SCODE Workbench 3.1

Release Notes

Copyright

Contents

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1 Introduction

SCODE Workbench comprises the following two components:

- SCODE-ANALYZER
- SCODE-CONGRA

1.1 SCODE-ANALYZER

SCODE-ANALYZER employs the SCODE Essential Analysis approach, which is a structured method used to increase the understanding of a problem and to reduce the complexity in the subsequent software and systems design. Often the term SCODE is used as a synonym for the SCODE Essential Analysis method. However, in a more general way, SCODE stands for System Co-Design, thus the co-engineering across different disciplines, e.g. control, software and hardware engineering.

Focus is on mastering the complexity of the software in automotive systems. Drivers for the complexity are increasing functionality, real-time behavior, and customer variance. The Essential Analysis for physically dominated systems is an analysis method that allows reducing the system complexity to the unavoidable inherent problem complexity. This method has been applied successfully on several product relevant subsystems.

1.2 SCODE-CONGRA

SCODE-CONGRA is designed to help you define and analyze continuous systems, simulate them and generating code.

The novel approach is that the system is described purely in form of variables, relations, and equations.

The equations are "undirected" and depending on which variables are marked as inputs, the equations are solved in the corresponding direction and code is generated representing the result of this direction of equations.

SCODE Workbench is an Eclipse-based product. If you are familiar with using an Eclipse environment, then you should feel at home.

1.3 References

- SCODE Workbench Getting Started.pdf
- Safety Advice.pdf

Both are available in the installed product.

1.4 Presentation of Supporting Information

`OCI_CANTxMessage msg0 =` Code snippets are presented in the Courier font.

Meaning and usage of each command are explained by means of comments. The comments are enclosed by the usual syntax for comments.

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Choose **File** > **Open**.	Menu commands are shown in boldface.
Click **OK**.	Buttons are shown in boldface.
Press <ENTER>.	Keyboard commands are shown in angled brackets in small caps.
The "Open File" dialog box is displayed.	Names of program windows, dialog boxes, fields, etc. are shown in quotation marks.
Select the file `setup.exe`	Text in drop-down lists on the screen, program code, as well as path- and file names are shown in the Courier font.
A *distribution* is always a one-dimensional table of sample points.	General emphasis and new terms are set in italics.

1.5 User Documentation

The SCODE Workbench user's documentation is provided as PDF (Getting Started) and online help. The online help is available at any time via the **Help → Help Contents** menu.

The Getting Started manual in PDF format can be found on the installation disk and in the `documents` subfolder of your installation directory.

2 Product Definition

2.1 Functions at a Glance

2.1.1 SCODE-ANALYZER

SCODE-ANALYZER yields a decomposition of the overall problem in several smaller sub-problems, which can be solved separately and more easily. The integration of the sub-problem solutions then provides the overall solution to the original problem. Main features of the tool are:

- An editor to define the input and output space by a Zwicky box in terms of Dimensions and Alternatives
- An editor to define modes by assigning input sets to output sets taking into account different analyses on input and output spaces
- An editor to define mode transitions to specify which context changes cause a transition between system modes
- A graphical editor to show the decision tree for modes and transitions which can be optimized to find the shortest transition between system modes
- Extensible code generators that can translate the system into code. This code can be executed or simulated, or post processed and integrated in real life production code.

2.1.2 SCODE-CONGRA

SCODE-CONGRA is a tool for designing system and generating code, both simulation and production code. The system can be described both graphically and textually. Main features of the tool are:

- A graphical editor enabling you to describe the content of your system using common graphical editing patterns as known from modeling tools
- A textual editor for the in the "System Equation Language" (syq) enabling you to describe the content of the system in an alternative way.
- An execution environment that answer important questions on the solvability, stability, as well as sensitivities in the specified system.
- Extensible code generators translate a given system into code. This code can be executed or simulated, or post processed and integrated in real life production code for e.g. control applications.
- A coupling with a simulation tool, which allows you to run the generated code on another platform and validate your model.

