T/HIS 17.0

T/HIS 17.0 – Contents
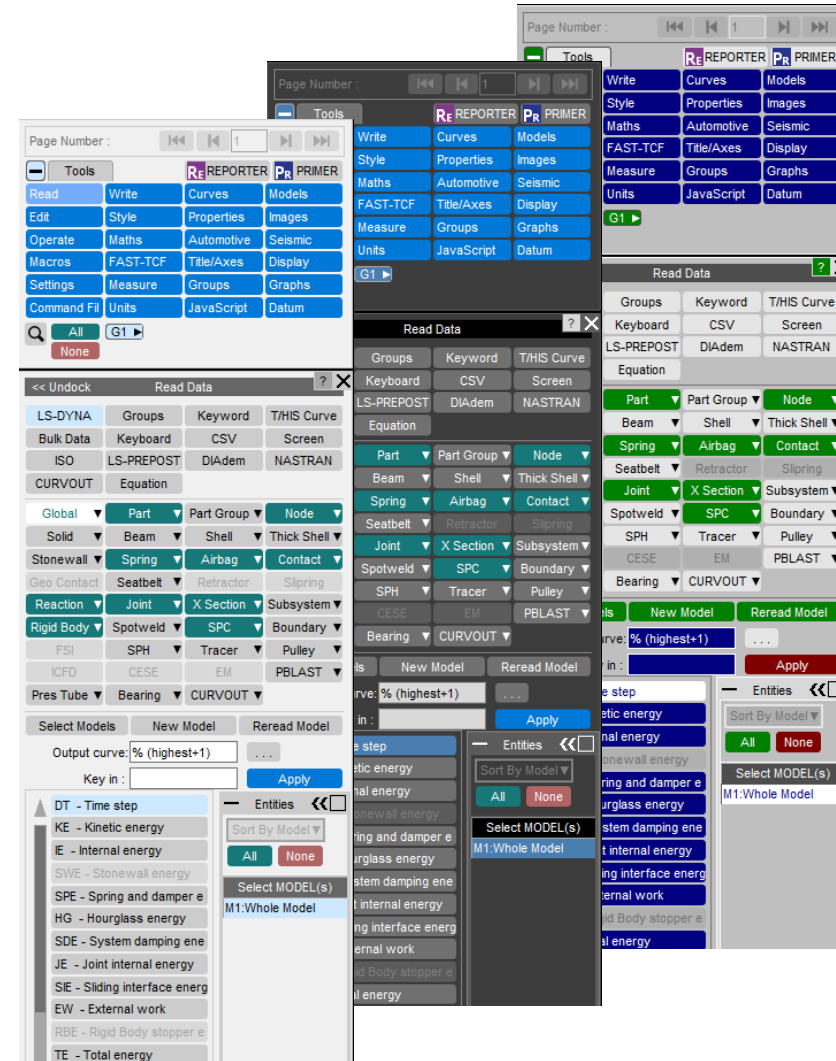
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User Interface Improvements

Themes

For a more comfortable and accessible experience:

- We have introduced three new theme options:
  - Light
  - Dark
  - Classic
- Buttons have been flattened with their corners rounded to give a more modern look and feel.

Improved Fonts

To make it easier to create publication-quality images and simplify the communication of your work:

- The range of font sizes is extended to cope with a wider range of displays.

- Font quality has been improved to include an 'anti-alias' option by default for better appearance.

- A wider range of fonts are now supported for menus.

These options can be accessed via the Menu Attributes panel.
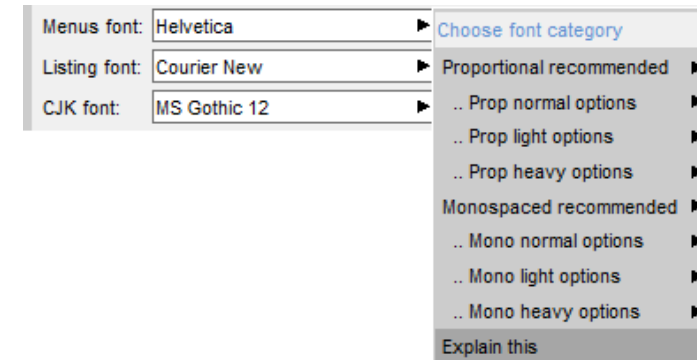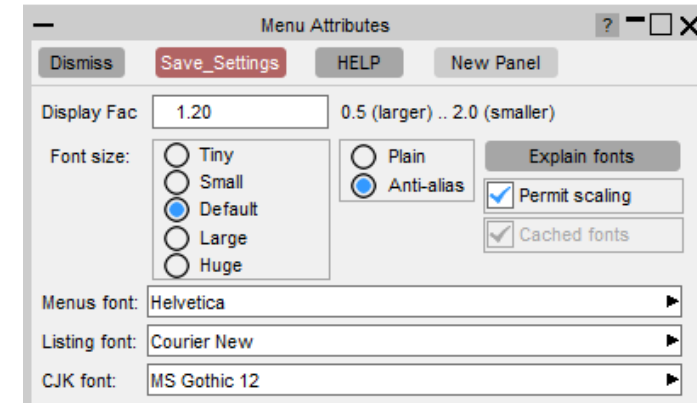
Buttons

To make buttons easier and more intuitive to use:

- Clickable buttons are now distinguishable on hover by a slight colour change.

- Radio buttons are now a standard size and shape to be more distinct from tickboxes and more recognisable as radio buttons.

- Button spacing has been adjusted for toggle button groups, so that users understand that they are linked together.
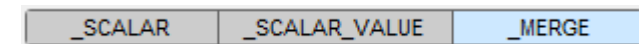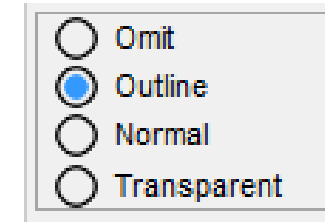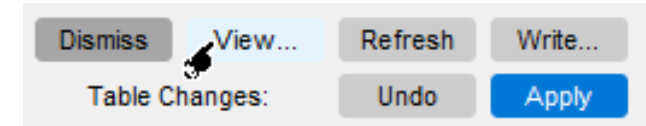
Scroll Bars and Sliders

To make navigating lists quicker and easier:

- Scroll bar length is now related to the number of list items visible.

- Left-clicking on an empty area of the scroll bar allows users to jump through sections of the list.

- Right-clicking on an empty area on the scroll bar allows the user to jump to that specific point in the list.

- Slider appearance has been improved to make them more distinct from scroll bars.
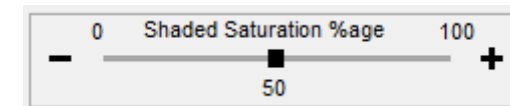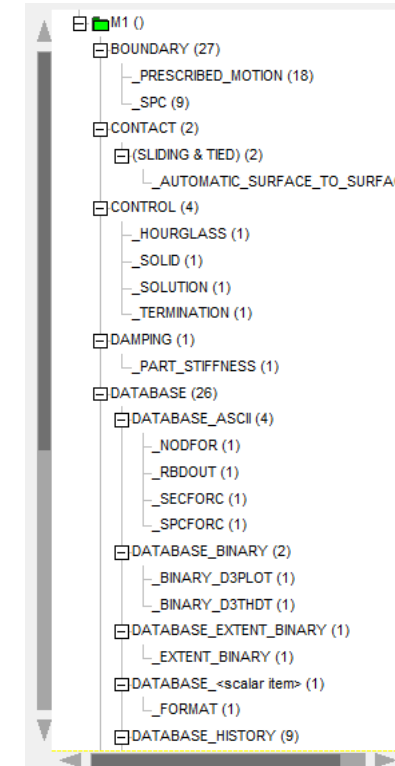
T/HIS → PRIMER Link

Highlight Output Database Cards in PRIMER

1. Most of the entity buttons in the 'Read Data' panel have a dropdown option. If you right-click on an entity button, an 'Edit in PRIMER' option will be displayed.

