Name: _____ Date: _____

Using Debrief to Analyse DIS Simulations

A Background to Debrief

Debrief was developed in the mid 90's by the Maritime Warfare Centre in Portsmouth UK to support the analysis and reporting of maritime tactical exercises. It is a free, open source application that makes it possible for analysis organisations to run open contests for support and development contracts to maintain or extend the application.

In 2015, a body of users identified the potential to use Debrief as a live simulation monitor. The Distributed Interactive Simulations (DIS) standard was chosen. DIS is a worldwide standard used by many organisations, including military organizations, for running real-time scenarios, and Debrief uses it to integrate with network simulators that adhere to that same protocol.

To understand how to use Debrief and DIS, we have broken this document into 3 sections:

1. **Getting Started with Debrief** - this is aimed at informing and orienting you to the application.
2. **Working with Debrief** - here we will look at how you define your Debrief workspace and view some data.
3. **Using Debrief to Analyse DIS Simulations** - we then configure and run the simulator, as well as adding and editing both existing and new data.

So first, we need to get started with Debrief.

Getting started with Debrief

Welcome to Debrief NG

In this first part of the tutorial, we will look at the following areas to get you up to speed as quickly as we can:

- About these tutorials
- Document conventions
- Installing and opening Debrief
- Welcome to, and working within, Debrief
- Debrief preferences
- Views, menus, the plot editor, and toolbars
- Shortcut key combinations
- Chart features

By the end of this getting started section, you will know where everything is in the application, how to work efficiently within Debrief, and be in the best position possible for the subsequent tutorials which are aimed at using your workspace and data within Debrief.

About these Tutorials

Though there is a wealth of information in these tutorials to get you both started and up to speed quickly, this will only be achieved by active involvement on your behalf. As such, in most procedures you will see checkboxes in the right margin. These are there to not only check your progress but also to help directly involve you while you proceed with learning how to use Debrief. For example, you will see something similar to the following:

1. You will need the following items to work through the tutorials:

   - A pencil/pen to tick off these checkboxes. ❏

   - Access to a PC ❏

   - Have either a pre-installed copy of Debrief, a Debrief CD, or an Internet connection to download a copy. ❏

2. Having read the previous, do you understand what will be covered in this, the first tutorial of Debrief, and what items you need?

By checking off the boxes as you go you can track your progress and see how well you're doing.

Document Conventions

The following conventions are used within the tutorial:

- **Bold** is used to identify commands, verbal instructions and other essential information, such as user interface (UI) details/buttons/names, and for emphasis.
- "**Bold + quotes**" are used to identify filenames and other external references.
- "Quotes" are used to highlight comments in examples.

Navigating within Debrief

When you're navigating within Debrief you will need to click on menus, sub-menus, and even sub-sub menus. However, though writing it out as "Click on **File** on the menu bar, then click on **Save As**, and finally **navigate to where you want to save your file**," is descriptive and accurate, it's pretty laborious and wasteful; so, we shorten it and write it as:

<div align="center">

File > **Save As** > **file location**

</div>

That's far more succinct and easier. Next we'll look at installing and opening Debrief.

Installing and Opening Debrief

Before you install Debrief, please check the following:

- If you haven't installed Debrief before, ensure you have downloaded the latest version from Github (https://github.com/debrief/debrief/releases).
- If you have an older legacy version of Windows already installed on your computer, then please uninstall that version via **Windows > Start menu > Settings/Control Panel > Add/Remove Programs**.

Once you're ready to go with the latest version of the software:

1. Unzip it to your computer/network.

2. Navigate to the **DebriefNG** folder, then double-click on the "**DebriefNG.exe**" file
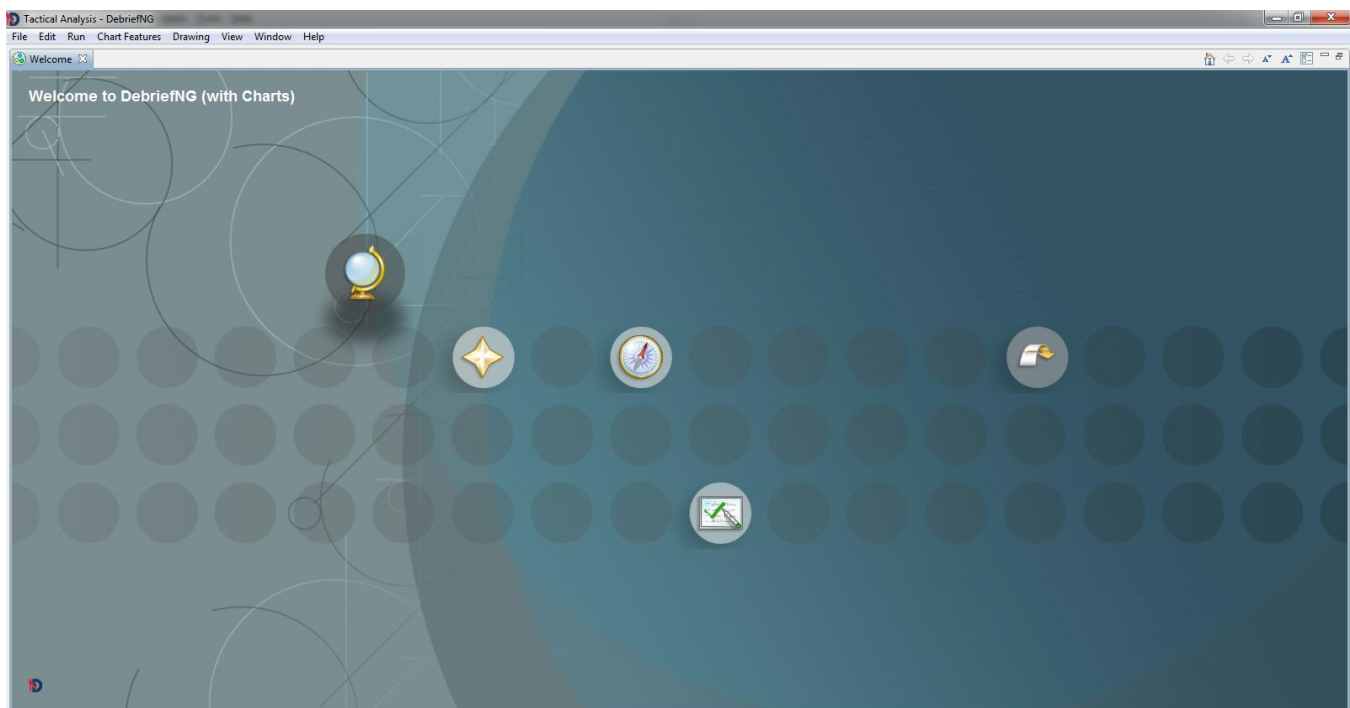   to run the application.

It will take a few seconds to load and, once loaded, you will see the **Welcome to Debrief NG** page.

Welcome to DebriefNG (with Charts)

The **Welcome** screen is displayed on your first visit to Debrief, but it is always accessible from within Debrief via the **Help** menu.

When the page loads, you will see the following screenshot:

As you can see, this contains these 5 buttons:

- **Overview** - if this is your first time using Debrief, it's a good idea to click on this button to get an overview of the features.
- **What's New** - we're constantly updating the software, so if you want to see the exciting new features, click on this button.
- **First Steps** - we all have to start somewhere; so, if you'd rather read the first steps than follow this tutorial, then feel free to click here.

- **Tutorials** - if you click on this option, then you'll see another version of this tutorial. However, it's always handy to know where to find these.
- **Workbench** - the workbench is the main interface for performing your plot analysis and other tasks: this is the place where you will do all your work.

I know you're raring to go, so we won't go into all the features or what you will find by clicking on the above, but I would recommend you explore and familiarise yourself with those elements when you have the time.

For the next sections, if you're an experienced computer user then you'll already know about main menus, context-sensitive menus and toolbars; if this is the case, feel free to skip them. However, I would recommend that you do read the section on **Views** as they are an important component of Debrief.

1. Click on the **Goto Workbench** button. The **Welcome** screen will close and you will see the **Create Project** dialog box.

2. Every Debrief project requires a name, so you can go with the default name of **DebriefProject**, or enter something more meaningful. I will name mine "**Debrief_test_project_01**".

3. You can leave the **Add Debrief Samples** and **Always Check at Startup** boxes checked.

4. Click on the **Ok** button. The dialog box will close and you will see an empty Debrief interface consisting of various items and objects (we will go over these in a second).

5. If you look in the **Navigator** 'window', you will see your new project name folder.
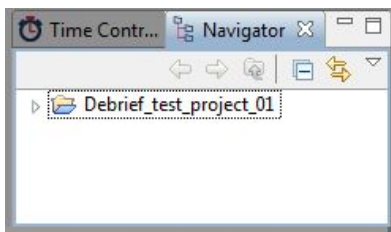
In Debrief, this small window is called a **View**. There are different types of view in Debrief, all of which perform different functions, e.g., if you click on the **Time Controller** tab (next to **Navigator**), you'll see we have a set of video-type controls: very useful for displaying time elements in Debrief.

Underneath these 2 views are 3 other views: **Properties**, **Track Tote**, and **Chart Overview**; again,

each of these views performs a different function. We won't look at these now, but these views and other interface items such as toolbars, menus, and the plot editor (the large empty space to the right of the views) make up a large part of Debrief.
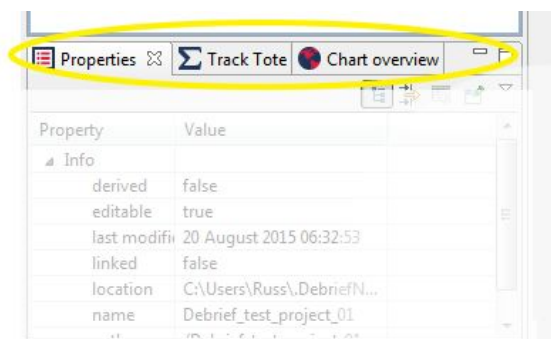
Though empty, the interface may seem a little daunting at first, but we'll work through all of these items and you'll soon come to realise that it's actually quite easy to work with.

However, as with any new application, it's a good idea to configure it exactly how you want it for your own purposes. In Debrief, these are called **Preferences** and, though you don't know that much about the software as yet, you will understand each of these settings.

Debrief Preferences

As mentioned, all software is configured a certain way 'out of the box', and Debrief is no different. However, it's most likely that you'll either want to change the way it's setup or know where to make the changes if you later decide to do so. For example, if you prefer **Over the Ground (OTG)** as the default import mode for track files, then you can change the setting here; the same if you wanted your **default range units** in **miles** or **nautical miles**, etc.

Debrief has a large number of different settings and configurations, all of which can be changed if you prefer alternatives to the preset ones. To change these:

1. In Debrief, click on **Window > Preferences**, and the **Preferences** dialog will open.

   We will now look at some of the important settings. Though we won't change any (as it's setup just right for the subsequent tutorials), it's handy to know where they are.

2. Click on **Maritime Analysis** and you will see 3 settings groups: **Default Track Import Mode**, **Default Range Units**, and **Relative Bearing Format**.

3. Again, we will leave these at the default setting, but just check that you want **Ask User** for the **Default track import mode**, **yd** for the **Default range units**; and **UK format (R180,,G180)** for the **Relative bearing format**. If not, make your change(s). ❑

4. Once you are done, click on the **Apply** button to commit the changes: **Apply** makes the changes and leaves the dialog box open, whereas clicking on Ok commits the changes and closes the box. ❑

Now we will look at the different location format options.

5. Click on the drop-down arrow next to **Maritime Analysis** and select **Formatting**. ❑

6. You can now choose your location format, either **DD°MM.MMM'** or **DD°MM' SS.SSS"**—again, we want the default option. ❑

7. If you have downloaded the "**Natural Earth**" set, click on this in the **Maritime Analysis** sub-menu (we talk a little more about this set in the following section). ❑

8. Click on the **Browse** button, navigate to the download location, and double-click on the file to load it. ❑

9. Finally, click on the **Ok** button. ❑

Those are the only settings we need for our tutorials. For the other preference settings, refer to the User Guide for further information. Before moving onto Working within Debrief, we'll quickly look at the **Natural Earth** set.

