JTLS-2016-12595 IMT Objects By Specified Geographic Region

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1.0 Summary of Model Change Request

It would be valuable to display Information Management Tool (IMT) data for objects in a specific geographic region. Suggest an IMT menu that allows the user to select a rectangular area on the Web Hosted Interface Program (WHIP) map window. When the box is drawn, the appropriate IMT screen is displayed.

2.0 Design Summary

Currently IMT screens are started from the WHIP's IMT menu. Once the desired IMT is selected, the IMT screen is displayed and it lists all units, targets, or other objects that meet the IMT filtering criteria in a table. The current IMT filters do not allow users to filter the displayed table objects by geographic region. This design proposes a method to accomplish such a capability, and adopts the same method of filtering table rows by geographic region to the Database Development System (DDS) Client (DDSC) tables.

This design explores adding two new buttons to the Navigator Tools found on the left-hand margin of the map window. One button will activate the drawing of a geographic region as a polygon over the map by a series of user selected points. The second button will open a window that will list the user created and shared geographic regions. From this window users will be able to share and remove the regions that they have created and own.

When opening a geographic region capable IMT screen or DDS table, users will be able to select the desired Region or Regions, from the available defined regions, to use for filtering the IMT screen or DDS table by the enclosed objects.

3.0 Detailed Design

3.1 WHIP Implementation

The following items or tasks for filtering an IMT screen by a regional area are discussed in this section.

- The creation of filterable geographic IMT regions. Section 3.1.1

- The ability to display, share, and delete filterable geographic IMT regions. Section 3.1.2

- The definition of the IMT screens that allow for geographic region filtering. Section 3.1.3

- The methodology of selecting a filterable geographic IMT region for a specific IMT screen. Section 3.1.4

3.1.1 Creating IMT Geographic Regions

A geographic area that can be access by an IMT will first need to be created. Two new buttons will be located in the map's Navigator Tools shown in Figure 1. Current Navigator Tool Bar. These two new buttons will operate in a similar manner to the Slide Creation and Slide Display/Sharing button. The Slide Creation button allows the user to create a new slide or edit an existing slide. The Slide Sharing and Display button allows the user to decide which slides to display on the map and which slides to share with other WHIPs on the same side or different sides.
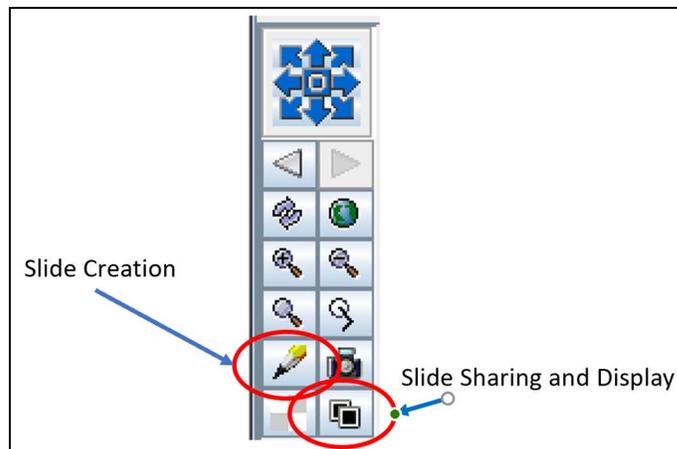

Figure 1. Current Navigator Tool Bar

In the final implementation, the Slide Creation and Slide Sharing and Display button will be next to one another as will the Polygon Creation and Polygon Sharing and Display button.

To create a new geographic region, the user clicks the new Polygon Creation button, which opens an editing tool at the bottom of the map display, similar to the slide editing tool shown in Figure 2. The new geographic region editing tool will not be as extensive as the Slide editing tool, but it will be similar in format and placement. Only the highlighted buttons will be on the new region editing tool.

Figure 2. Current Slide Editing Tool Indicating What Will Be Used For Regions

Table 1 provides a few more details concerning the plans for the Region Editing Tool

Table 1. Explanation Of Region Editing Tool

BUTTON	EXPLANATION
Blue Highlighted Button Close Region Editing Tool	Clicking the button will close the Region Editing Tool. In a manner similar to the Slide Editing Tool, when the Region Editing Tool is open, the only map feature that works is the selection of a location using the mouse.
Red Highlighted Area Region Selection and Identification Area	The user is able to select an existing Region that the user owns from the Drop-Down list displayed by clicking on the "Down-Arrow" symbol. When an existing Region name is selected, it will be displayed and made active and shown by the vertex handles. Editing of existing regions is discussed immediately following this table.
Green Highlighted Button Create New Region Button	When the create new region button is selected, a new panel opens in which the user must enter the name of the new Region and then immediately draw the desired polygonal area to be covered by the region. The region naming panel will also have a map select arrow indicating the user is ready to drawn the polygonal area. Once a name has been entered and a polygon defined, the user clicks the "Ok" button to create the Region. The name appears in the selected Region area and the region will be saved with the user specified points on the server by the Synapse service The saved information for the created regions will contain two elements: the name given to the region and the points selected for the enclosing polygon. The saved regions will be owned by the creating WHIP user.