2. This option will open PRIMER (if it is not linked already) and will highlight the database cards required for this specific entity to obtain results from LS-DYNA to be viewed in T/HIS.
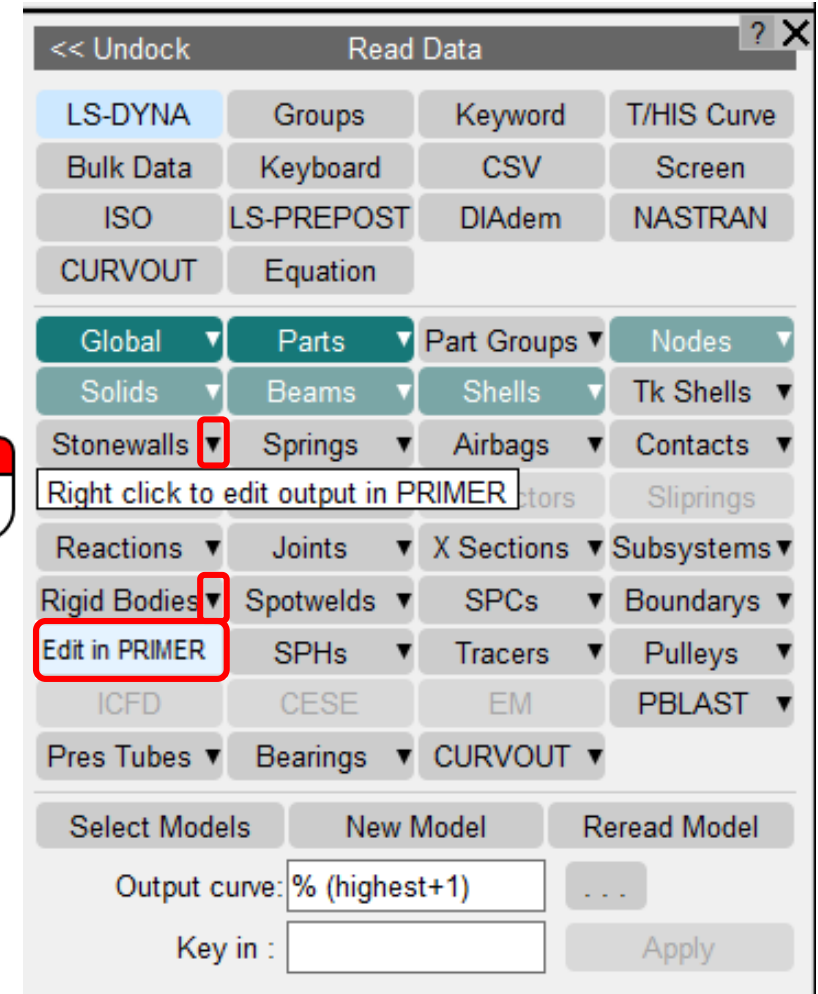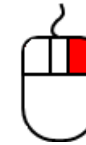
Highlight Output Database Cards in PRIMER

3. This feature is also available for multiple models. In case of multiple models, after you click on 'Edit in PRIMER', a model selection menu will be mapped which will give you a choice to select the model for which you want database cards to be highlighted.

4. You can turn on the required database cards and use them in your next LS-DYNA run to get results related to the specific entities in T/HIS. [See next page]

Model selection menu will appear in case of multiple models
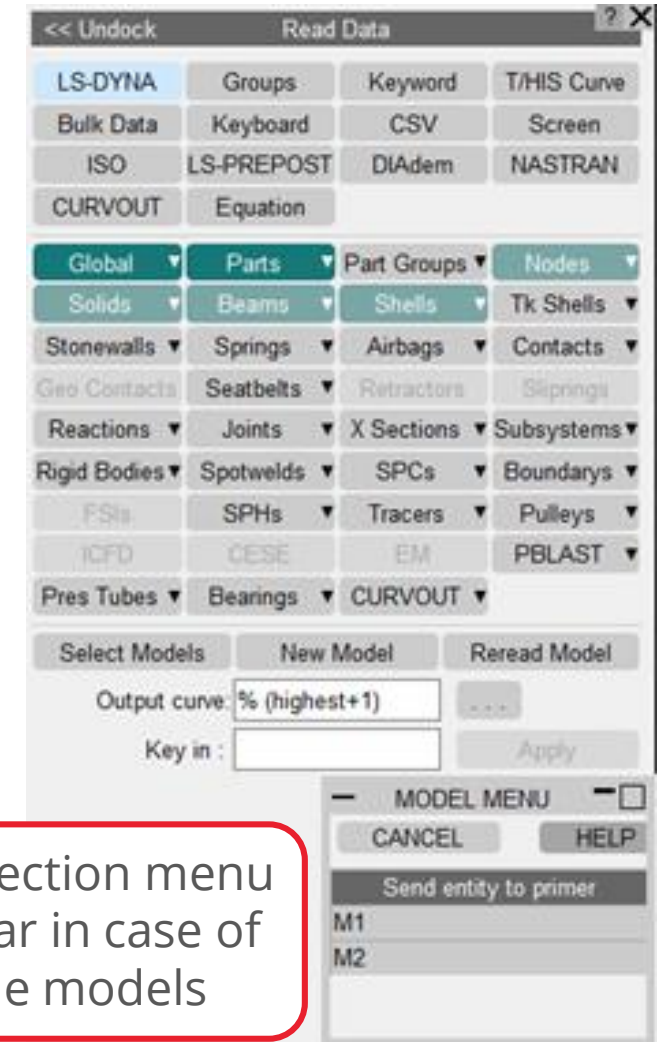
Highlight Output Database Cards in PRIMER

Highlighted database cards will be opened in linked PRIMER.

PRIMER will always highlight the database cards for entities in the same order as they are clicked in T/HIS.

You need to turn on the required cards with relevant values in order to use them in next LS-DYNA run.
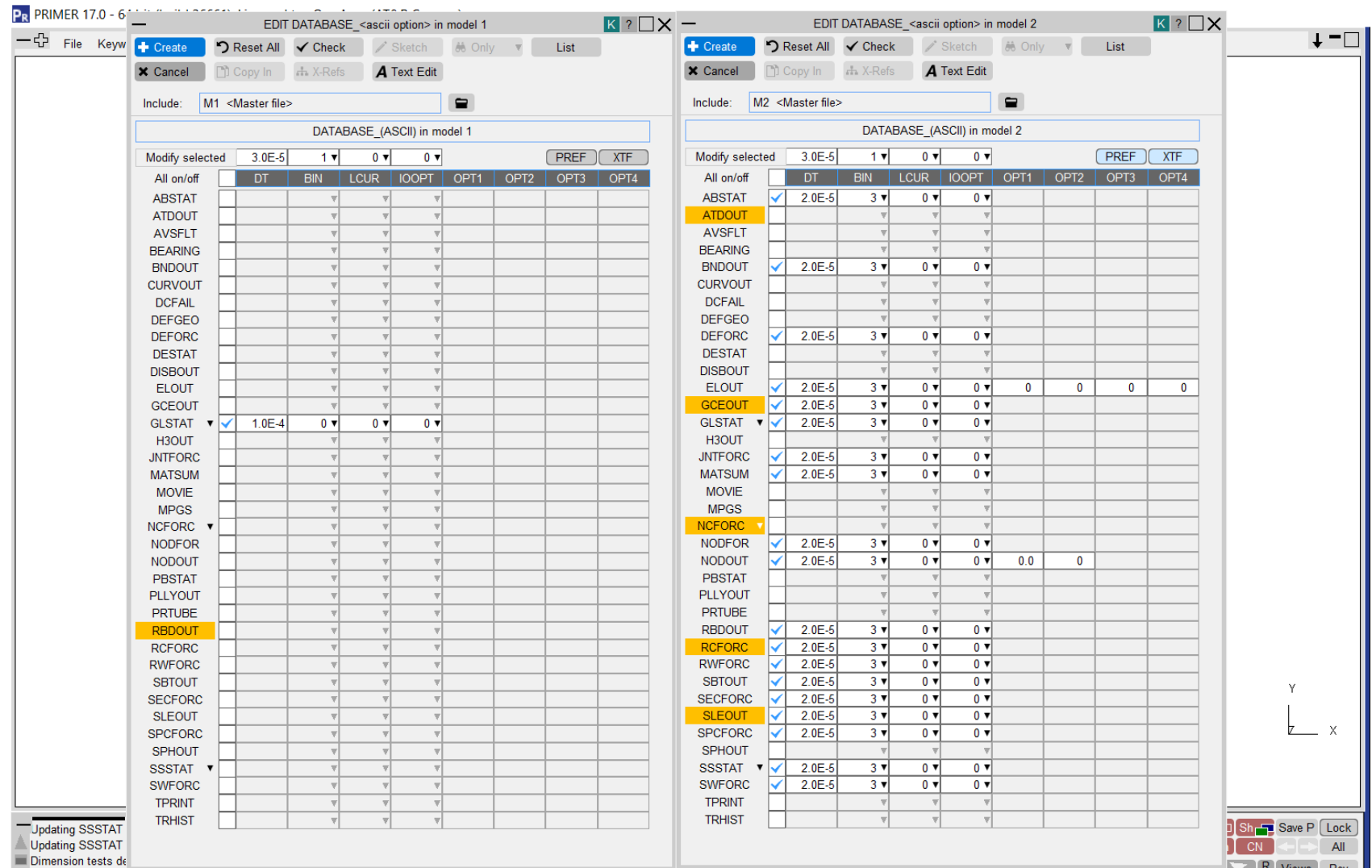
T/HIS → PRIMER Link

T/HIS can automatically locate an associated LS-DYNA keyword file to load in a linked PRIMER session. The logic used to locate the keyword deck has been improved in Oasys Suite 17.0:

1. The model name is now written to the .ztf file and is read by T/HIS. If this model exists, it is auto-loaded in PRIMER. If the .ztf file is missing, the approach depends on filename convention:

If you use the LSTC results filename convention (d3thdt, xtfile)

2. T/HIS looks to see if there is a single LS-DYNA keyword file (.key/.k/.kby or a .gz/.zip variant thereof) in the working directory and auto-loads it in PRIMER.

