International Civil Aviation Organization
Regional Aviation Safety Group - Pan America (RASG-PA)

INFORMATION PAPER

RASG-PA/15 — IP/07
20/02/26

Fifteenth Meeting of the Regional Aviation Safety Group – Pan America (RASG-PA/15) and Fifth RASG-PA–GREPECAS Joint Meeting (RASG-PA–GREPECAS/5)
Mexico City, Mexico, 2 to 4 March 2026

Agenda Item 9: Enhancing Safety/Just Culture

AVIATION SAFETY REPORTING IN SUPPORT OF SAFETY INTELLIGENCE: EUROPE'S EXPERIENCE AND POSSIBLE RELEVANCE FOR THE PAN-AMERICAN REGION

(Presented by EASA)

EXECUTIVE SUMMARY

This paper shares Europe's experience with aviation safety reporting. It explains how common rules have helped define who must report, what needs to be reported, and how accident and incident reports are processed in a consistent way. It highlights the benefits of the European Aviation Safety Reporting Portal, the framework for confidential safety reporting, and methods to protect information sources. The paper also describes how harmonised taxonomies enable data to be compared and analysed across countries, the roll-out of the new European Coordination Centre for Accident and Incident Reporting System (ECCAIRS 2), and early results from EASA's Data4Safety initiative.

Strategic Goals 2026-2050:	• Every flight is safe and secure • Aviation is environmentally sustainable • Aviation delivers seamless, accessible, and reliable mobility for all • No country left behind

1. Introduction

1.1 Aviation remains one of the safest modes of transport globally, propelled by continuous improvement in risk identification and management. Under this global endeavour, cultivating a proactive and robust safety-reporting culture is essential to contemporary aviation safety management as it facilitates the early identification of hazards and enables swift risk mitigation measures—helping to prevent incidents and accidents before they occur.

1.2 In Europe, this safety ambition is underpinned by a robust occurrence reporting framework, strengthened by harmonised regulations that guarantee consistent reporting of accidents and incidents, thereby enabling the systematic collection, sharing, and analysis of safety data and information. This framework is further strengthened by sophisticated analytical tools and initiatives designed to extract insights and drive continuous improvements.

1.3 At the core of this framework is the roll-out of ECCAIRS 2, a user-friendly interface for states and organisations that simplifies the reporting process with an intuitive design and use of the Accident/Incident Data Reporting System (ADREP) taxonomy. Through ECCAIRS 2 and the foundational work of the Data4Safety programme, the European Union is building advanced capabilities to handle extensive aviation safety datasets, deliver predictive risk intelligence, and integrate regional practices within the ICAO global framework.

1.4 This paper explores how aviation safety reporting mechanisms in Europe contribute to safety intelligence initiatives. It places special emphasis on the regulatory framework that enables a proactive and efficient safety-reporting culture and introduces best practices with potential application in the Pan-American Region.

2. Discussion

Importance of occurrence reports and overall levels of reporting in the EASA Member States

2.1 Safe operations rely on states and organisations understanding and managing aviation risks effectively. Occurrence reports serve as the most important source of information. They provide valuable insights both individually and when analysed collectively. These insights drive the learning that prevents accidents.

2.2 Occurrence reports also serve as valuable tools for monitoring and assessing the performance of organisations, products, and components. By examining individual occurrences, those responsible for oversight or certification gain insight into the safety performance of these entities, as well as a clearer understanding of the risks they are managing.

2.3 Occurrence reporting rates provide a valuable measure of a State's safety culture. A substantial number of reports is often indicative of a mature safety culture environment and strong safety awareness. Therefore, while a higher number of accidents and serious incidents may be viewed negatively, in reality, an increase in total occurrence reporting, which includes incidents, should be interpreted as evidence of constructive safety development.

2.4 Figure 1 illustrates that, over the past four years—coinciding with the recovery phase following the COVID-19 pandemic—the overall reporting rate collected in the European Central Repository (ECR[1]) has remained steady at above 30 reports per 1,000 airport movements, with fluctuations between 32 and 35 reports per 1,000 movements. Meanwhile, Figure 2 presents the total number of reports submitted to the ECR from 2016 to 2024. Notably, 2024 saw the highest volume of reports within this period, surpassing 350,000 submissions.

[1] European Central Repository: The European Central Repository (ECR) is the central database of all occurrences and other safety-related information reported to the competent authorities.

