Oasys
LS-DYNA Environment

Update and Release Notes for the Oasys Ltd LS-DYNA Environment Software

Version 23.0

Contents

1 Introduction

The Oasys Ltd LS-DYNA Environment 23.0 suite, dated Jun 2026, is a full release which supersedes all previous releases.

This document lists the enhancements that have been made during development, and the bugs that have been fixed (since 22.1). 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 Ansys LS-DYNA® releases

The 23.0 release has been used and tested with Ansys LS-DYNA version R15. It supports all the keywords in volumes I, II and III of the released R15.0 User's Manual (except ISPG). Some of the new keywords in the development R16 User's Manual are also supported.

Ansys LS-DYNA R11.0 is the default keyword output format of PRIMER. (However, output may be generated for later releases.)

1.2 Hardware platforms supported

Oasys Ltd LS-DYNA Environment 23.0 is available on the following platforms:

Windows	Windows 11	64 bit
Linux	RedHat Enterprise 8.x	64 bit

For Windows, v23.0 is built and tested on Windows 11. It should work on Windows 10, but this is untested. Windows 10 went end-of-life in October 2025, so you are encouraged to upgrade to Windows 11 if you currently use Windows 10. The software may also run on Windows 8.1, but this is untested. It will not run on Windows versions prior to that because of changes in the way Microsoft configure displays.

For Linux, the RedHat Enterprise 8.x build has been released on the website as this has been found to run on all the Linux machines we have tested (RHEL 8, SuSE 15.3). If you require a different Linux build, please contact Support.

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. Please contact Support for more information.

1.4 Licensing

This latest version of the software uses the LM-X licensing platform to provide an increased level of license security.

To ensure you are ready to enjoy all the great features v23.0 will bring, we recommend you update all your Oasys Suite license servers and files as soon as possible.

Action to take

If you are using a floating network license, you will need to install the LM-X license server software (version 6.0.6). 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 23.0 LM-X license file and license daemons are backwards compatible for all currently supported versions of Oasys Suite. This means that any existing 22.x, 21.x and 20.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

Airbag

- **Case 58672**

After swapping SHELL topologies with their corresponding *AIRBAG_SHELL_REFERENCE_GEOMETRY topologies in PRIMER, a crash could be triggered when viewing the Xrefs of one of the affected Nodes. This has been fixed.

Airbag Folding

- **Case 57346**

In the AIRBAGS folding panel some button text was truncated. This has been fixed by increasing the panel size.

Attached

- **Case 56319**

Previously, the Attached tool, with the Recursive option set, could be very slow the first time it was run with a model containing many tied contacts. This has now been fixed such that the time taken to run the tool the first time is more consistent with subsequent runs of the tool.

Belts

- **Case 58690**

The Forward/Backwards rotation for pelvis meshed sliprings was rotating the slipring in the incorrect direction during the fitting process when the orientation of the rotation vector was set based on the instructions in the help text and the configuration shown in the sketch but worked correctly when the rotation vector was reversed.

This was due to the direction of rotation for both shoulder and pelvis meshed sliprings relying on a specific orientation of the rotation vector and the pelvis slipring rotation was incorrect if you specified the axis in the ‘expected’ direction.

A fix has been made that ensures the slipring rotation for both shoulder and pelvis sliprings no longer depend on the orientation of the rotation vector defined in the ‘Slipring rotation’ panel.

- **Case 58689**

The belt path in the seatbelt fitting tool is split into segments at intermediate point of fixity type ‘fixed’ or ‘slipring’. Therefore, if a path definition does not have any intermediate fixed/slipring points, it should only be composed of a single segment (bordered by the two end points). The

belt segment count calculation was incorrectly splitting the path into segments at end points set to ‘Fixed’ type, leading to an incorrect segment count. This has been fixed.

- **Case 58037**

Fixed an issue that caused the ‘Adjust’ option in the ‘Slipring rotation’ panel to reverse twist vectors for some belt path points under certain belt configurations.

- **Case 56982**

Fixed post-fitting belt path distortion near B-POST sliprings caused by discontinuities in belt width across different regions around the slipring.

Cases

- **Case 58452**

ECER42 model build crash:

ECER42 crash test setup could fail when block filenames started with a number during model build. This has been fixed. Filenames starting with a number are now blocked, and the error message has been clarified.

ECER42 automatic part sets:

ECER42 crash test setup could fail when using automatic part set options. Automatic part set setup is now supported and behaves consistently with other protocols. This issue has been fixed.

Checking

- **Case 58644**

Fixed an issue where the check panel was unmapped when resetting or re-reading preferences while the panel was open.

- **Case 58240**

Previously, the model check tool would not report the error S_PT_130 (*SET_PART containing NRB is used by entity other than *LOAD_BODY_PARTS) if the referenced *SET_PART containing the NRB was referenced by both a *LOAD_BODY_PARTS and some other entity. This has now been fixed.

- **Case 58230**

Previously, the model check error code S_PT_130 (*SET_PART containing NRB is used by entity other than *LOAD_BODY_PARTS) was only reported as a warning despite the condition causing LS-DYNA to terminate. This has now been corrected: S_PT_130 is now reported as an error.

- **Case 58201**

A crash could occur when computing mass in a model containing tied contacts. This has now been fixed.

- **Case 58130**

Previously, the model checker would report an error when a *PART containing BEAMs with ELFORM = 3 referred to a *MAT_NULL material. Furthermore, when creating or editing the *MATERIAL via the drop-down in the *PART edit panel, the *MATERIAL edit panel would not provide *MAT_NULL as an option when ‘Filtered’ mode was set. This condition is allowed in LS-DYNA and so the error has been removed along with the block to selecting *MAT_NULL in the editor.

- **Case 58104**

Previously, the model checker would incorrectly report that an invalid component type was used when the COMP field on a *SENSOR_DEFINE_ELEMENT(_SET) was set to ‘ZX’. This has been fixed such that the error is no longer thrown for this condition.

- **Case 56968**

Previously, the model checker did not report an error for when the OUTLV field on *EM_DATABASE_NODOUT was out of range. This has now been fixed.

- **Case 56912**

Previously, when a *COMMENT appeared prior to a keyword in a keyword deck PRIMER would incorrectly show that keyword as being referred to by the *COMMENT in the Xrefs panel. Furthermore, if the keyword was of an unlabelled type the model checker would report errors regarding an unlabelled type being referred to by another keyword. This has now been fixed.

- **Case 56170**

PRIMER will produce a model check warning when *NODEs are used by BEAMs or SHELLs referencing *MAT_NULL. However, this warning was not always thrown when it should have been, e.g. if the *NODE in question was also referenced by *ELEMENT_MASS. This has now been fixed.

Comments

- **Case 51292**

Previously, if the special ‘$> end_saved_comments’ was manually deleted from an input file, and the lines that followed in the file contained PRIMER keyword header comments such as

$ ==========
$ NODE cards
$ ==========

PRIMER would save those comments. This has now been corrected such that these comments are no longer saved.

Connections

- **Case 58880**

Some buttons for the PARMAX (MIG-weld) option on the Connection Options panel were not mapped correctly, e.g. missing. This has been fixed.

- **Case 58507**

Creation of meshed in weld connections could leave unattached masses. These are now automatically deleted.

- **Case 58371**

Undo for Quick Pick of multiple *NODE labels was slow due to an un-necessary warning. This has been fixed.

- **Case 58085**

The Connection from FE tool, when applied to a NRB connecting three panels, now calculates the correct layers using NRB connectivity (i.e., AB:C or A:BC) where previously it did not.

- **Case 58046**

A model with highly ill-conditioned *MAT_100 SOLIDs could cause PRIMER to crash in the connection creation routine when running model checks or using the ‘Connections’ tool. Processing of such cases is now blocked to prevent the crash.

- **Case 57982**

Spotweld remeshing could take an unusually long time for some models. A significant amount of time was spent deleting failed spotwelds. To optimize performance, failed spotwelds are no longer stored during the remeshing process and are instead deleted at the end. This significantly reduces the overall remeshing time for full BIW models.

- **Case 57933**

When connections were deleted from the Connections Table with the ‘Leave FE’ option enabled, *SETs in the connection entity list were incorrectly emptied. This behaviour is only correct when the FE is deleted. This has now been fixed.

- **Case 57516**

Previously, PRIMER would not allow MIG welds to be applied to solid *PARTs. This has now been fixed such that they are allowed.

- **Case 57090**

Previously, screen picking of line welds has could be difficult. Screen picking has now been improved to make it easier to pick line welds.

- **Case 56642**

The option ‘modular bolts get unique deformable parts’ has been modified so that *SECTION and *MATERIAL cards are no longer duplicated.

Constraints

- **Case 56719**

When adding or removing *NODEs in the Constrained Nodal Rigid Body edit panel, the master *NODE is automatically moved to the geometric centre (if applicable), and the NRB is redrawn. However, this was only being done when using the ‘Add nodes to NRB’ or ‘Rem nodes from

NRB' buttons in the edit panel, and not when adding/removing *NODEs via the referenced *SET_NODE drop-down. This has now been fixed such that the master *NODE position is updated and the NRB redrawn when using either of these methods.

Contacts

- **Case 58063**

*CONTACT_TIED_SURFACE_TO_SURFACE has been modified to ignore offset of either the tracked or master surface when section NLOC is set and CNTCO is set on *CONTROL_SHELL. *CONTACT_TIED_NODES_TO_SURFACE was correct.

Contour

- **Case 57300**

Clicking 'Update' on the *LOAD_SHELL keyword editor would cause the model to switch automatically to SI display mode. This has been fixed with proper checks to see whether the current plotting mode is SI or CT and whether the contour data component is Shell normal before switching the display mode.

Control

- **Case 58213**

Toggling of FORMING_AUTOPOSITION_PARAMETER or FORMING_PARAMETER_READ in the *CONTROL edit panel would produce "Unprocessed button id" errors. This has been fixed.

Removed incorrect CONTROL prefix from the IMPLICIT_MODES button in the *CONTROL edit panel.

Fixed toggle dependencies:

  - Turning off THERMAL_EIGENVALUE no longer disables THERMAL_SOLVER.
  - Turning off ICFD_OUTPUT_VAR no longer disables ICFD_OUTPUT.

- **Case 56683**

When two different *CONTROL Panels were open simultaneously and *CONTROL categories were selected, unprocessed button errors could occur. This has been fixed.

- **Case 56673**

When two different *CONTROL Panels were open simultaneously, and *CONTROL categories were selected then some cards overlapped. This has been fixed.

Crash Test Setup

- **Case 57961**

Crash test setup panel would become modal after using sketching functionality, preventing access to other PRIMER options outside the panel. This has been fixed

Cut Section

- **Case 58426**

Whenever PRIMER was opened as a linked session from D3PLOT, the Cut Section panel would open automatically. This has been fixed.

