Innovation Summit for Federally Funded Laboratories

Mr. Stephen P. Welby
Deputy Assistant Secretary of Defense (Systems Engineering)

6 January 2015

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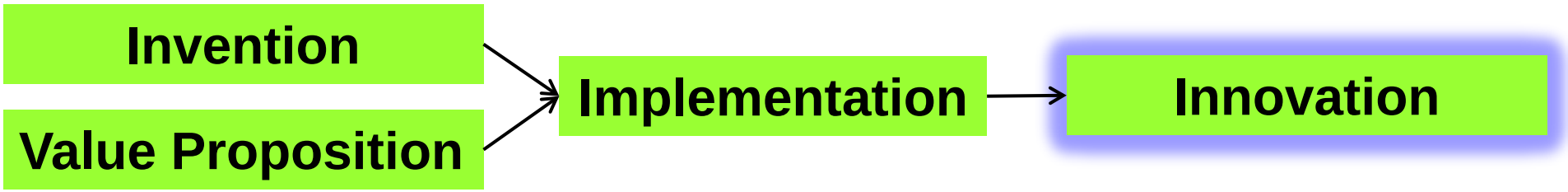
Defining Innovation

Innovation: The creation, development and implementation of a new product, process or service, with the aim of improving efficiency, effectiveness or competitive advantage.

Invention: a device, contrivance, or process originated after study and experiment

Innovation ≠ Invention



Corollary in DoD S&T Space: Innovation ≠ Transition

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DoD at Strategic Crossroads

Chuck Hagel
Budget Rollout Brief
24 Feb 2014

"The development and proliferation of more advanced military technologies by other nations means that we are entering an era where American dominance on the seas, in the skies, and in space can no longer be taken for granted."

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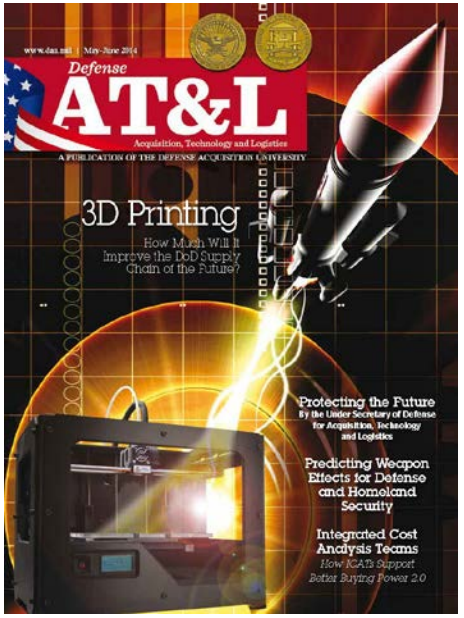
USD(AT&L) Priority
"Protect the Future"

Frank Kendall
USD (AT&L)

"I am concerned about protecting the adequacy of our research and development (R&D) investments in capabilities and systems that will allow us to dominate on future battlefields and keep engineering design teams who develop advanced defense systems."

"[Peer competitors] are developing cutting-edge military capabilities that are designed to defeat current and planned U.S. capabilities."



Protecting the Future, Defense AT&L Magazine, May-June 2014, Pg. 2

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A New Reality:
Global Dimensions Affect DoD S&T

Pace of Technology

Rise of the Commons

Black Swan Syndrome

Expanding Global Knowledge Base

Technology Commercialization

Information Agility

Economic and S&T Mega-Trends

Mass Collaboration

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Criticality of Innovation to US National Security Strategy

- **Reemergence of a Competitive Global National Security environment**
  - "Advanced State Capabilities" challenge US defense systems
  - Modernization plans directly focused on negating US technical advantages
- **US military/technical edge dependent on non-military unique technology**
  - Limited Barriers to Entry: Common supply chain available globally to non-US entities; Key expertise also available globally
- **Non-US actors may be able to turn faster than current US acquisition process**
  - Not constrained by "large installed base" and "need to maintain backward compatibility" – i.e. current US Force structure and capabilities
- **Last major "revolutionary" innovation in US capabilities dates to the 1980's – Precision Weapons, UAVs, ISR**
  - Potential adversaries have studied US and learned strengths/weaknesses
- **Budget pressures challenge executability of current US modernization plans**

Competitive Security Environment Demands Innovation
Disrupt Ourselves Before Others Disrupt Us

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Better Buying Power 3.0 (Draft)

