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Overview to Industry

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16 August 2017

UNPARALLELED
**COMMITMENT
& SOLUTIONS**

Act like someone's life depends on what we do.



U.S. ARMY ARMAMENT
RESEARCH, DEVELOPMENT
& ENGINEERING CENTER

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U.S. ARMY
RDECOM

RDECOM MISSION & VISION



MISSION

To ensure decisive capabilities for unified land operations to empower the Army, the joint warfighter, and our Nation.

VISION

The preeminent world leader in research, development, and engineering.

U.S. ARMY
RDECOM[®]
TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.



U.S. ARMY
RDECOM

WHAT WE DO



ARL

ARMY RESEARCH
LABORATORY

- Extramural Basic Research
- Computational Science
- Materials Research
- Sciences-for-Maneuver
- Information Sciences
- Sciences for Lethality & Protection
- Human Sciences
- Assessment & Analysis
- Advanced Computing & Big Data
- Agile Manufacturing
- Synthetic Biology



ARDEC
ARMAMENTS

ARMAMENTS

- Munitions Systems & Technologies
- Integrated Weapon Systems
- Energetics, Warheads & Manufacturing
- Guidance, Navigation & Control
- Fuze & Precision Armament Technology
- Cross Domain Fires



AMRDEC

AVIATION AND
MISSILE

- Airframe Structures
- Rotors & Rotor Systems
- Sensors and Seekers
- Guidance, Navigation, & Control
- Propulsion
- Counter-UAS
- Visualization
- Anti-Access/Area Denial
- Missile Defense



CERDEC
US ARMY-RDECOM

COMMUNICATIONS-
ELECTRONICS

- Mission Command
- Tactical and Deployed Power
- Tactical Cyberspace Operations
- Electronic Warfare
- Intelligence, Surveillance, Reconnaissance and Targeting
- Network
- Prioritize Position Navigation and Timing (PNT)



EDGEWOOD, CHEMICAL BIOLOGICAL CENTER

EDGEWOOD,
CHEMICAL
BIOLOGICAL
CENTER

- Chemistry and Biological Sciences
- CB Agent Handling and Surety
- CBRNE Materiel Acquisition
- CBRNE Analysis and Testing
- CBRNE Munitions and Field Operations



US ARMY NATICK SOLDIER RDE CENTER

NATICK SOLDIER

- Advanced/Multifunctional Materials
- Biomechanics
- Cognitive & Behavioral Sciences
- Food Science
- Geographic/Precision Guided Systems
- Soldier Performance Optimization
- Biological Technology
- Neuro-cognition



TARDEC

TANK AUTOMOTIVE

- Ground Vehicle Survivability
- Autonomy-Enabled Systems
- Vehicle Electronic Architecture
- Ground System Software
- Ground Vehicle Power & Mobility
- Robotics/Autonomous Systems
- Combat Vehicles
- Advanced Protection Systems

Delivering capabilities for the Army, joint warfighters, and our Nation



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ARDEC CORE COMPETENCIES



RESEARCH



DEVELOPMENT



PRODUCTION



FIELD SUPPORT



DEMILITARIZATION

Munitions Engineering & Technology Center:

Provides life-cycle engineering research, development, production, field support and demilitarization for all integrated munitions systems.

- Propellants; explosives; pyrotechnics; warheads; fuzes; insensitive munitions; environmental technologies and explosive ordnance disposal; aero ballistics and telemetry

Weapons and Software Engineering Center:

Generates technologies and executes life-cycle research, design development, production engineering and sustainment of programs related to weapons and weapon systems.

- Small, medium and large caliber weapons design, experimentation, evaluation, manufacturing, and integration; digitization; and embedded system software; directed energy; technical and tactical fire control; homeland defense

Enterprise & Systems Integration Center:

Serves as ARDEC Executive Agent to ensure cost, schedule, performance adherence, and sustainability through the integration of technical and business competencies.

