Selected Technologies
<table>
<thead>
<tr>
<th>Num</th>
<th>Lethality and Firepower (11 / 0 = 11)</th>
<th>Reconnaissance (16 / 0 = 16)</th>
<th>Sustainment and Protection (15 / 0 = 15)</th>
<th>Training (5 / 0 = 5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>Phantom Badger (Boeing)</td>
<td>Sky-Watch Huginn X1 Integrated Drone Recon System (Deutschmark Express)</td>
<td>120W Solar Panel (CERDEC)</td>
<td>SPOTLITE (Aptima)</td>
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<tr>
<td>31</td>
<td>Bandolier Lightweight Clearing Charge (Critical Solutions)</td>
<td>Sky Watch TAS for Huginn X1 (Deutschmark Express)</td>
<td>Conformal Soldier Battery System (CERDEC)</td>
<td>Augmented Reality for Small Units (ARL-STTC)</td>
</tr>
<tr>
<td>32</td>
<td>Argo Amphibious Lightweight Tactical ATV (Ontario Drive &amp; Gear)</td>
<td>Skylark I Block 2 SUAS (Elbit)</td>
<td>Wearable 20W Fuel Cell Power System (CERDEC)</td>
<td>Robotic Human-Type Targets (Marathon Target)</td>
</tr>
<tr>
<td>33</td>
<td>Dynamic Weight Distribution (Source Vagabond Systems)</td>
<td>Man-Portable Ground Surveillance Radar (ELTA)</td>
<td>DP-12 Rhino Robotic Rotorcraft (Dragonfly Pictures)</td>
<td>MPIMs Force-on-Force Trainer (Forcit Defense)</td>
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<tr>
<td>34</td>
<td></td>
<td>Recon V Mini Long Range (FLIR)</td>
<td>Apollo Hybrid Power System (Energy Solutions)</td>
<td>Virtual Planning Workspace (Lockheed Martin)</td>
</tr>
<tr>
<td>35</td>
<td></td>
<td>Universal Optical Sensor Enhancement (Lentix)</td>
<td>DyneCell Protective Structures (Explora Security A&amp;E)</td>
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<tr>
<td>36</td>
<td></td>
<td>Enhanced-Vehicle Optic Sensor System (Lockheed Martin)</td>
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<tr>
<td>37</td>
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<td>Lightweight Surveillance System (Lockheed Martin)</td>
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<tr>
<td>38</td>
<td></td>
<td>Sensor Data Interconnect Kit (Lockheed Martin)</td>
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<td>39</td>
<td></td>
<td>InstantEye (Physical Science Inc.)</td>
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<tr>
<td>40</td>
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<td>PD-100 Black Hornet Personal Recon System (Prox Dynamics USA)</td>
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<td>41</td>
<td></td>
<td>Skystar 180 Tactical Aerostat (RT Aerostat Systems)</td>
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<tr>
<td>42</td>
<td></td>
<td>Remote Operation Surveillance System (Seraphim Optronics)</td>
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<tr>
<td>43</td>
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<td>Phoenix 15 Quadrocopter UAS (UAV Solutions)</td>
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<td>44</td>
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<td>Phoenix 60 Hexacopter UAS (UAV Solutions)</td>
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<td>45</td>
<td></td>
<td>Gore Multispectral Covers (WL Gore &amp; Associates)</td>
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<td>46</td>
<td></td>
<td>Gore Multispectral Turkey Suit (WL Gore &amp; Associates)</td>
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<td>47</td>
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<td>Mission Configurable Helmet Cover (GENTEX Corporation)</td>
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<td>48</td>
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<td>Containerized Weapons Station (HDT Global)</td>
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<td>49</td>
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<td>ACH Upgrade Kit (Ops-Core)</td>
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<td>50</td>
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<td>Armordillo Protective Cover (Transshield)</td>
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<td>51</td>
<td></td>
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<td>Versa Sea Pak: Portable Water Purification System (W.S. Darley &amp; Company)</td>
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<td>53</td>
<td>RPG-7(USA) Rocket Launcher (Airtronic USA)</td>
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<td>54</td>
<td>Automated Direct/Indirect-fire Mortar (ARDEC)</td>
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<td>55</td>
<td>TowerHawk (AADT)</td>
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<tr>
<td>56</td>
<td>PROTECOR RWS-Heavy (Konsberg Protech Systems)</td>
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<tr>
<td>57</td>
<td>PROTECOR RWS-Javelin (Konsberg Protech Systems)</td>
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<tr>
<td>58</td>
<td>Reticle Rings (Kopis Mobile)</td>
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<td>59</td>
<td>Meslas (Meprolight)</td>
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<tr>
<td>60</td>
<td>M72A9 Anti Structure Munition (Nammo Talley)</td>
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<td>61</td>
<td>M72 Airburst (Nammo Talley)</td>
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<tr>
<td>62</td>
<td>Scalable Offensive Hand Grenade (Nammo Talley)</td>
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<tr>
<td>63</td>
<td>Mini-Multi-Purpose Infantry Munition (OYOY Forcit AB)</td>
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</tbody>
</table>

**Mobility (6 / 0 = 6)**

5. Leader/Soldier Effects Tool Suite (ARDEC)
6. Maneuver Aviation Fires Integrated Application (AMRDEC)
7. I-DEICID S6 Associate (CERDEC)
8. USCOUT (CERDEC)
9. SideBridge Wireless Communications (DataSoft)
10. Combat Net Radio Gateway (Exelis)
11. Embedded Tactical Data Router (Exelis)
12. SINCGARS PLI RT-1947A (Exelis)
13. SINCGARS RT Programming Station (Exelis)
14. SINCGARS Software v9.0 (Exelis)
15. SRW Applique SideHat (Exelis)
16. Tactical Ethernet Switch (Exelis)
17. Vehicle Remote Control Unit (Exelis)
18. DCGS-A Lite (INTEL EAE)
19. Networked Tactical Television (Kopis Mobile)
20. Nett Warrior Future Initiative (PM SWAR)
21. The Silynx CLARUS (Silynx Communications)
22. SitaWare Frontline/Edge (Systematic)
23. Machine Foreign Language Translation System (TCM-BF&MFLT)
24. Full Motion Video Mission Module (Thales Comm)
25. MBITR2 AN/PRC 148 (Thales Comm)
26. VIPER SRW Radio System (Thales Comm)
27. TRX NEON (TRX Systems)
28. VITEC Situational Awareness FMV Solution (VITEC)
Network
MC/AI TECD 3.a/b - Leader/Soldier Effects Tool Suite

High Level Diagram

Technical Description

- This product will run on MaFIA and Nett Warrior plug-in software architectures. Current development of the capabilities is being done using surrogate architecture until POR architecture is available.
- This product will required IP-based network hardware (ex. Radios) and interfaces to communicate with other systems
- This product will support CoT, JVMF and other Army standard messaging protocols
- Software currently runs on Linux x86 platform (Leader Effects component) and Android OS (Leader/Soldier Mobile component)

Operational Description

- Provides the small unit leader/soldier role based initial capabilities that enables the planning, coordination and execution of networked LOS/BLOS effects, supports cooperative engagements, the integration of maneuver and fires.
- Optimizes effects asset management and execution to include sensor-to-shooter information processing and target hand-off
- Baseline capabilities include:
  - Preliminary weapon placement
  - Initial planning & coordination sharing capabilities with lower echelons
  - Target image sharing,
  - Receive planning & coordination measures from upper echelons

Soldier Module: Target management/nomination; UAV/UGV sensors/effects request; Alerts and strike warnings; Effects planning coordination/synchronization; Target hand-off; Weapon placement

Leader Module: Fire support execution matrix sharing with lower echelons; Interoperate with emerging and existing organic weapons including Remote Weapon Stations (RWS) for lethal/non-lethal effects; UAV/UGV sensors/effects request/tasking; Target image sharing with lower echelons

Contact Information

MC/AI TECD 3.a/b

Ketula Patel
USA RDECOM ARDEC
973-724-8671
Ketula.patel.civ@mail.mil

Experiment Objective Addressed: 1

UNCLASSIFIED
MANEUVER AVIATION FIRES INTEGRATED APPLICATION (MAFIA)

TECHNICAL DESCRIPTION

- 100% Govt Owned
- Hardware agnostic (future hardware migration)
- Employs the AMRDEC **Army Global Engine** software - similar to Google Earth Engine
- Applies the AMRDEC **Terrain Association** algorithm to determine heading and provide User immediate orientation into surrounding terrain.
- Employs NAVAIR unclassified **rPFI**s (Precision Fires Imagery)
- Exploits SUAS Full Motion Video and Meta Data
  - Data link with SUAS using MBITR2/MM; MAFIA displays FMV and location cursor on AGE
  - Digital interoperability between EUD and SUAS operator to support bi-directional data

OPERATIONAL DESCRIPTION

- Provides Fires(13F) and Small Unit (11B/19D) leaders the ability to quickly generate CAT 1 coordinates for accurate, timely, and predictable fires
- Enables CO FSO to dynamically clear and maintain air picture for the CO AO (offensive and defensive fires)
- Provides FMV from Raven/Puma SUAS and InstantEye mUAS down to Squad level EUD (no OSRVT)
- Digital interoperability supports Cursor On Target (COT) commands from NW (MAFIA) to SUAS operator requesting SUAS asset to put “Eyes-On”
- Improvement over current voice only operations with SUAS operator

CONTACT INFORMATION

Aviation Missile Research Development and Engineering Center (AMRDEC) – US Army
POC: Mike Murray
PH: 256 783 2722
michael.v.murray4.civ@mail.mil
**TECHNICAL DESCRIPTION**

Integrated Decision Enhancing Capabilities In Dynamic Environments (I-DECIDE) S-6 Associate

- Expert System Knowledge Base provides real-time network assistance
- S6 Network Planner is based on Visio Plug-in designed to automate creating of a network diagram from LDIF+ spreadsheet data
- Data Distribution Services layer proxies for various applications and provides a publish/subscribe scheme to allow any service on the bus to subscribe (design allows current Army capabilities to be easily integrated)

**OPERATIONAL DESCRIPTION**

Assists the S6 and Signal Staff at Battalion and Company level by providing an expert system that can give guidance based on real-time network data and documented tactics, techniques, and procedures.

- Reduces cognitive burden on signal staff by providing expert advice
- Allows for faster completion of CyberOps/NetOps tasks by improving functionality of existing CyberOps/NetOps Systems
- Improves integration of Signal Operations with other Battlefield Functional Areas

**CONTACT INFORMATION**

**US ARMY CERDEC S&TCD**
6010 Frankford Ave
Aberdeen Proving Ground, MD 21005
http://www.cerdec.army.mil/

**POC:** Shahin Cook
Tel: (443) 395-5612
Email: shahin.cook.civ@mail.mil
Technical Description

- Port existing GEC2O-based handheld software to JBC-P handheld platform
- Utilizes developed Mounted JBC-P UI in TECD & transition it to PM FBCB2
- Generates JVMF messages
- Integrates with JCR/JBC-P
- Provides web interface to USCOUT’s Task Product Database

Operational Description

- Live, squad-level tasking of multiple unmanned systems
- Operation in bandwidth-constrained environment
- Data provided to higher echelons (images, video, metadata)
- Data utilized from higher echelons (weather)

Additional Information

- Testing requirements:
  - Restricted Operating Zone (ROZ) of 1.5km x 1.5km (4km x 4km preferred)
  - Frequency clearance for Rifleman radio, Raven C2 and Raven video
- POC: Udam Silva, DSN 648-0366, udam.s.silva.civ@mail.mil
**TECHNICAL DESCRIPTION**

- SideBridge attaches directly to a tactical radio for wireless communication with a smart phone
- Full network connectivity – No Wires
- Simplifies and expands communications with smart phone capabilities such as images and video, Nett Warrior and other apps
- Rugged enclosure with secure Bluetooth IP connectivity designed to FIPS-140-2
- BlueLink Android app displays SRW network status and position location information racking information for management and monitoring of SRW network
- SideBridge has USB port for optional, wired link

