



Adaptive Red Team (ART) / Technical Support and Operational Analysis (TSOA) Activity Overview

<http://uniquemissioncell.org>

28 July 2015
Provo, Utah

DISTRIBUTION STATEMENT C: Distribution authorized to Department of Defense (DoD) and U.S. DoD Contractors only. This document contains critical technology information. Other requests for information concerning SART activities shall be referred to the SART Project Office, 5426 Bay Center Drive, Suite 275, Tampa, FL 33609 (Phone: 813-839-0750).



DESIGN • DEVELOP • DELIVER • DOMINATE
SOLDIERS AS THE DECISIVE EDGE

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Briefing Purpose

Overview – George Gilkes, Site Director

Back Ground

Activity

Objectives in Provo – George Gilkes, Site Director

Overall

This Visit

Potential Scenarios / Operations – SFC Graeme Rudd

The Adaptive Red Team Technical Support and Operational Analysis (ART/TSOA) Activity is sponsored and funded by the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASAALT) and executed by the Night Vision Electronic Sensor Directorate/Unique Mission Cell (NVESD/UMC)





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BackGround

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ART/TSOA Evolution (Since 2009)



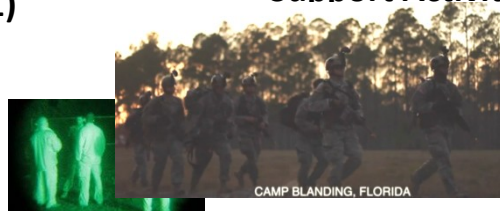
- TSOA is based on experience and lessons learned from previous field experiments & exercises
 - Provides collaborative environment
 - Has a small, mobile footprint that is expeditionary-needs focused
 - Has a unique Red-White-Blue-Black approach, integrating warfighters, analysts, and developers
 - Uses the Warfighter Technology Tradespace Methodology with Logistics, User Interface and Technical factors for assessing systems' performance and finding
 - Operates on a 90-day battle rhythm for events and provides rapid feedback and multiple assessments
 - Identifies vulnerabilities and potential fixes
- TSOA is not a display, demo, "free play", or Developmental Test/Operational Test (DT/OT)

TSOA Started at Camp Roberts, CA in 4Q10 and Has Undergone Continuous Evolution to Meet Needs and Stress Systems in Various Ways

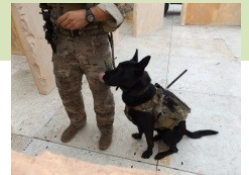
System of Systems Integration using
PUMA and Switchblade (FY11)
Introduced Tactical AAR after
Each Scenario (FY12)



Threat Emulation Training TRADOC G2 Intelligence
Support Activity OPFOR Academy (FY13)

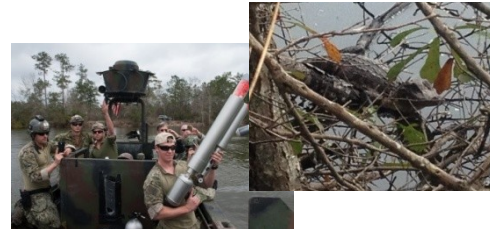


Implemented Endurance
Scenario (FY13)



Integrated MSCOE Capability Development
Assessment Informing Future CDDs (FY13)

Held Gunshot Detection Event
Inspired by Umbrella Week
(FY12)



Introduced Riverine
and Light Jungle
Environments (FY14)



