Update and Release Notes for the LS-DYNA Environment Software

from Oasys Ltd

SHELL

PRIMER

D3PLOT

T/HIS

REPORTER

Version 18.1

Contents

1   Introduction

The Oasys Ltd LS-DYNA Environment 18.1 suite, dated October 2021, is a full release which supersedes all previous releases. It is a bug fix release of the Oasys Ltd LS-DYNA Environment 18.0 suite.

This document lists the enhancements that have been made during development, and the bugs that have been fixed (since 17.1). Each 'Case ID' referred to in these lists is unique and should be cited if more information or clarification are required.

1.1   Compatibility with LS-DYNA releases

The 18.1 release has been used and tested with LS-DYNA version R12 and the development version of R13. It supports all the keywords in volumes I, II and III of the released R11.0 User's Manual. Most of the new keywords in the released R12 User's Manual are also supported (only some *DUALCESE keywords outstanding). The Oasys 18.1 release also supports the core R13 *IGA keywords.

LS-DYNA R9.0 is the default keyword output format from PRIMER. (However, output may be generated for later releases of LS-DYNA.)

1.2   Hardware platforms supported

The complete Oasys Ltd LS-DYNA Environment 18.1 is available on the following platforms:

Windows	Windows 10 *Note that support for Windows 7 has been deprecated as Microsoft is no longer supporting Windows 7. As far as we are aware, the software runs on Windows 7.*	64 bit
Linux	RedHat Enterprise 7.x, RedHat Enterprise 8.x	64 bit

For simplicity of support and maintenance only the RedHat Enterprise 7.x build has been released on the website for Linux as this has been found to run on all the machines we have tested (RHEL 7, RHEL 8, SuSE 12.3).

If you require a different Linux build, please contact Oasys Ltd.

1.3   Graphics hardware supported

The default graphics protocol used on all platforms in the table above is OpenGL, which gives good quality 3D performance on a wide range of hardware.

'Legacy' X-Windows (2D only) graphics drivers remain in PRIMER on Linux platforms only, since these are used by a small minority of clients who display over a network of mixed machine types. However, this X driver is not maintained or updated and will give poor performance, so it should only be used as a last resort. There are much better 'thin wire' graphics solutions available today, and Oasys Ltd can give advice about these on request.

1.4   Licensing

This latest version of the software will only use the LM-X licensing platform to provide an increased level of license security. FLEXlm is not used for Oasys licensing from version 18.0 onwards.

To ensure you're ready to enjoy all the great features Oasys Suite 18.1 will bring, we recommend you update all your Oasys Suite license servers and files as soon as possible.

Action to take

If you're using a floating network license you will need to install the LM-X license server software (version 4.9.24). The software and supporting documentation are available to download from our website and are also included in our installation packages.

Backwards compatibility

The Oasys Suite 18.1 LM-X license file and license daemons are backwards compatible for all currently supported versions of Oasys Suite. This means that any existing 18.x, 17.x, 16.x, and 15.x software will continue to work with new LM-X license files and servers.

2   Bugs Fixed

The enhancements and bug-fixes for each program have been broken down into a series of topics. Within each topic enhancements and bug-fixes are listed by case ID.

2.1   PRIMER

2.1.1   Bugs Fixed in 18.0

Adhesive

- **Case 44488**

The From FE (Connection) tool was failing to work for adhesives. This bug appeared when connection layers were extended from just shells to solids and thick shells. The solids of the selected part (the prospective glue) are now excluded from segment creation.

Airbag

- **Case 45340**

There are a few data fields in LS-DYNA, for example FRIC on *AIRBAG_PARTICLE, where the legal values are something like

Value $\leq$ -1 negative label of some item type
-1.0 < value < +1.0 scalar fractional value, here friction
Value $\geq$ 1 +ve label of some item type

In other words depending on its magnitude and sign a value might legitimately be either floating point or integer.

PRIMER handles these data fields and performs checks on them during keyed in interactive input, typically in an editor.

These checks also apply if the data field is defined by a parameter when typed in, but in this instance the check for a floating point parameter did not consider the magnitude of the parameter value and rejected it unconditionally (because it was not an integer) even if it lay in the legal 'scalar float' range in this context. In the example above using a parameter evaluating to 0.3 was rejected - wrongly - as not being a valid label in that context.

Fixed by applying the same checks to parameterised floating point input as are applied to plain numbers in the same context.

Belts

- **Case 44805**

When 2D *ELEMENT_SEATBELT elements are used for a belt the node set EDGSET on the relevant *SECTION_SHELL card defines the order of a row of nodes across the belt. This must line up correctly with any sliprings and retractors across the belt.

Historically PRIMER has checked this against retractors but not sliprings. It now tracks along the belt looking for sliprings and checks these too, ensuring that shell sets SSID1 and SSID2 on the retractor are consistent with the element topology implied by EDGSET.

- **Case 44659**

Read CSV for belts: There was error in the generated belt path for certain 'fixity' strings. Fixed this.

Checking

- **Case 45733**

Fixed a crash if a check was run on a model containing *CONSTRAINED_EXTRA_NODES which did not contain any IDs.

- **Case 45286**

PRIMER was reporting errors when *CONTACT_FORCE_TRANSDUCER was referring to beams. This was not right. This has been fixed now.

- **Case 44846**

If *MAT_ADD_XXX is read but the material referenced was missing, PRIMER set the material type code to *MAT_ADD_XXX and model check reported no errors. This type code is now reported as out of range for structural material.

- **Case 44791**

Incorrect errors/warnings for *FREQUENCY_DOMAIN_FRF card have been fixed. Zero values on <DOF1> and <DOF2> fields are now also permitted.

- **Case 44724**

The check option 'maximum percentage of tria' was causing model check to crash. The error has been corrected.

- **Case 44660**

After element quality check, check categories on the drop-down were un-necessarily greyed out and model check was required to restore them. The buttons are no longer greyed.

- **Case 43588**

*DEFINE_CONSTRUCTION_STAGED _PART previously threw an error message when the Part's element type was TSHELL. However, TSHELL part is supposed to be permitted for the keyword, so the spurious error message has now been removed.

- **Case 42923**

When reading LS-DYNA output files, the dialogue box displayed an incorrect line count. This has been fixed.

Clipboard

- **Case 43515**

In the clipboard, when moving something to an include file, and choosing 'Master file', instead of moving it to the master file, a new include file called "Master file" was being created and it was put in there. This has been fixed.

Connections

- **Case 44918**

Connection operations could give rise to unexpected deletion of some or all contacts in the model. This was observed to happen on remake of a connection when copy-orient had been applied but may occur in other contexts of connection remake.

- **Case 45534**

When an image file (of any type: png, jpg, pdf, etc) was saved with a white background selected, and the current screen background colour was not white, some types of sketched graphics overlying the plot could be lost. An example would be when modifying a connection the line showing the proposed new connection, but a similar problem could occur in other contexts where transient sketched graphics have been added to the plot.

This was because redrawing with a different background colour causes some aspects of the plot to be recreated, since their colour can be dependent on the background colour. As part of this process overlaid sketched graphics were being deleted.

Now fixed: the 'update and redraw' process required to save an image with a different background colour will no longer delete overlaid sketched graphics.

- **Case 44625**

When the option use_parent_layer is switched off for bolts, NRB bolts will be made with conventional node set irrespective of the setting 'NRB bolts may use set collect'. The defaults are use_parent_layer=true, use_set_collect=true but these can be changed by preference settings.

- **Case 44509**

The NO_ACTION option on the Remove panel will now support deletion of solids from adhesive connections. The EMPTY_CONX action is unchanged, i.e. same as NO_ACTION for adhesive, for other connections removes all contents.

- **Case 43477**

When the pitch for MIG line weld was set too small, coincident beams appear in the weld run. This has been fixed by resetting the pitch to the minimum node-node distance if it is below that.

- **Case 43476**

Weld lines (not MIG) made on panel edges could previously move to the wrong edge on 1st remake and then back to correct edge on 2nd remake. This issue did not affect MIG welds which are more commonly used on edges. This has been fixed.

- **Case 43056**

When one changes Part ID in the Connection Table and uses 'update connection data', the Part ID on the elements was not changing. The missing logic has been added to fix this.

Constraints

- **Case 43405**

The field STIFF in *CONSTRAINED_INTERPOLATION_SPOTWELD can now take Function ID when MODEL field is greater than 10. Also, negative Material ID is not written out in versions prior to R12.0

Contacts

- **Case 44726**

Labels for some fields in *CONTACT_XX_THERMAL_{option} were different to those in the R12 LS-DYNA manual. Changed RAD and H to FRAD and H0.

- **Case 44307**

When a PDF image is captured it can sometimes result in the text overlay (that is title, contour bar, etc) of the on-screen image going the wrong colour. This problem rights itself as soon as mouse movement or any other explicit operation causes a screen refresh.

Caused by an internal problem in the graphics driver and now fixed.

- **Case 43309**

The ONLY function for contacts was not working when the contact was defined using
*SET_SEGMENT(_GENERAL). This has been fixed to unblank the elements that lie under the
segments.

- **Case 43122**

Contact write xls data has been corrected so the reported count of penetrating/tied nodes and the
min/max penetrations agree with the values given on the part edit panel.

- **Case 38627**

Contact with Soft=2 (segment based) is now analysed using logic which simulates LS-DYNA's
projection algorithm. This should give much better agreement with results published in the
mes0000 file.

PRIMER assigns the penetration to the closest node and additionally reports any node to
segment penetrations as these are valid information and assist the penetration fixer.

Contour

- **Case 45613**

Contour plotting shell elements with the true thickness option turned on did not draw the shells
correctly for high-order elements. This has been fixed.

Curves

- **Case 45304**

Fixed a bug where field values such as SFA in the first line of the load curves would not be
correctly applied when read in after being exported using the 'Text edit' option. Details below:

When editing a *DEFINE_TABLE definition it is possible to export the table to an external file
using 'Text edit' for editing in an external editor.

Exceptionally for Text edit, which normally only works on the single entity being edited, this
exports not only the *DEFINE_TABLE definition but also vestigial *DEFINE_CURVE
definitions for all the loadcurves that the table references. This is because a table relies on these
curves following it immediately in the keyword deck.

This gave the impression that it was possible to edit the first lines of these curves, changing
values like SFA, SFO, OFFA etc. However although these edits would be accepted they would
not be applied to the underlying loadcurves since the process which re-imported the modified
table definition after the external edit ignored them.

This has been modified so that changes to these vestigial 'first lines' of loadcurves will now be

read and re-imported in this case. This is exceptional treatment which applies only to 'curves belonging to a table' in this context.

- **Case 44628**

Scale and offset was being applied unconditionally when clicking Edit curve in PRIMER (from T/HIS). This now takes into account whether or not the scale and offsets button is actually on.

Cut section

- **Case 45583**

Multiple cut planes were not drawn on parts not intersecting the base plane but intersecting another offset plane. This is now fixed.

Database

- **Case 42900**

Field 2 of card 1 (BINARY) in *DATABASE_FSI has been added to the editor.

Deleting

- **Case 45378**

'Cleanup unused' now works for unused *DEFINE_FRICTION (when no PARTs are referenced).

- **Case 43547**

An error check has been added for the case when a load is applied to a massless node. Also cleanup unused has been improved to remove such loads.

Dummies

- **Case 45520**

While updating the Dummy Assemblies, the error/warnings were not getting reported properly. This has been fixed.

- **Case 44767**

Problem with obtaining a discrete element ID during simulation based dummy positioning setup potentially resolved. Now discrete elements are checked for label clashes during creation of spring damper.

Edit

- **Case 45279**

'auto-create off/on' button was obscured in *CONSTRAINED_EXTRA_NODES create panel which is now fixed.

- **Case 45159**

Fixed bugs which resulted in unintended errors for <MCOUP> and <IBOXID> drop down for *CONSTRAINED_LAGRANGE_IN_SOLID create/ modify panel.

- **Case 44770**

The generic editor, used for things like *INITIAL, had a couple of features related to popup menus that did not work:

#1 'Compound' fields, meaning those which might be one entity type if +ve, but a different object type if negative, appeared to ignore the result of a pick or selection from a popup if the data field was currently empty, selection worked OK if the data field already had a value.

#2 Label fields would ignore the result of a right-click popup label selection (1st, 1st in layer, etc).

In both cases typing in a value worked fine.

Both were due to internal coding errors and have been fixed.

- **Case 44742**

The third card in *INITIAL_VELOCITY is optional but was set to be processed unconditionally in the keyword editor. It has been fixed now.

- **Case 44734**

The fields Q, CQ and SOCINIT on EM_RANDLES_BATMAC, _MESHLESS, _SOLID and _TSHELL were incorrectly being rounded to integers when they should be floats. Fixed this.

- **Case 44524**

If *CONTROL_SPOTWELD_BEAM RPBHX applies, the beam part now allows HGID to be defined without error messages.

- **Case 44099**

For *DATABASE_PWP_OUTPUT, fields <iaccx/_y/_z> now can have any integer value as input which previously had clamping range (0-17). However, warning messages will now be displayed if values are not in this range.

- **Case 44095**

Some 'complex' data fields were not working correctly in all editors:

*DEFINE_BOX_ADAPTIVE field LIDX/NDID (loadcurve if the value was positive, or a node if negative) was not being interpreted correctly in the keyword editor.

*AIRBAG_PARTICLE fields FRIC and PFRIC are functions if >1.0, loadcurves if $\leq$ -1.0, and scalar values if in-between. These were defaulting to a loadcurve when positive which was wrong.

Both were due to internal errors in the definition and processing of these fields, now fixed.

- **Case 43876**

The fields LCIDD and LCIDT were not being processed correctly on the *LOAD_MOVING_PRESSURE create panel. Now fixed.

- **Case 43618**

The error in the generic editor, which caused loadcurves that have negative labels being displayed as positive if selected from a popup or created, is fixed.

Encryption

- **Case 44760**

Blocks of PGP data were getting lost when two models from two different directories were read and were output in some new different directory. This is now fixed.

Errortrapping

- **Case 45140**

Fixed a bug where if the user opens the *ALE_REFERENCE_SYSTEM_GROUP create panel in PRIMER and sets PRID to a positive value (while PRTYPE is 0) a warning message about PRID being NULL might display in the dialogue box.

FMH

- **Case 45513**

Column widths in the tree (menu) generated by reading data from a .csv file into the FMH panel were set differently for the top (occupied) part and the bottom (empty) portion. This has now been fixed.

- **Case 45280**

FMH check panel - made some columns wider so that text (headers & values) fit properly.

Formula

- **Case 43147**

Until PRIMER 17.0, input in text boxes, for example edit panels or keyword editors were treated as formula when they contain any arithmetic operator +, -, *, / or brackets, even when they had not got the = sign as prefix. As this can cause unintended formula evaluation due to typing errors, the preference primer*formula_req_equal to require the = sign has now been added. By default this is now TRUE, i.e. the = sign is required.

Geometry

- **Case 44291**

The JT reader library has been updated to the most recent version (10.8).

Graphics

- **Case 45147**

When using NiceDCV on a remote Linux server with a high-specification Nvidia card the graphics window might not be refreshed when a sub-window obscuring it is unmapped or moved aside.

This is simply an issue with the NiceDCV setup. To work around this, the user should set the GRAPHICS_NO_BACKING_STORE environment variable in the Oasys Ltd. software.

- **Case 44085**

A warning message was displayed unnecessarily in the slider of the 'orient' tool. This has been fixed.

Groups

- **Case 45717**

When decomposing a group containing set parts defined by range (for example, when calculating mass properties of group) a crash could occur. Now fixed.

- **Case 44663**

Models read with duplicate groups and the setting to permit duplicates on all keywords could hang PRIMER. Now fixed.

Include

- **Case 44950**

Fixed issue where *INCLUDE_AUTO_OFFSET and *INCLUDE_UNITCELL were written out in LS-DYNA versions incompatible with the keywords.

- **Case 44098**

The include function 'add new child' when used with *INCLUDE_AUTO_OFFSET_USER was not applying the label offset correctly. Now fixed.

Include transform

- **Case 45628**

If a *DEFINE_TRANSFORMATION card contained MIRROR and ROTATE transforms PRIMER could get the combined transformation wrong. Now fixed.

- **Case 44482**

Fixed a bug involving lost *PARAMETER_DUPLICATION cards when defined in an *INCLUDE_TRANSFORM file, and increased the speed of processing parameters. Explanation below:

A model which contains self-referential *INCLUDE_TRANSFORMs, (generically include file A includes file B, which includes A using some different transform) caused PRIMER some real problems when some of those transforms were defined by *PARAMETERs which were themselves defined in an include file that underwent transformation.

This led to parameters being duplicated, requiring a *PARAMETER_DUPLICATION card to placate LS-DYNA, and while PRIMER read this it card it got lost during the processing of include transforms. In addition the 'sorting out' phase of parameter processing took an impossibly long time.