2.2 General Description

2.2.1 System Prerequisites

The following minimum system prerequisites must be met:

Required Hardware	2.0 GHz Dual-Core PC or equivalent
	4 GB RAM
	DVD-ROM drive (applicable for DVD based installation only)
	Network adapter
	Graphics with a resolution of at least 1024x768
Required Operating System	Windows® 10 (x64)
Required Free Disk Space	800 MB (not including the size for application data)

The following system prerequisites are recommended:

Recommended Hardware	2,0 GHz Quad-Core PC or equivalent
	8 GB RAM
	DVD-ROM drive (applicable for DVD based installation only)
	Network adapter
	Graphics with a resolution of 1920x1080
Recommended Operating System	Windows® 10 (x64)
Recommended Free Disk Space	>2,0 GB

2.2.2 Software Prerequisites

SCODE-CONGRA will require a Computer Algebra System (CAS) to execute most of its functionality. The free CAS Maxima is provided with the installer. If installed during the installation of SCODE-CONGRA, Maxima is also configured correctly in the tool.

An installation of MATLAB® is required for Simulink integration between SCODE Workbench and MATLAB® and Simulink®.

2.2.3 Release Test Configuration

2.2.3.1 Host Platform

SCODE Workbench has been tested on the following host platforms:

- Windows 10 (64-bit, versions 1903, 1909)

2.2.3.2 Java^{TM} Platform

SCODE Workbench has been tested with the following JRE:

- openjdk version "11.0.14.1" 2022-02-08
- OpenJDK Runtime Environment Temurin-11.0.14.1+1 (build 11.0.14.1+1)
- OpenJDK 64-Bit Server VM Temurin-11.0.14.1+1 (build 11.0.14.1+1, mixed mode)

2.2.3.3 Eclipse Target Platform

SCODE Workbench has been tested on the following Eclipse platform releases:

Eclipse Platform Releases	Product Platform	Update Site
Eclipse 2021-06 (4.20)	✓	

Product platform indicates the version of the Eclipse workbench installed when you install SCODE Workbench from product installer.

Update site indicates the version(s) of Eclipse that are supported when installing SCODE Workbench from a compatible update site on the product DVD.

The Eclipse target platform configuration for each of these releases is provided on the DVD in the folder `EclipseTargetPlatforms`.

You can access the Eclipse target platform configuration for your using the following steps:

1. Install the product.
2. Start SCODE.
3. Go to **Help → About SCODE Workbench.**
4. Click "Installation Details".
5. Select the "Configuration Tab".

2.2.3.4 3rd Party Products

This release of SCODE Workbench has been tested using the following products:

Product	Version
MathWorks®: MATLAB® and Simulink®	MATLAB 2016b, 2017b, 2018b, 2019b,2020b
QTronic FMU SDK[1]	2.0.3

2.3 Delivery

The software is delivered with an installation routine on a DVD including SCODE Workbench software, documentation, tools, utilities, and further information. All software documentation is available in the Portable Document Format (PDF), which requires a PDF Reader.

The DVD contains the following items:

File or Directory	Description
Autostart.exe	The executable for starting the ETAS Product Installation program.
Start.exe	The ETAS Product Installation program.
Start.ico	The SCODE Workbench icon.

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[1] https://www.synopsys.com/verification/virtual-prototyping/virtual-ecu/fmu-sdk.html

`install\ETAS SCODE Workbench 3.1`	Directory containing the software installation of SCODE Workbench.
`\Documentation`	Directory containing copies of the PDG user documentation.
`\Documentation\Open Source Software`	Directory containing information about 3rd party open source software used in or provided for use with SCODE Workbench. Including copies of the licenses under which this software is used.
`\HTML`	Directory containing text and images for the DVD.

2.3.1 Used 3rd Party Software

SCODE Workbench makes use of third-party software components. Licensing information for these components can be found in `Documentation\SCODE Workbench 3.1 OSS Attributions.pdf`.

2.4 Installation

SCODE Workbench is distributed as a standard Microsoft Windows installer. Run `setup.exe` and follow the on-screen instructions to install the SCODE Workbench product.

Installation procedures and hints can be found in `Documentation\SCODE Workbench 3.1 Getting Started.pdf`.

2.5 Licensing

Licenses can be ordered via your regional ETAS sales representative.

For evaluation of the product, there is the possibility to request evaluation licenses with a 3 months duration. Please contact your regional ETAS Sales Representative.

