# Enabling Artificial Intelligence for Space System Applications - AISSA

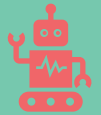16/10/2024

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# AISSA - Overview

*Enabling Artificial Intelligence for Space System Applications* is a new topic for Harmonisation.

This will be the 1st time the topic is addressed.

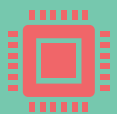| Competence domain | Title | 2025 Revisit | Book captain |
| --- | --- | --- | --- |
| CD9 | Enabling Artificial Intelligence for Space System Applications | New | Christophe Honvault<br><br>Inter-Directorate Working Group |

# AISSA - Rationale & Scope

The increasing relevance and application of AI technology in space system highlights the importance of a harmonization process.
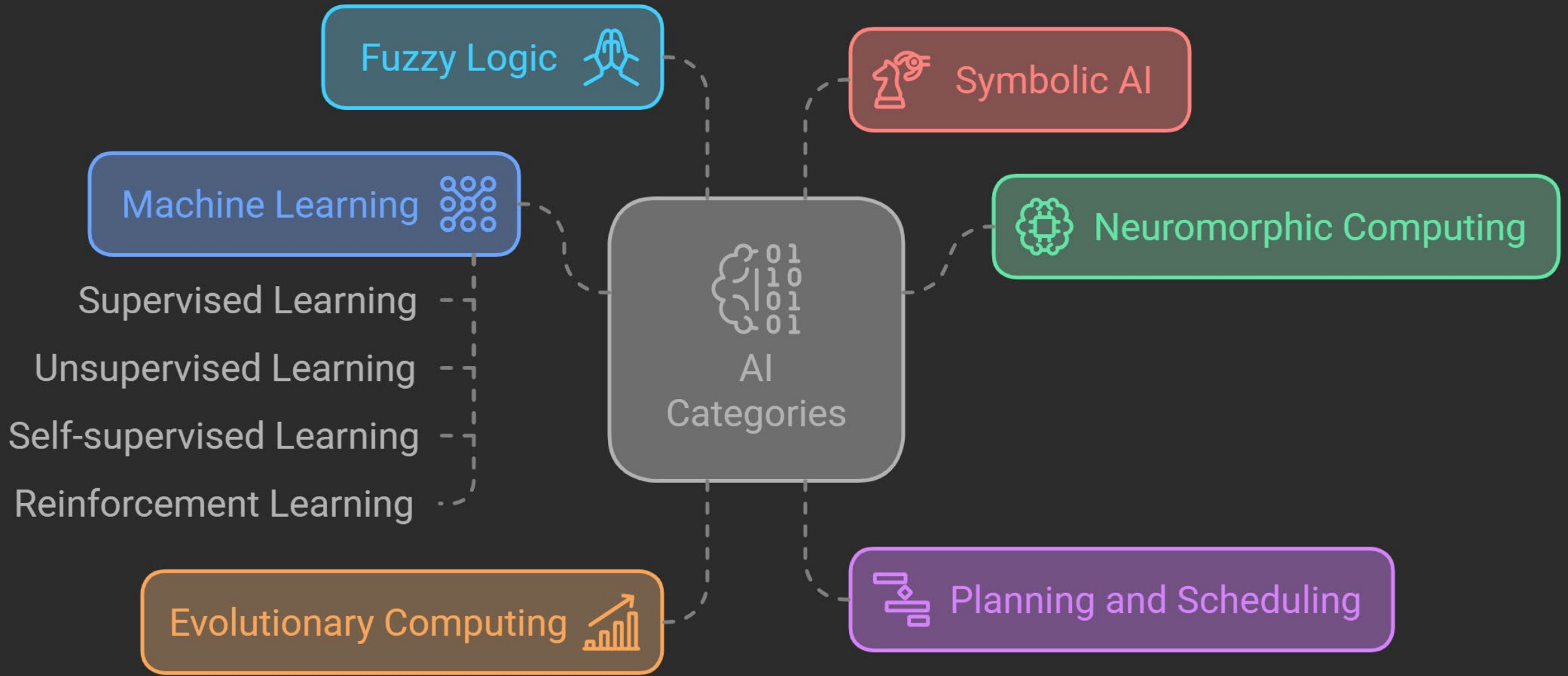
AI can be used in extremely diverse applications in all domains of space system developments.

