FCS LUT 3 LVC MS&I Requirements Study

Overview

13 Jan 09
Report Documentation Page

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<th>1. REPORT DATE</th>
<th>13 JAN 2009</th>
<th>2. REPORT TYPE</th>
<th>3. DATES COVERED</th>
<th>00-00-2009 to 00-00-2009</th>
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<th>4. TITLE AND SUBTITLE</th>
<th>FCS LUT 3 LVC MS&amp;I Requirements Study. Overview</th>
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<th>6. AUTHOR(S)</th>
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<th>7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)</th>
<th>U.S. Army Test and Evaluation Command, ATEC-TTS, 4501 Ford Ave, Alexandria, VA, 22302-1458</th>
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<th>12. DISTRIBUTION/AVAILABILITY STATEMENT</th>
<th>Approved for public release; distribution unlimited</th>
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<th>13. SUPPLEMENTARY NOTES</th>
<th>Live-Virtual Constructive Conference, 12-15 Jan 2009, El Paso, TX</th>
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<th>16. SECURITY CLASSIFICATION OF:</th>
<th>17. LIMITATION OF ABSTRACT</th>
<th>18. NUMBER OF PAGES</th>
<th>19a. NAME OF RESPONSIBLE PERSON</th>
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Agenda

• Future Combat Systems (FCS) Limited User Test (LUT) 3 – Phase I and II

• Study Overview
  ✦ Purpose
  ✦ Status
  ✦ Methodology
  ✦ Gap Analysis Process
  ✦ Schedule

• Federate Candidates Process

• Questions
FCS IV3 LUT Phase 1

T1: ID TGTs
P1: Provide SA
T2: Observe engagements
P2: Evaluate effects

T1: Destroy Threat TGTs
P1: Prevent enemy disruption

T1: Provide C2 for combat units
P2: Assign tactical missions/facilitate SA

T2: ID TGTs
P2: Initiate tactical response
2nd and 3rd CAB = Virtual + Constructive
A Live Combined Arms Battalion (CAB), some of whose assets – in the context of the overall full spectrum operations scenario – have been cross-attached to a sister CAB in order to weight the FCS BCT’s (Brigade Combat Team) main effort

Live elements of the Brigade Headquarters; Reconnaissance, Surveillance, and Target Acquisition (RSTA) Squadron; Non-Line of Sight-Cannon (NLOS-C) Battalion; and Forward Support Battalion (FSB);

Virtual FCS Command and Control Vehicles (C2V) which the sister CAB Commanders and their staffs, as well as select parts of the Brigade staff, RSTA Squadron, NLOS-C Battalion, and FSB will fight and control their subordinate elements from using the FCS Battle Command System and/or other C2/ISR (Command and Control/Intelligence Surveillance and Reconnaissance) systems

Select Constructive federates (e.g., One Semi-Automated Forces (OneSAF), the LSI’s Communications Effects Server (CES), etc.) which in some cases will be “manned” by FCS BCT Company/Team Leaders
Study Purpose and Deliverables

• The purpose of the Study Team is to:

"Define the FCS Core Program LUT 3 Live, Virtual, and Constructive (LVC) Modeling and Simulation (M&S) and Instrumentation (MS&I) (to include real-time casualty assessment (RTCA), data collection, reduction and visualization) requirements and the aligned MS&I capabilities to those requirements."

♦ Types of requirements considering as part of the study:
  □ M&S (by Warfighting Function)
  □ DCA&I
  □ Threat
  □ Training (supporting the LUT/Soldier)
  □ Federation (interoperability)

• Recommend an architecture to support the LVC MS&I Federation

• Endstate of the study is defined by:
  ♦ A documented (in DOORS) set of Operational Test and Evaluation requirements.
  ♦ A proposed LVC MS&I Federation
Current Status

- Kickoff Meeting – 30 May
- Initial requirements from the Evaluator and Operational Tester
- Use Case Development Workshop – 17-18 June @Leavenworth
- M&S Requirements Workshop – 14-18 Jul @Leavenworth
- Develop a list of current inventory of tools to include “as-funded capabilities” – 15 Sep.
- DCA&I Requirements Workshop – 19-21 Aug @Bliss
- Requirements Refinement and SV-4 Mapping Workshop – 2-5 Sep @Leavenworth
- Develop complete set of initial requirements: M&S and DCA&I – 15 Sep
- Leverage existing Integration events to conduct bench testing of potential tools, i.e., (Omni Fusion 2008) – Sep/Oct
- Requirements finalization workshop – 14-17 Oct @Orlando
- MS&I Tools finalization/identification workshop – 20-24 Oct @Orlando
- Finalize requirements set and publish Technical Requirements Document (TRD) from DOORS – 31 Oct
- Workshop to evaluate tools (SMEs) against list of requirements (Gap Analysis) – 3-7 Nov @Leavenworth
- Analysis of bench testing results and Gap analysis results – Nov / Dec
- Federation Operational Consideration Workshop – 8-12 Dec @Orlando
- Federation Architecture Design Workshop – 15-19 Dec @Orlando
- Final Report – Feb 28, 2009
Methodology – Mutually Supporting Lines of Operation

