Satellite Industry Association[1] Earth Observation Forum Working Group
White Paper - National Security Policy Directive 27 and U.S. Commercial Remote Sensing Policy

Background

U.S. Commercial Remote Sensing (CRS) Policy (National Security Policy Directive (NSPD-27)), was implemented in 2003 to solidify American leadership in remote sensing activities and enhance the U.S remote sensing industry as a means to secure national security and foreign policy objectives. The policy also aimed to promote economic growth, environmental stewardship, and scientific excellence. While the policy goals outlined in NSPD-27 are still relevant, the U.S. finds itself in a very different strategic, technological, and economic environment than when the directive was adopted nearly two decades ago. This paper outlines those shifts and offers several recommendations for any update to NSPD-27 that reflect those changes.

The United States is now entering a period of strategic competition with China and Russia. Military might alone will not win the battles of the future. It is the combination of superior U.S. technology, a flourishing innovative ecosystem, and strength of our partnerships -- enabled by forward-leaning policies, policy implementation, and resources -- that will offer a strategic and military advantage in the years ahead.

However, that advantage is not assured in space. China has designated space as a top industrial priority,[2]and U.S. CRS companies are losing ground to foreign competitors.[3] The proliferation of space technologies and growth in the global space economy -- now worth over $386 billion[4] -- is fueling numerous countries and private companies alike to start their own space programs, vastly increasing the number of players, and thus competition, on the global stage. Over the next four to five years, the National Geospatial-Intelligence Agency (NGA) expects to see 500 remote sensing satellites launched each year[5]. Yet NGA also assesses that foreign CRS competitors are leading the U.S. in certain areas, such as synthetic aperture radar and multispectral imagery. Absent effective CRS policy and policy implementation, there is a real risk that U.S. companies will be further displaced.

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[1] SIA Executive Members include: Amazon; The Boeing Company; DIRECTV; EchoStar Corporation; HawkEye 360; Intelsat S.A.; Iridium Communications Inc.; Kratos Defense & Security Solutions; Ligado Networks; Lockheed Martin Corporation; OneWeb; Planet; SES Americom, Inc.; Space Exploration Technologies Corp.; Spire Global Inc.; and Viasat Inc. SIA Associate Members include: ABS US Corp.; The Aerospace Corporation; Artel, LLC; AST & Science; Astranis Space Technologies Corp.; Aurora Insight; Blue Origin; Comtech; Eutelsat America Corp.; ExoAnalytic Solutions; Hughes; Inmarsat, Inc.; Kymeta Corporation; Leonardo DRS; Lynk; Omnispace; OneWeb Technologies; Ovzon; Panasonic Avionics Corporation; Peraton; SpaceLink; Telesat Canada; ULA; UltiSat and XTAR, LLC.

[2] "'Made in China 2025' Industrial Policies: Issues for Congress," Congressional Research Service, August 11, 2020.

[3] https://spacenews.com/analysis-china-europe-pulling-ahead-of-u-s-in-commercial-satellite-imaging/

[4] Satellite Industry Association, 2022 State of the Satellite Industry Report

[5] https://spacenews.com/nga-annual-olymmpics/

Another marked change since the inception of NSPD-27 is the private capital flowing into commercial space to fund satellite development, launch, and operations. In 2020 alone, $7.8 billion was invested in start-up space companies. Such investments stand in stark contrast to 2003, when the U.S. Government (USG) was needed as an "anchor tenant" to keep commercial imagery companies solvent. However, the same dependence on the USG will happen again without a modernized export policy that enables greater international purchase of U.S. CRS data and products.

Given these changes in the competitive landscape, leveraging commercial capabilities is critically important for United States security. Commercial satellite remote sensing capabilities and the resulting data can be used to augment existing government systems, provide unclassified and shareable insights, and decrease risk assumed by the USG given the investment of extensive private capital in commercial companies. Having U.S. industry at the forefront is a true competitive advantage by:

1. Providing valuable redundancy for U.S. capabilities (not just augmentation) that creates justified foreign reliance on U.S. commercial capabilities, not those of our adversaries;
2. Sparking capital flows that create high paying and innovative jobs here in the U.S.;
3. Expanding the bench of American STEM talent, and helping build capacity of our allies and partners; and
4. Enabling new technologies and capabilities for environmental monitoring and weather observations to understand our changing climate and protect society.

