



Emerging Capability & Prototyping

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<http://www.acq.osd.mil/ecp/>



Leadership Perspective



Secretary Carter

Submitted Statement

Senate Armed Services Committee

FY2016 Budget Request

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*“For decades, U.S. global power projection has relied on the ships, planes, submarines, bases, aircraft carriers, satellites, networks, and other advanced capabilities that comprise our military’s unrivaled technological edge. **But today that superiority is being challenged in unprecedented ways.**”*

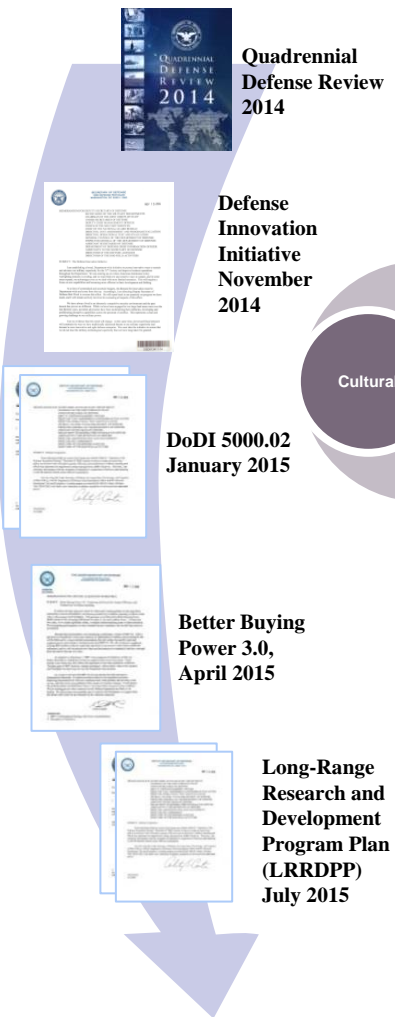
Advanced military technologies, from rockets and drones to chemical and biological capabilities, have found their way into the arsenals of both non-state actors as well as previously less capable militaries.

And other nations – among them Russia, China, Iran, and North Korea – have been pursuing long-term, comprehensive military modernization programs to close the technology gap that has long existed between them and the United States.”

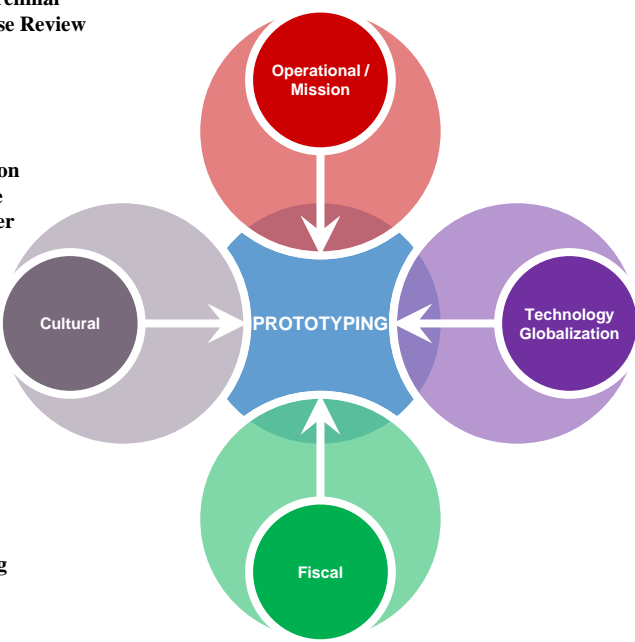


Strategic Environment

Strategic Guidance



Challenges



Prototyping and Experimentation

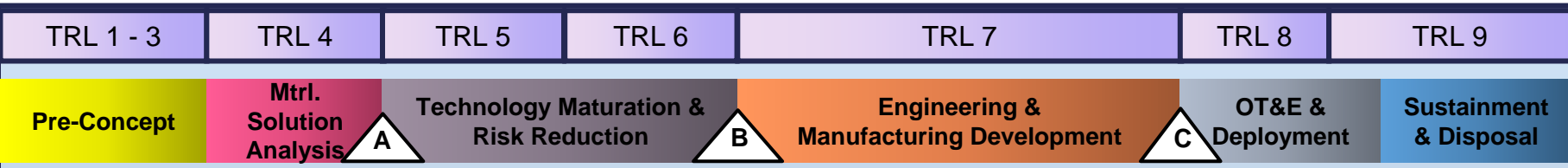
AGILITY **INNOVATION** **AFFORDABILITY**