If you use the Oasys results filename convention (.thf, .xtf)

2. T/HIS looks to see if a *<job>*.thf has been loaded. If yes, T/HIS looks for a matching *<job>*.key/.k/.kby or a .gz/.zip variant thereof.

3. If a *<job>*.thf is not found, T/HIS tries a similar logic with a potential *<job>*.xtf file.

4. Failing all of that, T/HIS looks to see if there is a single LS-DYNA keyword file in the working directory.

The final fall-back, as always, is for you to manually select an input deck to load in PRIMER.

Equations

Equations

There is a new "Equation" option in the Read panel, which allows you to input an equation of the form $y = f(x)$ and plot the corresponding curve. Here, the function f can depend on any of $X, t, T, time$ or $TIME$, in place of x.

Additionally, curves can be referenced in these equations, using variables of the form $c1$, $C1$ or $\#1$ to refer to curve #1. For example the equation $y = \#1 + \#2$ is valid and sums curves #1 and #2, allowing multiple individual curve operations to be replaced by a single equation.

Equations can also be used to evaluate *DEFINE_CURVE_FUNCTION sent from PRIMER. See the PRIMER manual and new features presentation for more information.

<< Undock	Read Data		? X
LS-DYNA	Groups	Keyword	T/HIS Curve
Bulk Data	Keyboard	CSV	Screen
ISO	LS-PREPOST	DIAdem	NASTRAN
CURVOUT	Equation		

Equation :   y = `#1 + #2*exp(-0.5*x)*sin(4*PI*x)`

◉ User-defined X values

　　X Axis start : 　0.000000

　　X Axis end :　　 2.000000

　　X axis interval : 0.010000

○ Take X values from curve #　　1

○ Calculate X values from curve variables

Output Curve :　% (highest+1)　　　　. . .

Curve Label :　y = #1 + #2*exp(-0.5*x)*sin(4*PI*x)

☑ Use equation as curve label

X Label :

Y Label :

Apply

Equations

- There are several options for specifying the x-values used to plot the equation. The values can be specified explicitly, taken from another curve or calculated from the curves referenced in the equation.

- By default, the curve will use the equation as the label.

- Once an equation curve has been created, the equation can be edited by right-clicking the curve and selecting "Edit equation...", which will automatically overwrite the original curve.

- Equations can also be used in FAST-TCF via the "equation" command and in JavaScript via **Read.Equation**. Details of how to use these options can be found in the user manual.
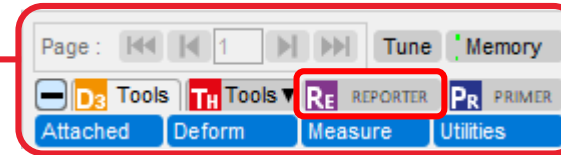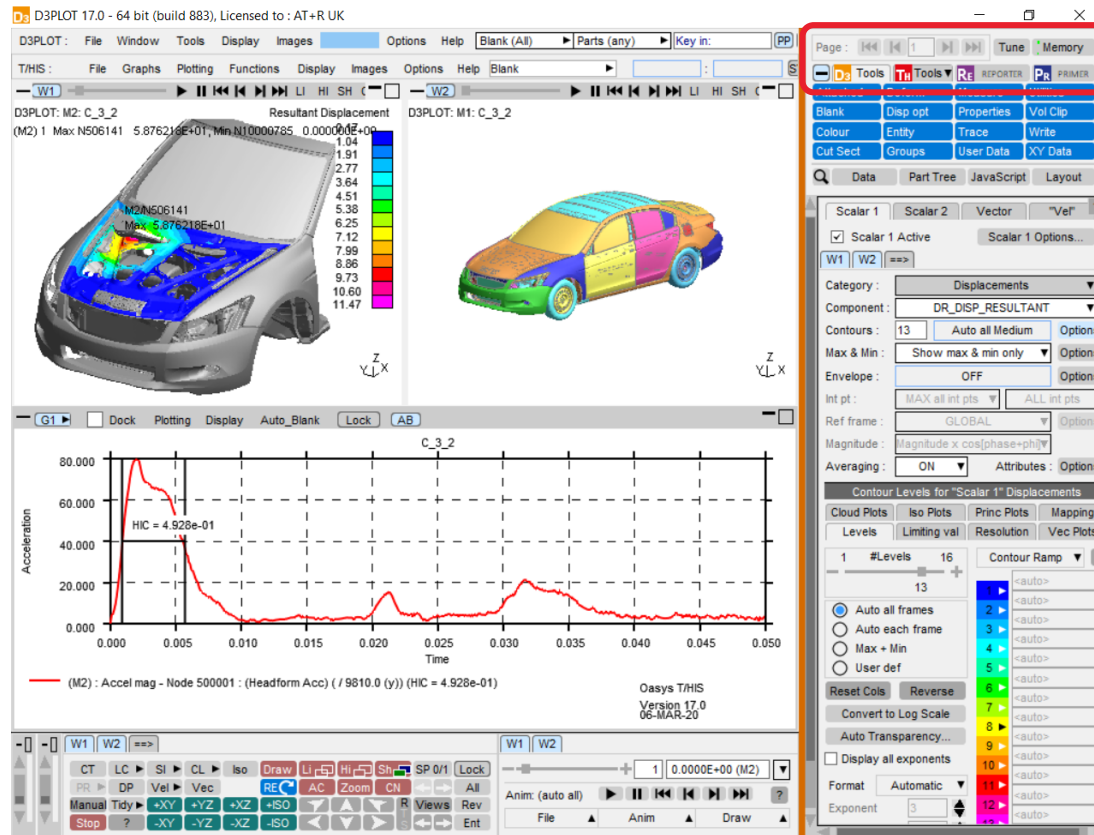
Add REPORTER to your Workflow

In version 17.0, REPORTER has been fully integrated with D3PLOT and T/HIS. Now, you can seamlessly add plots and graphs to reports as part of your normal post-processing workflow. Automated LS-DYNA reporting is just a few clicks away.

REPORTER can now be launched from D3PLOT and T/HIS

- You have been post-processing an analysis and want to put an image into a report.

- Press the "REPORTER" button above the TOOLS menu to launch REPORTER in a linked, shared memory mode.

