



Terms of Reference

State of the Space Industrial Base 2020: Virtual Solutions Workshop

Critical Actions to Sustain US Economic & Military Leadership in Space

Save the Date

Dates: 4 - 7 May, 2020

Location: Virtual teleconference

Goal

In light of the great power competition shaping the first half of the 21st century, identify actions for the DoD to undertake or champion in the near, mid-, and long-term necessary to sustain both US military and economic leadership in the space domain.

Specific Objectives

1. Establish implementable recommendations for defense policy and actions to ensure the maintenance and expansion of the US space industrial base to meet national defense needs.
2. Establish these defense policies and actions in the context of the larger set of implementable whole-of-government policies and actions required to guarantee the US space industrial base needed to ensure a space future supporting US national power.
3. Provide particular focus on short-term recommendations and actions to preserve and expand the US space industrial base in light of the disruption to the overall US economy and particular to the Space Industrial base by the COVID 19 virus pandemic.

¹ Artist rendering: [Northrop Grumman](#)

Motivations

The US Space Industrial Base is a vital element to maintain and expand US space capabilities as an element of overall national power. There is a growing set of analyses that project:

1. Space as an ever increasing domain of human activity and an expanding source of commercial, civil and military national power.
2. Rapidly increasing competition in space across the civil, commercial and military domains that puts at risk US capabilities to maintain and increase US space power as needed to protect US national interests.

Specifically for national defense a strong US space industrial base is essential to:

1. Provide the military specific and general space capabilities.
2. Ensure the ability to defend increasingly critical civil and commercial space capabilities during conflict.
3. Ensure the ability to deny an adversary's commercial space capabilities during conflict to limit the adversary's warfighting capabilities.

Approach

1. This workshop builds on the analytical approach and results from the two AFSPC (now USSF) and the AFRL/DIU workshops and the recently released [National Space Policy](#). These have established the trends across civil, commercial and military space, the challenges these pose to maintenance and expansion of US space capabilities in support of overall national power and the broad strategic actions needed at the national level to address these trends and challenges. The overarching aim of the workshop is to perform the next level of decomposition of this problem for commercial space. The specific goals are:
 - a. To identify the key inflections that affect the trajectory of the future of overall and US commercial space.
 - b. To determine the specific actions within the defense community and more broadly across the US whole-of-government with the commercial space community to ensure a space future that guarantees the US the space capabilities and power to protect national interests.
2. The workshop will start with a summary of the new [National Space Strategy](#) and the findings and challenges from the three previous workshops. This will include review of the overall competitive environment the US will face in the future across the full range of future space rivals and adversaries. Participants will be provided a background package of information to minimize the need for detailed reviews or summaries during the workshop. Participants will also be provided a draft outline of the workshop report prior to the workshop for review and comment.

3. The workshop will explore the areas of commercial growth along the 7 lines of commercial activity and development in the approximate order of how we project they will grow in time. These are, across cis-lunar space and beyond:
 - a. Space information services – This area includes space communications/internet, PNT and the full range of earth observing functions which have commercial, civil and military applications. This encompasses the commercial development of the maximum exploitation of the electromagnetic spectrum to, in and from space for information services.
 - b. Space transportation & logistics – This area includes transport to, in and from space.
 - c. Human presence in space – This area includes human presence as part of exploration, space tourism and to support the full range of commercial space enterprises.
 - d. Space manufacturing – This area includes space manufactured for terrestrial markets and to provide space infrastructure and buildout of greater commercial space.
 - e. Resource extractions – This area includes extraction from the Moon and asteroids.
 - f. Space power - This area includes power in, across and from space.
 - g. Space policy and finance - This area includes near-, mid-, and long-term economic and financial policies that the U.S. government (and when appropriate, allies) could leverage to incubate nascent industries and ensure the long-term competitiveness of the commercial space sector.
4. The workshop is organized around these 7 areas with a workshop subgroup addressing each. Each of the subgroups addresses six questions.
 - a. What is the current state of US commercial capabilities and investments in the area?
 - b. What are the specific connections and implications for this area to the needs and responsibilities of national defense?
 - c. What are the present and future challenges to US commercial capabilities and investment in that area both technologically and competitively with other present and emerging space powers?
 - d. What are the key inflection points in terms of events or breakthroughs that will most affect US commercial capabilities and investment in this area?
 - e. What defense and overall government options are there to affect those events or accelerate those breakthroughs to the advantage of the US?
 - f. What decisions or actions can the national defense community and all-of-government in partnership with industry and academia take to affect these events or accelerate those breakthroughs to the advantage of the US (to include initiatives, public private partnerships, tax and trade policy)?

5. The workshop will devote a day each to address these questions in the near-, mid- and long terms. Near-term analysis will include the adverse economic, workforce and scheduling impacts of the COVID-19 outbreak to the health of the US space industrial base and actions that can be taken to address those impacts, and actions which might be implemented within the next budget cycles.
6. The workshop will have a day of plenary sessions to review the overall work of the subgroups, determine common actions across the areas and determine key recommendations and content for the report.
7. The workshop will conclude with an executive outbrief to a senior leader of the US Space Force. Ideally, the facilitator or a member of each workshop subgroup will have 5 minutes to briefly review their groups findings, actions and recommendations for the long-, mid- and near-term.

Terminology

Words matter, so to be clear in our messaging the follow definitions are used in the context of meeting the workshop objectives:

Civil Space	Within the U.S. government, civil space endeavors are managed primarily by NASA or NOAA, with input from other civil agencies.
Long-term	10 years
Mid-term	3 to 5 years
Near-term	Next 6 to 18 months
Space Economy	All public and private actors involved in developing and providing space-enabled products and services.
Space Industrial Base	The private-sector, industry-suppliers of technology, hardware, software, systems, data and financial and insurance capacities that grow the space economy to serve our nation's civilian, civil and national security interests.

Read Aheads

[State of the Space Industrial Base: Threats, Challenges and Actions](#): A Workshop to Address Challenges and Threats to the U.S. Space Industrial Base and Space Dominance, 30 May 2019

[The Future of Space 2060 & Implications for Strategy](#): Report on the Space Futures Workshop, 5 Sep 2019

[Space Commodities in Service of National Security](#). B. Cahan and T. Locke, 2018.

[China's Ambitions in Space - Contesting the Final Frontier](#). 2019 Report of the U.S.-China Economic and Security Commission.