



Army Science & Technology

Army Science & Technology Overview

Dr. Thomas Russell
Deputy Assistant Secretary of the Army
(Research & Technology)

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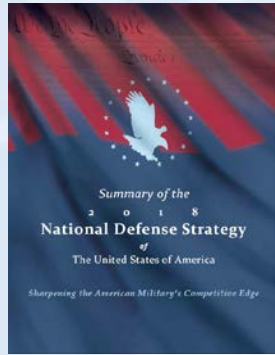
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DESIGN • DEVELOP • DELIVER • DOMINATE
SOLDIERS AS THE DECISIVE EDGE



Army S&T Strategy



Army Modernization Priorities	
1. Long Range Precision Fires	4. Network/C3I
2. Next Generation Combat Vehicle	5. Air & Missile Defense
3. Future Vertical Lift	6. Soldier Lethality



Army S&T Investment Strategy

S&T Projects Aligned to Modernization Priorities

S&T Projects directly aligned to provide technology options for the Army's Modernization Priorities.

6.3-6.4 Funding



6.1-6.2 Funding



Exploration & Innovation

Science & Technology efforts aimed at exploration, discovery, and innovation supporting next generation Army capabilities in the mid- and far-term.





The Urgency of Modernization



The Army's Mission remains constant: To deploy, fight, and win our Nation's wars by providing ready, prompt, and sustained land dominance by Army forces across the full spectrum of conflict as part of the Joint Force.

The 2017 *National Security Strategy* (NSS) and 2018 *National Defense Strategy* (NDS) call for the Army to become more lethal across all domains in order to deter and defeat near-peer adversaries.

A combination of strategic, technological, and institutional trends now places the Army's competitive advantages at risk.

- ❑ Army's focus on ongoing conflicts combined with reality of constrained resources to slow, defer, and/or halt the development of new capabilities.
- ❑ Adversaries have invested in capabilities to provide overmatch across multiple domains.
- ❑ Army is not institutionally organized to quickly deliver modern, critical capabilities to Soldiers and combat formations.

Inflection Point: The Army can no longer afford to defer modernization without risk of losing overmatch.



Vision of the Future Army in 2028



The Army of 2028 will be ready to deploy, fight, and win decisively against any adversary, anytime, and anywhere, in a joint, multi-domain, high-intensity conflict, while simultaneously deterring others and maintaining its ability to conduct irregular warfare.

Secretary Mark Esper, AUSA, MAR 2018*



The Army will do this through:

- Employment of modern manned and unmanned ground combat vehicles, aircraft, sustainment systems, and weapons.
- Coupling them with robust combined arms formations and tactics based on modern warfighting doctrine.
- Centering on exceptional Leaders and Soldiers of unmatched lethality.



By investing in the Army's Six Modernization Priorities:

