Army Science & Technology

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Problems and Challenges

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Big Army Problems that S&T Must Help Solve
Current focus: "Soldier as the Decisive Edge"

1. There is insufficient **FORCE PROTECTION** to ensure highest degree of survivability across the spectrum of operations.
2. Soldiers in Small Units (squads/fire teams/crews) are **OVERBURDENED** (physically and cognitively); this degrades performance and may result in immediate, as well as, long term consequences.
3. U.S. Army squads are too often **SURPRISED** in tactical situations. Soldiers in Small Units lack sufficient timely **MISSION COMMAND & TACTICAL INTELLIGENCE** to understand where their assets are, who and where the enemy is, who and where non-combatants are and to document and communicate this information to each other and higher echelons.
4. We spend too much time and money on **STORING**, **TRANSPORTING**, **DISTRIBUTING** and **WASTE HANDLING** of consumables (water, fuel, power, ammo and food) to field elements, creating exposure risks and opportunities for operational disruption.
5. Soldiers in Small Units have limited capability to integrate maneuver and fires in all environments to create **TACTICAL OVERMATCH** necessary to achieve mission objectives.
6. Operational **MANEUVERABILITY** (dismounted & mounted) is difficult to achieve in complex, austere, and harsh terrains and at high OPTEMPO.
7. We do not understand **WHAT MAKES THE HUMAN TICK** in a way that can lead to assured ability to perform operational, high OPTEMPO missions effectively and without secondary negative effects.

Problems listed in no particular order—validated by Senior Army Leadership

24 Army S&T Challenges

	Challenge #	Challenge Title
Top 5	1b	Force Protection – Soldier & Small Unit
	1c	Force Protection – Occupant Centric Platform
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	3a	Surprise/Tactical Intelligence – Mission Command
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Remaining 14	1d	Force Protection – On the Move (Ground)
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	3d	Surprise/Tactical Intelligence – Organic Combat ID
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	5a	Tactical Overmatch – Deliver Decisive Effects
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	6b	Maneuverability – Degraded Visual Environment (brown-out)
	7a	Human – Strength-based Soldier Characteristic Assessments & Readiness
	7c	Human – Collective Training for Tactical Operations
	7e	Human – Trauma Management

Top 10

Force Protection – Soldier and Small Unit

1.b Top 5

Problem Statement: The spectrum of threats encountered by Soldiers in Small Units is varied and complex; current equipment, clothing, and other protective measures do not provide adequate protection without adding significant mobility challenges.

Challenge: Formulate a S&T program to increase the level of individual protection for male and female Soldiers at reduced total weight and volume while enabling increased physical and mental agility, particularly over extended periods. The goal is to reduce the number and severity of injuries and casualties (including TBI and PTSD causes).

Challenge Boundary Conditions:
Who: Individual Soldiers

What: Develop technologies to increase protective gear performance while reducing weight and volume – protection from weapon threats, blast, fire, insect-borne diseases, weather conditions including excessive heat/cold, and CB threats.

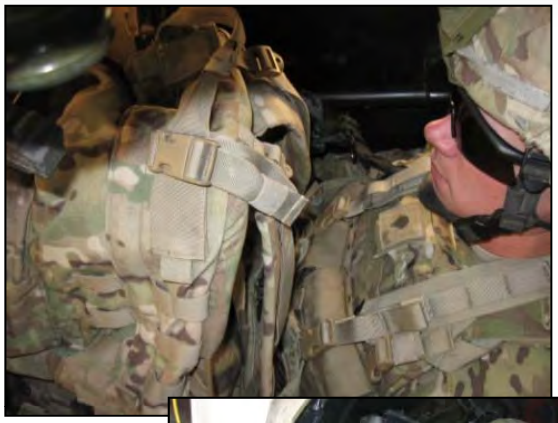
How: Establish baselines 2010/2011 field collection data, injury, and use other data sources to clearly define the focus.

