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13. ABSTRACT *(Maximum 200 Words)* Army Experiment 6 (AE6) Situational Awareness Tactical Internet Data Server (SATIDS) - High Level Architecture (HLA) Integration and the Tactical Internet After Action Review Development, was a software development effort performed as Delivery Order (DO) #0110. This effort was performed under the Lockheed Martin Advanced Distributed Simulation Technology II (ADST II) Contract administered by the U.S. Army Simulation, Training, and Instrumentation Command (STRICOM).

The purpose of the SATIDS-HLA Integration and the Tactical Internet After Action Review Development Effort was to develop the best approach to integrate the SATIDS simulation system into the Adaptive Thinking Experiment Exercise (ATE) and the Eagle simulation, and provide a proof of concept for a Tactical Internet After Action Review System for the field. The SATIDS/Eagle integration was successful and implemented for the ATE Exercise on 10-14 May and the Tactical Internet AAR effort was successfully demonstrated for the Commander 1st Brigade 4th Infantry Division on 2-6 August.

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Army Experiment 6 (AE6) Situational Awareness Tactical Internet Data Server (SATIDS) - High Level Architecture (HLA) Integration and the Tactical Internet After Action Review Development, was a software development effort performed as Delivery Order (DO) #0110. This effort was performed under the Lockheed Martin Advanced Distributed Simulation Technology II (ADST II) Contract administered by the U.S. Army Simulation, Training, and Instrumentation Command (STRICOM).

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The objectives of the effort were:

- To establish an interface for the SATIDS and Eagle simulations to support the AE6 ATE 10-14 May.
- To show a proof of concept for a Tactical Internet After Action Review System for the field.

ADST II Contributions:

- Developed an interface for the SATIDS and Eagle simulations to support the AE6 ATE 10-14 May.
- Successfully demonstrated a proof of concept for a Tactical Internet After Action Review System for the field.
- Provided training to the WARLAB staff at Fort Leavenworth on how to use these applications.

The software development was performed in the ADST II Operational Support Facility (OSF) in Orlando, FL from 1 April to 1 May 1999. After the software development was completed an integration effort took place at the WARLAB in Fort Leavenworth, Kansas from 4-8 May. The product was used in the Army Experiment ATE from 10-14 May.

Achievement Summary:

- Both phases of the development effort were completed ahead of schedule.
- Software on file in the ADST II CM Library for future use.

1.0 INTRODUCTION

1.1 Purpose

The purpose of this final report is to document the ADST II effort which supported Army Experiment (AE6) Situational Awareness Tactical Internet Data Server (SATIDS)- High Level Architecture (HLA) Integration and the Tactical Internet After Action Review Development, Delivery Order (DO) #0110. This report includes a full description of the experiment, its conditions, and lessons learned.

1.2 Experiment Overview

The purpose of the SATIDS-HLA Integration and the Tactical Internet After Action Review Development Effort was to develop the best approach to integrate the SATIDS simulation system into the Adaptive Thinking Experiment Exercise (ATE) and the Eagle simulation, and provide a proof of concept for a Tactical Internet After Action Review System for the field. The SATIDS/Eagle integration was successful and implemented for the ATE Exercise on 10-14 May and the Tactical Internet AAR effort was successfully demonstrated for the Commander 1st Brigade 4th Infantry Division on 2-6 August.

The objectives of the effort were:

- To establish an interface for the SATIDS and Eagle simulations to support the AE6 ATE 10-14 May.
- To show a proof of concept for a Tactical Internet After Action Review System for the field.

1.3 Technical Overview

The technical approach to the SATIDS-HLA Integration and the Tactical Internet After Action Review Development Effort started with a requirements analysis to determine the best technical approach to meet the customer requirements. Once the analysis was complete a software development process took place in the ADST II Operational Support Facility (OSF) in Orlando, FL from 1 April to 1 May 1999. Upon completion of the development phase in Orlando an integration phase took place at the WARLAB at Fort Leavenworth KS from 4-8 May.

Once the synthetic environment functional tests were completed training was conducted for the staff at the Staff Digital Leader's Reaction course (S-DLRC) at Fort Leavenworth, KS, and final preparations were made to support the ATE 10-14 May.