Sample Methodology





Prototyping Categories



Proof of Principle

- Art of the possible
- Demonstrate feasibility of an integrated capability
- Provide evidence of overcoming specific technical risk barriers
- Develop sufficiently detailed cost data to enable cost-capability trades

Pre-E&MD

- State of the art
- Demonstrate military utility of integrated capability solutions
- Demonstrate robust fabrication processes
- Demonstrate performance in specific operational environments
- Define form, fit, function and “ilities”
- Enable business case analyses

Fieldable

- Suitable for a targeted purpose in a specific environment
- Demonstrate performance in the target operational environment
- Establish a method to support fielded units
- Implement repeatable manufacturing processes
- Demonstrate form, fit and function



EC&P Project Focus Areas FY 2015 – 2016



Asymmetric Force Application:

- **Use of non-traditional technologies, tactics, and weapons to provide a clear military advantage to our forces during maneuver and engagement operations**
- **Solutions will reduce U.S. reliance on overleveraged blue capabilities and creatively exploit increasingly capable adversary systems while adjusting the cost curve in our favor**
- **Of particular interest are applications that provide an innovative technology offset and / or cost calculus advantage**
- **Includes technologies needed for - -**
 - **Countering threats associated with integrated air defense systems**
 - **Long range penetrating strike**
 - **Offensive and defensive air superiority operations**



EC&P Project Focus Areas FY 2015 – 2016



Space Capability Resilience:

- Responds to a sophisticated adversary's attempts to deny us access to our space-based capabilities and adverse space conditions that degrade our space-based capabilities
- Resilient response includes:
 - Taking proactive and reactive defensive measures (Avoidance)
 - Designing systems with enhanced survivability features (Robustness)
 - Conducting operations to replenish lost or diminished capacity (Reconstitution)
 - Help re-establish space capability and capacity (Recovery)
 - Subsystems and activities that support any systems architecture able to achieve effects normally associated with current space systems



EC&P Project Focus Areas FY 2015 – 2016



Autonomous Systems:

- **Capability that enables a particular action of a system to be automatic or, within programmed boundaries, or ‘self-governing’**
- **Important for mobile unmanned systems that must maneuver in an environment with little or no human assistance, or systems that aid human cognitive tasks, including:**
 - **Target recognition and systems that aid the human in the coordination of multiple sensors and multiple weapons to support the completion of blue, and the defeat of red, detect-to-engage sequences**
 - **Improving capability without increasing capacity by better coordinating and synchronizing current sensors and weapon systems, while maximizing the combat efficiency of both**
 - **Combing through large volumes of Intelligence, Surveillance and Reconnaissance (ISR) data, and notify the analyst of pattern of life anomalies or other data that meets user-specified criteria**



