loft
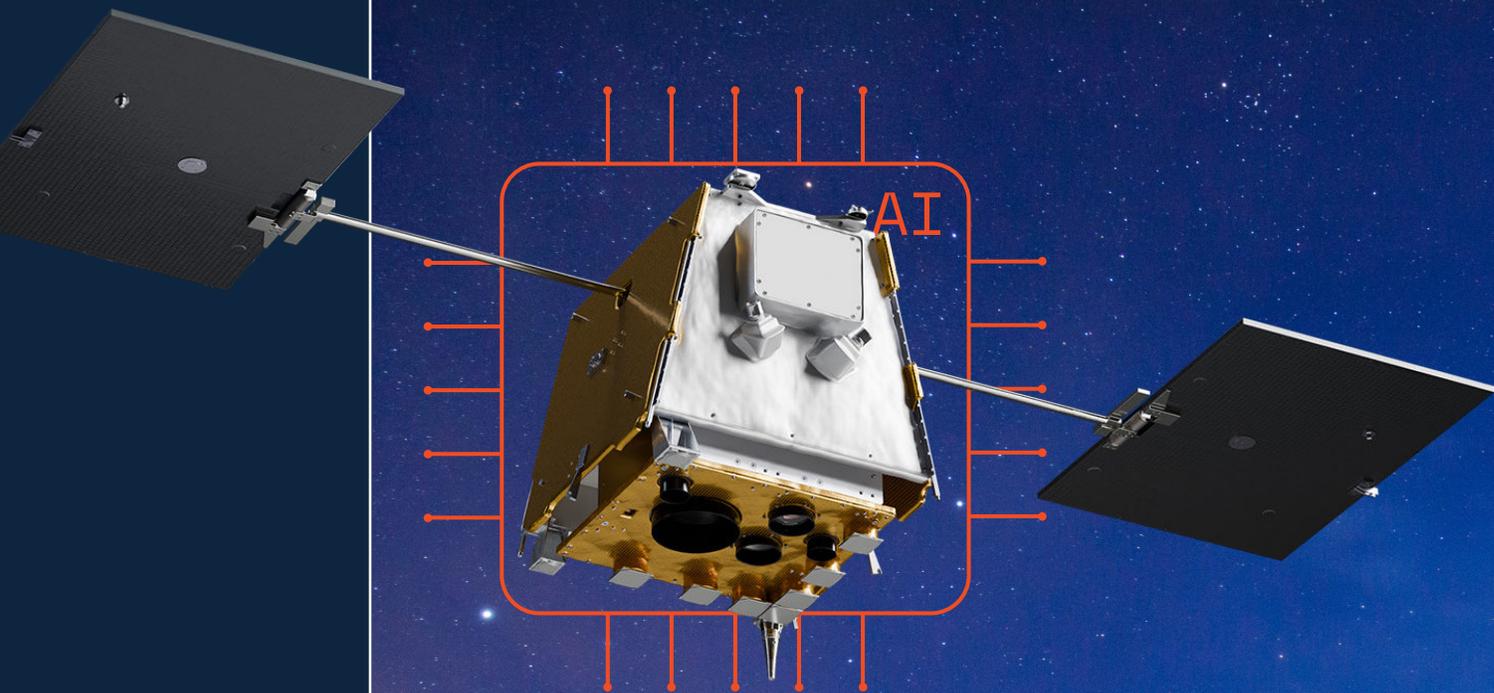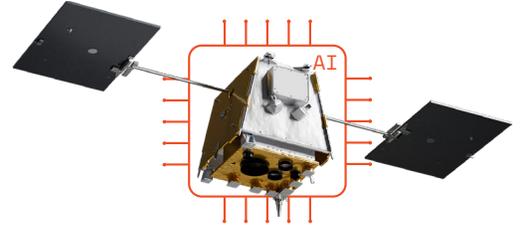
Building Space-Native Intelligence for
Faster, More Reliable Decisions on Earth

AI in Space, Made Simple

Executive Summary

A new generation of artificial intelligence models are transforming how decisions are made on Earth. But space is a critical domain that has been largely left out of that transformation.

Most satellites still operate the same way they did decades ago: collect large volumes of raw data, transmit everything to the ground, and rely on humans or cloud systems to parse through dense information to find what matters. That operating model creates delays, drives cost, and limits how quickly decision-makers can act on space-derived insights.