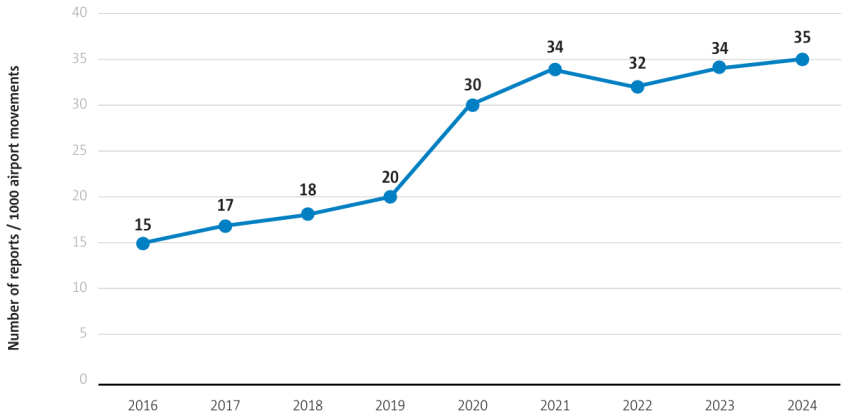


Figure 1. Reporting rate (number of reports/1 000 airport movements) per year

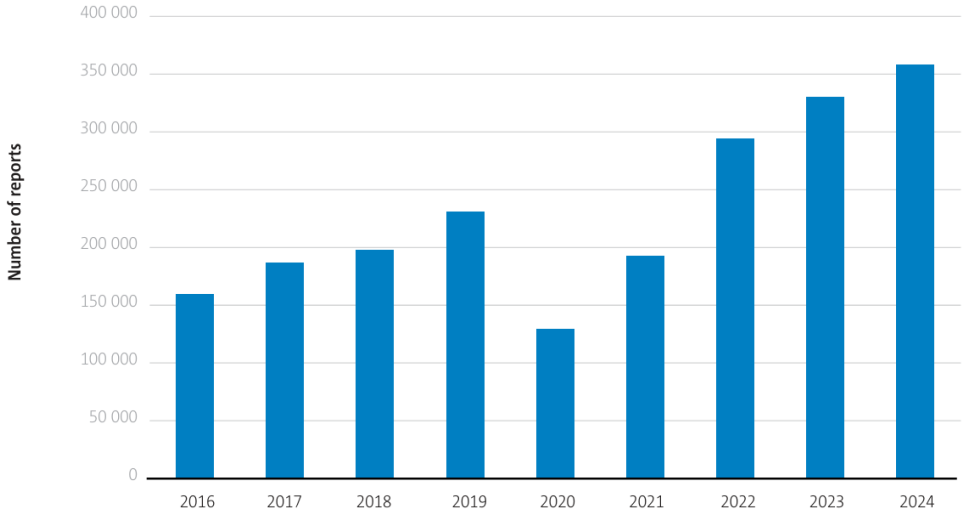


Figure 2. Number of reports collected in the ECR per year

EU regulatory framework for aviation safety reporting

2.5 To safeguard aviation safety, it is essential that front-line professionals consistently report any occurrences that present a significant risk. In support of this objective, the European Union has progressively transformed its regulatory framework for safety reporting toward a proactive, evidence-driven, non-punitive, and risk-focused approach.

2.6 Central to this journey is the Regulation (EU) 2018/1139[2], which defines broad safety objectives and oversight mechanisms for air operators, air navigation service providers, aerodrome operators, and other stakeholders. Further detailed implementing and delegated acts—such as Commission Implementing Regulation (EU) 2015/1018 (on occurrence classification), Commission Delegated Regulation (EU) 2020/2034 and Commission Implementing Regulation (EU) 2021/2082 (on the common European risk classification scheme), translate these objectives into precise reporting requirements, specifying responsibilities, deadlines, classification methodologies and procedural safeguards that uphold safety reporting principles.

2.7 Building on this framework, Regulation (EU) No 376/2014[3] forms the backbone for occurrence reporting, analysis, and follow-up in civil aviation in the EU, including the protection of safety data. By prescribing uniform data formats and protection standards across all EU Member States, it ensures that safety information is both reliable and legally secure. The creation of a centralised reporting portal (known as The European Aviation Reporting Portal[4]), coupled with voluntary Confidential Safety Reporting (CSR) provisions, has further consolidated Europe's approach, reducing administrative complexity and fostering cross-border cooperation in aviation safety reporting.