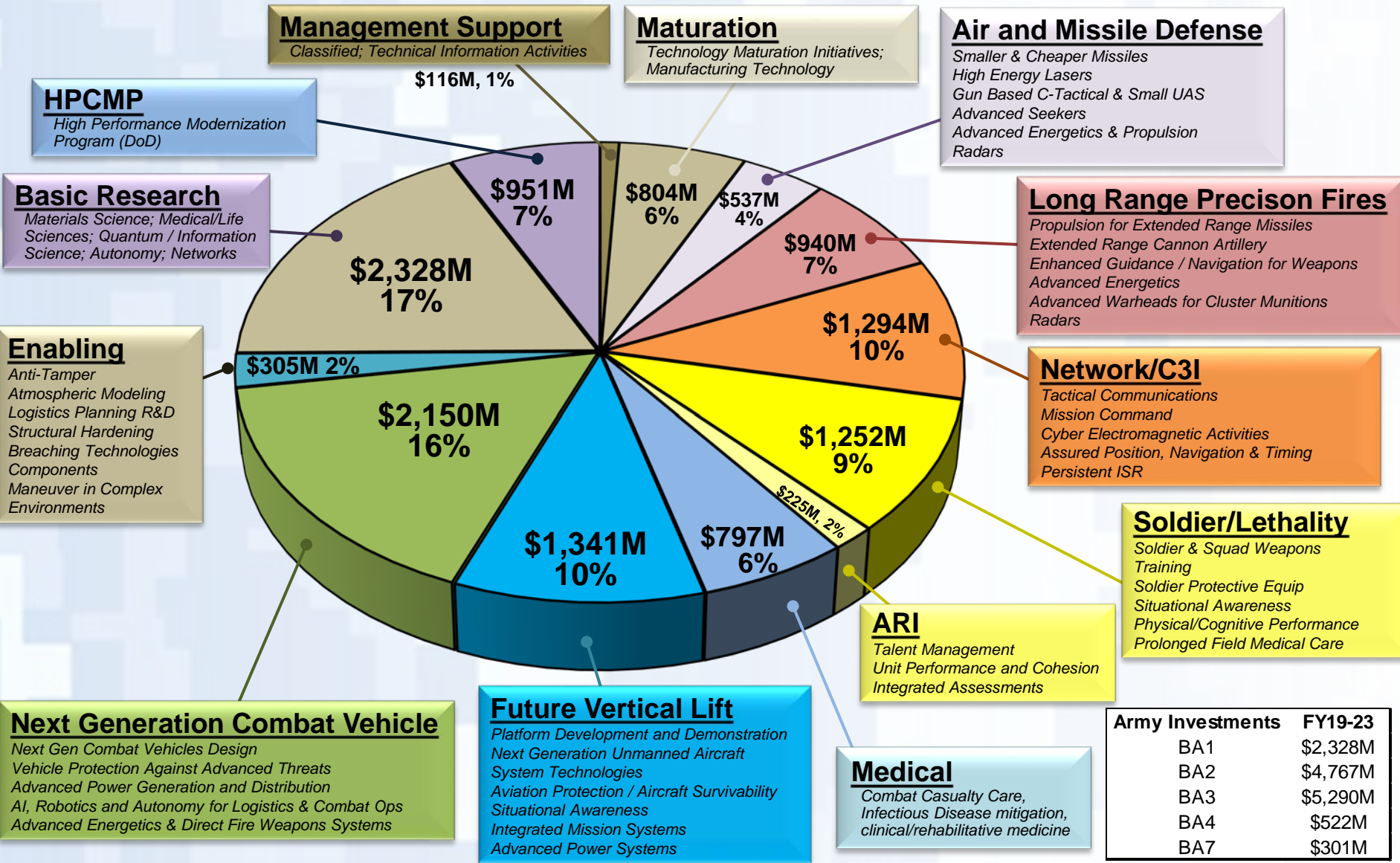
Long Range Precision Fires
Next Generation of Combat Vehicles
Future Vertical Lift

Army Network
Air and Missile Defense
Soldier Lethality

Technologies with leading edge potential that support these priorities include: Artificial Intelligence (AI), ultra-secure communications, robotics, virtual reality, the internet of things, energetics, Directed Energy (DE), and ultra-designed materials.

Army S&T Investments by Priority

PB19 - \$13.7B (FY19-23)



Army Investments	FY19-23
BA1	\$2,328M
BA2	\$4,767M
BA3	\$5,290M
BA4	\$522M
BA7	\$301M

BA6 \$155M, Procurement \$350M



Long Range Precision Fires

Goal: Provide extended range allowing an increased capability to support maneuver and counter enemy long-range systems.

