



Providing Innovation for Technological Superiority

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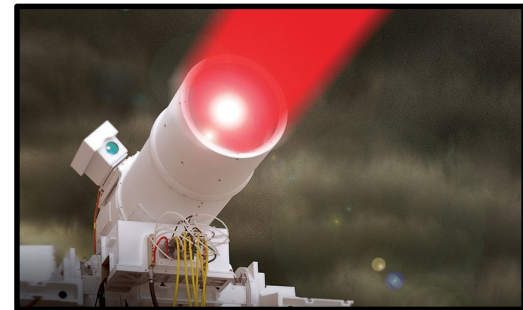
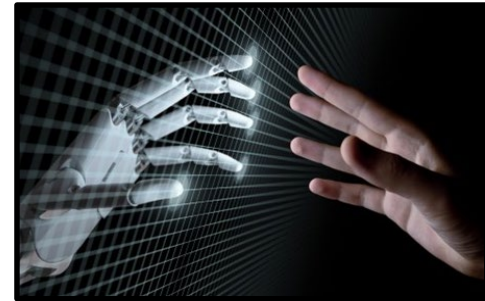




Return to Great Power Competition



- Reemergence of long-term, strategic competition
 - Revisionist powers: China and Russia
- U.S. technological advantage is eroding
 - Adversaries are moving to next generation capabilities across all domains
- Rapid technological advancements are changing the character of war
 - Lower barriers to entry
 - New technologies
 - New ways to fight



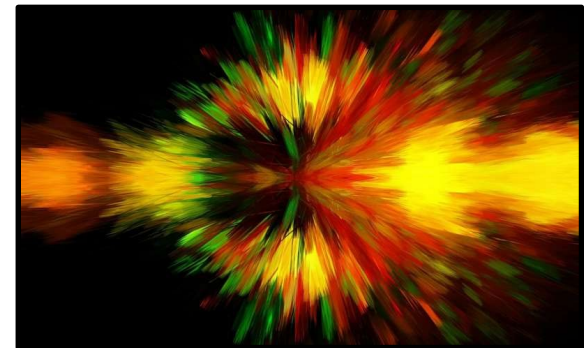
“...innovations that drive military and economic competitiveness will increasingly originate outside the United States...”

– 2019 Director, National Intelligence Worldwide Threat Assessment



The Opportunity

- Success goes to the country that better integrates and adapts to new technology
- US will continue to rely on technology to offset disadvantages in mass and logistical challenges of fighting in other theaters
- Organization and culture
 - Coincides with historic need for advanced, innovative capabilities to maintain and widen our technological edge
 - S&T community currently enjoys broad support and desire for us to succeed



The currency of today's strategic competition is technology



2017 National Defense Authorization Act (NDAA), §901 Organization of the Office of the Secretary of Defense

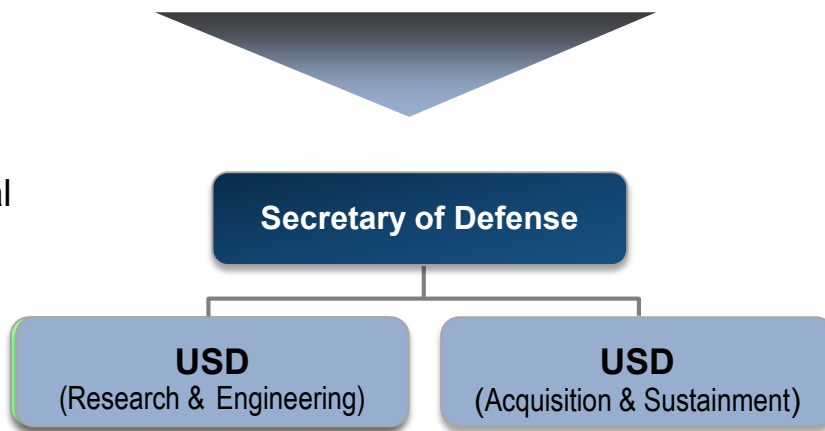
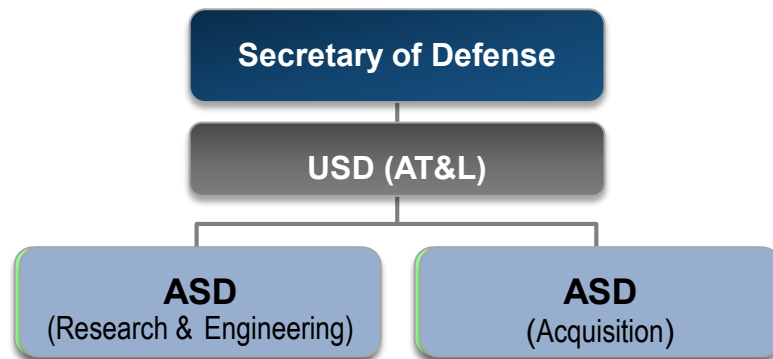
“Establish policies on, and supervising...”:

