



# SMS

— SAFETY —  
MANAGEMENT  
SUMMIT BRAZIL

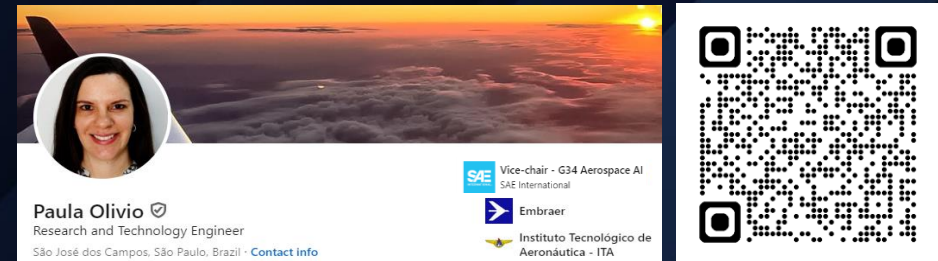
2024


# SMS


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MANAGEMENT  
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2024


## Artificial Intelligence in aviation




  
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SAE International

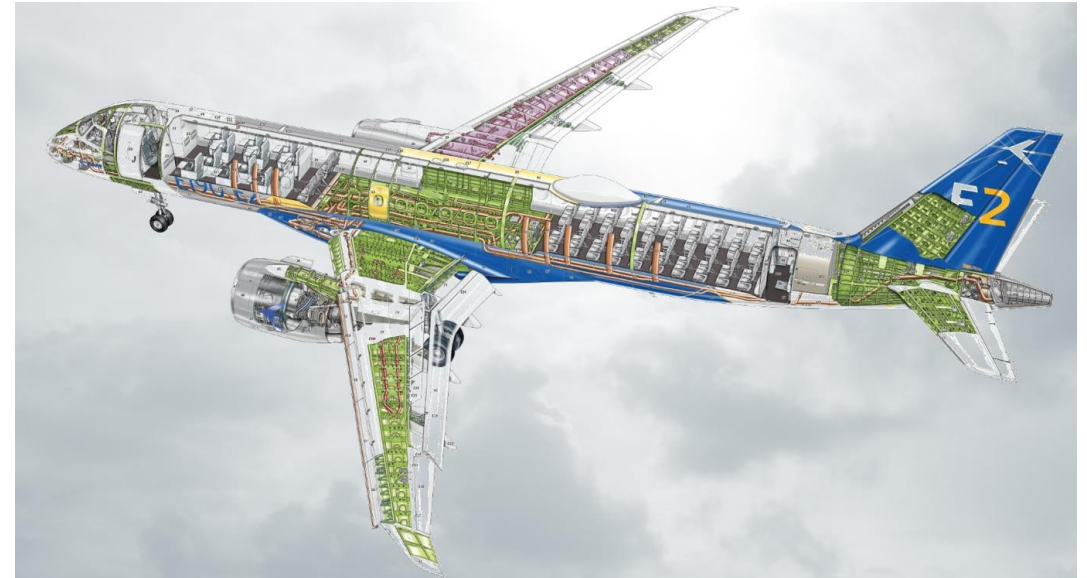
 Embraer

 Instituto Tecnológico de  
Aeronáutica - ITA



# Artificial Intelligence in Aviation

- ✓ Global safety impact of artificial Intelligence, advanced automation, and digital solution to Aviation.





# AI in Aviation

Global transformation:

