**Change log**

**V2024.1.0**

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A close-up of a cable

Description automatically generated

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# Revision history

|  |  |  |  |
| --- | --- | --- | --- |
| Version | Date | Name | Description |
| 6.0.1 | 11.12.2014 | F. Rappel | Changes in version 6.0.1 |
| 6.0.2 | 30.03.2015 | F. Rappel | Changes in version 6.0.2 |
| 6.0.3 | 30.06.2015 | F. Rappel | Changes in version 6.0.3 |
| 6.1.0 | 05.08.2015 | F. Rappel | Changes in version 6.1.0 |
| 6.2.0 | 02.03.2016 | F. Rappel | Changes in version 6.2.0 |
| 6.2.1 | 14.04.2016 | F. Rappel | Changes in version 6.2.1 |
| 6.2.2 | 11.08.2016 | F. Rappel | Changes in version 6.2.2 |
| 6.2.3 | 12.12.2016 | F. Rappel | Changes in version 6.2.3 |
| 7.0.0 | 25.04.2017 | F. Rappel | Changes in version 7.0.0 |
| 7.0.1 | 19.07.2017 | F. Rappel | Changes in version 7.0.1 |
| 7.0.2 | 18.08.2017 | F. Rappel | Changes in version 7.0.2 |
| 7.0.3 | 25.08.2017 | F. Rappel | Changes in version 7.0.3 |
| 2018.1.0 | 22.06.2018 | F. Rappel | Changes in version 2018.1.0 |
| 2018.1.1 | 26.07.2018 | F. Rappel | Changes in version 2018.1.1 |
| 2018.1.2 | 14.12.2018 | F. Rappel | Changes in version 2018.1.2 |
| 2019.1.0 | 11.07.2019 | F. Rappel | Changes in version 2019.1.0 |
| 2020.1.0 | 29.06.2020 | F. Rappel | Changes in version 2020.1.0 |
| 2020.1.1 | 13.08.2020 | M. Rüsseler | Changes in version 2020.1.1 |
| 2020.1.2 | 12.01.2021 | M. Rüsseler | Changes in version 2020.1.2 |
| 2021.1.1 | 10.05.2021 | M. Rüsseler | Changes in version 2021.1.1 |
| 2021.1.2 | 16.08.2021 | M. Rüsseler | Changes in version 2021.1.2 |
| 2021.1.3 | 19.01.2021 | M. Rüsseler | Changes in version 2021.1.3 |
| 2021.1.4 | 09.02.2022 | M. Rüsseler | Changes in version 2021.1.4 |
| 2021.1.5 | 23.02.2022 | M. Rüsseler | Changes in version 2021.1.5 |
| 2022.1.0 | 27.04.2022 | M. Rüsseler | Changes in version 2022.1.0 |
| 2022.1.1 | 09.08.2022 | M. Rüsseler | Changes in version 2022.1.1 |
| 2022.1.2 | 25.08.2022 | M. Rüsseler | Changes in version 2022.1.2 |
| 2022.1.3 | 29.08.2022 | M. Rüsseler | Changes in version 2022.1.3 |
| 2022.1.4 | 21.09.2022 | M. Rüsseler | Changes in version 2022.1.4 |
| 2022.1.5 | 15.03.2023 | M. Rüsseler | Changes in version 2022.1.5 |
| 2023.1.0 | 10.05.2023 | M. Rüsseler | Changes in version 2023.1.0 |
| 2023.1.1 | 29.08.2023 | M. Rüsseler | Changes in version 2023.1.1 |
| 2024.1.0 | 28.05.2024 | M. Rüsseler | Changes in version 2024.1.0 |

# Glossary

|  |  |
| --- | --- |
| Term | Commentary |
| E³.HA | E³.HarnessAnalyzer |
| HCV | Harness Container for Vehicles |
| xHCV | Extended Harness Container for Vehicles |
| E3HA-xx | Internal issue number |

# Change log

## V6.0.0 🡪 V6.0.1

* E3HA-49: Enhanced installation documentation for E³.HA in terms of addition chapters describing unattended installation features.
* E3HA-52: Exchanged cavity sort comparer functionality in connectors table (Data grid) to prevent random crashes on HCV document load.

## V6.0.1 🡪 V6.0.2

* E3HA-53: Changed incorrect handling how to determine ZGS and KEM information. Instead using the max. change ID value the latest change date will be used now.
* E3HA-55: SVG document type definition (DTD) schema validation processing will to be ignored by default while opening drawings from HCV files to prevent load error in E³.HA if given web link in DOCTYPE header element of SVG file cannot be acquired in case there is no internet connection available or the company network prevents downloads from files by applications.
* E3HA-56: Enhancements and fixes in SVG opening process. Fixed a bug while processing path line elements in SVG drawing when grouping them together to polyline objects. Set default fill mode to “none” if no fill mode attribute exists for every basic graphic element. Added special workaround for SVGs containing a master group element including all other group elements to prevent incorrect behavior of selection and highlight functionalities.
* E3HA-57: Fixed bug within graphical redlining functionality and moved layer to the back of the drawing to prevent wrong selection behavior with overlapping graphic objects.

## V6.0.2 🡪 V6.0.3

* E3HA-64: Fixed display bug in harness data table and removed double entry of degree of maturity information.
* E3HA-65: Fixed wrong determination for displaying combined wire color information in cable/wire data tables. Now all available color information based on KBLs “Wire\_colour” element will be sorted by “Color\_type” property alphanumerically before the result string will be displayed in the table cells.
* E3HA-66: Fixed KBL data comparison problem occurred when lists of referenced components (i.e. on accessories or vertices) has to be compared. This lists containing reference IDs and therefore both of them has to be sorted first before each ID will be compared.
* E3HA-67: Fixed display of wrong ID value in wire protection sub table.
* E3HA-68: Fixed crash on application initialization when description of MRU list entries in application menu contains directory or file names containing ampersand characters.

## V6.1.0

* E3HA-42: NEW FEATURE: Visualization of entire car harness connectivity (for further detailed information please refer to the help file).
* E3HA-48: NEW FEATURE: Graphical comparison of two HCV documents (for further detailed information please refer to the help file).
* E3HA-51: NEW FEATURE: Ability to include user-defined wires for bundle cross-section calculation and visualization (for further information please refer to the help file).
* E3HA-58: Fixed graphical redlining screen area capturing functionality and use now rendered background graphic which represents exactly the selection box instead of real calculated bounds of graphical objects which has been (partly) hit.
* E3HA-60: Fixed occasionally occurred crash while exporting entire HCV document data content to Excel file. Therefore, the displayed image resources used in cell appearances in all data tables has been changed.
* E3HA-61: Validate KBL file while loading HCV document with schema validation if load of data tables failed. In some cases, the KBL file included in our HCV container is corrupt, contain invalid content or failed the validation of the schema definition. In this cases, when the E³.HA load process of data tables cannot import the entire KBL information properly, the application now checks the KBL file against the official schema definition and report all problems to the logging window so that the user is able to review the problems.
* E3HA-63: Fixed some graphical conversion issues comes with SVG processing of path elements with cubic/quadratic curved polylines.
* E3HA-67: Fixed crash while comparing HCV document data (based on KBL information) which occurred if identical instruction types in installation information or processing instruction elements exists.
* E3HA-68: Allow import of module configurations from harnesses with different part number and version.
* E3HA-69: Fixed mapping of fixing assignments to multiple segment elements.
* E3HA-73: Fixed crash while exporting segment data to Excel which contains alias id information.

