



# The Weapons Technologies Community of Interest (COI)

## Brief to National Defense Industrial Association March 2018

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Weapons COI



# Weapons Technologies COI Areas

ORDNANCE



HIGH ENERGY LASERS



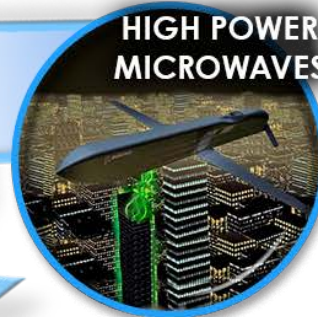
## Common themes across components

- Greater effects at standoff and longer range
- Increased Capacity for greater mission lethality
- Navigate in controlled, degraded and operationally limited environments
- Propulsion solutions for range and end-game maneuver
- Networked and Composable/Fractionable
- Deep magazine
- Combined Effects – Kinetic and Directed Energy
- High Speed Guidance
- Defense Against High Speed Threats
- Weapon Open Architecture with Ensured Cyber-resiliency

PROPULSION



HIGH POWER MICROWAVES



GUIDANCE, NAVIGATION & CONTROL - DATA LINKS (GN&C AND DL)



UNDERSEA



INTEGRATED WEAPON DEMONSTRATIONS



NON-LETHAL WEAPONS

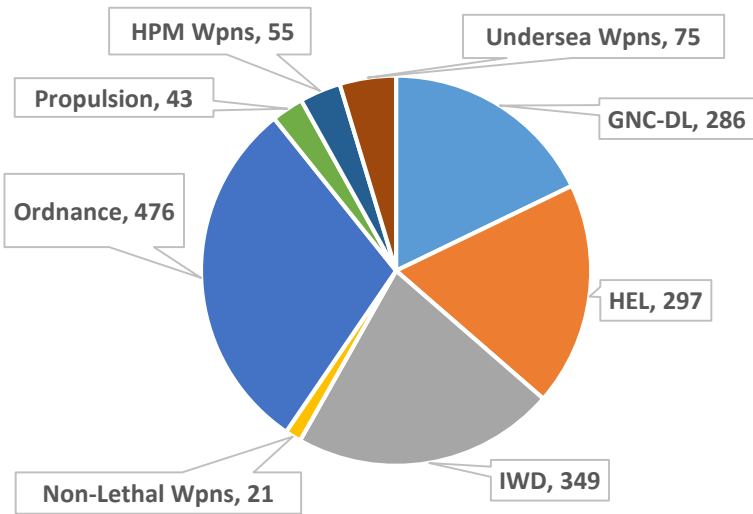




# Weapons Technologies COI FY 2018

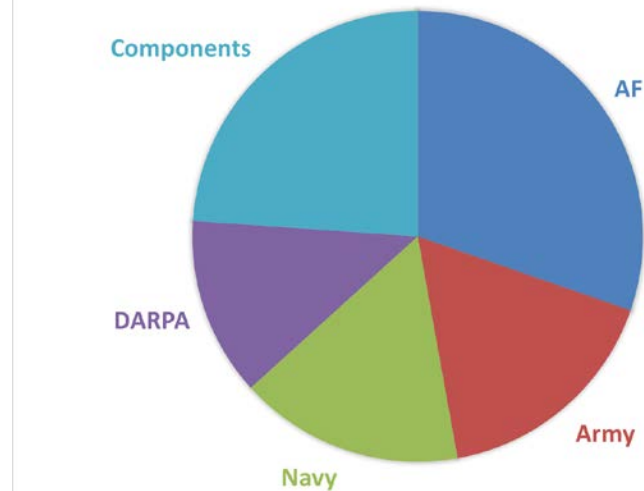


FY18PB (\$M)

