

JTLS

Version Description Document

July 2013



DEPARTMENT OF DEFENSE
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JOINT THEATER LEVEL SIMULATION
(JTLS 4.1.0.0)

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ABSTRACT

The Joint Theater Level Simulation (JTLS[®]) is an interactive, computer-based, multi-sided wargaming system that models combined joint and coalition resource air, land, naval, and Non-Governmental Organization (NGO) environments.

This *JTLS Version Description Document (VDD)* describes specific features of the Version 4.1.0.0 delivery of the configuration-managed JTLS software suite.

JTLS 4.1.0.0 is a Major release of the JTLS 4.1 series that includes a newly developed SBDKOR41 Standard Database, as well as major model functionality changes implemented as Engineering Change Proposals (ECPs), which are summarized in Chapter 2. Code modifications that represent corrections to known Software Trouble Reports (STRs) are described in Chapter 3. Remaining and outstanding STRs are described in Chapter 4.

This publication is updated and revised as required for each Major or Maintenance version release of the JTLS model. Corrections, additions, or recommendations for improvement must reference specific sections, pages, and paragraphs with appropriate justification and be forwarded to:

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1.0 INTRODUCTION

1.1 SCOPE

This *JTLS Version Description Document* (VDD) describes Version 4.1.0.0 of the configuration managed Joint Theater Level Simulation (JTLS[®]) software suite. JTLS 4.1.0.0 is a Maintenance delivery for the JTLS 4.1 series of releases. JTLS 4.1.0.0 includes the entire JTLS suite of software and the SDBKOR41 Standard Database that supports a realistic scenario based on the current Korean Peninsula theater of operations. Database modifications that were accomplished to upgrade the previous JTLS Standard Database to this current version are summarized in this chapter, as well as [APPENDIX B](#). Detailed descriptions of Engineering Change Proposals (ECPs) implemented for this release are provided in [Chapter 2.0](#).

JTLS 4.1.0.0 executes on the Red Hat Enterprise Linux Version 5 64-bit operating system. **Support for executing the model or its support programs within any 32-bit operating system environment has been discontinued.** The Web-Hosted Interface Program (WHIP[®]) user workstation interface can be executed from any Java-compatible Web browser available on any operating system.

1.2 INVENTORY OF MATERIALS

This section lists documents and software that are relevant to JTLS. All JTLS documents included in this delivery are provided in PDF format within a documents subdirectory. DoD Military Standards can be accessed through the appropriate military channels.

1.2.1 Obsolete/Outdated Documents

Development of the JTLS Air Tasking Order Generator (ATOG) has been suspended. The *JTLS ATOG User Guide* (JTLS Document 02) has been removed from the JTLS documentation suite for this release.

1.2.2 Unchanged Documents

The model enhancements implemented for JTLS 4.1.0.0 are incorporated within the documentation provided for this release:

- *JTLS Analyst Guide* (JTLS Document 01, Version 4.1.0.0)
- *JTLS ATOT User Guide* (JTLS Document 03, Version 4.1.0.0)
- *JTLS Controller Guide* (JTLS Document 04, Version 4.1.0.0)
- *JTLS Data Requirements Manual* (JTLS Document 05, Version 4.1.0.0)
- *JTLS DDS User Guide* (JTLS Document 06, Version 4.1.0.0)

- *JTLS Director Guide* (JTLS Document 07, Version 4.1.0.0)
- *JTLS Executive Overview* (JTLS Document 08, Version 4.1.0.0)
- *JTLS Installation Manual* (JTLS Document 09, Version 4.1.0.0)
- *JTLS WHIP Training Manual* (JTLS Document 10, Version 4.1.0.0)
- *JTLS Player Guide* (JTLS Document 12, Version 4.1.0.0)
- *JTLS PPS User Guide* (JTLS Document 13, Version 4.1.0.0)
- *JTLS Standard Database Description* (JTLS Document 14, Version 4.1.0.0)
- *JTLS Software Maintenance Manual* (JTLS Document 15, Version 4.1.0.0)
- *JTLS Technical Coordinator Guide* (JTLS Document 16, Version 4.1.0.0)
- *JTLS Entity Level Server User Guide* (JTLS Document 19, Version 4.1.0.0)
- *JTLS Federation User Guide* (JTLS Document 20, Version 4.1.0.0)
- *JTLS C4I Interface Manual* (JTLS Document 21, Version 4.1.0.0)

1.2.3 Updated Documents

- *JTLS Version Description Document* (JTLS Document 17, Version 4.1.0.0)

1.2.4 New Documents

No new volumes are delivered with the JTLS 4.1.0.0 documentation suite.

1.2.5 Delivered Software Components

JTLS 4.1.0.0 may be delivered either on a CD or as a set of compressed TAR files to be downloaded. Either method includes the complete suite of software executable code and command procedures. These software components are included with this release:

- Combat Events Program (CEP)
- Scenario Initialization Program (SIP)
- Interface Configuration Program (ICP)
- Reformat Spreadsheet Program (RSP)
- Database Development System (DDS)

- Terrain Modification Utility (TMU)
- Java Symbols Application (JSYMS)
- Lanchester Development Tool (LDT)
- ATO Generator Program (ATOG)
- ATO Translator Program (ATOT)
- ATO Retrieval Program (ATORET)
- Convert Location Program (XCONVERT)
- Count Critical Order Program (CCO)
- JTLS HLA Interface Program (JHIP)
- After Action Review Client (AARC)
- Scenario Data Client (SDC)
- Order Entry Client (OEC)
- Order Verification Tool (OVT)
- JTLS Object Distribution Authority (JODA)
- Web Services Manager (WSM)
- Web-Hosted Interface Program (WHIP) and its component programs:
 - Apache Server (APACHE)
 - JTLS XML Serial Repository (JXSR)
 - Order Management Authority (OMA)
 - Synchronized Authentication and Preferences Service (SYNAPSE)
 - XML Message Service (XMS)
 - Total Recall Interactive Playback Program (TRIPP)
 - Air Tasking Order Viewer (ATOV)
- Entity Level Server (ELS)
- JTLS Operational Interface (JOI)

- KML Operational Interface (KOI)
- TBMCS/ICC Interface Program (JTOI)
- JTLS Interface Network Navigator (JINN)
- JTLS Order of Battle Editor (JOBE)
- Database Configuration Program (DCP)
- DDS User Interface (DDS)

Instructions for installing JTLS 4.1.0.0 are provided in the *JTLS Installation Manual*. Installing a previous version of JTLS prior to installing JTLS 4.1.0.0 is not necessary. No other upgrade beyond installation of the compressed TAR files (or CD) is required. The software provided with this delivery is a complete release that includes all files and code required to execute JTLS.

1.2.6 Released Databases

This release includes these sample unclassified databases:

- The scenario developed as the Korea Standard Database and named SDBKOR41 is a large-scale, seven-sided scenario database reflecting the approximate starting positions of units involved in the Korea Peninsula theater of operations. This example scenario was developed using unclassified data sources and is consequently not completely accurate. Discrepancies among actual units and their locations are not detrimental to the intended purpose of this database, which is to provide a recognizable and realistic scenario that demonstrates the simulation capabilities and supports JTLS training.
- The scenario DEMSDBKOR41 is a reduced version of SDBKOR41 that requires fewer resources, loads faster, and is intended for use in demonstration, training, and testing environments that do not require the complete Standard Database.
- The scenario blank40 is the SDBKOR41 database with all force structure data removed, which can be used as a framework for building your customized database.

1.3 INTERFACE COMPATIBILITY

1.3.1 Support Software

JTLS 4.1.0.0 requires the following versions of support software, including operating systems, compilers, scripting utilities, database tools, transfer protocols, and display managers.

- Operating system for the model: Red Hat Linux Enterprise Edition Version 6 (ES), 64-bit architecture.

Some JTLS components will not execute under Red Hat Linux Version 4.0. Therefore, model support for this OS version has been discontinued. However, Red Hat Linux 4.0 may be used on client workstations to execute the WHIP.

Security Enabled (SE) Linux must not be enabled on systems used to execute JTLS or its components. Tests reveal that SE Linux-enabled systems cause frequent and random JXSR crashes and errors. Use of SE Linux to support JTLS is currently not authorized.

- Operating system for client workstations (one of the following):
 - Red Hat Linux Enterprise Edition Version 3
 - Red Hat Linux Enterprise Edition Version 4
 - Red Hat Linux Enterprise Edition Version 5
 - CentOS Linux Version 4 or 5Windows 2000, XP Professional, Vista, or Windows 7 can be used only if the workstation is an external HTTP client of the simulation network.
- Java Version 1.7.0 is required (Update 25 is recommended) for all platforms and must be used to support all workstations.
- JTLS database tools require use of a certified Oracle database server and the full Oracle Client installation for runtime requirements. Refer to [Section 1.6.2](#) of this chapter for additional installation details.
- Windows software, X11R5 server, Motif 1.2 Library, Motif Window Manager: These items are included as part of Red Hat Linux ES 5.0.
- TCP/IP is required for inter-process communication between the JODA data server and all user interface programs. The version of TCP/IP included with Red Hat Linux ES 5.0 is sufficient.
- The Perl script language is used by the JTLS system and game setup scripts. The version of Perl included with Red Hat Linux ES 5.0 is sufficient. The Perl program is typically located in the /usr/bin directory. If Perl is installed in a another location, a link should be created from the /usr/bin directory to this program.

- KDE Desktop support has been added to JTLS 4.1.0.0. Support of the GNOME desktop is continuing, and use of the KDE environment is optional. Details regarding the installation and use of KDE are provided in Section 4.4.3.2 of the *JTLS Installation Manual*.
- SIMSCRIPT II.5 (SIMSCRIPT to C) translator/compiler: SIMSCRIPT is required for recompiling JTLS code. It is not necessary to have a SIMSCRIPT compiler to execute JTLS, because all JTLS software executables are statically linked with the SIMSCRIPT libraries. The compiler is needed only if you are a U.S. Government organization that can obtain source code and plan to re-compile JTLS SIMSCRIPT code. To obtain a SIMSCRIPT compiler, contact CACI Inc. The following SIMSCRIPT II.5 versions are recommended for 64-bit Red Hat Linux Version 3.5
- ANSI C Compiler: It is not necessary to use a C compiler to execute JTLS. This compiler is used only by U.S. Government organizations that can obtain source code and intend to re-compile any of the JTLS component programs. The C Compiler version delivered with Red Hat Linux ES 5.0 is sufficient.
- C++ Compiler: It is not necessary to use a C++ compiler to execute JTLS. This compiler is used only by U.S. Government organizations that can obtain source code and intend to re-compile any of the JTLS HLA component programs. The C++ Compiler version delivered with Red Hat Linux ES 5.0 is sufficient
- The JTLS DDS (Database Development System) application uses these open source libraries:

JFreeChart, licensed under LGPL (GNU LESSER GENERAL PUBLIC LICENSE) by Object Refinery Limited, <http://www.object-refinery.com>

JCommon, licensed under LGPL2.1 (GNU LESSER GENERAL PUBLIC LICENSE version 2.1 or later) by Object Refinery Limited, <http://www.object-refinery.com>

Commons-math3-3.0.jar, licensed under Apache Software Foundation (Apache License, Version 2.0) <http://www.apache.org/licenses/LICENSE-2.0>HLA Compliance

The JTLS 4.1.0.0 release is fully High Level Architecture (HLA) compliant, and includes all the programs required to run JTLS in an HLA mode. JTLS has moved to a new Federation Object Model (FOM) located in the \$JGAME/data/hla directory. Federation testing of JTLS is not complete, but some initial tests with JCATS 11 have been accomplished. Future plans include expanding the federation capabilities.

The HLA RTI (Run Time Infrastructure) executive program (rtiexec) recommended for use with this release is RTI-NG-Pro-v7.0 or Pitch pRTI Evolved 4.4.2.0. However, this program is not included in the JTLS 4.1.0.0 delivery. Users may obtain a full installation package of the RTI software from either vendor: Raytheon Company (<http://www.raytheon.com>) or Pitch Corporation (www.pitch.se). For information about executing the HLA RTI Executive and other HLA-related software, refer to the appropriate HLA documentation and user guides.

1.3.2 KML Operational Interface (KOI)

The Keyhole Markup Language (KML) Operational Interface (KOI) server utility enables the model to feed operational simulation data to Google Earth™. The display capabilities and data transfer features of this terrain viewer are sufficiently robust to be used as a base-level operational interface. Operational Players who may be restricted from using the COP, C2PC, or other C4I systems may be able to install and use Google Earth and configure the KOI to provide a capability that resembles C4I for observing perception Force Side data.

Chapter 3 of the JTLS C4I Interface Manual describes requirements and procedures for using the KOI capabilities.

1.3.3 JTLS Air Tasking Order Translator (ATOT)

The ATOT executes in two modes:

- In the basic mode, one or more files containing the translated orders is created and the Controller is responsible for submitting an appropriate READ ORDER FILE Order that submits these orders to the model.
- In the advanced mode, the ATOT connects to the Oracle-based Scenario Database Repository (SDR) and places the translated orders into the appropriate Order Entry Client (OEC) tables. The OEC is responsible for submitting the orders to the model.

The SIMSCRIPT and Oracle library support required by both ATOT modes are obtained separately. The SIMSCRIPT support is currently provided with each JTLS release. The necessary SIMSCRIPT libraries are released in the ~/bin_support directory for 64-bit Linux. If running in the basic mode, the Oracle libraries are also released in the ~/bin_support directory for 64-bit Linux.

To run the advanced mode, users must have access to an Oracle server. Users must obtain, install, and configure the most current Oracle Full Client.

1.3.4 Web Services Manager Port Forwarding

The Web Services Manager (WSM) can monitor executing Web Services for a game using the ports for which the services are configured by the Interface Configuration Program (ICP). Secure Socket Layer (SSL) enhancements implemented for JTLS 4.1 limit the WSM to controlling one Web Service for each SSH Forward Port. A process using the SSL feature cannot connect to multiple remote processes through the same port; each process must be connected through a separate port. Configuring more than one service to use the same SSH Forward Port would create conflicts.

The SSL limitation of the WSM requires attention only for controlling more than one executing game on a single server; for example, using one Linux server to run two or more separate WSM GUIs for different games. Technical Coordinators must configure the services of each game to use unique SSH Forward Ports. If each WSM is executed on a separate server, conflicts are

avoided, but no safeguard exists to prevent executing them on the same server. The ports should be configured differently during the initial ICP configuration.

Although the ICP allows manual editing of the SSH Forward Port field, using the Set SSH Forward Ports menu option (Figure 1.1) for the entire scenario is recommended.



Figure 1.1 ICP Set SSH Forward Ports Menu Option

This option will ensure that all Forwarding Ports are properly de-conflicted for a scenario. The user must also ensure the selected port range is different for each scenario (Figure 1.2).

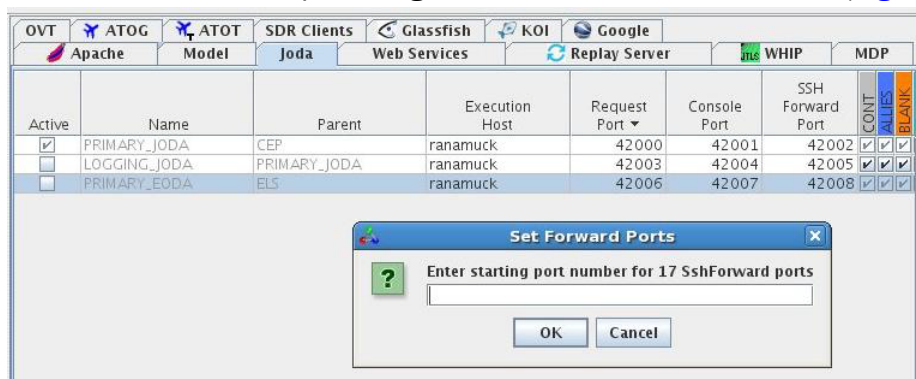


Figure 1.2 ICP SSH Forward Ports Configuration Window

1.4 INSTALLATION CONSIDERATIONS

The procedures for installing JTLS 4.1.0.0 depend on the hardware configuration provided at the installation site. All installation issues are addressed in the *JTLS Installation Manual*.

