

# Research, Engineering and Development Advisory Committee (REDAC) meeting

17 April 2024

*Ludovic Aron*  
*EASA representative to the U.S.A.*

**Your safety is our mission.**

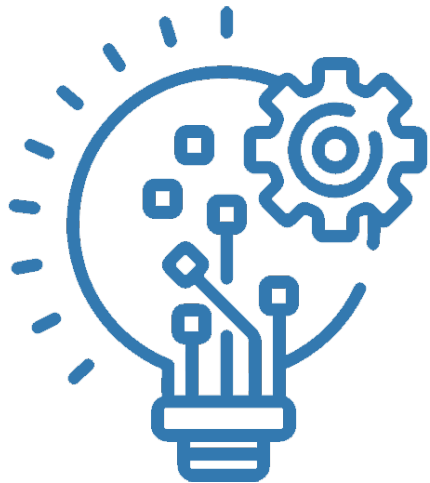


# 1. Research & Innovation activities

**Promoting sustainable aviation.**



# EASA Research & Innovation (R&I)

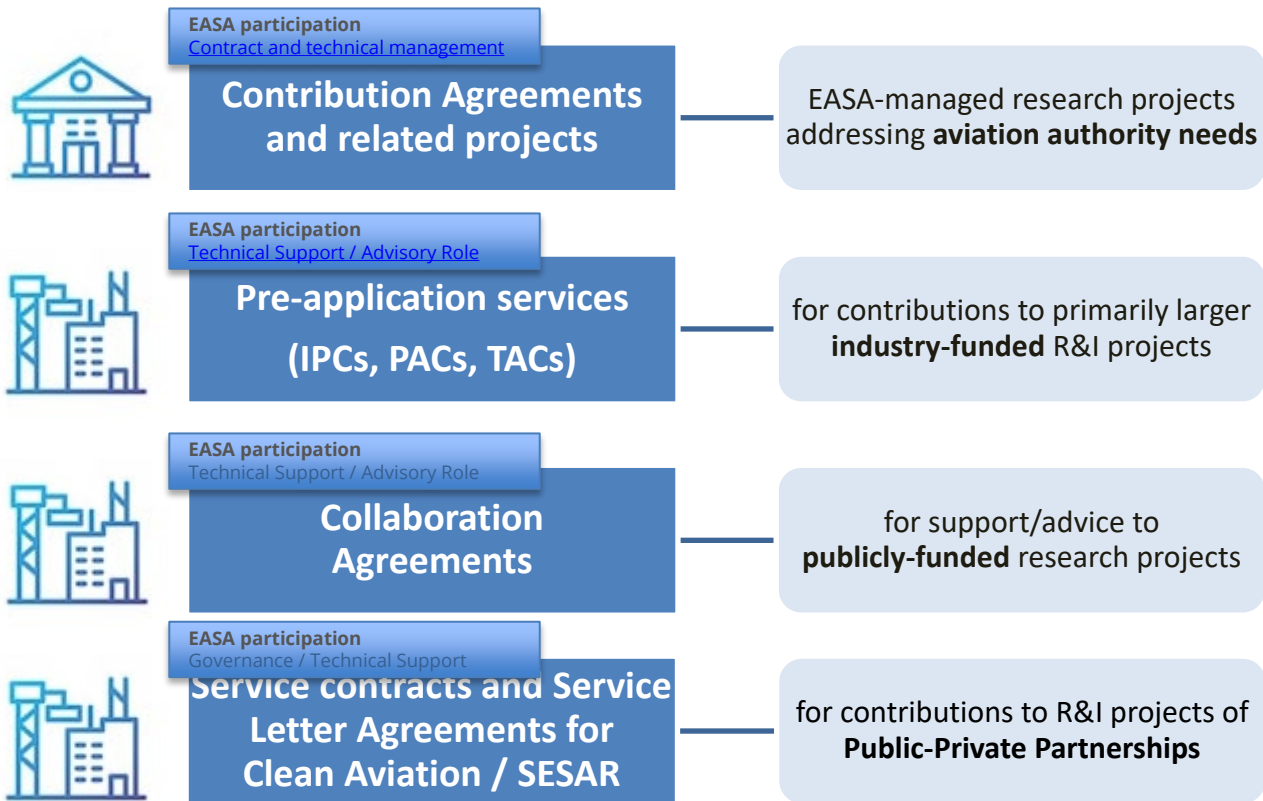


EASA uses its technical expertise to:

- Assist industry to innovate within acceptable safety and sustainability parameters
- Remove regulatory barriers to the smooth deployment of new technologies and operating concepts in the market
- Assess the potential safety, security and environmental impact of innovative solutions on the European aviation system
- Guide EU policymakers in targeting their R&I initiatives to relevant priorities (incl. existing safety issues)
- Organise with the EU Member States a Common Aviation Authorities Research agenda for civil aviation to complement EU and industrial programmes

