

# JTLS-2014-0086 Allow DDS Users to Change Unit Type

Jane Wu, Steve Tang, Ellen Roland

## 1.0 Summary of Model Change Request

It would be valuable to allow DDS users to easily change a unit's type, or by a larger extent, a target's category, from one to another. For example, currently in DDS, to change a ground unit to be a support unit, the unit must be deleted from the Ground Unit table first, and then recreate it in the Support Unit table. Similarly, to change a sensor target to be a communication target, the target must be deleted from the Sensor Target table first, and then recreate it in the Communication Target table.

When recreating a unit or target, the user has to re-enter, for the most part, the same parameters such as name, long name, location, etc., thus making the whole process tedious. Ideally, the user should be able to simply select an option to initiate the change, avoid re-entering same data, and let the application handle the rest.

## 2.0 Design Summary

In the JTLS-GO database, data is organized in which:

- Units are kept in six separate tables based on type, and
- Targets are kept in twenty one separate tables based on category.

This is the reason that changing a unit's type or a target's category is a cumbersome effort. This design makes no effort to modify the database, but rather adds three graphical user interface options to automate the process of moving a unit record from one unit table to a different unit table and a target record from one target table to another target table; thus, easing the burden for the user. The three graphical user interface options available to initiate the transfer record process are:

- Start the process from the individual object tables. For example, the process can be initiated from the Airbase Unit table or from the Communication Site Target table.
- Start the process from the "All Unit" table and from the "All Target" table
- Start the process from the Individual entity's context sensitive menu.

## 3.0 Detailed Design

The detailed design discussion covers the following topics:

- Description of the various user interface options are discussed in [Section 3.1](#)
- Description of DDS Data File that will be implemented to direct the mechanics of accomplishing the record transfer function is described in [Section 3.2](#)
- A top level description of how the DDS Glassfish server processes the new URL request and performs the change operations is discussed in [Section 3.3](#)

### 3.1 User Interface Options

As mentioned in [Section 2.0 Design Summary](#), three different user interface options will be implemented to start the process of transferring records from one table to another. Each of these options are discussed in the following sections.

#### 3.1.1 Unit / Target Table Transfer Record Interface

This design proposes that for each individual unit and target table, a new option will be added to the menu that pops up when a user right clicks on a selected record or records.

- For the unit tables, the new option will be configured to read “Change Type”. A dialog window will popup asking the user to provide the new type of the unit or units.
- For the target tables, the option will read “Change Category”. When this new option is selected, a dialog window will pop up asking the user to provide the new category and subcategory for the highlighted targets.

Once the popup form is filled in, the user will confirm the action to implement the movement. The DDS Client shall send out a new URL request to the DDS Glassfish server with the user’s specifications. The Glassfish server in turn, will handle the removal of the unit or target record from its original table, and then recreate it in the new relevant table. During this process, the server is responsible for keeping transaction control so that if the entire process encounters a problem, the data will be rolled back.

#### 3.1.2 “All Unit” and “All Target” Table Transfer Record Interface

Besides the individual unit and target tables, the DDS Client also has access to a system controlled “All Unit” table and an “All Target” table. The records in these tables are managed by database triggers; therefore, these tables are not editable in the DDS Client, but provide a summary view of all units and targets for the database builder.

This design proposes to allow the user to be able to edit the Type column in the “All Unit” table and the Category/Subcategory columns in the “All Target” table.

- When the user clicks the Type cell of a Unit record in the “All Unit” table, a new Unit Type dialog popup window will be displayed from which the user will be allowed to select the new Unit Type. Once confirmed, the process to move the unit from its current unit table to the unit table is executed.
- When a user clicks on the Category cell of a Target record in the “All Target” table, a similar dialog window will pop up prompting the user to provide the desired new Category and Subcategory for the target. After the change action is confirmed, the DDS Client shall send out the same new URL request to the DDS Glassfish server with the user’s specifications as mentioned earlier.

### **3.1.3 Entity Context Sensitive Menu Transfer Record Interface**

From any of the DDS components, such as a Map component, Hierarchy Component, Logistics Hierarchy Component, it is possible to “Right Click” on the entity to display what is known as the “Context Sensitive Menu”

From the DDS the ability to move Units and Targets to an alternate table will also be activated from the “Context Sensitive Menu”. Selecting the Transfer Record option from the “Context Sensitive Menu” will result in the display of the Transfer Popup Menu which can be filled in the user and confirmed.