1.5 DATABASE MODIFICATIONS

Significant database structure differences exist between JTLS 4.1.0.0 and any previous 4.0 series database. For this reason, after installing JTLS 4.1.0.0, you must unload and reload any JTLS 4.0 series scenarios that you may have.

To upgrade your previously installed and modified JTLS 4.0.X.0 scenario for JTLS 4.1.0.0, you must unload and reload your scenario. This will recreate the modified stored procedures, database triggers, etc. Failing to do so will cause issues in DDS operations, such as renaming, copying, and deep copying existing records.

If you are upgrading to JTLS 4.1 from JTLS 3.4 or earlier, you must unload and reload your scenario after the modification is completed.

The JTLS Default Symbol Set delivered with this release has been modified. You must propagate this new Default Symbol Set to any of your scenarios that use the Default Symbol Set. Use the procedure that follows. You should not make any modifications to the Default Symbol Set.

Use this procedure to start the JSYMS program to update the Default Symbol Set used by one or more scenarios.

1. Enter the command "jsyms --edit-default" from a command prompt window. Do not use the JTLS Menu > Database Menu for this purpose. This message appears:

"!!! JSYMS Allows Editing and Saving the Default Symbol Set."

2. Select the Default Symbol Set from the drop-down menu and select OK.
3. Select Symbols from the menu bar, and select Save to update all scenarios that use the Default Symbol Set.
4. Close JSYMS.
5. Use the JTLS Menu Option 1 > 1 > 6 (Load Symbols) to load the current Default Symbol Set to your scenario account in the Oracle database,

1.5.1 Database Upgrade

Users who currently possess a JTLS scenario (ASCII file set) compatible with a version earlier than Version 4.0.0.0 can use this recommended modification procedure after installing this new version of JTLS:

1. Create a new Oracle account for the scenario.

2. From the new JTLS account, load the scenario ASCII files to the newly created Oracle account.

This process creates the JTLS schema that matches the previous JTLS version. After all data are loaded to the database tables, the process modifies the schema to match the current JTLS version. For JTLS 4.1, this process supports JTLS 3.0 (or higher) series scenarios only. If your scenario version is older than 3.0, the scenario must be upgraded to Version 3.4 first, by using the JTLS 3.4 version upgrade process. Consult Section 1.5.2 of the *JTLS 3.4.0.0 Version Description Document* for details and procedures.

JTLS users must consider that the automatic modification program inserts default values to the new database fields. Also, a new JTLS version may use previously existing data fields in a different way. Consult the appropriate *JTLS Version Description Document* to identify data fields that must be updated. The Database Modify program is the first process to use to update your databases to the new JTLS version. Changing the values in new or changed data fields is equally important.

The JTLS scenario/database modification process requires 10.2.0.5.4 or higher full Oracle Client installation.

1.5.2 Standard Database Changes

Additional Standard Database changes that are applicable to JTLS 4.1.0.0 are described in [APPENDIX B](#).

1.6 INSTALLATION

1.6.1 Installation Instructions

The *JTLS Installation Manual* included in the documents compressed TAR file that is part of this JTLS delivery provides detailed instructions for installing a new version of JTLS.

1.6.2 Oracle Compatibility and Installation

A full Oracle Client installation (not Instant Client) that matches your database server version is currently a requirement for running JTLS applications. The Oracle Instant Client is not sufficient for JTLS applications because Oracle utilities, such as sqlldr, imp, exp, tnsping, etc., are missing. If you have applied a patchset to your database server, the same patchset should be applied to the Oracle Client installation. For the 64-bit version of JTLS, a 64-bit Oracle Client installation must be used. The JTLS scenario/database modification process also expects 10.2.0.5.4 or higher full Oracle Client installation. Some sites NFS mount their database server as Oracle Client; other sites prefer a full install of the Oracle Client to a different directory that mounts (simple NFS will suffice) to JTLS. Your system administrator can choose the appropriate installation. Assigning the full Oracle Client installation location (or mount point) as the

ORACLE_HOME in the JTLS .cshrc file allows connecting to an Oracle database server (10.2.0.5.4 or higher - including 11g XE) running on any Oracle-certified database server platform.

The new DDS application utilizes the Oracle GlassFish J2EE server, which, like the JTLS WHIP Apache server, is delivered with JTLS and requires no separate installation.

Oracle Forms/Reports Developer 6i client/server runtime for DDS Forms and the optional iAS EE 10.1.2.0.2 full stack are no longer supported.

Refer to Chapter 5 of the *JTLS Installation Manual* for additional details pertaining to the Oracle installation.

2.0 ENGINEERING CHANGE PROPOSALS

This chapter summarizes model capabilities added to JTLS 4.1.0.0 as a result of implementing authorized Engineering Change Proposals (ECPs).

2.1 JTLS-0093 IMPROVE NON-DETECTED EEI INFORMATION REPORTING

Summary of Model Change Request

The desire was to improve the HRU report process.

Design Summary

HRU reporting has been made more consistent. An HRU holds on to all collection information and reports this information at its schedule report time. If the HRU sees an Essential Element of Information (EEI) item, it immediately reports the information. The user can change the EEI for an HRU at any time.

2.2 JTLS-0094 AIRBORNE NON-REAL TIME ELINT COLLECTOR REPORT GENERATION

Summary of Model Change Request

JTLS Intelligence Collection by “Air Breathers” results in Imagery (IMINT) reports only. This is based on using a “Non-Real Time” Surface Search Sensor with the collector platform, and the appropriate Directed Search Area (DSA). As part of the Intelligence Collection capability, certain U.S. and foreign national “Air Breathers” can collect Electronic Intelligence (ELINT).

Design Summary

ELINT sensors can now be represented in one of three ways:

1. Theater-Wide collection - the entire game board is covered by ELINT
2. Satellite collection - If the satellite has an ELINT sensor, as it passes over the game board, all electronic emissions actively radiating and covered by the sensor are reported.
3. Air Mission collection - If the air mission has an ELINT sensor, as it passes over the game board, all electronic emissions actively radiating and covered by the sensor are reported.

The resulting TACELINT reports are generated by the JTLS Operational Interface (JOI).

2.3 JTLS-0095 NEGATIVE INTEL REPORTS

Summary of Model Change Request

The present use of the Directed Search Area (DSA) in JTLS only allows an IPIR or RECCEXREP to be generated when there is some entity in the area the DSA covers. If there is nothing in the area of the DSA, no report is received. In the “real world”, the Imagery analyst would include in the Narrative Description Section of the report “Nothing Significant to Report” if the area of collection was empty

Design Summary

A “Nothing Significant to Report” message is now generated.

2.4 JTLS-0108 SUP DDS REPORT

Summary of Model Change Request

Develop a Ship Unit Prototype (SUP) Report similar to the Database Development System (DDS) Tactical Unit Prototype (TUP) Report for printout.

Design Summary

This ECP is not simply about the DDS SUP Report. Within the JTLS Scenario Initialization Program (SIP), several reports have been created over the years. The purpose of this ECP is to move each of the existing reports from the (SIP) environment directly into the DDS. In addition to moving these existing reports to the DDS, a new SUP report was created. This approach has the added benefit of making these reports accessible via the JTLS Web-Services. Any user connected to the DDS via the Web is now able to generate, e-mail, and print the reports.

2.5 JTLS-0216 HRU OVER-WATCH AIRBASE

Summary of Model Change Request

Currently, HRUs can over-watch any unit. However, if they are told to over-watch an airbase unit, they only watch the airbase itself. They do not over-watch the squadrons located at the airbase. To accomplish this you must assign a separate HRU to an over-watch mission for each airbase squadron. This is time consuming, uses more over-watch assets and should not be necessary.

Design Summary

The ECP writeup only discusses the Airbase and Squadron relationship, but there are several other linked relationships for which HRU over-watch was adjusted. The implemented relationships are:

- An HRU over-watching an Airbase also provides over-watch protection to home-based squadrons.
- An HRU over-watching a Unit also provides over-watch protection to owned targets. This rule also means any squadron targets will be protected by an HRU over-watching the squadron's home base.
- An HRU over-watching a Unit also provides over-watch protection for the unit's assets that are in either convoys or air missions that are still in the area of the protected unit. This rule means that alert missions and convoys still loading at their home base are protected by the HRU over-watching the Unit.

2.6 JTLS-0237 ALLOW DATABASE HRU TO START IN COALITION SUPPORT

Summary of Model Change Request

Currently a database developer can create an HRU as part of the initialization database. The HRU can be created from a ship's capability and it will automatically be assumed to be on-board the ship at the beginning of the game. Similarly an HRU can be created from a land-based unit and then "magically placed in a water hex "on top of" a ship. When this creation method is used, the HRU doesn't know whether it should be in the water or on-board the ship at the beginning of the game.

Currently the model indicates that the HRU is in the water and it takes player action to put the HRU on-board the ship, i.e. they must enter a COALITION.SUPPORT task for the HRU. The purpose of this ECP is to include, as part of the initialization database, data parameters indicating whether a land-based HRU placed in a water location should be embarked on-board a ship.

Design Summary

An HRU in the initialization database can be created in one of three ways:

- An HRU can be placed at a specific location - if this option is selected, the HRU will not be in Coalition Support of any unit.
- An HRU is given an initial Coalition Support Unit - if this option is selected, the HRU is automatically placed at the same location of the Coalition Support Unit, and the HRU is automatically placed in Coalition Support. This means that the specific purpose of the ECP is fulfilled by this option.
- If an HRU is not given a location and it is not given an initial Coalition Support Unit, the HRU is assumed to arrive at its parent location. If the parent is a ship or is embarked on a ship, the HRU is placed in Coalition Support. In all other circumstances, the HRU is not automatically placed in Coalition support.

2.7 JTLS-0260 HRU OVER-WATCH CONVOY

Summary of Model Change Request

An HRU over-watch convoy capability is needed especially in humanitarian assistance. The HRU should also be capable of over-watching units that are being moved by rail/truck or barge since this is also a convoy.

Design Summary

HRUs can now over-watch a convoy, whether the convoy is a Truck Convoy, Rail Convoy, or Barge Convoy. The HRU will protect all assets, including units on board the convoy.

2.8 JTLS-0332 REDUCE ORDER PANEL SIZE

Summary of Model Change Request

Increasingly large order panels can prevent Players from easily interacting with the suite of Web Hosted Interface Program (WHIP) components, such as the Map display. Larger orders are also not friendly to small or low-resolution displays. Under such conditions, navigating through a large order can be cumbersome or almost impossible.

Also, the defined fields and groups of an order panel have limited flexibility of presentation. They must always be at the bottom of the order panel.

This ECP corrects these issues.

Design Summary

Order panels are currently organized to always present independent fields at the top with groups following below. These fields and groups are not logically sequenced and related fields and groups cannot be organized or segmented. [Table 2.1](#) describes several new order panel capabilities that are introduced in this new version.

Table 2.1 New Order Capabilities Summary

NEW CAPABILITY	DESCRIPTION
Order-comprehensive tabs	An order is currently defined as a main panel that includes a set of one or more optional tabs. Of all new order capabilities, the organization of related fields and groups within multiple tabs significantly reduces the screen space occupied by large order panels. For example, an order that previously contained 30 fields is now allocated into three tabs each holding ten fields. This reduces the space occupied by the improved order panel to one third the size of the original.

NEW CAPABILITY	DESCRIPTION
Group Within Groups	<p>Groups within orders provide a method to display a set of fields that depends on a user-selected option. Available options are indicated by a series of radio buttons. Selecting a radio button displays the selection's fields and hides the previous selection's fields.</p> <p>In previous versions of JTLS, groups could only display fields. The order panel definition logic was expanded to allow groups within groups. This also contributes to reducing the size of order panels because only the relevant fields for the selected option will be displayed.</p>
Order Field and Group Ordering	<p>All individual fields were previously placed at the top of the order panel and followed by the field groups at the bottom of the panel. This scheme created disorganized order panels that did not reflect a user's logical flow of entering information. This limitation has been removed from order panel design.</p>
Tab Field Filled Indication	<p>By definition, a hidden tab can accept only optional data, but a user must know when a field on such a tab is filled. A visual arrow icon on the tab indicates that the tab contains a filled field.</p>
Group Option Indexing	<p>In previous versions, the model could not determine which group option the user selected. Complex code was required to make this determination based on fields that were filled and fields that were not filled. The Order Management Authority (OMA) also could not easily determine the group option and therefore could not provide proper feedback about errors within an improperly defined order.</p> <p>The order panel definition is modified to automatically send an index with the order that identifies which group option the user selected and filled. This improvement has held code reliability and the feedback provided when an order is not appropriately filled.</p>
Group Bordering	<p>When groups are interspersed with normal fields, a user can easily recognize which fields belong to the group and which fields are independent. A border added to groups enables the user to visually identify the fields that belong to the selected group option.</p>
Three Column Radio Buttons	<p>In previous versions, all radio buttons were displayed in two columns. A group of nine options displays five rows of radio buttons that occupy excessive space. The buttons are now organized in three columns; nine options would require only three rows.</p>

2.9 JTLS-0450 HUP COMPROMISE WHEN REPORTING

Summary of Model Change Request

Two data parameters exist called HUP PROB COMPROMISE URGENT REPORT and HUP PROB COMPROMISE ROUTINE REPORT. These data parameters were not used in the previous version of JTLS. The purpose of this ECP is to make use of these database parameters.

Design Summary

Each time an HRU sends a status report to its parent unit, the model determines if there are any Communication Intelligence (COMINT) sensors covering the HRU's location. Using the normal sensor probability of detection algorithm, a random draw determines if the sensor detected the communication.

If the communication transmission of report is detected, the following occurs:

- An immediate HRU spot location report is sent to the detecting Side.
- If the HRU is covert to the detecting Side, then its remaining detection time is reduced by the appropriate HUP PROB COMPROMISE URGENT REPORT and HUP PROB COMPROMISE ROUTINE REPORT parameter.

2.10 JTLS-0451 HUP MOVING DETECTION MODIFIER

Summary of Model Change Request

A data parameter exists called HUP MOVE DET TIME MULTIPLIER. In previous versions, this data parameter was not used. The purpose of this ECP is to properly use this database parameter.

Design Summary

The methodology used to determine the remaining detection time for a covert HRU was completely re-engineered. The following logic is now used:

- A random time to detection is drawn from an exponential distribution with a mean equal to HUP MEAN TIME TO DETECT. This computed value is known as the HRU's Remaining Detection Time, which is then adjusted based on the HRU's current situation. The HRU holds an independent Remaining Detection Time for each Foreign Side represented in the database. The remaining of this discussion is assuming the computation is being done for a specific side.
- If the HRU has a posture of Moving or Patrolling, the Remaining Detection Time is adjusted by the HUP MOVE DET TIME MULTIPLIER.
- Based on the HRU's Movement Prototype (MP) and the current Terrain Type (TT) in which the HRU is located, the Remaining Detection Time is adjusted by MP TT SOF DETECTION TIME MULT.
- For each unit on the Foreign Side whose radius covers the HRU, the algorithm computes the size of the foreign unit. Based on this size and the Intelligence Information Prototype (IIP) of the foreign unit, the Remaining Detection Time is adjusted by IIP US SOF DETECTION RATE. In addition if the unit is actively searching for HRUs, the Remaining Detection Time is adjusted by IIP ACTIVE SOF SEARCH DETECTION TIME MULT.