D3PLOT > PRIMER link

- **Case 56747**

Added a *d3plot file filter to allow files such as cpr_d3plot to now be recognized via the PRIMER-D3PLOT link.

Deleting

- **Case 58218**

The displayed count of items (Models, Includes, or Assemblies) to be processed on the Cleanup panel has been corrected, as it could be incorrect when multiple models were in use.

Dummies

- **Case 58882**

While creating an LS-DYNA analysis model for positioning Dummy/HBM, the Position menu was being unmapped. This has been fixed.

- **Case 57938**

Fixed an issue where the Replace Dummy Position dialog displayed the wrong position name in the confirmation message.

- **Case 57590**

Fixed auto-generated end position naming so that reused models continue with the next available suffix, avoiding duplicate PRIMER-generated end positions.

Improved handling of duplicate saved dummy positions by introducing the dummy_overwrite_position_name preference with ALWAYS, ASK, and NEVER options. Updated replace position behaviour to resolve naming conflicts by retaining only the latest replacement and removing the original duplicate. This ensures consistent position naming and prevents ambiguity in subsequent dummy positioning operations.

- **Case 56276**

Removed unwanted widgets from the one-stage Dummy/HBM positioning panel.

- **Case 55224**

In the PRIMER Dummies/HBM positioning panel, new warnings have been added when STOP angles exceed the current assembly angles.

Edit

- **Case 58696**

The drop-down on the Part contents table was not working for IGSH and IGSO parts. This has been fixed.

- **Case 58017**

The scrollbar in the *AIRBAG_PARTICLE edit panel would previously jump to the top as soon as any fields in the open-ended region were edited. This has been fixed.

- **Case 41932**

The keyword *ICFD_DATABASE_POINTOUT did not have an editor. This has been fixed, and the Create/Modify editor is now available for this keyword.

Elements

- **Case 58504**

LS-DYNA allows *ELEMENT_INERTIA with mass = 0 and simply adds in the inertia terms. PRIMER incorrectly blocked these terms. This has been fixed.

Encryption

- **Case 57797**

Expanded Encryption Tool support for *DEFINE_FUNCTIONs.

- **Case 53374**

Fixed encryption key compatibility warnings for all key versions with newer LS-DYNA outputs.

Error Trapping

- **Case 58242**

*DEFINE_CPM_GAS_PROPERTIES keyword will no longer incorrectly give a warning if PID is 0 in optional card 3.

Frequency

- **Case 58186**

Previously, in the edit panel for *FREQUENCY_DOMAIN_RANDOM_VIBRATION_FATIGUE, the cards were not positioned in a way that matched the format of the keyword in the LS-DYNA manual. This has now been corrected such that the layout matches the format in the LS-DYNA manual.

Previously, for *FREQUENCY_DOMAIN_RANDOM_VIBRATION, PRIMER would incorrectly always write a minimum of one card 5 and, if the _FATIGUE option was set, one card 7.1 even if NAPSD and NFTG were 0. Further to this, NFTG = -999 was not correctly handled. This has now been fixed.

General

- **Case 55044**

Fixed an issue where oa_pref failed to set background colours close to white due to RGB8 to RGB4 conversion. Background colours are now handled using RGB8 values.

Geometry

- **Case 55250**

Previously, PRIMER would support the reading of PCURVE, DEFINITIONAL_REPRESENTATION, SURFACE_CURVE, or SEAM_CURVE entities when reading a STEP file. These STEP entity types, along with many others, are now supported.

Graphics

- **Case 57557**

On desktops spanning multiple monitors, it is possible for the PRIMER window to occupy multiple screens, resulting in a graphics window resolution exceeding the existing 4096 x 4096 pixel limit. This could cause a crash in some situations.

This has been fixed by raising the limit to 65536 x 65536 pixels.

- **Case 56498**

Previously, PRIMER would miscalculate the bounding box for *GEOMETRY_ARCs, which could lead to inappropriate autoscaling. This was most prominent for arcs that had very large radii. This has now been fixed.

- **Case 47167**

True section display of BEAMs will no longer show overlay when global overlay mode is set to free edge or feature line. This can be activated in the Display Options panel under BEAMs or via a preference.

- **Case 17008**

Historically, PRIMER's default graphics have drawn SHELLs on 3D element faces, i.e. co-planar elements, at their true neutral axis meaning that such overlaid PARTs might show one element type or the other at random, and in some cases a mixture of elements. The exact rendering would depend on element topology order and the innards of the graphics card.

For backwards compatibility this remains the default case, but there is now a Display Option to 'Lift' co-planar SHELLs above the SOLID faces which, in most cases, means that only the SHELLs are drawn.

Related to this, screen-picking of elements had a slight bias towards SHELLs in this situation but could quite often pick up the SOLID element instead. This has now been improved so that:

- In cases where screen-picking could legitimately select different element types, for example when picking a PART, it will now always select the SHELL rather than the co-planar SOLID face. This is the case regardless of whether SHELL graphics have been raised as explained above.

– In cases where an explicit element type is being picked then that type will be pickable ‘through’ its co-planar alternative element types, even if it is visually obscured by them. In particular, it is possible to pick a SOLID face obscured by a SHELL element which shares the same nodes.

This picking bias in favour of SHELLs is not switchable.

Groups

- **Case 55566**

Fixed a bug where duplicate ANSA comment entities were created for models with INCLUDEs and when include files were added to a model.

IGA

- **Case 58536**

Running contact analysis, performing checks, or using the contact keyword editor could result in a crash when *IGA elements were included in the contact. This has been fixed.

Include

- **Case 57282**

When using the ‘add new child’ function to add a model with INCLUDEs, the process works through model merge. Subsequent ‘Find modified’ operations incorrectly flagged the entire model. This has been corrected to flag only the includes added to the target model.

Include Transform

- **Case 58127**

Previously, PRIMER would fail to apply label transformations from an *INCLUDE_TRANSFORM to all labels referenced in an IF(a1,a2,a3,a4) statement in a *DEFINE_CURVE_FUNCTION. This has now been fixed.

Integration

- **Case 58620**

PRIMER did not always find D3PLOT results files in the Post menu if it was open when a model was read. This has been fixed.

- **Case 58614**

Fixed an issue where adding a model via ‘Add to PRIMER’ in D3PLOT caused inconsistent views between PRIMER and D3PLOT due to view resynchronization.

- **Case 58364**

The crash handler in Oasys Ltd codes allows configuration settings to be saved in oa_pref files across Home, OA_INSTALL, and OA_ADMIN directories.

Previously, no checks were performed to determine whether OA_INSTALL or OA_ADMIN directories were write-protected, allowing you to attempt to save settings that would fail. This has been fixed: if these directories are defined but write-protected, the option to save to them is now disabled (greyed out).

- **Case 56290**

Previously, PRIMER only picked up *.ptf, *.d3plot, and d3plot files automatically for the D3PLOT link. This issue has been fixed. Now, other valid files (d3eigv, d3part, d3ssd, *.fz, *.ctf, etc.) will also be picked up automatically.

JavaScript API

- **Case 58107**

The length of names for Windows, Widgets, and WidgetItems in the GUI Builder was previously limited to 50 characters. This restriction has been removed.

- **Case 57280**

LSTC Dummy Conversion tool:

Fixed an issue where reading a keyword file with data after %endoccinfo would result in the tool throwing an error.

Fixed an issue where reading an unsupported file caused the tool to throw an error.

If an invalid LCS is read, the tool now uses the H-point (if available) instead of defaulting to (0, 0, 0).

- **Case 57140**

The Sensor class constructor could fail if the SENSOR label clashed with an existing *SENSOR_SWITCH_SHELL_TO_VENT that could be relabelled. This has been fixed.

- **Case 57078**

Previously, looping through thousands of Database History Beams to simply update their properties could be very slow. This has been improved.

- **Case 56162**

If a script contained an error in a callback function PRIMER would not throw an exception, causing the script to become unresponsive. This has been fixed.

Keyword

- **Case 56821**

Previously, for *CONTROL_ACCURACY, PRIMER would report an error stating that IACC was out of range when the value was set to -1. This has now been fixed such that -1 is allowed.

- **Case 56538**

OPTT for *CONTACT_AUTOMATIC_NODES_TO_SURFACE has been corrected to only set the thickness for SURFB as per the latest LS-DYNA manual.

- **Case 54691**

For *INITIAL_VELOCITY_GENERATION, STYP=0 was allowed which was causing issues. Now, neither the keyword editor nor the edit panel allows STYP=0. Also, the default value is set to 2.

- **Case 43227**

Keywords *EM_DATABASE_ELOUT, *EM_DATABASE_NODOUT, and *EM_DATABASE_POINTOUT did not have editors. This has been fixed and Create/Modify editors are now available for these keywords.

Keyword Editor

- **Case 58094**

Drop-down menus were missing for the LARGE and ILOCAL fields in the *INITIAL_STRAIN_SHELL and the UNIT field in *INITIAL_IMPULSE_MINE editors. These have now been added.

- **Case 57974**

Previously, the edit panels for *INITIAL_STRESS/STRAIN_TSHELL did not work when the suffix was set to ‘none’. This has now been fixed.

- **Case 57351**

Some keyword edit panels in PRIMER have large radio button boxes on the side. Depending on the values of the initial numbers of keyword definitions and rows (settable via the Menu panel configuration panel, or the primer*kw_edit_init_defs and primer*kw_edit_init_rows preferences), this can result in a large amount of grey space below the keyword definitions in the keyword edit panels. To correct this, by ensuring enough rows/definitions are displayed to fill the panel, the initial numbers of keyword definitions and rows can now be set to ‘AUTO’, either by setting the corresponding preference(s) to ‘AUTO’ or by toggling the ‘Auto’ button in the Menu panel configuration panel. Provided that at least one of these values is set to AUTO and neither of them have a numerical value set the number of keyword rows and definitions drawn will be such that they fill the keyword edit panel.

- **Case 55049**

Previously, the title of the *DEFORMABLE_TO_RIGID keyword editor was incorrect. This has now been fixed.

Licensing

- **Case 57029**

The (optional) ‘timeouts’ functionality, which suspends a session if it has been idle for longer than a specified time, was not working correctly in PRIMER.

This was due to changes in licence management which caused internal confusion about what was being measured. This has been fixed.

Mass

- **Case 57969**

PRIMER previously did not calculate the speed of sound, and therefore the timestep, correctly for elements using *MAT_280 (*MAT_GLASS). This has been fixed.

- **Case 57558**

In the Assign Mass tool when applying mass to PARTs using subsets, empty PARTs in the subset are now ignored rather than triggering an unnecessary error.

- **Case 56696**

Previously in PRIMER, in the Mass Properties panel, if the Inertia Properties was set to ‘Centre user defined’ and then ‘Rigid elems’ was selected, then the Inertia Properties would be switched back to ‘Centre at CofG’. This has been fixed.

