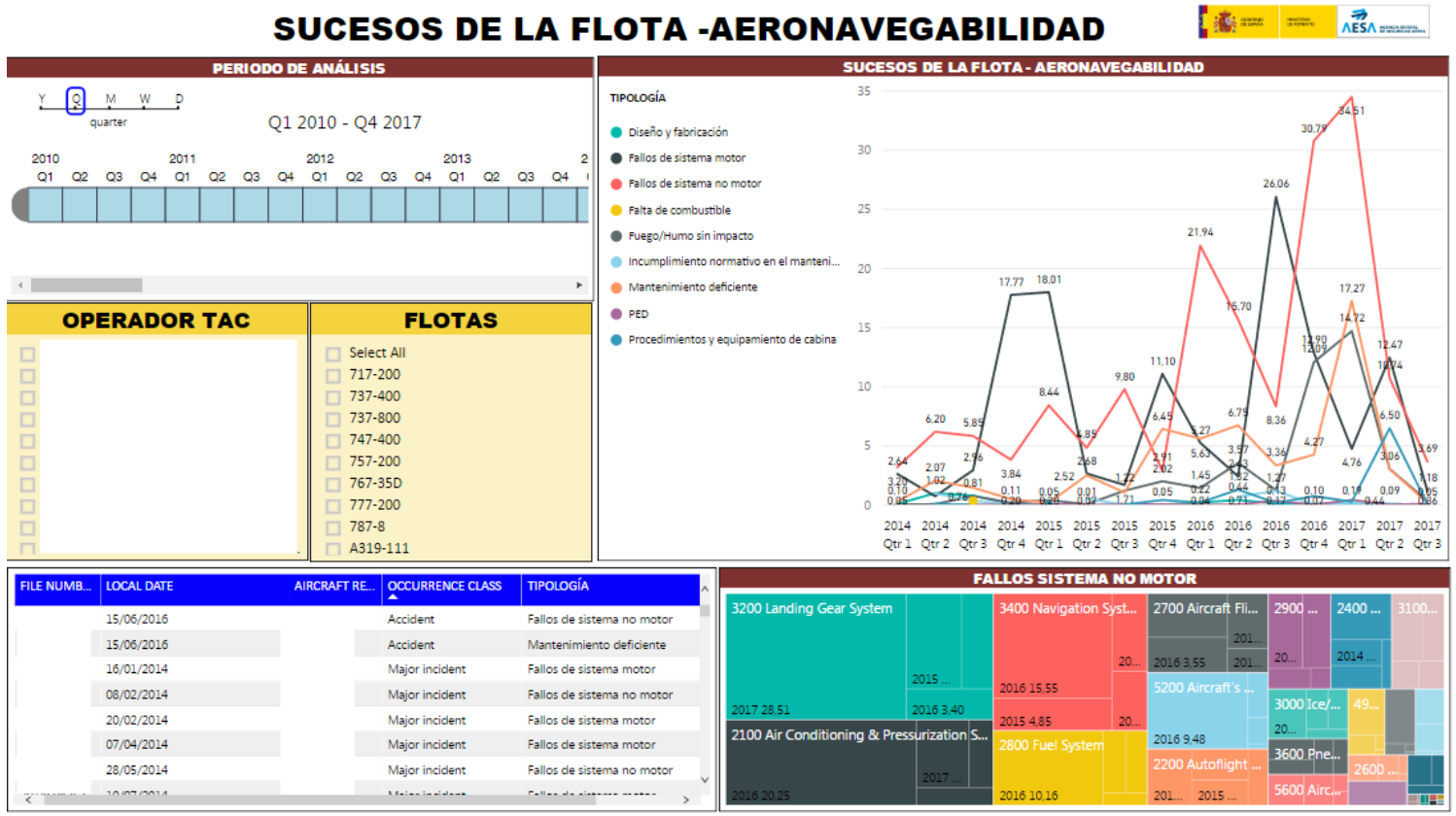
This project is funded by the European Union and implemented by EASA



Visualisation of information

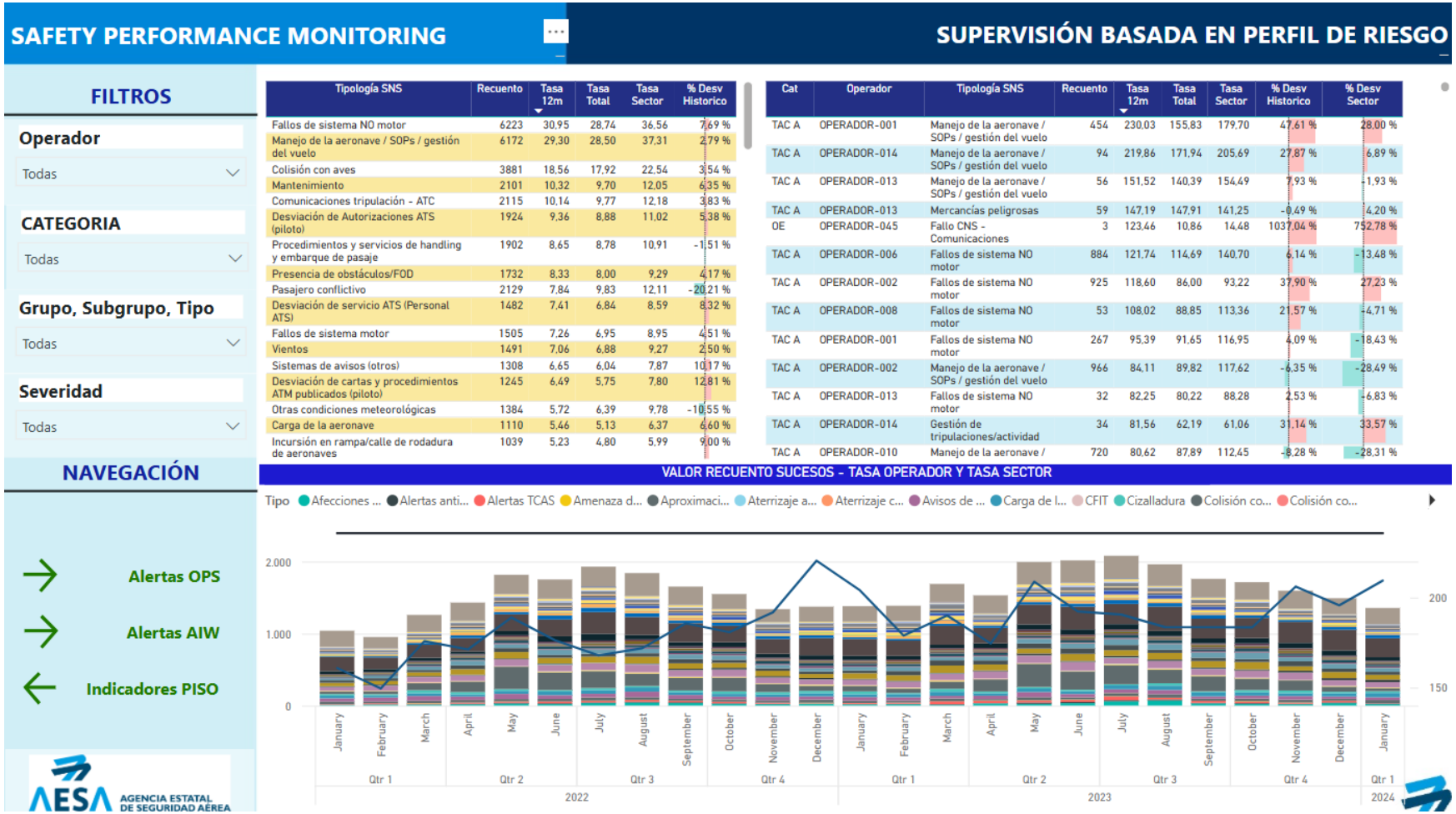
This project is funded by the European Union and implemented by EASA

RISK BASED OVERSIGHT



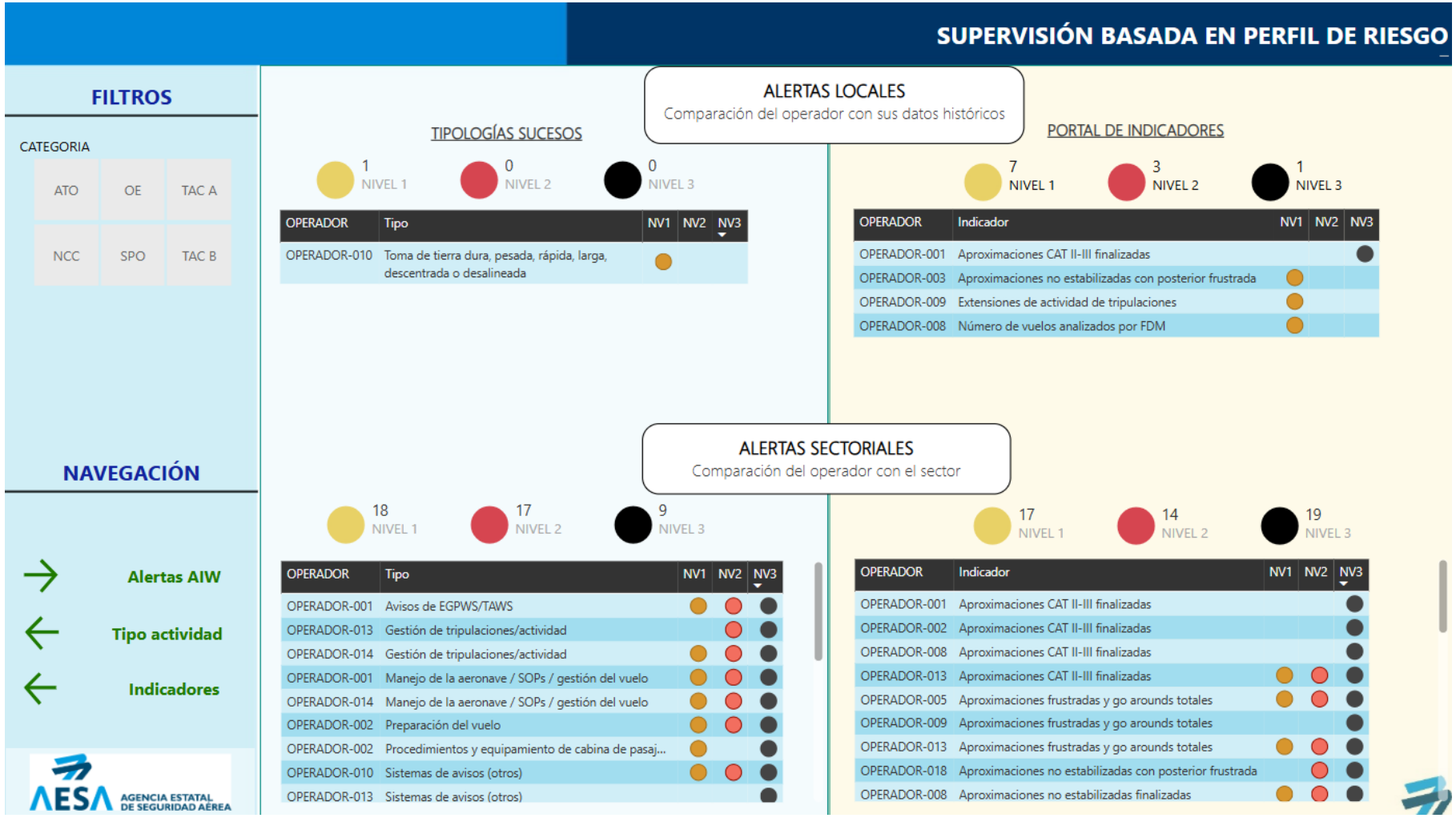
Visualisation of information

This project is funded by the European Union and implemented by EASA



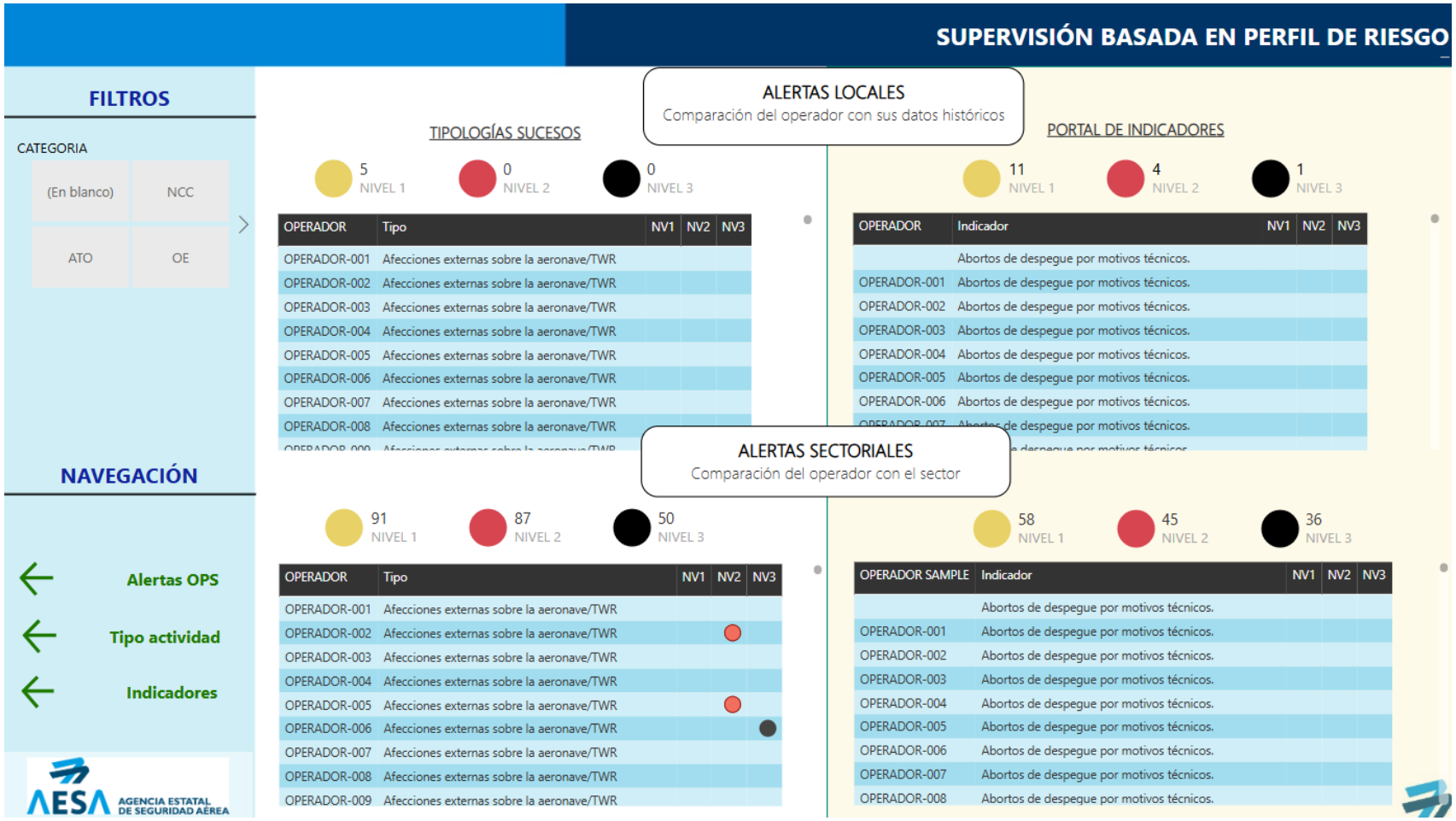
Effective dashboards and comm. tools

This project is funded by the European Union and implemented by EASA



Effective dashboards and comm. tools

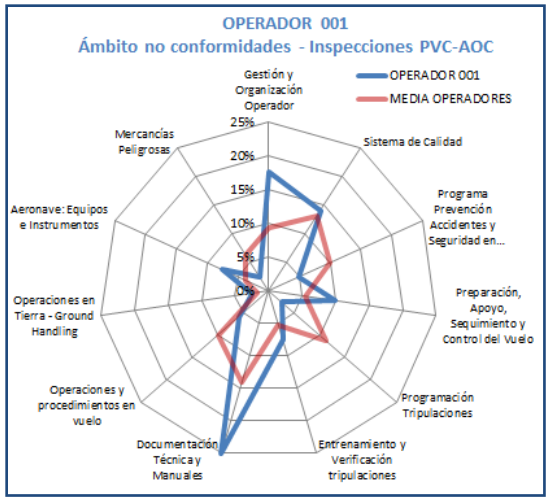
This project is funded by the European Union and implemented by EASA