Choose a Template to start creating your Report
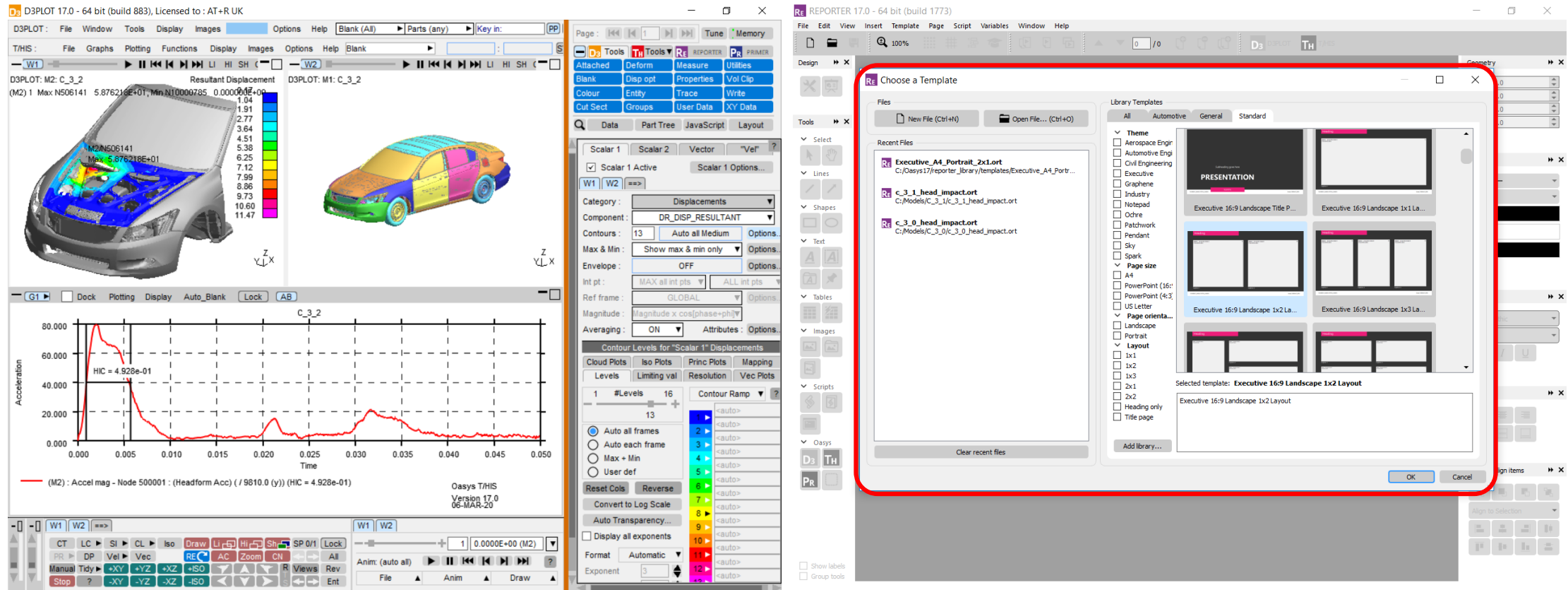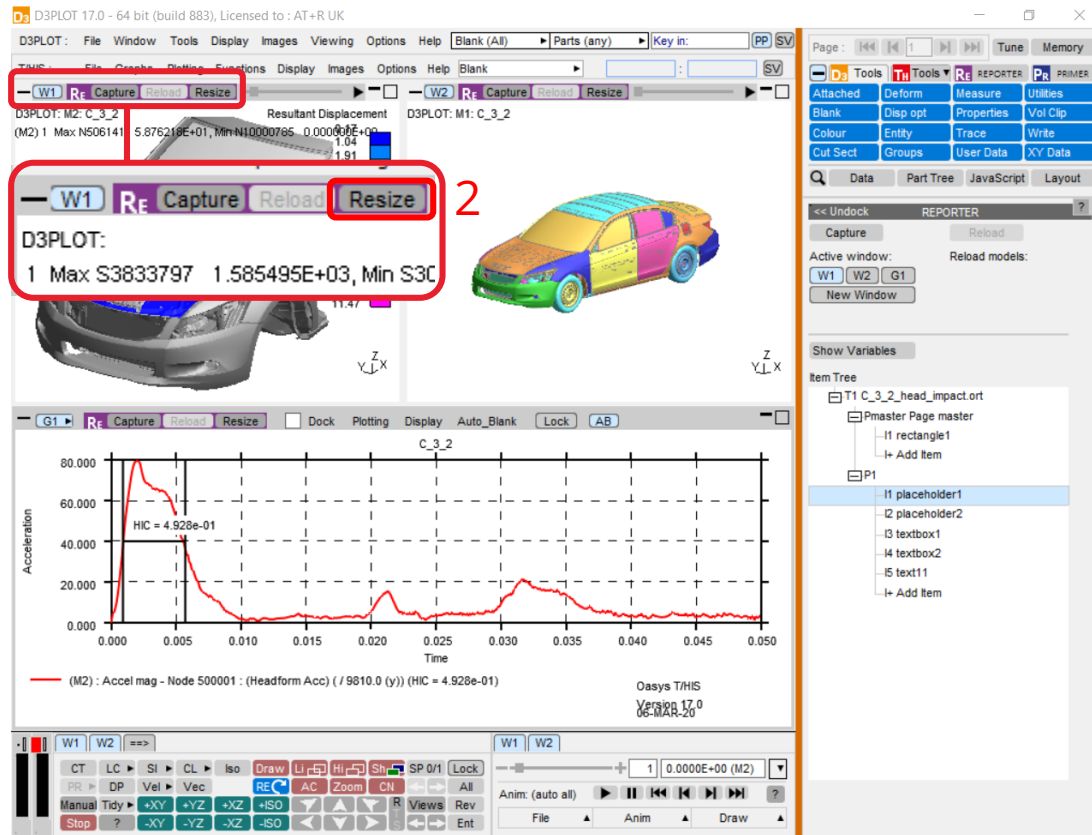

- Open a new blank template, an existing template or choose from a range of standard layouts to start creating a report.

Ensure Image looks right at Target Aspect Ratio

2. Press "Resize" button at the top of the D3PLOT window to resize to the REPORTER item aspect ratio.
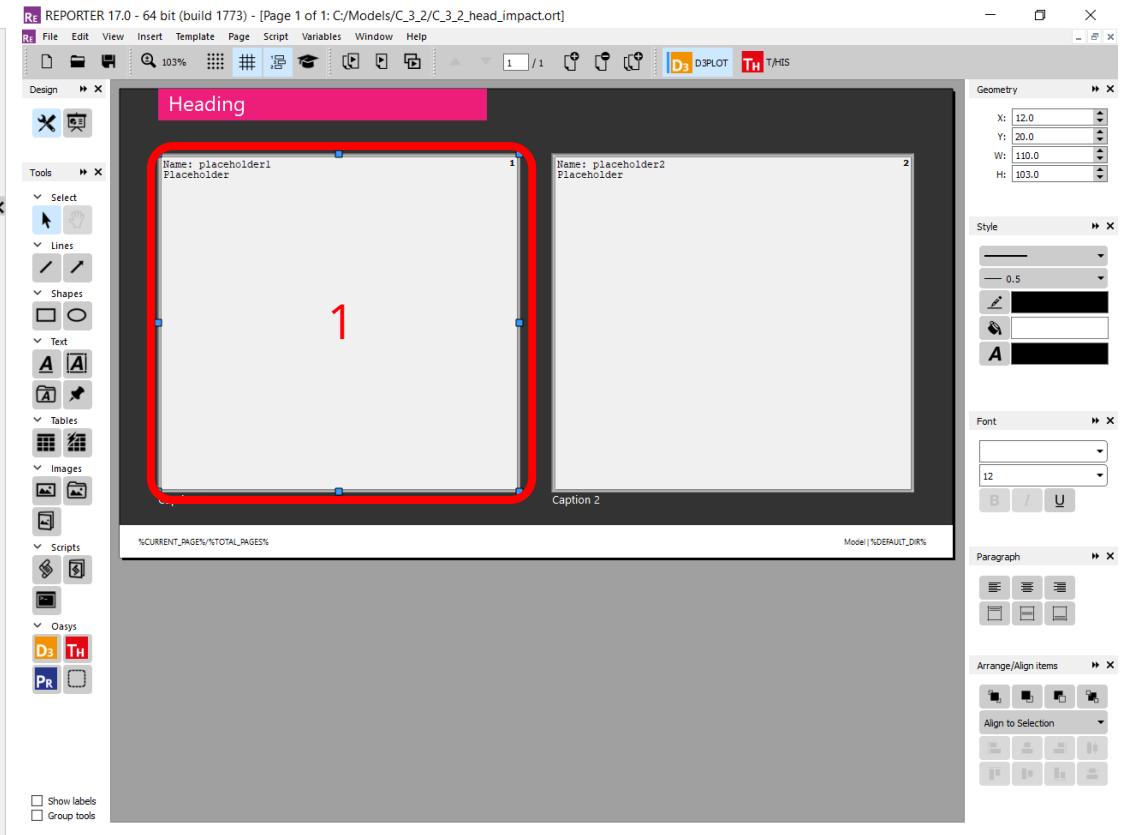
1. Select item in REPORTER that you want to capture into.

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Capture an Image

- Press the **Capture** button at the top of the D3PLOT window to send the capture to REPORTER.

- Capture information populates item in REPORTER.