ATEC (Near-Term)
- Requirements Workshop (Jul-Aug 08)
- TERRA/OSTRD
- FCS SEP

3CE (Long-Term)
- Requirements Identification (Jun-Dec 08)
- DCMP
- OV
- SV
- SRS

The near-term effort must establish a foundation and inform the long-term effort ... the long-term effort must validate the near-term estimate and further refine resourcing decisions
Methodology: Near-Term

**Phase I: Jul – Oct 08**

- Conduct Background Research
- Define and Decompose Use Cases

**Phase II: Sep – Feb 09**

- Conduct Gap Analysis

**An initial set of LVC M&S requirements**
- An initial set of LVC DCA&I requirements
- An aligned set of capabilities
- Identified gaps
- Recommend solutions

Aligned metrics and technical requirements ... based on an operational use case context.

Identified cross command capability
A Technical Framework Approach

3CE M&S Architecture SV-4

2 Simulation Functional Areas

1.1 System Physical Interface
(System/Subsystem, Instrumentation, Data Acquisition)

1.2 M&S Applications
- Stimulation Applications
- Emulation/Prototype Applications
- Simulation Applications

1.3 Common Operating Environment (COE) Services
- Middleware Services
- Management Services
- Application Programming Services

1.4 Infrastructure
- Network Foundation
- Computer H/W
- QoS
- QoS Abstraction Services
- Databases

1.5 Management Functional Areas

1.5.1 Preparation
- Data Preparation
- System Preparation
- Scenario Preparation

1.5.2 Management
- Initialization
- Control
- Monitoring
- Execution/Synchronization

1.5.3 Analysis
- Data Acquisition
- Data Storage
- Data Reduction
- Data Evaluation

1.5.4 Collaborative Environment
- WMSBased/Web 3
- Real Time Chat
- Streaming Video
- Streaming Audio
- Knowledge Repository

1.6 3CE Network
- BLCSE
- ATIN
- DVL
- DREN
- LSI SoSIL
Example: Gap Analysis by SV-4 Category

- Do the capabilities of tools A, B, and C satisfy requirements 1, 2, 3, or 4?
  - To what level of compliance?
  - To what level of fidelity?
- By requirement, do we attain full compliance?
  - If so, what tool(s) satisfy(ies) the requirement?
  - If not:
    - What level of compliance is achieved?
    - Which tool(s) achieve the “best” compliance?
Schedule

- SAG Review
- Chair Review

- M&S Workshop 14-18 Jul
- DCA&I Workshop 19-21 Aug
- 31 Jul
- 25 Sep 1300
- Reqs/Id Workshop 14-17 Oct
- Gap Analysis Workshop 3-7 Nov
- MS&I Tools Workshop 20-24 Oct
- We are here
- Finalize Gap Analysis 15 Jan 09
- Deliver Final Report 28 Feb 09
- Federation Workshops Operational Considerations/Architectural Design 8-12 Dec 15-19 Dec
- Delivered Draft Report 31 Jan 09
Federate Candidates Process
Campaign Plan

Warfighting Functions (WFF)

MS&I Requirements

Technical/Standards

3CE

Build Federation

Build upon each Event

Events

FCS LUT 3
TFT/TNG/FDT&E/OT

ID Candidate Components

LVC M&S/DCA/Inst/Tactical Systems/Test Control

DIACAP/V&V Pedigree per Federate

Other Non-FCS applications and events that support Federates & Integration
Developing a Core LUT 3 Architecture

Operational Considerations Workshop (8-12 Dec)
- Review Strawman Scenarios
- Force Structure Components (L,V,C)
- Environmental Conditions
- Tactical Network Diagram
  -TTPs, Behaviors

*  

Federation Architectural Design Workshop (15-19 Dec)
- ID Federation Agreement
- Test/Technical Control
- DCA&I Architecture
- Player Support Cells
  - Interfaces
- IA Rqmts – DIACAP
  *

These two workshops will enable the initial identification of a solution architecture for Core LUT 3
Long Term Planning Calendar

- Submit FY10 Work Packages
- Submit FY11 Work Packages
- Submit FY12 Work Packages
- Initial Federation Build Plan
- Federation Build I Complete
- Federation Build II Complete
- Federation Build III Complete v1.0
- Federation Final Decision
Questions