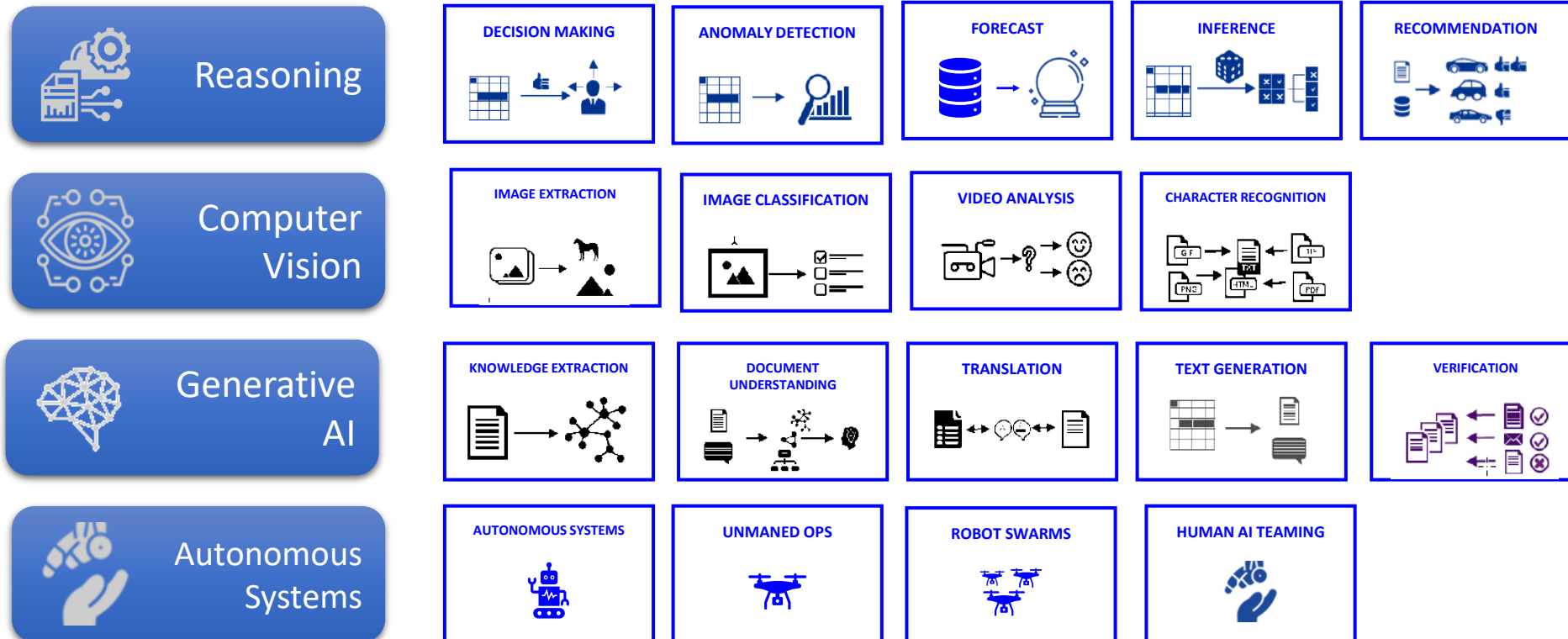
1. Technology
2. Development Challenges
3. Safety



