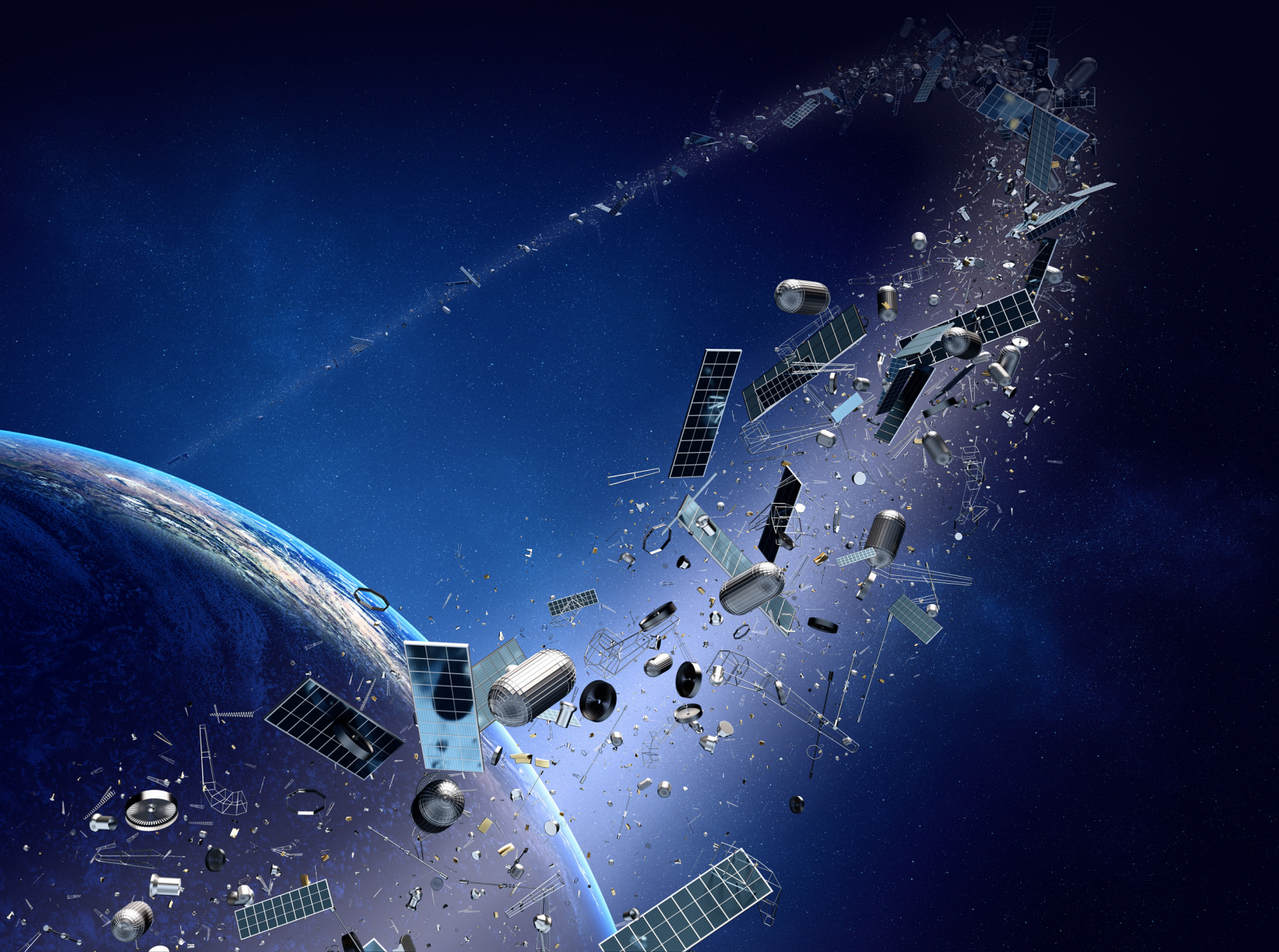


The U.S. Imperative for Mission Authorization and Supervision of Commercial Space Activities

December 2021



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SUMMARY

American companies are developing innovative groundbreaking space activities, such as on-orbit servicing, space-based manufacturing platforms, and commercially developed space stations, some of which expect to be operational within the next two years with more following in the next decade. According to “The Space Report 2021” published by the Space Foundation, the global space economy increased from \$428 billion in 2019 to \$447 billion in 2020. In addition, commercial space activities grew 6.6% to nearly \$357 billion in 2020, representing nearly 80% of the space economy. A civil space traffic management and coordination system is necessary as that type of growth will only continue.

Recognizing the importance of the emerging space economy, the Obama Administration¹, the Trump Administration,² and the Biden Administration³ recognized the need to initiate a government process for authorizing and supervising the new commercial activities in space to provide stability and international top cover, both critical for U.S. companies to be successful in their space endeavors. Unfortunately, very little action has yet been taken, even as the private sector has continued to mature and implement their projects. Consequently, there is an urgent need to identify the U.S. government agency and clarify processes for jurisdiction, control, authorization, and continuing supervision for these new types of ventures to fulfill our national legal obligations as required per Article VI of the 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space (“Outer Space Treaty”). The Office of Space Commerce (OSC) in the Department of Commerce is the agency most suited to take on this responsibility.

BACKGROUND

The existing domestic arrangements for authorization and supervision of nongovernmental activities in outer space serve a range of vital national interests including public safety, safety of property, national security, and foreign policy. In addition, they have been established to fulfill U.S. obligations to the Outer Space Treaty. Per the tenets of the treaty all signatory nations have a legal obligation to:

“...bear international responsibility for national activities in outer space, including the Moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities, and for assuring that national activities are carried out in conformity with the provisions set forth in the present Treaty.”