In PRIMER 17.1 the only fix that has been made is to correct the problem that *PARAMETER_DUPLICATION cards go missing if they are defined in an *INCLUDE_TRANSFORM file. The speed problem can be solved by using the option to pre-read parameters.

In PRIMER 18.0 the above fix carries over, but in addition the speed problem of sorting out parameters has been tackled so that their usage inside *INCLUDE_TRANSFORM is now resolved at least 20x faster than before.

However putting parameters that will be used to define transformations inside a file that will itself be transformed and duplicated is not recommended. Unlike LS-DYNA, PRIMER has to 'remember' all these duplicate definitions, and sorting them all out requires a lot of processing. It is strongly recommended that users put their parameters either in the master file or in a single include file that is read before anything else.

Integration

- **Case 45500**

In the LS-DYNA output tree D3PLOT can be opened at a given time state by right-clicking on entities. When no result files were available, D3PLOT crashed. Now PRIMER no longer opens D3PLOT in those cases.

- **Case 43198**

Message about results found when clicking the button 'Post' in PRIMER. Now we distinguish between D3PLOT and T/HIS results.

JavaScript API

- **Case 45783**

The SetMesh() method for the Belt class includes a segment index (number) and a 'data' object. The data object includes a property called 'mode' which allows users to change the mesh mode used for a particular segment. This can, for example, be used to convert a full 1D mesh segment to a mixed 1D/shell segment. Changes to 'mode' would not have worked correctly in previous versions. This has now been fixed.

- **Case 45606**

If a script restricted access in a window by using the Window active property and played a macro that opened the 'pre output check' window, set some options, and closed it, the restriction would be lost. Now fixed.

- **Case 45469**

It was not possible to set a beta angle of 0 for a shell from JavaScript as setting beta to 0 unset the _BETA option. The logic has now been changed so that beta can be set to 0. Setting beta to null unsets the _BETA option.

- **Case 45263**

If a property on a control card was edited the control card could move to the current include file. Now fixed.

- **Case 45258**

Previously, the PRIMER JavaScript API would return the wrong value for model.control.contact.isym. Now fixed.

- **Case 45252**

Previously, setting the MID property on a new layer on *PART_COMPOSITE via the JavaScript API function Part.SetCompositeData() would not create cross-references between the material and part composite. This has now been fixed.

A similar issue could also affect the entities in the following properties:

- *BOUNDARY_PRESCRIBED_FINAL_GEOMETRY: NID
- *INITIAL_VELOCITY: IRIGID
- *LOAD_NODE: M3
- *CONSTRAINED_NODAL_RIGID_BODY: PNODE
- *SECTION_SHELL: ELFORM, EDGSET
- *SECTION_SOLID: ELFORM
- *SENSOR_SWITCH: SWIT
- *ELEMENT_(T)SHELL_COMPOSITE: MID

These have also been fixed.

- **Case 45239**

In PRIMER, when using JavaScript to delete a model, input was restricted after the deletion which prevented the window from being used. Now fixed.

- **Case 45229**

Fixed *CONTROL_IMPLICIT_EIGENVALUE JavaScript API support for EVDUMP.

- **Case 44965**

Previously, PRIMER would crash when providing the Curve class constructor with an invalid Load Curve type. This has now been fixed - the JavaScript API will now report an exception instead.

- **Case 44701**

Previously, trying to set the M3 property for LoadNode, in the PRIMER JavaScript API, to a negative value via the property setter or constructor would not work. This has now been fixed.

- **Case 44685**

Previously, accessing the icid property of the VelocityGeneration class, in the PRIMER JavaScript API, would return the wrong value. This has now been fixed.

- **Case 44683**

*CONTROL_MPP_DECOMPOSITION_FLAG_STRESS_STRAIN_CURVE was previously not accessible via JavaScript. This has now been fixed.

- **Case 43829**

Previously, when calling File.Delete(pathname) through the PRIMER JavaScript API, on a Windows machine, the pathname would not be deleted if it were a directory. This has now been fixed.

- **Case 43347**

JavaScript category is now respected even after foreground and background colour may have been previously changed.

- **Case 42405**

The Section JavaScript class was not processing character labels correctly in its constructor. This has now been fixed.

Keyword

- **Case 45215**

For *SECTION_BEAM_AISC:
- Corrected value K from float to integer
- Corrected keyword editor for ELFORM 12

- **Case 45078**

Units for *ICFD_BOUNDARY_PERIODIC fixed.

- **Case 44993**

In *ALE_STRUCTURED_MESH_MOTION, <EXPLIM> was treated as an integer rather than floating point, which now has been fixed.

- **Case 44956**

For *MAT_SEISMIC_ISOLATOR, if ITYPE is greater than 2 then, it used to convert it to 0 but dependent cards were still written out. This is now fixed.

- **Case 44856**

All the *DUALCESE keywords now appear in the quickfind search list.

- **Case 44467**

Fixed incorrect conversion of units in some *EM keywords.

- **Case 44438**

*LOAD_ALE_CONVECTION_ID did not have a title in the additional card for the ID option. This is now fixed.

- **Case 43986**

MAT_119 and MAT_121 headers UNLDOPT have been corrected to IUNLD.

- **Case 43765**

*PERTURBATION_MAT was unable to be read in previously. It is now fixed.

- **Case 43472**

PRIMER showed incorrect number of cards present, in *EM_CONTACT keyword-popup, which now has been fixed.

- **Case 43333**

Added support for Function and Table creating options for the following fields:
<R0CHA> <R0DIS> <R10CHA> <R10DIS> <C10CHA> <C10DIS> in
*EM_RANDLES_MESHLESS, *EM_RANDLES_BATMAC, *EM_RANDLES_SOLID and
*EM_RANDLES_TSHELL.

- **Case 43311**

PRIMER showed incorrect number of cards present, in *EM_CIRCUIT keyword-popup, which now has been fixed.

- **Case 43275**

Field activation issue resolved for TMOD > 5 on *ICFD_CONTROL_TURBULENCE.

Kwd editor

- **Case 44601**

The generic editor could produce additional garbage if a model contained PRIMER-specific 'user data' after *END. This is a very rare occurrence, so unlikely to happen in practice, and now fixed.

Labels

- **Case 44516**

When reading a model with duplicate contact labels, PRIMER can change the labels to declash them. Sometimes this declashing used the same new label for more than one contact at a time, so that the labels were actually still clashing. This has now been fixed such that the labels become unique after declashing. This also avoids other errors and crashes later on in a PRIMER session where such a model has been read.

- **Case 43924**

PRIMER has always checked to see if a model can be written out in the selected small / i10 / large format, offering to renumber the model if required. This check had an error in that while it checked the contents of each include file it did not check what items in that include file referred to. For example *ELEMENT_SHELL in include file A might refer to *NODE definitions in include file B, and if the contents of file A were 'small' but those in file B were 'large' the

potential for overflow would not be detected.

The following fixes and changes have been made to correct this:

+ In 'Automatic' and 'Keep existing' keyout modes PRIMER now does an internal 'test write' of the model which will detect any overflowing fields reliably.

+ This information is stored at a resolution of 'item type in include file', that is PRIMER records that - say - *ELEMENT_BEAM in include file C overflows its data field.

Three sizes of output are available: 'small', 'i10' and 'large' and we refer to increasing the format from a smaller size to a larger one as 'promotion'. Given the level of detail at which overflowing data is recorded this makes it possible to promote the format of output from at three levels of detail:

(1) The whole model.   } Set on the *KEYWORD
(2) A whole include file } header card
(3) Individual keywords in an include file using % or + suffices

In 'Automatic' mode the chosen level of promotion (default = whole include file) is applied automatically; in 'Keep existing' mode you are informed and must choose which to apply.

The existing check for the largest label in the model is retained for the explicit small, i10 and large output options; likewise the existing 'renumber model to fit format' option is also retained.

Macro

- **Case 44518**

Macros to expand tools and keyword menus now work after changing and applying defaults in Window size and layout.

Manual

- **Case 45710**

In some cases on Linux, PRIMER could fail to open the HTML manual if the machine was used by multiple users. Now fixed.

- **Case 44741**

Users can now use the preferences 'All programs*pdf_application' and 'primer*pdf_keywords_arg' to open the keyword manual at the correct page using their preferred pdf reader.

Materials

- **Case 45344**

In *MAT_SPOTWELD_DAMAGE-FAILURE, USERV10 - USERV14 fields were incorrectly omitted while writing out in LS-DYNA versions <R12, which is now fixed.

- **Case 45142**

In *MAT_SEISMIC_ISOLATOR when ITYPE is set to 0 and IEXTRA is set to 1, values entered in KTHX, KTHY, KTHZ were lost. This issue has been fixed.

- **Case 44251**

Load curves now start from TSRFAC=2 for the keyword *MAT_FABRIC

- **Case 44025**

Material definition written within *ENCRYPTED_START and *ENCRYPTED_END was not full. Now it will write full material definition with zeros for fields that were not defined when read.

- **Case 43617**

*MAT_SEATBELT_2D can now be used in the JavaScript material constructor.

Mechanism

- **Case 44853**

Repeated clicking on Global Accuracy button under Mechanism panel no longer compounds calculations on convergence factors.

- **Case 44260**

Radio button default in Mechanism → Position → Options is now set to 'Draw normal' instead of 'Draw wireframe' when 'Reset defaults' is pressed.

Menus

- **Case 44861**

Colour palette wheel no longer disappears if the colour chosen is black.

Merge

- **Case 42587**

When merging two models and setting destination include in Model → Merge panel, it was not moving blocks of PGP to target include and instead ending up in master file. This issue has been fixed.

Mesh

- **Case 45225**

In a model with connections, the creation of swages would sometimes delete the solids and connections in the model. Fixed this.

- **Case 43894**

When there are say three cylinders and third cylinder's radius is less than or equal to second cylinder's radius, PRIMER was crashing. The 'Apply' button has now been greyed out for such situations to prevent this from happening.

Also when the difference in the radii between two adjacent cylinders was less than the element size chosen, PRIMER used to crash. This also has been fixed by checking for this condition, showing a message in the dialog box and breaking from the function.

- **Case 43318**

Selecting nodes using 'screen area' and 'screen polygon' did not necessarily return the nodes in order. Now if the selected nodes are on the free edge, the node order is rearranged before extrusion.

Model modified

- **Case 42860**

Reporting change of include file in model modified is now OFF by default. The function did not always work correctly on connections. This has been fixed.

Morphing

- **Case 44426**

When picking morphing drag handles in Selection mode and then changing visibility of corner, edge, face and/or internal points, sometimes different handles or points appeared as selected. This only affected the sketching, not the actual morphing. This has now been fixed.

- **Case 43068**

Previously, when merging nodes owned by morph boxes the parametric coordinates for the resultant node and its morph box were not updated. Furthermore, the merging of nodes owned by the same morph box was not allowed. This has been fixed such that nodes owned by the same or different morph boxes are allowed to merge together. The morph box that will own the resultant node can either be the box that has the highest or lowest label, out of the group of boxes that own the selected nodes. This option can be specified by the preference 'replace_morb_entry', set to 'HIGHEST' or 'LOWEST', or set in the program options panel.

The same issues also occurred when using Node replace, which have also been fixed as outlined above.

- **Case 43052**

Previously, when trying to create a morph box with pre-existing morph points, via the PRIMER JavaScript API, if an error was thrown because some of the flagged nodes were already owned by another morph box PRIMER would still create a new morph box, albeit empty. This has now been fixed such that a new morph box is not created when this error is thrown.

Nastran

- **Case 44233**

The character limit for NASTRAN include filenames has been increased to 600 characters.

Nodal RB

- **Case 44772**

Repeated creation (autocreate off) of *CONSTRAINED_NODAL_RIGID_BODY with _SPC option lost the option and the values set for CMO, etc. These settings are now preserved whilst the edit panel is active.

Orient

- **Case 44487**

Orient → Reflect previously changed the order of nodes on shells, but this did not reorder the thicknesses for *ELEMENT_SHELL_THICKNESS. Now the thickness values are reordered in the same way.

- **Case 44143**

When orients are encoded by *INCLUDE_TRANSFORM in the orient tool, the process checks that no explicit orient has been previously applied to the include by reading in the original to model zero and remaking the transforms. The process can give numerical discrepancies particularly with rotations. The logic for comparing coordinates has been made more robust to avoid spurious warning message which blocks progress.

Output

- **Case 45376**

Fixed several keyin and keyout bugs involving the i10 format for keyword cards. Details below:

PRIMER supports small, i10 and large formats by reading and writing the relevant suffix on the *KEYWORD card at the top of a file, for example '*KEYWORD i10=y'.

However LS-DYNA only considers that suffix when reading the master file of a deck, ignoring it on any child include files, since child includes are presumed to have the same format as their parent. If a child include file is to have a format that is different to that of its parent then the *INCLUDE statement must have a %, + or - suffix (for i10, long or short format respectively).

PRIMER - wrongly as it turned out - presumed that putting the suffix on the *KEYWORD header would suffice, and did not add any suffices to the *INCLUDE keyword. So if it wrote mixed format decks these would not read into LS-DYNA. Therefore the following fixes and changes have been made:

On keyin:

+ PRIMER now defaults to 'child include inherits format of parent' if no suffix are present on the parent *INCLUDE statement. (This behaviour was always available as an alternative, but it was not the default.)

+ PRIMER (unlike LS-DYNA) still inspects and considers any suffix on the *KEYWORD line of a child include file. If a suffix is found this is presumed to be the 'true' format of the file, superseding any inherited or implied format in the parent file.

On keyout:

+ When the format of an include file is different to that of the master file of the deck then PRIMER now always adds the relevant %, + or - suffix to the relevant *INCLUDE statement.

+ Any include file that is in i10 or long will have 'i10=y' or 'long=y' respectively added unconditionally to the *KEYWORD line at its top.

+ An include file in 'small' format written in a deck where the master file is not 'small' will have the suffix 'long=s' added to its *KEYWORD card.

The addition of suffices to *INCLUDE in the parent file and to *KEYWORD in the child file introduces a degree of redundancy into this process, hopefully future-proofing it. It also means that if a child include file in i10 or long format is read in isolation it should still be processed correctly.

- **Case 44860**

Added field headers to card *MAT_ADD_COHESIVE.

- **Case 44825**

*DEFINE_PRESSURE_TUBE was misread by PRIMER when the optional card 2 was omitted and card 3 was present for TYPE = 1 or 2.

- **Case 44483**

When a model with includes was written in 'merge to master' mode the *TITLE was written above *END (as when the model is written with includes). This has been corrected so *TITLE is written at the top of such a deck. Previously, the default position is top for model with no includes or written in 'merge to master' and bottom for model written with includes. In PRIMER 18.0 this behaviour is configurable by the preference 'dyna_placement_title' which the user can set to DEFAULT, TOP, BOTTOM or BOTH.

- **Case 43053**

When include files are compressed and/or binary, now a compressed and/or binary icon is shown at the end of the string file name in the include tree view. When hovering over the file name an explanation of what it means pops up.

Parameter

- **Case 45277**

*LOAD_BODY parameter names now display in the Vector option fields, where they previously only showed the numerical values.

- **Case 44834**

Fixed a bug where a false comparison error is displayed when running a Model Modified check between a model and the same model whose parameterised data field had been modified, the model then written out, and read back in.

It is possible to get a spurious Model Modified comparison error by the following method:

+ Have a model with a parameter in some data field.

+ Orient, or otherwise change, the model such that the value of that data field changes. This means that the parameter is no longer valid in that field because parameter value and underlying data field value no longer match.

+ Write the modified model out, then read it back in to a new model.

+ Run a Model Modified check on original vs new model. This can show a difference, claiming that the parameter is still used in that data field in the original model but not in the new one, which is not correct.

The reason for this is that it would be prohibitively expensive to check whether every

parameterised data field is still valid each time the model changes in any way, so PRIMER does not do this. Instead it leaves the association between parameter and data field until such time as this is exposed to the user, for example when editing the entity, copying it or performing a keyout operation. It is passage through these operations which expose the difference which triggers the removal of the association.

For speed only the edit/copy cases actually remove the internal parameter association, keyout does not, so in the sequence above it can be seen how the error arises. It can also be seen why this is quite a rare occurrence.

This has been fixed by adding 'Model modified comparison' to the list of operations which check and remove the association between a parameter and a data field in which it is used, removing the association if necessary before performing the comparison.

- **Case 44763**

A model which used a parameter for the IRIGID field on *INITIAL_VELOCITY generated internal errors during 'orient' if the parameter was not defined, or used before it was defined.

Nothing to do with parameters: the IRIGID field was incorrectly programmed such that certain internal operations, which happened to include resolving unknown parameters, would cause internal errors.

Now fixed.

- **Case 44500**

Fixed a few bugs related to *PARAMETER_DUPLICATION behaviour:

The way that *PARAMETER_DUPLICATION had been added to PRIMER was wrong in PRIMER 16.0 and 17.0 because when it first appeared some incorrect assumptions were made.