## V6.2.0

* E3HA-37: NEW FEATURE: KBL2.4 extensions. Added support for KBL version 2.4/2.4-SR1 with new component box and change description elements. Added support for new properties and reference information for existing KBL elements according to the new KBL schema definition.
* E3HA-39: NEW FEATURE: DSI files in addition with their referenced DWG/DXF drawing can now be imported in E³.HA. Cross-Highlight and data analysis features are supported according to the content available from DSI file.
* E3HA-54: Revised and enhanced conversion process of SVG drawings in HCV files while opening documents in E³.HA.
* E3HA-70: Enhanced selection functionality for vertices (nodes). Added support to highlight and determine referenced components with graphical representations of selected vertices like fixings, accessories or wire protections.
* E3HA-71: NEW FEATURE: KBL2.2 support. Added ability to open HCV or stand-alone KBL files with version 2.2 and convert them to version 2.3 to allow opening this files.
* E3HA-74: Added possibility to validate opened KBL file to check if loaded data structure is consistent. Result of validation process will be reporting in logging window. Fixed crash where initial validation against schema file failed when opening E³.HA application by double-clicking an HCV file.
* E3HA-75: Fixed crash while acquiring possible inliner combinations on load of extended HCVs.
* E3HA-76: Fixed grey-out logic for connector faces in drawing assigned to vertices (nodes). In some cases, connectors are active according to the selected module configuration while assigned vertex and segment may get inactive and therefore displayed greyed-out.
* E3HA-77: Fixed wrong scaling of SVG text elements while loading drawing.
* E3HA-78: Reworked functionality to get correct wire color information with valid sort order from KBL data.
* E3HA-79: Added missing gradient information on segments while comparing data of two documents which causes wrong compare results.
* E3HA-80: ENHANCEMENT: Changed assembly signing method of E³.HA.
* E3HA-81: Reworked visualization of connector boxes and scaled wire lines in connectivity view to fix problems may occurs while printing drawing.
* E3HA-82: Enhancements and improvements in data compare of two documents.
* E3HA-83: NEW FEATURE: Added feature to easily retrieve distance between two selected objects (vertex, connector, fixing, wire) or a bunch of selected segments.
* E3HA-84: NEW FEATURE: Added small calculator for wire resistance.
* E3HA-85: ENHANCEMENT: Support for missing KBL elements like assemblies and co-packs in E³.HA.
* E3HA-87: Added support of use of different application features of E³.HA and methods to validate available feature content especially while borrowing licenses from server.
* E3HA-92: ENHANCEMENT: Added save button in graphical compare dialog to allow user persisting of checked compare result information during work.
* E3HA-93: Fixed sorting of cavities in connectivity view when identical cavity names exist.
* E3HA-94: Fixed occasional occurring crash while saving checked compare result information of graphical compare when identical graphical entities with same KBL-ID exist in both reference and compare document.

## V6.2.0 🡪 V6.2.1

* E3HA-92: ENHANCEMENT: Added simple undo/redo functionality for graphical compare functionality for checked compare result information grid to give user ability to revert or restore last action in terms of undo modified check states and comments.
* E3HA-93: Reworked cavity sorting in connectivity view if similar cavity numbers exists on selected connector and connected connectors. Prevent getting wrong visualization in circuit diagram as cavities with identical numbers got lost.
* E3HA-98: There are some random cases where context menus of data tables get stuck on screen and won’t close automatically. Therefore, an enhancement to close opened context menu in data tables manually when clicking on any other position inside the current visible grid or leaving the data tables control has been implemented.

## V6.2.1 🡪 V6.2.2

* E3HA-110: Fixed crash while selecting graphical objects in drawing when no grid row of referring data object is visible because of filter settings.
* E3HA-121: Fixed wrong positioning and scale of graphical redlining’s overlay in drawing.
* E3HA-128: Fixed context menu visibility regarding “Calculate distance” button which appeared in wrong data table grids.
* E3HA-130: Fixed crash while packaging circles for segment bundle determination when no routed core/wire does have valid radius/outside diameter values
* E3HA-132: Fixed crash while comparing two splice/eyelet connectors with identical cavity numbers (depending on KBL mapping between cavity occurrence and contact point elements).
* E3HA-133: Reworked export/import functionalities for redlining’s in DSI files.
* E3HA-134: Fixed wrong comparison of connectors in KBL data compare when part numbers are not identical
* E3HA-135: Fixed bug while comparing housing definition (terminals/seals) of connectors
* INSTALLER: Fixed wrong mapping to processor architecture of VC++2013 redistributable package.

## V6.2.2 🡪 V6.2.3

* E3HA-139: Fixed crash while comparing data of two HCVs 🡪 There was a bug regarding a wrong object cast for fixing assignments of segments.
* E3HA-140: Fixed crash while calculating distance between two selected connectors 🡪 Reason for bug was a wrong determination of intermediate vertex graphics which has to be highlight.
* E3HA-141: Fixed crash while opening DSI files when branch insulation entry contains not existing node ID references.
* E3HA-144: Improved business logic for accessing reference elements of all object types.
* E3HA-145: Improved handling for graphical compare when compare result entry contains no graphic to display and removed message box.