Materials

- **Case 56782**

Previously, PRIMER would not the angle of the material triad to the ztf file correctly. This has now been fixed. When there is beta angle on the material card (MAT34, etc), this will be the sum of that and the angle on the section card.

Mechanism

- **Case 57547**

Previously, PRIMER would allow the creation of mechanism positions with duplicate names. Handling of duplicate saved mechanism positions names has been improved by introducing the ‘mechanism_overwrite_position_name’ preference with ALWAYS, ASK, and NEVER options. Updated replace position behaviour to resolve title conflicts by keeping only the latest replacement and removing the original duplicate. This ensures consistent mechanism position naming and avoids ambiguity during subsequent mechanism positioning operations.

- **Case 57031**

Hinge mechanisms where the points are too close with respect to the size of the mechanism assemblies can be unstable. A new check warns of this and, before positioning, offers you the option to extend the hinge size.

Menus

- **Case 58563**

When PRIMER calculates the optimum size of menu panels, it considers their contents but previously did not account for the text in the panel title. In rare cases, when the title was long and the panel contents was narrow, the panel could be truncated.

This has been corrected so that the title pane and its buttons are now included in the panel size calculation.

- **Case 58553**

In Tools → Other → Forming, clicking the label for the ‘Interpolate thickness’ checkbox previously caused the panel to close. This has been fixed. Clicking the label now correctly toggles the checkbox on and off.

- **Case 55691**

Previously, in the Menu Attributes panel the selected Dynamic viewing was not highlighted in the Presets popup list, making it difficult to recognise which option was selected. This has now been fixed.

- **Case 52826**

Fixed a *CONTROL panel resize issue where *CONTROL categories overlapped selected *CONTROL cards.

Merge

- **Case 56706**

Node merge tolerance was previously set automatically to 0.1 or 1e-4 based on model units, which could override user-defined settings.

Automatic setting is no longer applied if a user-defined tolerance is specified.

If the input exceeds 0.9 × characteristic element length, a warning is issued, but the merge is still applied.

Mesh

- **Case 58462**

Fixed UI update issues for the New Solids dropdown in Solid Extrude mode and the New Beams dropdown in Nodes Extrude mode.

Fixed an issue in Node Extrude where the ‘Start at’ label value was not updating.

- **Case 58047**

Previously, clicking the ‘Reject’ button in the Mesh Geometry panel would return to the Vertex/Join selection step as intended but would incorrectly deselect all surfaces, forcing you to restart the whole process. This has now been fixed.

- **Case 56715**

When creating SPH mesh elements inside a volume, the volume was previously required to be closed. PRIMER can now create SPH elements in volumes with holes or small gaps between parts.

- **Case 55873**

Previously, the SPH meshing script created SPH shells when internal horizontal shells were present. This has been fixed.

- **Case 33217**

Fixed an issue in Shell Split with Line – Multiple, where dot-sketching of selected SHELLs was lost after clicking “Draw Line.” The sketching is now displayed correctly.

Model Build

- **Case 57238**

Missing and extraneous ZCOORD headers printed out in list file for MODEL BUILD have now been fixed.

  – For the GENERAL_PARAMETER_TRANSLATE list file output: A user-defined ZCOORD header was missing after the user-defined YCOORD, and a calculated ZCOORD header was incorrectly added after the remaining headers, causing misalignment. This has been corrected so that headers align with the appropriate columns.

  – For PEDLEG_UPPER_2 list file output: An extra ZCOORD header was incorrectly added after the remaining headers. This has been removed.

Model Modified

- **Case 58251**

Previously, when performing a Model modified operation, if a keyword had character string data that had changed the information window outlining the differences could truncate the message, leading to some data differences disappearing from the message. This has been fixed such that Model modified reports for character string differences are now done using 2 separate lines.

Parameter

- **Case 57789**

Added an option in the keyword i/o panel to control renaming of duplicate *INCLUDE file names.
Added an option when writing keyword files to supress writing special comment ‘tags’ for mutable parameters.

- **Case 57108**

Editing a parameter from the Part Tree, Contents, or List menu appeared to accept changes, but these were lost after updating.

This was caused by an internal error and has been fixed.

- **Case 41797**

PRIMER, when it reads in a model, can sort out *PARAMETER references that precede the corresponding definitions. As a result, it previously did not issue errors for these out-of-order situations.

This behaviour has been modified. PRIMER now reports errors for such cases during model checks. As mentioned, PRIMER will sort these out internally and will write out the definitions

before any references during model write. Therefore, a model write operation will cause PRIMER to suppress these errors for the appropriate model(s).

Part Table

- **Case 57080**

Lumped mass distributed to part only considered parts of type Shell, Solid, Tshell, Beam. Mass on NRB was transferred to these parts. Now parts of type Discrete, Seatbelt and (D)Sph will keep mass that attaches to them. This does not change the global mass calculation for a model.

- **Case 56922**

Updated handling of the option ‘IFLAG’ in *CONSTRAINED_EXTRA_NODE and *CONSTRAINED_RIGID_BODIES so that COMPONENT_MASS in the part table more accurately reflects mass transfer to PART_INERTIA.

- **Case 55613**

Previously, if you made the Transparency column visible in the Part Compare table, then closed and reopened the panel, the column settings would be reset; however, the Transparency column would remain displayed, and everything would get in a muddle until you toggled the column on again. This would happen with a few other columns. This has been fixed.

Part Replace

- **Case 57942**

Previously, performing a Part Replace with a source *PART that did not have a material or section definition PRIMER would create a *SECTION with 0 thickness in the target model. This has been fixed such that the missing *SECTION is now applied in the target model.

Part Tree

- **Case 57241**

Resolved an issue where *MATERIAL keywords were not grouped under a single branch in the part tree contents.

Pedestrian

- **Case 57798**

Previously, when running the GB24550 2024 protocol in the Pedestrian Markup tool, the corner bumper plate written to the debug model could have different dimensions to those specified by the protocol (236mm x 236mm). This was to demonstrate the space that the plate, of correct dimensions, could occupy within which the corner bumper point was still valid. However, to improve clarity, the debug model now contains both the correctly sized Corner Bumper Plate and its ‘Valid Range’ counterpart.

- **Case 57314**

The Pedestrian Markup tool could be slow, particularly when computing the position of the semi-circular template used to join the side reference line with the bonnet rear and windscreen rear reference lines. This has been improved and is now 5–10× faster.

- **Case 54694**

As part of the EuroNCAP and CNCAP protocols, when marking the WAD lines on a vehicle, should the WAD lines end in a gap in the outer contour of the vehicle (such as between the bonnet rear and windscreen) the outer contour of the vehicle should be approximated horizontally rearward of the last contact point with the vehicle, the end point of the WAD line should be found on this tape and then projected vertically to the underlying structure. Previously, the Pedestrian Markup tool was approximating the outer contour of the vehicle as described but was not projecting the point to the underlying structure. This has now been corrected such that the tool performs this projection.

However, for the front of the vehicle, between the lower bumper reference line and bonnet leading edge, the protocol states that the outer contour of the vehicle should be approximated with tape and that points should be marked on this tape. As it is not clear from the documentation whether the projection should still occur at the front of the vehicle, the projection step at the front of the vehicle has been made user controllable (accessible through the WAD menu, or via the ‘project_front_wad’ command line option). This option is turned off by default.

Preferences

- **Case 56557**

Previously, some options available in the Display Options and Orient Options panels were not being saved as preferences after clicking the ‘Save display settings’ and ‘Save Orient settings’ buttons respectively. This has been fixed with the addition of the following preferences for PRIMER:

- back_faces
- internal_faces
- li_hi_free_edges
- use_triad_minimum
- triad_minimum_factor
- use_triad_scale
- triad_scale_factor
- shells_use_optt_sft
- swap_nodal_coords_mode
- swap_shell_topology_mode
- display_model_name_option
- copy_orient_options_labels
- orient_general_label

- orient_node_el_label

Fixed write_hm_comments.

Program Crash

- **Case 58670**

Fixed a crash caused by repeated right-clicks on Timesteps in the Dyna output tree viewer.

- **Case 58040**

The combination of *COMMENT and *AIRBAG_CPG in an input deck could cause a crash when opening the *AIRBAG_CPG editor. This has been fixed.

- **Case 58025**

Using Node Replace with Auto enabled, which updates the model immediately, could cause a crash during node picking.

This occurred because the picking mechanism was not aware of changes in the node count, leading to potential instability. A workaround was to disable Auto or turn off parallelised picking.

This has been fixed.

- **Case 57956**

Resolved a potential crash that could occur during node dragging when multiple models were open. Additional validation checks have been implemented to improve stability and help prevent similar crashes.

- **Case 57955**

Resolved a potential crash that could occur during the hole removal operation. Additional validation checks have been implemented to improve stability and help prevent similar crashes.

Quick Pick

- **Case 58515**

Resolved an issue where, after performing ‘Node → Modify → Pick a node on screen → Sketch node → Close panel’, subsequent screen picking of *NODEs was disabled.

Read

- **Case 58080**

When Text Edit is used to process unlabelled items, for example *INITIAL, *LOAD and a few *CONSTRAINED cards, PRIMER needs to know which internal definition is to be modified when it rereads the edited file. To make this possible it adds $PR_EDIT_INFO comments which identify the internal label and include file id.

If such a definition is manually cut and pasted into a full keyword file, leaving the comment (which says ‘Do not edit or delete’, so this is likely to happen) it causes problems when read into

PRIMER as a normal keyword input deck since the $PR_EDIT_INFO comment can change the current *INCLUDE file. This can result in items read from *INCLUDE file A being placed in incorrect *INCLUDE file B.

This has been fixed. $PR_EDIT_INFO comments will now only be processed during keyword input if this is part of a Text Edit operation, in all other contexts these comments will be ignored.

- **Case 57096**

Reading models containing large amounts of encrypted data from a remote machine took a long time. This has been fixed.

A new preference, 'keyin_temp_file_location', now allows you to control where the skipped PGP data file is written. The default value is AUTOMATIC, which writes the file to the local temporary directory when the top level keyword file is located on a remote machine.

Renumber

- **Case 58348**

PRIMER could crash or corrupt data if the Model→Renumber→Visualise panel was used in Include mode and 'only' was used on one of the blocks in the 'ALL' row. This has been fixed.

Scripting

- **Case 58606**

Fixed a crash that could occur when rescaling the PRIMER window when running the HRMD script.

- **Case 57769**

Previously, when importing custom sliding plane in the Luggage Retention tool, if the 2D plane was already at a certain angle, the tool would incorrectly position the blocks without making proper contact. The tool now accounts for the initial angle and places the blocks correctly. Additionally, another option (relative/absolute) is provided while giving the angle input to account for the initial angle of the plane.