Since then the LS-DYNA user manual has been clarified and PRIMER has been revised to make this card work correctly.

Symptoms of previous wrong behaviour were:

- Treating a multiply-defined parameter that should be ignored as implicitly _MUTABLE in some circumstances.

- Sometimes not ignoring / accepting the correct instance of a multiply-defined parameter.

These errors have been fixed, and *PARAMETER_DUPLICATION in PRIMER is now handled rigorously according to the rules spelled out in the LS-DYNA manual. In particular, input decks with wrongly ordered cards are detected during keyword input and the model is corrected to remove ambiguities arising from this.

- **Case 36596**

*PARAMETERS can now be used on *MECHANISM definitions on assemblies, connections, points, children and stretches. Previously PRIMER would have read models with parameters there, but replaced parameters with their values.

Now PRIMER keeps the parameter references when reading, copying or writing models and allows to update parameter values as on ordinary LS-DYNA keywords, but parameters are still not fully displayed on the mechanism edit panels.

Part table

- **Case 43348**

The part table only showed CON1, CON2 for rigid parts if CMO = 1. This has been modified so values are shown for CMO = 0 or -1 as well. CMO has been added as a new column on the table. Also, a new warning check is given if CMO = 0 and CON1 or CON2 is set.

Part tree

- **Case 43693**

In previous versions, include files could not be deleted in the 'Contents' mode in the Part tree. It worked fine in the 'Include' mode.

This has been fixed now.

Pedestrian

- **Case 45406**

Lower leg and upper leg bumper GTR impact tests now have impact points lying within the bumper test area specified by paragraph 3.10 in the GTR regulation document.

Preferences

- **Case 45505**

PRIMER now gives out confirmatory window message while saving preferences in SQUASH SUB-PANEL

- **Case 43805**

The command line option -pref=/xxx/yyy/custom_pref had 2 bugs.
- it was only reading runtime prefs and ignoring startup prefs
- if the preference primer*script_dir was used in custom_pref it got ignored
Both these have been fixed.

Program crash

- **Case 45245**

In certain cases the following sequence of JavaScript commands:

+ Open an object menu, for example Part.Select(...)
+ Move the mouse into that menu and use a keyboard short-cut key

could cause a crash.

This was because keyboard user events passed from JavaScript were being misinterpreted in this context due to an internal error. Now fixed.

- **Case 43962**

Fixed a bug where PRIMER crashed upon opening Discrete under the Element Keyword dropdown, after creating SENSOR_DEFINE_ELEMENT with ETYPE as DISC-ELEM and some latent entry in ELEMID.

Read

- **Case 45019**

PRIMER now reads *BOUNDARY_PRESCRIBED_MOTION_SET_SEGMENT without having to add an empty card 2. Additional card 2 is expected if DOF = 9, 10, or 11 or VAD = 4 on Card 1, otherwise it is skipped.

- **Case 43121**

PRIMER will not crash now when file reading is interrupted by dragging and dropping a new file before the previous file has finished reading.

Renumber

- **Case 45622**

1. Include file with unlabelled content will be shown last for Include entity labels sort option.
2. If general checkbox is turned off, it should now show include files in the correct order.

- **Case 45016**

Fixed some label clash bugs related to BEAM field by changing the relabelling logic. Details below:

If the BEAM field on *DATABASE_BINARY_D3PLOT is set to tell LS-DYNA to generate extra beam elements to duplicate DISCRETE and 1D SEATBELT elements this can cause label clashes if existing beams of the same labels exist.

PRIMER checks for this before keyword output and offers to relabel discrete and seatbelt elements if required, but the relabelling logic was very conservative and tended to result in larger than strictly necessary label increments. Normally this would not matter, but if the result was to increase the labels so that they exceeded the field width in the current output format this would require a larger output format to be used, and a second relabelling process to be gone through.

To try to avoid this the following changes have been made to this logic when a clash is detected:

+ Relabelling will now use the minimum shift of discrete and seatbelt element labels to move them out of the way of existing beam labels, while keeping the existing spacing between labels.

+ A further check is made to ensure that this minimum shift will not push their label range beyond what can be represented in the model's current 'soft' label limit. (99,999,999 for small format; 2,147,483,647 for i10/32 bit format; and so on) If this limit will be breached then the labels are made sequential with no gaps.

Scripting

- **Case 43431**

Sled_test, sba, and luggage_retention JavaScripts were showing a small empty label box above the '<<< Go back to panel' button. It has been deleted.

Selection

- **Case 45612**

Feature line screen-picking of parabolic shell elements could cause a crash. This was due to an internal error resolving the extra mid-side nodes on these elements.

Now fixed for these elements, and also for 8 noded segments on parabolic element faces which would have suffered from the same problem.

- **Case 41168**

Screen area picking of types for which the entity switch is OFF were using simple area pick. For items which use the visibility of the underlying element (e.g.contact, element_mass_part, database_history, set) the pick should only apply if an underlying element is visible. e.g. if all parts of a contact are blanked, then the contact should not select. Also a new preference has been added primer*visible_entities_only_on_object_menu:ON so that strict visibility can be enforced.

Sets

- **Case 44603**

Propagation of selected items in ALE models could select too many parts. This has been fixed.

Timestep

- **Case 43545**

Use of DT on MAT100 for mass scaling is non-preferred as it is rather unclear what the added mass actually is. A new warning check will warn if DT is set and offer autofix to zero DT(s) and set the model timestep from the smallest non-weld element

Units

- **Case 44708**

For VFLAG=1, units of G[i] previously changed the value of the field, which was incorrect. Now, no change to the value occurs upon changing the units.

- **Case 44676**

Corrected the units of BSTART, BSTARK and beta[i] to U_REC_TIME (wherever applicable) in materials 73, 76, 134, 276.

- **Case 44546**

Unit conversion on MAT_138 fields GIC and GIIC has been corrected.

User interface

- **Case 45597**

Fixed an issue with Dynamic viewing where certain button combinations would result in inconsistent item selection in the graphics window.

Dynamic viewing in both PRIMER and D3PLOT suffered from an annoying problem in the following situation:

+ Click a mouse button and start moving the mouse, far enough to initiate a screen area 'drag out area' selection operation.

+ Click shift or ctrl keys to initiate dynamic viewing. Mouse motion now influences the current view and the cursor changes to show this is the current operation.

+ Release mouse button or shift/ctrl key.

This would revert to the original 'area selection' operation, but this might now be invalid as the model has moved. Typically the screen rectangle will no longer be rectangular, and what is within it will have changed.

A variation on the above is when area selection is not wanted, but a dynamic viewing is started too hastily with the mouse (click and drag before shift/ctrl is pressed) with the result that what the user thought was a simple view change operation becomes some sort of selection one -

typically unwanted blanking if the default quick pick mode is current.

These problems have now been fixed in both codes. The fact that what was an area drag has mutated to become a dynamic viewing operation is now detected, and when dynamic viewing finishes the code now 'knows' that area selection is no longer valid and does not try to resume it.

- **Case 45558**

- Corrected a typo in an error message for not selecting a model when running Dummy_Finger_Assembly_Creation_Script.js.

- Corrected a typo in an information window when reloading a property file (.prp).

- **Case 44346**

In the Renumber Includes panel, the text boxes under 'Range unique?' and 'In range?' for main model were not turning green when the fields had correct values. This has been corrected now.

- **Case 44330**

Switching between the Light theme and any other theme, or vice-versa, causes the background colour of the plot to swap between black and white so the plot is redrawn with the new colour in SH shaded mode.

However if the current plot contained 'mixed mode' plotted elements that use HI hidden line mode their background colour failed to be updated to the new background colour until a new explicit plotting command was given.

Now fixed: if changing theme also changes the plot, background colour mixed mode HI plotted elements will update correctly.

- **Case 44299**

The 'Preview Mesh' button in Mesh → Ruled remained grey throughout in the new UI. Now it has been modified to change colour when it is supposed to.

- **Case 44106**

The red warning button on dialogue box previously did not function correctly when clicked while writing out .ztf files. This is now fixed.

- **Case 43698**

Text now fits on the following buttons in the new UI:
'→pencheck.csv', 'Incl scale and offsets'

- **Case 43600**

In the Connection → Contact panel, the following 3 buttons were grey. They are now green (as they used to be in the old interface):
- DELETE & REMAKE CONNECTION CONTACT
- Repair NOT-CONNECTED
- Repair NOT-STICKING

- **Case 43582**

The BPRM animation has a pair of + / - buttons for framerate control. They had different colours. They are now consistent with each other.

- **Case 43440**

The SFA, SFO, OFFA and OFFO textboxes in the DEFINE_CURVE editor no longer change colour to green when the 'Incl scales & offs' option is toggled on. Instead the labels above them change to the corresponding toggle button colour of every theme.

- **Case 43432**

Listing and settings panels of contour and vector plots had a blank area on the RHS. These panels have now been made narrower.

- **Case 43430**

Colour of parameter button (in top-right corner of panels) not appropriate in the dark or light themes. Changed from dark blue to light blue.

Views

- **Case 41566**

Fixed PRIMER crashing when screen picking nodes while using Match Image under the Viewing toolbar dropdown.

Volume 3

- **Case 43826**

Filter functions for ICFD keywords now work correctly.

Write

- **Case 45516**

When a model contains one or more compressed include files these will have extensions .gz or .zip. In the normal case of writing them out in the format in which they were read these extensions will be preserved, however if the model is subsequently written out in uncompressed

form it could end up writing child.key.zip when the file was in fact not a .zip file. Likewise .gz.

This was a simple omission: the case of 'child file was compressed but is no longer' had not been considered in the filename revision logic. Now corrected.

- **Case 45248**

When packaged .zip file output was chosen and the destination for include files was 'same as master' PRIMER wrongly put include files in a sub-directory in the .zip file.

This made the resulting file package unreadable since the master file did not have any pathname for that sub-directory in *INCLUDE filenames (correctly, because they were meant to be in the same directory) yet the files themselves were in a sub-directory within the .zip package.

This was an internal error: the 'same as master file' include file destination was not considered in the special logic used to write .zip file packages. Now fixed.

- **Case 44745**

*EM_MAT keywords have now headers for every instance.

- **Case 44743**

*EM_ISOPOTENTIAL_CONNECT now writes keyword headers for each instance of the card.

- **Case 44517**

When reading a model that contains skipped data and then writing it out in merge in master mode, skipped data was not getting inserted back. This has been fixed now.

- **Case 44484**

From R9.0 onwards LS-DYNA permits individual keywords to be promoted to I10 input format. PRIMER now takes advantage of this as follows:

V17.1: A simple 'promote small format keywords that contain 8 wide fields to I10 format' switch is added.

V18: The same switch is added but it has the options 'Promote if needed', 'Promote always' and 'Promote to I10 / large if needed'.

In V18 the 'automatic' and 'keep original' format keyout options also have options to promote individual keywords.

- **Case 44071**

Writing a .ztf file for a model with thick shells which had erroneously been assigned *SECTION_SHELL was found to crash as the extraction of integration points (nip) failed. Though this is a user error, some traps have been added to PRIMER to prevent the crash.

Xref

- **Case 43337**

The cross-reference tree when invoked on a dummy or mechanism was not showing the items that it refers to such as 'dummy mech assembly', 'mech connection', etc. This has now been corrected.

2.1.2   Bugs fixed in 18.1

Belts

- **Case 46825**

In the seatbelt path editor it is possible to adjust the 'twist' of the path at points. In the particular case of a B-Post slipring this was not working correctly if the user attempted to adjust the twist at the end of the belt from dummy to slipring, causing the path to be distorted. This was because the special logic which restricts rotation of a B-Post slipring to rotation about the axis of the notional bolt by which it is attached to the B-Post was not working correctly.

This has now been corrected: it now doesn't matter which side's twist handle you use at a B-Post slipring as both will only affect the 'correct' axes of twist.

- **Case 46358**

There was an error in the additional checks added in PRIMER 18.0 for 2d seatbelts. If a belt containing 2d sliprings contains 2d belt elements or shells that are in more than one *SET_SHELL then a crash may occur while checking *SECTION_SHELL cards if the first shell set on an element is not the one used on the *ELEMENT_SEATBELT_SLIPRING card that refers to this element.

This was due to an internal error that is fixed in PRIMER 18.1

- **Case 46146**

The seatbelt fitter has an optional 'initial depenetration' phase which attempts to sort out any small penetration errors in the belt path before the form-finding (fitting) process commences. This also tries to depenetrate any sections where belt paths inter-penetrate, typically at the entry and exit points of sliprings, which requires it to choose which path segment should be 'in front' and which 'behind'.

By default this in front / behind determination of overlapping belt segments is calculated automatically, using a majority voting algorithm. Occasionally it comes up with the wrong answer with the result that a belt path which is correct, even though it has no inter-penetrations, can end up being messed up by a spurious attempt at initial depenetration which tries to move the wrong belt path segment to the front.

This has been fixed as follows:

In PRIMER 18.1 a 'behind' segment is only moved if it actually inter-penetrates, or is very close to doing so. Previously it would be moved even if it was quite a long way from inter-penetration.

Blanking

- **Case 46243**

Previously, PRIMER would crash when applying the 'Only' function for a *SET_XXXX from the docked *SET panel if some intermediate model numbers had been deleted e.g. models 1, 2, 5 existed in the model where models 3 and 4 had been deleted (while model 5 was in existence).

This has now been fixed.

Checking

- **Case 46877**

LS-DYNA submission in PRIMER: the panel input restrictions were getting messed up while updating the LS-DYNA keyword output options during 'Initialise in LS-DYNA check'. Fixed this.

- **Case 46747**

PRIMER could crash if the keyword option for an item in the check tree was selected during a model check if there were custom JavaScript checks for the item type. Now fixed.

- **Case 46306**

JavaScript check strings could be lost or corrupted due to some incorrect memory management. Now fixed.

- **Case 46218**

Incorrect error check for NEIPB field on DATABASE_EXTENT_BINARY removed.

- **Case 46053**

If *AIRBAG_REFERENCE_GEOMETRY for a node is defined but that node label has no actual *NODE card PRIMER correctly detects that the node is effectively 'referenced but not defined'.

Many versions ago this error detection used to have an auto-fix which would create the node using the reference geometry coordinates, but this auto-fix has ceased to work since (at least) PRIMER 13.0.

The fix for this is version-specific:

In V18.1 an autofix has been added to this error when detected as part of the checking of *AIRBAG_REFERENCE_GEOMETRY, allowing all such nodes to be created automatically.

- **Case 46001**

Previously, when checking *CONSTRAINED_JOINT_STIFFNESS_TRANSLATIONAL, PRIMER would log the following as errors:

- NSDX is not negative (and similarly for NSDY, NSDZ)
- PSDX is not positive (and similarly for PSDY, PSDZ)

This has been fixed such that:

- NSDX is greater than PSDX is logged as an error (similarly for NSDY/PSDY, NSDZ/PSDZ)
- NSDX is equal to PSDX is logged as a warning (similarly for NSDY/PSDY, NSDZ/PSDZ)

- **Case 45959**

Previously, PRIMER would issue error S_AB_004 'Birth time exceeds death time' for SENSOR CPM AIRBAG when TDEATH was set to 0.0. This was not needed, as default TDEATH appears to be 0.1E21 in the otf.
PRIMER now will not give the error message when TDEATH is not set.

- **Case 45560**

Using the _THICKNESS option for 2nd order shell elements was being raised as an error by PRIMER's checking tool, whereas LS-DYNA will run to a normal termination when this option is set. PRIMER no longer raises this as an error.

- **Case 44840**

Custom JavaScript checks did not work for parameters. Now fixed.

Composites

- **Case 46050**

When switching a TSHELL part to composite, the _TSHELL option is now automatically activated.

Connections

- **Case 46340**

Previously in PRIMER, a bolt module that contains SET_COLLECT did not read correctly. This has now been fixed.

Contacts

- **Case 45991**

If the '%' suffix is used after the *CONTACT keyword, for example
'*CONTACT_SURFACE_TO_SURFACE %' then PRIMER will fail to read this keyword,
treating it as having invalid data after a valid header and putting it into a skip file.

The reason is because the '%' is detected and removed, leaving trailing white space, and this is
misinterpreted as a bad suffix. In fact a *CONTACT keyword with trailing white space would
show the same error.

Now fixed.

- **Case 45963**

Use of SNRDE > 0 was incorrectly reported as error when SOFT=2. The check has been
removed from PRIMER 18.1.

Crash test setup

- **Case 46478**

Fixed the bug not highlighting selected and active buttons. Updated UI to make the appearance
better throughout all GUI themes.

Dummies

- **Case 46293**

When the user modifies the label value for a DUMMY (or a MECHANISM) assembly, PRIMER
would throw an error about duplicate assemblies being referred by the children of those modified
assemblies. This was a false error and is now fixed.