Editing a region is also possible in a manner to editing polygons from the Slide Creation Tool. The current Slide editing capability for a polygon is shown in Figure 3.
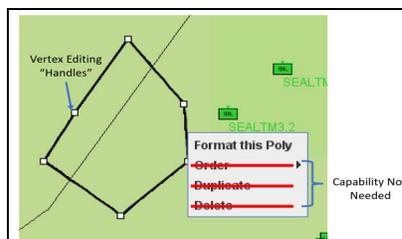

Figure 3. Region Editing Capability

There are two editing functions for a Region:

- **Altering the covered region:** The user selects a vertex handle and using a drag and drop motion can move the vertex, thus altering the covered geographic region.

- **Altering viewing attributes:** This is accomplished by "Right Clicking" on the region to display the editing context sensitive menu. The user selects the "Format This Polygon" menu item, which then displays the attribute changing panel shown in Figure 4 that has two tabs. The user will be able to change the display color and line attributes when displaying the Region on the map.
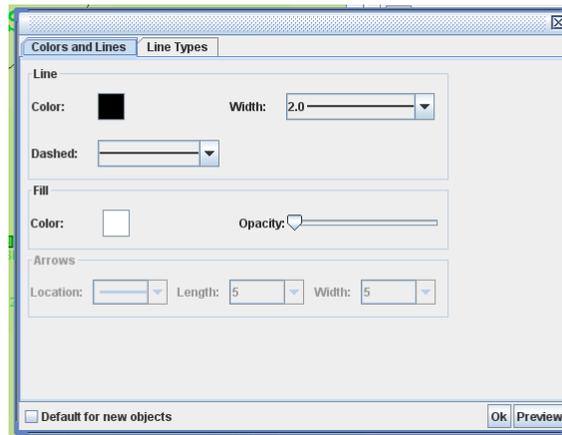

Figure 4. Polygon Attribute Editing Panel

In Figure 3, three of the context sensitive menu items currently available for Slide editing are not needed for Region editing.

- **Order:** This is used to order which Slide objects appear on top of other displayed objects. Regions will always be displayed as part of the top layer; thus, there is no need to alter the ordered layer for the Region.

- **Duplicate:** Each Region consists of one and only one polygon; therefore there is no need to duplicate a Region Object. The user simply needs to create and name a new Region object. The reader should note that this does NOT imply that an IMT can only be filtered by one region. As discussed in Section 3.1.4, the user is allowed to filter a given IMT screen on based on as many Regions as desired.

- **Delete:** The Delete function for slides refers to deleting one of the objects that exists on a given slide. Since a Region refers to one and only one polygon, there is no need to delete a polygon from a region. The Delete Region function is described in Section 3.1.2

3.1.2 Displaying, Sharing and Deleting Geographic Regions

A WHIP will be allowed to share the regions with other WHIPs and Force Sides so they can also apply the regions to their IMT screens when desired. After selecting the Region Display and Sharing button described in Figure 1, a Display/Sharing panel, similar to the Display/Sharing panel for slides, shown in Figure 5, will be displayed.
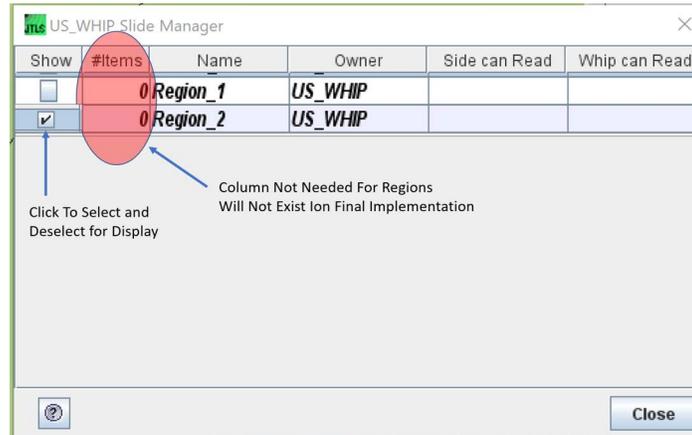

Figure 5. Sample Display / Sharing Region Panel

The Regions owned by the WHIP will be displayed within this panel in a dark font. Regions known to the WHIP but not owned by the WHIP will be displayed in a light gray font. This is similar to the Slide version of the Display/Sharing Panel. To display a region on the map, the user simply clicks the Display Radio button. It should be noted that a Region does not need to be displayed to be used by an IMT for filtering purposes. The displaying of a region is optional and may not be needed if created with a descriptive name.