---

**OPERATIONAL DESCRIPTION**

- Team members easily operate with smart phone capabilities connected into the SRW radio network without restrictions and single point of failure related to a cable tether
- Share images, video and data from tactical apps
- Through the BlueLink app, users monitor and manage the individual radio settings and radio network status
- Maneuvers are enhanced with blue-force mapping and tracking, unique node names, viewing network neighbor list and non-network and inactive nodes

---

**CONTACT INFORMATION**

DataSoft Corporation  
1275 W. Washington Street #106  
Tempe, AZ 85281  
[www.datasoft.com](http://www.datasoft.com)

POC: John Bohlke  
Tel: (480) 763-5777 x419  
Email: john.bohlke@datasoft.com
**OPERATIONAL DESCRIPTION**

- SRW Net Cross banded with SINCGARS through CNR-G-RIU can monitor and transmit to in coming air craft (SINCGARS)
- SRW (A) Cross banded with SINCGARS can extend voice rage to other SINCGARS Cross banded SRW (B)
- (Concept) SRW passing low rate data PLI or Chat message through SINCGARS range extension to other SRW

**CONTACT INFORMATION**

Exelis
Tel 571 203 7611  Cell 240 997 6454
12930 Worldgate Drive
Herndon, VA 20170
www.c4i.com
POC: Jorge Petrovic
Tel: 240 997 6454
Email: jorge.petrovic@exelisinc.com

**TECHNICAL DESCRIPTION**

- CNR-G-RIU provides audio and serial interface to patch voice and data (SINCGARS & SRW) Crossbanding disparate radio system.
- CNR-G-RIU can easily be used as a building-block to Command Post (TOC) / (TAC) node bring radio into IP environment (RoIP) in vehicles and UAVs.
- MIL-STD-810, 461, and High Altitude Tested
- Size 5.75”W x 1.77”H x 14”D / Weight 5.5 lbs.
- 800mA (Low Power)
ETDR is a tactical data router for use in the Army’s lower Tactical Internet. It enables the routing of data between different radio networks.

ETDR is installed in the SINCGARS Internet Controller (INC).

Voice, data and PLI information can be routed among different radios in a BCT using the ETDR technology.

Integrates the Cisco 5915 Embedded Services Router (ESR) into an existing SINCGARS Vehicular Radio Configuration (VRC).

Provides a fully capable Cisco 5915 ESR integrated into the AM-7239E SINCGARS Vehicular Amplifier Adapter’s (VAA’s) Internet Controller (INC) housing located on the right side of the standard VAA.

Cisco Router is 4.213in x 3.775 in x 0.873 in

Power Requirements: 7 – 10.19 Watts

Throughput: 163,000 Packets per second

Exelis Communications Solutions

tel 260 451 6480  cell 260 602 3581
7310 Innovation Blvd.,
Fort Wayne, IN  46818-1370

www.exelisinc.com

POC: Tony Tabler
Tel: 260 602 3581
Email: tony.tabler@exelisinc.com
<table>
<thead>
<tr>
<th>TECHNICAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>• SINCGARS beacon device that is interoperable with upgraded SINCGARS v9.0 software</td>
</tr>
<tr>
<td>• SINCGARS software v9.0 provides universal beacon capability across an entire BCT</td>
</tr>
<tr>
<td>• No COMSEC; commercial GPS</td>
</tr>
<tr>
<td>• Size 3.08”W x 5.66”H x 2.15”D</td>
</tr>
<tr>
<td>• Weight 1.2 lbs.</td>
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</table>

<table>
<thead>
<tr>
<th>OPERATIONAL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Transmits PLI beacon information to other PLI RT-1947A and SINCGARS ASIP radios for display on C2 devices such as Nett Warrior</td>
</tr>
<tr>
<td>• Stand alone device that can be used with or without other SINCGARS radios</td>
</tr>
<tr>
<td>• Supports tracking of individuals conducting small unit operations or on training ranges</td>
</tr>
<tr>
<td>• Ideal for dismounted Soldiers, international forces or federal/state first responders whose location must be tracked by the military</td>
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</tr>
<tr>
<td><a href="http://www.exelisinc.com">www.exelisinc.com</a></td>
</tr>
<tr>
<td>POC: Tony Tabler</td>
</tr>
<tr>
<td>Tel: 260 602 3581</td>
</tr>
<tr>
<td>Email: <a href="mailto:tony.tabler@exelisinc.com">tony.tabler@exelisinc.com</a></td>
</tr>
</tbody>
</table>
TECHNICAL DESCRIPTION

- The programming station is used to update SINCGARS Radio Transmitter software for the SINCGARS VHF radio systems.
- The station consists of a robust enclosure with eight ergonomically designed programming slots, a PC and an intuitive programming software application.
- Capable of upgrading 8 radios over 30 minutes versus 1 radio per GRM per 45 minutes
- Size 21.9 in wide x 17.5 in deep x 38.5 in high
- Weight 207 lbs.

OPERATIONAL DESCRIPTION

- Stand alone device that can be used to quickly upgrade the Software on the following items:
  - RT-1523E(C)/U NSN 5820-01-444-1219
  - RT-1523F(C)/U NSN 5820-01-535-3667
  - RT-1702E/F P/N: 8192710G3, 8192710G4 with GPS
  - EGR I NSN 5998-01-533-3754
  - EGR II NSN 5998-01-582-5261
  - Export GPS Module P/N: 8177867G
- Ideal to allow for rapid upgrade for the SINCGARS Radio systems.

CONTACT INFORMATION

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Email: tony.tabler@exelisinc.com
SINCGARS Software v9.0 (+INC6.5)

**TECHNICAL DESCRIPTION**
- Most current version of SINCGARS ASIP software
- Includes Universal Network Situational Awareness (UNSA) capability enhancement
- SINCGARS software v9.0 is available for installation on SINCGARs RT-1523E/F model radios
- UNSA enables SINCGARS ASIP radios to automatically beacon and receive their respective location across a Brigade Combat Team
- INC6.5 enables auto configuration to automatically link / associate SINCGARS PLI to C2 devices

**OPERATIONAL DESCRIPTION**
- SINCGARS software v9.0 is the latest version of SINCGARS software that includes the Universal Network Situational Awareness (UNSA) software capability
- PLI beacons are sent periodically from SINCGARS ASIP radios based on time or distance traveled
- Beaconing capability enables key leaders to track the location of SINCGARS ASIP radios in a Brigade Combat Team

**CONTACT INFORMATION**

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Experiment Objective Addressed: 1
Lower Tactical Network Challenges
SRW Applique SideHat

TECHNICAL DESCRIPTION

- The Exelis SideHat is a simple radio solution that quickly attaches to existing SINCGARS radio installations, offering rapid, affordable and interoperable wideband network communications for Brigade Combat Teams.
- SideHat is purpose built for vehicular applications where EMC/EMI is a real concern.
- User friendly and designed to match SINCGARS ASIP robustness

OPERATIONAL DESCRIPTION

- SRW Applique SideHat is a vehicular SRW Applique that enables dismounted Soldiers to communicate with leaders in Army Combat Vehicle
- SideHat enables mounted and dismounted Soldiers to exchange simultaneous voice and data (video and position location information).
- A unique feature of the SideHat is the ability to bridge different networks via the radios built in tiering / scaling capability which negates the need for additional routers in a vehicle.

CONTACT INFORMATION

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Experiment Objective Addressed: 1
Lower Tactical Network Challenges
TECHNICAL DESCRIPTION

• Provides a standalone, multiple port solution for Ethernet access.
• Provides up to 5 Ethernet connections
• Standard RJ-45 sockets with Link Lights that illuminate to show connectivity
• Hand held and mounted applications
• Size: 4.14 in wide x 1.27 in high x 6.13 in deep

OPERATIONAL DESCRIPTION

• TES is an Ethernet access solution for use in ???
• Can be used in both Classified (Secret and Below) and Non-Classified networks ???
• Was successfully deployed during NIE 12.2
• Low-Power: connects directly to VAA J9 connector (+28V@500mA).
• Small, lightweight assembly.

CONTACT INFORMATION

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Email: tony.tabler@exelisinc.com
Vehicle Remote Control Unit (VRCU)

Vehicle Remote Control Unit (VRCU)

TECHNICAL DESCRIPTION

- VRCU allows full control of both single and dual RT-1523 radios for ease of use from any location within a vehicle
- Specifications
- Size: 7 in wide x 3.5 in high x 2.75 in
- MIL-STD-810 tested for environmental
- MIL-STD-461 EMI tested
- Operational temperature: -60°F to +160°F

OPERATIONAL DESCRIPTION

- The SINCGARS VRCU (C-12754/VRC) was designed to control the entire SINCGARS RT-1523 family of radios
- Primary use is in Tactical Wheeled Vehicles where radios are located out of leader / vehicle operator reach
- VRCU replicates the front panel of the SINCGARS ASIP Radio
- VRCU allows the radio operator to remotely control the SINCGARS radio rather than having to move around in the vehicle during a mission

CONTACT INFORMATION

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DCGS-A Lite system is an integration and fielding effort of the DCGS-A system specifically enhanced to meet identified United States Army Special Operations Command (USASOC) and Company Intel Support Team (CoIST) Information and Intelligence needs. Its primary design features specifically address: Ease of use; actionable intelligence to the edge; node-to-node data synchronization/content management; knowledge management and entity extraction from unstructured data.

DCGS-A Lite is built on top of 80% of the DCGS-A V3.1.7 applications, tools and services, while augmenting the system with an offline, disadvantaged user capability in a tactical edge node environment. Components of the DCGS-A Lite system include a Basic Analyst Laptop (BAL) and an Intelligence Fusion Server (IFS). The BAL is a laptop designed for connected or disconnected use. While the analyst is connected, services run on the IFS, and once disconnected, a seamless switch to services running on the BAL is made. The DCGS-A Lite system utilizes DCGS-A V3.1.7 Ozone technology running on the laptop for disconnected use.

**CONTACT INFORMATION**

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520-533-0365  
Raytheon  
POC: John Bendyk  
Tel: (571) 250-1489  
Web: john.c.bendyk@raytheon.com
TECHNICAL DESCRIPTION

- Small analog video encoders with built-in comms
- Uses common Wi-Fi bands: 2.4GHZ for smartphone access and 5GHZ for a mesh between boxes.
- Mesh between boxes uses high-power Wi-Fi, has reached 1km with clean line of sight.
- Batteries are rechargeable and last 2-4 hrs.
- System will work with Android, Blackberry and iOS.
- Uses standard Wi-Fi WPA2 AES 128-bit encryption.
- VDB provides Wi-Fi, Bluetooth, Ethernet and USB comms and GPS location
- TRL 7; should be 8 by AEWE execution

OPERATIONAL DESCRIPTION

Greatly enhance overall situational awareness by combining two sets of COTS products - any standard analog action cameras (e.g. GoPro) and smart End User Devices - to allow squad members to easily share live video among themselves or the on scene commander. An optional specialized app lets the soldier easily flip through ‘channels’ to see what his fellow soldier can see. The small system footprint enables multiple uses of the kit, so the squad can migrate the camera from dismounted, to mobile, to fixed site surveillance with minimal effort and little modification.

CONTACT INFORMATION

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517 Liberty Road, Suite D
Flowood, MS 39232
http://www.KopisMobile.com

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Tel: (601) 260-2116
Email: hjones@kopismobile.com
**NETT Warrior Future Initiative**

**TECHNICAL DESCRIPTION**

The Nett Warrior capability provides overmatch operational capabilities to all dismounted ground combat leaders and small unit operations. The Nett Warrior is an integrated dismounted leader situational awareness (SA) system for use during combat operations. Nett Warrior provides SA to the dismounted leader, allowing for faster and more accurate decisions in the tactical fight. With advanced navigation, SA, and information sharing capabilities, leaders are able to avoid fratricide and are more effective and more lethal in the execution of their combat missions.