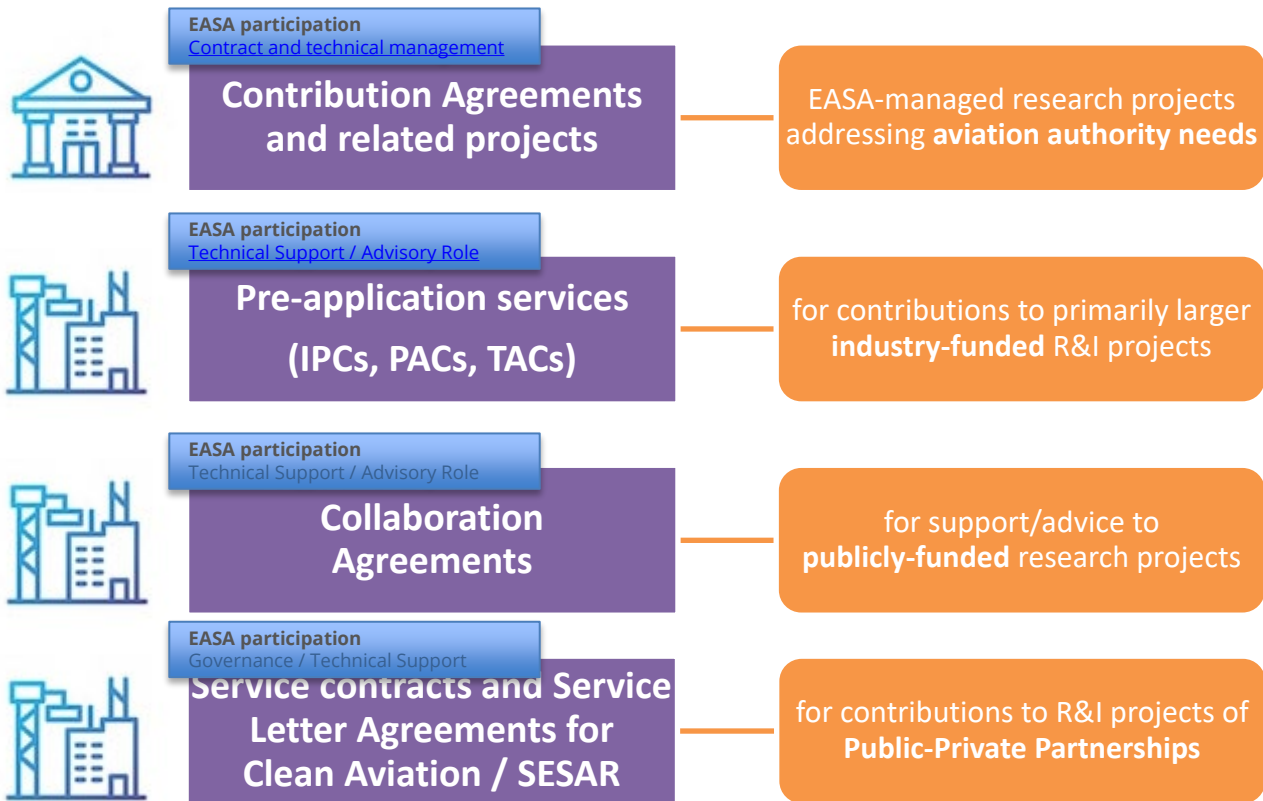


# Several types of engagements/frameworks



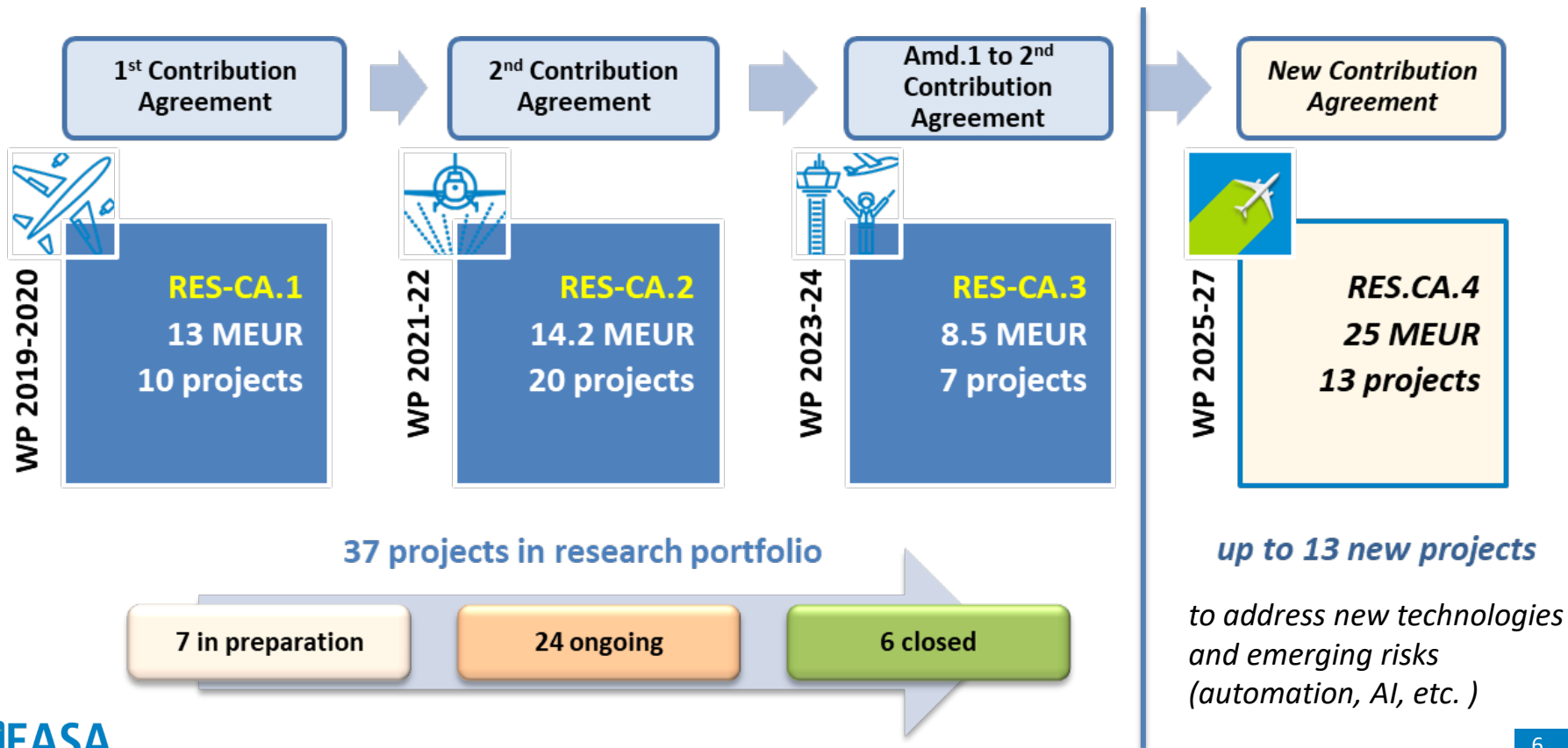


# Several types of engagements/frameworks





# EASA-managed projects funded by H2020/Horizon Europe





# Ongoing research projects

MODEL-SI (Digital Transformation – Case Studies for Aviation Safety Standards – Modelling and Simulation)  
VIRTUA (Digital Transformation – Case Studies for Aviation Safety Standards – Virtualisation)  
DATAPP (Digital Transformation – Case Studies for Aviation Safety Standards – Data Science Applications)  
MLEAP (Machine Learning Application Approval)

eMCO-SIPO (Extended Minimum Crew Operations – Single Pilote Operations – Safety Risk Assessment Framework)  
Effectiveness of flight time limitations (FTL)

