Army Science & Technology

Science and Technology (S&T) Overview

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Army S&T Principles

MISSION: *Identify, develop and demonstrate technology options that inform and enable effective and affordable capabilities for the Soldier*

VISION: *Providing Soldiers with the technology to Win*

Current Force
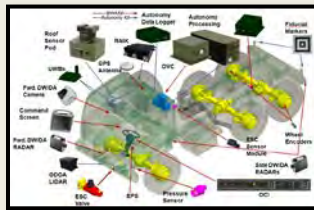

Deployable Force Protection Adaptive Red Team

Advanced Rotary Wing Aerial Delivery Sling Load Net

Autonomous Mobility Appliqué System

High Speed Container Delivery System

Video from Unmanned Aerial Systems

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

Secretary of the Army
Honorable John M. McHugh

Under Secretary of the Army
Honorable Brad R. Carson

Assistant to the Secretary of the Army for Acquisition, Logistics, and Technology
Honorable Heidi Shyu

Deputy Assistant Secretary of the Army (Research & Technology)
Ms. Mary J. Miller
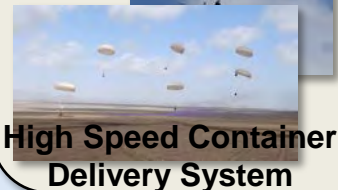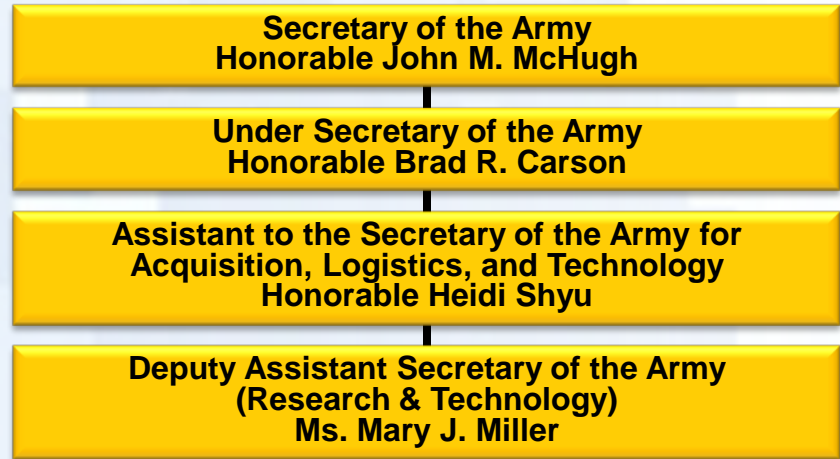
* Percent of S&T core program executed, PB15

74%*	8%*	13%*	3%*	2%*
Army Materiel Command	**U.S. Army Medical Command**	**U.S. Army Corps of Engineers**	**U.S. Army Space & Missile Defense Command**	**HQDA, G-1 Personnel**
Research, Development & Engineering Command	Army Medical Research & Materiel Command	Engineer Research & Development Center	Space & Missile Defense Command Technical Center	U.S. Army Research Institute for the Behavioral and Social Sciences
Army Research Laboratory / Research, Development & Engineering Centers	Laboratories	Laboratories		

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

Legend:
- 🟢 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

Map Labels:
- Tank Automotive RDEC
- Cold Regions Research & Engineering Lab
- Natick Soldier RDEC
- Research Inst. of Environmental Medicine
- Communications-Electronics RDEC
- Armament RDEC
- Research Inst. of Chemical Defense
- AMRDEC - Army Aeroflightdynamics Directorate
- Construction Engineering Research Lab
- RDECOM HQ
- Research Inst. of Infectious Disease
- Army Research Institute for the Behavioral & Social Sciences
- Walter Reed Army Inst. of Research
- Edgewood Chem Bio Center
- ARL - Battlefield Environments and Survivability Elements
- Army Research Lab (ARL)
- Space and Missile Defense Command Technical Center
- ARL - Army Research Office
- Geospatial Research Laboratory
- Institute of Surgical Research
- Aviation & Missile RDEC
- ARL - Simulation & Training Technology Center
- Engineer Research and Development Center
  Coastal & Hydraulics Lab
  Environmental Lab
  Geotechnical & Structures Lab
  Info Tech Lab
- Aeromedical Research Lab

Total Civilian Manpower: ~17,000
- ~12,000 Scientists & Engineers
- ~5,000 Technicians, Analysts, and Administrative support
- ~500 Military S&E