Edit

- **Case 45160**

In the create panel of *BOUNDARY_THERMAL_BULKFLOW, changing option to SET did
not change ID to SET_BEAM. This has now been fixed.

Encryption

- **Case 46818**

When an input file contained free-standing PGP encrypted data and this occurred before cards
which will handle partial encryption (that is *AIRBAG, *DEFINE_CURVE and *MAT) then
PRIMER failed to read the file.

This was because it thought that there was 'pending' PGP data to be included in those special keywords when in fact free-standing PGP data is written to a separate file and should then be ignored.

This has now been fixed.

Explode

- **Case 46847**

If a model was 'exploded' using the 'Connection between includes' method, the edges of parts which had been blanked by the process were still being sketched for predictive picking. This has been fixed.

Fmh

- **Case 45569**

The 'Show Target' toggle button in FMH panel now works fine: it draws and clears the target marker when turned ON/OFF.

Formatting

- **Case 46458**

Sometimes, when running LS-OPT with PRIMER integration for morphing within PRIMER, LS-OPT could write variables to the design variable file with a number format that the 'apply_lsopt_variables.js' script (run by PRIMER) could not read. This would result in an error. The script has now been updated to account for these number formats and they can now be read.

Graphics

- **Case 45961**

When performing selection by area PRIMER has an EXT mode which will limit selection to only what is actually visible on the screen. (This is not the default, which is to select everything in the 'tunnel' through a 3d mesh.)

This was not working correctly for some types of area pick that involved selection of 3d elements, or nodes on these elements; typically only a subset of eligible items would be chosen, or often nothing at all would be selected.

This was caused by parallelisation of screen picking, and has been fixed by serialising area selection when in EXT mode.

Iga

- **Case 46097**

Previously, part replace would not replace trimming curves, which could result in a crash when trying to sketch the trimming curves. Part replacing should work fine now. It should copy underlying DEFINE_NURBS_CURVE definition too.

Integration

- **Case 46893**

Corrected minor widget name errors on the LS-DYNA Submission panel.

Javascript api

- **Case 46823**

The JavaScript debugger could fail to terminate the script correctly in some cases when the Kill button was pressed. Now fixed.

- **Case 46802**

Links to MDN pages on Arraybuffers have been updated.

- **Case 46785**

Setting 'x', 'y' or 'z' properties using the SetPoint() method from the Mechanism JavaScript class would previously not work correctly, if applied to a 'point' that previously used a node. This has now been fixed.

- **Case 46778**

The Interface Springback constructor no longer throws errors when more than 8 optional arguments are defined. Also the correct values are now assigned to the appropriate fields.

- **Case 46774**

In previous versions of PRIMER, a node property specified for the SetPoint() JavaScript method for the Mechanism card would incorrectly invoke a *POINT_LOCATION card instead of a *POINT_NODE card. This has now been fixed.

- **Case 46228**

The documentation for the Binary property of the Model.Write function was misleading in that it implied that the default binary / ascii format is ascii, meaning that if it was undefined the model would be written in ascii.

The actual situation behaviour for the binary property is:

true: the entire model will be written in binary
false: the entire model will be written in ascii
undefined: each file in the model will be written in the format in which it was originally read.

If this is a newly created model then the default will be ascii.

- **Case 46227**

Part should now show the correct number of beams referred by it.

- **Case 46223**

Parameters should now show the correct number of xrefs for material.

- **Case 46075**

Javascript mass calculation was ignoring the option to include timestep added mass when the whole model or include file(s) were flagged for the function MassPropCalc(). This has now been fixed.

- **Case 46058**

Regular expressions could fail in JavaScript in version 18.0 (after the JS engine upgrade) with a 'too much recursion' error.
This has now been fixed.

- **Case 45823**

If a script that used a graphics drawing function was stopped at a breakpoint in the JavaScript debugger error messages could be shown in the dialogue box and an exception thrown. Now fixed.

- **Case 34709**

Unicode text could not be used in comboboxes and listboxes. Now fixed. Additionally right and centre justification of comboboxes was not correct and has been fixed.

Keyword

- **Case 46412**

*DUALCESE_MATERIAL had an empty unnecessary drop down box in the keyword menu. This has now been removed.

Kwd editor

- **Case 46663**

In *DUALCESE_BOUNDARY_XXXXX, all keywords displayed fields of other keyword cards as well. This is now fixed.

- **Case 46592**

Giving a zero value to PNODE and a non-zero value to NODEID for *CONSTRAINED_NODAL_RIGID_BODY caused a crash in PRIMER. This has now been fixed.

- **Case 46221**

While doing 'Select...' from the keyword editor, the editor filters were not honoured. Fixed this.

- **Case 46033**

The keyword editor buttons were getting incorrectly placed for certain keywords like *DEFINE_MATERIAL_HISTORIES. Fixed this.

Manual

- **Case 45801**

PRIMER now opens correct manual pages for Generic Keywords.

Mass

- **Case 46724**

The mass property tool was not returning the correct value when masses were directly selected if these were Element_Mass_Set. Selecting lumped mass worked correctly and using the option to include attached mass also worked correctly for both types of mass. This has now been fixed.

Materials

- **Case 46933**

Timestep for *MAT58 was not being calculated due to errors introduced when support for -ve LC for EA, EB was added. Now fixed.

- **Case 45760**

For *MAT_SEATBELT_2D, FORM has been updated to take integer values. Previously, PRIMER would issue an error that FORM was not equal to -14, even though it was, which has now been rectified. Also, the warning for CSE when 2D seatbelt is chosen has been updated.

Mesh

- **Case 46155**

Behaviour of Split predefined mode graphics button and Diagonal split type button in spilt shell menu fixed. Previously, the predefined mode graphics button in the Spilt shell menu could become unavailable when switching between Split->Shell and Split->Solid.

- **Case 46105**

Primer was crashing when nodes were extruded, specifically which were adjacent to a node which is part of another edge. Also, a subset of nodes were extruded if all nodes were selected in a particular edge.
The crash is averted and the bug is fixed.

- **Case 45775**

Previously, Tet mesh would crash when parabolic shells are used
- fixed this issue.

Model build

- **Case 46515**

Model build from csv for pedestrian lower legform should now write the z-value to the .lst output file.

- **Case 46005**

Impactor positioning (IHI, IPP, PEDHEAD, etc) in Primer 18.0 and previous was performed using a contact setup without boxes, irrespective of user's definition.
If the vehicle side of the contact is very large (in the worst case the exempted parts of the impactor) time taken to set up the contact can be considerable.
In v18.1 the box defined on the contact will be used unless the preference is set to ignore it.

Multiple jobs

- **Case 45740**

LS-DYNA Submission bookmarks menu in the PRIMER panel would show the non-accessible folder options too (could be INSTALL/ADMIN folders). This is now fixed and only the folder options that have read/write permissions are shown.

Nodal rb

- **Case 46857**

In the nodal rigid body edit menu, previously selected nodes were being drawn when selecting new nodes after pressing reset all. This has been fixed.

Orient

- **Case 46635**

The orient consider INCL_TRANS option was incorrectly disabled if any model in memory contained no includes. This restriction is now only applied if the model contains items to be oriented.

Output

- **Case 45914**

In PRIMER 18.0 a spurious (but harmless) error message will be generated during keyword output if:

- Keyword auto-promotion is set. (In keyout options #2 panel)
and
- The model contains 'child' items such as mechanism assemblies.

There will be an error message about db_ifile_pointer() written to the dialogue window for each such child item. It is harmless and can be ignored.

Only present in V18.0, fixed in V18.1

Part table

- **Case 45964**

When section properties are edited on the part table, if the section is shared by multiple parts, a new one is created. This should have the old values copied into it, this copy was unfortunately broken by bug fix 33887. Now fixed.

Pedestrian

- **Case 46798**

Previously, in the Pedestrian Markup tool, PRIMER would incorrectly calculate the upper leg impact point angles/velocities/masses for CNCAP protocols via the logic introduced in EuroNCAP v8.0. This has now been fixed to use the correct logic outlined in CNCAP 2018.

- **Case 46203**

In the Pedestrian Markup Tool, when clicking 'Sketch' for the Head Impact points calculated using the 'Distance' method after running a GTR protocol, sometimes the script would break. This has now been fixed.

- **Case 46168**

Previously, when running the GTR protocol in the Pedestrian Markup tool with the bonnet rear reference line (BRRL) selected for calculation, the side reference lines (SRLs) were always cropped at the BRRL. If a wrap around distance (WAD) line was further back on the vehicle than the BRRL then this could result in the WAD line being cropped inappropriately. This has now been fixed such that the SRLs are cropped at either the rearmost WAD line or the BRRL, whichever is furthest back on the vehicle.

- **Case 46056**

Made the Pedestrian Markup Tool more reliable.

- **Case 45806**

From EuroNCAP v8.0 and CNCAP 2018 onwards, Child head impact points require an alternative impact angle when situated on/in front of the bonnet leading edge. PRIMER previously didn't provide the ability to set an alternative impactor orientation angle for these points. This has now been fixed - an impactor orientation angle can be set for these points via the Bumper (angle) text box on the impact points window of the Pedestrian Impact Markup tool.

Penetrations

- **Case 45922**

Soft=2 contact on solid segments was giving spurious penetration reports as the wrong thickness value was being used. For solid segments this should be zero or SLDTHK. This change does not affect the calculation for shell on shell contacts.

Performance

- **Case 45431**

There was a problem with blanking and feature line edge display which could be triggered as follows:

- Blank a 3d part
- Turn on feature line overlay
- Edit some part (not necessarily the blanked one) and update it
- Unblank the part blanked at stage one.

In this scenario the newly unblanked part would have all its edges drawn. This only affected 3d parts.

This has now been fixed.

Preferences

- **Case 46161**

The preference no_discrete_contouring could previously be set by text-editing the oa_pref file but was not listed in the preference tree. This has now been fixed.

Program crash

- **Case 46699**

Primer could crash when writing a BOM file if a part had the HGID field set but had a SECID value 0. Now fixed.

- **Case 46681**

Previous versions of PRIMER could, sometimes, crash when users attempted to edit *ICFD_SET cards. This issue has now been fixed.

- **Case 46483**

PRIMER would crash while trying to drag on '0' K1BEG for *SET_<XXXX>_GENERATE_INCREMENT - resolved.

- **Case 46479**

PRIMER could crash if you tried to sketch a *SENSOR_DEFINE_MISC card with mtype CURVE. Now fixed.

- **Case 46385**

JavaScript can be used to change the part id of elements, and when this is done PRIMER checks to see if the elements being changed form part of a connection (*CONNECTION cards).

If they do it makes further checks to see if the change of part id requires related changes to the connection and makes these changes automatically. One such situation is when a connection is an adhesive in which the 'glue' material is a layer of solid elements: PRIMER requires that all elements in a patch of glue be of the same part id, so if one is changed the rest are changed to match.

This logic contained an error when some of the 'glue' elements were latent (referenced but undefined) since it resulted in these elements changing from not having a part defined to being assigned some part id. This caused many problems, including a crash in some graphics operations.

Fixed by leaving latent elements with no part id unchanged in this situation.

- **Case 46253**

Previously, PRIMER would crash when reading a script into the JavaScript Debugger using non-LATIN-1 encoding. This has now been fixed.

- **Case 46157**

PRIMER would crash when creating a new *SET_<XXX>_GENERATE_INCREMENT by creating K1BEG and K1END - resolved.

- **Case 45950**

PRIMER could crash if a script which could not compile because of an error was run more than once. Now fixed.

- **Case 44444**

PRIMER could crash when editing and picking nodes for a *DEFINE_COORDINATE_NODES card in some rare situations. This has been fixed.

Program hanging

- **Case 46251**

Using the directory selector could cause PRIMER to hang on Windows 10, versions 2004 and newer, unless the file selector was used first. This has now been fixed.

Ptf compress

- **Case 45574**

If a model contained 2nd order shell elements the Write->ptf/d3plot function produced a corrupt d3plot file. This has been fixed.

Quick pick

- **Case 46126**

Blanking elements by screen area could - rarely - cause a crash. This would be most likely to happen with multiple models containing many solids, however it could be unpredictable.

This has now been fixed.

Read

- **Case 46368**

Layup files containing PATCHID on element line 201 could not be read by PRIMER. Now fixed.

- **Case 45957**

Changed the way we check extensions for drag and drop case. Now, except for the special extensions like .jt, .inp, etc, everything will be read as a LS-DYNA keyword file.

Renumber

- **Case 46640**

The order of file names written out in CSV files will now match the order of the include files in the Renumber Includes panel.

Rigidify

- **Case 46586**

There was a crash when writing out a model after a rigidify process. This has now been fixed.

Scripting

- **Case 46048**

When running Dummy_Finger_Assembly_Creation_Script.js in PRIMER 18.0, a warning message would be issued. This caused a problem as the script uses macros to create the new assemblies.
This has been fixed now.

Seatsquash

- **Case 46513**

While positioning the Seat and Dummies using the 'Seatsquash and Dummy' tool in PRIMER, the selected dummy parts to be kept deformable were not being honoured. Fixed this.

Sets

- **Case 46516**

PRIMER assumed that setting an increment of zero on the *SET_XXX_LIST_GENERATE_INCREMENT keyword meant nothing should be added to the set.

However, LS-DYNA silently changes this to an increment of 1. PRIMER has been updated to mimic this.

- **Case 44705**

Any node on *INITIAL_TIED_CONTACT_DATA keyword was flagging other nodes when selected for a Node SET. This caused extra nodes that were not selected to get added to the Node SET. This has been corrected now.

User interface

- **Case 46025**

There were some inconsistencies with the colours of buttons used to add and remove optional cards for some keywords. This has now been made consistent.

- **Case 45960**

Seatbelts -> Fit - yellow "x" for *DATABASE_CROSS_SECTION changed to red-orange.

Utilities

- **Case 44539**

*INITIAL_FOAM_REFRENCE_GEOMETRY Create option was not working when multiple models are loaded in PRIMER. Fixed this.

Write

- **Case 46360**

Open ended cards for the *DEFINE_QUASAR_COUPLING were being written out for pre R13 versions. Fixed this.

- **Case 46095**

On *CONTROL_IMPLICIT_SOLVER when card 2 was left with default zero values, Card 3 was written as card 2, this has been fixed.

2.2 D3PLOT

2.2.1 Bugs Fixed in 18.0

Animation

- **Case 45311**

If an image or movie was written out of D3PLOT and it contained Shell element parts which were being drawn using the option to display them with their thickness, then those parts could be missing from the image. The problem would only occur if the parts were either being cut by a cut section or if only a subset of the elements in the part were being drawn.

- **Case 45156**

The default frame rate when writing Movies has been changed to 25 fps. This value can be controlled using the new **d3plot*output_frame_rate** preference.

- **Case 44413**

The version of FFmpeg used by D3PLOT (and now also REPORTER) has been updated to 4.3.1.

- **Case 45389**

If a movie file of a contoured model was exported without having already manually animated the model, the contours could be scanned with data scan set to first/last (i.e. the max/min values calculated based on the first and last frames only). If the data values in intermediate frames fell outside the first/last frame max/min, then the contour bar values in the movie file would not be correct. This has been fixed.

Attached

- **Case 44961**

In the dialogue command Attached menu a new option has been added for Rigid Parts to swap between unblanking single elements or the whole part.

Previously this option existed in the GUI, but the dialogue command options only had an option for controlling the behaviour in deformable parts.

The four options for single/whole parts in rigid/deformable are now:

/attached selection single_elem
/attached selection attached_part
/attached rigid_selection single_elem
/attached rigid_selection attached_part

(the first two already existed and are unchanged)

- **Case 43978**

If the recursive option was used in the Attached menu, then D3PLOT would track across deleted elements and find flying unattached elements.

In D3PLOT 18.0 the recursive option no longer tracks across deleted elements unless the user has turned on the option to draw deleted elements.

- **Case 43446**

In previous releases, Attached worked on a per-model basis and this meant that if a model was in multiple windows with different entities blanked in each window, the effect of an Attached operation was to unblank the same elements in all windows.

In D3PLOT 18.0 the Attached menu has been modified so that it now has window tabs instead of model tabs when multiple windows are active. The Attached operation now works on a per-window basis.

Blanking

- **Case 45152**

If you used the Quick Pick 'Key In' option to try and blank any of the Multiphysics Parts then nothing happened. Now fixed.

Contacts

- **Case 41558**

The order in which contact surfaces appear on the XY data panel has been changed. Previously, the slave surfaces were followed by all master surfaces:

Slave 1
Slave 2
Slave 3
Master 1
Master 2
Master 3

Now slave and master for the same contact are paired like so:

Slave 1
Master 1
Slave 2
Master 2
Slave 3
Master 3

Contour

- **Case 45540**

If the option to plot data relative to a reference node was turned on while a reference state was also set, then the values displayed could have been incorrect. This has been corrected.

