

EASA AI Days 2025

Lunch break – 12:30 to 13:30

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aידays2025

Passcode: kd7z53



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EASA AI Days 2025

Flash Talk: FAA work progress on AI



Mazdak Hobbi
FAA Senior Representative to EU

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FAA's Effort on “Path to Certification” for AI Software onboard an Aircraft

Mazdak Hobbi (FRAeS)

FAA Senior Representative to the EU

Trung T. Pham, Ph.D.

Chief Scientific & Technical Advisor

**EASA's AI Day in Cologne, Germany (August 27-28,
2025)**



**Federal Aviation
Administration**

Disclaimer

The objective of this technical presentation is only to provide an engineering perspective of the AI/ML technology in the effort to clarify what it can and cannot do within the scope of safe use of the technology in aviation.

Agenda

- **Introduction**
- **Historical Timeline**
- **The FAA's Roadmap for AI Safety**
- **Technical Development from the Guiding Principles**
- **Discussion: US AI Action Plan 2025**



Introduction

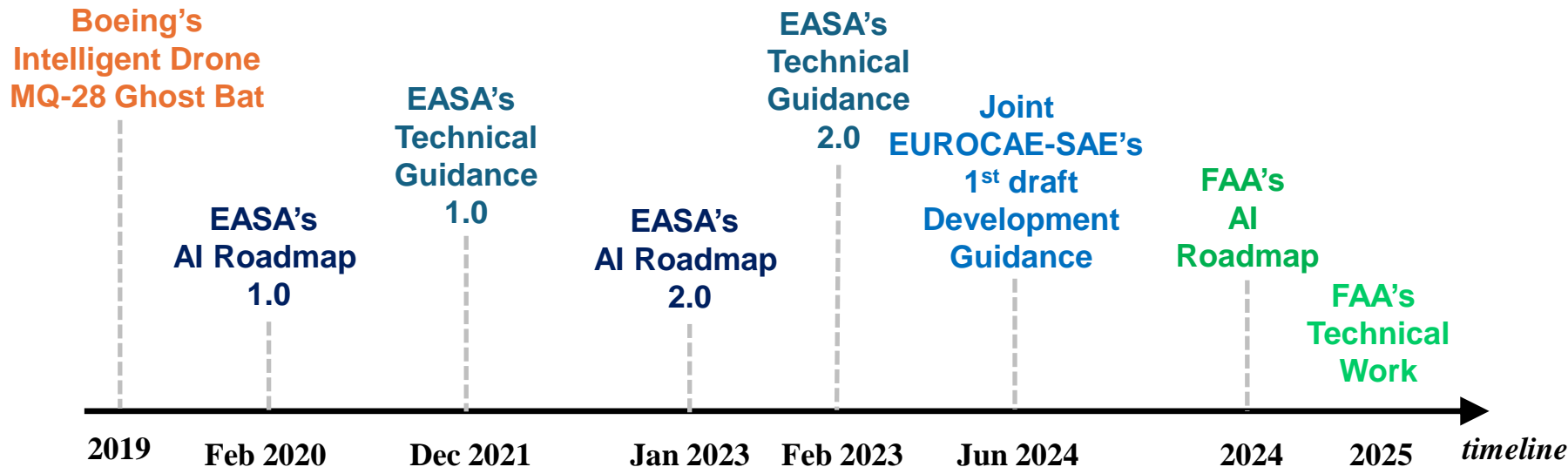
Since the introduction of AI into aviation by Boeing in the MQ-28 Ghost Bat to the Australian Royal Air Force in 2019, the public media has stirred up interest for aviation regulation authorities to prepare for this new technology in the certification framework



2 of 8

Historical Timeline

- The conversation on AI in aviation has started around 2020



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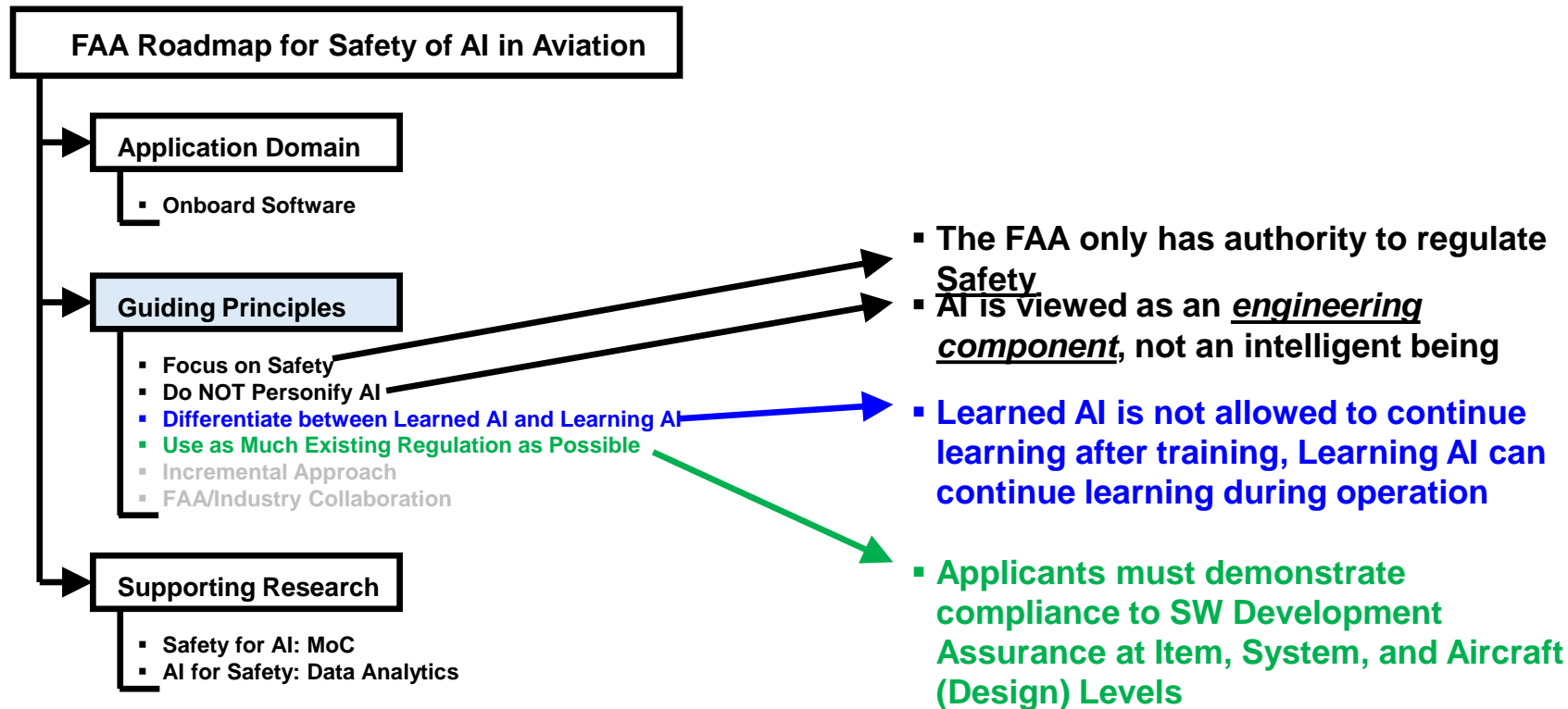
The FAA's Roadmap for AI Safety