WTTM, HTA Evolution

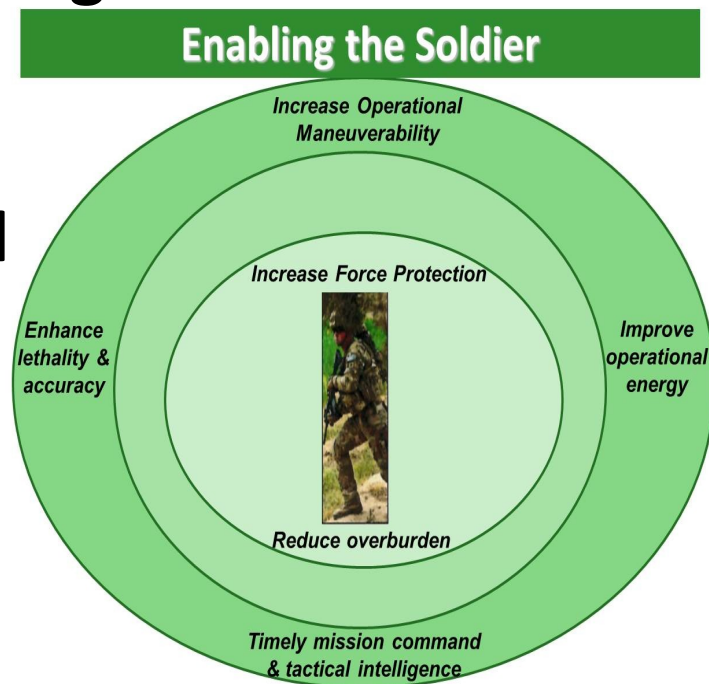
Uncertainty & Extreme Event Exploration

New Locations to Vary Environment



Adaptive Red Team Mission

The Adaptive Red Team supports the Assistant Secretary of the Army for Acquisition, Logistics & Technology efforts to enable the soldier by identification of potential vulnerabilities in emerging technologies including performance degradation in contested environments, interoperability, adaptability and training/ease of use through live and virtual experiment venues designed to improve Warfighter maneuver, survivability, and lethality.





Challenge Environments

New Theaters will present new challenges as the Army shifts focus to future operations against technically savvy opponents in a contested and congested environment

Physical Environment: Terrain (Natural & Urban) Climate

Electronic Environment: Congestion / Frequency Overload

Contested Environment: Electronic Jamming, Cyberattacks

Red Teaming activities focused on emerging systems are critical in identifying performance degradation and potential system vulnerabilities

Red Team results will be used to focus S&T activities to mitigate or eliminate vulnerabilities during early design phases where possible

Red Team results will be used to enhance robust and resilient engineering design of systems where possible





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Activity

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Objective, Functions & Driving Factors

RFI - FEDBIZOPS

Objective: Identify vulnerabilities that may threaten fielding, use, and operational effectiveness of systems and/or systems-of-systems

1. Provide Timely Mission Command and Tactical Intelligence

- COP
- Battle Space Owner (relevant)
- Realtime Situational Awareness
- Data Compression and Transfer
- Data Standard / Common Operational Environment
- Communications
- Sensor & Data Fusion
- Autonomy
- Data Dissemination
- Secure Communications
- Data Handling & Storage

2. Reduce Soldier Overburden

- Weight
- Volume
- Set Up
- User Interface
- Electronic Burden
- Trouble Shooting
- Training
- Ergonomics
- Integrated Capabilities
- Transport
- Multi-Functional Capabilities
- Logistics supportability
- Availability
- Sustainable
- Scalable Functionality
- Adaptability/Flexibility
- Customizable

3. Enhance Lethality and / or capability to Temporarily Incapacitate threats

- Detecting
- Locating
- Targeting
- BDA
- Marking
- Identifying
- Target Discrimination
- Reduce collateral damage
- Reduced TLE / CAS
- HUMINT
- SIGINT
- STANO Devices
- Extended Ranges

4. Increase Force Protection (Soldier/Vehicle/ Base)

- Active Defense
- Counter Multi-Threats
- Cover from Direct /Indirect Fire
- Enhance Troop Movement
- Perimeter Security
- ECP
- Expeditionary Power
- Long Range Surveillance
- Sense and Warn
- 360° Hemispherical Protection
- Subsurface Protection
- Obscuration
- Active Defense
- Detect/ID/Mitigate CBRNE
- Detect/ID/ Mitigate Explosive Hazards
- Autonomous Systems
- Warn & Alert
- Area Denial
- Establish, Expand, Protect, and Close Bases
- Shape Terrain
- Perform Infrastructure Reconnaissance
- Access, Establish, Secure, Expand Ports of Debarkation (POD)

Assessment Criteria = System Performance plus...Perceived Usefulness and Ease of Use