## V7.0.0

* E3HA-88: ENHANCEMENT: Added additional method (beside already existing circle packaging approach) based on a user-parameterizable generic formula how segment raw bundle CSA and outside diameter will be calculated in bundle cross section dialog.
* E3HA-89: ENHANCEMENT: An new analysis view is available to show all segments with a given taping/protection from a dropdown list.
* E3HA-90: ENHANCEMENT: While filtering graphical compare results in grid the corresponding graphical symbols will be now filtered-out in both reference and compare drawing as well.
* E3HA-90: ENHANCEMENT: Now it is possible to identify and modify the base offset for the graphical compare functionality. By analyzing the offsets of vertex nodes in compare and reference drawing, a general offset vector is determined and can be applied before the compare. This reduces the number of differences in these cases.
* E3HA-97: Support of E³.HA for Windows® 10 OS.
* E3HA-115: Rework of help documentation with lots of enhancements and more detailed descriptions of all existing/new functionalities in E³.HA.
* E3HA-129: ENHANCEMENT: What if analysis of segment bundles and clipboard functionality for a selection of (user) wires from one bundle cross section dialog to another.
* E3HA-131: NEW FEATURE: Weight calculation tool for a selection of wires or the entire wire content of a selection of segments, considering optional material specification.
* E3HA-136: Cavity comparison has to be reworked 🡪 A**ll relevant** technical differences will be now compared on cavities properly, especially the cavity housing content regarding terminal, seals and plugs in detail.
* E3HA-137: NEW FEATURE: German language for UI is now available for E³.HA.
* E3HA-138: NEW FEATURE: Inliner consistency check 🡪 Report all potential problems of entire vehicle (xHCV) based on found inliners over the different harnesses (plating material mismatch, CSA differences, signals inconsistencies and further).
* E3HA-143: Fixed determination of start and end connector of wire/connection based on correct “position on wire” value of extremity references.
* E3HA-147: Fixed segment center curve render algorithm for draft drawing and considering the spline degree information of the KBL properly.
* E3HA-148: ENHANCEMENT: Several KBL-2.4 extensions (i.e. approvals) were added to E³.HA.
* E3HA-149: ENHANCEMENT: Hourglass on switch of tabs in data compare dialog has been added.
* E3HA-150: NEW FEATURE: Quality management visualization support of pre-defined issue list (based on input XML file) as new analysis view has been added.
* E3HA-151: ENHANCEMENT: Grouping feature for redlining information to support change management is now available 🡪 Manage redlining groups with meta information and assign it to redlining’s which belongs together.
* E3HA-152: NEW FEATURE: Quality stamping 🡪 New type of quality management functionality to mark/stamp issues on drawing objects.
* E3HA-153: NEW FEATURE: Touch-enabled support for E³.HA 🡪 Basic support for controlling the application with touch gestures on tablet devices.
* E3HA-154: Fixed crash within the removal of wires in bundle cross section dialog.
* E3HA-155: Added a legend for the graphical representations on to the overall connectivity view.
* E3HA-156: Fixed a crash that occasionally occurred in show entire routing path dialog.
* E3HA-157: Fixed handling of assembly objects in general, especially how referenced occurrence objects are determined in KBL structure.
* E3HA-158: User-defined scale factor for quality stamp and redlining indicator has been added to give user a chance to resize this symbols in drawings.
* E3HA-159: The mass information (weight) caption in wires/cores and protections data tables gets an additional information that the displayed value originated from KBL represents the per meter weight value and not the correct total weight value (including correct length).
* E3HA-160: Evaluate material specification for wire resistance calculation tool to handle i.e. aluminum wires.
* E3HA-161: Fixed a crash that occasionally occurred on close of bundle cross section dialog.
* E3HA-163: ENHANCEMENT: An indicator was added to the wires/cores data table, signaling that there are different plating materials on both ends of a wire/core.
* E3HA-164: ENHANCEMENT: Consider active objects regarding modules in connectivity view and display module information in tooltip on graphical wire representations.
* E3HA-165: Activate multiple modules via part number definition in file name of HCV file.
* E3HA-166: Fixed wrong calculated pan offset of reference and compare drawing in graphical compare dialog.
* E3HA-167: It is now possible to generate a topology view without adding a car background picture in the topology editor dialog.
* E3HA-168: Export of drawing to DWG/DXF considers now the active module setting to be consistent to i.e. standard print outs.
* E3HA-7904: Fixed update of custom module configuration after user applied the activation of modules displayed in the assigned modules dialog.
* Fixed check of already installed prerequisites (VC++ 2008/2013) for E³.HA in installer (MSI) and bootstrapper (EXE) package.
* Lots of minor bug fixes and improvements…

## V7.0.0 🡪 V7.0.1

* E3HA-172: Fixed crash while checking inliner consistency on load of xHCVs and added check to load only inliners which are from the xHCV and disregard additionally opened HCV documents.
* E3HA-173: Fixed wrong appearance of window selection rectangle of topology hub control pane.
* E3HA-174: Added possibility to toggle maximize window state of topology hub via context menu.
* E3HA-175: Changed drag style layout of topology hub to be consistent to other control panes of the application (fixed slow dragging behavior of floating window).
* E3HA-176: Fixed crash on display of show overall connectivity view 🡪 Reworked preparation of data for generated overall connectivity when two or more connection objects pointing to the same wire.
* E3HA-177: ENHANCEMENT: Changed business logic how default configuration XML files (e.g. weight settings) will be handled on application start 🡪 Now we check the installation directory first if there is such a XML file existing and then copy this to the user profile instead of creating a new default one.
* E3HA-178: Revised check rules for inliner consistency especially the string compare for e.g. plating information and converted corresponding entries to lower characters for compare.
* E3HA-179: Fixed crash while loading inliner consistency dialog if a cavity is missing entirely in one inliner half.
* E3HA-181: Blocked opening of other HCV documents in application if xHCV is already opened and vice versa.
* E3HA-182: Fixed a crash in graphical compare dialog if two drawings have no compare results (means both are identical) 🡪 Prevent that empty reference/compare views and regarding buttons are accessible by user.
* E3HA-183: Disabled access to graphical compare dialog while reference document will be loaded.
* E3HA-184: Unify object ids for data table selection event arguments (internal structure change).
* E3HA-186: Fixed wrong display positions of connector table and connector face symbols in start/end connector and entire routing path view.

## V7.0.1 🡪 V7.0.2

* E3HA-187: Fixed synchronous pan for both reference and compare drawing in graphical compare dialog.
* E3HA-188: Fixed crash occurring during export of compare results to Excel while application is running in German language.
* E3HA-189: IMPROVEMENT: Performance of exporting data table information to Excel especially for compare results has been revised and improved.
* E3HA-190: Fixed crash on load of graphical compare dialog, which occurs in some cases when vertex Kbl-Ids are not unique in reference drawing.

## V7.0.2 🡪 V7.0.3

* E3HA-191: Fixed crash that may occurred while comparing data of two HCV files with different optional harness properties.

## V2018.1.0

### NEW FEATURES

* 3D Visualization of wire harness structures based on 3D coordinates that are specified in KBL, VEC or PLM XML input data files.
* Schematic browser view containing connectivity information of wire harnesses and their components.
* Import of Siemens PLM XML files.

### ENHANCEMENTS

* E3HA-142: Added consistency checks for imported DSI files and may report occurring warnings/errors to log window.
* E3HA-169: Print dialog for drawings and additional views has been reworked containing new UI and some improvements regarding print cutoffs of large drawings.
* E3HA-185: xHCV container can now consist of KBL files only.
* E3HA-206: Enhance cross-highlight functionality for added objects originated from compare data result 🡪 now it is possible to reference added objects in compare document while clicking on regarding row entry in compare result table.
* E3HA-207: Wire resistance calculation dialog now allows user-defined input variables for temperature, length etc.
* E3HA-208: Calculation and display of real module weights based on accumulated weight data of controlled components also available for BOM list.
* E3HA-209: Allow user to define an add-on/knock-off length for all chosen wires in weight calculation dialog in addition to manipulate individual CSA and length values.
* E3HA-210: Display part number information for controlled components of modules in data compare result table.
* E3HA-211: Improvement for connector table differences in graphical compare 🡪 a small arrow marker indicates now all relevant change positions within the table graphic.
* E3HA-213: Added SVG validation checks 🡪 possible detected warnings/errors will be added to log window after load.
* E3HA-214: Use default general settings configuration file if available in installation folder of application.
* E3HA-215: Group referred modules of segment by originated object type (like routed wires, fixings, protections) in assigned modules dialog.
* E3HA-216: Added application setting to apply KBL validation check on load of HCV/KBL file.
* E3HA-218: Show module part number and abbreviation values in table for relevant cables/wires in bundle CSA calculation dialog.
* E3HA-219: Display information tooltip in drawing when hovering redlining marker.
* E3HA-223: Added feature to change raw bundle diameter tolerance percentage value in CSA calculation dialog on the fly.
* E3HA-228: Display message box on load of bundle CSA calculation dialog if selected segment has routed cables/wires without module assignment.
* E3HA-230: Display plating information of terminal in cavities child table.
* E3HA-242: Added message hint on load that chosen length type in general settings is not available in current HCV/KBL file.