While national policy has acknowledged the many benefits of commercial remote sensing and has encouraged the USG to leverage these services to the maximum extent practicable,[6] its implementation often falls short. In budgeting processes, procurement of commercial services is not prioritized and consistently goes underfunded. Regulatory burdens and lengthy export control processes in some cases limit the ability of commercial remote sensing providers to efficiently conduct business both domestically and internationally, often disadvantaging them against foreign competitors. Finally, NSPD-27 focused only on imagery, failing to imagine new and emergent commercial remote sensing phenomenologies, such as radio frequency (RF) mapping, and monitoring emissions which contribute to climate change.

In sum, the strategic landscape and technological capabilities of U.S. industry and our adversaries is vastly different today than when NSPD-27 was written. Similarly, the CRS industry and overall space economy has grown and changed substantially in the 19 years since NSPD-27 was enacted. Without a more efficient review process, U.S. companies will continue to lose business to foreign competitors. The U.S. commercial space sector, particularly novel capabilities like RF, is a competitive advantage over our adversaries but requires active leadership and a modernized NSPD-27 policy to maximize the benefits of commercial space for U.S. national security, our broader economic prosperity, and environmental stewardship. As such, the Satellite Industry Association (SIA) has a series of recommendations to consider when updating the 2003 U.S. Commercial Remote Sensing Policy.

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[6] 51 U.S.C. 20102(c) states: Congress declares that the general welfare of the United States requires that the Administration seek and encourage, to the maximum extent possible, the fullest commercial use of space. In addition, in P.L. 116-283, Sec. 1612 (Mac Thornberry National Defense Authorization Act for FY21), Congress directs that the DoD and ODNI shall "leverage, to the extent practicable, the capabilities of the industry of the United States, including through the use of domestic commercial geospatial-intelligence services and acquisition of domestic commercial satellite imagery."

Recommendations

Recommendation #1:

Given extensive changes to the U.S. and global space economy, particularly within the CRS industry, and increased competition with emergent competitors, it is critical to maintain American innovation with forward leaning national policy, transparent processes, timely decision making, and proper execution and follow-through on national policies.

Accordingly, we recommend emphasizing that commercial space innovation is a vibrant part of America's innovation ecosystem and is essential to the U.S. maintaining a competitive advantage in space. The competitive landscape and global proliferation of space technology necessitates more forward-leaning national policy on CRS space capabilities, in areas ranging from its role in architecture resiliency, to acquisition and resourcing matched to the speed of technology innovation, to timely export reviews. Create mechanisms in policy that facilitate more effective implementation of policy direction (e.g., periodic reviews by the Executive Office of the President, firm direction provided from the Office of Management and Budget to Departments and Agencies in the annual President's budget request process, etc.).

Recommendation #2:

We recommend the policy reflect the new and emergent areas of remote sensing being commercialized that were not imagined two decades ago. Specifically, the emergence of radio frequency remote sensing, as well as the use of hyperspectral and short-wave infrared remote sensing to monitor emissions which contribute to climate change which is not currently addressed in NSPD-27.

Recommendation #3:

The "Fundamental Goal" of NSPD-27 is to "advance and protect U.S. national security and foreign policy interests by maintaining the nation's leadership in remote sensing space activities, and by sustaining and enhancing the U.S. remote sensing industry." We believe that this goal should be expanded to address the increasing nexus between economic and national security interests. U.S. space technology and a strong commercial space innovation base are a competitive advantage for the United States. They support a more comprehensive national policy that advances and protects U.S. national security, foreign policy, and economic interests.