# AI in Aviation

## 1. Technology

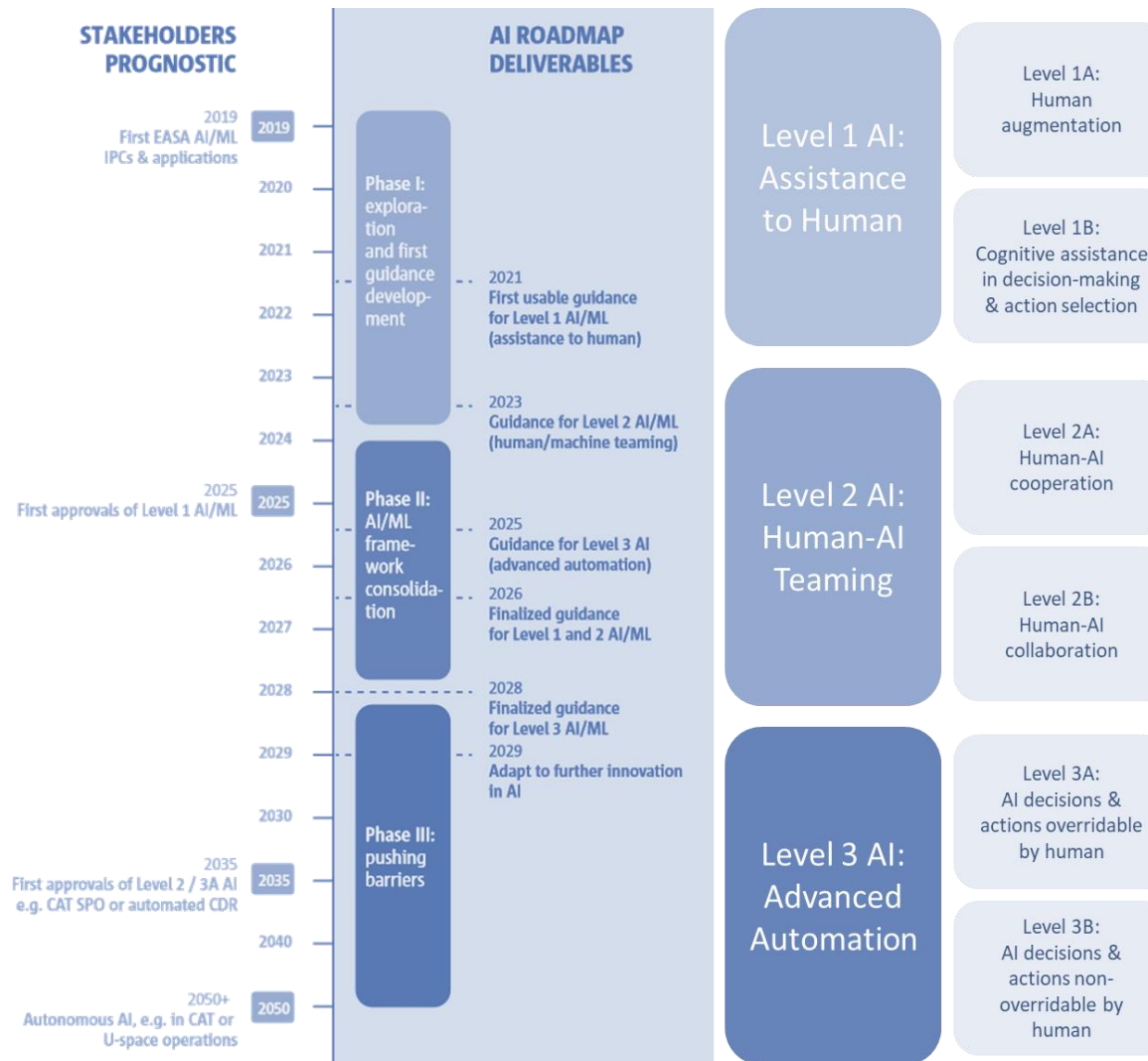
- ✓ Systems of systems
- ✓ Building blocks



# AI in Aviation

## 2. Developments Challenges

- ✓ People & Culture
- ✓ Roadmaps



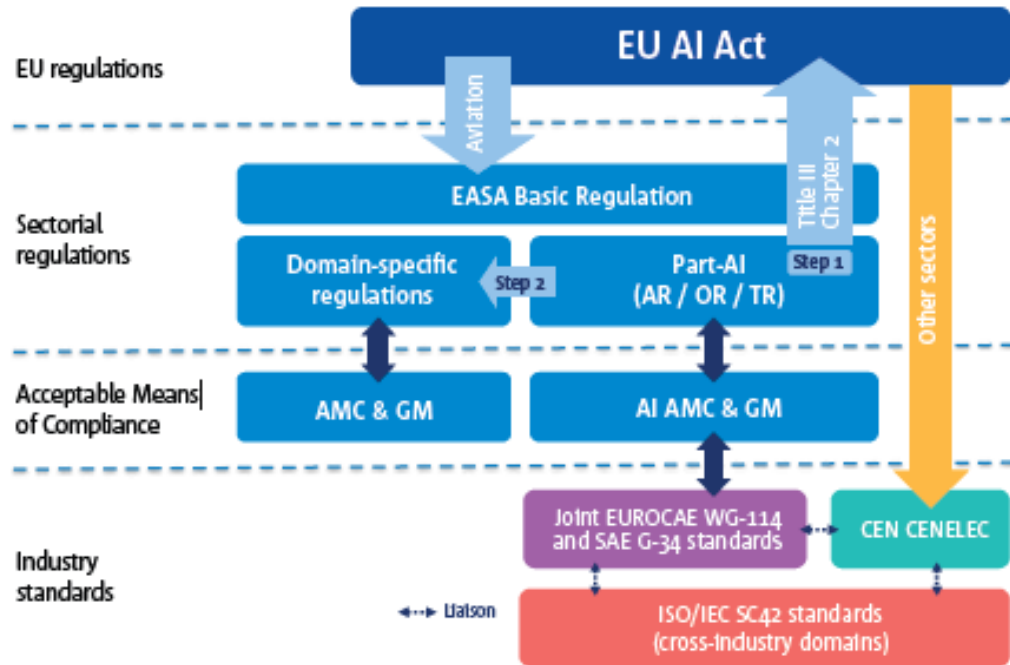
EASA AI Roadmap timeline (adapted from EASA, 2023a)