Integration with CONOPS

Transportability

Power and Energy

Time to Assemble/ Disassemble

Integrate-ability

Robustness to Enemy TTPs

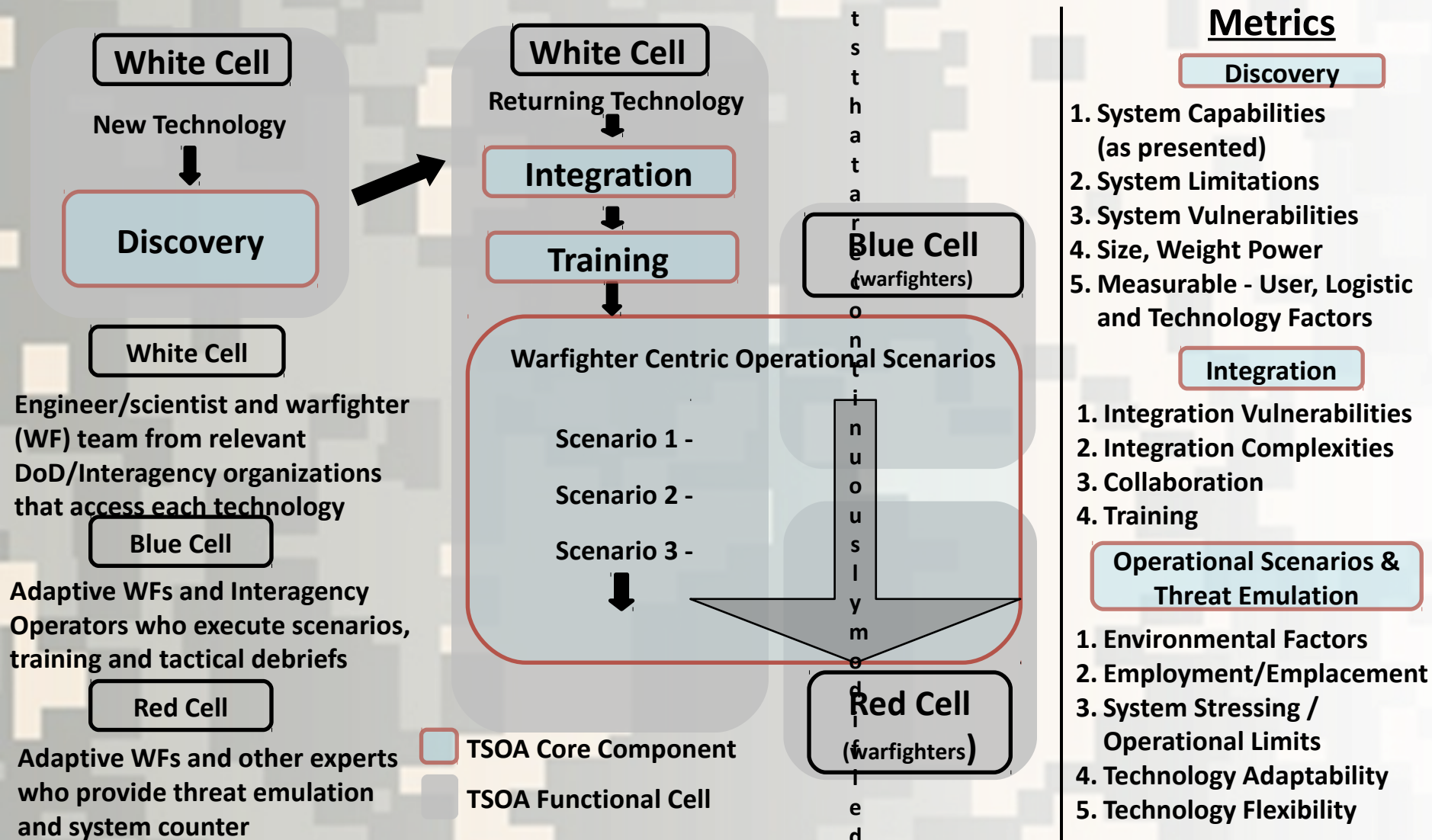
Manpower Requirements

Supportability

Training

Ability to Scale





Warfighter-Centric Venue that Provides Framework for Realistic Input, Warfighter Adaptability & Training