- The Remaining Time is then adjusted based on the HRU's current system status. The original HUP MEAN TIME TO DETECT was based on a full capability HRU. As the HRU loses systems or is given fewer systems to begin with the detection should be increased because it is more difficult to locate. The adjustment factor is the ratio of the HRU's current Radius to the HUP's planned radius. The Remaining Detection Time is divided by this value, resulting in the smaller the ratio, the larger the Remaining Detection Time.

2.11 JTLS-0452 HUP WIPED OUT THRESHOLD

Summary of Model Change Request

A data parameter exists called HUP WIPED OUT THRESHHOLD. In previous versions, this data parameter was not used. The purpose of this ECP is to properly use this database parameter.

Design Summary

Currently an HRU must lose all of its personnel before it is wiped out. The decision concerning this ECP was to remove the unused database parameter. Given that High Resolution Units are high visibility units, the Design Team felt removing an HRU before all people were killed was unrealistic.

2.12 JTLS-2006-1658 MODEL TACTICAL TLAM-E

Summary of Model Change Request

The purpose of this ECP is to model the Tomahawk Land-Attack Missile (TLAM-E) capabilities. Although JTLS currently supports some TLAM-E characteristics, the weapon's capability to follow a detailed route to the target area must also be represented.

Design Summary

The advanced capabilities of the TLAM-E Cruise Missile include:

- mid-flight redirection of the missile to a new target area, and
- following a detailed route to the target area.

JTLS currently represents the capability to assign a new target to a Cruise Missile during flight. This design therefore emphasizes implementing the missile's capability to fly a detailed route to the target area. The Fire Missile Order has been expanded to allow the user to provide a detailed flight path route for those missiles that are labeled as TW GPS ROUTE CAPABLE.

2.13 JTLS-2006-1715 HRUS PROVIDE COVERT INFORMATION TO SITREP

Summary of Model Change Request

HRUS should report their covert status in the WHIP Situation Report (SITREP). This information is already available through the IMT screen, but including it with the SITREP can help avoid operator confusion.

Design Summary

The covert status of an HRU is now displayed on the SITREP for an own side HRU.

2.14 JTLS-2006-1744 HRUS PATROL POLYGON / OPAREA / ROUTE

Summary of Model Change Request

Currently when an HRU is told to patrol along a route, it travel the route and stops at the end of the route. This is contrary to the manner in which air missions patrol routes. They travel the route, back and forth for the patrol period. The purpose of this ECP is to provide HRUs the same patrol options offered to Air Missions.

Design Summary

HRUs can now be told to Patrol a Route, a Polygon, or an existing OPAREA.

2.15 JTLS-2006-1747 BDA BOXES REPORT HRU CASUALTIES

Summary of Model Change Request

It is possible to create Battle Damage Assessment Boxes within JTLS. All damage that occurs within the box is accumulated and reported each Periodic Report event. The damage caused to HRUs and by HRUs is not being accumulated or reported in the BDA Box Reports. The purpose of this ECP is to correct this problem.

Design Summary

All HRU damage and all HRU inflicted damage is now reported in the BDA Assessment Box Reports.

2.16 JTLS-2006-1826 HRUS ATTACK SUPPLY CONVOYS

Summary of Model Change Request

HRUs can attack units and targets, but they have no ability to attack convoys. The purpose of this ECP is to given HRUs the ability to attack convoys.

Design Summary

Convoys are not detectable perceived objects within JTLS. Making them such is beyond the scope of this ECP. Still, the ability to attack convoys is being given to HRU with a Ambush posture. If the HRU is given the proper search parameters for trucks, rail or barge, and such convoy passes with their range, an HRU with an Ambush mission attacks the Supply Convoy.

2.17 JTLS-2006-1828 CONSISTENCY OF EFFECTIVE TIME FOR HRUS

Summary of Model Change Request

Order execution information required as user input for many of the JTLS High Resolution Unit (HRU) orders is inconsistent. Some orders execute immediately, others require users to enter an order Start Time, and others require users to enter the time at which the task associated with the order must start.

This ECP enforces consistent user input among the HRU orders. Users are allowed to enter the order Start Time or the order Task Time, which would occur after the Unit moves into position to perform the task.

Design Summary

This ECP combines many of the HRU orders into one order. Since all HRU tasks are defined in a single order panel, the Execution Time of each task is consistent. Reducing the number of HRU task orders is feasible because the new order panel design [JTLS-0332 REDUCE ORDER PANEL SIZE](#) allows order groups within groups. Like the naval Execution Plan concept, HRUs now hold an Execution Plan of future HRU tasks.

[Table 2.1](#) summarizes orders that can be currently issued to HRUs and briefly describes how this ECP addresses each order.

Table 2.1 Current HRU Orders Summary

HRU ORDER	EXPLANATION
CF Cancel Fire	This order remains in JTLS, but HRUs will not use this order to cancel an existing Fire task. A new Cancel HRU Task order was created to manage the canceling of all scheduled tasks, including Fire Missile.
CLS Change Launcher Status	This order remains in JTLS, but HRUs do not use this order to change launcher status. HRUs use the inclusive HRU Task Order to schedule when the launcher status should be changed.
CPO Cancel Pending Orders	This order remains in JTLS, but HRUs do not use this order to cancel an existing Fire task. The new Cancel HRU Task order is used to manage the canceling of all scheduled tasks, including Fire Missile.

Table 2.1 Current HRU Orders Summary (Continued)

HRU ORDER	EXPLANATION
FM Fire Missile	This order remains in JTLS, but HRUs do not use this order to Fire Missile. HRUs use the inclusive HRU Task order to schedule when the launcher status should be changed.
HMOV HRU Move	This order was removed from the system. All HRU moves are tasked using the expanded HRU Task order.
HOVW HRU Overwatch	This order was removed from the system. The HRU Overwatch is tasked using the expanded HRU Task Order.
HPAT HRU Patrol	This order was removed from the system. The HRU Patrol is tasked using the expanded HRU Task order.
HRD HRU Raid	This order was removed from the system. The HRU Raid is tasked using the expanded HRU Task order.
HSAM HRU Set Ambush	This order was removed from the system. The HRU Ambush is tasked using the expanded HRU Task order.
HTSK HRU Task	This order was expanded to include all HRU tasks. The current tasks currently covered by this order include: Defend, Withdraw, Coalition Support, Civil Military Operations, Traffic Control, Terminate Overwatch, and Rejoin Parent. Terminate Overwatch was removed from the order and placed under the new Cancel HRU Task order. The Withdraw task is no longer supported. An HRU will withdraw automatically. Otherwise, a Move task should be used.
MM Magic Move	No changes were made to this order, but new rules affecting an HRU's Execution Plan were implemented. As with Naval Execution Plans, a Magic Move results in the cancellation of an HRU Execution Plan.
ROE Rules Of Engagement	No changes were made to this order.
SHRUP Set HRU Parameter	No changes will be made to this order.
TUNSHE Tunnel Sheltering	ECP JTLS-2009-10280 REPRESENTATION OF PERSONNEL BUNKERS adds this new order to JTLS. This order did not become an HRU task, but is only accepted by an HRU that is in the Defend posture. The tunnel occupation is automatically and immediately canceled when the HRU begins an active task.

Table 2.1 Current HRU Orders Summary (Continued)

HRU ORDER	EXPLANATION
IEL Insert Extract List	These Utility Directives are used when orders to an Insert/Extract Air Mission are issued or changed. Insert/Extract missions are not affected by this ECP.
IECL Insert Extract Change List	
HRML HRU Movement List	This Utility Directive is used to assign HRUs to be transported by a type of movement asset, such as rail or trucks. The Utility Directive, or the manner in which a user indicates that an HRU should be moved via a ground transportation asset, was not changed. An HRU's Execution Plan is automatically canceled when the user picks up the HRU via any type of transportation asset.

2.18 JTLS-2006-1845 DEFINE HRUS NOT CONSTRAINED BY HUP

Summary of Model Change Request

While creating High Resolution Units (HRUs), previous versions of JTLS were constrained by the High Resolution Prototypes (HUPs) that existed in the database. To create a tailored HRU based on the requirements of the training audience or response cell, the purpose of this ECP is to implement the following specific options:

- Allow users to specify an HRU's Combat Systems and supplies.
- Allow an HRU to be created, even if its complete Table of Organization and Equipment (TO&E) is not available.

Design Summary

The user can now specify the HUP for which the HRU should be created, but the creation allows the user to alter the desired systems. There are some limitations to this capability.

- An HRU can be given only the combat systems listed in a specific HUP.
- An HRU can not be given additional systems than the number specified in the HUP.
- The same two rules apply to supplies.
- The order allows the user to indicate the number of mandatory assets and the number of desired assets.

In addition, the creation order now allows a user to ask which HUPs are legal templates if an HRU is to be given the listed systems and supplies. This makes the job of locating an applicable HUP much easier.

2.19 JTLS-2007-1975 ALLOW USERS TO ENTER ALL ATO DATA FIELDS

Summary of Model Change Request

Every JTLS Air Mission order may contain a set of “silent” fields. These legal fields do not appear on any order panel. Mission Call Sign is an example of a silent field. External programs, such as the ATO Translator, can pass a Call Sign to the model, but users could enter this information from an order panel in previous versions of JTLS. Silent fields were established because model management believed that typical JTLS users would seldom manually enter the information. Also, these displaying these seldom-used fields expanded the order panels to occupy excessive screen area.

This ECP requests that all silent fields be available on order panels. This request became feasible because the simultaneous implementation of ECP [JTLS-0332 REDUCE ORDER PANEL SIZE](#).

Design Summary

All ATO fields are now located on an optional tab for each Air Mission Order. The ECP is not limited to the silent fields associated with Air orders and included a thorough review of all orders containing silent fields. Most existing silent fields were removed from the silent field category to become optional fields under non-primary order tabs.

2.20 JTLS-2007-2262 DAMAGE REPORT IMPROVEMENTS

Summary of Model Change Request

There are several specific improvements desired for damage reports. These are:

1. Supply Storage Areas do not get damaged, only the supplies in the storage areas are damaged. The reports keep saying no damage when in fact there is damage to the supplies.
2. When a dead target is hit, the damage report says no damage. Technically this is true, but it is confusing to the player.
3. If you drop on a target that has moved, you get information about what was hit but absolutely no mention that the target was not seen in the area and there is no damage to report.
4. Damage is calculated and reported for each weapon. The desire is to continue to calculate the damage for each weapon, but like damage from two or more weapons should be accumulated and reported as a total. Thus damaging POL from weapon 1 should be added to the damage to POL from weapon 2, 3, and 4.

Design Summary

Each of the requirements described in the ECP were implemented.

2.21 JTLS-2008-10001 PASS TACELINT TO REAL WORLD SYSTEMS

Summary of Model Change Request

Tactical Electronic Intelligence (TACELINT) messages generated by JTLS must have the required information and proper format so they can be passed directly to real-world C4I systems.

Required information in a well-formed TACELINT message includes ELINT notation (ELNOT), emitter frequency, and emitter pulse repetition. This information was neither available to nor represented by JTLS. Also, a real-world TACELINT feed for external C4I systems requires a continuous stream of tactically dynamic message content. The volume of this continuous stream will create processing overhead that would impact overall JTLS performance.

The purpose of this ECP is to implement a preferred option for creating and passing ELINT data to external C4I systems.

Design Summary

The JTLS Operational Interface was expanded to generate a TACELINT message stream for all active sensors that have an ELINT Notation (ELNOT) code. The database was also changed to include two important TACELINT data fields, Pulse Rate and Frequency. If any one of the TACELINT database parameters are specified for a specific sensor, then all three of the fields must be filled.

This continuous stream is generated by the JTLS Operational Interface (JOI). There are three ELINT collection capabilities now represented in the model:

- National ELINT collection is represented and is available 100% of the time.
- Airborne Reconnaissance and Electronic Combat missions can now carry ELINT sensors.
- Satellite ELINT coverage is also represented.
- Land-based or Sea-based collection capability is also represented.

TACELINT messages from the following emitters can be reported:

- Land-based or Sea-based sensors or jammers
- Airborne sensors or jammers

- Fire Control sensors from Air Defense Sites. To properly represent this capability, the Emission Control Order was expanded to turn on or turn off an Air Defense sensor.

2.22 JTLS-2008-10017 LINK TO MULTIPLE JCATS INSTANCES

Summary of Model Change Request

The previous version of JTLS has successfully linked to several instances of JCATS, but that implementation hard-coded the number of different JCATS instances that were allowed. This ECP uses the experimental results demonstrated with the previous version of JTLS to formalize the procedure that assigns Units to multiple instances of JCATS or other models.

Design Summary

A new Federation Available Models (FAM) table was added to the database. Each JTLS Unit is assigned an attribute that specifies the unit's controlling model from the FAM table list. This new method allows external control of Units to be held by an extensible number of models and instances of those models.

2.23 JTLS-2008-10040 IMPLEMENT ORDER MULTIPLE SEND (MSEND)

Summary of Model Change Request

Orders are customarily submitted from the WHIP for processing one at a time. A user who chooses to submit the same order several times with a field modified on each submission must manually change the field value and resubmit the entire order. The purpose of this ECP is to the efficiency of this process, by build a multiple send (MSEND) capability for selected JTLS orders.

Design Summary

An order that has this new capability has both a SEND button and an MSEND button at the bottom of the order panel.

Selecting the MSEND button open a dialog window that displays two required field parameters: the value by which to modify the predetermined field and the number of successive increments to perform. The dialog window will provide a Done button to complete the MSEND dialog entries. When the order is sent by selecting SEND, the WHIP will generate multiple orders based on the provided input values.

Only one SEND is performed when no MSEND data are provided.

2.24 JTLS-2008-10080 HRUS SHOULD ALWAYS COLLECT INFORMATION

Summary of Model Change Request

HRUs only collect information while they have a mission of Patrol. They should be able to collect information if they are in Defend or even if they are over-watching something. There is nothing that should stop them from doing both missions at once.

Design Summary

All HRUs collect information, no matter what they are doing. They can collect information based on the sensor targets they are given or based on the Visual Sensor for their specific Intelligence Information Prototype (IIP).

2.25 JTLS-2008-10082 CHANGE NAME OF WILD WEASEL TO SEAD

Summary of Model Change Request

JTLS refers to the Suppression of Enemy Air Defense (SEAD) missions using the old Wild Weasel terminology. This is very US centric and calling the missions a SEAD mission is more appropriate.

Design Summary

All external references to the term Wild Weasel have been changed to SEAD. Absolutely no database changes have been made. Thus if a user scenario has an Aircraft Load called WILD.WEASEL.STD, the name of the load has not been changed. These database changes are left to the end user.

2.26 JTLS-2009-10280 REPRESENTATION OF PERSONNEL BUNKERS

Summary of Model Change Request

During a recent exercise, users stated that they could not properly represent personnel bunkers or enclosed buildings. High Resolution Units (HRUs) could not hide in enclosed spaces and thus avoid detection by overhead assets. This capability exists for aircraft and supplies, but not personnel, Targets, or other Combat Systems. Since visual detection assets, such as unmanned Aerial Vehicles (UAVs), are assuming a more important role on today's modern battlefield, the representation of shelters or bunkers to hide and protect the variety of JTLS-represented assets is an equally important capability.