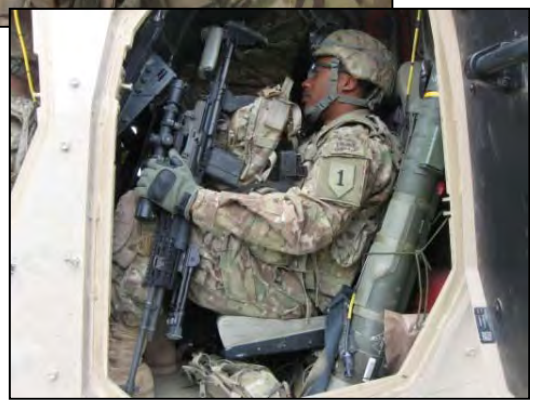
Objectives:
Near term (FY17): Identify trade space to enable holistic protection design and implementation on the individual Soldier and in Small Unit; optimize level and area of protection against threats while reducing total weight of individual protective gear/equipment by 50% and total volume by 30% from baseline; improve clothing, helmet, MOPP gear, fire retardancy, insect repellant, etc.

Force Protection – Occupant Centric Platform

1.c Top 5

Problem Statement: We design vehicles to put Soldiers in rather than designing vehicles around Soldiers. Increasing protection levels of the platforms impacts interior volumes reducing mobility, maneuverability, and freedom of movement for occupants and leads to heavier platforms.





Challenge: Formulate a S&T program to make improvements to existing platforms or develop new platforms that provide appropriate increased protection from current and emerging threats and optimal space allocation for Soldiers and their gear, while decreasing platform weight and maintaining or increasing maneuverability during full spectrum operations. Goal is to reduce overall platform weight by 25% and reduce casualties and WIAs by 50% across each mission role with scalable protection levels to defeat a wide range of threats, enhance mobility, and maintain freedom of action during full spectrum operations.

Challenge Boundary Conditions:

Who: TBD – for Small Unit transport and convoys

What: TBD – specify mission, vignettes, scenarios, conditions of the 2011 representative baseline

How: Establish baselines using 2010/2011 field collection data, injury, and other data sources.

Objectives:

Near term (FY17): Establish baselines; develop occupant protective standards; mature interior and exterior occupant protection technologies; increase lab testing capability; improve confidence in M&S predictions

Surprise/Tactical Intelligence – Mission Command

3.a Top 5

Problem Statement: The Small Unit lacks tools and ability to execute mission command on the move (air or ground) to synchronize action, seize the initiative and maintain situational awareness.

Challenge: Formulate a S&T program to provide an integrated data structure for intelligence and mission command systems that can feed automated processing and analysis tools to reduce time to decision; provide interactive tools to provide relevant, timely information to support decisions; and reduce the timeline needed to develop, accredit and field intuitive, useful, effective mission command and battlefield awareness software applications.

Challenge Boundary Conditions:
Who: Small Units operating in decentralized locations

What: Focus on TOC/COIST capability

How: Assess consolidation of Intel and Battle command decision support and analysis tools by 2015 to inform and shape Science and Technology to shorten/improve the decision cycle to figure out HOW to measure success.

Objectives:
Near term (FY17): Identify how to reduce development time for BFA software applications to 6 months, for all environments,

Overburdened – Physical Burden

2.a Top 5

Problem Statement: Soldiers in Small Units (squads/fire teams/crews) are physically overburdened, often carrying up to 130lbs; this degrades performance and may result in immediate, as well as, long term consequences.

Challenge: Formulate a S&T program to significantly reduce the weight and volume of all items that individual Soldiers in a Small Unit must physically carry to accomplish their missions while maintaining or increasing the ability of the Unit to perform tasks, whether operating as dismounted or in vehicles.

Challenge Boundary Conditions:

Who: Soldiers and Small Units operating in Afghanistan-like environments

What: Reduce physical burden within the squad so that no individual Soldier load exceeds 30% of their body weight.

How: Establish 2011 baseline for various operations and for Afghanistan-like engagement conditions. Measure impact on load (weight, volume, cube) relative to Soldier's body weight and related impacts on Small Units distribution/supply handling against baseline

Objectives:

Near term (FY17): Reduce physical burden of Soldier and Small Unit so that grenadier, SAW gunner and attached combat medic does not exceed 50% of individual's body weight without a reduction in operational capability.

Human – Medical Assessment and Treatment

7.d Top 5

Problem Statement: Traumatic brain injury (TBI) continues to be a significant issue due to IEDs and other hazards. The Army medical community is not able to promptly assess, diagnose, treat and rehabilitate Soldiers who have been exposed to ballistic and blast events or other insults.

