Army Science & Technology

“America’s Army – Decisive Force”

Army S&T Priorities—Update

Dr. Marilyn M. Freeman
Deputy Assistant Secretary of the Army for Research and Technology

April 18, 2012
Purpose

• Update S&T strategy development

• Review the new processes we are implementing in Army S&T

• Highlight opportunities for partnership
We have learned from last decade of war...

"In the past the small unit was built around the fighting system. Today and for the future, the fighting system must be built around the small combat unit."

MG(R) Robert Scales*

*Ground Combat Vehicle CONOPS - Concept paper dated Dec 2, 2010

We will continue to pursue programs focused on the Soldier and small unit capabilities with the intent of making our formations more flexible, adaptable and lethal.
What we have done...

Since 2010 we have been making strides to address...

DASA(R&T)’s Problem & Challenge

• The Problem
  – It takes too long to get technology enabled capabilities to the field
  – Army S&T is perceived as irrelevant

• Fixing the Problem requires:
  – New comprehensive strategy
  – Changing the culture
  – Restoring confidence in Army S&T
  – Building a strong Partnership with Leadership
  – Motivating the workforce towards results

We have validated a new set of priorities for and approaches to managing Army S&T...

The Vision

Vision
Provide Technology Enabling Capabilities that Empower, Unburden and Protect our Soldiers and Warfighters in an environment of Persistent Conflict

Army S&T Portfolios

Enduring Technologies Portfolio
Basic Research
Air Portfolio
Ground Portfolio
C3 Portfolio
Soldier (Medical) Portfolio
Soldier (Non-medical) Portfolio
What we have done …

DASA(R&T)’s Problem & Challenge

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Provide *Technology Enabling Capabilities* that Empower, Unburden and Protect our Soldiers and Warfighters in an environment of Persistent Conflict

Our Challenge

Deliver these technologies through effective partnerships in synchronization with Army Force Generation (ARFORGEN) and fiscal processes

Respond Rapidly to Technological Evolution
What we have done …

**DASA(R&T)'s Problem & Challenge**

- **The Problem**
  - It takes too long to get technology enabled capabilities to the field
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- **Fixing the Problem requires:**
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**Army S&T Portfolios**
Sources Informing S&T (6.2 & 6.3) Investment Decisions for 2014-2028

DoD Priorities

- Counter Terrorism & Irregular Warfare
- Deter & Defeat Aggression
- Project Power Despite Anti-access/Area Denial Challenges
- Counter Weapons of Mass Destruction
- Operate Effectively in Cyber & Space
- Maintain a Safe, Secure & Effective Nuclear Deterrent
- Defend Homeland & Provide Support to Civil Authorities
- Provide Stabilizing Presence
- Conduct Stability & Counterinsurgency Operations
- Conduct Humanitarian, Disaster Relief, & Other Operations

"...recalibrate its [U.S.'] capabilities and make selective additional investments in:"

- Mission Command
- Intelligence
- Movement and Maneuver
- Fires
- Protection
- Sustainment
- Training and Leader Development
- Institutional Army
- Human Dimension

TRADOC Future Outlook

Desired Capabilities against a predicted future environment in:

TRADOC Warfighter Outcomes, CAN, CBA, ICD, CDD, CPD

Maturation of Technologies for Acquisition Programs of Record or Planned Programs (Army G3/5/7 Capability Portfolio Reviews Roadmaps and Trades)

Three things S&T must invest in:
1) What we do that no one else does (maintaining core competencies)
2) What we do to advance capabilities
3) What “big bets” that others invest in so we can counter

Army Capstone Concept

International/Allies

TRADOC Warfighter Outcomes, CAN, CBA, ICD, CDD, CPD

CPR Roadmaps

BA4 Tech Maturation

Wargaming Exercises

NGIC

Commercial

Other Services

JCIDS
S&T Investment Strategy
Balanced Portfolio

Studies, Tech Planning Activities

Long-term Game-Changing (Disruptive) Technology

Long-term Enabling Technology Development—Innovation, invention, technology exploitation to create sub-system opportunities

Competitive prototyping; Greater than TRL6

TECDs—Near-term integrated capability demonstrations—predominately 6.3, may have some 6.2

Mid-term—Innovation*, maturation, technology demonstration; reducing technological risk; predominately supporting planned Programs of Record

* Includes Rapid Innovation Funding
1. There is insufficient **FORCE PROTECTION** to ensure highest degree of survivability across the spectrum of operations.