↘ Loft is changing that in a fundamentally new way.

We are building a space-native AI platform that brings intelligence closer to the sensors themselves. Instead of treating satellites as passive data collectors, Loft's AI-enabled satellites detect, filter, and prioritize events in orbit, sending decision-ready information to the ground in near real-time.

To prove this concept, Loft is today flying:
- High-powered, four-node compute architectures for on-board processing
- Multiple satellites hosting customer-provided AI models for AI-Powered Missions
- Real-time data relay antennas for always-on connectivity

Within the year, Loft will continue to expand on these capabilities by:
- Launching the first AI-enabled, multi-sensor constellation
- Introducing the Loft Mission Store to support third parties and sovereign partners to deploy on-orbit agents and AI-driven workflows.

A new paradigm for on-orbit, AI-derived insights is here.

Who We Are

Loft did not start as an AI company.

Our mission from the very start was to make space missions simpler and more reliable. By integrating, launching, and operating satellites on behalf of customers, Loft built deep experience in spacecraft operations, mission integration, and real-world constraints like power, thermal limits, pointing tradeoffs, regulatory complexity, and schedule risk.

As Loft matured, we began flying our own sensors and onboard compute alongside customer payloads on satellite rideshare programs. This created something new: a shared, programmable

space infrastructure where software could evolve over time. Loft's vision for AI in space is a natural extension of that foundation. Now we're adding a layer of applications and AI agents on top of that infrastructure. We are applying intelligence where it actually changes outcomes: on orbit, right next to the sensors, inside real mission constraints.

What "Space-Native AI" Means at Loft

When Loft describes itself as building a space-native AI platform, we mean three things.

1. Intelligence runs next to the sensors

Rather than streaming all imagery or radio frequency (RF) data to Earth, Loft satellites run lightweight AI agents directly onboard. These agents detect patterns, anomalies, and risks while the satellite is still over the area of interest.

Examples include:
- Identifying vessels behaving inconsistently with their declared identity
- Detecting GPS/GNSS jamming near airports or military assets
- Spotting early signs of wildfire or oil pollution

Loft has low-bandwidth real time connectivity to send light-weight alerts similar to SMS messages that include event information like coordinates, time, confidence level, and other details. This is in contrast to waiting for access to a ground station to downlink heavy data files. The satellite ends up sending compact event messages, not raw data, along with references to the underlying data if deeper analysis is needed.

This also means "space-native AI" isn't just a technical upgrade, it's about

both budget optimization and efficiency. By only sending event messages instead of petabytes of raw data, we're reducing ground storage costs and reducing downlink speeds from tens of minutes to just seconds.

TRADITIONAL DATA FLOW

LOFT'S DATA FLOW
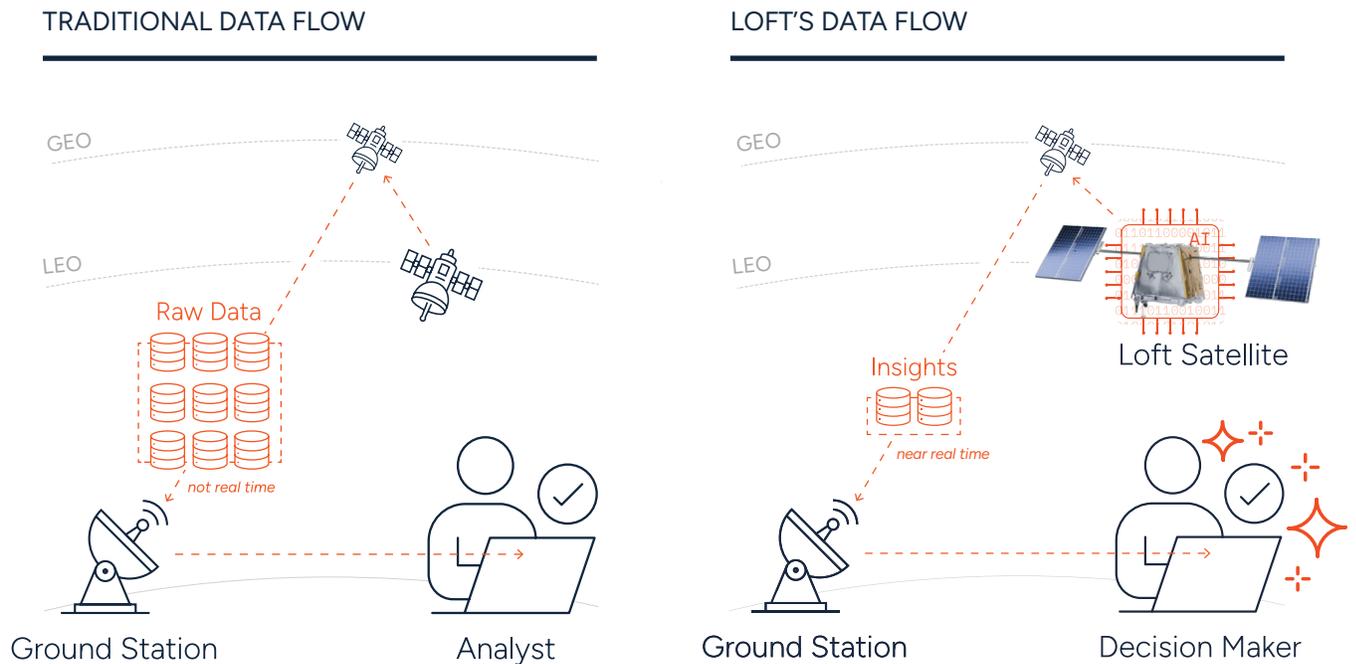
2. AI is about simple orchestration, on-board inference

