

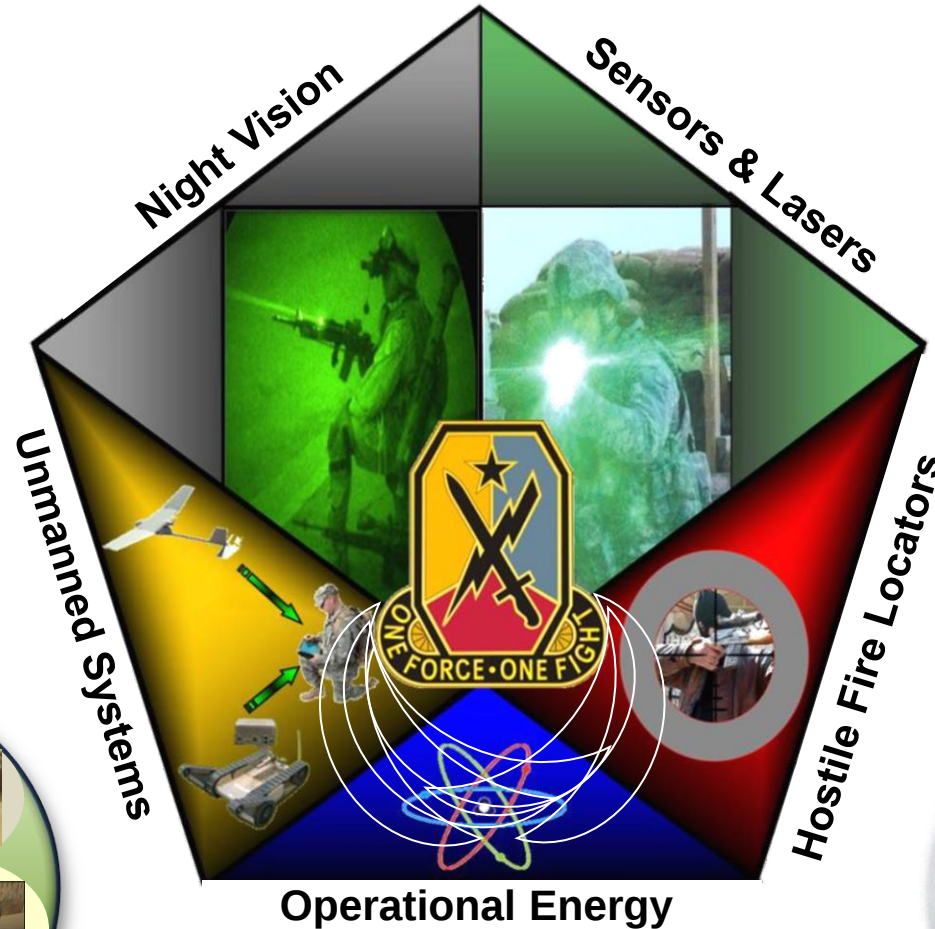


INDUSTRY DAY 2016



Fort Benning, Home of the MCoE

Electronics and Special Development Branch (ESDB)





ESDB Branch Overview



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- **SD and ESD Mission Statement**
- **ESD Key Tasks**
- **Branch Organization**
- **Community of Interest/Stakeholders**
- **Teams**
 - **Night Vision Sensors and Lasers (NVSL)**
 - **Operational Energy – Small Unit Power (OE)**
 - **Robotics and Autonomous Systems (UMS/RAS)**
- **Questions**



Mission Statement



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Soldier Division Mission Statement

Soldier Division develops future requirements and manages Soldier capabilities for all Soldiers across the DOTMLPF domains, in all formations, with a primary focus on Maneuver Brigade Combat Teams and Squads, in order to strengthen America's Force of Decisive Action and provide the Army with the best trained and capable Soldiers in the world.

ESDB Mission Statement

ESDB develops future requirements and manages Electronics and Specialized capabilities for all Soldiers across all DOTMLPF domains, for all formations, with a primary focus of providing Maneuver Brigade Combat Teams and Squads with Soldier-borne night vision devices, Soldier-borne thermal devices, sensors, lasers, Ground Robotics, Unmanned Aircraft and Small Unit Power/Operational Energy.