Lines of Effort

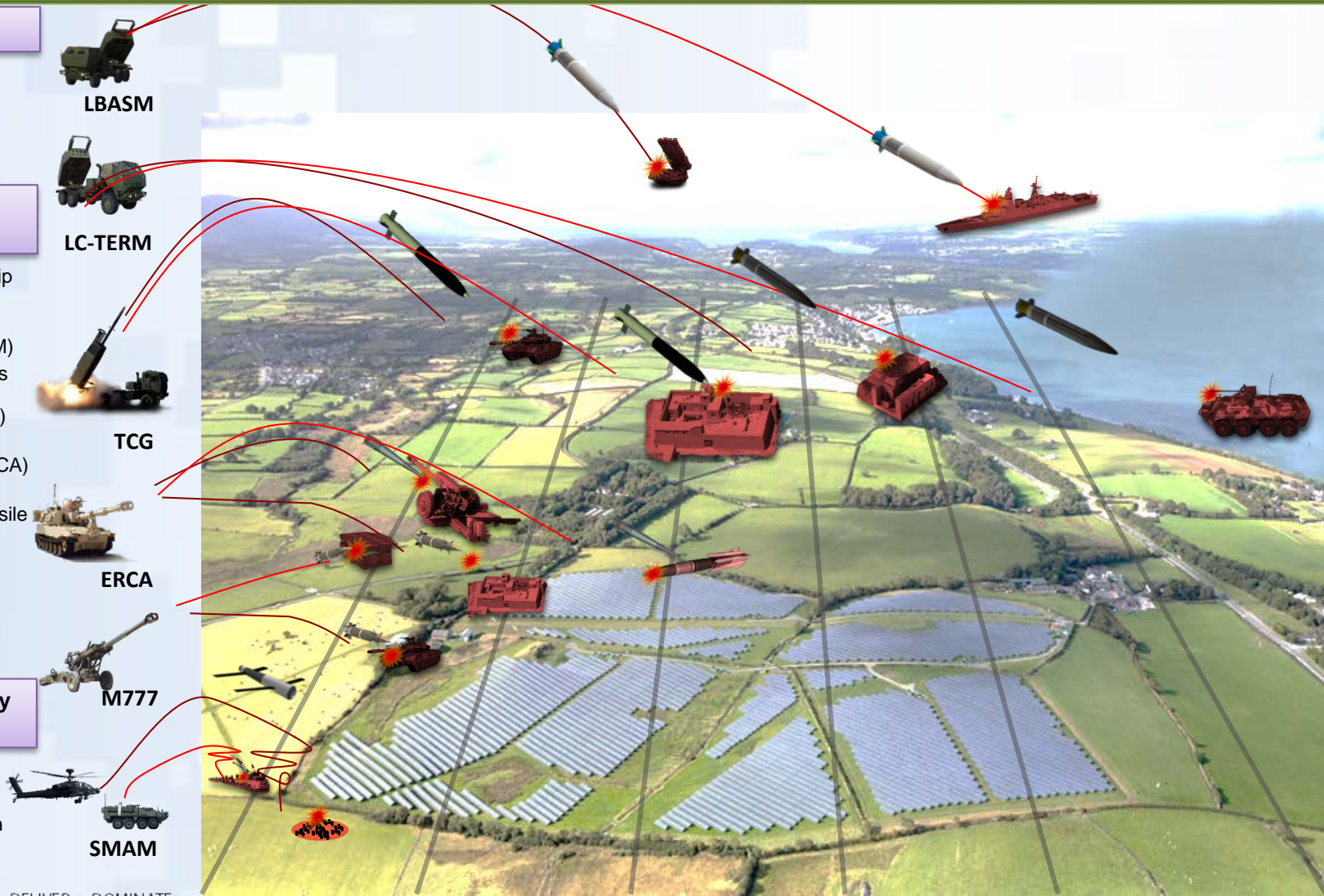
- Deep Fires
- Close Fires
- Foundational

Technology Demonstrations

- Land-Based Anti-Ship Missile (LBASM)
- Single Multi-mission Attack Missile (SMAM)
- Multiple Simultaneous Engagement Technologies (MSET)
- Extended Range Cannon Artillery (ERCA)
- Low Cost – Tactical Extended Range Missile
- Cluster Munition Replacement Technologies
- Long Range Maneuverable Fires (LRMF)

Critical Technology Areas

- Extend Range
- Expand Coverage
- Enable Cross-domain Maneuver





Next Generation Combat Vehicle

Goal: Engage in close combat and deliver decisive lethality during the execution of combined arms maneuver.