- **Case 45381**

When D3PLOT calculates the contour bar range for SI, CT or LC plots then by default, it only includes the values from external visible faces of 3D elements. To include the values from internal faces, you previously had to switch on the drawing of internal faces.

From version 18.0 onwards D3PLOT has a new option in the Data menu. If selected, D3PLOT will include the internal faces when calculating the contour bar range without having to switch on the drawing of internal faces.

For backwards compatibility, the default in D3PLOT 18.0 is still to use just the external visible faces but this can be changed via a new preference option, **d3plot*contour_bar_3d_faces**.

- **Case 44007**

If a contour plot with limiting values was created, then any entity types for which the component was invalid were drawn as uncontoured (grey) items, even if the user had selected the 'omit' option. In D3PLOT 18.0, this behaviour has been changed so that by default, uncontoured items are not displayed when the limiting values 'omit' option is selected.

A new option has also been added to the limiting values menu to switch off the new behaviour and to revert to the previous logic if preferred.

- **Case 43610**

If some items had the display mode changed from 'Current' to 'Shaded' then when Auto Transparency was used, those items would be drawn opaque and the transparency level applied to uncontoured items wouldn't be applied to them.

D3PLOT 18.0 has a new option which can be used to apply the uncontoured transparency value to Shaded items. The default is the same as in previous versions so that Shaded items are still drawn opaque, but the Auto Transparency menu now has a new option, "Treat Shaded as Uncontoured", which applies the transparency to the Shaded parts as well.

Cut section

- **Case 45071**

The JS API function GetCutForces sometimes returned incorrect values when used in a D3PLOT session started from the command line with **-d=tty**. This has now been fixed.

- **Case 44978**

D3PLOT would report the wrong cut section forces if a cut section was defined when magnified displacements were also set.

In D3PLOT 18.0 this has been fixed if the cut section has been defined using BASIC space.

When DEFORMED space is used it is not possible to calculate the forces within D3PLOT, so D3PLOT 18.0 now checks for the combination of DEFORMED space and Magnify displacements and, if they are both set, it refuses to calculate the forces and displays a warning message telling the user why they have not be calculated.

- **Case 44728**

When switching on multiple parallel cut planes (with uniform spacing) via a dialogue command and then changing the spacing to a smaller number, D3PLOT would sometimes continue to draw the (smaller) number of planes relevant for the larger spacing. Now the number of cut planes drawn updates correctly.

- **Case 44189**

The drawing of the intersection of warped quadrilateral faces with cut planes has been improved.

- **Case 44152**

Cut planes intersecting warped quadrilateral shells can have all four edges intersecting the plane. D3PLOT now correctly draws two capping line segments on these shells, rather than one.

Data components

- **Case 43193**

Fixed an issue where the button that normally displays 'Vel' would read '???' when Volume 3 analysis results were opened in D3PLOT.

Dialogue command

- **Case 45134**

Fixed an issue where the AVI_READ dialogue command would crash if passed a filename to a non-existent file. The AVI_READ and AVI_DISPLAY commands are now deprecated in favour of MOVIE_READ and MOVIE_DISPLAY following the addition of MP4 support to D3PLOT.

- **Case 45069**

Some dialogue commands for beam properties caused D3PLOT to crash. Now fixed.

- **Case 44678**

Fixed an issue that caused D3PLOT to crash if the dialogue command to set user-defined contour levels was entered as a single line.

Filtering

- **Case 38357**

When selecting all visible items with All_Vis from an object menu, text filters were not respected, so items not displayed on the menu due to the filter were also selected. Now, only items on the list are selected.

General

- **Case 44530**

If a model contained both SPCs and either NRBs or Loads, and if PRIMER had created a ZTF file, then the internal numbering of the NRBs and Loads was incorrect if SPC forces has been written out to a LSDA (binout) file.

This error would result in the incorrect entity types being reported as being connected to nodes which should have had SPCs on them (as shown in the write table when listing connected elements). It also meant that using the Attached menu to find items attached across NRBs didn't work correctly. This has now been fixed.

Graphics

- **Case 44989**

For a faded background colour, the option to use Auto was not working in D3PLOT 17. It is now fixed.

- **Case 44988**

In a colour popup, if you create a new colour, you now see it applied immediately.

In the Part Tree or when using Quick Pick, when selecting a single item to change the colour and create a new colour, then the colour palette is initialised as the current item colour (instead of black).

Image

- **Case 45363**

D3PLOT has an option to capture image files at 2× and 4× screen resolution. On Linux, when the Window Dressing options to clip the image to a sub-set of the screen (e.g. 'Part screen',

'Report format') were used, the resulting image had a superimposed grid of horizontal and vertical stripes. Now fixed.

Integration

- **Case 45636**

REPORTER templates containing a mixture of D3PLOT and T/HIS items could cause a crash if generated in a D3PLOT session linked with T/HIS rather than in separate D3PLOT and T/HIS sessions. This has been fixed.

- **Case 44494**

If a composite part had an even number of layers and data was plotted using the 'Min/Max/Mag All' option for one of the Extra time history variables, then the plot could incorrectly show 0 for those elements. This has now been fixed.

JavaScript API

- **Case 45532**

D3PLOT could crash if a JavaScript was run multiple times without any model loaded. Now fixed.

Labels

- **Case 45466**

The label font size at maximum and minimum contour values was not updated correctly when the List option was not selected on the Max & Min options in the Data menu. Now the font size updates correctly.

Materials

- **Case 44493**

If data was plotted on composite parts for one of the Extra time history variables, then everything worked correctly if the surface was changed to one of the 'Min/Max/Mag All' options.

If the same data was plotted by selecting the component via the Material Properties data component category, then the 'Min/Max/Mag All' options could report incorrect values.

This has now been fixed.

Menus

- **Case 45201**

In D3PLOT 17.1, reading a settings file would cause the user colours to be modified. In D3PLOT 18.0, the user colours remain determined by the user_colours.xml file.

- **Case 44392**

When running REPORTER with a linked D3PLOT-T/HIS session, the Variables panel sometimes failed to update and move any newly created variables to the list of existing variables when the capture was updated. Now fixed.

Part Tree

- **Case 45015**

Fixed an issue where the colour popup could appear stranded when its parent menu closed.

Preferences

- **Case 43800**

Fixed an issue where D3PLOT was not applying locking to startup preferences (like graphics_type, maximise).

- **Case 43742**

When running D3PLOT with the command line option **-pref=/xxx/yyy/custom_pref**, if the preference 'script_dir' was used in 'custom_pref', the setting got lost and the scripts did not appear on the tree. Now fixed.

Program crash

- **Case 45658**

D3PLOT could crash when picking a part in a window containing multiple models, one of which contained no solid or thick shell elements. This has been fixed.

- **Case 45539**

D3PLOT could crash when writing out *INITIAL_STRESS_BEAM cards if the model contained Belytschko-Schwer beams and the PTF files did not contain all of the output data required for Belytschko-Schwer beams. Now fixed.

- **Case 45200**

D3PLOT could crash when reading back in a d3plot/.ptf file that had been created using the Cutdown/Compress option from within D3PLOT, if the file was written in the re-ordered format

and the ZTF file was embedded within the file.

The crash would occur if the cut-down model only contained a subset of the original parts and contained spotweld assemblies that referenced elements in parts that had not been output to the file. This has now been fixed.

Properties

- **Case 45549**

In the Properties menu, the settings for the entity and label switches were not copied across to other models when 'All Properties' were exported. Now fixed.

Read

- **Case 45657**

When a model was reopened (File → Reread model) the current plotting mode would initially revert to shaded, swapping to the current mode (e.g. SI) only when the mouse was hovered over it, triggering a Predictive Pick redraw.

Now fixed: The original plotting mode is remembered and reused immediately when a model is reread.

- **Case 45281**

Fixed an issue where D3PLOT could appear to hang for some time when reading in a model while displaying the following message: *Computing quick draw list in family 0*

- **Case 43854**

In the 'Multiple Models (Search Directories)' the file type filters sometimes filtered by the wrong type when opening a new model. For example, when D3SSD files were selected, the bottom of the panel actually showed D3EIGV files. This has now been fixed.

Sections

- **Case 44867**

True beam sections in D3PLOT were not always drawn consistently with those in PRIMER and the LS-DYNA keyword manual. For ICST = 5 on the *INTEGRATION_BEAM card the drawing in D3PLOT 18.0 has now been changed from a solid box to a tubular one.

Session

- **Case 44640**

If multiple copies of D3PLOT were started by the same user on the same machine and they all used the options to save or restore session files then things could go wrong as they would try to

use temporary files with the same filenames.

From D3PLOT 18.0 onwards, each occurrence of D3PLOT creates unique pathnames for any temporary files. In addition, D3PLOT 18.0 will tidy up and remove these temporary files when it has finished with them or if the user exists D3PLOT.

- **Case 44312**

If a session file was opened in D3PLOT by double-clicking on it and some of the models it referenced were unavailable then the Apply button was still active and would generate error messages if you clicked it. Now fixed.

Settings file

- **Case 45361**

If a settings file was written out that included measurements that had been defined using a reference state, then when the settings file was reloaded the relative state was not re-applied to the measurement. Now fixed.

- **Case 45360**

If 'Traces' were setup in D3PLOT and a settings and properties file were then written out, the 'Traces' were not restored when the files were read back into another session. Now fixed.

- **Case 45010**

If you read a settings file from D3PLOT 16.1 or earlier where the overlay colour was set to 'element', it came out violet. This has now been fixed and it comes out 'element' colour as expected.

Shortcut

- **Case 44725**

Corrected 'w' shortcut key processing to open the Images panel on the Raytrace tab if that was the last one accessed in a session.

User interface

- **Case 45653**

When D3PLOT or T/HIS were linked to REPORTER in shared memory mode the item tree would not necessarily update to include a vertical slider when the contents extended beyond the bottom of the item tree box. This has been fixed.

- **Case 45373**

In a linked D3PLOT-T/HIS session, if a graph was changed from child to sibling or vice-versa then 'Bad window id in: 0' error messages would be displayed and the REPORTER Panel could be displayed in D3PLOT. This has been fixed.

- **Case 43674**

The 'Select None' text now fits in the button in the Write Table panel in the new UI.

- **Case 43641**

Adjusted scaling of object menus in D3PLOT so text fits on the Scr_Area button in the new UI.

- **Case 43460**

The colour of Window and Model tabs was not changing when hovering over them. Now fixed.

- **Case 43410**

Yellow and dark blue colours in the key of the FLD graph were not readable in light and dark themes respectively. Changed to dark orange and olive, which are readable in all themes.

- **Case 42503**

The button text 'Tools' on the T/HIS link button has been changed to 'T/HIS'. It now only says 'Tools' when the T/HIS link is actually open and the T/HIS tools buttons are shown.

Views

- **Case 44545**

If a window contained multiple models and perspective viewing was switched on, then the options in the GUI to modify the perspective settings were not applied and the view did not update. Now fixed.

Write

- **Case 45086**

If a new model was opened in D3PLOT while the Write Keyword menu was open, then the menu was closed as normal, but when it is subsequently re-opened, the Model tabs were not displayed and the terminal window showed some error messages. Now fixed.

- **Case 44082**

If a model was loaded into multiple windows then the 'Write Keyword', Write Scan' and 'Write Global' menus always used the first window that the model was displayed in when extracting data.

In these menus which use model tabs D3PLOT 18.0 has a new option that allows you to select which window is used when extracting data.

If a model appears in more than one window, then by default the first window containing the model is used (same behaviour as previous versions), but a popup menu is activated that allows you to select any of the other windows that the model is also in.

Beside the popup (which shows the currently selected Window) the state time for the selected window is also displayed to make it more obvious which state data will be extracted from.

In SCAN mode, if you have selected multiple states via the 'Envelope' option then the popup is disabled and the time display unmapped.

XY Data

- **Case 45626**

Fixed an issue where outputting an XY Data composite graph for an element type other than solid elements, if multiple element types present in the model, would generate incorrect data.

2.2.2   Bugs Fixed in 18.1

Airbag

- **Case 46781**

D3PLOT can calculate the averaged airbag particle velocity in a cell and display it as a vector plot. If you chose to 'smooth' data over adjacent cells, then this was not displayed correctly in vector plots which instead continued to use the raw per-cell data. Now fixed.

Animation

- **Case 46849**

When animating models with a delay – of one frame per second, for example – the window slider could be one frame ahead of the graphics. If multiple windows were animated the window slider in W1 could be one frame ahead of the other windows. Now fixed.

- **Case 46614**

If a velocity plot was animated the arrows were drawn correctly the first time (while the animation was being created) but after that, the arrows stayed fixed and did not change from state to state as the animation played. Now fixed.

Blanking

- **Case 46500**

Fixed a crash that could occur if a movie or image background was read in and moved to a separate window, and if you then used one of the object menus (e.g. the blank menu) and hovered over an item in the menu to sketch it.

Command files

- **Case 46598**

Added a preference d3plot*show_all_components to show all possible data components on the popups in the Write and XY Data menus. With this preference set, the components not available are greyed out (as in the Data menu) rather than omitted.

Contour

- **Case 46055**

Fixed a crash that could occur when contouring a model containing solid elements with a reference state from another model containing a different number of solid elements.

- **Case 44178**

Fixed an issue where velocity arrows were occasionally not displayed if the user clicked the VEL button directly after having done a CT, SI or LC contour plot.

Cut section

- **Case 46525**

When a cut section was passing through undeformed geometry, the intersection of the plane with the undeformed position of shells was drawn twice on top of each other in different colours. Now it is only drawn once as dashed lines in the colour of the undeformed geometry.

- **Case 46501**

Cut section end caps on shells did not respect the NLOC values of underlying sections. Previously they were always drawn with the nodes on the middle surface, where now they appear on the top or bottom surface depending on NLOC. This is consistent with the drawing of shells with true thickness.

- **Case 46387**

Cut section 2D capping thicknesses can either be based on true shell thickness or on a fixed thickness. For models with no thickness data available D3PLOT always uses a fixed thickness. When a graphics window contained two models, where one had got thickness data and the other one had not, then the cut section would have been drawn incorrectly with a fixed thickness for both models in D3PLOT 18.0 even when the option to use true thicknesses was selected. Now D3PLOT draws the cut section correctly with true thickness in the model having it and with a fixed thickness only in the model without thickness data.

- **Case 45999**

When dragging a cut plane defined by three nodes either as translation or as rotation, the cut section panel continued to show it as defined by three nodes although in general the plane will no longer pass through these nodes. Now it reverts to a definition by origin and vectors similarly to the case of rotating a plane with constant X, Y or Z. The panel is now updated correctly.

D3PLOT Viewer

- **Case 46435**

3D Viewer Export has been renamed to D3PLOT Viewer. A D3PLOT Viewer button has been added to the D3PLOT Viewer panel to launch the D3PLOT Viewer web page. Additional help has been added to D3PLOT Viewer file format to explain compatibility with PowerPoint and other viewers.

- **Case 46336**

Specifying GLB contour output for a single component at multiple through-thickness integration points on the command line resulted in all results being written to the same filename which was overwritten for each through-thickness integration point. This has been fixed.

- **Case 46334**

A model with only undeformed geometry could not be exported to 3D viewer format and did not give any warning message. This has been fixed.

- **Case 46775**

If a GLB file was created using the command line '-glb' option then it was always created using the uncompressed format.

This has been changed in 18.1 so that the '-glb' option now creates a compressed GLB file and a new '-glb_uncompressed' option has been added to create uncompressed files.

Dialogue command

- **Case 46555**

The dialogue commands /XY_DATA GLOBAL and /WRITE GLOBAL were not working. Now fixed.

Error trapping

- **Case 46750**

If user created Wn (window n) containing two or more models, deleted Wn and then recreated Wn containing only one model, then an error message was printed to the dialog box. This has been fixed.

- **Case 46446**

If multiple windows were closed and then a window was opened, D3PLOT could generate an error message 'Unused window id in <set_active_window>:'. This has been fixed.

FEMZIP

- **Case 46695**

D3PLOT misread a results file in which both solid and shell elements were present, but results were only written for shells.

It opened the file OK and animated the geometry correctly, but as soon as results were plotted errors were generated. In addition the file only contained plastic strain and an 'extra' shell data component, but D3PLOT offered stress tensor data components for plotting.

This was because it was decoding the control block of the file incorrectly, leading it to expect stress and strain results for solids, meaning that the data in the file was misinterpreted. The file in question was a FEMZIP file, which meant that the error looked like a FEMZIP reader failure, but in fact the error would have been present for a plain file as well.

Fixed by correcting the error in interpretation of the control block.

Graphics

- **Case 46872**

In D3PLOT 18.0, each change to an option on the Entities panel would cause the last active graphics window to update based on that change, but no other windows would update. This could cause slow behaviour if the user wanted to change multiple options, as each would update the window individually. Plus, other windows would not see this change until later. Now D3PLOT waits until the user has set all the options they want before updating the windows. It also updates all active windows at once.