Natural Earth

In addition to plotting recorded vehicle data, Debrief is able to show a number of datasets in backdrop form.

Debrief used to offer the Vector Product Format (VPF) vectored dataset and the ETOPO-2 gridded bathymetry, but in more recent times, these have been superseded by the shiny new "**Natural Earth**" set.

Debrief contains a small, low resolution subset of the "**Natural Earth**" dataset, sufficient to provide coastlines and country boundaries. However, you can make your analysis plots much more attractive by obtaining and configuring higher resolution data.

Obtaining the Natural Earth dataset

It's worth checking to see if your workplace already has a network copy of "**Natural Earth**"; and, if your IT security policy permits it, and you have sufficient storage space on your machine, you will get better performance by copying the data to your hard drive.

If you don't have access to a copy, you can go to https://github.com/debrief/NaturalEarth and download it by clicking on the **Download zip button** (file size is approximately 25 MB).

Once you have downloaded the zip-file, unzip it in the normal way and save it to a safe place on your hard drive. Then you can configure Debrief to use it.

Configuring Debrief with Natural Earth data

To configure Debrief to use the data-set::

1. Click on **Window > Preferences** (or press **Alt, W, P**).

2. Click on **Maritime Analysis** and select **Natural Earth**.

3. Click on the **Browse** button to navigate to your unzipped **Natural Earth** folder.

4. Click on **Ok**.

That's it. Debrief will now use the Natural Earth set. Now let's look at working within Debrief itself.

Working Within Debrief

The UI for Debrief is called the **workbench**, and is centred on what is called the **plot editor**; this in turn is surrounded by a series of small windows, called **views**. We'll come onto these shortly, but the **plot editor** is where your plots will be displayed and where you can work on them.

Within the workbench itself, the base component for working is the project (we already created our

The Plot Editor

base project in the previous section, **Welcome to DebriefNG**), and everything we see in the UI is related to the selected project.

The first thing we must do is to define the workspace for this project. To do this, we need to ensure the **Navigator** view is open; and, unless you accidentally closed it, it should be; but we'll quickly go over 2 methods of opening this view as it is one of the more common views in Debrief. The **Navigator** view to Debrief is akin to "**Windows Explorer"** to your operating system, so it's essential to know how to open it.

Opening the Navigator view

The easiest ways to open the **Navigator** view are either via the menu or the **Quick Access** dialog.

Opening views via the menu

To open views using the menus (remember, we're just concerned with the **Navigator** view here, but these steps apply to any Debrief view):

1. Click on **Window** on the menu bar

2. Mouse-over or click on **Show View**

3. Click on **Navigator** and that view will open.

Using the convention I described before, this would be:

Window > Show View > Navigator.

We will use this convention from here on.

However, a much quicker way to open a view is to use a keyboard combination—a sequence of key presses to perform an action; the only difference here is you must know the name of the view you want to open.

Opening and closing views

To open the **Quick Access** dialog and locate any item within Debrief:

1. Press **Ctrl+3** on your keyboard and the **Quick Access** popup dialog will show.

2. In this instance, we are searching for the **Navigator** view, so just start typing 'navigator' into the search field and, before you've finished typing the word, you will see **Views - Navigator - General** appear.

3. Click on it and the **Navigator** view will show in the top left of your window.

The **Quick Access** dialog also 'remembers' your choices, so the next time you open it you will see recently selected items listed beneath the search field; just click on the one you want and it will open.

As you can see, opening views is easy; so is closing them: to close a view, click on the **X** icon on the view name tab.

Now we've looked at opening and closing views, let's have a look at them in a little more detail.
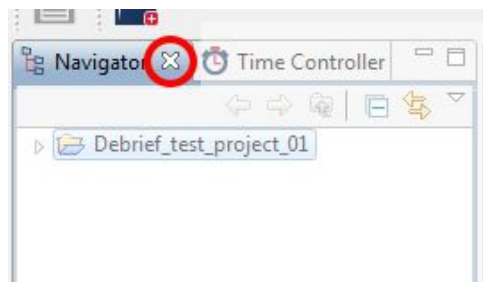
Working with views

As mentioned, views are small viewing panes which present information specific to the task you are carrying out in the plot editor in different ways. For example, one view may display tabular information about the properties of an object: its position, its color, etc., (the **Properties** view); whereas, another will have video controls to show time (the **Time Controller** view); and yet another will show a graphical overview of the chart in use (the **Chart Overview** view). Again, views display supporting data or properties about the selected data or tasks. As you will see, they are an important element of Debrief and you will use them extensively.

We've already looked at opening and closing views, next we'll look at other view-related tasks.

Active or Inactive?

In any Windows program, we refer to items such as a window, a video, an image, some text, etc. as an 'object'. An object can only have 2 states: it is either selected (**active**) or it isn't (**inactive**). The vast majority of the time, you can only work/perform an action on an active object, i.e., something that has been selected to work on.
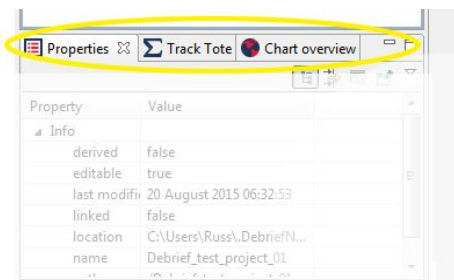
In addition, and this applies to most computer programs or applications, there has to be an active object: this is what you've selected to work on or with. Naturally, if you want to work on an inactive object, then you must first make it active by selecting it (this applies in most cases, though not all). Debrief shows you which object is the active view with a blue **name tab** and blue border.

1. Click on the **Outline** view in the bottom left of your window. It's name tab will turn **blue** and you can see a **blue border** around the view. This is now the active object.

2. The **Outline** view is still empty, so click on the **Navigator** view to select it (make it active), and you will now see some attributes in the **Properties** view.

3. In the **Properties** view, click on the **Info** attribute in the **Property** column: this attribute becomes the active property and this view the active view.

4. In the same column, click on the **location** attribute; this is now the active attribute.

To make an object inactive, click on a different object to select it; the new object is now active.

Note: there will be times when you will use the **Ctrl** and **Shift** key on your keyboard to select multiple objects; when this occurs, all selected items become active.

Next, it's quite possible that you will want to reposition views as you work, so we will look at how to move them.

Moving Views

Moving views is very easy and they can be positioned anywhere around the plot editor by dragging-and-dropping. This is very handy as not only can you move the important features into prominent positions on your monitor when you need them, but you can also move them out of the way, onto another monitor (if you have multiple monitors), or even drop them into an already open view to stack them up (to save screen space). Try it:

1. Click on the tab of any open view to make it active (remember, the tab will turn blue).

2. Now, click on the tab itself and, keeping the mouse button pressed, drag it across the plot editor area. As you approach the edges of the plot editor, you will see the cursor change to a black direction arrow and a placeholder box will appear to one side of the **plot editor**; if you wish, you can drop the view into place there.

3. However, if you drag it further onto to another view, the cursor will change to a graphical set of files (or **folders**); you will also see a shaded border around the view you are over, showing you where it will be placed. If you drop it now, the view will add to that view set (or **stack**), and become active.

4. But, if you didn't drop it on the view, deciding instead to drop your cursor either onto the name tab of the view you are over or right next to it, you will see a dotted box appear showing you where your view will be placed. As soon as you drop the view, it will dock in that position and become the active view.

Note: within the confines of the central editor pane, you can also do the same with the plot editor.

Resizing Views

In addition to the standard Windows **minimize** and **maximize** functionality (the two small icons in the top right-hand corner of each view), you can also resize views by moving your mouse cursor over the view's border. As soon as the cursor changes to a directional arrow, left-click on the border and then drag it in one of the indicated directions. Once it's in position, release the mouse button. Try this with the **Navigator** view now.

As you probably realise, many of Debrief's functions are centered around using the mouse, so we'll first look at menus and then at toolbars.

Menus

Debrief has a number of different menus which provide different functions. These are the main menu, context-sensitive menus, and view drop-down menus. We'll look at each of these in turn.

Main menu - reduced

Without a Debrief file open, you will only see a reduced main menu set of 6 items: **File**, **Edit**, **Navigate**, **Run**, **Window**, and **Help**. So, we'll open a file to see the full set.

Opening a Debrief file

To manage or open files, we need to go to the **Navigator** view. If it isn't open, open it. You can either:

- Click on **Window > Show View > Navigator**. ❏
- Press **Ctrl+3 > Quick Access > [click on Navigator - General]** ❏

Now, in the **Navigator** view:

1. Click on the drop-down arrow next to **"Debrief_test_project_01"** and it will expand. ❏

2. Click on the "**sample_data**" folder and locate the file "**boat1.rep**". ❏

3. Double-click on "**boat1.rep**" and the **Select track mode** dialog will show (remember, we accepted the default in **Preferences** to always ask us for the track mode). ❏

4. Select **Over the Ground (OTG)**. ❏

5. Click on **Ok**. After a second or two, the **boat1.rep** plot will display in the plot editor part of the UI. ❏
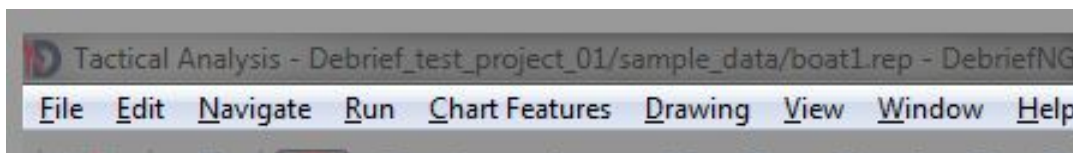
You will also see the full main menu set as well as the main toolbar set.
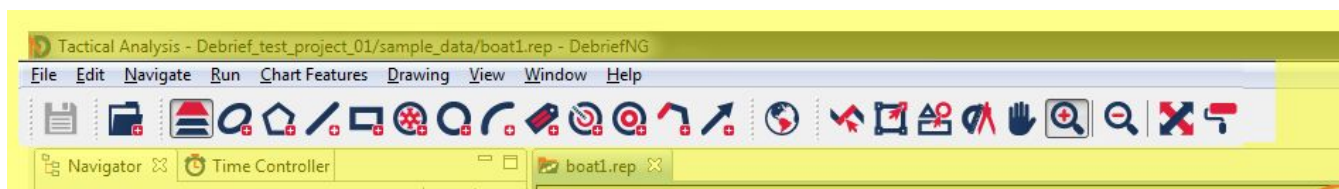
Main Menu - full

The 9 main main menus items are **File, Edit, Navigate, Run, Chart Feature, Drawing, View, Window,** and **Help**. These are self-explanatory and mostly mirror many of the principal functions common throughout apps/programs today.

Because of this, I won't run through what each do as the **User Guide** contains that information, but will just add that you can only perform certain functions in Debrief if certain pre-conditions have been met. If these conditions haven't been met, you won't be able to do them, e.g., the **Edit > Paste** function will be

greyed-out and won't be available if you haven't yet copied anything to the clipboard. Similarly, you can't copy anything if nothing has actually been selected in the interface—I appreciate that you probably already knew this, but it does bear repeating.

Using the menus is very easy, especially with the mouse. However, you can also access the main menu items using the keyboard. We'll discuss more about this in **Shortcut Key Combinations**.

The second type of menu we have are called **context-sensitive menus.**

Context-sensitive menus

One mostly unused function when using the mouse with Windows is the right-click mouse button or the right-click keyboard button (this is the one with the graphic on it, normally 2 to the right of your keyboard's space-bar).

Using either of these functions will cause a pop-up menu to appear—this is called a **context-sensitive menu**. Try it now.

In the **plot editor**:

1. Right-click on the grey area of the plot. You will see a popup menu with 3 options: **Copy Cursor Location**, **Edit base chart**, and **Edit Projection**.

Admittedly, these aren't much help to us at the moment, but it's a quick way of accessing required information or attributes and functions of the chosen object (in this case, it was the grey background area—the sea).