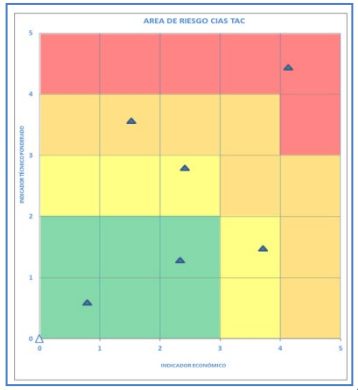


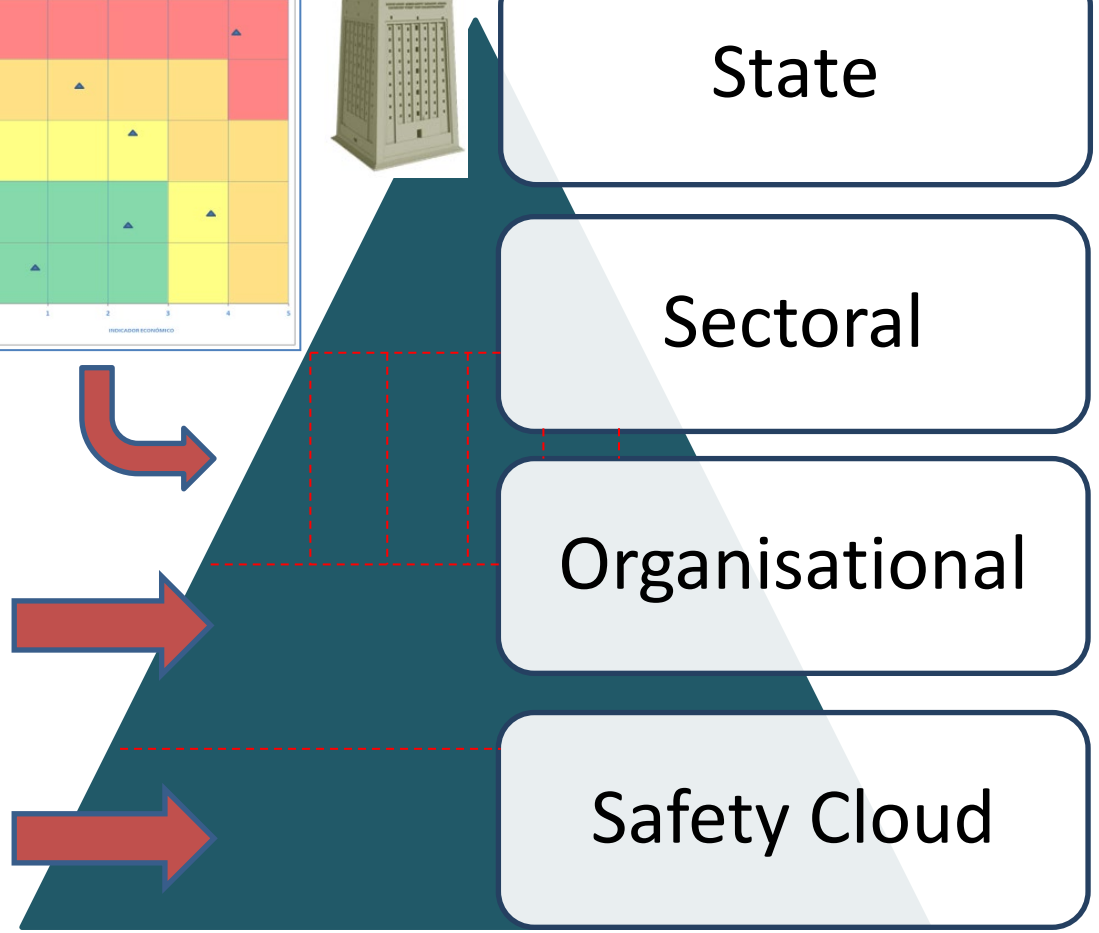
SSP top safety issues

This project is funded by the European Union and implemented by EASA

- Different levels of analysis :







SSP top safety issues

This project is funded by the European Union and implemented by EASA

RIMAS (RISK MANAGEMENT IN AVIATION SAFETY)

- MOR. 102 types of events. Registered in ECCAIRS.
- Other databases: ASN, Eurocontrol (CFMU), ESTOP,...
- 5 degrees of severity (ICAO and EUROCONTROL): Minor, Significant, Major, Serious, Accident
- 4 aircraft types T1, T2, T3, T4 (No. of passengers)

- ✓ Operations
  - Hard landings,…
- ✓ Air Navigation
  - TCAS RAs,…
- ✓ Airworthiness
  - Engine failure,...

- ✓ Airport
  - Vehicle collision,...
- ✓ External factors
  - Bird strikes,...

SSP top safety issues-RIMAS

This project is funded by the European Union and implemented by EASA

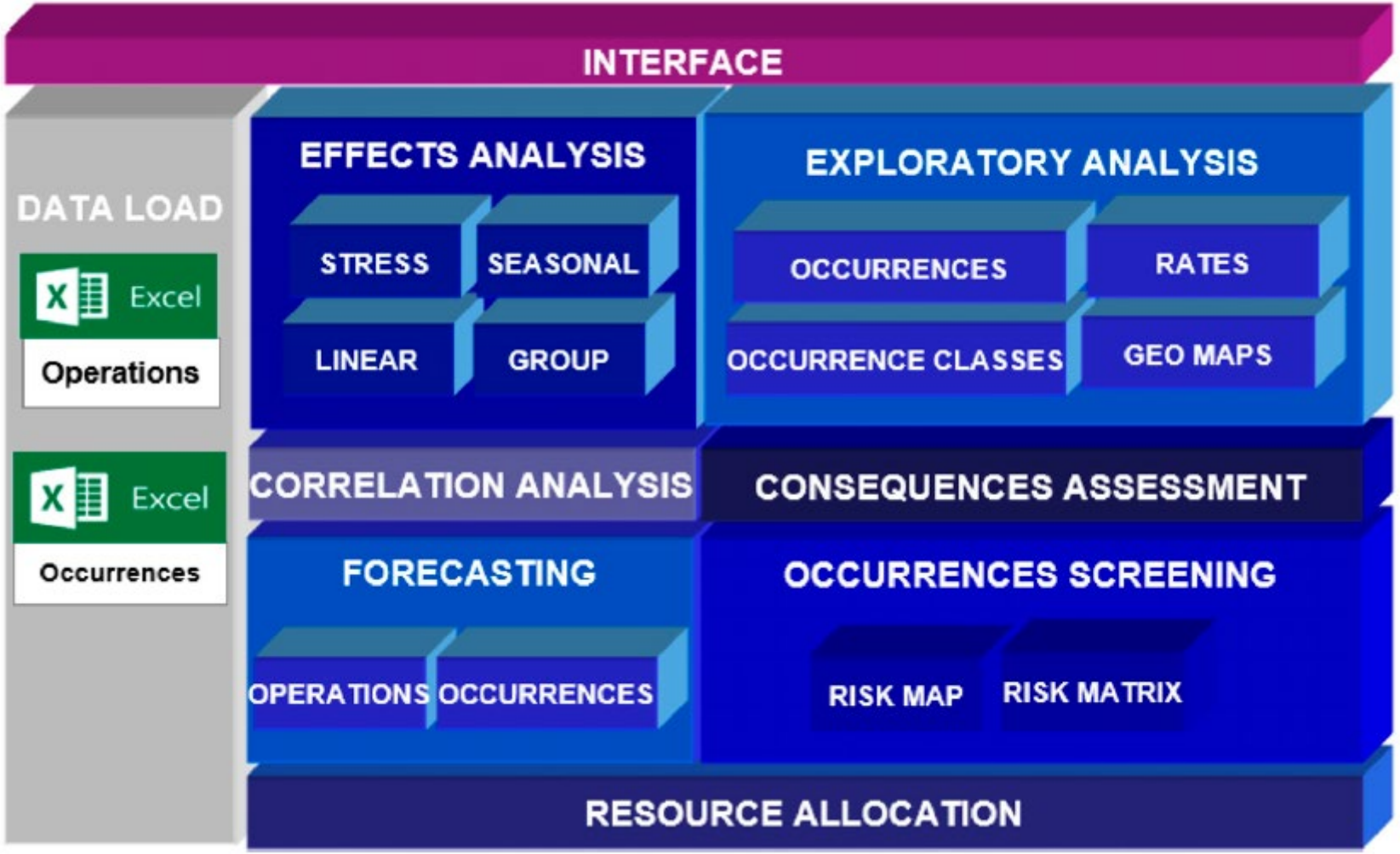
- A scientifically supported methodology for state-level safety risk management
- Beyond risk matrices and towards a coherent development of SSPs

Based on R! and ECCAIRS (and other aviation databases), it supports the development of:

- Forecasting models for 102 event types (including number of operations)
- Forecasting models for event severity types (1 to 5)
- Forecasting models for the consequences of event occurrences (fatalities, delays, ...)A multi-attribute utility function to evaluate such consequences.
- Risk maps (and risk matrices)
- Event screening
- Optimal measures to reduce and mitigate aviation safety risks
- Visualisation of all types of charts to create aviation safety reports

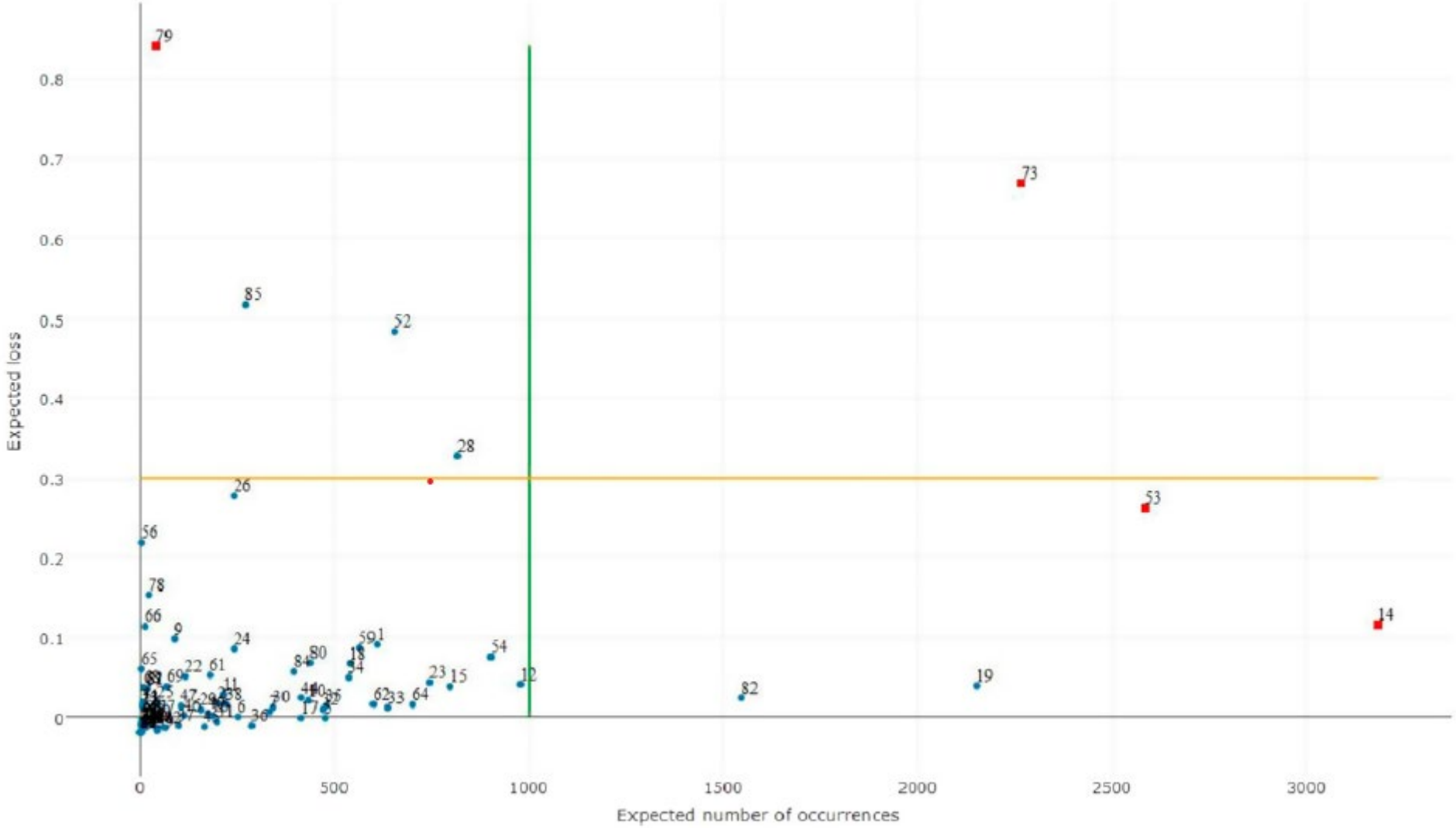
SSP top safety issues-RIMAS

This project is funded by the European Union and implemented by EASA



SSP top safety issues-RIMAS

This project is funded by the European Union and implemented by EASA



SSP top safety issues

This project is funded by the European Union
and implemented by EASA

PRELIMINARY SAFETY SCREENING

POSSIBLE HIGH SEVERITY

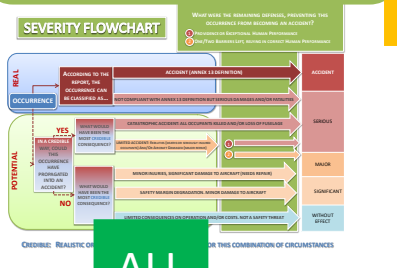
- Information Gathering
- Deeper Analysis
- Formal Investigation?

AFTER THE ANALYSIS

ECCAIRS UPDATING WITH RESULTS

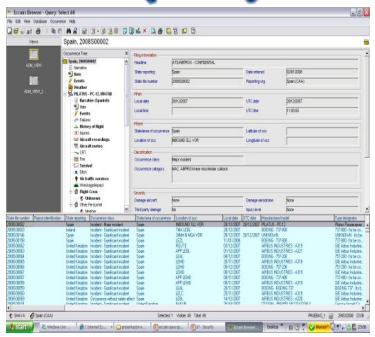
ERCS + Risk Assessment for Single Occurrence

RAT >< ARMS >< Bow Tie>¿?