In 2024, the FAA published its Roadmap for AI Safety

- **Addressing the safety of AI technology in the context of AI software onboard an aircraft**
- **Separating the automation from AI in a context where AI is viewed as one of the many possible enabling technologies for automation**



The FAA's Roadmap for AI Safety



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Technical Development from the Guiding Principles

Within the focus of AI as Airborne SW, an AI system (developed through ML) is handled at item level

Certification Framework

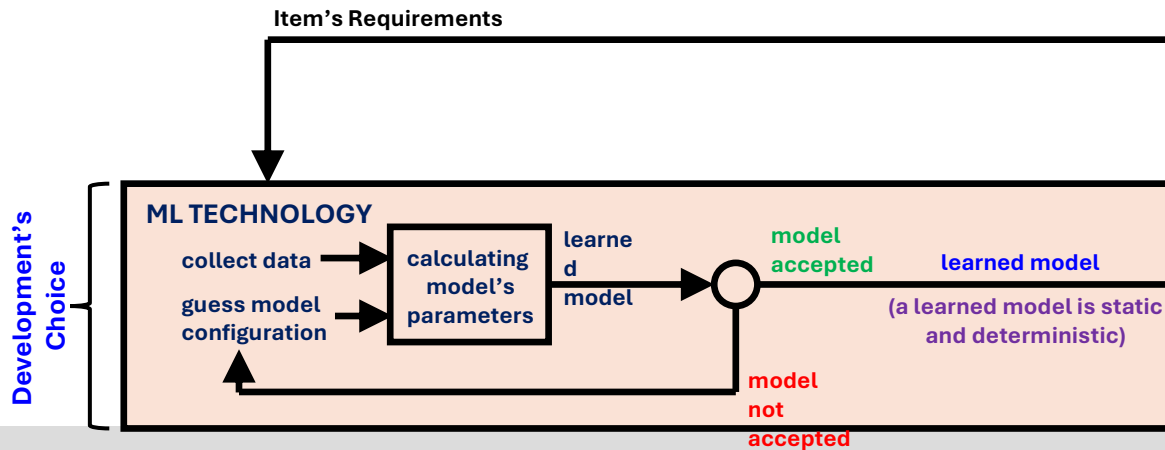
AIRCRAFT SAFETY

SYSTEM INTEGRATION

ITEM DEVELOPMENT

Item

(MATH FORMULA)
Verification



6 of 8

Technical Development from the Guiding Principles

From the Guiding Principle, “Using as Much Existing Regulation as Possible,” and through various projects with the industry

- **An AI system developed through ML technology will be handled at item level in the existing certification framework**
- **An AI system developed through ML technology can be verified within the existing certification framework, but through different MoC**

Discussion – US AI Action Plan 2025

- The America's AI Action Plan (released by the US White House on July 23, 2025) reiterates the engineering approach to treat an AI system as a software component (as outlined in the US Roadmap for AI Safety):
 - Evaluate the assessment of the *performance* and *reliability* of AI systems
 - Support the development of the science of *measuring* and *evaluating* AI systems

Thank you very much

Merci beaucoup

Muchas gracias

Cám ơn rất nhiều

非常感謝

Grazie mille

Muito obrigado

Moltes gràcies

आपका बहुत बहुत धन्यवाद

EASA AI Days 2025 **EUROCAE WG-114/ SAE G-34 Joint working group on AI**



Fateh Kaakai
Safety Expert and AI
Assurance Researcher at Thales



Sandrine Serres
Designated Certification Specialist
at Airbus

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EUROCAE & SAE INTERNATIONAL

EUROCAE WG-114 (Artificial Intelligence)

SAE G-34 (Artificial Intelligence in Aviation Committee)



ARP6983 / ED-324 – Development and Assurance guidelines for Aeronautical Systems and Equipment Implemented with Machine Learning

Fateh Kaakai (Thales)

EASA AI days

August 26-27, 2026

Agenda

- About EUROCAE WG-114 / SAE G-34 committee
- Statement of Concerns - Reason for ED-324 / ARP6983 creation
- ED-324 / ARP6983 Scope Issue 1
- Master Schedule
- Key Draft 7 Highlights for Open Consultation
- Use Case Overview
- Overview of new Subgroups SG8 and SG9

About SAE G-34 / EUROCAE WG-114 – Global picture

Joint Committee

- Created in 2019

- Leadership



F. Kaakai (Thales), S. Serres (Airbus), R. Zakrzewski (Collins)



P. Olivio (Embraer), M. R. Jahn (Boeing), G. Brown (Airbus)

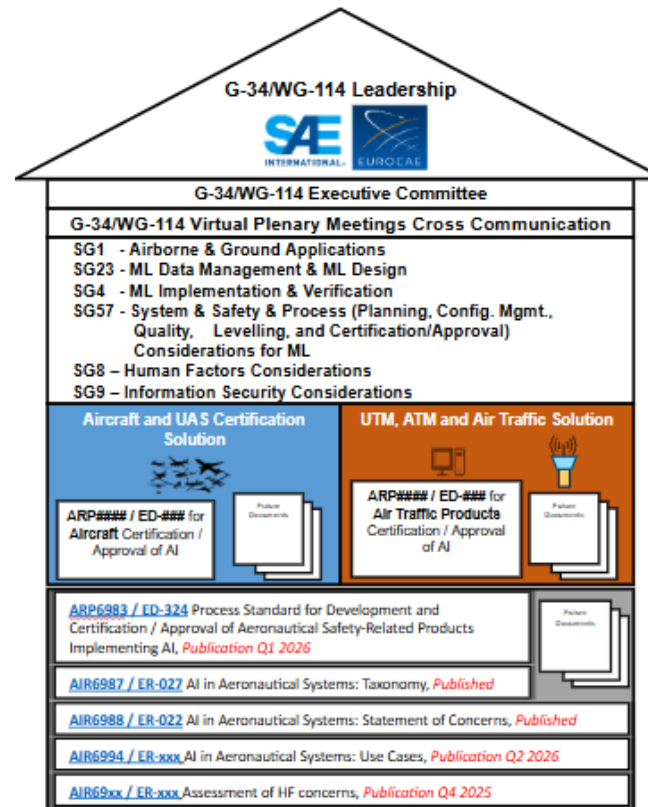
- Contributors: industries, authorities, university