2.8 The regulatory framework established by Regulation (EU) 2018/1139 and Regulation (EU) No 376/2014 articulates precise obligations regarding the submission of occurrences which may represent a significant risk to aviation safety. All licensed personnel, organisations, and third parties listed in the said regulations are required to notify competent authorities of any safety occurrence, including incidents, near-misses, and deviations from established procedures. By adopting a unified, binding occurrence-reporting framework throughout the EU, states and organisations eliminate conflicting national requirements and lighten the administrative load on multinational operators through harmonised reporting criteria, electronic forms, deadlines and common data-protection measures. This harmonised approach also ensures that safety information is consistently classified, exchanged and analysed across borders, enabling regulators and industry to perform reliable trend analyses and share safety intelligence more effectively.

2.9 Under this framework, occurrences are reported to the competent authority, whether that is EASA or the Member State's aviation authority.

Who must report aviation safety occurrences

2.10 To begin with, it is essential to establish a binding definition of what constitutes an "occurrence." Under Regulation (EU) No 376/2014, an occurrence is defined as "*any safety-related event which endangers or which, if not corrected or addressed, could endanger an aircraft, its occupants or any other person, and includes in particular an accident or serious incident*." This definition stands independently of the specific list of reportable occurrences, ensuring the regulation remains adaptable to emerging safety risks and evolving operational contexts.

[2] https://eur-lex.europa.eu/eli/reg/2018/1139/oj/eng
[3] https://eur-lex.europa.eu/eli/reg/2014/376/oj/eng
[4] https://aviationreporting.eu/en

2.11 To ensure legal certainty for both operational personnel and organisations required to report, it is essential that reporting duties be clearly defined in a binding rule. In the European context, under Regulation (EU) No 376/2014, mandatory reporting applies to both organisations and individual professionals involved in civil aviation. These include:

- Organisations[5]:
  - Airlines and aircraft operators;
  - Maintenance and continuing airworthiness organisations;
  - Air navigation service providers (ANSPs);
  - Aerodrome operators;
  - Manufacturers and design organisations;
  - Aviation training organisations; and
  - Entities involved in ground handling.

2.12 Each organisation must establish internal reporting systems to collect and submit safety-related occurrences.

- Individuals:
  - Pilot in command (including RPAS operators);
  - Person engaged in designing, manufacturing, and continuous airworthiness monitoring;
  - Air traffic controllers and flight information service officers;
  - Airport safety staff;
  - Air Traffic Safety Electronic Personnel (ATSEP); and
  - Ground handling personnel (e.g., loaders, fuelers, de-icers).

2.13 The Regulation requires individual staff to report occurrences to their organisation. The onward reporting to the state authority is done by the organisation and set in the context of the organisations Safety Management System (SMS). Reports must be submitted within 72 hours of becoming aware of the occurrence, unless exceptional circumstances apply.

What must be reported (Mandatory Occurrence Reporting), and what is not mandatorily reported

2.14 To avoid limiting the reporting of safety-related occurrences and to clarify which events are reportable, a binding regulation must unambiguously specify the categories of occurrences that fall within the reporting obligation. In the European context, under Regulation (EU) No 376/2014 and its implementing act Regulation (EU) 2015/1018, the following occurrences must be reported (non-exhaustive)[6]:

- Occurrences related to the operation of the aircraft, such as collision-related occurrences or in-flight occurrences;
- Occurrences related to technical conditions, maintenance and repair of aircraft, such as structural defects or system malfunctions;

[5] U-space service providers—Europe's implementation of the UTM concept—are not explicitly referenced in Regulation (EU) No 376/2014. However, to obtain certification under Regulation (EU) 2021/664, they must establish and maintain an occurrence reporting system in line with the requirements of Regulation (EU) No 373/2014.

[6] The full list of reportable occurrences is defined in Article 4 of Regulation (EU) No 376/2014.

- Occurrences related to air navigation services and facilities, such as collisions, near collisions or potential for collisions; and
- Occurrences related to aerodromes and ground services, such as occurrences related to aerodrome activities and facilities.

2.15 Not all aviation-related events require mandatory reporting under Regulation (EU) No 376/2014. Occurrences with no impact on safety—such as minor administrative errors—are excluded from mandatory submission. Similarly, events already governed by other reporting frameworks, like security breaches covered by specific regulations, fall outside this scope. Military operations are also exempt unless they intersect with civil aviation activities. Nonetheless, such events may still be reported voluntarily if they offer insights that could enhance safety learning and proactive risk management.

