

Army Science & Technology



Army Science and Technology Overview

Brief to NDIA Science Engineering & Technology Conference

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(Research & Technology)

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DESIGN • DEVELOP • DELIVER • DOMINATE
SOLDIERS AS THE DECISIVE EDGE



Army S&T Principles and Vision

Foster innovation, maturation and demonstration of technology enabled capabilities that Empower, Unburden and Protect the Warfighter of the future while exploiting opportunities to transition increased capability to the Current Force

Current Force



Advanced Affordable Turbine Engine



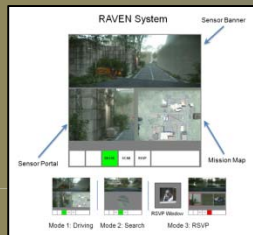
Deployable Force Protection



Enhanced Combat Helmet



Advanced Rotary Wing Aerial Delivery Sling Load Net



Rapid Serial Visual Presentation



Enabling the Future Force

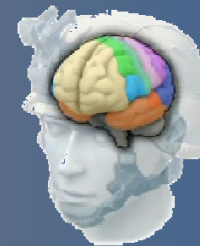
Enhancing the Current Force

Future Force



Cyber tools

Next Generation Rotorcraft



Neuroscience



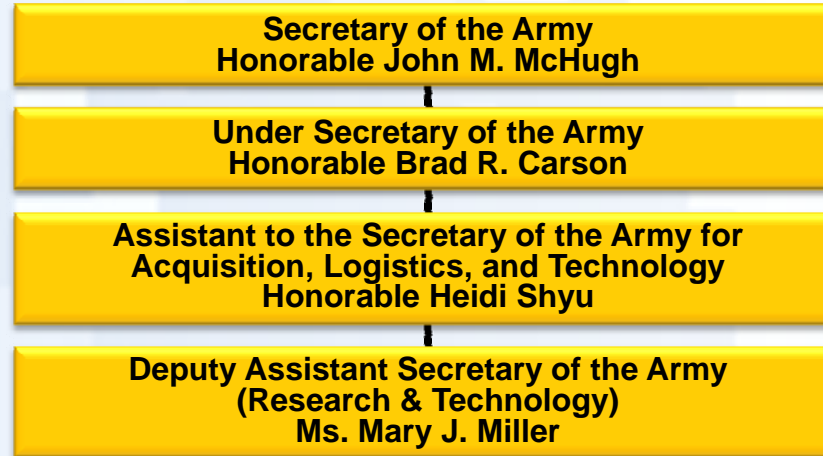
High Energy Lasers



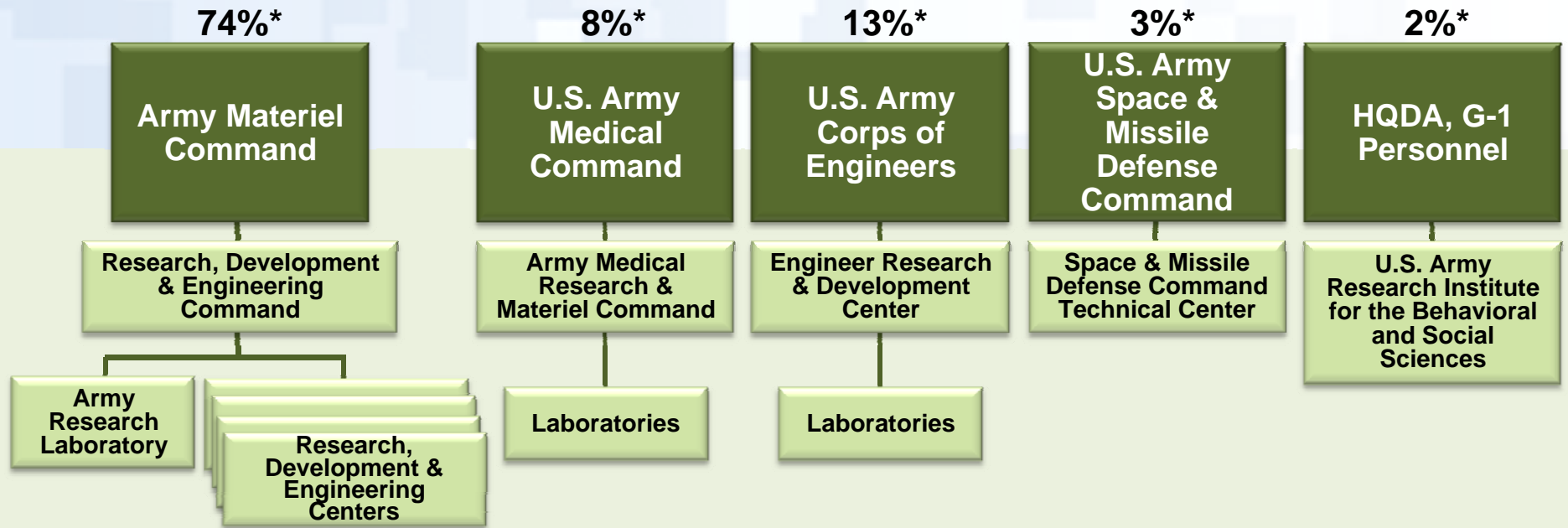
Occupant Centric Platform



Army S&T Enterprise



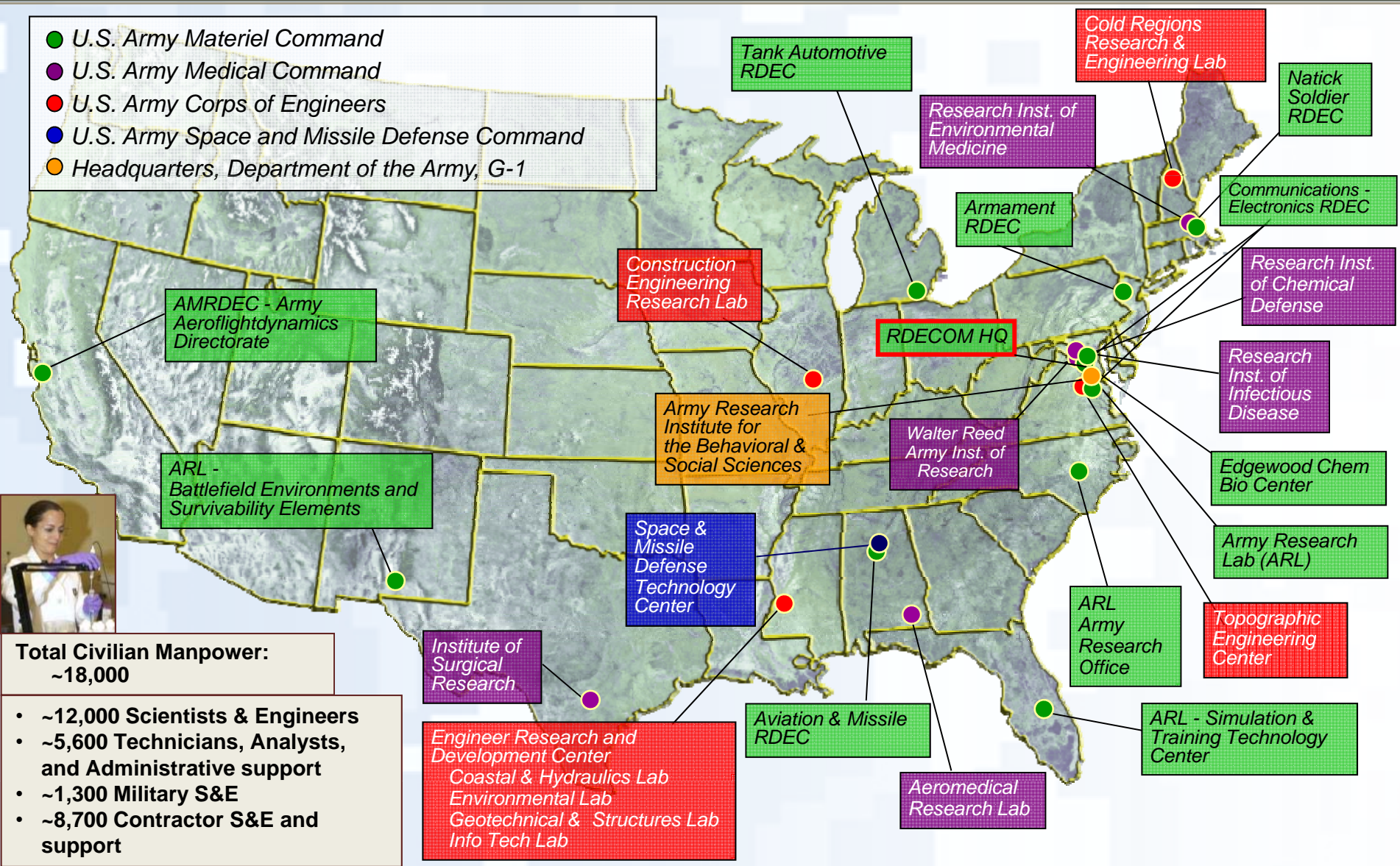
* Percent of S&T core program executed, PB15



Army S&T Enterprise—Research, Development & Engineering Centers & Labs



- U.S. Army Materiel Command
- U.S. Army Medical Command
- U.S. Army Corps of Engineers
- U.S. Army Space and Missile Defense Command
- Headquarters, Department of the Army, G-1



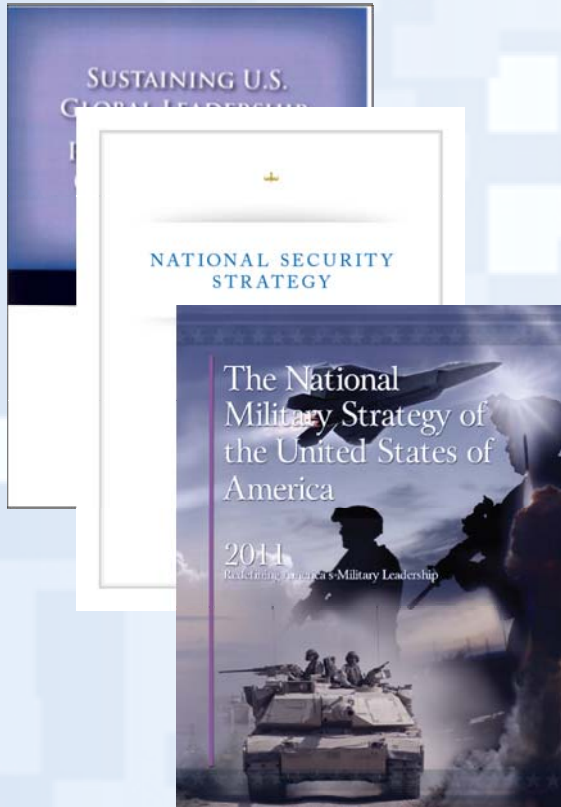
Total Civilian Manpower:
~18,000

- ~12,000 Scientists & Engineers
- ~5,600 Technicians, Analysts, and Administrative support
- ~1,300 Military S&E
- ~8,700 Contractor S&E and support