**OPERATIONAL DESCRIPTION**

PdM Ground Soldier focuses on the development of Situational Awareness and Mission Command capabilities for the dismounted leader. Nett Warrior has the ability to graphically display the location of an individual leader’s position, as well as the positions of other Nett Warrior equipped leaders, on a digital geo-referenced map image. Nett Warrior is connected through a secure radio capable of sending and receiving data and position location information from one Nett Warrior to another. Nett Warrior also allows the leader to receive higher echelon information products, to assist in decision making and mission planning, by connecting the leader to the mid-tier network. Nett Warrior will increase the leader’s Situational Awareness and Command & Control capabilities, while greatly reducing the potential for fratricide.

**CONTACT INFORMATION**

Program Manager Soldier Warrior  
10125 Kingman Rd., Bldg 317  
Fort Belvoir, VA 22060  

LTC Adrian A Marsh  
Product Manager Ground Soldier  
Tel: (703) 704-3846  
Email: adrian.a.marsh2.mil@mail.mil
### Technical Description

Miniature tactical headset providing hearing protection, situational awareness, and communications.
- Steady-state noise protection.
- Passive attenuation of 25 NRR.
- Adjustable situational awareness hear-thru levels.
- Dual radio capability with full duplex audio.
- Low power consumption from radio or AAA battery.
- Wide selection of interchangeable radio adaptors.
- Full survivability for radio communications.
- Light weight: control box 115g, headset 41g.
- Submersible: Control box 20m, in-ear headset 1m.
- Operates in environments of -40C to +72C.

### Operational Description

The CLARUS is the world’s smallest and lightest tactical headset system, providing users with in-ear hearing protection and communications capabilities.
- Simple to use, the CLARUS provides passive and steady state noise control, and clear communications, in any environment, as well as electronic hear-thru and sound localization for full situational awareness.
- Designed for all soldiers, with or without radios, mounted or dismounted, airborne or maritime
- Reduces the impact of, and the cost to treat injuries related to, exposure to high noise environments
- Starting price under $800

### Contact Information

Silynx Communications, Inc.
9901 Belward Campus Drive, Suite 150
Rockville, MD 20850
www.silynxCOM.com

POC: Leslie Landers
Tel: (301) 217-9223 x147
Email: leslie.landers@silynxCOM.com
**OPERATIONAL DESCRIPTION**

SitaWare Headquarters/Frontline provides a unified C2 across echelons from vehicle platforms to the battalion headquarters. SitaWare allows commanders and their staff to collaborate across multiple echelons and leverage geospatial, terrain, and environmental effects in the development and assessment of COAs, visualize potential outcomes, make decisions, and rapidly develop, assess, adapt, disseminate, and execute plans in a dynamic environment. Frontline provides the Company CoIST with the ability to produce/track both Friendly/Enemy Sensor, through a comprehensive Common Operating Picture (COP) while on the move.

**CONTACT INFORMATION**

**Systematic Inc.**
5875 Trinity Parkway, Suite 130
Centreville, VA 20120-1971
[www.systematic.com](http://www.systematic.com)

POC: Rafael Torres Jr.
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Email: rafael.torres@sseusa.com

**TECHNICAL DESCRIPTION**

Battle Management Apps
- **Friendly Force Tracks** – consumed and produced from vehicles and dismounted commanders
- **Tactical Situation Picture** – Blue/Red Sensor COP, spot reports of hostile, neutral and unknown objects
- **Plans and Intelligence Overlays** – depicting Sensor location/activity, danger areas, points of interest, etc.
- **Command Layers** – to illustrate tactical maneuvers
- **Tactical Communication** – compressed for low bandwidth movement of data around the battlefield
- **System Integration** – video down link, legacy systems, Boomerang, SWORD, FAC, etc.
**Operational Description**

The Machine Foreign Language Translation System (MFLTS) program provides a machine translation capability to the Soldier on a variety of hardware platforms, including a two-way speech-to-speech (S2S) translation application on the Nett Warrior End User Device (EUD). This application allows the Soldier to perform basic communications with a foreign language speaker in support of missions such as checkpoint operations and base security. MFLTS stores conversations in log files on the EUD, in both audio and text format, for future use.

**Technical Description**

The Machine Foreign Language Translation System (MFLTS) resides as an application on the Nett Warrior End User Device (EUD). This application provides a two-way speech-to-speech (S2S) translation capability for English-Iraqi Arabic and English-Pashto. The MFLTS application provides a standalone translation capability using only the computing resources on the EUD; there is no need for a network connection. MFLTS uses the Tactical Communication and Protective System (TCAPS) headset provided with the Nett Warrior system as a speaker/microphone for the input and output of speech.

**Contact Information:**

TCM-BF&MFLT
ATTN: ATZS-CDI-BF
Bldg. 80011, Carter St.
Ft. Huachuca AZ 85613

Tel: 520-45-1842
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**TECHNICAL DESCRIPTION**

- Provides a 2-channel radio based upon the field proven AN/PRC-148 radio by adding a second modular channel to provide Full Motion Video capability or special purpose waveform as mission dictates
- Developed mechanically integrated prototype to support user demos
- Retains existing narrowband Type-1 capabilities including SINCGARS, BFT, and IW SATCOM
- Provides the dismounted team-leader the ability to dynamically accommodate special function waveforms while retaining interoperability with existing fielded radios
- The Modular approach provide new levels of flexibility and mission-specific customization to ground tactical communications

**OPERATIONAL DESCRIPTION**

**Challenge:**
- To reduce Mounted and Dismounted Vehicle & Soldier loads while enhancing SA and OPTEMPO.

**Capabilities Provided:**
- Reduces the burden on the warfighter by eliminating the need to carry multiple radios, receivers and ancillaries
- Economical approach to enhancing capability of 200,000+ fielded AN/PRC-148 radios
- Enabling users of AN/PRC-148 radios to quickly and easily add advanced capability to the radio on an as-needed basis
- Providing new levels of flexibility to the AN/PRC-148 radio by seamlessly adding an reconnaissance (ISR) module

**CONTACT INFORMATION**

Thales Communications, Inc.
22605 Gateway Center Drive
Clarksburg, MD 20871
Website: www.thalescomminc.com

BD: Rich Tranfield  
301-256-5066  
Rich.Tranfield@thalescomminc.com

SME: Kelley Gapen  
240-864-7373  
Kelley.Gapen@thalescomminc.com
### TECHNICAL DESCRIPTION

- Adds second wideband channel to the AN/PRC-148 to provide networking, data and video capability
- 30-512 MHz legacy waveforms
- 225-450 MHz/L-band for SRW
- Common look/feel (training) / common logistics support
- Economical upgrade kit reuse of 200,000+ fielded AN/PRC-148s
- Retains existing PRC-148 JEM narrowband Type-1 capabilities including SINCGARS, BFT, and IW SATCOM

### OPERATIONAL DESCRIPTION

- Provides the soldier a **simultaneous** 2-channel tactical radio with the ability to integrate into the Army’s tactical net (SRW)
- Retains interoperability with existing fielded radios
- Additional wideband channel configurable to support a variety of wideband services – MANET (SRW), LPI/LPD, Video Downlinks, Biometrics, etc
- Provides a solution that enhances the networked capabilities of the Soldier and Small Unit (mounted and dismounted)
- Provides legacy comms **without** losing network presence
- Low-risk introduction of a capability in a widely fielded form-factor - retains same form-factor as existing AN/PRC-148 – reuse of fielded ancillaries (VAs, PAs)

### CONTACT INFORMATION

Thales Communications, Inc.
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Clarksburg, MD 20871
Website: [www.thalescomminc.com](http://www.thalescomminc.com)

- **BD:** Rich Tranfield
  301-256-5066
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- **SME:** Ed Combs
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  Edward.Combs@thalescomminc.com
The Vehicle Integrated Power Enhanced Rifleman (VIPER) Radio System provides a vehicular mounted Soldier Radio Waveform (SRW) radio. The radio provides all the capabilities of the integrated Rifleman Radio while adding 20W RF power output. VIPER also integrates additional connectivity to Ethernet and Vehicle Intercom Systems.

**OPERATIONAL DESCRIPTION**

**CONTACT INFORMATION**

Thales Communications, Inc.
22605 Gateway Center Drive
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- BD: Rich Tranfield
  301-256-5066
  Rich.Tranfield@thalescomminc.com

- SME: Wade Owen
  240-864-7703
  Wade.Owen@thalescomminc.com
TECHNICAL DESCRIPTION

- Provides 3D location in GPS-denied areas using low cost sensors, without installed infrastructure.
- User wears small tracking unit and has Android interface for viewing team location information.
- Sensor fusion, peer to peer ranging and inferred mapping enables seamless ‘track through’ capability.
- Inferred maps provide automated corrections to the user location enabling longer duration tracking.
- Ranging provides reliable relative positions within the squad which do not diminish over time.
- Tested at Ft. Hood subterranean facility.

OPERATIONAL DESCRIPTION

GPS-Denied Navigation and Mapping Solution enhances command and small team situational awareness

- Delivers reliable GPS-denied relative positions to team (Focus 1) and (optionally) to command in indoors and subterranean environments (Focus 3).
- Provides local ad-hoc network to share PLI (Focus 1).
- Enables location sharing, a user’s location (e.g. SAASM GPS) can be referenced to provide team location (Focus 4).
- Provides map intelligence gathering capability when simply walking though a facility (Focus 3).

CONTACT INFORMATION

TRX Systems, Inc.
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Greenbelt, MD 20770
www.trxsystems.com

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Email: carole@trxsystems.com
**OPERATIONAL DESCRIPTION**

Demonstrate an ability to ingest various ISR/Tactical video sources on the battlefield, compress to highly efficient/adaptive FMV streams for dissemination over Radio link to other battlefield assets or the rear HQs.

- Capitalizes on current tactical radios for transmission of critical ISR video
- Maximizes real time information sharing between front line and higher echelon commands
- Specialized Software for archiving and sharing FMV assets and integration with 3D maps
- Real time recording and sharing of tactical footage allows for instant use in AARs.

**CONTACT INFORMATION**

**VITEC Inc**

2200 Century Parkway, Suite 900
Atlanta, GA 30345

[www.vitec.com](http://www.vitec.com)

POC: Kristen Argus
Tel: (404) 320-0110, ext. 110
Email: kristen.argus@vitec.com

**TECHNICAL DESCRIPTION**

Network efficient end-to-end FMV System:

- Small, portable, MIL STD appliances encode live video sources on the ground and from airborne assets
- MPEG-4 H.264 HD/SD compression in ultra-low delay utilizing minimum bandwidth
- Adaptive bit-rate technology automatically adjusts FMV stream to meet ever-changing available data pipe
- SDI and HDMI inputs for compatibility
- Image stabilization and KLV/metadata insertion
- Low power designed for battery packs or UAVs
- AES encryption for secure end to end transmission
Mobility
Experiment Objective Addressed: 2 – Tactical Mobility

TECHNICAL DESCRIPTION

- TRL level 9
- Vehicle weight is 4200lbs + 3500lbs payload
- Vehicle in production and fielded
- SOCOM tested – safety, performance, durability
- 4 wheel steer with adjustable ride height
- Multi-fuel commercial engine w/ tailorable ECU
- CTIS equipped with Run-Flats
- Simple design
- Multiple mission modules in development & fabrication

OPERATIONAL DESCRIPTION

- Tactical vehicle designed for military operations
- Payload modularity provides mission flexibility
- High speed with superior maneuverability
- Internally transportable in V-22
- Air drop capable
- Sling load capable
- Common parts and COTS components
- Minimal annual sustainment cost
- Easily maintainable
- Mission Module interchangeable within 30 minutes

CONTACT INFORMATION

Boeing/Defense, Space & Security/Phantom Works
6315 James S McDonnell Blvd
Berkeley, MO 63134
www.boeing.com

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Bandolier is a lightweight terrain conforming clearing charge containing 2400gr of Research Department Explosive (RDX) and Pentaerythritol Tetranitrate (PETN) per linear foot, which results in relative effectiveness (RE) factor 24% greater than that of traditional C4 explosives. The 15-lb, 35-ft system is pre-packaged in stand-alone 5-ft, 10-ft and 20-ft MOLLE configured modules. A unique explosives hinge encourages good coupling with the area of effect, while a container sock provides mechanical stability so it can be dragged out, tossed during deployment, or hung and twisted around potential targets. Quick connects on both ends of each module permit rapid end to end expansion to create any length of charge. Module disassembly is easy for tasks requiring precise blast effects.

