

# National Security And The Commercial Space Sector: Part 2

By **Jeff Chiow and Skip Smith** (May 31, 2024)

The U.S. Department of Defense and its newest service branch, the U.S. Space Force, have published their strategies to integrate commercial space companies' innovative technologies and capabilities into national security plans, including through hybrid government, commercial and allied space architectures.

The DOD published its "Commercial Space Integration Strategy" on April 2.

A week later, the U.S. Space Force released its complementary "Commercial Space Strategy: Accelerating the Purposeful Pursuit of Hybrid Space Architectures."

Beyond the strategic guidance they offer, these documents confirm that space is critically important to U.S. national and economic security and that a robust commercial space sector is essential to both.

Part one of this two-part article discussed the rise of the commercial space sector and the DOD's strategy to leverage commercial innovation and production capabilities.

Part two will highlight the Space Force's four implementing lines of effort — including its specific demand signal to industry — and finish with a discussion of the legal, regulatory, and practical barriers the DOD will need to address to harness the innovative and productive capacity of commercial space actors.

Building on the DOD strategy, including its four guiding principles of balance, interoperability, resilience and responsible conduct, the Space Force strategy commits to integrate a mix of organic, allied and commercial space solutions to build a hybrid architecture that is greater than the sum of its parts.

It seeks to harness the commercial sector's innovation, scalable production and rapid technology refresh rates to strengthen deterrence and support military capabilities in times of peace and war.

Beyond simply buying commercial products and services, the Space Force touts the benefits of job creation and of the U.S. being the country of choice for international space investment.

In World War II and the Cold War, a strategic advantage for the U.S. was the productive capacity of its private industry and that of its allies.

By stimulating a robust space industrial base that attracts foreign capital, the U.S. can generate an enduring advantage against its key competitors in space, China and Russia.

In summarizing its purpose, the Space Force strategy outlines a new mindset and approach, describing proposal evaluation criteria, prioritizing missions where commercial space is



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desired and defining terms to enhance collaboration.

The strategy sets out four criteria that will inform Space Force decisions to leverage commercial space:

- Does the identified capability, good or service have operational utility, i.e. does it meet an operational need of the Space Force or its operational partners?
- In terms of cost to acquire, does it provide sufficient value to expend Space Force resources?
- Is the product or service resilient by design?
- How long will it take for the Space Force to field and see a benefit?

Much of the Space Force strategy spells out prioritized opportunities for industry. In particular, the strategy highlights cross-cutting technological capabilities that may be supplied by entities that are not directly focused on the space industry.

Concerning barriers to entry, the Space Force says it will update processes to ease integration as much as possible. And beyond simply buying for urgent operational needs, the Space Force Strategy commits to support a broad industrial base with its future funding requests.

### **Space Force Strategy Goals**

The strategy also describes desired goals for transparency, integration, collaboration and a cultural shift away from building and toward buying. It also says the Space Force will include commercial partners and solutions in capabilities it offers to combatant commanders, and declares that budget requests must be realigned and reprioritized to fully support hybrid architectures.

To achieve these goals, the Space Force strategy sets out four lines of effort:

- "Collaborative Transparency";
- "Operational and Technical Integration";
- "Risk Management"; and
- "Secure the Future."

### ***Collaborative Transparency***

The first line of effort, titled "Collaborative Transparency," is all about the Space Force learning as much as it can about the commercial space sector's innovative culture, shorter development timelines and array of offerings.

This is to be accomplished by outreach with industry associations, think tanks, academia and industry members themselves. It will also involve Space Force warfighters, i.e. guardians integrating with commercial sector companies to build a mutual understanding of evolving requirements and possible solutions.

When considering force design, the Space Force strategy vows to "identify requirements

that can, should, and will be met by commercial space solutions."

***Operational and Technical Integration***

The Space Force strategy's second line of effort, titled "Operational and Technical Integration," identifies specific mission areas for which Space Force is seeking commercial support, and its priorities among them, which it describes as its demand signal to industry.

Within each mission area, the Space Force strategy further specifies the minimum capabilities it will require the commercial sector to support.