Undersecretary of Defense (R&E)

- Defense research and engineering
- Technology development
- Technology transition
- Prototyping
- Experimentation
- Developmental testing activities and programs...
- Allocation of resources for defense research and engineering
- Unifying defense research and engineering efforts across the DoD

Undersecretary of Defense (A&S)

- Acquisition policy
 - system design, development, and production
 - procurement of goods and services
- Sustainment policy
 - logistics
 - maintenance
 - materiel readiness
- Defense industrial base policy
- Materials critical to national security
- Contract administration policy
- Modernization of nuclear forces
- Development of counter-WMD capabilities





National Defense Strategy Lines of Effort



- Build a More Lethal Force
- Strengthen Alliances and Attract New Partners
- Change the Way We Do Business



“A more lethal force, strong alliances and partnerships, American technological innovation, and a culture of performance will generate decisive and sustained U.S. military advantages.” – National Defense Strategy



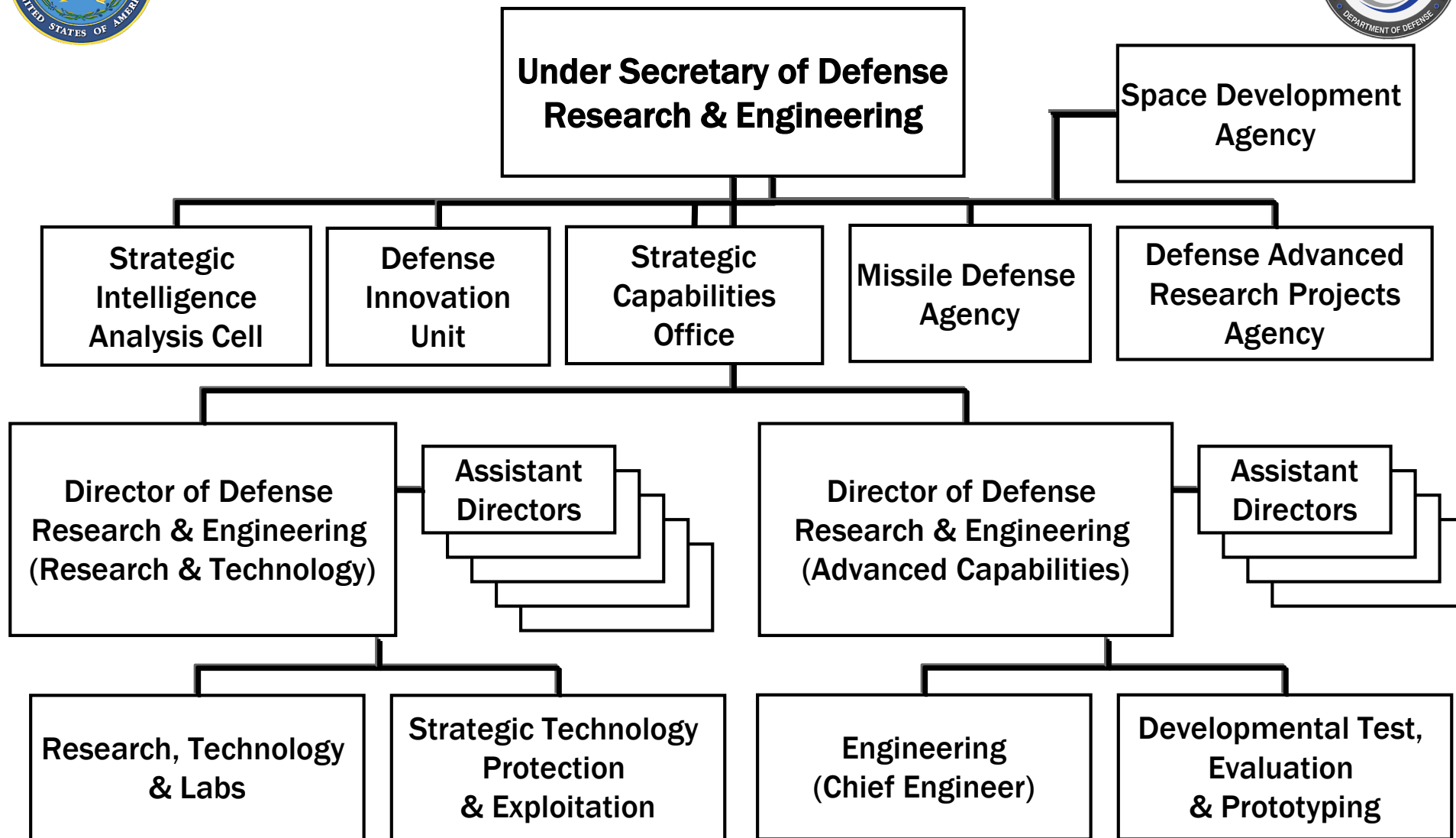
Focus on Modernization

- The U.S. is now **challenged to strike any adversary at will**
- **Equal access to emerging technologies**, such as autonomy, artificial intelligence and synthetic biology, will disrupt future conflicts
- The U.S. still possesses the best military, however our **adversaries' deliberate actions mandate change** in what we buy and how we operate
- **We must develop new lethal capabilities and accelerate the pace** in which we get that capability **to the warfighter**





OUSD(R&E) Organization





Regaining Technological Superiority



These modernization priority areas magnify the Department's **technical dominance** and support the objectives set forth by the Secretary of Defense and the **National Defense Strategy**.

Modernization Priorities

- Hypersonics (HS)
- Fully Networked Command, Control and Communication (FNC3)
- Directed Energy (DE)
- Cyber
- Space
- Quantum Science (QS)
- Machine Learning / Artificial Intelligence (ML/AI)