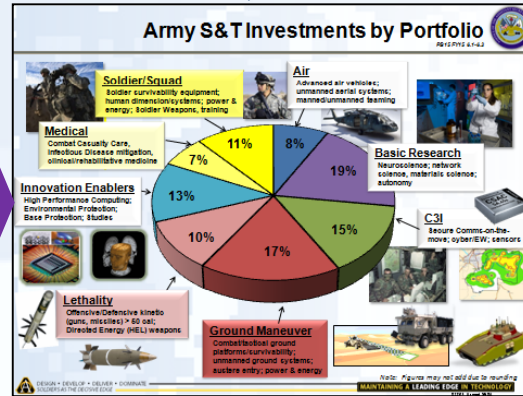
Sources Informing S&T Investment

National/DoD Priorities

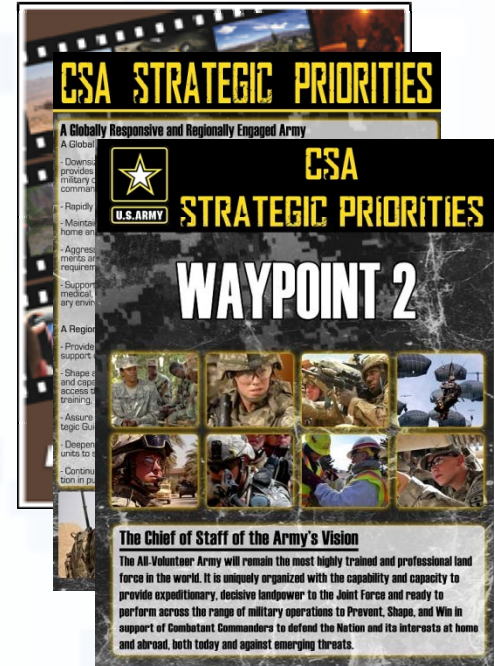


- Communities of Interest
- JCIDS
- International/Allies

Global S&T/
Industry/
Academia



Army Priorities



- Army Equipment Modernization Plan
- Army Strategic Planning Guidance
- CSA Challenge – Force 2025 and Beyond: Expeditionary; More Lethal; Tailorable; Scalable; Self-Sufficient; Leaner
- TRADOC Warfighter Outcomes, CNA, CBA, ICD, CDD, CPD
- Wargaming/Exercises



NGIC/
IC
Community



Army S&T Approach

- Align S&T investments and develop a modernization strategy that creates technology insertion opportunities for Programs of Record
- Invest S&T resources where we must (i.e., Army-specific areas), and leverage where we can -- from industry, other Services, Federally Funded Research Development Centers, National Labs, academia, and international partners
- Concentrate basic research on potentially high-payoff science with a unique Army nexus looking at the world beyond 2030+
- Look to harness investments in technologies that reduce operational and sustainment costs, increase combat readiness, and increase reliability

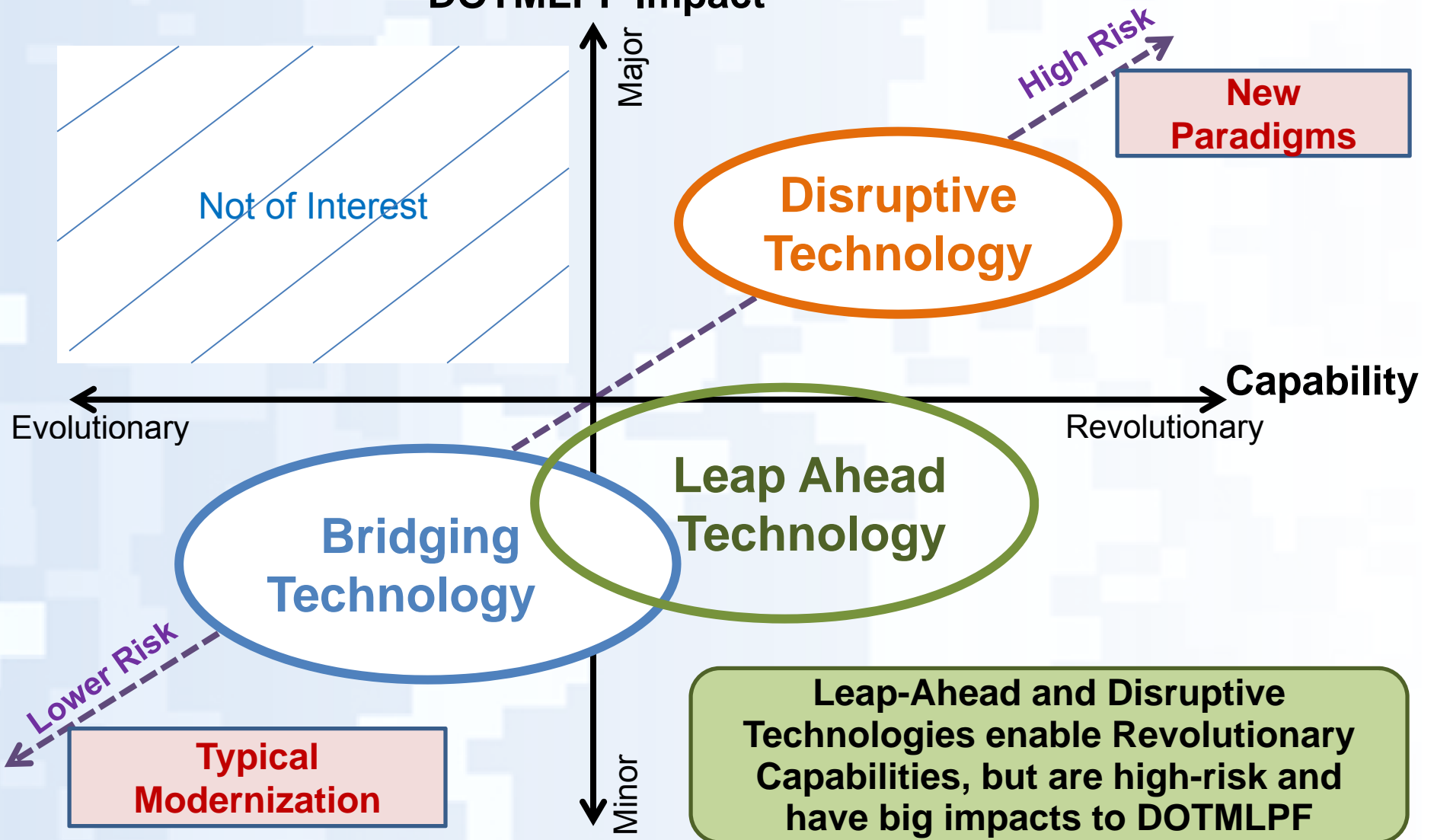
Army S&T lays the technology foundation for Army's future capabilities

