



DoD Research and Engineering

Defense Innovation Unit – Experimental Townhall

Mr. Stephen Welby

Assistant Secretary of Defense for Research and Engineering

February 18, 2016



Preserving Technological Superiority



- **US and Allies have been able to count on a decisive technological advantage for more than 40 years**
 - Advantage built on technologies developed by and for the US military
 - Precision weapons, long-range intelligence, surveillance and reconnaissance (ISR), stealth
- **What has changed:**
 - Increasingly global access to resources, technology and talent
 - Competitors investing in capabilities directly designed to counter US technical advantage: tactics, techniques, technologies, procedures
 - Responding to such an environment requires agility and a commitment to invest to keep pace with technical opportunity
 - Drives a focus on cost and cycle time





DoD Innovation



- In response to this long-term challenge, DoD R&E seeks competitive advantage through innovation...
 - **Leveraging all sources of innovation opportunity:**
 - Academia, Commercial, Defense Industry, Organic (DoD Labs), Global Sourcing (Allies and Partners)
 - **Time to market matters** – Accelerate the Technology Adoption Cycle
 - Out-innovate competitors with access to the same commercial technology base
 - **Speed transition from Laboratory to Fleet**
 - Prototyping, Demonstrations, Operational Experiments





Defense R&E Strategy



1. Mitigate current and anticipated threat capabilities

- Cyber
- Counter Space
- Missile Defense
- Electronic Warfare
- Counter-WMD

2. Affordably enable new or extended capabilities in existing military systems

- Systems Engineering
- Capability Prototyping
- Interoperability
- Modeling and Simulation
- Developmental Test & Evaluation
- Power & Energy

3. Create technology surprise through science and engineering

- Autonomy
- Human Systems
- Quantum Systems
- Data Analytics
- Hypersonics
- Basic Sciences

Technology Needs

- Cyber / Electronic Warfare
- Engineering / M & S
- Capability Prototyping
- Protection & Sustainment
- Advanced Machine Intelligence
- Anti-Access/Area Denial (A2/AD)

Researchers and Engineers doing game-changing work



Defense Innovation Unit Experimental (DIUx)



• Three Year Pilot Project designed to:

- Build new relationships with High-Tech, Non-Traditional firms.
- Scout for breakthrough and emerging technologies.
- Impedance match the needs of the DoD with the fast-moving commercial innovation community
- Highly qualified Civilian and Reserve Military experts with first-hand experience in high-tech start-ups.
- Initial operating location: Silicon Valley



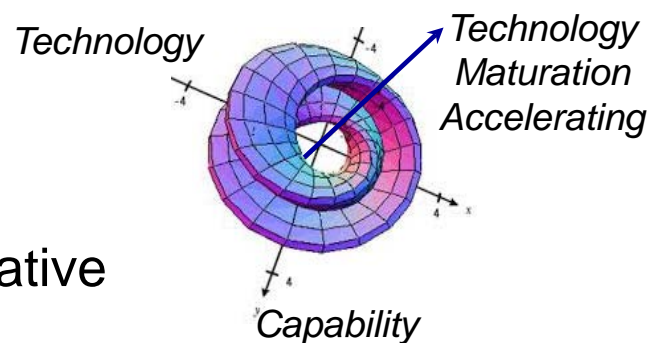
“...creating tunnels of ideas into the Department that haven’t existed before...”
 - Bob Work, Deputy Secretary of Defense, DSD Editorial Board, 15 September, 2015



Speed to Market



- Shift our culture to more ***rapidly adopt / refresh technology***, transition to operational capability
- ***Remove barriers*** to commercial technology, increase ***international science and technology awareness***
- Focus on ***high-payoff technology prototyping*** and operational demonstrations
- Pilot ***accelerated contracting vehicles*** for innovative research and development
 - Streamlined Broad Agency Announcements (BAAs), Other Transactional Agreements (OTAs), Fast Track Acquisition, etc.
 - Leverage new accelerated procurement authorities, venture capital-like





Force of the Future



- **Recruit and retain a workforce** ready to address the technical and operational demands ahead
- A Department ***open to ideas*** and the ***flow of talent*** in and out of DoD
 - Talent must not be taken for granted
 - Address generational, technological, and labor market changes
 - Increase permeability of the DoD workforce: Sabbaticals, internships, transitions
 - Continue to attract the talent needed to demonstrate high standards of performance, leadership, ethics, honor and trust





DoD Science, Technology, Engineering and Mathematics (STEM) Efforts



Mission: *Attract, inspire, and develop exceptional STEM talent across the education continuum and advance the current DoD Science and Engineering workforce to meet future defense technological challenges*



- **Communicate:** Growing opportunities to work cutting edge, leap-ahead technologies



- **Inspire:** Young scientists and engineers to consider careers with the Department



- **Cultivate:** Culture of Innovation to sustain our competitive edge



- **Promote:** Diversity and agility of thought

- **Enhance:** Continued professional development and growth



DoD Innovation Strategies



- **Shifting culture environment**  **Leaning forward into a complex security environment**
 - Technologies, operational and organizational constructs, people
- **Growing organically**  **Looking externally**
 - DoD Laboratories, academia, defense industry, DIUx, global sourcing (allies and partners)
- **Avoid technology surprise**  **Seeking asymmetric advantage**
 - Third Offset Strategy; Robotics, Big Data, Visualization, Microelectronics, Hypersonics, Directed Energy
- **Leveraging new sources of technology and expanding core competencies**  **Servicing and**
 - Prototyping, demonstrations, and experimentation; Modular, Open Systems Architecture; Manufacturing Innovation Centers





DoD R&E Enterprise: Pursuing Sustained Technical Advantage



DoD Research and Engineering Enterprise:
<http://www.acq.osd.mil/chieftechnologist/>

Defense Innovation Marketplace
<http://www.defenseinnovationmarketplace.mil>

Twitter: @DoDIInnovation