REMAKING U.S. REGULATION OF SPACE COMMERCE

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Issue Brief

The U.S. administration is planning to significantly enlarge the space portfolio of the U.S. Department of Commerce to help expand the nation's commercial space sector and accelerate its evolution. The reinvigoration of what traditionally has been a small office can start with providing adequate resources to carry out a space commerce strategic plan that has been in place for more than a decade. Additionally, the office is expected to regulate and facilitate an array of space activities that are emerging in the private sector. As a result, its range of responsibilities will include far more than just regulatory reform and space traffic management, the two topics that dominate current planning.

What's Old Is New Again

The latest strategic plan of the U.S. Department of Commerce (DOC) identifies space commerce as one of the important components of American economic leadership.[1] The prominent placement of space commerce as Strategic Objective 1.1, according to insiders, was done purposefully by Commerce Secretary Wilbur Ross. The strategic plan envisions DOC as "the lead federal agency for the advancement of commercial space activities" that will act "as an industry advocate within government, promoting commercial space opportunities." The intent is to ensure that the United States "is the world leader in space commerce" and will "remain the preferred destination for commercial space business activity." This strategy is reinforced by a subsequent presidential directive[2] and a reorganization proposal submitted to Congress by Secretary Ross.[a]

Although the level of attention is new, the department has been involved in commercial space activities through its Office of Space Commerce (OSC) since the late 1980s.[b] The expanded portfolio may seem overly ambitious given that OSC in recent years has had a very small staff and has been without a full-time director for a decade. But the basic requirements have been in place at least since OSC issued its strategic plan in 2007.[3] Some of the elements of that plan still resonate today:

- **Vision:** A robust and responsive U.S. industry that is the world leader in space commerce.
- **Mission statement:** Foster the conditions for the economic growth and technological advancement of the U.S. commercial space industry.

[a] The Ross proposal would create a Space Policy Advancing Commercial Enterprise (SPACE) Administration reporting directly to the Secretary. It would include OSC, the Office of Commercial Remote Sensing and Regulatory Affairs, and representatives from the Bureau of Industry and Security (BIS), the International Trade Administration (ITA), the National Institute of Standards and Technology (NIST), the National Oceanographic and Atmospheric Administration (NOAA), and the National Telecommunications and Information Administration (NTIA). Marcia Smith, "Ross to Create Department of Commerce SPACE Administration," *SpacePolicyOnline*, May 28, 2018 (https://spacepolicyonline.com/news/ross-to-create-department-of-commerce-space-administration/).

[b] From 1988-1996, OSC was the "Office of Space Commerce" within the Office of the Secretary of Commerce. From 1996-2005, it was the "Office of Air and Space Commercialization" and then the "Office of Space Commercialization" within the department's Technology Administration. It retained the latter name from 2005-2018 as a unit of NOAA's National Environmental Satellite Data and Information Service (NESDIS) (http://www.space.commerce.gov/law/office-of-space-commercialization/).

- **Functions:**
  - Seek the removal of legal, policy, and institutional impediments to space commerce.
  - Assist commercial space companies in their efforts to do business with the U.S. government and act as industry's advocate within the Executive Branch.
  - Increase U.S. government use of commercial space goods and services.
  - Reduce U.S. government competition with industry.
  - Promote growth in the export of space-related goods and services.

From this sample of the functions envisioned for OSC in 2007, we can see that today's focus on regulatory reform is nothing new, nor is the desire to increase government use of commercial systems, to grow the export market or to maintain world leadership in space commerce. But OSC was not given sufficient personnel, funding, or priority to meet the demands of its strategic plan. Tasks outlined in the plan—such as collection and analysis of industry and market data, sponsorship of workshops and seminars, and publication of a variety of reports—were not executed or were undertaken at minimal levels. If the administration and Congress remedy the resource problem, the office will have the opportunity to accomplish much of what is on today's agenda by following and expanding on an existing strategic plan.

New Challenges

Although the 2007 OSC strategic plan provides a fitting baseline for the expanded organization, there is much that needs to be added. As indicated above, the high priority of regulatory reform is already represented in the plan but another high-visibility concern on the administration's agenda—space traffic management—is not. Nor are a host of other topics that will become DOC's responsibility in the years ahead.

The administration's space commerce reorganization, as envisioned so far, keeps the U.S. Department of Transportation in charge of licensing and regulation of commercial launch and reentry, and the Federal Communications Commission retains its responsibility for regulating electromagnetic spectrum use. Everything else in the commercial development of space—a very broad and growing field—would be handled by a "one-stop shop" at DOC.[4]

Some duties of the reinvigorated office are obvious. It will absorb the commercial remote sensing licensing and regulation functions from the National Oceanic and Atmospheric Administration (NOAA). It will provide services in space surveillance and, eventually, space traffic management (STM), as announced by Vice President Mike Pence and Secretary Ross in April 2018[5] and directed by President Trump two months later.[6] For this function, the department will be climbing a steep learning curve, making it dependent for some time on other federal agencies and contractors with relevant expertise. STM is likely to command much of the spotlight due to its importance and urgency in an era of growing space activity and concerns about orbital debris. But it is just one piece of a portfolio that could expand dramatically in the not-too-distant future.