- Microelectronics (ME)
- Autonomy
- Biotechnology

Each focus area is assigned an Assistant Director or Technical Director who functions as the Under Secretary's lead expert on that technology priority



Allied Prototyping Initiative

- Develop cooperative prototyping projects to provide leap-ahead capabilities in the 5-7 year time horizon focused on the top 10 modernization priorities
- Secure OUSD(R&E) funding and partner nation funding for selected projects, negotiate Project Arrangements (PAs), and staff PA's for approval to completion
- Supports SECDEF's National Defense Strategy to maintain a military competitive advantage in all three Lines of Effort:
 - *Build a more lethal force* through rapid prototyping in modernization technology areas
 - *Strengthen alliances* through cooperative development of equipment to inherently deepen interoperability with participating allies & partners
 - *Reform the department for greater performance and affordability* through leveraging and coordinating allied R&D funding towards shared defense capability needs



Maintaining Technological Superiority



- The U.S. military has long relied on **high quality people, technological superiority, innovative operational and organizational constructs**, and our **unmatched ability to fight** both as a **Joint Force** and within **Coalitions**
- We are addressing the erosion of technological superiority by identifying and investing in **innovative technologies and processes**
- We are pushing the envelope with **innovative and cutting edge research**
- Beyond technical innovation, we are pursuing **new practices and organizational structures** to ensure future U.S. technical dominance
- From **basic research to developmental prototypes to programs of record**, the DoD R&E enterprise provides the **technological foundations** that ensures our military of the future remains the **most capable in the world**

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DoD Research and Engineering Enterprise

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