- 2 published documents

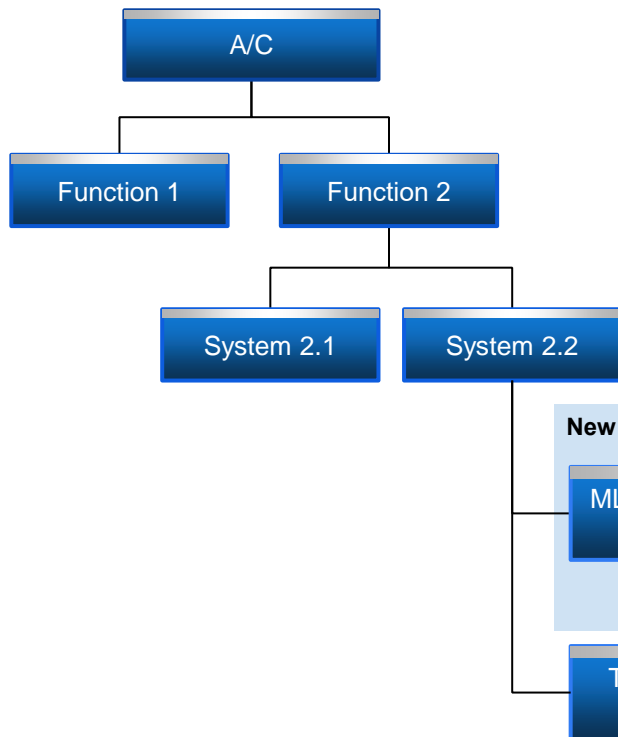
- ER-022 / AIR6988 ([Statement of concerns](#)) → Published on 30 April 2021
- ER-027 / AIR6987 ([Taxonomy](#)) → Published on 12 December 2024

- WIPs

- ED-324 / ARP6983 – [Process Standard for Development and Certification / Approval of Aeronautical Safety-Related Products Implementing AI](#) → Publication planned for June 2026
- ER-0xx / AIR6994 (Use Cases) → Publication planned for Q2 2026



Statement of Concerns – Gap in current Certification Approach



Airborne ED-79x/ARP4754x, ATM/ANS (EU) 2017/373

1. Knowledge-based Engineering (requirements, models, etc.) → **Data-Based (driven) engineering**
2. Software/Hardware design done by humans for humans (explainable, auditable, etc.) → **The complex design of an ML model is not directly understandable by humans**
3. Source code traceable to functional requirements → **The low level design developed by the machine is not directly traceable to functional needs**

New Standard WG-114/G-34

ML Constituent with SW/HW items

SW Item

SW Item

Airborne: ED-12x/DO-178x + Suppl.
ATM/ANS: ED-109x/DO-278x/ED-153

AEH Item

AEH Item

Airborne & ATM/ANS: ED-80/DO-254

Traditional SW/HW Items
without ML

Industry consensus on the ML challenges in Statement of Concerns (ER-022 / AIR6988)

ED-324 / ARP6983 – Scope issue 1

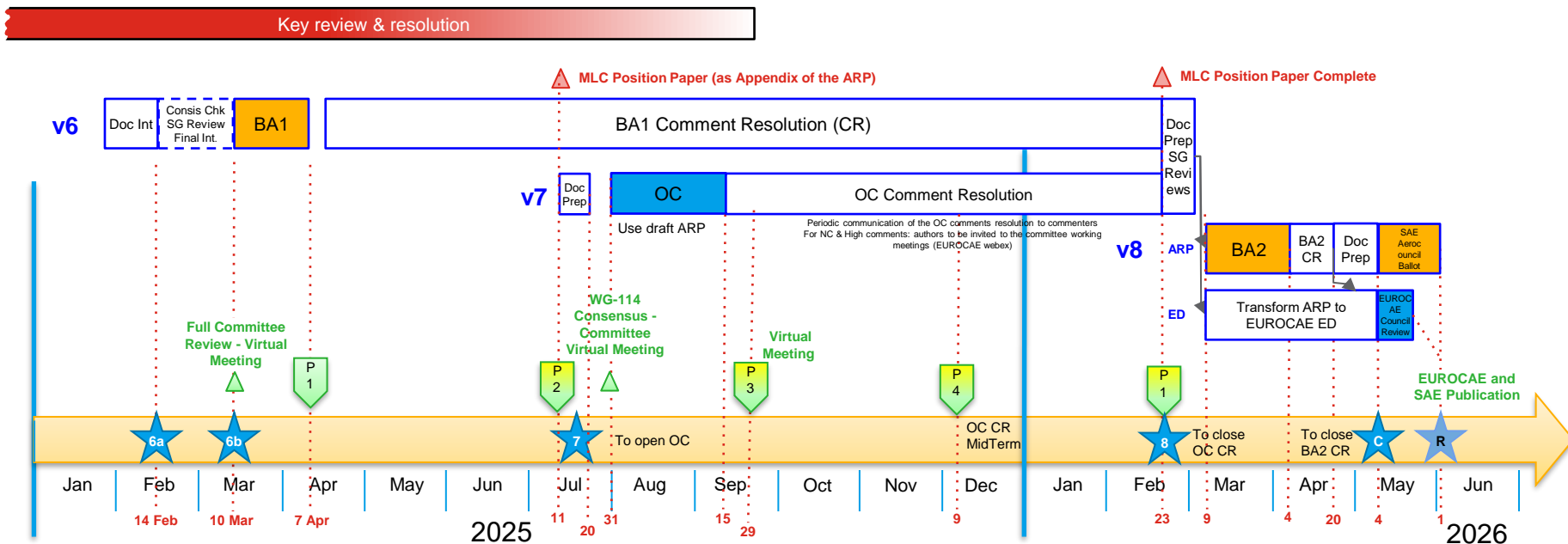
- Development assurance process focused on Learning Assurance
- Both airborne and ATM/ANS domains
- Crewed and uncrewed aircraft
- Issue 1 limited to a subset of ML technologies
 - Non-adaptive ML in supervised mode, and up to DAL C / AL 3 / SWAL 2
 - out of scope: Information security & Human factors considerations

Disclaimer: This presentation is based on ED-324/ARP6983 Draft 7 (WIP), which content may change due to current SAE ballots & EUROCAE Open Consultations processes.

