



3DEXPERIENCE®

# DYMOLA 2023X HIGHLIGHTS

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 DASSAULT SYSTEMES | The 3DEXPERIENCE® Company

...a – Dynamic Modeling Labor...

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Reading license key...

## EXECUTIVE SUMMARY

### Model editing

- Libraries / project view separates read-only libraries from user models
- Improved handling of associated resources when copying models

### Simulation

- Option to change evaluated parameters during parameter sweep

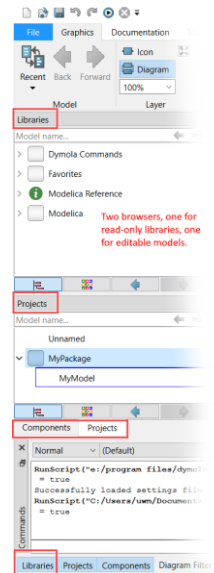
### Model import and export

- Initial support for FMI 3.0
- SSP import supports Simulation Resource Meta Data (SRMD)

## NEW LIBRARIES / PROJECTS VIEW

New user interface to organize models

- Clear separation between libraries and user models
  - Read-only models (libraries) in a separate browser
  - Editable user projects (packages and models) in a second browser
  - Project and Components share space by default (to save screen space)
- User's choice of browser style
  - Enable new Libraries/Projects style by pressing the Libraries button in the status bar
  - Traditional style Package Browser when Libraries button is not pressed



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## IMPROVED HANDLING OF RESOURCES

- When copying a class, external resources can also be copied by setting **Advanced.Editor.CopyResources=true**
  - Images
  - Resources in directories pointed to by the annotations `LibraryDirectory` and `IncludeDirectory`
  - Resources pointed to by the arguments of the built-in functions
    - `Modelica.Utilities.Files.loadResource`
    - `ModelicaServices.ExternalReferences.loadResource`
- When moving a class (e.g. Rename...)
  - Resources are moved by default
- References in the documentation are automatically updated when you run a conversion script or do a rename

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## CHANGE EVALUATED PARAMETERS DURING SWEEP

- Option to allow changes of evaluated parameters after translation, including sweeps
  - By default, evaluated parameters cannot be changed after translation

Warning: Setting pipe2.length has no effect in model.

After translation you can only set literal start-values and non-evaluated parameters.

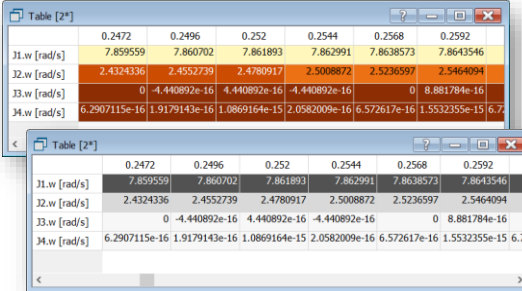
- Setting **Advanced.Translation.SmartSimulateExtended=true** gives

Automatic re-translation of model triggered by changing structural parameter pipe2.length and having **Advanced.Translation.SmartSimulateExtended=true**;

- Comes at a cost – model is translated when needed

## TABLE AND SCRIPTING IMPROVEMENTS

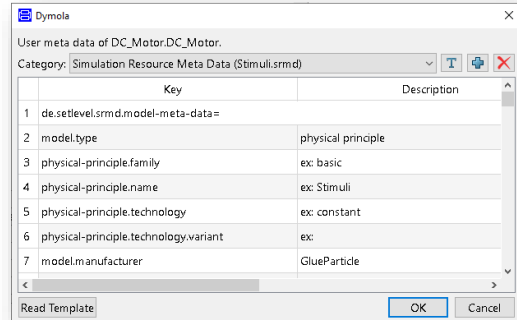
- Improved color-coding of simulation result tables
  - Wider range of colors
  - Text color updated to improve visibility (white on dark)
  - New monochrome color map
- Scripting plot/animation windows
  - Relative window size and position can be specified
    - $\leq 1$  is relative available space
    - $> 1$  is absolute pixels
  - Applies to createPlot, createTable, animationPosition