AI can help the European space industry to improve space systems developments, enable new missions or reduce cost of operations.
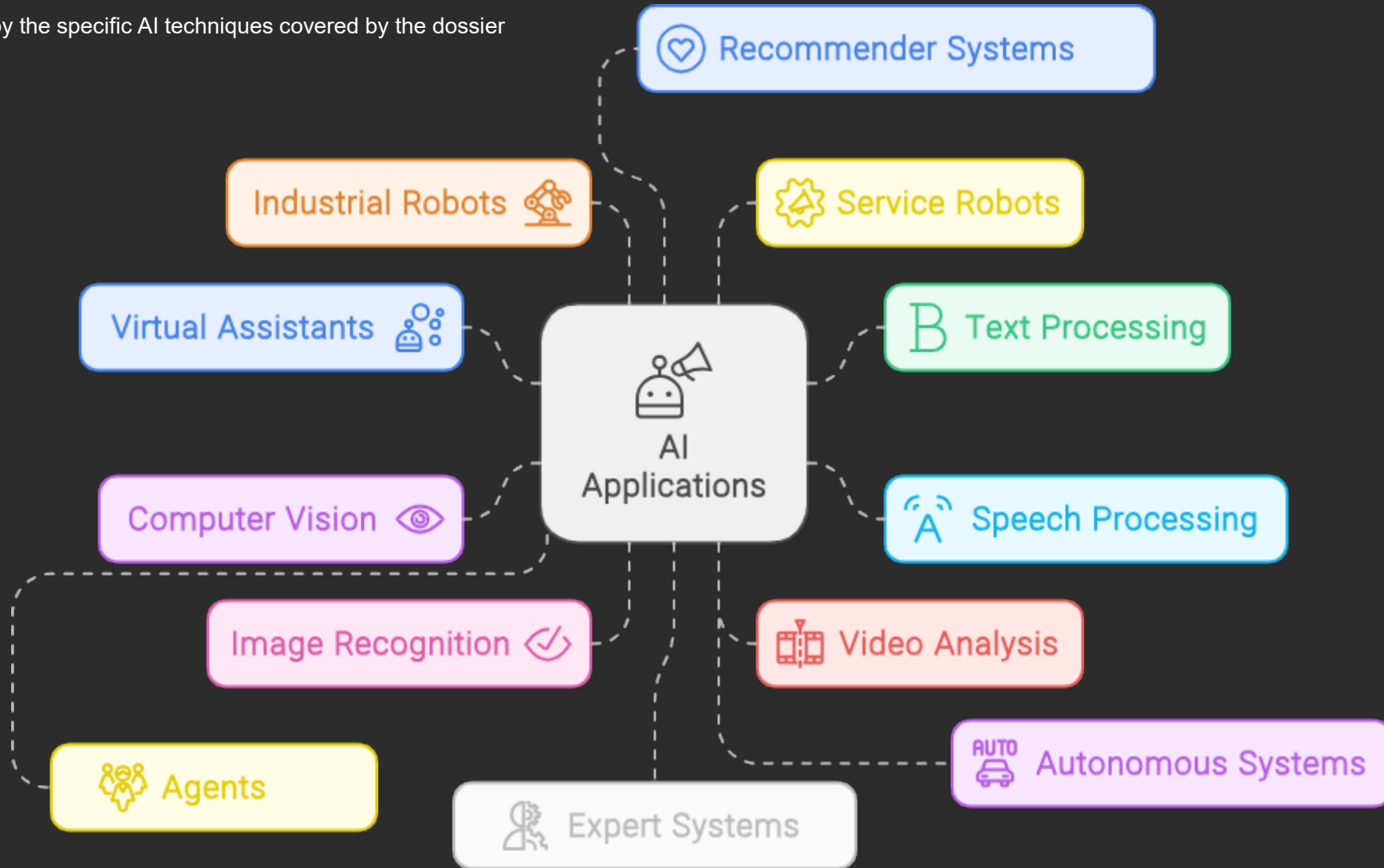
**This dossier aims at harmonising the development of AI techniques and technologies in view of their application to the different domains of space systems.**

# AISSA- AI Techniques



- Fuzzy Logic
- Machine Learning
  - Supervised Learning
  - Unsupervised Learning
  - Self-supervised Learning
  - Reinforcement Learning
- Evolutionary Computing
- AI Categories
  - 01 10 01 01
- Symbolic AI
- Neuromorphic Computing
- Planning and Scheduling

