



8TH EASA INTERNATIONAL

JOINING FORCES FOR
SAFER AND GREENER
AVIATION WORLDWIDE

COOPERATION FORUM



COLOMBO, SRI LANKA
19-21 MARCH 2024

EASA Artificial Intelligence Roadmap

Open Session

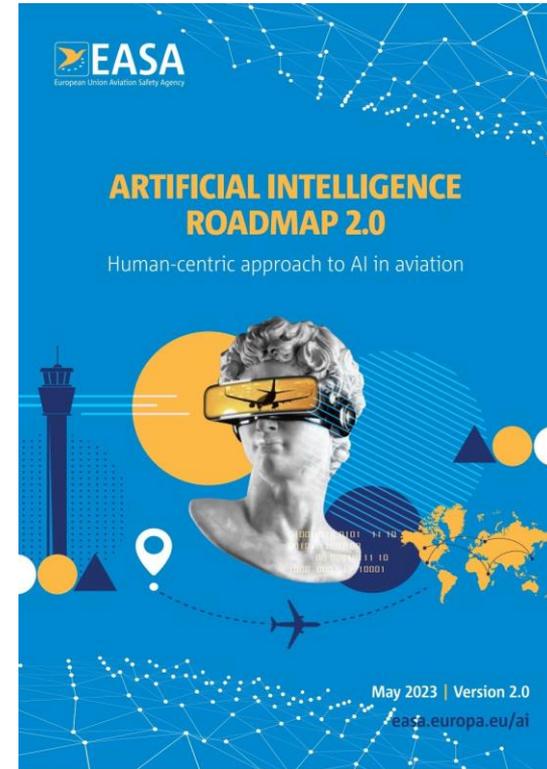
Guillaume Soudain

EASA AI Programme Manager



Presentation Guideline

- Overview of AI concrete use cases in aviation
- EASA AI Roadmap 2.0
 - Entering Phase II (consolidation)
 - Technical scope extension
- AI Roadmap deliverables: AI Concept Paper
 - Common challenges & statement of concern
 - AI trustworthiness concept
 - A collaborative approach
- Rulemaking plan for AI
- Internal usage of AI
- Support to Aviation sustainability
- EASA AI Programme structure