AI at Loft is not limited to "running a model on an image."

A second layer of intelligence translates operational intent into coordinated satellite behavior. Users can command satellites like delegating a task in human language:
- "Watch these sea lanes for dark ships"
- "Alert me if GNSS is jammed near these airports"

The platform converts those questions to:
- Which sensors and agents to activate
- How to prioritize power, compute, and downlink
- How multiple satellites coordinate listening, imaging, and follow-up

This orchestration layer creates an intent-based mission control that removes the need for manual, pass-by-pass planning while respecting real spacecraft constraints.

## 3. The platform is open but governed

Loft's satellites are not dedicated to a single mission. They support an open, governed environment where:

- Loft provides first-party applications (e.g., maritime awareness, GNSS interference, wildfire detection)
- Governments and partners can deploy their own on-orbit agents
- Applications coexist under clear security, resource, and sovereignty controls

Over time, this evolves into a curated and secure store of on-orbit applications and event streams, distributed across Loft's shared infrastructure.
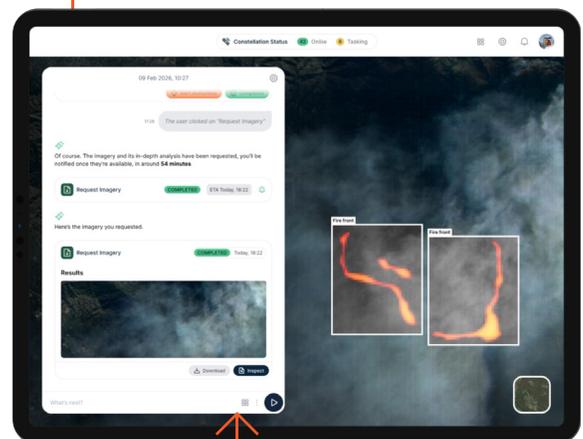
APP UI: ASK A QUESTION
"Are there any wildfires in the Brisbane, Australia area?"
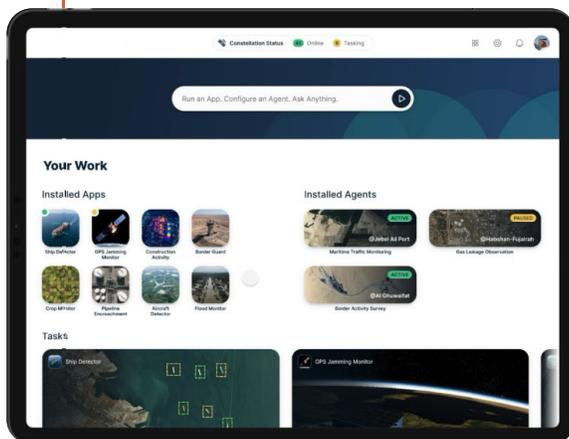
...RECEIVE AN ANSWER.
"Yes, fire fronts and smoke plumes have been detected northeast of Eaton Hills."

