

## MODELS FOR FACILITATING GOVERNMENT-FUNDED ACTIVITIES IN THE POST-ISS LEO ECOSYSTEM

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The International Space Station National Lab (ISSNL) was established through Congressional authority in 2005 and has been managed by a nonprofit called the Center for the Advancement of Science in Space (CASIS) since 2011 to support research, development, education, and commercial activities in low-Earth orbit (LEO). NASA leadership is considering next steps for microgravity and orbital activities in LEO in preparation for the retirement of the International Space Station (ISS) and transition to Commercial LEO Destinations (CLDs) in the 2030 timeframe. Specifically, our study team within the NASA Office of Technology, Policy, and Strategy addressed the question: **What are potential models for an ISS National Lab facilitating government-funded or subsidized activities on a commercial LEO platform after the transition of the ISS to one or more private platforms?**

To inform the trade space of potential models, we conducted over 40 discussions with stakeholders internal and external to NASA and reviewed over 35 documents related to LEO legislation, commercialization, models, and activities. Following the extensive literature review and discussions with diverse stakeholders, we defined and evaluated six models, in addition to the current ISSNL model. We assessed each model across three possible future scenarios (dynamic, steady, and limited growth of the commercial LEO market and activities) and across five stakeholder-driven model evaluation criteria (ability to meet NASA's needs, adaptability, opportunity for collaboration, market sustainability, and equity and accessibility). The six models in the future trade space were:

- Government Research Broker: Customizable research efforts on transport vehicles and CLDs
- Innovation Campus: Modern terrestrial campus with workforce focus
- Anchor Tenant: Long-term, substantial agreement for leasing space on a single CLD
- Fee for Service: Free market approach with NASA-sponsored grants and service/data buys
- Matchmaker: Neutral third-party connecting users to platforms
- Institute Network: Network of separate but related efforts to enable commercial scaling

The Government Research Broker model performed best across the scenarios, followed by Innovation Campus, Anchor Tenant, and Fee for Service. While Matchmaker and Institute Network exhibited positive aspects, the two models performed most favorably in future scenarios with well-established communities and markets. The six models presented in this study are representative of the potential trade space and are illustrative examples. NASA leadership can adjust models as desired to align to their priorities more closely by using combinations of the unique model features provided in our analysis. The optimal model is likely a combination of features from multiple models. Building upon this work to best position NASA and the diverse stakeholders of LEO activities for success post-ISS, further work will explore the near-term impact of preparing for the transition of the ISS to CLDs by identifying opportunities for modifying the current ISSNL-CASIS partnership.

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