- **Case 57188**

The simulation end time and control parameters will now always be prioritized from the HPM/HRMD (Human Model) *CONTROL card when merging with a vehicle model, previously this was not the case.

- **Case 56674**

When using the HPM tool, the H-point shown after positioning did not always match the final seated position. It is now correctly updated at the end of the positioning process, ensuring the displayed H-point reflects the final seat location. This has been fixed.

- **Case 55755**

Resolved an issue where running the HPM/HRMD tool multiple times in the same session could exhaust available flagging bits.

The logic for recycling flags has been corrected to ensure stability during repeated execution.

Selection

- **Case 58608**

Polygon selection - and other selection modes such as screen area and screen circle - could, previously fail to complete if a dynamic view change occurred during selection. This could happen before completing the polygon or, for rubberband selections (click, drag, release), before releasing the mouse button. This has been fixed.

- **Case 58027**

Previously, when using Vis → Area or All_Vis in an object menu, PRIMER would allow the selection *MASS_PART or *DATABSE entities even if their visibility was turned off in the Entities panel. These items reference visible *ELEMENTs or *NODEs but are not in themselves visible, so are now excluded.

- **Case 56753**

Path selection for SHELLs did not work in the PART → Remove Elements menu. This has been fixed.

- **Case 53021**

Improved path line selection for triad SHELLs via PRIMER object menus.

Sets

- **Case 58210**

Previously, PRIMER could hang when updating a *SET_type_ADD with a recursive reference to itself. The UPDATE button in the *SET edit panel is now disabled in these cases.

- **Case 58056**

Added support for *SET_XXX_GENERAL content operations using SET/DSET options. PRIMER supports only simple list-type sub-sets.

Sketch

- **Case 58294**

When creating multiple *NODEs (e.g., Node → Create → Between 2 points), some hardware did not sketch all created *NODEs until the plot was refreshed, requiring a graphics flush to display pending output. This was more likely when predictive picking, which updates the screen following significant mouse movement, was disabled.

This has been fixed.

SPH

- **Case 57792**

Hover text has been added and updated for all inputs in the SPH mesh tool. A link to the new manual page has also been added.

Spotwelding

- **Case 58313**

On the connection table, use of update and remake via the drop-down for meshed-in welds is now consistent with remake all/selected in terms of running the logic to re-attach items to the re-meshed area (this logic was previously missing for the former case).

T/HIS > PRIMER link

- **Case 57227**

Fixed an issue where an extra point was created when transferring curves to T/HIS prior to clicking Create.

Transform

- **Case 58720**

Edit → Update on *INCLUDE_TRANSFORM within *INCLUDE_TRANSFORM, where labels are offset, applied an incorrect offset to TRANID. This has been fixed.

User Interface

- **Case 58015**

The Material Create Panel has been redesigned for MAT_ADD_ keywords.

- **Case 57846**

Node set text box headers have been changed to grey, rather than colour-coordinated with the corresponding diagrams. This prevents inconsistencies between UI themes. Diagrams have been updated with extra labels and colour-coordination removed, to match these updates.

- **Case 56788**

The job monitor window, used to monitor the progress of LS-DYNA jobs submitted from PRIMER, was originally programmed to remain ‘in front’ of other windows.

This behaviour has been modified so that the window now follows the same stacking order as other windows in the PRIMER main window.

Volume III

- **Case 56682**

Field MID in *EM_EP_CELLMODEL_USERMAT was previously, incorrectly, treated as the label of the *EM_EP_CELLMODEL_USERMAT. This has been fixed such that it is now treated as MID in *MAT.

Workflows

- **Case 58227**

Previously, reading older user data JSON files with fewer components was not supported. This has been fixed such that these files can be read, even if new components have been added in later releases for the same entity.

Write

- **Case 58721**

The workflow definition filename written to the workflow user data file could incorrectly use the $HOME variable instead of $OA_WORKFLOW. This has been fixed.

- **Case 57092**

Segment sets can now be written with explicit zeroes for a1..a4 instead of blanks. In LS-DYNA, zero or blank values use the default options d1..d4. Other software may require explicit zeroes.

XRef

- **Case 58173**

Edit for *DAMPING via the cross-reference tree was incorrectly showing the create *DAMPING panel. This has been changed to show the keyword editor for *DAMPING.

ZTF

- **Case 58298**

Writing a ZTF file in batch (command line '-d=batch -ztf=input.key') could cause a crash if operations were being logged in the LMX licence log file.

This occurred because writing the ZTF file in this mode does not require a licence, so no connection is made to the LMX licence server, and attempts to write to its log file would fail. This has been fixed by detecting this situation and not writing anything.

- **Case 56274**

D3PLOT previously did not appear to draw *CONSTRAINED_NODAL_RIGID_BODY cards correctly if any associated *NODEs had the _MERGE keyword option assigned (i.e., node merges were specified). This has been fixed.

PRIMER now accounts for these merges when writing ZTF files, allowing D3PLOT to correctly render *CONSTRAINED_NODAL_RIGID_BODY definitions.

2.2 D3PLOT

Annotation

- **Case 58624**

Annotations with multiple models in a window would sometimes not reload animation settings correctly and this could cause D3PLOT to crash and D3PLOT Viewer export to write invalid files. This has been fixed.

Component

- **Case 57996**

Beam parts contoured with *MATERIAL_HISTORIES components could be incorrectly contoured with zero values rather than shown with N/C. This has been fixed.

Contour

- **Case 58075**

If a 2nd model was opened in D3PLOT while the 1st was displaying a CPG based data component, then when a contour plot was generated for the 2nd model, the data component would be correctly displayed as the same CPG component being displayed on the first window, but all the contour values would be set to N/A as though no data was available. This has been fixed.

- **Case 57937**

When an entity is not associated with a selected component and that entity is set to shaded mode, doing a CL/ISO plot does not retain the shaded plot on that entity. This is fixed.

- **Case 56761**

Contour did not auto refresh when using Annotations with envelopes in HDF5 files. This is now fixed.

- **Case 56649**

For some components like SHELL_THICKNESS the data at state 0 is not initialised and this gives wrong results when used state 0 as ref state in Tools → Deform → Ref state. In such cases state 1 can be used as ref state as they can also be used as undeformed state.

As a fix for data component SHELL_THICKNESS, when you select ‘Use undef (#0)’, a message pops up saying the ref state is set as state 1 and explaining why this happens (this message only appears for the first time).

- **Case 56599**

If nodal data components were being contoured and a cut section was active, then the min/max data values reported on the screen were not very accurate as they only considered nodes that lied exactly on the cutting plane.

In D3PLOT 23.0, all nodes on the cut elements are now used to calculate and report the min/max values.

Cut Section

- **Case 58688**

If while in the cut section menu you were selecting parts to exclude from the cut section and temporarily went into a different menu and then repressed the ‘Cut Sections’ button, the part selection menu was remapped but selecting and deselecting parts in it did not work correctly. This has been fixed.

- **Case 56470**

When the cut section panel was opened multiple times in the same D3PLOT session, it always showed the direction tab D1 even if a different tab was selected previously.

Now it still shows D1 when first opened in a session. When D2 or D3 is selected on the cut section panel, then some other menus are opened and then the cut section panel is opened again, it shows the same direction tab as previously selected, which is not necessarily D1. This new behaviour is more consistent with PRIMER.

Deform

- **Case 57727**

When plotting user-defined component with reference state from a different model, data could be incorrectly calculated. This has been fixed.

Dialogue Command

- **Case 58450**

Dialogue command for blanking x-sections is now updated to ‘x-sections’ from previously ‘x-section’ in D3PLOT.

- **Case 58370**

When using command history in the dialogue window (via Up/Down Arrows), strings on the dialogue window could become corrupted. This has now been fixed.

- **Case 58202**

D3PLOT incorrectly flagged the dialogue command ‘BP_BEAM_PLOTTING’ as invalid, but accepted ‘BP’, ‘BP_BEAM’ and ‘BP_BEAM_PLOT’ as acceptable alternatives. This has been corrected so the full command is now also deemed valid.

- **Case 58139**

When D3PLOT was open with a linked T/HIS session and in the D3PLOT dialogue box /THF MENU_SKETCH M1 was entered without entity type or label, then sometimes D3PLOT crashed. Now it will ask for ‘type’ ‘label’ after only the model has been specified.

When the dialogue commands /THF LOCATE_ITEM, SKETCH_ITEM or DISPLAY_ITEM was specified without model number on the same line, it was incorrectly treated as MENU_SKETCH. This has been fixed.

When the model number for any of these commands was specified with entity type name, for example NODE, then there was a false error message ‘Illegal character or construction’ but the command worked fine. Now the error no longer appears when the syntax is correct.

- **Case 57932**

Reloading a REPORTER D3PLOT item with /STATE LAST in a command file would not correctly set the reloaded model to the last state if the reload model had more states than the model that the item was captured from. This has been fixed.

- **Case 57186**

If the command line is used to select a user defined ‘OTHER’ component there was no way to set the correct entity type that the component applied to. In D3PLOT 23.0, you are now prompted for the entity type you want to apply the component to.

- **Case 57136**

When setting the overlay colour of entities with the dialogue command
/PROPERTIES OC_OVERLAY_COLOUR
to DEFAULT, they got the same overlay colour as they have got as ordinary colour. Some of you expected to get the same colour as is used by default for the overlay, which is set in the Display options panel and will be grey by default.

The dialogue command option DEFAULT in this option has now got the alternative name ENTITY because this is how the equivalent button on quick pick overlay colour popups is called. To set the colour defined in Display options there is now a new option CURRENT for the colour.

Envelope

- **Case 54768**

Envelope data calculation in D3PLOT has been speeded up as it is now parallelised.

Filename

- **Case 57765**

Giving relative path for the models in the session file will not work properly as it always considered the path relative to the current working directory.

This has been corrected by considering the path relative to the path of the session file itself for the models in the session file.

Graphics

- **Case 58345**

When on the Data menu the data plot refresh option Contours was ticked and then the number of contour levels was changed, the data plot did not always update immediately. When the new number of contours was typed in at the top of the Data menu, the refresh worked as expected. However, when the slider in the contour options tab was used, the refresh did not happen.

Now the plot refreshes after both ways of changing the number of contours.

- **Case 58191**

If some CPG particles were hidden using the options in the Display menu to only show particles with a subset of boundary types Autoscale still included the hidden CPG particles when scaling the view. This has been fixed.

- **Case 57971**

If you tried to screen pick nodes on a solid PART by dragging out an area, D3PLOT would only pick the nodes on the external faces of the solids while PRIMER would also select the internal face nodes.

In D3PLOT 23.0, this has been changed so that by default D3PLOT will now pick the nodes on internal faces as well. This behaviour can be turned off if required via the ‘Options > Pick & Select opts’ menu by turning off the option to pick ‘Internal Items’

- **Case 57774**

If a model contained a large number of SPH, ABP or CPG particles then the graphics window could flicker if a cut section was turned on and you were interactively dragging the cut section to reposition it. This has been fixed.

