

FUTURE SPACE TRANSPORTATION FLPP AUTUMN SESSION 2025



INSPOC-3

ZAITRA



Location: Czechia

Founded: 2020

Employees: 20

Mission: ZAITRA is a Czech startup founded in 2020, dedicated to enhancing the space market by bringing AI and automation directly onboard satellites. Its flagship product, SKAISEN, delivers actionable insights from Earth observation satellite data in under 10 minutes by extracting only the most relevant information, such as vessel positions, methane leaks, or changes in an Area of Interest, and transmitting concise alerts directly to end users. This enables real-time responses in applications such as maritime security, illegal fishing detection, gas leak monitoring, and rescue operations. To support these applications, ZAITRA has developed SKAIDOCK, a high-performance onboard computer providing reliable and powerful processing for space missions. Building on its heritage from commercial missions and ESA projects, the company has also expanded into in-orbit transportation, having served as prime contractor for ESA's InSPoC-3 ideation study.

Project name: Preliminary System Study – In-Space Proof of Concept-3 (InSPoC-3):
On-Board and Shared Intelligence – Ideation Activities

TECHNOLOGY AND INNOVATION

- **What we developed:** The InSPoC-3 study delivered a comprehensive analysis of future in-space transportation architectures, with a focus on enabling on-board autonomy, system reconfigurability, and long-term mission safety. Key outputs include a classification system for space-tug autonomy levels, detailed use-case analyses for orbital transport and refilling, and a preliminary in-orbit demonstration concept integrating real and simulated assets.
- **Unique feature:** The study pioneers the application of AI and software-defined architectures to reduce ground intervention and enable reusable, multi-purpose space-tugs. By proposing data structures for AI-enabled health monitoring and adapting terrestrial predictive-maintenance approaches to space, it opens the way for sustainable, autonomous orbital logistics.

GET IN TOUCH

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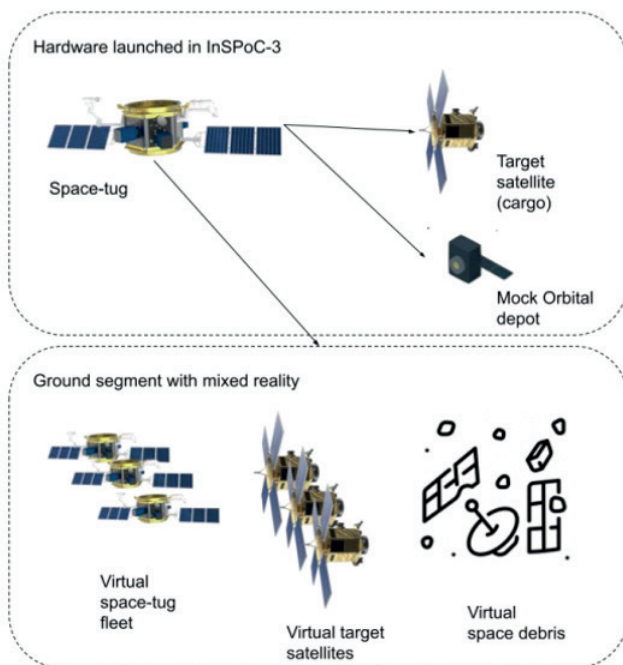


Figure 1: Hybrid cost-effective way to demonstrate InSPoC-3 critical technologies in all domains

KEY RESULTS

- Classification system for space-tug autonomy levels
- Detailed use-case analyses for orbital transport and on-orbit refilling
- Preliminary in-orbit demonstration (IOD) concept combining real and simulated assets
- Data structures and validation approaches for AI-enabled health monitoring
- Identification of telemetry data gaps relevant to autonomy and predictive maintenance

NEXT STEPS & MARKET READINESS

- **Roadmap:** Further development is needed to validate AI-based autonomy and software-defined architectures in representative lab and in-orbit environments. Next milestones: prototyping, testing, and an in-orbit demonstration (IOD). Target TRL 6 within 2 years.
- **Opportunities:** Seeking system integrators to demonstrate experimental payloads on board.
- **Target launch:** Space demonstration within 3 years.