2.0 Applicable Documents

2.1 Government

- ADST II Work Statement for Army Experiment 6 (AE6) SATIDS-HLA Integration and the Tactical Internet After Action Review Development, 16 February 1999, AMSTI-99-WO11, Version 1.0

3.0 System Description

3.1 System Configuration

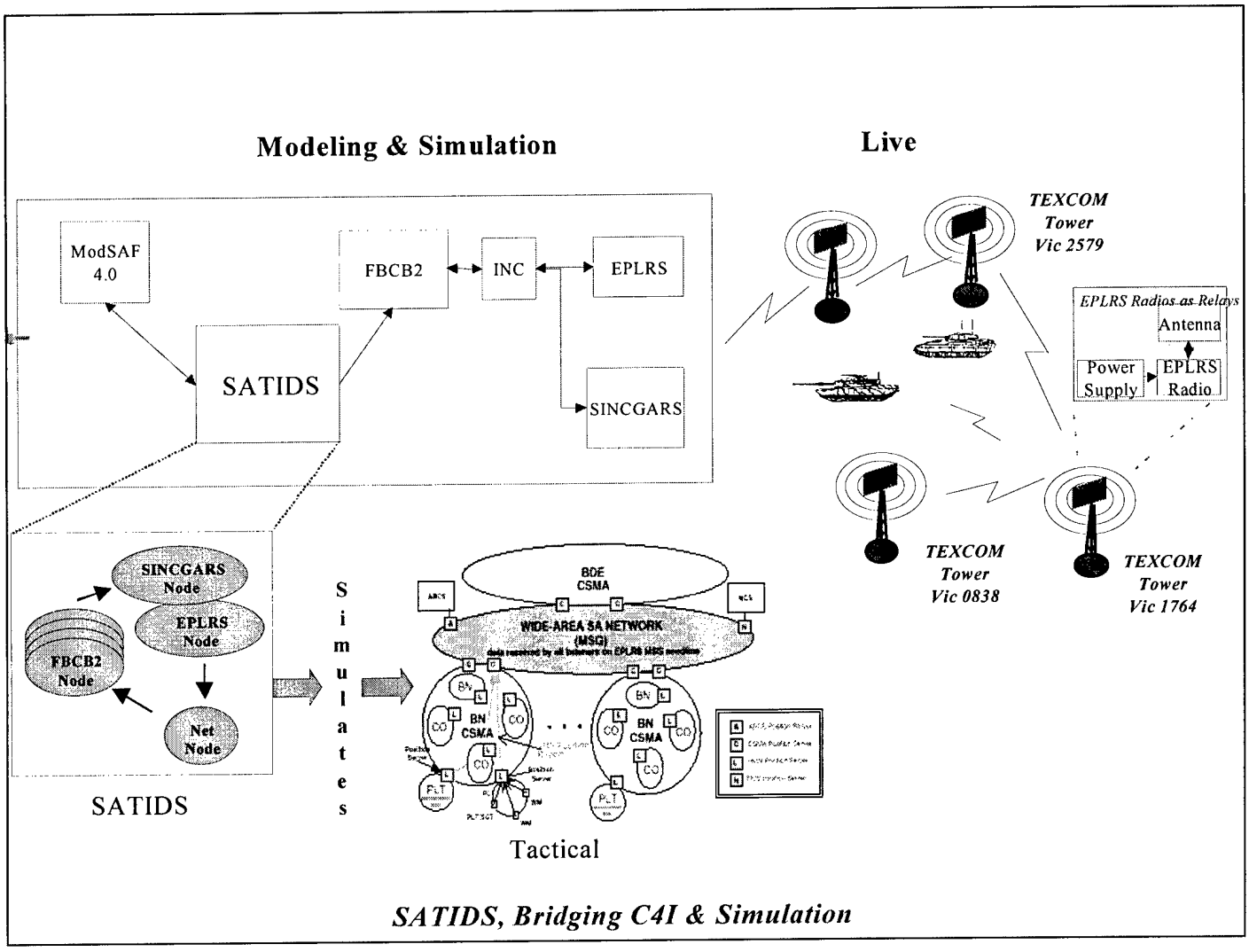

Figure 1 SATIDS, Bridging C4I and Simulation

3.2 Description of System Components

This section discusses the description, functionality and operation of the system components.