Starting from SCODE Workbench 3.1 Release, all machine based licenses for SCODE-ANALYZER and SCODE-CONGRA will be issued with a new technology Flex Net Embedded. For more details see https://www.etas.com/download-center-files/company/License_Management_FAQ_20200730.pdf.

3 Changes

This chapter describes changes with respect to the previous version of SCODE Workbench.

3.1 What's New in SCODE Workbench 3.1

3.1.1 General

- The underlying Eclipse platform is upgraded to 2021-06 4.20
- Function Packaging is set to "Inline" for all MATLAB Functions blocks created by the SCODE Workbench

3.1.2 SCODE-ANALYZER

- Generate information about model size and complexity into generated artefacts
- Fingerprint computation for variants
- Compilation and execution of variant specific verification code
- Include "Stay in mode" checks for non-system states in test vector
- Generate TPT wrapper code
- Channel names in csv file follow same rules as for code generation
- Export image of problem space
- Launch configuration for TPT test vector generation
- Launch configuration for C code generation
- Compute BDD from the structure of the decision tree
- Validation on decision tree
- Update linked dimension
- Convert a CONDITION dimension to a MODE.LINK dimension
- Convert COND.LINK and ZWICKYBOX dimensions to CONDITION dimensions and ACTION.LINK dimensions to ACTION dimensions
- Code generation for variant subsystems

3.1.3 SCODE-CONGRA

- Widen scope of verification by outputting all intermediate variables
- Option to configure print statement in verification code has been added
- Verification code return success variable
- Additional argument for precision used for equality operator
- Remove "Flattened model" option for "Structural analysis mode"
- Improved tearing algorithm to return best found solution
- Export of graphical elements now includes images of equations

3.2   Compatibility to Earlier Releases

It is recommended to use a new workspace with each new release. Additional semantic checks and analyses introduced may cause models originally developed in earlier releases to generate new warnings and errors.

Update sites for import and conversion of out-dated mint and mxe files are no longer supported. For conversion from mint or mxe the user should use SCODE Workbench release 2.6.3 and the corresponding update sites.

Users may have to perform 'Configure' to convert existing projects from an older version to a SCODE-ANALYZER nature or a SCODE-CONGRA nature for this release.

3.3   Known Issue Reports

If a product issue develops, ETAS will prepare a Known Issue Report (KIR) and post it on the internet. The report includes information regarding the technical impact and status of the solution. Therefore, you must check the KIR applicable to this ETAS product version and follow the relevant instructions prior to operation of the product.

The Known Issue Report (KIR) can be found here: https://www.etas.com/kir

3.4   Known Issues

This section describes the set of known problems.

3.4.1   SCODE-ANALYZER

Issue Reference	Description
SCT-86	**Warnings are logged in the .log file when commands have no category defined** The `*.log` file may contain warnings from an Eclipse plug-in that commands should have a category. **Workaround:** None, since these warnings have no functional impact.
SCT-88 **SCT-19489**	**Decision tree: performing undo/redo multiple times leads to crash the layout** **Workaround:** Click on Reorder Globally to retrieve the graph.
SCT-762	**Dropdown for description font and size in the property page is shown only half** **Workaround:** Clicking on the dropdown lets you choose the font and size.
SCT-993	**Simulink integration may not work if multiple versions of SCODE Workbench are open at the same time** **Workaround:** Close all running SCODE Workbench instances except the one to be used for Simulink integration.