Reload items from existing REPORTER Templates
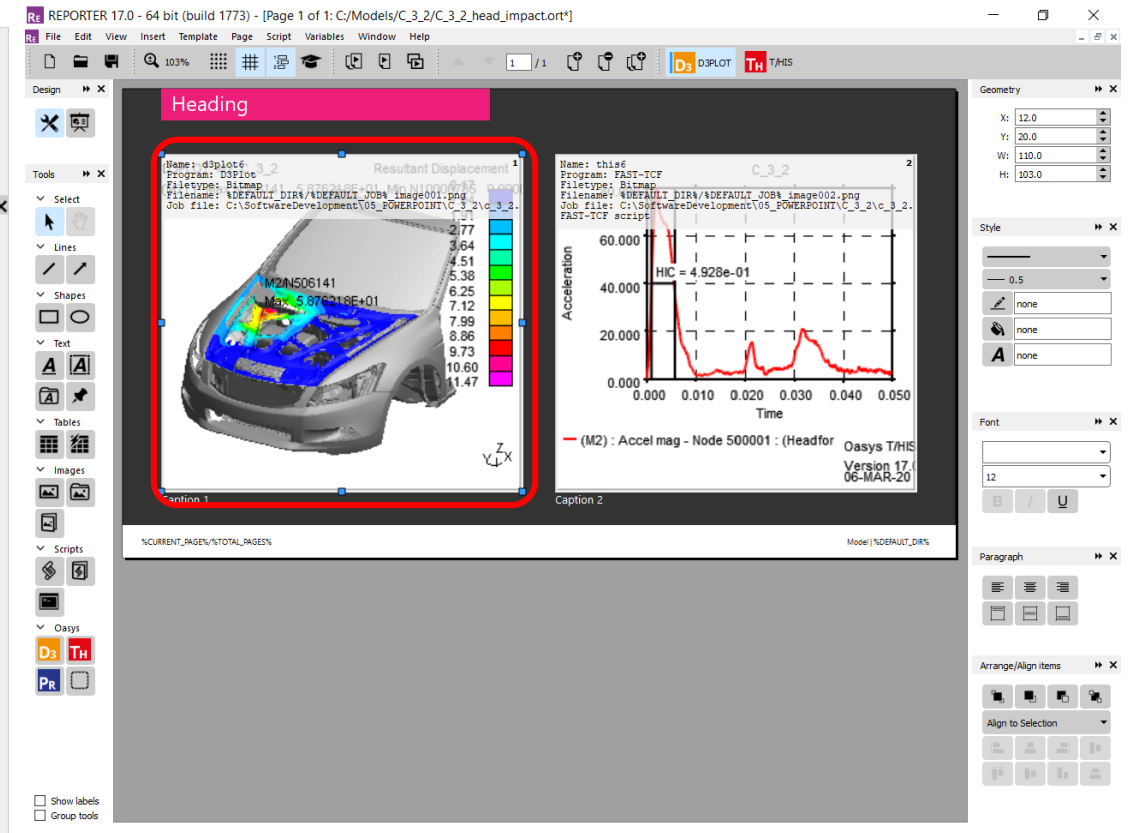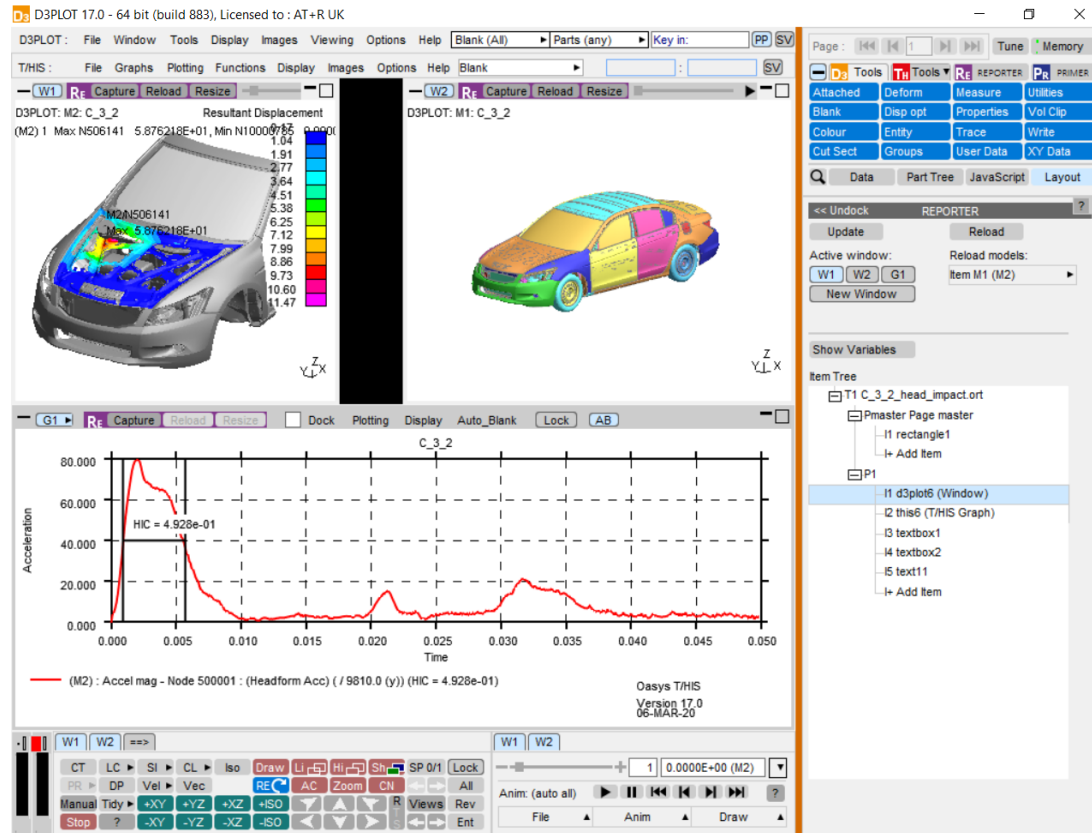
- Select item in REPORTER that you want to reload.

Items can be reloaded into a live POST session
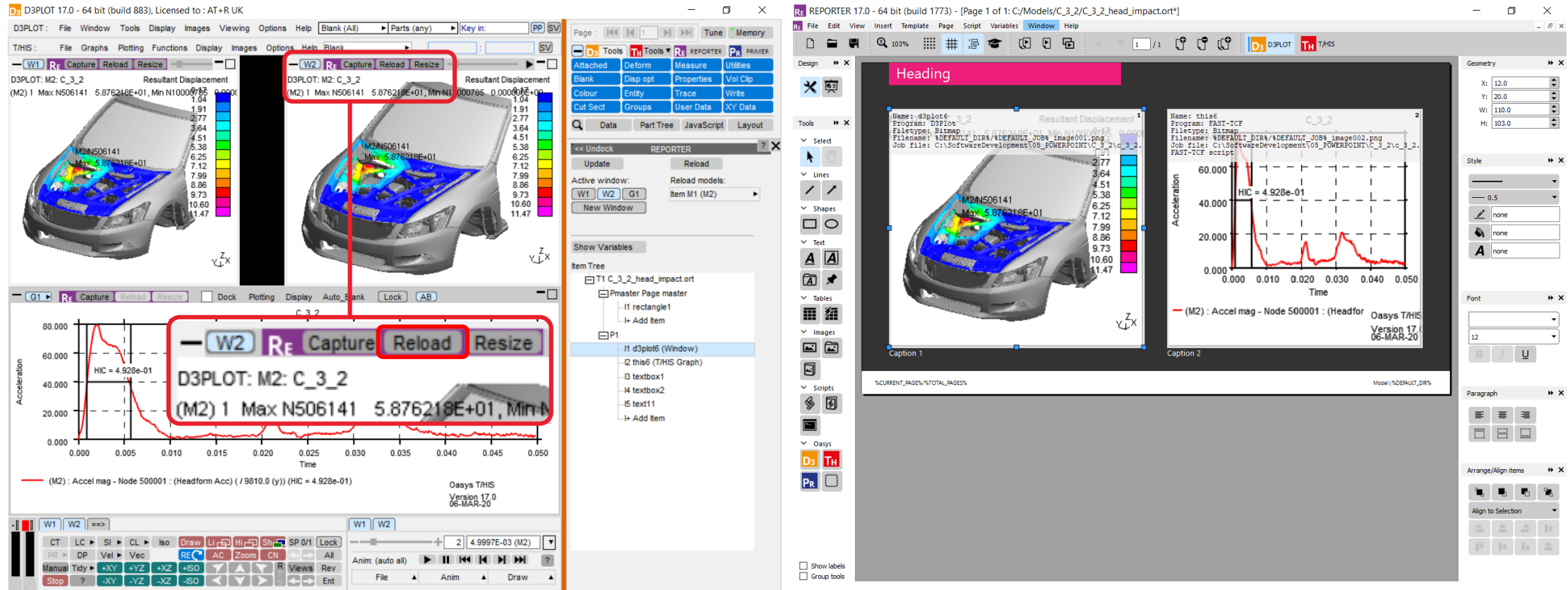
- Selected REPORTER item is reloaded into the selected window in POST.

Generate Templates from REPORTER

- Generate your template by selecting:

  File → Generate

- Generation takes place in existing linked POST sessions, reducing the time taken to generate reports.