# AI in Aviation

## 2. Development Challenges

- ✓ Legislation & Standardization



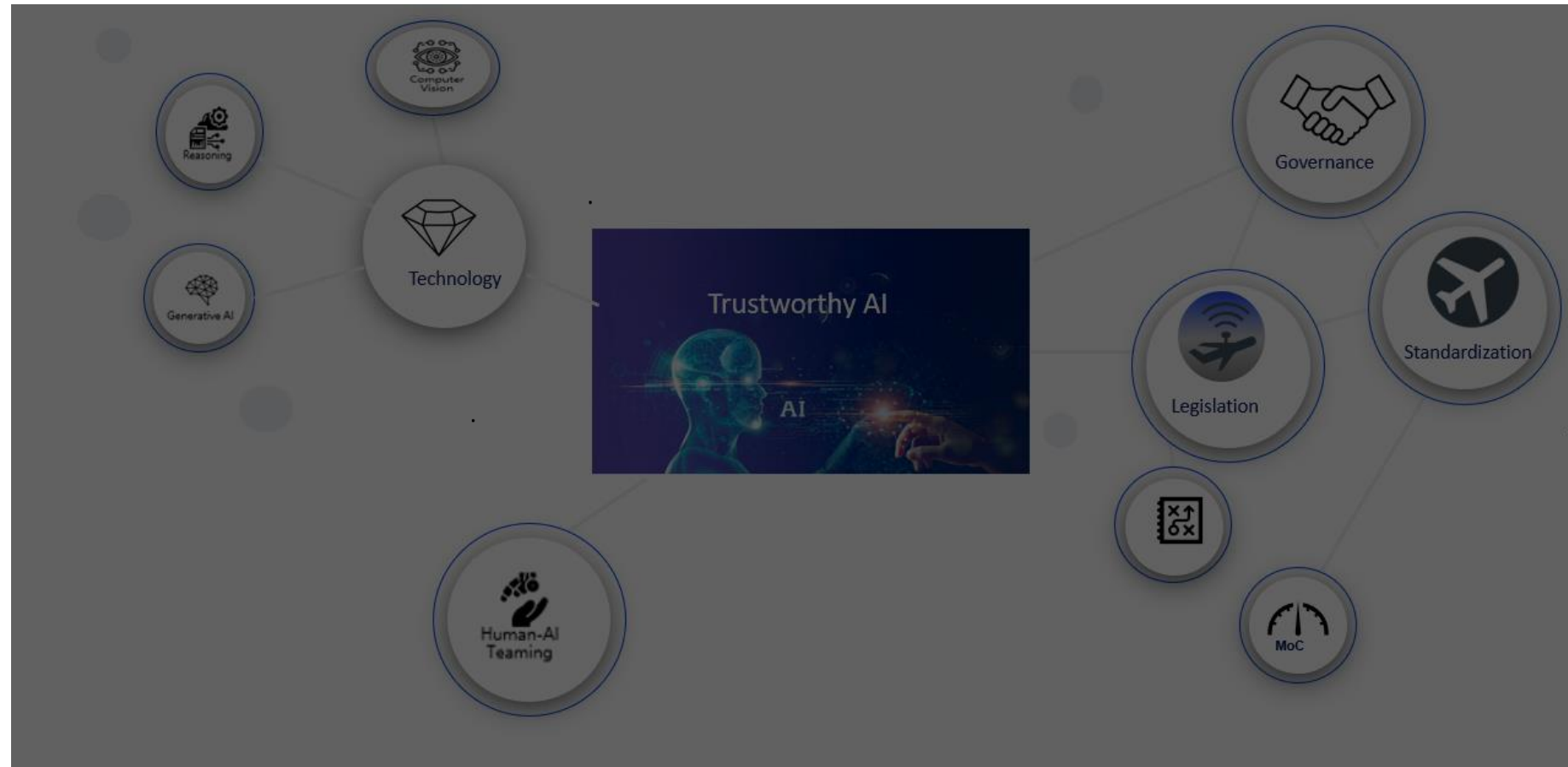
SAE G-34/WG-114 focuses on implementation and certification related to AI technologies for the safer operation of aerospace systems and aerospace vehicles.