2. Soldiers in Small Units (squads/fire teams/crews) are **OVERBURDENED** (physically and cognitively); this degrades performance and may result in immediate, as well as, long term consequences.

3. U.S. Army squads are too often **SURPRISED** in tactical situations. Soldiers in Small Units lack sufficient timely **MISSION COMMAND & TACTICAL INTELLIGENCE** to understand where their assets are, who and where the enemy is, who and where non-combatants are and to document and communicate this information to each other and higher echelons.

4. We spend too much time and money on **STORING, TRANSPORTING, DISTRIBUTING and WASTE HANDLING** of consumables (water, fuel, power, ammo and food) to field elements, creating exposure risks and opportunities for operational disruption.

5. Soldiers in Small Units have limited capability to integrate maneuver and fires in all environments to create **TACTICAL OVERMATCH** necessary to achieve mission objectives.

6. Operational **MANEUVERABILITY** (dismounted & mounted) is difficult to achieve in complex, austere, and harsh terrains and at high OPTEMPO.

7. We do not understand **WHAT MAKES THE HUMAN TICK** in a way that can lead to assured ability to perform operational, high OPTEMPO missions effectively and without secondary negative effects.

**Problems listed in no particular order – validated by Senior Army Leadership**
## 24 Army S&T Challenges

<table>
<thead>
<tr>
<th>Challenge #</th>
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<tbody>
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<td>Force Protection – Soldier &amp; Small Unit</td>
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<td>Force Protection – Occupant Centric Platform</td>
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<td>Human – Medical Assessment &amp; Treatment</td>
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<td>Force Protection – Basing</td>
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<td>7b</td>
<td>Human – Individual Training to Tactical Tasks</td>
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<td>Surprise/Tactical Intelligence – Actionable Intelligence</td>
</tr>
<tr>
<td>4a</td>
<td>Sustainability/Logistics – Basing</td>
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<td>Maneuverability – On the Move (Air)</td>
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<td>Maneuverability – Degraded Visual Environment (brown-out)</td>
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<td>Human – Strength-based Soldier Characteristic Assessments &amp; Readiness</td>
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<td>Human – Trauma Management</td>
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Characteristics of Technology Enabled Capabilities Demonstrations (TECD)

TECDs—Near-term integrated capability demonstrations—predominately 6.3, may have some 6.2

Warfighter Outcomes

Technology Development

Operational Evaluation

Technology Demonstration

Field Limited Capability

Continue Development

Terminate

Acquisition PoR

Responsible PEO/PM
Or Other mechanism

Army’s Capability Portfolios

- Integrated programs across all S&T
- Integrated solutions/multiple systems
- Output is a full capability
- High-level oversight, including TRADOC involvement
- Current status – 9 TECDs approved against Top 10

Goal: ~50% Army S&T BA3 Invested in these programs

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Experimentation Venues
Technology Enabled Concepts through Warfighter Evaluations

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<th>Concept Exploration</th>
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Increasing Maturity

Simulations/MITL

• S&T Labs/Centers
  - S&T Labs/Centers
  - TRADOC - Unified Quest

Simulations & Hardware

• Army S&T - SILs at Labs/Centers
  - C3 OTM
  - C4ISR (CSIL)
  - Radio Lab (REAL)
  - TRADOC Centers of Excellence