Detection of Lithium Batteries Using Security Screening Equipment  
Impact of Security Measures on Safety  
Fire risks caused by PEDs on-board aircraft  
LOKI-PED — Lithium Batteries Fire/Smoke Risks in Cabin

MGB (Integrity Improvement of Rotorcraft Main Gear Box)  
Helicopter Underwater Escape #2  
VRS (Helicopter Vortex Ring State Experimental Research)  
Helicopter Off-Shore Operations – New Flotation Systems

SHEPHERD (UAS Standards)  
iConspicuity - Interoperability of Electronic Conspicuity Systems for General Aviation

Cabin Air Quality Assessment of Long-term Effects of Contaminants  
Environmental Research - Rotorcraft Noise  
Environmental Research - Engine Emissions

RWYMT (Runway Micro Texture)  
Implementation of the Aerodrome 'Triple One' Concept

Enhanced fault detection and diagnosis solutions for air data systems  
Monitoring of flight control laws

CaVD-PACE (New treatments and diagnostic measures for cardiovascular diseases – Pilots and ATCOs Cardiovascular evaluation)  
MESAFE (Mental Health)  
DM (Diabetes Mellitus)



# In preparation

CYBER (Aviation Resilience – Cybersecurity Threat Landscape)

BIGDATA (New Intelligence Solutions Exploiting Big Data Technologies and Data Science)

DESIGN (Evolutions of Airworthiness Standards for New Aircraft Structure Design using Materials, Processes and Advanced Manufacturing Methods)

TRAIN (Training Media Allocation – Simulator vs. Actual Flying)

VISION (Colour Vision Requirements in the New Full Glass Cockpit Environment and Modern ATCO Consoles)

NONCO2 (Strengthening and Coordinating a European Network of Experts in Support to Non-CO2 Emission Impact Assessment and Policy Option Assessment)

HEALTH (New Health Safety Measures in Aircraft)





## Recent and upcoming EASA research & innovation events

March  
12<sup>th</sup>

Integrity improvement of rotorcraft main gear boxes ([MGB](#))  
Final dissemination event ([webinar](#))

March  
13<sup>th</sup>

Assessment of environmental impacts – rotorcraft ([NOISE](#))  
Final dissemination event ([webinar](#), training for users)

March  
19<sup>th</sup>

Market-based Measures – AERO-MS ([MbM](#))  
Final dissemination event ([webinar](#)); Training event on 20 March

April  
23<sup>rd</sup>

New standards for drones and U-Space ([SHEPHERD](#))  
Final dissemination event ([webinar](#))

April  
23-24

Mental Health of Pilots and ATCOs ([MESAFE](#))  
Final dissemination event during [EASA Mental Health Conference](#)

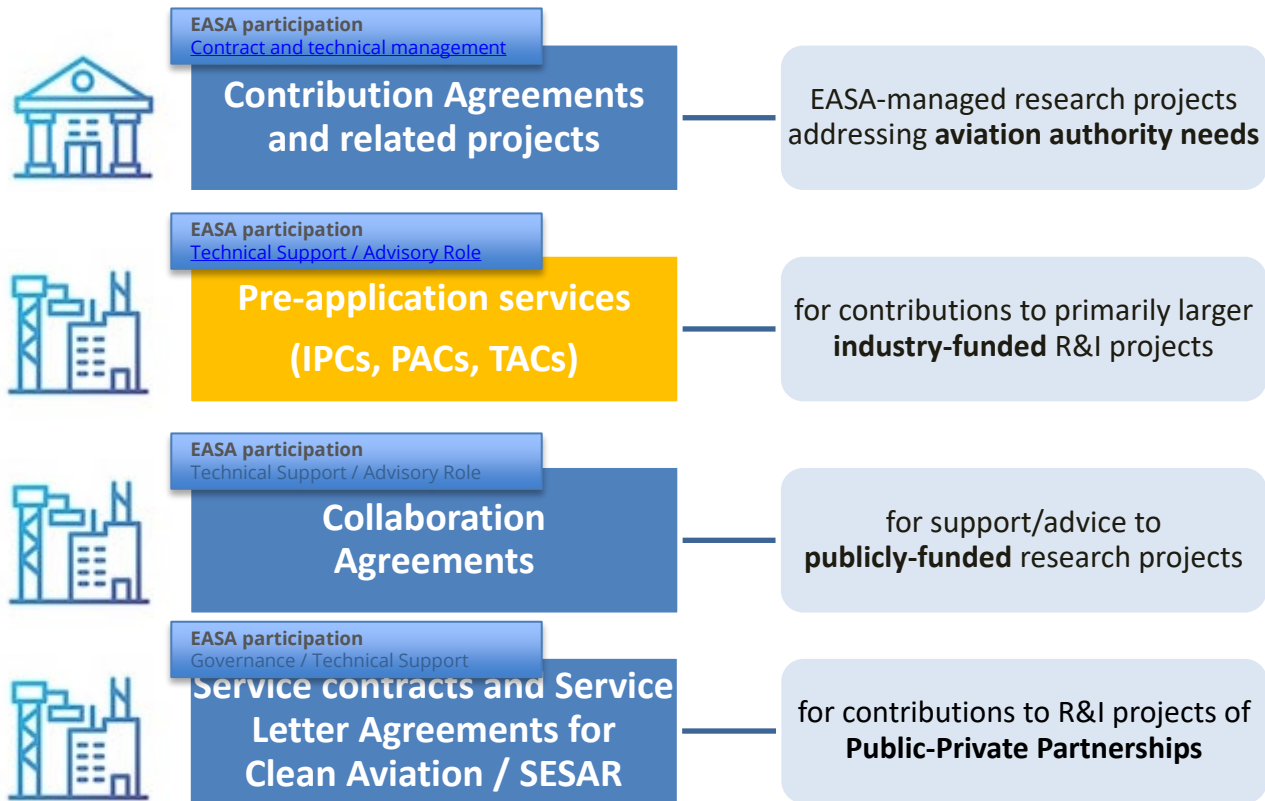
April  
25<sup>th</sup>

Helicopter underwater escape #2 ([HUE2](#))  
Final dissemination event ([webinar](#))