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Issue Reference	Description
SCT-13163	**Folders and projects may be renamed by invalid names** It is possible to use invalid names for folder and project names via F2 or rename . This may impede code generation. **Workaround:** Rename folders and projects watchfully.
SCT-16706	**Editor not updated when using Egit** When updating files in the workspace using git, the editor(s) will not be updated automatically. **Workaround:** Close and reopen the editor(s).
SCT-18088	**Code is generated to wrong target folder** Code for the model `ab.c.scode` is generated to the same folder as the code for model `ab_c.scode`. **Workaround:** Do not use dots in filenames.
SCT-18503	**Default transition behavior 'Based on target mode' does not consider walkthroughs** **Workaround:** Define events to explicitly exclude the walkthrough target states.
SCT-18514	**Edge labels may overlap in DAG view of decision tree** **Workaround:** Use Tree view.
SCT-18774	**Workspace caches error states from deleted project** **Workaround:** Disable 'Nested Projects' in the 'Content' tab of the 'Filters and Customization …' menu of the project explorer
SCT-18794	**'Copy-paste' and 'Rename (F2)' allow invalid project and model names** **Workaround:** See SCT-13163.
SCT-19127	**PDF report may have truncated table cell content** **Workaround:** Create a WORD report, open the created report file with Microsoft Word and save the document as PDF.
SCT-19153	**No rule suggestions for inconsistencies in non-system mode** **Workaround:** Toggle the non-system mode to a system mode, fix the overlapping rules and toggle the system mode back to a non-system mode.
SCT-19455	**Declared package does not match the expected package in generated ESDL code** Target folders for ESDL code in SCODE Workbench are not recognized as a valid ESDL package. **Workaround:** Copy the folder that contains the generated artifacts to the desired ASCET-DEVELOPER workspace.
SCT-19657	**Custom script is executed multiple times after connected block is updated** **Workaround:** None.

Issue Reference	Description
SCT-19659	**Report may look strange in WORD and PDF format when YAKINDU Traceability is installed and active** **Workaround:** Temporarily deactivate the YAKINDU Traceability license for report generation. Alternatively, use HTML or EHANDBOOK as report file type.
SCT-19673	**Build view shows green flag even if no MATLAB code is generated** SCODE Workbench does not report that code generation fails because MATLAB has locked an m-file. **Workaround:** Make sure MATLAB does not lock files which are expected to be replaced during code generation.
SCT-19705	**Decision tree for outgoing transitions of a mode does not show condition dimension nodes which are involved in outgoing transitions when all other alternatives of this condition dimension belong to the 'No transition' event of this mode.** **Workaround:** Click the 'Show non-transitions' button in the toolbar of the decision tree to display all nodes involved in the decision tree.
SCT-19784	**Updating the decision tree does not set model in an un-saved state** Clicking the link *"Results may not be up to date. Click here to update"* on a saved model does not make the "Save" command available. **Workaround:** Drag any node in the tree to a different position or click the "*Reload and shuffle tree*" button.
SCT-19817	**Functional dependencies show incorrect result** In case non-unique actions are present in exclude rules, the functional dependencies my show incorrect result. **Workaround:** Clean the model from non-unique actions.
SCT-20211	**Toggle start mode not working for empty mode** It's not possible to set an empty mode as start mode using the context menu. **Workaround:** Use the toolbar button.
SCT-20272	**Decision tree canvas might be empty** This can happen in case "Go into" was selected before, possibly for another decision tree. **Workaround:** Use "Go up" to display the whole tree.
SCT-20425	**Non-system states cannot be shown in decision tree after optimization** When the update link is displayed, the non-system states cannot be activated in the decision tree. **Workaround:** To save an optimized tree with shown non-system states, please activate the non-system states before starting the optimization.

Issue Reference	Description
SCT-20769	**Mode filter not working correctly for actions** **Workaround:** None.
SCT-20785	**Outline does not show the decision tree properly** Only part of the tree might be visible in the outline. **Workaround:** None.
SCT-20795	**Wrong result when reducing rules** Occurs when a rule and its complete negation are reduced. This is a corner case, as these rules model the whole problem space.
SCT-20796	**Implementation names may collide with dimension names** Might occur when dimension names contain characters that will be replaced in the generated code such as blanks. **Workaround:** Review the model and code for such names and replace them.
SCT-20813	**Reduce rules not working correctly when model contains non-unique actions** **Workaround:** Clean the model from non-unique actions.

3.4.2 SCODE-CONGRA

Issue Reference	Description
SCT-9, SCT-19088	**Rename of folder causes errors in SYQ file** Renaming a folder (aka package) the package name in the SYQ files does not update and causes errors. **Workaround:** Manually copy the files to the new package folder and rename the package internally also manually.
SCT-96	**Execution Environment does not support nested tearing** Computations with nested tearings cannot be executed in the execution environment. **Workaround:** Use execution environments for the generated code, e.g. of the MATLAB or C code.
SCT-192	**Solutions manually provided to the cache may be ignored** When providing manually a solution to the cache, if the request is a conditional equation then the solution has to be conditional otherwise it will be ignored. **Workaround:** Provide the same solution in the else expression and the solution will be used.
SCT-211	**Integrate/Delay relations with arguments of libraries is not possible** Modelling of such relations will work in the tool, even though the generated code might be erroneous. **Workaround:** Do not use integrate/delay relations with arguments of libraries.