The purpose of this ECP is to implement Personnel Bunkers and also provide the ability to hide in Tunnels.

Design Summary

JTLS currently represents Aircraft Shelter targets, which have an attribute indicating whether it is “closed” or “open”. This characteristic is used to determine whether a visual asset can view the contents placed within the Target. An example of an “open” Aircraft Shelter would be a revetment in which aircraft can be placed in an area that has additional protection from weapon blast damage. Similarly, a hangar is an example of a “closed” Aircraft Shelter.

Aircraft Shelters are assumed to be owned by Airbase or Squadron Aggregate Resolution Units (ARUs). The database indicates the priority of placing aircraft in the hangar and the JTLS Player is not required to manage placing aircraft into each hangar. The model does so algorithmically using the shelter capacity data and the priority given to the types of aircraft associated with the Unit. Airbase-owned shelters can shelter the aircraft of any associated Squadron, while a Squadron-owned shelter can house only the aircraft owned by that Squadron.

The basic premise of this design is to expand the current Aircraft Shelter capability to a more general Equipment Shelter capability, while keeping the automatic placement of assets in the shelters. This is a data intensive ECP. [VERSION 4.1.0.0 STANDARD DATABASE CHANGES](#) summarizes these data.

The following basic rules are used to establish which assets are placed in an Equipment Shelter:

- If the target is owned, then priority is given to the assets of the owning unit.
- If the target is owned by an airbase, the secondary priority is given to home-based squadrons.
- If the target is not owned, then it must be associated with a unit. All units in the area of the Equipment Shelter can use the shelter. Unit priority is based on the distance from the Equipment Shelter target. If a unit radius does not cover the radius of the Equipment Shelter it is not eligible to use the shelter.

The IMT shows how many systems are sheltered. In addition there is a report of what is include in the shelter.

Finally Tunnel Targets can also shelter assets, but this is not accomplished automatically. The user must specify exactly which assets should be placed in the shelter using a new order called TUNNEL SHELTERING. As assets are placed in the tunnel, the trafficability of the tunnel is reduced. The same order is used to tell a unit to vacate the tunnel.

An asset will automatically vacate a tunnel under the following circumstances:

- If it enters into combat
- If it is given an order that requires it to move

- If a unit's SSM is given a launcher setup order.

2.27 JTLS-2009-10271 TURN OFF AIR MISSION SENSORS

Summary of Model Change Request

JTLS needs to be able to simulate the failure of an AWACS mission's ability to detect aircraft. This task could not be accomplished because the mission's sensors are always assumed to be on and operational. The desire is to enable Players to turn airborne sensors on or off.

Design Summary

Using the Emission Control Order, a user can now turn on and off sensor and jammers that exist on an air mission.

2.28 JTLS-2009-10283 ATTACK HRUS

Summary of Model Change Request

The purpose of this ECP is to implement the ability to attack HRUs from air-to-ground missions.

Design Summary

It is now possible to attack HRUs, using artillery, missiles, and air missions.

2.29 JTLS-2009-10393 CONTROLLER KILL/DAMAGE HRU

Summary of Model Change Request

The purpose of this ECP is to allow the Controller to kill or damage an HRU.

Design Summary

The Assess Weapon Damage Event was expanded to allow the Controller to magically fire on an HRU.

2.30 JTLS-2010-10466 EACH SERVICE PRINT OUT TIME

Summary of Model Change Request

Each JTLS service, JXSR, OEC, SYNAPSE, etc, can be monitored from the Web Services Manager. The purpose of this ECP is to define a consistent set of information is required for each of the web services.

Design Summary

Each service now displays the following information on its status page:

- Current game time
- Time of last download
- Time execution started

2.31 JTLS-2010-10703 ALLOW TECHNICAL CONTROL TO STOP WHIPS

Summary of Model Change Request

An exercise Instructor/Controller (IC) may inadvertently log on to an incorrect WHIP and prevent the designated IC from logging on to the same WHIP. Technical Control can track the host IP from which the WHIP started, but if hosts have been relocated, the host IP cannot be easily correlated with a physical location and the designated IC. Distributed games with ICs may not be located at the same premises as Technical Control.

Technical Control typically uses the SYNAPSE to log out the WHIP and the designated IC then restarts the WHIP. Since a WHIP automatically issues a heartbeat to the SYNAPSE that automatically logs the WHIP on, the SYNAPSE must register the restarted WHIP before the previous WHIP session sends its heartbeat and logs on again.

The purpose of this ECP is to make it easier for Technical Control to stop a specific WHIP.

Design Summary

From the Synapse console, the Technical Controller is to issue a shutdown signal to a specified WHIP. A WHIP that receives this signal displays a message that Technical Control has initiated a shutdown and will terminate properly after a countdown interval ends. After the countdown is complete the WHIP stops.

2.32 JTLS-2011-10837 BALLISTIC MISSILE DISPLAY FLEXIBILITY

Summary of Model Change Request

Missiles can be displayed on the WHIP, but there is no ability to display different symbols for Ballistic Missiles and Cruise Missile. It is also not possible to filter on these two types of missiles.

Design Summary

Three new database parameters were added:

- Icon for Cruise Missile - The icon that is used when displaying a Cruise Missile. The icon can be displayed on both the owning side of the fired missile and on those WHIPs that detect the Cruise Missile.

- Icon for Ballistic Missiles - The icon that is used when displaying a Theater Ballistic Missile (TBM). The icon can be displayed on both the owning side of the fired missile and on those WHIPs that detect the TBM.
- Icon for Torpedoes - The icon that is used when displaying a torpedo on a WHIP. No detection capability is provided for torpedoes.

The WHIP also allows the user to filter on these three types of missiles.

2.33 JTLS-2011-10926 SUBMARINE BATTERY TIME REMAINING

Summary of Model Change Request

Joint Theater Level Simulation (JTLS) diesel-electric submarines must periodically snorkel or surface to recharge their batteries. Players may optionally order a submarine to snorkel and recharge at any time. Otherwise, the submarine automatically snorkels to recharge when its battery strength reaches zero. To assist Players to manage the recharging regimen, the model generates a warning message when battery strength is less than a database-defined threshold. The submarine's current battery strength can also be monitored in the Naval Unit Information Management Terminal (IMT) or by requesting a Unit Situation Report (SITREP).

The purpose of this ECP is to display on the IMT the computed depletion time for the submarine battery. This information will provide the user with the information needed to quickly ascertain when the submarine will be forced to snorkel.

Design Summary

The Naval Unit IMT now displays the battery depletion time for a submarine.

2.34 JTLS-2011-10928 FIX REAL WORLD MESSAGE FORMATS

Summary of Model Change Request

The Uniform Standard Message Text Format (USMTF) Initial Imagery Report (IIR) is not realistic enough for the exercise audience. The purpose of this ECP is to work closely with the Intelligence Staff to generate a more realistic IIR message.

Design Summary

The primary basis for this improvement is that the IIR message should include comparative information with the last time that an imagery asset covered an area. This means that the status of the asset needs to be saved so the model can establish differences when the area is subsequently covered. This is accomplished in two ways:

- Basic Encyclopedia (BE) Directed Search Areas (DSA) save the collected information directly on the BE structure since these data objects are seldom deleted from the model.

- Non-BE DSA save the collected information directly on the DSA structure. Depending on how the user enters the original DSA order, these structure may be deleted every 24 hours, meaning that comparative information will not be possible from one day to the next. If the DSA is not removed from the game, then long term comparative information can be reported.

2.35 JTLS-2011-10949 ADD SENSORS TO MISSION

Summary of Model Change Request

A mission can be directed to load special weapons, but no capability exists to order a mission to load a special sensor. The sensor configuration is automatically selected by the load assigned to the mission.

Design Summary

A mission can now to directed to load special sensor, as part of the original air mission order.

2.36 JTLS-2011-10956 CANNOT RESCUE ENEMY LIFEBOATS

Summary of Model Change Request

When a ship suffers more than a database determined number of holes in its hull, it assumes an INCAPABLE posture. It will eventually sink (leave the game) unless one or more of these hull breaches are repaired before the randomly scheduled sinking time. The time it takes to sink may be several hours.

While the ship is in the process of sinking, the model automatically schedules lifeboat deployments, assuming the ship has lifeboats on board. The algorithms attempt to get the last of the people off of the ship just before it actually sinks. The ABANDON SHIP order allows Players the option of over-riding the automatic process and directing that lifeboat deployment start at a specific time.

The Lifeboats that are created are actually HRUs. The parent unit of each of them is initially the sinking ship. After the ship sinks, the parent unit changes automatically to the next higher headquarters of the now lost ship. These HRUs belong to the Force Side of the ship, and therefore inherit the Force Side Relationship data of that side.

There are currently only two ways for Players to rescue Lifeboats: by air using the INSERT EXTRACT order, and by sea using the COALITION SUPPORT order. The Insert Extract orders are sent to the rescue Squadrons while Coalition Support orders must be sent to the Lifeboat HRUs themselves.

The problem with the Insert Extract order is that it does not allow pickup of an HRU from a SUSPECT or an ENEMY side. The problem with the Coalition Support order is that an HRU cannot

be ordered to link to an ENEMY side unit. Therefore, neither order can be used to rescue Enemy side lifeboats, or for that matter Downed Air Crews.

This ECP provides for functional improvements that will solve both problems: Enemy lifeboat rescue by Air and rescue by Sea.

Design Summary

Special logic was added to allow Lifeboat HRUs to go into Coalition Support of any unit. This means that the order panel had to allow the display of all units, not just Friendly or Neutral Units on the Coalition Support Task. The model will reject the order, if a user tells a non-Lifeboat HRU to go into Coalition Support with an Enemy Unit. Once on-board the enemy HRU is removed from the game.

Similarly, an Insert/Extract Air Mission can now go and pickup an Enemy Lifeboat. Again this means that the model will display the names of all known HRUs and will not limit the select list based on Relationship. The HRU will be removed from the game, when the mission completes.

2.37 JTLS-2012-11204 UNUSED LEAFLET PACKET WEIGHT PARAMETER

Summary of Model Change Request

Joint Theater Level Simulation (JTLS) Players may engage in psychological warfare by ordering Air Missions or artillery to deliver propaganda leaflets to units. Targetable Weapons (TWs) carry the leaflets dropped from Air Missions or fired from artillery. The JTLS Combat Events Program (CEP) uses the number of sub-munitions (TW NUMBER MUNITIONS) and the leaflet packet count (LEAFLETS PER PACKET) to calculate the total quantity of leaflets delivered to the targeted unit. The existing WEIGHT OF LEAFLET PACKET database parameter that represents the weight of each leaflet packet is not a factor in this calculation, but the weight of the TW is subtracted from the CATEGORY LEAFLET Supply Category. This design enhances this methodology to include the weight of each leaflet packet in the delivery calculation and use the existing database parameter to yield more consistent and realistic results.

Design Summary

The previous CEP leaflet delivery calculation considers the quantity of TWs delivered, the number of leaflet-carrying sub-munitions within each TW and the quantity of leaflets in each leaflet packet. The current calculation assumes a one-to-one correspondence between a submunition and a leaflet packet. This assumption can cause inconsistent results and interfere with tracking the leaflets as a Supply Category. [Table 2.2](#) presents an example that compares the number of

leaflets delivered for three different weapons. The inconsistency between the weight of the Targetable Weapon and the number of leaflets delivered is readily apparent.

Table 2.2 Leaflet Calculation Inconsistencies

TW NAME	TW WEIGHT	TW NUMBER MUNITIONS	LEAFLETS PER PACKET	NUMBER LEAFLETS DELIVERED
ALPHA	5 LBS	1	1000	1000
BRAVO	50 LBS	2	1000	2000
CHARLIE	500 LBS	1	1000	1000

This example shows that if one ALPHA weapon is fired, 5 LBS are removed from the firing unit's CATEGORY LEAFLET and 1000 leaflets are dropped on the enemy. If one CHARLIE weapon is fired, 500 LBS are removed from the firing unit's CATEGORY LEAFLET, but only 1000 leaflets are dropped on the enemy. Similarly, if one BRAVO weapon is fired, 50 LBS are removed from the firing unit's CATEGORY LEAFLET, but 2000 leaflets are delivered. Tracking of leaflets published and moved into the theater is lost because a common unit of measure is not used.

The weight of one leaflet packet is available as a global parameter in the JTLS database, but is not used in the model. The new algorithm determines the number of leaflet packets delivered by taking the weight of the TW and dividing by the existing database parameter WEIGHT OF LEAFLET PACKET. The following equation is now used to determine the number of leaflets dropped by a Leaflet TW:

$$\text{Number}_{\text{Leaflets}} = (\text{TW}_{\text{Weight}} / \text{WEIGHT OF LEAFLET PACKET}) \times \text{LEAFLETS PER PACKET}$$

This means that the existing number of sub-munitions parameter is not accessed for leaflet weapons. A new SVP Warning, Number 1352, was added if a Leaflet Weapon has a sub-munition count greater than 1.

2.38 JTLS-2012-11205 WEB SERVICES MANAGER DIACAP REQUIREMENT

Summary of Model Change Request

The Department of Defense (DoD) Information Assurance Certification and Accreditation Process (DIACAP) mandates the application of risk management on information systems. This requires secure information exchange among JTLS software components. Currently, from the JTLS Web Services Manager, the console capability is an option employed by the user to communicate with each JTLS web service component based on a raw ASCII telnet session running on a command-line, Operating System (OS) terminal interface. The Telnet program uses a similarly named network protocol that provides a bi-directional interactive communications facility. User data is transferred over the Transmission Control Protocol / Internet Protocol (TCP/IP) as 8-bit byte plain

text. Because TCP/IP traffic can easily be read, plain text transferred with raw Telnet technology is not secure and thus not in compliance with DIACAP.

The purpose of this ECP is to alter the console capability of the Web Services Manager so it will use a DIACAP approved, encrypted transmission of the needed data and without using the system provided Telnet program.

Design Summary

To ensure that each JTLS software component satisfies the DIACAP secure requirements, three options are thoroughly analyzed. The design team concluded that utilizing the well-established TCP/IP socket connection over Secure Shell (SSH) Tunnel together within current JTLS architecture is the most feasible solution.

SSH is a DIACAP approved secure shell protocol supporting high bits (32, 64 and 128) cryptographic algorithms for the protection of confidentiality, integrity, or availability of classified information. SSH uses TCP/IP as its transport mechanism. It encrypts and decrypts the traffic passing between two ends of a connection. Even insecure protocols like Telnet and others running over TCP can be made secure by forwarding the connections through SSH. This capability, called port forwarding is largely transparent to the user and proven for data integrity. Port forwarding is also known as tunneling because the SSH connection provides a secure “tunnel” through which another TCP/IP connection may pass.

The Web Services Manager (WSM) can monitor executing Web Services for a game using the ports for which the services are configured by the Interface Configuration Program (ICP). Secure Socket Layer (SSL) enhancements implemented for JTLS 4.1 limit the WSM to controlling one Web Service for each SSH Forward Port. A process using the SSL feature cannot connect to multiple remote processes through the same port; each process must be connected through a separate port. Configuring more than one service to use the same SSH Forward Port would create conflicts.

The SSL limitation of the WSM requires attention only for controlling more than one executing game on a single server; for example, using one Linux server to run two or more separate WSM GUIs for different games. Technical Coordinators must configure the services of each game to use unique SSH Forward Ports. If each WSM is executed on a separate server, conflicts are avoided, but no safeguard exists to prevent executing them on the same server. The ports should be configured differently during the initial ICP configuration.