- **Case 31922**

Autoscale used to leave more white spaces in some models when the view was not aligned with global coordinates. This is now fixed and it fits the visible model tighter.

Groups

- **Case 58038**

D3PLOT could crash if you tried to create groups in D3PLOT for a mode that contained LOAD definitions. This has been fixed.

JavaScript API

- **Case 58872**

Component.BV, Component.CV, Component.DV, Component.VV, Component.AV, Component.RDV, Component.RVV, Component.RAV, Component.TFV were all unavailable to JS API QueryDataPresent(), this has now been fixed.

- **Case 58856**

Fixed a crash when trying to use GetData()/GetMultipleData() for use with a JavaScript UBIN U_SOSH components for specific Layer integration points.

- **Case 58723**

When the JS API function Part.Elements was called on a part whose element type had not got a JS API class, for example for the part of SPH elements, then D3PLOT crashed. Now the script reports an exception in that situation.

- **Case 58119**

The JS API function Pick() on the global class now returns null instead of an exception when the picking is cancelled. This has already been the case for the Pick() functions on classes like Node.Pick(), Part.Pick() etc. This functionality for the global Pick() function allows to handle the cancellation in scripts also for entity types which have not got their own classes in the D3PLOT JS API.

- **Case 58084**

The special memory comment at the top of a script would be ignored when running a script if another script was already running. Now fixed.

- **Case 57999**

When in a D3PLOT object in REPORTER a JavaScript was defined with lines longer than 512 characters, they were truncated and could cause errors while generating. This included cases where REPORTER variables are used in the script and then the lines exceeded the length after inserting the variable values. This limit has now been increased to 1024.

- **Case 57817**

When getting the ‘material’ property in the JS API classes Beam, Part, Segment, Shell, Solid or Tshell in a model written directly as d3plot/.ptf from PRIMER, there was an exception in D3PLOT. Now the property will be null in those cases, which gives more options for scripts to handle this situation.

- **Case 57603**

The JS API function IsDeleted returned false for the type_code Type.PART even when all elements were deleted at the state specified. This has now been fixed.

- **Case 57281**

When any data component was plotted and the contour range option ‘Auto each frame’ was selected with envelope plotting on, then the Max: and Min: values shown on the model in the graphics area were for the current state only. Now they are the correct maximum and minimum of the values after enveloping.

- **Case 57046**

When there are multiple models in a window and then the model which the window was first created with is removed from that window, any JavaScript or Python GraphicsWindow objects pointing to that window became invalid. Now they continue to point to the same window.

- **Case 56675**

The JS API function GetConditionParts gave unexpected results with nodal data components like displacements, velocities or accelerations. This has now been fixed.

- **Case 56638**

The JS API function Part.Blanked sometimes returned unexpected values for spring or seatbelt parts after the shortcut key “r” was pressed. This has now been fixed.

- **Case 55267**

The JS API function GetConditionParts did not support spotweld data components Component.SW_F, Component.SW_FAIL, Component.SW_S etc. Now this function adds a part to pass_list for spotweld components if there is at least one beam or solid spotweld with underlying element in the given part such that the data value of the spotweld satisfies the condition specified.

Labels

- **Case 56650**

Element triads or local X, Y, Z could previously already be drawn using either a fixed size or using automatic size computation. A new scale factor has now been introduced for use with the automatic mode which will allow you to increase or decrease the symbol size as per their requirements.

Load Paths

- **Case 58810**

The Fixed radius option in the display options for load path symbols in D3PLOT was set to 15.0, which meant that sometimes the load path symbols could cover the model, this is now sorted. The load path symbols fixed radius is now 1% of model size by default, you can change the value if you choose.

Measure

- **Case 58070**

If the ‘m’ shortcut key was pressed to use measure for the 1st time in a D3PLOT session while a data component read from the LSDA (BINOUT or D3DAT) was being plotted, D3PLOT would crash. This has been fixed.

Multiple Models

- **Case 57076**

When D3PLOT was opened with the command line argument -ml=... to specify a model list file, sometimes the models were not opened in the correct windows. This happened and has been fixed in the following circumstances:

When model M1 is specified to open in window W1 (1 in the file) and model M2 in window W2 (2 in the file), the models opened as expected, but model M2 appeared twice in window W2. This could be seen by M2 appearing twice at the top left of the graphics window. Also, the 'models' property on a JS API GraphicsWindow object for that window counted the model twice.

When models were opened in reverse order, for example model M1 requested to open in window W2 and model M2 requested to open in window W1, model M1 could actually end up in window W1 too.

When there were gaps in the windows specified, for example only in windows W1, W3 and W4 but nothing in W2, then D3PLOT could crash. Now it opens the models requested for W3 in W2 and those requested for W4 in W3 in this situation, so it condenses down the window numbers.

Nastran

- **Case 58667**

D3PLOT would crash if a model was read in from a OP2 file and then the PTF Compress utility was used to generate a set of cut-down d3plot/PTF files for the model. This has been fixed.

Program Crash

- **Case 57934**

When applying a settings file that plots a contour plot on one model with a reference state from another model D3PLOT could crash. This has been fixed.

- **Case 57159**

When trying to read the model using the -ml command line argument and the path of model is provided into double quotes (invalid format), then D3PLOT trying to read the models gets crashed.

This is fixed. Now when there is no valid model name in the model list file given in -ml, D3PLOT throws an error and prompts new model read via the 'OPEN PLOT FILE' menu.

Properties

- **Case 58494**

If a properties file was read in for a model which contained SPH elements, the blanking status was not always applied correctly for some of the SPH elements. This has been fixed.

Python API

- **Case 58833**

The Python API function Part.Elements sometimes reported an exception even when all arguments were correct. This has now been fixed.

- **Case 58045**

When a Python script called Oasys.D3PLOT.Measure.GetFromID and then tried to access properties of the Measure object returned, there were unexpected errors. This has now been fixed.

Quick Pick

- **Case 58603**

An extra line, ‘Main file : <Unknown>‘, was being displayed in the Part Information box during Quick Pick. This issue has been fixed now.

- **Case 58460**

The picking of spotwelds that are drawn as spheres has been improved so that the radius of the sphere is now considered along with the z depth when considering if a spotweld is hidden behind another element. Previously just the centre of the spotweld was used.

Read

- **Case 58676**

D3PLOT was crashing when tried to select the models from the popup in the Models list during reading settings file through ‘File → Open new model → Settings file including window layout’ read mode.

Also, when the models were first loaded followed by selecting the settings file here would throw errors for models which are already loaded in the memory when pressed ‘Apply’.
This is now fixed.

- **Case 58581**

Typing settings filename in the textbox in the OPEN PLOT FILE menu always throws an error saying non existing filename.
This is now fixed.

Settings File

- **Case 53847**

Cut sections defined with constant X, Y or Z with a node or 3 nodes with with ‘origin follows node’ off could change location when reloaded from settings files. This happened when after first creating the cut section the state was changed so that the defining nodes moved with the plane remaining at the previous location.

This has been fixed and D3PLOT loads the cut section at the location determined by the nodes at the state where it was done before saving the settings file.

User Interface

- **Case 58589**

After displaying the transient message of ‘Multiple ZTF files found...’ in the OPEN PLOT FILE window, the button label flickered between ‘(Re)Read’ and ‘Apply’ when the mouse was hovered over it. This issue has been fixed now.

- **Case 58438**

If annotations was selected as the output option in the D3PLOT Viewer tab of the Images panel then all annotations were deleted. The Images panel would change the output option to current page, but the current frame / animation radio button would not be visible. This has been fixed.

Write

- **Case 57548**

When we write out Yield Utilisation Percentage using WRITE Table in D3PLOT, we get N/A instead of the data values. This is now fixed.

2.3 T/HIS

Airbag

- **Case 58519**

For a CPM airbag the Y-axis units for the ‘MAF’ and ‘MAV’ data components were not set correctly to ‘Mass’. This is fixed now.

Blanking

- **Case 57941**

Auto Blank by ‘Entity ID’ for airbag part data auto blanked by part ID instead of airbag ID. This is fixed now.

Curve Table

- **Case 57171**

In a linked D3PLOT- T/HIS session, a scroll bar would appear in the Graph buttons tab of the Curve table even when there were not enough graphs to require one. This is fixed now.

Curves

- **Case 57790**

The smoothing factor is now correctly displayed in the History data. Previously, the value shown reflected the half-window rather than the total window. This issue has been resolved.

Data Components

- **Case 58113**

T/HIS 23.0 supports the following new LS-DYNA R17 CPG airbag data components

  – Part heat convection
  – Part heat convection rate
  – Part energy leakage
  – Part energy leakage rate

Datum

- **Case 58501**

The datum points stored in session file (or fast-tcf file) are truncated to 6 decimal places, so if the datum points values are less than E-06 the datum is not re-drawn with precision when retrieved the session (or re-run the fast-tcf). This is now fixed.

FAST-TCF

- **Case 58692**

T/HIS can now sum operate on more than 1024 curves when outputting through ISO-MME.

- **Case 58138**

The command to extract airbag cpg part data, e.g.
ab_cpg_pa 10001 4 spr tag SPR_P## lab Pressure P##
tagged all the curves with SPR_P10001, i.e. it substituted the ## with the airbag ID. In this case it should substitute it with the part IDs, i.e. SPR_P4, SPR_P5 etc. This is fixed now.

- **Case 58129**

T/HIS wrote the wrong Fast-TCF command for curves generated using the Octave operation.

If the Octave operation used the '1/3 Octave Bands' option T/HIS wrote the Fast-TCF command:

operation octave curve_1 octave mean linear

The second 'octave' should have been 'third'. Similarly, if the 'Octave Bands' option was used T/HIS wrote:

operation octave curve_1 third mean linear

Where 'third' should have been 'octave'.

This has been corrected.

- **Case 57632**

Reading multiple models now updates all the T/HIS menu pathnames to the directory from which the models were read. Previously default paths were install directory. This is fixed now.

Filename

- **Case 58661**

In Image write, the filename that gets into the recent files was updated to next filename instead of the current filename. This is now fixed.

Also, when typed in the image output file the extension was not appended to the filename and eventually the image file gets written without the extension. This is fixed.

- **Case 55227**

The Curve Table in T/HIS now supports saving data in CSV and XLSX formats, along with files using custom extensions. When a filename is entered without an extension, the system automatically applies either a .csv or .xlsx extension to ensure proper file creation.

Generate

- **Case 54046**

When capturing a FAST-TCF where a docked Legend's position had been altered, that information was not being retained. This meant on reading of that FAST-TCF, the legend would be positioned automatically via T/HIS. We now remember what position the legend has been altered to and now regenerate the graph with that position.