Ways of reporting – The European Aviation Safety Reporting Portal

2.16 To comply with these reporting requirements, once occurrences or unsafe conditions are identified as reportable under the applicable regulations, they may be submitted to the competent authority via the European Aviation Safety Reporting Portal (Figure 3. Occurrence reporting interface). This can be done through the online interface (Figure 4 'online mode'), by uploading an E5X file (Figure 5 'EX5 format'), or by submitting a completed PDF form offline. All methods route through the same portal and trigger submission to the concerned authority(ies).

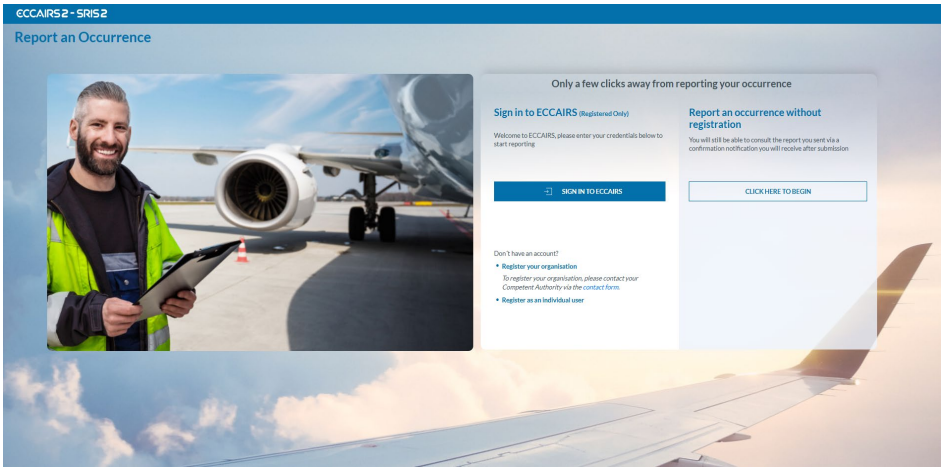
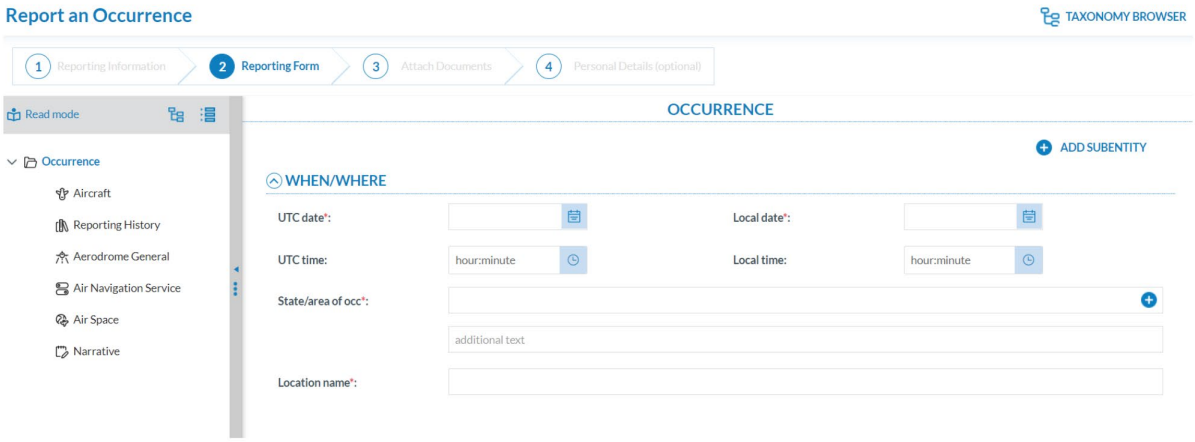


Figure 3. Occurrence reporting interface

2.17 The European Aviation Safety Reporting Portal (https://aviationreporting.eu) provides common reporting forms for organisations and individuals to report to their competent authority, including EASA, using a common and simple interface. The portal is designed as a secure, multilingual web interface, offering encrypted transmission of reports. This system not only enhances data consistency but also reduces the administrative burden on reporters. It offers five reporting forms (i) ATM/ANS, (ii) Flight Operations, (iii) Technical, (iv) Aerodrome and (v) General Aviation. Organisations choose the most adequate form for the type of occurrence which is being reported (e.g., DOA, POA and EASA-145 would use the Technical form, while the ATO would use the Flight Operations form).