Fully integrated solutions to optimize system performance



ESDB Key Tasks



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- Develop and staff Joint Capabilities Integration Development System (JCIDS) documents for emerging requirements
- Determine requirements based on gap analysis and by maintaining contact with Soldiers, Industry and Academia
- Support materiel solutions development through integration with experimentation, Test and Evaluation (T&E), Basis of Issue (BOI) development, fielding and source selection of all systems

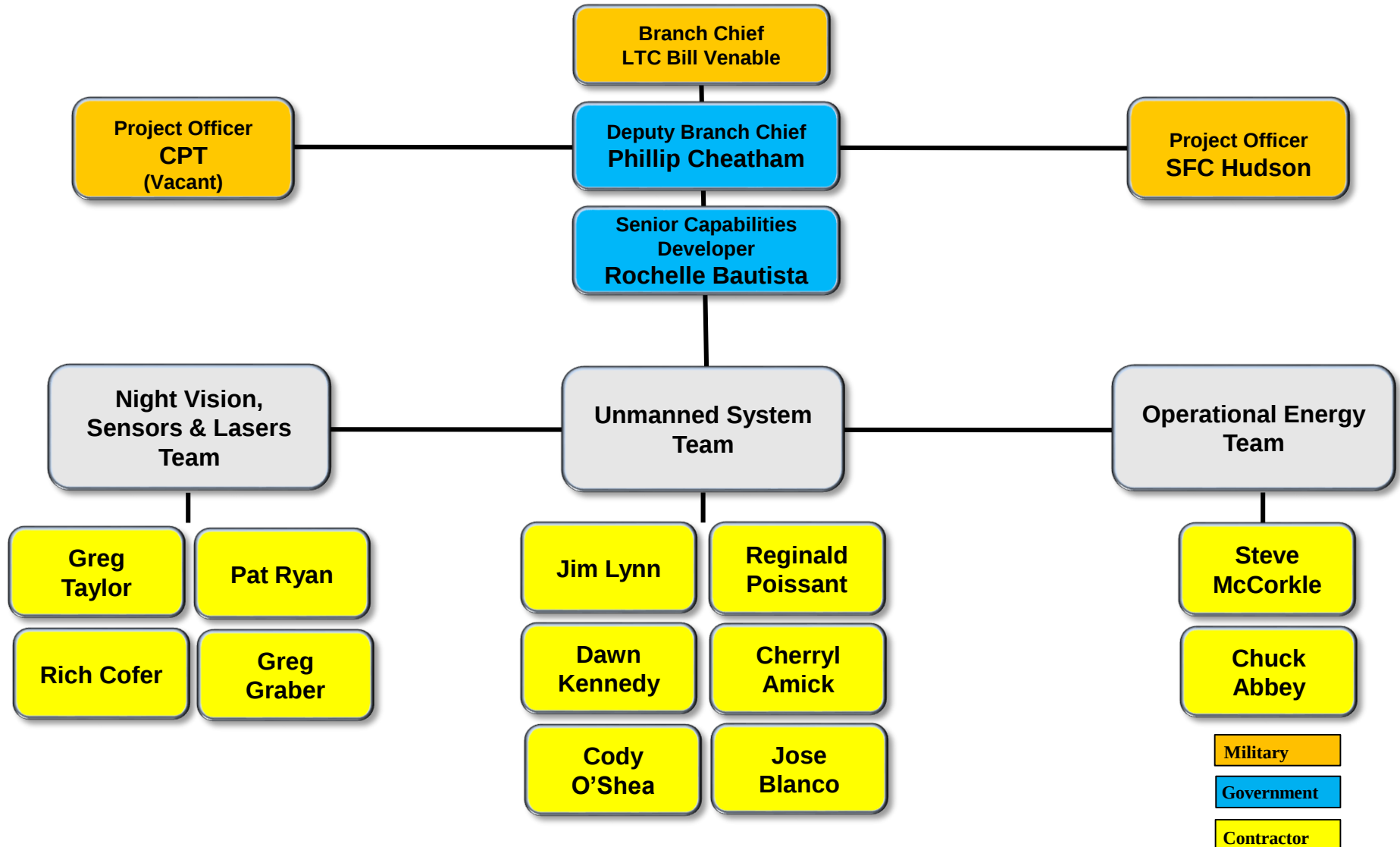
Fully integrated solutions to optimize system performance



ESDB Organization



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NVSL Team Stakeholders



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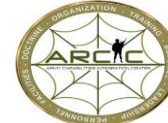
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RAS Team Stakeholders



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JGRIT

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- Fires CoE
- Intelligence CoE
- Maneuver CoE
- Maneuver Spt CoE
- Signal CoE
- Sustainment CoE
- ARCIC
- USAF
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- USN
- USSOCOM
- Combined Arms Ctr
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- CERDEC
- DARPA
- JGRE
- JIEDDO
- NGIC
- RDECOM
- REF
- SPAWAR
- TARDEC
- TCMs