As pointed out in another paper in this series,[7] it is important to recognize the breadth and diversity of the activities—technical, legal, and regulatory—required to establish a space infrastructure. The full extent of what it will take to provide the backbone of a sustainable space economy can only be estimated at this stage. The discussion below briefly highlights key areas that will require the attention of DOC—in some cases very soon—if the current one-stop-shop plan is established and maintained.

Inter-orbital transportation is not addressed in the statutory authority granted to the U.S. Department of Transportation, which is responsible only for launch and reentry. As a result, spaceflight is the only form of transportation in which the beginning and the end are covered by regulations and behavioral norms, but not the journey in between. As Earth orbital space becomes more congested, and increased use of maneuverable assets makes space tracking less predictable, DOC will need to exercise its leadership of civilian STM to establish order in coordination with international counterparts. The near-term plans of multiple non-government and non-U.S. entities to initiate **on-orbit servicing** will soon make this a

pressing issue. Fortunately, industry and government coalitions already have formed to begin developing consensus standards.[8]

Private-sector space stations are expected to pick up where the International Space Station leaves off after 2025. But some ventures may appear sooner, offering habitable volume on orbit for research and other purposes.[c] The operation of such stations will have implications for both space traffic and human safety. Government-sanctioned regulations or standards may prove essential to gaining customer and investor confidence and obtaining insurance coverage. In addition to safe orbital operations, other concerns include the onboard environment (e.g., air quality, pressure, and temperature) and emergency procedures (e.g., evacuation plans and standardization of airlocks for rescue).

The **exploitation of extraterrestrial resources and locations** entails multiple unsettled issues that will compel DOC to work closely with the U.S. Department of State and NASA. The placement of private installations on celestial bodies and the extraction of material resources for profit prompt questions about property rights and perceived claims of national sovereignty in violation of international law. Additionally, these circumstances elicit concerns about planetary protection (i.e., forward and backward contamination) as non-government entities begin sending missions to solar system bodies. Should they follow protocols similar to those used by government science missions? Lunar and asteroid missions may be of less concern due to their low probability of harboring life, but private-sector missions to Mars already have been proposed, and other solar system locations may follow.

A variety of **utilities in cislunar space** may emerge to serve multiple missions and customers. Possibilities include storage depots for liquid fuels; solar energy collection and distribution systems, expansion of communications and navigation systems to better serve all of cislunar space; and realtime detection and reporting systems for space weather, especially to protect inhabited facilities from hazards such as solar flares.

DOC can expect to be involved, and often in the lead on behalf of the U.S. government, in the facilitation, promotion, regulation, and licensing of these and other space-related developments. In many cases, the actions taken will be breaking new ground and setting precedents. DOC will need to call upon expertise in numerous disciplines that currently does not exist within the agency.

Execution of an implementation plan for the nation's expanded space commerce strategy will require a time frame measured in years, not months. Although today's perspective may be that regulatory reform is the first priority on DOC's space agenda, in the long run it is a small initial effort in a much grander enterprise.

References

1 "U.S. Department of Commerce Strategic Plan, 2018-2022: Helping the Economy Grow," p. 6, https://www.commerce.gov/sites/commerce.gov/files/us_department_of_commerce_2018-2022_strategic_plan.pdf. The relevant language is presented in Appendix 1 of this paper.

2 Trump, D. J., "Space Policy Directive-2: Streamlining Regulations on Commercial Use of Space," May 24, 2018, https://www.whitehouse.gov/presidential-actions/space-policy-directive-2-streamlining-regulations-commercial-use-space/.

3 "U.S. Leadership in Space Commerce: Office of Space Commercialization Strategic Plan," March 2007, http://www.space.commerce.gov/wp-content/uploads/NOAA-2007-Space-Commercialization-Strategic-Plan-6-pages.pdf. The complete text of the document is presented in Appendix 2 of this paper.

4 Smith, M., "Ross to Create Department of Commerce SPACE Administration," SpacePolicyOnline, May 28, 2018, https://spacepolicyonline.com/news/ross-to-create-department-of-commerce-space-administration/.

5 Department of Commerce, Office of Space Commerce, "Vice President, Secretary Ross Announce New Space Traffic Management Policy," April 23, 2018, http://www.space.commerce.gov/vice-president-secretary-ross-announce-new-space-traffic-management-policy/.

6 Trump, D. J., "Space Policy Directive-3: National Space Traffic Management Policy," June 18, 2018, https://www.whitehouse.gov/presidential-actions/space-

[c] Bigelow Aerospace, which has an inflatable module attached to the International Space Station, is a prominent example of a potentially near-term commercial space station (http://www.bigelowaerospace.com/).

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[7] Vedda, J. A., "Cislunar Development: What to Build – and Why," Aerospace Corporation, April 2018, http://aerospace.wpengine.netdna-cdn.com/wp-content/uploads/2018/04/CislunarDevelopment.pdf.

[8] Reesman, R., and A. Rogers, "Getting in Your Space: Learning from Past Rendezvous and Proximity Operations," Aerospace Corporation, May 2018, http://aerospace.wpengine.netdna-cdn.com/wp-content/uploads/2018/05/GettingInYourSpace.pdf.

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