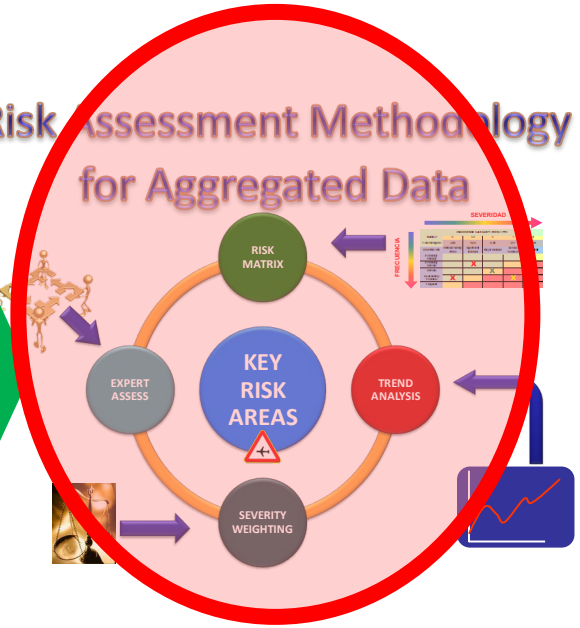
ALL

ECCAIRS



READY FOR EXPLOITATION

Risk Assessment Methodology for Aggregated Data



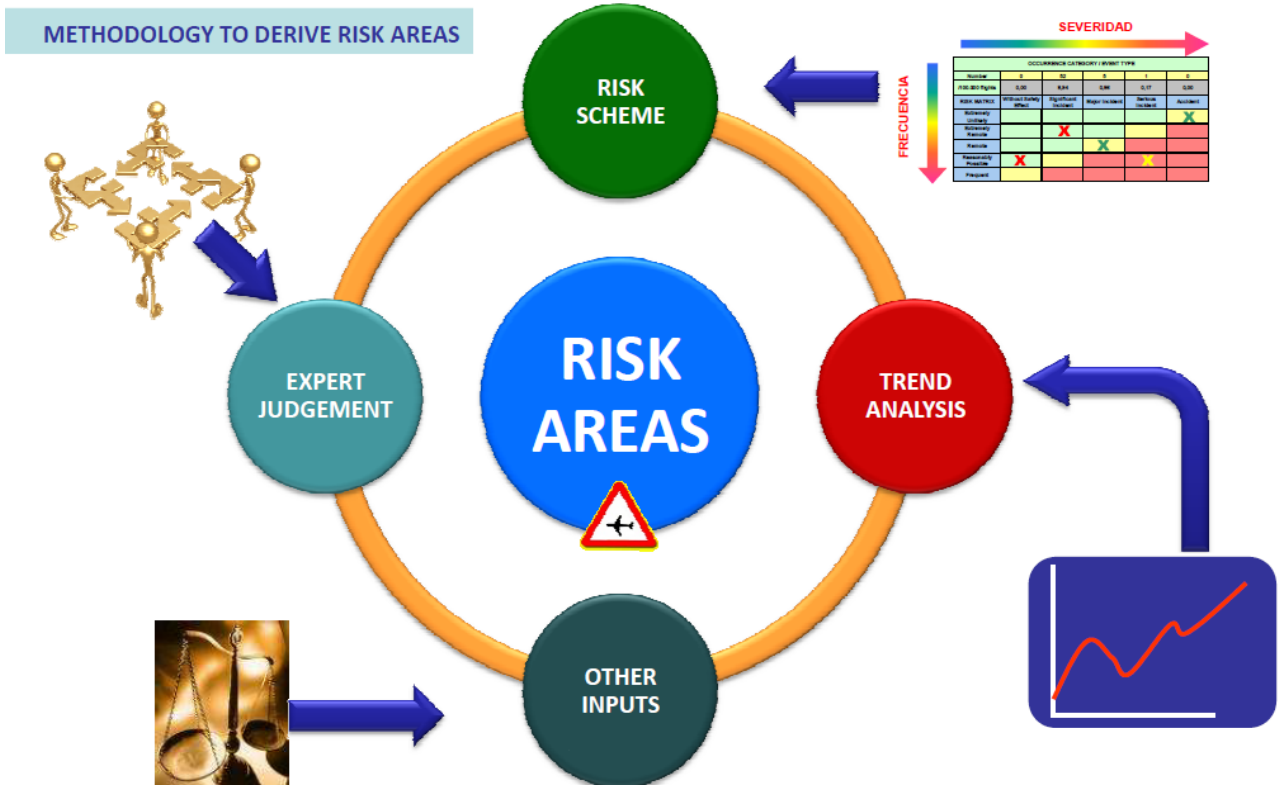
FROM AGREGATED DATA

FROM SINGLE OCCURRENCES

TOP SAFETY ISSUES

SSP top safety issues

This project is funded by the European Union and implemented by EASA



- Identification of Key Risk Areas from aggregated data
- The influence of different factors are considered
- A battery of indicators is finally assessed and validated by experts

SSP top safety issues

This project is funded by the European Union and implemented by EASA

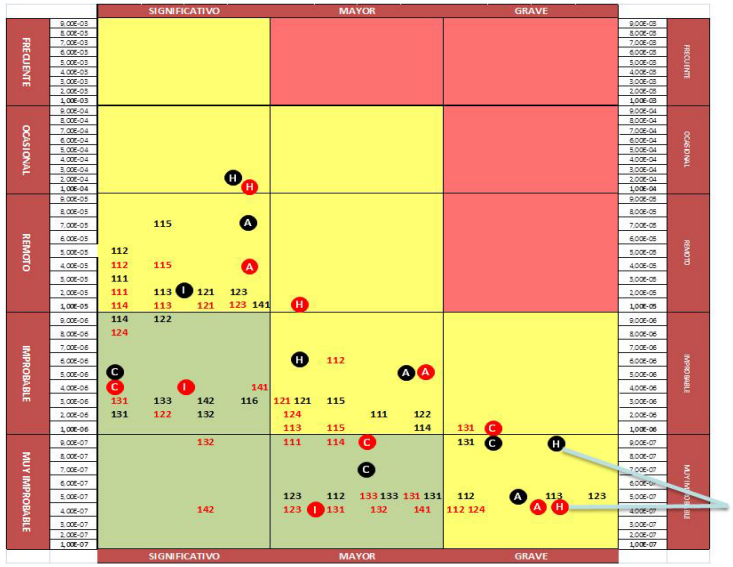
RISK MATRIX

A visual scheme for Risk

- Shows the usual bi-dimensional representation of Risk for each event type
- Different Exposure data for calculations, depending on the event type (flights, movements, AC cycles, etc)
- Only **Significant, Major and Serious** events are taken into account
- The outcome is not a number! It is a **combination of three symbols showing the evolution for each severity** column: significant, major, and serious

GROUP	CATEGORY	EVENT TYPE
AIRPORT RELATED	GROUND HANDLING	Damage by Ground vehicle
		Ground Handling/Parking/Pushback procedures
		Flight Dispatch/ Load Sheet/ Refueling
		Dangerous Goods
	AERODROME FACILITIES	Design / Ilumination
		Aerodrome Maintenance
		Runway Obstacles/FOD
		Aerodrome Services
	COLLISION ON GROUND	Powered Aircraft
		Non Powered Aircraft
	ANIMAL RUNWAY INCURSION	Runway Incursion-Animal

Indicator 1 (three coord)



(=,=,=)
(=,=,+)
(=,+,=)
(=,+,+)
(+,=,=)
(+,=,+)
(+,+,=)
(+,+,+)

SSP top safety issues

This project is funded by the European Union and implemented by EASA

TREND ANALYSIS

Quantifying the variation

$$\text{Indicator 2} = \frac{\Delta\text{Type Rate}}{\Delta\text{Rest of Group Rate}}$$

- **>1** This type grows more than the rest of occurrences in a similar operational area. Warning!
- **~1** The variation is similar for the whole group. Possible reporting culture improvement; Check
- **<1** This type grows less than the rest of occurrences in a similar operational area. OK!

GROUP	CATEGORY	EVENT TYPE
AIRPORT RELATED	GROUND HANDLING	Damage by Ground vehicle
		Ground Handling/Parking/Pushback procedures
		Flight Dispatch/ Load Sheet/ Refueling
		Dangerous Goods
	AERODROME FACILITIES	Design / Ilumination
		Aerodrome Maintenance
		Runway Obstacles/FOD
		Aerodrome Services
	COLLISION ON GROUND	Powered Aircraft
		Non Powered Aircraft
	ANIMAL RUNWAY INCURSION	Runway Incursion-Animal

Indicator 3 (%)

CRITERIA	ONLY HIGH SEVERITY	
Size of Type Sample	< 2% Total Occurrences	≥ 2% Total Occurrences
% Increase Previous Year	≥ 100%	≥ 30%

SSP top safety issues

This project is funded by the European Union and implemented by EASA

SEVERITY WEIGHTING

Calculating the “weight” of each type

- Each type is expressed as a “severity vector” difficult to compare with.
- A scalar numerical estimation is built to assess the WEIGHT of each event type in the annual occurrence sample.
- Only taken as a comparison value; difficult to interpret.

GENERAL PROPORTION OF “SIGNIFICANT EVENTS” WITH RESPECT TO EACH SEVERITY

ACCIDENT	SERIOUS	MAYOR	SIGNIFICANT	MINOR
300	100	25	1	0,25

X Rate + X Rate + X Rate + X Rate + X Rate

=

Indicator 4 → Equivalent Significant Event

FOR EACH EVENT TYPE

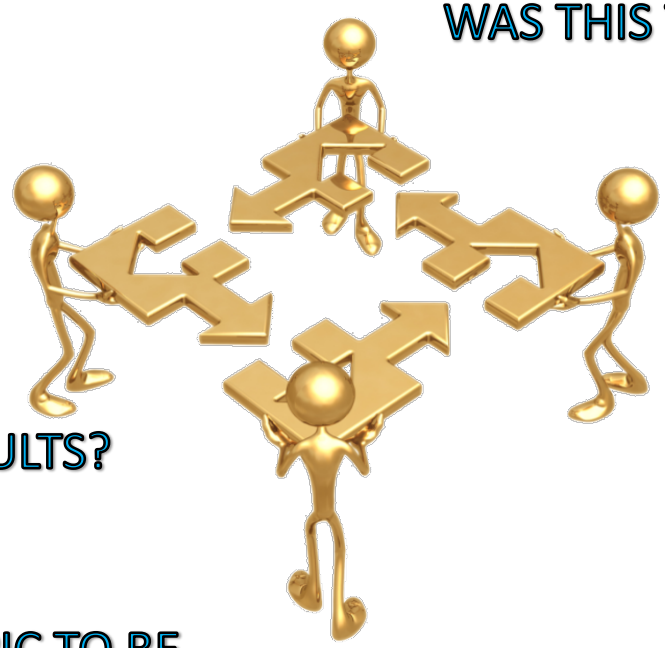
SSP top safety issues

This project is funded by the European Union and implemented by EASA

EXPERT ASSESS

Validation by Aviation Experts

- The results are assessed and discussed by a team of Pilots, ATCOs, Maintenance Technicians, Flight Dispatchers, Engineers…
- Any other safety topic can be highlighted as additional risk area



WAS THIS TOPIC IDENTIFIED AS RISK AREA BEFORE?

DO WE NEED TO GO DEEPER?

DO THE RESULTS SHOW THE REAL SITUATION?

DIFFICULTIES IN THE INTERPRETATION OF THE RESULTS?

ARE THE RESULTS COHERENT?

ANY OTHER TOPIC TO BE INCLUDED?

SSP top safety issues

This project is funded by the European Union and implemented by EASA

KEY RISK AREAS

RESULTS

Ind 1 Ind 4 Ind 2 Ind 3

RISK AREA	CODE TYPE	OCCURRENCE TYPE	RISK MATRIX	SSE	RATE TYPE vs GROUP	INCREASE 2010-09 HIGH SEV.	RIK AREA IN 2009?
1	441	POWER PLANT FAILURES	+++	3,12E-03		46%	YES
2	271	LOW ALTITUDE OPERATIONS	+++	1,54E-03			NO
3	651	BIRD STRIKES	+	4,1 E-0			YES
	652	BIRD INGESTION		7,6 E-05		150%	
4	661	INTERFERENCE TO THE AC FROM G		8,96E-05	22,93		NO
5	331	DEVIATION FLIGHT CREW/ANS		9E-03	1,20	53%	NO
	335	ATCO PROVISION OF SERVICE		-03	1,29	40%	
6	333	CNS FAILURES		3	14,25	110%	YES
7	311	TCAS ALERTS					NO
8	321	RUNWAY INCURSIONS					YES
9	334	AIRSPACE INFRINGEMENTS	+++	3,37E-04	1,35		YES
10	112	HANDLING PROCEDURES	+++	2,50E-04			YES
	111	AC STRUCK BY VEHICLE/EQUIPMENT	++=	8,32E-05		100%	

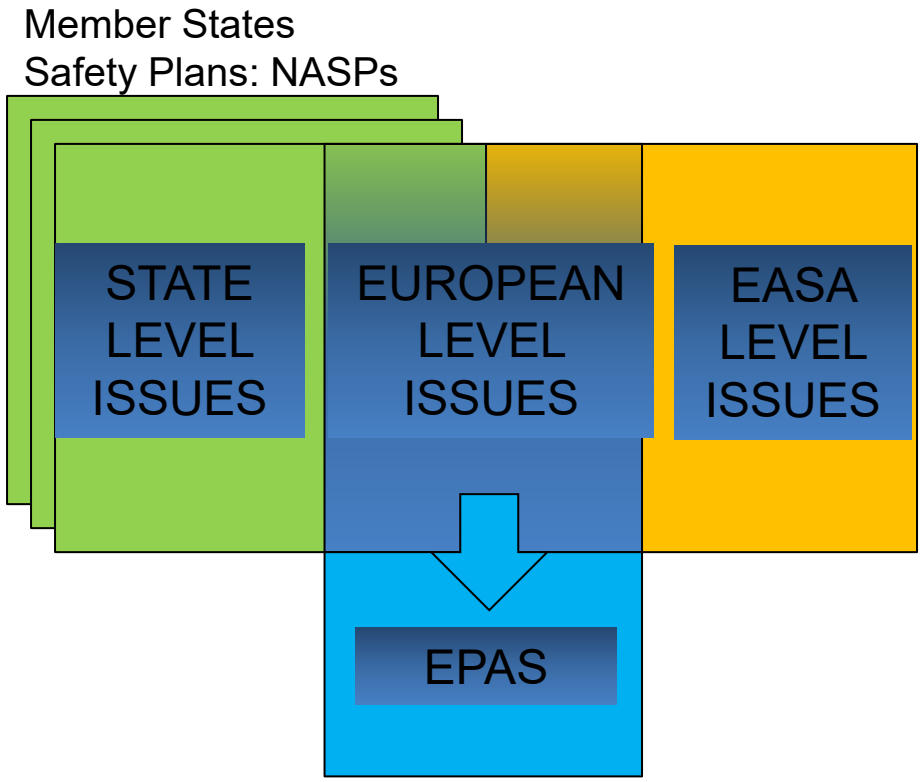
Module 15: The EU Safety Risk Management process