All the WHIP's owned geographic regions will be available to Delete and Share from this panel. To activate the Deleting and Sharing menu, the User highlights an owned Region, right clicks to display the Delete.Share menu as shown in Figure 6. The Delete and Share option will work in the same manner as it does for Slide deletion and sharing, but not all sub-menu options are needed.
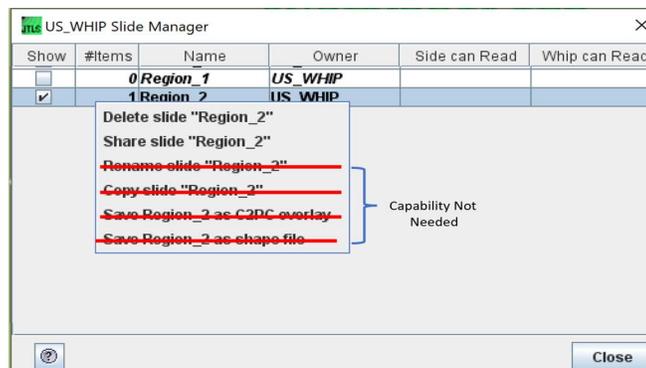

Figure 6. Delete / Share Region Menu

3.1.3 IMT Screen Definition

Each IMT screen is defined with the data criteria to populate its table rows and the filters that can be applied. Because all IMT screens may not be suited to filter the records by a geographic region on the map, the design proposes adding a geographic region filter to the existing <filters> node in the elected IMT Extended Markup Language (XML) configuration files. This attribute will designate whether to include the Region filtering tab on the IMT panel.

It is expected that any IMT display used to display an object that has a location attribute will be marked as suitable for region filtering. These IMT screens include units, targets, air missions, convoys, formation, and satellites.

3.1.4 Object Request By Geographic Region

When the user selects an IMT screen to be displayed, the user must configure the screen by selecting the desired display columns and the desired filter options. For those IMT screens that have regions specified as part of their XML <filter> node, a "Region" tab will be added to the screen's configuration panel, as shown in Figure 7. This tab will list all of the Regions known to the WHIP, all Operations Areas (OPAREAs) known to the WHIP, and a filter labeled as "World Filter".
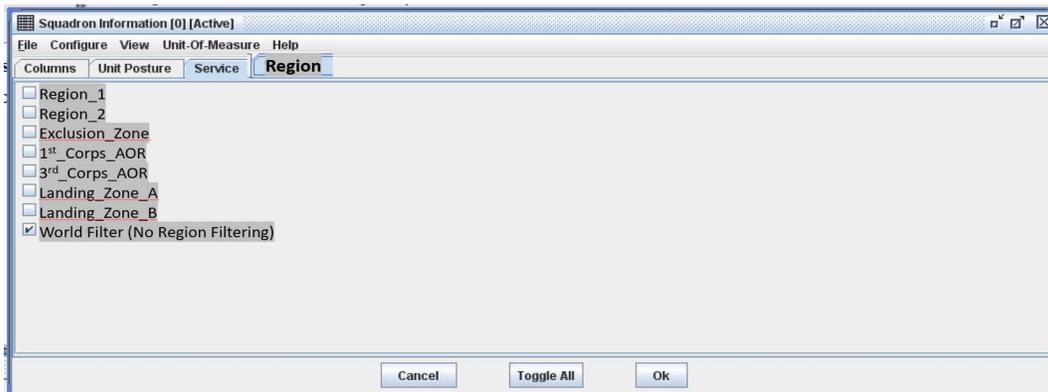

Figure 7. Mock-Up Region Filtering Tab

The user will select the Regions or OPAREAs to apply in the IMT screen by selecting its name from the available regions in the filter tab.

The Region Filter panel does NOT work in exactly the same way as the other IMT filter panels. Note the addition of a filter option labeled as "World Filter (No Region Filtering)". An IMT panel will be started with only this filter option selected. When an IMT retrieval request is sent to the JTLS-GO XML Service (JXSR), no region filtering will be part of the request. The end result is that the JXSR will return all objects that meet the other IMT filter tabs. No geographical region filtering will be accomplished.

