

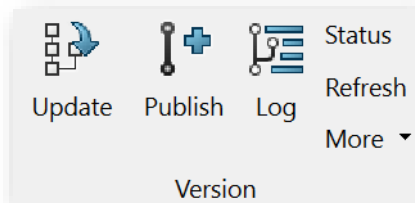


3DEXPERIENCE

DYMOLA 2023X REFRESH 1 HIGHLIGHTS

April 21, 2023

 DASSAULT SYSTEMES | The 3DEXPERIENCE® Company



EXECUTIVE SUMMARY

Model editing

- Improved Git support: status is shown in the project browser of Dymola, and improved branch support
- Highlight of matching targets when drawing a connection

Simulation

- Parameter sweep extended with Monte Carlo simulation
- New Modelica features and extended support for FMI 3.0
- Testing new Sundials version and IDA solver

MODEL EDITING

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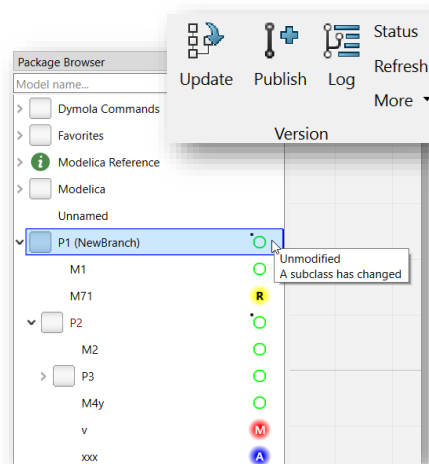
3

CATIA

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VERSION MANAGEMENT WITH GIT

- Significant improvements in Git support
- Git status is shown in the package browser
 - Unmodified, Modified, Added, Renamed, Untracked
 - Branch support
 - Git branch name shown for top-level package
- Shows when model inside a package has been modified
- Revised operations in the Tools ribbon
- Simplified Git operations
 - Commit + Push → Publish
 - Use other tools for advanced Git support



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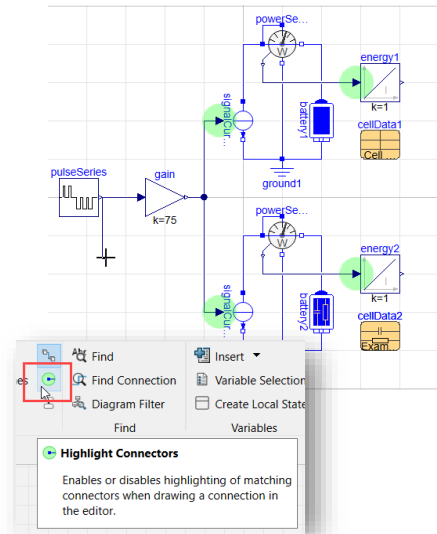
4

CATIA

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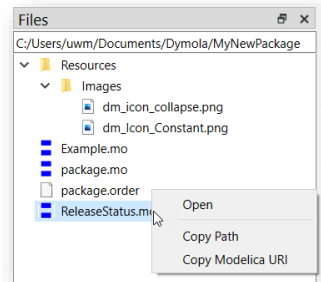
GRAPHICAL EDITOR

- Highlight of matching targets when drawing a connection
 - Enabled by default in this release
- Improved display of enumerations in parameter dialog
 - Enumerator value is right-aligned to show most significant part
 - Improved tooltips
- Selective model extension
 - Recent extension in Modelica 3.6
 - Deleting inherited components or connections deselects them from being inherited
- Remove exiting parameter modifier (Modelica 3.6)
 - **Set to No Value** in context menu



MANAGING FILES

- File browser integrated in Dymola
 - To display files related to the project
 - Drag images into model
 - Copy Modelica URI (for documentation) or path
- Drag images into your model from Windows Explorer
 - Gets a default size, resize afterwards
- SSP Simulation Resource Meta Data
 - Meta-data marked as SRMD is stored as SRMD files
 - Other meta-data stored as model description annotations