Who Benefits from AI in Space

We're building on existing partnerships with organizations like Microsoft Azure, NASA, Centre National d'Études Spatiales (CNES), Little Place Labs, and Agenium to realize this vision and demonstrate tangible benefits from AI in space.

Defense and intelligence agencies
- Persistent monitoring of maritime approaches, borders, and regions
- Faster detection of illicit activity, interference, or emerging threats
- Secure, sovereign control of data, analytics, and decision-making pipelines

Civil agencies and environmental organizations
- Earlier warnings for wildfires, pollution, and disasters
- Reduced data volumes with faster actionable alerts
- Evidence-backed events linked to underlying metadata when needed

Commercial companies
- Risk-focused intelligence layered on top of vessel or asset data
- Better situational awareness without building or launching satellites
- Subscription access to evolving applications instead of static datasets

Developers and partners
- Ability to deploy analytics directly on real satellites
- Monetization of space applications without owning hardware
- Familiar cloud-native development workflows adapted for orbit

Why Speed Matters and What Actually Changes

Traditional space systems optimize for data collection, not reactivity.

When raw data has to wait for ground station access, processing pipelines, and analyst review, minutes or hours can pass before decision-makers can understand what has happened. In domains like maritime security, disaster response, or navigation interference, those delays matter.

By reducing data in orbit and sending event-level intelligence, Loft:
- Shortens time from observation to alert
- Cuts bandwidth and storage costs
- Allows operators to focus attention where it matters most

This is not about replacing humans. It is about giving decision-makers a clearer, faster picture so they can act sooner and with confidence.
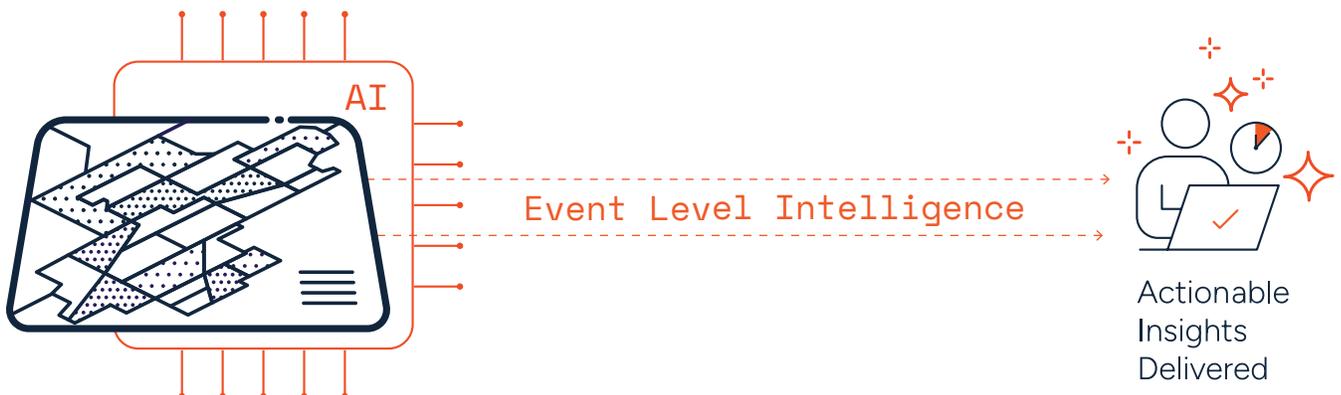
TRADITIONAL INFORMATON TRANSFER

All data is downlinked

00100111011001001110110010011101101
11010101010110101010101101010101011
11110000101111100001011111100001101

Raw Data
Delivered

LOFT'S INFORMATION TRANSFER

Only relevant data is downlinked

AI

Event Level Intelligence

Actionable
Insights
Delivered

Addressing the Hard Constraints of Space

AI in orbit is not unlimited and that is a key reality that Loft has factored into its roadmap.

Satellites operate under tight constraints:
- Limited power budgets
- Finite onboard compute
- Restricted downlink capacity
- Thermal and pointing tradeoffs

Loft's approach acknowledges those realities:
- Only lightweight, mission-relevant agents run onboard
- Heavier processing, storage, and training stay on the ground
- AI workloads are scheduled and throttled alongside core mission operations

The goal is not to turn satellites into data centers. It is to deploy AI applications on orbit to dramatically improve mission outcomes today without compromising spacecraft reliability.