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Issue Reference	Description
SCT-646	**MATLAB® licencing dialog will block SCODE-CONGRA**
	This is a similar issue to SCT-7400 (please see also this description).
	Solution: Please install a license of MATLAB first before using MuPAD as a solver.
SCT-896	**Computation can be invalid**
	It can happen that a generated computation is marked as faulty by the IDE, primarily, if it contains a library call. Then no further code that depends on the computation will be generated.
	Workaround: Open the computation in the editor. It is then indexed again, which leads to a correct file. Thus, the code generation process continues.
SCT-920	**Corrupt SYQ file after adding flow or system**
	If the textual model file (SYQ) ends with an end of line comment without a line break, then, when adding a flow or system via the context menu in the graphical editor, this might render a wrong SYQ file after saving. The declaration of the new flow (or system) might start in the comment line.
	Workaround: Manually insert a line break in the SYQ file, and always be sure to use a line break after the last comment line.
SCT-922	**Unchanged diagrams are marked as dirty**
	In case several graphical diagrams are opened, and only one of them is changed, all diagrams are marked with the "*" for being "dirty".
	Workaround: None.
SCT-923	**Renaming a flow is not reflected in the execution environment**
	The execution environment and the specification of objects are closely synchronized, and the execution environment gets updated with changes in the specification. This however does not hold true if you rename a flow or computation.
	Workaround: Reopen the renamed computation/flow in the execution environment. You will have to redo any changes you did (in particular values).
SCT-925	**Removing packages from a project has side effects on other packages**
	The deletion of a package in a project that does contain multiple packages does also temporarily remove the model and flow nodes in the project explorer under other SYQ files in other packages.
	Workaround: Close the project and open it again.

Issue Reference	Description
SCT-927	**MuPAD® returns negative result when reaching maximum depth for nested procedure calls**
	When passing complex solving commands to MuPAD that involve algebraic loops with a large number of relations, variables and assumptions MuPAD might return a negative result.
	Workaround: Try to reduce the number of assumptions, to manually break/tear the affected algebraic loops or to use a different solver.
SCT-933	**Generated resources cannot be referenced, especially subcomputations in case of subsystem libraries**
	The generated resources (e.g. `*.syq` files containing computations) are not put into the index at point of generation. Consequence is that the importing of objects in these generated files (especially: computations of generated "library" systems) does not work ad hoc.
	Workaround: Close and reopen the project containing the generated files (i.e. the library) after building and generation.
SCT-935	**TX_GraphicalEdit: The positions are translated when removing or adding an element**
	When a node gets added in the graphical editor and a different node gets deleted in the textual editor without saving in between, the nodes might change their index and they get re-ordered after saving.
	Workaround: Always save after a single change. Or Save before switching the editor type.
SCT-944	**Outline view does not update the arrow style**
	If during a sensitivity analyses or simulation values are changing in the execution environment then the outline view gets not updated.
	Workaround: None
SCT-946	**Border node arrangement might not work as expected if there are many border nodes**
	If there are many border nodes, the "arrange" border nodes algorithm might produce wrong result in case the calculated positions of the border nodes intersect with each other.
	Workaround: Repeat the arrange command, and/or use manual rearrangement of the border nodes or use the "Layout->Linked Border Nodes" context menu.
SCT-949	**Comments in the SYQ file might get deleted**
	When doing modifications to the model in the graphical editor, esp. when deleting elements, also comments in the SYQ file might get deleted (Root cause is that these comments are associated with the deleted elements)
	Workaround: you might want to use the "local history" to check on inadvertent deletion of comments.