# Several types of engagements/frameworks







# Pre-Application Services



## Engaging bilaterally with Industry

Cover the supply of technical expertise & support within an “innovation project”

- Encourage development
- De-risk certification process
- Regulatory gap analysis
- New Special Conditions/Mean of Compliance

### Applicable to

- Disruptive technologies or innovative concepts
- Product with embodied innovative or disruptive technologies



Special Condition  
electrical VTOL



Special Condition  
Airship



Special Condition  
Gyroplane



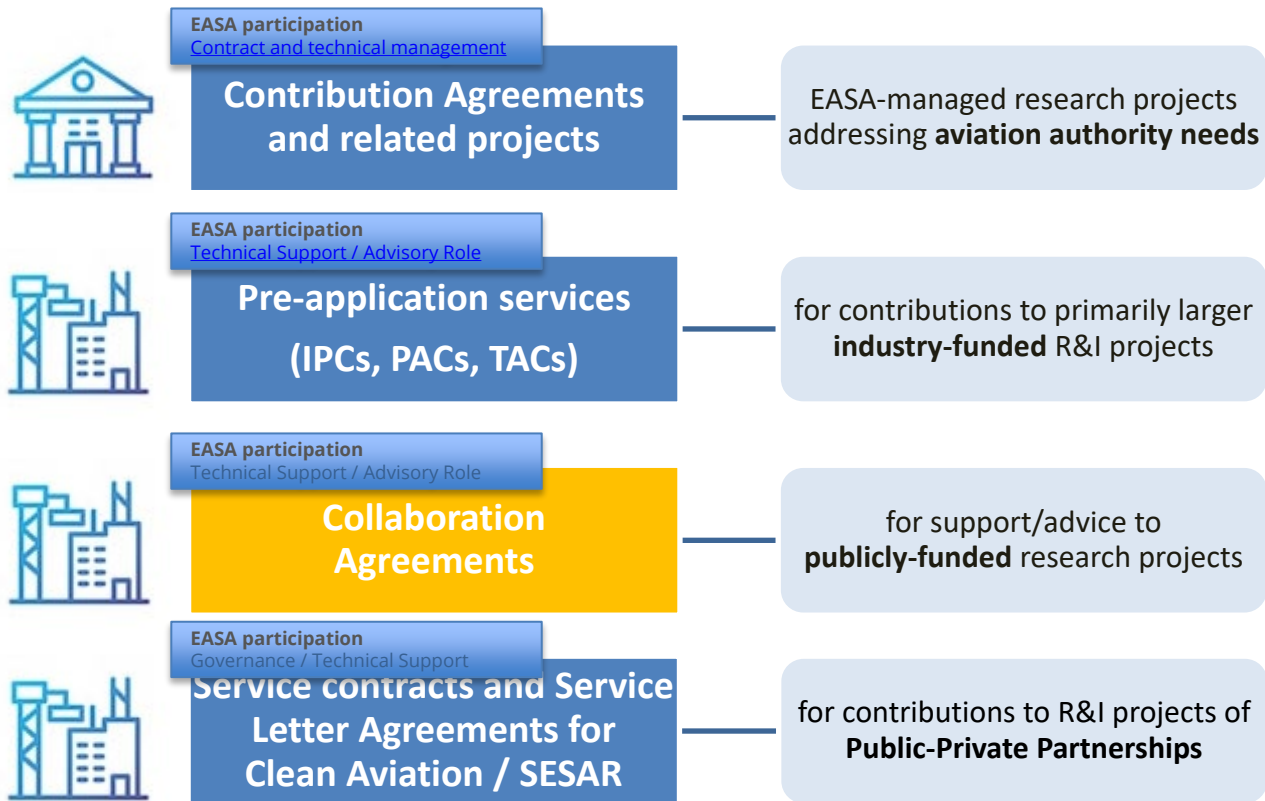
Special Condition  
Electric/  
Hybrid Propulsion  
System