Challenge: Formulate a S&T program to rapidly conduct in-the -field screening, assessment and mitigating treatment to improve short and long term adverse outcomes of mTBI and TBI.

Challenge Boundary Conditions:
Who: Individual Soldier and combat medic

What: Selected Operational Mission Scenarios

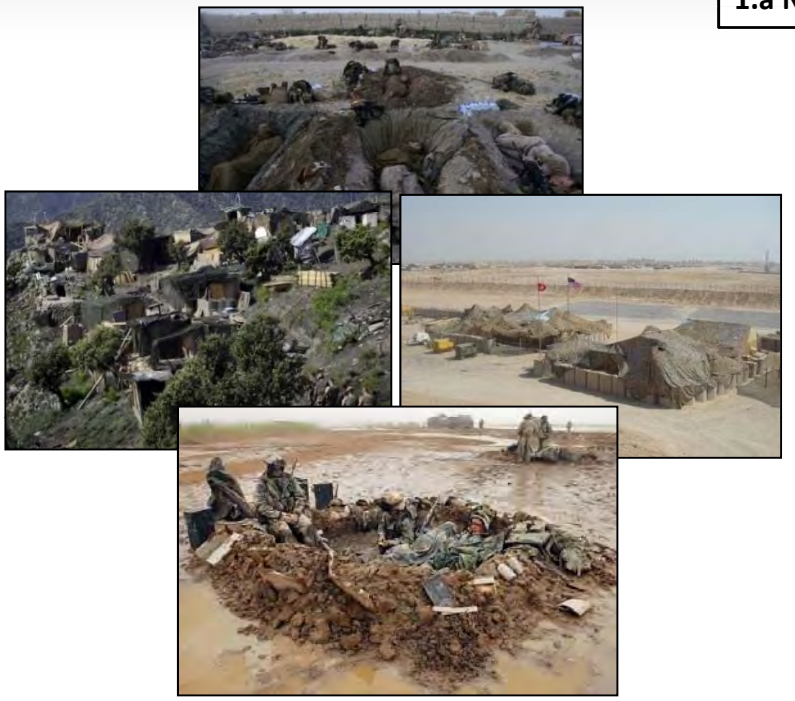
How: Measure the number of Soldiers correctly identified and diagnosed with mTBI/TBI without significant false positives; reduce number of evacuations due to suspected against 2011 baseline

Objectives:
Near term (FY17): Develop tools that accurately and objectively assess Soldiers with mild to moderate TBI in less than 1 hour following Soldier's return to COP/PD without increasing personnel or administrative burden.

Force Protection - Basing

1.a Next 5

Problem Statement: It takes too long and too much manpower to deploy, set up, protect, sustain and relocate Combat Outposts (COPs) and Patrol Bases (PBs).



Challenge: Formulate a S&T program to reduce the percentage of Soldiers needed to set-up a COP/PB and protect against threats (including small arms, indirect fires, air delivered weapons, and CBRNE) in austere, restricted terrains.

Challenge Boundary Conditions:

Who: Focus on Combat Outposts and Patrol Bases in Afghanistan-like conditions

What: Representative 2011 COP/PBs baseline indicates that it takes 60-90 days using 70% of the manpower assets (i.e., 70% not available for mission tasks)

How: Measure impact on Soldier availability and set-up time

Objectives:

Near term (FY17): Increase Soldier availability for mission tasks vs. set-up and security tasks to 50% in 30 days with increased force protection; decrease tear-down time to no more than 4 days and increase the percentage of material reusable at next COP within 100 miles.

Human – Individual Training to Tactical Tasks

7.b Next 5

Problem Statement: The Soldier today has a larger number and more complex weapons, protective systems and communications devices with which to perform more complex missions. The Army needs a highly adaptable, versatile, easy-to-access learner –centric system of training skills and tasks that is tailored to the individual's developmental needs through timing, content, delivery, and duration.

Challenge: Formulate a S&T program to develop self-training mechanisms which can supplement or replace trainers to monitor and track Soldier learning needs, assess and diagnose problems, and guide Soldiers through training events, provide effective performance feedback, select appropriate instructional strategies, anticipate and seek out information and learning content tailored to the learner's needs, and provide interventions of other assistance as needed.

