Oasys Post Processing Update

March 2019

Oasys D3PLOT v16.0
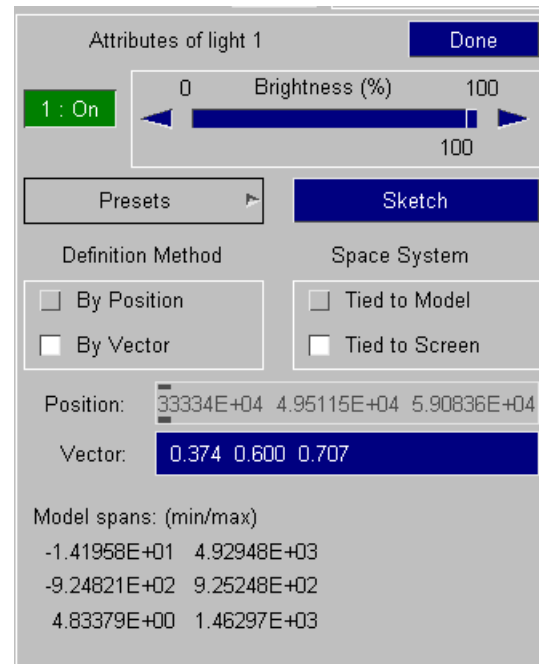
Model Visualization

Lighting Panel

Material Attributes

New in D3PLOT 16, the Material Attributes panel allows for a greater range of part-specific colour and lighting control.

Data Components

D3PLOT 16 can display a component that shows whether the surface of a shell that the user can see is in tension or compression. The contour colours on the top and bottom surface of the shell can be different colours, e.g. if the shell is in bending.

Front and back views of the same part, showing some areas of shells in bending

New Data Components – Strain Energy Density

D3PLOT 16 can now read and display the Strain Energy Density values output to the "d3plot" and "d3eigv" files for Solids, Shells and Thick Shells by setting ISED on *DATABASE_EXTENT_BINARY_COMP.

D3PLOT 16 can now read and display the Residual Forces
and Moments that can be written to the d3iter file by
setting D3ITCTL=1 on *CONTROL_IMPLICIT_SOLUTION

ZTF - Displaying Loads

Data Read into D3PLOT

- The ZTF file created by PRIMER includes data for SPC's, spotwelds, *DATABASE_CROSS_SECTIONS.

- Results for spotwelds, SPC's, springs and 1D seatbelt elements can be read from the LSDA (binout) file and displayed.

PTF (D3PLOT) File

Nodes

Solids

Beams

Shells

Thick Shells

SPH

Airbag Particles

ZTF File

Springs

Seat belts

Joints

Lumped Masses

Rigidwalls

Spotwelds

SPC's

Loads

Nodal Rigid Bodies

Material Properties (*MAT)

*SET… defs

Composite ply angles

Geometry +
Results

Oasys
D3PLOT

Geometry Only

Results

LSDA File

Spotwelds

SPC's

Springs

Seatbelts

Displaying Loads

D3PLOT v16 introduces the ability to display loads on the model. Load information is transferred to D3PLOT via the ZTF file, so it is necessary to generate a ZTF file with PRIMER v16 for load plotting to be available.

The display of loads can be controlled in Disp opt >> Loads

The size of load symbols can be adjusted.

Auto all frames – load symbols normalised to maximum value across all states – as you step through states loads will 'grow'.

Auto each frame – load symbols normalised to maximum value in current state – shows distribution but not time variation.

Fixed length – load symbols all shown with fixed length.

Loads can be blanked via the Blanking menu or using Quick Pick

Loads can be set to be shown only when the node or element they are applied to is visible, or to always be shown.

Displaying Loads

Loads can be contoured in CT and SI plot modes

A new component category "Applied Loads" has been added. This contains four components:

- LOAD_FORCE (node loads DOF 1-4)
- LOAD_MOMENT (node loads DOF 5-8)
- LOAD_LINE_LOAD (beam loads)
- LOAD_PRESSURE (shell & segment loads)

Displaying Loads

Load display has the following limitations:

- Only the following load types can be plotted:

    - LOAD_NODE_POINT / SET,

    - LOAD_BEAM(_SET),

    - LOAD_SHELL(_SET),

    - LOAD_SEGMENT(_SET).

- Loads defined with functions are not supported and will not be displayed.

- The information to display loads is new to the v16.0 ZTF file, so the ZTF file must be generated with v16.0 PRIMER.