# AI in Aviation

## AI Trustworthiness

- ✓ Ethical
  - ✓ Robustness
- ✓ Human factors
  - ✓ Collaborative
- ✓ Safety risk mitigation
  - ✓ Governance

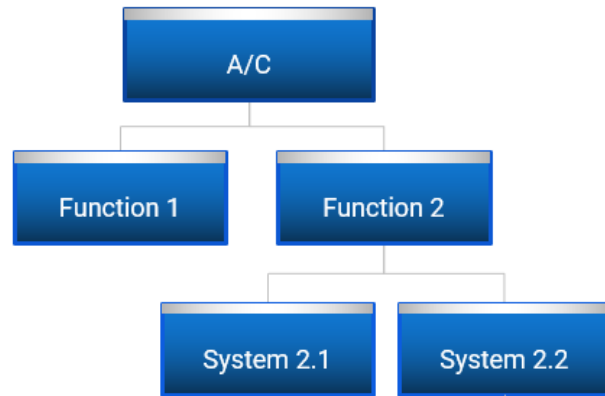




# AI in Aviation

## 3. Safety for AI

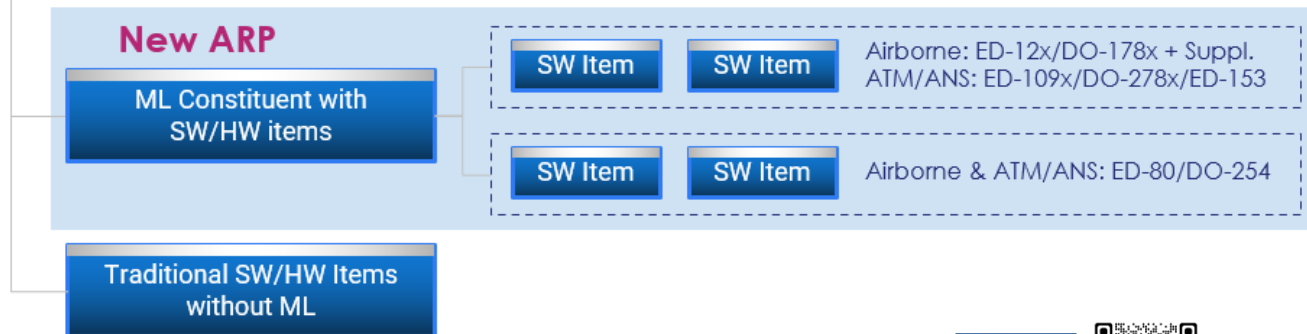
- ✓ ARP– Aerospace Recommended Practices (**WIP – work in progress**) ARP6983/ED-324



**Airborne 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 a 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**