Master Schedule (revision 9.4 - 250710)

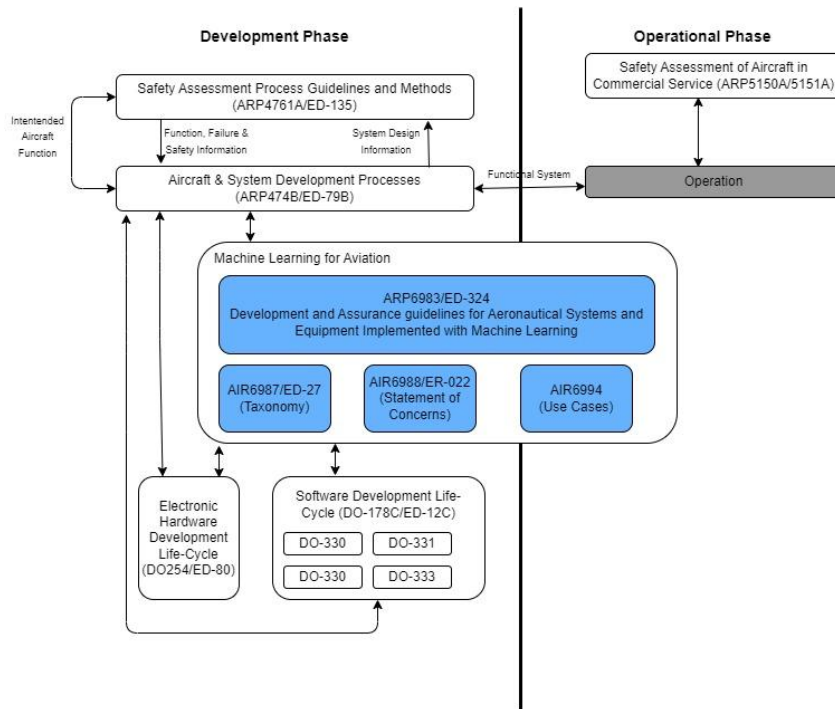


- 6a: SG revisions integrated into master document
 6b: Consistency checks and SG review integrated into document;
 Grey text managed
 – input to BA1
 7: Input to OC
 8: BA1 & OC comments resolved and integrated
 C: Final Ballot input / Possible Council Input



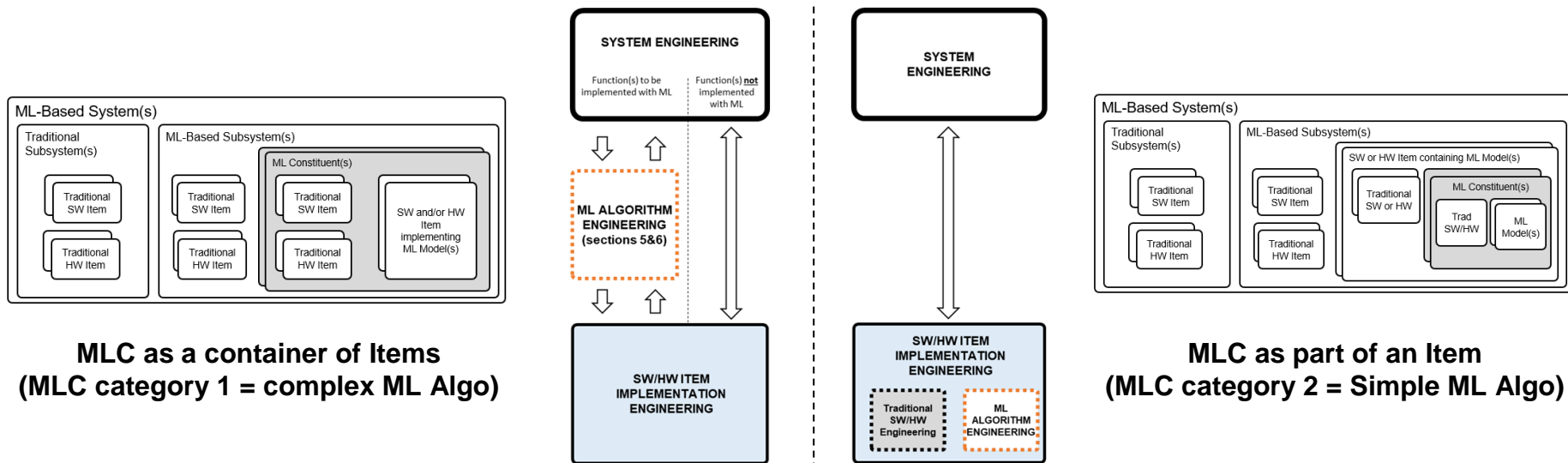
ED-324 / ARP6983 – Relationship to other Guidelines

Airborne Domain



ED-324 / ARP6983 – Concepts: Machine Learning Constituent (MLC)

- The work on the interface between ED-79B/ARP4754B (system) and ED-324/ARP6983 (MLC) revealed a more general concern in existing aviation standards regarding the way to manage complex algorithms in critical systems and the specific development assurance to apply (compliance).
- MLC Definition: A defined and bounded set of one or more ML model(s) and the ML data processing required for their execution, implemented in hardware and/or in software, and considered as a single entity for assurance purposes

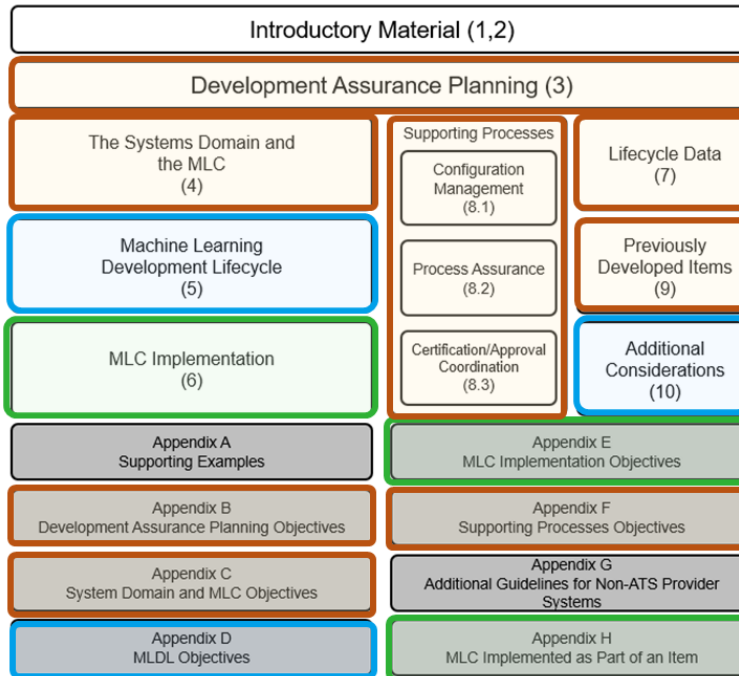


ED-324 / ARP6983 – Document Structure of Draft 7

System & Integral Processes

ML Algo Design

Implementation



	ED-324 / ARP6983	ED-79B / ARP4754B	ED-12C / DO-178C + ED-94C / DO-248C
Intro, ToC	8	4	9
Main body	103 (W Shape)	68	68
Supportive information	52	107	43 + 140 = 183
Total	163	179	260