3.2.1 SATIDS-HLA

SATIDS modeled the Tactical Internet for the Eagle simulation. The model provides the Situational Awareness picture to all the Force XXI Battle Command Brigade and Below (FBCB2) systems used in the exercise. SATIDS incorporated a native HLA interface to the Eagle simulation. The Eagle simulation provided company level positions over the simulation net. SATIDS deaggrated the company positions down to the vehicle level. The Tactical Internet was modeled using these positions from the virtual world. SATIDS supports the Sun Operating System (OS) version 2.6 running on a spark station.

3.2.2 Tactical Internet AAR

The Combat Tactical Internet After Action Review system is a proof of concept FBCB2 after action review system. Training can be improved by conducting AAR. In the field the commander, presently, can not conduct an AAR with the support of visuals of the unit's location. This proof of concept was designed to show the ability to take tactical FBCB2 information and display it for AARs.

SA data was collected for the FBCB2 participating in the Staff Digital Leaders Reaction Course (S-DLRC). A tool was developed to take FBCB2 K05.01 position reports and convert this information into a DIS logger format. During the conduct of an AAR, the log could be played back and displayed on the AE6 Mission Planning and Rehearsal tool (MPRT). The Simulyzer plays the log back and is displayed on a ModSAF Plan View Display (PVD).

4.0 Conduct of the Experiment

4.1 Staff Training

Staff training for the SATIDS-HLA Interface was conducted for the S-DLRC staff after on-site integration was completed and as preparations were made to support the ATE 10-14 May.

4.2 Experiment

The SATIDS-HLA Interface was used to support the ATE at the S-DLRC from 10-14 May. The Tactical Internet AAR was shown as a demonstration to the Commander 1st Brigade 4th Infantry Division during his staff training at the S-DLRC from 2-6 August.

5.0 Observations and Lessons Learned

- Observation #1

During the exercise the FBCB2 did not display all the entities simulated in Eagle.

- Discussion #1

The FBCB2 has a set Unit Task Organization (UTO). During this exercise FBCB2 version 2.1a was used. The UTO in this version only has 250 Unit Reference Numbers (URN). URNs are used by FBCB2 to determine one vehicle from another. The FBCB2 can only display vehicles that are presently in the UTO. Since the exercise we were playing had more than three Brigades, the FBCB2 could only display the 250 vehicles.

- Recommendations/Solutions:

- Future versions of FBCB2 will have more vehicles in the UTO. Version 3.2 due out in December of 1999 will have 1500 vehicles in the UTO for one complete division. Using this version will allow every vehicle to be mapped from Eagle to FBCB2.
- It is believed that FBCB2 versions down the road will have the ability for the user to create their own UTO databases. It is not know when this will happen.

6.0 Conclusion

Both the development of the SATIDS-HLA Interface and the Tactical Internet AAR were successful. The SATIDS-HLA Interface software is on-site at the S-DLRC for future use and is also in the ADST II Configuration Management (CM) Library. The Tactical Internet AAR software is currently on file in the ADST II CM Library for future use in any experiment that desires to use it. A Software Version Description Document (VDD) is also being prepared and placed in the CM Library.

7.0 Points of Contact

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8.0 Acronym List

AE6	Army Experiment 6
AAR	After Action Review
ADST	Advanced Distributed Simulation Technology
ATE	Adaptive Thinking Experiment
C2	Command and Control
CDRL	Contract Data Requirements List
CM	Configuration Management
DO	Delivery Order
DIS	Distributed Interactive Simulation
HLA	High Level Architecture
FBCB2	Force XXI Battle Command Brigade and Below
MPRT	Mission Planning and Rehearsal Tool
ModSAF	Modular Semi-Automated Forces
OS	Operating System
OSF	Operational Support Facility
POC	Point of Contact
PVD	Plan View Display
SATIDS	Situational Awareness Tactical Internet Data Server
STRICOM	Simulation Training and Instrumentation Command
UTO	Unit Task Organization
URN	Unit Reference Number
VDD	Version Description Document