Special Condition  
Light UAS



# Several types of engagements/frameworks





# EASA contribution to Research projects as Technical Advisor by Technical domain



Horizon 2020  
Research and  
Innovation programme

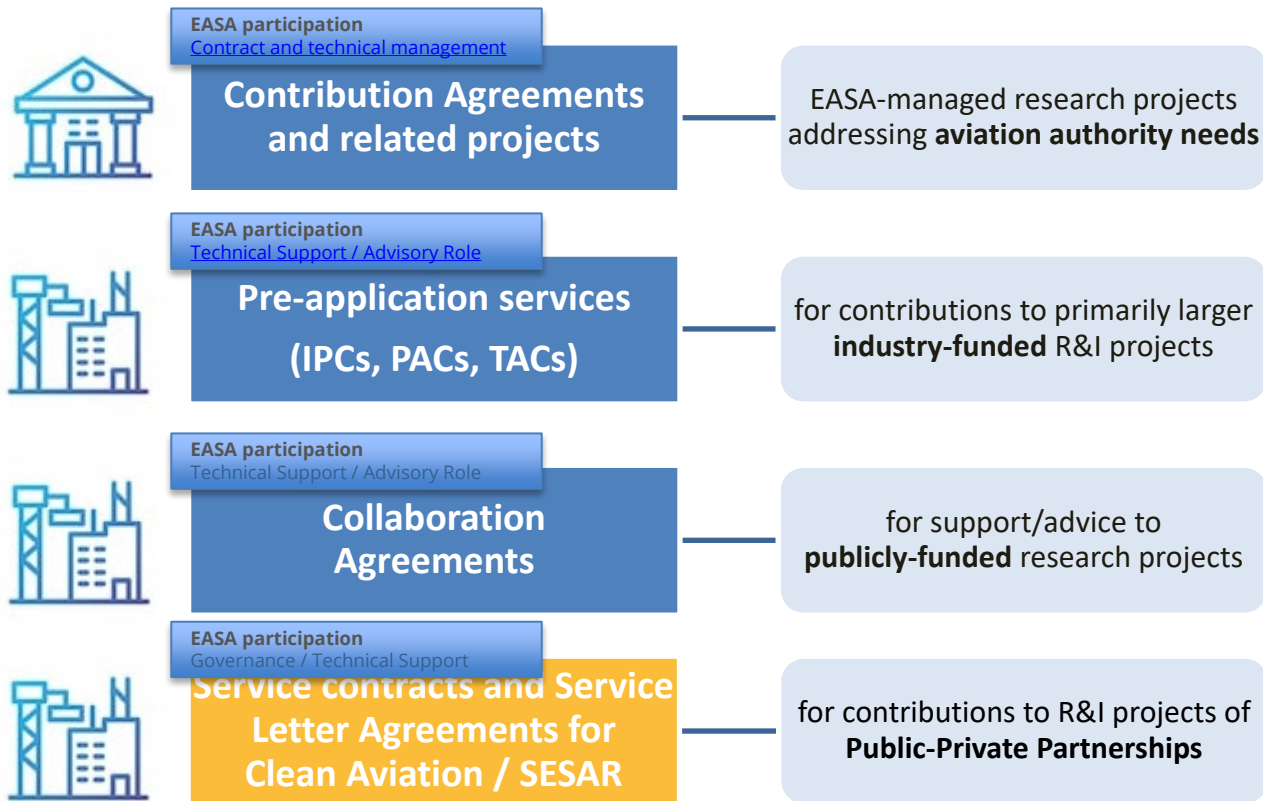


- **23 projects, mainly in**
- **Structures 4**
- **AI 3**
- **Aerodromes 2**
- **Hybrid electric aircraft 2**
- **Icing 2**
- **Sustainability, Environment 2**

Project short title	Domain	Project start date	Project end date (planned)
ADENEAS	Hybrid electric aircraft	13/01/2023	12/07/2025
ALIGHT	Aerodromes	01/01/2023	31/10/2024
ATAP	Structures	01/11/2023	01/11/2025
ATM Drones - DANTE	ATM-Droneas	01/11/2023	01/11/2025
AVATAR	Maintenance	01/11/2023	31/01/2026
CerTEST	Structures - Composite material	01/04/2019	30/03/2024
COCOLIH2T	COMposite CONformal Liquid H2 Tank	01/02/2023	01/02/2026
DOMMINIO	Structures	07/06/2022	06/06/2025
FLYING V	Flight Control	01/07/2021	06/05/2025
IMOTHEP	Hybrid electric aircraft	01/01/2020	28/02/2025
InSIDE	Industrialized Simulation of Ditching Events	01/01/2022	22/03/2024
JOICE	ICING	01/11/2020	31/03/2024
KIEZ4.0 AI	Artificial intelligence	01/07/2020	29/06/2024
MORPHO	Structures	07/02/2022	06/05/2025
OLGA	Aerodromes	01/10/2021	24/11/2026
PAFA-ONE	Avionics	01/04/2020	29/11/2024
PROVING	Structures	28/03/2022	27/03/2026
SENECA	Noise/Emissions	01/11/2021	30/06/2024
SUSTAINAIR	Structures	09/11/2023	30/06/2024
TRACES	ICING	01/11/2023	01/11/2025
TULIPS	Innovative & Sustainable airports	01/10/2022	31/12/2025
Vicki 1 (Diehl)	Artificial Intelligence	12/10/2020	11/01/2024
Vicki 2 (Jepp)	Artificial Intelligence	30/11/2020	28/02/2024



