

SOFTWARE IN-ORBIT DEMONSTRATION



ENABLING SOFTWARE-DEFINED SPACE MISSIONS

D-Orbit's **Software In-Orbit Demonstration** service provides a streamlined path to validate innovative applications in orbit without the traditional barriers of satellite development. The service leverages D-Orbit's **ION Satellite Carrier platform**, which combines **advanced computing capabilities** with a comprehensive array of **onboard sensors and instruments accessible through an application programming interface (API)**.

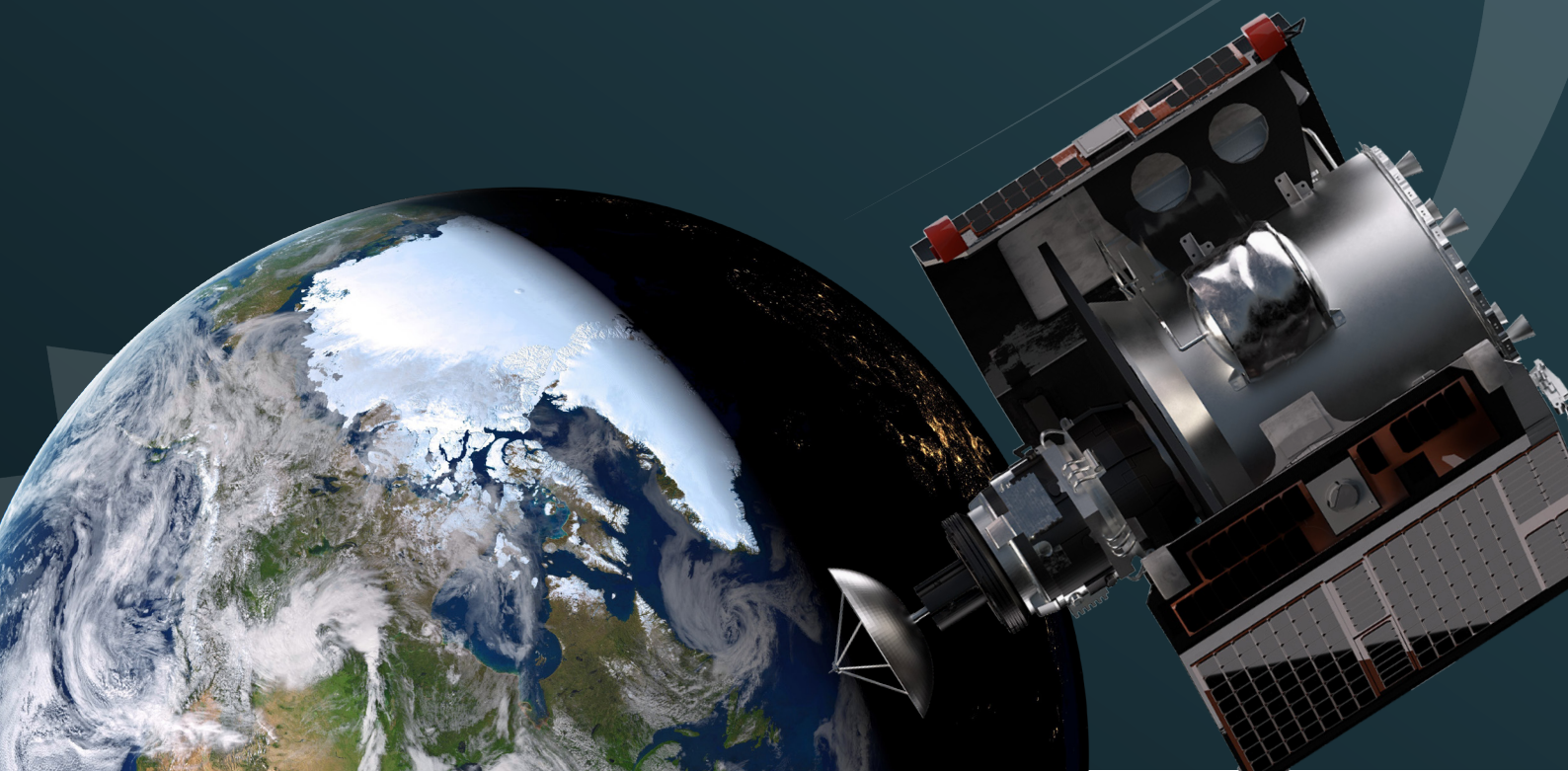
This framework allows organizations to **develop a prototype** of their proprietary application, upload it to ION as a software-defined mission, **run it in the space environment**, and **downlink** the resulting data and demonstration results. D-Orbit's infrastructure enables the creation of **time-sensitive applications** with near-real-time performance capabilities. The flexibility of a software-defined mission allows developers to incrementally refine their applications through multiple iterations, testing and deploying in orbit, **significantly reducing development risk and accelerating time-to-market** for new space-based services.