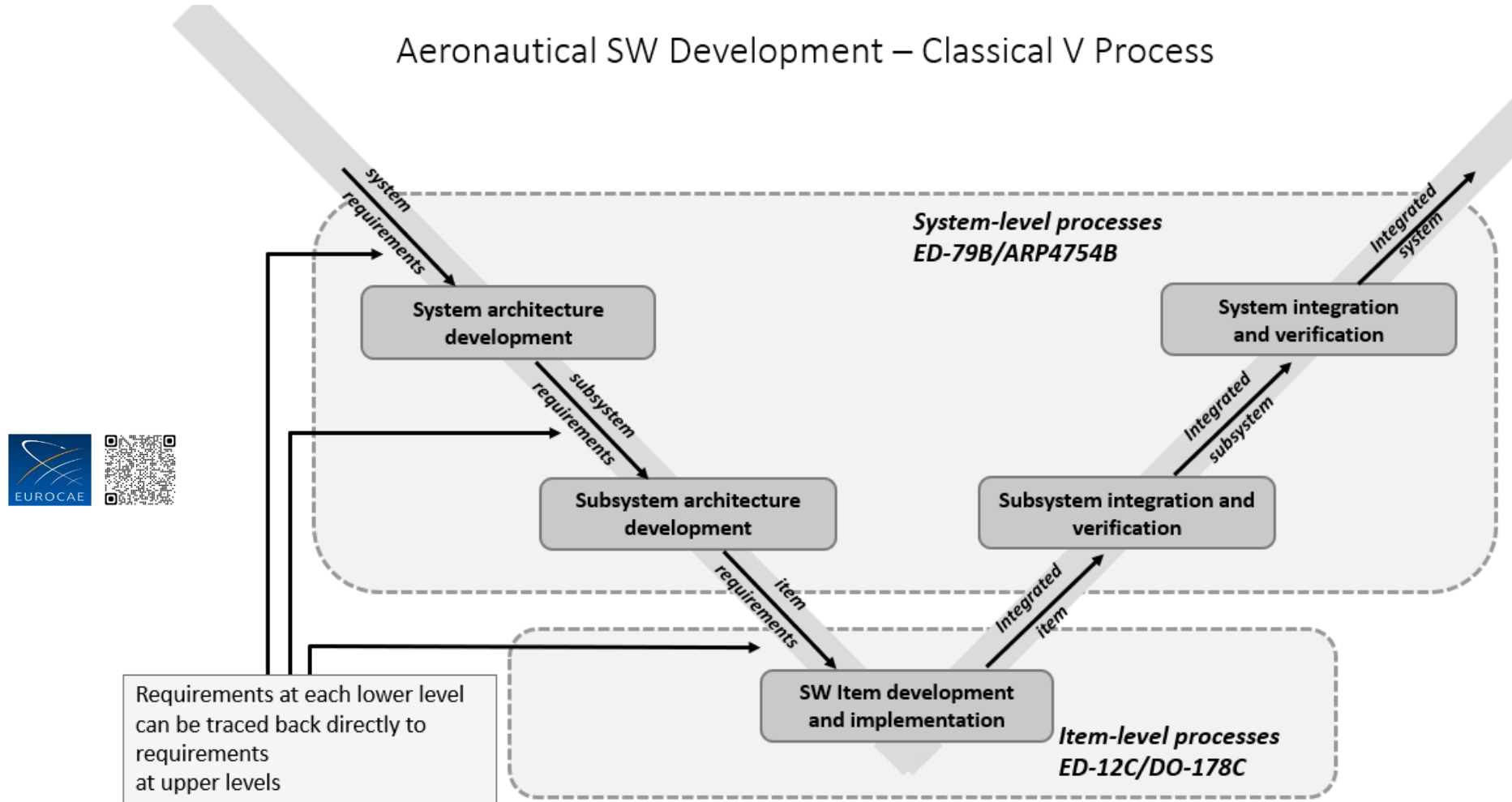
AI in Avitation – Eurocae/ SAE  
Video Series WG114/ SAE G-34