→ From occurrence analysis to the EPAS

EU Safety Risk Management process

This project is funded by the European Union
and implemented by EASA

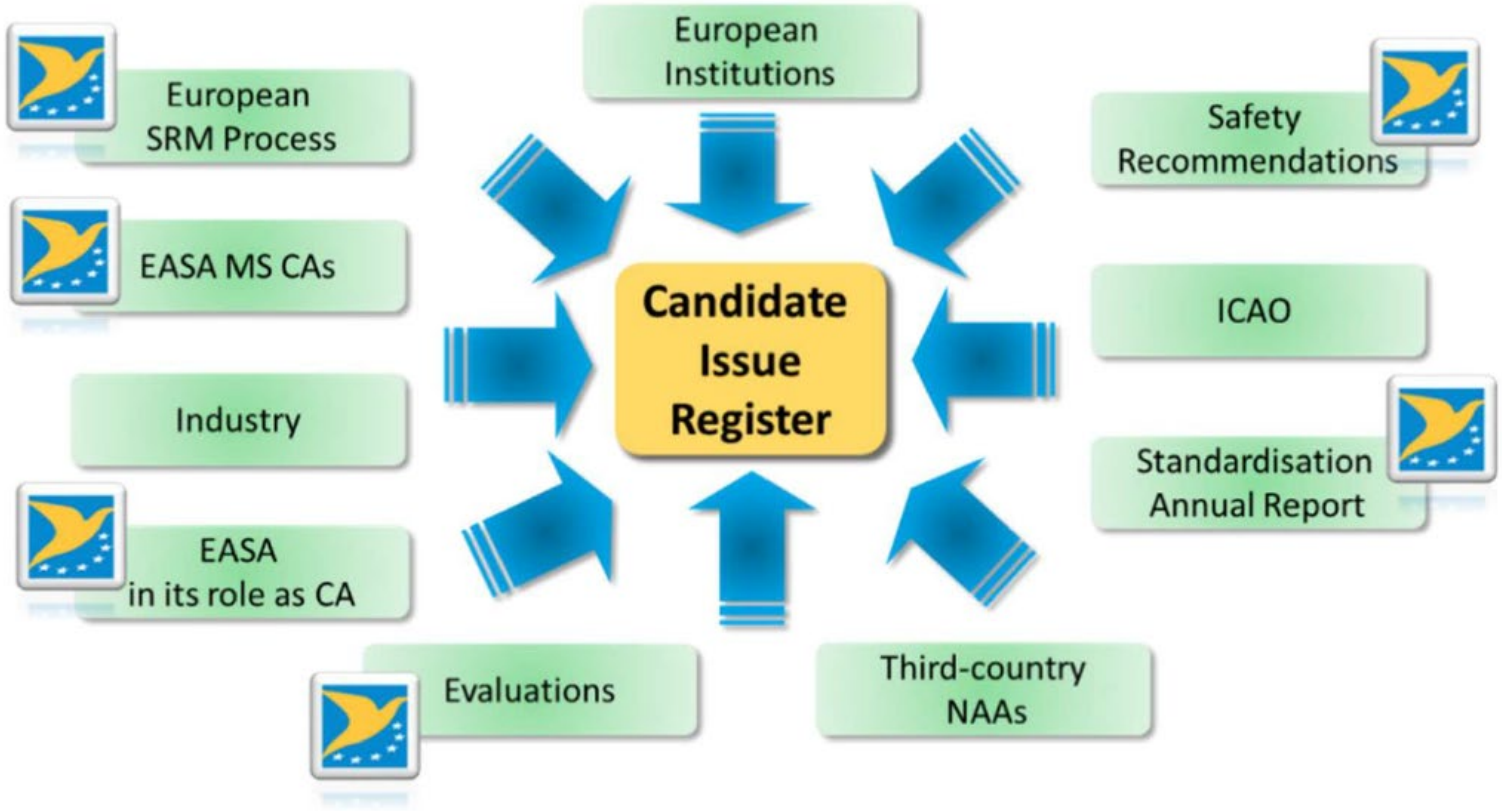
EUROPE: EPAS



EU Safety Risk Management process

This project is funded by the European Union and implemented by EASA

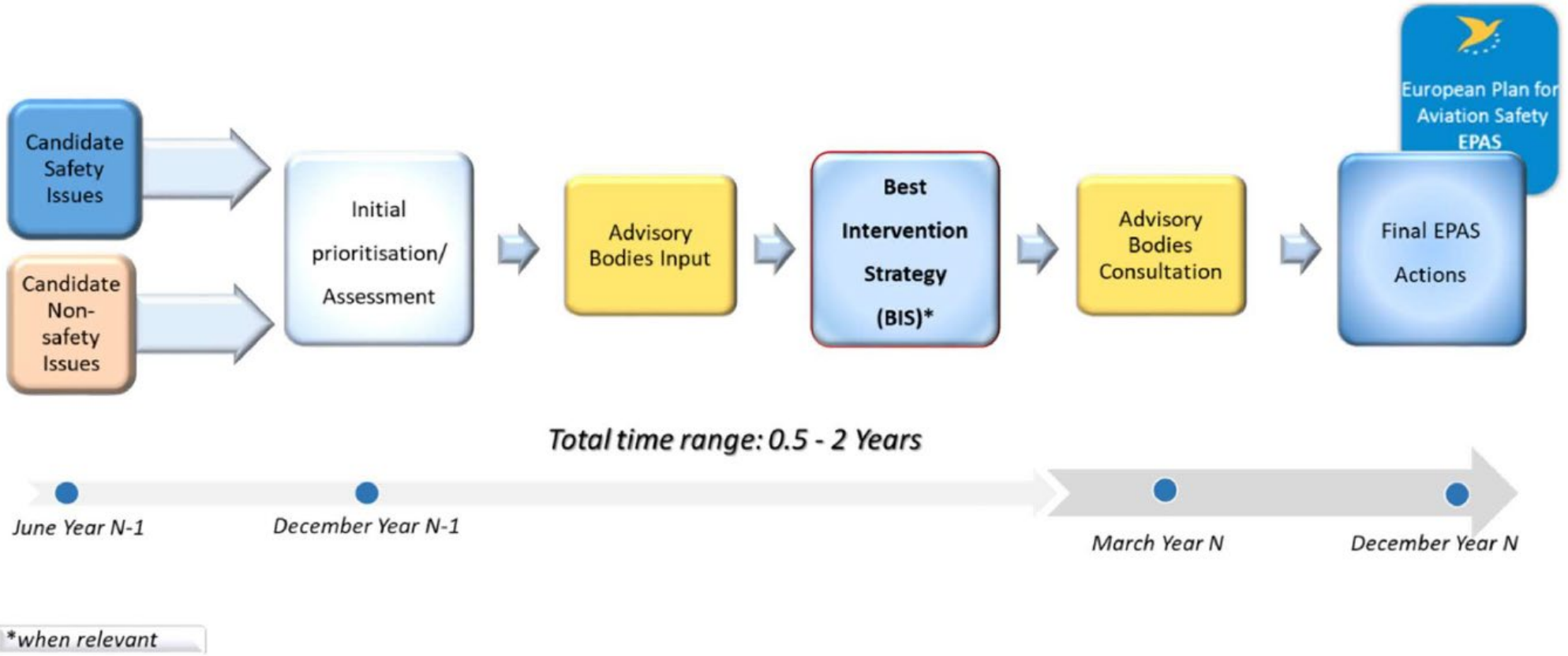
EUROPE: EPAS



EU Safety Risk Management process

This project is funded by the European Union and implemented by EASA

EUROPE: EPAS



EU Safety Risk Management process

This project is funded by the European Union and implemented by EASA

EUROPE: EPAS

Inputs

- Based on data combined with expert inputs

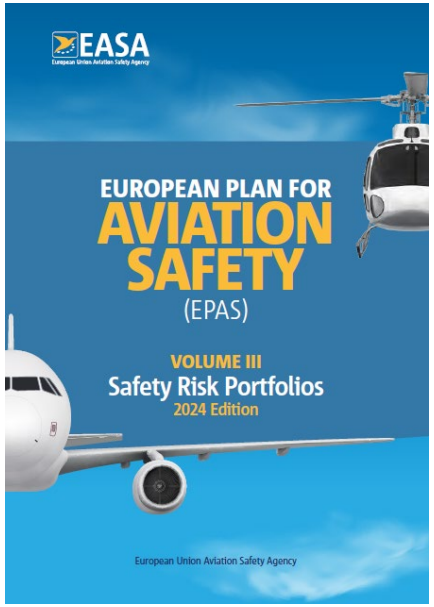
Outputs

- Safety risk portfolios:
  - A prioritised list of safety issues (ASSESS – MITIGATE - MONITOR)
  - **European Plan for Aviation Safety (EPAS) Vol III**
- Safety issue assessments
  - Detailed review of priority safety issues to identify the causes and proposed mitigating actions
- Programming actions
  - Definition through best intervention strategy (BIS)
  - **European Plan for Aviation Safety (EPAS) Vol II**
- Implementing actions by actors
  - — Rulemaking tasks (RMTs)
  - — Implementation Support tasks[10] (ISTs)
  - — Safety Promotion tasks (SPTs)
  - — Research projects (RES)
  - — Member State tasks (MSTs)
  - — Evaluation tasks (EVTs)[11].
- Monitoring:
  - Annual Safety Review

EU Safety Risk Management process

This project is funded by the European Union and implemented by EASA

Areas of greater concern or need: EASA

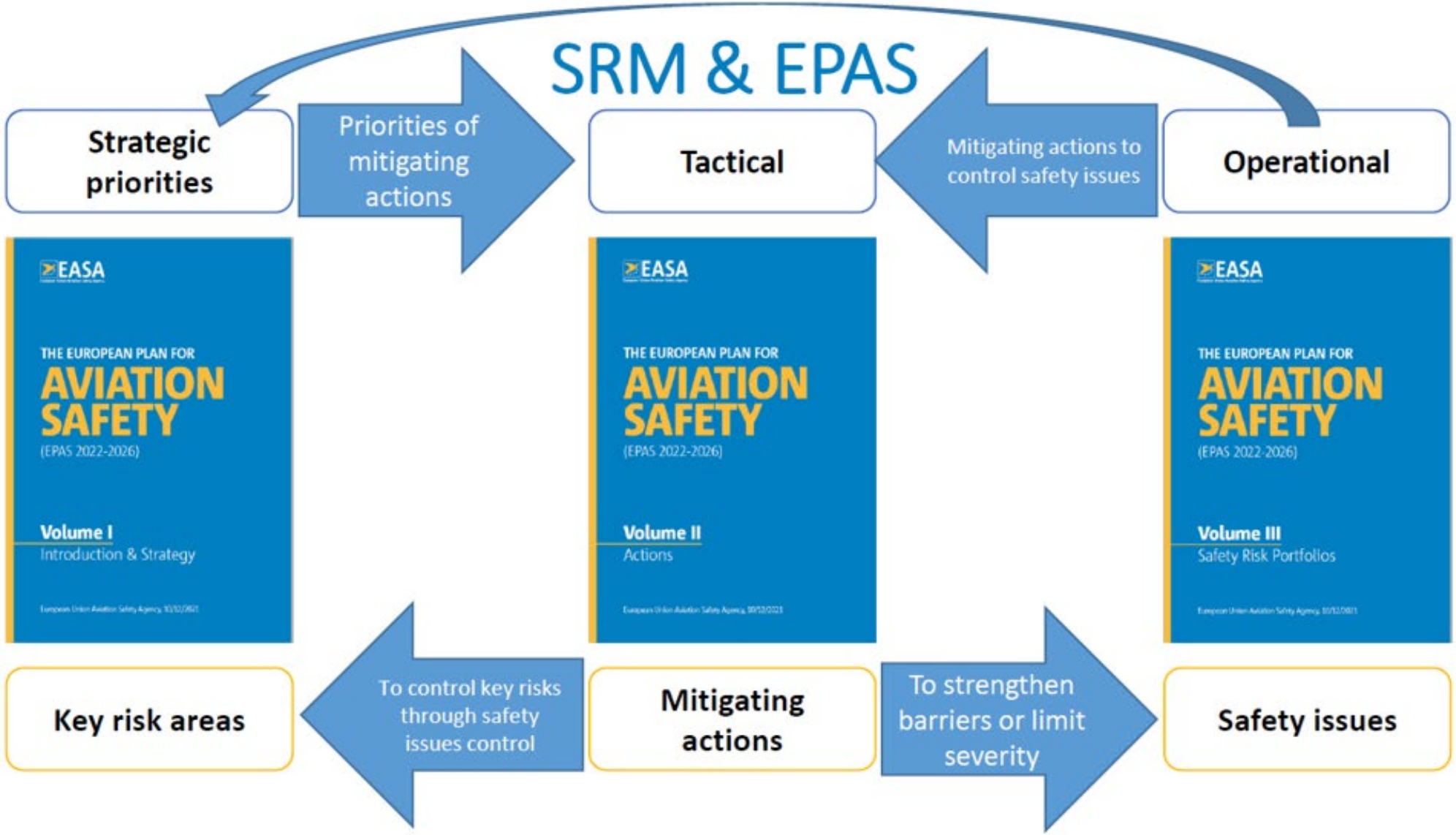


Safety Issue Priority Index (SIPI)

The main element: The residual risk		The additional elements factored in the index		
The worst likely accident outcome, and	The systemic barriers already implemented, and their effectiveness	Whether the safety issue has already resulted in fatalities, or contributed to a high-energy accident outcome	Whether the safety issue is novel (e.g., associated with newly introduced technology, unusual operations, innovative design)	Whether the operational exposure to the Safety Issue is important (e.g., safety issues may only be of concern during training flights, reducing the operational exposure)

EU Safety Risk Management process

This project is funded by the European Union and implemented by EASA

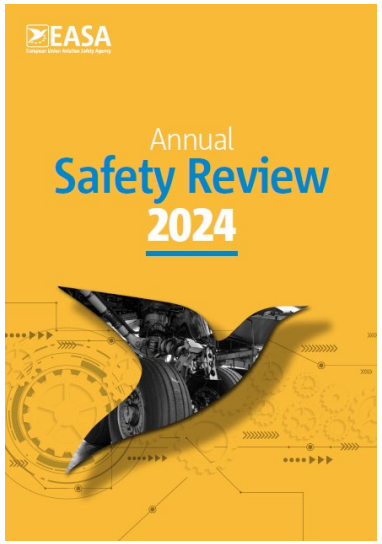


EU Safety Risk Management process

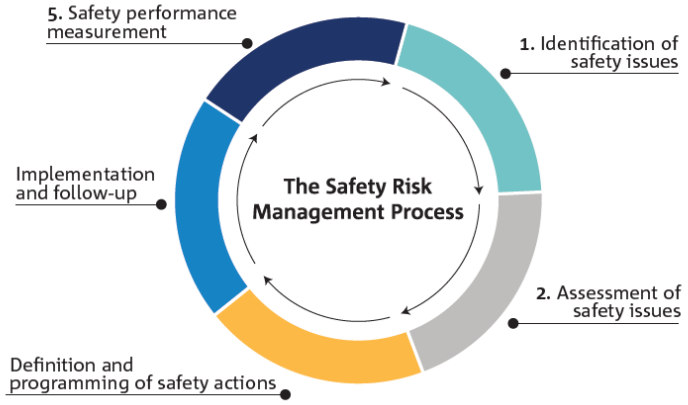
This project is funded by the European Union
and implemented by EASA