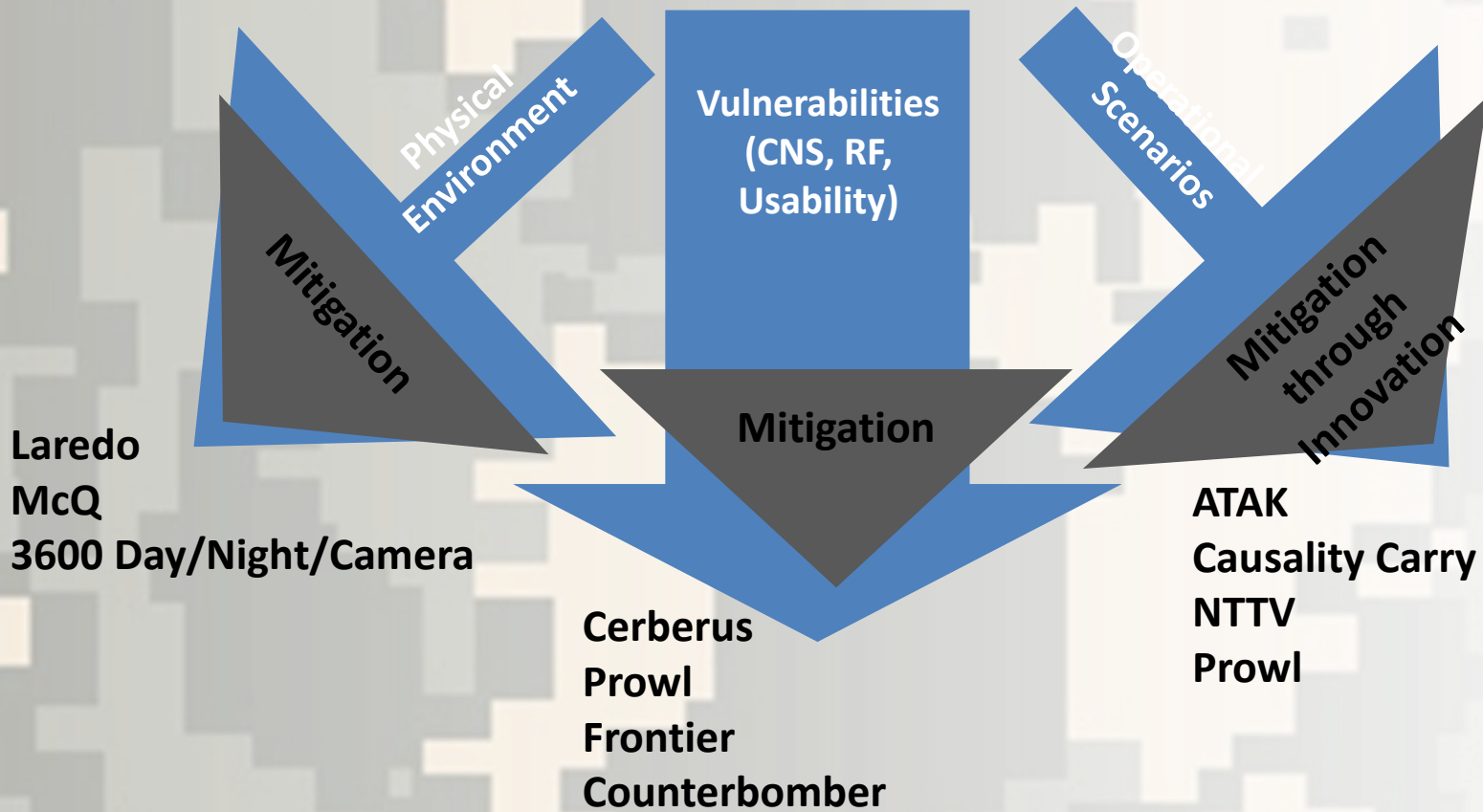


ART/TSOA Paths to Success

Each TSOA presents unique challenges and threats

Live Experiment Venues (TSOA)

The path to success is different for every technology



TSOA Doesn't Make Systems – We Make Systems Better!
We Maximize Innovation through Unique Challenges and Threats





11 August 2015

Methods

- Apply open-source standards and intelligence available to the adversary for accurate assessment
- Use adversaries tools and methods combined technology assessments
 - Computer Network Attack (CNA) /Computer Network Exploitation (CNE), RF, optics, social engineering, and environmental factors

Analytical Findings and Reports

- What the results were
- How we accomplished the attack
- Why it worked
- Details on how to replicate the effect
- References to show authenticity

Identification of specific threat specifics

- Skill sets required
- Resources and motivation
- Level of effort required to accomplish their goal (effect)





TSOA 16-1 Provo

Military Operations in Megacities

EX-ART/TSOA 15-2

- Cape Canaveral
- Port and Harbor

2-6 March 2015

EX-ART/TSOA 15-3

- MCB Quantico
- MOUT / Dense
- Tech Discovery

1-5 June 2015

AFRICOM
PACOM
SOCOM
NORTHCOM
CENTCOM
EUCOM

Unified Quest – 2014

“Megacities are a landpower problem”

The Army Strategic Studies Group delivered a report to General Odierno in May 2014 claiming, “it is inevitable that at some point the United States Army will be asked to operate in a megacity and currently the Army is ill-prepared to do so.”

