

3DEXPERIENCE

Dymola 2013

Overview of new features

11 May 2012

Executive Summary

Model editing

- Easier to compose and re-compose models by reusing existing components to create new models.
- Comments and documentation can be written in your native language, for example, Japanese.

Portability and diagnostics

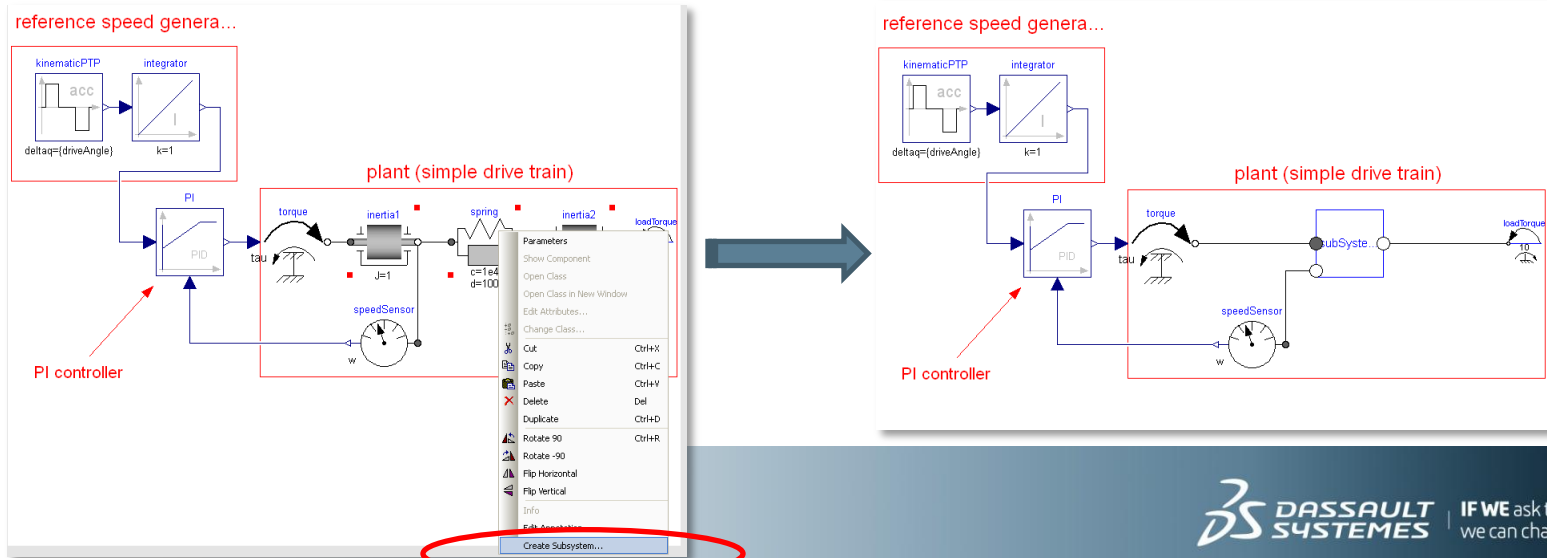
- Choose between strict Modelica 3 compatibility checking or extended backward model compatibility.
- Improved error messages and more structured presentation makes model debugging more effective.

Environment and setup

- Better post-processing setup and possibility to disable export options inside Dymola.
- Improved layout when plotting Boolean and enumeration signals.
- Simulink interface and FMI support on Linux.

Model editing

- ▶ Convenient submodel aggregation
 - ▷ Create a new model from some existing components
 - ▷ Old components are replaced by a component of the new model
 - ▷ Connectors inserted at boundary, connections created
 - ▷ Propagated parameters “pushed down”



Model editing

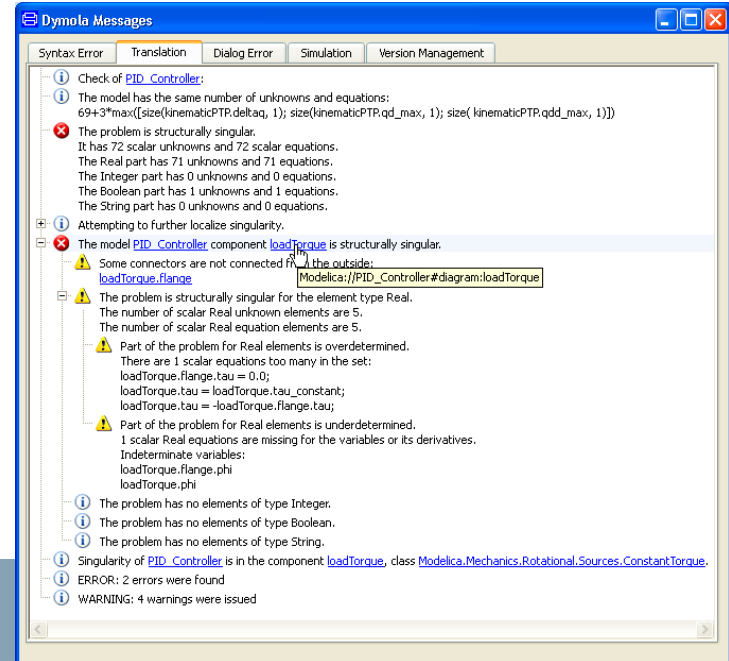
- ▶ Convenient rescaling of coordinate systems
 - ▷ Interactive using mouse dragging in diagram and icon layers
 - ▷ Bounding box and origin clearly marked
- ▶ UTF-8 support