# Several types of engagements/frameworks

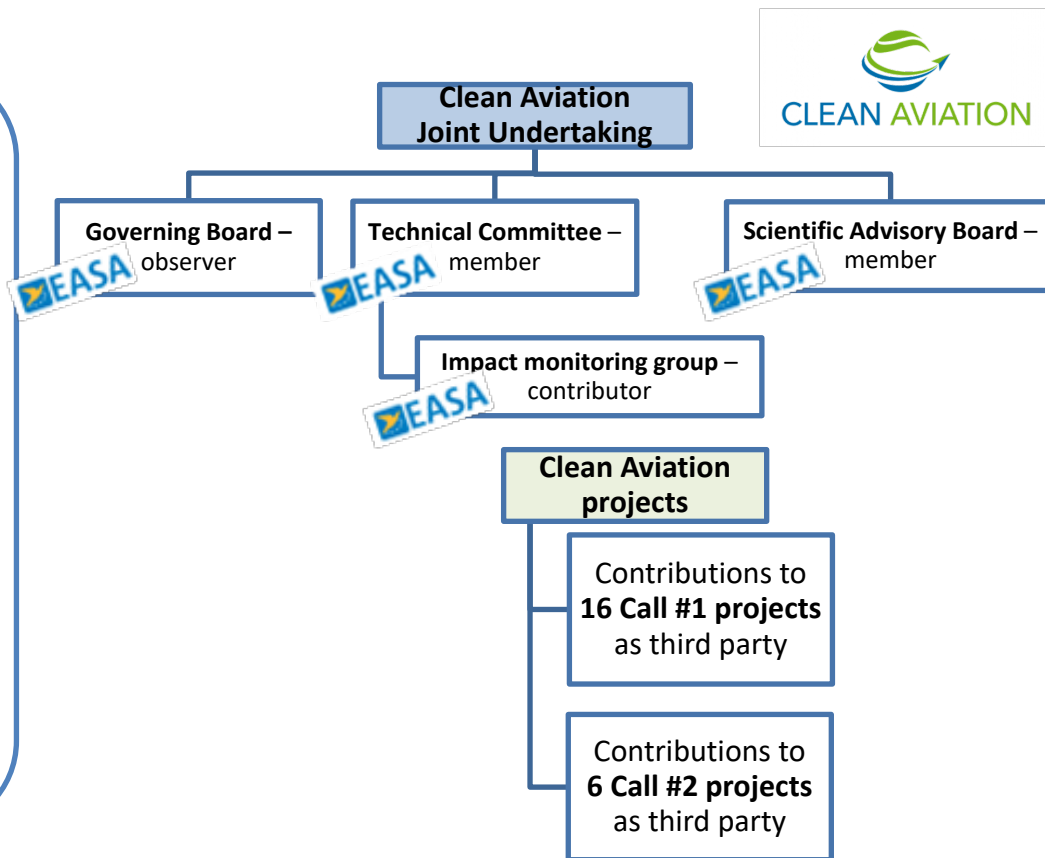




# Objectives & governance for the Clean Aviation Programme

For the Single Basic Act, EASA is legally required and committed to

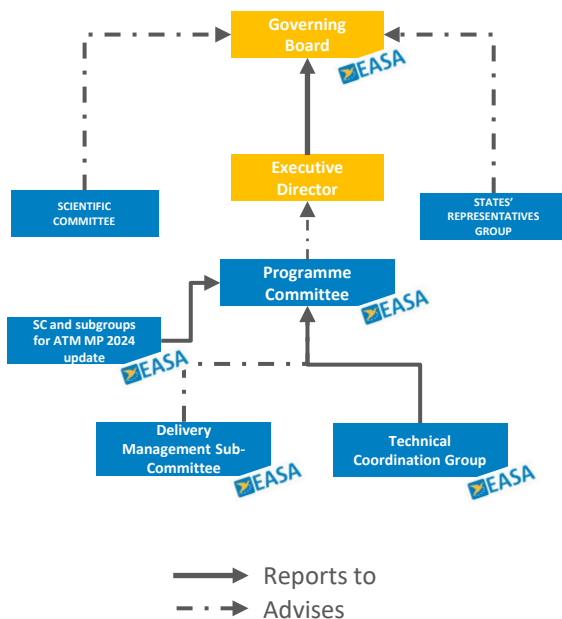
- achieve the Green Deal strategic objectives
- maximise the impact of the R&I actions
- accelerate market uptake of new technologies
- facilitate the certification process and the update of the regulatory framework across all relevant aviation domains





# EASA involvement in SESAR 3

## Governance



## Service Contracts



→ EASA involvement<sup>1</sup> as third-party expected in 33 projects

## Service Level Agreement

### Work Plan 2023

→ More than 40 SESAR solutions reviewed with ATM Master Plan update campaign in the scope

### Work Plan 2024

→ ATM Master Plan update campaign and regulatory review of Strategic Deployment Objectives in the scope



# EASA involvement in AZEA



**AZEA** (Alliance for Zero Emission Aviation) - voluntary European initiative of private and public stakeholders initiated by DG DEFIS to prepare the entry into commercial service of hydrogen-powered and electric aircraft

WG1 Rollout scenario and 'figures of reference'

WG2 Energy supply

WG3 Airports (infrastructure and operations)

WG4 Aviation regulation, certification and standardisation

WG5 Integration of electric and hydrogen aircraft into European network

WG6 Incentives



## 2. Artificial Intelligence Roadmap

**Promoting sustainable aviation.**



# EASA AI Roadmap 2.0



## Extended technical scope

- Unsupervised and Reinforcement Learning
- Symbolic & Hybrid AI



## Updated timeline

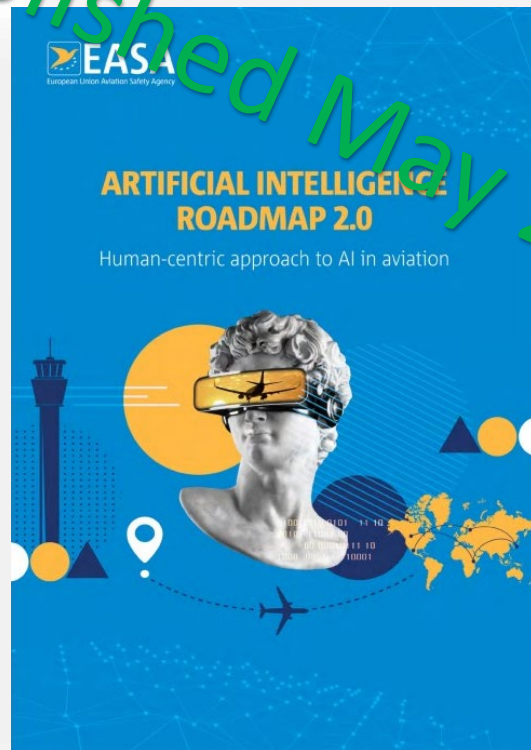
- Updated industry prognostics
- Augmented action plan