Use the navigation tree to move between topics. To add new instances of a topic click on the topic in the tree and click on ADD SUBENTITY in the screen shown at the right pane.

Figure 4. Occurrence reporting interface (online mode)

2.18 The Aviation Reporting Portal also enables the submission of an E5X XML file format. The E5X file format provides a standardised IT solution for organisations to export a high volume of safety data from their Annex 19 databases into an ECCAIRS environment—whether hosted by the Member State competent authority or by EASA itself. Any organisation capable of generating an E5X-compliant file can upload it directly to the Aviation Reporting Portal. The system also facilitates the automatic communication between the organisation's system and ECCAIRS 2 with the use of an API (Application Programming Interface), which is a Machine2Machine method. Organisations intending to use this tool must first secure approval from their competent authority.

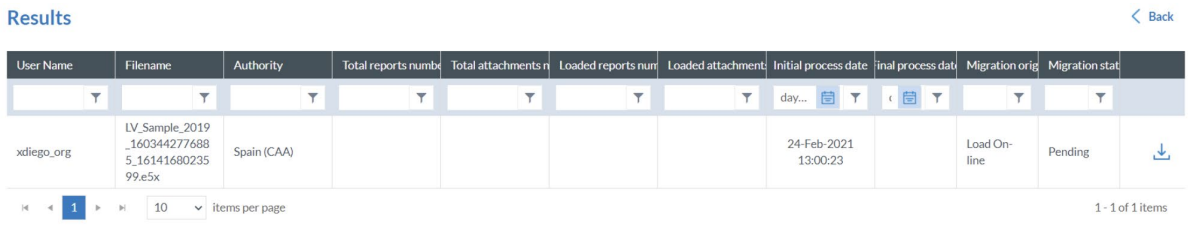


Figure 5. Occurrence reporting interface (E5X format)

The role of ECCAIRS 2 in the reporting chain and how it is enabling safety intelligence initiatives

2.19 The European Aviation Safety Reporting Portal and ECCAIRS 2 (hereafter "E2") are strategically linked. The reporting portal functions as the single, user-focused gateway for submitting safety occurrences across all EU Member States, while E2 serves as the cloud-based back-end platform and processing engine that underpins the portal. When an individual or organisation enters an occurrence report via the portal's web interface, the data is automatically mapped to the agreed ECCAIRS taxonomy and securely transmitted into the E2 Central Hub. There, the information is consolidated, protected, and made available—via role-based access—to competent authorities, such as civil aviation authorities, accident investigation authorities and EASA for analysis, trend monitoring and exchange with ICAO's ADREP system.

2.20 E2 aligns Regulation (EU) No 376/2014 reporting obligations with ICAO Annex 13 and Annex 19 requirements, offering modular applications tailored to accident investigation workflows and state safety programmes of the participant states. Investigator-focused dashboards facilitate detailed case analyses, while risk-monitoring modules support continuous oversight of organisational safety performance. Open APIs and a formal collaboration framework with ICAO ensure that taxonomy enhancements and data-exchange protocols developed in Europe are fully interoperable with global safety data repositories. See https://unitingaviation.com/news/safety/eccairs-2-the-modern-aviation-reporting-tool-that-is-enhancing-aviation-safety-worldwide/