Many spacefaring states discharge their obligation to ensure that national activities are carried out in conformity with the treaty through a general licensing approach for nongovernmental space activities. Likewise, the United States utilizes licenses to implement its international obligations and to safeguard public interests. Unlike many nations that created a single entity to oversee and supervise all space activities, the United States distributed authorities across agencies. The FAA has authorization for licensing launch and reentry, NOAA for remote sensing, and the FCC supervises communications to and from space. The U.S. government approach grew out of the organic emergence of space activities embarked on by the private sector; each new type of activity required a commensurate new authorization and supervisory function, which has historically been attached to an existing agency. This paradigm has been sufficient to date. However, the unprecedented energy, investment, and planned commercial space activities on the horizon far exceeds the ability of any of the existing licensing frameworks to address the U.S. government responsibilities under the Outer Space Treaty. In addition, the scale and breadth of potential activities requires a clear and predictable oversight process that ensures access to space while imposing minimal burdens on the private sector space industry. In 2020 alone, for example, there were a total of 114 orbital launches, 41 of which were purely commercial, involving 1282 total spacecraft; 40% of all small satellites launched in the last ten years launched in 2020⁴. These numbers will accelerate even more over the next few years.

The scope of proposed private sector endeavors in space is broad and includes:

› **New On-Orbit Activities**

Several companies have announced plans for new on-orbit activities including satellite life extension, active debris removal, satellite repair using robotic servicing, satellite refueling, in some cases using propellants derived from space resources, and commercial orbital habitats

› **Space Resource Utilization**

American companies have proposed extracting resources, such as rare elements, from the moon and asteroids, for use on Earth or in space to support deep space exploration and long-term human presence in space.

› **Missions Beyond Earth's Orbit**

Many companies have announced plans for commercial missions to the moon and Mars. Others have proposed technology demonstration missions to the moon, which would involve maneuvers on the lunar surface and operation of a lunar habitat.

CONCLUSIONS AND RECOMMENDATIONS

There is an urgent need for on-orbit and deep space authorization and supervision by a single agency, the Office of Space Commerce in the Department of Commerce, to ensure that U.S. companies promote the long-term sustainability of space. The OSC is uniquely positioned and has been designated as the appropriate government agency⁵ to help guide and develop the burgeoning economic sector in space. Its role includes not only the proposed mission authorization and supervision activity but also promoting safety by providing information and promoting coordination about ongoing on-orbit activities, using existing authorities to the maximum extent to minimize additional burdens to the industry, promoting the U.S. commercial space sector, and meeting U.S. obligations under international treaties. While the FAA, FCC, and NOAA can continue to license launch services, communications, and remote sensing to fulfill the U.S. obligations under the Outer Space Treaty for these activities, the OSC should be designated to focus on the authorization of new and emerging commercial space activities that fall outside those categories as well as coordinate across all government agencies to assure a consistent federal approach in the new space-based economic sphere.

Some tenets for the OSC to consider as it crafts the policies and procedures to authorize new and emerging commercial space activities include:

- › A thorough examination of a simplified Article VI compliance will support U.S. commercial space activity and reduce the uncertainty for innovators and investors by providing a clear and consistent foundation for business to operate within.
- › An open, transparent interagency process must take stock of the current regime; identify technical, legal, policy, and commercial gaps; and make policy recommendations.
- › Commercial space ventures must meet the highest industry standards and the U.S. government must close loopholes that allow flags of convenience to provide unfair competitive advantage against U.S. industry.
- › Analytical tools are needed that are fully defined, widely accepted, and readily available to analyze all risks associated with new commercial ventures, so that industry and the government are working on the same level.
- › At the international level, there is no immediate need for new treaties or to amend the current ones. What is needed is the enforcement of existing norms in international law and the elimination of obvious loopholes as related to authorization, control, jurisdiction, and supervision.
- › U.S. commercial operators should be required to be registered by a country that is a signatory to both the Registration and Liability conventions. This treaty structure creates economic incentives for countries to assess the risks and benefits for the future space enterprise. Countries that do not have the will or the capacity to employ the full registration process and perform the appropriate cost/benefit analysis will be prohibited to U.S. firms.
- › Clarity on authorization and supervision oversight will assist companies in fulfilling their fiduciary responsibilities to their investors to conduct due diligence in all aspects of the system development as it relates to domestic and international practices, regulations, and law.

The time for action is at hand. While the U.S. government has yet to act decisively on this issue despite comprehensive policy and legal work that has been completed by the last three administrations, U.S. businesses are moving forward with plans for on-orbit activities absent guiding principles for expected behavior. U.S. industry needs the stability and certainty that the designation of OSC as the authorizing and supervising agency for on-orbit and new private sector space ventures would provide. Furthermore, international discussions are taking shape on norms of behavior and technical standards absent a strong coherent voice representing U.S. interests. The U.S. government urgently needs to have a formally recognized agency that can engage internationally on behalf of the U.S. private sector on matters regarding the emerging space economy and space commerce. The Office of Space Commerce in the Department of Commerce should be that agency.

1 Letter dated April 4, 2016, from John P. Holdren, Director and Assistant to the President for Science and Technology Policy to Chairman John Thune of the Senate Committee on Commerce, Science and Transportation and Chairman of the House Armed Services Committee.

2 National Space Policy of the United States of America published December 9, 2020.

3 United States Space Priorities Framework, National Space Council Meeting, December 1, 2021.

4 Bryce 2020 Satellite Industry Snapshot.

5 51 U.S.C § 50702- U.S. Code

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