Overview of concrete AI/ML use cases in aviation



Airworthiness and air operations

Visual Landing guidance

Computer vision

Flight training

Assessment of training performance

Computer vision

ATM/ANS

Conflict Detection and Resolution

Optimisation

+ Natural Language Processing

Aerodromes

Detection of Foreign Object Debris (FOD) on the runway

Computer vision

Drones

Detection of object on delivery pad

Computer vision

U-space

Support to U-space management

Optimisation

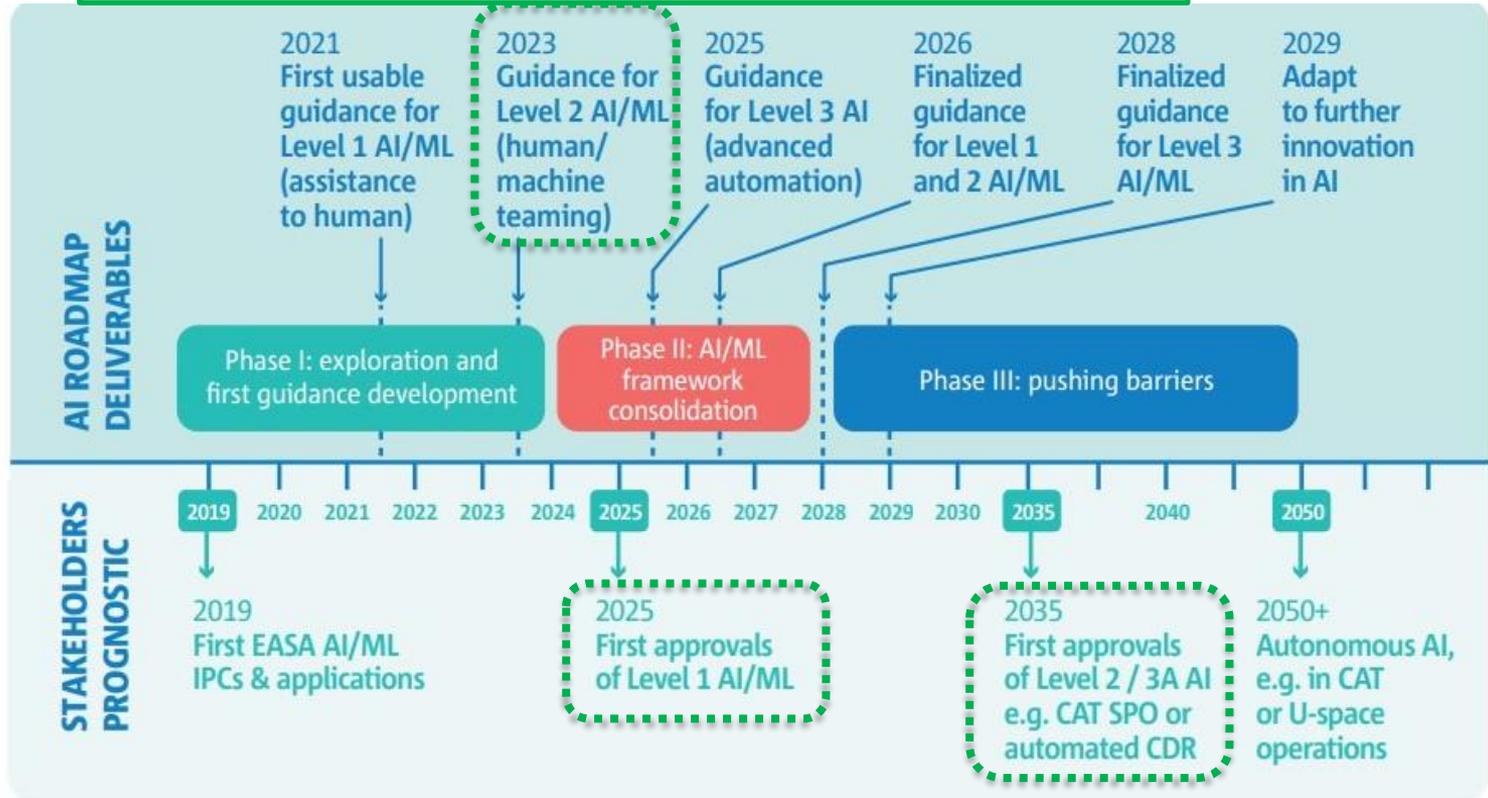
Maintenance

Damage detection in images