If the user wants the IMT to be filtered by Regions or OPAREAs, the user will click on the desired Regions or OPAREAs. As soon as the first area is selected, the World Filter option will be Deselected. Only objects that fall within the selected areas will be displayed on the IMT panel controlled by the filter.

This implies that the "Toggle All" button which exists on the filter panel and is not a part of each filter tab, needs to work in a different manner than it does for all of the other available filter tabs. Table 2 describes how the "Toggle All" Button will work from the Region Filter Panel.

Table 2. Toggle All Button Meaning On Region Filter Panel

OLD STATE BEFORE "TOGGLE ALL" BUTTON	NEW STATE AFTER "TOGGLE ALL" BUTTON
World Region Selected	No change to the filter panel. The World Region is already selected.
Some Regions Are Selected	All Regions will be selected
All Regions Are Selected	All Regions will be deselected and the World Region will be set to selected. Thus to turn off region filtering, two clicks on the "Toggle All" button will accomplish the desired task. The first click will turn on all Regions, the second click will turn off all Regions and replace the filter with the World Region.

Once the user alters the Region filtering for an IMT screen and clicks the "Ok" button, a download request will be sent to the JXSR. If the IMT screen had previously established an update subscription, that subscription will be canceled and a new subscription will be established with the geographic filter. The request query will be maintained as an active publication in the JXSR and reflect updates accordingly until the user selects a new geographic region or resets the IMT screen to show all possible objects by deactivating any previously selected region.

3.1.5 Handling Polygon Region Alterations And Deletions

As mentioned in Section 3.1.1, Polygon Regions can be altered or deleted. The biggest issue with this capability is the manner in which an IMT, that is currently being filtered by an adjusted Polygon Region, will handle the situation. Since the JXSR request is a series of locations and not the name of the Polygon Region, the Design Team is suggesting that the issue be ignored. The single IMT screen keeps a JXSR request open and the request is still valid even if the Polygon Region has been altered to deleted.

This means that the user will be responsible for either closing or reselecting the IMT filtering option for each IMT panel that is currently using the altered or deleted Polygon Region. This action will cancel the open JXSR request and resubmit a new JXSR request with the currently selected filtering options.

3.2 DDS Implementation

The DDS implementation of this design calls for changes in both DDSC and the DDS server. Unlike the WHIP in which Regions can be defined and shared between WHIPs, the DDS has no concept of sharing information between DDSCs. Thus all of the WHIP defined capabilities will be implemented in the DDSC, except for sharing of Region between DDSCs. This section describes the following functions needed t implement geographical region filtering within the DDSC.

- Defining DDS Screens with Region filtering option - Section 3.2.1

- Creating, altering and deleting Regions Section 3.2.2

- Region filtering selection - Section 3.2.3

- Server retrieval - Section 3.2.4

3.2.1 Screen Definition File

Similar to the WHIP's IMT definition files, the DDS Screen definition files define how the data in the DDS Client tables are retrieved and presented. For those tables that have location fields and are suitable for filtering data by geographical regions, the design proposes adding a "geo-filter" attribute to the DDS Screen definition XML <table> element. The value for the attribute is either "true" or "false". The attribute is not going to be mandatory and if it is not present, its value is assumed to be "false".

3.2.2 DDS Region Creation, Alteration, and Deletion

Creating, altering, and deleting Regions from the DDSC will work in a manner very closely linked to the WHIP's Region definition. This is being done to reuse much of the same code. The primary difference between the DDSC operations and the WHIP operations is that the DDSC has no concept of sharing information. It is beyond the scope of this ECP to add such a capability to the DDSC. In summary:

- Regions only exist after being created by the DDSC and will only be known to that DDSC. When the DDS Client exits gracefully, the user defined customized geographical regions will be saved as a part of map preferences that include the map views. This way, the customized regions can be recalled across different sessions of the same client.

- There will be no ability to share Regions between DDSCs.