Figure 6. ECCAIRS 2 launching portal

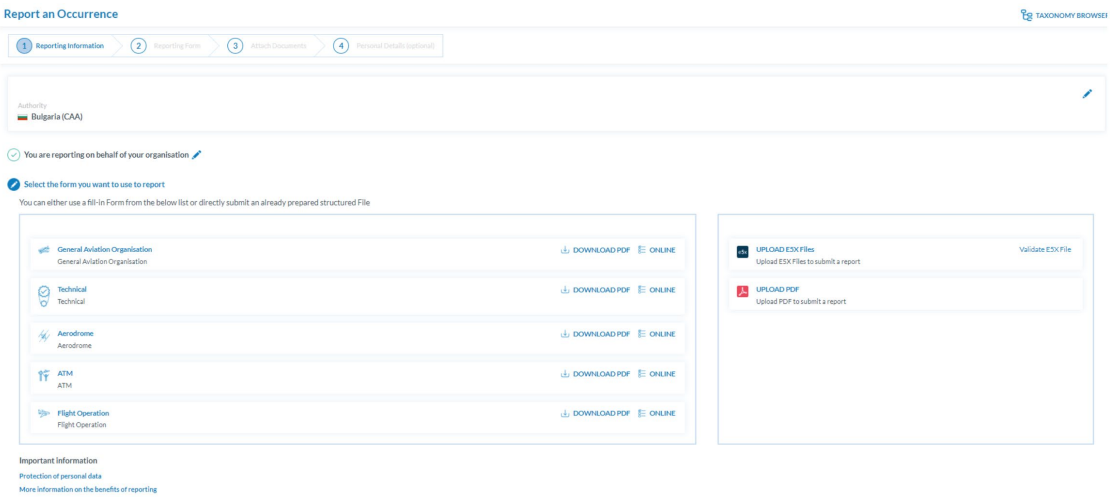


Figure 7. ECCAIRS 2 reporting tool

2.21 E2 is not just a reporting tool—it's a gateway to safety intelligence, feeding structured data into the ECR to enable cross-border trend analysis and risk identification. It underpins programmes like EASA's Data4Safety, which fuse occurrence data with flight data monitoring, ATM surveillance, and maintenance records to generate predictive safety insights.

Aviation Taxonomies in ECCAIRS 2 and the European Safety Reporting Portal

2.22 Given the varied sources and formats of aviation safety data, establishing a unified vocabulary across the reporting process is essential for consistent classification, more insightful analysis, and seamless data exchange. Guided by ICAO, a forward-thinking international team developed the ADREP to establish a universal aviation taxonomy. Over time, detailed stewardship of ADREP passed to EASA, forming the backbone of the ECCAIRS system. Today, known as the ECCAIRS taxonomy, this vital building block enables seamless safety-data sharing across Europe and beyond.

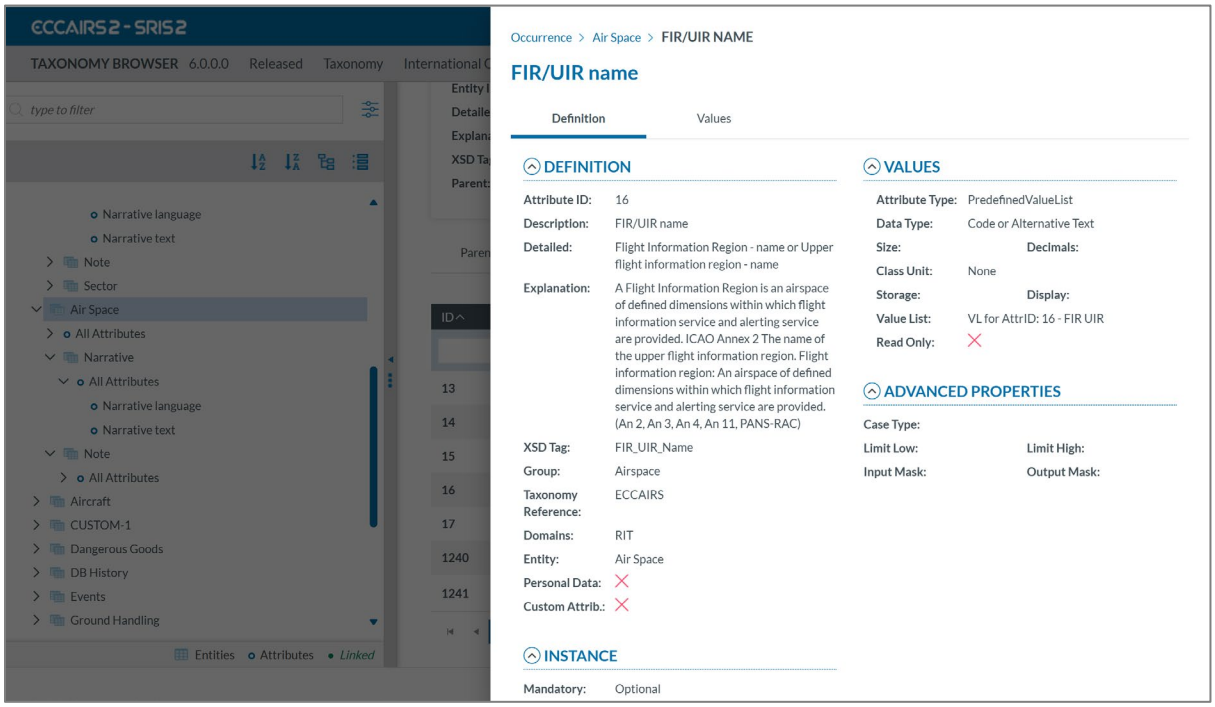


Figure 8. ADREP Taxonomy (example of attributes for Airspace - FIR/UIR name)