- **Case 46855**

In D3PLOT 18.0, if multiple models were loaded into a window and a velocity vector plot was generated then in some situations, the velocity vector arrows were not displayed on some models. Now fixed.

Integration

- **Case 46776**

PRIMER could fail to find a model when opened from a D3PLOT session with more than one model. This has been fixed.

JavaScript API

- **Case 46653**

There were the following errors in the JavaScript interface for cut sections:

For cut sections defined by constant X, Y or Z given by a node, the object returned from GetCutSection contained that node in nodes[1]. Now that node is correctly returned in nodes[0] (as stated by the API documentation).

For cuts defined by constant X, Y or Z with node ID or by 3 nodes, D3PLOT only worked when the nodes were specified by negative label, but crashed for a positive index. This has now been fixed.

For cuts defined by Origin and Vectors, the vectors were scaled unexpectedly. They are now correctly normalised to unit length.

Movies

- **Case 46883**

Fixed a possible crash when capturing MPEG-1 content at high resolution (4k).

Performance

- **Case 46204**

D3PLOT could run slower after properties, e.g. colour, were changed by include. This has been fixed.

Program crash

- **Case 46585**

Capturing windows with ICFD components contoured to REPORTER could cause D3PLOT to crash. This has been fixed.

- **Case 46562**

D3PLOT could crash if used with a 3D mouse and a machine running more than 8 threads. This has been fixed.

- **Case 46434**

D3PLOT could crash if you opened multiple windows, plotted an envelope plot, closed a window, and then created a window, either by opening a new model or via Window → New Window. This has been fixed.

- **Case 45817**

If a model containing shell elements was contoured with a reference state from a different model, then D3PLOT could crash. This has been fixed.

- **Case 43102**

T/HIS crashed when displaying a very long directory name as a prefix. Now fixed.

Properties

- **Case 46384**

In a D3PLOT session with multiple windows linked to PRIMER and with all the models in a window blanked – e.g. when an extra window has been opened to display a movie background – blanking a part in D3PLOT could result in the view changing. This has been fixed.

- **Case 46175**

On the top-level Properties panel, setting the colour of all entities of a given type, for example all parts, did not work. This has been fixed.

Quick Pick

- **Case 45753**

If the Quick Pick Type was changed to 'Entities' then the 'Key in' option wouldn't work, because an entity type prefix had to be specified (e.g. S10 to blank Shell ID 10) but the 'Key in' text box generated an error message if you made a non-numeric entry. If you entered the ID without the entity type prefix, then a different error message was generated, because the entity type had not been specified. Now fixed.

Read

- **Case 45809**

If multiple models were opened from a database file with the option to open all models in a single window selected, the option would be ignored and the models opened in separate windows. This has been fixed.

Selection

- **Case 45973**

In D3PLOT 18.0 (but not in earlier versions), if T/HIS link was open and you tried to select entities for reading data into T/HIS by selecting 'Pick Visible' and dragging a box around the entities in the D3PLOT window, then D3PLOT could crash. This has been fixed.

Session

- **Case 46447**

If T/HIS was opened from D3PLOT and a session file was saved, reloading the session file wouldn't reload curves that had been blanked. This has been fixed.

- **Case 45979**

Writing a session file for a D3PLOT ↔ T/HIS link session may have caused D3PLOT to crash. This has been fixed.

Settings file

- **Case 46808**

If a settings file was created and then read back into D3PLOT where a window contained multiple models, then the data blocks containing settings for external 'blob' plot data were not read correctly and could cause an internal memory overwrite of other settings in the D3PLOT session. Now fixed.

Sketch

- **Case 46120**

Fixed a crash that could occur if you had multiple models open, and when you hovered over a part in an Object menu and D3PLOT tried to sketch the part.

Streamlines

- **Case 46874**

When data plotting on streamlines, if you changed from calculation by ICV Fluid velocity to ICV Average velocity, and then hovered over the model, the max/min values plotted on the model would update, but the contour bar may not have updated, resulting in a mismatch between the max/min values on the model and on the contour bar. This has been fixed.

T/HIS link

- **Case 46755**

It was possible to select graphs to export as GLBs for D3PLOT Viewer when the D3PLOT-T/HIS link was active, but these are not suitable to export in this way, so D3PLOT could behave inconsistently. It is now no longer possible to select graphs from the menu.

User interface

- **Case 46532**

The Ray Tracing and D3PLOT Viewer tabs of the Images/Movies Export panel can now be accessed via Quick Find.

- **Case 43964**

In version 17 and 18.0 of D3PLOT, if the user clicked and released the mouse button quickly on the button to display the list of database component categories, the menu would automatically select the first component in the category that the mouse was over when the popup appeared. In most cases this would select a component in the 'Shell Resultants' category.
In version 18.1 onwards, the behaviour has been changed to stop the data component from being accidentally changed.

User defined

- **Case 44440**

When plotting user-defined data from .ubd files, if the user had the ubd_file_location preference set and valid data in the directory it was pointing to, but also valid data in the model's directory, data would be set to 0 for all states.

Now, D3PLOT will only read .ubd files from one location: the preference location if it is set, otherwise from the model directory. If D3PLOT reads data from the preference location and also detects data in the model directory, the user will be warned that this data will not be available in the current session and be told how to access it in another session.

Variables

- **Case 46453**

In D3PLOT linked to REPORTER (version 17.0 onwards) the '+' button in the REPORTER Panel variables list remained active even when all the possible variables had been defined and if pressed resulted in a warning about unsaved variables when user changed item. Now the '+' button is only shown if some possible variables have not yet been added to the item.

Write

- **Case 46094**

Nodal data values for element data components, e.g. X direct stress, for nodes connected to solid elements with multiple integration points in WRITE, XY-DATA and Quick Pick → Dynamic Label → Data Value, were calculated incorrectly. This bug did not affect contouring. This has been fixed.

XY Data

- **Case 46612**

If XY Data was used to extract strain-based data components for Thick Shells and the MIN/MAX/MAG all option was used, then the curves generated could be wrong and were sometimes displayed as a constant value of 1.0. Now fixed.

2.3   T/HIS

2.3.1   Bugs Fixed in 18.0

Annotation

- **Case 45538**

Annotations in the Measure menu did not show x- and y-values. This has been fixed.

Curve table

- **Case 44423**

If the contents of the curve table were written out to a CSV or XLXS file and the curve table was displaying injury criteria, then any lines containing the model summary incorrectly showed zero for the injury criteria where they should have shown '-' for the values that did not apply. Now fixed.

Curves

- **Case 45254**

If you displayed the history for a curve in T/HIS and tried to delete the last operation used to create the curve, then when you clicked on 'Update Curve', the curve was rebuilt as it originally was with the last operation still being applied. This has now been fixed.

- **Case 45223**

A crash could occur after deleting curves with annotations. This has been fixed.

Dialogue command

- **Case 43433**

Added StartTHisLink() and ExitTHisLink() JS API functions to D3PLOT. You can now open and start the T/HIS link via JavaScript.

These have been added to replace the use of DialogueInput() which was previously not able to open the link correctly when a JavaScript Window was open. This bug should now also be fixed, although it is recommended to use the new functions mentioned above for this purpose.

FAST-TCF

- **Case 45265**

A FAST-TCF script could extract data from the wrong in-plane (or solid) integration point if the script contained multiple read commands where the first command did not specify an integration point and the second one did. Now fixed.

- **Case 43419**

If an airbag and airbag part both had names, then if the option to write names in place of entity IDs into FAST-TCF scripts was switched on (this is the case by default), then FAST-TCF Read commands for airbag part data would not be processed correctly. This has been fixed.

Menus

- **Case 45228**

Previously, if you selected a user-defined colour for your title or axis, it changed on the graph, but did not show as changed in the menu. This has been fixed.

- **Case 45108**

In some circumstances, if the option to select models was changed to 'Search Directories', then in the panel that lists the models, the buttons used to select the models were too small and did not display any text. This has been fixed.

- **Case 44118**

On Windows, the sequence:

- Move mouse into menu of items
- Let it auto-expand
- Move mouse over button at top of menu

could cause the 'Hover over lighting up' of the button to display in the wrong place, typically near the top of the scrollable list of menu items. Now fixed.

Preferences

- **Case 43799**

T/HIS was not applying locking to startup preferences (like graphics_type, maximise). Now fixed.

Properties

- **Case 44502**

Fixed an issue where FAST-TCF curve legend properties for the minimum and maximum Y-values were not being correctly read into T/HIS.

Read

- **Case 45476**

For Volume 3 ASCII files (CESE, ICFD, EM) with the format of *file_name_xxx.dat* or *file_name.xxxx.dat*, if you read more than 100 files, errors would pop up in the dialogue window. Now fixed.

- **Case 45346**

T/HIS could sometimes crash if it attempted to read data from an LSDA (binout) file on a remote disk system while an LS-DYNA analysis creating the LSDA file was still running. In T/HIS 18.0 some changes have been made to improve reliability.

- **Case 45240**

Some BINOUT files produced by beta versions of LS-DYNA R12.1 were displayed in T/HIS with the X-axis unit set to 'Frequency' instead of 'Time'. Now fixed.

- **Case 44589**

T/HIS failed to read a CSV with an extra comma and white space at the end of each line. Now fixed.

Session

- **Case 44639**

If multiple copies of T/HIS were started by the same user on the same machine and they all used the options to save or restore session files, then things could go wrong as they would try to use temporary files with the same filenames.

From T/HIS 18.0 onwards, each occurrence of T/HIS creates unique pathnames for any temporary files. In addition, T/HIS 18.0 will tidy up and remove these temporary files when it has finished with them or if the user exists T/HIS.

- **Case 42795**

If a session file was saved for a D3PLOT-T/HIS linked session where curves had been sent to T/HIS from D3PLOT, then the model number, entity type and entity ID for the curves were not recorded in the session file. This meant that when the session was re-opened the curves were

created correctly, but they were not assigned to the correct model and the entity type and ID were not set. Now fixed.

Speed

- **Case 45462**

A JavaScript that performed operations on many curves was slower in T/HIS 17 than in T/HIS 16. Now T/HIS 18.0 no longer updates the Curve Manager menu while a JavaScript is running. If the JavaScript is interactive, e.g. uses curve picking, or is run from the debugger, the curve manager menu will be updated. This behaviour can be changed by setting the new preference **this*javascript_update_curve_menu** to TRUE instead of FALSE (the default).

User interface

- **Case 45409**

In the Read panel, a new 'Read Models' subheading was added to make it easier to find the New Model and other related buttons.

- **Case 45393**

Adjusted the 'Edit in PRIMER' popup to be more readable across a wider range of screen dimensions and display settings.

- **Case 45035**

The Read and Generate X Values buttons in the CSV menu have been changed to radio buttons and function accordingly.

- **Case 44827**

Fixed an issue where the Operate output curve selection menu would become disabled for the remainder of the T/HIS session.

- **Case 44812**

Fixed an issue whereby the Graph Toolbar 'Auto Hide' functionality did not persist when re-reading and 'Extracting to match' curves.

- **Case 44503**

Fixed the Y Max and Y Min curve property tick boxes from unintentionally changing into a mixed state colour when the Highlight and Display text options have both been turned on.

- **Case 44319**

A slider was added to the Select Int Points and Node panel for better operation on smaller screens.

- **Case 43691**

The colours in the curve History buttons had been lost in the new UI. Now, the buttons are blue when modified and green when inserted.

- **Case 43479**

T/HIS Keyboard input was white text in the Light theme, making it very difficult to read. Changed so that the text input is now the same colour as the regular dialogue input.

- **Case 43212**

Under certain situations on Linux, while trying to save out an image or curve file without specifying the file extension, it would not be added to the final filename. Now fixed.

2.3.2   Bugs Fixed in 18.1

Curve menu

- **Case 46343**

The curve number button will no longer be greyed out for the last curve if it is copied and inserted above.

Curve table

- **Case 46557**

If multiple models are read into T/HIS, then by default T/HIS automatically adds a prefix to the curve labels containing the model number (M#).

If the HOME key was pressed in the textbox displaying a curves label in the Curve Manager menu, then the cursor would move to the start of the prefix (which can't be edited) and not the start of curves label. You were then unable to type anything into the curve label textbox.

A similar problem would occur if you clicked in the textbox and the used the left arrow key to move the cursor left into the prefix text.

These issues have now been fixed.

Curves

- **Case 46245**

Line width is now preserved when reading in .cur files.

Edit

- **Case 46871**

When editing a curve using the Edit panel, if you right-clicked on the curve in the graphics window and press 'Locate', seemingly nothing happened.

In T/HIS 18.1 onwards, the list of points in the Edit menu is now scrolled so that the selected point in the curve is in the middle of the range of points displayed.

FAST-TCF

- **Case 47020**

If a FAST-TCF script was run multiple times (or multiple different FAST-TCF scripts were run) and they used the option to define a curve via an equation, then T/HIS could sometimes crash. Now fixed.

- **Case 46947**

When attempting to write out a FAST-TCF file when equations that contained Maths functions with the letter 'c' (e.g. cos(x) or csc(x)) have been created in the session, the 'c' in the math formula command was omitted from the FAST-TCF file. This has been fixed.

- **Case 46810**

Fixed an issue where User Equations generated from FAST-TCF were not being correctly ordered upon playback completion.

- **Case 46531**

The FAST-TCF variable $run_name only got set if the model keyword file had a *.key extension. It will now get set if it has a *.key or *.k extension.

- **Case 45601**

Fixed a bug where FAST-TCF generation was not correctly uncommenting label commands when curve labels were manually edited.

- **Case 41318**

When opening a model in T/HIS, if the option to automatically extract curves to match those already read from another model was used, then the curve labels for any curves that had been created by a curve operation showed incorrect curve numbers used to create the curve. Now fixed.

JavaScript API

- **Case 46328**

We have added functionality to all Read class functions in the T/HIS JavaScript API so that you are now able to specify the output option. For instance, being able to specify that a file will begin reading into Curve 5, or by Highest+1 and read sequentially from that point for files containing multiple curves.

The following functions have been deprecated and optional arguments on the old functions have been collapsed into an object with equivalent object properties into a new function of the same name. Support for the deprecated versions of these functions may be removed in future releases:

Read.CSV()
Read.DIAdem()
Read.Equation()
Read.ISO()
Read.LSPP()

- **Case 46211**

The Graph class functions .Delete() and .DeleteFromID() were not removing the graphs properly. Now fixed.

Menus

- **Case 45940**

The behaviour of the scroll bar in the EM menu has been improved.

Program crash

- **Case 46817**

Fixed a crash that could occur in T/HIS 18.0 while performing some dynamic viewing operations.

- **Case 46324**

In the Curve History menu, the delete operation is now hidden when more than one curve is present to avoid T/HIS crashes.

Program hanging

- **Case 46828**

Fixed an issue where the integration point selection menu for LS-DYNA reading would persist when swapping to another reading menu (e.g. T/HIS Curve) and potentially cause T/HIS to hang.

Read

- **Case 46850**

When creating a curve directly from the screen using the mouse to pick points, the mouse scroll wheel did not work to zoom in/out. Now fixed.

- **Case 46643**

When trying to plot Effective Plastic Strain for Thick Shells from a THF source, all Y data would be output as zeroes. This has now been fixed.

Fixed a bug that occurred when plotting Effective Plastic Strain for Thick Shells from an LSDA binout file. In some situations, it was not possible to access specific through-thickness integration point data for binout files only containing elout data. This has now been resolved.

- **Case 46606**

T/HIS could plot nodal displacements incorrectly from d3thdt files output from LS-DYNA versions R11 and later. Now fixed.

- **Case 46563**

CURVOUT ASCII files will now be read in correctly if being read in with a BINOUT file.

- **Case 46549**

Thick shell strain data could be plotted incorrectly from a d3thdt file output from newer versions of LS-DYNA. The XX strain would be plotted with the YY strain value, YY with the ZZ values, etc. This has been fixed.

- **Case 46335**

Extract curves to match model no longer causes a linked D3PLOT-T/HIS session to crash.

- **Case 46182**

T/HIS can now support ISO-MME files written out by Altair HyperGraph.

Scripting

- **Case 46509**

Launching the GUI Builder from a T/HIS session started from D3PLOT caused a crash. This has been fixed.

T/HIS link

- **Case 46583**

Setting a shortcut key in T/HIS to open the image menu didn't work in a D3PLOT-T/HIS linked session. This has been fixed.

Text

- **Case 46691**

Fixed an issue where text could be lost on a textbox when copy and pasting.

User interface

- **Case 41794**

A scroll bar has been added to the Title/Axis menu.

User defined

- **Case 46953**

Fixed a potential crash or error when creating a User Colour within T/HIS.

2.4   REPORTER

2.4.1   Bugs Fixed in 18.0

Capture

- **Case 45224**

If you open a template created in REPORTER 16.1 or earlier in REPORTER 18.0 or later, any D3PLOT and T/HIS items will continue to be captured and generated using the old pre-version-17 method (in versions 17.0 and 17.1, they were automatically converted to the new method, but this caused problems for some users' templates).