Lines of Effort

- Robotics & Autonomous Systems
- Ground Vehicle Platforms
- Armor & Active Protection
- Kinetic & Laser Lethality Effects

Technology Demonstrations

- Combat Vehicle Robotics (CoVeR)
- Robotics for Engineer Operations
- Ground System Active Defense (GSAD)
- Advanced Powertrain Demonstrator
- Advanced Lethality & Accuracy System for Medium Caliber (ALAS-MC)
- Extended Line of Sight (ELoS)

Critical Technology Areas

- Maneuver Robotics and Autonomous Systems
- Directed Energy & Energetics
- Power Generation & Management
- Advanced Armor
- Vehicle Protection Suites



Advancing Ground Capability to Enable Joint Combined Arms Maneuver





Future Vertical Lift

Goal: Close selected Army capability gaps and rapidly deliver 5th Gen rotorcraft to the Army.

Lines of Effort

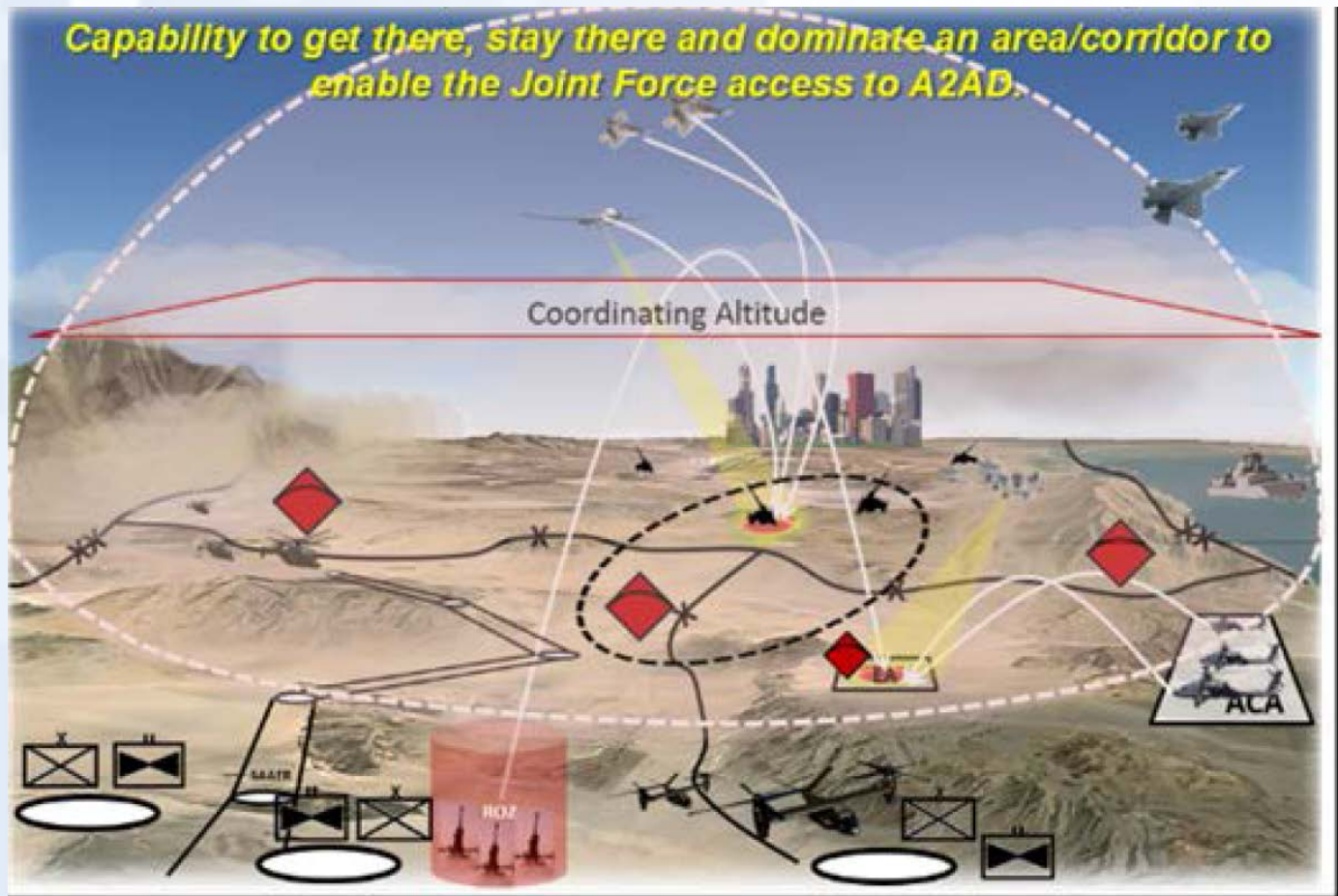
- FVL Capability Set 1
- Modular Open Systems Approach
- Future Unmanned Aircraft System
- FVL Capability Set 3