The Bandolier explosive charge can be rapidly employed across a range of combat engineer, light infantry, and special operations tasks. As an area explosive, the Bandolier can be used to reduce obstacles including minefields and protective wire. Bandolier’s modular design enables expedient timber, concrete, and steel cutting along with an array of demolitions tasks. The Bandolier is carried by the dismounted Soldier to provide increased mission capability and speed at a significant weight reduction at almost half the weight of C-4.

Contact Information

Critical Solutions International
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Tyler Sammis
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Email: tyler.sammis@c-s-i.com
Web: www.c-s-i.com
TECHNICAL DESCRIPTION

Fielded and operationally proven vehicle platform
- Amphibious
- Ground pressure as low as 1 psi to traverse extreme cross country terrain conditions
- Steel chassis frame for modular mission configuration
- Diesel Engine
- Triple Differential Transmission
- 1340 lbs internal cargo capacity & 2000 lbs towing capacity
- 27 km/h max speed cross country

OPERATIONAL DESCRIPTION

Designed for Light Infantry and Special Operations Forces:
- CH47 Internally Transportable/UH-60 60 Sling Load/463L Pallet Air Droppable
- Requirement for high tactical mobility in off-road and extreme terrain conditions, including amphibious crossings, ability to traverse swamp, soft sand, and over-snow
- High payload capacity to extend the endurance of squad through company sized elements and reduce Soldier Burden by off-loading man carried equipment

CONTACT INFORMATION

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www.argoatv.com

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Experiment Objective Addressed: 2 & 5
TECHNICAL DESCRIPTION

The DWD system is comprised of a hip belt, a spine bar and a control unit that allows the user while "on-the-move" to easily shift the weight from 100% on the shoulders to 100% on the hips and everything in between. The DWD system is stand alone in conjunction with current issued soldier systems and is part of a protection and load distribution system developed by Source.

OPERATIONAL DESCRIPTION

The benefit of the DWD system as part of a Warfighters protection and load carriage system developed by Source is in improved survivability, agility, mobility and cognitive performance when compared to current issued protection and load carriage systems.

• The DWD system does not interfere with natural body movement in turn the DWD enhances this movement allowing the Warfighter to bend, pivot and rotate the torso; allows for comfortable sitting in a vehicle.
• Improves thermal control and will not interfere with current quick release functions.

CONTACT INFORMATION

Source Vagabond Systems Ltd.
7 H’atu’a Str.
Tirat Carmel, Israel 30250
www.source-military.com

POC: Ronnie Leonard
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Reconnaissance
### TECHNICAL DESCRIPTION

**Huginn X1:** Onboard navigation software, 1500g (3lbs) total takeoff weight, 2 km range, foldable airframe and less than 1 min deployment time.

**LADCU:** 3-axis gyros, 3-axis accelerometer, Magnetometers, GPS, Internal battery, Internal 900 MHz 128 bit encrypted data link, visible laser pointer, and color display.

**Laser Range Finder:** diode laser 1550 nm, Range > 1.5 km (NATO target) total range 5 km.

**Video Display Device:** Built-in antennas, 9.5 hours endurance, 205g and small size.

### OPERATIONAL DESCRIPTION

The Integrated Drone Reconnaissance System encompasses all aspects of a tactical UAS reconnaissance kit, including a low weight and foldable drone in a custom reinforced tactical carrying system, a small tablet for advanced waypoint navigation, a handheld video display device, a weapon mounted Laser Aided Drone Control device (LADCU). The LADCU is a brand new technology, which combines a state-of-art Laser Range Finder (LRF) with an advanced Internal Measurement Unit (IMU). This enables the soldier to control the drone by the click of a button mounted on the weapon, rather than relying solely on computers for navigation. This is especially very useful in stressful situations where there is little time for operating a drone, moreover the LADCU enables the operator to remain as an offensive asset to the team while operating the UAS.

### CONTACT INFORMATION

**Deutschmark Express LLC**  
8506 Greenbrier Court  
Charlestown, Indiana, 47111 USA

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Web: [www.dmexp.biz](http://www.dmexp.biz)  
Mel Flaget  
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**Experiment Objective Addressed:** Focus Areas 3, 4, 5
## TECHNICAL DESCRIPTION

TAS a Rifle mounted UAS control and targeting system that works in combination with the classic Sky Watch X1 SUAS.
- Blue Force Tracking on soldier level
- Integrated UAS Control for Sky Watch Huginn X1
- Black box mission recording for training etc.
- Friendly fire warning
- Real-time Rifle-to-Rifle communication
- Target designation

## OPERATIONAL DESCRIPTION

The TAS is an innovative system, designed to be mounted any standard weapon rail system. It enables a standard rifle to be upgraded into a state-of-the-art smart rifle system. The TAS allows the Soldier to operate the Sky Watch Huginn X1 via a combination of the built in Laser Range Finder and the scope mounted on the rifle. The Soldier will simply look at the target and push a button eliminating the need for computers and maps. Moreover the TAS provides the squad leader with an overview of the individual squad members, their location and heading. This information can then be used for i.e. Blue Force.

## CONTACT INFORMATION

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Mel Flaget
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The Skylark I Block 2 SUAS provides the most capable EO/IR imagery available on an Army SUAS system (NIIRS 7.8 / 7.3 at 1000 ft AGL). The redesigned Skylark is the easiest system to hand-launch in its class of Long Range SUAS; increasing operational readiness and reducing costs associated with failed launches. The auto-directional GDT and recently integrated L3 BANDIT DDL provided extended range (~30 KM) and interoperability with the family of ROVER remote video terminals.

The Skylark I Block 2 SUAS is designed to provide the battalion and below an enhanced SUAS system capable of operating at higher altitudes while still providing usable imagery for various RSTA missions. Proven in Kunar Province with the 101st ABN DIV, the latest Block 2 configuration extends mission range, altitude, and endurance (~2.5 hours) while reducing the operator’s cognitive load through its unique ‘camera guide’ mode – allowing the operator to focus on the mission, not the air vehicle.

Elbit Systems of America
3100 Gentian BLVD Suite 7G
Columbus, GA 31907
Tel: 706-992-5637
POC: Tom Carlisle

Thomas.carlisle@elbitsystems-us.com
Web: www.elbitsystems-us.com
**OPERATIONAL DESCRIPTION**

The ELM 2180 is a lightweight, man-portable Ground Surveillance Radar (GSR) designed for small unit operation. The detection range is 6 km for dismounts and 12 km for a vehicle with a range accuracy of 0.5m and 0.5° in angle for threats moving as slowly as 0.17 m/s and as rapidly as 60 MPH. With day, night, and all weather capability to detect, track and classify vehicles and dismounts the complete system is stowed in two backpacks allowing extremely fast setup and tear down and self contained for 8 hours of continuous operation.

**CONTACT INFORMATION**

ELTA North America  
11840 West Market Place  
Fulton, MD  20759

Rich Aronson  
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Web:  www.eltacorp.com

**UNCLASSIFIED**

Experiment Objective Addressed: 3
**OPERATIONAL DESCRIPTION**

The Recon V MLR is designed to meet the needs of the Army and its soldiers at the Squad and Platoon level, the new Recon Mini-LR will maintain the range performance of the AN/PAS-24(A) and incorporate a high performance LRF in a significantly weight-reduced, ruggedized enclosure. Recon variants are current SOF programs of record as well as fielded in theater to conventional forces through the REF program. The Mini-LR will detect a man standing vs. man high crawling and man holding a weapon vs. man not holding a weapon 2000m.

**CONTACT INFORMATION**

FLIR Government Systems  
25 Esquire Road  
N. Billerica, MA 01862  
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www.flir.com

POC: Roger Anderson  
Cell (912) 399-9341  
roger.anderson@flir.com

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**TECHNICAL DESCRIPTION**

- Light Weight Hand Held Device
- 640 x 480 InSb based
- HD Eyepiece Display
- 220mm Dual Field of View (DFOV)
- MLR-10K LRF
- 4 lbs with Hot Swap CR-123 batteries
- Light Weight, Submicro IDCA
- Digital Magnetic Compass (DMC)
- GPS
- Electronic Stabilization
**TECHNICAL DESCRIPTION**

- Software program
- “Plug and Play” system
- Windows 7 and 8 OS compatible
- Graphics card (GPU) processing
- Software file size: 10MB
- Optimized for Windows 8, 64-bit
- Customizable settings for multiple scenarios
- Response time: 7 milliseconds

**OPERATIONAL DESCRIPTION**

Enhance optical footage (live or previously captured) in near real time by illuminating shadows and revealing further visual intelligence during reconnaissance operations. Compatible with all full-color sensors (IR/NVG enhancement in development). Identify high value targets via streaming video enhancement and capture high resolution still images or video if desired. Designed for interoperability with optical sensors currently in use to increase capabilities of existing systems without the need for new hardware nor adding any weight burden to the warfighter.

**CONTACT INFORMATION**

Lentix, Inc.
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Suite 1776
Knoxville, TN 37902
lentix.com

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Email: simpson@lentix.com
## TECHNICAL DESCRIPTION

- The Gyrocam VOSS is a fielded (TRL 9) Triple Sensor system that integrates three-chip color CCD camera, mid-wave cooled infrared, and next generation night vision into one four-axis gyro-stabilized system.
- SDIK (TRL 9) transmitter and receiver/monitor operate in the C band. Transmits at 2.5 MHz, one-way encrypted H.264 encoded video, and receives low latency video decoder 115.2 kbaud data.
- The geo-location system uses a micro-machined, solid state accelerometer/gyroscope triad. A differential GPS determines the orientation of the base of the gimbal to north and is accurate to about 10 milliradians (0.6°).

## OPERATIONAL DESCRIPTION

Employed for combat maneuver, reconnaissance, or force protection, the E-VOSS allows the operator to search and scan roadways, surrounding terrain, or objective areas to detect vehicles, personnel, and IEDs, while remaining under armor, and moving or halted; rapidly determine grid location of the far target; and share full motion video with other platforms, ground Soldiers, and the command center in real-time for enhanced situational awareness across the formation.

## CONTACT INFORMATION

Lockheed Martin Gyrocam Systems  
5600 Sand Lake Rd. MP-946  
Orlando, FL 32819  
[http://www.lockheedmartin.com/gyrocam](http://www.lockheedmartin.com/gyrocam)

POC: David Barton  
Tel: (941) 504-2107  
Email: david.n.barton@lmco.com
TECHNICAL DESCRIPTION

The LSS is a man-packable tripod, mast-mounted 360° EO/IR sensor powered by rechargeable lithium ion batteries with solar panels for recharging, 8.4-inch all-weather monitor, hand controller, and interface unit. Deployable from 4 –24 feet high, the LSS can be set up and operational in less than 30 minutes. The 9M gimbal offers two-axis gyro-stabilization, high-definition low-light capable CMOS color camera, mid-wave continuous-zoom thermal imager with 8 optional palettes, eye-safe laser range finder, laser illuminator/pointer, inertial measurement unit, quick-swap universal mount, and multi-sensor interoperability.

OPERATIONAL DESCRIPTION

The LSS provides the Infantry and Scouts with the ability to detect, observe, and target enemy forces from austere locations. The LSS gives the user the capability to detect, recognize, identify, and act upon threats outside of small arms and explosive hazard ranges. Deployable in rugged and urban terrain, for surveillance, force protection, or incorporated with random road-side checkpoints. The LSS can be relocated or repositioned in just a few minutes. The 9M gimbal can be used on vehicles with the Gyrocam mast system during mounted operations.

CONTACT INFORMATION

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Experiment Objective Addressed: 3
**TECHNICAL DESCRIPTION**

SDIK is a TRL 9 system employed to share VOSS video with other platforms in the formation. Operates in the C band with a transmit power of 33 dBm (2 watts), and a receive sensitivity of -100 dBm. SDIK transmits one-way encrypted H.264 encoded video and 115.2 kbaud data, and receives low latency video decoder 115.2 kbaud data. Transmitting bandwidth is 2.5 MHz, receiving full resolution, full frame rate video. SDIK requires 2 amp/28 VDC power. The transmitter has a 6 db Omni 1” diameter, 15-24” long vertical polarization antenna attached. Encryption for the transmitter is AES 128.