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
- Build stronger partnerships between the acquisition, requirements, and intelligence communities
- Anticipate and plan for responsive and emerging threats
- Institutionalize stronger DoD level Long Range R&D Planning

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 across DoD
- Increase effective use of Performance-Based Logistics
- Remove barriers to commercial technology utilization
- Improve the return on investment in DoD laboratories
- Increase the productivity of IR&D and CR&D

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 Small Business Innovation Research (SBIR)
- Provide draft technical requirements to industry early and engage industry in funded concept definition to support requirements definition
- Provide clear "best value" definitions so industry can propose and DoD can choose wisely

Eliminate Unproductive Processes and Bureaucracy

- Emphasize Acquisition Executive, Program Executive Office and Program Manager responsibility, authority, and accountability
- Reduce cycle times while ensuring sound investments
- Streamline documentation requirements and staff reviews

Promote Effective Competition

- Create and maintain competitive environments
- Improve technology search and outreach in global markets

Improve Tradecraft in Acquisition of Services

- Increase small business participation, including more effective use of market research
- Strengthen contract management outside the normal acquisition chain
- Improve requirements definition
- 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 the DoD leadership for development programs is technically qualified to manage R&D activities
- Improve our leaders' ability to understand and mitigate technical risk
- Increase DoD support for Science, Technology, Engineering and Mathematics (STEM) education

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

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Highlighted items are key opportunities for engineering community engagement

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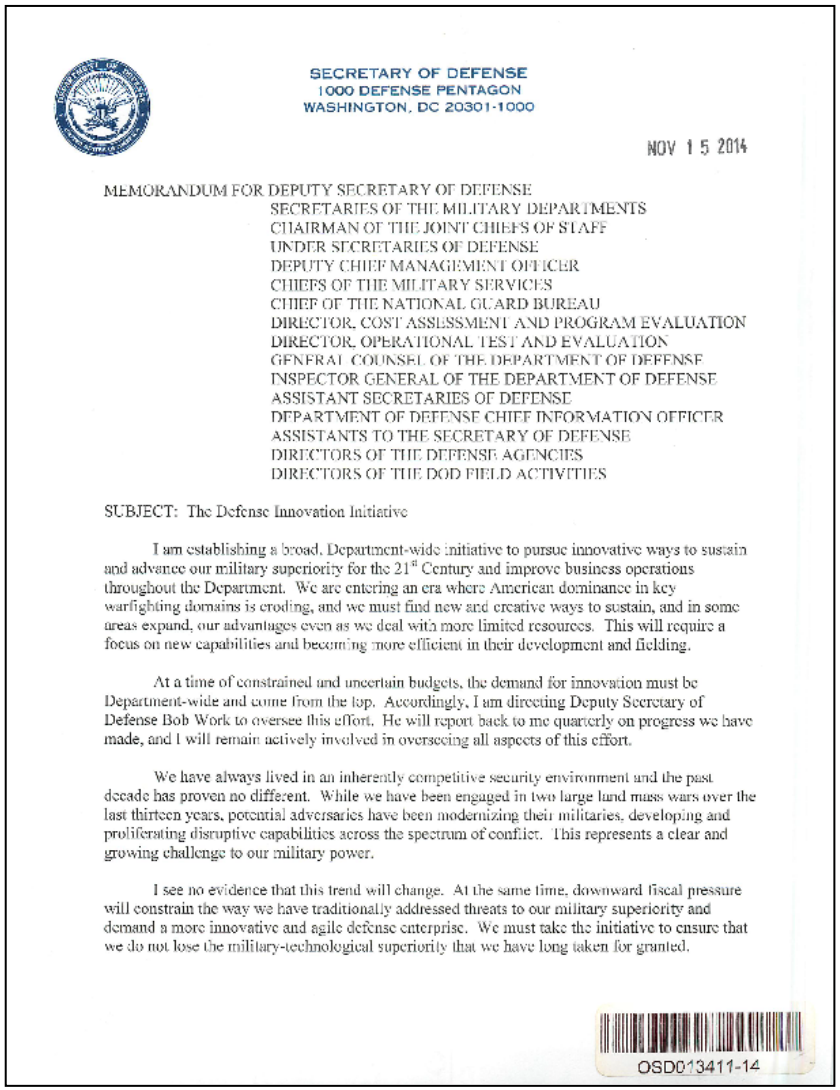
Defense Innovation Initiative (DII)