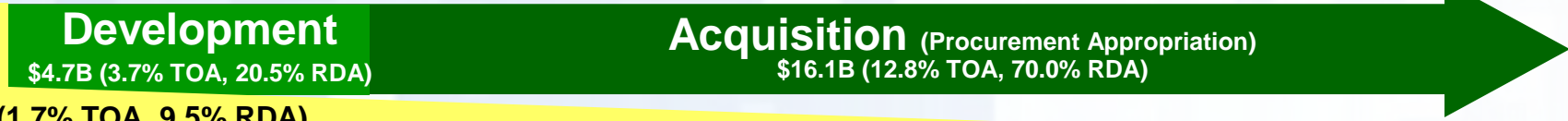**S&T** (RDT&E BA 1-3) **$2.2B** (1.7% TOA, 9.5% RDA)
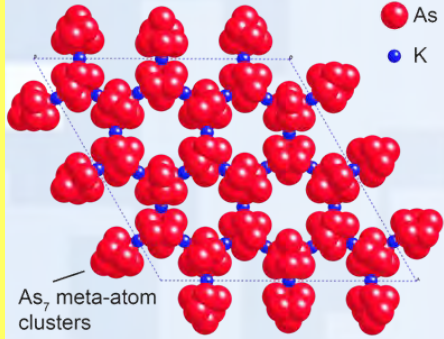
Development $4.7B (3.7% TOA, 20.5% RDA)

Acquisition (Procurement Appropriation) $16.1B (12.8% TOA, 70.0% RDA)
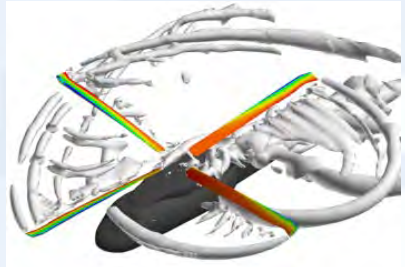
6.1: Basic Research $425M (19% of S&T)

Material Science

As7 meta-atom clusters

- **Understanding to solve Army-unique problems**
- **Knowledge for an uncertain future**

6.2: Applied Research $880M (40% of S&T)

Aeromechanics and Computational Methods

- **Applications research for specific military problems**
- **Components, subsystems, models, new concepts**

6.3: Advanced Technology Development $896M (41% of S&T)

Occupant Centric Protection

- **Demonstrate technical feasibility at system and subsystem level**
- **Path for technology spirals to acquisition— rapid insertion of new technology**

6.4: Technology Maturation Initiatives $41M

- **Funds technology maturation efforts, including competitive prototyping and experimentation in support of selected pre-Milestone B Programs of Record.**

6.6: Technical Information Activities $27M

- **Advisory Bodies**
- **Reporting and Info Dissemination**
- **Studies and Tech Assessment**

6.7: Manufacturing Technology $48M

- **Address manufacturing issues and facilitate affordable production of weapon systems and materials**
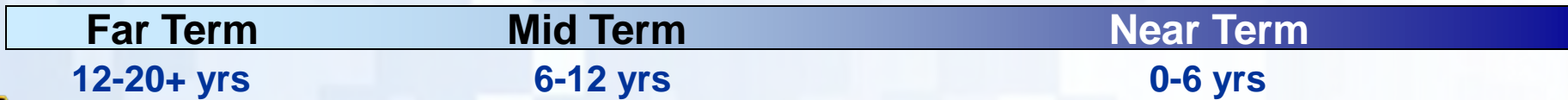
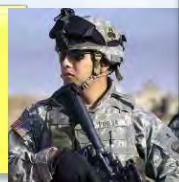| **Far Term**	**Mid Term**	**Near Term**
12-20+ yrs	**6-12 yrs**	**0-6 yrs**

Army Investments by Portfolio

Soldier/Squad
Personnel, Training, Human System Integration, Dismounted mission equipment and power & energy

Air
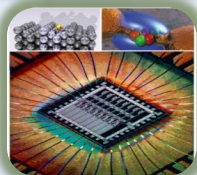Advanced air vehicles; unmanned aerial systems; manned/unmanned teaming

Medical
Combat Casualty Care, Infectious Disease mitigation, clinical/rehabilitative medicine

Basic Research
Materials Science; Medical/Life Sciences; Quantum/Info Science; Autonomy; Networks