- Use REPORTER variables to generate your template after each LS-DYNA simulation.
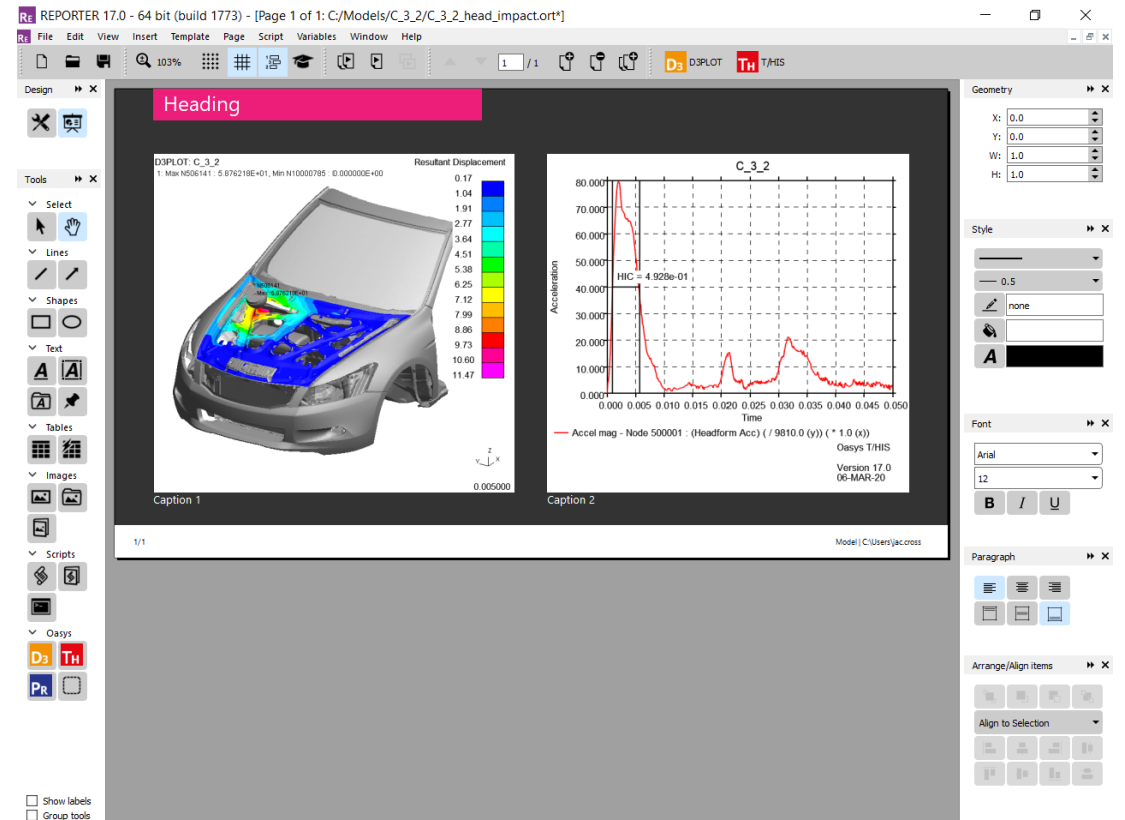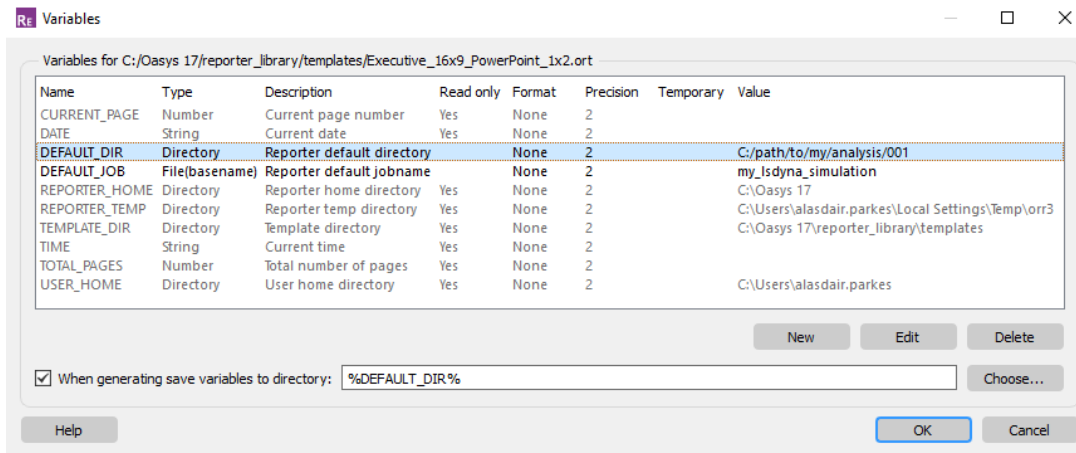
Useful to know...

- PRIMER item capture and generation are unchanged from earlier versions.

- REPORTER has a new Placeholder item type that can be filled with any of D3PLOT, T/HIS or PRIMER items.

- REPORTER can link to both D3PLOT and T/HIS in the same session.

- Captures are now single window / graph – to capture a multi-window layout, capture each window into individual REPORTER items and then design your page layout with greater flexibility in REPORTER.

- Variables are now easier to work with and accessible though the REPORTER panel in D3PLOT and T/HIS.

- Existing templates are fully supported and can be edited and generated using the 16.0 method with a simple option in REPORTER.

Curve Locking and Freezing

Curve Locking and Freezing

Similar to the behaviour of locking in D3PLOT and PRIMER, locking one or more curves on a particular graph will stop those curves from becoming visible, until they are unlocked. This is particularly useful in a session with a large number of curves, when you want to only leave a select few curves unlocked in each graph, preventing accidentally unblanking all curves.

Freezing is the equivalent of locking but for visible curves. Freezing a curve on a graph will stop it from being blanked until it is unfrozen.

The remaining unlocked/unfrozen curves can be manipulated, including the use of shortcut keys 'u', 'r' and 'b', without unblanking the locked curves or blanking the frozen curves.

Curve Locking and Freezing

Locking can be applied using the "Lock" button at the top of each graphics box. This will lock all blanked curves on the corresponding graph.

Freezing can be applied by right-clicking a curve in the curve manager, which freezes it on all active graphs, right-clicking one or more curves in the graphics window or using quick pick.
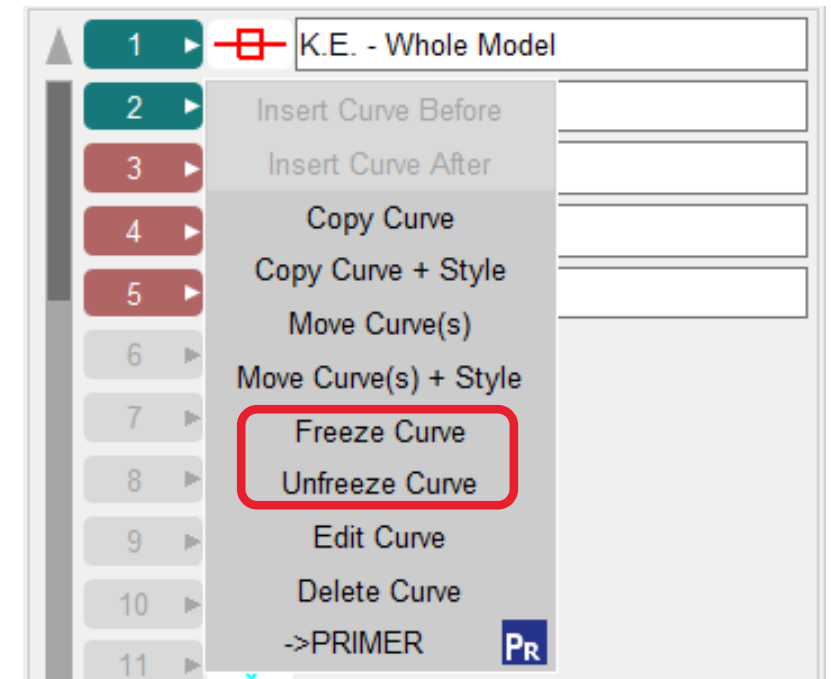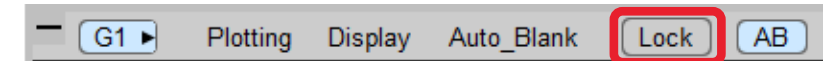
Curve Locking and Freezing

The graph buttons in the curve table can be repurposed by right-clicking the "Graph buttons" tab and selecting "Locking/Freezing" mode or selecting the "Locking/Freezing" button. Clicking on one of the tickboxes will then lock a curve if it is blanked, colouring the box red, or freeze a curve if it is visible, colouring the box green. Clicking any of the buttons along the top row will lock all blanked curves on the corresponding graph.