Technology Payoffs Capability & Impact to DOTMLPF



* Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel and Facilities

***DOTMLPF Impact**





Army Enduring Challenges

- Greater **force protection (Soldier, vehicle, base)** to ensure survivability across all operations
- Ease **overburdened** Soldiers in Small Units
- Timely **mission command & tactical intelligence** to provide situation awareness and communications in all environments
- Reduce logistic burden of **storing, transporting, distributing** and **retrograde** of materials
- Create **operational overmatch** (enhanced lethality and accuracy)
- Achieve operational **maneuverability** in all environments and at **high operational tempo**
- Enable ability to **operate in CBRNE environment**
- Enable **early detection and improved outcomes for Traumatic Brain Injury (TBI) and Post Traumatic Stress Disorder (PTSD)**
- Improve **operational energy**
- Improve **individual & team training**
- **Reduce lifecycle cost** of future Army capabilities



Technology Wargaming

Objectives:

- Lead technology reconnaissance that explores the technological context for the future force.
- Develop and maintain an analytic capability to rigorously examine potential future technology concepts
- Develop and maintain a compelling “end-to-end narrative” relating investments to capabilities.

Outcomes support TRADOC Unified Quest and provide input to S&T POM guidance

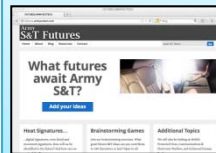
Virtual SME Engagement



Kickoff Webinar for S&T Community

Crowd-sourced Ideation

Web-based Ideation Exercises



Capture fresh ideas
Wide community
Innovative,
Non-traditional thinkers

Assessment of Future Concepts



Red-teaming In-depth Analytics/Enabling technology requirements/Relating investments to capabilities