ED-324 / ARP6983 – Use Case Overview

Use Case	ML technique(s)	ML algorithm category	MLC Category	MLC IDAL/AL/SWAL	ARP6983/ED-324 standard coverage)
Time-Based Separation	Supervised	Regression	Category 1	IDAL C	Section 4 and 5
Automated Fuselage Skin Anomalies Inspection	Supervised	CNN	Category 1 (implementation in one or several items)	IDAL C	Sections 5 and 6
Collision Avoidance Use Case	Reinforcement	NN - Fully Connected Layer	Category 1 Homogeneous MLC case (SW)	IDAL C	Section 4 (all parts) 5.2 ML Constituent Requirements Process
ACAS-XU Use Case	Supervised	Fully connected NN	Category 1	IDAL C	Section 4 (system), 5 (MLDL) and 6 (implementation)
ML-based Automatic Air-to-air Refueling Use Case	Supervised	CNN	Category 1	IDAL C	Sections 4, 5, 6
NASA low-dimensional Use Case for Engine Health Management	Supervised Offline	Shallow NN or Nonlinear Regression	Category 2	IDAL C	Section 4 (partial) - System requirements but no QSA Section 5
Aircraft Emergency Braking System (AEBS) - Powered by Runway Sign Classifier (RSC)	Supervised	CNN-based object detection DNN	Category 1	IDAL C, IDAL D	Sections 3, 4, 5, 6, 7, 8, 10
Multi-sensor Ensemble-guided Attention Network for Aerial Vehicle Perception Beyond Visible Spectrum	Supervised	Transformer with attention layers	Category 1	research only IDAL C	4,5 and whatever will be applicable from 6 for the development portion
Vision Landing System (VLS) Use Case	Supervised	CNN	Category 2 (both can be applied)	IDAL C	Sections 4 and 5
Autonomous Integrated Resilient System for Enhanced Navigation in Secure Environments	Supervised	CNN + Fully connected NN	Category 1	IDAL C	Sections 4 and 5

Scope & Focus

End Users considerations in relationship with the AI development.

Expected Result

Guidance to develop AI that address end-users needs.

Planned Activities

- Charter approved
- Engaging outside (EASA, FAA, ANAC, G10H, S18H)
- Identification and selection of Use Cases
- Identification of Human Concerns
- Analysis of assurance provision for AI systems to address human concerns



Scope & Focus

The **security aspects** of **initial and continuing airworthiness** and **ATM/ANS** certification and **maintenance** for AI-based aeronautical systems.

Expected Result

Guidance to develop AI that addresses information security concerns

Planned activities

- SG creation approved in the July plenary by WG-114
- Charter in work
- Engaging outside (EASA, FAA, S-18, G-32, ISO, etc.)
- Gap analysis of information security concerns

- SAE Ballot 1 ended on April 7th, ≈1800 comments are being addressed
- EUROCAE Open Consultation started August 1st 2025, will run 45 days
- SAE Ballot 2 planned for March 2026
- Target publication issue 1: June 2026
- Use Cases in work to illustrate how to apply the recommended practice to different applications
- Issue 2 will follow, covering more ML techniques (such as Reinforcement Learning)

Note: This is the current schedule, it is subject to change

Acknowledgements

- The content of ED-324 / ARP6983 is the work of **many individuals** (too many to name) beyond the leadership, SG leads, and editors.
- Special thanks to EASA for the invitation to present.

Any questions?

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Update on AI Rulemaking

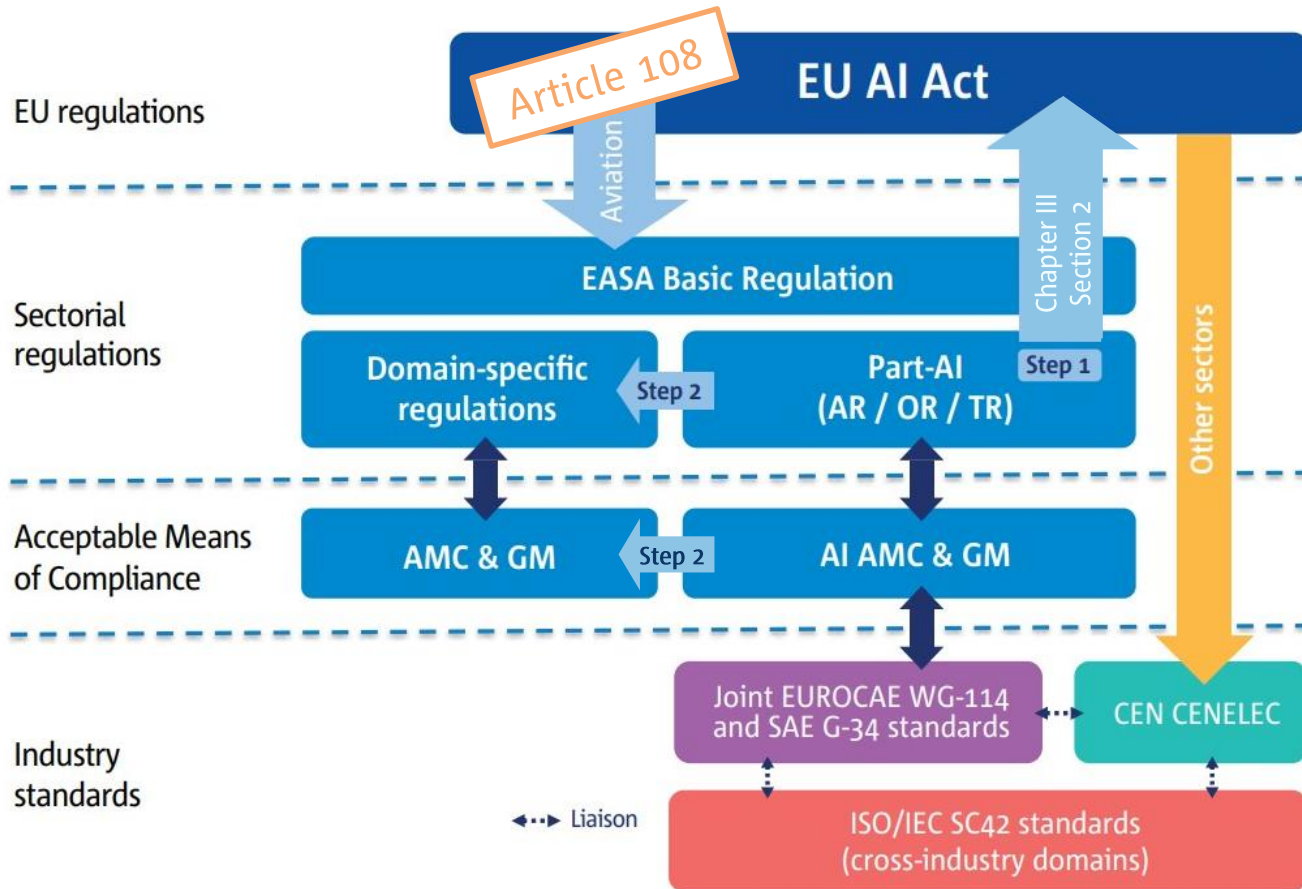


Giovanni Cima
Project Manager 'RMT.0742'