- System engineering; quality engineering; logistics engineering; project management; business development; S&T; financial & knowledge managements

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MULTIPLE WAYS TO DO BUSINESS



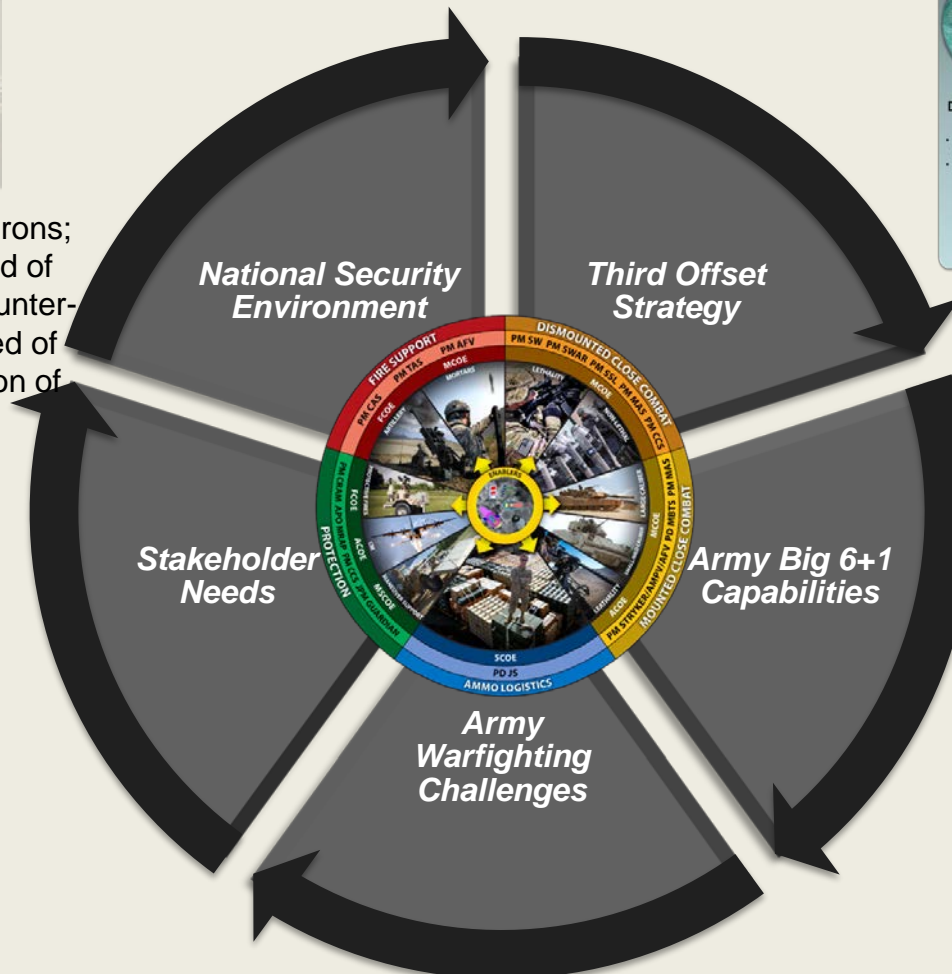
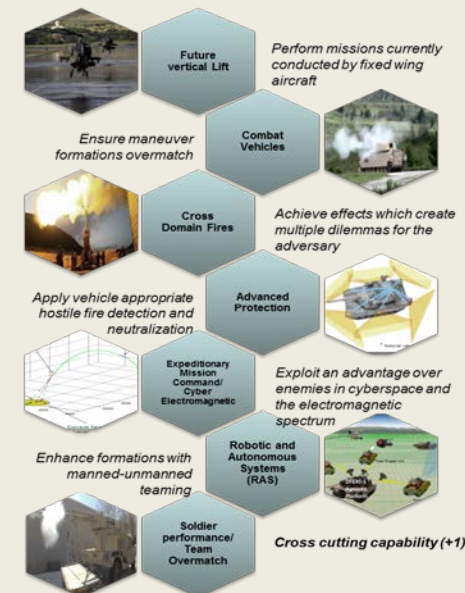


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ADDRESSING ARMY NEEDS

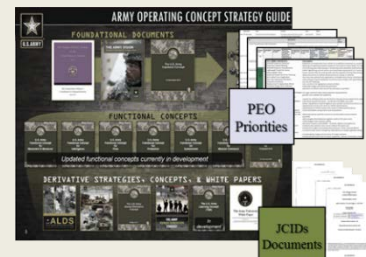


Competitive strategy to achieve decisive, asymmetric operational advantage, gain technological overmatch, and eliminate parity



Congested and Restricted Environments; Potential for Overmatch; Spread of Advanced Cyberspace and Counter-space Abilities; Increased Speed of Human Interactions; Proliferation of Weapons of Mass Destruction

Identification, coordination, organization of individual "Source Documents" needs/gaps/priorities into one list



Enduring, first order problems, the solution to which will improve current and future force combat effectiveness