### BUGFIXES

* E3HA-180: Fixed find functionality for individual objects when multiple documents has been opened containing identical part numbers.
* E3HA-192: Fixed crash on DSI import when some connectors are not packaged correctly.
* E3HA-204: Fixed exception may occurred if weight settings configuration file will be created by system on German Windows 7 machines.
* E3HA-205: Fixed visualization problems may occurred in additional views when tooltips popping up over graphical elements.
* E3HA-212: Fixed mapping to correct harness part numbers while opening xHCV files containing entire car settings configuration.
* E3HA-222: Appearance settings in analysis views has been revised 🡪 Gray-out color of inactive symbols in addition of orange-like background color looks now brighter.
* E3HA-224: Hide sub menu buttons of object types, which are not available when showing up corresponding cross-highlight child context menu for selected row entries in data tables.
* E3HA-229: Fixed crash on import of memo list information if this file has been exported in different language.
* E3HA-235: Exchanged algorithm for segment center curve calculation (B-splines) while generating draft drawings based on KBL content.
* E3HA-252: Fixed crash on load of entire routing path dialog, which may occurred if not all contact points of a connector have extremity definitions in connection section.
* E3HA-254: Fixed a bug in SVG conversion process, which occurred in some cases when arc path definitions should be converted into polylines with bulge vertex definition.
* E3HA-272: Fixed crash while displaying connector’s data table, which may occurred if associated parts of contact points contains one or more terminals/seals without module assignment.
* E3HA-282: Fixed bug while applying active module configuration regarding grey-out state of inactive elements in drawing if one module has been selected in modules tree before.
* E3HA-288: Fixed cancel action of SVG drawing load process after opening of HCV/xHCV, which caused termination of complete document load process.
* E3HA-290: Improve Excel export performance of data tables.

## V2018.1.0 🡪 V2018.1.1

* E3HA-294 🡪 Fixed crash on load of documents, which has to do with preparation of schematics view when KBL data contains modules without controlled components.
* E3HA-295 🡪 Fixed crash and some inconsistencies during load of PlmXml files and consider general units like inches, etc. correctly. In addition, the wire routing and connectivity handlings has been reworked and import order of wire occurrence elements has been updated, too.
* E3HA-296 🡪 Fixed general startup behavior and reset E³.HarnessAnalyzer to run as single instance application.
* E3HA-301 🡪 Fixed crash while comparing invalid KBL data (means schema validation fails) and reworked comparison of external references within KBL files.
* E3HA-318 🡪 Fixed business logic order when loading additional SVG drawings in background (via selection in “Drawings” window): Show tab first when complete load and resize/zoom processes of converted drawing has been completed to prevent crashes when user tried to enter the drawing during load.
* E3HA-327 🡪 Fixed crash on load of xHCV files if no 3D view feature is available.
* E3HA-335 🡪 Fixed crash occurred on close of documents, which leads to inconsistencies in cleanup processes (e.g. search dialog has not been updated).

## V2018.1.1 🡪 V2018.1.2

* E3HA330 🡪 Fixed wrong license failure message displayed if a PlmXml or DSI file were opened from the most recent list.
* E3HA-336 🡪 Display of start object in schematics view window caption now contains more details (e.g. object name).
* E3HA-345 🡪 Fixed check if part reference ID exists in occurrence element before accessing mapper to part element in KBL to prevent crash if none relation exists.
* E3HA-346 🡪 Support selection and opening of multiple HCV/KBL files in file open dialog.
* E3HA-351 🡪 Fixed usage of wrong ID to identify inactive wiring groups.
* E3HA-353 🡪 Fixed resolve of wires in wiring groups in schematics view.
* E3HA-355 🡪 Fixed flash highlight when identical start-/end-coordinates are existent in 3D view.
* E3HA-359 🡪 Fixed German translation of properties displayed in wiring group’s detail dialog.
* E3HA-360 🡪 Wires directly connected to component boxes will be now handled properly.
* E3HA-361 🡪 Improved visualization of imported connector faces in 3D view.
* E3HA-364 🡪 Fixed crash while exporting all data tables to Excel when no module is active.
* E3HA-365 🡪 Fixed wrong calculation of outside diameters form cables/wires in bundle CSA dialog if no part number and wire type mapping is available for routed wires/cables of selected segment.
* E3HA-375 🡪 Wrong visualization of nodes with multiple assigned connectors in draft drawing has been fixed.
* E3HA-376 🡪 Segment visibility in 2D harness/draft drawing and data tables depending on active module configuration has been reworked 🡪 now there will be gray-out segments existing in segments data table, which means that either referring segments have no protection assigned or protection is inactive in selected configuration, and there will be at least one active wire routed via this segment.
* E3HA-387 🡪 Fixed crash that occurs in bundle CSA view if ESC key has been hit within user-defined tolerance text box.
* E3HA-388 🡪 Added full support of “xHCV” MIME type to open this kind of file directly by double-clicking on it with E³.HA.
* E3HA-389 🡪 Fixed borrow utility tool and wrong business logic that tried to borrow licenses that were not in the license file.
* E3HA-403 🡪 Fixed apply and consideration of selected module configuration in all opened drawings within single HCV files.
* E3HA-405 🡪 Re-added “Center to paper” button in print settings.
* E3HA-409 🡪 Fixed crash that may occurs if 3D bundle objects are used for flash highlighting.
* E3HA-412 🡪 Print settings dialog has been reworked to fix problems regarding getting valid information from selected printer.
* E3HA-422 🡪 Area filter set/reset will no longer reset user filter of data columns in table of graphical compare dialog.
* E3HA-423 🡪 Fixed data table row selection handling in KBL data compare dialog.
* E3HA-424 🡪 Most recent list will be now maintained correctly if documents are opened by MIME type.
* E3HA-425 🡪 Fixed retrieval of material spec information for multicores used for wire resistance/weight calculation tools.
* E3HA-433 🡪 Opening multiple documents now store all documents in MRU list.
* E3HA-434 🡪 Replaced old print dialogs with new one in additional views e.g. start/end connector view etc.
* E3HA-435 🡪 Prevent changing part number in combo box of wires/cables grid in bundle cross section dialog by using mouse wheel if it is not a user wire/cable.
* E3HA-436 🡪 Fixed occasionally crash while loading 3D view if centerline definition of b-spline is missing and/or identical start/end points of segments.
* E3HA-438 🡪 Fixed deployment of FLMAC DLL, which is mandatory for proper execution of Borrow Utility.

