Φ-lab

AI-eXpress

Smart in-orbit data processing, launching the SpaceStream

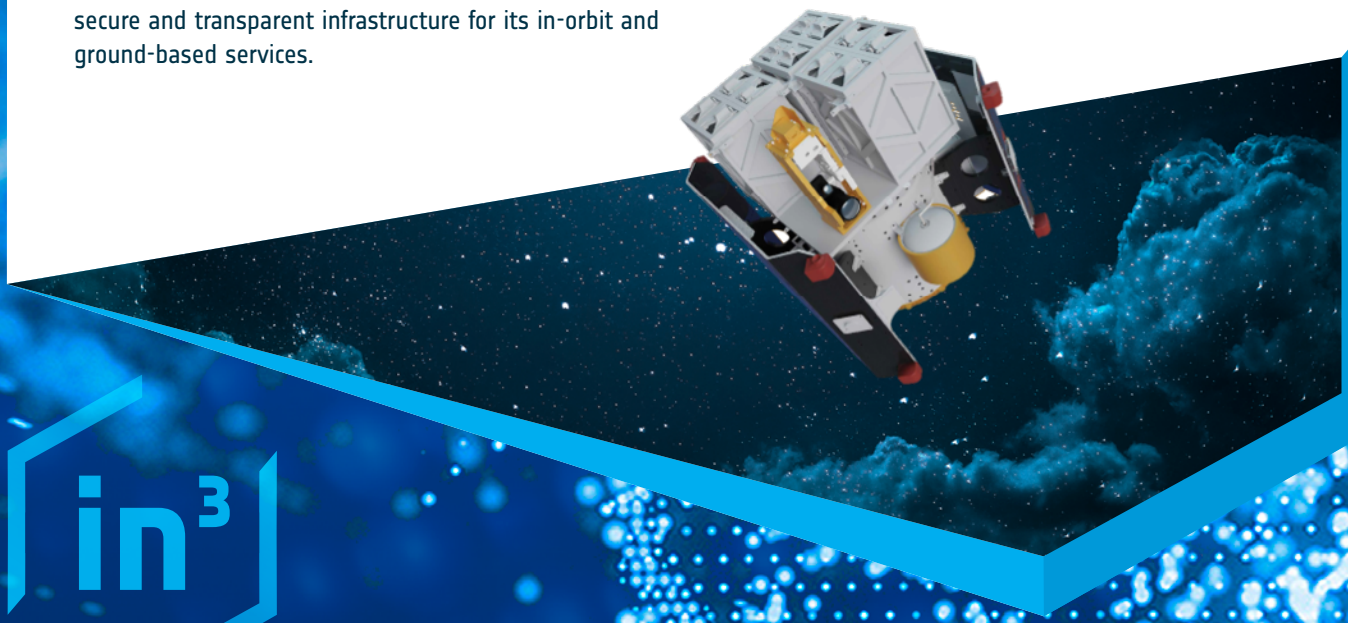
Imagine Earth Observation (EO) data like pictures from space. Instead of just looking at the pictures themselves, people using them (like farmers or park rangers) really want information that helps them do their jobs better. They need tools that make their work easier. For example, if we're trying to spot fires from space, it's crucial to get the information to the right people at the right time. Sometimes, the best place to process this information is actually on the satellite itself. This lets the satellite quickly identify a fire and immediately alert ground stations. Think of it like this: instead of sending huge files of raw image data (like sending a whole photo album), the satellite could just send a small message saying "Fire detected here!" with the location (like sending a text message with a pin on a map). This saves a lot of time and resources because the satellite only needs to send a tiny amount of information instead of gigabytes of data. This is what we mean by transforming data into "intelligence" directly in space. It's much more efficient. AIX is not a standard EO mission but rather a "satellite as-a-service". Imagine it as a space-based platform where users can get exactly the data and information they need, when they need it.

Technical Innovations

- **A "testbed" for AI in space**: AIX provides the hardware, software, and services needed to develop and test AI applications in a real space environment.
- **On-demand secured space services**: AIX provides a secure and transparent infrastructure for its in-orbit and ground-based services.
- **Easily develop onboard software**: AIX supports the growth of the commercial space industry by providing tools and services that make space more accessible to businesses.
- **Real-time monitoring and alerts**: AIX can be configured to monitor specific areas or events, detect changes, and send alerts based on AI-powered data processing.

AIX Products & Technology

- **A space platform**: Using D-Orbit's ION Carrier, AIX provides a platform in orbit for hosting instruments and deploying small satellites (CubeSats).
- **Software for managing everything**: Using Planetek's SpaceKit and AIKO's orbital_OLIVER solutions, AIX provides a software framework to manage the instruments and onboard resources.
- **A catalog of space "parts"**: AIX offers a catalog of hardware and software components available for use on the platform, along with a fast communication channel.
- **An "app store" for space**: AIX provides a catalog of AI-based processing functions and algorithms that users can select and use.
- **On-demand CubeSat deployment**: AIX can deploy CubeSats into orbit when needed.
- **Support for custom designs and operations**: AIX provides support services to help customers design their own solutions and manage their operations.



in³

Facts and figures

Launch	Three rideshare hosted launches: AIX-1p: NET January 2025 (Falcon 9, Transporter 12) AIX-1: NET June 2025 (Falcon 9, Transporter 14) AIX-1+: NET October 2025 (Falcon 9, Transporter 15)
Launcher	Falcon 9 (SpaceX), Transporter 12
Orbit	561 km +/- 15 km 10:00 + 60min LTDN SSO +/-0.1 deg
Mission life	1 year
Satellite	D-Orbit's In-Orbit Now (ION)
Power	7 – 25 W (Depending on processing and storage selection and use)
Instruments	Instrument 1: high-performance computing unit AI-ready Instrument 2: dual-head multispectral VIS-NIR camera system Instrument 3: Low-latency channel
Revising time	Variable (target 1-day RGT SSO)
Mission control	D-Orbit Flight Operations Segment in Fino Mornasco, CO, Italy
Operations & data processing	Planetek's AIX app-store, powered by ERMES, in Bari, BA, Italy S-band for TTC
Prime contractor	Planetek Italia s.r.l. (Italy) in partnership with D-Orbit s.p.a. (Italy) and AIKO s.r.l. (Italy).

For further information
ESA Newsroom and Media Relations
Tel: + 31 71 5656409

media@esa.int
www.esa.int