

HUCAN

**Holistic Unified Certification Approach
for Novel systems based on advanced
automation**



Welcome to the inaugural edition of the HUCAN newsletter!

In this newsletter, we highlight the progress we've made in one year of deep work, including:

1. The publication of a state-of-the-art report
2. The release of a certification glossary
3. The definition and mapping of automation levels in selected case studies
4. Ongoing events and collaborations with key stakeholders

HUCAN mission

HUCAN is focused on developing an **approach to support future-proof innovation in European aviation facilitating**, taking into account the **certification requirements of AI-based solutions** since the early stages of development.

By producing a **framework based on EASA AI Roadmap 2.0 objectives**, HUCAN aims to build a bridge for SESAR research projects, promoting their coherent and strategic development along the programme pipeline.

By the end of the project (February 2026), HUCAN will provide **practical guidelines** and **design toolkit** to support the implementation of certification objectives in SESAR research project, facilitating the application of a unified and holistic framework.

Challenges of advanced automation for aviation towards AI certification: HUCAN state of the art analysis

AI is anticipated to play a pivotal role in advancing automation in aviation. HUCAN has delivered **three state-of-the-art reports** outlining the emerging innovation challenges in civil aviation, examined existing certification methods, and investigated innovative regulatory approaches for a trustworthy AI.

Report #1 | Advanced automation in aviation

This report provides a comprehensive review of advanced automation in the EU Digital Strategy for Mobility, particularly focusing on aviation and ATM. Despite opportunities such as continuous learning and adaptation, challenges like validating and certifying systems, ensuring transparency, and addressing human-centric design concerns persist. Maintaining a human-centric approach, as advocated by the EASA AI Roadmap, is crucial for ensuring that AI enhances human capabilities rather than replaces them entirely.

[Download the deliverable](#)

Report #2 | Certification methods and automation: benefits, issues, and challenges

This report collects the state of the art on current certification methods and regulations of airborne systems, aerodromes and ATM systems and explores the suitability of current certification methods and approaches to advanced automation and AI-powered technologies, thus highlighting possible benefits, issues and challenges associated to the introduction of higher levels of automation

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Report #3 | Innovative approaches to approval and certification

This report presents the most innovative approaches to the approval and certification process of automated and AI-based technology and analyses them showing pros and cons of each of them, as well as suitability for the aviation domain.

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Certification glossary

Advanced automation and AI-based solutions present tremendous opportunities for the aviation sector. To fully realize these benefits, fostering effective communication among all stakeholders, including aviation professionals and AI experts, is essential. The first step toward achieving this goal is to **create and adopt a shared vocabulary that enhances**

mutual understanding and collaboration, driving progress and innovation within the industry.



HUCAN project has developed the *Glossary of Essential Terminology for AI and Advanced Automation in Aviation*. **Designed to support the SESAR community, this tool offers a clear, comprehensive and accessible guide to help navigate the complexities of these cutting-edge topics.**

[Download the Glossary](#)

The document brings together in a single framework the official definitions from key regulatory initiatives for AI in aviation at the European level, including the **AI Act (2024)**, **GDPR**, and the **EASA AI Roadmap**, while also integrating insights from the **SESAR AI Framework** and the **EU HLEG-AI Ethics Guidelines for Trustworthy AI**.

Definition and mapping of automation levels in the chosen case studies

As HUCAN aims to **develop ready-to-use guidelines**, the Consortium is adopting a **case study-based approach** to test the effectiveness of its holistic certification approach. In light of this, four case studies are used to support the design and the validation of the holistic and unified approach to certification defined by the project.

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The analysis conducted produced a comprehensive report that highlights

- the **purpose, objectives and the automation role of each case study**
- the **human factors impact of the reference ATM solutions**
- the **level of automation of the reference ATM solutions**
- a **preliminary liability analysis for each case study**

Events and workshops



Stakeholder consultation group workshop - Rome, May 2024

This event convened key stakeholders from the SESAR research community to discuss certification challenges associated with advanced

automation and AI in ATM. The workshop facilitated the identification of certification issues pertinent to emerging technologies.

[Read more](#)



The paper Challenges and New Directions for the Certification of AI and Advanced Automation in Civil Aviation is available online

The paper presented at the SESAR Innovation days 2024 is now available online.

Authored by experts from Deep Blue, DLR, CIRA, EUI and NLR, the paper evaluates current innovative certification approaches and explores how levels of automation can enable a more refined development and certification process. In light of the results obtained, the paper proposes new directions that could advance a holistic approach to certification, considering the guidance provided by EASA.

[Read more](#)



SESAR AI Flagship workshop - Rome, November 2024

On 11 November 2024, the SESAR AI Flagship workshop brought together researchers, industry stakeholders and regulatory representatives at Spazio Europa in Rome. The workshop spotlighted **five SESAR projects**, each tackling unique challenges in applying AI to air traffic management, including HUCAN.

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