EX-ART/TSOA 15-4

- AWG Ft AP Hill
- Urban/Underground
- Tech Focused

31 Aug – 4 Sep 2015

EX-ART/TSOA 16-1

- Megacity/Provo
- SOCOM
- DHS

16-20 November 2015



Objectives this Visit

Letter of Support – County / City
Law Enforcement Briefing / Support / All
Water Conservancy Support
Power Plant as an Objective

Federal Building
Operational HQ

Area around city center - operational
One additional facility for an Objective
NOTE: Marriott Downtown = Event HQ





2015 Dates

Execution	2-6 Mar 2015 (27 Feb-8 Mar)	Cape Canaveral, FL
IPC	7-8 Jan 2015	Tampa, FL
FPC	11-12 Feb 2015	Tampa, FL
Data Call Ends	9 Jan 2015	
TSOA 15-3	DATES	LOCATION
Execution	1-5 Jun 2015 (29 May-7 Jun)	Quantico, VA
IPC	15-16 Apr 2015	Tampa, FL
FPC	13-14 May 2015	Tampa, FL
Data Call Ends	3 Apr 2015	
Off Cycle Event	DATES	LOCATION
Execution	17-21 Aug 2015	Camp Roberts, CA
IPC	18-19 Jun 2015	Washington, DC
Data Call Ends	19 Jun 2015	
TSOA 15-4	DATES	LOCATION
Execution	31 Aug- 4 Sept 2015 (28 Aug -6 Sep)	FT. AP Hill ,VA
IPC	22-23 July 2015	Tampa, FL
FPC	19-20 Aug 2015	Tampa, FL
Data Call Ends	3 July 2015	
TSOA 16-1	DATES	LOCATION
Execution	16-20 Nov 2015 (13-22 Nov)	Provo, UT
IPC	30 Sept-1 Oct 2015	Tampa, FL
FPC	24-22 Oct 2015	Tampa, FL
Data Call Ends	18 Sept 2015	
AS OF: 9 July 2015		



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Potential Operations

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QUESTIONS

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Back Up

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TSOA Components and Supporting Organizations

- Program Director: Dr. Niki Goerger, US Army Engineer Research & Development Center
- TSOA LOE Lead: John Klopfenstein, CERDEC/NVESD/Unique Mission Cell (UMC)
- TSOA Venue Coordinator: George Gilkes, Naval Postgraduate School/UMC
- Integration Lead: Kurt Badertscher
- Lead Contract Support/Network: Kelly Hanlon
- Airboss: Brett Horton
- Analytics & Assessments Cross-Cutting LOE Lead: Dr. Pat Driscoll

White Cell

Lead: Mary Odea

HTA: Integration Lead: Kurt Badertscher

- Dr. Pat Driscoll
- Dr. Tim Elkins
- USMA, NPS, ERDC

RF & CNS Assessments:
• Mark Robertson (RB)

Data Collectors:

- RDECOM
- China Lake
- DHS
- REF
- Military Units (Joint)

COP/Integration:

- Special Technologies Lab-
Pam Robinson and Greg
Boyleston

MSCoE:

- Chad Morris

Blue Cell

Leads/Training:

- SFC Rudd
- MSG Mityga

Operations Coordinator:

- Chad Clever

Military Units (Joint)

Interagency

Red Cell

Lead: Brad Curry

Military Units (Joint)

Threat Emulation (CNS&RF):

- Dave Rohert
- Justin Willmann

Analytics & Assessments
Cross-Cutting LOE

RF=Radio Frequency, CNS=Computer Network Security



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MAINTAINING A LEADING EDGE IN TECHNOLOGY