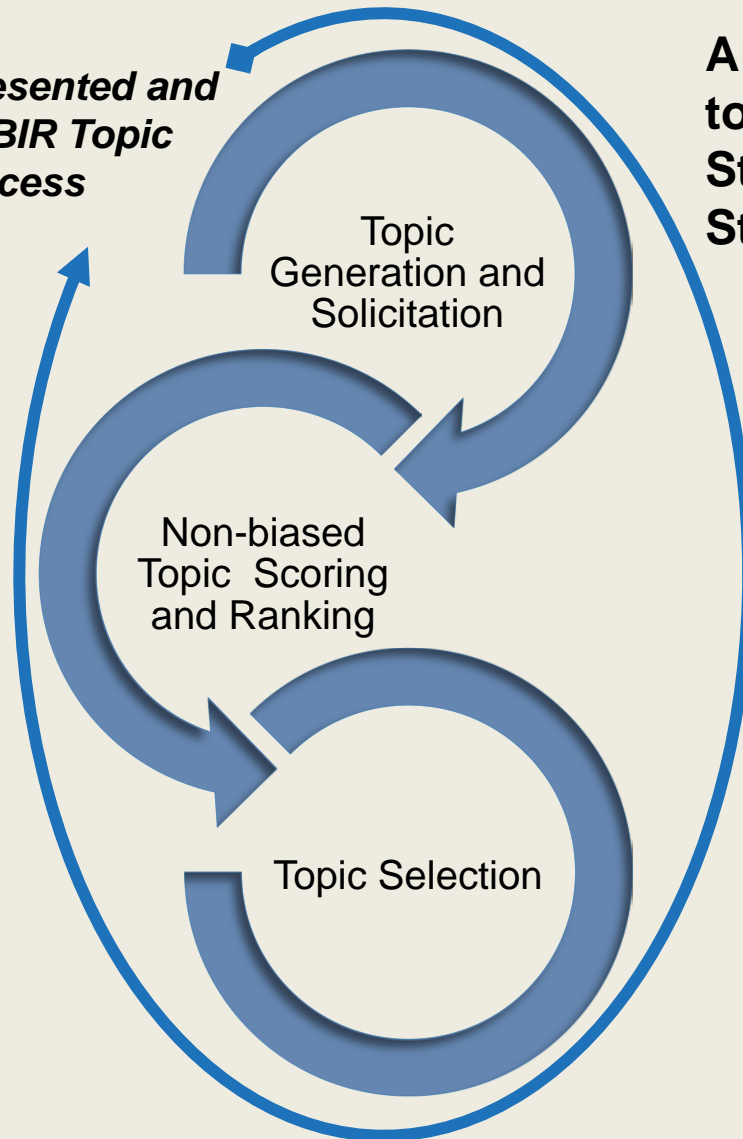
Framework, governance and strategic communications strategy to prioritize research and development



- Non-kinetic effects that enable multi-domain defeat of threats for indirect fires
- Reduced cost tactical grade IMUs
- Reduced cost, high reliability control actuation technologies that enable high g maneuver
- Imagers that can operate in all conditions (obscured, clouds, weather)
- Higher density power sources that enable extended time of flight and survive long term storage
- Reliable, gun hardened, fuzing components w/ focus on air burst & proximity
- Advanced warheads against personnel and light vehicles
- Novel energetic and non-energetic materials



PMs are represented and involved in SBIR Topic Selection Process



All proposed SBIR topics are linked to the ARDEC Armament S&T Strategic Plan and the ARDEC Stakeholder Needs

- Topics are solicited for and submitted in a centralized data system that allows for standardized, searchable data
- Topics are scored against set criteria and ranked utilizing statistical methods which remove bias between topics and between scorers
- Representatives from PMs actively participate in SBIR topic selection to ensure maximum transparency, communication and buy-in