SAFETY RISK MANAGEMENT
EU/EASA

EPAS



EASA ANNUAL SAFETY REVIEW



Module 16: Communication & Sharing of Safety Information

- Internal and external communication strategies
- Regional sharing practices: Exchange of Information Between Partner States and EASA
- European Central Repository: Dissemination of Information
- Sharing information with interested parties and the public

Internal and external communication strategies

This project is funded by the European Union and implemented by EASA

Stats Analysis

Technical Reports

Weekly Follow-Up

Risk Profiles

Alert Mechanism

Quarterly Reports

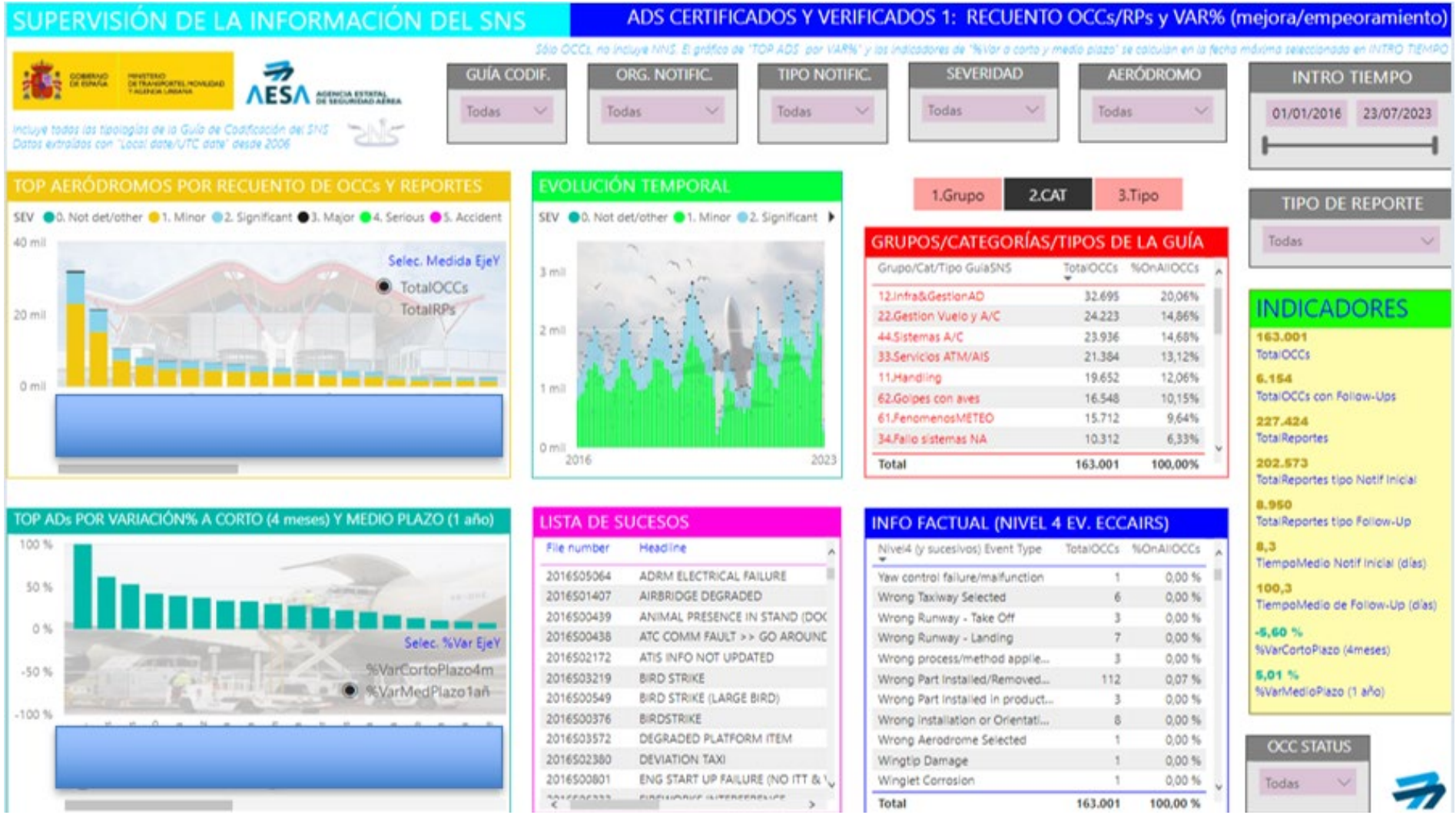
Safety Comms

Weekly reports

Annual Memory

Internal and external communication strategies

This project is funded by the European Union and implemented by EASA



Internal and external communication strategies

This project is funded by the European Union and implemented by EASA

Flow of information:

Internal and external communication strategies

This project is funded by the European Union and implemented by EASA

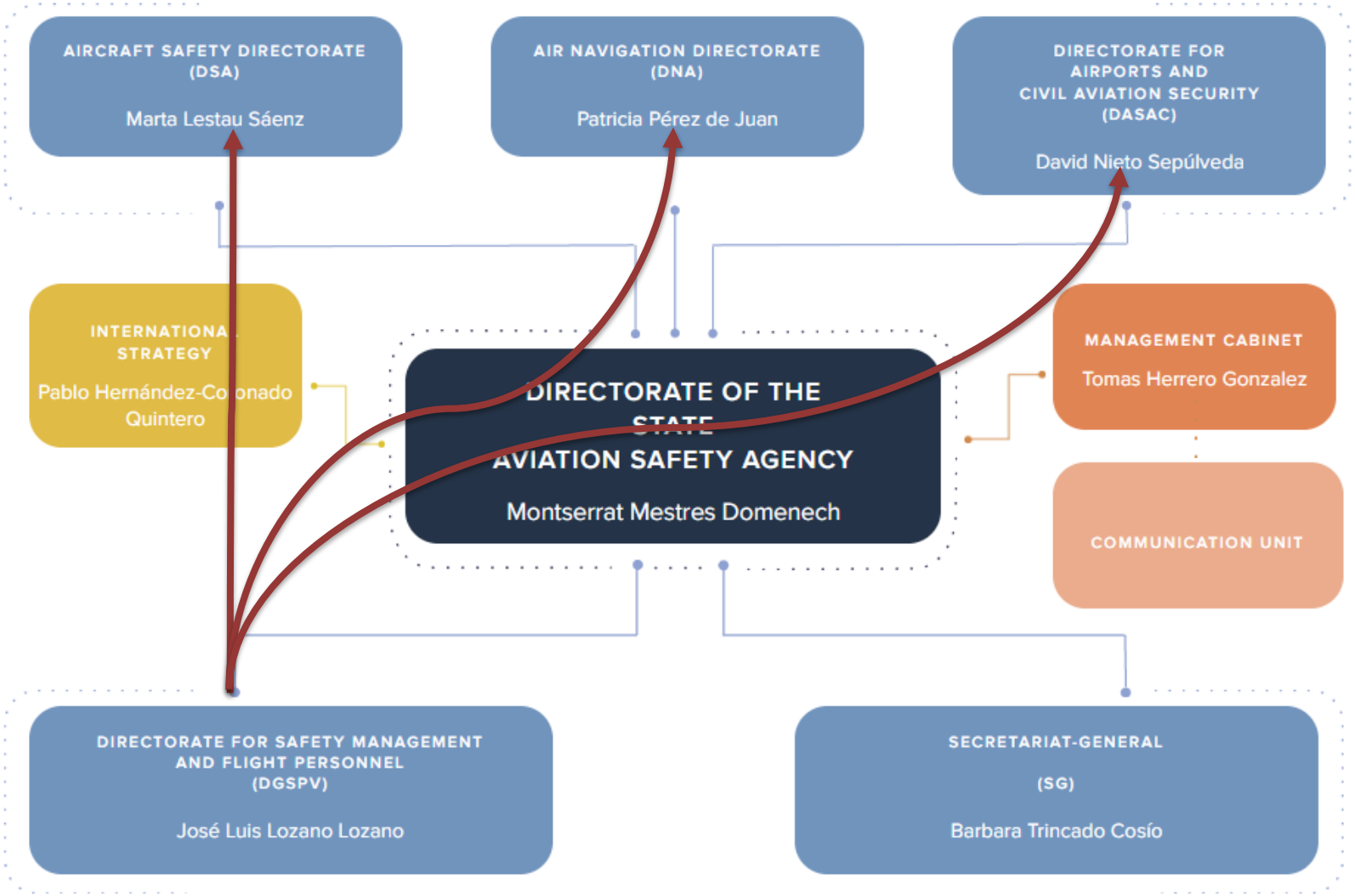
THE WEEKLY TOP-LIST

- Every **week** there is a meeting in which those events that have been considered most relevant in the coding meetings are discussed.
- In the TOP meeting, what is decided is which events are going to be **followed up and/or are deemed of the interest of other units within AESA:**
- The criteria for including an event in the TOP-LIST are as follows:
  - Events with severity equal to or greater than Major.
  - Events of special interest.
  - Any other circumstance in the opinion of the experts (e.g. repetition).

Internal and external communication strategies

This project is funded by the European Union and implemented by EASA

THE WEEKLY TOP-LIST



Internal and external communication strategies

This project is funded by the European Union and implemented by EASA

THE WEEKLY TOP-LIST

AESA AGENCIA ESTATAL DE SEGURIDAD AÉREA

LISTADO DE SUCESOS TOP - INFORMACIÓN SENSIBLE CRÍTICA

SEMANA TRAMITADA

Desde 31/12/2018 | Hasta 19/05/2024 | 2024 | 2023 | 24-20 | 24-19 | 24-18 | 24-17 | 24-16

ÁREA DE INTERÉS

Aeronaves | Aeropuertos | Navegación Aérea | Otros

Sucesos Top: 6326

N_SUCESO	TÍTULO	FECHA LOCAL	LOCALIZACIÓN	SEVERIDAD	Observaciones
2023S17320	ULM ENG FAIL & OUT-OF-A/D EMERGENCY LANDING	28/06/2023	BERGA	Serious incident	PARADA DE MOTOR Y TOMA FUERA DE AERODROMO. CIAIAC INVESTIGA.
2024S02870	BALLOON HIT POWER LINE AT LANDING	04/01/2024	BERNUY DE PORREROS	Major incident	GLOBO AEROSTÁTICO IMPACTA CON TENDIDO ELÉCTRICO
2022S17283	ENG FUEL VALVE CLOSED >> FORCED LANDING	12/07/2022	BETERA	Accident	FALLO DE MOTOR EN VUELO DE ULTRALIGERO OCASIONA ATERRIZAJE DE EMERGENCIA FUERA DEL CAMPO Y DAÑOS. CIAIAC INVESTIGA.
2024S00003	ULM FATAL GND COLLISION IMMEDIATELY AFTER TAKEOFF	30/12/2023	BETETA	Accident	AERONAVE SE PRECIPITA CONTRA EL TERRENO TRAS EL DEPEGUE. CIAIAC INVEST
2019S19536	FOOD BURNT IN MALFUNCTIONING (O/HEAT) GALLEY	19/07/2019	BETWEEN BIKF-	Major incident	HUMO EN EL GALLEY PROCEDENTE DEL HORNO.

Entidades Directamente Vinculadas al Suceso (Aeronave, Aeropuerto, Espacio Aéreo y Unidad ATS)

OPERADOR
Xclusive Jet Charter Ltd
WOW Air (PLAY)
World Aviation, S.L.

FABRICANTE A/C	MODELO A/C	MATRÍCULA	NºVUELO	CALL SIGN
AIRBUS	A330	ZZ343		RRR9111
LET	L410	ZS-ATD	UNO970	
BOMBARDIER	CL600 2B19	ZP-CRS		

PAÍS	AEROPUERTO
Australia	YPPH (PER) : Perth Intl
Australia	YGWA : Goolwa
Australia	YCAR (CVQ) : Carnarvon

ESPACIO AÉREO	TIPO	PAÍS	FIR/UIR
YPPH	CTR	Australia	YMMM : Melbourne (FIR)
YMMM	FIR /	Australia	YMMM :

UN. ATS
UNK
SDP
POLAR

Organización que Reporta y Narrativa de los Sucesos

PAÍS	ENT. NACIONAL	TIPO DE ORG.	ORGANIZACIÓN	NOMBRE	NARRATIVA
					Se realizan incursiones en la pista activa con vehiculos de tierra, ademas de las inspecciones de pista, sin notificar en la frecuencia 122,675. Esto ocurrio en la semana del 7 al 11 de enero, no recuerdo el dia y hora exactas. Se realizan pruebas de motor (B767) en las posiciones de aparcamiento frente al hangar principal con regimenes de motor distintos de ralenti. Se tiene constancia grafica de una prueba de motor izquierdo con reversa en esta posicion, a un regimen superior de ralenti. Ruido ensordecedor, escalera delantera acoplada y personal en las inmediaciones. Estos hechos se han notificado al director del aeropuerto con anterioridad, y la empresa Tarmac sigue haciendo pruebas en el aparcamiento con el beneplacito de la autoridad aeroportuaria

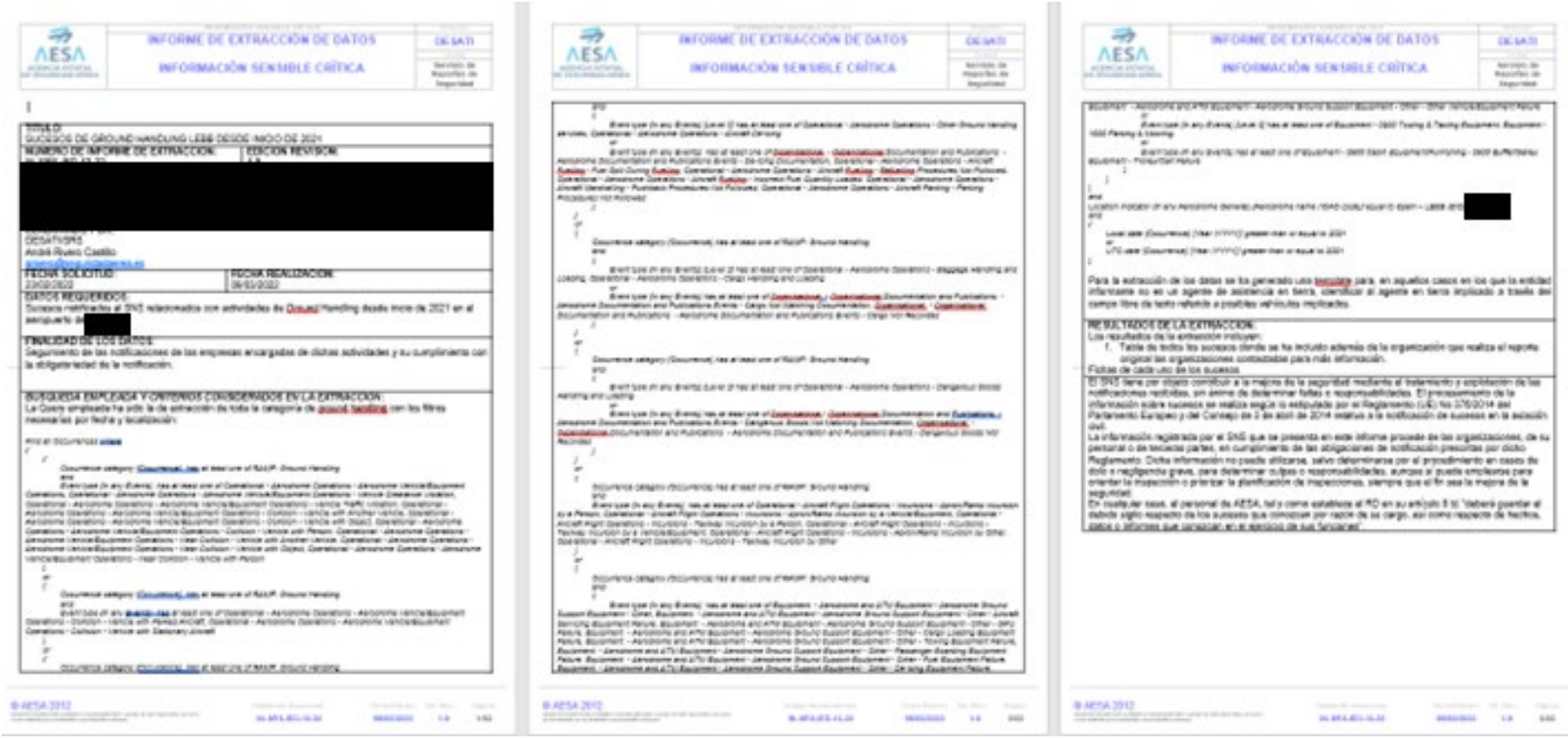
Seleccione semana, área de interés y suceso para filtrar

Internal and external communication strategies

This project is funded by the European Union and implemented by EASA

DATA EXTRACTION REPORTS

Generated to help our colleagues in charge of oversight activities and information demanded from accepted interested parties.