TSOA

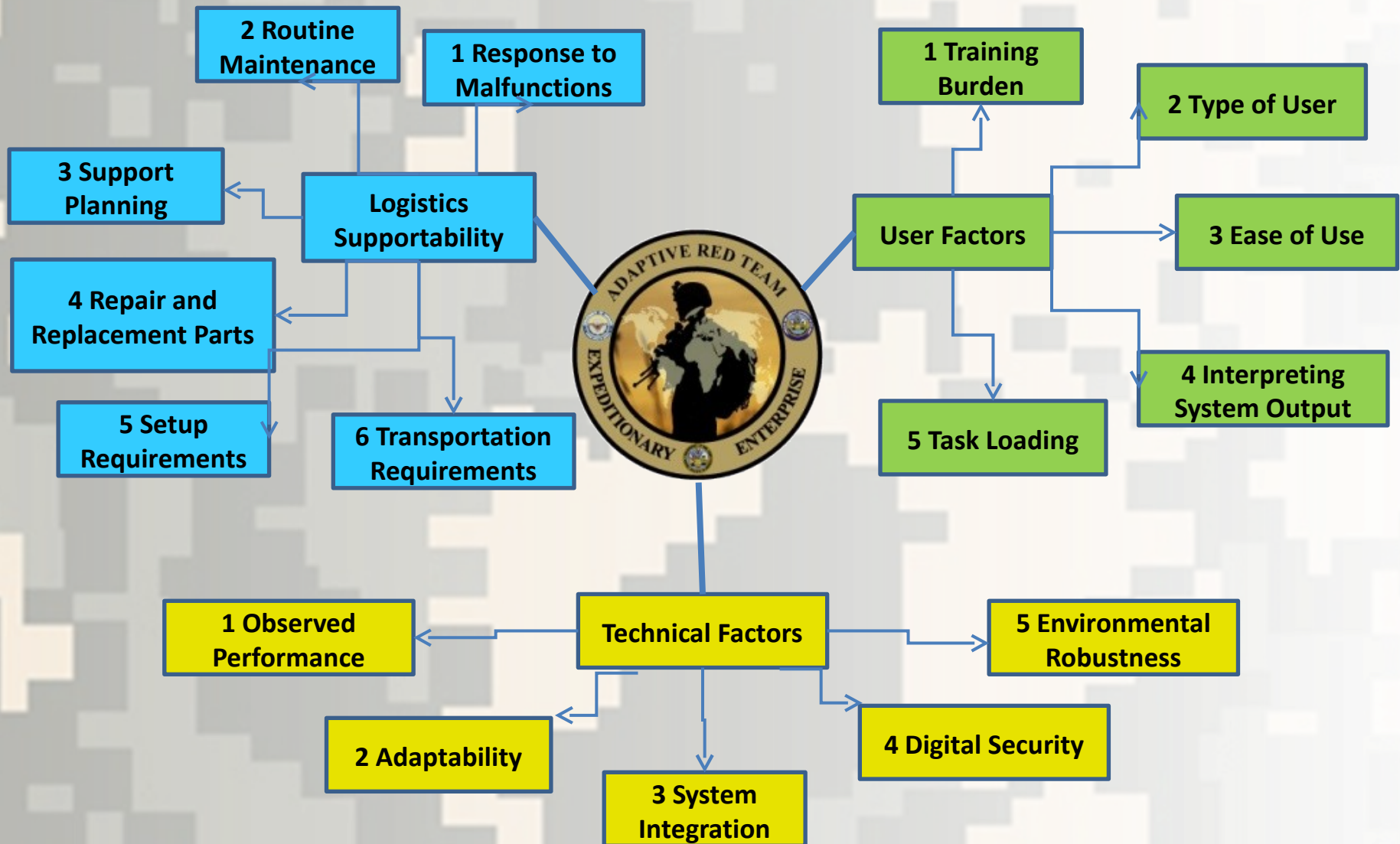
Activity Ground Rules

- Unclassified
- Collaborative - take advantage of the austere location, attending personnel, and your own investment to further your development
- **Experiment & Assess vs Test/Demo:** We have established and manage this venue and its activities for assessment, exploration and insight generation through experimentation – This is not a formal test event or substitute for developmental or operational test and evaluation
- Try New Things / Learn New Things
- Challenge the Limits of Your Technology
- No penalty if “it” doesn’t work - Benefit from learning environment





Assessment Factors



Operational Area (Coordinates)



