

**MITCHELL INSTITUTE**  
for Aerospace Studies



# **The Indispensable Domain: The Critical Role of Space in JADC2**

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# Why do we even need this?

- **US capabilities & capacity have not kept pace with peer threats**
  - Coming out of Cold War US possessed the capabilities and capacity to dominate global military operations...when and where it chose
  - This is **NO LONGER** true
- **Success in a future pacing threat conflict will go to the side who has:**
  - Superior battlespace knowledge
  - Makes better decisions
  - More efficiently directs its forces
  - Closes kill chains faster
- **JADC2 must:**
  - Provide relevant information
  - To the right warfighter
  - At the right time to achieve desired effects

“JADC2 is an absolute priority for the United States Space Force. Enabling JADC2 by connecting the Joint Force through space may well be our greatest contribution to joint operations in the next decade.”

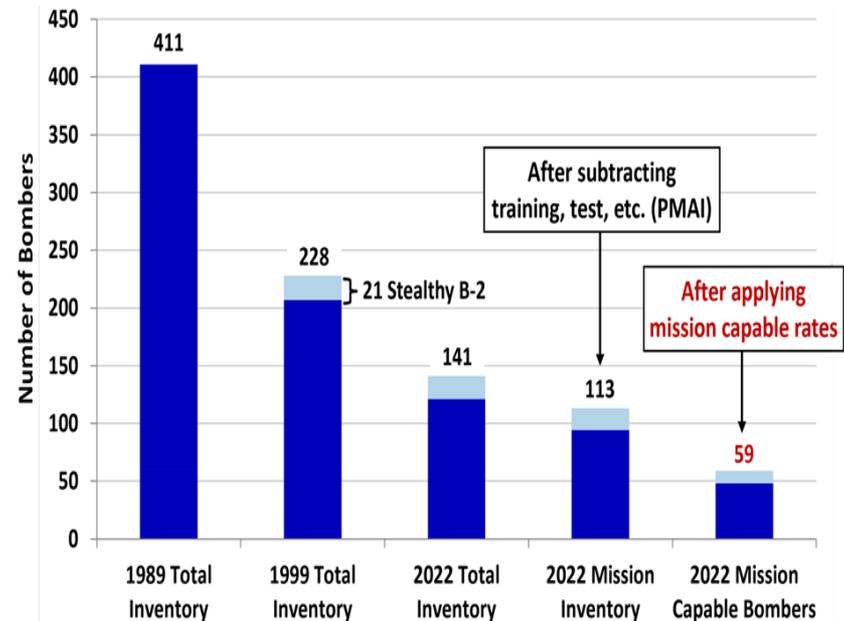
Gen David Thompson, VCSO

Importance of information and decisions advantages=JADC2



# How did we get here?

- America's military primacy has eroded over the past three decades
- Further compounded by China's efforts over the same decades
- 2022 National Defense Strategy: "People's Republic of China as our most consequential strategic competitor and the pacing challenge for the Department."
- U.S. Military Forces required to meet objectives of the National Defense Strategy fall far short of what they operate today



Capabilities and Capacity simply have not kept pace with evolving demands.



# INDO-PACOM Challenge

- **Conflict with China will require tremendous situational awareness and the integration of forces distributed across the vast expanse of the Indo-Pacific**
- **Get the most out of limited forces**