# AI in Aviation

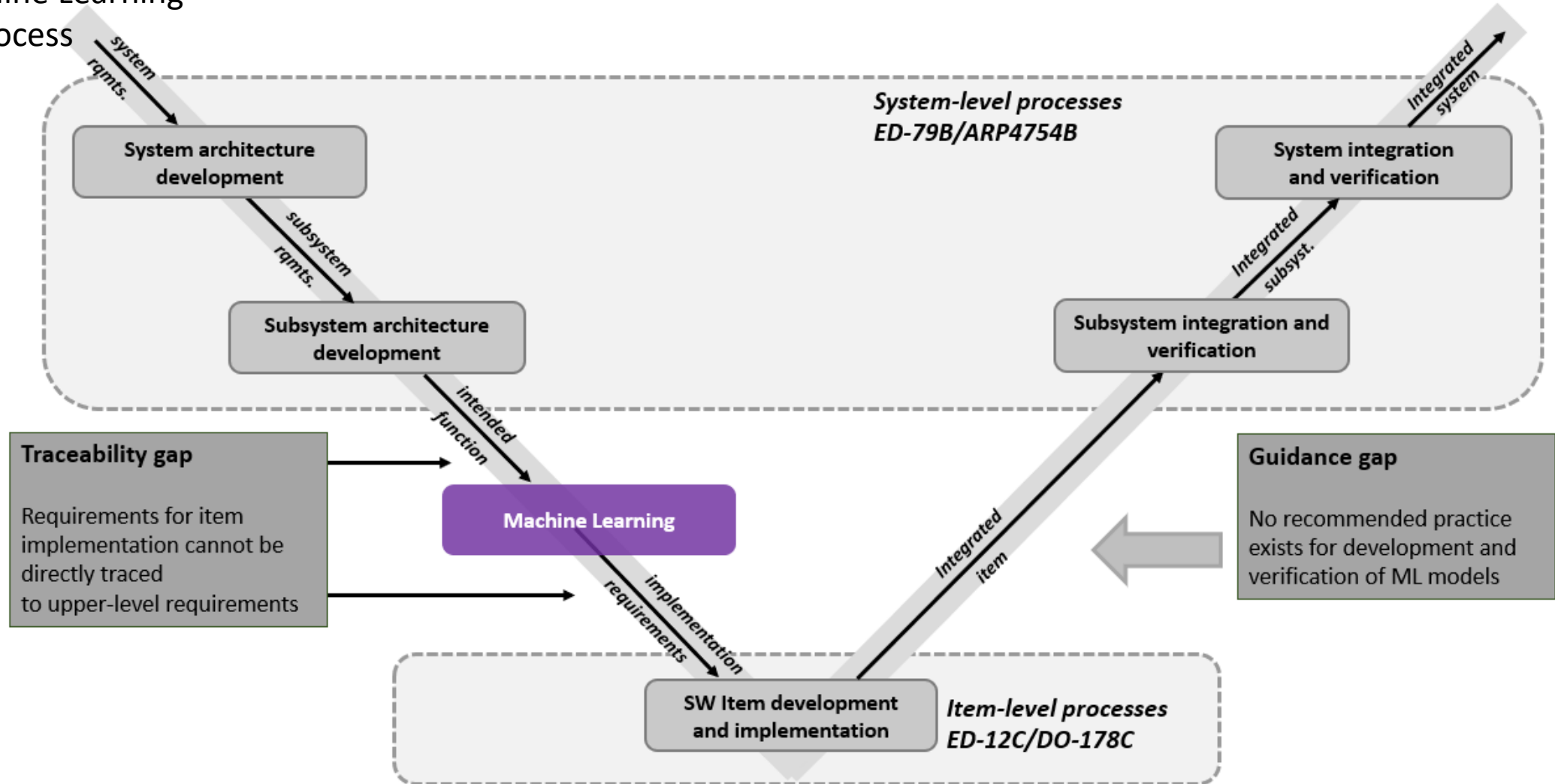
- ✓ Software Development

Aeronautical SW Development – Classical V Process



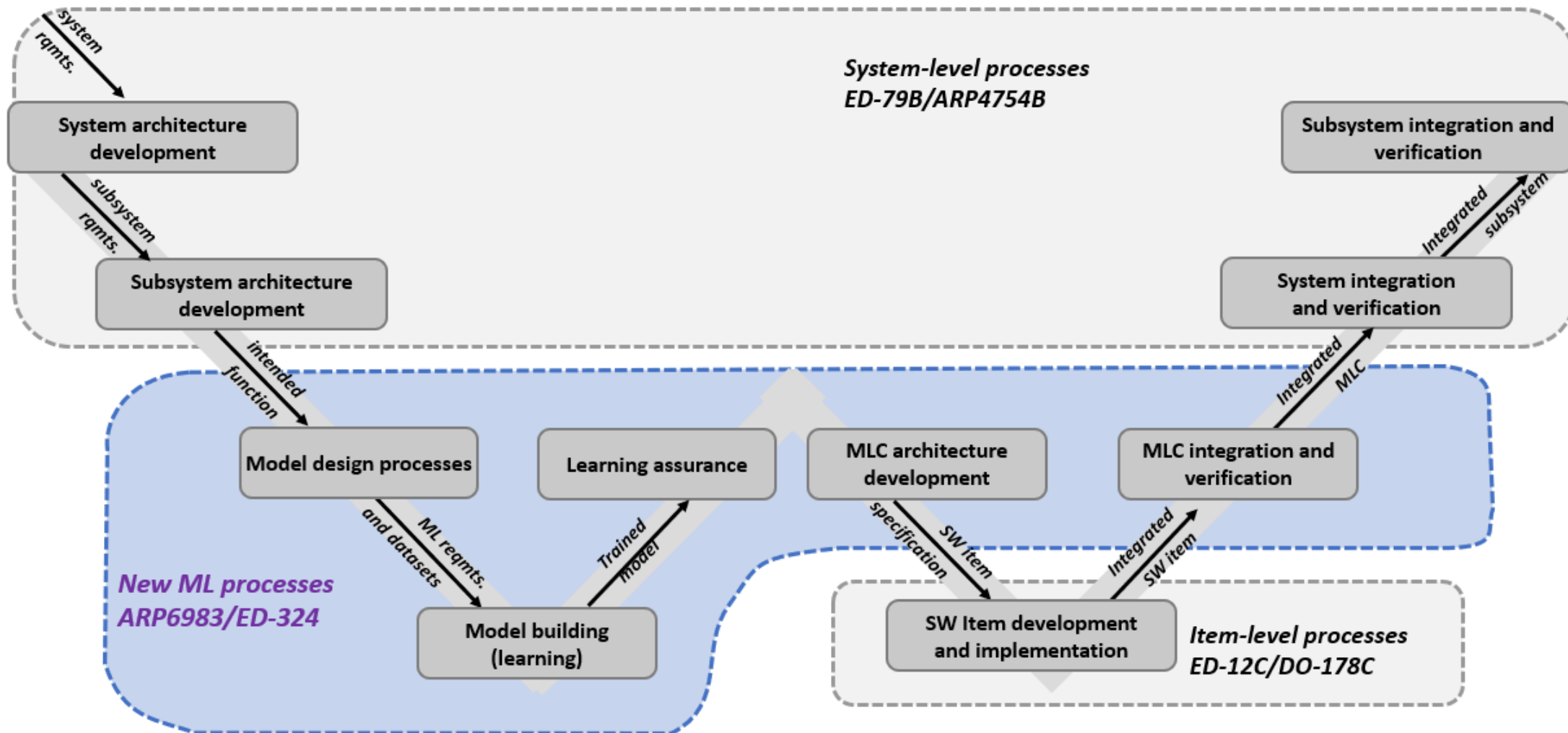
# AI in Aviation

- ✓ Machine Learning
- ✓ W process



# AI in Aviation

ML Development – New **W** Process with ED-324/ARP6983





## AI in Aviation





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