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# AISSA- AI Applications

Applications enabled by the specific AI techniques covered by the dossier

Recommender Systems

Industrial Robots

Service Robots

Virtual Assistants

Text Processing

AI Applications

Computer Vision

Speech Processing

Image Recognition

Video Analysis

Agents

Autonomous Systems

Expert Systems
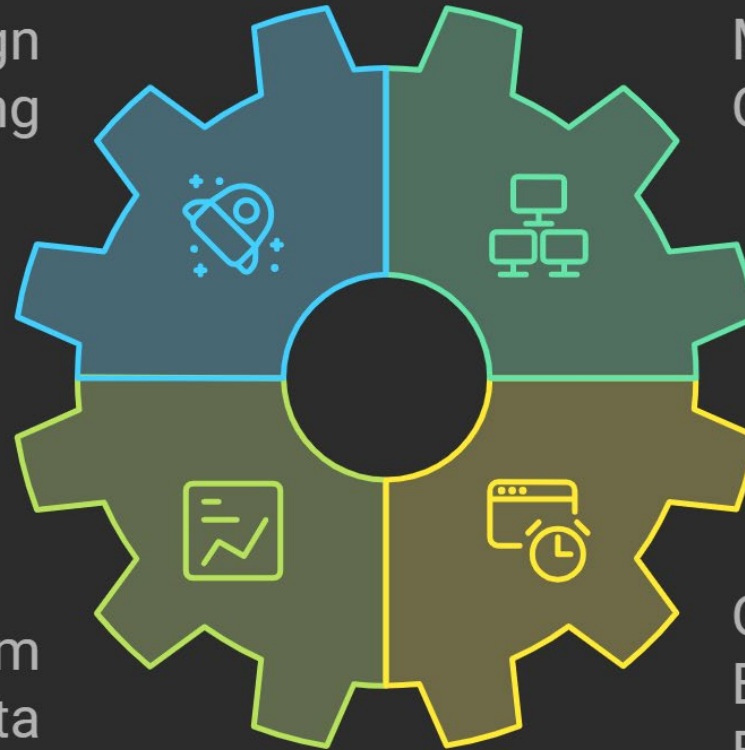
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# AISSA- Areas covered

Areas

Leverage AI technologies to enhance the design, and development of space missions

AI to improve the efficiency and effectiveness of operations, enabling autonomy

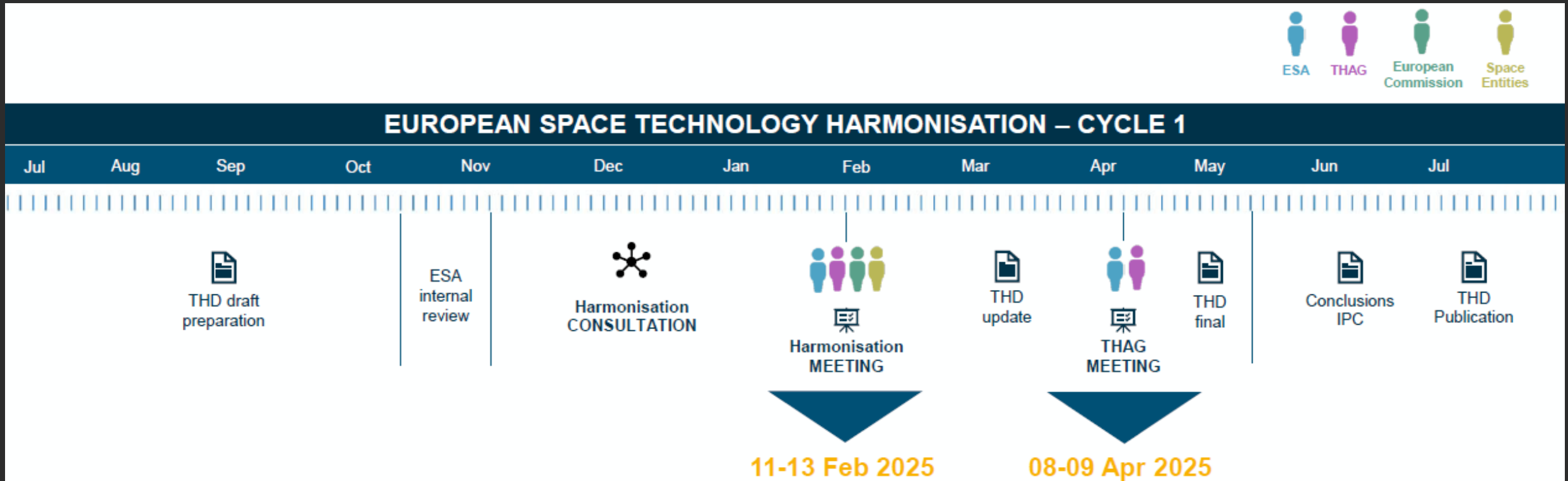Mission Design and Engineering

Mission Operations

Insight from Mission Data

Operational Efficiency and Effectiveness

AI to extract insights and knowledge from the vast amounts of data generated by space missions

AI to provide assistance, automate processes and facilitate collaboration and knowledge sharing

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# Harmonisation Overview - Timeline



EUROPEAN SPACE TECHNOLOGY HARMONISATION – CYCLE 1

ESA | THAG | European Commission | Space Entities

Jul — Aug — Sep — Oct — Nov — Dec — Jan — Feb — Mar — Apr — May — Jun — Jul

- THD draft preparation
- ESA internal review
- Harmonisation CONSULTATION
- Harmonisation MEETING — 11-13 Feb 2025
- THD update
- THAG MEETING — 08-09 Apr 2025
- THD final
- Conclusions IPC
- THD Publication

# Thank you.

esa

Q&A

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