How the US Space Industrial Base Can Address Great Power Competition
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How the US Space Industrial Base Can Address Great Power Competition

- The Threat of Great Power Competition and Loss of Technological Dominance Has Created a Compelling Case for Change
  - China Threat
    - More than Just Stealing and Copying Our Technology
    - The 4X Problem
  - Loss of Technological Dominance
    - 30 Years of Unilateral Restraint, Proliferation and Adversarial Catch-up
    - Manufacturing Decline – Laissez Faire Industrial Policy
    - Commercial R&D and Globalization
    - Allies: Niche Investments/ITAR Free Advances Foreign Space Industry
How the US Space Industrial Base Can Address Great Power Competition

- The Peacetime/Post Cold War US Defense Innovation Model is Inadequate to Meet the Threat
  - Government Directed
  - No Civil-Military Integration vs. China Military-Civilian Fusion
  - Time is Not a Variable
    - Requirements 2 Years
    - Budget 3 Years (POM and Appropriations)
    - Contracting 2 Years (GAO study)
    - Acquisition Process: 5000 Series – 10 Years
  - 90% Solutions Not in the Culture
How the US Space Industrial Base Can Address Great Power Competition

- US Needs a New Approach to Better Incentivize the Industrial Bases at its Disposal to Innovate on its Behalf
  - Five Industrial Bases
    - Government Labs – OCI/IP Concerns
    - Traditional Defense – FAR 15: Mired in Red Tape
    - Commercial – Decline of FAR 12: Commercial of a Type
    - Emerging Non-Traditional: OTA – No Path to Programs
    - Allied -- ITAR
How the US Space Industrial Base Can Address Great Power Competition

- 2015-17: Congress Establishes a New Innovation Framework and Pathways
  - Historically Threats Lead to Alternative Pathways – China Threat No Different
  - Time Based – Section 804 Middle Tier
    - Operational Prototyping/Rapid Fielding – 90% Solutions
  - OTA Production – Path to Program and Profitability
  - FAR 12 – Expansion and Regulatory Roll Back
  - CAS Reform – Commercial Accounting Systems for Traditional
  - NTIB – Test Case for ITAR Reform for Both Allies and VC Backed Firms
  - Budget Flexibilities
How the US Space Industrial Base Can Address Great Power Competition

- 2020 Status Report: Progress Has Been Made But Future Outlook is Increasingly Uncertain
  - China Still Winning
    - Congressional Reforms Were Inadequate
    - Implementation Has Been Slow
    - Status Quo Culture Continues to Block Change – No Urgency
  - Middle Tier Has Most Promise but took 3 Years to Implement and Under Threat
  - Civil-Military and Allied Integration Still a Dream
    - OTAs are Increasing but Under Threat
    - Little or No Progress on Reducing Burdens on FAR Part 15 or 12
    - Even Our Best Allies Are Going ITAR-Free
  - Budget Flexibility – DOD Missed Opportunity
Leveraging the National Space Industrial Base to Address Great-Power Competition

CompTIA Space Enterprise Council and Satellite Industry Association Webinar

December 5, 2019

John P. Stopher
The National Defense Strategy

• Strategic Environment
  • China and Russia
    • And we cannot ignore Iran and North Korea on the back burner
  • Expanding Commercial Technologies Erode Our Advantage

• Strategic Approach: Expanding the Competitive space through Three Lines of Effort
  • Rebuild Military Readiness as We Build a More Lethal Joint Force
  • Strengthen Alliances and Attract New Partners
  • Reform the Department’s Business Practices for Greater Performance and Affordability
Strategic Environment: Prepare for Great Power Competition

• Shift from Violent Extremist Organizations to Peer Competitors
  • Dramatic implications for investment priorities

• China - leveraging a whole of nation strategy, that includes predatory economic practices, to compete with and displace U.S. leadership

• Russia - corruption, propaganda, political subversion, proxies, and the threat or use of military force

• Peer Competitors have
  • Ability to deny US advantages
    • In Space – Jamming, anti-satellite capabilities, advanced cyber threats, etc.
  • Comparable (relatively) similar capabilities
    • ISR, Hypersonics, AI
Strategic Approach: Build a More Lethal Force
- Modernize key capabilities

• Space and cyberspace as warfighting domains.
  • prioritize investments in resilience, reconstitution, and operations
  • invest in cyber defense, resilience, and the continued integration of cyber capabilities

• Command, control, communications, computers and intelligence, surveillance, and reconnaissance (C4ISR).
  • prioritize developing resilient, survivable, federated networks and information ecosystems from the tactical level up to strategic planning.

• Advanced autonomous systems.
  • invest broadly in military application of autonomy, artificial intelligence, and machine learning, including rapid application of commercial breakthroughs, to gain competitive military advantages.
Strategic Approach: Strengthen Alliance and Attract New Partners

• Deepen interoperability (which will lead to increased resilience)

• Strengthen focus on multi-domain operations (because that’s how our adversaries see it)

• We are stronger together.
  • The United States does not have the resources to go it alone;
  • We need to leverage our allies and partners
Strategic Approach: Reform the Department for Greater Performance and Affordability

• Deliver performance at the speed of relevance.
  • Success no longer goes to the country that develops a new technology first, but rather to the one that better integrates it and adapts its way of fighting.