## V2019.1.0

* E3HA-255 🡪 Added enhancement to wire resistance calculation feature to be able to determine wire resistance values based on selected wires in grid topology-wide (across harness borders and splice/eyelet objects).
* E3HA-538 🡪 Fixed crash with grid appearance configuration file when version attribute is not set properly.
* E3HA-539 🡪 Fixed bug in data compare feature if cavity names on splices has been changed.
* E3HA-547 🡪 Added feature to hide graphical artifacts in harness drawing, if these are not assigned to a module (accessible by menu button).
* E3HA-549 🡪 Added functionality to exclude text decoration settings from graphical compare. This can be controlled in the compare dialog and will be persisted in the user settings.
* E3HA-551 🡪 Fixed behavior of enable/disable state of “Close all” application menu button.
* E3HA-563 🡪 New feature implemented to control properties for every object type which should be considered for technical compare. This can be customized in grid appearance settings dialog.
* E3HA-571 🡪 Added feature to comment and check technical compare results like the graphical compare results.
* E3HA-579 🡪 Implemented highlighting of change markers in harness drawing originated from change description grid table.
* E3HA-587 🡪 Enhanced modification features in bundle cross section dialog and allow to change wire types even for wires originated from KBL document.
* E3HA-588 🡪 Allow to inverse logic of display added/deleted elements in result grid tables of compare dialogs controlled by a flag in general settings configuration.
* E3HA-600 🡪 Fixed cross-selection from nets to corresponding wires and other objects in data tables.
* E3HA-603 🡪 Fixed cross-selection from search (finder) dialog to module tree if application language is set to “German”.
* E3HA-604 🡪 Fixed bug while redlining changes do not affect the field "changed by" and “change date”.
* E3HA-605 🡪 Module overview tables in harness drawings will be selectable (row-by-row) and linked to corresponding module Ids if regarding SVG has correct structure.
* E3HA-612 🡪 Added complete support of displaying (default) dimension specifications in E3.HA.
* E3HA-615 🡪 Fixed a bug when comparing empty cavities of a connector.
* E3HA-644 🡪 Added complete support for HCV files containing a JT model (only working with x64 version of E3.HA).
* E3HA-722 🡪 Fixed bug detected when closing document is called and recalculating of documents are running.
* E3HA-730 🡪 Check for empty slot lists for connector occurrences and housings before accessing items to prevent crashes in compare etc.

## V2020.1.0

* E3HA-246 🡪 ENHANCEMENT: Ability to support KBL documents up to version 2.5.
* E3HA-358 🡪 Fixed display of draft 2D drawing for special segment spline (NURBS) curve modelling approaches which might be used to transfer 3D topology geometries in KBL.
* E3HA-542 🡪 Use unique combined contact point ID consist of connector occurrence ID, cavity number and associated part numbers for data compare to fix inconsistencies while comparing contact points of cavities.
* E3HA-645 🡪 Closing the data compare dialog are now selecting the reference drawing tab again in case it has been changed by user.
* E3HA-662 🡪 Added cross-highlight support for wire protections imported from JT files within HCV.
* E3HA-678 🡪 Fixed wait cursor handling while initializing data tables which slowed down the application.
* E3HA-753 🡪 Visibility of objects without module assignment in data tables has been revised: Now objects without module assignment in data tables will be hidden if “Hide entities with no modules” button in ribbon menu is activated (synchronized behavior between drawing objects and content in grids). In addition, wrong business logic how active and inactive rows and cells should be lowlighted in drawing has been fixed.
* E3HA-765 🡪 Fixed display of connector table tooltip in 2D draft view when hovering connector rectangle boxes.
* E3HA-766 🡪 Fixed tooltip creation on graphical redlining to prevent Strange behavior if mouse cursor hovers over graphical redlining artifacts in 2D drawing.
* E3HA-801 🡪 Touch support now works within the detailed schematics view regarding correct zoom and pan actions.
* E3HA-805 🡪 Fixed functionality which gets all running E³ application instances to have a valid error handling working.
* E3HA-820 🡪 Fixed crash while opening HCV with JT file included which contains instances with two or more geometrical body meshes.
* E3HA-822 🡪 Fixed problem with module mapping of segments which has no protection assigned.
* E3HA-842 🡪 Fixed multi-selection behavior and handlings for data tables, especially for modules grid when module tree will be triggered for selection change events etc. Check if control or shift key has been pressed before validating click cell events in data tables.
* E3HA-843 🡪 ENHANCEMENT: Updated business logic to handle HCV files including 3D KBL and JT data originated from E3.3DTransformer application.
* E3HA-847 🡪 Fixed crash opening multiple HCVs via MIME type (double-click HCV file in Windows Explorer).
* E3HA-848 🡪 Fixed bug with null reference exception in Excel compare result export functionality while getting wire length information from the regarding detail dialog.
* E3HA-851 🡪 Fixed issue where weight calculation yields partly unreasonable results.
* E3HA-852 🡪 Added support for multiple attached wire ID's within SVG files tagged as row type and fixed cross-highlight and selection behaviors.
* E3HA-857 🡪 ENHANCEMENT: Added two new buttons in application settings tab group of ribbon menu where the user now can review the current used wire type diameter and weight configuration.
* E3HA-859 🡪 Adjusted transformation matrix determination for 3D connector/fixing mesh object placement within 3D view to be valid based on general Daimler approach how they are filling in placement information (U/V vector) in KBL.
* E3HA-861 🡪 Car background layer of 3D view will now be removed when HCV/KBL document has been closed.
* E3HA-862 🡪 ENHANCEMENT: Added missing functionality to import and export technical data compare results from/to file.
* E3HA-863 🡪 Fixed save of compare data in technical KBL compare functionality which seemed not to work properly.
* E3HA-890 🡪 Display message box to inform user when changing general settings which affects configuration files which are initialized during load of HCV document to reload all opened HCV documents for applying changes made.
* E3HA-898 🡪 ENHANCEMENT: Extended all compare functionality to also consider component objects: Enhanced technical and graphical data compare functionalities to fully support component and fuse occurrences properly.
* E3HA-899 🡪 Display harness part number under module tree as label information. Allow user to decide whether the modules tree node check states should be considered for sorting in tree or not by selecting this behavior via context menu button on root tree node level.
* E3HA-900 🡪 Changed cable/wire length class matching functionality to case insensitive for all relevant methods in application.
* E3HA-901 🡪 Added button for calculating all bundle outside diameter values at once for each module configuration in bundle cross-section dialog.
* E3HA-902 🡪 Enhanced SVG validation and added check for white or transparent texts.
* E3HA-903 🡪 NEW FEATURE: Complex (virtual) inliner mapping: Added feature to retrieve inliner mapping information out of additional KBL files containing component's inner connectivity based on Daimler-specific approach to describe complex inliner connectors by using component box elements of KBL structure stored within xHCV containers.
* E3HA-904 🡪 NEW FEATURE: Validation/Analysis feature as check min. allowed distance for terminals on ultrasonic-spliced wires based on imported list of regarding part numbers.
* E3HA-924 🡪 Fixed invalid cross-highlight behavior in drawing while check state in technical data result grid has been changed by user.
* E3HA-925 🡪 Reworked and improved Excel export results for comparison result grids: Added additional row where compare values will be displayed in separate cells instead of combining ref./comp. values in comments.
* E3HA-926 🡪 NEW FEATURE: Added interactive check of cavity assignment for each connector.
* E3HA-927 🡪 NEW FEATURE: Import and visualization of validity check results based on Daimler-specific import format (XML structure).
* E3HA-929 🡪 Added check if JT model exists in HCV container and skip usage of connector/fixing 3D meshes from library within 3D view.
* E3HA-934 🡪 Fixed crash in technical compare dialog depending while general inverse flag setting has been set to true.
* E3HA-949 🡪 Fixed printer dialog handlings while user made changes.
* E3HA-950 🡪 Fixed crash on printing if PDF printers has been used and custom sizes are too large.
* E3HA-951 🡪 Allow scaling on PDF export.
* E3HA-1007 🡪 NEW FEATURE: Export bundle inner structure of wires/cables to Excel in bundle cross-section dialog of selected segment for usage within COMSOL application.
* E3HA-1030 🡪 Hide all context menu buttons except for changing marked row logic when user right-clicks a marked row which is not active nor selected to prevent crashes.
* E3HA-1042 🡪 Fixed technical data comparison for nets.
* E3HA-1044 🡪 Fixed dirty tagging in 3D view for background car model if transformation has been modified by user.
* E3HA-1045 🡪 Fixed crash while loading corrupt HCV file and check if mapper strictures are not empty.