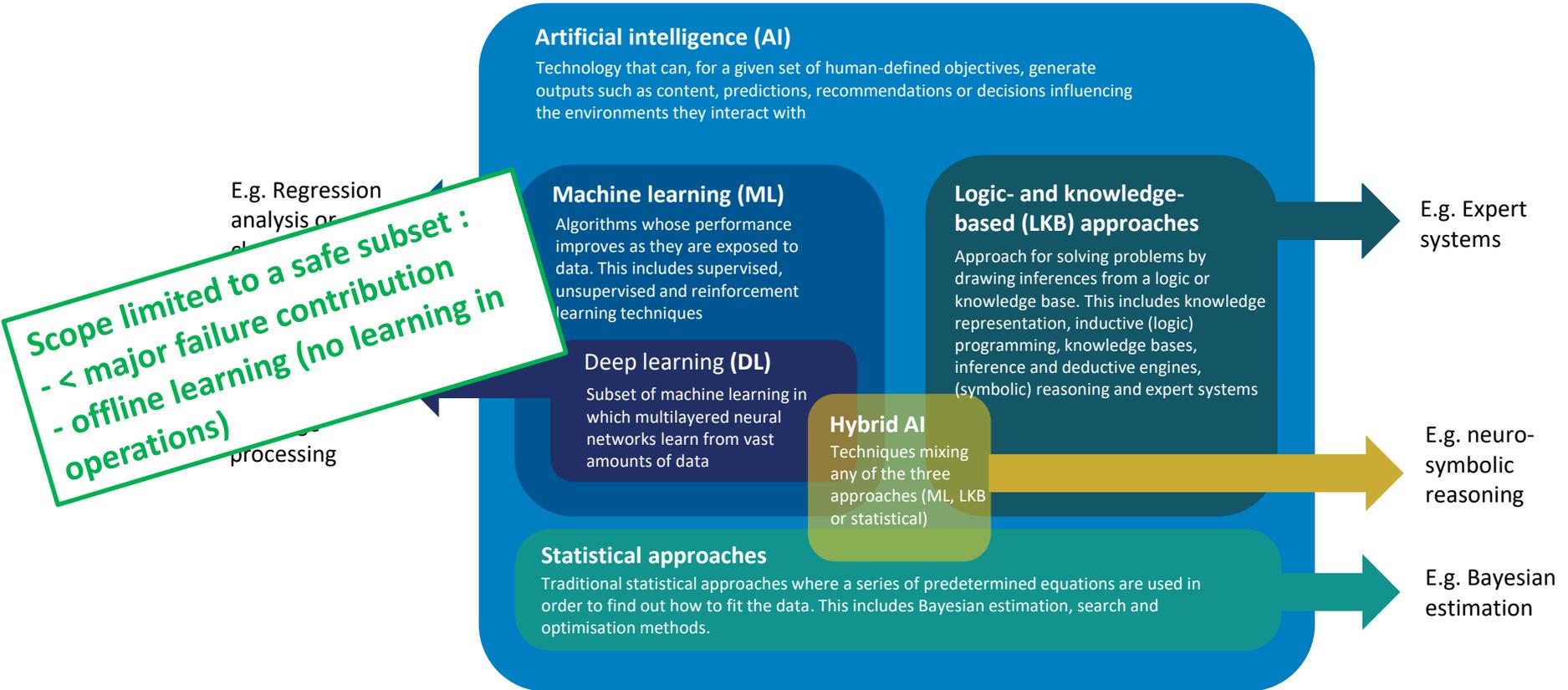
Computer vision

Entering in Roadmap 2.0 Phase II

Deliverable of Phase I = EASA AI Concept Paper Issue 02



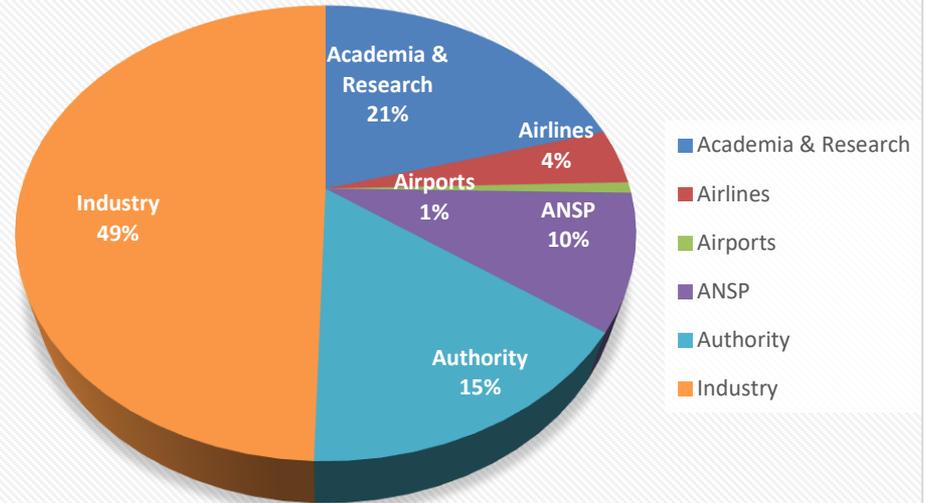
Scope of technology covered by Roadmap 2.0



EASA AI Concept Paper – Publication of Issue 02



Consultation in 2023: EASA received
900 comments from 34 stakeholders



Common challenges & statement of concerns



Data management

- Development assurance frameworks not adapted to learning and inference
- Difficulty in keeping a comprehensive specification through data and knowledge