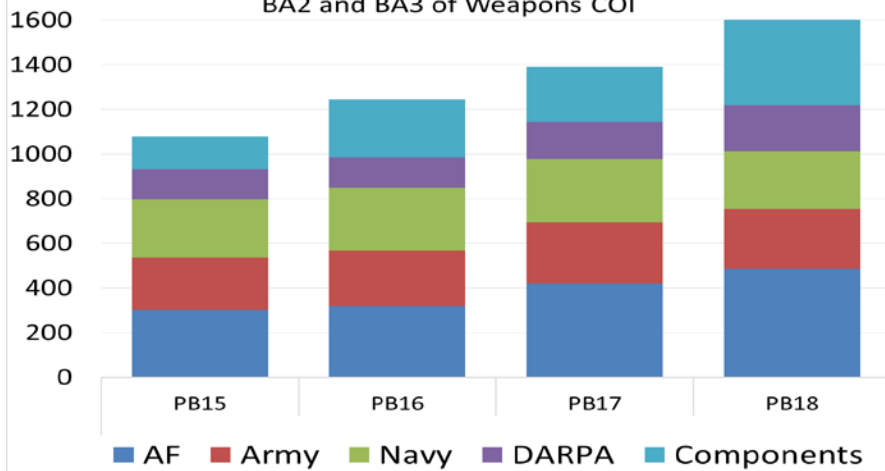


Component Investment

FY18PB - BA2 AND BA3 OF WEAPONS COI



BA2 and BA3 of Weapons COI



## PB18 FUNDING AND TAXONOMY NOTES

- Total \$1.6B (FY18PB) increase from \$1.36B (FY17PB)
- Largest change, Ordnance
- GNC-DL: Guidance, Navigation & Control – Data Links
- IWD: Integrated Weapon Demonstrations
- HPM: High Power Microwaves
- HEL: High Energy Lasers



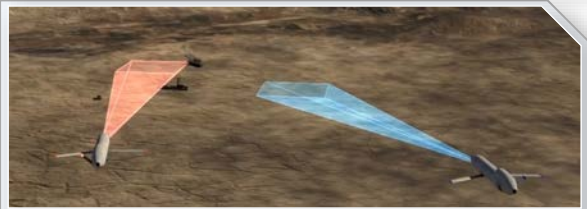
# Integrated Systems.... ...Integrated Solutions



## Guidance & Control



Networked Swarming Weapons



Low Cost Seekers & All-Weather



Hypersonic and Extremely Agile Missiles



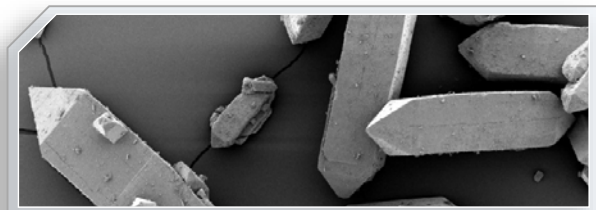
## Integration



## Integrated Systems

(New Systems & Existing Systems)

## Ordnance



Nano-energetics



Selectable Effects



High Performance, Affordable Metals





# Recent Weapons Technologies COI Impact



- **Precise Robust Inertial Guidance for Munitions (PRIGM)**
  - Navigation-grade Inertial Measurement Unit (IMU) performance with microelectromechanical systems (MEMS) cost, size, weight, and power (CSWaP)
  - Prototype sensors delivered and are under test at government lab
- **Navigation for Weapons in Contested Environments**
  - Demonstrated nonlinear estimation (particle filter) and image processing algorithms for single and multiple munitions
- **Joint Insensitive Munitions Technology Program**
  - Advances in JIMTP allow investigation of improved performance (range & lethality) while maintaining IM
- **High Speed Strike Weapon**
  - Successfully conducted S&T demonstration tests of advanced tactical booster technologies
- **Non-Lethal Weapon Technology**
  - Millimeter Wave Active Denial Technology (ADT)
  - High Power Microwave Weapons for Vehicle and Vessel Stopping



# The DOTC Enterprise

**DoD Ordnance Community**



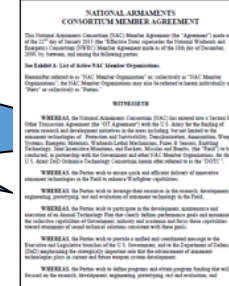
OSD Charter

**Overarching Agreement  
Section 815  
Other Transaction**



DOTC OTA

**National Armaments Consortium**



NAC CMA



- OUSD (AT&L) LW&M
- Department of the Army
- Department of the Navy
- Department of the Air Force
- Special Operations Command
- Defense Advance Research Projects Agency (DARPA)
- Defense Threat Reduction Agency (DTRA)
- Other Agencies and Departments