Although the ICP allows manual editing of the SSH Forward Port field, using the Set SSH Forward Ports menu option (Figure 2.1) for the entire scenario is recommended.



Figure 2.1 ICP Set SSH Forward Ports Menu Option

This option will ensure that all Forwarding Ports are properly de-conflicted for a scenario. The user must also ensure the selected port range is different for each scenario (Figure 2.2).



Figure 2.2 ICP SSH Forward Ports Configuration Window

2.39 JTLS-2012-11239 IMT FROZEN PANEL SECTIONS

Summary of Model Change Request

Information Management Tool (IMT) windows are used to display data in a tabular format. When an IMT displays many data columns that exceed the screen width, users must scroll horizontally to view data displayed in all columns. The leftmost column that displays the row labels, such as Unit Names or Target Names, must be displayed constantly to remain visible while the remaining data columns are viewed by scrolling. This design uses the concept of "frozen" columns to implement this capability.

Design Summary

The identifying column or columns for each IMT screen have been frozen. This is normally the name column, but for screens such as the ROE screen, this is two columns, the Side and ROE Type column are frozen.

The ECP was expanded to include the IMT-like screens used by the DDS. These screens also use the developed frozen column technology.

2.40 JTLS-2012-11305 IMPROVE NAVAL DETECTION REPRESENTATION

Summary of Model Change Request

When a sensor of any type detects an opposing force naval Unit, the model currently will inform the user about the Unit name after the sensor's specified fusion time. This behavior is unrealistic, especially if the sensor is a radar sensor. The only information a radar can provide is the location of the ship. Imagery sensors should be required to properly identify the ship.

The purpose of the submitted ECP was to improve the JTLS representation of naval detections, but the implemented ECP applies the new detection rules and object naming rules to all units and targets.

Design Summary

The essence of this ECP is to model these detection phases and modify the name used to identify the object as the detection enters a new phase:

- Localization or initial detection - This is the information phase each sensor is capable of accomplishing.
- Classification - A sensor can provide Classification information if the new attribute ST CLASSIFICATION CAPABLE is set to "YES". A sensor with this capability will immediately provide the user with Classification information for each newly detected object.
- Recognition - A sensor can provide Recognition information if the sensor gets close enough to the object. The database defines the meaning of "close enough" using two new database parameters: ST RECOGNITION RANGE and ST RECOGNITION ALTITUDE. If the sensor gets within the range and altitude restrictions, the Recognition information is reported on the object.
- Identification - A sensor can provide Identification information if the sensor gets close enough to the object. The database defines the meaning of "close enough" using two new database parameters: ST IDENTIFICATION RANGE and ST IDENTIFICATION ALTITUDE. If the sensor gets within the range and altitude restrictions, the Identification information is reported on the object.

Table 2.3 describes the information provided during each of the detection phases.

Table 2.3

DETECTION PHASE	OBJECT TYPE			
	LAND UNIT	NAVAL UNIT	HRU	TARGET
Localization	US LOCALIZATION NAME - New Unit Size attribute.	SUP DISPLACEMENT - new Ship Unit Prototype attribute.	Radius of the HRU based on the systems it currently has and the HUP RADIUS database parameter.	Radius of the target based on its category and sub-category. The category is known, but not the sub-category.
Classification	The Graphics Symbol Organization type of the Unit's TUP GRAPHICS SYMBOL.	Unit's SHIP BASIC TYPE	The Graphics Symbol Organization type of the Unit's HUP GRAPHICS SYMBOL.	The Category name is used to identify the target. The sub-category is still not known.
Recognition	TUP RECOGNITION NAME - new Tactical Unit Prototype attribute. In addition, the echelon of the unit become known information.	SUP SHIP CLASS NAME	First 12 characters of the HUP NNAME	The specific sub-category becomes known, and the target's name includes this information.
Identification	UT SHORT NAME	UT SHORT NAME	HRU.NAME	TG CCF NUMBER

2.41 JTLS-2012-11377 LINK 16 SURFACE TRACKS

Summary of Model Change Request

The purpose of this ECP is to feed Link-16 Surface tracks to C4I devices.

Design Summary

Two Link-16 messages were added to the JOI capability. These messages are:

- Surface (PPLI), J2.3 - This message is sent out for Link-16 capable naval units and the following data are included in the message; speed, course, location, platform, mode2, etc.
- Surface Track, J3.3 - This message is sent out for detections made by Link-16 capable Naval Units or Aircraft that detect a surface ship.

2.42 JTLS-2012-11378 SUPPORT JAVA 7

Summary of Model Change Request

A major new version of Java, called Java 7, has been release by Oracle Corporation. Quick tests of the new Java 7 package uncovered issues with the Slide Creator tool within the WHIP. The purpose of this ECP is to correct all Java program issues uncovered when using Java 7.

Design Summary

Java 7 Update 25 is delivered as part of JTLS 4.1. Users need to use this version for optimal results. Java 6 is no longer supported.

2.43 JTLS-2012-11379 WHIP SUPPORT NEW OPENMAP VERSION

Summary of Model Change Request

The implementation of ECP [JTLS-2012-11378 SUPPORT JAVA 7](#) required that the new version of OpenMap be used. The purpose of this ECP was to replace all OpenMap support with the most current version of OpenMap.

Design Summary

The primary improvement user will see with the new OpenMap version, is that the new WHIP supports the map panning capability. A user can "slide" the map to the desired location.

2.44 JTLS-2012-11380 SUPPORT LINUX 6

Summary of Model Change Request

RedHat Linux 6 has been approved for use by the United States Defense Information Systems Agency (DISA). The purpose of this ECP was to alter JTLS to work on Linux 6.

Design Summary

JTLS 4.1 is approved for use with either RedHat 5 or RedHat 6.

2.45 JTLS-2012-11381 AUTOMATICALLY CORRECT SVP ERRORS/WARNINGS

Summary of Model Change Request

In previous versions of JTLS, the running of the Scenario Verification Program (SVP) was an independent process. The user would build a database using the Database Scenario Program (DDS), download the database, run the SVP, review the Errors and Warnings, and then manually go back to the DDS to correct the issues.

The purpose of this ECP is to make this process more efficient.

Design Summary

The original capability is still available, but an additional procedure has been implemented. Although not all Errors and Warnings can use the new procedure, the plan is to continue with the improvement even after the initial JTLS 4.1 delivery.

The new procedure steps are as follows:

- From the DDS, the user can execute the SVP Tool. This automatically downloads the database, runs the SVP, generates the Error and Warning List and loads that list into the DDS SVP Tool.
- Once the current Error and Warning list is loaded into the SVP Tool, the user can access each Error or Warning. The SVP Tool provides the user with one or more options to correct the problem.
- The available options are: Correct a specific piece of data, bring up a specific table and record, or find the object on the map. Depending on the selected option, the user can correct the issue manually or use the automatic correction option.

2.46 JTLS-2012-11382 SATELLITE SERVICE

Summary of Model Change Request

JTLS does currently not specifically represent satellites as collection assets. The model can create National Asset Pass events that specify a single collection point, the sensor associated with the collection asset and the time the asset is located at the collection point. This methodology causes several issues. The primary issue involves the coverage area for the pass of the overhead sensor.

JTLS models the collection from a single point. Therefore, data entered into the model from the collection range of the sensor results in a much larger collection area than is realistic, but is

more likely to include the real-world area of coverage for the overhead asset. [Figure 2.3](#) depicts this concept.

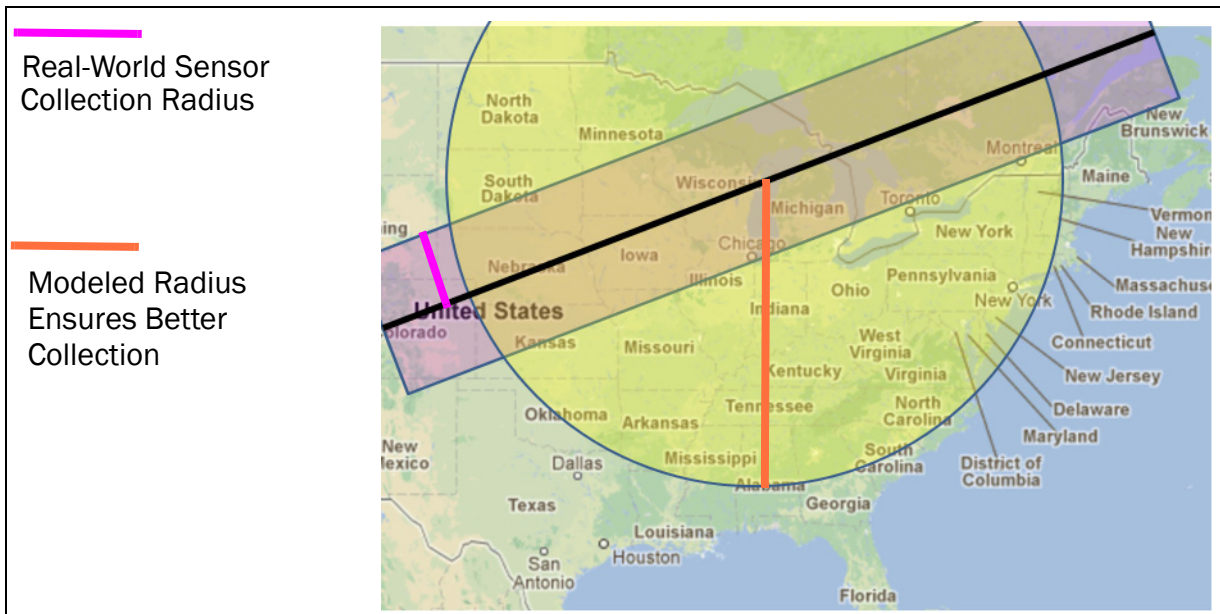


Figure 2.3 National Asset Pass Collection Area Issue

A related minor issue must also be corrected. The model uses data that indicate the number of Directed Search Areas (DSAs) that can be collected per pass. These data are meaningless because each pass is different. Some passes over the theater represent a short period of time, while others involve longer periods of time ([Figure 2.4](#)).

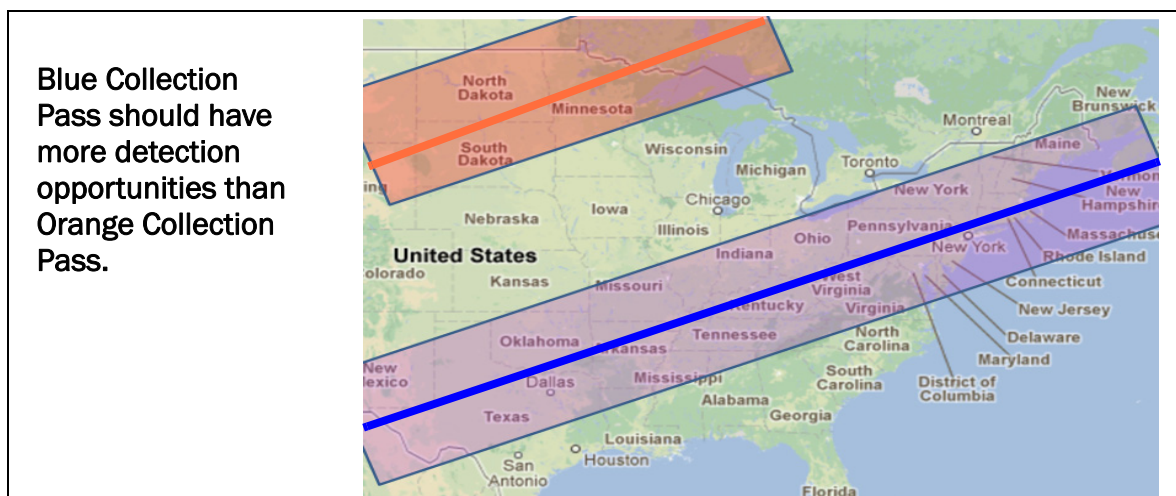


Figure 2.4 National Asset Pass Coverage Time Issue

Design Summary

The algorithms that define the orbit mechanics of any earth satellite are unclassified and well-documented. Military national collection assets and the parameters that define their orbit profile are highly classified, but the algorithms are unclassified and openly available. Such unclassified algorithms were included with JTLS to support improved representation of these national collection assets.

A new program, called JTLS Satellite Program (JSAT), can be accessed from the Scenario and Execution Tools menu. The input data to the program is a well-documented Two Line Data Entry (TLDE) description of a satellite. Once this satellite data is obtained, the user selects a scenario and a time period for which satellite coverage is desired. The program executes and outputs the resulting coverage in one of two ways.

- Create a database file for National Asset Passes. The file can then be loaded into an existing database.
- Create a Read Order file for National Asset Passes, which can be entered into a executing game.

2.47 JTLS-2012-11383 XMS MULTI-THREADING

Summary of Model Change Request

During several recent exercises, the XML Message Service (XMS) lagged the 1:1 speed of the Combat Events Program while processing messages. XMS delays between 20 and 90 minutes during Periodic Reports processing were observed. An initial evaluation of the XMS code suggested that the XMS I/O through the Apache Server was congested. A proposed separate thread to handle the returned communication to the client after the XMS processes a client request would allow the main thread to handle the next client request and utilize available CPU resources while I/O processes occurred simultaneously.

A more recent analysis conducted when the XMS exhibited this issue indicated that the core problem was not I/O congestion, but was attributed to the storing and saving of keywords by the XMS. Multi-threading the XMS would increase its processing speed, but would not resolve the message processing delay issue or efficiently use development resources. Therefore, the intent of this ECP to accelerate the processing of client requests and handling of messages from the CEP will be achieved instead by removing the XMS saved keyword capability.

Design Summary

When the XMS receives a new message notification from the CEP, the service opens the specified message to extract and store information about the message. The majority of this information is saved as metadata that appear at the heading of each message and include the

message type (for example, Logistics Report or Order Acknowledgment), intended recipients, message ID, and involved Unit, if any.

The XMS also obtains the message generation time from the first data tag, in compliance with JTLS programming standards. The XMS then checks the remaining tokens within the first and all subsequent data tags to determine whether the tokens represent numeric integers. If the data tokens are not numeric, the XMS regards them as keywords and determines whether the keyword has previously been filed within its known set of keywords, and adds an unknown keyword to the list, assigning it a sequential index. This requires the XMS to completely parse and scan all messages and check each data token in those messages to determine whether the token must be saved as a keyword. For messages like Periodic Reports, which can contain the names of all Units and Targets in the scenario, hundreds of thousands of keywords may be checked and filed if they are not previously filed.

This processing enables the client to request all messages containing a specified keyword from the XMS. Receiving such a request, the XMS uses its list of all keywords to map the specified keyword to an index, then checks all messages to determine whether they contain the indexed keyword. However, no other clients, including WHIPS, utilize this XMS capability. Therefore, saving keywords wastes processing resources.

This modified design restricts the XMS to gathering only metadata information and the message generation time (the first data token) from the message. Now the XMS completes processing the message after this information is collected and no longer continues to process the other data tokens as keywords. However, some keywords will exist because all Unit names are collected and filed as keywords when the XMS receives a download from the JODA. These Unit Name keywords continue to be collected and filed because they are used as part of the XMS capability to retrieve messages by Unit hierarchy.

2.48 JTLS-2012-11384 DIRECT LINK TO MUSE

Summary of Model Change Request

This ECP enables the Multi-User Simulation Environment (MUSE) to generate an Unmanned Aerial Vehicle (UAV) display of the JTLS theater for exercises and training.