UTC D
383504.96 N – 773243.41 W



FSS
383447.12 N – 773248.31 W



MOUT
383431.56 N – 773159.22 W



Range 11

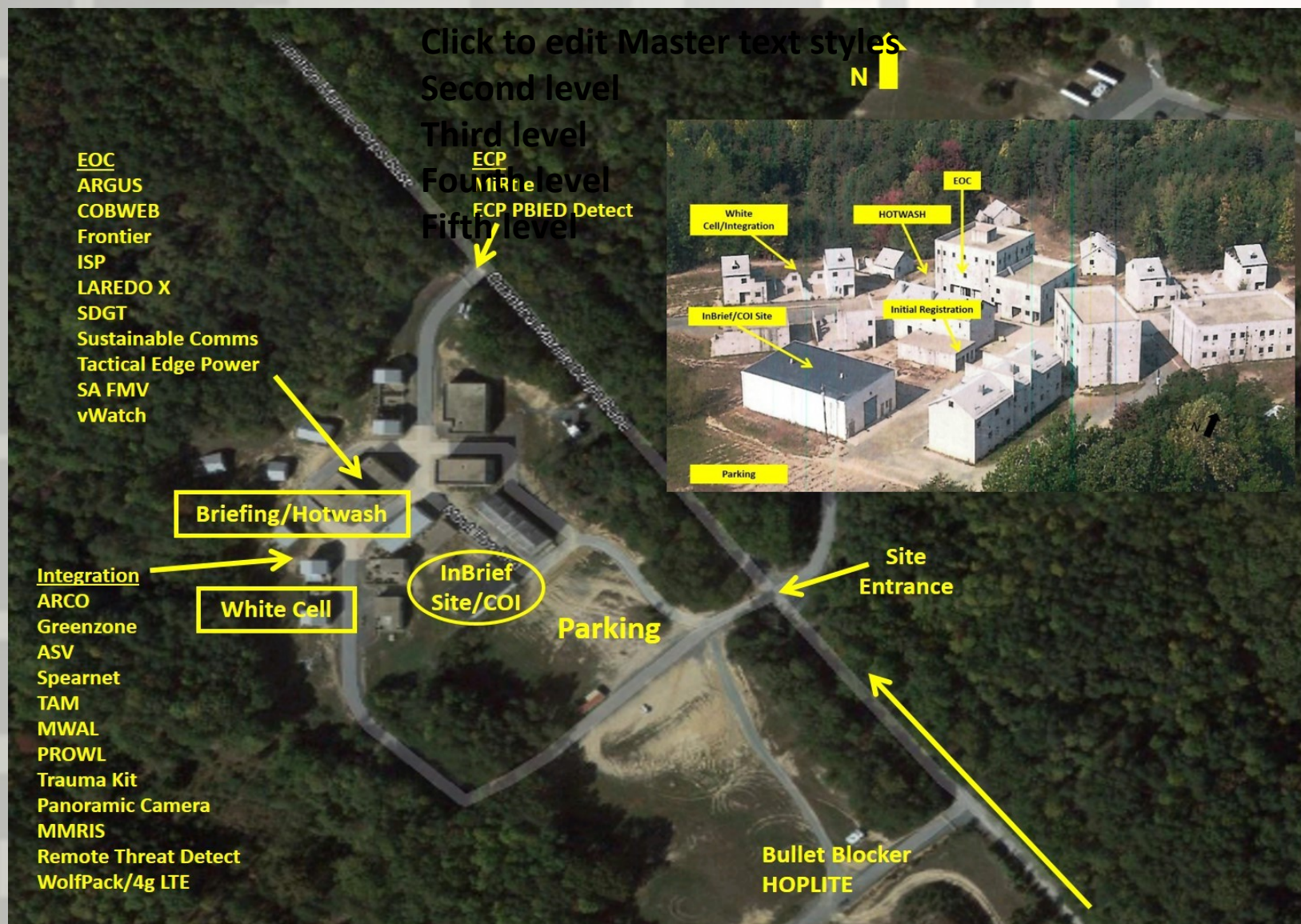
UTC C
383428.12 N – 773241.74 W



MAC South



Site Laydown





Initial Schedule 15-3

Final Schedule posted on <http://uniquemissioncell.org>



Daily – Morning In-Brief – (0730 Tuesday – 0900 Wednesday / Thurs – (Night Ops)

Daily – Hotwash - 1630)