- **Case 45056**

Fixed an issue where D3PLOT Items would sometimes fail to load the image when conducting a fresh 'old method' Capture.

Library

- **Case 45562**

The 'LS-DYNA Version and Revision' *version.js* Library Program script has been updated so that it works with newer d3hsp/OTF files that can include:

1. An Ansys legal notices header above the LSTC header
2. LS-DYNA revision names incorporating the newer Git revision hashes instead of the older SVN revision numbers

Shortcut

- **Case 43423**

All main window keyboard shortcuts can now be used while the Logfile has focus.

Standard templates

- **Case 45644**

Fixed an issue that could prevent the GTR Head Impact 2020 template from updating properly after you Edit Settings from any of the buttons on the template.

- **Case 45423**

In the IIHS Side MDB Impact 2017 template, if you Set Observations on page 2 after the template had generated, then any changes to the head protection rating were not then reflected in the Overall rating displayed on page 1. Now fixed.

- **Case 45386**

In the USNCAP templates, the Nij calculation and chest transducer rotation for the HIII 5F passenger were using the same values as for the HIII 50M driver. Now fixed. Additionally, the HUMANETICS_HIII_5F_V2.0.2 dummy info now looks for cross sections rather than beams for upper neck and femur inputs so as to be consistent with the FE model.

- **Case 45098**

In many of the standard templates, calculations of compression forces were given the incorrect sign when run with LSTC dummies. In addition, some body region calculations were not considering both negative and positive values when comparing against rating limits. These errors have now been fixed.

- **Case 45097**

In the CSV files for LSTC HIII 50M dummies in reporter_library/templates/dummy_info, the knee slider inputs were incorrectly configured as spring elements. They are now configured correctly for *JOINT_STIFFNESS.

User interface

- **Case 45632**

The page number in the main window title bar will now correctly display the current page (usually the last in the Template) after report generation.

- **Case 45394**

The page number listed in the page navigation box should now correctly correspond to the current page (usually the last in the Template) after writing a PDF, PowerPoint, or HTML file.

- **Case 44362**

The JavaScript function Template.EditVariables now accepts an optional boolean argument to determine whether selected Variables should be displayed alphabetically (true) or in the list order in which they were passed to the function (false).

- **Case 43422**

The filename in the main window title bar will now correctly have an asterisk appended to it to indicate the file has been modified when Variables are edited or updated.

- **Case 14096**

All dialogs accessed via the menu bar (or created via JavaScript) should now appear on the same display screen as the main window. If manually repositioned, these dialogs should remember their previous position when being reopened. When moving the main window to a new display screen, all of these dialogs should follow to the new screen (excluding an open Logfile or a maximised dialog).

2.4.2   Bugs Fixed in 18.1

Capture

- **Case 46113**

Updating an image capture for a D3PLOT Item with an image file extension of .jpg, .bmp, or .ppm will no longer overwrite these extensions with .png.

Image

- **Case 46521**

T-HIS Items with JavaScript type and Image output were not producing an image on Generate. This is now fixed to behave in the same manner as old method FAST-TCF capture. Old T-HIS Items with JavaScript type and Image output that had been configured to work correctly by writing the image from the JavaScript may need to be edited.

PowerPoint

- **Case 45660**

When running REPORTER in batch from SHELL with REPORTER iconised, a windowing bug was causing the Combined Output Options to occasionally produce corrupted files. Now fixed.

Qt

- **Case 46461**

REPORTER 18.0 would crash when run through Xvfb unless particular settings were used. Now fixed.

Standard templates

- **Case 46756**

Corrections have been made to the neck and femur inputs for Humanetics Harmonized HIII 5F v2.02 model dummies so that they use cross sections rather than beams (in a small number of templates).

- **Case 46588**

Fixed a bug that could report an incorrect score from the femur compression exceedance curves in various automotive library templates.

- **Case 46017**

The neck and femur loadcell inputs were incorrectly assigned 'Beam' entity type in the dummy_info CSV files for Humanetics SID IIs SBLD v.4.3.1.csv and Humanetics SID IIs SBLD v.4.3.2.csv. They are now correctly assigned as cross sections, enabling the PRIMER GUI for selecting model inputs to function correctly.

- **Case 45797**

The PRIMER GUI for selecting model inputs could fail if your model contained a very large number entities in DATABASE cards (e.g. a DATABASE_BEAM_SET containing thousands of beam elements). This has been fixed by capping the number of entities displayed in the DATABASE card popups to 100 for each entity type. You can still specify an entity ID that doesn't appear in the popup by picking/selecting it or by entering its value.

Tables

- **Case 46292**

We have improved REPORTER's handling of file paths for the Autotable 'File' option. Updated guidance has been added to the manual.

Text

- **Case 43230**

Right-aligned text was sometimes clipped in PDF output. Now fixed.

Variables

- **Case 46258**

%TEMPLATE_DIR% was not set early enough when a Template was being opened, causing Image Items that were attempting to use this variable to appear as 'missing images'. Now fixed.

2.5   SHELL

2.5.1   Bugs Fixed in 18.0

Filename

- **Case 45456**

If there is a space in the *KEYWORD_ID card fields, the SHELL was unable to submit the model for LS-DYNA run. This has been Fixed.

- **Case 43407**

Support panel leaves a grey patch upon dismissal on Linux machine. This has been fixed.

Edit

- **Case 44046**

When the 'dyna_versions' file is not present, the default CPU settings were not imposed in the SHELL submit panel. This has been fixed.

Filename

- **Case 43630**

LS-DYNA submission fails from certain directories with whitespace in path. This has been fixed.

Memory

- **Case 44389**

For the command line SHELL, the memory value conversion was incorrect at times. This has been fixed.

Sensor

- **Case 44649**

Kill Switches did not work for LS-DYNA submission with LSTC format outputs. This has been fixed.

User interface

- **Case 44531**

Added new environment variable 'SHELL_REMOTE_FAST' to launch faster (non-iconised) versions of the SHELL GUI on the Remote Linux machines.

- **Case 44398**

Re-configured the PRIMER/D3PLOT and T/HIS 'Options' panels for widgets consistency and usage.

- **Case 44289**

On Linux the PRIMER 'Options' panel was getting launched in Full-screen size. This has been fixed.

- **Case 44091**

The SHELL main menu popups were not mapped with the Left-mouse click on the buttons like 'Themes', 'Manuals' and 'Utilities'. This has been fixed.

- **Case 43898**

Corrected the widget label string for processors in the Submit panel.

2.5.2 Bugs Fixed in 18.1

Memory

- **Case 46134**

The MEMORY units conversion was not correct for the command-line SHELL. Fixed this.

User interface

- **Case 46943**

The popup menu for 'Utilities' was mapped even if there are no utility functions defined. Fixed this.

- **Case 46934**

While performing 'ONLINE' submission in the command-line SHELL, a false error string was being printed. Fixed this.

- **Case 46791**

D3PLOT Options: Rename checkbox option from '3D Viewer Export' to 'D3PLOT Viewer'.

- **Case 45943**

Removed the term 'PLATFORM' from the description of a new LS-DYNA entry inside the dyna_versions file - created by the SHELL when 'Add versions' button is pressed.

Variables

- **Case 47019**

The value strings for environment variables were getting culled. Fixed thi.

2.6 Oasys

2.6.1 Bugs fixed in 18.0

Program hanging

- **Case 43859**

Fixed an issue on Windows where, when process A fired off linked process B (e.g. PRIMER launched a linked D3PLOT session), and then process A terminated normally, its console (MS-DOS) window got 'left behind' until child process B was eventually killed.

User interface

- **Case 43485**

The dashed outline for the most-recently-selected tree item is now coloured more suitably for the current GUI theme. Additionally, the right-hand and bottom borders have been shifted in by 1 pixel so they no longer get left behind when a different item gets selected. This applies to all tree menus in PRIMER, D3PLOT & T/HIS.

- **Case 43485**

Fixed an issue where the unblanked status of selected items in the Part Tree could become lost.

2.6.2 Bugs Fixed in 18.1

Preferences

- **Case 45962**

When closing the splash screen a message was being displayed in the dialogue box saying that it's saved the 'font_quality preference ANTI_ALIAS'. From version 18 this is the default option already, there was no need to do it any more so that is now removed.

User interface

- **Case 46114**

When launching D3PLOT or T/HIS at smaller window/screen sizes, one of the new feature buttons on the splash screen could be mislabelled with a PRIMER feature. This has now been corrected.

3   Enhancements

The enhancements and bug-fixes for each program have been broken down into a series of topics. Within each topic enhancements and bug-fixes are listed by case ID.

3.1   PRIMER

3.1.1   Enhancements in 18.0

Animation

- **Case 42863**

PRIMER's boundary prescribed motion animation function now permits you to specify an analysis timestep of your choice that can override the default value computed by the function.

Belts

- **Case 44271**

Added the option to create *AIRBAG_REFERENCE_GEOMETRY automatically when meshing seatbelts (for nodes on the seatbelt that are meshed in SHELLs). Option available in panels:
- Mesh - Tickbox
- Auto-refit - Radio button

- **Case 43682**

Seatbelt fitting enhancements:
- Duplicated some fitting parameters on the popup panel to make them more obvious
- Added a dropdown menu (with 4 levels of mesh fineness) to control 'Max curve angle', 'Belt length' and '#rows'

- **Case 43627**

Changes made to the seatbelt fitting panel:
- Added 'Pause' button - duplicate of 'Stop' button
- Added 'Step' button - next by 1 iteration
- Replaced 'Restart' button with 'Reset' button - back to initial state (because 'Restart' is just 'Reset' + 'Fit')
- Changed buttons to icons - added hover text and button alias

- **Case 42693**

Seatbelt fitting - increased maximum '#rows' from 19 to 100

Checking

- **Case 45214**

Added a model check for MAT_054 where if DFAILT > 0 then DFAILC must be < 0.

- **Case 42073**

A new text box has been added on the LS-DYNA output reader panel which informs whether the analysis has terminated properly or not.

Clipboard

- **Case 44277**

Header box in Clipboard object selection menu now updates to reflect number of items being added or removed.

Compare

- **Case 44731**

Part compare write to Excel format now indicates whether the filename already exists by showing the text in a red colour. The panel is now unmapped once the write to Excel is complete.

Connections

- **Case 43692**

PRIMER's merge bolt connection requires that rigid shells of the bolt overlap deformable shells of the layers. This is necessary as emptying the connection involves deleting the rigid shells.

The connection tool 'From FE' has been enhanced to handle the case where the rigid shells are not initially overlapped with deformable by creating deformable shells on them so the connection can be created.

Contacts

- **Case 45075**

*CONTACT_AUTOMATIC_GENERAL_INTERIOR is now included in the segment edge check phase of contact checking.

Contour

- **Case 44070**

The values Area (for shells only) and Volume (for beams, shells, solids and thick shells) have been added to the list of data components that can be contoured as element properties in SI/CT mode.

Cut Section

- **Case 45206**

Cut sections modifications:
- Added a custom spacing option to PRIMER's multiple cut sections feature.
- Added PRIMER manual links to help messages for thick cuts and multiple cuts.

Element quality

- **Case 45707**

Added max solid spotweld/adhesive warpage to the CHECK OPTIONS panel Quality category.

Encryption

- **Case 44252**

The ability to read partially encrypted *AIRBAG cards has been added.

The *AIRBAG must have suffix _ID and the first line of:

[Label] [Title]

must be provided in clear. Thereafter PGP encryption can start on any line.

The implications inside PRIMER are as follows:

- Checking is suppressed for encrypted airbags since it is assumed that no data values will be known.

- The PGP data is remembered and reproduced verbatim on keyout.

- If the model also contains partially encrypted loadcurves these will be locked against deletion if the model also contains encrypted loadcurves (or materials, as before).

Graphics

- **Case 44661**

The 'Saved properties' panel was a bit obscure, since the only way of accessing it was to hover over the [Save P] button.

Two new ways of invoking it directly have been added:

(1) A direct access from the [Display] popup menu.
(2) Via the short-cut key '~'. (Like all keyboard shortcuts the key can be re-assigned)

In addition in the Saved Properties panel itself the [Reset attributes] popup menu has been added, giving an easy way of resetting visual attributes.

IGA

- **Case 44507**

Added warning if NODE is referred to by *ELEMENT_SHELL_NURBS_PATCH

- **Case 44473**

Added support for mass calculation for *ELEMENT_SHELL_NURBS_PATCH

- **Case 44242**

Added high order basis function checks to *ELEMENT_SHELL_NURBS_PATCH.

- **Case 44241**

Added checks on NISS/NISR and PS-PR fields to *ELEMENT_SHELL_NURBS_PATCH.

Implicit

- **Case 45483**

A new tool has been added to help setup the *CONTROL cards required to run various types of implicit analyses. This tool can be accessed from the 'Implicit' button on the Tools panel. The tool offers a selection of implicit analysis types: Static, Transient (Direct or Modal), Buckling (standalone or intermittent), Eigenvalue (standalone or intermittent), Frequency Domain (FRF).

By default, the tool will open in a simplified mode which requires less input to setup the different analysis types, however an advanced mode is also available to allow more customisation/use of non-standard options.

Include

- **Case 43009**

Added new warning text below the text box if file exists.

JavaScript API

- **Case 44917**

The _MORTAR keyword option can now be set on supported contact types using the Contact JavaScript class.

- **Case 43767**

Added new SensorDefine class to PRIMER JavaScript API.

- **Case 43625**

A GUI Builder has been added to the JavaScript menu to allow you to interactively create windows and widgets for a JavaScript GUI, rather than having to code it by hand. This is present in PRIMER, D3PLOT and T/HIS.

Keyword Editor

- **Case 44671**

Enabled keyword editor for * ELEMENT_SOLID_NURBS_PATCH with first two cards.

Macro

- **Case 45190**

Added new preference 'write_checkpoint_files' and a command line option with the same name to regulate the writing of the checkpoint files in PRIMER.

Manual

- **Case 43024**

Added access to the LS-DYNA User Manuals from Help → Keyword manuals.

Mass

- **Case 43728**

Assign mass using *ELEMENT_MASS_PART creates new definitions in the same include as the *PART, using *ELEMENT_MASS creates them in the same include as *ASSIGN_MASS.

This behaviour is now switchable on the main panel (or by preference settings) so you can use PART includes or ASSIGN_MASS includes as you wish.

Measure

- **Case 42415**

Added new option for number format similar to D3PLOT.

Mechanism

- **Case 42958**

Added new preferences for value related options in Mechanism → Position → Options.

Mesh

- **Case 44109**

The user now has extra control over splitting quad shell into two tria shells. The user can choose the diagonal along which the shell has to be split. Four options are now available for the user:
1. Short diagonal
2. Long diagonal
3. N1 → N3
4. N2 → N4

- **Case 43741**

A Settings button has been added to the Geometry Meshing panel and Area Remesh panel which will take the user to Program → Meshing options where meshing parameters can be changed.

Pedestrian

- **Case 43142**

'Line Labels' labelling style is added to pedestrian markup script in PRIMER.

Read

- **Case 45461**

Added the preference to read any file as a *KEYWORD file irrespective of the extension (like *.inp, *.dat etc.) or read based on the file extensions.

- **Case 34393**

Added support for Dragging and Dropping of IGES, JT, LAYUP, NASTRAN and ABAQUS filetypes to improve support for geometry.

Renumber

- **Case 44608**

Added sorting functionality in Renumber → Visualise panel.

Scripting

- **Case 43305**

Added JavaScript support for *CONSTRAINED_LINEAR_GLOBAL and
*CONSTRAINED_LINEAR_LOCAL.
- New Linear class.
- JavaScript API manual updated.

- **Case 43141**

As per ECE R42 regulation, Slow Speed Front 4 & 2.5kmph and Slow Speed Rear 4& 2.5kmph
test setup added to standard crash test setup script.

User interface

- **Case 45563**

On some VMWare installations the status of the 'Shift' and 'Control' keys is not reported
correctly with the result that these keys can appear to be 'stuck' in the pressed state.

It is possible to determine the state of these keys by secondary means, and although this is not
the default this option can be turned on by setting environment variable
SM_VMWARE_BUGFIX.

This is quite a rare problem and users should discuss it with Oasys Ltd first to see if a better
solution is available.

3.1.2   Enhancements in 18.1

Checking

- **Case 45921**

When checking/plotting minimum length of elements, PRIMER will now use timestep size (for shells, it depends on the *CONTROL_TIMESTEP <ISDO> field) when the new preference primer*check_min_length_timestep is set to TRUE.

Integration

- **Case 46571**

When PRIMER and D3PLOT are linked together, and D3PLOT has more than one window open on the linked model, and D3PLOT is using different blanking settings in each window then a problem could occur that:

+ User made a blanking change in D3PLOT W1
+ This caused blanking in PRIMER to update (correctly)
+ The updated blanking in PRIMER would then 'echo' back to W2 in D3PLOT, causing its blanking status to change (wrongly).