Challenge Boundary Conditions:

Who: Selected specific tasks (vehicle driving, maintenance mechanic, weapon operations)

What: Baseline of FY11 learning tools and methods of instruction

How: Measures of Soldier comprehension, retention and skill proficiency; determine how this changes requirements for frequency of training/retraining.

Objectives:

Near term (FY17): Develop more effective fieldable simulators and apps-based training modules for key skills and tasks that can be used whenever and wherever Soldiers need to be trained/retrained/certified; develop a mechanism to automatically collect and document proficiency levels that are accessible to leaders.

Surprise/Tactical Intelligence – Actionable Intelligence

3.b Next 5

Problem Statement: Small Units do not have capability to send/receive critical tactical intelligence; the tools or training to help them recognize/identify friends or foes, to know where IEDs are, to see inside buildings and around corners or over hills; or awareness of cultural patterns that might indicate imminent danger.

Challenge: Formulate a S&T program to provide Small Units with tools and training to efficiently collect, process, exploit, and disseminate data to support situational awareness and decision making without adding more Soldiers or significantly increasing weight or number of devices.

Challenge Boundary Conditions:

Who: Small Units operating COIN/Stability Operations in Afghanistan-like conditions

What: Goal is to provide the ground unit a common operational picture in real time to identify friendly forces in a given AO with 90% accuracy and maintain 90% probability of determining threat interdiction.

How: Measure reduction in unanticipated threat encounters, reduction in loss of equipment and loss of life (friendly/non-combatant) against 2011 baseline.

Objectives:

Near term (FY17): Provide timely accurate/actionable info/intel to obtain in 25% reduction in unanticipated threat encounters at the squad level and increase mission accomplishment (%) measured against loss of life and equipment by 50%

Sustainability/Logistics – Basing

4.a Next 5

Problem Statement: The Army needs improved capability to enable sustainment independence/"self-sufficiency" and to reduce sustainment demands at expeditionary basing levels. It is too costly, too unpredictable, and too labor intensive for a Small Unit to carry all required consumables to last for weeks or months at a COP/PB, storage facilities and systems do not meet needs of these small bases, and resupply efforts are highly unpredictable.

Challenge: Formulate a S&T program to increase self-sufficiency, reduce supply demands, and reduce waste at COPs/PBs and improve the ability to sustain the Small Unit for the duration of the mission at lower cost and lower risk to suppliers without adversely impacting primary mission Soldier availability.

Challenge Boundary Conditions:
Who: Small Units in Afghanistan-like environments

What: Identify tools, tactics, and techniques to achieve demand reduction.

How: Measure demands for power, water and fuel; waste generated and/or waste-to-energy power; weight/volume of food; time to resupply.

Objectives:
Near term (FY17): reduce need for fuel resupply by 20%, reduce need for water resupply by 75% and decrease waste by XX% while increasing quality of life over 2011 COPs/PBs in Afghanistan

Sustainability/Logistics – Transport, Distribute & Dispose

4.b Next 5

Problem Statement: The Army needs improved capability to tactically transport and reliably deliver consumables to Forward Operating Bases (FOBs) and smaller satellite bases in remote, dispersed, austere locations with reduced supplier and equipment risk, including improved efficient and safe methods for disposing waste.

Challenge: Formulate a S&T program to leverage all available conveyance modes to ensure supply delivery, to increase the reliability and timeliness of supplies delivery, and to be able to predict when and where all classes of supplies will be needed. In addition, the program will devise methods to reduce waste and use it to provide power.

Challenge Boundary Conditions:

Who: For Forward Operating Bases with applications to expeditionary bases (Small Units in COPs and PBs)

What: Rapidly deliver significant quantities (volume, weight, etc) of supplies. Air drop and convoy operations - develop ability to conduct rapid movement of emergency, planned, or critical logistics support that enables precise delivery of supplies and repair parts to forward battlefield locations, medical evacuation operations and relief operations

How: Representative 2011 Afghanistan-like environment baseline

Objectives:

Near term (FY17): Develop tools that efficiently manage, track, redirect, account for and distribute supplies to support forced entry, early entry, and non-contiguous operations

Remaining 14

Force Protection – On The Move (Ground)

1.d

Problem Statement: The Army needs an improved capability to move at tactical speeds off and on road unconstrained by explosive hazards (mines and IEDs) to conduct wide area security and combined arms maneuver operations. Route Clearance Patrols and BCT convoys have limited capability to rapidly detect and neutralize explosive hazards at standoff distances. Vehicle convoys and route clearance teams need improved on-board capabilities to detect, neutralize and defeat mines/IEDs.