**OPERATIONAL DESCRIPTION**

The SDIK delivers real-time full motion video transmission to all vehicles within the patrol and to adjacent elements equipped with compatible receivers (range up to >1 mile). With high operational reliability in the harshest of environments and terrain, SDIK allows all receiver equipped platforms to view imagery from multiple Gyrocam sensors (up to 8), providing enhanced situational awareness, command and control, and the directing of fires and maneuver elements on the battlefield. SDIK is not effected by current CREW devices.

**CONTACT INFORMATION**

Lockheed Martin Gyrocam Systems  
5600 Sand Lake Rd. MP-946  
Orlando, FL 32819  
http://www.lockheedmartin.com/gyrocam

POC: David Barton  
Tel: (941) 504-2107  
Email: david.n.barton@lmco.com
**OPERATIONAL DESCRIPTION**

Demonstrate integrated squad level airborne ISR with ability to provide, MAFIA enabled, cursor on target and BDA capabilities.

Combat proven, easy to use, small sized, vertical take off and landing (VTOL) small UAS, for squad level choke point/danger zone ISR operations as well as enabling precision targeting through MAFIA.

Expendable, all weather, day (EO) /night (LWIR) capable.

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**CONTACT INFORMATION**

Physical Sciences Inc /Tactical Robotics Group
20 New England Business Center Dr.
Andover, MA 01810
psitactical.com

POC: Richard Guiler, PhD
Tel: (978) 609-7067
Email: guiler@psicorp.com

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**TECHNICAL DESCRIPTION**

- **Weight:** 430-530 grams (~1 lb)
- **Size:** 25cm (9.8 in)
- **Payloads:** real-time video (standard), plug-n-play payloads, thermal, IR Illumination, SIGINT
- **Range:** LOS 1000m
- **Speed:** 0 to 16 m/s (0-35 mph)
- **Control Interface:** handheld GCS/EUD, digital encrypted
- **Vehicle Cost:** (Expendable)
- **Endurance:** 20-30 minutes (Payload Dependent)
- **Service Ceiling:** >12,000 ft MSL
- **Wind Station Holding:** >30mph
- **Product Status:** In production, fielding with US Army

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**Experiment Objectives Addressed:** Reconnaissance while in contact and Precision indirect fires

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**UNCLASSIFIED**
TECHNICAL DESCRIPTION
The PD-100 Personal Reconnaissance System (PRS) provides the Dismounted Soldier with a game changing new personal airborne ISR capability.

OPERATIONAL DESCRIPTION
The PD-100 is designed as a short range ISR system for lower echelon combat units. The complete system is easily carried by a single soldier on the combat vest, providing the unit with a quick reaction reconnaissance and surveillance capability. The extremely small and light UAVs are inherently safe and poses no risk to personnel or other air vehicles, allowing the system to be operated almost anywhere at any time without prior airspace coordination. It is easy to use and requires only a few hours of training.

CONTACT INFORMATION
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www.proxdynamics.com

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**TECHNICAL DESCRIPTION**

- Balloon diameter: 19.5 feet
- Operational elevation: 1,000 feet
- Wind limits: 40 knots operating
- Mission endurance: 72 hours
- Air vehicle max weight: 40 pounds
- Payload weight: Up to 18 pounds
- 360 degree stabilized observation coverage
- Day/Night/Laser gyro stabilized payload
- Entire system based on towable trailer
- Helium supply self-contained
- Recovery, helium refill & launch in only 30 minutes
- Power: Battery, on-board generator, & NATO 24 volt

**OPERATIONAL DESCRIPTION**

Small, operationally-proven, highly mobile, rapidly deployable, tactical aerostat system.
- Simple and full deployment in less than 30 minutes;
- Provides high-quality surveillance video & data using gyro-stabilized GPS/INS up to 72 hours;
- 3 axis (pan-zoom-tilt) day (color)/night (Cooled IR) and optional laser pointer;
- Downlink video and interactive digital map displayed at system’s Ground Control Station, and can be networked with existing C4I systems;
- Full digital recording of video and data.

**CONTACT INFORMATION**

RT Aerostat Systems, Inc.
1500 Research Parkway
Suite 270
College Station, TX 77845
www.rtaerostat.com

POC: Tom Sheets
Tel: (760) 213-3705
Email: tsheet@stonewall-group.com

Experiment Objective Addressed: 3

UNCLASSIFIED
Remote Operation Surveillance System (ROSS)

**TECHNICAL DESCRIPTION**

- 10.2” x 6.5”; less than 10 pounds
- Built to MIL-STD; highly ruggedized
- Internal Pan & Tilt with no moving parts
- Moving human recognition 1600m night/2200m day
- Offers full suite of communications options--WiFi, Cellular, Wired, & Satellite (optional)
- Highly energy efficient: <5 watts fully operational & transmitting
- On-board real time processing & recording
- Flexible power options (solar, standard batteries, rechargeable batteries, fuel cells)

**OPERATIONAL DESCRIPTION**

The ultimate lightweight and compact unattended imaging day & night persistent surveillance system. Jointly developed by the US TSWG and the Israeli MOD after years of engineering & operating excellence.

- Wireless, easy to set up & use
- Easily concealed & withstands harsh, operating environments.
- Anti-Tampering, Digital Magnetic Compass, & GPS
- Enables use of acoustic, seismic, tactical radar etc
- Engineered for survivability & energy efficiency
- Extracts exact target coordinates from FMV

**CONTACT INFORMATION**

Seraphim Optronics Ltd
2 Hayetzira St. POB 621
Yokne’am, Israel 20692
[www.seraphim.co.il](http://www.seraphim.co.il)

POC: Tom Sheets
Tel: (760) 213-3705
Email: tsheets@stonewall-group.com
**TECHNICAL DESCRIPTION**

Phoenix 15 Quadrotoor Unmanned Aerial System (UAS)
- Micro system ideal for intelligence, surveillance and reconnaissance (ISR) missions
- Air vehicle: 7” x 7”; 1.6 lbs.
- Payload: Stabilized, combined electro-optic/infrared, FLIR Quark 336 and Misumi Pinhole Camera, 13mm lens
- Rear-looking camera for greater situational awareness
- Ground control system integrated into tablet weighing less than 5 lbs.
- Range: ½ mile; Endurance: 10-15 minutes

**OPERATIONAL DESCRIPTION**

Demonstrate a micro UAS that will provide squad members performing close in missions with instant situational awareness with little weight burden
- Easy to carry in rucksack or backpack
- Fits existing DOD ISR network Infrastructure
- Command and control and video communications combined on single encrypted digital data link
- Rapid deployment <2 minutes
- Single day training for operators

**CONTACT INFORMATION**

UAV Solutions, Inc.
8280 Patuxent Range Road
Jessup, Md. 20794
Uavsolutions.com

POC: Sharon Corona
Tel: (240) 456-0195 x262
Email: sccorona@uavsolutions.com
**TECHNICAL DESCRIPTION**

Phoenix 60 Hexacopter Unmanned Aerial System (UAS)

- **Air vehicle:** 30" x 30"; less than 15 lbs. with gimbal
- **Payload:** Stabilized, combined electro-optic/infrared, FLIR Quark 640 IR camera and Flytron 10x optical zoom daylight camera, 19mm lens
- **Rugged Tactical Ground Control System that can fly other UAV Solutions platforms**
- **Range:** 1-2 miles line of sight
- **Endurance:** 40 minutes under battery power; system can be tethered to increase endurance

**OPERATIONAL DESCRIPTION**

Rugged unmanned aerial system that provides situational awareness for nearly 40 minutes;

- **Additional booms** for added thrust and system redundancy
- **Small operator footprint/low training requirement**
- **Portable with rapid setup <2 minutes**
- **Fits existing DoD intelligence, surveillance and reconnaissance network Infrastructure**

**CONTACT INFORMATION**

**UAV Solutions, Inc.**
8280 Patuxent Range Road
Jessup, Md. 20794
Uavsolutions.com

**POC:** Sharon Corona
Tel: (240) 456-0195 x262
Email: sccorona@uavsolutions.com
TECHNICAL DESCRIPTION

Dual environment\(^1\), multispectral\(^2\) cover system that provides full camouflage/concealment while providing an improvement in energy efficiency

1) Reversible construction (i.e. woodland/desert, or other desired combination)
2) Visible, nIR, SWIR, MWIR, LWIR and radar meeting requirements of MIL PRF 53134

Technology Readiness Level (TRL) = 7

OPERATIONAL DESCRIPTION

Provides soldiers and associated strategic assets with the most advanced signature mitigation available - encompassing visible, nIR/SWIR, thermal and RF obscuration, reducing threats posed by aerial and land based enemy sensor platforms. Similar in pitch/strike to current cover systems (i.e. ULCANS) with reversibility features that ensure global theater readiness in a reduced logistical footprint and lightweight package. Energy efficiency and related costs are also reduced due to solar load benefits provided by the GORE® cover system.

CONTACT INFORMATION

WL Gore & Associates, Incorporated
105 Vieve’s Way
Elkton, MD 21921
wlgore.com

POC: Sean McDearmon
Office (410) 506-5246
Cell (302) 540-8968
Email: smcdearm@wlgore.com
**TECHNICAL DESCRIPTION**

Garments with GORE® Multispectral Concealment materials provide camouflage and concealment from multiple concurrent sensor threats to aid the operator in infiltrating and exfiltrating target objectives with a significant reduction in probability of detection.

- Greatly reduces range of detection from enemy sensors (multiple sensor threat)
- Provides significant tactical advantage for night time operations
- Allows for improved infiltration/exfiltration with minimal detection
- Provides the ability to independently control visible, nIR, SWIR, MWIR, and LWIR sensor detection
- General use broad environment patterns and theater specific patterns developed
- Garments designed for multiple mission needs
- Fully integrated for use with current equipment

Technology Readiness Level (TRL) = 8

**OPERATIONAL DESCRIPTION**

Garments made with GORE® Multispectral Concealment material will provide Soldiers with the most advanced signature mitigation available in a combat uniform/turkey suit form. Offering protection throughout the complete visible and Infrared spectrum (nIR – LWIR) these garments will enhance mission effectiveness in daytime and nighttime environments.

The growing proliferation of sophisticated detection devices in the hands of our enemies is addressed by greatly reducing the range and probability of detection of the Soldier.

An optimized lightweight design minimizes thermal burden and fully integrates with a Soldier’s theater based kit.

**CONTACT INFORMATION**

WL Gore & Associates, Incorporated
105 Vieve’s Way
Elkton, MD 21921

[wlgore.com](http://wlgore.com)

POC: Sean McDearmon
Office (410) 506-5246
Cell (302) 540-8968
Email: smcdearm@wlgore.com
Lethality and Firepower
### TECHNICAL DESCRIPTION

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRL</td>
<td>TRL9 (In Production)</td>
</tr>
<tr>
<td>Caliber</td>
<td>40MM</td>
</tr>
<tr>
<td>Weight</td>
<td>13.9 Pounds (6.35 kg) without furniture</td>
</tr>
<tr>
<td>Length</td>
<td>35.75 inches (909 mm)</td>
</tr>
<tr>
<td>Lifecycle</td>
<td>1,000 shots</td>
</tr>
<tr>
<td>Launch Tube</td>
<td>4140/4150 ordnance grade barrel steel</td>
</tr>
<tr>
<td>Maximum Range</td>
<td>1000 Meters (round dependent)</td>
</tr>
<tr>
<td>Effective Range</td>
<td>300 Meters (round dependent)</td>
</tr>
<tr>
<td>Ammunition</td>
<td>Compatible with all existing rockets. Fires warheads from 40mm to 106mm.</td>
</tr>
</tbody>
</table>

### OPERATIONAL DESCRIPTION

The Airtronic RPG-7 meets the US military standard of “safe, suitable, and effective.” The durability, simplicity, low cost and effectiveness of the RPG-7 has made it the most widely used man-portable anti-armor weapon in the world.