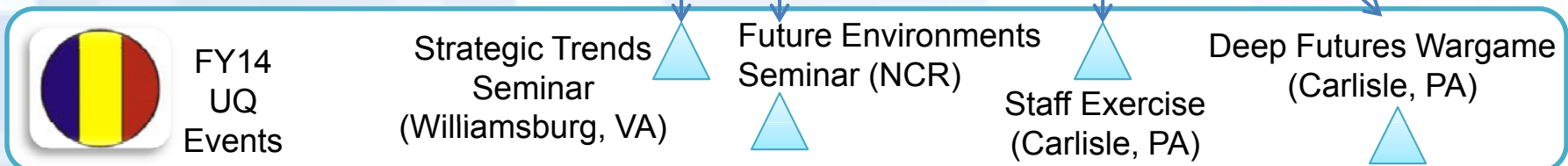
Compiling S&T Trends



FY 14 Consolidated Emerging S&T Trends Report

Assessment Topic Areas

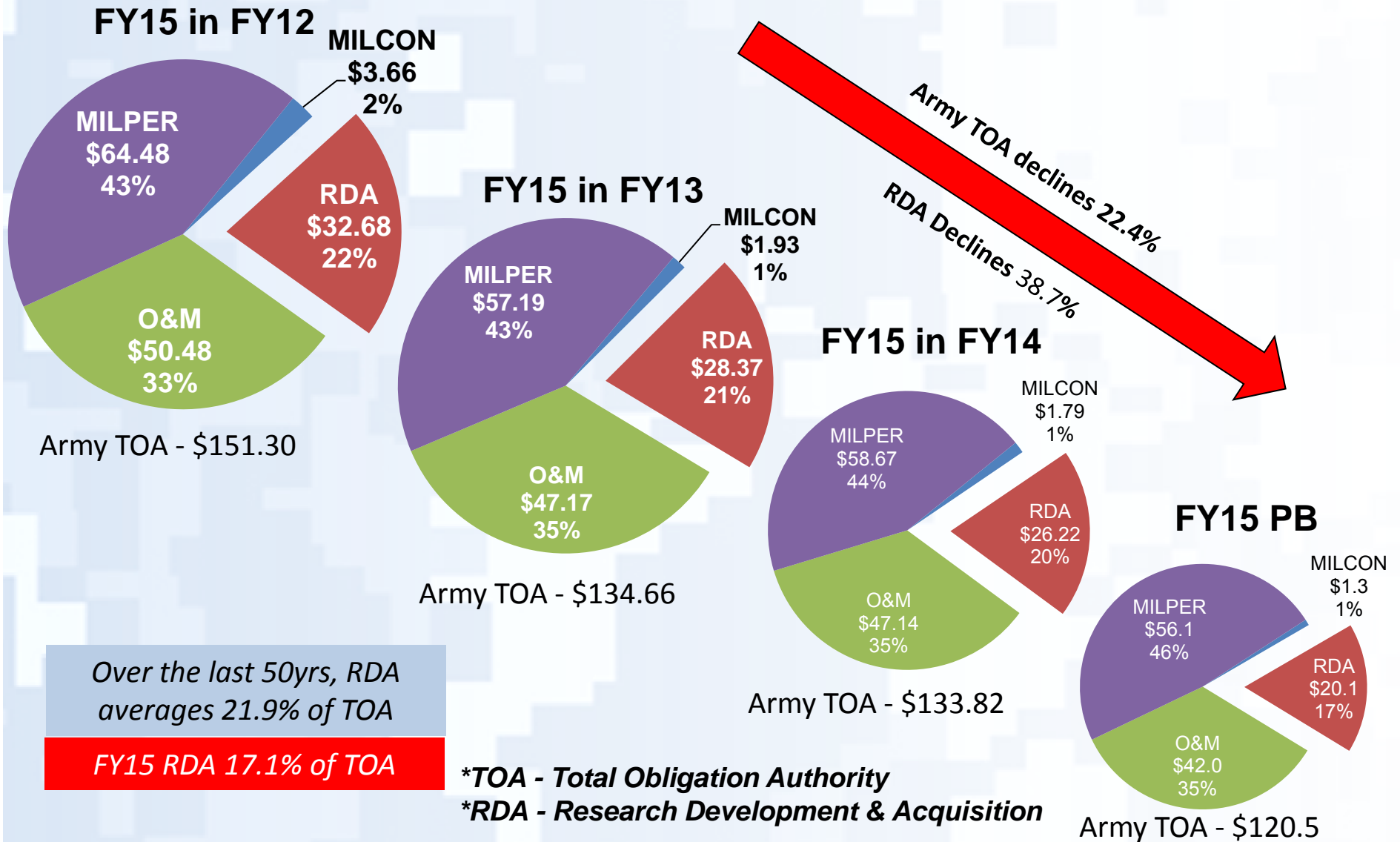
1. Mobile Protected Fires
2. Identity Intelligence
3. Optimizing Human Performance
4. EW/Comms



JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
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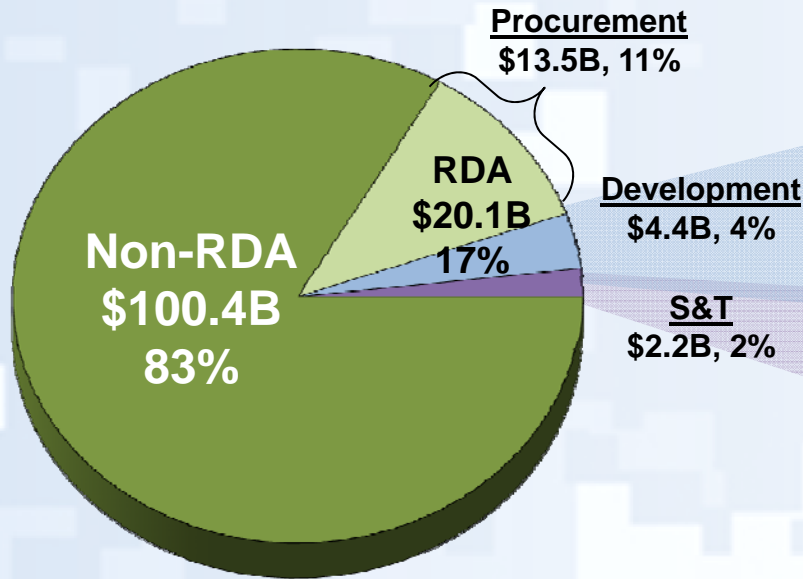
FY 15 Declining Army TOA (\$B)



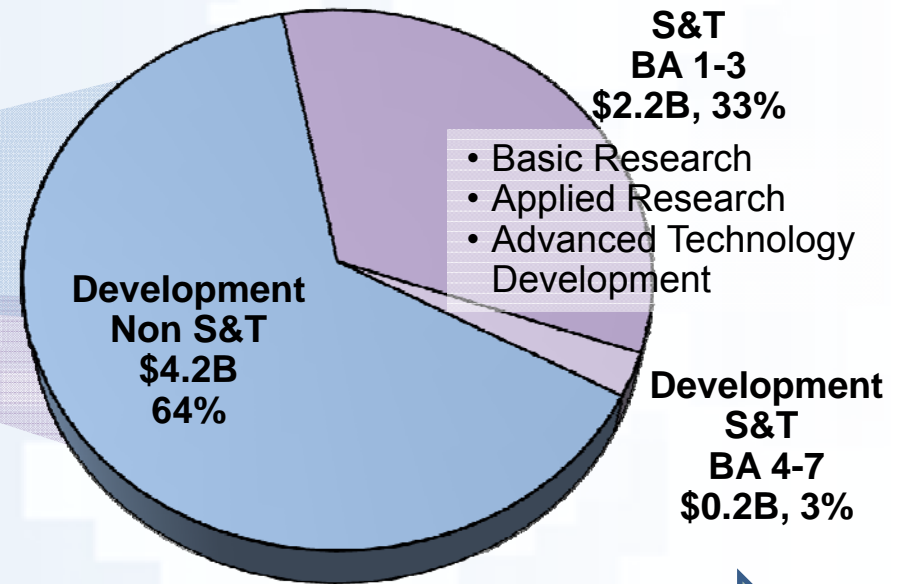


Army S&T Funding – FY15 PB

TOA = \$120.5B



RDTE (\$6.6B)