Issue Reference	Description
SCT-958	**Inconsistent graph for sub-system and sub-system "preview"**
	The graphical preview (mouse-over over a subsystem) does not update in case of adding a tearing edge in a subsystem.
SCT-987	**Equation solving operation in external CAS tools cannot be cancelled**
	The solving of equations in an external CAS tool cannot be cancelled. Depending on the nature of the system/flow to be solved, the time taken by the CAS Tool (e.g. MuPAD) can be several minutes (esp. in case of algebraic loops). This process cannot be interrupted.
	Workaround: **Wait until the CAS tool is finished, or manually terminate SCODE-CONGRA in the Task Manager.**
SCT-993	**Simulink integration may not work if different versions of ETAS tool is installed**
	When there are several tools of SCODE-CONGRA in an older version installed, it might happen, that from Simulink opening the latest SCODE-CONGRA tool does not work.
	Workaround: Launch SCODE-CONGRA first and then perform a double click on the Simulink block
SCT-1002	**Maxima solver is using a lot of resources**
	In cases of complex equations, the maxima solver uses a lot of resources and may not terminate in time. In some cases, SCODE-CONGRA tries to reinvoke Maxima, which leads to concurrently running maxima instances consuming even more memory.
	Workaround: Use an alternative solver (e.g. MuPAD or cache solvers).
SCT-1467	**TX_Solver: Endless loop when solving with MuPAD**
	For some projects solving ends up in an endless loop.
	Workaround: The user has also the computation (means the generated SYQ file) open in the editor. This file needs to be closed then the loop will terminate.
SCT-13064	**Char table parameters are only created once**
	If char tables are defined in subsystems their parameters are only created once even though the subsystem is used several times.
	Workaround: Use instance-specific char tables.
SCT-13163	**Renaming allows invalid folder names**
	When renaming a folder (which represents a package in the CONGRA model) it is possible to use names that are invalid in the CONGRA grammar.
	Workaround: Don't use special characters and reserved keywords in folder names and check for error markers.

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Issue Reference	Description
SCT-14243	**Gradient for conditional equations within not symbolically solvable algebraic loops is computed as zero** In this case the gradient should not be calculated at all, but the resulting computation shows zero as result. **Workaround**: None.
SCT-14284	**Constraints on result variables are not passed to the MuPAD solver** This might lead to more and more complex solutions return by the MuPAD solver. **Workaround:** Manually select the adequate solution or use the solution cache to use simplified solutions.
SCT-14669	**Border node position are lost when subsystem is exchanged** If a subsystem used within a relation is exchanged for another one, the border nodes are relocated. **Workaround**: Rearrange the border nodes manually or using the context menu.
SCT-14875	**For small values "fsolve" does not deliver the correct result.** The default tolerance used by the MATLAB routine is too large. **Workaround:** Manually edit the generated MATLAB code to make the solver deliver correct result by decreasing the tolerance.
SCT-14918	**Multiple SCODE Workbench installations share the same update site location** This leads to the unexpected result that when (un-)installing plugins for one installation this might affect other installations. This only applies to concurrent installations of the same SCODE version. **Workaround**: Do not have several installations of the same SCODE Workbench version.
SCT-15178	**Error case within a relation tearing cannot be handled by using a replacement value** If the computation of the slack variable within a relation tearing happens to include a potential error case (such as division by zero), no replacement value can be given. **Workaround:** Use "Report error/abort execution" as error case handling, or adjust the model to eliminate the error case.

Issue Reference	Description
SCT-15576	**Naming conflict between variables and functions for ESDL code generation (case sensitivity)** In CONGRA you can use the same name for a variable and a function, given that there is a difference in cases. The ESDL generation will not work though for such models. **Workaround:** Be careful to not reuse names, even with different cases.
SCT-16706	**Editor not updated when using Egit** When updating files in the workspace using git, the editor(s) will not be updated automatically. **Workaround:** Close and reopen the editor(s).
SCT-17133, SCT-19525	**Erroneous models might not be displayed using the correct colors and analysis results** Graphs for models with an error might not be using the correct colors. In addition, parts that should be inactive can be displayed as active if errors exist in the model. **Workaround:** Fix the errors to get the correct colors and active parts of the graph.
SCT-17447, SCT-19087	**Opening a graph in the editor will mark it as modified** **Workaround:** None
SCT-18673	**Pantelides algorithm does not work for states that are also outputs** **Workaround:** None.
SCT-19122	**Analysis not updated when applying tearing during manual workflow** When a tearing violates the intrinsic direction of at least one relation, errors will only be visible after saving the model. **Workaround:** Save and redirect after model changes during the manual workflow.
SCT-19139	**Evaluation of tearing boundaries might lead to evaluation errors** **Workaround**: Users have to take care to use only expressions for the boundaries of the tearing interval that can be safely evaluated.
SCT-19525	**All nodes are marked as active if the flow is not computable** **Workaround:** None.
SCT-19701	**Diagram layout from flow editor not properly persisted** When layouting the flow diagram, the changes might sporadically not be persisted until the project is closed. **Workaround**: Use the system editor to initially layout the diagram.