## V2020.1.0 🡪 V2020.1.1

* E3HA-1078 🡪Fixed crash of inliner overview if trivial inliners are to be displayed and there is no face view.
* E3HA-1081 🡪 Removed debug exception in schematics loader.
* E3HA-1082 🡪Added component highlight from 3D JT components to grid.
* E3HA-1091 🡪 Fixed display of table change marker in graphical compare.
* E3HA-1096 🡪 Fixed unit display if units are now modelled closely to the kbl spec (NX kbl case).
* E3HA-1101 🡪 Path definitions with ending z-command (close path) without blank are fixed.
* E3HA-1112 🡪 In case graphical dimensions are linked to dimension objects in kbl, the module control and hiding of the dimension in grid and graphics is fixed.
* E3HA-1113 🡪 On copying of default settings-XMLs, an existing target file gets overwritten now.

## V2020.1.1 🡪 V2020.1.2

* E3HA-1155🡪 Fixed wrong position of navigator marker within sheet context.
* E3HA-1132🡪 Fixed 3D import and handling of not existing z-coordinates from kbl.
* E3HA-1157🡪 Fixed wrong business logic in ultrasonic splice terminal distance check.

## V2020.1.2 🡪 V2020.1.3

* E3HA-1108🡪 Integrated and updated topology compare function.

## V2020.1.3 🡪 V2020.1.4

* E3HA-1189🡪 Fixed dimension compare crash on added or modified dimensions.

## V2020.1.4 🡪 V2021.1.1

* E3HA-170🡪 Major exchange of VDraw graphic kernel 6028 to 8.8005
* E3HA-1079🡪 DXF and DWG export failed on export graphics. This was due to an installation issue.
* E3HA-1108🡪 Added feature “Structural TopoCompare” (extra license feature).
* E3HA-1132🡪 Fixed issue with Z-coordinate access, if not written in kbl.
* E3HA-1147🡪 Added analysis view feature: “Usage of part number” finder.
* E3HA-1155🡪 Fixed wrong location display in navigator hub.
* E3HA-1160🡪 Fixed missing update of bundle view if “ENTF” key was used on user wires.
* E3HA-1164🡪 Fixed missing localization of tool tip message on redlining.
* E3HA-1166🡪 Added feature to bulk reset filters on tabs in information hub.
* E3HA-1167🡪 Added feature to ease selection of modules in modules hub by additional context menu entries.
* E3HA-1168🡪 Added display of absolute position values from kbl on protections and fixings in information hub.
* E3HA-1169🡪 Added new feature to visualize the contacting of special connectors like FAKRA or Ethernet, evaluating the contact point modelling from kbl.
* E3HA-1186🡪 Added new feature to ease adding of redlining on cavities and connectors directly from the cavity check function.
* E3HA-1187🡪 Fixed localization of connector to “Kontaktgehäuse” instead of “Stecker”.
* E3HA-1189🡪 Fixed crash on compare of dimensions if these were added or removed.
* E3HA-1190🡪 Fixed wrong highlight from compare to drawing tabs as this was not considered on implementation of the inverse compare.
* E3HA-1191🡪 Modified the highlighting of nodes and dimension objects. There was an implicit highlight to the dimensions as these were not in the kbl, but now the real dimension objects are used and their linkage in now evaluated.
* E3HA-1194🡪 Extended the key on entire car settings to the part number of the harness and additionally the version number.
* E3HA-1199🡪 Extended the analysis view also on 3D. Restructured analysis view selection dialogs and improved performance.
* E3HA-1200🡪 Added feature splice position proposal in 3D view.
* E3HA-1201🡪 Added feature show connectivity rubber lines in 3D.
* E3HA-1211🡪 Added new 3D view for each individual HCV additionally to the consolidated 3D view for the entire vehicle.
* E3HA-1219🡪 Fixed missing display of fixings in 3D if placement is given in kbl, but this fixing is not found in JT.
* E3HA-1223🡪 Improved Zoom and Pan handing in 2D drawings on switch of the drawing tabs. The previous state is now kept.
* E3HA-1225🡪 Improved speed by keeping the navigator image if created after load with zoom extends and only adding the markers on change.
* E3HA-1230🡪 Disabled QM-stamp functionality in 3D view as it is not usable here.
* E3HA-1231🡪 Fixed missing localization in edit issues from for quality stamps.
* E3HA-1236🡪 Fixed file access to all read only files. This could lead to a failure if a locked or read only tagged file is opened.
* E3HA-1241🡪 Removed localized entry on object type in redlining to avoid display changes if application language is changed.
* E3HA-1242🡪 Fixed crash if loading of additional documents failed due to cleanup.
* E3HA-1244🡪 Fixed crash on delete of last entry in redlining grid.
* E3HA-1246🡪 Fixed crash on delete of cavity redlining in redlining grid.
* E3HA-1247🡪 Fixed localization of reference object type in quality stamp grid.
* E3HA-1249🡪 Fixed slow mouse move behavior on large document frames if there are many other information like i.e. tables are directly located within the frame’s svg group.
* E3HA-1256🡪 Fixed crash on schematics view if kbl contains component box connectors.
* E3HA-1258🡪 Added schematic entry from cavity in connector hub.
* E3HA-1280🡪 Implemented display of embedded images (base64-coded) in svg.

## V2021.1.1 🡪 V2021.1.2

* E3HA-1294🡪 Fixed blocking if any Excel export to a network drive tried to query the overwriting.
* E3HA-1297🡪 Fixed svg path handling if implicit ‘lineto’ -commands are used.
* E3HA-1298🡪Fixed crash on change of the display leaders in the topology structural compare (segment, vertex and package).
* E3HA-1299🡪 Added possibility to separately set the length classes on both documents in the topology structural compare.
* E3HA-1301🡪 Display the document names on both views within the topology structural compare.
* E3HA-1302🡪 Enhanced switch of change selector if only one single change is existing. (Starts now from 0)
* E3HA-1304🡪Added export of compare in topology structural compare to Excel.
* E3HA-1306🡪 Fixed rounding of CSA display in the connector table in 3D popup.
* E3HA-1307🡪 Fixed crash on switch between 2D and 3D and clicking in the 2D canvas.
* E3HA-1309🡪 Fixed opening of “change” entry in harness tab of information hub on German localization.

## V2021.1.2 🡪 V2021.1.3

* E3HA-1276🡪 Fixed wrong sequence of text drawing with background in text block of page frame.
* E3HA-1310🡪 Fixed missing display of empty cavities in generic 3D connector table (pop up).
* E3HA-1311🡪 Modified wire and module display as well as plug part number handling in 2D draft connector table.
* E3HA-1313🡪 Added special feature to allow opening of E3Xml files in draft mode.
* E3HA-1314🡪 Fixed reset of panes if drawings tree was moved out.
* E3HA-1318🡪 Fixed wrong deletion of flmac dll on second start of application in as admin.
* E3HA-1321🡪 Fixed missing text update after Pan operation.
* E3HA-1323🡪 Fixed wrong behavior of Pan Button in ribbon on change of drawing (multiple tabs in one document).
* E3HA-1325🡪 Fixed wrong selection from wire row or terminal cell to Grid if 3D License is active.
* E3HA-1327🡪 Fixed lost coloring of redlining markers.
* E3HA-1328🡪 Fixed wrong compare on canvas selection which resulted in missing selection.