- Basic Research
- Applied Research
- Advanced Technology Development



6.1 Basic Research

64% Universities/ Industry
33% In-House
3% OGA, Other

Investigation & analysis of basic law of nature, phenomenon to increase scientific knowledge

6.2 Applied Research

33% Industry
53% In-House
14% OGA, Other

Application of knowledge to develop useful materials, devices and systems or methods

6.3 Adv. Technology Development

60% Industry
28% In-House
12% OGA, Other

Development of subsystems & components to integrate into system prototypes

6.4 Adv. Component Development

90% Industry
10% In-House

Maturation of systems/sub-systems through competitive prototyping and experimentation

6.6 Systems Dev. & Demo

90% Industry
10% In-House

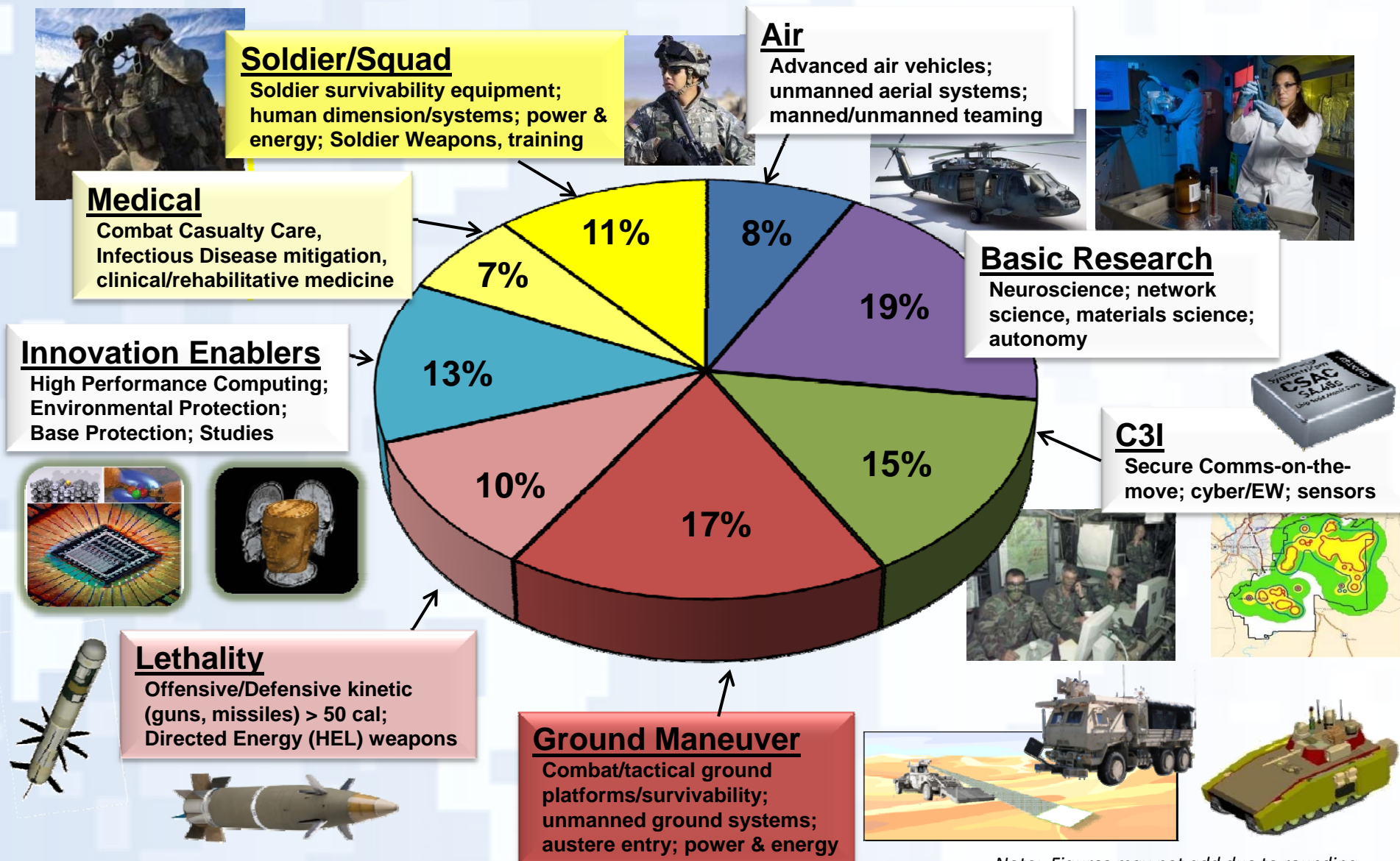
6.7 System Improvements

84% Industry
16% In-House

Manufacturing technologies and pre-planned product improvements

Army S&T Investments by Portfolio

PB15 FY15 6.1-6.3



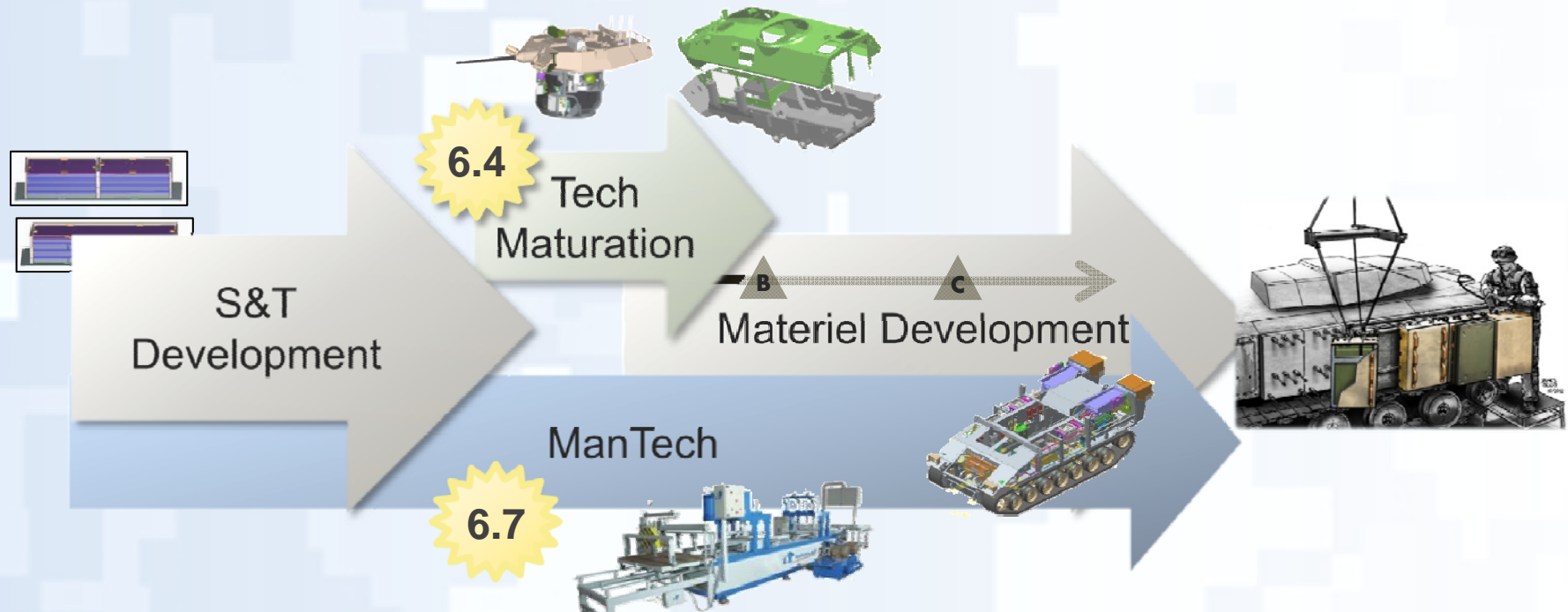
Note: Figures may not add due to rounding

MAINTAINING A LEADING EDGE IN TECHNOLOGY

Technology Maturation/ Manufacturing Technology Strategy



Goal: Enabler programs to mature key capabilities the Army needs, applied when and where appropriate to “ramp up” technology insertion.



Technology Maturation/ Prototyping

- Further mature technologies (goal TRL 7)
- Enable competitive prototyping prior to MS B
- Inform materiel requirements
- Drive down technology and cost risks
- Accelerate capabilities to the Warfighter

Manufacturing Technology

- Provide efficient and affordable manufacturing for next-generation combat systems
- Reduce production risks and manufacturing costs

Partnerships—Leveraging Other Services, Agencies, Academia, Industry & International R&D



Other Services

- Air Force
- Navy/USMC



PTSD treatment

Versatile, Affordable,
Advanced Turbine Engine



Agencies

- DARPA
- DTRA
- DoE labs
- DHS
- NIH
- NASA

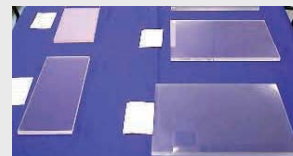
Academia

- Georgia Tech