In this example, 4 curves are visible on each of graphs 1, 2 and 3, all other curves are locked on each graph and the first of the visiable curves on each graph is frozen.
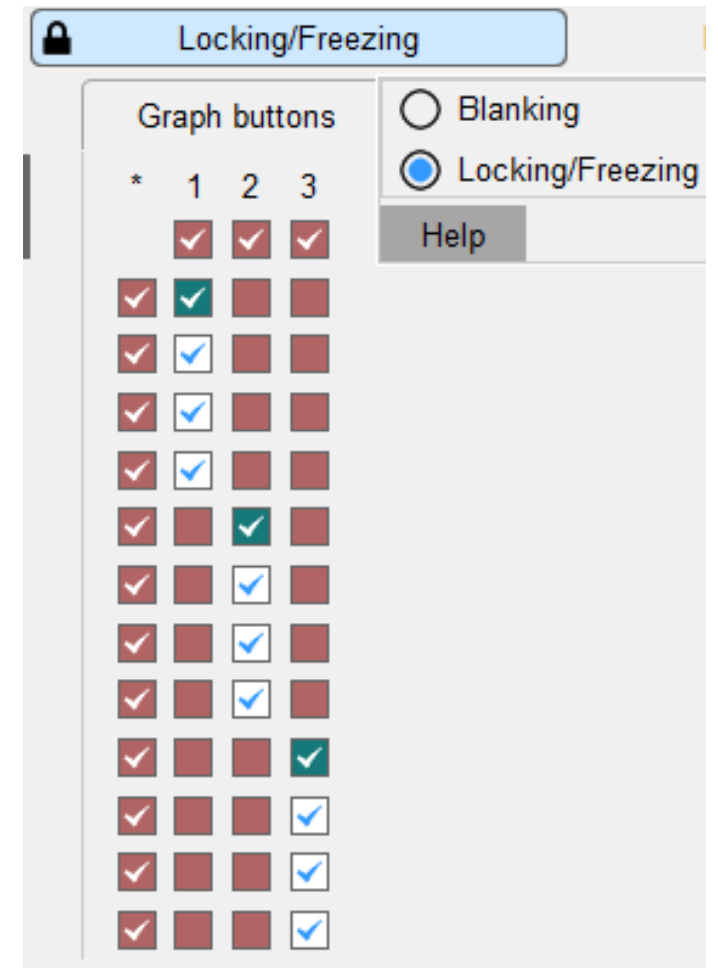
User-defined Colours

User-defined Colours

User-defined colours are available in T/HIS via a new colour popup.

The user-defined colours are created from the colour popup using a colour palette:

Hover over a colour then click 'Edit'
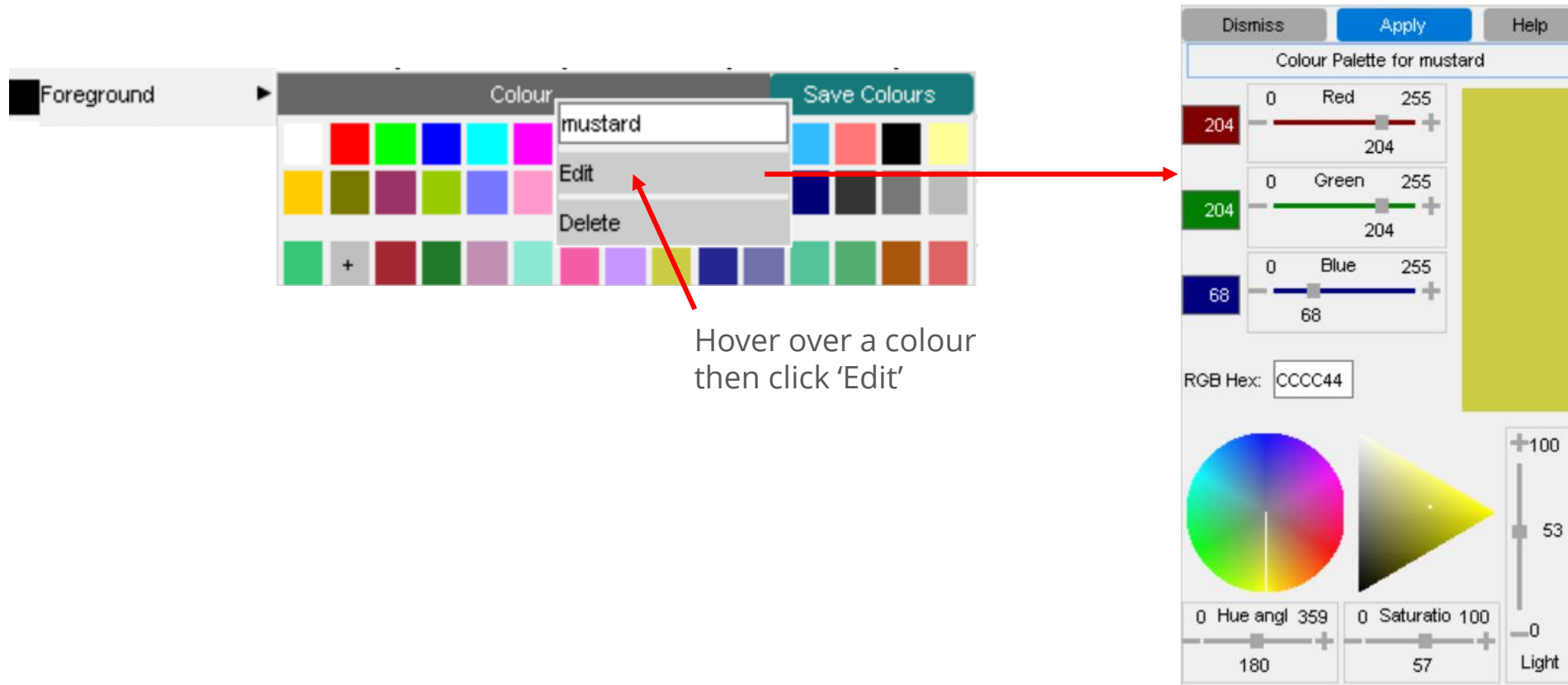
User-defined Colours

There have been a number of improvements made to user-defined colours in T/HIS.

- User-defined colours are created from the colour popup using a colour palette.

- The maximum number of user-defined colours has increased from 6 to 150.

- Colours can be named and these names can be referred to in FAST-TCF scripts.

- Once saved, the same user-defined colours are available in D3PLOT.

- The colours are saved to an XML file, *user_colours.xml*. A *user_colours.xml* file can exist both in the install directory and a user's home area (if any colours are defined in both places, the user's colours take priority), or a location specified by a preference.

- The *user_colours.xml* files will be read by both D3PLOT and T/HIS.

- In JavaScript, the function **Colour.RGB(r, g, b)** can now colour anything in T/HIS. The HEX code for this RGB value will be written directly into any generated FAST-TCF scripts, and thus reproduce the colour exactly.