Data Security and Governance

Loft is also not looking to sacrifice security for the sake of leveraging emerging technologies. Loft ensures customers' privacy and data security by processing information on-orbit and limiting unnecessary data downlink. All mission data can flow into the customer's own systems and sovereign cloud environment, making sure the data and intelligence that powers decision-making stays under their control.

How This Evolves Over Time

Loft's approach to AI in space is designed to continuously evolve as the technology accelerates.

Over time, we expect the platform to grow from individual applications toward a richer, multi-sensor intelligence layer in orbit. New AI agents can be introduced, existing ones refined, and different sensing modalities combined more fluidly. As this happens, common event models and interfaces mature, making it easier for customers and partners to build, deploy, and operate applications without re-engineering the underlying space system.

As the ecosystem grows, more organizations contribute specialized on-orbit agents and analytics. Governments, commercial users, and partners can select from a broader catalogue of applications that run directly on shared space infrastructure, adapting as missions, threats, and priorities change.

In the longer arc, space shifts from being a delayed source of raw data to an active participant in decision-making workflows. Satellites will increasingly support persistent monitoring, localized intelligence, and faster response, working in concert with terrestrial systems rather than acting as a disconnected upstream feed.

Success in this model is not defined by how much data is collected, but by:
- How quickly relevant information reaches decision-makers
- How reliably missions can be repeated, scaled, and adapted
- How broadly these capabilities are adopted across government, civil, and commercial use cases
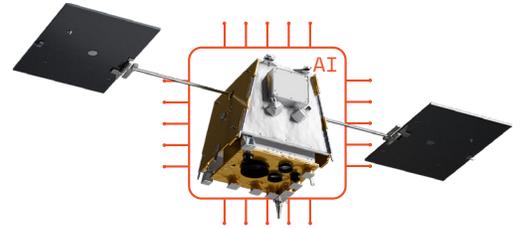
What Success Looks Like

For Loft, success means:

✓ Customers subscribing to evolving space applications, not static datasets

✓ Developers building valuable space-native real time analytics without touching hardware

✓ Governments maintaining sovereignty and secure access to data while gaining faster, clearer situational awareness

✓ Space becoming a trusted, real-time input to decisions that matter on Earth

↘ AI in Space is not a distant vision. It is already how satellites are operated. Loft is building the infrastructure to make that shift reliable, repeatable, and operational.
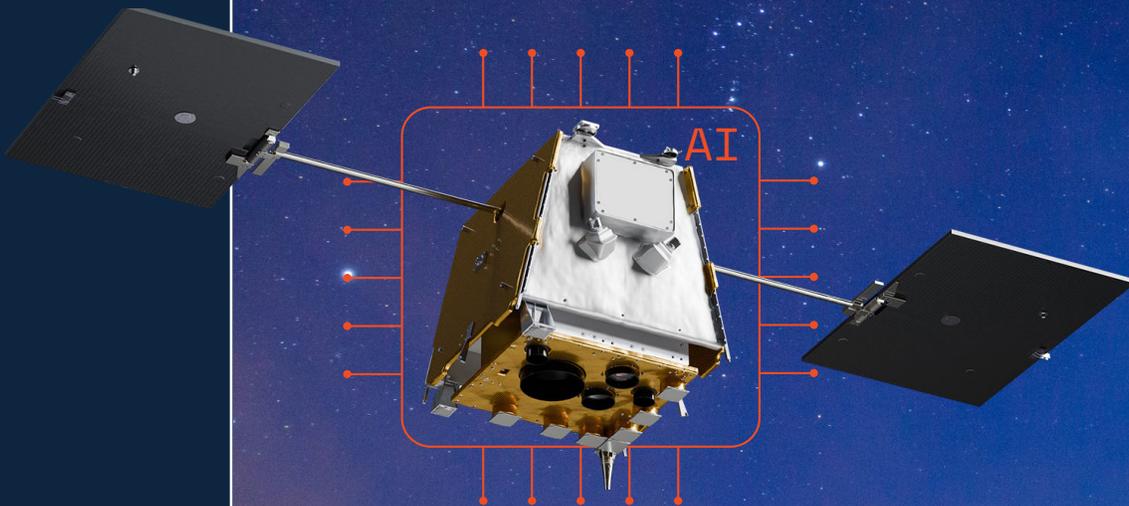
loft

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Contact us to embark on your AI-in-space journey with Loft

AI