Graphs

- **Case 58687**

Turning off the y2-axis from the floating menu of a graph did not work. This is fixed now.

- **Case 58074**

When loading a second model containing airbag cpg data in T/HIS using 'Extract curves to match model', T/HIS would crash. This is fixed now.

- **Case 58065**

Toggling y-axis to logarithmic will cause a crash when the minimum positive value of the axis is smaller than the minimum value that is representable by a float. This has been fixed.

- **Case 57754**

The JS API function Graph.GetFromID can now support more than 32 Graphs.

- **Case 56721**

After turning off the graph legend area, it was not always possible to reposition the bottom of the graph by dragging the bottom axis. This is fixed now.

Integration

- **Case 58162**

In T/HIS linked to REPORTER, if you click on the scrollbar in the 'Active window:' popup then the active window selection would not work correctly and could cause a crash. This has been fixed.

- **Case 58155**

With T/HIS linked to REPORTER, if you click on the 'New Graph' button in the REPORTER panel while other graphs were open and contained curves, T/HIS could crash. This has been fixed.

- **Case 58050**

In the REPORTER panel, if more than 6 graphs are open in the session graph selection is via a popup list, selection on this list did not work. This has been fixed.

JavaScript API

- **Case 58517**

If you try to set a non-existent page as an active page through JavaScript, T/HIS used to stop executing the script with an error saying, ‘Error executing the script’. It has been now corrected to give an error message in the dialogue box that the page does not exist and continues to execute the remaining script.

- **Case 56713**

CORA now truncates ref and sim curves to the overlapping range with evaluation intervals set to ‘full’. Previously, Y_NORM (peak absolute value of the reference curve) was calculated before truncating curves to the overlapping range. This could result in some confusion if the reference (test) data had a peak value before/after the start/end of the simulation curve data.

Multiple Models

- **Case 58073**

Opening multiple models that contained airbag CPG data previously caused T/HIS to crash. This is fixed now.

Operations

- **Case 58470**

Updating the curve history of a curve read from ISO-MME data and labelled with the channel code would revert the label to the channel code. This has been fixed.

- **Case 58126**

The history curve menu did not always show the correct constant values used in an operation in the hover text or in the popup menu to change the values. Additionally, it was not possible to change the values to 0. This has been fixed.

- **Case 58016**

The dialogue command to do a regression operation (‘operate > regr’) could get stuck in a loop if an invalid option was selected. This has been fixed.

Right clicking on a curve generated by this operation and selecting the History menu could cause a crash when hovering over the Regression button or when right clicking on it. This has been fixed.

- **Case 57297**

T/HIS now resets the injury properties when you manually edit a HIC curve using the edit panel.

- **Case 55841**

T/HIS can now do the Max, Min and Envelope operations with non-monotonic curves.

PDF

- **Case 58537**

When using a Datum defined via points and capturing an image of a graph with 2x or 4x screen resolution, the image would appear disjointed. This has been fixed.

Pages

- **Case 57533**

If graph(s) were deleted using a JavaScript while T/HIS was open in the link with D3PLOT the page layout would not be updated following deletion, leaving empty spaces on the page. This has been fixed.

Preferences

- **Case 58757**

When using preferences y_grid_spacing_auto, x_grid_spacing_auto, x_axis_type and y_axis_type without their intended input strings, unintended values for graph properties were set. This has now been fixed.

Read

- **Case 58847**

When trying to read a .DAT file via the DIAdem reading routines when the .DAT file was not a valid DIAdem file, T/HIS would crash. This has now been fixed.

- **Case 57514**

When the ISO codes in an .iso file are not in proper format (only the first letter should be capital) T/HIS was not reading in the iso file.
This has been fixed.

Session

- **Case 58714**

‘Extract curves to match model’ did not work when reading a model into T/HIS that has a session file already loaded. This is fixed now.

- **Case 58469**

When trying to overwrite an existing session file, T/HIS automatically created a new session file with the next available number series.

Now giving the same session name highlights the text box in red, and when clicked Apply, it gives an option to ‘Overwrite’ the existing session file or create a ‘New file’ which updates the textbox with new filename with next available number series.

- **Case 58420**

When loading a session file for a linked D3PLOT-T/HIS session error messages ‘Error in FTCF_ADDITIONAL, model ID (n) not used’ could be printed to the T/HIS command window. This has been fixed.

- **Case 57951**

When attempting to retrieve a T/HIS session file which was created from a T/HIS instance where a session file had been retrieved with embedded curve files, T/HIS could report an error and be unable to read the session file. This has been fixed.

- **Case 57035**

If multiple session files were read in one after another and the option to append new graphs/pages that the session creates to those already in T/HIS then the page layout of new pages was not set correctly. This is fixed now.

- **Case 56967**

T/HIS could crash if multiple session files were reloaded one after the other and you tried to start the 2nd (or subsequent) reload before the previous one had completed. In T/HIS 23.0, the menu has been modified to inhibit the start of a 2nd restore session while another one is still being processed.

T/HIS Link

- **Case 58505**

When reading T/HIS files, if a directory named ‘D3PLOT’ was present, T/HIS incorrectly assumed it to be a valid d3plot file and attempted to read it as a d3plot/PTF file. This resulted in an error because the path referred to a directory rather than a file.

T/HIS has now been updated to distinguish between files and directories and will attempt to read a d3plot only when the path corresponds to a valid file.

Variables

- **Case 54531**

You can now choose what text should be replaced by a variable in REPORTER FAST-TCF script item.

Workflows

- **Case 58646**

With the removal of the 32 graph and 32 page limits in standalone T/HIS, but not in linked T/HIS, JS API functions Page.MaxAllowable() and Graph.MaxAllowable() have been added. These return the maximum allowable number of pages / graphs.

- **Case 55445**

In the Automotive Assessment workflow, the curve colours used for structural assessments would depend on the number of structures selected and were not always consistent. This has been fixed.

Write

- **Case 58677**

In T/HIS, when operations are defined using an ISO MME JSON file, the system previously determined the operation output curve dimensions based on the results of the curve calculations. With the recent change, T/HIS now reports the curve dimensions derived directly from the ISO code, rather than those computed from the curve calculations.

- **Case 58582**

On the T/HIS Write Panel the Apply button did not work if an error (such as a writing read-only file or incorrect folder) occurred in the textbox. Now you can change file name and save file if they mistakenly put in wrong file name.

- **Case 58406**

Typing a filename without extension into the Write Menu output box and pressing Apply will now automatically add the extension to the filename and write out the file.

2.4 REPORTER

Filename

- **Case 57379**

When a D3PLOT item had got Image file paths containing spaces, they were being trimmed. This has been fixed.

Integration

- **Case 58052**

Settings files for components in the Material Properties category were not correctly reloaded (the contours often appeared as N/C). This has been fixed.

- **Case 57759**

Fixed an issue where newly created D3PLOT items attempted to load a default auto-generated job file path that did not exist, causing unwanted D3PLOT information popups. D3PLOT now opens with the File Open dialog when the job is invalid, providing a better user experience.

PDF

- **Case 58524**

The image on the master page is now written only once per PDF output to reduce the output PDF file size.

- **Case 58476**

Fixed the issue of fonts not being displayed inside the table cell when the descent height is 0

Program Crash

- **Case 58223**

Fixed a REPORTER crash that occurs when trying to generate templates with a large number of pages.

- **Case 57954**

REPORTER will no longer crash when trying to insert Library Program items inside a table item.

Tables

- **Case 58609**

Table misalignment could occur in some library templates when viewed in REPORTER and REPORT Viewer. This issue has now been resolved.

User Interface

- **Case 58288**

The coloured tiles hover box in the preference dialog for colours now has contrasting text and background colours for better readability.

- **Case 57461**

Icons in the Line Style combo box were too small, making it difficult to identify each style. This has been resolved.

User Defined

- **Case 58577**

When a template was opened via command line, sometimes the page thumbnail did not update. This has been fixed.

Workflows

- **Case 56797**

The MPDB Compatibility calculation did not work correctly if the model used a unit system that did not use mm. This has been corrected.

- **Case 56532**

The Automotive Assessment workflow would crash for the MPDB compatibility load case if the barrier was not aligned with the global X or Y axis. This has been fixed.

2.5 SHELL

User Interface

- **Case 58862**

Enhanced REPORTER Variables Panel – improved usability with a fix to the scrollbar behaviour, ensuring smoother navigation and consistent movement.

- **Case 57825**

On Linux, the ‘Oasys Ltd LS-DYNA Environment’ message at the bottom of the main shell window could be cut off vertically.

This was due to a positioning error that only showed up on Linux, now fixed.

2.6 Oasys Suite – Cross Application

Integration

- **Case 57778**

If T/HIS was launched from REPORTER and a further model was opened in T/HIS with the 'extract curves to match model' option ticked, then the curves would not be created correctly. This has been fixed.

JavaScript API

- **Case 57838**

If the background or foreground colour of a widget was set with Colour.RGB() in the GUI Builder and then saved to a .jsi file, the values got saved and loading the .jsi file read the values, but the widget colour did not get updated. The same was true of the window background colour. This has been fixed.

Menus

- **Case 55846**

On some occasions, the software might ignore the 'stop' button or other buttons which control the progress of dynamic operations, such as during seatbelt fitting, unless pressed multiple times.

This was caused by how button press events were processed during active operations. This has been recoded to make it more robust, fixing the problem.

Python API

- **Case 58386**

Fixed broken links in the Python PDF manual that prevented downloading files and accessing the Python documentation.

T/HIS link

- **Case 58067**

In a D3PLOT and T/HIS linked session, selecting an entity in the T/HIS panel could sometimes open the Help box unexpectedly. This is now fixed.

Workflows

- **Case 55916**

Workflows were not sorted alphabetically. This has been fixed and workflows are now listed in alphabetical order.

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

Ale or Euler

- **Case 55025**

Added support for drawing and sketching colours for the following ALE keywords *ALE_COUPLING_NODAL_CONSTRAINT, *ALE_COUPLING_NODAL_DRAG, *ALE_COUPLING_NODAL_PENALTY and *ALE_STRUCTURED_FSI.

Attached

- **Case 56338**

An option to specify a fixed number of iterations for Find Attached Recursive has been added. If left at zero, the original fast iteration will be applied until all items are found or timeout is reached.

- **Case 50445**

Find Attached with tied contact option on and recursion was analysing all tied contacts up front. When attached was performed on only a subset of the model, this incurred considerable redundant calculation of contacts. The method has been changed so contacts are now analysed on moving front as they appear in the current visible volume.

Belts

- **Case 55860**

Seatbelt fitting tool: Added an option to auto-refine the belt mesh at the region around meshed sliprings when using the ‘Adjust’ feature from the ‘Slipring rotation’ panel.