2. Now, at the top of the track (the entire line on the plot is the track), you can see a straight yellow section. Right-click anywhere on it and a context-sensitive menu with a large range of options will display.

3. The 3rd option down is **Reset color**; select it and that small part of the yellow track will change color to red.

Of course, there are many other things we can do with these options, but it's handy to know they are there and it's far quicker than using the main menu all the time.

You might think this is no big deal, but when you're using a computer all day shortcuts like this help enormously. As well as saving you time and energy, these context-sensitive menus also show you what other functionality is available to you; and, as well as being a neat training aid, are great for

improving your efficiency and capability with the program. The last menu set is the view drop-down menu.

View Drop-down Menus

All views have a drop-down menu which further narrows-in on the functionality for the particular subset of tasks you are performing. For example, not only can you right-click on every individual element or attribute in a view, but you can also click on objects such as column headings as well as the small drop-down arrow in the top right-hand corner of each view: each one will provide with you a new set of options specific to that attribute/view.

With our **boat1.rep** file:

1. Identify the **Outline** view (if it isn't visible, open it: **Window > Show View > Outline**).

2. Within that view, click on **Track:NELSON** to expand it. You should see **120500.00 (402 items)** as the first item in the list (this contains the information about the entire track in our plot editor).

3. Right-click on **120500.00 (402 items)**.

4. Mouse-over **120500.00** and another popup will show.

5. Mouse-over **Linestyle** and select **Long dashes**. The track now changes to long dashes.
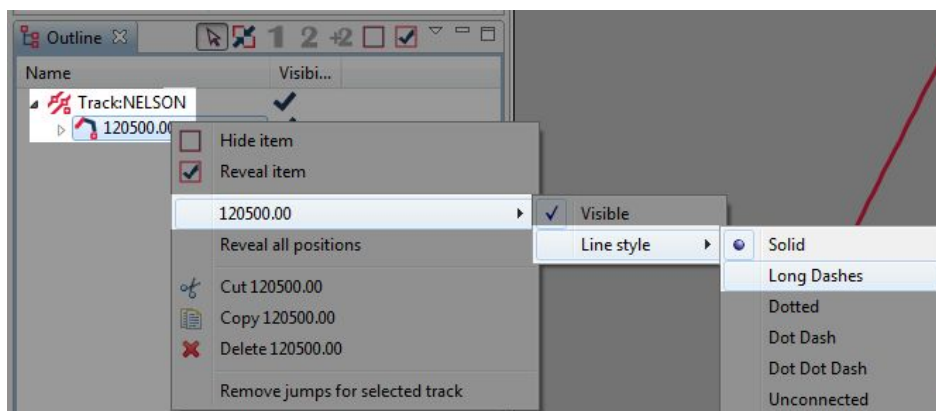
Next, we'll go one step up, to the track-level:

1. Still in the **Outline** view, right-click on **Track:NELSON**. ❏

2. Mouse-over **NELSON** and a popup will show. ❏

3. Mouse-over **Color** and select **Blue**, most of the track will change color to blue. ❏

Now, we'll go another step up, this time to the view-level:

1. Click on the **Outline** view's drop down arrow (in the top right corner). ❏

2. Select **Hide Item** and the track will disappear from the plot (it's still there, just hidden). ❏

3. Click on the drop-down arrow again and select **Reveal Item**, it will show again in the plot editor. ❏

Note: you can perform these functions at different levels in the view, e.g., you can also hide/reveal at the track and node levels, but it all depends on what you are actually working on in the plot editor.

The Plot Editor

The plot editor itself is locked to the centre of the user interface, and is where you view and work on your projects. You can have multiple files open in the central area, each of which has its own tab (though I wouldn't recommend too many as it will become cluttered).

If you do work in a plot editor, then an asterisk (*) will appear in its tab, denoting any unsaved changes.
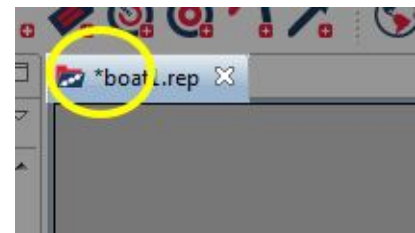
With the changes we made to the **Nelson** track in the previous section:

1. Click on **File > Save**, and because our original file has been changed we must save it as a different format (we will come onto the different file types later). ❏

2. Click on **Ok** and the **Save As** dialog will display. ❏

3. Select the project folder you created earlier, and click on **Ok**. The "**boat1.rep**" file will save as "**boat1.dpf**", the active plot tab name will change, and the asterisk will disappear. ❏

Note: you could also press **Ctrl+S** on your keyboard to save the active plot.

Navigating within the plot area

In addition to using the mouse to move around the plot area, there are other ways of navigating, including using the tab key to cycle through the 5 drag modes, as shown below. If you have a mouse with a wheel, you can press the **Ctrl** key and then use the mouse wheel to zoom in and out of the plot. ❏
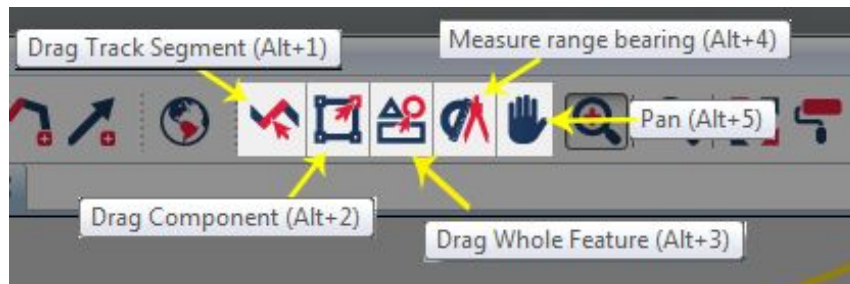
Moving plots

You can move the plot order by clicking on the plot's tab and then dragging it into a new position alongside an existing tab.

1. In the **Navigator** view, double-click on the file "**boat2.rep**" to open it. ❏

2. Select **Over the Ground (OTG)**, then click on **Ok**. The file will display in a new tab. ❏

We now have 2 tabs open: **boat1.dpf** and **boat2.rep**.

1. To move it, left-click and hold on the **boat1.dpf** tab. ❏

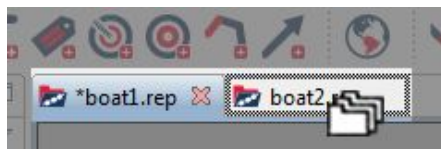2. Either drag the tab on top of or next to the **boat2.rep** tab (you will see the mouse cursor change to a stacked file set and a shaded box will appear). ❑

3. Release the mouse and the tabs will have swapped positions. ❑

Now, we'll take this one step further and view multiple plots.

Viewing multiple plots

Debrief allows you to view multiple plots in one window (much in the same way as you can arrange windows in other applications):

1. Left-click and hold on the **boat2.rep** tab to select it. ❑

2. Now, depending on where you want to position the **boat2.rep** editor in relation to the **boat1.dpf** editor, drag the selected tab towards the edge of the screen (top, bottom, left or right). As you go, you will see the stacked files mouse cursor change to a black arrow and a shaded box will appear showing where the editor will be placed if you release the mouse. ❑

3. Release the mouse where you want the **boat2.rep** file to be positioned. The plot will then show in the new location. ❑

4. In the **Navigator** view, double-click on the "**shapes.rep**" file to open it. ❑

5. Select **Over the Ground (OTG)**, then click on **Ok** (a few times—there are a few tracks in this file). The shapes will display. ❑

6. Now, click and hold on the **shapes.rep** tab. ❑

7. Drag it to the bottom of the **boat2.rep** screen until the mouse cursor changes to a black down arrow. ❑

8. Release the mouse button and your **shapes.rep** editor is now sitting nicely below the **boat2.rep** editor (and both of these are to the right of the **boat1.dpf** editor).

You can repeat this process with other files to further segment your plot editor area.

Rearranging or removing plots

To rearrange or remove plots:

● To **rearrange plots**: drag-and-drop a plot onto the top, side, or bottom of another plot and, when the shadow border that shows where the plot will be positioned is in the right place, release the mouse.

● To **remove plots**: either close the plot by clicking on the **X** in its tab, press **Ctrl+W** on your keyboard, or click on **File > Close**.

Do this now with the **shapes.rep** plot:

1. Left-click and hold on the **shapes.rep** tab to select it.

2. Drag the tab on top of the **boat1.dpf** tab and, when the shadow border appears, release it.

3. Now, click on the **X** in the **shapes.rep** tab to close it.

You should now have **boat1.dpf** and **boat2.rep** side by side. We will now look at Debrief's toolbars.

Toolbars

In the same way that Debrief has menu options for the application's main functions, there are 4 types of toolbar to assist you:

● the **main** toolbar - provides functions specific to the application/workbench.
● the **view** toolbars - these are specific to views and provide functions related to the selected view.
● the **fast view** toolbar - this sits in the bottom-left of the screen and enables fast access to selected views.

● the **perspectives** toolbar - perspectives are not used in Debrief at present, please refer to the User Guide for further information.

We will look at each of these in turn.

Main Toolbar

The main, or *Workbench*, toolbar contains a combination of a number of mini toolbars—kept apart by a vertical dotted-line; and, grouped buttons—kept apart by a vertical solid line (a separator); refer to the image below for further details. You can move the mini toolbars by clicking on the dotted lines and dragging horizontally or vertically; and, if you mouse-over any of the buttons, a button tooltip will appear explaining the main function of that button.
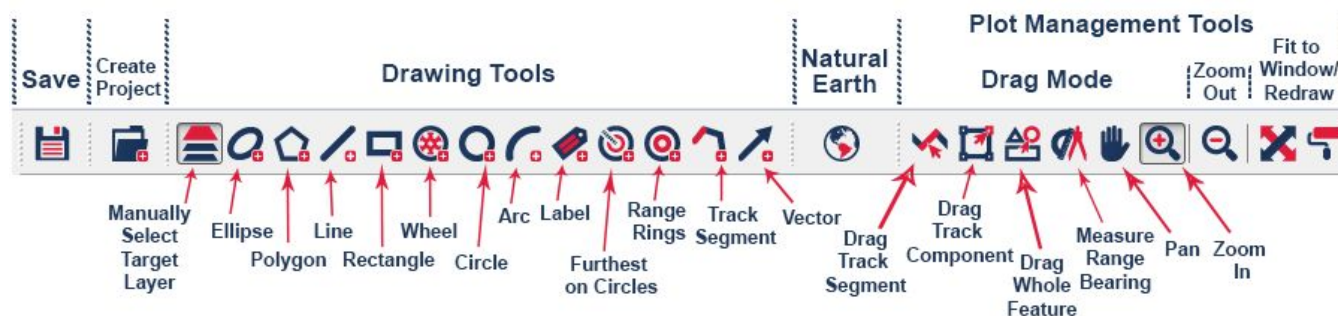
The mini toolbars are as follows (from left to right):

● **Save** - this will save the project with the currently saved name.
● **Create project** - clicking here will initiate the **Create a project** wizard.
● **Drawing tools** - the drawing toolbar contains buttons which allow you to view plot layers or to place objects such as shapes, labels, range rings, tracks, and vectors onto the plot. Refer to the User Guide for further details.
● **Plot Management tools** - this group of 9 buttons is split into 3 parts by separators—solid vertical lines between buttons. These buttons allow you to perform various management functions within the plot editor, including object repositioning, measuring, zooming in and out, etc.

From the image above, you can see that the section labelled **Drag Mode** contains 6 buttons; it's important to note that only one button from this group can be selected at a time. The first 3 buttons of this group—d**rag track segment, drag whole component** and **drag whole feature**—are used to drag and reposition objects on the plot. The next button to the right is used to measure

range bearing between 2 objects; then, to the right of that, and to the left of the first separator, are the **pan** and **zoom in** buttons which allow you reposition and increase plot magnification, respectively.

To the right of the separator, in the second group, is the solitary **zoom out** button—its function is self-explanatory and this button can be used in conjunction with all the buttons in the first group.