## V2021.1.3 🡪 V2021.1.4

* E3HA-1336🡪 Fixed wrong reference to library in install package for topology comparer.
* E3HA-1341🡪 Fixed license borrowing and evaluation of features from server.

## V2021.1.4 🡪 V2021.1.5

* E3HA-1355🡪 Fixed display problem with Quality-Stamps if these were created with a different language setting than the consuming system.

## V2021.1.5 🡪 V2022.1.0

* E3HA-1205🡪Reworked the object handling in 3D consolidated view using the already loaded entities from the individual views.
* E3HA-1370🡪Fixed implicit segment module control if cores of multicores were partially routed through them.
* E3HA-1388🡪Fixed module control of segments if only one wire without module assignment is routed through it.
* E3HA-1349🡪Added new view of 3D connector models in cavity checker and inliner transition dialog.
* E3HA-1389🡪Fixed display of connector faces in cavity checker; these could get displayed highlighted if selected from the canvas.
* E3HA-1344🡪Added highlight of segment trace in 3D on distance calculation.
* E3HA-1338🡪Added magnifier in 2D drawings.
* E3HA-1374🡪Added deletion of HA settings in the user’s profile if a newer version of HA was installed an started.
* E3HA-1381🡪Fixed crash on selection of supplements in 3D.
* E3HA-1380🡪Fixed crash on show of StartEndConnector if no kbl connection is available.
* E3HA-1378🡪Reworked plmxml importing regarding multicores-these were missing.
* E3HA-1369🡪Added culture dependent call of help files, German help can now be called.
* E3HA-1375🡪Fixed tab display of drawings if loaded from the document tree; it could happen that the graphics and the corresponding tab got mixed up.
* E3HA-1373🡪Fixed deselection from 3D to 2D drawings-the deselection worked only on the information hub.
* E3HA-1371🡪Improved cavity low/highlight on module control if cavity column has own identifier.
* E3HA-1367🡪Fixed display and handling of change markers in graphical compare in case the sheets to compare were changed.
* E3HA-1330🡪Added some minor properties introduced by kbl 2.5.
* E3HA-1366🡪Fixed implicit segment control on module changed if more than one protection is on the corresponding segment.
* E3HA-1346🡪Enhanced custom filters in information hub so that these can be reopened for editing.
* E3HA-1365🡪Fixed import of quality stamps if these have no object reference.
* E3HA-1354🡪Enhanced check of white text in drawings-images with white text are not considered any longer.
* E3HA-1355🡪Fixed missing display of quality stamps if language setting does not correspond to the initial definition of these stamps.
* E3HA-1347🡪Added module information to 3D pop up property display.
* E3HA-1350🡪Separated bundle tolerance definition to innovation and basic tolerance.
* E3HA-1352🡪Added modul highlight also to 3D view.
* E3HA-1238🡪Enhanced printing of 3D documents.
* E3HA-1341🡪Fixed borrowing on retrieval of DSI feature.
* E3HA-1333🡪Reworked svg pattern handling to allow for more complex fillings.
* E3HA-1337🡪Modified module control of connector faces/models in 3D view; the implicit logic to show it even if only a linked additional part is active was removed.
* E3HA-1323🡪Improved pan and magnifier handling on switch of individual views (tabs) within a document. These functions are now on /off for all tabs of the document.
* E3HA-1342🡪Adjusted BOM regarding plug replacement definition within the kbl.
* E3HA-1348🡪Added parameterization of connector table columns in 3D pop
* E3HA-1334🡪Enhanced BOM view on active modules. There was a problem if old part number structure (with white space) and new were mixed.
* E3HA-1325🡪Fixed selection from 2D terminal in drawing to information hub. Instead of the connector, the cavity gets now selected.
* E3HA-1376🡪Fixed problem with sequence of drawing text (and other graphics) if these are on white background fillings.
* E3HA-1343🡪Added localized description from kbl to several grid within the information hub.
* E3HA-1343🡪Updated schematics viewer to lates version.
* E3HA-1398🡪Added start node display to information hub on fixings and segment protection for reference to position information.
* E3HA-1400🡪Added display of processing instructions on fixing assignments to fixings grid in information hub.

## V2022.1.0 🡪 V2022.1.1

* E3HA-1421🡪Added localized description to modules and harness in information hub.
* E3HA-1422🡪Fixed missing Infragistics assembly regarding filter in information hub.
* E3HA-1423🡪Added display of tooltip on plug / seal replacements in active modules BOM form.

## V2022.1.1 🡪 V2022.1.2

* E3HA-1424🡪Fixed crash on close of printing dialog if no 3D content is in hcv.

## V2022.1.2 🡪 V2022.1.3

* E3HA-1426🡪Fixed wrong CSA calculation on bundle view in packaged mode.

## V2022.1.3 🡪 V2022.1.4

* E3HA-1430🡪Fixed missing check on existence of kbl tag BendRadius on compare. This was only checked on one document and assumed to be the same on the other document, which is only valid for kbls from the same provider.
* **E3LIB-1443**🡪Exchanged license key in core tech jt library which caused 3D license error on opening of 3D hcvs with JT content.
* **E3HA-1440**🡪Fixed missing check on retrieval of changes details in harness tab.

## V2022.1.4 🡪 V2022.1.5

* E3HA-1472🡪Fixed Regex on import of E3XML on vertex coordinates if these are negative.
* E3HA-1458🡪Added position import of fixings from E3XML, if these are on segments but not on way points and have position value.
* E3HA-1459🡪Fixed import of modules from E3XML if assignment is entirely missing.
* E3HA-1453,1455🡪Added proper length class detail display on kbl data compare.
* E3HA-1457🡪Fixed sequence depending data compare on modules in case the controlled components are different.
* E3HA-1438🡪Fixed wrong calculation of tape length if start and end position are equal.
* E3HA-1445🡪Fixed overall connectivity display regarding missing parts depending on the sequence of tracing.
* E3HA-1446🡪Fixed show entire routing path and traces via inliners which were not detected in all cases.