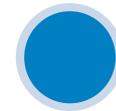
AI model assurance

- Addressing model bias and variance optimisation in the various steps of the AI assurance process
- Elaborating pertinent guarantees of AI models and on the absence of unintended behaviour



AI explainability

- Coping with limits in predictability and explainability of the AI application behaviour



Human-AI teaming

- Managing shared operational authority in novel types of human-AI interaction
- Dealing with adaptivity of the AI application

**EASA response:
the AI trustworthiness concept**

Main AI trustworthiness concepts

Scope of EASA AI Concept Paper Issue 03

Unsupervised automation safety risk mitigation (3B)

Human-AI supervision (3A)

Human-AI teaming

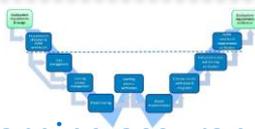
Collaboration(2B)
Cooperation (2A)

Ethics-based assessment

Continuous safety
risk assessment

AI explainability

Learning assurance



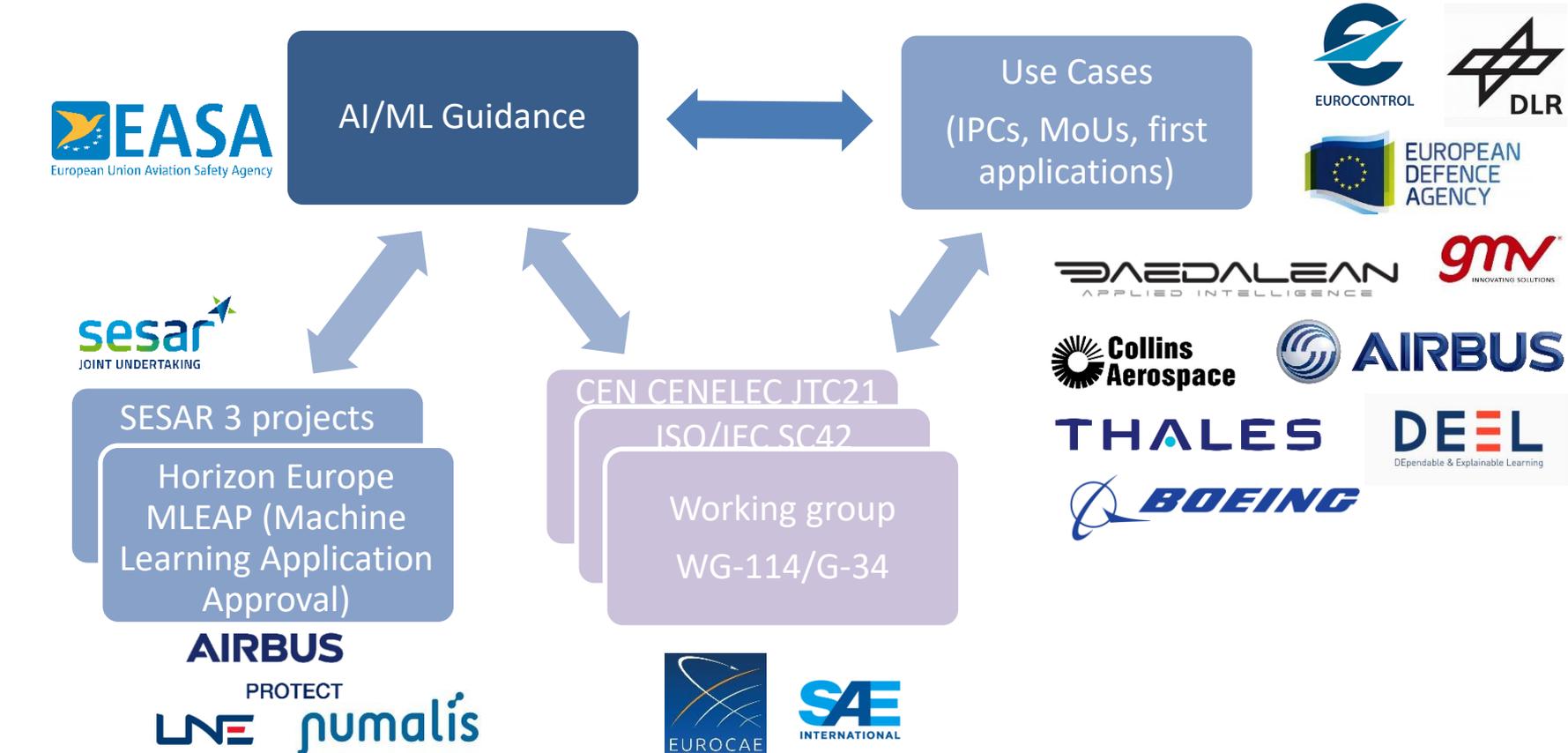
Level 1 AI
Cognitive
Human
assistance

Level 2 AI
Human-AI
teaming

Level 3 AI
Advanced
automation

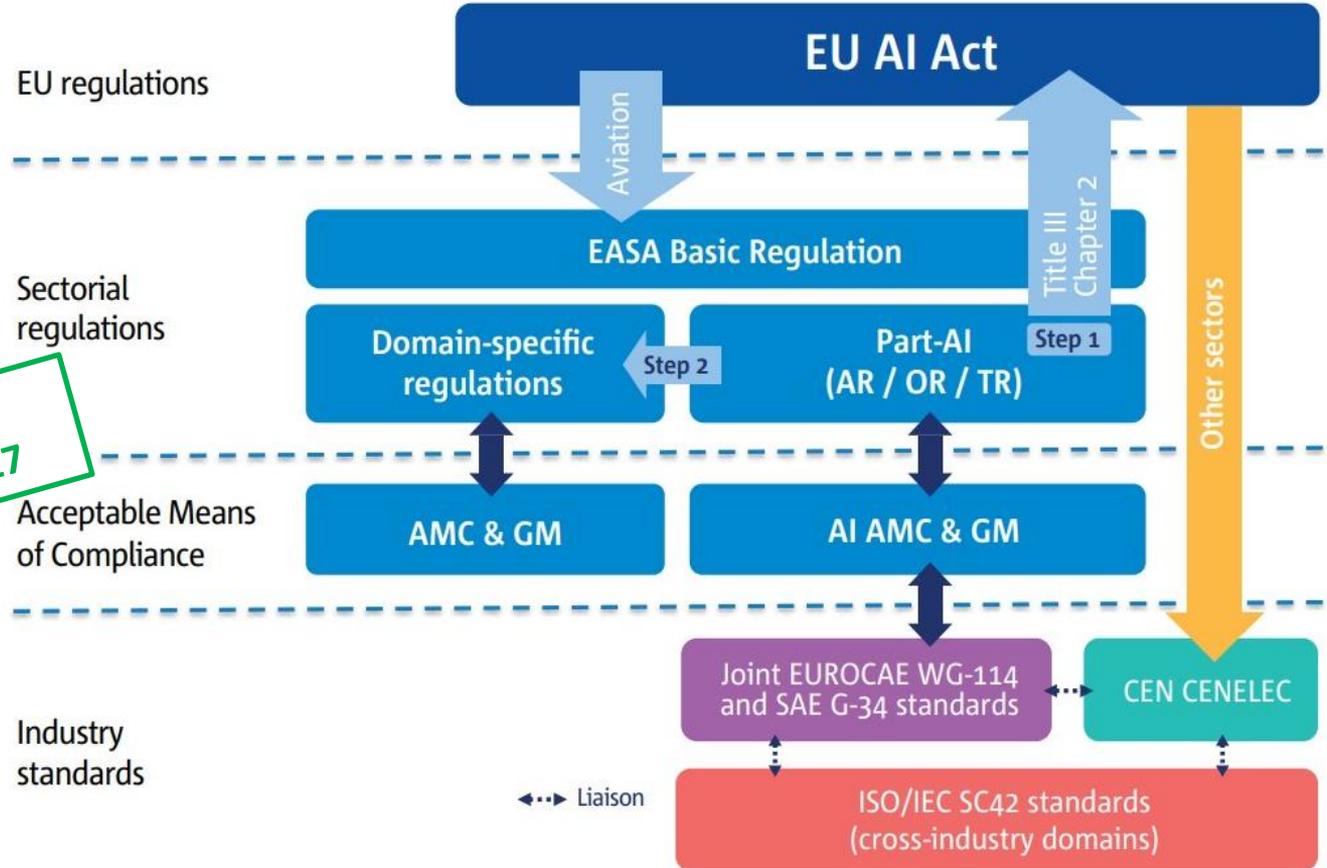
Level 3C or 4
Autonomous
AI
?