Finally, to the right of the second separator, in the third group, we have the **fit to window** and **redraw plot edito**r buttons, respectively—again, these are self-explanatory.

Note: as seen in the above image, if you have also loaded the **Natural Earth** set, this will show in the toolbar area also.

We won't go over all of these functions, so refer to the **User Guide** when necessary.

Show/Hide the main toolbar

You can show/hide the main toolbar by clicking on **Window > Show/Hide Toolbar**.
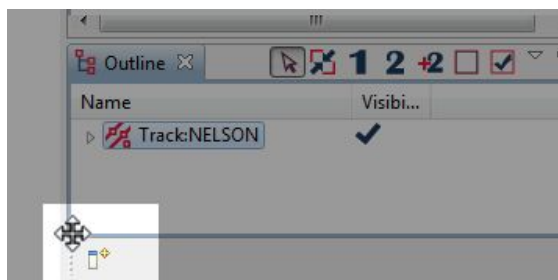
View Toolbars

Each view also has its own mini-toolbar which provides functionality specific to that view.

1. Click anywhere on the **NELSON** track in the **boat1.rep** editor; the details of that track will appear in the **Outline** view.

2. In the **Outline** view, click on **Track:NELSON** to select it.

3. In the **Outline** view's mini-toolbar, click on the empty check box, second from the right-end—the **Nelson** track in the plot editor will disappear.

4. In the same mini-toolbar, click on the check box with the tick in it—the **Nelson** track will reappear.
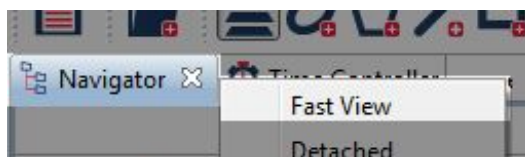
Fast View Toolbar

This particular toolbar contains what are called 'fast views'—shortcuts to frequently-used views. By default, this toolbar resides in the bottom-left of the interface, underneath the **Outline** view (at the moment), but it can be dragged to any position around the outside edge of the interface.

1. Move your mouse cursor over the dotted vertical line on the **Fast View toolbar** and the cursor will change to a 4-direction cursor.

2. Left-click and drag it to the top-right corner of the UI (next to the button which says **Tactical Analysis**, or part thereof).

3. Release the mouse and the **Fast View toolbar** is now in the top right corner of the UI.

Now we will add a view to the toolbar:

4. Right-click on the **Navigator** view tab and select **Fast View**. The **Navigator** view button will now be added to the **Fast View** toolbar.

    Note: You may find it helpful to keep the **Navigator** view in the **Fast View** toolbar as you will likely only want it visible when you need to see and open files/data.

You will notice that both these views have disappeared from the **Workbench**. This is because views in this toolbar become **toggle options**: you click once on the button to show it (toggle on), and click on it again to hide it (toggle off).

Note: These icons do look similar, so until they're familiar, remember to mouse-over each to see the tooltip before clicking on it.

5. In the **Fast View toolbar**, click on the left-most button in the toolbar and you will see a drop-down list of all views in Debrief.

6. Select the **Properties** view and the button will display as the 3rd icon in the toolbar; the **Properties** view will also show.
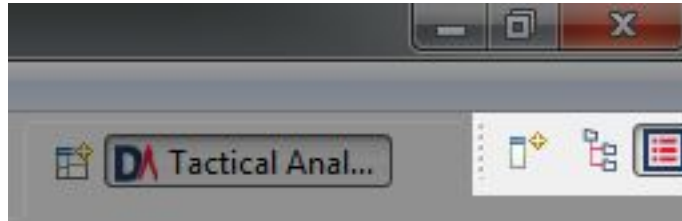
You can drag any view and either stack or position it in the same way as we did with the **boat1.rep** and **boat2.rep** files before.

Perspectives Toolbar

By moving the **Fast View toolbar** to the top right, we nudged the **Perspectives toolbar** to the side. At the moment, the **Tactical Analysis** button is selected, but the other functions it offers are not currently used in Debrief. Refer to the **User Guide** for further details about this.

Now that we've covered views, menus and toolbars, we've seen that navigating, moving and manipulating objects with the mouse is standard functionality known to us all. Equally useful, but much less common, is the use of shortcut key combinations.

Shortcut Key Combinations

If, like me, you prefer to use the keyboard where possible, then you can use what are called keyboard combinations to perform common tasks. Keyboard combinations (or shortcut key combinations) consist of a sequence of keys which together perform a certain action in the program. For example, a common keyboard combination/shortcut in any program is **Ctrl+S**. This means:

1. You press the control key down (**Ctrl**);

2. keep it pressed (**+**);

3. press the **S** key (**S**).

This shortcut key set will save your current document without changing the filename.

If you want to save the document with a new filename, or '**Save As**', as it's commonly known, then the shortcut key combination is **Alt, F, A**:

1. You press the **Alt** key (**Alt**)
2. then you release it (**,**);
3. press and release the **F** key (**F,**);
4. press the **A** key (**A**)—the **Save As** dialog will display. You can then save your file with a new name.

Also mentioned earlier was how to use **Ctrl+3 t**o access the **Navigator** view (not that you'll need it that much if you prefer the mouse, it's right up there on the fast toolbar now).

How to Find Out What the Shortcut Keys Are

To find out what other shortcut keys work:

1. Press the **Alt** key and look at the main menu. By default, the **File** menu is selected (it's the first in the list); but, if you look at the initial letters of each menu item, they're underlined.

2. Pick any one of those underlined letters and press that key on your keyboard. A drop-down menu will appear, and you can see the options in that menu.

So, if I wanted to view a grid on my **boat1.rep** plot, I would:

3. Click on the **boat1.rep** tab to select it as the active plot.

4. Press **Alt, C, G** and a grid will display on the **boat1.rep** plot. You will notice here that the grid doesn't get added to the **boat2.rep** file. Each editor is a separate entity, and you need to add objects to each one in turn.

In some drop-down menus, you may also see a pre-programmed keyboard combination next to the more popular commands, e.g., in the **File** menu (you can access this via **Alt, F** or **ALt+F,** both work), you will see that the shortcut key to **Close** a file is **Ctrl+W**. This particular shortcut combination is common across the vast majority of Windows applications. If you can learn the common shortcuts, it'll speed up your work in Debrief enormously.

Seeing as we've just added a grid to our plot, we'll look at chart features next.

Chart Features

You can use a number of chart features to enhance the **plot editor** and assist with your analysis. When you add a feature to the chart, these will appear in the **Outline** view under the name **Chart Features**. We will do this now.

Add a Chart Feature

Adding a chart feature will not open the **Outline** view, so we'll do that first:

1. Press **Ctrl+3** and start typing "outline" in the **Quick Access** dialog. When **Outline - General** appears, click on it to open the **Outline** view. The view will display and you can see the **Chart Features** folder has already been added from the previous step.

2. Click on the **Chart Features** folder to expand it and you will see the **Grid object** is already there.

3. On the main menu, click on **Chart Features** and select your required feature (I selected **Local Grid** - this differs from grid in that you can modify a local origin by changing the **Origin** attribute in the **Properties** view).

4. Your chart feature will be added to the **Outline view > Chart Features** and be visible in the plot editor.

From here you can manage and manipulate the features.

Modify the Local Grid

Now we'll modify the **Local Grid** origin as we would to reflect a custom exercise grid:

1. Double-click on **Local Grid** in the **Outline** view. The **Properties** view for the **Local Grid** will open.

2. Locate the **Origin** property and click on the down arrow.

3. Click on the **Lat Minutes** value and change it to **11**.

❏

4. Change the **Lat Seconds** value to **10.63**.

❏

5. Change the **Long Minutes** value to **41**.

❏

6. Then, change the **Long Seconds** value to **52.37**, click away from the attribute to enter it.

❏

The **Local Grid** origin should now be on top of the white square on the **Nelson** track.

❏

Two of the more common and useful chart features include scale and grid.

Add a Scale

When you add the scale (**Chart Features > Scale**), the **Properties** view for the scale will become the active view. Here you can modify a number of attributes, including:

- **Color**
- **Location**
- **Scale**
- **ScaleStep**, etc.

It doesn't look particularly clear on my monitor, so in the **Properties** view:

1. Click on **Color Value**, and an **ellipsis button** will show.

❏

2. Click on the **ellipsis button** and the **Color palette** will show.

❏

3. Select a different colour, one which will stand out against the editor background, then click on **Ok**.

❏

4. The **Color** palette will close and the scale will change to the selected color.

❏

To change the display units:

- In the **Properties** view, click on the **Value** cell next to the **DisplayUnits** attribute and a drop-down arrow will appear. ❏

- Select your preferred units scale; I chose **nm**. Click away from the **Value** cell to enter this value. The **scale** on the **plot editor** will update accordingly. ❏

Temporarily Hide a Chart Feature

To temporarily hide a **Chart Feature**, either:

- Right-click on the feature itself in the **Outline** view and select **Hide Item**, or ❏

- Left-click on the feature in the **Outline** view and, in the **Properties** view, change the **Visible** attribute to **No**. ❏

To Remove a Chart Feature

To remove a **Chart Feature**, in the **Outline** view:

1. Click on **Chart Feature** to expand it, and identify the feature you no longer want. ❏

2. Right-click and, in the pop-out menu, select **Delete [feature]**. The feature will be removed from the **Outline** view and the **plot editor**. ❏

That concludes this part of the "Getting Started with Debrief" tutorial. Either go over it again until you're happy with everything covered, or use it as an aide-memoire and refer to it as needed. When you're ready to move on, proceed to the next page and onto the "Working with Debrief" tutorial.

Working with Debrief NG

In the second part of this tutorial, we're going to cover working with Debrief and, in particular, defining your workspace and viewing some data. These are both essential to building your knowledge before moving onto analysis tasks.

Defining Your Workspace

In the previous tutorial, we talked about the workbench (the Debrief UI), and in this section we will look at how to define your workspace, which includes generating a general project for your data, generating links to existing data, and configuring background data.

Generating a general project for your data

To create a 'general project' for your data:

1. Right-click anywhere in the **Navigator** view, the **New** sub-menu will display.

2. Select **Project…**

3. The **New Project wizard** will open. Click on the **General** folder, then select **Project**.

4. Click on the **Next** button. You will now **Create a new project resource**.

5. Enter a name for your project (perhaps the name of the current exercise or another meaningful name).

   If you're in a workplace where users are unable to create folders in their home directory, clear the **Use default location** checkbox and **Browse** to a folder in your personal working directories. (**Note**: you can ignore 'Working Sets' for now).

6. Click on the **Finish** button.

You will see the new project in your workspace.

Generating links to your existing data

As mentioned previously, Debrief NG stores its data in a local folder called a project. While these are frequently created afresh to store new analysis data, it's also possible to denote your existing data directories as sub-folders (via links).

The following procedure guides you through generating links to your existing data folders. However, if the **Create Project** form opened when the application started, and if you provided both a project name and indicated that you would like sample data to be imported, then you can skip the following steps and move on to the next tutorial (***Viewing some data***).

Open Navigator

If the **Navigator** view is closed, open it by using the shortcut key **Ctrl+3**, and then either clicking on the option in **Previous Choices**, or starting to type 'navigator' in the search field and clicking on the appropriate link when it appears.

Check you have a workspace

Before you can link existing data, you need to define a project for your work. If your **Navigator** view is empty, you must follow the **Generating a general project for your data tutorial** (above).

Add a new folder

To add a new folder:

1. Right-click on your current project in the **Navigator** view, the **New** sub-menu will show.

2. Select **Folder** and the **New Folder wizard** will open.

Here though, instead of creating a fresh child folder to store our data, we're going to link to an existing folder.