Warfighting Functions

Movement and Maneuver

Maneuver Support

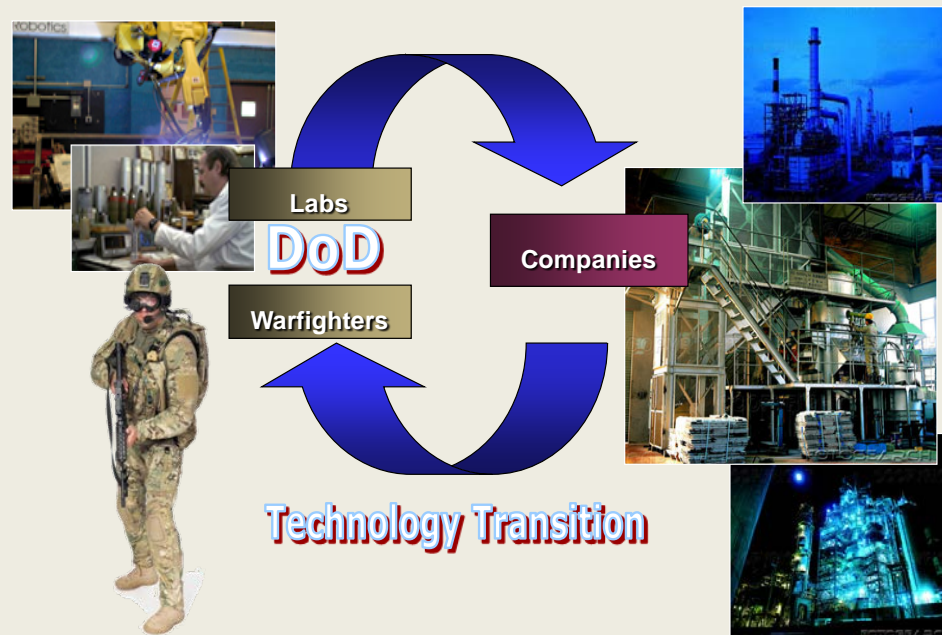


Technology	Texas Research Institute Austin: Munitions Packaging	Surface Optics: Hyperspectral Imaging Technology	Robotic Research: Urban Mapping and Positioning System (UMAPS)
Benefit	Injection molding and mold design for composite munition canisters for tank rounds.	Army sniper rifle targeting scopes and for use in detecting camouflaged objects.	Tracking and mapping technologies for advanced capabilities
Transition(s)	FY16 Transitioned for Government and Commercial use, i.e., for PING Inc	FY16 Transitioned to DoD proponents	FY16 Transitioned to DoD proponents, Homeland Defense, FEMA

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RDECOM**BIO: PARTNERING AND CRADAs**

Partnering is a Strategic ARDEC Initiative that is embedded in the ARDEC Culture. ARDEC is continuously expanding its network of Strategic Partnerships with Industry, Academia and Other Government Organizations—both Domestically and Internationally.

**DOD transfers technology to the Industrial Base,
enabling and speeding transition to the Warfighter**





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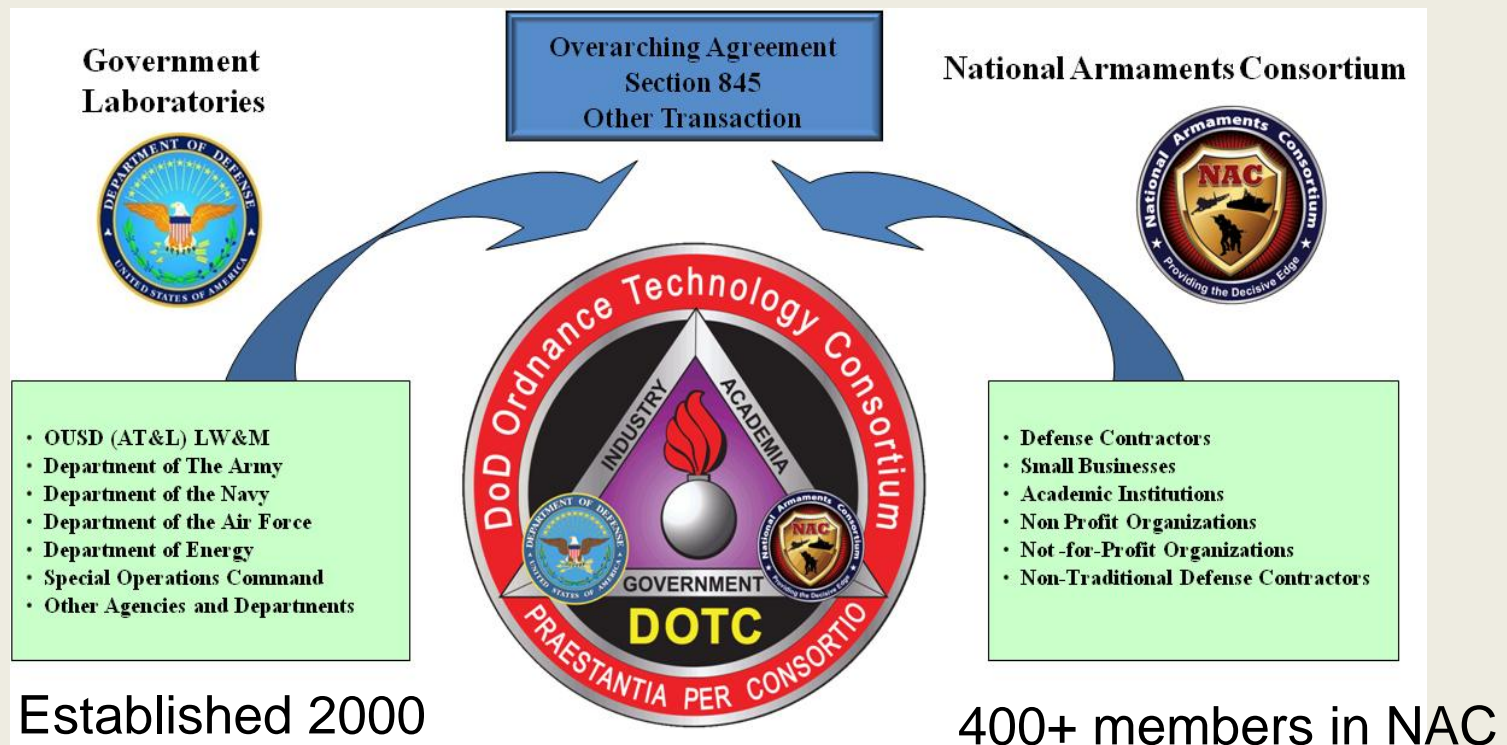
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DEFENSE ORDNANCE TECHNOLOGY CONSORTIUM