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Issue Reference	Description
SCT-19730	**Some solutions returned by a CAS are not recognized**
	Involved solutions returned from a CAS might not be used by SCODE-CONGRA, leading to unsolved computation steps.
	Workaround: Use a different solver, reformulate the equation, solve numerically or use the solution cache.
SCT-20226	**Verification fails for sqrt() function**
	The verification fails for negative values.
	Workaround: Reformulate the equation to avoid the issue.
SCT-20393	**Using libraries an algebraic loop might be wrongly detected**
	The structural analysis wrongly shows an algebraic loop instead of overconstraintness.
	Workaround: None.
SCT-20583	**Name conflict when tearings in the same flow have the same target**
	The generated tearing method will then have the same name.
	Workaround: Avoid multiple tearings in the same flow having the same target.
SCT-20526	**Issues with computation of partial derivatives**
	During computation of partial derivatives, errors can occur, such as "Comparison method violates its general contract!". This can be caused by using variable names that start with the name of another variable, e.g. abc when there already is a variable a.
	Workaround: Deactivate the computation of partial derivatives by setting the option **Solver** > **Partial Derivatives** > **Use solver** to "None". Alternatively, consider renaming the variables to avoid the issue.

4 Notes

4.1 General

- After importing projects that were created with earlier versions it may be necessary to configure them to the correct nature using **Configure > Convert to SCODE-ANALYZER project** or **Configure > Convert to SCODE-CONGRA project**, respectively.

- Importing existing SCODE-ANALYZER models using the mint format and existing SCODE-CONGRA models using the mxe format is not supported for SCODE Workbench. Please use SCODE Workbench 2.6.3 or earlier versions to import such models.

4.2 SCODE-ANALYZER

- 'Edit' functionality in mode transition graph is not supported.

- 'Undo' on decision tree is not supported for all operations.

- Large models may lead to performance issues while calculating analysis results and fingerprints.

- Non-system modes are not excluded while calculating the decision tree for outgoing transitions of a mode.

- The mode transition graph is not updated dynamically. The graph must be exported after mode transitions are changed.

- The `*.sdgm` and `*.scode` files are tightly coupled by the name. Renaming of the `*.scode` file will make the nodes and edges in the `*.sdgm` diagram file appear with (X).

- C Code is compiled and verified on MinGW

- Update scripts for Simulink integration do not update the delay element for generation source 'Mode Transition Matrix'. The delay element is only created by running the create script in MATLAB.

4.3 SCODE-CONGRA

- FMU generation does not support 32-bit floating-point numbers

- Units are an incubation feature and might not be handled correctly. Do not use models with units to generate production code!

- Update scripts for Simulink integration do not update the additional blocks or workspace parameters. Use the create script to generate all related objects.

4.4 MATLAB® Connection

- For round trip engineering between SCODE Workbench and MATLAB as well as for using the solver MuPAD, connection between the tools should be established.

- If an exception occurs or the connection between MATLAB and SCODE Workbench is lost, both tools need to be restarted.

- A connected Simulink block is updated upon 'Save' operation on `*.scode and *.syq` files.

- Before uninstalling SCODE Workbench all connections to MATLAB versions must be removed in the MATLAB/Simulink section of **Windows > Preferences** in order to be able to establish connections with a newer release of the product.

- There are known issues when using MATLAB on a machine with a NVIDIA graphics card. This might prohibit MATLAB from starting or working properly, which will impact the functionality of SCODE as well regarding solving with MuPAD or the Simulink integration of SCODE.

  In such cases, it was helpful to update or uninstall the "NVIDIA RTX Desktop Manager". For further information please contact the MathWorks or NVIDIA support.

5 Contact Information

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