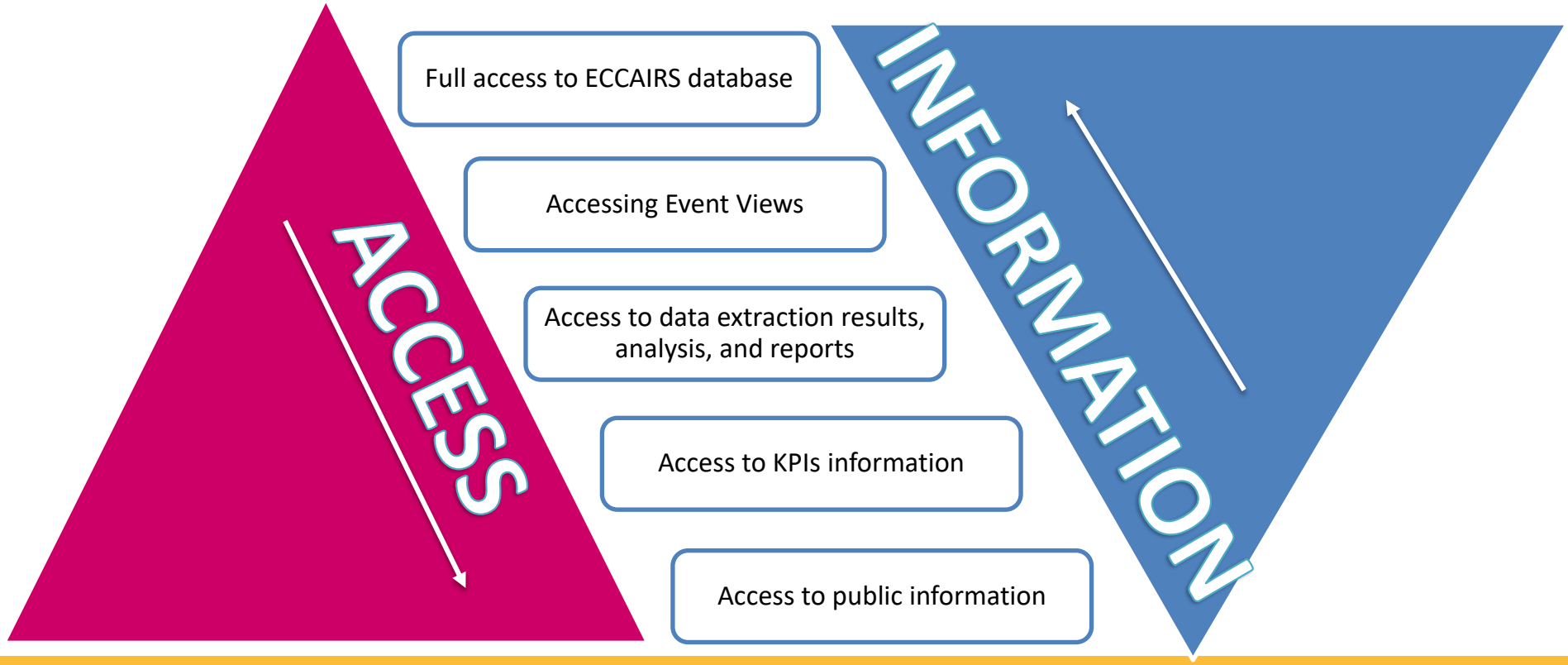


Internal and external communication strategies

This project is funded by the European Union and implemented by EASA

Sharing information in AESA

- → Need to sign a confidentiality form
- → Important: Use only to improve aviation safety
- → Different levels of access



Exchange of Information Partner States & EASA

This project is funded by the European Union and implemented by EASA

→ Applicable Regulation: Regulation (EU) No376/2014: Article 9

Sharing of information:

Every authority shall make all the reports related to safety available to the other authorities through the ECR no later than 30 days after having been entered in the national database and can be updated as necessary,

Information on accidents and serious incidents

1) During the course of the investigation: preliminary factual information
2) When the investigation is completed:
    i. the final investigation report; and
    ii. when available, a summary in English of the final investigation report.

Exchange of Information Partner States & EASA

This project is funded by the European Union and implemented by EASA

→ Applicable Regulation: Regulation (EU) No376/2014: Article 9

Relevant authorities

The safety-related information can be sometimes sent by the reporters to an authority other than the one responsible for its investigation. Every authority shall forward this information to the relevant authority of the Member State or the Agency as soon as possible if:

(a) The safety matters are of interest to other Member States or the Agency; or

(b) The safety matters require safety action to be taken by other Member States or the Agency.

European Central Repository

This project is funded by the European Union and implemented by EASA

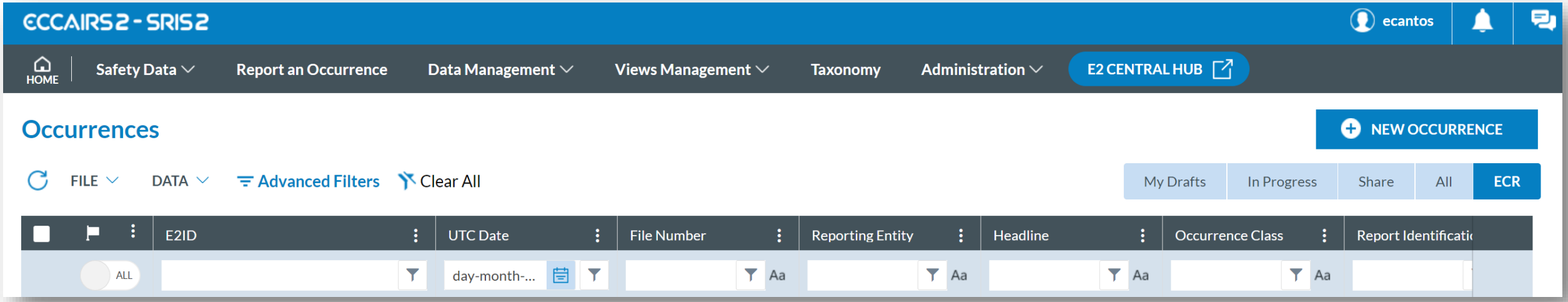
→ Applicable Regulation: Regulation (EU) No376/2014: Article 8

- The Commission shall manage the European Central Repository (ECR) to store all occurrence reports collected in the Union.
- Each Member State shall update the ECR by transferring to it the safety information stored in the national databases.
- EASA shall transfer to the ECR the occurrence reports and its implementing rules, including those stored in the Internal Occurrence Reporting System (IORS).

European Central Repository

This project is funded by the European Union and implemented by EASA

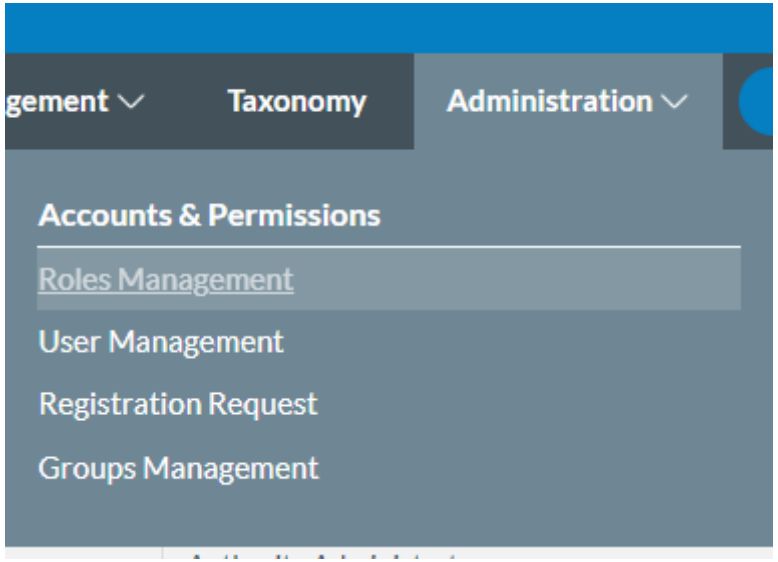
- The ECR will be populated with be the information shared from the different authorities.
- This information must undergo the different coding and quality checks performed by the authorities before being uploaded to the ECR.

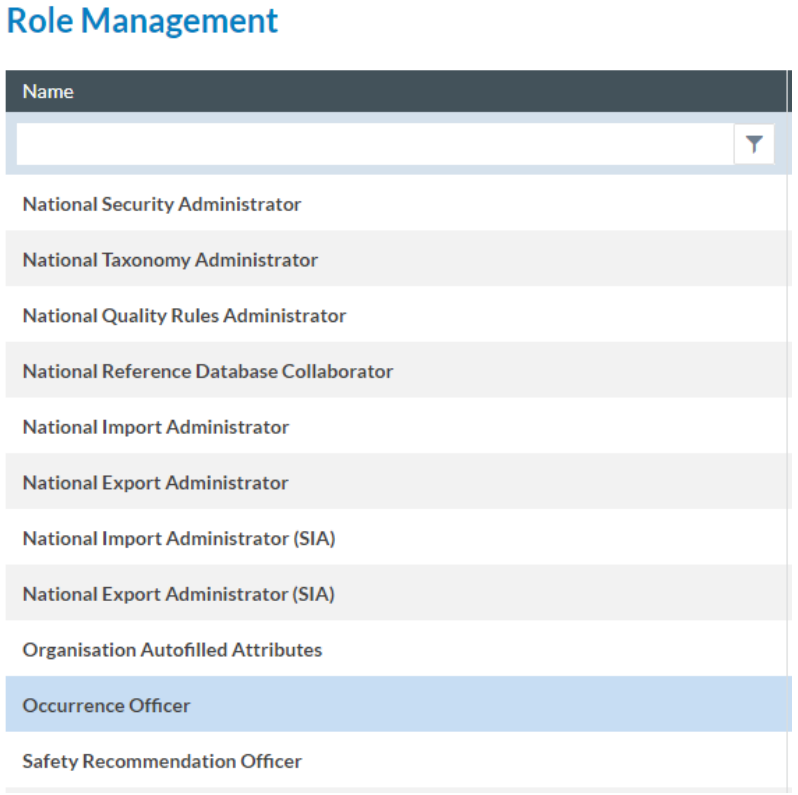


European Central Repository

This project is funded by the European Union and implemented by EASA

- To be able to access the ECR and interact with its information the user must have the appropriate permissions.





European Central Repository

This project is funded by the European Union and implemented by EASA

- To be able to access the ECR and interact with its information the user must have the appropriate permissions.

Basic Permissions | Advanced Permissions | Occurrence Views | Enrolled Users

Name	Create	Edit	Read	Delete
Library	☑	☑	☑	☑
M2M Users	☐	☐	☐	☐
Notification			☐	
Occurrence	☑	☑	☑	☑
Organisation Users	☐	☐	☐	☐
Original Report			☑	☑
Query	☑	☑	☑	☑
Reporter Original Report			☐	
User			☑	
Validated Report	☑	☑	☑	☑
View			☑	
Word Template	☑	☑	☑	☑

Basic Permissions | Advanced Permissions | Occurrence Views | Enrolled Users

- Reports
- Data Management
- User & Roles
- Taxonomy
- Other
- E2 Central Hub

Name	Reporter Ori...	Original Rep...	Validated Re...	Occurrence
Archive		☑	☑	☑
Discard draft		☐	☐	☐
Duplicate			☑	☑
ERCS			☐	☐
Export		☑	☑	☑
Integrate into existing Occurrence			☑	
Report to				☑
Send Notes			☑	
Share			☑	☑
Transfer		☑		
Upload E5X		☑		
Validate		☑		☑

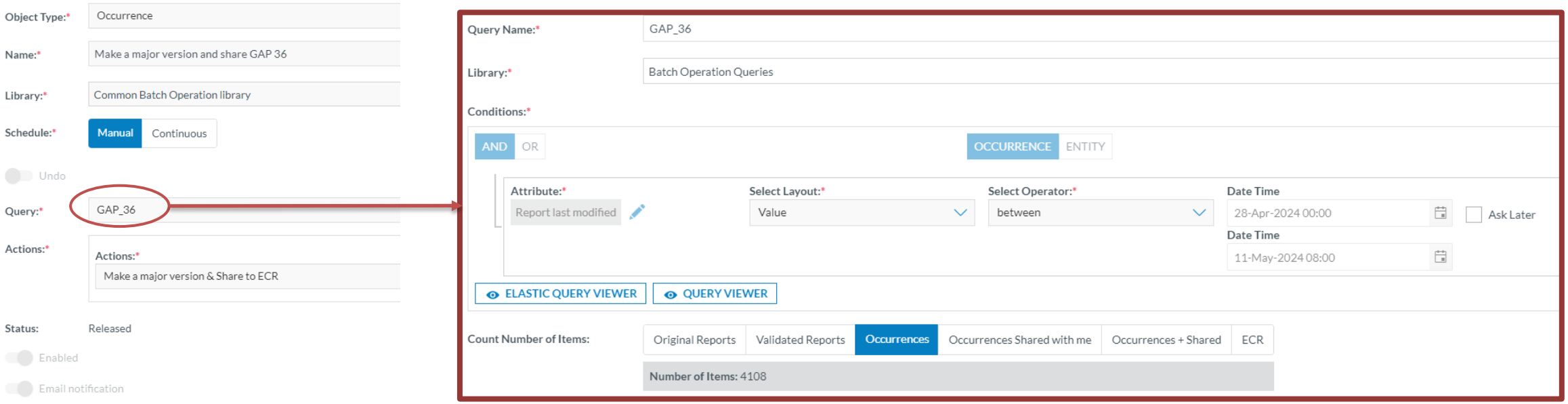
European Central Repository

This project is funded by the European Union and implemented by EASA

- Adding information to the ECR from ECCAIRS2

Select the OCCs that must be sent to the ECR and make a major version and share.

