

# The Space Superhighway and Space Resources: Response to the White House

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**SPACE RESOURCES ROUNDTABLE 2022**

# Presenter history

- DARPA program manager in space robotics
  - SUMO demonstration, FRENED robotic arm 2002-2006
  - Robotic Servicing of Geosynchronous Satellites (RSGS) 2014-2018
- Consultant to government and private entities 2018-2022
- "The Robotic Space Station": The Space Review 2018
- Co-author of Commercial Lunar Propellant Architecture study 2018
- Participant in NASA In-Space Assembled Telescope study 2018-19
- "Unlocking Value in Earth Orbit": Aviation Week op-ed 2019
- Co-organizer of Space SMART Think Tank 2020-21
- "Let's build a superhighway in space": The Hill op-ed 2021
- Provided inputs to OSTP interagency working group 2021-22



# What is a “space superhighway?”

**National in-space infrastructure** for logistics for **all users**—commercial, civil, and national security

- Primarily **privately funded and operated**
- Coordinated at the national level
- Government as customer, seed funder, critical R&D

**Put the US in a leadership position** with respect to space infrastructure & operations

Capture **outsized economic and national security benefits**

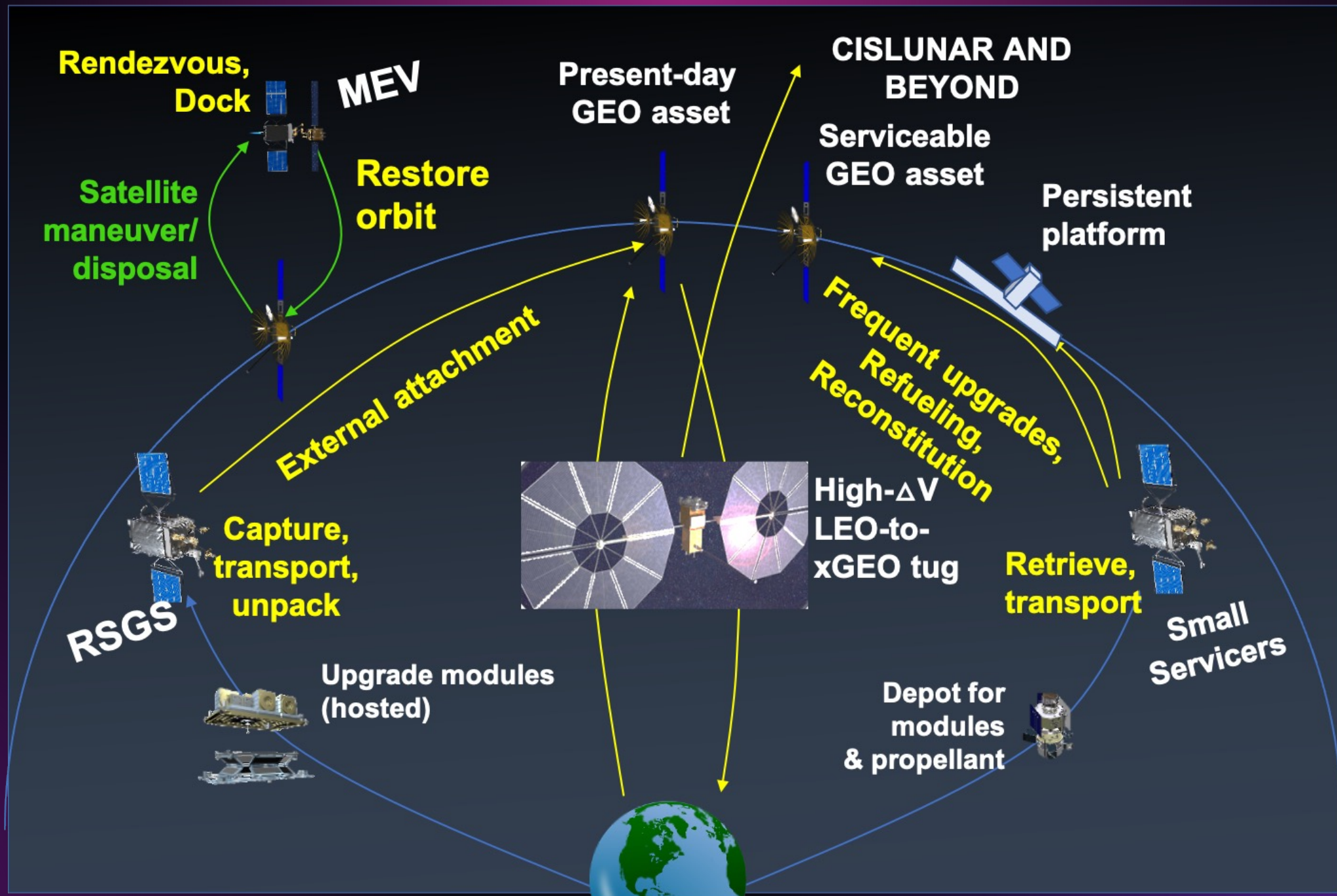
- **Outpace adversaries**
- **Global soft power and influence**
- **Unlock value**
- **A commercial system with strategic power**