Technology Demonstrations

- Joint Multi-Role Technology Demonstrator
- Degraded Visual Environment-Mitigation
- Next Generation Tactical UAS Tech Demonstrator
- Alternative Concept Engine
- Next Gen Rotorcraft Transmission
- Integrated Mission Equipment
- Modular Missile Technology
- Multi-Role Small Guided Missile
- Advanced Rotorcraft Armaments Protection System

Critical Technology Areas

- Expanded Reach & Protection during Movement of Forces
- Increased payload, maneuverability and performance
- Manned-Unmanned Teaming





Network/C3I

Goal: Provide Soldier with assured communications in contested environments through situationally-aware, intelligent network, and autonomously routing of information over resilient communications link.

Lines of Effort

- Unified Network
- Common Operating Environment
- Command Post
- Core Competencies
- PNT – Enterprise Enabler
- PNT – Ground User Equipment

Technology Demonstrations

- Modular RF
- Non-Traditional Waveforms
- Protected SATCOM
- WGS Interference Cancellation
- Spectrum Obfuscation
- Next Gen HF
- Every Receiver a Sensor
- Robust Grey C3I
- Integrated Demos with NGCV, Soldier Lethality, FVL, AMD, and LRPF

Critical Technology Areas

- Tactical Network/Comms
- CEMA/EW/Cyber
- Mission Command/Command Posts
- A-PNT
- Persistent ISR





Air and Missile Defense

Goal: Provide capability to defend against enemy air attack at extended range.

Lines of Effort

- Indirect Fire Protection Capability
- Maneuver – Short Range Air Defense
- Sensors & Other Efforts

Technology Demonstrations

- Low Cost Extended Range Air Defense (LowER AD)
- Maneuver AD Technologies (MADT)
- Ballistic Low Altitude Drone Engagement (BLADE)
- Accurate Rapid Controlled Hybrid Effects Round (ARCHER)
- High Energy Laser Tactical Vehicle Demonstrator (HEL TVD)
- Multi-Mission High Energy Laser (MMHEL)
- Unconventional Countermeasures & Survivability

Critical Technology Areas

- Mobile and Survivable Maneuver Short Range Air Defense (M-SHORAD)
- Counter UAS
- Operate within a Contested Environment





Soldier Lethality

Goal: Improve Soldier and small unit performance, reduce surprise, increase protection, and enhance lethality in close combat on an intensely lethal and distributed battlefield and within complex, urban terrains.