Electronics & Special Development Branch

Day/Night Situational Awareness Convergence Industry Day Brief

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Agenda



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- **Current Night Vision Issues**
- **Soldier Systems 2030 Concept**
- **Future NV Focus Area**
- **Laser Focus Area**
- **Sensor Focus Area**
- **Questions**



Current Night Vision Device Issues



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- Aging Electro-optic Fleet (TWS)
 - Currently little to no training
 - Weight, Size and power consumption
- Christmas Tree Affect (to many pieces of kit attached to the weapons platform)
- Limited rail space creates integration issues between electro-optic sights, direct view optics, small arms fire control and pointing devices (STORM, PEQ-15, etc.)
- FWS and Small Arms Fire Control systems are not compatible
- Currently no Night Vision/Electro-optic capability that can be used with the MK-19 when it is super elevated

SOLIDER SYSTEM 2030 Characteristics

- ✓ Provides Leap Ahead Technology to the Soldier in 2030.
- ✓ Collaboration with universities, laboratories, and the technology industry.
- ✓ Integrated components across PEOs.
- ✓ Integrated Sensor suite that cues Soldier.
- ✓ Generates state of the art Situational Awareness.
- ✓ Augmented Reality.
- ✓ Reduces Soldier load.
- ✓ Common power source.

Vision & Data System

- Laser Protection
- Heads Up Display
- Augmented Reality

On-Soldier Architecture

Fires Sensors

Weapons Sensors

- Digital Fire Control (Day/Night)

Remote Sensors

Countermeasure Sensors

Protection System Sensors

Connectivity/Integration to the Force



Coming To A Theater Near You



Future Day/Night SA Convergence



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Future Electro-optics/Night Vision systems must:

- Provide a fully integrated day/night fire control system for all small arms
- Change the design/form factor of head mounted goggles
 - Version I: Small Form Factor Goggle
 - Version II: Integrated Helmet/Conformal System (See through Head mounted display compatible with NBC Equipment)
- Reduce Soldier burden and Solder-required adjustments (so hands can stay on weapon)
 - Automatic adjustment of imagery (individual sensor and fused imagery)
 - Matched sensor Fields-of-View; matched latency
 - Multi-Spectral Rapid Targeting Acquisition (RTA)
 - Target Aided Tracking/Identification
- Provide a data display/interface for Soldier Network (Soldier as a System)
 - Overlay Data from Soldier Devices onto Sensor Imagery
 - Overlay Soldier Ammo Status on Sensor Imagery
 - Data Display which provides for Soldier Route Planning/Heading Information
- Provide advanced power management
- Leverage individual Soldier sensors to provide new capabilities
 - Transmit fused imagery across the battlefield
- Respond to possible downturn of US I2 industrial base and increased cost



Soldier Night Vision SA Issues



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What we need immediate help solving:

- Low Light Level Sensor requires Soldier Custom Read-Out Integrated Circuit (ROIC) Design
 - High Resolution Sensor supporting Target Detection & Mobility
- Need Low Latency/High Frame Rate (60Hz/120Hz)
- Maintain or improve on I² Tube Low Light Level Performance
- On Chip Power Management
- Optimized sensor fusion with matching LWIR read-out
- Improved digital prototype performance requires:
 - Better Form Factor/Mechanical Design
 - Adding Wireless Network Connectivity
 - Ability to Add/Re-configure (Think Goggle Apps)
 - Interface capability for other Soldier systems
- Power
 - Requires Smart Design Changes at the Component Level and System Level to reduce power draw



Laser Focus Area



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- Lasers visible under all conditions (i.e. lighting/weather) and through obscurants
- Single Laser visible through all targeting sensors (i.e. LRAS/TWS/I²)
- Virtual Pointing: Laser free/passive pointing capability which can leverage sensors, compass, and information systems to dynamically point to targets or other objects/areas of interest
- Target locators which do not require calibration
- Target locators capable of providing accuracy of ≤ 2 mils



Sensor Focus Area



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- Portable multi-use/spectrum sensor capable of detecting and geo-locating threats by optics or similar means, without false detections, weighing ≤ 1.25 pounds including power source
- Portable/wearable sensor weighing ≤ 0.5 pound, displays subsonic detections, detection range ($\geq 1200\text{m}$), power requirement to meet 24 hour mission (power profile and source type), target data capable of being ported to current and future displays
- Portable sensor (≤ 1.5 pounds) that can accurately detect the presence of threats through urban structures of common building materials 12-14 inches thick with a stand off of 50 meters



NVSL Team POCs



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???QUESTIONS???