- Backwards compatible with all existing rockets that offer multiple effects from anti-tank, to anti personnel, to thermobaric, to anti-structure such as adobe walls.
- Upgraded optics currently available; American made rockets in development.
- Inexpensive training rounds for improved accuracy

Hard and soft targets include troops in the open, structures, bunkers, light armored vehicles such as technicals and SUVs, tanks, and vessels. Round dependent.

### CONTACT INFORMATION

**Airtronic USA, Inc.**
1860 Jarvis Ave.
Elk Grove Village, IL 60007
[www.airtronic.net](http://www.airtronic.net)

**POC:** Dr. Merriellyn Kett
Tel: (847) 437-0100
Email: mkett@airtronic.net
Automated Direct/Indirect-fire Mortar (ADIM)

**OPERATIONAL DESCRIPTION**
ADIM may be employed for base defense as part of a traditional gun battery, or in expeditionary mode
- Increases force protection with remote weapon operation, 360 degrees of coverage
- Increases combat effectiveness: precision aiming under any conditions; reduced gun lay errors
- Acts as a force multiplier: quick response time and higher rate of fire; crew of two (driver and operator)
- Provides tactical flexibility with “sensor-to-shooter” support for FOB/COP defense.
- Serves as a roving mortar to expand effective area of influence

**CONTACT INFORMATION**
Armament Research Development & Engineering Center (ARDEC)
Weapons & Software Engineering Center
RDAR-WSW-I
Bldg 95N 2nd Floor
Picatinny Arsenal, NJ 07806-5000

POC: Matt Tomik
Tel: (973) 724-3267
Email: matthew.h.tomik.civ@mail.mil

**TECHNICAL DESCRIPTION**
- Breech-loaded 81mm Mortar weapon.
- Mounted on M1152 HMMWV.
- Direct and indirect-fire mission capability.
- Soft-recoil enables firing from light tactical vehicles.
- Remote-control capability both cabled and wireless.
- Automated: azimuth, elevation, ammo-feed, firing
- Rapid response: slew to cue < 8 sec
- Always emplaced
- Integrated with Fire Control System
- 20-round Magazine: M821A2 (81mm HE)
TECHNICAL DESCRIPTION

Modular remote weapon system consisting of:
• Highly accurate .338 Lapua Magnum semi-auto rifle equipped with a 10 or 35 round magazine, day and night optics
• Laser rangefinder/pointer
• Electro-optical/Infrared sensor ball
• Remote ground station for operations under cover
• Secure fiber optic communications between weapon and ground station
• Ability to engage man-sized targets at ranges over 1200 meters with low/no CIVCAS or collateral damage

OPERATIONAL DESCRIPTION

The TowerHawk Weapons System is a transportable, modular remote weapon system (RWS). Soldiers can employ it as an integrated capability of the Combat Outpost’s (COP) Force Protection (FP) network or as a stand-alone capability. In either configuration, TowerHawk provides the following capabilities:
• Extended Range Precision Offensive Lethal Response
• Surveillance
• Enhanced Perimeter Defense

CONTACT INFORMATION

US Army Aviation Applied Technology Directorate
Bldg 401 Lee Blvd
Ft. Eustis, VA 23604-5577
http://www.aatd.eustis.army.mil/

POC: Stephen W Stilwell, Jr.
Tel: (757) 878-3393
Email: stephen.w.stilwell.civ@mail.mil

Experiment Objective Addressed: 4
For the purposes of demonstrating the RWS-Heavy at AEWE Spiral J, KPS will deliver a M151A2 PROTECTOR RWS; MILES will be adjusted to simulate and replicated the effects of a 30mm weapon station.

**TECHNICAL DESCRIPTION**

- Fully stabilized, scalable medium-caliber RWS
- Common interface, hardware, and software to M151 RWS
- MK44 30mm Bushmaster Automatic Cannon – Stretched
  - 150 + ready rounds, Air Burst Munitions (ABM) ready
- Dual linkless ammunition feed system with first round select
- Re-load from under armor
- Lead angle compensation, target tracking
- TRL: 7

**OPERATIONAL DESCRIPTION**

- Affords SBCT increased ability to support maneuver with highly accurate 30 / 40 mm fires out to 3500 meters and under all tactical conditions
- Supports maintenance / transport of nine man squad / three man (vehicle) crew
- Successful live fire demonstration at the MCOE (February, 2014)
- Allows for weapon and sensor growth potential; i.e. 40mm, CROWS (Hunter / Killer), Javelin, etc.

**CONTACT INFORMATION**

Kongsberg Protech Systems, USA
1725 Duke Street, Suite 600
Alexandria, VA 22314
[www.kongsberg.com](http://www.kongsberg.com)

Carl Sundin
Mobile: 814-288-8974
[carl.sundin@kongsberg.com](mailto:carl.sundin@kongsberg.com)
PROTECTOR RWS-Javelin

**OPERATIONAL DESCRIPTION**

- Lethality and force protection enhancements (over PROTECTOR M151A2 RWS):
  - Affords SBCT the ability to gain and maintain mounted tactical overmatch by defeating hardened or vehicle targets out to 2500 meters (T) / 4200 (O) under all tactical conditions
    - Range supported by common (w/RWS-Heavy) sensor package
  - Affords SBCT increased force protection by employment of Javelin from under armor through RWS Fire Control Unit (FCU)

**TECHNICAL DESCRIPTION**

- Enhanced PROTECTOR M151A2 RWS with:
  - Javelin missile
  - Cooled Thermal Imaging Module (TIM 4000) (FLIR) to meet 125% D/R/I for extended Javelin range requirement (Common for RWS-Heavy aka 30mm)
  - BATRAM 1550 Laser Range Finder and VIS95 (>50% increased ID range, >300% larger scene improving the situational awareness
  - FCU III with 800 x 600 resolution and “picture in picture” with WFoV and NFoV
  - TRL:7

**CONTACT INFORMATION**

**Kongsberg ProTech Systems, USA**  
1725 Duke Street, Suite 600  
Alexandria, VA 22314  
www.kongsberg.com

Carl Sundin  
Mobile: 814-288-8974  
carl.sundin@kongsberg.com
This app is meant to be used when a shooter needs to quickly determine ballistics solutions in a number of directions, for multiple milestones, instantaneously. This gives the shooter a quick mental reference as he moves between shots quickly. Other ballistics apps only provide a single shot solution.

At start, the location of the user is determined and ballistics solutions are calculated based on the most recent set of weapon and weather information that had been entered. This solution, in the form of distance and drop, is then displayed in user-defined rings overlaid on a map of the immediate area.

**TECHNICAL DESCRIPTION**

- Uses standard ballistics calculator, which can be modified to suit customer requirement or preference. When the weapon and weather information is changed by the user, the solution automatically updates.
- BlackBerry and Android versions can receive real-time weather feeds from Bluetooth-enabled Kestrel weather meters if desired.
- Configurable ring/marker color, range, & separation
- Versions are available for Android, iOS, and BB10
- TRL 7; Should be TRL 8 by AEWE execution

**OPERATIONAL DESCRIPTION**

**CONTACT INFORMATION**

Kopis Mobile LLC
517 Liberty Road, Suite D
Flowood, MS 39232
http://www.KopisMobile.com

POC: Henry L. Jones II, Ph.D.
Tel: (601) 260-2116
Email: hjones@kopismobile.com
TECHNICAL DESCRIPTION

- Weight: 4.08 pounds (without batteries)
- Dimensions (LxWxH): 390X145X115 (mm)
- Emission wavelength: 1.54 μm
- Magnification: 10X
- Lens diameter: 40mm
- Maximum range: 2000m
- Exit pupil diameter: 4mm
- Eye relief: 65mm
- Field of view: 2.2 °
- Optional camera and video for training and C² use
- Accessories: Rugged carrying case, batteries, user manual, covers, & adapters

OPERATIONAL DESCRIPTION

An innovative, 10 X 40, Sniper Fire-Control Riflescope, designed in close consultation with operating forces.

- Eye safe laser range finder
- Invisible to night vision devices
- Durable in all environmental conditions
- Integral Picatinny rail adapter
- Withstands sustained recoil of high caliber weapons
- Enhances Detection, Recognition & Identification
- Increases probability of first round hit
- MIL-STD qualified
- Complies with MIL SPEC 810G

CONTACT INFORMATION

Meprolight LTD
PO Box 26
4 HaHadas St,
Or-Akiva Industrial Park
Or-Akiva, 3065001 Israel
www.meprolight.com

POC: Amir Karo
Tel: +972-52-850-7376
Email: amirk@meprolight.com
**TECHNICAL DESCRIPTION**

- M72 based blast+frag warhead w/ 15ms fuze delay.
- Bash through, fragmenting warhead with 1.4 lbs. of IM enhance blast explosive fill.
- Qualified, operational use in SOCOM since 2005.
- PIP to existing M72 family of weapons.
- Same type classified components as M72A7, except for fuze, warhead and fill.
- 9.8 pound total system weight, 30 inches long.
- Superior MOUT maneuverability.
- Combat proven by US and Foreign Militaries.
- M72A9 ASM is at TRL Level 9 and in production.

**OPERATIONAL DESCRIPTION**

- Provides dismounted Soldiers a lightweight, shoulder fired; penetrate/fragmentation round.
- Increases individual User organic firepower.
- Outstanding breaching weapon on 12 in. adobe and double brick or similar thicker targets.
- Delivers 1.4 lbs of explosive in fragmenting case.
- Leverages current training for M72 LAW systems.
- Offers demonstrate lethal over-pressure and fragmentation to defeat targets in structures.
- Extensive use in current operations.

**CONTACT INFORMATION**

Nammo Talley Inc.
4051 N Higley Road
Mesa, AZ 85282

www.nammo.com

POC: Gary Ostendorf
Tel: (480) 898-2209
Email: gostendorf@nammotalley.com
M72 Airburst

TECHNICAL DESCRIPTION

- Programmable airburst for the M72 LAW.
- PIP to existing M72A9 reduces risk, testing, and rapidly deploys capability to the Warfighter.
- Versatile system, lethal anti-structure and airburst capability for both short and extended ranges.
- Under 10 pound total system weight.
- Simple, low cost, User-set, L-3 Ballistic Sight Module, airburst range and aiming module.
- Adds proven MIL-STD-1316 Dual Safe Fuze.
- SOCOM M72 Airburst Fragmentation Warhead Program begun with SOCOM S&T
- M72 Airburst is TRL Level 6

OPERATIONAL DESCRIPTION

- Provides dismounted Soldiers a lightweight shoulder fired airburst round, for targets > 600m.
- Greatly improved lethality over other systems such as XM25 and 40mm.
- Delivers 1.4 lbs of explosive in fragmenting case.
- Multi-mode fuze technology - choice of fuze delays (long or short) and airburst mode.
- Leverages current training for M72 LAW systems.
- Bridges the gap between direct and indirect firepower and provides rapid response to threats.

CONTACT INFORMATION

Nammo Talley Inc.
4051 N Higley Road
Mesa, AZ 85282

www.nammo.com

POC: Gary Ostendorf
Tel: (480) 898-2209
Email: gostendorf@nammotalley.com
**TECHNICAL DESCRIPTION**

- Base grenade with non-removable 3.5 sec fuze and auxiliary explosive modules to increase effect
- Maximum configuration is Base + 2 modules (345g)
- Each module has 115 grams (1/4 lb) of Insensitive Munitions (IM) qualified secondary explosive
- Three stage Safety Pin
  - ~ 4 lb unlocked pin pull
  - No brush lock required
- Reliable, fielded fuze with enhanced safety pin
- Composite case, fuze body, and spoon to minimize fragmentation
- Fielded in US SOCOM and Finland Defense Force

**OPERATIONAL DESCRIPTION**

- User configurable blast effects from 1/4lb to 3/4lb
- Outstanding for call outs of inhabitants in structures
- Min fragments = quick access on entry operations
- Scale effects to structure design to min/max damage
- Significant overpressure to incapacitate/disorient
- Robust, rugged design, easy to throw at distance
- SOCOM fielded since 2010 with operational success
- Simple, established user training and hardware
- No tools required, easy hand operation to attach

**CONTACT INFORMATION**

Nammo Talley, Inc.
4051 N Higley Road
Mesa, Arizona 85215
www.nammo.com

POC: Gary Ostendorf
Tel: (480) 898-2209
Email: gostendorf@nammotalley.com
**TECHNICAL DESCRIPTION**

M-MPIMS fragmentation zone at 30 meters is 23 meters wide, 2 meters high, and provides minimum 5 hits per square meter. The M-MPIMS significantly reduces collateral damage because the fragmentation pattern is repeatable and aimable. In Urban Operations, the overpressure compared to legacy systems is SIGNIFICANTLY reduced, there by creating less chance for friendly casualties in/near the blast area.