- **Case 53010**

Added an option to auto-rotate 2D sliprings during the fitting process to a more natural position based on the iterative position of the incoming and outgoing belt sections.

- **Case 44548**

You can use the new ISOFIX tool in PRIMER to build ISOFIX load case models for ECE R14. It automates common setup tasks such as importing and positioning the SFAD model, creating constraints and contact definitions, and applying inertial loading. It writes keyword models to your chosen output folder using your selected keyword version.

Checking

- **Case 57926**

The checking report on *INITIAL for duplicate items has been improved to enable easier deletion of superseded definitions on the assumption that the final (highest internal label) definition wins.

- **Case 56973**

PRIMER can output the results of model checks as a text file and can also write these results to an output model keyword file. In both instances, the version of PRIMER that was used for checking is now also written out.

- **Case 56481**

A warning is given if DT2MS on *CONTROL_TIMESTEP is greater than zero as this is likely to have unintended consequences. For models with seatbelt elements, an error is reported (as before).

Connections

- **Case 56914**

MIG welds can now be made at a defined pitch rather than being fixed onto edge nodes.

- **Case 56830**

Creation of MIG/ARC welds from IGES curves has been substantially improved.

- **Case 56775**

PRIMER now supports the import and export of connection data from and to standalone files in the χMCF format.

Additionally, connection data embedded as post-*END χMCF by some software can now also be read in and processed by PRIMER during model input.

- **Case 56751**

A preference, primer*connection_arcweld_method, has been added to support TIED_CONTACT or NODAL_RIGID_BODY

Constraints

- **Case 57853**

When ‘Only’ is applied on the edit panel of *CONSTRAINED_EXTRA_NODE, PRIMER previously displayed only the constrained nodes. PRIMER now also displays the PID (*PART or nodal rigid body) as well.

Contour

- **Case 57254**

Thick Shells can now be contoured depending on their normal (away: blue; towards: magenta). Previously, this was only possible for thin shells.

Crash Test Setup

- **Case 57752**

You can now set up the C-NCAP Frontal Impact MPDB protocol in Crash Test Setup. The test is included in the crash test library and can be selected directly from the Crash Test tab.

- **Case 57178**

You can now set up the C-NCAP Side Impact MDB protocol in Crash Test Setup. The test is included in the crash test library and can be selected directly from the Crash Test tab.

- **Case 57177**

You can now set up the C-NCAP Side Pole Impact protocol in Crash Test Setup. The test is included in the crash test library and can be selected directly from the Crash Test tab

- **Case 57176**

You can now set up the C-NCAP Front Full Width Frontal Impact protocol in Crash Test Setup. The test is included in the crash test library and can be selected directly from the Crash Test tab

- **Case 51298**

Added a preference to select Absolute or Relative file path in the ‘Write Master File’ Window.

- **Case 50992**

You can now run Crash Test Setup in PRIMER batch mode using batch XML configuration and your saved preferences. This enables automated setup of crash test cases from the command line without a graphical interface, allowing you to process multiple test setups efficiently.

- **Case 49574**

Modified the UI for the ‘Preferences Panel’ and ‘Keyword Link Panel’ in Crash Test Setup.

Cut Section

- **Case 57093**

The Cut Section Custom Spacing panel did not allow you to have less than two plane positions. As the local cut origin 0.0 is always present, when there was only one other plane position this could not be deleted. Also, the number of parallel planes could not be set to 1. The reason for this behaviour was because a plane only at 0.0 has the same effect as turning multiple cuts off.

This behaviour turned out to be inconvenient when it is exactly known what plane positions are wanted and all previous ones were unwanted.

Now PRIMER allows to delete all positions except for 0.0 and there is also a new button ‘Clear positions’ to delete all positions except 0.0.

Deleting

- **Case 56010**

Added Ctrl+Z as a shortcut for UNDO in PRIMER.

Dummies

- **Case 55678**

A script has been written to write out element quality metrics. It can be accessed from:

1. Node import process
2. Main JavaScript menu
3. Tools → Element quality reporting

The script can write output in two formats:

1. Euro NCAP HBM CP 551 Frontal_VTC
2. IIHS Rear Impact SIMULATION Data Submission Template

The script can write output to a new file or to an existing Excel file.

Edit

- **Case 43684**

Historically, the ‘generic’ editor, the editor which mimics the exact keyword format for individual keywords, has not had popups giving the options for integer fields. (e.g., 1 = part id, 2 = part set id)

These popups were not always present in ‘keyword’ (multi row) editors as well.

These are now enabled in generic editors and the missing fields in keyword editors, although the implementation of this will be gradual since the popup data has to be created for all keywords and at the time of writing only some have been done.

Element Quality

- **Case 52494**

You can now perform an element quality check on just the visible elements of a model.

Geometry

- **Case 58072**

The layout of the select Join and Vertex options, in the Mesh Geometry tool, has been improved.

- **Case 52267**

As part of increased support for CAD file formats, PRIMER can now read CATIA V5 files.

Graphics

- **Case 57585**

Added *IGA_1D_BREP sizing to the model size calculation. This means that the geometry of these entities can affect view autoscaling.

- **Case 57579**

Added *IGA_EDGE_UVW sizing to the model size calculation. This means that the geometry of these entities can affect view autoscaling.

JavaScript API

- **Case 58203**

For the CrossSection class, the radius has been added as an optional argument to the constructor.

- **Case 57567**

Added generic functions such as Blanking, Drawing, Sketching and Picking to all eligible *IGA JS classes.

- **Case 57540**

Added a JS API and a PY API class for the *IGA_REFINE_SOLID keyword.

- **Case 57030**

The Error and Warning methods were missing from the History class. They have now been implemented.

- **Case 42398**

Autofixes can now be given for custom (JavaScript) checks.

Keyword

- **Case 57983**

Post-end Altair HM UDM xml can now be read/written by PRIMER with support for part label change.

- **Case 57939**

Added generic editors for *CHEMISTRY_CONTROL keywords.

- **Case 57848**

Scalar editors are now available for the following keywords:

  – *CHEMISTRY_COMPOSITION

- *CHEMISTRY_DET_INITIATION
- *CHEMISTRY_INFLATOR_PROPERTIES
- *CHEMISTRY_MODEL
- *CHEMISTRY_PATH
- *CHEMISTRY_PROPELLANT_PROPERTIES

- **Case 57187**

Added editors for the following keywords:

- *STOCHASTIC_SPRAY_PARTICLES
- *STOCHASTIC_TBX_PARTICLES
- *LSO_DOMAIN
- *LSO_ID_SET
- *LSO_POINT_SET
- *LSO_TIME_SEQUENCE
- *LSO_VARIABLE_GROUP

- **Case 48616**

Added a dropdown menu for the field FLOW_VAR in *DUALCESE_D3PLOT.

Keyword Editor

- **Case 57574**

Added the scalar and keyword editors for the *CESE_INITIAL_<OPTION> keyword.

Load Paths

- **Case 57990**

Load path tool ‘Auto-create’ feature: Added an option to split each cross-section plane into four separate *DATABASE_CROSS_SECTION definitions.

- **Case 57989**

Load path tool ‘Auto-create’ feature: Added an option to create cross-sections along splines instead of linear segments between selected nodes, using arc-length-based positioning and orientation.

- **Case 57988**

Added an option to encode cross-section location into IDs using the format [root][coord][sign/quadrant], with clash detection and automatic range resolution strategies.

Loadcurves

- **Case 56717**

A syntax checker has been added for *DEFINE_CURVE_FUNCTION.

Manual

- **Case 51105**

Added a ‘k’ button on the right side of *CONTROL categories, which opens the respective keyword manual.

Mass

- **Case 53008**

You can now write out an .xlsx file containing the assign mass data of selected assign mass entities from your model, including thumbnails of the corresponding entities. Preferences have been added to control the output data and images.

Measure

- **Case 54460**

A new Measure tool has been added to calculate the radius of a hole from three nodes.

- **Case 33897**

Added multi-measure capability as per D3PLOT.

Menus

- **Case 50715**

Go To Label and Go To String search functionality is now available for all object menus:

  – Go To String scrolls the menu to the first item that contains or matches the input string.

  – Go To Label scrolls to the item whose label most closely matches the user-entered label.

- **Case 37043**

Previously, the CREATE/MODIFY DEFINE_FUNCTION panel displayed 10 rows regardless of panel size. The number of rows now adjusts dynamically with panel height.

Mesh

- **Case 58099**

Fixed an issue in the Mesh Geometry tool where surface selections were not preserved when toggling the “Join Surfaces” option ON/OFF. PRIMER now retains the selected surfaces during this operation.

- **Case 58098**

Fixed an issue where PRIMER could crash when using the Mesh Geometry tool if the element size was changed multiple times while previewing the mesh on selected model surfaces.

- **Case 58004**

Previously, when generating Tet mesh for a volume, PRIMER created tetrahedral elements of almost the same size at both the surface and within the interior. In cases where the focus is primarily on surface behaviour, larger elements in the interior can help reduce computational cost.

To support this, depth-based sizing parameters have been added, and the Tet mesh panel has been updated to allow elements to grow towards the interior of the volume.

Model Build

- **Case 56311**

You can now resize the first column in the Template Control Panel when the panel is expanded, making it easier to view long names.

Model Modified

- **Case 53895**

When the Model Modified panel is dismissed, the Modified tab is no longer tidied.

Part Replace

- **Case 37291**

An option has been added to ‘abort out’ of a Part replace operation either at the merge stage or at the end of the operation. This option restores the original model.

Pedestrian

- **Case 57131**

When writing out Lines and Test Field boundaries in the Pedestrian Markup tool, the file containing the line for the side of the bumper test zone has been renamed from BUMPER_END to BUMPER_SIDE.

- **Case 57048**

In the Pedestrian Markup tool, when writing out impact points to CSV files, the tool only writes z-coordinates for points that fall in the gaps of the outer contour of the vehicle or points that have been projected horizontally. The option to always write z-coordinates for all head impact points has been added, which can be found in the new ‘Output options’ menu, accessible from the Head impact points menu.

- **Case 56339**

A new preference, primer*model_build_lst_decimal_places, has been added, which allows you to limit the number of decimal places in .lst files.

- **Case 53209**

A new preference, primer*pm_beam_length, has been added which allows you to set ‘Beam length’ in the Pedestrian markup tool.

Properties

- **Case 54382**

You can now efficiently copy properties from one model to multiple others simultaneously, without the need to manually write out and re-read files.

Quick Pick

- **Case 57865**

Added picking functionality for *IGA_FACE_XYZ.

Scripting

- **Case 57992**

Improved error handling for the Luggage retention tool and introduced stricter checks for user input.

- **Case 57017**

SBA Automation tool:

Added an option to squash seat using PRIMER.

Added an option to align lap block along a user-defined vector N1N2.

Moving torso block close to seat back and added an option to keep the block at a user-defined distance from the seat back.