## V2022.1.5 🡪 V2023.1.0

* E3HA-1447🡪Added new function to compare different modules in case of composite harnesses.
* E3HA-1449🡪Added new function to show dimension specification from kbl in 3D view.
* E3HA-1452🡪Added export to kbl if input source was E3Xml.
* E3HA-1454🡪Added new function to show clock symbols (mounting and plugging direction) in 3D view.
* E3HA-1460🡪Fixed missing docking of cavity grid in cavity checking function.
* E3HA-1462🡪Fixed touch support-this crashed on activation in general settings.
* E3HA-1464🡪Optimized display of text in draft mode, removed display of branch ids as these are not user friendly.
* E3HA-1466🡪Fixed localization errors in general settings.
* E3HA-1467🡪Fixed display of axis cursor in 2D drawing. This was not displayed properly any longer.
* E3HA-1474🡪Fixed crosslink of accessories to connectors in case there are more than one. Idref resolution did not consider multiplicity.
* E3HA-1477🡪Added location information on accessories in information hub. These may be referenced in the fixing assignments on segments.
* E3HA-1478🡪Added TextBased-Instructions to 3D pop up on connectors, segments, protections, and fixings.
* E3HA-1481🡪Added highlight form changed elements to their corresponding elements in 2D and 3D.
* E3HA-1482🡪Added accessory display to draft mode.
* E3HA-1484🡪Added clock values (mounting and plugging directions) to pop up display on fixings and connectors in 3D.
* E3HA-1485🡪Added possibility to highlight starting or ending vertices on location definitions, so that these can be found easily for understanding the reference point. Any “eye” icon is shown in these cases in the information hub or the 3D pop up.
* E3HA-1487🡪Fixed bug in display of the segments CSA in the 3D pop up, if there are more than one CSA value given within the kbl.
* E3HA-1488🡪Added highlight from dimension specifications to 2D and 2D. Starting or ending objects are highlighted, respectively corresponding segments if these are referenced in the kbl.
* E3HA-1489🡪Improved selection of accessories which are underneath a segment’s protection in 3D.
* E3HA-1490🡪Added optional display of the viewing start point on a node in 3D.
* E3HA-1491🡪Added missing jumps to corresponding accessories in the information hub (kbl 2.5 extension).
* E3HA-1495🡪Fixed crash on 3D view if mouse wheel is activated during load of the document.
* E3HA-1501🡪Fixed wrong creation of protections which span several segments via nodes.
* E3HA-1502🡪Fixed possible wrong retrieval of material specification in weight or resistance calculation if multiple documents are involved.
* E3HA-1505🡪Added version number to WeightSettings.xml, DiameterSettings.xml and QualitiyStampSpecification.xml for better traceability.
* E3HA-1508🡪Added highlight of starting and ending objects from dimension specifications in 2D.
* E3HA-1509🡪Added new function for calculation of voltage drop and power dissipation for individual wires in a trace of connectivity.
* E3HA-1512🡪Added jump from redlining on protection to 2D drawing (Redlining grid).
* E3HA-1239🡪Added pencil icon to visualize existence of redlining on the different design objects.
* E3HA-1520🡪Fixed crash on click of an QM issue (Row header) in the “Edit QM- Issues” Form.
* E3HA-1521🡪Fixed crash on export of technical compare result if referenced cavities are filled within Vertices.
* E3HA-1522🡪Fixed crash on change of length classes in general settings if xHCV was opened.
* E3HA-1524🡪Fixed partly wrong display of 3D connector models in inliner overview from (multiple connectors instead of only one).
* E3HA-1529🡪Fixed blocking of context menu on tab headers of information hub in conjunction with mark select logic and deselection of rows.
* E3HA-1532🡪Fixed length unit display in tooltips in detail information form when called from technical compare.
* E3HA-1533🡪Added new feature to display video tutorials.
* E3HA-1537🡪Fixed export of all tables to excel if previously selected rows were requested.

## V2023.1.0 🡪 V2023.1.1

* E3HA-1539🡪Fixed crash on adding of redlinings to cavities if 3D document exists.
* E3HA-1541🡪Improved detection of splices in PlmXml files.

## V2023.1.1 🡪 V2024.1.0

* E3HA-1525🡪Reworked /restructured inliner definition in general settings to handle the suffix and version problem (\*-S\_v1). The definition of the component / splice / eyelet detection for the schematics view was reworked here, too. There is only one definition for inliners now to be used for the entire logic as well as the schematics view.
* E3HA-1527🡪Fixed possible problem of inliner pair detection if two inliners with the same suffix are encountered. These were considered to be a pair, so it could happen that -S was plugged to -S.
* E3HA-1539🡪A possible crash on adding redlinings to cavities was fixed.
* E3HA-1541🡪The detection of splices if imported from PLMXML was improved.
* E3HA-1545🡪The bundle calculation was not properly updated if the modul activity was changed in the modules hub. The 3D bundles were also not recalculated. This is fixed now.
* E3HA-1547🡪The compare of length class values is made case insensitive as there were different casings found in different kbl files.
* E3HA-1548🡪The current value entered by the user in the voltage drop calculation is kept between the different calls of the calculator to ease handling.
* E3HA-1549🡪Consolidated the settings of inliner detection definition in general settings to be used throughout the system.
* E3HA-1553🡪Fixed layout problem in contacting view - there were pins drawn on top of each other.
* E3HA-1554🡪Fixed splice detection in schematics view to also consider the usage definition from the kbl.
* E3HA-1555🡪A crash on switching of the normal and implicit dimensions in 3D was fixed depending on the start node definition.
* E3HA-1556🡪The display of dimensions was improved if the value is 0 from the start node to a fixing. This is left out now.
* E3HA-1578🡪Fixed exclusion handling of alias Ids on compare of protections.
* E3HA-1584🡪Add compare of placement changes on fixings, accessories and connectors by evaluating the placement vector information.
* E3HA-1596🡪Fixed possible crash on compare if external references are used and are different.
* E3HA-1597🡪Added feature to allow for standalone usage of the bundle calculator without having a hcv opened.
* E3HA-1561🡪Added functionality for hiding objects in 3D view to allow access to the inner objects (i.e. fuse boxes or cable ducts).
* E3HA-1567🡪Fixed weight calculation on modules for tapes and tubes. Tapes are now left out as there is data missing to be able to calculate from the kbl modules and on tubes this is fixed respecting the definition of the protection length.
* E3HA-1568🡪Fixed crash on pan operation in consolidated 3D view if a background car model is loaded.
* E3HA-1581🡪Added display of absolute position changes in detail information form on data compare.
* E3HA-1582🡪Added display of absolute length information in the 3D property dialog on protections if these are not supplied by the kbl.
* E3HA-1583🡪New feature section dimensions is available in 3D to visualize the dimensions in between objects like protection or clips.
* E3HA-1587🡪New feature kbl data compare with 3D augmentation is available. Both 3D documents get overlayed and can be faded across to see changes also in 3D.
* E3HA-1593🡪Fixed JT loading error if protections occur without being linked to segments. This can happen if protections are defined on nodes.
* E3HA-1599🡪Renamed “Dimensions” to “Reference Dimensions” in markers to align to existing user understanding.
* E3HA-1602🡪Modified the sequence of display of the clock symbols on clips and fixings to match the existing standard.
* E3HA-1603🡪Added end view direction symbol additionally to the existing start view and exchanged the text display by a given symbol.
* E3HA-1604🡪Added direction markers (clock symbols) on segments.
* E3HA-1606🡪Fixed highlight and selection behavior in cavity checker if autosync property is true.
* E3HA-1605🡪Added hint indicator in the 3D view, displaying the processing or installation instructions which are tagged as “TextbasedInstructions” supplied on several objects within the kbl.
* E3HA-1607🡪Fixed missing access to the detail dialog on certain entries in the data compare.
* E3HA-1609🡪Added display of Csa, color and wire type directly in the connector tab of the information hub.
* E3HA-1610🡪Added supplements and fuses in a table below the connector table in the 3D property dialog.
* E3HA-1616🡪Added new feature to allow for multiple pinned property popup dialogs in the 3D view.
* E3HA-1619🡪Fixed svg path handling on arc definitions within path command. These were not properly closed and closing lines might get lost. These structures were generated by E3 svg and they are still not fillable.
* E3HA-1623🡪Using E3XML in HarnessAnalyzer needs to mirror the Y axis due to different coordinate systems. This was changed now to mirror not only graphically, but also the Y coordinates in the data, so that a successive kbl export has mirrored coordinates, too.
* E3HA-1631🡪Fixed wrong Id handling in consolidated schematics view. This crashed the application before on load of certain xHCVs.
* E3HA-1442🡪The “Export model” button is now disabled if there is no model to be exported.