日本語テスト

- ▷ Comments and documentation in your native language

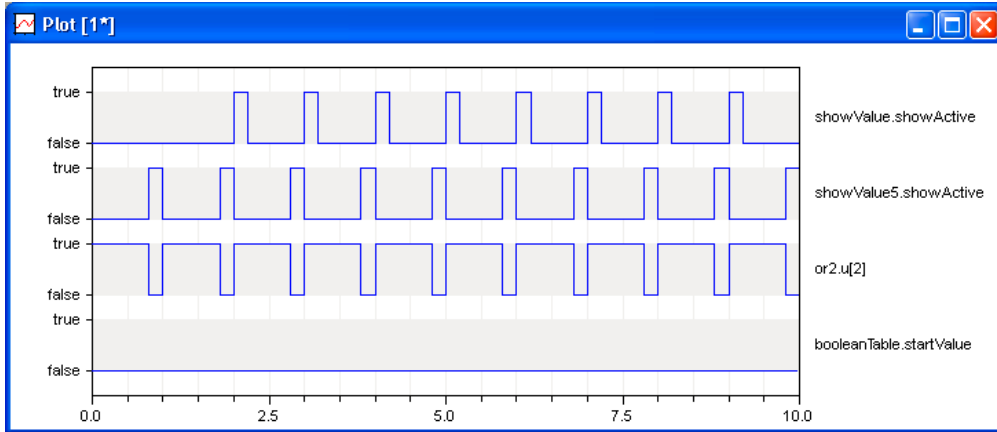
Portability and diagnostics

- ▶ Pedantic translation mode for Modelica 3 semantics
 - ▷ Increases portability by enforcing Modelica 3 semantics
 - ▷ Loose interpretation available for more backward compatibility
- ▶ Improved error reporting
 - ▷ Model indication in error messages
 - ▷ Structured error/warning messages →
- ▶ Further improved error messages for encrypted models
 - ▷ Better handling of models with mixed encrypted/non-encrypted component models



Improved plotting

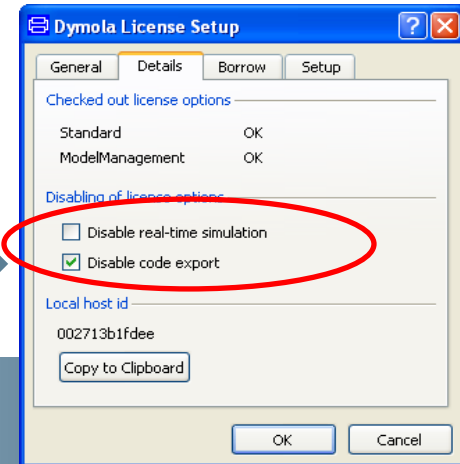
- ▶ Plotting Boolean and enumeration signals



- ▶ Plot layout and setup can be stored between sessions
 - ▷ *Edit > Options* and *File > Save Script...*

Environment and setup

- ▶ Libraries for Modelica 2 must be installed separately
- ▶ Improved homotopy support
 - ▷ Especially for thermo-fluid system modeling
- ▶ Simulink interface and FMI support on Linux
- ▶ SUNDIALS included in distribution
 - ▷ CVODE numerical integration routine used in FMI for co-simulation
- ▶ Disable code export options in GUI →



the right questions
to change the world.

Libraries

- ▶ More libraries in Library menu
- ▶ New and improved libraries
 - ▷ Optimization 2.1
 - ▷ VehicleDynamics 1.6
 - ▷ Hydraulics 3.2.1
 - ▷ AirConditioning 1.8.2
 - ▷ FlexibleBodies 2.0.1

Vehicle Dynamics Library

- ▶ Powertrain sub-package
 - ▷ Extended with components that allow for powertrain-oriented analysis
 - ▷ Engine models with cycle resolved characteristics allow studying the mechanics of the engine and engine-induced vibrations
 - ▷ Engine, transmission and driveline mounts integrated in templates
- ▶ Tuning of vehicles and chassis.
 - ▷ Allow for automatic tuning of e.g. camber, toe, cross weight, and ride height
- ▶ Grounds and Roads
 - ▷ Support for explicit contact point calculation so that the contact point can be performed in the ground model
- ▶ DataAccess
 - ▷ New architecture for data management
 - ▷ Interfaces with data from sources outside the Modelica environment