The DDSC Navigator Tool Bar is shown in Figure 8. As shown, the DDSC Navigator Tool Bar has no Slide Creation or Slide Display Button, but the same new WHIP buttons for Region Creation and Region Display defined in Section 3.1 will be added to the DDSC Navigator Bar.
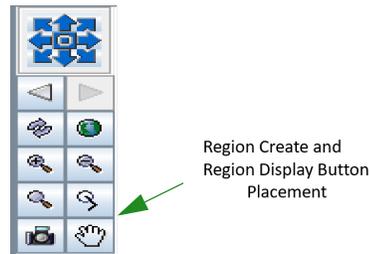
Figure 8. Current DDSC Navigator Tool Bar

These two buttons will have the following reduced functionality:

- **Region Creation Button** - When clicked the Region Editing Tool bar will be opened at the bottom of the map display. This bar, shown in Figure 9, will work in the same manner described for the WHIP in Table 1. After clicking the button, the other DDS GUI activities are temporarily put on hold until user closes the Region Creation panel. Once the region is created, it is added to the list of geographical regions that can be used to filter data objects.
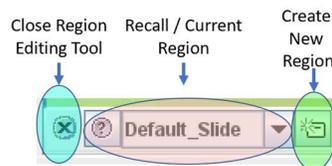

Figure 9. DDSC Region Editing Panel

- **Region Display Button** - This button will be a significantly cut-down version of the same button in the WHIP. Since regions cannot be shared, the Region Display Button only needs to worry about displaying a Region and deleting a Region. This means that the Display Panel will look similar to the mock-up in Figure 10.
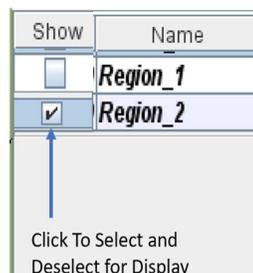

Figure 10. Mock-Up Region Display Panel In The DDSC

When a Region is highlighted on this panel and the user "Right-Clicks", it will bring up the context sensitive menu that has only one option - Delete the Region from the DDSC.

3.2.3 DDS Client Map Component

Note, unlike the WHIP, the DDSC currently has only one tab on the Configure Panel, the Column Tab. When the "geo-filter" attribute of a screen definition file is set to "true" and the table is instantiated as the GUI, its configuration panel will have a new tab where the user can select geographical regions or OPAREAs for data filtering as shown in Figure 11.
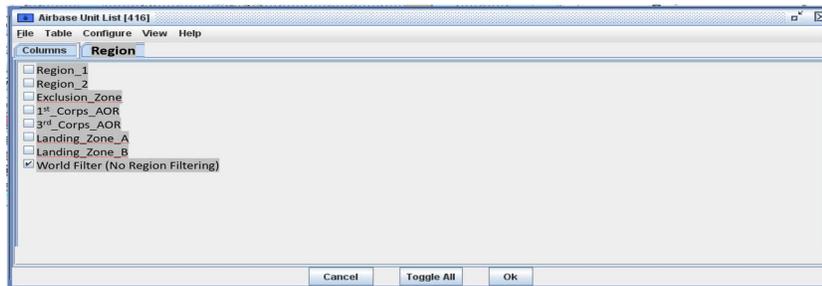

Figure 11. DDS GUI Configuration Panel With Region Filtering

The panel lists all DDSC existing Regions by name, and all OPAREAs that exist in the OPAREA database table. The DDSC has no concept of side, so all defined OPAREAs in the database will be listed, irregardless of the side that owns or will have visibility of the OPAREA during game execution. Each name is associated with a check box where the user can select it to be used as a filter or not. The "Toggle All" button will work in a manner identical to the WHIP operation as described in Table 2.

3.2.4 DDS Client and Server Communication

Once the user selects one or more customized Regions or OPAREAs on the table's configuration panel, the DDS table collects the vertex location data for each selected polygon. This data is transferred through the Glassfish server to accomplish an appropriate retrieval from the database. When the Glassfish server receives the request from the client, it will retrieve the data from the database table and filter out those that do not fall in any of the selected geographic region. From there, it then sends the results back to the DDS Client.

When DDS Client table receives the response back from the Glassfish server, it will process and display them in the table as it would do for other request responses.

If the configuration panel only has the "World" region selected, the Glassfish server will not conduct any geographic region checks. The request will work exactly as it does in the current version of the DDS.

4.0 Data Changes

No data changes are required to implement this ECP. This means that this ECP will be delivered as part of the JTLS-GO 6.1 series.

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 Basic WHIP Capability

Purpose: The purpose of this test is to ensure the basic WHIP IMT geographic filtering capability works.

Step 1: Use a database that has at least two OPAREAs defined and known to the Player WHIP on which the test is being conducted. This WHIP is referred to as WHIP A.

Step 2: Define three Regions from WHIP A.

Step 3: Bring up the Owned Target IMT screen on WHIP A.

Expected Results: All Owned target should be displayed since no area filtering has been selected.

Step 4: Using the filtering tab, filter all target types off except for SAM/AAA targets.