Challenge: Formulate a S&T program that provides affordable technology to rapidly detect, jam, and neutralize explosive hazards at standoff distances. Provide appropriate capabilities to route clearance patrols and convoys.

Challenge Boundary Conditions:

Who: Engineer Route Clearance Platoons (RCP) and BCT convoys/patrols

What: Low false alarm rate detection sensors, networked sensors, airborne sensors, fusion of air and ground sensor data

How: Measure mine/IED found and cleared rate, rates of advance for RCPs, and number of friendly vehicle losses due to mine/IED events

Objectives:

Near term (FY17): Provide affordable, interoperable sensor suites for mine/IED detection. Develop a next-generation Army networking capability to neutralize IEDs.

Overburdened – Cognitive Burden

2.b

Problem Statement: We do not understand causes or mitigating factors associated with excessive cognitive load and its impact on Soldier performance.

Challenge: Formulate a S&T program to determine what are the most important factors that contribute to excessive cognitive load associated with performing the tasks/functions within the Small Unit against various tactical scenarios; develop standard measures of cognitive load and its impact on performance; and demonstrate the ability to reduce cognitive load and increase performance.

Challenge Boundary Conditions:

Who: Individuals in squad, platoon and company in COIN and Stability Operations

What: TBD – specify mission, vignettes, scenarios, conditions of the representative baseline

How: Identify Soldier tasks missions; determine the amount of cognitive stress is associated with each, develop tools to measure reduced cognitive load, and find ways to reduce cognitive load and improve performance.

Objectives:

Near term (FY17): For the squad leader and company commander validate and apply known behavioral and network (system) measures of cognitive load to reduce the mismatch between system "x" and the Infantry Squad war fighting capability in a (TBD) tactical scenario in order to improve mission effectiveness.

Surprise/Tactical Intelligence – Cultural/Linguistic

3.c

Problem Statement: Poor understanding of the culture and/or language can increase risk, lead to misunderstandings, and result in inability to execute mission. It takes too many linguists, translators and cultural advisors in Small Units.

Challenge: Formulate a S&T program to provide Small Units tools and training to efficiently collect, process, exploit, and disseminate intelligence and situational awareness and make informed decisions without adding linguists/translators or significant weight or number of devices.

Challenge Boundary Conditions:

Who: Small Units is COIN/Stability Operations

What: Provide affordable real-time translations and understanding of behaviors of people in other countries

How: Assess key cultural, psychological, and social info; political, military, economic, social, infrastructure info; physical environment and time variables that are critical in operational environment. Determine how these factors can be used during screening operations and improve ability to determine deception during interrogation under field conditions in real time and how source credibility can be assessed or determined.

Objectives:

Near term (FY17): Develop socio-cultural information standards and develop the capability to train cross-cultural competence across Soldier, cognitive, behavioral and attitudinal domains needed to achieve situational understanding.

Surprise/Tactical Intelligence – Organic Combat ID

3.d

Problem Statement: Small Dismounted Units lack organic assets/tools/methods to distinguish enemy combatants from civilians day and night and avoid fratricide in asymmetric warfare environments.

Challenge: Formulate a S&T program to enable improved anti-fratricide and Combatant/Non-Combatant ID capabilities. Program shall not add overall weight or logistics burden to the squad; use existing load bearing and tactical equipment without wires between the weapon and the Soldier borne radio; function for the full duration described in the squad OMS/MP without additional power and be available 100% of the time; not materially increase the timelines for weapon engagement; be affordable within Soldier system constraints. Soldier-to-Soldier anti-fratricide Combat ID system must be interoperable with air/ground platform Combat ID systems and feed the Common Operating Picture.

Current night capability
Which one is the combatant?