This can be done with a batch operation for multiple OCCs, via the API or manually for each one.

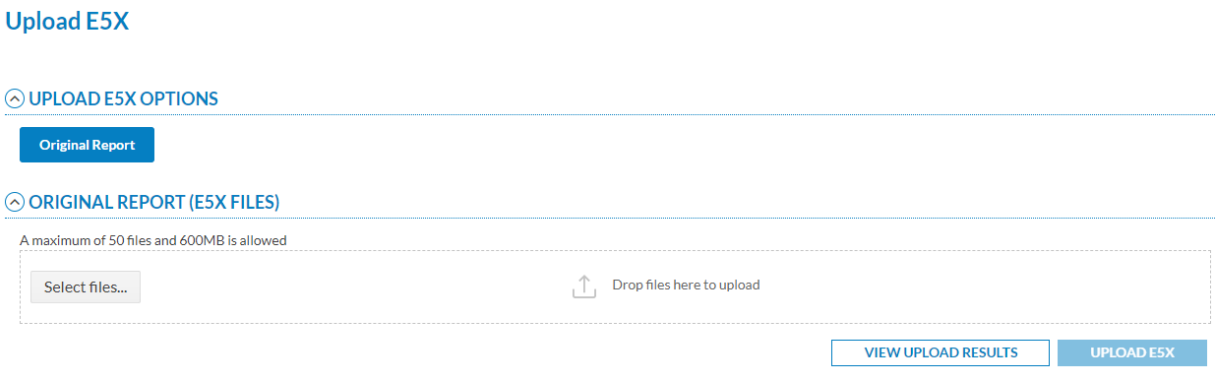


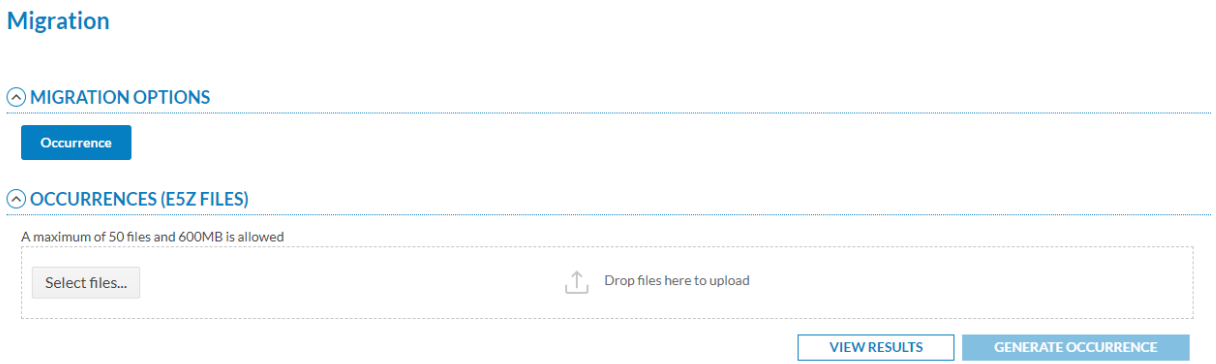
European Central Repository

This project is funded by the European Union and implemented by EASA

- Adding information to the ECR from other sources

In this case, information can be uploaded as an e5x or an e5z (for migration) file from external sources. Once uploaded, the process is the same although they do not appear as ORs, they come into the system as OCC Minor versions.



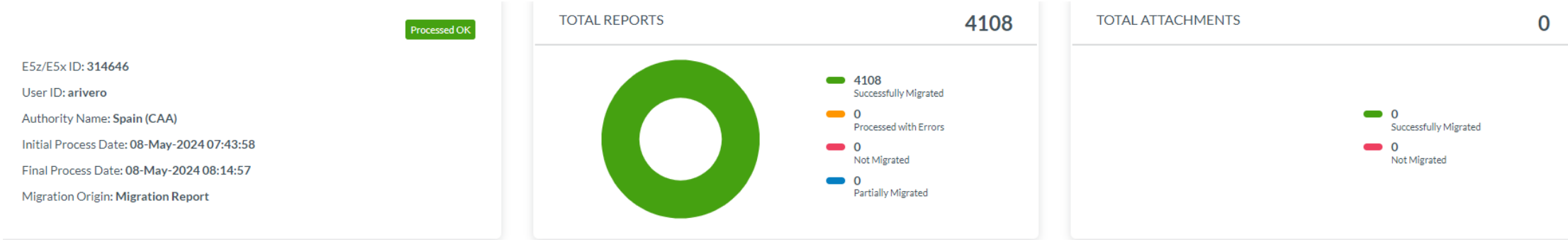


European Central Repository

This project is funded by the European Union and implemented by EASA

- Adding information to the ECR from other sources

E2 has a built-in tool to do integrity checks of the uploads

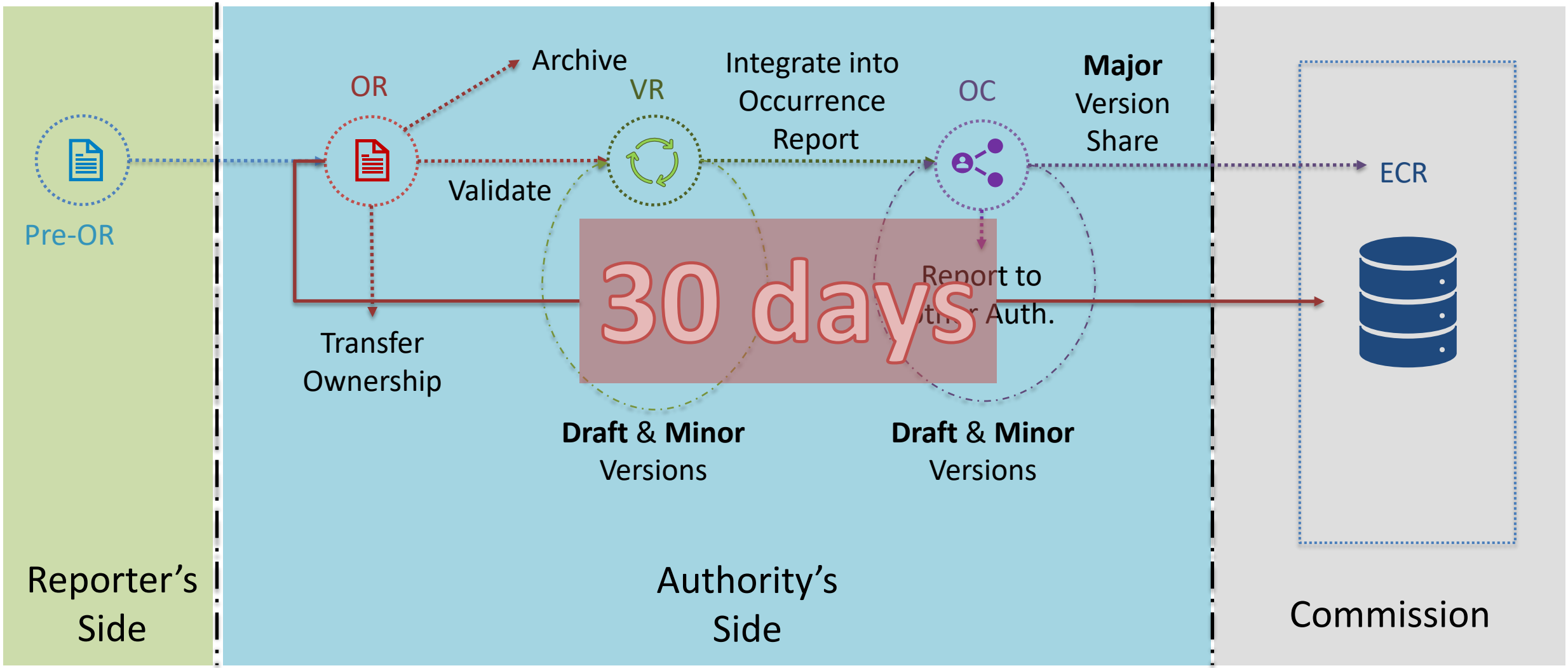


REPORTS

XML ID	Filename	File Number	Total Attachments	Loaded Attachme...	Migration Status	Message
4948036	FFE86204852D42B69A0FFD6471471846	2024S10553	0	0	Successfully Migrated	"OC-0000000005910657"
4948035	FFDD947CD5F64579B2F122CC8536DE37	2024S09386	0	0	Successfully Migrated	"OC-0000000005910656"
4948034	FFCF0F054E2349D0BEFA6251319D86A8	2024S07846	0	0	Successfully Migrated	"OC-0000000005910655"
4948033	FFC914D62AAA42F8BA57020A7E5BF3BF	2024S06941	0	0	Successfully Migrated	"OC-0000000005910654"

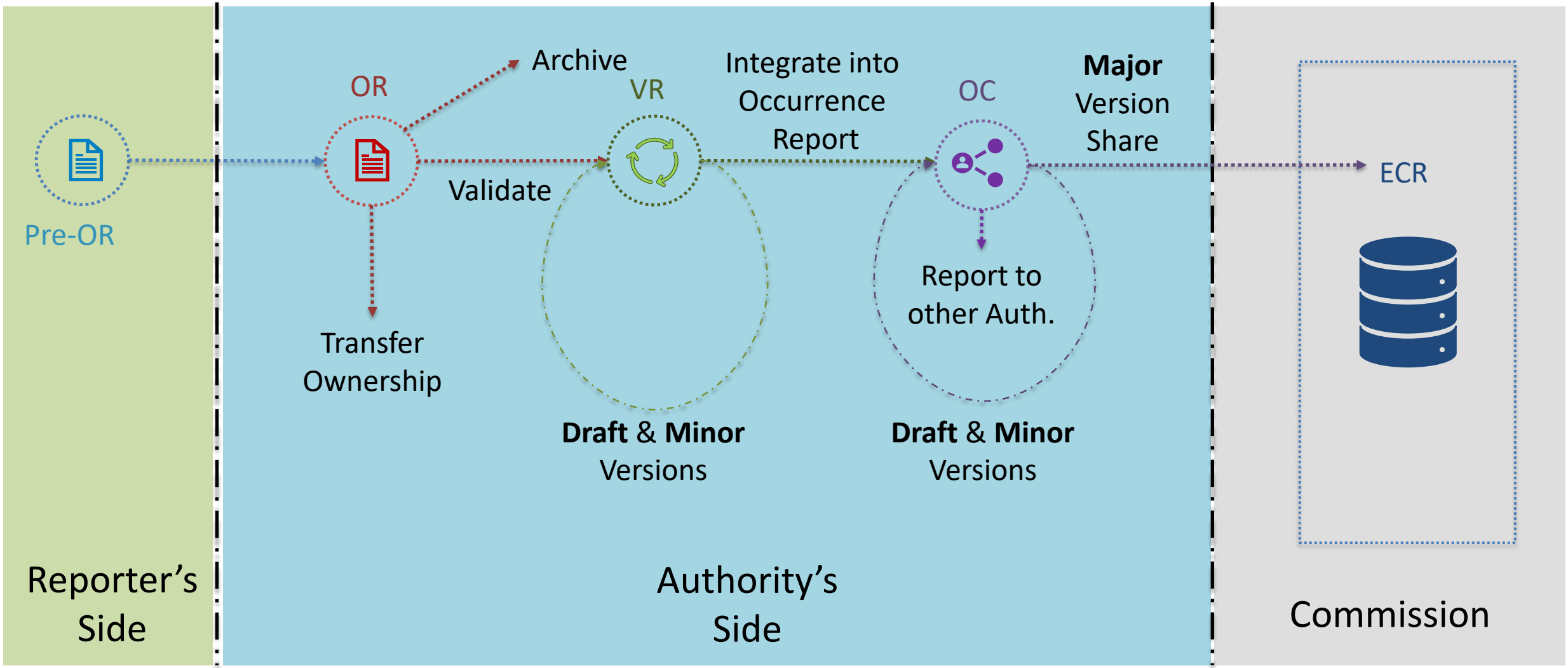
Exchange of Information

This project is funded by the European Union and implemented by EASA



Exchange of Information

This project is funded by the European Union and implemented by EASA



Exchange of Information

This project is funded by the European Union and implemented by EASA

→ Sharing information with other relevant authorities

3 ways to share information from within E2

1) If the authority is other than the one responsible for its investigation.
2) If the safety matters are of the interest to other authorities or they require a safety action to be taken by other authority.
3) Via the ECR.

Exchange of Information

This project is funded by the European Union and implemented by EASA

→ Sharing information with other relevant authorities

3 ways to share information from within E2

1) If the authority is other than the one responsible for its investigation.

As the original report is received and read by the Occurrence Officer it is detected that this report should have been sent to another authority.

Exchange of Information

This project is funded by the European Union and implemented by EASA

→ Sharing information with other relevant authorities

3 ways to share information from within E2

1) If the authority is other than the one responsible for its investigation.

☑		Open	OR-0000000000006610 v0.1	TestHEadline1	2022-000000000002123	Albania > AIB			
☐		Processed	OR-0000000000006714 v0.2		2022-000000000002134	Angola		Significant incident	
☐		Processed	OR-0000000000050508 v0.1	Human performance: Groundcrew possibly not informe ...	GER-2023-LBA-08760	Germany > Other > Aerodrome operator > Flughafen M ...	Triebwerksüberprüfung während der Abfertigung	Incident	04-Sep-2023
☐		Processed	OR-0000000000006695 v0.1	2 DENTS NOTED ON R/H I/B FLAPS LWR DURING A TRANSI ...	2022-000000000002130	Ireland > Other > Aircr... ...	esr/1534 ...	Incident	29-Apr-2022
☐		Processed	OR-0000000000004017 v0.1	TAKE OFF DISCONTINUED	000000000002077-2022	Italy	000054	Incident	08-Mar-2022
				Aft Pocket Door					

Contact Details
View
Validate
Archive
Transfer full ownership
Version History
Export

Exchange of Information

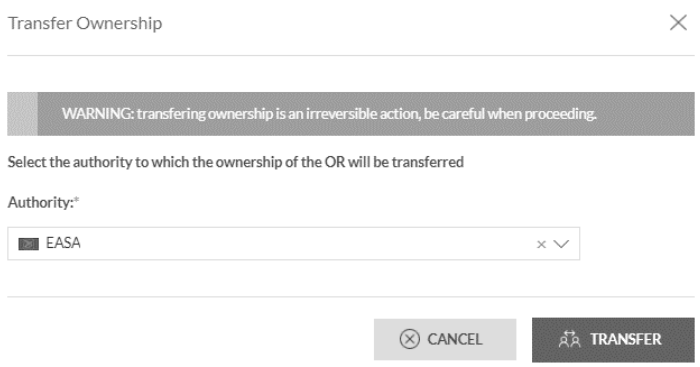
This project is funded by the European Union and implemented by EASA

→ Sharing information with other relevant authorities

3 ways to share information from within E2

1) If the authority is other than the one responsible for its investigation.

