



# EXLABS

Open Missions to Deep Space. A Global Science & Public Engagement Platform.

Apophis EX – 4.13.2029

## Space Resource Roundtable



# EXLABS

## Affordable Access

A cost point that enables diverse global participation in cis-lunar to deep-space mission areas.

# EXMEDIA

## A Global Narrative

The ability to share the importance of the work with a worldwide audience through world-class media partnerships



### Comprehensive Logistics

- Launch Vehicle procurement + spacecraft integration
- Trajectory Design and Mothership Mission Operations
- NASA JPL technical oversight



### Flexible Payload Requirements

- Support for low TRL to high TRL instruments, sensors, etc.
- Support for experimental hardware and software demonstrations
- Focus on Space Resources and Planetary Defense applications



### Destination Range

- Reliable ride-share access
- LEO, GEO demonstrations + cislunar orbits
- Repeatable deep space asteroid destinations

EXLABS

# Apophis EX

## Agenda



Mission Roadmap



Apophis EX and the SERV Spacecraft



Telling the Story



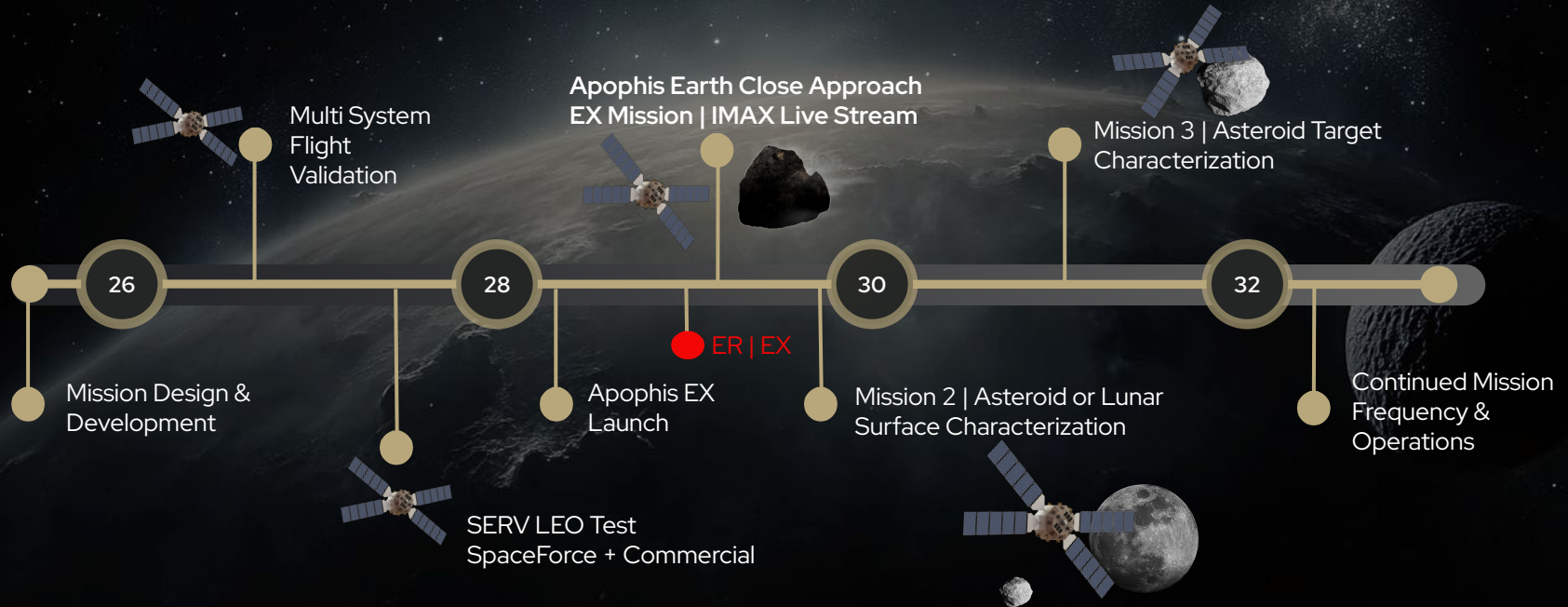
The Mission as a Service Model



Mission 2 Development

# Mission Roadmap

Exlabs will deliver Planetary Defense and Space Resource Missions on a fixed schedule



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# Meet **SERV**

## The Common Platform for the **Next Space Economy**

### Multi-Orbit:

Unified spacecraft platform across  
LEO, MEO, GEO, Cislunar

### Versatile Payloads:

Same spacecraft, varied applications  
120–5,000 kg. payload

### Nuclear-Ready:

Designed to support advanced propulsion &  
power for deep-space scale

### Rapid Turnaround:

Mission-ready in 12 months

### Modular & Stackable:

Modular, reconfigurable,  
multi-mission architecture

### On Board AI & Edge Compute

Autonomous decision making and data transfer

One platform. All Orbital Regimes. Built for Capabilities, not Bespoke Requirements