- MIT
- Penn State
- USC
- UMd
- UC System
- Delaware
- Michigan

Industry

- Primarily technology development to create options for PMs
- Small Business Innovation Research—solutions from non-traditional sources
- Army Venture Capital Initiative—dismounted Soldier and vehicle power

Transparent Armor-
Technology
Assessment &
Transfer, Inc.



International

- The Technical Cooperation Program (US, UK, CA, AUS, NZ)
- NATO Science & Technology Organization
- Bilateral Leadership Forums (UK, CA, IS, GE)



Co-investment with UK to
advance state-of-the-art in
network science



Defense Innovation Marketplace

(www.DefenseInnovationMarketplace.mil)



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.

"We also have the Defense Marketplace, which is a website that we allow industry to identify IR&D opportunities... that we can then leverage."

Mary Miller, Deputy Assistant Secretary of the Army for Research & Technology

NEW IN THE MARKETPLACE

<p>Strategic Documents</p> <ul style="list-style-type: none"> Systems Engineering 2013 Annual Report **NEW** DoD's FY15 S&T Testimony Chairman's 2nd Term Strategic Direction Expeditionary Forces Capstone Concept Reliance 21 Operating Principles <p>More...</p>	<p>Doing Business with DoD</p> <ul style="list-style-type: none"> DARPA Hand & Touch Interfaces (HAPTIX) Proposer's Day **NEW** DARPA Upward Falling Payloads **NEW** Navy Optical Telescope Assembly BAA **NEW** DARPA Tactical Boost Glide BAA <p>More...</p>	<p>News & Events</p> <ul style="list-style-type: none"> Aerospace Enterprise Dialogue with Industry Wright Dialogue with Industry DAU March Newsletter Top Downloads February Army Technology Magazine Defense AT&L Magazine <p>More...</p>
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Updated 3/31/14

FEATURED DOCUMENT

USMC Expeditionary Forces 21

This document provides guidance for how the Marine Corps will be postured, organized, trained, and equipped to fulfill assigned public law and national policy responsibilities.