3. In the **New Folder** wizard, click on the **Advanced** button, and the **Advanced options** will show.

4. Select **Link to alternate location (Linked folder)**.

5. Click on the **Browse**... button and navigate to an existing data folder on your machine or the network.

6. Once complete, click on **Finish** to close the wizard and link to your existing data
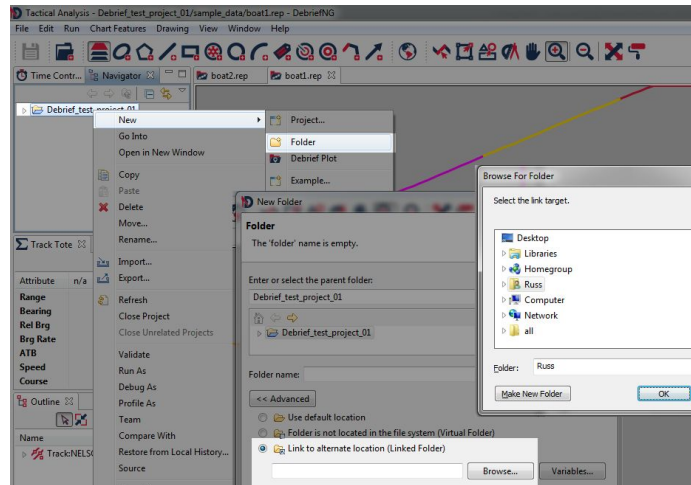
Note: if you don't have your own data, please use either of the following:

- For a deployed Debrief, use the **"sample_data"** folder that's installed in your Debrief installation folder.
- If you are running a development version of Debrief, use org.mwc.cmap.combined.feature/root_installs

If you followed these steps, you will have created a link to the sample data; however, if you need to load data from other data directories, repeat this process as often as is required, but use a shared working folder.

Next we will look at viewing some data.

Viewing Some Data

In this, the second section of the **Working with Debrief NG** tutorial, we will first look at **viewing, adding,** and **editing** data (creating, populating, and working with a new Debrief plot), followed by **viewing the UI**, and finally **analysing sensor data**.

Creating a new plot in Debrief

This tutorial will guide you through creating a new, blank plot in Debrief.

Plots are stored in projects, so before you create a **plot**, you must have a **project**. You should have one, as we created one earlier, but if for some reason you don't, refer to **Generating a project for your data** and follow the steps there.

Create new plot

To create a new plot, in the **Navigator** view:

1. Right-click on the parent folder for your new plot and select **New/Debrief Plot**; the wizard will open. ❏

2. Next, either confirm where you would like the plot to be stored—this is called the **plot's container**—or select a different location by first clicking on the **Browse** button and then selecting the parent folder of your data directories. ❏

3. Change the filename (as required). ❏

4. Click on **Next**. ❏

5. Now, select/deselect whether to use the **Natural Earth** dataset; click on **Next**. ❏

6. Now you can choose whether to **Add Scale to Plot**, or not; including the following options: **color, display units**, and **scale location**. ❏

   If you select to include a scale, you must enter the **display units** and **scale location** to proceed to the next step. ❏

7. Next you can choose whether to **include a coastline** or not. This option is not mandatory. ❏

8. Clicking on **Next** shows you last step in this process, the **Add Grid to Plot** dialog box. ❏

9. Here you can select whether to include a grid, the grid color, whether to show **Plot Labels**, and the **Delta-grid step size**. ❏

10. Once you have selected your options, click on the **Finish** button. The changes will be applied, and the dialog will close. ❏

Finished

Your new plot (with the filename you used earlier) will then display within your Debrief window. It is also located in the folder you specified in step 2 (above).

Note: all wizards make things easier for us, but all the steps above can be performed from the **Chart Features** menu in Debrief (**Alt,C**).

Adding data to a plot

Debrief's **New Plot** wizard is effective at providing you with a preformatted backdrop to your analysis, but it doesn't load your data for you. We will now load some existing tracks to assist you in getting started.

Check Sample Data

To check sample data:

1. Open the **Navigator** view (using your mouse, or **Ctrl+3** and typing the search term).

2. Expand the folder that contains your existing Debrief files (these will be either REP or DPF).

Note: valid Debrief files are flagged with a Debrief icon. Refer to the **Debrief File Formats** chapter in the Debrief **User Guide** to learn more about the two file types.

Drag in a simple track

If you've already got a plot open, close it now by clicking on the cross in the small tab-shaped icon above it. Don't worry about saving the tutorial files. Drag a rep track from your **Navigator** onto the blank plot area. The "**boat1.rep**" file is a simple starting point. The plot and any associated views will promptly update. When rep files are dragged in, you may be asked whether you wish to import the data in **Over The Ground (OTG)** or **Dead Reckoning (DR)** mode. For this tutorial, select **OTG**.

Drag in a complex plot

If you have multiple tracks to analyse, you can drag them onto the track plot you've just created. But for now, close the plot you have open by clicking on the cross icon in its tab and press **Don't Save** when asked.

Now, drag "**sample.dpf**" into the plot area. You'll see that this plot contains more complex graphical features.

Debrief file types

Note, you've just encountered two file types, the **Replay** file type (.rep) and the **Debrief** file type (.dpf).

The two file types differ in that though the rep file format is a very simple, column oriented text format ideal for passing around track data and for getting your raw track data into Debrief (see the Reference section in the user manual for more details), it isn't suited to storing formatting data or user preferences; in contrast, with its textual XML structure and ability to store a wide range of data, the dpf file format is.

As such, a typical flow is that data enters Debrief in rep format and an analyst uses this data to create a custom plot; this plot is then stored in XML format as a DPF file.

Your track data is now on the plot.

Note: tracks can be dragged into Debrief from other areas, such as "**Windows Explorer**". Refer to the **Maintainer's Guide** section of the **Debrief User Guide** to learn how to support right-click track opening on MS Windows.

Editing your data

Check you have data

To check that you have data:

1. As before, open **Navigator** if it is closed (**Ctrl+3** then clicking on **Previous Choices**, or typing in 'navigator' into the search field and clicking on it when it appears).

2. Confirm you have sample data-files in the **Navigator** view. If not, refer to the **Viewing Some Data** tutorial.

Note: valid Debrief files are flagged with a Debrief icon. Refer to the **Debrief File Formats** chapter in the **Debrief User Guide** to learn more about the two file types.

Open the sample plot-file

If necessary, double-click on **"sample.dpf"** in the **Navigator** view; the sample plot will open.

Fit to window

You can also experiment with zooming in and out. Click the **Zoom Out** button once to zoom out, or you can put the plot into *Zoom In Mode* by clicking on the **Zoom In** button. Now, when you drag an area, the map will zoom in on that viewport.

Lastly, to make sure all of the data is visible, click on the **Fit-to-Window** toolbar button. You can read more about the toolbar buttons in the **Moving around the view** section of the **Debrief User Guide**.

Note: if you hover your mouse cursor over any button, a tooltip explaining its function will display.

Ensure the properties view is open

The **Properties** view is normally at the bottom left of Debrief. If it's there but not at the top of the 'stack', click on its tab to reveal it. If you can't find it, select **Properties** from the **Window > Show View** drop-down list (**Alt,W,V,P**).

Select an item

You can select an item on the on the plot by double-clicking on it.

1. Identify the chart feature named **Some Label**; to the right of it is a red circle.

2. Double-click on the circle to select it. In the **Outline** view, you will see that the object **Label:Some Label** has been selected and, in the **Properties** view, you can see that the properties for the object you selected are listed, including **Color**, **Font**, **Location**, etc.

3. Now, double-click anywhere on the **NOGO DELTA** rectangle to select that feature.

Make a change

To change the rectangle's label color:

1. Click once on the green rectangle next to **Label color;** a button containing an ellipsis will appear.

2. Click on the ellipsis to open the **color editor**.

3. Next, click on the red rectangle, and then the **OK** button.

The dialog will close, the label color property will be updated, and the plot will redraw.

Undo the change

Our new color doesn't meet the "**NATO MilStd 12332 Sub-para 14g (2002 version) standard**", so we need to undo it:

1. Click on the tab at the top of the **sample.dpf** plot.

2. Click on the **Edit** menu

3. Select **Undo**.

The color of the label will now change back—you've undone 1 step.

Now that you've undone an action, if you click on the **Edit** menu again, you'll see there's now a **Redo** option available. This undo/redo feature is common to most programs and can be applied to many functions; the shortcut keys for these are **Ctrl+Z** and **Ctrl+Y**, respectively (I use the former a lot).

One point to note is the **Undo** button applies to the active Debrief view; so, to undo a change to a plot, you must first select the plot and make it **active** before pressing undo.

Edit a position

To select a position within a track, double-click on that position and its editable attributes will appear in the **Properties** view. You can modify all of these attributes (as required).

Note: different elements have different properties, so you may have to scroll up and down the **Properties** view to see all available properties.

Edit an entire track

To edit an entire track, we use the **Outline** view. This makes selecting a plot easy. To open the **Outline** view:

1. Click on **Window > Show View > Outline View**.

2. In the **Outline** view, click once on the name of a track and the entire track's properties will be editable in the Properties view.

The **Outline** view is also useful for selecting and editing non-geographic entities such as a grid, scale, or background data-set.

Rearranging views

Rearranging views within Debrief is a simple case of dragging views to where you wish to locate them. So, click on the **Properties** panel tab and drag it upwards. You will now be able to see the **Outline** and **Properties** views at the same time.

Edit directly from the plot itself

It's possible to edit certain attributes by right-clicking on an item on the plot. A popup menu will display showing a series of available options and commands. A drop-down menu is shown next to the current item's name and, from this drop-down menu, you'll be able to edit the respective attributes.

Note: if you click on a vehicle position, a drop-down is shown for the parent track as well as the position itself. Also, remember that right-click functionality is available from anywhere within the program, and relevant options will be shown related to the tasks or actions you are currently undertaking.

Don't forget to save

Anyone who has used computers for any length of time will have lost work at some point, so ensure you save your work regularly. You can save your work quickly by clicking on the floppy-disk icon on the main toolbar or by pressing **Ctrl+S**. Do this now.

Note: if the data you're using is actually a rep file, these cannot store formatting data, so you will be prompted to save the file in Debrief's DPF plot-file format.

View the UI overview in the Help

That's the end of the guided tour. We hope it's been very helpful to you.

Next we're going to go over other features in the user interface, but don't forget that, in addition to these tutorials, Debrief has an extensive User Guide that you can use.

Analysing Sensor Data

Check you have data

To check that you have data:

1. Open **Navigator** (using your mouse, or **Ctrl+3** and typing 'navigator')

2. Confirm you have sample data-files in **Navigator**. If not, refer to the *Finding the sample data* tutorial.

Open the sample sensor tracks file

To open the sample file, double-click on the "**sen_tracks.rep**" file. The file will then load. If the **Import** dialog appears, select **Over The Ground (OTG)** for both tracks and you will see the red and blue vessel tracks.

Fit to window

The workspace can get cluttered quickly so, to make sure all of the data is visible, click on the **Fit-to-Window** toolbar button.

Add the SSK track

We will now add the sensor data. Starting from the **Navigator** view, drag the "**sen_ssk_sensor.dsf**" SSK sensor data file onto the plot. You can accept the default options in the **import wizard**.

Add the FF track

Next, drag the "**sen_frig_sensor.dsf**" frigate sensor data file onto the plot. ❏

Note: the data will import, but there will not be any visible change to the plot area. Since very high volumes of sensor data are typically loaded, sensor data is hidden by default. ❏

View the sensor data

To view the sensor data, in the **Outline** view:

1. Expand the tree for the two tracks called **Frigate** and **New_SSK**. Within each of these tracks, you will see named blocks of sensor data. ❏

2. Now, we need to make each block of sensor data visible, so click on it to select it and then click on the **Reveal Selected Items** toolbar button. As you make each set of data visible, you should see its bearing fan appear in the plot area. Overall, there are six blocks of sensor data across the two tracks. ❏

Sensor formatting options

Sensor lines can be formatted to change their color, their label, and its location. This formatting can be applied to a single sensor line or a series of sensor lines. ❏

Format the sensor data

Next, we will simulate formatting a series of bearing lines to represent the state of a particular sensor. From the Outline view:

1. Open the **NEW_SSK_BB** sensor for the **New_SSK track** (click on **New_SSK**, then on **Sensors**—the sensor bearings will show). ❏

2. Select the first five sensor bearings by first left-clicking on the top sensor bearing; and then, with the **Shift** key pressed, click on the 5th sensor: all 5 items should be selected. ❏

3. Switch to the **Properties** view. This should show the editable properties for those bearings. ❏

4. Click on the **Color** property, and select **yellow**. Click **Ok**. ❏

You will see the sensor lines on the plot update.