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# Apophis EX: SERV-700 Summary

- **~850 kg wet mass launched in Q1 2028** – fits mid-class commercial launch vehicles
- **Dual Pulsar Hall-effect thrusters**, 5 kW each, Isp ~1,900 s
- **~9.9 km/s effective delta-V** – demonstrated on the Apophis trajectory
- **7 kW solar array** – sustains EP operation across the inner solar system
- **GTO injection orbit** – compatible with PSLV-XL, Ariane, and other commercial GTO vehicles
- **Payload capacity up to ~120 kg** – adaptable for kinetic impactor, instruments, or deployers
- **Modular octagonal structure** – payload bay reconfigurable without full redesign
- **Fully autonomous GNC** – GPS-denied deep-space operations
- **RPO system** – acquires targets from 1,000 km, stereo ranging at close approach
- **Dual-mode RCS** – precision maneuvering and reaction wheel desaturation

# Apophis EX: Advancing Planetary Defense

Apophis is a once-in-a-lifetime event

● **Launch: 2028**

● **Size: 340 meters (~1,115 feet)**  
**Mass: 26 million tons**  
**Speed: 67,000 mph**

● **Earth Close Approach: April 13, 2029**  
Will pass within 19,000 miles of Earth, inside GEO orbit

● **Mission Objective:**  
Intercept and study Apophis and provide global awareness

**Strategic Value:**  
Data for asteroid planetary defense

● **First Commercial Deep-Space Rideshare**

- Multi-spectral imaging
- Subsurface analysis
- High-resolution imaging
- Deployable landers
- Bistatic radar (CAT scan for asteroids)

● **Establishes Low-cost Asteroid Mission Rideshare**

- Continuous access to deep-space
- Asteroid resource utilization and Planetary Defense

# Apophis EX: Payloads

## Payload Overview

Apophis EX hosts an international suite of instruments focused on structural characterization and geotechnical assessment. The strategic collaboration between ExLabs & PERC/Chiba Institute of Technology integrates the following payloads:

1. 8K visible IMAX camera for high resolution mapping and livestream content
2. Multiband Camera (PERC): Captures multi-spectral imagery to track surface material dynamics and physical changes induced by Earth's tidal forces.
3. CubeLanders (PERC): Two landers utilizing Hayabusa2-heritage technologies to investigate geotechnical and subsurface properties directly from the surface.
4. ALEMIE (ALE Low-Energy Multi-Impact Experiment): Employs a Mass Driver System to launch metallic spheres. Observing ejecta and cratering provides critical data on regolith cohesion and material strength without orbital alteration—essential for future kinetic impactor defense and In-Situ Resource Utilization (ISRU) strategies.

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# JPL Strategic Partnership

Partnered with NASA JPL for hardware and mission design, assembly, and validation  
Builds credibility, reduces risk, accelerates development



## Mission Design & Planning



World-class deep space mission expertise and trajectory design.

## Mission Operations & Control

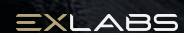


Leverage proven operational success for command, and control.

## AI&T Facilities



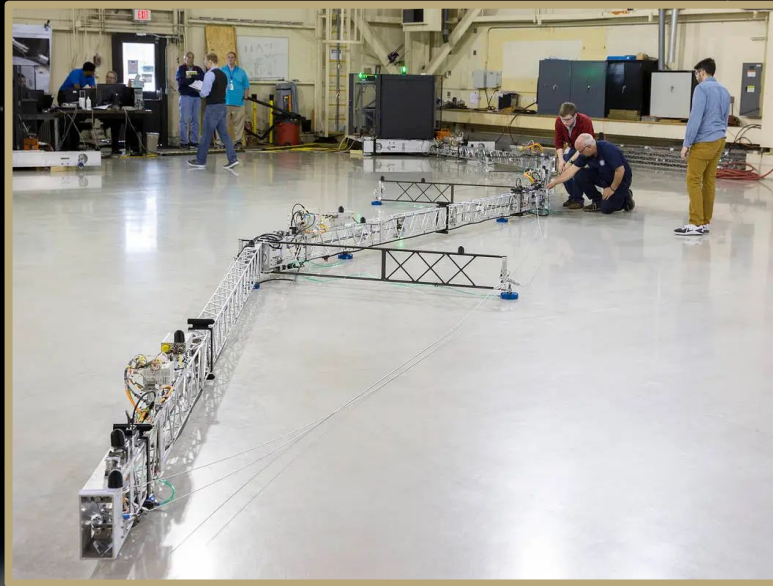
Utilize advanced assembly, integration, and testing facilities.