Expected Results: Only SAM/AAA targets should be displayed.

Step 5: Without closing the IMT, bring up the Region configuration panel and select the filter for one of the Regions.

Step 6: Click "Ok"

Expected Results: Only SAM/AAA Targets within Region 1 should be displayed in the IMT.

Step 7: Display the region being used for filtering.

Step 8: Submit an ADA Report order using the polygonal option and drawing the polygon to match the displayed region.

Step 9: Compare the ADA Report SAM/AAA Targets with the list of targets listed in the IMT.

Expected Results: The targets listed on the IMT and the report should match exactly.

Step 10:Repeat Step 5 thorough Step 9, when two Regions are clicked.

Expected Results: The displayed targets should match the contents of the two ADA Reports. You will need to manually merge two submitted ADA Report messages to properly compare.

Step 11:Repeat Step 5 thorough Step 9, when you turn off one of the two Regions that were clicked.

Expected Results: The displayed targets should match the contents of the ADA Reports for the displayed region.

Step 12:Repeat Step 5 thorough Step 9, when one Region and one OPAREA are clicked on.

Expected Results: The displayed targets should match the contents of the two ADA Reports submitted for each selected geographic area. You will need to manually merge two submitted ADA Report messages to properly compare.

Step 13:Alter the Target Category Filter and turn on one more type of target.

Expected Results: Only targets in the selected areas should be displayed in the IMT.

Step 14:Repeat Step 5 thorough Step 9, when no Regions and two OPAREAs are clicked.

Expected Results: The displayed targets should match the contents of the two ADA Reports. You will need to manually merge two submitted ADA Report messages to properly compare.

Step 15:Turn off all filterable regions.

Expected Results: The "World" area should be shown as set. All targets should be displayed again.

7.2 Basic DDSC Capability

Purpose: The purpose of this test is to ensure the basic DDSC geographic filtering capability works.

Step 1: Use a database that has at least two OPAREAs defined bring up any DDSC.

Step 2: Define three Regions in the DDSC.

Step 3: Bring up the Ground Unit Table.

Expected Results: All Ground Units should be displayed since no area filtering has been selected.

Step 4: Using the Configuration tab, turn off all Ground Unit attributes except the unit short name and location.

Expected Results: No change should be made in the numbers of Ground Units retrieved. Only the selected attributes should be displayed on the table.

Step 5: Without closing the table, bring up the Region configuration panel and select a single Region.

Step 6: Click "Ok"

Expected Results: Only units within the region should be displayed. Check this by doing a Find on each displayed unit.

Step 7: Repeat Step 5 thorough Step 6, when two Regions are clicked.

Expected Results: The table displayed units should match the units in the areas as shown on the map.

Step 8: Repeat Step 5 thorough Step 6, when you turn off one of the two Regions that were clicked.

Expected Results: The displayed units should match the units in the areas as shown on the map.

Step 9: Repeat Step 5 thorough Step 6, when one Region and one OPAREA are clicked on.

Expected Results: The displayed units should match the units in the areas as shown on the map.

Step 10: Alter the Column Filter and turn on one more unit attributes.

Expected Results: The retrieved and displayed units should not change. The new attributes should be properly displayed.

Step 11:, Repeat Step 5 thorough Step 6, when no Regions and two OPAREAs are clicked.

Expected Results: The displayed units should match the units in the areas as shown on the map.

Step 12:Turn off all filterable regions.

Expected Results: The "World" area should be shown as set. All units should be displayed again.

7.3 Sharing Regions WHIP Capability

Purpose: The purpose of this test is to ensure that a WHIP can share Regions with other WHIPs.

Step 1: For the three Regions created and owned by the WHIP A, change the fill color for one of the regions, change the line color for the second region, and change the line format for the third region.

Step 2: Go to the WHIP Region Display and Sharing screen. There should be at least three Regions defined.

Step 3: Share one of the three created regions with a single WHIP on the same side. Share one of the three regions with a Controller WHIP. Share one of the three regions with all WHIPs on a different side.

Step 4: Bring up the player WHIP for which Region 1 was shared. Bring up the Naval IMT screen and select the filter for Region 1.

Expected Results: The WHIP IMT screen should only show naval units that are in the Region.

Step 5: Bring up the Controller WHIP for the which Region 2 was shared. Bring up the Unit IMT screen and select the filter for Region 2.

Expected Results: The WHIP IMT screen should only show units that are in the Region 2.

Step 6: Bring up a WHIP from the side for which Region 3 was shared. Bring up the Formation IMT screen and select the filter for Region 3.