Session Files

Session Files

D3PLOT 16.0 introduces the ability to save and restore 'sessions', permitting the user to quickly revert to the state they were at when they last exited D3PLOT. Sessions may be saved via either the File popup menu, the Utilities panel or the EXIT window.

Auto-save

Explicit session path and name

JavaScript

JavaScript

The following new functions have been added to the D3PLOT JavaScript API. Optional arguments are given in italics.

Function	Description
IsVisible(*type_code, item, window_id, state_id*)	Returns JS_TRUE if the item is currently visible, otherwise it returns JS_FALSE. An entity is considered "visible" if the following conditions are all true: 1. Not blanked, 2. The visibility switch is ON for type 'type_code', 3. Is not empty, if type is PART, 4. The entity 'item' has not been deleted in the current state if the type is an element. Arguments: type_code (constant), item (integer), window_id (integer), optional state_id (integer).

Function	Description
Colour.RGB(*red, green, blue*)	Specify a colour by the RGB value with *red*, *green* and *blue* in the range 0-255.
Colour.*COLOUR_CONSTANT*	Specify a colour by the associated colour constant, which can be any of: DEFAULT, WHITE, GREY, BLACK, MAGENTA, RED_MAGENTA, RED, DARK_ORANGE, ORANGE, YELLOW, YELLOW_GREEN, GREEN, GREEN_CYAN, CYAN, LIGHT_BLUE, MEDIUM_BLUE, BLUE.

Preferences

The following preferences have been added to D3PLOT:

Preference	Description
d3plot*lode_param_tension_sign	Can be set to POSITIVE or NEGATIVE to set the sign convention for the lode parameter for uniaxial tension. The default is NEGATIVE.
d3plot*session_auto_save	Can be set to ON to instruct D3PLOT to save a session on exit
d3plot*session_save_option	Can be set to one of HOME, DESKTOP or USER_DEFINED to define the save location for sessions during exit.
d3plot*session_save_dir	Can be set to a location of the user's choice and is applicable if d3plot*session_save_option is set to USER_DEFINED.

Oasys T/HIS v16.0

Curve Table

Curve Table

V15

V16

Multiple new features have been added to the curve table:

- Curve properties and injury values

- Writing to CSV and XLSX files

- Operating on curves

- Annotating curves with property values

Session Files

T/HIS Session – Save and Retrieve

A T/HIS session can now be saved as a session file (.tsf), which can be read back in to restore the saved session.

Save session

Retrieve session

New Preferences

New Preferences

The following preferences have been added to T/HIS:

- **session_auto_save**   Saves a session unconditionally on exit. By default T/HIS does not save session on exit.
ON/OFF

- **session_save_option**   Sets the location for auto saving of session on exit. By default will be saved to OA_HOME.
HOME/USER_DEFINED/DESKTOP

- **session_save_dir**   Defines the user-defined location for auto save on exit.
string "pathname"

New Preferences

- **session_embed_cur/csv_files**   Embed the cur and csv files used into the session file. By default cur/csv files are not embedded into session file.
ON/OFF

- **session_embed_curve_data**   Embed the curve data into the session file. This can help in retrieving a session even when LS-DYNA results are missing. By default curve data is not embedded into session files.
ON/OFF

- **show_session_retrieve_on_start**   A pop-up panel to retrieve T/HIS session file pops-up every time T/HIS is started. This panel does not appear by default.
ON/OFF

New Preferences

- **ctable_injuryvals_on**   Show the injury value columns chosen by the above preferences in the curve table by default. TRUE/FALSE

- **ctable_properties_on**   Show curve property columns chosen by the above preferences in the curve table by default. TRUE/FALSE

- **ctable_show_*propertyname***   Show or hide each individual curve property or injury value column by default. Replace ***propertyname*** with any of: miny, maxy, minposy, minx, maxx, minposx, xatminy, xatmaxy, xatminposy, average, rms, points, hic, hicd, tms, tti, thiv, phd, corr. TRUE/FALSE

Curve Operations

Curve Operations - Regression

The Regres operation applies least squares regression to fit data with either a linear, polynomial (degree 1-4), logarithmic or exponential curve.

Curve Operations - Regression

The equation of the output curve and Pearson's R^2 coefficient can be viewed by right-clicking on the curve and selecting Properties.

Curve Operations - Regression

In the case of linear regression, additional statistics are given in the properties pop-up. Additionally, for linear regression it is possible to display 95% confidence and prediction bands around the output curve. These are displayed by selecting the Properties menu in the top-right panel and then ticking Show CBands.