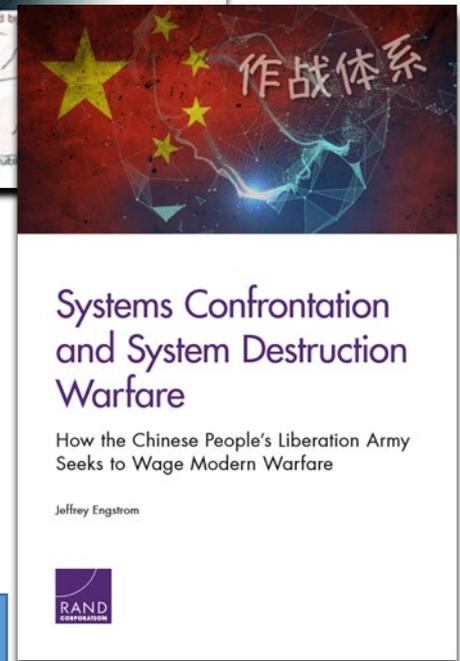
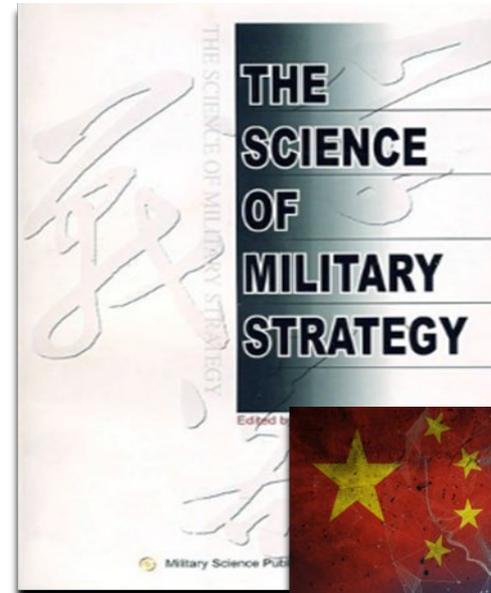


U.S. forces require information and decision advantage



# Chinese Thoughts/Strategy

- **Informationized warfare: maximize the information advantage for tactical and technical objectives—for example, to provide precise coordinates for a weapon.**
- **Intelligentize forces: expand capabilities in a far more dynamic, comprehensive fashion through technologies like AI, decision aides, massive data processing, and enhanced C2 to orchestrate highly complex, integrated multi-domain operations.**

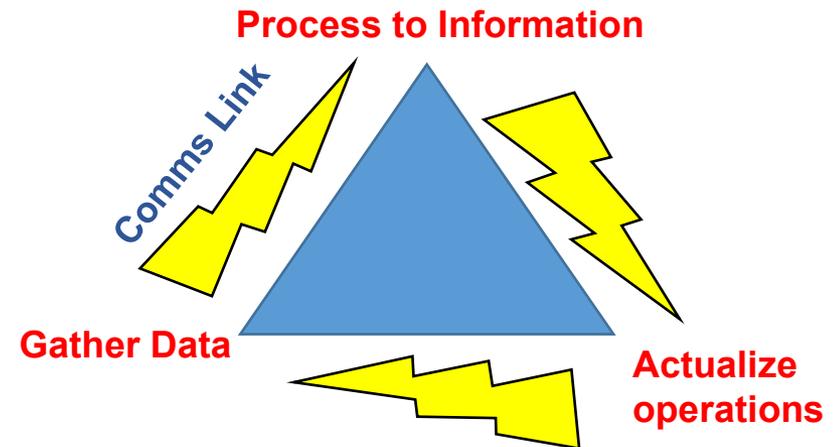


**China's strategy of system confrontation in the Indo-Pacific requires new operational concepts**



# Transforming C2 to prevail

- The U.S. is facing an adversary that has optimized its capabilities to undermine core U.S. military strengths—especially command and control
- JADC2: produce the warfighting capability to sense, make sense, and act at all levels and phases of war, across all domains, and with partners, to deliver information advantage at the speed of relevance
  - Data inputs are the backbone of information and decision superiority
  - Must move information at the speed of need and be global in scale