The service follows industry-standard practices, with applications packaged in **Docker containers** for a seamless transition from ground-based testing to orbital deployment. This methodology allows technical teams to **focus on application functionality** through meaningful representative scenarios rather than hardware development, dramatically compressing traditional space mission timelines while gaining flight heritage with a **sustainable workflow without the complexity of developing, integrating, and testing custom hardware**.

The platform's versatility supports a **wide range of applications**, from Earth observation-based analytics to communications optimization, space domain awareness, and emerging future applications, all benefiting from the extensive **flight heritage** of seasoned D-Orbit service teams, the ION platform and its demonstrated reliability across multiple orbital missions.

KEY FEATURES

- **Advanced Data Processing in Orbit:** AI-accelerated computing to process mission data directly in orbit.
- **Comprehensive Orbital Sensing Suite:** Full access to a complete array of space-qualified sensors and instruments synchronized ensuring spatial and temporal consistency.
- **Space Qualification at the Speed of Software:** Fast track from mission concept to orbital validation enabled by industry standard cloud-native development tools and practices.
- **Near Real-Time Capabilities:** Superior response times and higher data throughput for time-critical applications by processing directly in orbit, eliminating the downlink bottlenecks that constrain traditional ground-based solutions.



INTELLIGENCE LOGISTICS



ORCHESTRATING SPACE-BASED DATA NETWORKS

D-Orbit's **Intelligence Logistics** service addresses the traditional challenges of accessing and using multiple satellite data sources by allowing the creation of **custom data processing networks directly in orbit**.

Through a network of **advanced computing nodes integrated into D-Orbit's satellite fleet**, the service enables organizations to create custom data infrastructures that connect multiple space assets via industry-standard protocols and formats like the **SpatioTemporal Asset Catalog (STAC)**. These customer-defined infrastructures can combine information from D-Orbit's onboard sensors with feeds from public and private third-party satellites, creating a cohesive information resource without the complexity of managing individual satellite interfaces. This approach enables the **creation of time-sensitive applications with near-real-time performance capabilities**.

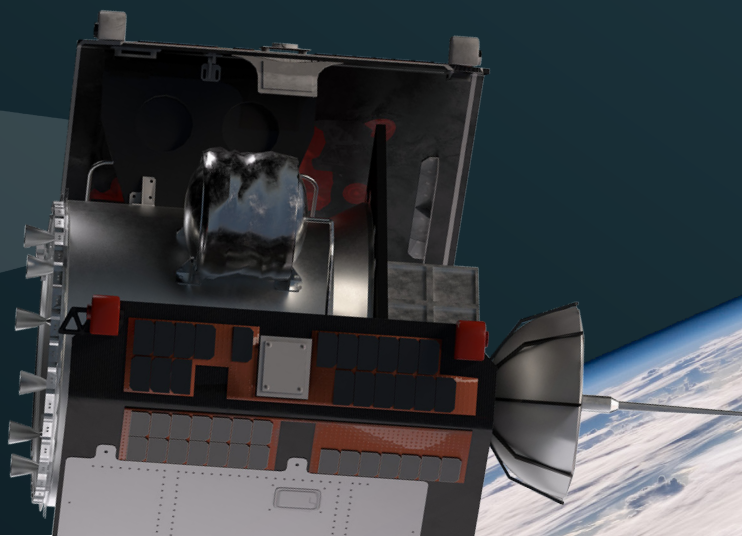
The computing nodes function as **orbital data fusion centres**, enabling data federation from multiple sources by collecting raw information from diverse satellites and applying customer-developed AI-powered processing to transform it into actionable intelligence. D-Orbit's orbital processing approach, combining federated data streams and a processing pipeline, significantly **reduces the latency and bandwidth limitations** that constrain traditional ground-based applications.

Processed information is delivered to its optimal destination—whether it's immediate downlink to ground stations, transfer to other space assets, or integration with automated decision systems. This orchestration creates **end-to-end data pipelines that deliver decision intelligence for insights and action** precisely where and when they create the most value.

A **subscription model** enables organizations to mobilize consistent, reliable intelligence aligned with their specific operational requirements. This delivery approach **eliminates the need to manage complex space data infrastructure**, allowing clients to focus on deploying innovative AI applications for real-world business and societal impact without navigating today's fragmented space data ecosystem.

KEY FEATURES

- **Unified Access to Space Data Sources:** Set up custom incoming data flows from multiple space assets, combining local sensors with public and private third-party satellites, synchronized for spatial and temporal consistency.
- **Advanced Data Processing Networks:** Transform multi-source space data into actionable intelligence through proprietary AI applications running on orbital processing chains, delivering intelligence products precisely where they create maximum value.
- **Flexible Space Data Services:** Access space-based digital infrastructure through automated subscription services precisely aligned and optimized with custom operational requirements.
- **Near Real-Time Capabilities:** Superior response times and higher data throughput for time-critical applications by processing directly in orbit, eliminating the downlink bottlenecks that constrain traditional ground-based solutions.



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