Expected Results: The WHIP IMT screen should only show formations that are in the Region 3.

Step 7: For each of the newly started WHIP ensure that the Regions that were shared can be displayed on the map.

Expected Results: The regions should be displayed with the proper colors and attributes.

7.4 Deleting WHIP Regions

Purpose: The purpose of this test is to ensure deleting WHIP Regions are properly handled.

Step 1: Displayed Region 1 on WHIP A and the WHIP with which Region 1 was being shared

Step 2: Delete Region 1

Expected Results: The Region should be deleted, the Region should be removed from the map and the Region should be removed from the WHIP with which it was shared.

Step 3: Open up a Squadron IMT screen on both WHIPs and go to the configuration tab for the IMT.

Expected Results: Region 1 should not be listed.

Step 4: On both the WHIP A and the Controller WHIP with which Region 2 was shared, select Region 2 for the IMT Squadron filtering. On the Controller WHIP also select the side filtering for the side of WHIP A.

Expected Results: The Squadron IMT screens should show the appropriate squadron units and the units should be the same on each WHIP's IMT.

Step 5: Delete Region 2.

Expected Results: There should be no change in the IMT. As far as the system is concerned the JXSR has no knowledge of the Regions, just the series of vertex locations. The on-going JXSR publication has not changed.

Step 6: Bring up the Squadron IMT configuration panel on each WHIP.

Expected Results: On WHIP A, Region 2 should not be displayed and the World filter should be checked. Clicking "Ok" should re-retrieve and all squadrons should be displayed. On the Controller WHIP, Region 2 should not be displayed. Clicking "Ok" should result in a retrieval and all squadrons on the side selected should be displayed.

Step 7: Create Region 4 on the Controller WHIP and share it with WHIP A.

Step 8: Bring up the Logistics IMT screen on both WHIPs and select Region 4 for filtering.

Step 9: On WHIP A, also select Region 3 for filtering.

Expected Results: The proper units should be displayed in each IMT screen.

Step 10: Have the Controller WHIP delete Region 4.

Step 11: Open the Logistics Unit IMT Configuration panel on each WHIP.

Expected Results: The Controller WHIP should show the World filter selected. WHIP A's filter panel should show Region 3 selected. Clicking "Ok" should result in the Logistics units as identified by the selected Regions filters.

7.5 Creating and Deleting WHIP OPAREA

Purpose: The purpose of this test is to ensure Creating and Deleting OPAREA from the game are properly handled by the new IMT filtering capability.

Step 1: Bring up the Convoy IMT display and select filtering on one of the OPAREAs

Step 2: Delete the OPAREA from the game.

Expected Results: The IMT contents will not change because the JXSR is holding the retrieval based on a list of locations.

Step 3: Open the configuration panel. The OPAREA should not be displayed. Click a different Filtering option and the "Ok".

Expected Results: The Convoy IMT should only list the convoys that are located in the select area filters.

7.6 Test Automatic Updates Of WHIP IMT Using Area Filtering

Purpose: The purpose of this test is to ensure that when objects move into and out of select area filter regions, that the IMT screen appropriately adds or removes the object from the display.

Step 1: Create a Region on WHIP A.

Step 2: Open the Convoy IMT screen and filter on both a Region that covers a Support Unit.

Step 3: Open another Convoy IMT screen and filter on an OPAREA that covers a Ground Unit that will receive supplies.

Step 4: Enter a Directed Resupply order to send a convoy from the support Unit to the Ground Combat Unit.

Step 5: Watch both IMTs and follow the Convoy from start to finish.

Expected Results: The convoy can be tracked on the map. When it moves out of the defined Region, it should be removed from that IMT screen. When it moves into the OPAREA, is should be added to that IMT screen. The convoy attributes should change as they change within the model. When the convoy returns home, the reverse should happen.

7.7 Test Altering Regions

Purpose: The purpose of this test is to ensure that after the user alters the area that a Region covers, any IMT screen will pickup that change.

Step 1: Bring up the Formation IMT screen and filter using one of the existing WHIP Regions

Expected Results: The IMT Screen should display only those Formations that fall withing the selected Region.

Step 2: Using the alter Region capability to redraw the existing region.

Expected Results: The displayed IMT screen will not change.

Step 3: Open the IMT screen filter panel and without changing anything, click "Ok" which should cancel the current IMT publication and schedule a new publication with the new vertex locations.

Expected Results: The contents of the IMT should change to display only those Formation in the altered Region.

7.8 Test "Toggle All" Button On IMT Region Filter Panel

Purpose: The purpose of this test is to ensure that the "Toggle All" button on the IMT Region Filter panel works as described in Table 2.