EC&P Project Focus Areas FY 2015 – 2016

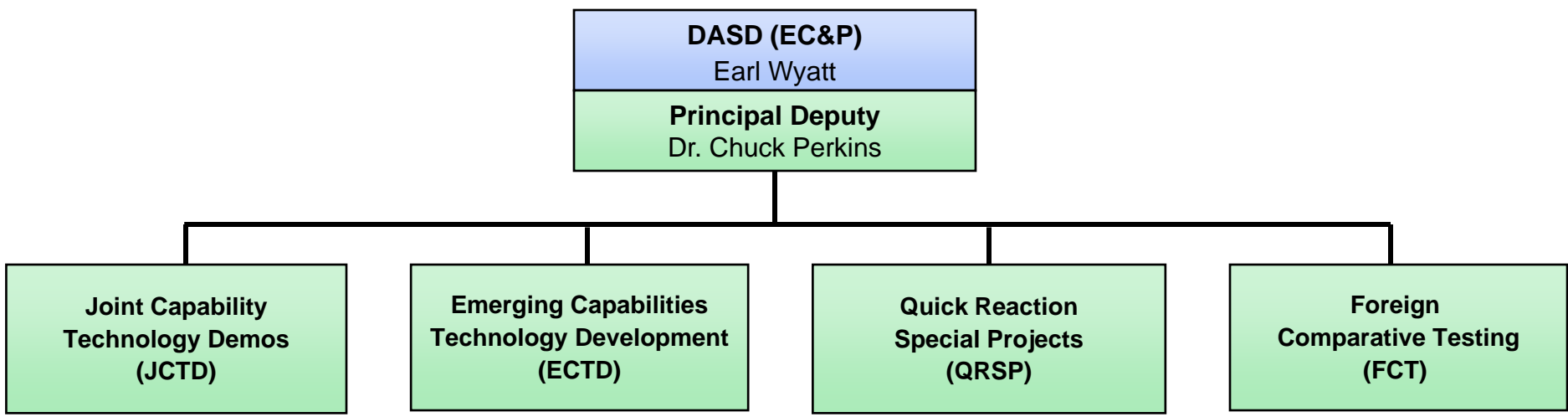


Electromagnetic Spectrum Agility:

- **Capabilities that allow Department of Defense (DoD) forces to operate with freedom of maneuver in the electro-magnetic spectrum (EMS). Operations include:**
 - **Gaining and attaining access to spectrum for friendly forces, denying and/or degrading spectrum to our adversaries**
 - **Conducting EM deception operations to degrade an adversary's understanding of our intent and capability**
 - **Otherwise preventing the adversary from leveraging the EM domain to conduct operations in other domains (i.e., air, space, maritime, land and cyber)**
 - **New effects in the EMS domain to include directed energy and radio frequency disruption**



Emerging Capability & Prototyping Program Elements



Joint Capability Technology Demonstration (JCTD)

- Pre-EMD and fieldable prototypes; < 48 months, < \$100M
- Topic areas: Asymmetric Force Application, Space Capability Resilience, Counter WMD

Emerging Capabilities Technology Development (ECTD)

- Proof-of-Principle prototypes; < 36 months, < \$6M
- Topic areas: EM Spectrum Agility, Dismounted Soldier Systems

Quick Reaction Special Projects (QRSP)

- Respond to time-sensitive operational needs
- QRF – Conventional warfare needs focusing on A2/AD (ex: IWAS); < 12 months, < \$3M
- RRF – Irregular warfare needs with global focus (ex: ANDE); < 18 months, < \$1.5M

Foreign Comparative Test (FCT)

- International partners, developed technologies; < 24 months, < \$2.5M
- Topic areas: Force Protection, Interoperability



Resources for DoD R&E Enterprise Defense Innovation Marketplace



Resources for Industry

- DoD Technology Roadmaps and Investment Strategies
 - DoD R&E Strategic Guidance documents are all posted to the Marketplace
- DoD/Service Solicitations
- Virtual Technology Interchanges & Events
- Opportunity to grow and expand DoD relationships / partnerships
- Secure Portal for IR&D Project Summaries

Resources for DOD

- Market Research for approved DoD S&T, R&D and Acquisition professionals:
 - Secure portal with more than 15,000 IR&D Project Summaries
 - Technical Maturity and Surveillance
 - Guide DoD R&E investments
 - Potential for risk / cost reduction
- Opportunity to grow and expand new relationships and partnerships

DEFENSE INNOVATION MARKETPLACE

HOME RESOURCES FAQS NEWS & EVENTS ABOUT CONTACT US

CONNECTING INDUSTRY & DoD

The Defense Innovation Marketplace is a centralized resource for market research:

For Industry, to learn about Department of Defense (DoD) S&T/R&D investment priorities, capability needs and technology interchanges.

For Government, to access search tools to assess and then leverage industry IR&D projects for current and future programs.

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NEW IN THE MARKETPLACE

Strategic Documents	Doing Business with DoD	News & Events
<ul style="list-style-type: none"> • Defense Innovation Initiative "NEW" • US Army S&T Campaign Plan 2015-2025 • AF Global Strike Command 2014 Strategic Master Plan • DoD R&E Enterprise Strategic Direction: Presentation to TechAmerica • Navy Cyber Center of Excellence: Strengthening Critical Infrastructure • ISR Joint Force 2020 White Paper 	<ul style="list-style-type: none"> • DOD STTR 2016 "NEW" • FY14 Defense Medical R&D Program Team BAA "NEW" • Army TARDEC Cooling Tech RFI "NEW" • AF Seeba System Tool Kit Modeling & Analysis Software "NEW" • Dynamic Spectrum Industry Day "NEW" • Master Data Repository "NEW" 	<ul style="list-style-type: none"> • DOD/HS/NSF Cyber Small Business Innovation Workshop "NEW" • DARPA Resilient Synchronized Planning and Assessment Proposers' Day • Army iEWTP Industry Day • International Space System R&D Conference • 30th Annual National Test & Evaluation Conference • Dynamic Spectrum Industry Day