Collaborative approach with all Stakeholders



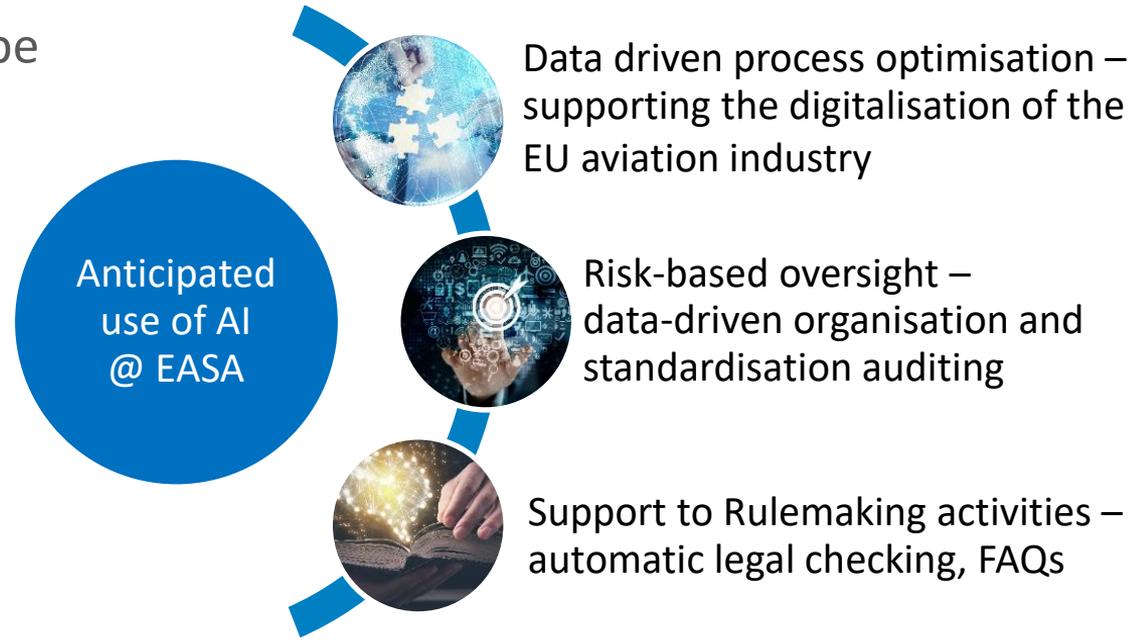
IPC = Innovation Partnership Contract
 MoU = Memorandum of Understanding

EASA Rulemaking plan for AI - EPAS RMT.0742



Use of AI in support of EASA processes

→ The deployment of concrete AI use cases at Agency level will be managed as part of EASA's **digital transformation programme**



AI as enabler for a more sustainable aviation



ATM/ANS

Optimisation of trajectories is one example of how AI can help reducing carbon emissions



Environmental Labelling Scheme

Optimisation of carbon estimation algorithms in support of part of the ReFuelEU regulation voluntary labelling scheme