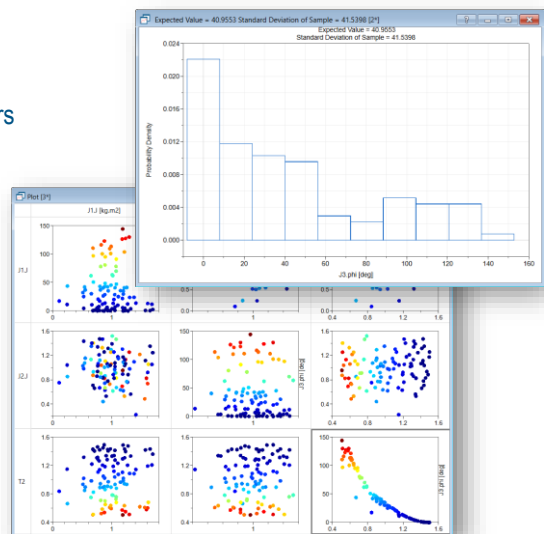


	Key	Description
1	de.setlevel.srmd.model-meta-data=	
2	model.type	physical principle
3	physical-principle.family	ex: basic

SIMULATION

SWEEP PARAMETER

- Monte Carlo simulation
 - Uniform or normal distribution random number generators
 - Distribution of each plot variable (probability density)
 - Scatter plot of final values
- Extended options dialog
 - Allow sweep of evaluated parameters (retranslation)
 - Plot the result of the sweep (default on)
 - Output the result to CSV
- Multiple parameters with trajectory plot
 - Can potentially create a large number of plotted curves
- Sweeping two parameters (last point)
 - One 3D plot for each plotted variable



OTHER SIMULATION

- Improved status message for sweeps

Completed simulations: 21 of 121

Completed simulations: 15 of 121 (Failed: 3, Batch timer: 35.1 of 120 s)

- Steady-state solver
 - Ignore low-order states for static and dynamic steady-state finding
 - Optional, default off

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MODELICA LANGUAGE IMPROVEMENTS

- Improved unit checking and propagation
 - Built-in sin, cos etc. unit checked
 - Improved unit check of expressions (proposal for Modelica)
Advanced.Modelica.CheckUnitsProposedSimple=true
- Improved reporting of failures to propagate units
- Further improvements for Modelica's predefined plots
 - Empty legend
 - Variable expansion
 - Links



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FUNCTIONAL MOCKUP INTERFACE 3

- Arrays
 - More efficient and natural handling of non-scalar variables
- Early return, event mode and intermediate update
 - Generate FMU with improved co-simulation capabilities
 - Supported by Dymola as FMU co-sim master
 - To enable hybrid co-simulation at FMU import (beta feature)
Advanced.Beta.FMI3.HybridCoSim=true
- Terminals and icons
 - Group variables semantically to ease connecting compatible signals
 - Define a graphical representation of the FMU and its terminal
 - To enable terminals and icons (beta feature)
Advanced.Beta.FMI3.ExportTerminalsAndIcons=true



FEATURES UNDER DEVELOPMENT

Features that have been recently developed and need testing

- Downsample plots with many points
 - Improved performance with little loss of detail
Advanced.Beta.Plot.DownsampleLimit = 20000
- Sundials 6.4.1 and SuperLU_MT 3.1
 - Requires VS 2015 or later
 - Advanced.Beta.Sundials641 = true
- IDA solver
 - Modern variable step size, variable order solver of hybrid DAEs
 - Select CVode
 - Advanced.Beta.Sundials641 = true
Advanced.Beta.Sundials641IDA = true

NEW RELEASE LIFECYCLE

- One major release per year (autumn)
 - Dymola 2023x
 - Dymola 2024x
 - And so on...
- One maintenance release per year (spring)
 - Dymola 2023x Refresh 1
 - Dymola 2024x Refresh 1