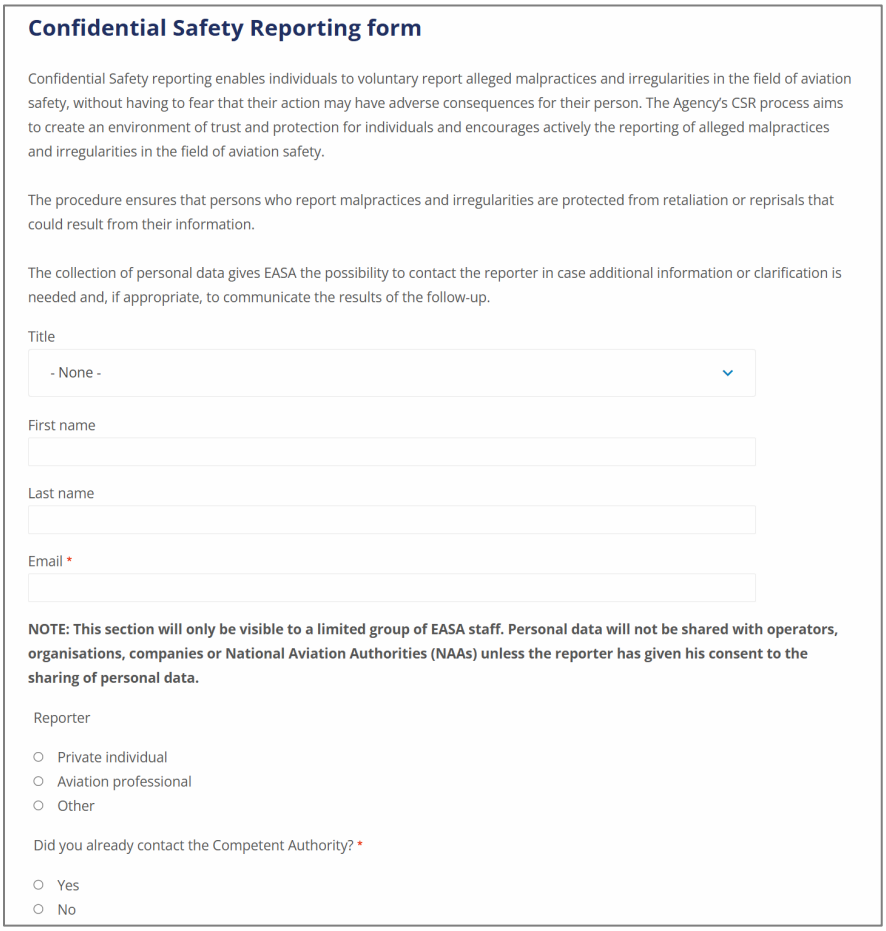
2.23 This taxonomy includes different attributes and values used for safety reporting, such as airspace type, aerodrome status, aerodrome type, aircraft flight level, etc. The full list can be consulted in the E2 Taxonomy Browser[7]. Consistent use of these taxonomies by operators, service providers, and regulators standardises the classification of occurrence types, contributory factors, and safety barriers. This harmonisation enables robust trend analyses, accelerates root-cause investigations, and supports aggregated safety intelligence at both national, regional and global levels, thereby enhancing the efficacy of preventative safety measures.

The EASA Confidential Safety Reporting System

2.24 To complement the mandatory reporting schemes introduced in the above sections, under Regulation (EU) 2018/1139, EASA has established a system for reporting Confidential Safety Reports (hereafter “CSR” or “CSRs”) to enable individuals to voluntarily report to EASA alleged malpractices and irregularities in the field of aviation safety, without having to fear that their action may have adverse consequences. CSR facilitates the collection and exchange of aviation safety-related information that is complementary to the standard filing and reporting lines of Regulation (EU) No 376/2014 (See Figure 9). This system helps to detect and follow up of breaches, irregularities, and malpractices that otherwise might remain hidden and could cause serious harm to aviation safety.