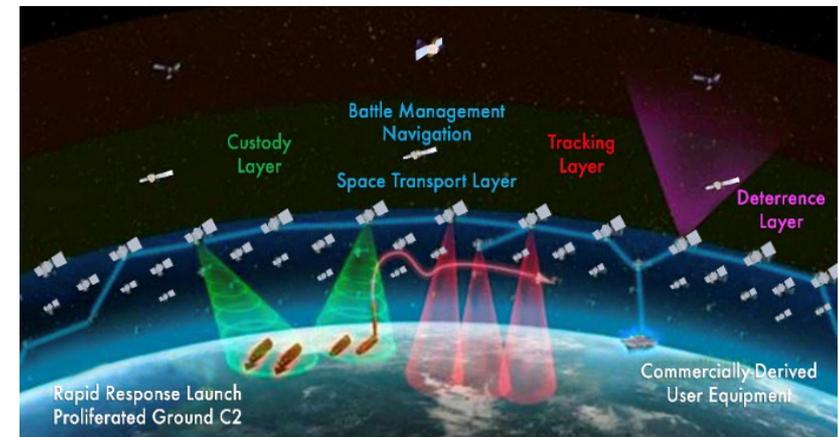


Space Sensors and Connectivity enable JADC2



# Space Contributions to JADC2: Sensing

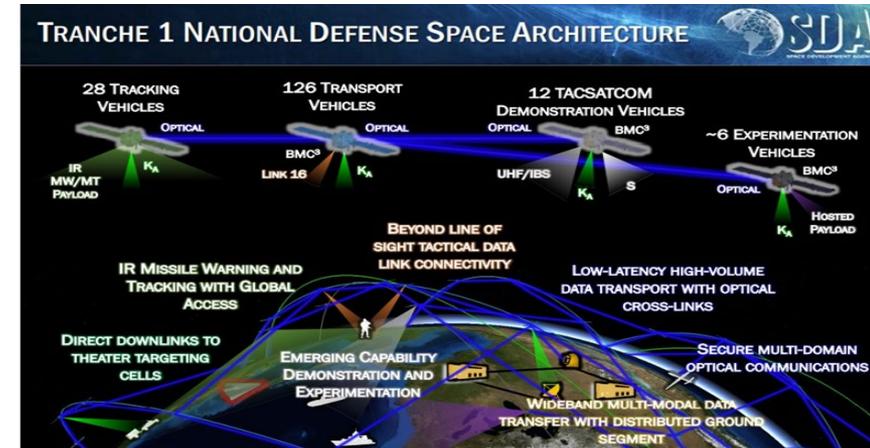
- **Sensors in the right place and time to gather desired inputs across the battlespace**
- **Coverage of vast portions of the earth**
  - Rapid refresh rates
  - Constant coverage
  - Avoid traditional air defenses
  - Reduces demands on low density/high-demand aircraft
- **Advances in sensor technologies allow for disaggregation of sensors, processing power, and C2 personnel**





# Space Contributions to JADC2: Transport Layer

- The Transport Layer must connect all elements of the JADC2 enterprise in a dependable, high-speed, seamless, resilient fashion
- These requirements are best met through space-based capabilities due to their global perspective, global persistence, and global information connectivity
- Interoperability is a must:
  - Demands a network that allows for a wider range of frequencies
  - Incorporates dozens or more space systems and constellations from allied, coalition, and commercial partners



No matter how much the DOD invests in sensors, processing power, C2 centers, or front-line assets, none will really matter without the ability for robust, rapid, and resilient space-centric communications



# Space Force JADC2 Requirements

- **A survivable JADC2 enterprise:**
  - a hardened, proliferated networked systems
  - operates in multiple orbits (LEO, MEO, GEO, and cislunar)
  - must complicated adversary targeting and attack calculus
  - provide defense in depth (to include rapid reconstitution)
- **Robust Space Domain Awareness**
  - space-based ISR platforms
  - LEO, MEO, GEO, and cislunar orbits
  - detect and identify adversary threats and prevent attack
- **All-domain, offensive and defensive weapons**
  - deter, defend and defeat active attacks





# Recommendations

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1. Chief of Space Operations as the Space Force design architect given the primary responsibility of overseeing the integration of the entire JADC2 system
2. FY 2024 National Defense Authorization Act guidance and funding creating an unrestricted path for Space Force's development of space control doctrine, missions, and capabilities needed to assure the functionality of JADC2
3. DOD report on the plan to field JADC2 architecture concurrent with DOD's fielding of adequate defenses of its component
4. Resourcing to enable the Space Force to deliver enhanced space domain awareness and to develop weapons to defend against attack
5. The defense strategy must prioritize the defending of space components to the JADC2 architecture
  - Ensure this priority is reflected in programming and resourcing choices across the services



# Recommendations

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6. **Frequently review Space Force's JADC2 integration efforts to ensure interoperability remains a top priority**
  - Open architectures
  - Data standardization
  - Wide-band arrays and capabilities that incorporate all
7. **Space Force must rapidly transform its ethos from being an enabler and provider of services to a service that provides warfighters and capabilities that create war-winning effects**
8. **Space Force must develop a realistic training, test, and range capability to exercise and mature JADC2 functionality while developing Guardian warfighting skills**

“Space underwrites the joint force—our joint missions don't close without space. We can't fight, communicate, target, precision-strike, or maneuver . . . without space.”

Gen John “Jay” Raymond, CSO

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