Datums
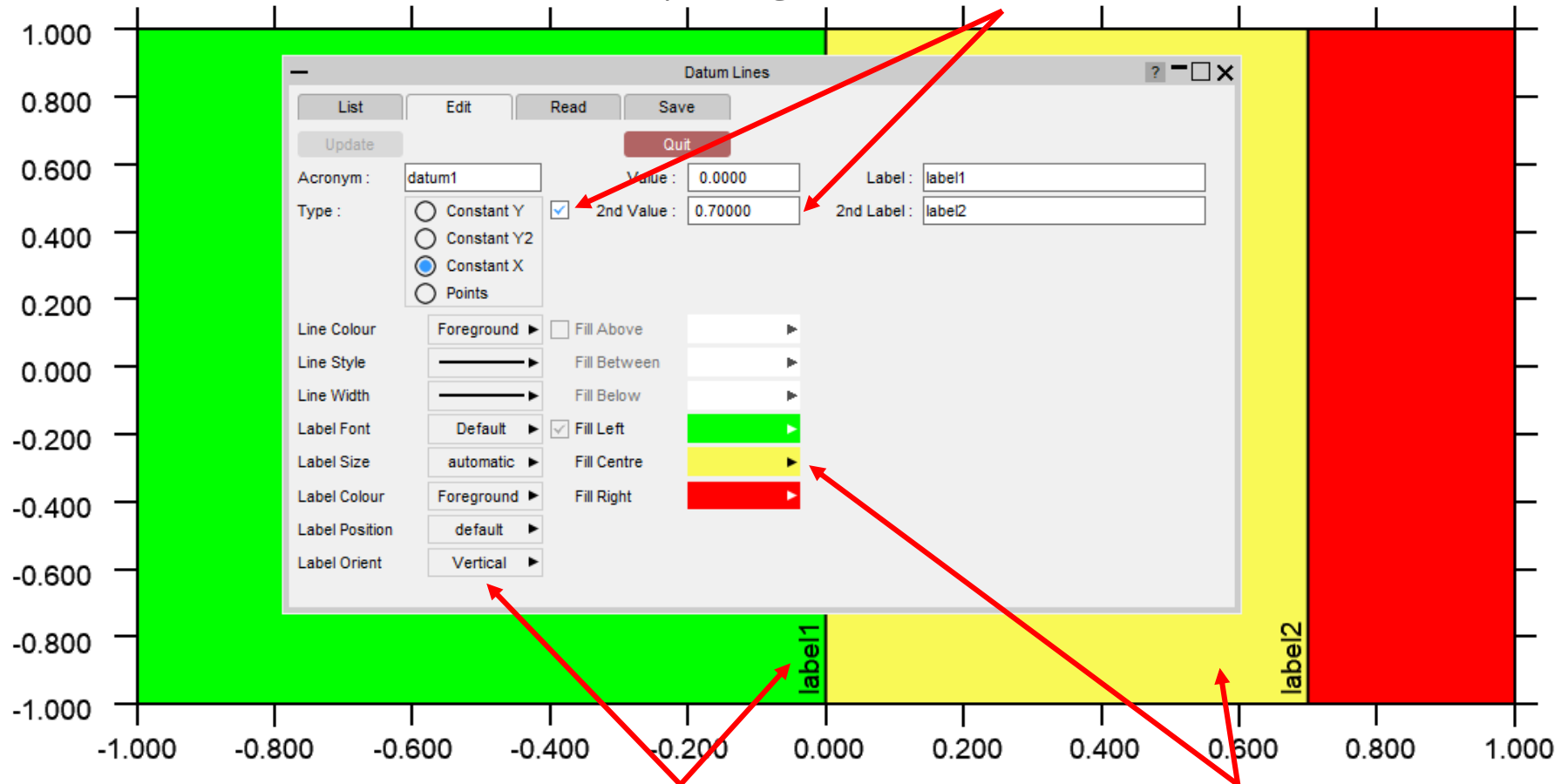
Datums

Datums

Points can now be copied into a points datum from a curve, with the option to copy the curve label too.
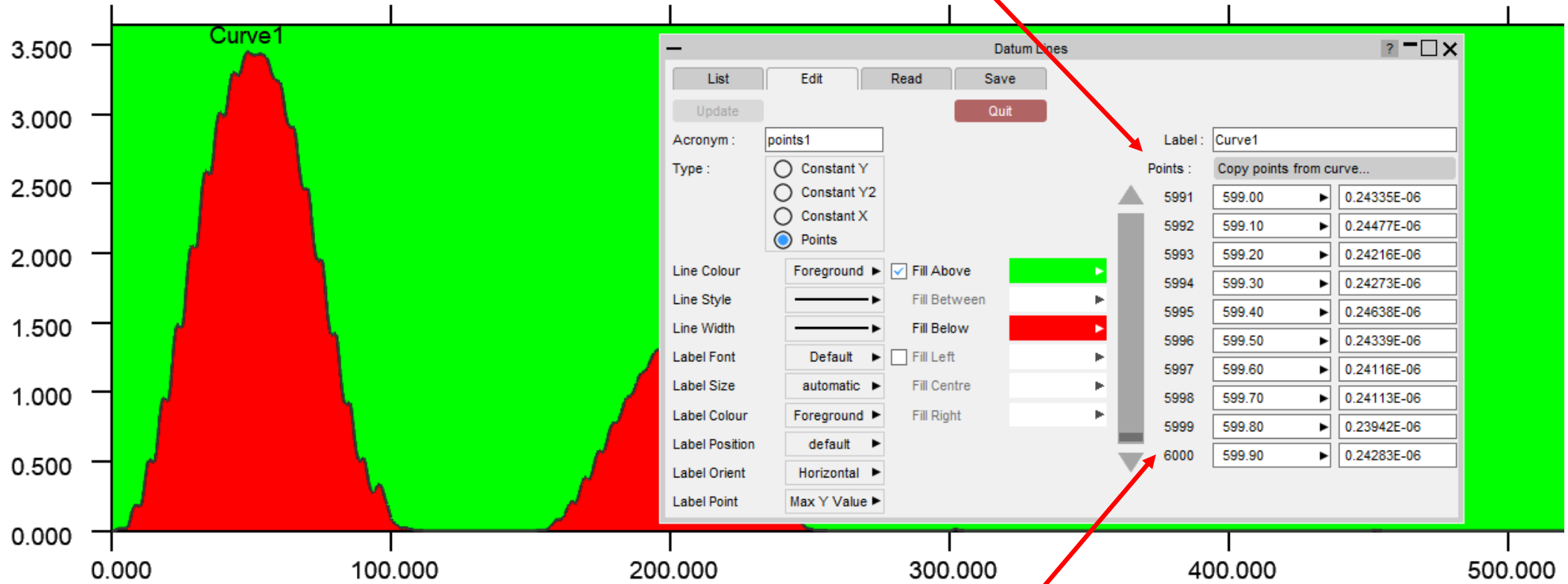
The limit of 1024 points in a datum has been removed. The indices of each point are now displayed next to the coordinate values.

Datums

Additionally:

- FAST-TCF variables can now be used inside datum definitions in FAST-TCF scripts.

- All of the new features have been added to the JavaScript API as well as datum definitions in FAST-TCF and *.dtm* files. Please see the manual for details.

New Preferences

New Preferences

The following preferences have been added to T/HIS:

Preference	Description
this*show_checkpoint_files	• To show/hide checkpoint playback panel upon T/HIS start up • The value of the preference can be TRUE/FALSE (default – FALSE)

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New Command Line Options

New Command Line Options

The following command line options have been added to T/HIS:

- **-show_checkpoint_files=<*TRUE/FALSE*>**

  - To show/hide checkpoint playback panel upon T/HIS start up.

  - The value of the preference can be TRUE/FALSE (default – FALSE).

- **-checkpoint_dir=<directory>**

  - Directory path to write checkpoint files.

  - *<directory>* must be a valid directory name on your system.

  - If the value is <**none**> then the checkpoint files are not recorded for the T/HIS session.

FAST-TCF

FAST-TCF

The following new options for writing FAST-TCF scripts have been added:

Option	Description	Default
Write DIAdem channel names	DIAdem channel names will be written into the FAST-TCF instead of channel numbers. Can be set using preference *ftcf_write_diadem_channel_names*.	ON
Write colour names	Names of user-defined colours will be written into the FAST-TCF instead of HEX codes. The colour definitions will be added to the comments in the script in case they are missing when replaying the script. Can be set using preference *ftcf_write_user_colours*.	OFF
Only reference models required by the script	When writing a FAST-TCF script, only models that are required for the curves captured by the script will be referenced, rather than all the models in the session. For example, say there are two models, M1 and M2 in a session, with a single graph that contains data only from model M2. When a FAST-TCF script is written, if this option is on then M2 will be referred to as model 1 in the script, so it can be played back in a session with 1 model. If this option is off, then it will be referred to as model 2, so it can be replayed in the same session with the same result. Can be set using preference *ftcf_write_required_models*.	ON

FAST-TCF

The following commands have been added to FAST-TCF:

Command	Arguments	Description
read_diadem	"filename" "channel name"	DIAdem channels can now be read by providing the channel name, enclosed in quotes, in place of the channel number.

JavaScript

New JavaScript Functions – Global Class

The following functions have been added to the T/HIS JavaScript API.

Function	Description
Graph: g.active	Return 1 if graph *g* is active, 0 otherwise.
Group.DeleteGroup(*group*, *auto*)	Delete one or all curve groups. The argument *group* can be either the name or ID of a group, or 0 to delete all groups. Automatically generated groups can only be deleted if the optional argument *auto* is set to 1.
Read.Equation(*expression*, *x_val_opt*, *x_start*, *x_end*, *x_interval*)	Expression string to define the equation "y = expression", optional arguments to define the x-values used for the curve. For more details see Equations.

JavaScript API

- JavaScript API enhancements:

  - A new slider widget is available for graphical user interfaces.

  - The *onClick* event can now be used for label widgets.

Extending Classes

There have been a few instances where users have extended an existing class in T/HIS by adding their own property (for example adding a 'type' property to the Widget class). When we add new functionality to the API this potentially causes a conflict.

For Arup to be able to extend and enhance the API in the future any constant, property or method names beginning with a lowercase or uppercase letter are reserved.
If you need to add your own properties or methods to one of the existing classes then to avoid any potential future conflict you should ensure that the name begins with either an underscore (_) or a dollar sign ($) or the name is prefixed with your own unique identifier.

For example if company 'ABC' need to add a property called 'example' then to avoid any potential future conflict use one of:

_example

$example

ABC_example

Replay of Drag-Drop Files

Replay of Drag-Drop Files

- The checkpoint files will now support replay of the drag and drop of the files into T/HIS graphics area.

Contact Information

ARUP

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