GOVERNMENT-CONSORTIA RELATIONSHIP



- Promoting strong partnership with industry/academia
- Other Transaction Agreements (OTA)
- Includes Traditional and non-traditional industries and academia



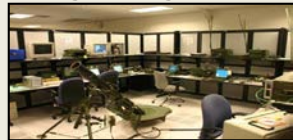


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STATE-OF-THE-ART FACILITIES



**Armament Software
Engineering Center**



**Ballistic Gun
Range Complex**



**Manufacturing
Technology Facility**



**Energetics Synthesis,
Formulation and Scale-up
Complex**



**High Performance
Propellants Complex**



**Davidson
Warhead Facility**



Automated Test Sets Facility



***Our Facilities are a National Asset
Available to Private Sector at Low Cost***

Fuze Development Center

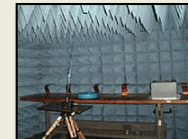


Directed Energy Facility



- Test results are proprietary to the customer; not released outside the government without permission of the customer
- Authority in 10USC2539b

Electromagnetic Effects Complex



Remote Armaments Facility



Soft Catch Gun Facility



**DoD Joint Packaging, Handling,
Storage, and Transportation Complex**



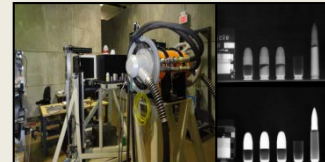
**Demilitarization
Facility**



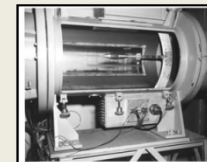
Drop Tower Facility



**Non-Destructive
Evaluation Facility**



Wind Tunnel Facility



**Precision Armaments
Complex**





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COYOTE UNATTENDED GROUND SENSOR SYSTEM



Technology:

- Components developed under SBIR(s)
- System designed under CRADA between Innovative Wireless Technologies and the Acoustics and Networked Sensors group at Picatinny Arsenal
- Multi-modal Unattended Ground Sensor System integrated into enterprise-level mesh network backbone - Ideal for difficult communication environments
- Sensing modalities include seismic, acoustic, PIR, LWIR imager
- Highly scalable, persistent, cost effective deployments with 2+year operating life on 2 BA-5390 batteries
- Ideal for Infrastructure/Border monitoring; DHS, Border Security

Development Efforts :



- Addition of Aircraft and Boat classifiers
- Improvements to Human vs. Animal discrimination to further reduce false alarms
- Implementation of SATCOM long haul option

Payoff:

- Allows for long duration surveillance of remote locations and for perimeter security with minimal maintenance
- System is completely buried except for flexible communications antenna, microphone windscreen, and imager lens, allowing for ease of concealment
- Low cost allows for denser sensor emplacement compared to competitive systems

Program Status:

- Commercial product

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TEAMING WITH ARDEC



- **Small Business Innovative Research (SBIR)**
POC: Ms. Sheila Speroni, sheila.c.speroni.civ@mail.mil
- **CRADAs/Patent Licenses/Testing
Services/Engineering Services/International/IR&D**
POC: Tim Ryan, timothy.s.ryan.civ@mail.mil
- **DOTC**
POC: Don Geiss, donald.a.geiss.civ@mail.mil



.....Continued Dialog to Leverage Collaboration Opportunities



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QUESTIONS?