Challenge Boundary Conditions:

Who: Squad-level Soldiers

What: Provide improved anti-fratricide Combat ID capabilities and increased Combatant/Non-combatant ID ranges

How: Measure impact on Combat ID performance; measure increased range performance for Combatant/Non-Combatant ID; track system affordability metrics

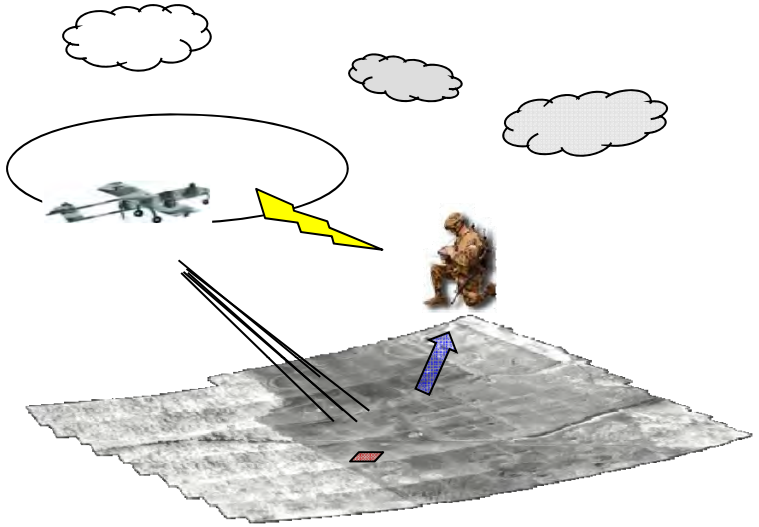
Objectives:

Near term (FY17): Provide Soldier borne sensors and weapon sights that can provide Combatant/Non-Combatant ID at increased ranges

Surprise/Tactical Intelligence – Overwatch Persistent Surveillance

3.e

Problem Statement: Small Units require improved ability to rapidly transform data from non-organic overhead assets to Soldiers on the ground where and when needed to avoid surprise and to enable situation development and improve planning and mission execution and enable persistent assessment.



Challenge: Formulate a S&T program to demonstrate wide area airborne Persistent Imaging (PI) systems capable of tracking both vehicles and dismounted personnel with real time product generation/ dissemination

Challenge Boundary Conditions:

Who: Individual Soldiers and small units, especially when operating in urban environments

What: Systems capable of servicing multiple concurrent users with timely information products

How: Success will be measured by quantifying the accuracy of the information products, the dissemination latency and number of concurrent users supported

Objectives:

Near term (FY17): Provide day/night, wide area coverage with automated onboard product generation and delivery to the Warfighter. Demonstrate day/night, wide area coverage capable of tracking vehicles in urban environments and personnel in open terrain.

Surprise/Tactical Intelligence – METT-TC Data/Information/Knowledge

3.f

Problem Statement: Small Units lack capability of rapidly shaping the operational environment before engagements.

Challenge: Formulate a S&T program to enable the Small Unit to obtain, manage and understand geo-spatial, geo-environmental, geo-cultural, and geo-temporal data.


Information


Knowledge

Challenge Boundary Conditions:
Who: Soldiers in COIN or Stability Operations

What: Increase effectiveness, avoid surprise through knowledge of environment

How: Measure types and fidelity of information needed to improve mission planning and operational success, net-centric data policy standards of accessibility, assured Quality of Service and cross-domain understanding, agility of decisions and performance, and sufficiency of retrieved data/information/knowledge by method of access (general, indexed search, smart push, smart pull.)

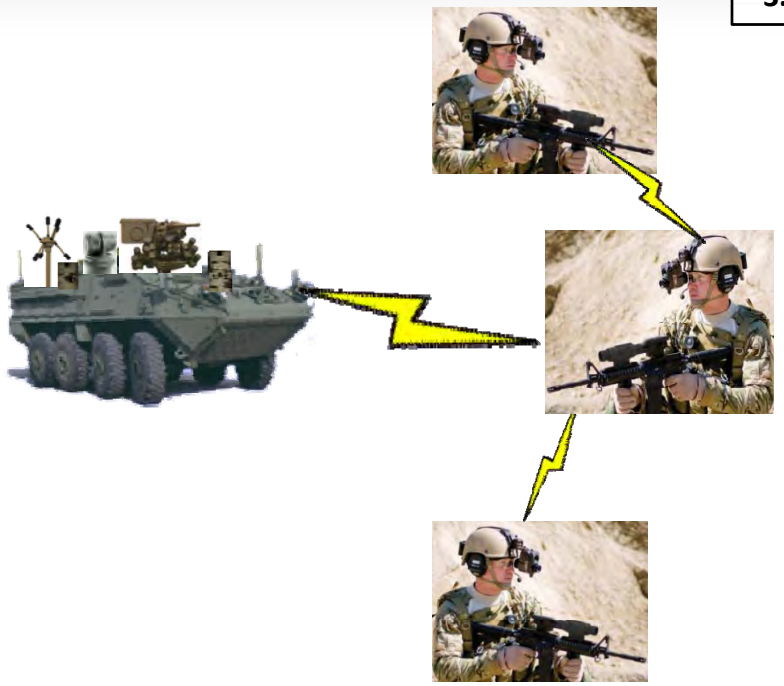
Objectives:
Near term (FY17): Demonstrate geo-KM tools that provide platoon/squad knowledge so that a Squad can understand terrain, weather and key indicators about the populace and more rapidly achieve tactical objectives.