Conduct a plot-lock

We will now simulate the process of dragging tracks so that their bearing fans match. In the UK this process is called a plot-lock, and in the US it's called a tie-point.

First though, we must indicate which tracks we want to view the relationship between:

1. Right-click on **Track:Frigate** and then select **Make Primary**.

2. Right-click on **Track:New_SSK** and select **Make Secondary**.

These will both appear in the **Track Tote** view.

Commence plot-lock

To commence plot-lock, which will enable us to use the mouse to drag the tracks, click on the **Drag Whole Feature** button; it's the third button from the left.

Start dragging

The **Stacked Dots** view should have opened and the cursor should now have changed to a brown hand.

The **Stacked Dots** view shows the bearing error for visible sensor bearing lines against the point on the target track nearest to that DTG.

When the cursor is over a track, it will turn green.

1. Move the cursor over the north-west end of the blue track until the cursor turns green.

2. Hold down the mouse button and start dragging the track.

You will see the track and its sensor data start to hover as you drag it and, once you have finished moving the track, the bearing errors in the **Stacked Dots** view will update accordingly. When plot-locking tracks, your aim is to minimise the errors displayed on the graph. If you value some sensor data more than others, experiment with hiding the other blocks of sensor data (by making them invisible)—this will declutter the plot and the stacked dots, making plot-locking easier.

Done

Well done! You've completed the steps on loading, managing and formatting sensor data—supported by a healthy dose of plot-locking. Having come this far, you now know the initial steps of using Debrief. Sure, you're a way off mastery, but that comes with a bit of practice, so be sure to run through the steps above again.

You now know about the views and how we can use them to our advantage, so it won't take you as long next time.

We'll now move on to the 3rd and final tutorial in this series, **Using Debrief to Analyse DIS Simulations**.

Using Debrief to Analyse DIS Simulations

In this, the third part of this tutorial, we're going to look at analysing DIS simulations using Debrief. In particular, how to:

1. Open the Simulator if it isn't visible in Debrief
2. Configure Debrief to control the external simulator
3. Configure Debrief to listen for DIS messages
4. Use Debrief to run the external simulator
5. View new data being displayed
6. Edit input file for external simulator

By the end of this tutorial, you will know how to setup, configure, and run the simulator in Debrief as well as view, edit and input existing and new data.

Note: all steps occur within Debrief itself.

First, if it isn't visible, we'll need to open the simulator.

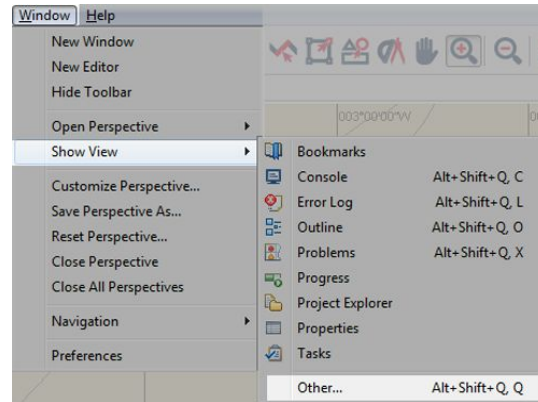## Opening the simulator if it isn't visible in Debrief

When you first launch Debrief, you should see the workbench and views similar to the following:
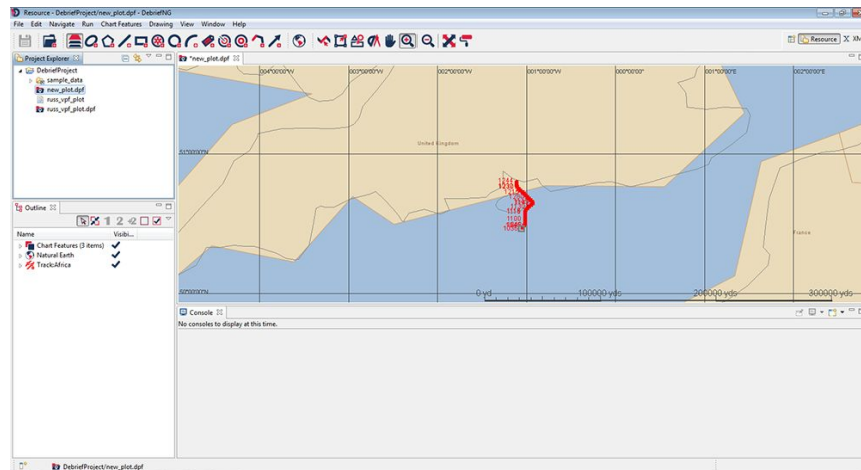

As you can see in the above image, the workbench and surrounding views are visible, but the **DIS Listener** view isn't. If it is, in fact, visible on your pc, great; but if it isn't, we need to enable it. To do this:

1. Click on **Window** on the menu bar, then mouseover **Show View**, the following will display:
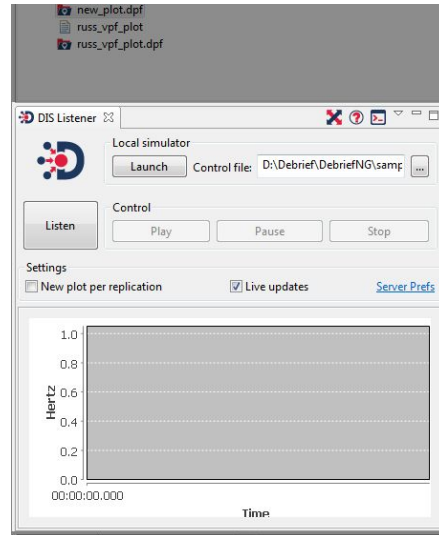
2. It's possible that **DIS Listener** will be visible here, if so click on it to open it. If it isn't visible, click on **Other**. You will then see it.
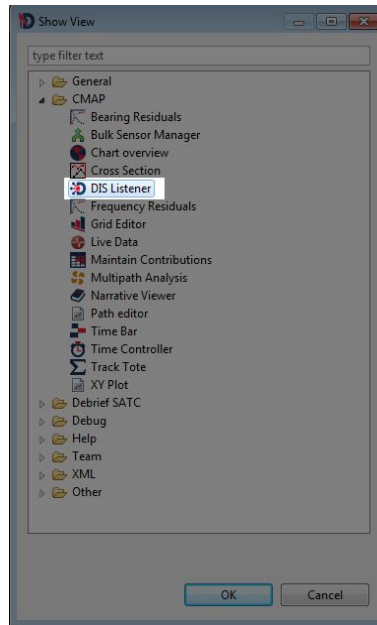
3. Left-click to select it, then click on **Ok**. The simulator will then open and you can resize the view so you can see it clearly.

4. Ensure you can see all of the **DIS Listener** view, including the graph, as shown above. ❑
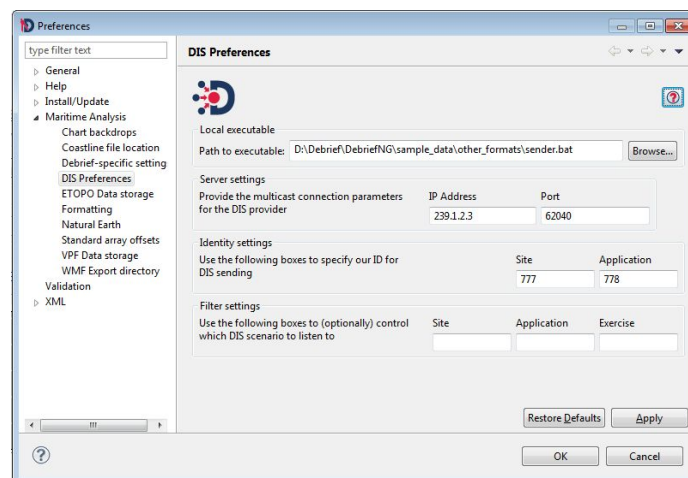
Now we will look at configuring Debrief to control the external simulator.

Configure Debrief to control the external simulator

To configure Debrief to control the DIS Listener:

1. Click on **Server Prefs**; the Debrief **Preferences** dialog will open showing the **DIS Preferences** options. ❑

We will now configure the following **DIS preferences**:

- The **path to the executable** - some DIS simulators run as complex combinations of services & applications; whereas other simulators are contained in standalone executables. If your simulator is a single *exe* or a *bat* file, then specifying the path here will allow you to to launch the simulator directly from Debrief

- **Server settings** - Debrief uses DIS to talk to simulators on either the local or a remote machine. This network communication requires certain configuration information, namely the **IP address** and the **Port** to listen to.

- **Identity settings** - if a networked environment has multiple participants, there may come a time when we need to distinguish who's-who. Specifying a unique **Site** and **Application** ID fulfils this need, since all messages sent out from Debrief will carry these settings.

- **Filter settings** - if multiple simulations are being run on the same network address and port, the filter settings permit Debrief to control which ones are listened to. This can be applied to **Site**, **Application**, **Exercise**, or a combination thereof.

To specify your preference settings:

1. Click on the **Browse** button next to **Path to the executable** and navigate to **sample_data/other formats** in your Debrief installation folder on your pc; identify and select the **sender.bat** file.

    Note: on my pc, the full path is:
    "**D:\Debrief\DebriefNG\sample_data\sender.bat**"

2. Enter the **Server Settings IP Address** and **Port** numbers.

3. Enter the **Site** and the **application Identity settings** (if applicable) to uniquely identify this machine on a multi-user network.

4. [Optional] Enter the required **Filter settings** to control which simulation information is received, either: **Site**, **Application**, or **Exercise**.

5. Click on the **Apply b**utton to save these changes or, if you want to clear all and start again, click on **Restore Defaults**.
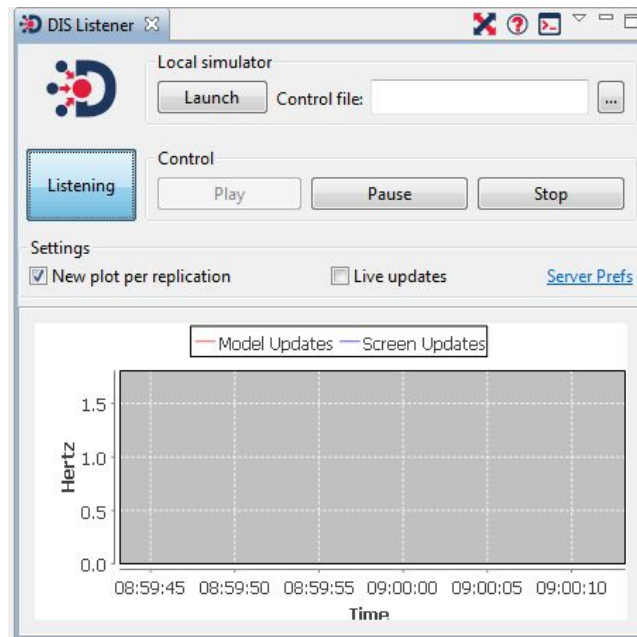
The **Preferences** dialog will close and you will be taken back to the workbench.
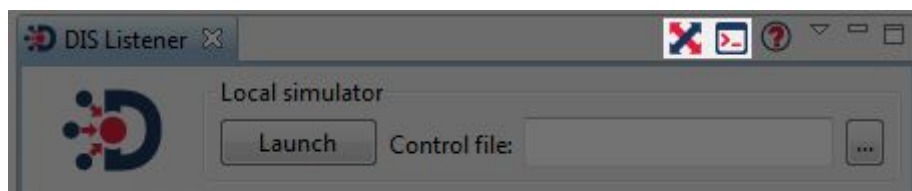
Now we've specified the DIS Listener **preferences**, we can configure Debrief to listen for DIS messages.