SECRETARY OF DEFENSE
1000 DEFENSE PENTAGON
WASHINGTON, DC 20301-1000

NOV 15 2014

MEMORANDUM FOR DEPUTY SECRETARY OF DEFENSE
SECRETARIES OF THE MILITARY DEPARTMENTS
CHAIRMAN OF THE JOINT CHIEFS OF STAFF
UNDER SECRETARIES OF DEFENSE
DEPUTY CHIEF MANAGEMENT OFFICER
CHIEFS OF THE MILITARY SERVICES
CHIEF OF THE NATIONAL GUARD BUREAU
DIRECTOR, COST ASSESSMENT AND PROGRAM EVALUATION
DIRECTOR, OPERATIONAL TEST AND EVALUATION
GENERAL COUNSEL OF THE DEPARTMENT OF DEFENSE
INSPECTOR GENERAL OF THE DEPARTMENT OF DEFENSE
ASSISTANT SECRETARIES OF DEFENSE
DEPARTMENT OF DEFENSE CHIEF INFORMATION OFFICER
ASSISTANTS TO THE SECRETARY OF DEFENSE
DIRECTORS OF THE DEFENSE AGENCIES
DIRECTORS OF THE DOD FIELD ACTIVITIES

SUBJECT: The Defense Innovation Initiative

I am establishing a broad, Department-wide initiative to pursue innovative ways to sustain and advance our military superiority for the 21st Century and improve business operations throughout the Department. We are entering an era where American dominance in key warfighting domains is eroding, and we must find new and creative ways to sustain, and in some areas expand, our advantages even as we deal with more limited resources. This will require a focus on new capabilities and becoming more efficient in their development and fielding.

At a time of constrained and uncertain budgets, the demand for innovation must be Department-wide and come from the top. Accordingly, I am directing Deputy Secretary of Defense Bob Work to oversee this effort. He will report back to me quarterly on progress we have made, and I will remain actively involved in overseeing all aspects of this effort.

We have always lived in an inherently competitive security environment and the past decade has proven no different. While we have been engaged in two large land mass wars over the last thirteen years, potential adversaries have been modernizing their militaries, developing and proliferating disruptive capabilities across the spectrum of conflict. This represents a clear and growing challenge to our military power.

I see no evidence that this trend will change. At the same time, downward fiscal pressure will constrain the way we have traditionally addressed threats to our military superiority and demand a more innovative and agile defense enterprise. We must take the initiative to ensure that we do not lose the military-technological superiority that we have long taken for granted.

OSD013411-14

http://www.defenseinnovationmarketplace.mil/resources/DefenseInnovationInitiative.pdf

Secretary of Defense Chuck Hagel's November 15, 2014 memo, "The Defense Innovation Initiative" directs:

"*A new long-range research and development planning program will identify, develop, and field breakthrough technologies and systems that sustain and advance the capability of U.S. military power*."

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DoD Long-Range R&D Program Plan

- **Challenges**
  - U.S. faces a potential loss of technological superiority in light of threat investments
  - Threats have studied U.S. warfighting strengths and weaknesses and have identified effective countermeasures (e.g., global investments in Anti-Access/ Area Denial Capabilities, Electronic Warfare Modernization, etc.)
  - Responding symmetrically to threat investments has limited value and imposes significant cost on U.S.
  - Current DoD R&D planning is largely focused on mapping investments to critical technology areas; limited, focused investments on high-value game changers that challenge current operational concepts

- **Opportunity**
  - Initiate a DoD-level long-range plan to provide strategic R&D investment guidance (similar to that conducted in the 1970s) focused on identifying and accelerating enabling R&D that may lead to innovative capability concepts that:
    - Offer significant warfighting advantage over current capabilities
    - Provide asymmetric advantages over potential threat capabilities
    - Allow the U.S. to cost-effectively shape the trajectory of future military materiel competition

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Long-Range R&D Program Plan (LRRDPP) Approach

Identify high-payoff enabling technology investments that could:

- **Provide an opportunity to shape key future US materiel investments**
- **Offer opportunities to shape the trajectory of future competition for technical superiority,**
- **Engage communities inside and outside the Defense community, and**
- **Will focus on technology that can be moved into development programs within the next five years.**

http://www.defenseinnovationmarketplace.mil/LRRDPP.html

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

DASD, Systems Engineering
http://www.acq.osd.mil/se

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