DDR&E (AC) Overview

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Near-Peer Adversaries

We now face a renewed power competition

Invest in technologies that mitigate our strengths

Exploit U.S. vulnerabilities

Erode traditional U.S. advantage in conventional warfare

Field systems more rapidly
USD(R&E) Mission

- Ensure Technological Superiority for the U.S. Military
  - Set the technical direction for the Department of Defense
  - Champion and pursue new capabilities, concepts, and prototyping activities throughout the DoD research and development enterprise

- Bolster Modernization
  - Pilot new acquisition pathways and concepts of operation
  - Accelerate capabilities to the warfighter

“Our mission is to ensure that we, if necessary, reestablish and then maintain our technical advantage.”
  - Under Secretary Griffin, April 2018
“We cannot expect success fighting tomorrow’s conflicts with yesterday’s weapons or equipment.”
– National Defense Strategy

Modernization Priorities

**DDR&E Advanced Capabilities**
- Hypersonics
- Fully Networked Command, Control, & Communication
- Space
- Autonomy

**DDR&E Research & Technology**
- Directed Energy
- Cyber
- Quantum Science
- Microelectronics
- Biotechnology

**USD Research & Engineering**
- Machine Learning / Artificial Intelligence

There is a Portfolio Manager (Assistant Director) who is responsible for establishing the DoD-wide, mission-focused strategy and execution plan for each modernization priority.
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
DDR&E Advanced Capabilities: Accelerating Modernization By Identifying, Prototyping, and Rapidly Fielding Technology

- Bridges the invention-operations divide as the primary technology transition enabler
- Identifies and supports relevant, high pay-off, cost-effective cross-component technology efforts
- Plans and prioritizes research and development of advanced capabilities
How DDRE(AC) Operates: High-level Development Cycle

Legend

- Functions
- DDR&E (AC) Portfolio
- Other Organizations

- Hypersonics
- Fully Networked C3
- Space
- Autonomy
Building an Integrated Ecosystem for Success

- Unified mission-level focus
- Strong link to Services
- Strong SE framework
- Effective DT&E strategies
- Interagency prototyping and experiments
- Robust testing and evaluation capabilities
- Innovative idea generation
- Commercial success stories
- Model-based engineering
- IRAD investment
- Workforce development

An integrated, collaborative ecosystem optimizes technology investments aligned to national priorities and mission needs

- Unified missions-level focus
- Model-based engineering
- Workforce development

- Unified missions-level focus
- Common goals to support the warfighter

- DDR&E AC
- Industry
- FFRDCs/UARCs
- Other DoD/Agencies
**USD(R&E) “Corporate” at a Glance...**

### Research, Technology & Labs
- Provides affordable options for new concepts and capabilities from basic science to advanced tech.
- Oversees FFRDCs/UARCs & 63 DoD Service Labs/Centers
- Leads Strategic Outreach (Intl, SBIR, Cross-Agency)

### Strategic Tech Protection & Exploitation
- Assesses & mitigates risk of loss of critical techs
- Leads Manufacturing Technology Development and the National Manufacturing Institutes
- Established Resilient-by-Design Methodologies

### Engineering
- Assesses feasibility and programmatic risk for major programs throughout the acquisition life cycle
- Establishes mission portfolios & joint open system architectures

### Test Resource Management Center
- Provides adequate testing in support of development, acquisition, fielding and sustainment of defense systems; and maintains awareness of T&E facilities and resources, within and outside DoD

### Developmental Test, Evaluation & Prototyping
- Advances developmental test standards and policy, assists major programs in developing test plans, and provides oversight for developmental test community
- Identifies, develops, & demos multi-domain concepts & techs to satisfy DoD, Joint, interagency, & CCMD priorities
- Works within operational mission threads & obtains Warfighter feedback

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**USD(R&E) provides leadership from concept to capability to meet the challenges of an uncertain future through advances in science, technology and innovative engineering, informed by developmental test & evaluation**
Questions?

DoD Research and Engineering Enterprise
https://www.CTO.mil/

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**DDR&E(AC): How We Operate**

**WARFIGHTER NEEDS**

**Combatant Commands & Liaison Officers**

*Testing/Operational Use*

**USD Acquisition & Sustainment**

*Development/Production in Industry*

**TRMC**

*Prototyping and Demonstration*

**AD ROADMAPS**

- Hypersonics
- Space
- Autonomy
- Fully Networked C3

**THE PATH TO MODERNIZATION**

**MISSION INTEGRATION**

**ENGINEERING POLICY AND SYSTEMS**

**DEVELOPMENTAL TEST & EVALUATION**

*Missions-level Technology Identification and Gap Assessment*
The Extended OUSD(R&E) Enterprise

- **Defense Advanced Research Projects Agency:** Makes pivotal investments in breakthrough technologies for national security
- **Defense Innovation Unit:** Identifies, evaluates, and purchases commercial innovation to solve national defense problems
- **Strategic Capabilities Office:** Develops disruptive and asymmetric uses of existing systems to regain the element of surprise
- **Strategic Intelligence Analysis Cell:** Provides an operational, technical, and threat-informed analytic foundation for DoD investment decisions to restore technical overmatch to the Joint Force
- **Missile Defense Agency:** Develops and deploys a layered Ballistic Missile Defense System to defend the United States, its deployed forces, allies, and friends from ballistic missile attacks of all ranges and in all phases of flight