Antialiasing Curves

Antialiasing Curves

Curves are now antialiased by default in T/HIS, which gives them a smoother look. This can be turned on and off via:

Display -> Use Antialised Lines

There is also a preference that can be used to turn this on or off by default:

this*line_antialias: ON/OFF

Antialiasing off

Antialiasing on

FAST-TCF

FAST-TCF

An option has been added to the FAST-TCF create panel, so that one can choose to write entity names (when they exist), in place of IDs, into any generated FAST-TCF script. These names will then be used to identify the entities when running the script.

FAST-TCF

FAST-TCF

The following commands have been added to FAST-TCF:

Command	Arguments	Description
colour	n RRGGBB	Set the n-th user-defined colour (up to 6) using a 6-digit hexadecimal to specify the RGB values.
colour_rgb	n R G B	Set the n-th user-defined colour (up to 6) using three integers in the range 0-255 to specify the RGB values.
y_min, ymax, y2_min, y2_max	auto_vis	Set the minimum/maximum value on the y/y2-axis to the automatic value based on the currently visible section of the x-axis. Similar to 'Y' shortcut key.

FAST-TCF

Command	Arguments	Description
y_ranges	auto auto_vis y_auto y_auto_vis y2_auto y2_auto_vis	Set the minimum and maximum values simultaneously on either the y-axis, the y2-axis or both together. These can be set either to the automatic values based on the whole x-axis or just on the visible portion.
varr vara varf tab — VAR_NAME all taba tabc tabcr	all_minx all_maxx all_miny all_maxy all_xatmin all_xatmax all_catmin all_catmax	New variables for properties relating to all curves. These give the min/max x, min/max y, x value at min/max y and curve number at min/max y respectively, each of which is calculated over all curves.

JavaScript

New JavaScript Functions – Global Class

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

Function	Description
GetCurrentDirectory()	Returns the current working directory.
GetInstallDirectory()	Returns the value of the OA_INSTALL environment variable, or, if this doesn't exist, the directory in which the current executable is installed.
GetStartInDirectory()	Returns the directory passed in by the -start_in command line argument, or, if this wasn't used, the directory from which the executable was run.
GetPreferenceValue(*program_name, preference_name*)	Get the value of preference_name for program_name from any of OA_ADMIN, OA_INSTALL or OA_HOME oa_pref files.
SetCurrentDirectory(*pathname*)	Sets the current working directory to the directory specified by the string 'pathname'.

New JavaScript Functions – Page Class

Function	Description
Page.ReturnActivePage()	Returns the current active page in T/HIS.
Page.SetActivePage(*page*)	Sets the current active page to *page*, or gives an error if this page does not exist.
Page.AddGraph(*page*, *graph*, *copy_settings*, *n_graphs*)	Adds graph number *graph* to page *page.* If *graph* = 0, then create a new graph and copy settings from graph number *copy_settings.* If *graph* = 0 then *n_graphs* specifies the number of new graphs to create and add to *page.*
Page.ReturnGraphs(*page*)	Returns an array of JavaScript Graph objects, containing all the graphs on page *page.*

New JavaScript Functions – Group Class

Function	Description
Group.xmin/xmax	Minimum/maximum X value over all curves in the group.
Group.ymin/ymax	Minimum/maximum Y value over all curves in the group.
Group.x_at_ymin/ymax	X value at minimum/maximum Y value over all curves in the group.
Group.crv_at_ymin/ymax	Curve number of the curve with the minimum/maximum Y value in the group.
Group.xminpos/yminpos	Minimum positive X value/Y value over all curves in the group.
Group.x_at_yminpos	X value at minimum positive Y value over all curves in the group.

New JavaScript Functions – Read Class

Function	Description
Read.Key(*filename*)	Reads a Keyword file named *filename* into T/HIS.
Read.ISO(*filename*, *format*)	Reads an ISO file named *filename* into T/HIS. Multiple channels can be read in by giving an ISO index file and specifying *format* = 0, 1 or no argument. A single channel file can be read in by giving the name of the channel file and specifying *format* = 2.
Read.LSPP(*filename*, *format*)	Reads an LS-PREPOST file named *filename* into T/HIS. A curve file can be read by specifying *format* = 0,1 or no argument. An XY pairs file can be read by specifying *format* = 2.

Oasys REPORTER v16.0

Fonts

Until now, REPORTER has only supported four fonts (with very basic add-on support for Chinese, Japanese and Korean fonts):

Courier   Helvetica   Times   Σψμβολ (Symbol)

Version 16.0 offers support for many more fonts, giving you greater control over the look of your reports, and allowing you to create templates that match your organisation's branding.