Design Summary

JTLS has an extended history of attempts to formalize a link to a UAV simulator. The inability to produce a simulated UAV video feed for today's military environment, in which the use of drones or UAVs is increasingly important, has proven detrimental to the continued use of JTLS to support real-world training events. Previous attempts to formalize this capability are summarized in [Table 2.4](#).

Table 2.4 Previously Attempted Links To MUSE

ATTEMPT DESCRIPTION	WHAT WENT WRONG
Distributed Interactive Simulation (DIS) Link	This project never proceeded beyond initial testing. A typical JTLS database has more than 3.5 million entities and DIS required a heartbeat every 3 to 5 seconds. A JTLS heartbeat would saturate the network and all models would come to a standstill.
Direct Link Using Aggregate JTLS Object Distribution Authority (JODA). This link was very successful and JTLS showed naval damage in greater detail than any other model that also linked to MUSE.	MUSE accepted the aggregate information, which included a unit center of mass location and the numbers and types of Combat systems. MUSE then created a template and placed the unit's Combat Systems in a reasonable location around the aggregate unit's center of mass. The issue with this implementation was that other entity level models also used the JTLS aggregate information and their customary template structure logic to determine where the entities were located. The result was an inconsistency between what the UAV showed and what an external intelligence model showed.
HLA Link Using the JMRM Federation FOM	This federation FOM used HLA time management strategies that did not require a heartbeat. The federation was well-received and used, but funding ended prior to enabling MUSE to link using the federation's unique FOM.
HLA Link Using the JLVC Federation RPR 2.0-based FOM	This federation used HLA in a connectionless mode that required a mandatory heartbeat. Although attempts to execute with MUSE entered initial testing, the heartbeat issue posed a problem again and project alternatives were considered.
HLA Link Using the North Atlantic Treaty Organization (NATO) Training Federation FOM	This FOM was very similar to the JLVC FOM, but was executed in a connected mode. The NTF planned and JTLS successfully demonstrated a link to Virtual Battle Space 2 (VBS2). The issue is that the U.S. Government has no plans to use VBS2 and MUSE has no plans to join the NTF Federation.
Direct Link to MUSE - This is the capability delivered with JTLS 4.1.	When the JLVC Federation issues became evident, the MUSE and ROLANDS & ASSOCIATES Corporation (R&A) development teams determined that the best solution would re-implement the direct link from JTLS to MUSE. The JTLS Entity Level Server (ELS) resolved the primary issue, discovered many years ago, that involved the MUSE template scheme. This JTLS tool has its own template structure and provides entity level information to models that need entity level detail and propose to integrate with JTLS.

2.49 JTLS-2012-11385 REQUIRE ONLY ONE GLASSFISH SERVER

Summary of Model Change Request

In the current version of JTLS, if a user is working on more than one scenario at a time, a separate machine must be assigned for each scenario to execute Glassfish. The desire is to run several Glassfish instances on a single machine, if the user needs to do so. In addition, some improvements are desired for the Database Development System (DDS) Configuration Program (DCP). The DCP fulfills two functions:

- Allows the user to configure the DDS for a specific scenario by indicating the machine on which the scenario's Glassfish server executes and the names and passwords of the DDS users that are allowed to have access to the scenario.
- Manages the execution of the Glassfish server. From the DCP, a user starts and stops the scenario's Glassfish server. Currently to accomplish this second function, the DCP must be executing on the machine assigned to the Glassfish Server. A user cannot start and stop the Glassfish Server from a different machine. This ECP will also solve this issue,

Design Summary

To solve these problems, JTLS moved to a newer version of Glassfish. Glassfish Version 3.1.2 is delivered as part of JTLS 4.1. Because a new version of Glassfish is being delivered with JTLS, Technical Control will be able to configure Glassfish in any way that they want.

2.50 JTLS-2012-11386 PROVIDE GRAPHICAL INPUT TO DDS

Summary of Model Change Request

The purpose of the ECP is to move the Graphical Database Program (GDP) capability into the Database Development system (DDS).

Design Summary

The old GDP will no longer be supported. There are only a few limitations to the DDS version of the GDP. The user can bring up only one of each of the following components:

- Map,
- Command Hierarchy Tool,
- SITREP Tool, and
- Logistics Hierarchy

The user can still bring up multiple spreadsheet tables for the same data as desired.

2.51 JTLS-2012-11387 COMMAND HEIRARCHY DELETE AND COPY

Summary of Model Change Request

The purpose of this ECP is to allow the DDS User to copy a complete Command Hierarchy or delete a complete Command Hierarchy.

Design Summary

Both copy and delete of a command hierarchy can be initiated from the DDS Command Hierarchy Tool.

2.52 JTLS-2012-11412 EXPAND LINK-16 MESSAGES

Summary of Model Change Request

In order to provide the required feed for the Ballistic Missile Defense (BMD) tool called the Link-16 Surface-to-Air Missile Command and Control System (SAMC2) Interoperability Demonstrator known as Link 16 Intelligent Decision Tool (LSID), JTLS must produce several new Link-16 messages. LSID is part of the new version of ICC (2.8.2) and provides the capability to display the missile defense situational awareness picture using Link 16 Data. The following messages must be produced by JTLS:

- J 3.6 Space track Message
- J 3.0 Reference Point
- J 7.0 Track Management (Drop Track)
- J 13.3 Surface (Maritime) Platform and System Status
- J 13.5 Surface (Land) Platform and System Status (only for SSM & SAM Sites)
- J 10.2 Engagement Status

Design Summary

In current JTLS, several Link-16 messages are being generated and provided to the C4I system from the JTLS Operational Interface (JOI) Program. The JOI can provide the following Link-16 messages:

- Air Precision Participant Location and Identification (PPLI), J2.2 - This message is sent out for self-reporting Link-16 capable Air Missions and includes data such as; altitude, speed, course, location, activity, mode1, mode 2 mode 3, call sign, etc.

- Surface (PPLI), J2.3 - This message is sent out for Link-16 capable naval units and the following data are included in the message; speed, course, location, platform, mode2, etc.
- Land Point PPLI, J2.5 - This message is sent out for Link-16 capable ground based units and provides the location, activity, and platform.
- Reference Point, J3.0 - This message is generated upon the detection of a Ballistic Missile (TBM) launch and provides the launch point, impact point, and expected impact ellipse data.
- Emergency Point, J3.1 - This message is sent out to report an emergency situation, such as DOWN AIRCRAFT.
- Air Track, J3.2 - This message is sent out for air tracks that are detected by Link-16 capable assets and provides the following data; relationship, altitude, strength, speed, course, location, mode 1, mode 2, mode 3, mode 4 indicator, etc.
- Surface Track, J3.3 - This message is sent out for surface tracks that are detected by Link-16 capable assets and provides the following data: relationship, altitude, strength, speed, course, location.
- Space Track, J3.6 - This message is sent to report continuous location updates for a Ballistic Missile object.
- Drop Track, J7.0 - This message is sent when an air PPLI or track is dropped.
- Air Platform and Surface, J13.2 - This message is sent out to provide the current status of an air PPLI or track. The message includes the following data; fuel, operational capability, weapon loads, etc.
- J 13.3 - provide the current status information for a surface platform
- J 13.5 - provide the weapon and equipment status information of a land platform
- J 10.2 Engagement Status - provides status of an engagement between the participating tracks

The J13.3 and J13.5 messages work in similar manner as the J13.2 messages which provide additional status/weapon information for the air PPLI/tracks that are currently being reported to the C4I system.

2.53 JTLS-2012-11413 EXPAND SIX PART ICC MISREP

Summary of Model Change Request

JTLS must be able to produce Air Mission Reports (MISREPs) following the new requirements of the Integrated Command and Control (ICC) 2.8.2 system. The format is outlined in the Allied Data Publication Number 3, known as ADATP-3 standard format. The MISREP produced by JTLS needs to be broken into six parts according to the new ICC 2.8.2 data structure.

Design Summary

The ECP does not accurately reflect exactly what is needed by ICC. ICC 2.8.2 provides the user a view to six different portions or pieces of a Mission Report from the user interface. These report pieces appear to the user in ADATP3 standard format, but the ICC underlying database does not hold the text version of the message. Instead the database holds the data needed to generate the appropriately formatted MISREPs. JTLS needs to populate the underlying database, so ICC can generate the appropriately formatted reports.

Table 2.5 summarizes the JTLS data generated to support the ICC requirement.

Figure 2.5 Six-Part Data Information Needed By ICC

PART NUMBER	TYPE OF INFORMATION
1	EWSPT - Electronic Warfare Support Intercept Data.
2	JAM - Report Existence Of Jamming
3	SAFIRE - Report Enemy Surface Air Engagements
4	ENINCEPT - Report Foreign Mission Intercepts
5	ACLOS - Report Aircraft Loss
6	SIGHTING - The design team has been told to ignore this section of the MISREP reporting requirement. There will be no sighting data collected or provided to ICC as a result if this ECP.

2.54 JTLS-2012-11414 UNIT DIFFERENCES REPORT

Summary of Model Change Request

The purpose of this ECP is to create a Unit Differences Report within JTLS to describe Units that have changed positions, posture, or strength during a specified period of time (hours).

Design Summary

This task cannot be assigned to the JTLS After Action Review (AAR) capability because the AAR is currently unable to easily establish the location, posture, and strength of a specific Unit at a

specific time. The AAR can record this information at periodic intervals, but cannot provide the flexibility users have requested.

The North Atlantic Treaty Organization (NATO) sponsored this ECP. JTLS currently supports a NATO Reports order that includes Own Unit Situation Report (SITREP) and Enemy Unit SITREP options. This design added a Unit Differences Report option to the NATO Reports Order.

The operator is able to specify:

- which Units, including or excluding subordinates, are included in the report and
- the duration of interest window (hours) the report will consider.

Units are listed in a table format (Unit Short Name, Unit Long Name, location, new Posture, new Unit Strength. The table is ordered by Command Hierarchy. The report must be a text report available in the Message Browser and the location can be viewed in either Latitude/Longitude format or in Military Grid System format.

2.55 JTLS-2012-11415 JTLS ORDER OF BATTLE EDITOR EXTENDED FILTERING CAPABILITY

Summary of Model Change Request

The JTLS Order of Battle (OB) Editor (JOB) is used to pass a portion of a scenario's Order of Battle to an external organization. Using the JOB the user can make OB changes and send those changes back to the central scenario database. The JINN is used to extract the data that should be included in the OB data file. For large scenarios, the extracted file can be extremely large because all targets are retrieved as part of the extraction process.

The purpose of this ECP is to allow the operator to select exactly which target types should be included in the OB database extraction algorithm since some of the targets in the database might not be needed to be downloaded in the JOB XML files.

Design Summary

The JINN allows the user to select which types of targets should be retrieved and which target types should not be retrieved.

2.56 JTLS-2012-11416 MAKE DSAS VISIBLE ON WHIP

Summary of Model Change Request

The purpose of this ECP is to improve JTLS by making Directed Search Areas (DSAs) visible in the Web-Hosted Interface Program (WHIP).

Design Summary

A DSA is an area on the playing surface or a specific object that has been established by a Player to be used during the gathering of intelligence. In JTLS, there are six types of DSAs which may be created and displayed on the WHIP map. They are:

- a DSA which corresponds to a single location - An "X" is placed at the specified location.
- a circular area - A circle is displayed on the map.
- a corridor rectangularly-shaped region - A rectangle is displayed on the map.
- an area defined by a polygon - A polygon is displayed on the map.
- a DSA corresponding to a specific Target - The target is highlighted.
- a DSA representing a Basic Encyclopedia (BE) Facility - a circle representing the radius of each BE object is displayed on the map.

The filter panel for DSA appears on the main WHIP Panel. The user can decide the type of DSAs that should be displayed based on these two attributes:

- National or Tactical DSA
- DSA Type (point, circle, corridor, polygon, target, or BE)

In addition each order panel field that requires the input of a DSA now has a drop-down menu with the names of the available DSAs.

2.57 JTLS-2012-11430 CREATE IMPORTANT ALERT MESSAGES

Summary of Model Change Request

Among the many messages generated by the model, users cannot easily recognize an urgent and important message, such as a Unit reporting that it has entered combat. The purpose of this ECP is to create an alerting system within the WHIP that enables users to identify important events and related messages.

Design Summary

The following alerts are generated:

- Object Begin Combat
- Object Under Air Attack
- Object Under Artillery Attack

- Object Under SSM Attack
- Object Encounters New Minefield
- Ship Begins Sinking
- Mission Aircraft Lost
- Mission Ignores National Boundaries
- Mission Return To Base For Fuel
- Mission No Route Found
- Mission No Next Intercepting Hex Found

Based on end user design decisions, the special rules have been implemented for Alert Messages:

- Each individual Alert Message Type can be turned on or off from the WHIP Main panel.
- If an Alert Message is turned off, all existing alerts of the specified type are thrown away and cannot be retrieve.
- If the same Alert Message is generated for the same object, the WHIP automatically throws away the alert message and keeps on the current message. For example, the same air mission will not have two “Mission Aircraft Lost” alert messages displayed on the WHIP.

3.0 SOFTWARE TROUBLE REPORTS

Software Trouble Reports (STRs) describe software code errors that have been discovered by JTLS users or developers and have been corrected. No STRs have been identified for this JTLS Major release. Code corrections implemented for the previous JTLS 4.0 series of releases have been tested with the model enhancements delivered with JTLS 4.1.0.0 and are included.

STRs that remain outstanding from previous JTLS versions are listed and described in [Chapter 4.0](#). Errors identified for JTLS 4.1.0.0 and corrected for future Maintenance releases in the JTLS 4.1 series will be documented in this chapter.

4.0 REMAINING ERRORS

Every effort has been made to correct known model errors. All reproducible errors that resulted in CEP catastrophic software failures (crashes) have been corrected. Other corrections were prioritized and completed according to their resource cost-to-benefit relationship.

Correction of the remaining STRs, however, must be postponed to a later version due to time and resource constraints. These problems may be corrected prior to the next release of JTLS. If an immediate need arises for code corrections to remedy any of these outstanding STRs, such as an exercise planned to occur before the next release, contact the JTLS Development Team Leader. Refer to the Abstract of this document for the current address.

Code errors described in this chapter should be noted specifically because they affect the basic functionality of JTLS. Information is provided regarding the extent of the error, as well as suggestions to avoid or minimize the effects of the problem.

4.1 JTLS-0942 Air Transport Cannot Combine Wet And Dry Supplies

When both wet and dry supply categories are included in the same Transport Instructions List for an Air Transport mission, they will not be transported at the same time. The first supply category shipment type will be loaded, but the second will not. If both are included in the same Supply List, the wet category is preferred. The aircraft go through the motions as if loading and delivering the denied category, including MISREP confirmation. No pickup or delivery is made, although an empty storage area may be created. There is no documentation to support this situation, and the user is not notified of the problem.

4.2 JTLS-0956 MPP Messages For Canceled Missions In Error

If an airbase is magic moved with several squadrons on active missions that need to be canceled or with squadrons in the middle of a self lift, the subsequent message generated for the situation has several errors. The changes required are too risky during the exercise. The problem will not cause a crash, but will cause the MPP to incorrectly display the message contents.

4.3 JTLS-0961 Group Ground Move Delayed To Lead Unit

There is a problem when a group ground move is sent. The directive is delayed to the lead unit. When the lead unit learns about the move, it immediately tells the units in the follow-on group. This could lead to directives being received out of order. Assume the user sends a directive at 0100 and the CEP determines the lead unit should receive the message at 0200. The lead unit cannot receive any other directives until after 0200. The CEP ensures that directive receipt is in the same order as the user sent the directives. This is not true for the follow-on units. If the user sent an order at 0115 directly to one of the follow-on units, the follow-on unit could receive the 0115 directive prior to the order sent at 0100. If this error is causing problems for upcoming exercises, the Configuration Manager should be contacted for a code fix to solve this problem.