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Rulemaking concept for AI (Roadmap 2.0)



Overview of feedback received on RMT.0742

→ Feedback from the EU Commission

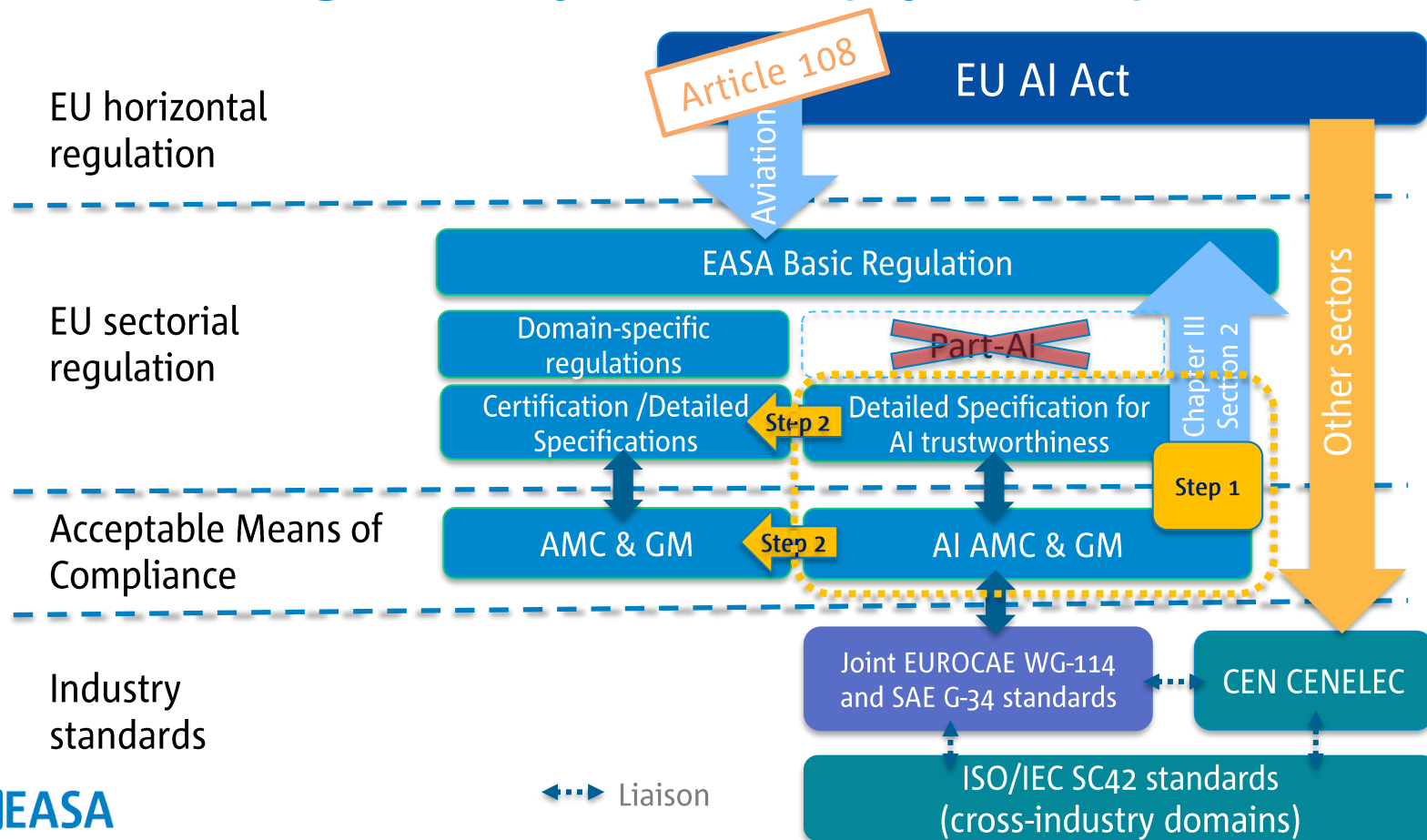
- A discussion with the EU Commission on RMT.0742 legal basis raised some need for clarification on the interplay between EU AI Act and Aviation Basic Regulation.

→ Feedback from Industry


- SAB/AG.005 (aircraft design) group triggered concerns on the scope of the RMT.0742 and on the structure involving a Part-AI.
- SAB/AG.005 feedback has been taken into account in the replanning strategy.

- Based on the feedback received, EASA decided a reorientation of the RMT.0742 plan towards a first NPA focusing on the “soft-law” aspects for domains in the scope of EU AI Act Article 108.

Rulemaking concept for AI (updated)



RMT.0742 ToR and EPAS update

 European Union Aviation Safety Agency		
Terms of Reference <i>for rulemaking task</i> RMT.0742 Issue 1		
Artificial intelligence trustworthiness		
OBJECTIVES		
1. Ensuring Artificial Intelligence (AI) trustworthiness for its safe use in aviation in response to the EU AI Act Chapter III Section 2. 2. Enable the deployment of AI in the specific aviation domains identified in the EU AI Act Article 108. 3. Enable the deployment of AI in other affected aviation domains (e.g., but not limited to, aerodromes).		
The activities in the context of this RMT will be based on EASA Concept Paper 'Guidance for Level 1&2 machine learning applications' Issue 02. The objectives are intended to be achieved through the following subtasks: Subtask 1: Proposal for an AI trustworthiness aviation regulatory framework in response to the EU AI Act Chapter III Section 2 Subtask 2: Development of the associated set of generic AI-related acceptable means of compliance (AMC) and guidance material (GM) Subtask 3: Development of the necessary adaptations to domain-specific regulatory material for aviation domains identified in the EU AI Act Article 108 Subtask 4: Development of the necessary adaptations to domain-specific regulatory material for other affected domains (e.g., but not limited to, aerodromes)		
REGULATIONS INTENDED TO BE AMENDED		RELATED EASA DECISIONS INTENDED TO BE AMENDED
— Regulation (EU) No 748/2012 (Initial Airworthiness) — Regulation (EU) No 1321/2014 (Continuing Airworthiness) — Regulation (EU) 2024/1107 (LJAS airworthiness and organisation requirements) — Regulation (EU) No 965/2012 (Air Operations) — Regulation (EU) 2019/945 (Unmanned aircraft systems) — Regulation (EU) 2019/947 (Operation of unmanned aircraft) — Regulatory framework for the operation of VTOL and air taxis — Regulation (EU) No 1178/2011 (Aircrew and Medical) — Regulation (EU) 2015/940 (ATCO licensing) — Regulation (EU) 2017/373 (ATM/ANS) — Regulation (EU) 2023/1768 (Conformity assessment DPO) — Regulation (EU) 2023/1769 (Ground equipment) — Regulation (EU) 2021/664 (U-space) — Regulation (EU) No 139/2014 (Aerodromes) — Regulatory framework for safety-related aerodromes equipment — Regulatory framework for the provision of ground handling services — Regulation (EU) 2023/203 (Part-66)		— All related Certification Specifications and Detailed Specifications, as well as relevant AMC and GM.
AFFECTED STAKEHOLDERS		
NCAs, NSAs, DOA holders, ETSOA holders, POA holders, unmanned aircraft manufacturers, aircraft operators (manned and unmanned), aircrew, CAMOs and MOs, ATM/ANS providers, ATCOs, common information service providers (CISPs), u-space service providers (USSPs), training organisations (such as approved training organisations, declared training organisations, organisations operating FSTDs, ATCO training organisations, maintenance training organisations), AOR operators, organisations responsible for provision of AMS at aerodromes, organisations involved in the design and production of safety-related aerodrome equipment, organisations responsible for the provision of ground handling services, etc.		
WORKING METHOD(S)		
Development By EASA with external support	Impact Assessment(s) Light	Consultation Public - NPA
PLANNING MILESTONES: See the latest EPAS Volume II.		