Surprise/Tactical Intelligence – Network

3.g

Problem Statement: Small dismounted units need sight/beyond line of sight robust network to facilitate command and ensure user access anytime/ anywhere..

Challenge: Formulate a S&T program to provide secure, rugged networking (voice and data) capability within SWAP-C constraints for the dismounted squad, moving and at base stations, to provide timely, relevant, accurate information needed to execute their missions more effectively and efficiently.



Challenge Boundary Conditions:
Who: Small Units (dismounted and mounted)

What: Full network capability at SWAP-C no greater than 2011 baseline to enable enhanced tactical intelligence data intra-squad and squad-to-squad, as well as inter-echelon connectivity, to enable units to communicate effectively and integrate maneuver & fires in all environments. Many applications will leverage this capability

How: Measure optimal dispersal and number of stations needed on asymmetric battlefield.

Objectives:
Near term (FY17): Improve spectrum efficiency, network throughput users per channel and enable communications through blue & red jamming to provide an integrated, protected and end-to-end, and secure robust networked communications to facilitate echelon appropriate Soldier access to networked services and information.

Tactical Overmatch – Deliver Decisive Effects

5.a

Problem Statement: At both fixed and mobile sites, Small Units need improved capabilities to detect threats and respond rapidly with precision fires to deliver decisive effects

Challenge: Formulate a S&T program for a system of systems including organic sensors and shooters that will enable the Army to increase the hemispherical protection for Soldiers against dismounted threats and incoming munitions. Program should address capabilities for static and mobile operations

Challenge Boundary Conditions:

Who: Soldiers at fixed and mobile sites in current and future hostile environments

What: Provide an organic capability for hemispherical protection from dismounted threats and incoming fire.

How: Comparing current and future threat detection and targeting capabilities; measure time required to reach operational readiness and required manpower during setup

Objectives:

Near term (FY17): For fixed sites, provide sense/warn and respond capability that automatically provides precise target locations to allow suppression of dismounted threats with precision . Provide the capability to detect and respond to indirect fire weapons.

Tactical Overmatch – Targeting/Hand-off

5.b

Problem Statement: Small Units require improved lightweight, day/night target acquisition capability to facilitate precision fires, intra-squad fires, call for fires, hand-off of targets to other assets and ability to conduct battle damage assessments.

Challenge: Formulate a S&T program to provide small dismounted units with the tools and training they need to detect, identify, and precisely locate targets without significant Size, Weight, Power or Cost (SWaP/Cost), number of devices, or the need for additional operators.

Challenge Boundary Conditions:

Who: Small Unit in irregular or conventional warfare,

What: Accurate, low SWaP/Cost targeting and hand-off capability

How: Measure impact on collateral damage, target location accuracy, unit lethality, speed/ accuracy, and probability of first shot hit target handoff measured against non-organic fires success for irregular warfare operations (2011 baseline).

Objectives:

Near term (FY17): In 2 years, provide faster*, more reliable/accurate target handoff between mounted and dismounted and intra-squad elements day and night. Provide significant increase in first hit probability at extended range.

Maneuverability – On The Move (Air)

6.a

Problem Statement: The Army needs improved capability to tactically transport (dismounted vertical maneuver/air assault) Soldiers, vehicles and equipment to austere or unprepared landing zones.

Challenge: Formulate a S&T program to provide technical capability for vertical lift aircraft with improved survivability in a low to medium threat environment.