This operation removes the record from the national original reports input and sends it to the selected authority OR input. It transfers full control of the report.



Exchange of Information

This project is funded by the European Union and implemented by EASA

→ Sharing information with other relevant authorities

3 ways to share information from within E2

2) If the safety matters are of the interest to other authorities or they require a safety action to be taken by other authority.

Sometimes the occurrence is of such a complicated nature as to require the input of more than one authority.

E.g., Aircraft Operators are under NAA supervision, but Design Organizations are under EASA. If the nature of the events of the occurrence, its investigation or analysis, or the expert's opinion so counsel, the NAA should share this information with EASA and wait for their input before proceeding.

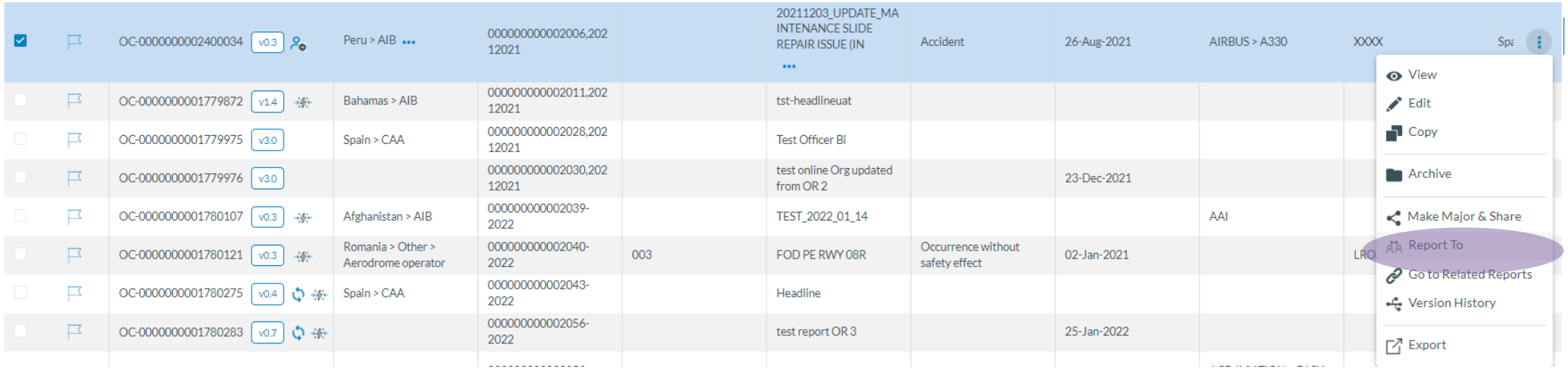
Exchange of Information

This project is funded by the European Union and implemented by EASA

→ Sharing information with other relevant authorities

3 ways to share information from within E2

2) If the safety matters are of the interest to other authorities or they require a safety action to be taken by other authority.



Exchange of Information

This project is funded by the European Union and implemented by EASA

→ Sharing information with other relevant authorities

3 ways to share information from within E2

2) If the safety matters are of the interest to other authorities or they require a safety action to be taken by other authority.

This operation does not remove the record from the authority's Occurrences Database, a new record is generated on the selected authority database and linked.

Exchange of Information

This project is funded by the European Union and implemented by EASA

→ Sharing information with other relevant authorities

3 ways to share information from within E2

3) Via the ECR.

This operation is automatic as everything shared with the ECR is shared with the respective ECR-Authorities of other member states.

Sharing information with interested parties

This project is funded by the European Union and implemented by EASA

→ Applicable Regulation: Regulation (EU) No376/2014: Article 10

- Any regulatory entity or investigation authority shall have secure full online access to the ECR, subject to the confidentiality and protection of the information sources.

- Interested parties may request access to certain information from the ECR to the point of contact designated for their respective authority.
  - Interested parties from Member States: To their national authority.
  - Interested parties from outside the Union: To the Commission, who shall inform the competent national authority.

Sharing information with interested parties

This project is funded by the European Union and implemented by EASA

→ Applicable Regulation: Regulation (EU) No376/2014: Article 10

- ECR information relating to ongoing safety investigations shall not be disclosed to interested parties.

- For security reasons, interested parties shall not be granted direct access to the ECR.

Sharing information with interested parties

This project is funded by the European Union and implemented by EASA

→ Applicable Regulation: Regulation (EU) No376/2014: Article 10

Interested Parties

(a) List of interested parties which may receive information on the basis of a case-by-case decision or on the basis of a general decision:

1. Manufacturers
2. Designer
3. Maintainers
4. Aircraft Operators
5. Air navigation services providers and providers of ATM-specific functions
6. Aerodrome service providers
7. Aviation training organisations
8. Third-country organisations
9. International aviation organisations
10. Research

Sharing information with interested parties

This project is funded by the European Union and implemented by EASA

→ Applicable Regulation: Regulation (EU) No376/2014: Article 10

Interested Parties

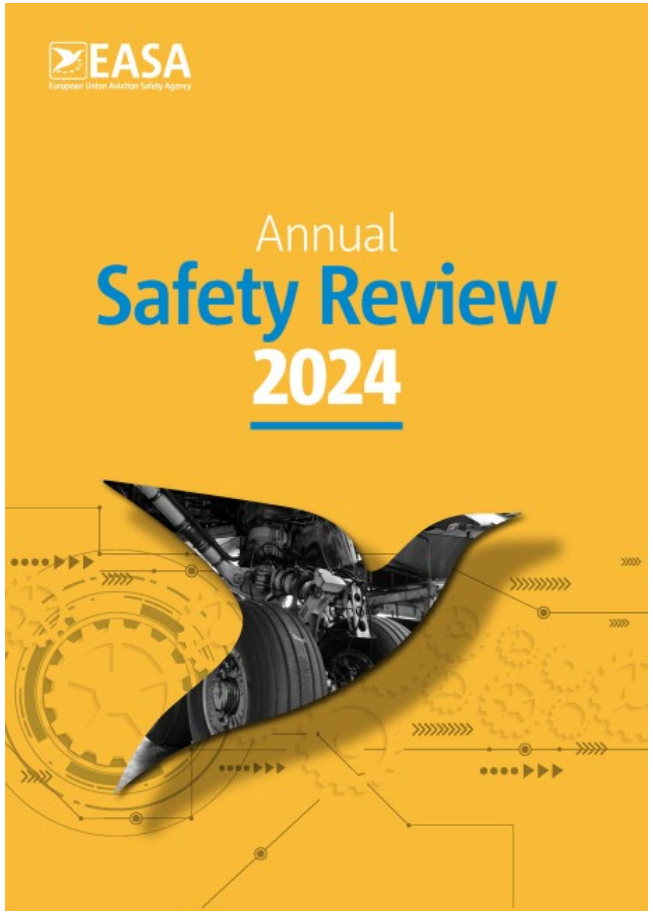
(b) List of interested parties, which may receive information on the basis of a case-by-case decision:

1. Pilots
2. Air Traffic Controllers
3. ATM/ANS staff
4. Engineers
5. Technicians
6. Air Traffic Safety Electronics staff
7. Aviation managers
8. Aerodrome managers
9. Professional bodies of staff carrying out safety-related tasks

Sharing information with the public

This project is funded by the European Union and implemented by EASA

→ The EASA Annual Safety Review



What's new in the ASR this year?

1. Fully based on ECR data using the European Risk Classification Scheme (ERCS) as coded by the NAAs of the EASA Member States (MSs).
2. The Key Risk Areas are ordered based on ERCS scores.
3. All occurrence classes are covered.
4. There is a new chapter specifically looking at the safety performance of UAS/drones.

https://www.easa.europa.eu/en/document-library/general-publications/annual-safety-review-2024

Sharing information with the public

This project is funded by the European Union and implemented by EASA

- To inform the public of the level of safety in civil aviation, Member States should publish a safety report at least once a year.

- The report shall contain:

  - Aggregated and anonymised information on event types and safety-related information collected by their national mandatory and voluntary reporting systems.

  - Indication of trends.

  - The measures they have taken.

Sharing information with the public

This project is funded by the European Union and implemented by EASA

AESA

Agencia Estatal de Seguridad Aérea

Memoria

Evaluación de la Seguridad

AESA 2023

INFORMACIÓN PÚBLICA

Sharing information with the public

This project is funded by the European Union and implemented by EASA

Análisis General de Sucesos

52.805 NOTIFICACIONES → **38.679 SUCESOS**

El SNS puede suministrar información a demanda de los usuarios que lo soliciten, siempre y cuando se acredite que dicha información se va a utilizar exclusivamente para la mejora de la seguridad.

Existe un procedimiento que regula las solicitudes de información a la base de datos del SNS, que se realiza mediante la cumplimentación de un formulario específico. Para más información, puede consultar en la Web de AESA.

En 2023 se han recibido 52.805 notificaciones, relacionados con 38.679 sucesos. La diferencia entre estas dos cifras se debe a que un suceso puede ser remitido por varios notificantes, como se ha visto anteriormente: ADRM, OPR, ANSP, etc. Se han recibido notificaciones que una vez analizadas no se han considerado como sucesos de seguridad si bien quedan registrados por si la información o circunstancias pudieran ser de interés en el futuro.

Los sucesos se clasifican en los dominios que muestra la siguiente figura, donde los principales contribuyentes son aquellas organizaciones que proporcionan servicios aeronáuticos y cuentan con Sistemas de Gestión de la Seguridad Operacional (SMS) implementados.

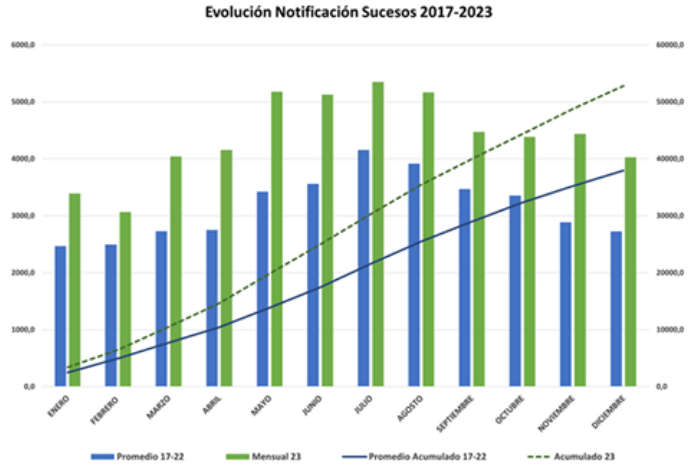
Los sucesos relacionados con los servicios de navegación aérea, operación de la aeronave, gestión aeroportuaria y aeronavegabilidad suman el 80% del total.

Otro de los grupos en los que se clasifican los sucesos es el de factores externos a la aeronave, tales como la meteorología adversa o las afecciones externas a la aeronave y la panorámica se completa con los sucesos de Seguridad Física (Security), que pueden comprometer la Seguridad Operacional y los problemas médicos que afectan a tripulaciones y pasajeros de las aeronaves. Cada uno de estos grupos se desarrolla con mayor detalle en este documento.

El número total de sucesos es menor que la suma de los sucesos de cada grupo, ya que hay sucesos que por su contenido pertenecen a varios grupos.

Evolución de la notificación

En la gráfica inferior se puede observar el progreso de la actividad notificadora en España desde 2017. Se observa un aumento de un 14,3% en el número de notificaciones de 2023, respecto al 2022, lo que se traduce en un aumento de un 15,9% en el número total de sucesos registrados. Aunque existen varios factores relacionados, el reporte está claramente asociado al volumen de operaciones aéreas.



Severidad de los Sucesos

El SNS realiza una evaluación de severidad de todos los sucesos notificados según una métrica normalizada. Debe destacarse el carácter preliminar de esta evaluación, ya que las notificaciones de sucesos sólo se contrastan mediante una investigación de seguridad en caso de severidad elevada o reiteración.

Sharing information with the public

This project is funded by the European Union and implemented by EASA

ÁREA PRIORITARIA	SUCESOS	ACCIDENTES	GRAVES	MAYORES	SIGNIFICATIVOS	LEVES
FFHH y competencia	1346	7	5	50	837	447
Fallos sistema no motor	3254	17	8	73	1278	1878
Manejo de aeronave SOPs	2999	18	10	80	1282	1609
Tonas duras, pesadas...	162	14	3	5	134	6
Colisiónes con Aves	2933	2	2	22	615	2292
Incursiones en pista	235	0	3	14	201	17

Final Wrap-Up & Workshop Closure

- → Summary of key takeaways
- → Final Q&A and feedback

Summary of key takeaways (1/3)

This project is funded by the European Union and implemented by EASA

📌 Introduction & Context

- Occurrence reporting is fundamental to proactive safety management.
- ICAO Annex 19 and EU Regulation 376/2014 provide the regulatory framework.

📌 Legal & Institutional Framework

- Clear roles for organisations, authorities, and safety investigation bodies.
- Mandatory and voluntary reporting systems must be established.
- Protection of source and just culture principles are essential.

📌 Reporting Systems & Occurrence Data

- A robust Safety Data Collection and Processing System (SDCPS) includes:
  - Data input, processing, analysis, and output functions.
  - Scalability and governance policies are key for sustainability.

📌 ECR & Information Exchange

- The European Central Repository (ECR) supports centralised safety data access.
- Access is limited to designated entities to ensure data protection.

Summary of key takeaways (2/3)

This project is funded by the European Union and implemented by EASA

📌 Taxonomies & Data Classification

- Harmonised taxonomies (e.g., ADREP, CAST/CICTT) enable data comparability.
- Accurate coding and severity assessment support risk prioritisation.

📌 Follow-Up & Safety Risk Management

- Organisations must analyse occurrences and respond to authority follow-ups with structured reports.
- Safety risk management must be systematic and data-driven.
- SRM processes in SSP and SMS should be aligned.

📌 Roles, Competencies & Governance

- New profiles are needed: data analysts, domain experts with SSP/SMS knowledge.
- Effective governance models (centralised, decentralised, federated) define responsibilities and enable data sharing.
- Interface risks must be addressed proactively to avoid safety gaps.

Summary of key takeaways (3/3)

This project is funded by the European Union and implemented by EASA

- Safety reporting is not just a compliance task—it is a **strategic safety tool**.
- Strengthening reporting culture, competencies, and systems is essential.
- Authorities and organisations should collaborate on:
  - Data quality and interoperability
  - Continuous training and awareness
  - Sharing safety intelligence for collective benefit

Final Q&A and feedback

This project is funded by the European Union and implemented by EASA

🔚 **Thank you for your engagement!**

Now, we open the floor for:

✅ Final Q&A

🗣️ Participant feedback

📨 Next steps and follow-up actions

Workshop Closing

→**Thank you very much for your collaboration and for all your attention!!**

→For any questions or queries: phernandez@seguridadaerea.es

EASA
European Union Aviation Safety Agency

This project is funded by the European Union
and implemented by EASA

Effective Aviation Safety Occurrence Reporting Systems: Implementation and Use in SSP/SMS

EU-Africa Safety in Aviation (EU-ASA) Project

Dates: 15–18 July
Online: Zoom

easa.europa.eu/connect

Your safety is our mission.

An Agency of the European Union