Step 1: Create at least five Regions and three OPAREAs on WHIP A.

Step 2: Bring up the Foreign Target IMT without configuring anything.

Expected Results: The IMT screen should be displayed and all known foreign targets should be displayed.

Step 3: Open the Region Configuration Panel on the IMT screen and click "Toggle All".

Expected Results: Nothing should happen. When you bring up the panel, the "World" region should be selected and nothing else should be selected. This should not change at all when the "Toggle All" button is selected.

Step 4: Click on two Regions and one OPAREA on the filter panel. Click "Ok"

Expected Results: The IMT screen should be displayed and all foreign targets within the select Regions and OPAREA. should be displayed.

Step 5: Open the Region Configuration Panel on the IMT screen and click "Toggle All".

Expected Results: All of the Regions and OPAREAs should be selected.

Step 6: Click "Ok"

Expected Results: The IMT screen should be displayed and all foreign targets within all defined Regions and OPAREA. should be displayed. Targets outside all of the Regions and OPAREAs should not be displayed in the IMT.

Step 7: Open the Region Configuration Panel on the IMT screen and click "Toggle All" again.

Expected Results: All of the Regions and OPAREAs should be deselected. The "World" regions should be automatically selected.

Step 8: Click "Ok"

Expected Results: The IMT screen should be displayed and all known foreign targets should be displayed.

7.9 Check Region Filtering Panel Availability

Purpose: The purpose of this test is to ensure that each IMT screen for which region filtering makes sense has the capability.

Step 1: Open every IMT screen and review whether the "Region" filter tab is or is not available.

Expected Results: This screens where Region filter expected should have the tab. The IMT screens where you would not expect region filtering should not have the Region filter tab.

7.10 DDS Region Attribute Changes

Purpose: The purpose of this test is to ensure that altering the display attributes of a Region works properly

Step 1: Create three DDSC Regions.

Step 2: Using the editing function, change one Region to have a fill color, have one Region have no fill color, but a different outline color, and finally given the third Region a different type of lien representation.

Expected Results: Each Region should be displayed on the map as indicated by the attribute changes that were made.

Step 3: Using the editing function, change the location of a Region's vertices.

Step 4: Bring up the Naval Table and select the altered Region as a filtering Region.

Expected Results: Only Naval Units that have locations within the newly altered Region area should be displayed.

Step 5: Bring up the Table Region configuration panel and click "Toggle All" button.

Expected Results: All filterable Regions and OPAREAs should be selected.

Step 6: Click the "Toggle All" button again.

Expected Results: All filterable Regions and OPAREAs should be deselected. The "World" Region should be selected.

Step 7: Click "Ok".

Expected Results: All Naval Units should again be displayed in the DDSC Table.

Step 8: Highlight all units in the table, and conduct a multiple attribute change for Owning Federation. Set all Naval Units to "JTLS Only"

Step 9: Go back to the Region filter Table and select one OPAREA and one Region that covers naval units from several factions. Click "Ok"

Expected Results: Only those Naval Units in the Region and OPAREA should be displayed.

Step 10: Using the table filter command, build a filter to only list units from one of the factions.

Expected Results: Only units from the filter faction and within the selected Region and OPAREA should be displayed.

Step 11: Highlight all Naval Units displayed and conduct a multiple attribute change for Owning Federation. Set all of the displayed Naval Units to "JTLS".

Expected Results: The attribute should be updated and displayed. The Naval Units displayed in the table should not change.

Step 12: Open another Naval Unit table that has no Region filtering.

Step 13:Create a table filter command to list only the Naval Units that have an Owning Federation attribute of "JTLS".

Expected Results: The number of units displayed in each table window should be identical.

7.11 Test DDSC Restarts

Purpose: The purpose of the test is to ensure that defined Regions are available after normally stopping a DDSC and restarting the DDSC.

Step 1: Stop the DDSC for which several Regions are defined.

Step 2: Move to another machine and restart the same DDSC.

Step 3: Bring up the Region Display panel from the Navigator Tool.

Expected Results: All Regions that existing before the DDSC was stopped, should be there.

Step 4: Select one of the regions for display.

Expected Results: The region should be displayed at the same location and with display attributes when the DDSC was stopped.

Step 5: Bring up the Support Unit Table and select the Region for filtering.

Expected Results: Only the Support Units that fall within the selected region should be displayed in the table.

Step 6: Go back to the original machine and bring up a different DDSC.

Step 7: Look at the Region selection panel.

Expected Results: No reasons should be listed.