If the torso block, after being moved, penetrates the lap block it will be translated away from the seat back until the penetration is resolved. Alternatively, you can specify an offset distance to eliminate the penetration.

Torso block is now adjusted so that its loading belt aligns with the lap block’s belt

Added a right-side mount type seat option for the middle seat in second row.

- **Case 56950**

A new testing protocol, ‘EuroNCAP Front FWDB (2026)’, has been added to the Crash test setup.

- **Case 56899**

Luggage Retention Tool:

Added view planes at H-point, H+100, and H+150.

Added an option to position the luggage floor at a user-defined height.

Added an option to rotate the luggage floor downward by a user-defined angle.

Speed

- **Case 58102**

Historically, using bespoke editing panels to Create or Modify items caused them to be sketched when the Update action was applied. For large items such as *SET and *CONTACT, this could be slow in large models.

An option, ‘Sketch item on Edit update’, has now been added to the [DISPLAY] Sketch options panel to enable or disable this behaviour. This setting can be saved as a preference.

Text

- **Case 56493**

The contents of the dialogue box can now be saved as a text file using the new Save → Text option.

User Interface

- **Case 55981**

In the Graticule Display Options Panel, empty space has been removed for the 2D option as the space was used by buttons and textboxes only mapped for 3D option.

- **Case 53723**

Increased the maximum number of rows in ‘CONNECTION TABLE’, ‘CONX COMPARE’, ‘PART TABLE’, and ‘PART COMPARE’ panels from 50 to 100 to account for larger screen sizes.

3.2 D3PLOT

Cut Section

- **Case 57094**

The cut section custom spacing panel did not allow to have less than two plane positions. As the local cut origin 0.0 is always present, when there was only one other plane position, this could not be deleted. Also, the number of parallel planes could not be set to 1. The reason for this behaviour was because a plane only at 0.0 has the same effect as turning multiple cuts off.

This behaviour turned out to be inconvenient when it is exactly known what plane positions are wanted and all previous ones were unwanted.

Now D3PLOT allows you to delete all positions except for 0.0 and there is also a new button ‘Clear positions’ to delete all positions except 0.0.

FEMZIP

- **Case 57794**

D3PLOT 23.0 supports reading of Set Part Trees for FEMZIP files using the latest femzip dlls.

Graphics

- **Case 38620**

D3PLOT now has a new RendPh plotting mode that enables photo-realistic graphics with support for environment maps. Create high-fidelity, presentation-ready visuals in real time with realistic materials, reflections, and environment mapping.

JavaScript API

- **Case 57527**

There is now a new function Page.Current to return a JS Page object for the page currently selected in D3PLOT.

- **Case 57231**

There are now JS and Python API constants:

  - Constant.MAX_ALL
  - Constant.MIN_ALL
  - Constant.MAG_ALL
  - Constant.AVERAGE

They can be used for the ip option on Beam.GetData, Shell.GetData, Tshell.GetData and GetMultipleData on the same classes. These functions then return the maximum, minimum, maximum magnitude value or average across all integration points.

- **Case 57169**

On the JS API Measure constructor node1, node2, node3, part1, part2 and window should now be specified as Node, Part or GraphicsWindow objects. The previous syntax with positive indices or negative labels for nodes or parts still works for backwards compatibility, but it has been deprecated.

The new syntax is more consistent with other object-oriented JS API functions. Moreover, it should avoid confusion between indices starting at 0 and indices starting at 1.

- **Case 56676**

There is now a JS and Python API function Part.GetConditionParts doing the same thing as the previous JS GetConditionParts on the global class but returning arrays of Part objects instead of arrays of indices starting at 1.

The indices starting at 1 caused confusion because Part.GetFromIndex was called on them, and the latter function expects indices starting at 0. The return array with Part objects avoids such confusion.

- **Case 56635**

There are now properties ‘colour’, ‘transparency’, ‘displayMode’, ‘overlayColour’ and ‘overlayMode’ on the JS API and Python classes Beam, Contact, Node, Part, Segment, Shell, Solid and Tshell for the display options of these items.

- **Case 49552**

In JavaScript there can now be a callback function defined to be called whenever the state in D3PLOT changes interactively. For example, when a script opens a GUI window, that callback can be used to update any buttons depending on interactive state changes.

Materials

- **Case 42213**

D3PLOT can now write and retrieve render material properties using XML file format.

Part Tree

- **Case 56563**

Set Part Trees are now supported in D3PLOT. We can populate Set Part Trees from ptf/d3plot file output of Ansys LS-DYNA. We can interact with the Set Part Trees using the Part Tree menu and Quick Pick menu in D3PLOT. All the options that work for Includes and Part Assemblies in part tree also work for Set Part Trees in D3PLOT.

Python API

- **Case 55002**

There is now a new JS and Python API CutSection class.

Text

- **Case 56494**

The contents of the dialogue box can now be saved as text file with a new button Save → Text.

Workflows

- **Case 52730**

New Adhesive Utilisation workflow available to contour adhesive utilisation/ plastic strain from a contour scale of 0-2. There are multiple options for you to show contour results that are suitable for adhesives, and eroded elements can also be displayed.

- **Case 50852**

New Adhesive Utilisation and Fastener/Spotweld Utilisation workflows are now added. These Utilisation workflows are built upon and replace the existing Strength Check workflow. You can now use these tools to contour adhesive and fastener/spotweld utilisation, with non-adhesive and fastener/spotwelds being blanked or shown shaded with transparency. Eroded adhesive and fastener/spotweld elements can also be displayed.

- **Case 50841**

Strength Check workflow has been replaced by General Utilisation workflow. This allows you to easily show and contour parts with plastic strains above a user-specified amount.

3.3 T/HIS

Airbag

- **Case 58060**

T/HIS now supports the new BINOUT data component ‘Unblocked Part Area’ that LS-DYNA now writes for CPG airbags.

Graphs

- **Case 45810**

Maximum number of graphs and pages in T/HIS are both increased from 32 to 1024. T/HIS will now allocate additional memory for graphs and pages beyond 32, as long as the system allows.

Also increased the absolute maximum number of graphs on a single page from 32 to 64, though the default remains at 32 out-of-the box. This setting can be changed interactively on the Page Layout panel or set via a preference.

Pages are no longer added and deleted by adding graphs to or removing graphs from them. They must be added and deleted manually by you.

Additionally, pages can now be given unique names to identify them. Page names can be used in dialogue commands and FAST-TCF, as well as JavaScript and Python scripts for ease of automation.

Note that these above additions are not currently supported by the D3PLOT-T/HIS link, which remains limited to 32 graphs at this point in time.

Also addressed the issue where you found it too easy to accidentally change the layout for all pages when you only wanted to change it for your current page by introducing a confirmation popup when changing layouts for all pages at once.

JavaScript API

- **Case 58724**

A new global JavaScript API command THISLinkStatus() has been added to return the status of T/HIS in the link. It returns Constant.STANDALONE, Constant.DOCKED, Constant.MENUS_UNDOCKED or Constant.ALL_UNDOCKED.

Text

- **Case 56495**

The contents of the dialogue box can now be saved as text file with a new button Save → Text.

Workflows

- **Case 57595**

The workflows multiple models selection popup now has all the models selected by default.

In addition, two buttons have been added to select and deselect all the models.

- **Case 57232**

A new class method has been added to the Workflow JS-API class, Workflow.GetWorkflowDataFromPath()

It searches for workflow data in the specified path and can be used to read Workflow user data for models that might have been read in after the workflow was started.

- **Case 57214**

The behaviour of the user_data_required property in the workflow definition file has been changed.

Previously, if this was set to false, then user data would not be read in when running a workflow, even if it existed.

The behaviour has been changed in release 23.0 so that it will be read in if it exists, i.e. setting user_data_required: false means user data is optional.

3.4 REPORTER

Pages

- **Case 56933**

From REPORTER 23.0 onwards, reports can be written to a new PowerPoint or appended to an existing PowerPoint using a template PowerPoint file. During both these processes, REPORTER items are scaled to fit the template PowerPoint layout.

- **Case 56740**

Added the Ctrl+D keyboard shortcut to duplicate a page when selected (and in focus) in page navigation.

Pedestrian

- **Case 56894**

A HIC Processor tool has been added to PRIMER to post-process head impact result data, to calculate HIC and generate a .blob file. Inputs can be .lst files (from model build) or existing .blob files with partial results.

PowerPoint

- **Case 57506**

The thumbnails of the Movie (MP4) items written out to PPTX and PDF files can be controlled using Movie (MP4) thumbnail frame preferences found under Preferences → Apps. By default, this preference is set to Current, meaning the thumbnail will reflect the frame where the Movie item is paused. You can also change this setting to First or Last to control which frame is used as the thumbnail.

- **Case 56983**

Reports can be saved using an existing PowerPoint template or appended to an existing file. Slide layouts are automatically applied, with content scaled to fit.

Preferences

- **Case 55966**

PRIMER, D3PLOT, T/HIS, and REPORTER can now be configured to exit automatically after a specified duration. The timeout is controlled via the OASYS_TIMEOUT environment variable. Once the defined limit is reached, the applications terminate safely.

User Interface

- **Case 53524**

Sorting and search features have now been added to the Variables dialog.

- **Case 52734**

Search functionality has now been added to the Logfile dialog.

- **Case 50870**

Search functionality has now been added to the Main Window to enable finding relevant actions and submenus.

- **Case 42528**

Search functionality has now been added to the Choose a Template and Choose a Page dialogs.

Workflows

- **Case 56970**

You can now download the template thumbnail via the Edit Template Properties dialog, or via the JavaScript/Python API. You can also now update the thumbnail with an image of your choice via the API.

3.5 Oasys Suite – Cross Application

Help

- **Case 58048**

New links to the Workflows new features PDF has been added in all programs.

For PRIMER, D3PLOT, T/HIS and REPORTER, go to Help → What's New. There are now two buttons linked to new features PDFs in the <INSTALL_DIR\manuals\new_feature> directory: one for the current program and one for Workflows.

For SHELL, a new Workflows button was added under Manuals → What's New.

Licensing

- **Case 56882**

The optional 'timeouts' feature, which will suspend a process if it has been idle for longer than a specified time, has historically been controlled by a file called 'timeouts' in the OA_ADMIN or OA_INSTALL directories.

The ability to define timeout settings in the LMX licence file, arup.lic, was requested and has now been implemented.

- **Case 54632**

From release 22.1 onwards:

- The optional 'timeouts' feature now suspends an interactive session rather than killing it.
- If you cannot re-acquire a licence and save your work while in this state, the save location is now a unique directory identified by date and time, and within that directory each model is saved in sub-directories m1, m2, etc.

In release 23.0, the capability remains the same, but the introduction of a new Licence Manager panel makes it easier to understand the current licence and timeout status, and to re-acquire a licence.