Challenge Boundary Conditions:

Who: Air assault and aerial resupply squadrons

What: Medium class vertical lift aircraft capable of meeting anticipated future requirements for lift, speed, range and operating environment

How: Representative 2011 baseline of speed, range, and payload parameters.

Objectives:

Near term (FY17): Assess trade space between speed, range and payload to identify optimum system attributes. Quantify operational benefits through Warfighter analysis. Demonstrate system capability through flight tests.

Maneuverability – Degraded Visual Environment (brown-out)

6.b

Problem Statement: A significant number of Army helicopter losses in theater result from a loss of situational awareness in degraded visual environments (DVE)/brownout.

Challenge: Formulate an S&T program to develop and demonstrate affordable, lightweight DVE pilotage solutions to increase Warfighter safety and survivability.

Challenge Boundary Conditions:

Who: Pilots of Army attack, utility, cargo and scout rotary wing aircraft

What: Lightweight, cost effective pilotage system to increase survivability while operating in multiple DVE conditions

How: Success will be measured by quantifying the ability to detect obstacles, enable full flight maneuver tasks and maintain situational awareness in DVE

Objectives:

Near term (FY17) – Provide 360 degree, infrared based DAS for pilotage under zero illumination conditions and modest DVE

Human –
Strength-Based Soldier Characteristic Assessments and Readiness

7.a

Problem Statement: The Army lacks capability to rapidly and accurately identify and measure attributes and talents; document them; and use them to predict potential, success, and performance.

Challenge: Formulate a S&T program that identifies a valid set of "most promising" attributes, talents and/or potential characteristics; identifies assessment tools and techniques which could be used to rapidly predict, measure human status and conduct data/decision analysis which could be communicated to leaders, both at home station and in the field; and demonstrate that these can be used to assist in assignment of tasks.

Challenge Boundary Conditions:
Who: Army recruits, selected deploying units, TBD…

What: Enabling leaders to rapidly assess and utilize Soldier and Unit strengths.

How: Representative 2011 baseline of screening events, methods and methodologies.

Objectives:
Near term (FY17): Integrate human characteristic data from multiple sources into tools that are fieldable throughout the Soldier lifecycle of service.

Human – Collective Training for Tactical Operations

7.c

Problem Statement: The significant number of critical skills required by Soldiers, Leaders and Units in complex tactical operations exceeds the Army's current capability for home-station training and there is no clear set of best-effective training or leadership development methods; fidelity for mission rehearsal is inadequate.

Challenge: Formulate a S&T program to provide an immersive, full-spectrum, training experience for Small Units at home station and/or while deployed that approaches the complexity and realism of fixed-site combat training centers but requires a minimum of infrastructure and pre-event preparation. –

Challenge Boundary Conditions:
Who: Small Unit/Squad

What: Selected Operational Mission Scenarios against 2011 baseline

How: Reduction in number of personnel; improved tactical unit operations

Objectives:
Near term (FY17): Provide tools, based on learning theories, that enable repeatable and scripted and unscripted training situations; represent both kinetic and non-kinetic effects, as well as social and culturally realistic, reactive, dynamic situations, with immediate performance analysis and feedback, exercise review, and after-action analysis. Provide a 10:1 reduction in the number of overhead personnel to plan, execute, and evaluate Small Unit training; including: training to provide commanders and units with effective training tools, methods, and socio-cultural competencies that improve unit tactical operations.

Human – Trauma Management

7.e

Problem Statement: Dismounted Warfighters have significant, complex injuries due to IEDs and other battlefield events that require advanced trauma management.

Challenge: Formulate a S&T program to capture, process and electronically disseminate near-real-time medical information on Soldier injuries, wounds and treatment from point of injury through the continuum of care. Also improve battlefield care to enable better monitoring and management of hemorrhaging.

Challenge Boundary Conditions:

Who: Individual Soldier and combat medic

What: Selected Operational Mission Scenarios

How: Measure reduction in deaths due to hemorrhaging against a 2011 baseline

Objectives:

Near term (FY17): Develop and demonstrate a system that can be worn by Soldiers and/or used by Combat Medics to capture, process and disseminate information on casualties in a field operation; decrease pre-surgical, preventable hemorrhage death on the battlefield by 5%.

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Providing Soldiers Technology Enabled Capabilities

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