## Anticipated consolidation phase II

- Overview of Rulemaking Concept
- Anticipated impact on all domains

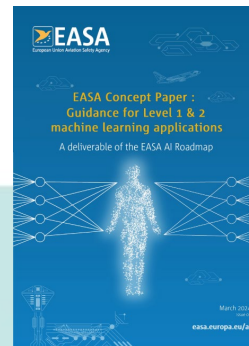
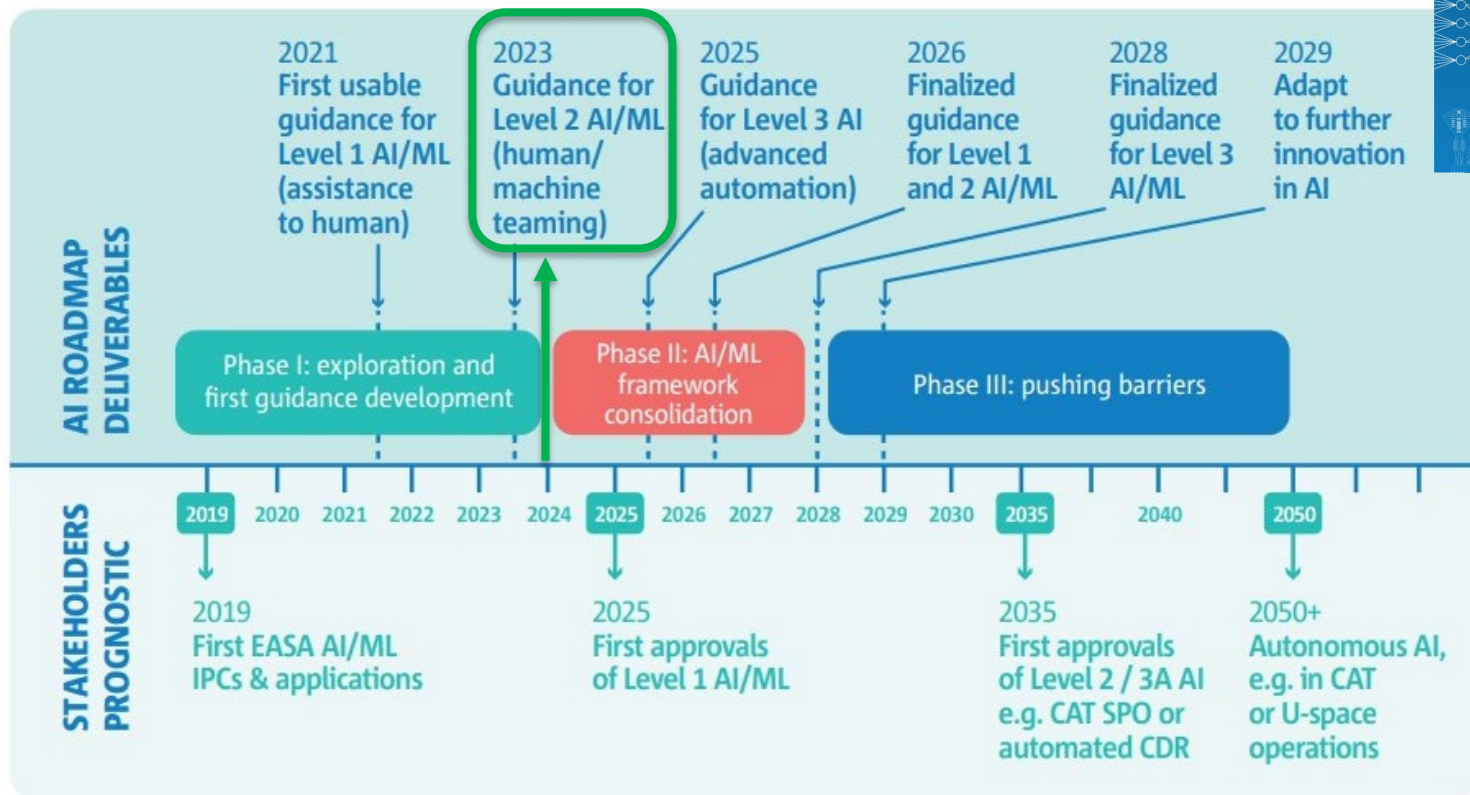
Published May 2023





# 2024: entering in Roadmap 2.0 Phase II

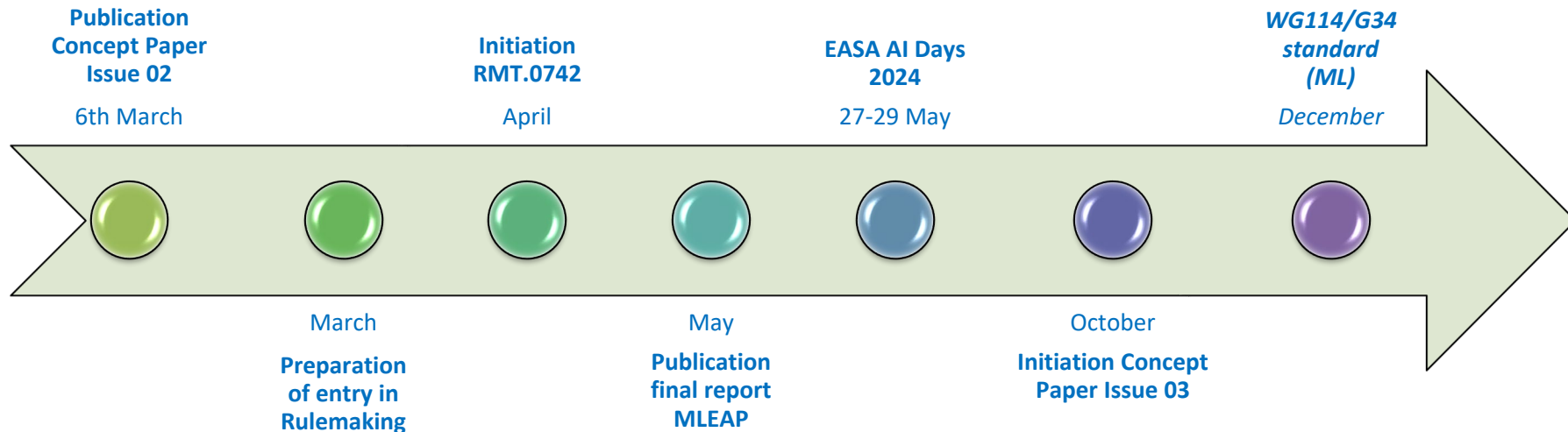
Deliverable of Phase I = EASA AI Concept Paper for Level 1&2 AI