• C3 OTM
  - C4ISR (CSIL)
  - Radio Lab (REAL)
  - TRADOC Centers of Excellence

• AEWE
  - TRADOC Centers of Excellence
  - NTC

• AEWE
  - TRADOC Centers of Excellence
  - NTC

• NIE/CIE
  - Ft. Bliss
  - White Sands

Requirements Generation

PORs and Supporting Requirements (DOTMLPF)
Current Army Modernization Path

- TRADOC desired Capability
- Modernization-driven Capability Increase
- Acquisition Programs of Record
- S&T New Capability Enablers
- S&T Supporting Programs of Record

Years:
- 2012
- 2020
- 2028

Programs:
- Army PAM 525-3
- TRADOC desired Capability

Capability
The Rest of the Story
Recovered Acquisition Budget

Capability

Acquisition Programs of Record

S&T New Capability Enablers

Increased Capability

Without New S&T Enablers

S&T Supporting Programs of Record

Army PAM 525-3
Next Steps

1. Get PEO/PM Needs and define a set of programs to meet the highest priority ones.

2. Identify technologies that have high potential to “Bridge Gaps” or “Leap Ahead” – taking advantage of time when Acquisition programs are slowed down due to constrained budgets – and define a set of programs to meet the highest priority ones.

3. Define a set of priorities for Basic Research and identify challenge statements against which programs can be proposed and approved.
Where can you help?

• Many opportunities and programs available to partner
  – Allied Governments
    • International Agreements
    • Forums (SNR-A, TTCP, etc.)
  – Industry
    • IR&D
    • Army’s Rapid Innovation Fund
    • SBIR Program
    • CRADA’s
  – Academia
    • Grants
  – Army’s International Technology Centers can assist with
    • Identifying foreign TEC's that may address all or part of a Challenge
    • Partnering with Army laboratories or engineering centers
Army’s Rapid Innovation Fund

• Tremendous response, with over 1,000 White Papers received against the top 10 S&T Challenges

• Approximately 10% have been asked to submit full proposals

• Plan is to issue another BAA for White Papers in July 2012
SBIR Program

• Highly successful program for innovation
• In Fiscal Year 2011
  – 139 Topics
  – 419 Phase I and 204 Phase II proposals awarded
  – Total Awards = $201 million

✓ Starting this year, SBIR topics/projects will align with TECDs, S&T Challenges and high priority PEO needs
In Summary...

• We are changing the Army S&T business model to be an enduring, sustainable, successful enterprise model

• We are aligning our strategic planning to the budget processes so that we are more efficient and able to achieve “top-down” S&T leadership investment focus

• We are identifying critical Army problems that we can solve in the near and mid-term, using the best talent and skills wherever they exist

• We are enhancing visibility of Army S&T priorities to provide partnering opportunities to jointly solve problems and enhance our Warfighter capabilities

The better we understand our needs and priorities the better able our enterprise will be to give us capability solutions
# Portfolio Managers

## OFFICE OF THE DEPUTY ASSISTANT SECRETARY OF THE ARMY (RESEARCH AND TECHNOLOGY)

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<td>Director for Soldier Technology, Ms. Cathie Hurley (Act.)</td>
<td><a href="mailto:catherine.a.hurley.civ@mail.mil">catherine.a.hurley.civ@mail.mil</a></td>
</tr>
<tr>
<td>Director for Ground Technology, Mr. Matt Donohue</td>
<td><a href="mailto:matthew.c.donohue2.civ@mail.mil">matthew.c.donohue2.civ@mail.mil</a></td>
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<tr>
<td>Director for Air Technology, Mr. Todd Turner</td>
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<td>Director for C3I Technology, Mr. Kris Gardner</td>
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<td>Director for Enduring, Dr. Niki Goerger</td>
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<td>Director for Basic Research, Mr. Jeff Singleton</td>
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For More Information

Office of the Assistant Secretary of the Army
(Acquisition, Logistics and Technology)

Army Research & Technology
asaaltaie.wordpress.com
Army Science & Technology

Providing Soldiers Technology Enabled Capabilities

MAINTAINING A LEADING EDGE IN TECHNOLOGY