→ ToR issue 1 published on 11.09.24

→ 4 subtasks

→ 2 steps

→ RG composition included

→ EPAS 2025 update (ToR issue 2)

→ Step1 re-purpose to “soft law”

→ Timeline

→ Full Impact assessment

→ Next steps

RMT.0742 Rulemaking Group composition



European Union Aviation Safety Agency

Rulemaking Group Composition

RMT.0742 Issue 1 — 11 September 2024

Artificial Intelligence trustworthiness

Represented NAA, organisation or association	
ASD	Eurocontrol
Aeronautical Engineers Inc. (AEI)	Federal Aviation Administration (US)
AESA - Spain	Fraport
Aerospace Industries Association (AIA)	GE Aerospace
Airbus	IAOPA
Amazon	International Air Transport Association (IATA)
ANAC-Brazil	IFATCA
ANITI	KLM
ANRA	Lufthansa Group
Boeing	Merlin Labs
CAE	Moog
CANSO	Rolls-Royce
DFS Aviation Services	Schiphol Airport
DGAC-France	SkyGuide
Deutsches Zentrum für Luft- und Raumfahrt (DLR)	Transport Canada (TCCA)
DSAC-France	Thales
European Cockpit Association (ECA)	The Edge Company
ENAC-Italy	Chair
EUROCAE	EASA

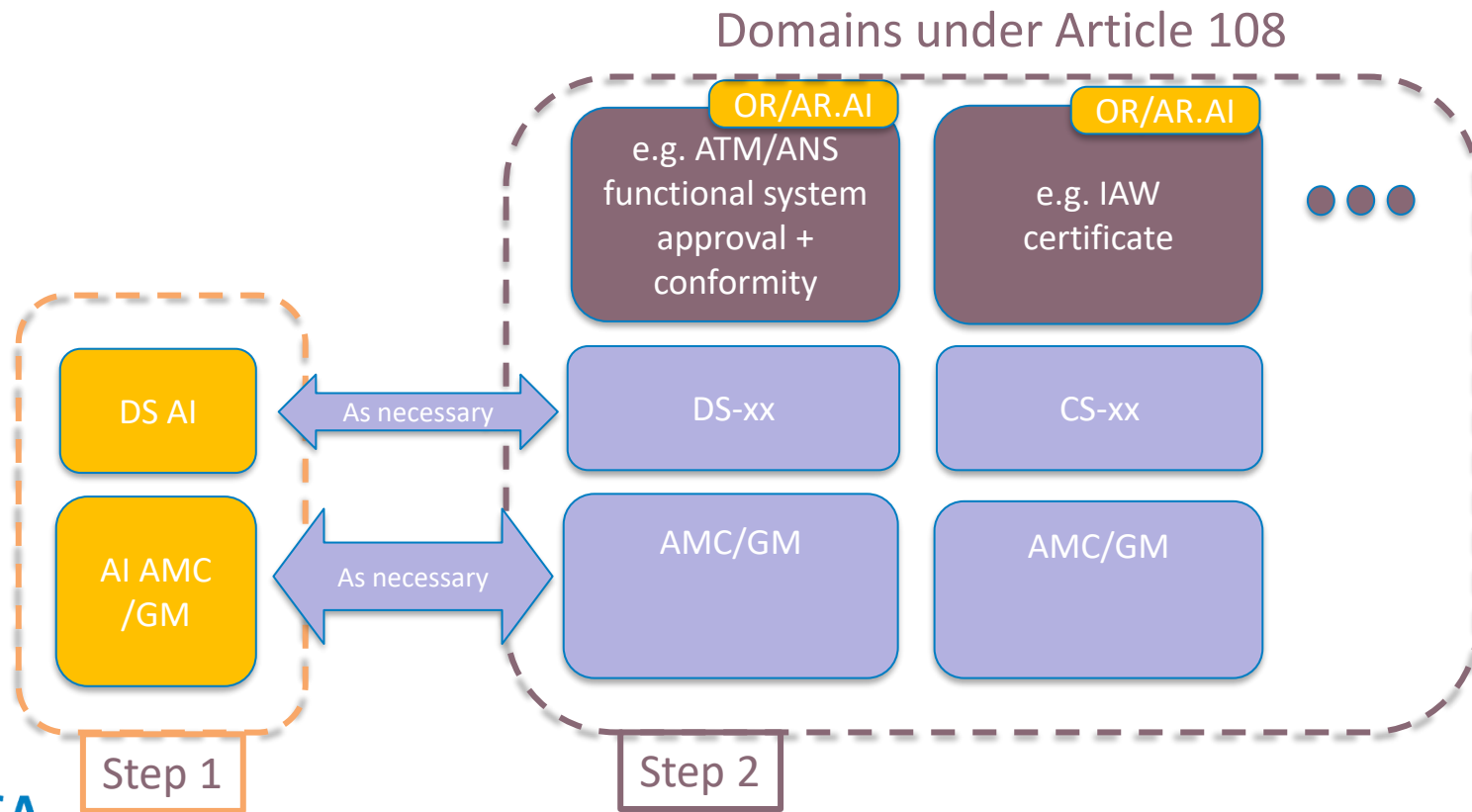
Domain / Stakeholder	Industry (OEM)	Operators	Unions	NAA's	Research	SDOs
IAW / AirOps	✓	✓	✓	✓	✓	✓
ATM	✓	✓	✓	✓	✓	
Aerodromes	✓	✓	✓	✓	✓	
Drones	✓			✓		
Uspace		✓		✓		
Maintenance	✓	✓	✓	✓		
SHM	✓					
Training	✓					
Cybersecurity (horizontal)	✓					

RMT.0742 - One year of work

- KickOff meeting **04.09.2024**
- **12** meetings held (in person Plenary 22/23.05.2025)
- Next meeting **29.08.2025**
- NPA1 (step1) nearly completed
- Anticipation of step 2