Therefore, we recommend updating the existing fundamental goal to include economic leadership and a strong commercial space innovation industrial base. For example, a new goal could be: "For the U.S. commercial remote sensing industry to lead globally and advance U.S. national interests, including national security, foreign policy, and economic interests."

Recommendation #4:

NSPD-27 is intended to "Enable U.S. industry to compete successfully as a provider of remote sensing space capabilities for foreign governments and foreign commercial users." Export controls are an important policy matter addressed in NSPD-27. The policy direction in NSPD-27 states: "[Export] license applications for U.S. commercial remote sensing space exports shall be considered favorably to the extent permitted by existing law, regulations and policy when such exports support [U.S. national security, foreign policy, and economic

interests].” In principle, this policy direction is sound. In practice, however, its execution has not provided timely resolution of export control license applications and, too often, has not recognized technological advancements of these capabilities. Furthermore, since 2003, the proliferation of CRS technology, know-how, and capabilities —particularly outside of the U.S.—has resulted in a much more globally competitive and ubiquitous commercial remote sensing market, and the use of CRS information has spanned far beyond traditional military and intelligence uses to the benefit of civil, environmental, humanitarian, and commercial applications.[7]

As a policy principle, the export of U.S. commercial remote sensing products and data of all phenomenologies should be presumed exportable as information that is not controlled either by the Export Administration Regulations (EAR) or the International Traffic in Arms Regulations (ITAR) absent a clearly evidenced high national security risk to a U.S. military or intelligence advantage that cannot be mitigated in any way other than the application of the export controls of the ITAR of the Department of State.

Furthermore, traditionally in the regulation of CRS exports, there has historically been a recognition of the distinction in the application of export controls between the satellite equipment and technology used to sense remotely and the data or derived products generated by those satellites (which is information related to the Earth or whatever is being sensed, i.e., not information relating to the satellites themselves). We recommend that this long-standing policy distinction be reinforced and extended to include commercial RF remote sensing data. Also, we recommend the Administration reinstate the National Security Council export appeal process to resolve interagency disagreements and set clear deadlines for adjudication of all export matters.

NSPD-27 should be revised to remove the current policy requirement for “sensitive or advanced remote sensing exports” to have a government-to-government agreement (GTGA) in place prior to the approval of necessary export licenses. As noted in the policy directive, GTGAs can be effective tools to enable “end-use and retransfer assurances that protect U.S. controlled technical data, and broader national security and foreign policy needs.” However, the negotiation of binding GTGAs can deter foreign customers, embolden foreign competition, and result in unnecessary delays that affect U.S. competitiveness in this sector. We concur that the USG has legitimate interests in working with foreign government customers to align remote sensing capabilities and protect important data, but as envisioned in NSPD-27, there are “other acceptable arrangement[s]” that can provide similar assurances, including an exchange of diplomatic notes or official memorandum of understanding that address these concerns.

<u>Recommendation #5:</u>

NSPD-27 encourages U.S. companies “to build and operate commercial remote sensing space systems whose operational capabilities, products, and services are superior to any current or planned foreign commercial systems.” However, the current licensing practice for CRS systems imposes stringent “temporary” conditions on advanced Tier 3 operations that have capabilities superior to foreign competitors, including restrictions on how often Tier 3 CRS providers can image certain sensitive locations. These conditions, including “rapid revisit”

[7] A market study by Global Industry Analysts Inc., https://www.strategyr.com/market-report-satellite-remote-sensing-forecasts-global-industry-analysts-inc.asp, indicates that China has the fastest growing remote sensing capabilities.

conditions, can be imposed for up to three years, or even longer if requested by the Secretary of State or Secretary of Defense.

Although we understand the need to protect national security interests, we recommend that NSPD-27 take the position of disfavoring restrictions on a CRS system's ability to frequently image locations of global or regional interest. Such restrictions discourage commercial innovation and the dissemination of CRS products of great scientific and humanitarian value and should not be imposed or, if imposed, should be strictly time-limited and should expressly allow frequent imaging of locations that are of global or regional interest for scientific or humanitarian reasons.