The table below organizes these mission areas and specific requests according to the Space Force's stated priorities:

Priority Level	Mission Area	Description	First Targets for Commercial Integration
1	Tactical Surveillance, Reconnaissance and Tracking (TacSRT)	Space-enabled operational information about adversary military force capability, composition, and disposition, as well as positional and inertial data relevant to planning and operations in every domain.	<ul style="list-style-type: none"> <li>Broad surveillance services, planning products, data, transmission and fusion, and analytic capabilities from commercial sector.</li> <li>Space Force will continue to partner with Intelligence Community to leverage existing capabilities to ensure no duplicative effort.</li> </ul>
2	Space-based Environmental Monitoring (SBEM)	Sensing, characterizing, and exploiting the natural environment from space-based platforms.	<ul style="list-style-type: none"> <li>Capability to characterize both terrestrial and space environments to improve resilience of SBEM architectures, inform warfighting planners, and improve resilience of military systems to deliver warfighting effects and avoid operational surprise.</li> </ul>
3	Positioning, Navigation and Timing (PNT)	Providing precise four-dimensional positioning capability, navigation options, and a highly accurate time reference for the Joint Force.	<ul style="list-style-type: none"> <li>PNT capabilities to enable operational resilience across the Joint Force and Allies and partners.</li> <li>Space Force will test and evaluate to inform utilization across the spectrum of conflict.</li> </ul>
4	Space Access, Mobility and Logistics (SAML)	Supporting Joint space operations sustainment through spacelift, force reconstitution, maintenance, and logistics of space assets.	<ul style="list-style-type: none"> <li>Launch services, flexible launch options, in-space servicing and tactically responsive capabilities that can be tested, experimented with and integrated into future missions.</li> <li>Build on the National Security Space Launch program, interoperability baseline with Allies and partners, and provide sustainability as part of Space Force generation (SPAFORGEN) process.</li> </ul>
5	Satellite Communications (SATCOM)	Operation of spacecraft constellations that support beyond-line-of-sight communications critical to establishing command and control, data transport, and reach back for the worldwide Joint Force.	<ul style="list-style-type: none"> <li>Improved data transport speed, capacity, agility, flexibility, reliability and/or resilience with emerging technologies to maintain competitive endurance.</li> <li>System agnostic, multiband, multi-orbit, machine-to-machine for easy integration</li> <li>Integrate proliferated commercial networks into hybrid architectures and offset future government-owned investments.</li> </ul>
6	Space Domain Awareness (SDA)	Timely, relevant, and actionable understanding of the operational environment to plan, integrate, execute, and assess space operations.	<ul style="list-style-type: none"> <li>Commercial capabilities that contribute to the holistic generation of space domain awareness.</li> </ul>
7	Cyberspace Operations	Ensuring the security and integrity of space systems through defensive cyberspace operations and the DOD information network operations.	<ul style="list-style-type: none"> <li>Provide mission assurance across all ground, link and space info. segments.</li> <li>Enable digital force by making data visible, accessible, understandable, linked, trustworthy, interoperable and secure.</li> <li>Bold changes and technology consistent with the DOD Zero Trust Framework and DOD Data, Analytics and AI Adoption Strategy.</li> <li>Enduring partnerships and capabilities to enable a future of improved awareness and protection of cyberspace with Allies and partners.</li> </ul>
8	Command and Control (C2)	Exercise of authority and direction by a properly designated commander over assigned and attached forces in the accomplishment of the mission.	<ul style="list-style-type: none"> <li>Capabilities that increase C2 capacity and capability.</li> <li>Prioritize dynamic technology (multi-band) to allow for delivery of resilient data management, decision support tools, planning support, and secure global communications to the Joint Force to avoid operational surprise and deny adversary first-mover advantage.</li> </ul>

In addition to continued further integration of commercial satellite communications and space domain awareness capabilities, the Space Force seeks:

- New commercial integration in tactical surveillance, reconnaissance and tracking to track and characterize military adversaries;
- Security assertion markup language to provide tactically responsive and sustainable space capabilities;
- Space-based environmental monitoring to improve awareness of space, terrestrial weather and positioning;
- And navigation and timing to ensure the ability to continue operations in GPS-denied scenarios.

Beyond these specific commercial space capabilities, the Space Force strategy indicates there are significant opportunities for companies of all types and sizes to provide valuable cross-cutting capabilities, which it calls mission enablers.

The Space Force specifically seeks hybrid solutions that span multiple missions and are fundamental to conducting space operations, such as: constellation management; standard user interfaces for satellite telemetry, tracking and commanding; decision support software and tools; rapid prototyping; artificial intelligence; data management; ground support; and modeling and simulation.

Institutional integration of these identified and desired commercial capabilities will require updates to Space Force doctrine, training, acquisition, leadership education and personnel structures, among other things. The Space Force says its planning, programming, budgeting and execution processes will include more commercial space solutions.

Funding will be allocated based on the strategic importance and urgency of missions, with priority given to mission areas critical for enhancing national security.