### **3.2 DDS Transfer Data Files**

When moving records from one table to another table, there are three situations that need to be handled:

- For those record attributes that exist in both tables, the data held in the source table will be transferred to the new destination table.
- If an attribute exists, in the source table, but does not exist in the destination table, the data will not be moved and will be lost.
- If an attribute exists in the destination table, but in the source table, decisions need to be made concerning what data, if any, will be entered into the new table record. If the attribute is a “Null Allowed” attribute, no data will be entered in the destination attribute cell. If the attribute requires a value, the data table definition already contains a “Default Value”. and the default value will be used.

Specifying which attributes fall into which categories will be placed in a new DDS data file called the “Record Transfer Definition” file. This means that once implemented, any improvements or

changes to a JTLS-GO data structure will not require coding changes, just updates to the “Record Transfer Definition” file. There is no set of rules that can be used to create the original version of this data file, so it will need to be created manually by the implementation team.

Table 1 summarizes the rules that will be established for the transfer of unit records. It should be noted in this table, that Naval Units are excluded from this transfer capability. The unit record transfer capability will not support movement of Naval Unit records to one of the land unit tables and vice versa.

**Table 1. Unit Table Data Attribute Summary**

ATTRIBUTE	GROUND	AIRBASE	SQUADRON	SUPPORT	FARP
Attributes transferred under all circumstances					
Short Name					
Long Name					
Unit Identification Code (UIC)					
Faction Name					
Prototype					
Initial Support Unit					
Regular Support Unit					
Higher HQ					
Port Unit					
Aircraft Type					
Max Sortie Rate Per Day					
TPFDD Time					
Number Serials					
Location					
Parent Unit					
Service					
Orientation					
Adjust Supply Interval					
Last Adjust Supply Time					
Attack With					
Protect With					

**Table 1. Unit Table Data Attribute Summary**

ATTRIBUTE	GROUND	AIRBASE	SQUADRON	SUPPORT	FARP
Screen With					
Cover With					
Unit Effectiveness					
Night Effectiveness					
C3 Effectiveness					
C3 Quality Rating					
Highest C3Quality Rating					
Political Country					
Owning Federate					
JU Number					
Link 16 Network					
Link 16 Feed					
Link-16 Track Block Start					
Link-16 Track Block End					
Link-16 Target Block Start					
Link-16 Target Block End					
Comment					
<p>The following attributes exist in some of the Unit Tables but not all. The cells highlighted in Yellow indicate that the attribute exists in the specified Unit Type table. There are four situations that are considered:</p> <ul style="list-style-type: none"> <li>• When transferring a record from a Unit Type that has a colored cell to a different Unit Type that also has a colored cell, the data held by the attribute is transferred.</li> <li>• When transferring a record from a Unit Type that has a colored cell to a different Unit Type for which the attribute cell is not colored, the data is not transferred and is lost.</li> <li>• When transferring a record from a Unit Type that has an uncolored cell to a different Unit Type for which the attribute cell is colored, there are two possible outcomes. Those cells highlighted in “Yellow” have default values and the default value will be used for the destination record attribute. Those cells highlighted in “Blue” allow Null values and the receiving record will be created with a Null attribute.</li> </ul>					
ICAO					
Max Aircraft Capacity					
Alternate Base					
Naval Qualified Flag					

**Table 1. Unit Table Data Attribute Summary**

ATTRIBUTE	GROUND	AIRBASE	SQUADRON	SUPPORT	FARP
Default Mode 1					

It is a little more difficult to visualize the Target attribute movement in tabular format because there are 21 different Target Category tables. To help fit this important information in this design, an integer identifier is used for each of the different Target Tables. [Table 2](#) provides the reader with the numeric identifier used for Target Table and [Table 3](#) provides the visualization of the data that will be transferred as part of the target record transfer process.

**Table 2. Target Table Numeric Identifier**

NUMERIC IDENTIFIER	TARGET TABLE
1	Air Defense
2	Bridge
3	Tunnel
4	Sensor
5	Runway
6	Interdiction Point
7	Supply Storage
8	Surface-to-Surface Missile (SSM) Site
9	Facility
10	Equipment Shelter
11	Material Handling Equipment
12	Minefield
13	Pumping Station
14	Jammer
15	Communication Site
16	The six place holder target types which have identical tables; therefore <a href="#">Table 3</a> considers them as a group. These placeholder target types are: Ship, Combat Arms, Vehicles, Aircraft, Small Boats, and Supply Type.