	0.2472	0.2496	0.252	0.2544	0.2568	0.2592
J1.w [rad/s]	7.859559	7.860702	7.861893	7.862991	7.8638573	7.8643546
J2.w [rad/s]	2.4324336	2.4552739	2.4780917	2.5008872	2.5236597	2.5464094
J3.w [rad/s]	0	-4.440892e-16	4.440892e-16	-4.440892e-16	0	8.881784e-16
J4.w [rad/s]	6.2907115e-16	1.9179143e-16	1.0869164e-15	2.0582009e-16	6.572617e-16	1.5532355e-15

## SSP SUPPORT

- Multiple sections of meta data
  - Creation of multiple (named) categories of meta data
  - Reads SRMD meta data files in SSP extra directory
- Supports composite Modelica types
  - E.g. voltage or a rotational flange
  - Encoded as SSC::Binary type in SSP
    - mime-type = "x-Modelica"
    - source = "absolute model path"



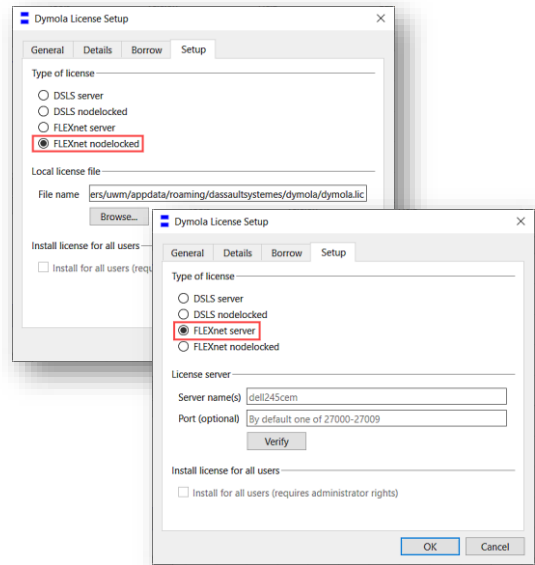
## SUPPORT FOR FMI 3.0

- FMI 3.0
  - FMI 3.0 specification released in May 2022
  - See overview in <https://doi.org/10.3384/ecp2118117>
- Initial limited Dymola support
  - Import and export of FMUs
  - Currently implements the FMI 2.0 functional subset
  - Uses the new FMI 3.0 structures and naming
- Near future plans
  - Array variables
  - Terminals and icons
  - Early return from co-simulation at event



## LICENSE HANDLING

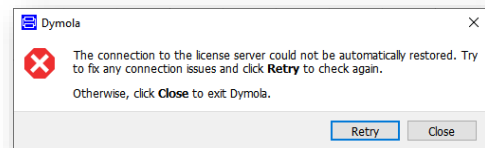
- Simplified license setup using Tools > License Setup
  - Clear selection of type of license
  - Simplified input of relevant data
  - Supports both DSLS and FLEXnet license keys
- DSLS license format is now default
  - If you prefer a FLEXnet license key please specify so when you order the key



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## LICENSE HANDLING

- Termination of Support (TOS)
  - Applies if support has been contractually terminated
  - Cannot use a version released after the TOS date
  - Earlier versions of Dymola can still be used
- Dymola warns about lost connection to license server
  - Repeated warnings for 20 minutes
    - To give you time to fix the problem and save files
  - Eventually Dymola waits until the connection has been restored
    - Session continues when the connection has been restored



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## 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

2022


- Dymola 2023
- Dymola 2023x

2023

- Dymola 2023x Refresh 1
- Dymola 2024x

## FEATURES UNDER DEVELOPMENT

Features that have been recently developed and need testing

- Translation warning when reversing causality (signal blocks)
  - Advanced.Beta.CheckLoopCausality=true
  -  System of equations with causal connection variables, this is normally not intended.  
Causal connection variables:  
[add.y](#)  
[gain.y](#)
- Highlight good end-points when starting a connection
  - Highlights suitable target connectors when you start drawing a connection
  - Advanced.Beta.HighlightMatchingConnectors=true