4.4 JTLS-0968 Inconsistency Between Regular Run And Pusher

There is a major inconsistency between a regular run and a run created using pusher. When an order with ASAP is sent, the READ KEYWORD routine sets the data parameter to TIME.V. When pusher reads in the order, TIME.V is much earlier than it was when the order arrived in the first place. For orbiting missions and alert missions, this alters when they will go off alert by a great deal. This must be fixed and made consistent. It appears that both TIME.V and order receipt time must be saved to the ci1 file to accomplish this task.

4.5 JTLS-0971 Ship Continuous Tracking Not Working

The new unidentified object design indicates that ships which are continuously tracked will not have unidentified objects created. A continuously tracked Naval unit and all of its targets are creating unidentified objects. They should not be doing this.

4.6 JTLS-0973 Periodic Report Air Supplies And Fuel Not Correct

The arrays which hold air supply usage are not being maintained correctly given the new MISSION RESOURCE ALLOCATION event.

4.7 JTLS-0974 Submarine Detection By Ground Sensors

A moving submarine does not get full credit for coverage time by sonars on board other ships or submarines. It gets full coverage time for airborne sensors but not ground based sensors.

4.8 JTLS-0981 Formation With No Posture

The model crashed when a formation reached a Destination Two hex and the formation no longer had a posture. Therefore it did not know what to do. A Destination Two hex indicates that the Formation should conduct its assigned Amphibious Operation, drop off its Sealifted supplies or clear mines from a minefield. The posture of the formation is used to tell the formation which of these three tasks should be accomplished.

When the formation reached its Destination Two hex, the posture of the formation was zero; therefore, the formation did not know which of the three tasks should be accomplished.

4.9 JTLS-1384 Area, Target, And Unit Report Documentation

Some users have indicated that the documentation of Area Report, Unit Report, and Target Report similarities and differences are incomplete or inaccurate. A review of this documentation is needed.

4.10 JTLS-2005-1457 Target Auto Assign Errors In Orbiting OAS

An Orbiting OAS mission was created with Auto Assigned allowed and search target category as SSM. An SSM was magic moved to the area of the orbit. Perception of the SSM was given to the

mission's side using the controller Target Report order. The mission saw the target and immediately attacked it. When the OAS mission returned, the Mission Report said it was assigned to attack target UIO11816U but the target could not be found. It appears that mission was previously holding the target as unidentified and it was not found after it was assigned a specific target number.

4.11 JTLS-2011-10810 SE Linux Causes JSXR Crashes

Frequent and random JSXR Web Service crashes occurred while executing JTLS 3.4.3 in an exercise network configuration supported by a Security Enhanced Linux-enabled platform. The system configuration included 7 JSXRs and 125 WHIPs. Java 1.6.0.16 was used to support workstations. Accumulation of numerous core.jsxr files in the `$/game` directory and `logic_error` files in the `$/debug` directory was observed. Server CPU resources and system memory were adequate and not adversely affected.

This issue did not occur after SELinux was disabled on the system servers. Until this issue is resolved, executing JTLS or its components on SELinux-enabled systems is not authorized.

APPENDIX A. ABBREVIATIONS AND ACRONYMS

Terms are included in this Appendix to define their usage in JTLS design, functionality, and documentation.

AAA	Anti-Aircraft Artillery
AADC	Area Air Defense Commander
AAL	Air-to-Air Lethality
A/C	Aircraft
ACP	Air Control Prototype
ADA	Air Defense Artillery
AEW	Airborne Early Warning
AFB	Air Force Base
AG	Air-Ground (Air-to-Ground)
AI	Air Interdiction
AIM	Air Intercept Missile
AIREF	Air Refueling
AKL	Area Kill Lethality
AMMO	Ammunition
AO	Area of Operations
AOC	Air Operations Center
APC	Armored Personnel Carrier
ARECCE	Armed Reconnaissance
ARTE	Air Route
ARTY	Artillery
ASC	Automatic Supply Calculation
ASCII	American Standard Code for Information Interchange
ASW	Anti-Submarine Warfare
ATC	Aircraft Target Category
ATGM	Anti-Tank Guided Missile
ATK	Attack
ATO	Air Tasking Order
ATORET	Air Tasking Order Retrieve Program
ATOT	Air Tasking Order Translator
AWACS	Airborne Warning And Control System
AZ	Altitude Zone

BADGE	Bilateral Air Defense Ground Environment (used by Japan Defense Agency)
BAI	Battlefield Air Interdiction
BDA	Battle Damage Assessment
BDE	Brigade
BN	Battalion
C3	Command, Control, and Communications
C3I	Command, Control, Communications, and Intelligence
C4I	Command, Control, Communications, Computers, and Intelligence
CA	Civil Affairs
CADRG	Compressed ARC Digitized Raster Graphics
CAP	Combat Air Patrol
CAS	Close Air Support
CAT	Category
CCF	Central Control Facility
CCP	Command Control Prototype
CCU	Controller Change Unit
CEP	Combat Events Program
CMDR	Commander
COP	Common Operational Picture
CP	Combat Power
CS	Combat System
CSP	Combat System Prototype
CTAPS	Contingency Tactical Air Planning System
CTG	Commander Task Group
CTRL	Control keyboard command
DCA	Defense Counter Air
DCL	Digital Command Language
DDS	Database Development System
DEMSDB	Demonstration Standard Database
DISA	Defense Information Systems Agency
DIV	Division
DMA	Defense Mapping Agency
DoD	Department of Defense
DOS	Days of Supply

DPICM	Dual Purpose Improved Conventional Munitions
DS	Direct Support
DSA	Directed Search Area
DTG	Date Time Group
EC	Electronic Combat
ECM	Electronic Counter Measure
ECP	Engineering Change Proposal
EEI	Essential Elements of Information
ELINT	Electronic Intelligence
ELS	Entity Level Server
EODA	Entity Level JTLS Object Data Authority
ETA	Estimated Time of Arrival
FARP	Forward Arming and Refueling Point
FLP	Fire Lethality Prototype
FLOT	Forward Location of Troops
FOL	Forward Operating Location
FWL	Frederick W. Lanchester (originated a differential equation model of attrition)
GAL	Gallon
GCCS	Global Command and Control System
GRTE	Ground Route
GS	General Support
GSR	General Support Reinforcing
GUI	Graphical User Interface
HARM	High-speed Anti-radiation Missile
HE	High Explosive
HELO	Helicopter
HMMWV	High Mobility Multipurpose Wheeled Vehicle
HQ	Headquarters
HRU	High Resolution Unit
HTML	Hypertext Markup Language
HTT	High resolution unit Target Type
HUP	High resolution Unit Prototype
ICM	Improved Conventional Munitions
ICP	Interface Configuration Program

ICPLLogin	Interface Login Program
ID	Identifier
IFF	Identification Friend or Foe
IIP	Intelligence Information Prototype
IMT	Information Management Tool
INFO	Information
INTEL	Intelligence
JCATS	Joint Conflict And Tactical Simulation
JDA	Japan Defense Agency
JDPI	Joint Desired Point of Impact (formerly DMPI: Desired Mean Point of Impact)
JDS	JTLS Data System
JDSP	JTLS Data System Protocol
JEDI	JODA Entity Data Identifier
JMCIS	Joint Maritime Combat Information System
JMEM	Joint Munitions Effectiveness Manuals
JODA	JTLS Object Distribution Authority
JOI	JTLS Operational Interface
JPL	Jet Propulsion Laboratory
JRSG	Joint Rapid Scenario Generation (formerly JIDPS: Joint Integrated Database Preparation System)
JSDF	Japanese Self-Defense Force
JTLS	Joint Theater Level Simulation
JTOI	JTLS Transaction Operational Interface
JXSR	JTLS XML Serial Repository
KIA	Killed In Action
KM	Kilometer
KNOTS	Nautical miles per hour
LA	Lethal Area
LAN	Local Area Network
LAT	Latitude
LB	Login Build (JTLS order type)
LDAP	Lightweight Directory Access Protocol
LDT	Lanchester coefficient Development Tool
LOG	Logistics
LOGIN	Logistics Input

LOGREP	Logistics Report
LONG	Longitude
LOTS	Logistics Over The Shore
LR	Long Range
M&S	Modeling and Simulation
MAPP	Modern Aids to Planning Program
MB	Megabyte
MCP	Mobility Counter-mobility Prototype
MCR	Model Change Request
MG	Machine Gun
MHE	Material Handling Equipment
MIP	Model Interface Program
MOGAS	Motor Gasoline
MOPP	Mission-Oriented Protective Posture
MOSAIC	NCSA user interface software
MOTIF	X Window System graphical interface
MP	Maneuver Prototype
MPP	Message Processor Program
MSC	Major Subordinate Command
MSG	Message
MTF	Message Text Formats
MUREP	Munitions Report
NCSA	National Center for Supercomputing Applications (University of Illinois)
NEO	Noncombatant Evacuation Operations
NFS	Network File Server
NGO	Non-Governmental Organization
NIS	Network Information Service or Network Information System
NM	Nautical Mile
NTSC	Naval Telecommunications System Center
OAS	Offensive Air Support
OBS	Order of Battle Service (formerly UGU: Unit Generation Utility)
OCA	Offensive Counter-Air
OJCS	Organization of the Joint Chiefs of Staff
OMA	Order Management Authority

ONC	Operational Navigation Chart
OPM	Online Player Manual
OPP	Order Preprocessing Program
OTH	Over The Horizon
OTH Gold	Over The Horizon message specification
OTH-T	Over The Horizon-Targeting
pD	Probability of Detection
pE	Probability of Engage
pH	Probability of Hit
pK	Probability of Kill
PKL	Point Kill Lethality
POL	Petroleum, Oil, and Lubricants
POSIX	International operating system standard based on System V and BSD
PPS	Postprocessor System
PSYOPS	Psychological Operations
RAM	Random Access Memory
RDMS	Relational Database Management System
RECCE	Reconnaissance (air missions)
RECON	Reconnaissance (ground missions)
REGT	Regiment
RNS	Random Number Seed
ROE	Rules Of Engagement
RPT	Report
RSP	Reformat Spreadsheet Program
SAL	Surface-to-Air Lethality
SAM	Surface-to-Air Missile
SAM/AAA	Surface-to-Air Missile/Anti-Aircraft Artillery
SC	Supply Category
SCP	Simulation Control Plan
SDB	Standard Database
SEAD	Suppression of Enemy Air Defense
SIMSCRIPT	Simulation programming language (product of CACI, Inc.)
SIP	Scenario Initialization Program
SITREP	Situation Report

SLP	Sustainment Log Prototype
SOF	Special Operations Forces
SP	Survivability Prototype
SQL	Structured Query Language
SR	Short Range
SRP	Start/Restart Program (a JTLS component)
SRTE	Sea Route
SSM	Surface-to-Surface Missile
STR	Software Trouble Report
SUP	Ship Unit Prototype
SVP	Scenario Verification Program
SYNAPSE	Synchronized Authentication and Preferences Service
TADIL	Tactical Digital Interface Link
TCP/IP	Transmission Control Protocol/Internet Protocol
TEL	Transporter Erector Launcher
TG	Target entity attribute prefix
TGS	Terrain Generation Service (formerly TPS:Terrain Preparation System)
TGT	Target
TMU	Terrain Modification Utility
TOE	Table of Organization and Equipment
TOT	Time Over Target
TOW	Tube-launched Optically-tracked Wire-guided missile
TPFDD	Time-Phased Force Deployment Data
TTG	Target Type Group
TTL	Target Types List
TUP	Tactical Unit Prototype
TW	Targetable Weapon
UBL	Unit Basic Load
UIM/X	GUI builder tool
UNIX	POSIX-compliant operating system
UNK	Unknown
UOM	Unit Of Measure
USA	United States Army (U.S. and U.S.A. refer to United States and United States of America)
USAF	United States Air Force

USCG	United States Coast Guard
USMC	United States Marine Corps
USMTF	United States Message Text Format
USN	United States Navy
UT	Unit entity attribute prefix
UTM	Universal Transverse Mercator
VIFRED	Visual Forms Editor
VMS	Virtual Memory System
VTOL	Vertical Take-Off and Landing aircraft
WAN	Wide Area Network
WDRAW	Withdraw
WEJ	Web Enabled JTLS
WHIP	Web Hosted Interface Program
WIA	Wounded In Action
WPC	Warrior Preparation Center
WPN	Weapon
WT	Weight
WW	Wild Weasel
XMS	XML Message Service

APPENDIX B. VERSION 4.1.0.0 STANDARD DATABASE CHANGES

This Appendix describes changes to the SDBKOR41 Standard Database implemented for the JTLS 4.1 series of releases.

The ECPs implemented for JTLS 4.1.0.0 have required the addition, deletion, or modification of various data parameters maintained in the JTLS Standard Database. [Table B.1](#) summarizes the descriptions and uses of these variables to support the model enhancements described in Chapter 2 of this document. Detailed descriptions of these new or modified data parameters are provided in Appendix B of the *JTLS Data Requirements Manual*.

Table B.1 SDBKOR41 Data Element Summary

VARIABLE NAME	CHANGE	DESCRIPTION
JTLS-0452 HUP Wiped Out Threshold		
HUP WIPED OUT THRESHOLD	Deleted	The Set order for High Resolution Prototype attributes was altered.
JTLS-2006-1658 Model Tactical TLAM-E		
TW GPS ROUTE CAPABLE	Added	This attribute indicates whether the weapon can fly a detailed route that is based on a Global Positioning System (GPS) capability.
JTLS-2006-1845 Define HRUs Not Constrained By HUP		
CSP CS HRU SPEED	Added	This attribute of the COMBAT SYSTEM PROTOTYPE, COMBAT SYSTEM compound entity specifies the maximum speed that the entity can travel and is used only by High Resolution Units.
JTLS-2008-10001 Pass TACELINT To Real-World Systems		
IIP ELINT SENSOR IIP ELINT REPORT MEAN TIME	Deleted	The model no longer delivers TACELINT messages.
ST ELINT PULSE CODE	Modified	This attribute of the SENSOR TYPE permanent entity is a text string that holds this Sensor's normal pulse rate, is used when reporting a detection of its emissions by an ELINT collection asset and includes the unit of measure.
ST ELINT PREFIRE PULSE CODE	Modified	This attribute of the SENSOR TYPE permanent entity is a text string that holds this Sensor's normal pulse rate, is used when reporting a detection of its emissions by an ELINT collection asset, and includes the unit of measure.
ST ELINT FREQ VALUE	Modified	This attribute of the SENSOR TYPE permanent entity is a text string that holds the frequency over which the Sensor transmits, is used when reporting a detection of its emissions by an ELINT collection asset, and includes the unit of measure.