Configure Debrief to listen for DIS messages

All interactions with the DIS simulator are done via the **DIS Listener** view:

As you can see, at the top of the view we have 2 toggle buttons:

- You'll recognise the left-most button as it's on the main toolbar which, when clicked (on that toolbar), performs the **Fit to Window** function: it resizes the plot editor to fit the loaded data to the window. However, in this view its function is slightly different as it fits to window at each step of the simulation to ensure that all loaded data remains visible. This option is toggled "*ON*" by default.

- The button to its right is the **Show Console** button. When selected it will show the console view.

Help and Error Logs

To the right of the **Show Console** button is the **Help** button, this is self-explanatory. To the right of that is the standard **Debrief view** drop-down button.

1. Click on the drop-down button and you will see the drop-down:
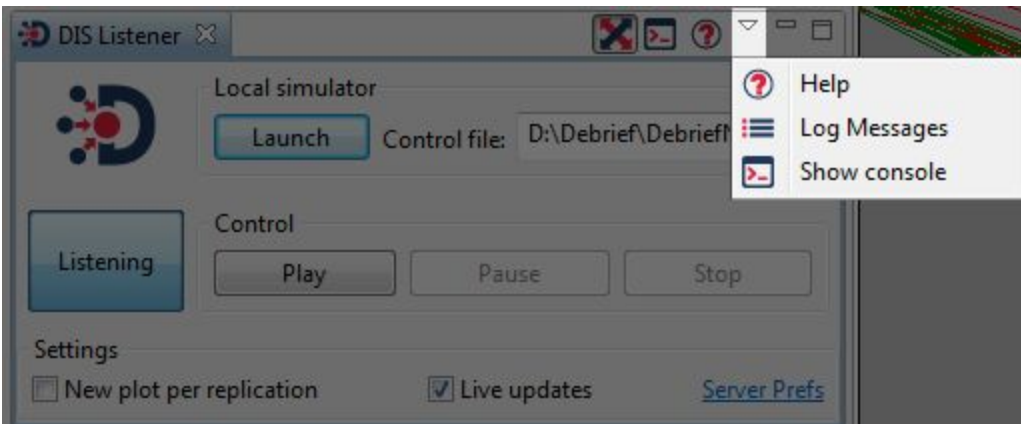
2. **Help** is self-explanatory, and we will cover **Show Console** a little later, so click on **Log Messages** to enable error logging.

    This is a toggle option and though you won't see anything else on-screen at this point, you will be notified at the end of the simulation:
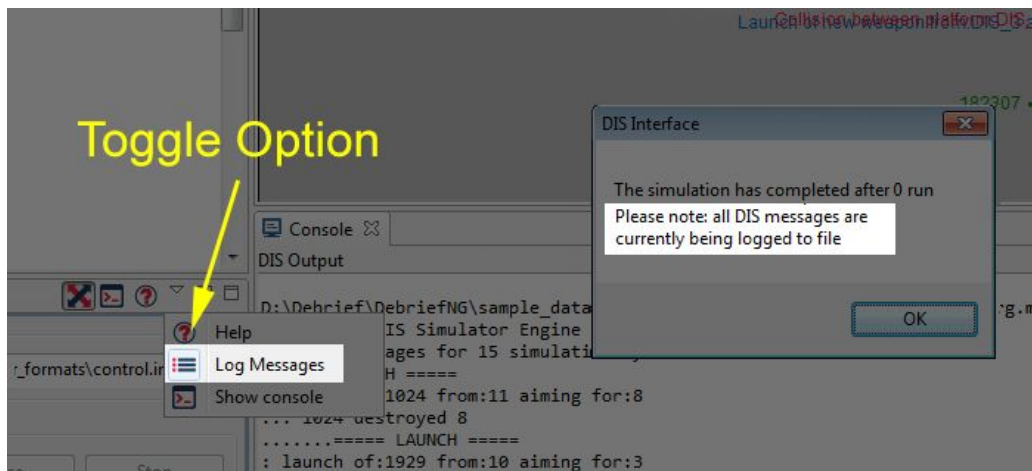
3. Click on **Log Messages** again to toggle the error logging to the off position.

❏

Moving down, we see the section called **Local Simulator**. After the **Path to executable** in the **DIS Preferences** has been set, you can a load a control file (.**inp**) here; this specifies the details of the input file for the simulation. We will come onto editing this particular file-type later.

However, loading a control file into the simulator itself can be done in a number of ways:

- Locate the control file in the **Navigator** view and drag-and-drop it into the **Control file** field in the the the **DIS Listener** view.   ❏
- Locate the control file in the **Navigator** view, right-click on it and select '**Run in simulator**'   ❏
- Click on the ellipsis button and navigate to and select the required control file.   ❏

Once the inp file is loaded, we can then run the simulator.

Use Debrief to run the external simulator

Before running the simulator, determine whether you wish to run the scenario in the active plot editor view, or you wish to run it in a new plot.

1. If the latter, click on **New plot per replication** in the **Settings** section..   ❏

2. To run the simulator, click on the **Launch** button and the simulator will run:
   - If you selected to open in a new plot, a new plot view will open and the simulation will run.
   - If you didn't select this option, the simulation will run in the active plot.

   ❏

3. As the simulation runs, the **DIS Listener** will switch to **Listening mode**:
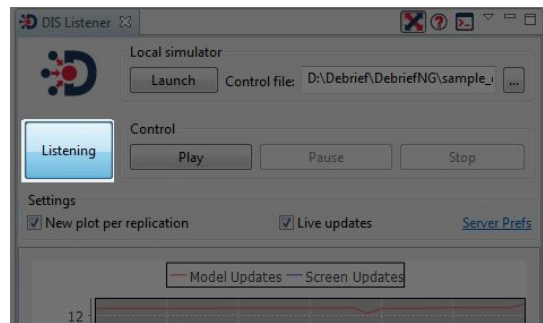
In listening mode, Debrief monitors the network for status messages from the simulator. If it receives a sufficient number of messages, then the **Play**, **Pause**, and **Stop** buttons will be enabled.
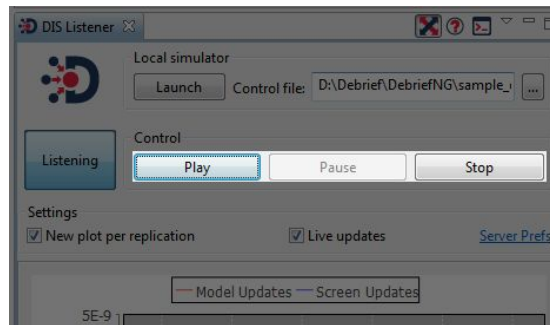

As the simulator runs, you can press:
   ○   the **Pause** button to temporarily halt the simulation.
   ○   the **Play** button to continue
   ○   the **Stop** button to end the simulation. **Note**: after the Stop button has been pressed, existing data will be wiped and any new DIS messages received will be put into a new plot.

4. If you don't want to see the active plot update as the simulation runs, click on the '**Fit to Window**' button in the **DIS Listener** view.

5. The **plot editor** will update accordingly:
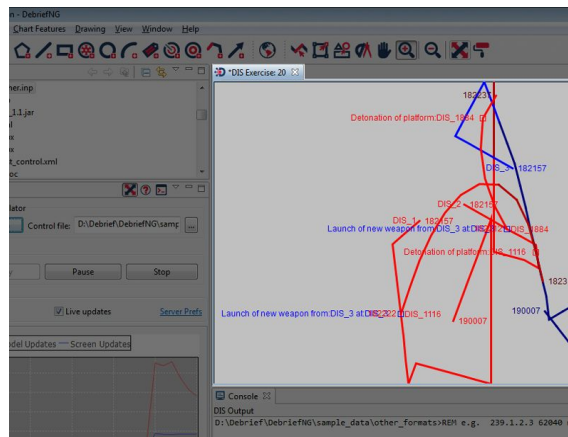
6. In the **DIS Listener** view, the **performance chart** underneath the **Control** buttons will update. This graph updates every second and shows 2 lines: the red line shows the f**requency at which simulation messages are being received**, the blue line shows the **frequency of screen updates**.

   As more data is received and shown on the plot, the **frequency of screen updates** will slow down.
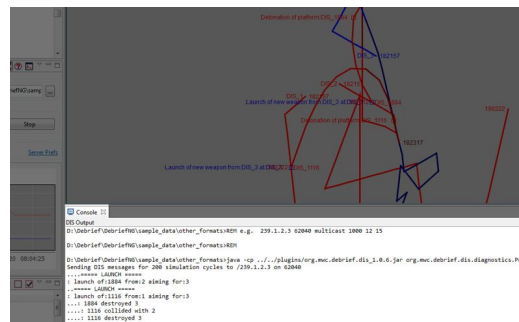
   This performance graph can provide the analyst with an indication of what's occurring with the simulation, i.e. whether or not the simulator is actually running, how quickly it is running, and how Debrief is handling the volume of loaded data.

   Note: if the simulator is running very quickly and it looks like the UI is becoming overloaded with updates, untick the **Live updates** checkbox:
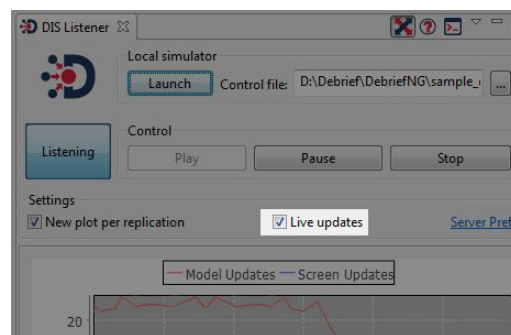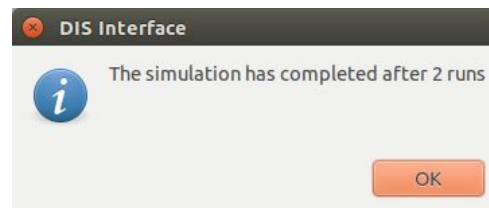

   Debrief will continue to receive and store DIS messages, but it won't update either the **Outline** view or the **Plot Editor**. We will cover **Live Updates** in more detail in the next section.

7. While the simulation is running, the **console** view will display relevant scenario messages:

8. Finally, at the end of the simulation, a message box will show to indicate that the simulation is complete. If it was a multi-scenario run, the number of replications completed will be shown:

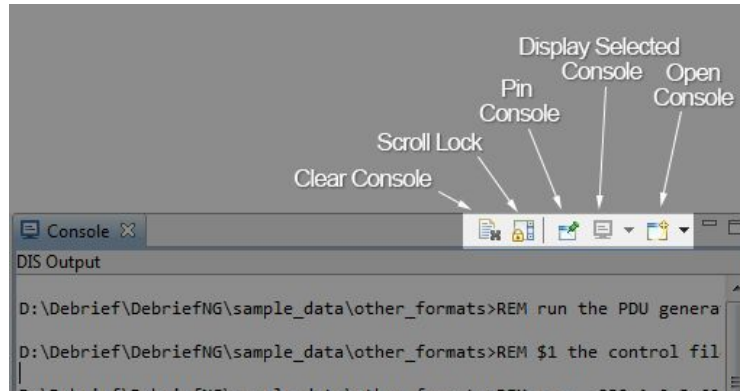Now that the simulation has run correctly, we will now look at viewing the new data.

View new data being displayed

We use the console view to see new data that is being displayed. As mentioned before, if the console view is not visible, either:

- Click on the **console** button in the **DIS Listener** view, or
- Click on **Window > Show View > Other > Console**

The console view will then display.

On the right side, you can see 5 buttons:

In addition to the standard minimize and maximize view buttons, these are (L-R), **Clear Console**, **Scroll Lock**, **Pin Console**, **Display Selected Console**, **Open and Console**.

