Key Elements of Defense Strategic Guidance

- The military will be smaller and leaner, but it will be agile, flexible, ready and technologically advanced.
- Rebalance our global posture and presence to emphasize Asia-Pacific regions.
- Build innovative partnerships and strengthen key alliances and partnerships elsewhere in the world.
- Ensure that we can quickly confront and defeat aggression from any adversary – anytime, anywhere.
- Protect and prioritize key investments in technology and new capabilities, as well as our capacity to grow, adapt and mobilize as needed.
Budget Challenge Hitting Hard

“Our current security challenges are more formidable and complex than those we faced in downturns following Korea, Vietnam, and the Cold War. There is no foreseeable “peace dividend” on our horizon.”

GEN DEMPSEY, CJCS
Testimony to SASC, 12 Feb 2013

- Sequestration hit 2013- 9% reductions to all accounts
- Dec 2013- Bipartisan Budget not affirmed sequestration but added funds in FY14 - FY15
  - 4% reduction in FY14 ($-27B)
  - 8% reduction in FY15 ($-41B)
  - 10% reduction FY16 - FY19
“The Orange Triangle”

- Budget Control Act directs $50Billion reduction each year FY13 – FY22
- Bipartisan budget action provided relief in FY14 & FY15
- Budget has 3 levers:
  - *Readiness*
  - *Force Size*
  - *Investment*
- Therefore, if DoD has the ability to move money, Investment Research Developmental Test & Evaluation (RDT&E) and Procurement will be disproportionately hit over the next couple of years
Top 10 DoD Labs by S&E Population

- Naval Air Warfare Center – Patuxent River, MD (3284)
- Naval Surface Warfare Center – Dahlgren, VA (2676)
- Aviation & Missile RDEC – Redstone Arsenal, AL (2503)
- Armament RDEC – Picatinny Arsenal, NJ (2455)
- Naval Surface Warfare Center – Carderock, MD (2352)
- Space & Naval Warfare Center – San Diego, CA (2066)
- Naval Undersea Warfare Center – Newport, RI (1977)
- Naval Research Laboratory – Washington, DC (1602)
- Communications & Electronics RDEC – (1521)
- Naval Air Warfare Center – China Lake, CA (1462)
Lab Demographics (FY’13)

- DoD civilian S&E population is tracked via the DCPDS
ENGINEERING

Age Demographics by Fiscal Year

Source: AT&L Defense Acquisition Workforce Data Mart

FY2007 Mean Age: 43.6 years
FY2008 Mean Age: 43.4 years
FY2009 Mean Age: 43.0 years
FY2010 Mean Age: 42.7 years
FY2011 Mean Age: 42.9 years
FY2012 Mean Age: 43.1 years
Q2FY2013 Mean Age: 43.3 years
USD(AT&L) Priorities
Concern of Losing Technological Edge

Frank Kendall
USD (AT&L)
Mr. Kendall on the Department's Technological Edge, January 2014

• “I’m very concerned about eroding technological superiority”

• DoD’s R&D spending declined 14% since 2009
  • We have to preserve the future capability

“We're in a cyclical downturn right now. It will end, and then there will be an upturn. The people who are prepared with products that we need or who have done the technology to build the products that we will need will be much better positioned when that upturn occurs.”
We are trading away tomorrow’s force capabilities to pay for today’s force.
Defense R&E Strategy

“Protect and prioritize key investments in technology and new capabilities, as well as our capacity to grow, adapt and mobilize as needed.”

-SECDEF, January 2012 Strategic Guidance

1. **Mitigate** new and emerging threat capabilities
   - Cyber
   - Electronic Warfare
   - Space Capability
   - Counter-WMD

2. **Affordably** enable new or extended capabilities in existing military systems
   - Systems Engineering
   - Modeling and Simulation
   - Prototyping
   - Interoperability
   - Develop Test

3. Develop technology **surprise** through science and engineering
   - Autonomy
   - Data-to-Decisions
   - Human Systems
   - Basic Research

Technology Needs

- Cyber / Electronic Warfare
- **Engineering / M & S**
- Capability Prototyping
- Protection & Sustainment
- Advanced Machine Intelligence
- Anti-Access/Area Denial
Military Operations Increasingly Depend on Being Able to Operate in Places “No One Owns” – *The Commons*
Prototyping

The Department can cost-effectively drive innovation in aviation, space, maritime and ground combat systems through prototyping

Proof of Concept:

“X”- Plane Prototyping

Prototype Development Programs have expanded the state of the possible in military aviation without each necessarily driving a follow-on procurement activity
Capability Prototyping
Example: High Speed X-Planes

X-1
First flight: 1947
Speed: Mach 1.26

X-2
First flight: 1952
Speed: Mach 3.2

X-7
First Flight: 1951
Speed: Mach 4.31

X-10
First Flight: 1953
Speed: Mach 2

X-15
First Flight: 1959
Speed: Mach 6.7

X-43
First Flight: 2001
Speed: Mach 6.83

X-43
First Flight: 2010
Speed: Mach 5.1

The Department can cost-effectively drive innovation in aviation, space, maritime and ground combat systems through prototyping.
A New Reality: Global Dimensions Affect DoD S&T

- Pace of Technology
- Black Swan Syndrome
- Rise of the Commons
- Technology Commercialization
- Expanding Global Knowledge Base
- Economic and S&T Mega-Trends
- Information Agility
- Mass Collaboration

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Pace of Technology

It took 23 years to go from modeling germanium semiconductor properties to a commercial product.

The carbon nanotube was discovered in 1991; recognized as an excellent source of field-emitting electrons in 1995, and commercialized in 2000.

The Pace of Technology Development and Market Availability is Exceeding the Pace of Acquisition.
Systems Engineering: Critical to Defense Technologies

Innovation, Speed, Agility

http://www.acq.osd.mil/se
Defense Innovation Marketplace
Resources For Industry And DoD

Improve Industry understanding of DoD needs

Marketplace: Resources for Industry
- DoD R&D Roadmaps; Investment Strategy
- Business Opportunities with the DoD
- Virtual Interchanges & Events
- Secure Portal for IR&D Project Summaries
- Top Downloads/Pages visited
- DoD IR&D SEARCH Trends

Marketplace: Resources for DoD
- Secure portal with 8,000+ IR&D Project Summaries
- Access for DoD R&D and Acquisition Professionals
- DoD Searchers encouraged to contact the Industry POC listed on project summaries of interest


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