• Harness and Protect the National Security Innovation Base.
  • Technological advantage depends on a healthy and secure innovation base that includes both traditional and non-traditional defense partners.

• Streamline rapid, iterative processes so that new entrants and small-scale vendors can provide cutting edge technologies.
  • Partnerships with the Commercial sector to leverage Innovation
Current Space Missions

• OPIR
  • Missile Warning, Battlespace Characterization, Technical Intelligence
    • Integration, AI, etc.

• Communications
  • Strategic, Protected, Tactical, Commercial
    • Networked, interoperable, international
    • Requires anti-jam, encryption – not typical of commercial systems

• Launch
  • Meet all launch requirements; faster, reliably, on-demand
  • DoD demand for small launcher market is uncertain

• Weather
  • Diverse requirements
    • Contribute to international coalition
Current Space Missions

• Position, Navigation, Timing  
  • GPS requires resiliency and effectiveness through conflict  
    • Alternative

• Intelligence, Surveillance, and Reconnaissance  
  • Primarily Performed by the NRO  
    • Advanced AI, integration, expanding sources and methods

• Space Control  
  • SSA/Space Domain Awareness, Creating Effects  
    • Very early in policy framework, technology investment, experimentation,
Summary

• DoD desires to leverage the ‘innovation’ and speed of commercial industry.
  • Investments in R&D in supporting technology (AI, etc.)
  • Expanded use of Section 804 middle tier acquisition for prototyping
• Preparing for High End Fight is a challenge for new entrants in current mission areas.
  • Specific opportunities to align technology, with Defense priorities exist
  • Innovative uses of data, integration
HOW THE SPACE INDUSTRY ADDRESSES THE NATIONAL DEFENSE STRATEGY

Space Enterprise Council Webinar

December 5, 2019

JEREMY PALMER, PH.D., P.E. | L3Harris SEC Representative
What is the National Defense Strategy (NDS)?*

• Discusses how DoD implements the President’s National Security Strategy
• Replaces the Quadrennial Defense Review originally authorized in the National Security Act of 1947
• Most recent NDS was authorized by Congress in Section 941 of the 2017 National Defense Authorization Act (NDAA)
• Four NDS reports issued since 2005.
• Prepared by the Office of the Secretary of Defense, published every four years
• Discusses how DoD “will contribute to achieving NSS objectives in order to maintain security and prosperity worldwide”


- China and Russia “revisionist powers”: establish a military relationship of transparency and non-aggression
- North Korea & Iran “rogue regimes”: counter efforts to obtain nuclear weapons and destabilize their respective regions
- ISIS, international criminal organizations, and other non-state actors:
  - Disrupt operations against U.S. citizens at home & overseas
  - Counter efforts to obtain weapons of mass destruction

“Inter-state strategic competition, not terrorism, is now the primary concern in U.S. national security.”

“This increasingly complex security environment is defined by rapid technological change.”

“China and Russia want to shape a world consistent with their authoritarian model—gaining veto authority over other nations’ economic, diplomatic, and security decisions.”

- Greater lethality
- Preparedness
- Prepared to fight in space and cyberspace
- Credible missile defense and nuclear deterrent
- C4ISR to “gain and exploit information” and deny information to adversaries
- Resilient, forward deployed forces with agile logistics and dispersed basing
- Autonomous systems
- Interoperability
In One Sentence: L3Harris Leaders on How Space Industry Might Address the NDS*

- “Reduce international sales of GaN amps, FPGA processors, and other enabling space parts.”
- “Incorporate resiliency as a standard into all space products.”
- “Generate minimum standards for cyber security in space and on the ground.”
- “Aim to diminish the attractiveness of craft in space or on celestial bodies as military or security targets by emphasizing software based systems that can be used on wide varieties of platforms.”
- “Develop [a] space [modeling, simulation & analysis] concept to collectively support development/maturation of [USSPACECOM’s] warfighting capability.”

*The statements listed here are the opinions of the subject matter experts and do not represent the position or policy of L3Harris Technologies or the United States Government.
Thoughts from the Author

• We strive first for Great Power competition (NOT conflict) and, occasionally, Great Power cooperation for mutual benefit.
• Beyond ISS
• Launch services
• Spectrum sharing, eliminating interference
• Traffic cops and good stewards: traffic management, environmental remediators
DoD can Immediately Increase SATCOM Resilience and Deterrence

Leverage recent market events:

» Today’s Commercial SATCOM Networks have Defenses against State and non-State Actor threats

» Abundant supply of existing “SATCOM Networks” enable a “Network of Layers” both Government and Commercial

By:

» Requiring Multi-Network Terminals (new installations and upgrades)

» Assessing Commercial Networks “Defenses”

» Using Commercial Network Services via “pay-as-you-go” SLAs