OSD INITIATIVES

- Long Range Research & Development Plan
- Better Buying Power 3.0

VIRTUAL TECHNOLOGY INTERCHANGES

- Air Force Technology Focus Areas
- Aero Enterprise Technology Gaps & Apps

INNOVATION OPPORTUNITIES

- Resources for Industry DoD Info for Business & Program Planning
- Submit IR&D Data Share projects with DoD Customers
- Resources for DoD DoD employee access of IR&D Search tool

FEEDBACK

- What did you Miss? Top pages & downloads

Updated 12/10/14

Privacy & Security | Acrobat | Recovery Act | FOIA | USA.gov | Accessibility/Section 508 | No Fear Act | Web Policy | About DoD

www.DefenseInnovationMarketplace.mil



BACKUP



Better Buying Power 3.0



Achieving Dominant Capabilities through Technical Excellence and Innovation

Achieve Affordable Programs

- Continue to set and enforce affordability caps

Achieve Dominant Capabilities While Controlling Lifecycle Costs

- Strengthen and expand “should cost” based cost management
- Anticipate and plan for responsive and emerging threats by building stronger partnerships of acquisition, requirements and intelligence communities
- Institutionalize stronger DoD level Long Range R&D Planning
- Strengthen cybersecurity throughout the product lifecycle

Incentivize Productivity in Industry and Government

- Align profitability more tightly with Department goals
- Employ appropriate contract types, but increase the use of incentive type contracts
- Expand the superior supplier incentive program
- Ensure effective use of Performance-Based Logistics
- Remove barriers to commercial technology utilization
- Improve the return on investment in DoD laboratories
- Increase the productivity of corporate IRAD

Incentivize Innovation in Industry and Government

- Increase the use of prototyping and experimentation
- Emphasize technology insertion and refresh in program planning
- Use Modular Open Systems Architecture to stimulate innovation
- Increase the return on and access to small business research and development
- Provide draft technical requirements to industry early and involve industry in funded concept definition
- Provide clear and objective “best value” definitions to industry

Eliminate Unproductive Processes and Bureaucracy

- Emphasize acquisition chain of command responsibility, authority, and accountability
- Reduce cycle times while ensuring sound investments
- Streamline documentation requirements and staff reviews
- Remove unproductive requirements imposed on industry

Promote Effective Competition

- Create and maintain competitive environments
- Improve technology search and outreach in global markets
- Increase small business participation, including more effective use of market research

Improve Tradecraft in Acquisition of Services

- Strengthen contract management outside the normal acquisition chain – installations, etc.
- Improve requirements definition for services
- Improve the effectiveness and productivity of contracted engineering and technical services

Improve the Professionalism of the Total Acquisition Workforce

- Establish higher standards for key leadership positions
- Establish stronger professional qualification requirements for all acquisition specialties
- Strengthen organic engineering capabilities
- Ensure development program leadership is technically qualified to manage R&D activities
- Improve our leaders’ ability to understand and mitigate technical risk
- Increase DoD support for STEM education

**Continue Strengthening Our Culture of:
Cost Consciousness, Professionalism, and Technical Excellence**



DII and LRRDPP



- **Defense Innovation Initiative (DII)**: Identify and *invest in innovative ways* to sustain and advance our national security into the 21st century.
 - *People*: Integrate leadership development with emerging opportunities and re-think how we develop managers and leaders.
 - *Wargaming*: Reinvigorate wargaming to test alternative ways of achieving strategic objectives, and help us think more clearly about the future security environment.
 - *New Operational Concepts*: Explore how to employ resources to greater strategic effect and deal with emerging threats in more innovative ways.
 - *Business Practices*: Find ways to be more efficient and effective through external benchmarking and focused internal reviews.
- **Long-Range Research and Development Program Plan (LRRDPP)**: Study and prioritize *new or unconventional technology* that could provide significant, national security advantages.
 - Reach out to the best and brightest minds inside and outside the DoD
 - Help us think through the technologically-enabled systems and architectures that we will want to have available post-2025.
 - Request for Information (RFI) posted (FedBizOpps and Defense Innovation Marketplace)
 - Share your Ideas (Submission portal)