[7] https://e2.aviationreporting.eu/taxonomy

2.25 The system's best practices include anonymous or pseudonymous submission options and legal safeguards against unintended disclosure during administrative or judicial proceedings. CSRs can be submitted by any individual, reporting in their personal capacity, including pilots, cabin crew members, air traffic controllers or maintenance organisation personnel, to name a few. The full list of individuals who can submit a CSR can be consulted at https://www.easa.europa.eu/en/confidential-safety-reporting. Ensuring reporter confidence necessitates the stringent protection of safety data and information sources. EASA's approach encompasses end-to-end encryption for data in transit and at rest, tiered access controls with rigorous authentication protocols, and comprehensive audit trails to detect unauthorised access. A dedicated CSR team at EASA is specially trained to deal with such reports.



Confidential Safety Reporting form

Confidential Safety reporting enables individuals to voluntary report alleged malpractices and irregularities in the field of aviation safety, without having to fear that their action may have adverse consequences for their person. The Agency's CSR process aims to create an environment of trust and protection for individuals and encourages actively the reporting of alleged malpractices and irregularities in the field of aviation safety.

The procedure ensures that persons who report malpractices and irregularities are protected from retaliation or reprisals that could result from their information.

The collection of personal data gives EASA the possibility to contact the reporter in case additional information or clarification is needed and, if appropriate, to communicate the results of the follow-up.

Title

- None -

First name

Last name

Email *

NOTE: This section will only be visible to a limited group of EASA staff. Personal data will not be shared with operators, organisations, companies or National Aviation Authorities (NAAs) unless the reporter has given his consent to the sharing of personal data.

Reporter

- Private individual
- Aviation professional
- Other

Did you already contact the Competent Authority? *

- Yes
- No

Figure 9. Confidential Safety Reporting form (entry portal)

How the aviation safety reporting framework in Europe powers safety intelligence initiatives

2.26 The consolidation of the European Aviation Safety Reporting Portal, national ECCAIRS databases, and the ERC into the cloud-based E2 platform enables seamless submission, ingestion, and secure sharing of occurrence reports using the standardised ICAO ADREP taxonomy—one of the fundamental pillars underpinning aviation-related safety-intelligence initiatives such as EASA's Data4Safety programme[8].

2.27 EASA's Data4Safety initiative—currently in its Operational Phase as of 2026—represents a strategic effort to leverage large-scale data sets for predictive risk management. By integrating flight data monitoring, occurrence reports, and third-party sources—such as meteorological and airspace complexity data—the programme has established a unified analytical platform. Early results include algorithms and methodologies to identify unstable approach events in FDM data, which provides valuable insights for the industry.

2.28 Further information on the initiative can be found on its dedicated EASA website: https://www.easa.europa.eu/en/domains/safety-management/data4safety

Relevance for the Pan-American Region

2.29 The Pan-American region is experiencing rapid traffic growth and is exploring new data-sharing initiatives. Some areas where the European experience may offer useful ideas include:

2.30 *Harmonised regulations:* Aligning national safety reporting regulations with a common framework—such as Regulation (EU) No 376/2014 or Pan-American technical guidance—to promote regulatory interoperability and reduce divergence across jurisdictions. This is especially critical for operators conducting cross-border operations, as harmonised reporting standards will enable more efficient data exchange and consistent risk analysis across the Pan-American region.

2.31 *Standard taxonomies:* Using ADREP-based classification to ensure consistent coding of occurrences, enabling meaningful regional trend analysis and risk comparison.

2.32 *Just culture protections:* Introducing or strengthening confidential safety reporting systems at the State/Administration level—potentially modelled on EASA's Confidential Safety Reporting framework—to ensure robust protections for reporter anonymity and non-punitive handling of disclosures. Embedding these safeguards will foster trust, encourage voluntary reporting, and reinforce a just culture environment that supports proactive hazard identification and continuous safety improvement

2.33 *Digital infrastructure for safety reporting*: Cloud-based portals such as ECCAIRS2, which accelerate data consolidation, quality control, and secure sharing among States/Administrations and industry. ECCAIRS2 offers the possibility to either set up its own system at the State/Administration level or to set up a single system for a number of States/Administrations.

[8] https://www.easa.europa.eu/en/domains/safety-management/data4safety

2.34 *Integrated safety intelligence:* Engaging with EASA to learn about the initial outcomes and developments of the Data4Safety program to exchange on best practices and state-of-the-art technologies in the merging, sharing and analysis of data in support of safety data sharing initiatives in the region. This will support Pan-American regulators and operators to anticipate hazards, prioritise interventions, and drive continuous improvements in safety performance.

3. Conclusion

3.1 The Meeting is invited to note the information contained in this paper.

— END —