Lines of Effort

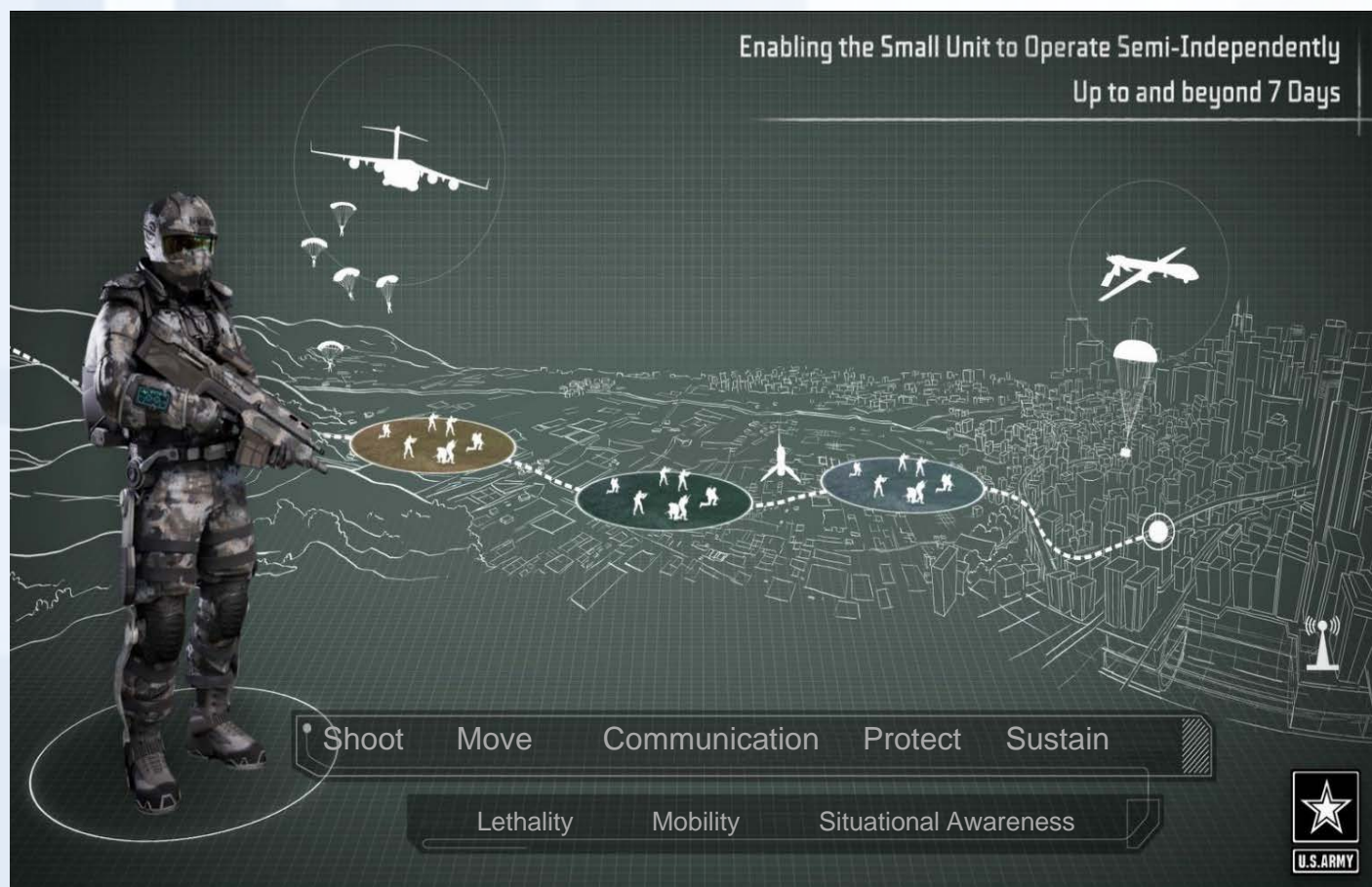
- Next Generation Squad Weapon
- Enhanced Night Vision Goggle-Binocular
- Adaptive Soldier Architecture
- Synthetic Training Environment
- Personnel Research
- Core Competencies

Technology Demonstrations

- Next Gen Squad Weapons Technology
- Next Generation Family of Ammunition
- Soldier Signature Management
- Extreme Austere Environmental Protection
- Integrated Headborne Systems
- Body Armor
- Common Synthetic Environment
- Exoskeleton Systems

Critical Technology Areas

- Next Generation Squad Weapons and Ammunition
- Enhanced Body Armor
- Improved Soldier and Small Unit Performance
- Reduce the Soldier's Load and Increase Bearing Capacity





Summary

- The Army S&T strategy supports the Army Modernization Strategy, and ultimately the National Defense Strategy
- The strategy balances S&T investments in support of the Army's Modernization Priorities with investments in Exploration and Innovation for the next generation of Capability
- Army S&T has undertaken a series of initiatives to implement this strategy, restore portfolio balance, and ensure transition of technologies in support of the Army's Modernization Priorities





Questions?