Table B.1 SDBKOR41 Data Element Summary (Continued)

VARIABLE NAME	CHANGE	DESCRIPTION
JT ELINT NOTATION	Modified	This attribute of the JAMMER TYPE permanent entity is a text string that holds the Jammer’s ELINT Notation (ELNOT) code.
JT ELINT PULSE CODE	Modified	This attribute of the JAMMER TYPE permanent entity is a text string that holds this Sensor’s normal pulse rate, is used when reporting a detection of its emissions by an ELINT collection asset, and includes the unit of measure.
JT ELINT FREQ VALUE	Modified	This attribute of the JAMMER TYPE permanent entity is a text string that holds the frequency over which the Sensor transmits, is used when reporting a detection of its emissions by an ELINT collection asset, and includes the unit of measure.
JTLS-2008-10017 Link to Multiple JCATS Instances		
UT EXTERNAL MODEL	Modified	This specified Federation Available Model (FAM) owns the Unit at game start.
FAM FEDERATE NAME	Modified	This attribute of the Federation Available Model (FAM) permanent entity represents the name of a federate that joins a federation with JTLS.
FAM MODEL NAME	Modified	This attribute of the Federation Available Model (FAM) permanent entity represents the name of a model that will be used in a federation with JTLS.
FAM INSTANCE	Modified	This attribute of the Federation Available Model (FAM) permanent entity represents the Instance Number of a model when it executes in a federation with JTLS.
JTLS-2009-10280 Representation of Personnel Bunkers		
AST NAME AST RANGE AST REPAIR TIME AST DESTROY TIME AST CAT CODE AST ICON SYMBOL AST OPEN FLAG AST JCATS TEMPLATE AGGREGATE AST DIS CODE AST AC CAPACITY	Deleted	These parameters are removed as a result removing the AIRCRAFT SHELTER TYPE (AST) Target Type, which is replaced by the EQUIPMENT SHELTER TYPE (EST) Target Type and its associated data structure.
EST NAME	Added	This attribute of the EQUIPMENT SHELTER TYPE permanent entity holds the text name of the EQUIPMENT SHELTER TYPE, which is used in several model messages that describe observed or detected objects to foreign Sides.

Table B.1 SDBKOR41 Data Element Summary (Continued)

VARIABLE NAME	CHANGE	DESCRIPTION
EST RADIUS	Added	This attribute of the EQUIPMENT SHELTER TYPE permanent entity holds the radius measured from the geographic center of a Target of this type and is used in the weapon assessment algorithms.
EST REPAIR TIME	Added	This attribute of the EQUIPMENT SHELTER TYPE permanent entity holds the average time to repair a damaged Target of this type.
EST DESTROY TIME	Added	This attribute of the EQUIPMENT SHELTER TYPE permanent entity holds the average time to dismantle a Target of this type as an engineering task.
EST DIS CODE	Added	This attribute of the EQUIPMENT SHELTER TYPE permanent entity is used to display the object on a MUSE UAV-generated video.
EST CAT CODE	Added	This five-digit Target Category Code is assigned to Targets of this specific type (TARGET SUBCATEGORY). This attribute is used primarily by real-world systems employed by U.S. Forces.
EST ICON SYMBOL	Added	The graphic symbol used to display a Target of this type. The icon will be color-coded to represent the perceived Side of the Target, but the graphic image will be determined by the symbol assigned to this attribute.
EST OPEN FLAG	Added	This value (0 or 1) attribute indicates whether a Target of this type (SUBCATEGORY) is open or hidden in some manner. The contents of open Targets are visible to overhead sensors.
EST JCATS TEMPLATE AGGREGATE	Added	This attribute of the EQUIPMENT SHELTER TYPE entity that designates the JCATS Aggregate Template Name to be used during generation of OBS data for these Targets.
EST STORAGE FLOOR AREA	Added	This attribute of the EQUIPMENT SHELTER TYPE entity that specifies the "floor area" available for storage of items in the facility for a Target of this type.
EST CS PRIORITY	Added	This parameter indicates the priority for each type of Combat System.
EST TGC PRIORITY	Added	This parameter indicates the priority for each type of available TARGET CATEGORY to be placed into an EQUIPMENT SHELTER TYPE Equipment Shelter target.
EST UNDERGROUND FLAG	Added	This indicator is used to determine whether the Equipment Shelter target is located underground and is primarily used by external models to determine the proper manner in which Targets should be modeled

Table B.1 SDBKOR41 Data Element Summary (Continued)

VARIABLE NAME	CHANGE	DESCRIPTION
AC STORAGE FLOOR AREA	Added	This attribute of the AIRCRAFT CLASS entity specifies the total storage area (Square Meters) that one item of this type requires if placed in an EQUIPMENT SHELTER TYPE (EST) target or a TUNNEL target used for storage.
AC SHELTER PRIORITY	Added	This parameter holds a priority value for each AIRCRAFT CLASS entity and is used by the model when selecting which Aircraft are to be placed in EQUIPMENT SHELTER TYPE targets.
TC STORAGE FLOOR AREA	Added	This attribute of the TRANSPORTATION CLASS entity specifies the total storage area, (Square Meters) that one item of this type requires if placed in an EQUIPMENT SHELTER TYPE (EST) target or a TUNNEL target used for storage.
TC SHELTER PRIORITY	Added	This parameter holds a priority value for each TRANSPORTATION CLASS entity and is used by the model when selecting which vehicles are to be placed in EQUIPMENT SHELTER TYPE targets.
AD STORAGE FLOOR AREA	Added	This attribute of the AIR DEFENSE CLASS entity specifies the total storage area (Square Meters) that one item of this type requires to be placed in an EQUIPMENT SHELTER TYPE (EST) target or in a TUNNEL target used for storage.
AD SHELTER PRIORITY	Added	This parameter holds a priority value for each AIR DEFENSE CLASS entity and is used by the model when selecting which Targets are to be placed in EQUIPMENT SHELTER TYPE targets.
BC STORAGE FLOOR AREA	Added	This attribute of the BRIDGE CLASS entity specifies the total storage area (Square Meters) that one item of this type requires if placed in an EQUIPMENT SHELTER TYPE (EST) target or a TUNNEL target used for storage.
BC SHELTER PRIORITY	Added	This parameter holds a priority value for each BRIDGE CLASS Target Type and is used by the model when selecting which Targets are to be placed in EQUIPMENT SHELTER TYPE targets.
ST STORAGE FLOOR AREA	Added	This attribute of the SENSOR TYPE entity specifies the total storage area (Square Meters) that one item of this type requires if placed in an EQUIPMENT SHELTER TYPE (EST) target or in a TUNNEL target used for storage.
ST SHELTER PRIORITY	Added	This parameter holds a priority value for each SENSOR TYPE Target Type that is used by the model when selecting which Targets are to be placed in EQUIPMENT SHELTER TYPE targets.

Table B.1 SDBKOR41 Data Element Summary (Continued)

VARIABLE NAME	CHANGE	DESCRIPTION
SSM STORAGE FLOOR AREA	Added	This attribute of the SURFACE SURFACE MISSILE CLASS entity specifies the total storage area (Square Meters) that one item of this type requires to be placed in an EQUIPMENT SHELTER TYPE (EST) target or in a TUNNEL target used for storage.
SSM SHELTER PRIORITY	Added	This parameter holds a priority value for each SURFACE SURFACE MISSILE CLASS Target Type and is used by the model when selecting which Targets are to be placed in EQUIPMENT SHELTER TYPE targets.
FAT STORAGE FLOOR AREA	Added	This attribute of the FACILITY TYPE entity specifies the total storage area (Square Meters) that one item of this type requires to be placed in an EQUIPMENT SHELTER TYPE (EST) target or in a TUNNEL target used for storage.
FAT SHELTER PRIORITY	Added	This parameter holds a priority value for each FACILITY TYPE Target Type and is used by the model when selecting which Targets are to be placed in EQUIPMENT SHELTER TYPE targets.
MHE STORAGE FLOOR AREA	Added	This attribute of the MATERIAL HANDLING EQUIPMENT TYPE entity specifies the total storage area (Square Meters) that one item of this type requires to be placed in an EQUIPMENT SHELTER TYPE (EST) target or in a TUNNEL target used for storage.
MHE SHELTER PRIORITY	Added	This parameter holds a priority value for each MATERIAL HANDLING EQUIPMENT CLASS Target Type, and is used by the model when selecting which Targets are to be placed in EQUIPMENT SHELTER TYPE targets.
JT STORAGE FLOOR AREA	Added	This attribute of the JAMMER TYPE entity specifies the total storage area (Square Meters) that one item of this type requires to be placed in an EQUIPMENT SHELTER TYPE (EST) target or in a TUNNEL target used for storage.
JT SHELTER PRIORITY	Added	This parameter holds a priority value for each JAMMER TYPE Target Type and is used by the model when selecting which Targets are to be placed in EQUIPMENT SHELTER TYPE targets.
CC STORAGE FLOOR AREA	Added	This attribute of the COMMUNICATION CENTER entity specifies the total storage area (Square Meters) that one item of this type requires to be placed in an EQUIPMENT SHELTER TYPE target or in a TUNNEL target used for storage.

Table B.1 SDBKOR41 Data Element Summary (Continued)

VARIABLE NAME	CHANGE	DESCRIPTION
CC SHELTER PRIORITY	Added	This parameter holds a priority value for each COMMUNICATIONS CENTER Target Type, and is used by the model when selecting which Targets are to be placed in EQUIPMENT SHELTER TYPE targets.
CAT STORAGE FLOOR AREA	Added	This attribute of the COMBAT ARMS TYPE entity specifies the total storage area (Square Meters) that one item of this type requires to be placed in an EQUIPMENT SHELTER TYPE (EST) target or in a TUNNEL target used for storage.
CAT SHELTER PRIORITY	Added	This parameter holds a priority value for each COMBAT ARMS TYPE Target Type, and is used by the model when selecting which Targets are to be placed in EQUIPMENT SHELTER TYPE targets.
CSP CS STORAGE FLOOR AREA	Added	This attribute of the COMBAT SYSTEM PROTOTYPE/ COMBAT SYSTEM compound entity specifies the total storage area (Square Meters) that one item of this type requires to be placed in an EQUIPMENT SHELTER TYPE target or in a Tunnel target used for storage.
TUC LANE WIDTH	Added	This attribute of the TUNNEL CLASS permanent entity holds the assumed width for each lane defined for a Tunnel target of this type.
TG RANGE	Modified	This attribute of the TARGET entity specifies the effective range (Kilometers) of RADAR, JAMMER, SSM, and AIR DEFENSE targets.
TG LENGTH	Modified	This attribute of the TARGET entity represents the length of the Runway (Feet) for RUNWAY targets, and holds the length (Kilometers) for TUNNEL targets.
JTLS-2011-10836 Ballistic Missile Display Flexibility		
ICON.TORPEDO.SYMBOL	Added	The icon that is used when displaying a torpedo on a WHIP. No detection capability is provided for torpedoes.
ICON.BALLISTIC.SYMBOL	Added	The icon that is used when displaying a Theater Ballistic Missile (TBM). The icon can be displayed on both the owning side of the fired missile and on those WHIPs that detect the TBM.
ICON.CRUISE SYMBOL	Added	The icon that is used when displaying a Cruise Missile. The icon can be displayed on both the owning side of the fired missile and on those WHIPs that detect the Cruise Missile.

Table B.1 SDBKOR41 Data Element Summary (Continued)

VARIABLE NAME	CHANGE	DESCRIPTION
JTLS-2012-11305 Improve Naval Detection Representation		
ST MEAN FUSION TIME	Deleted	This design removes the JTLS concept of information fusion.
TUP RECOGNITION NAME	Added	When a Unit that uses this Tactical Unit Prototype (TUP) is detected by a foreign Side and enters the detection Recognition phase, this string is used as part of the name.
SUP DISPLACEMENT NAME	Added	This is the name used to identify a ship when all the user has is localization information.
ST CLASSIFICATION CAPABLE	Added	This Sensor Type attribute indicates whether the sensor is able to classify a Target when it is detected.
ST RECOGNITION DISTANCE	Added	The maximum distance at which this sensor is able to recognize a detected object.
ST RECOGNITION ALTITUDE	Added	The maximum altitude at which this sensor is able to recognize a detected object.
ST IDENTIFICATION DISTANCE	Added	The maximum distance at which this sensor is able to identify a detected object.
ST IDENTIFICATION ALTITUDE	Added	The maximum altitude at which this sensor is able to identify a detected object.
JTLS-2012-11377 Link-16 Surface Tracks		
TUP RECOGNITION NAME	Added	When a unit that uses this Tactical Unit Prototype (TUP) is detected by a foreign side and enters the Recognition Phase, this string is used as part of the name.
JTLS-2012-11382 Satellite Service		
EE NAP MAX NUMBER DSA EE NAP MINIMUM LEAD TIME	Deleted	[explain why]
EE NAP END TIME	Added	This variable represents the game time when the satellite will leave the theater playbox.
IIP TIME PER DSA COLLECTION	Added	This variable represents the duration an asset will collect data on a single DSA.
IIP MIN COLLECTION LEAD TIME	Added	This variable represents the minimum lead time required before a DSA collection can be performed.
JTLS-2012-11412 Expand Link-16 Messages		
TG LINK16 BLOCK START TG LINK16 BLOCK END	Deleted	These attributes are removed from the Sensor Target database table. [also removed for all other Targets?]

Table B.1 SDBKOR41 Data Element Summary (Continued)

VARIABLE NAME	CHANGE	DESCRIPTION
UT LINK16 TRACK BLOCK START	Added	This text variable holds the starting octal number for the tracks that this Unit’s sensors detected.
UT LINK16 TRACK BLOCK END	Added	This text variable holds the ending octal number for the tracks that this Unit’s sensors detected.
UT LINK16 TARGET BLOCK START	Added	This text variable holds the starting octal number for assigning the JU Number for this Unit’s owning or associated Link-16 capable Targets.
UT LINK16 TARGET BLOCK END	Added	This text variable holds the ending octal number for assigning the JU Number for this Unit’s owning or associated Link-16 capable Targets.
ST LINK16 CAPABLE	Added	This Boolean flag indicates whether Sensor targets of this type are capable of communicating with the Link-16 network.
AD LINK16 CAPABLE	Added	This Boolean flag indicates whether Air Defense targets of this type are capable of communicating with the Link-16 network.
CC LINK16 CAPABLE	Added	This Boolean flag indicates whether Communication Center targets of this type are capable of communicating with the Link-16 network.
FAT LINK16 CAPABLE	Added	This Boolean flag indicates whether Facility Type targets of this type are capable of communicating with the Link-16 network.
SSM LINK16 CAPABLE	Added	This Boolean flag indicates whether Surface-to-Surface Missile (SSM) targets of this type are capable of communicating with the Link-16 network.
AD LINK16 MISSILE TYPE	Added	This valid missile type is named and defined in Link-16 documentation and used to provide J13.3 (Surface Platform and System Status) messages to report on-board missile data for the Link-16 participating surface platform.
SSM LINK16 MISSILE TYPE	Added	This valid missile type is named and defined in Link-16 documentation and used to provide J13.3 (Surface Platform and System Status) messages to report on-board missile data for the Link-16 participating surface platform.
AD LINK16 SITE TYPE	Added	This valid site type is named and defined in Link-16 documentation and used to provide J13.5 (Land Platform and System Status) messages to report system status.
CC LINK16 SITE TYPE	Added	This valid site type is named and defined in Link-16 documentation and used to provide J13.5 (Land Platform and System Status) messages to report system status.

Table B.1 SDBKOR41 Data Element Summary (Continued)

VARIABLE NAME	CHANGE	DESCRIPTION
FAT LINK16 SITE TYPE	Added	This valid site type is named and defined in Link-16 documentation and used to provide J13.5 (Land Platform and System Status) messages to report system status.
ST LINK16 SITE TYPE	Added	This valid site type is named and defined in the Link-16 documentation and used to provide J13.5 (Land Platform and System Status) messages to report system status.
SSM LINK16 SITE TYPE	Added	This valid site type is named and defined in the Link-16 documentation and used to provide J13.5 (Land Platform and System Status) messages to report system status.