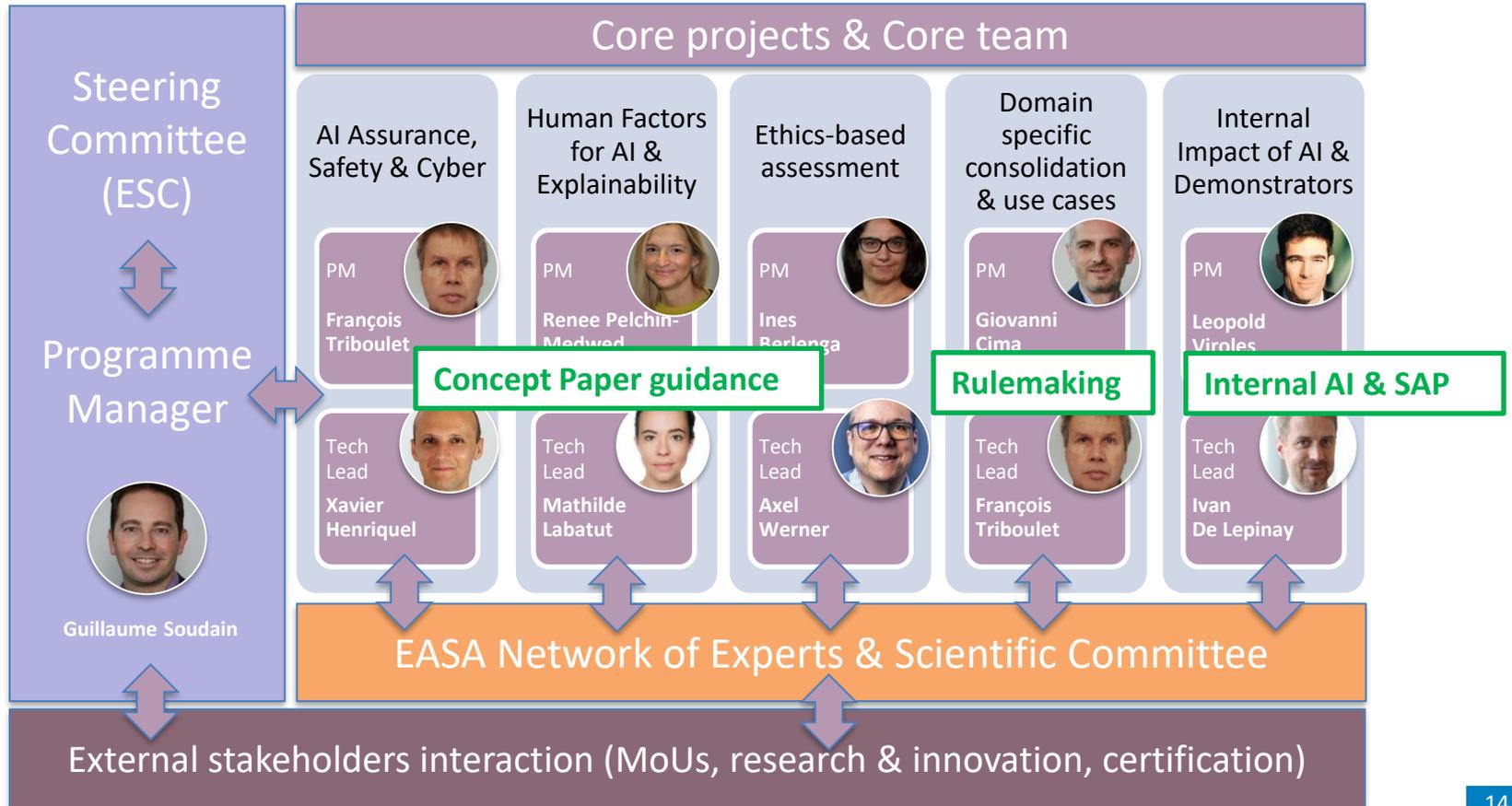


Environmental impact assessment

Data and computation-intensive activity that has significantly evolved over the past decades together with machine capabilities



EASA AI programme : structure & core team



EASA AI Days High Level Conference 2024

- Day 1 (2nd July) : EASA AI Roadmap day
- Day 2 (3rd July) : final dissemination event for Horizon Europe MLEAP* project
- Please register for on site or online participation under [EASA Artificial Intelligence Days — High-Level Conference 2024 - Hybrid event \(partially online and partially on-site\) | EASA \(europa.eu\)](#)

* 'Machine Learning Applications Approval'



Let's initiate international cooperation on AI...



Thank you for your attention!

Any questions?

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Your safety is our mission.

An Agency of the European Union 



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