

LeoLabs Launch and Early Orbit

Rapid tracking and identification support for newly launched payloads

LeoLabs Launch and Early Orbit service offers tracking support during the crucial first hours and days of new missions, providing rapid assistance for payload location so operators can quickly and reliably establish communications with their satellites. For rideshare missions, our service also helps with payload identification to sort out the multiple satellites belonging to various owners. The days of relying on luck to find your satellites after launch are over. You can trust in the only commercial service operationally proven to quickly locate and identify newly launched LEO payloads.

A Service that Reduces Workload and Losses

Historically, launches represent the most difficult and stressful phase of satellite operations. Multiple vital objectives must be accomplished in a brief period of time, including successfully locating satellites and establishing initial communications. Certain types of missions like rideshares can further amplify these challenges. Additionally, even after payloads are identified and cataloged, cross-tagging and misassociations can occur leading to further confusion.

As a result, operators have typically needed to dedicate key personnel to these resource-intensive efforts for days or weeks, putting critical projects on hold during these all-hands-on-deck processes. These are the challenges that LeoLabs addresses with its Launch and Early Orbit service, a first-of-its-kind commercial capability in the space industry.

Orbit Data Within Hours of Launch

Using the LeoLabs global network of proprietary phased-array radar systems, along with a suite of in-house tools and algorithms specifically designed to support fast asset tracking and data processing, we generate orbit data products and send them directly to satellite operators often within just hours of launch. This eliminates the need to rely on objects being added to the public catalog prior to receiving the first TLEs, which can often take several days or weeks for complex missions.



**Track Launch with
Prioritized Resources**



**Identify Newly Launched
Payloads Rapidly**



**Reduce Staff
Workload**



**Prevent Costly
Payload Losses**

LEOLABS LAUNCH AND EARLY ORBIT

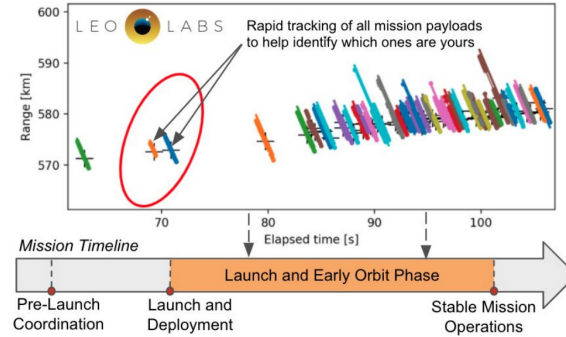
Collaborative Process with Customers

Pre-Launch Coordination

LeoLabs coordinates with satellite operators and launch providers to obtain launch nominals and predicted orbit insertion parameters for all payloads, to schedule our radars for tracking.

Early Orbit Tracking

LeoLabs radars are operated in search mode to track all deployed objects immediately following launch. High accuracy measurements are collected including range, doppler, radar cross section (RCS), and distribution data. Payloads are often identified within the first 1-2 radar passes, depending on orbit geometry. Subsequent radar passes can further improve accuracy of initial results.



Orbit Products

LeoLabs processes the tracking data through our algorithms for payload association and initial orbit determination to produce:

Fitted TLEs or state vectors corresponding to the payloads deemed most likely to be yours, delivered rapidly after each radar pass.

Data plots and visual aides showing all detected payloads and the relative distribution and spacing, with object labels for additional insights.

Identification Support

LeoLabs works directly with operators to help predict which payloads on rideshare missions are theirs, and delivers orbit products for those objects. If there is any ambiguity, we can also provide orbit products and distribution analyses for surrounding payloads to aid in establishing communications.

Transition to Routine Operations

LeoLabs support doesn't stop with Launch and Early Orbit. Customers subscribing to this service will also receive 30 days of our Tracking and Monitoring service, which provides high precision state vectors and ephemerides delivered daily. Tracking and Monitoring begins where Launch and Early Orbit ends, providing full mission coverage and a seamless transition into routine mission operations.

Planning a Launch?

Don't leave mission success to chance. Contact us today to learn more about Launch and Early Orbit or our other services supporting operational safety of flight.

Radar Network Growth

- Today: six radars at four locations
- 2022: adding one southern hemisphere site and one northern hemisphere site
- 2023-2025: further expansion to 20+ sites



Costa Rica
Costa Rica Space Radar



New Zealand
Kiwi Space Radar



Texas
Midland Space Radar



Alaska
Poker Flat Incoherent Scatter Radar



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LeoLabs is an agile space innovator that provides access to critical mapping and SSA data for low Earth orbit. LeoLabs services include collision prevention, risk assessment, constellation monitoring, and commercial SSA. LeoLabs today serves regulatory and space agencies, commercial satellite operators, defense, and scientific/academic organizations that are driving generational change in LEO.

Radar Network Planned Capability

- Industry-first capability to track objects < 10cm in size
- Catalog of 10x more LEO objects than today (estimate)
- Revisit rates of 10+ times per day for prioritized objects