Innovation Enablers
High Performance Computing; Environmental Protection; Base Protection; Studies; Technical Maturation Initiatives; Procurement
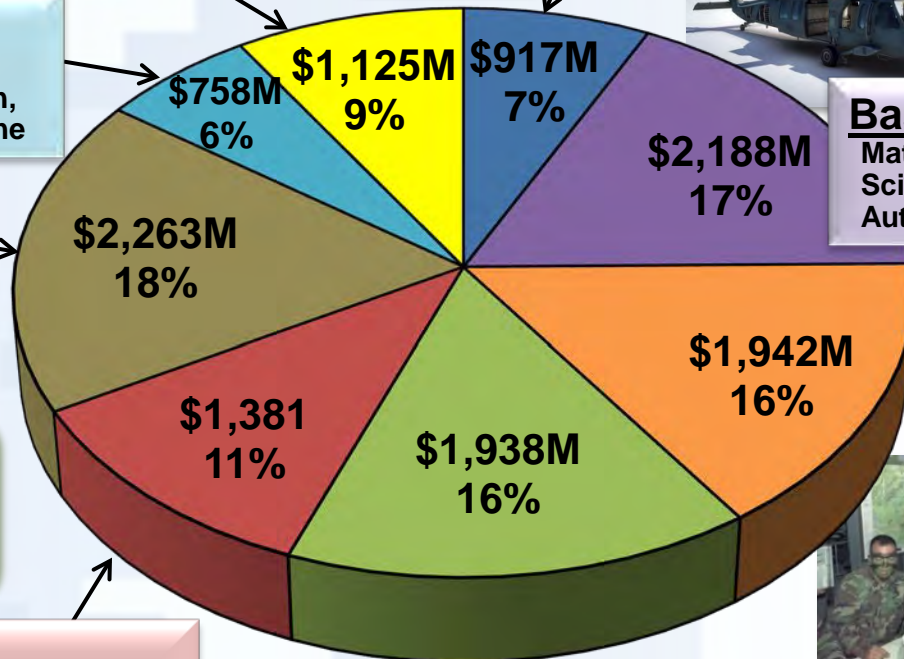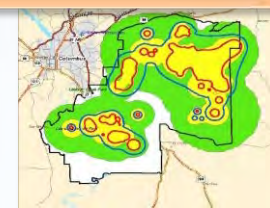
C3I
Secure Comms-on-the-move; cyber/EW; sensors

Lethality
Offensive/Defensive kinetic (guns, missiles), Soldier Weapons, Directed Energy (HEL) weapons

Ground Maneuver
Combat/tactical ground platforms/survivability; unmanned ground systems; austere entry; power & energy

Pie chart values:
- $917M — 7%
- $1,125M — 9%
- $758M — 6%
- $2,263M — 18%
- $1,381 — 11%
- $1,938M — 16%
- $1,942M — 16%
- $2,188M — 17%

Army Investments	FY16-20
BA1	$2,188M
BA2	$4,573M
BA3	$4,734M
BA4	$217M
BA7	$295M

BA6 $181M, Procurement $324M

U.S. Army S&T Major Efforts

Soldier/Squad
Soldier Training and Human Performance
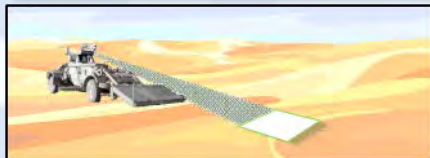Soldier Overmatch
Soldier System Engineering Architecture

Air
Advanced Aircraft Design
Degraded Visual Environment Mitigation
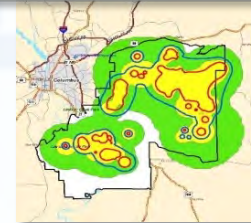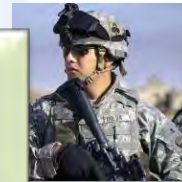**Joint Multi-Role Technology Demonstrator**

Ground Maneuver
Protected Mobility
Austere Entry & Maneuver
Increased Energy Density and Energy Efficiency

C3I
C3I Vehicle Architectures
High Definition (HD) Multifunction Sensors
Radio Frequency (Comms/EW/PNT) Common Operating Environment

Medical
Post Traumatic Stress Disorder (PTSD) and Traumatic Brain Injury (TBI)
Infectious Diseases (Drugs & Vaccines)
Damage Control Resuscitation

Innovation Enablers
Environmental Lifecycle Analysis
Threatened and Endangered Species
High Performance Computing Modernization Program

Basic Research
Multi-Scale Modeling of Materials
Intelligent / Autonomous Systems
Human Sciences / Cybernetics
Quantum Effects / Information Science

Lethality
Disruptive Energetics
Counter Unmanned Air Systems/Cruise Missile
Solid State High Energy Laser Technology Demonstration

Piloting a New Laboratory Business Model

ARL

Transformation Principles
Flow, Agility, Quality, Efficiency & Effectiveness

ATTRACT AND RETAIN BEST & BRIGHTEST

OPEN CAMPUSES

SHARED MODERN FACILITIES

INNOVATION PRACTICES

DEFENSE LABORATORIES

ACADEMIA

Facilities   People

TRANSFORMATIVE SCIENCE

Resources

INDUSTRY

Efficient, effective and agile research system

- ✓ **Human Sciences**
- ✓ **Information Sciences**
- ✓ **Sciences for Lethality and Protection**
- ✓ **Sciences for Maneuver**
- ✓ **Computational Sciences**
- ✓ **Materials Research**
- ✓ **Assessment and Analysis**

"We will need new technology over the next 10 years to make a leaner and more capable Army."

**GEN Raymond T. Odierno
38th Chief of Staff, Army**

Responding to the National Security Challenges of the 21st Century

Open Campus Website: http://www.arl.army.mil/opencampus/