USD(R&E)

Joint Experimentation

Office of the Undersecretary of Defense for Research & Engineering

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Research & Engineering Mission

Technology Strategy Pillars

- Leverage the United States' incredible technology innovation potential to solve the Department's tough operational, engineering, and mission-focused challenges.
- Set the foundation to attract and build a strong, talented future technical workforce that works in modernized laboratories and test facilities.
- Maximize our asymmetric advantages by partnering with the larger innovation ecosystem, from industry to universities and to laboratories, allies and partners.

Emerging Opportunities

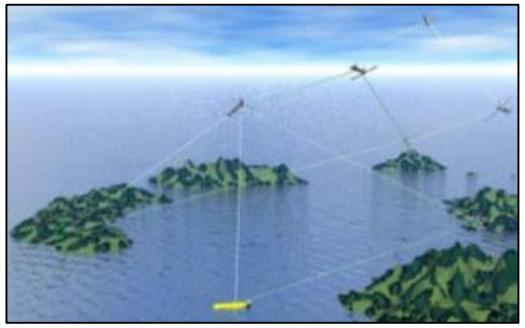
- Biotechnology
- Quantum Science
- FutureG
- Advanced Materials

Effective Adoption Areas

- Trusted AI and Autonomy
- Integrated Network Systems-of-Systems
- Microelectronics
- Space Technology
- Renewable Energy Generation and Storage
- Advanced Computing and Software
- Human-Machine Interfaces

Defense-Specific Areas

- Directed Energy
- Hypersonics
- Integrated Sensing and Cyber



OUSD(R&E) - Advanced Capabilities

Mission: Deliver Joint Warfighting Concepts (JWCs) to Prototype Capabilities; and Transition the Valley of Death

Roles:

- Develop and support future Warfighting concepts and integrated architectures
- Close capability gaps in support of defense modernization
- Strengthen engineering authorities and policies
- Conduct continuous stakeholder engagement to support development and delivery of capability to the Joint force, Joint Warfighter, and Combatant Commanders
- Ensure test range infrastructure and facilities support current and future needs

Prototypes & Experiments

- Deliver leap-ahead and disruptive technologies
- Execute allied prototyping initiative projects
- Close capability gaps

Engineering

- Propagate engineering best practices
- Solve engineering problems
- Connect the engineering community

Test Resource Management Center

- Provide robust and flexible testing & evaluation capabilities
- Align test & modernization goals
- Ensure ranges are ready to test new capabilities as they emerge

OUSD(R&E) AC - Prototypes & Experiments

Mission: Identify, develop, and demonstrate innovative technical concepts to address defined national security challenges faced by the DoD, Joint Force, Services, and Combatant Commands.

Characteristics of P&E Projects

- Span ***Joint mission/priority areas*** and ***DoD modernization priorities***
- ***In-year selection*** process for greater agility and responsiveness
- Informs requirements development
- Co-sponsors (***co-funding***) are critical to success
- Emphasize ***user involvement*** with technology demonstration and experimentation
- Most provide ***residual capabilities*** for the Warfighter
- Include ***transition*** planning from the start

Stratospheric Platforms, persistent flight

Automated Construction, 3-D printed buildings

Resilient Energy, Development and Training

Role of Experimentation in the DoD

- Defense experiments provide **opportunities for technologists and warfighters to evaluate potential solutions** to existing or emerging warfighter capability gaps and probe the integration of technology development and concept exploration in order to maximize synergies that exist.
  - **Increases the knowledge and understanding to inform the decisions making process.**
  - **Embrace experimentation to restore the U.S. defense technology overmatch.**
- **Experimentation influence based on geography**
  - Showcases strategic signaling, deterrence of adversaries, and demonstration of resolve.
  - Establishes global infrastructure supporting rapid innovation.
  - Enhances international partnerships.
- **Experimentation contribution by military service branch**
  - Empowers operational venues' decision making.
  - Builds a knowledge base of standards and metrics.
  - Puts warfighters, scientists, and industry partners in the same room.

Joint International Experimentation Potential Events

Strategic Opportunity

- Cooperative, structured US and partner nation R&D will maximize modernization, increase interoperability, and strengthen coalition partnerships
- Jointly identify technologies and experiments that benefit allied partnerships
- Allies devoting R&D resources to modernize their military capabilities in similar priority areas

Solutions

International Prototyping

- USD (R&E) works with INDOPCACOM J85 and staff to identify opportunities that align to critical needs of Partner Nations and expand operational venues for experimentation and collaboration

Joint International Experimentation (JIE)

- Field experiments/ technology demonstrations, in cooperation with Partner Nations
- Provide relevant operational environments for testing and assessment of technologies and to enhance coalition defense and security needs and provide mutual benefits from increased cooperation

Foreign Comparative Testing (FCT)

- Find, assess, and field already developed foreign technologies to deliver affordable, near-term solutions to satisfy capability gaps, enhance lethality, and increase readiness
- US Gov -to- Foreign Industry technology evaluation executed under a contract

Strengthening Partnerships with Allies to deliver operational capability

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