Testing and training to support integration is also a significant priority. The strategy envisions commercial test and training services, such as virtual or synthetic orbital ranges populated with red and blue forces.

### ***Risk Management***

The third line of effort, titled "Risk Management," is vitally important to commercial space actors, but receives less than a half-page of treatment in the Space Force strategy.

Companies are told they must accept the inherent risk of employing solutions in support of military operations and take actions to protect their capabilities, including in wartime. The Space Force will aid in identifying risks and providing actionable, timely risk mitigation data.

The Space Force acknowledges it must establish a process to share threat information, including space domain awareness and cybersecurity threat information at multiple classification levels.

In this regard, the Space Force says it "will work with the DOD to mitigate barriers including

overclassification, clearance processes, and cleared facility access to establish scalable procedures for unclassified communications with the commercial space sector."

### ***Secure the Future***

For the fourth line of effort, titled "Secure the Future," the Space Force will prioritize emerging technologies with the potential to support joint and combined forces now and in the future. It will establish a process to assess commercial offerings and identify capabilities on operationally-relevant timelines.

To better understand commercial capabilities, the Space Force will continue to partner with SpaceWERX, AFWERX, the Defense Innovation Unit and others to connect with the industrial base.

The DOD's proposed budget includes a significant increase for the Innovation Unit, an entity with a strong track record of developing promising commercial technologies for military uses.

### **Analysis**

Together the DOD and Space Force strategies confirm the importance of the commercial space sector to national and economic security.

They provide information useful to industry about DOD and Space Force priorities, and they identify practical barriers to the enhanced integration of commercial space capabilities that the DOD desires.

Unfortunately, there is very little attention to overcoming barriers to integration in either agency's strategy document beyond identifying the problems.

The DOD maintains it will use norms and standards, threat information sharing and financial protection mechanisms to promote the security of commercial solutions. But the Space Force strategy fails to specifically address financial protection mechanisms.

And as to threat information sharing for risk mitigation, the Space Force strategy provides only that the Space Force will work on solutions to serious barriers like overclassification and other regulatory issues with the DOD.

If commercial actors cannot get information without a clearance and cannot get a clearance without a contract, this friction and opacity will frustrate the DOD's desired integration.

If commercial actors get no assistance navigating a fragmented regulatory system involving the Federal Aviation Administration, the Federal Communications Commission and the National Oceanic and Atmospheric Administration, in addition to the DOD, the desired integration will be delayed.

A step in the right direction is the recently announced Commercial Augmentation Space Reserve.[1] This program will provide compensation and access to threat intelligence to companies with products or services the military identifies as essential to operations, and that have the surge capacity to support the DOD in potential wartime scenarios.

The products or services will be integrated into military infrastructure. Commercial Augmentation Space Reserve contracts could be awarded as soon as this year.

Also being discussed is the concept of a civil reserve space fleet similar to the Civil Reserve Air Fleet, which could provide additional capacity in a time of war. To be effective, integration would need to occur well before any potential armed conflict.

Engagement with industry and laying out DOD priorities are significant steps in the right direction. They will be insufficient, however, if equal attention is not given to specific methods and policies that address practical barriers to information sharing, which impedes the DOD's ability to attract and integrate innovative commercial actors.

Commercial integration in support of national security in space will require substantial institutional changes and leaders who ensure the strategy stays in focus. The strategy documents have articulated the DOD's intent and informed commercial actors about what the DOD's priorities are.

It will take significant multidisciplinary cooperation within and across the DOD, other federal agencies and Congress to set the conditions for success by enabling the DOD to share threat information, at scale, with those commercial entities whose capabilities the DOD seeks to leverage.

Public reports quoting DOD leaders suggest the pace of Space Race 2.0 is accelerating.[2] The DOD has decided its best chance of winning is to unleash the productive capacity of U.S. and allied commercial space companies.

The next year, in which much attention will be devoted to the U.S. election, will be a crucial test of whether this course change can be carried out as envisioned.

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[1] SpaceNews, 19 May 2024, Pentagon to forge deeper ties with space industry in "first-of-its-kind" program.

[2] [https://www.nytimes.com/2024/05/17/us/politics/pentagon-space-military-russia-china.html?unlocked\\_article\\_code=1.tU0.2kpx.pveaqdLeY0GK&smid=url-share](https://www.nytimes.com/2024/05/17/us/politics/pentagon-space-military-russia-china.html?unlocked_article_code=1.tU0.2kpx.pveaqdLeY0GK&smid=url-share)