RMT.0742: updated scope and structure



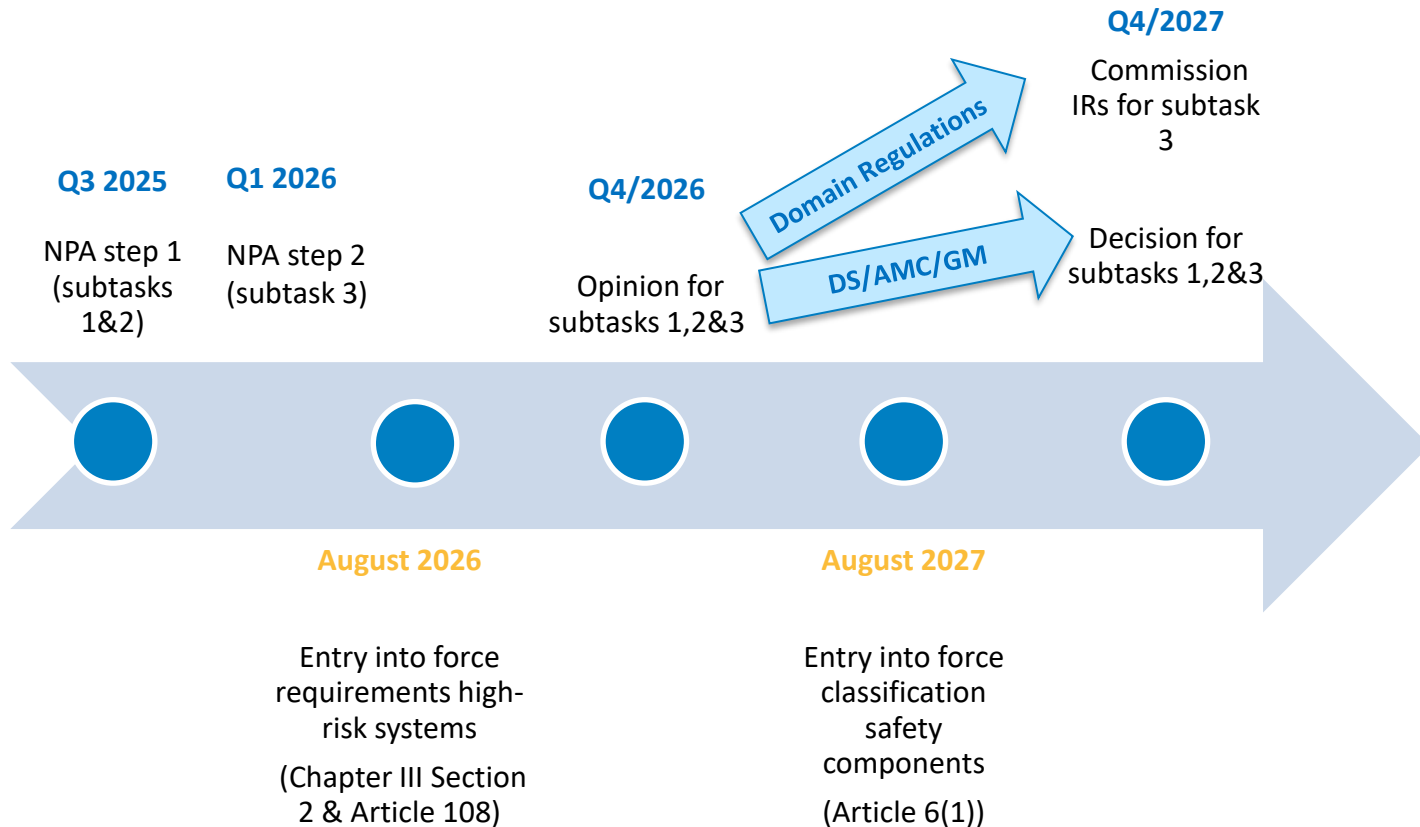
DS.AI trustworthiness requirements structure

- Scope
- Definitions
- Acronyms
- **Concept of Operations (ConOps)**
- **AI-based system classification**
- **Operational Domain (OD)**
- **AI-based system risk assessment**
- **AI-based system ethics-based assessment**
- **AI based-system intended behaviour**
- **AI-based system continuous risk assessment**
- **Human Factors for AI-based systems**



Timeline RMT.0742

RMT.0742 timeline



EU AI Act timeline (Entry into force)

August 2026

Entry into force
requirements high-
risk systems
(Chapter III Section
2 & Article 108)

August 2027

Entry into force
classification
safety
components
(Article 6(1))

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Workshops – 14:45 to 16:00

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Workshop debrief and conclusions: AI Assurance



François Triboulet
Project Manager 'AI Assurance'

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Debrief from the workshop

Benefits to be reinforced	Challenges or topics to be discussed further
Multidomain approach facilitating harmonization and common vision	Complexity to create data sets with adequate qualities
Ensure adequate management and monitoring of risks (safety risks)	(Verification of) Generalisation for high dimensionality use cases
Shared framework for learning assurance process	Verification methods at system level (in relation to e.g. safety assessment)
Favor general public and end user acceptance	How to create a regulated sandbox to gain in maturity?

Session co-chaired and debriefed by Florence de Grancey (Thales)

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Workshop debrief and conclusions: Human Factors for AI



Andrew Kilner
EASA Human Factors Expert'

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Debrief from the workshop

Benefits to be reinforced	Challenges or topics to be discussed further
AI levels and associated guidance proposes a Structured approach for the design.	AI classification aspects: 2A 2B classification too theoretical, 3A 3B presented as the natural evolution from 2A/2B and implication for explainability
Codification of "foreseable misuse" vs. safe behaviour (overreliance, complacency...)	Liability issues: what happens if the operator rejects recommendation (2A)?
Identify training needs	Guidance for training needs
Framework to master human performance (workload, attention, human errors...)	Ensure the success of human system communication (particularly when natural language is used for collaboration purpose)
Session co-chaired and debriefed by Denys Bernard (Airbus)	Determination of right level of transparency & explanation
	Data: How to ensure quality and protection?

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Workshop debrief and conclusions: Ethics-based assessment



Ines Berlenga
Project Manager 'Ethics for AI'

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Debrief from the workshop

Benefits to be reinforced	Challenges or topics to be discussed further
Provides consistency	Change to ethical perspectives over time and across generations
Enhances trust	Training and competency on ethics
Enhancing deployment of AI	Transforming perception from administrative overhead into safety gain
Makes ethics useable and practical	Cultural and regional differences

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EASA AI Days 2025

First day wrap-up



Jean-Marc Cluzeau

Principal Advisor to the EASA Safety Management
Sustainability and Global Outreach Director

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EASA AI Days 2025

Thank you and see you at the dinner at 19:00!

Restaurant Ex-Vertretung

Frankenwerft 31-33, 50667 Köln

For those participating on-line, speak to you tomorrow!

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