**Table 3. Target Table Data Attribute Summary**

ATTRIBUTE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Attributes transferred under all circumstances																
CCF Number																
Name																
Percent Capable																
Location																
Category Code																
External Event Time																
Political Country																
<p>The following attributes exist in some of the Unit Tables but not all. The cells highlighted in Yellow indicate that the attribute exists in the specified Unit Type table. There are four situations that are considered:</p> <ul style="list-style-type: none"> <li>• When transferring a record from a Unit Type that has a colored cell to a different Unit Type that also has a colored cell, the data held by the attribute is transferred.</li> <li>• When transferring a record from a Unit Type that has a colored cell to a different Unit Type for which the attribute cell is not colored, the data is not transferred and is lost.</li> <li>• When transferring a record from a Unit Type that has an uncolored cell to a different Unit Type for which the attribute cell is colored, there are two possible outcomes. Those cells highlighted in “Yellow” have default values and the default value will be used for the received record attribute. Those cells highlighted in “Blue” allow Null values and the receiving record will be created with a Null attribute.</li> </ul>																
Number																
Range																
Owning Unit																
Associated Unit																
Mobility																
JU Number																
Link-16 Network																
Link-16 Feed																
Length																
Direction																
Depth																
Targetable Weapon																

Note in [Table 3](#) there are two cells marked in “Red”. These cells are mandatory and are unique to the minefield target. If a minefield target is transferred to a different target table, these two piece of data are not needed and will be lost. On the other hand, if a different target type is moved to the Minefield Target table, the data must be filled in.

The Design Team considered the option of simply not allowing the transfer of records into the Minefield Target Table. This option was rejected because there is a plausible use case for the capability. It is not unusual for an organization to identify possible mining locations of harbors and other important choke points. These are normally built in a JTLS-GO database as a “Facility” target, so an entity can attack the Facility Target with a Mine Weapon and create a minefield at the identified location.

During the database build and scenario development process, the exercise audience may decide to start the exercise with some of the identified port and/or choke location already mined, Thus the database team would want to transfer the identified records from the Facility Table to the Minefield Table.

Because there is this definite and useful use case for this capability, special code will be written to fill in the Targetable Weapon required field when transferring a record to the Minefield Table. [Table 4](#) summarizes the special code considerations for transferring records to the Minefield Target table.

**Table 4. Transferring Records To Minefield Target Table**

TRANSFER FROM	RESULTING SPECIAL SITUATION
A Target record that has an Associated Unit	The Associated Unit should be assigned to the Minefield and the first MINE type target in the Targetable Weapon table should be assigned to the Minefield.
A Target record that has no Associated Unit, but has an Owning Unit.	The Owning Unit should become the Associated Unit and the first MINE type target in the Targetable Weapon Table should be assigned to the Minefield.
A Target Record that has no Associated Unit and no Owning Unit.	The target transfer cannot be accomplished and an appropriate error message should be generated.

### 3.3 DDS Glassfish Server’s Process

First of all, the Glassfish server will also load the new Record Transfer Definition data file. A new servlet will be created in the DDS Glassfish server to handle the process of changing the type for a unit or the category for a target. When processing the request, the servlet will:

1. Determine if the original table and the new table are the same. If they are the same, the process is stopped and is considered successful.

2. If the original table and the new table are not the same, it will delete the record identified by the record's Object Identifier (oid) from the original table first. But before doing so, it shall retrieve the data of the record from the original table.
3. Then it will create a record in the new table. The values for the columns are those values of the matching columns from the old table except the column value pairs specified in the URL request. If no matching old column can be found, and no column value pair is provided, then the column will be skipped so that the database will fill it with the default value.
4. If the whole process is successful, the Glassfish server either updates, or deletes then creates record in the corresponding tables and record the transaction(s) in the history tables.
5. If the process encounters a problem, the Glassfish rolls back the data. In this case, no transaction is being recorded in the history tables.
6. Send the process's status response back to the DDS Client.

## 4.0 Data Changes

No data changes are required to implement this ECP.

## 5.0 Order Changes

No order changes are required to implement this ECP.

## 6.0 JODA Changes

No JODA Changes are required to implement this ECP.

## 7.0 Test Plan

### 7.1

Purpose:

Step 1:

Step 2:

Step 3:

**Expected Results:**

Step 4:

**Expected Results:**

## 7.2

Purpose:

Step 1:

Step 2:

Step 3:

**Expected Results:**

Step 4:

**Expected Results:**

Step 5:

Step 6:

**Expected Results:**