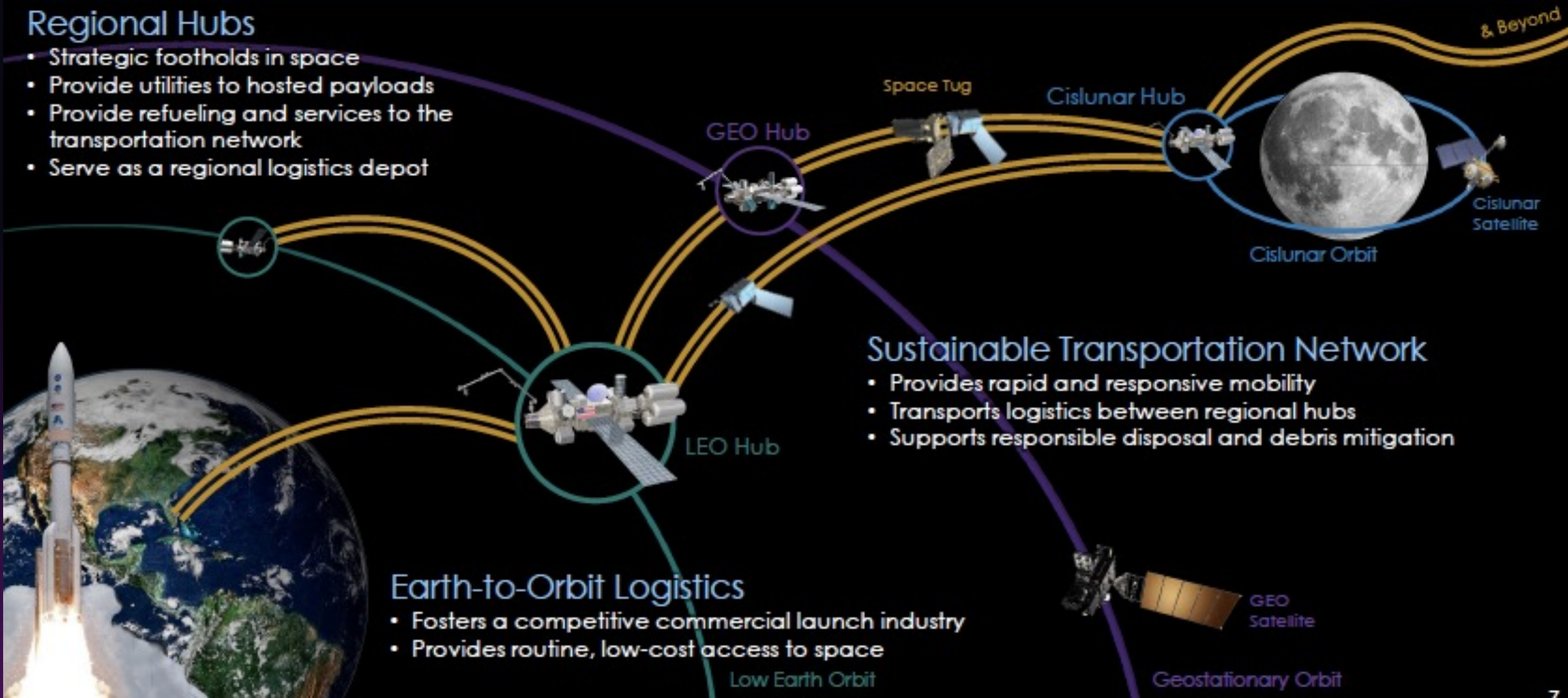






## Regional Hubs

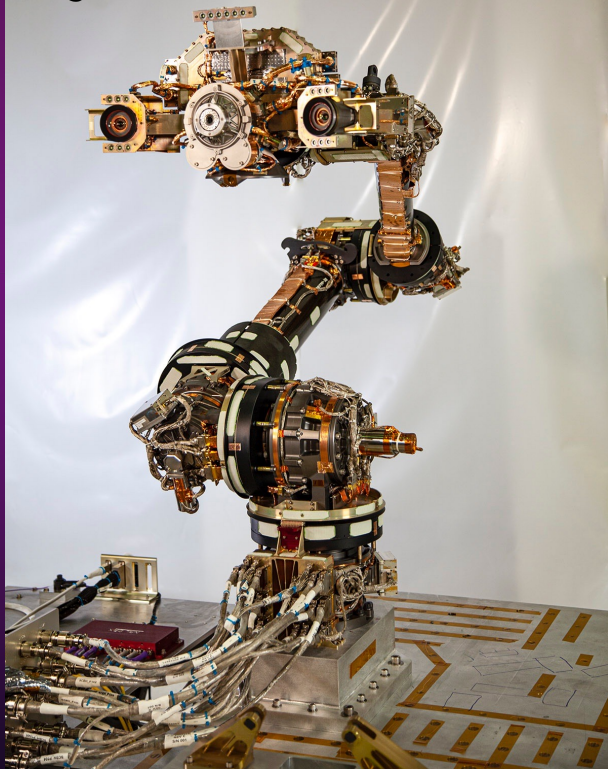
- Strategic footholds in space
- Provide utilities to hosted payloads
- Provide refueling and services to the transportation network
- Serve as a regional logistics depot





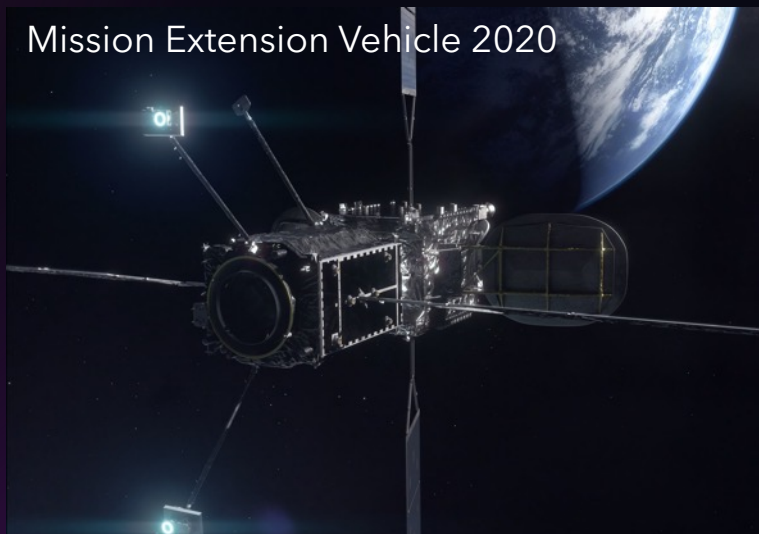
# The technology is in hand

Flight Robotic Arm for RSGS 2020



NRL

Mission Extension Vehicle 2020



Northrop Grumman

Orbital Express 2007

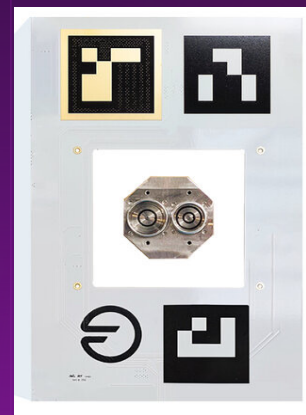


DARPA

Fluids interfaces



NASA GSFC



OrbitFab



iBOSS



# White House interest

- Months of work by an Interagency Working Group 2021-22 coordinated by the Office of Science and Technology Policy
- Now there is a **call for public comment** (published in the Federal Register)



## IN-SPACE SERVICING, ASSEMBLY, AND MANUFACTURING NATIONAL STRATEGY

*Product of the*  
IN-SPACE SERVICING, ASSEMBLY, AND MANUFACTURING  
INTERAGENCY WORKING GROUP  
*of the*  
NATIONAL SCIENCE & TECHNOLOGY COUNCIL

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# Space logistics market demand

## Civil

- Meteorology: continuity, growth
- Lunar habitats
- In-space assembled observatories
- Responsive resupply
- Climate monitoring platform
- International partners

## National security

- Maneuver without regret
- Eliminate obsolescence
- Outpace adversaries
- "Shell game"
- Developmental test
- "Unclassified classified satellites"
- Reconstitution

## Commercial

- GEO life extension
- GEO upgrades
- **Lunar resources**
- Hosting platforms
- In-space manufacture
- Private space stations
- Hardware qualification
- Entrepreneurial



# Space logistics and space resources

- Can a single scalable logistics system meet all or most resources needs?
- What are the necessary properties of such a system?
- How does the system enhance business opportunities across the resources community?

**Let us take the first step together to develop answers**

# Preparing a unified response

- Help shape the Space Superhighway to meet **your** logistics needs
- Questions for each lunar resources company:
  - **When** will you begin production?
  - What will your **production rate** be (MT/yr)?
  - **Where** will you sell your product?
  - What **unique logistics** needs do you have?
- Data will be rolled up, "anonymized" for OSTP
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Thank you for your participation!

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