We'll run a quick scenario to illustrate these functions, but first we need to edit a control/input file to give us better, and more, data.
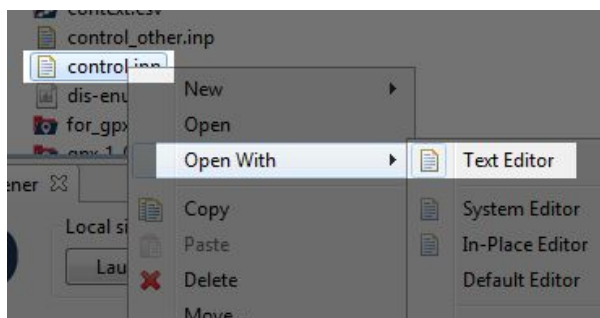
Edit input file for external simulator

We can change the conditions of the simulator by editing the input file - the **.inp** control file. To do this:

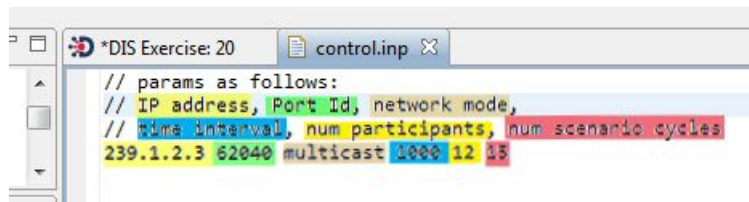1. Locate the command file in the **Navigator** view:
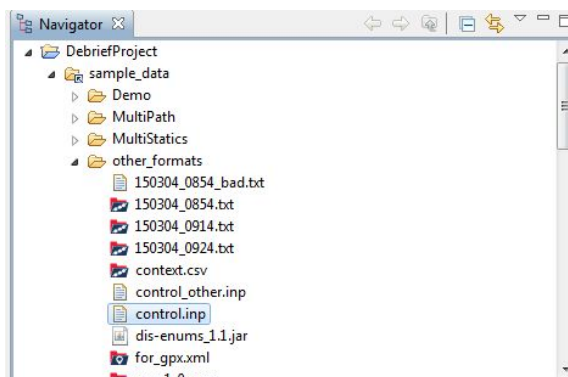
2. Right-click and select **Open With > Text Editor** :

You can select other options, as applicable, but the **Text Editor** works for me.

3. The **inp** file then opens in the **plot editor**:

Note: these have been color-coded for clarity. Here you can clearly see the **IP address** and **Port ID** that were specified in **Preferences > Server settings** earlier, as well as the type of **network mode**.

We can also see the 3 main parameters for the simulation:

- ○ **Time interval** in **m/secs** (colored blue, value **1000**)
- ○ **Number of participants** (colored yellow, value **12**)
- ○ **Number of scenario cycles** (colored pink/red, value **15**).

We'll save this file as a different name rather than edit the original:

4. Click on **File** on the menu bar
5. Click on **Save As**
6. Save this file with the name '**Control_200_22_150.inp**'
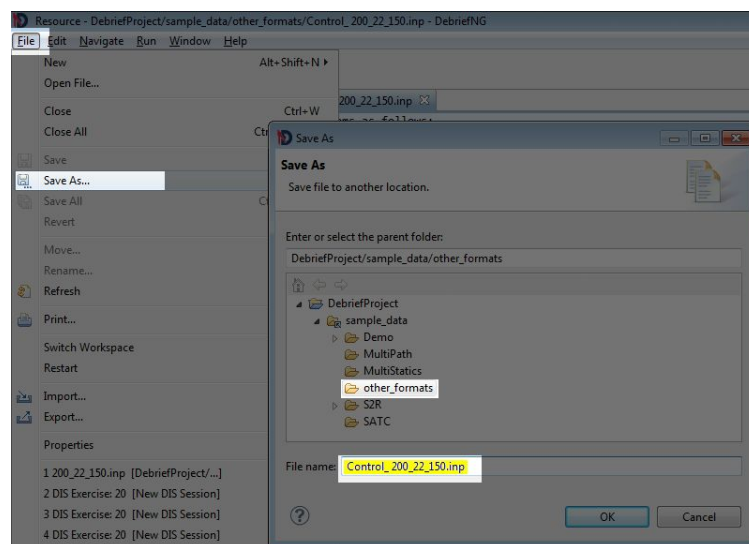
Now, in your new inp file, change the following settings:

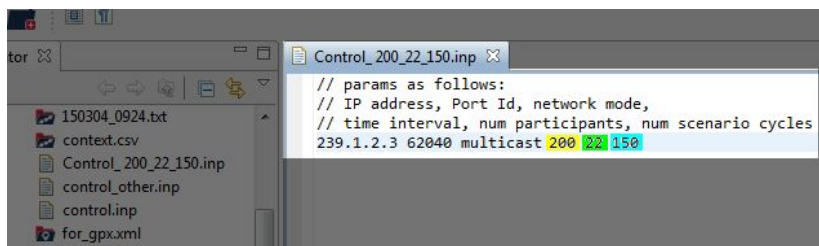7. The **time interval** from **1000** to **200** (1/5th of a second)   ❏

8. The **number of participants** from **12** to **22**   ❏

9. The **number of scenario cycles** to **150**.   ❏

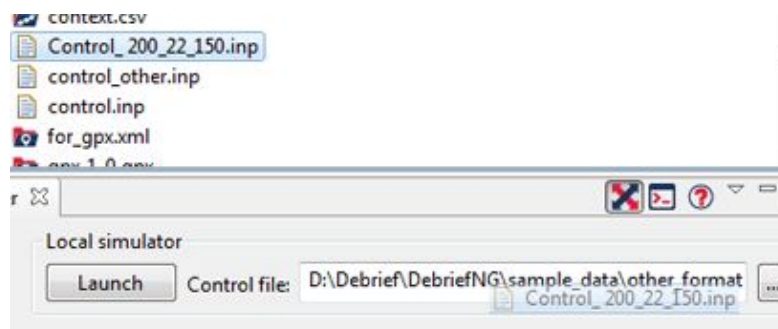Your inp file should now look like this:

10. Click on the **Save** button on the toolbar to commit the changes.   ❏

11. Click on the **Close** button in the **Control_200_22_150.inp** tab.   ❏

12. Now, drag-and-drop the **Control_200_22_150.inp** file from the **Navigator** view into the **Control file** field in the **DIS Listener** view.   ❏

We can now run the simulation and analyse the data.

Viewing the Data

For this particular scenario, we're going to look at the data and see if any collisions occurred; and, if they did, how many.

Before we begin, ensure the **Fit to Window** button in the **DIS Listener** view is selected (it is by default).

1. Click on the **Launch** button. First you will see some information data from Debrief as it loads various files; then second, you will see the messages start to come through:

Clear Console

2. If you're quick, you can click on the **Clear Console** button and all console messages will be deleted; additional messages will then start to appear as the simulation continues.

If you're not so quick, you can always click on the **Pause** button in the **DIS Listener** view to temporarily halt the simulation; then you can review the messages and decide whether to clear the console (or not).

When you are ready to resume, click on the **Play** button.

3. As the simulation restarts, you'll see the console fill-up quite quickly. As before, if you want to clear this latest batch of data, click on the **Clear Console** button again.

Scroll Lock

4. However, if you see some interesting data, you can lock that part of the console view by clicking on the **Scroll Lock** button:

5. If you look at the chart in the **DIS Listener** view you will see that, though the simulation is still running and data is being added, the **console** view is now locked on the data that is currently displayed.

6. When you have finished reviewing the scroll-locked data, either use the vertical scroll bar to navigate down to newer messages, or click on the **Scroll Lock** button to toggle it to the off position, and 'jump' to the newest message.

Pin Console, Display Selected Console, and Open Console

These 3 buttons are closely related and, though **Open Console** can be used with just a single source, **Pin Console** and **Display Selected Console** are only used when multiple, concurrent external simulations are being run.

When a simulation begins, Debrief views that simulation in its own console. When Debrief receives new input data from a separate source, it will open that source in a second console; if it receives input from another source, then a 3rd console will open, and so on. The 3 buttons are self-explanatory, but we'll just clarify to make sure:

- **Pin Console** - selecting this option 'fixes' the current console view as active and overrides Debrief's switch to new console functionality. This is a toggle option and clicking on it to deselect it will re-enable Debrief's default action.

- **Display Selected Console** - this is only enabled when multiple consoles are available, and clicking on the down arrow and then selecting the console you want to view will show that console and make it active.

- **Open Console** - clicking on this option duplicates the active view. As shown with **Clear Console**, if you run a simulation and want to create a duplicate console to edit as soon as the simulation starts, you could click on **Open Console** to create a duplicate, and then click on **Clear Console** straightaway in the new view. That way the active view would be filtered, whereas the inactive view would still continue to receive all scenario messages.
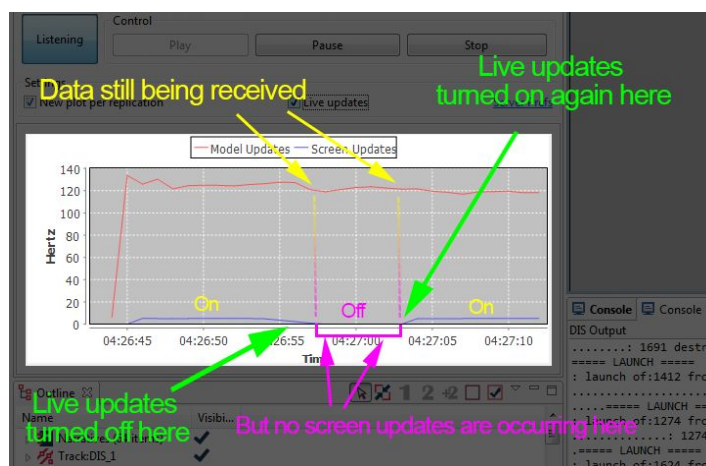
Live Updates

This was touched on briefly earlier, but depending on the simulation itself and how many data input sources are being used, a lot of data might be getting passed to the **DIS Listener**. If too much data is being received, there is an option to turn off **Live Updates** from Debrief.

To do this, in the **DIS Listener** view:

Click on the **Live Updates** checkbox to deselect it and you will see something similar to the following:

In the above **performance graph**, it can be seen that **Live Updates** are turned off at
04:26:57 (as indicated by the blue line dropping down and the left-hand green arrow).
However, though updates to the **outline** view and the **plot editor** have stopped, the
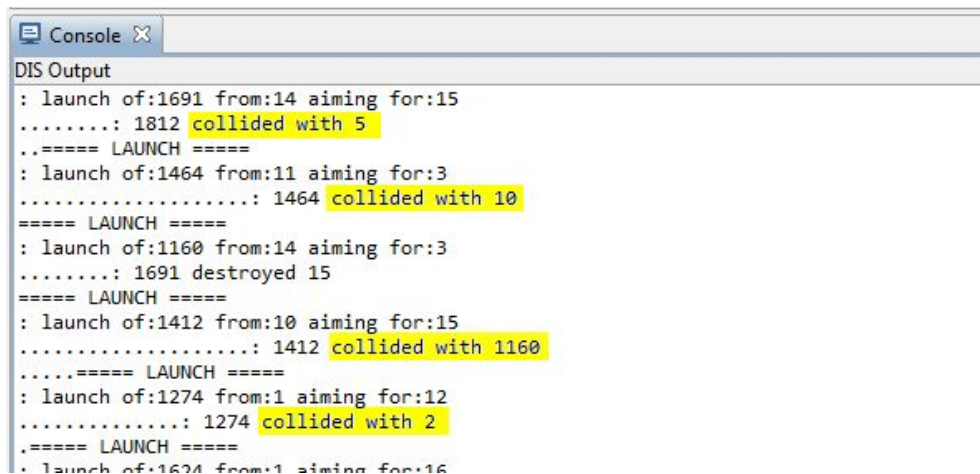red line shows that the simulation itself continues to run and receive data.

When **Live Updates** are again re-enabled at **04:27:03** (as shown by the right-hand
green arrow pointing to the time this occurs), the rising blue line indicates the **outline**
view and **plot editor** are once again updating.

Were there any collisions?

To answer to our earlier questions of were there any collisions and, if so, how many were there, we just
need to examine our console log.

All told, there were 4 collisions, these happened within a few second of running the simulation.

That concludes this "Using Debrief to Analyse DIS Simulations" tutorial. We hope you've found it both
easy and enjoyable to work through. We do realise there's quite a bit to take in, so feel free to go over it
again until you're happy with everything covered, or use it as an aide-memoire and refer to it as
needed.

Signed: _____   Date: _____