Schedule Highlights

1 Jun - 0830 – Mandatory Safety and Event In-Brief

4 Jun – COI Day

3-4 Jun – Night Ops

1 Jun - 1830 – No Host Social, Courtyard Quantico

5 Jun – Venue Closed

Time	Monday 6/1/2015	Tuesday 6/2/2015	Wednesday 6/3/2015	Thursday 6/4/2015	Friday 6/5/2015
7:00					
7:30		Arrive MOUT 0730 Brief			Arrive MOUT 0730 Brief
8:00	0730 - 0830 White Cell /WTTM / warfighter Indoc	WTTM UTA 1, 2, 3			0830 - 1030 Warfighter Debrief - Homewood Suites
8:30					
9:00	0830 - 1030 Mandatory Safety, Event-Scenario, JVAB, Integration, MSCoE, Warfighter and Tech Briefs		Arrive MOUT 0900 Brief	Arrive MOUT 0900 Brief	
10:00				Group Picture - All	
10:30		Prep for scenario / integrate and position assets			Collaboration Experiments and Modified Scenarios as Requested
11:00	Move to FSS - Check-in NLT 1130				
11:30					
12:00			Scenario	Scenario	
13:00	Tech Update - Onsite			COI Day	1200 - Venue Closed - Begin Range and Site Clearance
14:00					
15:00	Site Setup & Integration				
16:00					
16:30	1630 - Hot Wash -MOUT	1630 - Hot Wash -MOUT	1630 - Hot Wash -MOUT	1630 - Hot Wash -MOUT	
17:00					
18:00			Break	Break	
18:30	1830 No Host Social Courtyard Quantico				
19:00					
19:30					
20:00					
21:00			1900 - Night Ops - Vicinity MOUT	1900 - Night Ops - Vicinity MOUT	
22:00				Endurance OP - until 0600	
23:00					
24:00			Hot Wash - Night Ops	Hot Wash - Night Ops	





Battle Rhythm



- NLT 0700 Daily – Support team on Site
- Daily Update– **Each Group must be represented**
 - 0730 – 2 Jun
 - 0900 – 3 Jun (Night Ops)
 - 0900 – 4 Jun (Night Ops)
 - 0730 – 5 Jun
- Hot Wash – 1630 Daily
 - Daily results discussed
 - Next day coordination / de-confliction
 - **Each Group must be represented**





TSOA

Hot Wash Agenda

- Safety / Administrative
- Infrastructure
- White Cell
- Blue Cell
- Red Cell
- JVAB
- Technologies
 - Daily Significant Activities (SIGACTS)
 - What were your objectives for today?
 - Did you accomplish your objectives? Why or why not?
 - Did you collaborate with any other technologies?
 - Did you encounter any issues?
 - What are your objectives for tomorrow?
 - How can we help?
- Next Day Events
- Closing Remarks / Alibies





TSOA

Communications & Network

RADIOS

- Channel 1 - Red Cell (Use this channel for Red Cell only)
- Channel 2 – ADMIN (Use this channel for all admin traffic)
- Channel 8 – WINTEC LOS

NETWORK

Wi-Fi:	TSOA
Wi-Fi key:	umc#tsoa
Gateway:	172.16.0.1
Subnet	255.255.0.0
DNS/Time:	172.16.0.8
CoT	172.16.0.9
Datashare	http://tsoadata.tsoa

PW: umc#tsoa





Initial Technology List

EXP #	15-3 TSOA Technology	Organization	Remarks
1	500 Watt Ruc Packable Generator	Flex Fuel	
2	ARGUS	Intelligent Automation, Inc	HTA
3	Augmented Reality Clip (ARCO)	CERDEC/NVESD	ENDOP
4	Autonomous Surveillance Vehicle (ASV)	Sharp Electronics	
5	CobWeb-SF	Sentinor Ltd	ENDOP
6	ECP PBIED Detection System	JIEDDO/NVESD/UK MOD	
7	GreenZone	GreenZone Systems	
8	Integrated Surveillance Platform	Digital Barriers	HTA
9	LAREDO-X	ERDC	ENDOP
10	Midwave Aiming Laser - Sniper (MWAL-Sniper)	LaserMax	
11	MiRTLE	Radio Physics, Inc	HTA
12	MMRIS	Kopis Mobile	ENDOP
13	Panoramic Night/Day Perimeter Surveillance	HGH	MSCoE
14	Prowl	Camgian Microsystems	ENDOP
15	Situational Awareness FMV Solution	VITEC	
16	Soldier Deployable Geospatial Technology (SDGT)	ERDC-GRL	
17	SpearNet Radio	Exelis Inc.	
18	Sustainable Communications Network	RIVA Networks, Inc	
19	Tactical Edge Hybrid Power (3500W)	UEC Electronics	
20	Trauma Kits	Phokus Research Group	
21	Tunnel Activity Monitoring System (TAM)	MIT Lincoln Labs/DHS	
22	vWatch Video Compression System	McQ	
23	WolfPak Canine / 4G LTE	MissionTEQ / General Dynamics	
Quick Look			
1a	Frontier	Exelis, Inc	ENDOP
2a	Hoplite (Wed / Thurs Only)	Phokus Research Group	ENDOP
3a	Bullet Blocker (PM Training)	Gabriel Ballistic Base Layer	
Infrastructure			
A	ATAK		
B	Cerberus / Centurion		
C	ISA		
D	RaptorX		
Special Projects			
a	Hierarchical Task Analysis (HTA)		
b	MSCoE Assessments		