# Langley Strategic Partnership

ExLabs Advanced Concepts Partnered with NASA Langley for robotic capture and control

NASA Langley  
Research Center



The Tendon-Actuated Lightweight In-Space MANipulator  
(TALISMAN): An Enabling Capability for In-Space Servicing



Presented To:  
ATLAST Seminar Series

John T. Dorsey  
NASA Langley Research Center  
November 18, 2015

NASA Langley Talisman program has been donated to ExLabs via Space Act Agreement and is being merged into the ExLabs Robotics Facility in Long Beach, CA



IMAX



PLIMSOLL

itv

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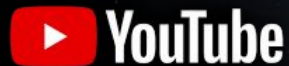
Mission 2 Development

EXMEDIA

# The Moment

*The Camera is the Mission*

IMAX



## Creating the Most Viewed Event in History

- Apophis will pass below weather satellites
- Visible to over 2 billion people with the naked eye
- Live-stream from space-based IMAX cameras
- Initial launch audience: 150 million subscribers
- Free Event on Youtube translated into 22+ languages
- Theatrical release: 1,800 global locations
- Cultural inflection point: Fear, hope, science, spectacle



# EXMEDIA

## The Production:

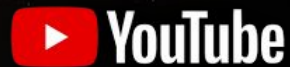
*We connect the Space Industry to  
Mainstream Media and Deliver Global  
Viewership & Impressions*



Deep Space IMAX Programs | Content Streaming in  
Negotiations



Mainstream Media and Film Production



Fortune 500 Sponsorship in Development



EXMEDIA

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# Mission-as-a-Service

## NADIR Deck | Mothership

- Payloads on the exterior of the Mothership (Imaging)
- Internal payloads which can be tested during the mission

## Deployables

- 6U | 12U or Custom Payloads deployed during the mission
- May include orbiters, landers or free-flying deep space systems

Scope of Work (SOW) is flexible and may be updated during the contract

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Pricing: \$1 Million USD / Kg with volume discounts

# Mission Services

Turnkey mission services include:



- Business Development, Marketing and Fundraising support to enable the mission
- Full spacecraft integration support + guidance on power, comms, thermal interfaces, etc.
- Dedicated static payload or deployer bay with optional slow speed deployers



- Mission operations through payload deployment
- Conops | troubleshooting support during mission



- Data: Full data plan development (EG Apophis EX 0.5 TB (500 GB) Included )
- Insurance included from receipt of payload to launch pad | Additional Insurance available
- Optional ExMedia content development for online streaming and IMAX programs available via separate contract

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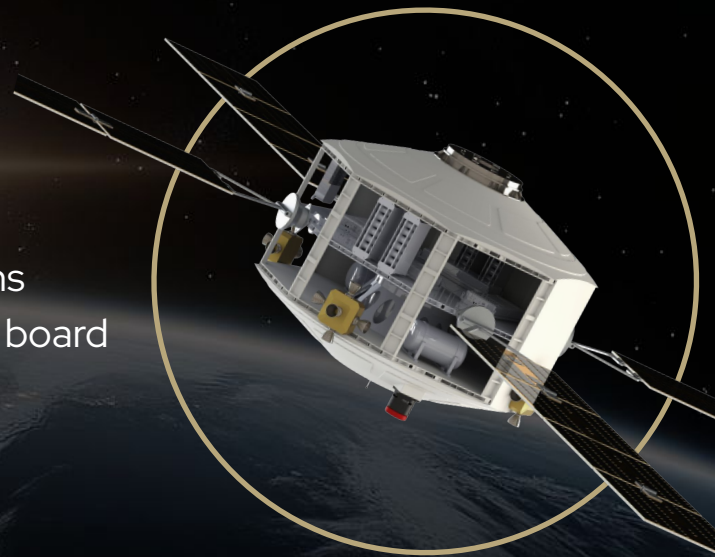
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# Mission 2: Now Accepting Payload Submissions

Where we go is a critical choice...

## Partners + Payloads Guide Mission Area Selection:

- **Coordinating with NASA JPL's trajectory design team**
- Targeting closer NEAs for shorter cruise times
- Current list includes 200+ NEAs
- Targets are kept classified until mission closes and PR begins
- Clients and partners are invited to join the mission advisory board
- Partners who sign early help define the target area
- Once a mission is 60% manifested the launch is booked



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## Whats Next?



- Non Binding MOU outline ISRU payload to LEO or GEO for testing to deep space for a mission



- Secure the Payload User's Guide under NDA
- Develop Payload SOW that describes the payload, the mission and the conops
- ExLabs can provide pricing model and collaborate with your teams to secure funding required



- SOWs can be updated and changed anytime with approval of both parties



# APOPHIS EX

Humanity's First Open Mission to Deep Space. A Global Science & Public Engagement Platform.

4.13.2029

**-- Watch the Trailer --**

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