Fonts (continued)

Font Mapping

Customisable font mapping is provided to improve compatibility between users and operating systems. If another user shares a template with you that uses a font that is not installed on your system, suitable alternatives will be suggested in the Font Substitution dialog that appears when you open the template.

If you create templates on Windows but then run them in batch on a Linux server, font mapping will help preserve the look and style of your output.

For more details, see chapter 11 of the REPORTER 16.0 manual.

Exporting Tables to Excel

Table and Autotable items can now be exported in Microsoft Excel format, complete with formatting (cell size, text alignment, font style, borders, colours, merged cells).

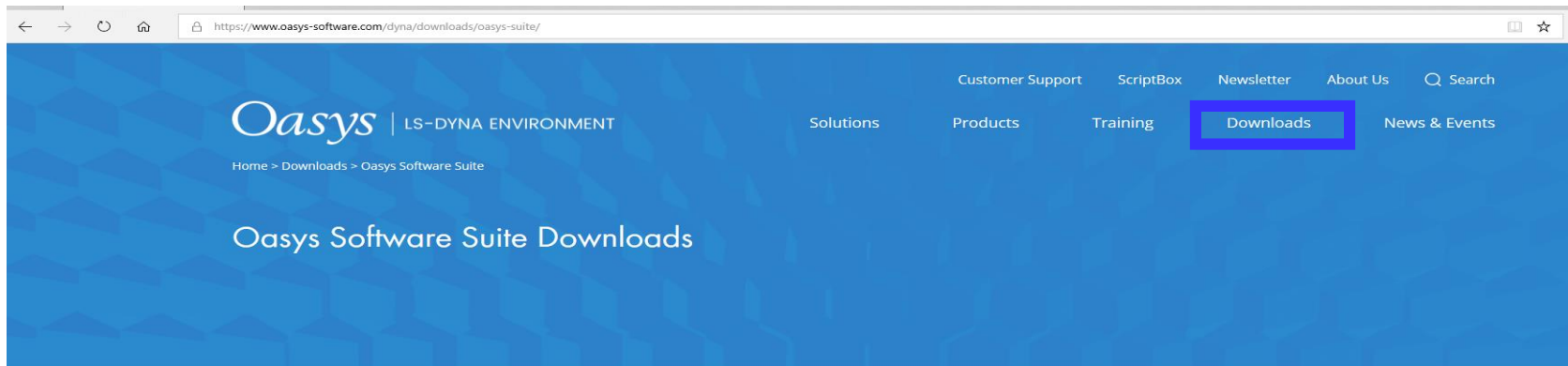In the Table or Autotable dialog, check 'When generating save to XLSX file' and choose a filename.
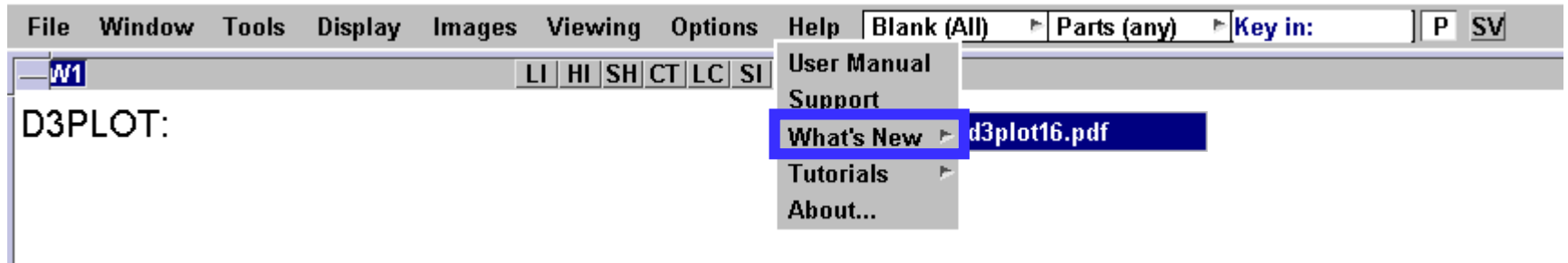
Tables in the JavaScript API

Various new functions have been added to the Item class of the JavaScript API to enable full control over Table and Autotable items. For example, it is now possible to:

- Insert/delete/resize rows/columns

- Merge/unmerge cells

- Get/set cell properties (e.g. text, alignment, font, colour, border width)

- Get/set cell conditions

What's New

Version 16 Download

ARUP

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