This has been fixed by making PRIMER distinguish between blanking changes made locally (which should be transmitted to linked D3PLOT), and blanking changes received from linked D3PLOT (which should be echoed back).

This fixes the immediate problem, however because PRIMER only has a single graphics window it is not capable of 'remembering' the per-window blanking status in D3PLOT. Therefore when a local blanking change is made in PRIMER it will affect all linked windows in D3PLOT, effectively harmonising them. This isn't a bug, just a feature of linking the two codes together.

- **Case 46568**

When PRIMER was running with linked D3PLOT it would sometimes be the case that when the model was hovered over by the mouse in PRIMER this would cause the view in linked D3PLOT to be updated. This could result in unwanted effects when D3PLOT had more than one window and different blanking settings in each window.

Fixed by reducing the frequency with which view updates are sent from PRIMER to D3PLOT. Previously they would be sent pre-emptively whenever the plot was redrawn, which could happen in some predictive pick scenarios. Now they are only sent if the current view has actually changed.

Pedestrian

- **Case 46398**

- **In the Pedestrian Markup tool, when running the GTR / UN R127 protocol:**

- **- The lower leg height has been updated from 25mm to 75mm**

- **- The bumper test zone inboard offset has been updated from 66mm to 42mm**

- **Case 46158**

Support added to the Pedestrian Markup tool for the EuroNCAP v9.0 Testing Protocol.

- The windscreen rear reference line (WRRL) can either be calculated by finding the rearmost free edge of the selected windscreen part (default), or by determining where a vertical stick rotated rearwards by 45 degrees would touch the windscreen. This can be set via the Rear Reference Line window or a .pmset settings file.

- Cyclist head impactor orientation angles can be set via the new 'Cyclist' (Angle) and 'Roof' (Angle) textboxes in the Impactor window after markup.

- A pre-existing Cyclist head impactor template .csv file can be used by setting the new preference 'primer*pm_cyclist_head_template.

- **Case 45826**

As described in EuroNCAP Testing protocol v8.2 section 3.6, the Pedestrian Markup tool now projects the corner reference point forward to the WAD 775 line. The tool will also draw a line joining the corner reference point and projected point, along the outer contour of the vehicle, to make it easier to visualise. The corner reference point and its projected line/point can be viewed in the markup line model via the corresponding *SET_NODEs, and will be written out when outputting head impact boundary lines.

- **Case 45794**

Support for the CNCAP 2021 protocol has been added to the Pedestrian Impact Markup tool. Settings and writing of impact points between the WAD 2100-2300 lines can be controlled using the 'Cyclist' options on the impact points window.

Performance

- **Case 44558**

Previously, quickly releasing the mouse button after right-clicking on a popup button could sometimes result in selecting an unwanted option from the popup box (e.g. in the connection table). The behaviour of item selection from popup boxes has now been changed to stop this from happening.

3.2   D3PLOT

3.2.1   Enhancements in 18.0

Blanking

- **Case 43608**

In D3PLOT 18.0 the Blank menu now has a propagate tab '==>' which can be used to propagate the blanking from one window to another.

In D3PLOT, blanking is a per-window attribute. This means that if a model is displayed in more than one window, then different items in the model can be blanked in different windows.

The new propagate tab can be used to synchronise the blanking across all the windows a model is in. The blanking status is copied for each model in the 'source' window to all of the selected 'target' windows that the model exists in.

If for example you have:

Window 1 - Containing Models 1 & 3
Window 2 - Containing Models 1 & 2
Window 3 - Containing Model 2 & 3
Window 4 - Containing Model 4

and you copy the blanking from Window 1 to the other windows then afterwards:

Window 1 - No changes
Window 2 - Model 1 blanking changed to match Window 1
Window 3 - Model 3 blanking changed to match Window 1
Window 4 - No changes

The Blanking menu also has a new 'M ==> M' button that can be used to propagate the blanking from one model to one or more other models. Items are matched by type and ID so the blanking status of PART 1 in the 'source' model is copied to PART 1 in the 'target' model(s). If PART 1 does not exist in a target model, the status is ignored.

If a target model contains items that do not exist in the source model, then their status is unchanged.

Contacts

- **Case 43597**

In D3PLOT 18.0 the default is now to automatically blank contact segments if the underlying element is blanked. This works for both blanking individual elements and when a part is blanked.

The Blank menu also has a new Options menu in which this new behaviour can be switched off. It also contains an option to swap the parent element to the first 3D element (solid or thick shell) instead of the first shell.

New preference options have also been added to switch the new logic off by default and to swap the default parent to the first 3D element if required.

Cut section

- **Case 45036**

In D3PLOT 18.0 a new data component has been added for cut sections:

FM_MAGNITUDE_CUT_FORCE

Previously the X,Y and Z forces could be output in both the Write and XY Data menus, but not the resultant.

This component has also been added to the CUT_SECTION_SUMMARY data component in the Write menu so the resultant force is also now output along with the other cut section data.

- **Case 30447**

Cut sections modifications:

- Added a custom spacing option to D3PLOT's multiple cut sections feature
- Added D3PLOT manual links to help messages for thick cuts and multiple cuts

D3PLOT Viewer

- **Case 37286**

D3PLOT can now output models in the 3D GLB format with support for shaded and contoured plots and single frame or animated output. GLB files output from D3PLOT are best viewed in D3PLOT Viewer, but can be viewed in other viewers, e.g. in Microsoft PowerPoint, with reduced functionality.

Data components

- **Case 43708**

D3PLOT can now calculate and contour section forces for thick shells of Gaussian, Lobatto, Trapezoidal and part composite sections. By default, section forces for thick shells are switched off, but can be switched on in Display Options → Thick Shells or by setting environment variable TSHELL_SHOW_RESULTANT to TRUE.

Include

- **Case 44986**

There is now the ability in Quick Pick, under Colour, to Colour by Include.

Macro

- **Case 45191**

Added new preference **d3plot*write_checkpoint_files** and a command line option with the same name to regulate the writing of the checkpoint files in D3PLOT.

Materials

- **Case 45293**

Updated the file mat_prop.csv with the latest material history variable names.

Measure

- **Case 37467**

A new Measure class has been added to the D3PLOT JavaScript API. It allows you to create measurements and to draw them in the graphics windows with similar options to those available on the interactive Measure panel.

Menus

- **Case 42550**

The new colour popup has been added in the following places:

- Airbag particles
- Watermark transparent colour
- Blob plot symbol colour
- Streamlines
- Using the Edit window to set model colours
- The hidden and fill colours for Crit, Vel and Vec plots
- The current overlay colour for the window
- Setting the edge colour for the undeformed geometry

Movies

- **Case 37615**

D3PLOT can now read MP4 files into a window background for synchronised playback with model animation, similarly to old functionality using AVI files.

- **Case 30717**

D3PLOT is now able to write video files in the MP4 format using H.264 encoding. Model animations can be captured in MP4 format and passed to an open REPORTER session for playback.

Preferences

- **Case 44526**

Added a preference **d3plot*mat_prop_location** to allow a user-defined location for the file mat_prop.csv of material history variables.

User interface

- **Case 44636**

It is now possible to capture animations to REPORTER by selecting Movie or GIF from the drop-down menu on the REPORTER panel Capture button.

3.2.2 Enhancements in 18.1

Integration

- **Case 46570**

When D3PLOT and PRIMER were linked and a part was blanked in PRIMER, it would be blanked in all windows in D3PLOT, including windows that were not selected. Now, blanking in PRIMER is only mirrored in selected windows in D3PLOT.

Menus

- **Case 46115**

In D3PLOT 18.0, propagation behaviour for window and model settings was changed to launch a popup giving greater control than in previous versions. To reduce button clicks, two propagate tabs are now provided: '==>' for auto-propagate and '…' to launch the propagate popup.

3.3 T/HIS

3.3.1 Enhancements in 18.0

Component

- **Case 44980**

T/HIS 18.0 supports the following new data components that can be written to the Airbag ASCII file ABSTAT of the LSDA (binout) file.

- Mass out
- Mass in
- Mass out through fabric
- Mass out via vent

These new options are output instead of the mass flow rates by setting MLKBAG on *CONTROL_OUTPUT.

Data access

- **Case 40883**

When reading ISO-MME data, the curves listed in the menu can be filtered by location in the model, e.g. Head, Foot, Wheel.

Data components

- **Case 44852**

T/HIS 18.0 supports the 'torsion' data component that can now be written out for spotweld beams to the LSDA (binout) and ASCII (swforc) output files.

- **Case 44820**

T/HIS 18.0 now supports the following new data components for seatbelt sliprings:

- Warp angle
- Skew angle
- Coulomb friction coefficient
- Spring normal force
- Side 1 belt force
- Side 2 belt force

FAST-TCF

- **Case 44320**

A 'Script generated' message is now displayed in the command window upon the generation of FAST-TCF script.

JavaScript API

- **Case 44922**

Constants have been added to the Read class which can be used in the various Read functions.

- **Case 42784**

New properties label_font and label_size have been added to the Datum class in the JavaScript API, to allow the font and font size to be set for datums via JavaScript. The properties can take values assigned using Datum class constants that can be found in the user manual.

Macro

- **Case 45192**

Added new preference 'write_checkpoint_files' and a command line option with the same name to regulate the writing of the checkpoint files in T/HIS.

Menus

- **Case 45074**

A dynamic Location pop up that sets up options according to channel list has been added to the ISO menu.

- **Case 44848**

The Curve Label pop-up has been added to the ISO menu with new options Channel Code or Channel Name.

Read

- **Case 43569**

The time taken to read a large T/HIS curve file back into T/HIS has been considerably reduced in version 18.0.

This speed up is even more noticeable in the linked D3PLOT-T/HIS case when a large number of curves or points is sent to T/HIS from D3PLOT.

- **Case 42584**

Added T/HIS reading support for EM ASCII file types:

em_boundaryOut
em_circuit
em_circuit0D
em_circuitRes
em_timestep
em_rogoCoil
em_globEnergy
em_partData
em_isoPotConnOut
em_isoPotOut
em_randlesCell
em_randlesCellTot
em_randlesCellTotEn
em_randlesIntShort
em_randlesIntShortTot

- **Case 15901**

An option has been added to the Read → ISO-MME menu to label the curves with the Channel Code, rather than the Channel Name.

- **Case 44599**

Support has been added to the ISO Read menu so that it can read v2.0 of the format.

- **Case 45475**

Added support for the new EM files with *em_file_xxx.dat* format to be read in when reading using the 'Multiple Directories' option. Also added support for volume 3 (ICFD,CESE and EM) files to be read in if they have a prefix when using multiple directories.

Units

- **Case 45474**

Added 'charge' as a unit in T-HIS.

Write

- **Case 43968**

A new option has been added to the Write menu to output curves in the ISO-MME format.

3.4 REPORTER

3.4.1.1 Enhancements in 18.0

Licensing

- **Case 44733**

Along with the rest of the Oasys Suite, REPORTER has transitioned to LM-X licensing for version 18.0, so the FLEXlm licence is no longer supported.

Movies

- **Case 3485**

Support for the playback of MP4 movies and animated GIFs has been added to REPORTER. These can be captured directly from D3PLOT for use with a D3PLOT item or be added to a template through an image or image file item. Playback can be controlled by hovering over the item or using the buttons in the new animation toolbar.

Powerpoint

- **Case 44261**

You can now use the -pptx command line argument to trigger PowerPoint output. Both -pptx and -ppt arguments have the same behaviour (they output .pptx files).

Similarly, the JavaScript API method Template.Ppt has been deprecated in favour of Template.Pptx (both continue to output .pptx files).

- **Case 44259**

REPORTER has been able to write PowerPoint (.pptx) files since version 11. In REPORTER 18.0 support for the old .ppt VBA output has been removed.

Preferences

- **Case 44540**

The first sixteen colours saved in PRIMER, D3PLOT or T/HIS are now read into REPORTER via the user_colours.xml file and are accessible via the 'Custom colors' panel (select 'More colours…'). Any user colours added in REPORTER via 'Add to Custom Colors' can be saved to user_colours.xml via the new 'Fonts and Colours' tab in the Preferences dialog and will thereafter be accessible in PRIMER, D3PLOT and T/HIS.

- **Case 39537**

Font settings can now be saved directly from REPORTER via the new 'Fonts and Colours' tab in the Preferences dialog. There is also a new 'Startup' tab with preferences for maximising the main window, and also to specify the starting directory for REPORTER (previously these preferences could only be modified via the preferences editor in the other programs).

Standard templates

- **Case 44532**

The part lists necessary for the MPDB deformation algorithm are now exposed in the unencrypted script *d3plot_MPDB_barrier_parts_blanking.js*, allowing the template to be adapted to work on modified or third-party FE models.

- **Case 44115**

Following the release of Euro NCAP MPDB Compatibility Assessment templates in version 17.1, REPORTER 18.0 includes the C-NCAP MPDB Compatibility Assessment templates, with variants for 2022 and 2023 scoring. For more information on the templates, open REPORTER and select Help → Additional user guides.

- **Case 44013**

Improvements were made to the MPDB Compatibility assessment barrier deformation calculation to eliminate flying elements from consideration.

Text

- **Case 44127**

You can now specify a font mapping table CSV file in a location other than the installation location, to make customised font mapping more convenient.

User interface

- **Case 45506**

The Legacy GUI theme has been deprecated and is no longer accessible from the Preferences dialog. If you wish, you can still select Legacy theme via **reporter*gui_theme** in your oa_pref file.

- **Case 42966**

The 'LS-DYNA' tab in the Preferences dialog has been renamed 'Oasys Items'. All of the settings in the Program Locations dialog have been moved to this tab, and they can now be saved from REPORTER along with the other preferences.

3.4.2 Enhancements in 18.1

JavaScript API

- **Case 45772**

The filetype, job, resolution, and cropping properties have been added to the Javascript Item class (for certain Item types).

Standard templates

- **Case 46507**

A new template has been added for C-NCAP Head Impact 2021.

- **Case 46506**

A new Euro NCAP Head Impact 2023 template has been added, with updates to process Cyclist impacts according to the latest protocols.

- **Case 46494**

A new C-NCAP Leg Impact 2021 template has been added.

- **Case 46493**

A new Euro NCAP Leg Impact 2023 template has been added, with updates to process the aPLI impactor according to the latest protocols.

- **Case 46314**

New MPDB Occupant Assessment templates have been added for the latest C-NCAP and Euro NCAP protocols. These templates process the THOR 50M driver dummy, as well as the HIII passenger (5F for C-NCAP, 50M for Euro NCAP).

- **Case 45106**

A new GTR Leg Impact 2019 template has been added.

- **Case 43858**

For the femur calculation in pedestrian leg impact templates, the data can either be a beam or a contact depending on the upper leg impactor specified. We have now ensured that the correct data is extracted, defaulting to beam elements if the type is unspecified.

3.5 SHELL

3.5.1 Enhancements in 18.0

D3PLOT Viewer

- **Case 44752**

Added support to write out the 3D Export (GLB) files from the D3PLOT options panel.

ISO-MME

- **Case 44771**

Added support for ISO-MME to SHELL's T/HIS options panel.

Macro

- **Case 45193**

Added support to regulate the Read/Write of the Checkpoints files in the D3PLOT, PRIMER and T/HIS options panels.

PowerPoint

- **Case 44498**

Removed the obsolete VBA output option from the REPORTER options panel.

3.5.2 Enhancements in 18.1

Command files

- **Case 46790**

D3PLOT Options: Added a new option to output 'uncompressed' GLB files.

3.6 Oasys

3.6.1 Enhancements in 18.0

Integration

- **Case 43511**

Models loaded into a PRIMER session can be submitted for LS-DYNA analysis directly from within PRIMER. The LS-DYNA job submission can be done on the same machine as PRIMER or on a networked Linux machine.

Performance

- **Case 44551**

Various keyboard shortcuts have been added to speed up text selection:

Shift + Left Arrow : Highlights from the current cursor position to the left by one character
Shift + Right Arrow : Highlights from the current cursor position to the right by one character
Shift + Up Arrow : Highlights from the current cursor position to the left-most character in the string (0 or prefix)
Shift + Down Arrow : Highlights from the current cursor position to the right-most character (length of the string)
Ctrl + Left Arrow : Jumps the cursor from the current cursor position to the left-most character of the word
Ctrl + Right Arrow : Jumps the cursor from the current cursor position to the right-most character of the word
Ctrl + Shift + Left Arrow : Highlight the rest of the word to the left of the cursor position up to the breaking character
Ctrl + Shift + Right Arrow : Highlight the rest of the word to the right of the cursor position up to the breaking character
Double Click Left Mouse Button : Highlights the whole word
Triple Click Left Mouse Button or Ctrl + A : Highlights the whole line