March 2024

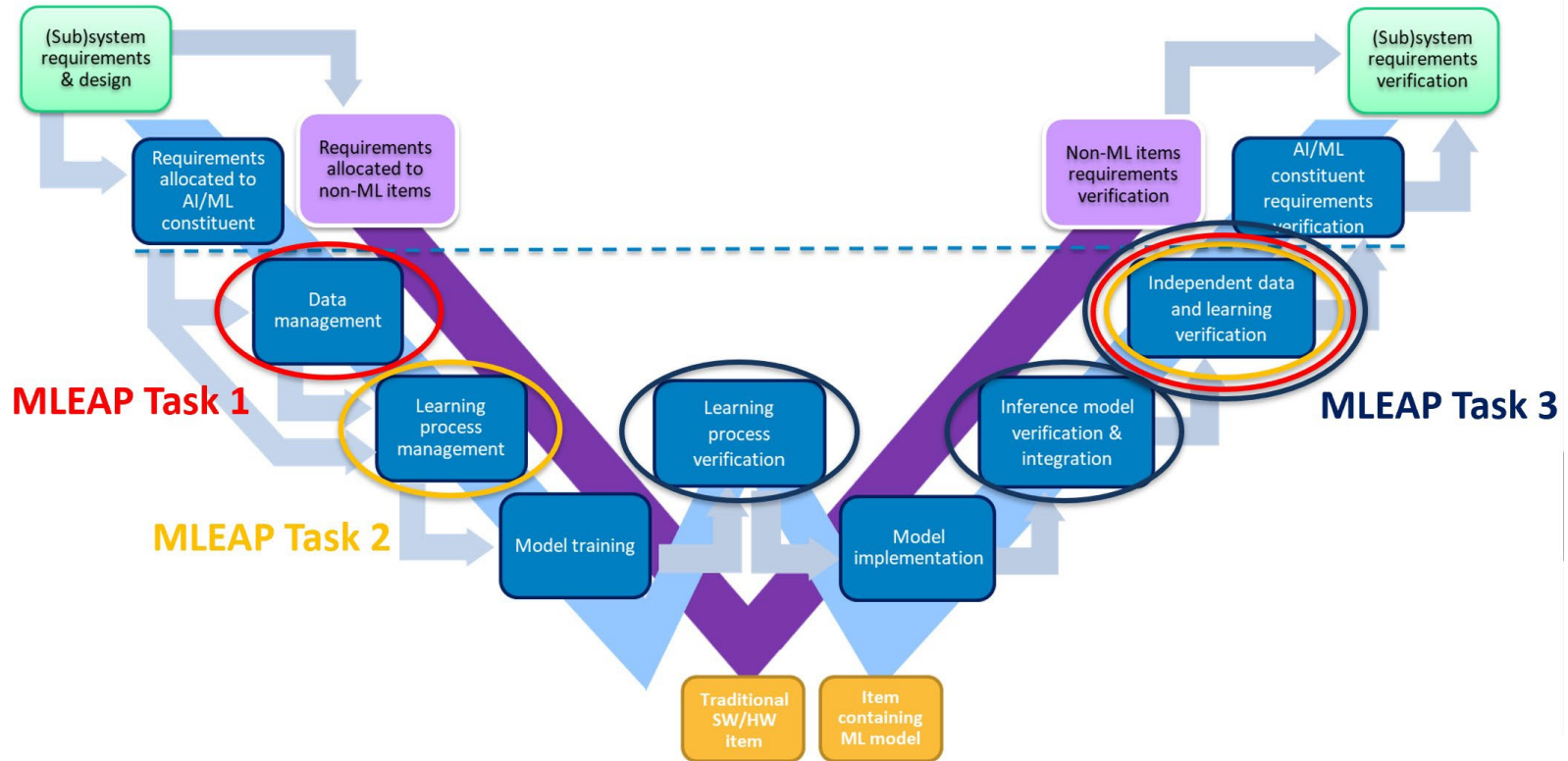


# Overview of AI Programme activity for 2024



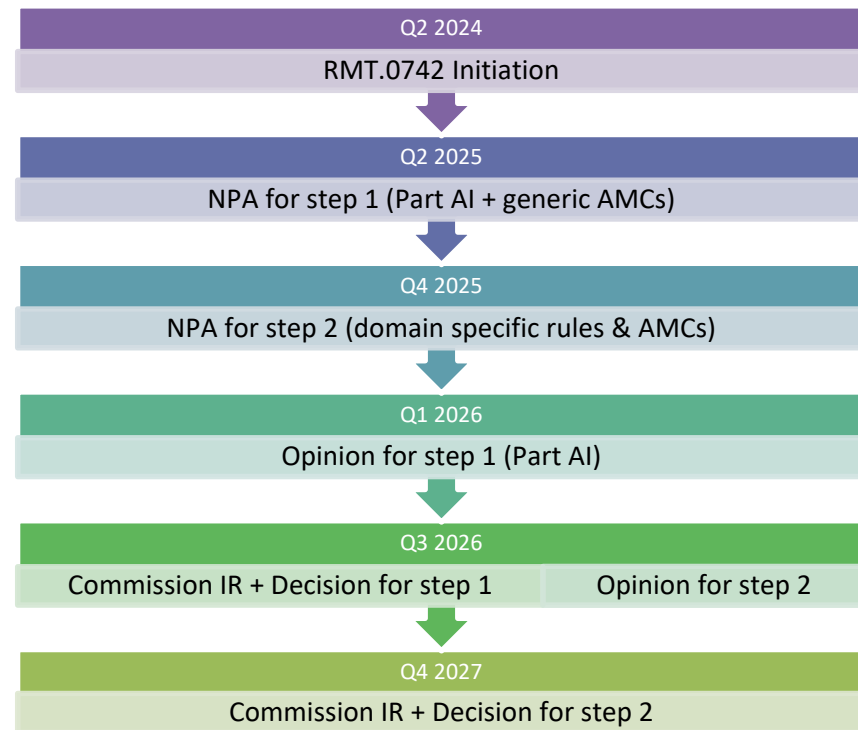
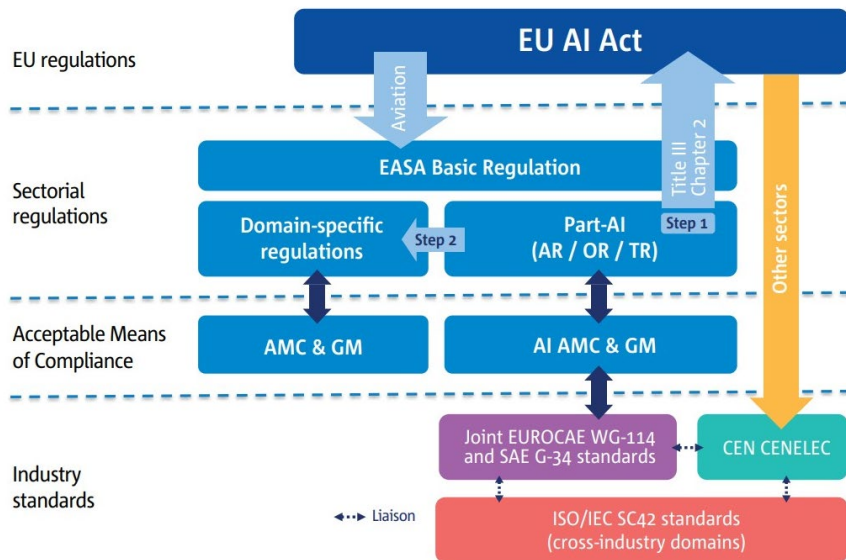


# MLEAP research project





# Rulemaking plan for AI





# Thank you!

[easa.europa.eu/connect](https://easa.europa.eu/connect)



## Your safety is our mission.

An Agency of the European Union 