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

Search Trends

What did you Miss?

Top Marketplace pages and downloads. ➔

TECHNOLOGY INTERCHANGES

Aeronautical

Dialogue with Industry and IR&D Interchange ➔

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Army Resources

"We also have the Defense Marketplace, which is a website that we allow industry to identify IR&D opportunities... that we can then leverage."

Mary Miller, Deputy Assistant Secretary of the Army for Research & Technology



Acquisition

- [Assistant Secretary of the Army for Acquisition, Logistics and Technology \(ASA\(ALT\)\)](#)
- [Army Materiel Command](#)
- [Army Medical Research and Materiel Command](#)
- [Army Space and Missile Defense Center](#)
- [Corps of Engineers](#)

Program Executive Offices

- [PEO Ammunition](#)
- [PEO Aviation](#)
- [PEO Command Control Communications-Tactical](#)
- [PEO Combat Support and Combat Service Support](#)
- [PEO Enterprise Information Systems](#)
- [PEO Ground Combat Systems](#)
- [PEO Intelligence, Electronic Warfare and Sensors](#)
- [PEO Missiles & Space](#)
- [PEO Soldier](#)
- [U.S. Army Edgewood Chemical Biological Center \(ECBC\)](#)

Sustainment

Doing Business with the U.S. Army

- [Army's Briefings to Industry December 2013](#)
- [Army Single Face to Industry](#)
- [U.S. Army Medical Research Acquisition Activity \(USAMRAA\)](#)
- [Army Corps of Engineers](#)
- [Army Manufacturing Technology Program](#)

Small Business Opportunities

- [Army Office of Small Business](#)
- [Army Small Business Innovation Research \(SBIR\)](#)
- [Army Medical Research and Materiel Command Small Business Programs](#)
- [Space And Missile Defense Center](#)
- [Army Contracting Command](#)

Life Cycle Management Commands

- [Joint Munitions and Lethality](#)
- [Tank-automotive and Armaments Command](#)
- [Aviation and Missile](#)
- [Communication and Electronics Command](#)

Requests For Information / Proposals (RFIs/RFPs)

- PEO Soldier
- PEO Simulation Training and Instrumentation
- Joint PEO Chemical and Biological Defense
- PEO Assembled Chemical Weapon Alternatives

Technology

Strategic Overview

- Navy Unmanned Systems and Autonomy
- Army FY14 S&T Testimony
- Army S&T Ground Overview
- Army S&T Overview
- Army S&T Power and Energy Overview
- Army S&T Air Overview
- Army S&T Soldier Overview
- Army S&T C3I Overview
- Army Equipping guidance 2013-2016
- 2014 ARMY Equipment Modernization plan
- Army Launches New Rapid Equipping Site
- Army Capstone Concept
- TRADOC 2028 Strategic Assessment
- Army 2020 Update

Doing Business with the Army

- Engineer Research and Development Center (ERDC)
- Army Medical Research and Materiel Command (MRMC)
- U.S. Army Research, Development and Engineering Command (RDECOM)
- U.S. Army Research Laboratory (ARL)
- U.S. Army Natick Soldier Research, Development and Engineering Center (NSRDEC)
- U.S. Army Armament Research, Development and Engineering Center (ARDEC)
- U.S. Army Tank Automotive Research, Development and Engineering Center (TARDEC)
- U.S. Army Communications-Electronics Research, Development and Engineering Center (CERDEC)
- U.S. Army Aviation & Missile Research, Development & Engineering Center (AMRDEC)
- U.S. Army Edgewood Chemical Biological Center (ECBC)

Proposals (RFIs/RFPs)

- Army's ERDC 2014 BAA
(Closes 1/31/2015)
- Enhancing Warfighter Capabilities in Subterranean Environments RFI
- D3I Domain 3 Synopsis
(Closes 7/31/2015)
- New and Innovative Ideas for Air, Space, and Missile Defense Technology
(Closes 4/5/2014)
- Armored Multi-Purpose Vehicle (AMPV) Draft RFP Website
- Army Networking the Soldier: Information for Industry
- Army Technology Opportunities

Army Energy Program

- Army Energy Security
- Army Power and Energy - Ideas, Comment & Observations

Army Strategic Documents

- Army FY15 Budget Materials ****NEW****
- Army FY15 Budget Overview ****NEW****
- Useful Information
- 2013 Army Business Transformation
- 2013 Army Weapons System Handbook
- Army AL&T Magazine

Questions

Contact us [here](#).



Summary

- The Army will continue to have missions around the globe that require Soldiers to be equipped with the best technology to prevent, shape and win decisively
- The Army focuses on addressing the enduring challenges to meet the needs of the ~170,000 Soldiers deployed over 150 countries worldwide conducting civil & military operation
- We will continue to develop a S&T modernization strategy that enhances efficiency and effectiveness across the Army S&T Enterprise

**Our job is to provide and maintain the leading edge
in technology for the Army**

Army Science & Technology



Providing Soldiers Technology Enabled Capabilities

MAINTAINING A LEADING EDGE IN TECHNOLOGY