- Defense Contractors
- Small Businesses
- Academic Institutions
- Non Profit Organizations
- Not -for-Profit Organizations
- Non-Traditional Defense Contractors

*The DOTC Consortium... Partnership to Accelerate Warfighter Superiority*



# DOTC Objective Areas – FY18

## Ammunition (AMM)

- Small Caliber
- Medium Caliber
- Large Caliber
- Non-Lethal Ammo
- Mortars
- Grenades
- Logistics

## Joint Insensitive Munitions (JIM)

- High Performance Missile Propulsion
- Minimum Signature Missile Propulsion
- Blast Fragment Warheads
- Anti-Armor Warheads
- Gun Propulsion
- System Level Demonstration

## Demilitarization (DEM)

- Disassembly of Munitions
- Munitions Recycle, Recovery, and Re-Use
- Munitions Destruction and Final Disposition
- Removal of Energetic Materials from Munitions
- Waste Stream Treatment
- Disposal Logistics

## Protection & Survivability (PAS)

- Threat Detection and Tracking
- Countermeasures, Counter Countermeasures & Anti-Tamper
- IED Detection and Destruction Technology
- Explosive Ordnance Disposal
- Armament Survivability
- Equipment Survivability
- Demolitions
- Active and Passive Armors

## Directed Energy Warfare (DEW)

- High Energy Lasers
- Electro-optic
- Radio Frequency
- Multispectral
- Magnetism
- Acoustic
- Particle Beam, Thermal and other Energy modalities
- Prime/Pulse Power
- Beam Forming
- Directed Energy Weaponization

## Rockets, Missiles, and Bombs (RMB)

- Air-to-Air
- Air-to-Surface
- Surface-to-Air
- Surface-to-Surface
- Shoulder Launched

## Enabling Technologies (ENT)

- Materials
- Manufacturing and Process Technologies
- Modeling and Simulation and Virtual Prototyping
- Precision Guidance
- Power Sources
- Weaponization
- Autonomous Systems
- Soldier and Soldier Weapon Performance

## Sensors & Sensor Systems (SSS)

- Multispectral
- Data Processing and Data Links
- Tactical Cyber
- Electronic Warfare
- GPS Denied
- Intelligence, Surveillance and Reconnaissance
- Command, Control and Networking

## Energetic Materials (ENR)

- Explosives
- Propellants
- Pyrotechnics
- Ingredients
- Additive Manufacturing for Energetic Materials

## Warheads/Lethal Mechanisms (WLM)

- Shaped Charge/Explosively Formed Penetrator
- Kinetic Energy
- Multipurpose
- Unitary

## Fuzes (FUZ)

- Hard Target Fuzing Technologies
- Tailorable Effects Fuze Technologies
- High Reliability Fuze Technologies
- Enabling Fuze Technologies
- Safe and Arm Fuzes
- MEMS
- Fuze Producibility
- High G-Force
- Fuze Sensors

## Weapon Systems (WPN)

- Small Caliber
- Grenade Launchers
- Medium Caliber Cannons
- Mortars
- Large Caliber Artillery
- Non-lethal Weapons
- Mechanisms & Effects
- Fire Control
- Accessories
- Electric Weapons
- Area Denial



# Pathway Forward



- **Focus Going Forward**

- Propulsion solutions for range and end-game maneuver
- Networked, scalable and modular technologies
- Long range effects in controlled, degraded and operationally limited environments
- Low cost, size, weight
- Increasing output power DE weapons

- **Engagement Opportunities with Industry**

- Industry IRAD Technical Interchange Meetings
  - [http://www.defenseinnovationmarketplace.mil/coi\\_weaponstech.html](http://www.defenseinnovationmarketplace.mil/coi_weaponstech.html)
- Component BAA's
- Component Industry Days
- Air Force S&T 2030 Strategy Engagement Events
  - <https://www.afresearchlab.com/>
- Army Open Campus Program
  - <https://www.arl.army.mil/opencampus/>
- DEFENSEWERX: Doolittle Institute, AFWERX, SOFWERX
  - <http://defensewerx.org/>





**QUESTIONS?**