<table>
<thead>
<tr>
<th>TECHNICAL SPECIFICATION</th>
<th>M-MPIMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross weight</td>
<td>2.0 lb</td>
</tr>
<tr>
<td>Net Explosive Quantity</td>
<td>1.1 lb</td>
</tr>
<tr>
<td>Width</td>
<td>4.2 in</td>
</tr>
<tr>
<td>Height</td>
<td>3.3 in</td>
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<tr>
<td>Depth</td>
<td>2.0 in</td>
</tr>
<tr>
<td>Amount of fragments</td>
<td>315</td>
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<tr>
<td>Fragment type</td>
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<tr>
<td>Fragment diameter</td>
<td>13/64</td>
</tr>
<tr>
<td>Fragment weight</td>
<td>0.02 oz</td>
</tr>
</tbody>
</table>

**MINI-MULTI-PURPOSE INFANTRY MUNITION**

M-MPIMS is designed for SOF unique requirements. It is extremely light (2.0lbs) but efficient. It can be used in raid, ambush, Base Camp protection, Force Multiplier, and Area Access Control scenarios. It can be employed offensively and/or defensively.

- M-MPIMS is effective to over 50 meters,
- Optimized to 30 meters with reduced explosive cone
- Primary use against dismounted troops
- Wide variety of applications
- Can be daisy chained
- Significantly reduced rear safety distance (15meters)
- Fast deployment to any ground type, trees or walls can be equipped with a Picatinny rail for camera, laser or other required attachments

**OPERATIONAL DESCRIPTION**

**CONTACT INFORMATION**

OY Forcit AB
Forcit Defence
P.O. BOX 19
FIN 10901 Hanko
www.forcit.fi

POC: Deac Heilig
Tel: (727) 560-9599
Email: spttechnology2@aol.com
Sustainment and Protection
**TECHNICAL DESCRIPTION**

Amorphous Silicon flexible thin-film solar panels can be connected directly into a system needing power or into a power storage device or manager.
- Folded: 14”x14”x3”, Deployed: 86.5”x54.5”
- Weight: <5 lbs
- Voltage: 15V or 30V (21V OCV); Current: 7.2A or 3.6A;
- Tested to 3000 foldings and unfoldings
- TRL 6
- Cable and connector agnostic, but comes standard with either Delphi or SAE.

**OPERATIONAL DESCRIPTION**

Provides 120 watts of remote tactical power to the individual Soldier or Unit to charge batteries for C4ISR.
- Radios, night-vision devices, GPS, laptops, range-finders, water purification, small refrigerators, UAS, robots, flashlights, and smartphones.
- Reduces Soldier load by limiting the need for multiple batteries and eases logistical resupply.
- Fits neatly in the rucksack and deploys in seconds.
- Rugged (able to sustain bullet holes and still function), weather resistant, low light capable, and requires no sun soaking.
- Panels can be daisy-chained for increased power.

**CONTACT INFORMATION**

CERDEC/CP&I, Power Division  
5100 Magazine Rd  
Aberdeen Proving Ground, MD 21005

POC: Cassandra Reilly  
Tel: (443) 395-4663  
Email: cassandra.l.reilly.civ@mail.mil
Technical Description

Wearable, conformal primary and rechargeable battery contours to match the dimensions of the Soldier protection plates
- Energy Density: 150Wh
- Operating range: -20°C to 60°C
- Max discharge capability at 5 amps
- Thin profile with thickness of approximately 0.63 inches
- Push button activated, 5 LED State of charge (SOC) indicator

Operational Description

The conformal battery is a thin, lightweight, wearable battery that is designed to fit in the chest pouch of the Soldier’s vest, along with armor. It is designed for integration with Soldier systems, where it is used as a centralized power source, providing power to all of the Soldier’s worn electronics. It is a good balance between size, weight and energy content to provide a safe, high energy content, ergonomic and low cost, and offers a rechargeable version.

Contact Information

CERDEC/CP&I, Power Division
5100 Magazine Rd
Aberdeen Proving Ground, MD 21005

POC: Cassandra Reilly
Tel: (443) 395-4663
Email: cassandra.l.reilly.civ@mail.mil

Experiment Objective Addressed: 2, 5
**TECHNICAL DESCRIPTION**

Wearable 20W Fuel Cell Power System (WFC20)
- Wearable power system for the dismounted soldier
- Output: 20 W Continuous, 35W Peak (10mins)
- Dimensions: 7.0” X 8.0” X 0.8”
- Fuel Cell Weight: 0.7 kg
- Cartridge: 80Wh (811 Wh/kg)
- Voltage: 10-16.8V, 5V USB

**OPERATIONAL DESCRIPTION**

- Designed as a man wearable power supply for integrated Soldier systems such as SWIPES
- Significant weight / volume savings for missions exceeding 8 hours
- Projected unit and lifecycle costs comparable to Conformal Wearable Battery (CWB)
- Spent cartridge is environmentally friendly
  - Solid-state Hydrogen Storage

**CONTACT INFORMATION**

CERDEC/CP&I, Power Division  
5100 Magazine Rd  
Aberdeen Proving Ground, MD 21005

POC: Cassandra Reilly  
Tel: (443) 395-4663  
Email: cassandra.l.reilly.civ@mail.mil
TECHNICAL DESCRIPTION

Lightweight, portable, low-altitude UAV for **austere**, complex, and **dynamic high-threat environments**. Provides quiet reconnaissance and surveillance; and **precise aerial resupply** and defense via plug & play sensors and payload munitions. Geo-locates and directs fire at stationary and fleeting targets.

• 7’ long, **150 lbs useful load** (food, water, ammo, medical supplies), 2 kw power
• **Precision engagements:** <5 m CEP
• **Simple control = 1 soldier or Contractor Operator.**
• No runway, launch/recovery system, or setup required
• 10,000 ft Hover Out of Ground Effect

OPERATIONAL DESCRIPTION

DP-12 Rhino Robotic Rotorcraft provides organic air support to small air/ground units in hostile **urban** and **mountainous** terrain. The highly autonomous aircraft:

• Automates **resupply** to small units (hostile conditions)
• Operates in **austere areas**, e.g., FOB, COP, or truck.
• Provides **force protection** to soldier and small unit.
• Increases mission command and tactical intelligence.
• Carries modular payloads: **Comm Relay, Network radios, GMTI, HFI, EO/IR/LD/LR, GPSAR, ADS-B**, etc.
• Aids the ground unit commander for **tactical overmatch** for quick reaction force from TOC

CONTACT INFORMATION

Dragonfly Pictures Inc.
600 W 2nd Street
Essington, PA 19029
www.dragonflypictures.com

POC: Joe Pawelczyk
Tel: (610) 521-6115 x 203
Email: josephpawelczyk@dragonflypictures.com
The technology that we are presenting is a hybrid power system that utilizes energy inputs from fossil fuel generators and photovoltaic panels, stores the energy in lithium battery banks, and delivers reliable AC power. The Apollo Hybrid System (AHS) consists of flexible PV panels mounted on portable dual axis trackers (Apollo MMX), portable energy storage cases, portable power conversion cases, and supplementary power derived from fossil fuel engine driven generators.

**OPERATIONAL DESCRIPTION**

The AHS is designed to serve electrical loads from 300W to 36KW continuous. Each of the energy generation, storage, and conversion products are modular building blocks which affords the user the flexibility to match the electrical supply to the electrical load. The quantities of each of the three main components can be varied based on the client’s application. These conversion systems can be daisy chained to provide up to 36 kW continuous power that is fully load demand compatible. Optional 3 phase Power is also available in the same case format.

**CONTACT INFORMATION**

Energy Solutions , LLC.
11851 Dunlay Lane
Baton Rouge, LA 70809
www.MoreEnergySolutions.com
www.facebook.com/MoreEnergySolutions

POC: Bill DeVillier
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Email: Bill@MoreEnergySolutions.com
**TECHNICAL DESCRIPTION**

Modular, expeditionary system that can be rapidly employed in any AOR. Specifically designed to protect personnel in the field while reducing the logistical burden of deployment. Easily transportable, and can be erected and employed without heavy lifting or specialized equipment. The DynaCell and accompanying panel system provides cutting edge technology to protect personnel and property in kinetic environments to include ballistic, blast and fragmentation protection.

**OPERATIONAL DESCRIPTION**

Two distinct concepts of operation; retrofits of and stand-alone protected containerized housing and operating units. The structure applications range from Forward Operating Base and Village Stability Platforms, to Garrison Level commands. They have applicability in any expeditionary location that is under VBIED, SBIED, overhead and direct fire munitions threats. Most relevant during the initial campaign phases prior to placement of conventional protective structures, and in settings where protection is urgently needed but the host country will not permit enduring facilities. Fully erected in under 3 hours.

**CONTACT INFORMATION**

Explora Security A&E Inc.
1420 Bevely Rd
McLean, VA 22101
http://www.explorasecurity.com

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The Pegasus PTWP (Protected Tripod Weapon Position) is part of the Exsel MAPS (Modular Armor Protection System) range of protection bunkers / emplacements.

The joints incorporate Ultra High Molecular Weight Polyethylene (UHMWP) within the construction which is the same material used for the armor panels that form the protective structure, providing protection against 7.62 NATO ball and AK47 rounds to level NIJ III. The system is a self-supporting structure that doesn’t require any anchor bolts or pins to be placed into the surface it is mounted onto.

**OPERATIONAL DESCRIPTION**

Rapidly assembled bunker / sentry position that is:

- Modular and lightweight
- Ergonomically designed for manual handling
- Easy and intuitive to assemble
- Adaptable (flexible in use)
- Provides environmental cover and camouflage
- Rapidly deployable and re-deployable
- Protected against ballistic and blast wave
- Integrated for use with tripod weapon mounting.

**CONTACT INFORMATION**

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POC: Robert (Bob) Tyler
Tel: +44 1432 373650
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TECHNICAL DESCRIPTION

The STALWART MPFP (Modular Protected Firing Position) is a protective shield and mounting base for integration of weapon mounting for .50CAL, HMG, 7.62mm M60 and 40mm AGL. The STALWART is integrated into the MAPS VIKING (Modular Armor Protection System) range of protection bunkers / emplacements. The armor panels are manufactured from HMWP and provide protection against 7.62 NATO ball and AK47 rounds to level NIJ III. The system is a self supporting structure that doesn’t require any anchor bolts or pins to be placed into the surface it is mounted onto.

CONTACT INFORMATION

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OPERATIONAL DESCRIPTION

- Weapon mounting capability
- Modular and lightweight
- Ergonomically designed for manual handling
- Easy and intuitive to assemble
- Adaptable (flexible in use)
- Rapidly deployable and re-deployable
- Protected against ballistic and blast wave.
**TECHNICAL DESCRIPTION**

The SENTRY MBPE (Modular Ballistic Protection Emplacement) system is part of the Exsel MAPS (Modular Armor Protection System) range of protection bunkers / emplacements. The unique jointing system incorporates Ultra High Molecular Weight Polyethylene (UHMWP) within its construction. The armor panels are manufactured from HMWP and provide protection against 7.62 NATO ball and AK47 rounds to level NIJ III. The system is a self supporting structure that doesn’t require any anchor bolts or pins to be placed into the surface it is mounted onto.

**OPERATIONAL DESCRIPTION**

Rapidly assembled bunker / sentry position that is:

- Modular and lightweight
- Ergonomically designed for manual handling
- Easy and intuitive to assemble
- Adaptable (flexible in use)
- Rapidly deployable and re-deployable
- Protected against ballistic and blast wave.

**CONTACT INFORMATION**

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TECHNICAL DESCRIPTION

- The MCHC is a patent pending helmet cover design that attaches directly to the currently issued ACH helmet via reversing hook and pile fasteners.
- The cover includes mounting platforms which can be used to attach accessories for enhanced mission effectiveness.
- Designed to provide sufficient rigidity of the mounting platforms so that they perform in the same manner as if they were attached directly to the shell.
- The configuration of the helmet assembly itself is not affected by the addition of the cover.

OPERATIONAL DESCRIPTION

Soldiers will have the opportunity to transform their standard issued Advanced Combat Helmet (ACH) into a modular platform capable of adding mission specific upgrades and accessories.

Modular architecture will enable soldiers to tailor their helmet to meet their mission requirements as their duty position and operational environments change.

Maxillofacial Protection for turret gunners, breaching, and high value targets raids.

CONTACT INFORMATION

GENTEX Corporation
324 Main Street
Simpson, PA 18407
http://www.gentexcorp.com

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# TECHNICAL DESCRIPTION

PM CCWS, AMRDEC and HDT developed the CWS to provide a fully integrated scalable, standalone force protection / remote threat suppression asset. The CWS is a cursor on target platform that is interoperable with a wide range of sensor systems and is networkable with open architecture electronic systems. This “Man in the Loop” system is the first line of security defense for (ECPs), COPs, FOBs, Airfield Security, Embassy Protection, etc. The CWS serves as a weapons system platform that has been optimized to host the CROWS M153. The CWS technology is currently at a TRL-8.

# OPERATIONAL DESCRIPTION

Enhanced Lethality, Force Protection, Force Projection. Provides the ability to sense, scan and engage with a “man in the loop” from a remote location (up to 1000m) by utilizing the CROWS M153 various levels of firepower ranging from .50 cal to Javelin.

- Has been integrated with (COSFPS,BETSS-C, RAID, FireFly, etc) and open architecture electronic and IT systems.
- Ideal for ECP, FOBs, COPs, Airfields, Embassies
- Fully Standalone: has on board solar harvesting, battery storage and generator power.

# CONTACT INFORMATION

**HDT Global**
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**Government POCs:**
PM CCWS - Mr. Bill Ruta: william.b.ruta.civ@mail.mil
PM CCWS - Mr. Doug Agee: douglas.agee@us.army.mil
AMRDEC - Mr. John Dillon: John.Dillon2@us.army.mil
**Experiment Objective Addressed:** Protection

**OPERATIONAL DESCRIPTION**
Soldiers will transform their standard issued Advanced Combat Helmet (ACH) into a modular platform capable of adding key accessory components.

- Modular architecture enables soldiers to tailor their helmet to meet mission specific requirements as their duty position and operational environments change
- Eye and Face Protection for turret gunners, breachers, and high value targets raids
- Ability to add broad range of COTs accessories

**CONTACT INFORMATION**
Ops-Core  
Marine Industrial Park  
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http://www.ops-core.com

POC: Scott Furner  
Tel: (617) 603-2434  
Email: sfurnner@ops-core.com

**TECHNICAL DESCRIPTION**
- Integrates with protective and situational awareness accessories including:
  - GENTEX Ballistic Mandible
    - Protects against 9mm and fragmentation
    - Collapsible design increases breathability
  - GENTEX Ballistic Visor
    - Fragmentation Protection
    - Snap Lock design enables silent adjustment
  - Lights and Strobes
  - HMDs, Cameras and Mission Documentation
Transhield Armordillo covers are a patented technology to help protect equipment. Armordillo offers the ease-of-use found in earlier vinyl and tarp covers combined with the durability, breathability and corrosion reduction of Vapor Corrosion Inhibitor. Armordillo is a custom fitted cover that can be installed by one-two persons. Armordillo extends the life of the equipment ensuring prolonged operational readiness at a very affordable cost.

TECHNICAL DESCRIPTION

- Dramatically reduces corrosion and environmental degradation
- Prevents water intrusion
- Lightweight – easy to install
- Patented Vapor Corrosion Inhibitor (VCI)
- Protects from UV, dust, wind, heat, etc.
- Breathable – water vapor transmitted to outside
- Cost effective and affordable
- Soft inside surface- protects CARC surfaces
- Custom Fit and Durable (3-4 year life span)

CONTACT INFORMATION

Transhield
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POC: Bill Scheible
Tel: (404) 427-5550
Email: billscheible@transhield-usa.com
### TECHNICAL DESCRIPTION

Self Sustained Portable Water Purification System
- High Pressure Hydraulic Intensifier to enable reverse osmosis technology in a compact package
- 200 Gallons per day (8GPH) of potable water from any water source
- Washable two stage pre-filtration
- Safety lights and alarms to ensure water quality
- Integrated batteries and solar panel within one case or separate (as seen in picture)
- Use only 120 Watts / 4.5 Amps
- Support Small Unit Teams throughout filed deployment

### OPERATIONAL DESCRIPTION

- Demonstrate a capability to reduce outside resource supply reliance.
- Offer commanders the ability to safely produce potable water before any logistical planning occurs.
- Capable to purify nearly any water source found in the field
- Self sustaining field operation. Field washable pre filters and high efficient solar capabilities
- Water can be pumped 30 feet away from unit
- Less than 5 min set up time

### CONTACT INFORMATION

W.S. Darley & Company  
325 Spring Lake Drive  
Itasca, IL 60143  
[www.purifiresystems.com](http://www.purifiresystems.com)

POC: Kevin Sofen  
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Email: kevinsofen@darley.com
Training
TECHNICAL DESCRIPTION

- Real-time Training Performance Assessment Tool for small unit leaders and instructors
- On-the-spot collection of training assessment data
- Customizable performance measures (PMs)
- Rapid media capture (video, audio) of training
- Geo-tag and time stamp events for easy recall
- Immediate soldier feedback AAR with video and ratings to quickly enhance small unit effectiveness
- Data download to web-based PM integrator
- TRL level 7, fielded in a variety of DoD applications
- Mobile Android touch-screen platforms

OPERATIONAL DESCRIPTION

- Measure soldier skills (tactics, decision making, social interaction) in the field in live training
- Capture accurate training data real-time versus spotty post-exercise recollections
- View immediate AAR multimodal (video, voice, ratings) feedback
- Drastically shortens learning feedback loop
- Tailor learning objectives and performance measures to specific unit-level training requirements
- Accelerate soldier skill acquisition by reducing AAR cycle time—allows more repetitions

CONTACT INFORMATION

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Experiment Objective Addressed: 7
Augmented Reality for Small Units

**TECHNICAL DESCRIPTION**

Coupled Augmented Reality based Training Systems
- Augmented Reality System for Unaided eye.
- Augments soldiers view with virtual avatar/effects that match the real-world.
- Augmented reality enabled weapons
- Lightweight, low power soldier-worn. Tracks & correlates soldier(s) view with the real-world.
- Centralized game simulation engine/ AI engine for avatar control and effects.
- Supports Small Unit Fire Team/Squad level training for non-lethal and lethal exercises.

**CONTACT INFORMATION**

U.S. Army Research Laboratory-Simulation & Training Technology Center
12423 Research Parkway
Orlando, Fl 32826-3274

POC: Mr. Frank Dean
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Email: frank.dean@us.army.mil

**OPERATIONAL DESCRIPTION**

Demonstrate an Augmented Reality (AR) based Collective Training system that provides an immersive, full-spectrum lethal and non-lethal training experience for Small Units. They wear AR-eyewear and use AR-binoculars to see/hear virtual avatars/objects and have AR-attachments for their weapons for lethal interactions.

- Allows individual or unit to conduct multiple runs of same event – until they get it right
- Reduces need for transporta-tion to CTCs, numbers of role players & training logistics
- Range-Independent; no fixed Infrastructure

**EXPERIMENT OBJECTIVE ADDRESSED:**

Coupled Augmented Reality based Training Systems

- Augmented Reality System for Unaided eye.
- Augments soldiers view with virtual avatar/effects that match the real-world.
- Augmented reality enabled weapons
- Lightweight, low power soldier-worn. Tracks & correlates soldier(s) view with the real-world.
- Centralized game simulation engine/ AI engine for avatar control and effects.
- Supports Small Unit Fire Team/Squad level training for non-lethal and lethal exercises.

*Left: Real world; Right: Augmented Unaided Eye View.*

System Concept: Warfighters real-world is augmented with virtual character and effects. Warfighter can interact with the virtual entities.
## TECHNICAL DESCRIPTION

Marathon RHTTs are autonomous robotic targets which can move freely across the entire training environment.

- No joystick operation, no down-range infrastructure.
- Max speed 11mph, endurance 10mi, fast accel.
- Recharge time: 2 hours
- Mannequin: human-shape, all aspect, 3D
- Hit sensing: all aspect, kill vs. body shot
- Hit indication: stop/drop/reset, auto-revive
- Armour: 9mm, 5.56mm, 7.62mm, .308
- Operation via graphical interface on rugged laptop
- Wireless signal: up to 1km line-of-sight

## OPERATIONAL DESCRIPTION

Marathon RHTTs are designed to train soldiers the way they fight: against unpredictable smart moving targets, with live ammunition.

**Realistic training:** targets look, move, and behave like people. E.g. if one target gets killed, the others can scatter, run for cover, regroup and counter-attack.

**Not just a target:** besides moving marksmanship, the system allows training of shoot/no-shoot decision making, rules of engagement, fire control, situational awareness, adaptability, and cognitive skills for shooters and their commanders.

## CONTACT INFORMATION

Marathon Targets  
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Huntsville, AL 35801  
www.marathon-targets.com

POC: Mr Ralph Petroff  
Tel: (256) 990-0224  
Email: r.petroff@marathon-targets.com
MPIMs Force-on-Force Trainer (FOFT)

TECHNICAL DESCRIPTION

- Compatible with all MILES equipment (HITS)
- Transmits player or weapon ID
- Lethal sector in front approximately 60 degrees
- Simulates impact out to 328 feet
- Light indication during and after simulation
- Operates from cable trigger
- Uses rechargeable 3.6 Li-lo battery, min 200 hour
- Class 1 eye safe laser transmitter
- Weight approx 4.2 pound
- Dimensions: 10.6 x 6.7 x 3.2 inches with folded legs

OPERATIONAL DESCRIPTION

The MPIMs FOFT simulates a Directed Fragmentation Weapon system. MPIMs FOFT allows Soldiers to “train as they fight” at home station or at one of the National Training Centers in the US. MPIMs FOFT is a MILES/HITS compatible system (incorporating a Class I eye-safe laser) complemented with pyrotechnics, sound and light effects or other effects as desired. The MPIMs FOFT has an operational area 100m x 100m and 4m. MPIMs FOFT has the capability of being sighted directionally to provide simulated fragmentation lethality over a specific area and a spread angle of 60 degrees.

CONTACT INFORMATION

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TECHNICAL DESCRIPTION

The Virtual Planning Workspace (VPW) is a highly realistic virtual mission planning capability using scalable digital “sand table” methodology that integrates and displays sources of intelligence and operations data in an interactive, collaborative, and information-rich 3D global geospatial environment to facilitate mission planning, rehearsal and comprehensive after action review. VPW is easy-to-use, intuitive and a highly interactive capability that enables distributed collaborative planning and has a fully interactive remote user capability with a touch-enabled device. TRL: 7

OPERATIONAL DESCRIPTION

VPW uses the proven sand-table method for team training, applying today’s geo-specific terrain data sources and Lockheed Martin virtualization technology to create a collaborative and interactive Virtual Planning Workspace. The VPW’s capabilities enhance the training environment for classroom-based staff training exercises. Instructors and trainees are able to collaborate and share information on the digital sand table using portable devices throughout the training process and participate visually in an After Action Review.

It’s simplicity of use and shared visibility improves subject matter learnability, for analysis of terrain, threats, courses of action, mission planning and rehearsals. While a hands-on approach to collaboration improves lesson retainability, VPW integrates with Warfighters Simulation (WARSIM), One Semi-Automated Forces (OneSAF) and Mission Command systems.

CONTACT INFORMATION

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