DASSAULT SYSTEMES

# DYMOLA 2024X HIGHLIGHTS

November 24, 2023




## EXECUTIVE SUMMARY

### Model editing

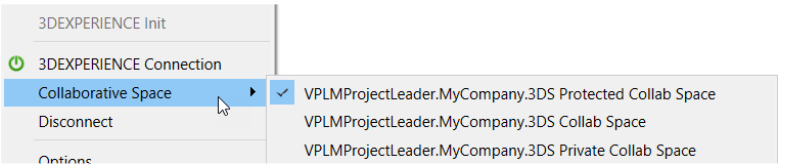
- 3DEXPERIENCE – Design with Dymola
- Improved Git support (even more)
- Process Modeling Library

### Simulation

- Sparse solver for system of equations,
- Faster Jacobian approximation
- FMI 3: Event mode, intermediate input, variable step co-sim

# 3DEXPERIENCE – DESIGN WITH DYMOLA

- Integration of Dymola standalone with the 3DEXPERIENCE platform
  - Start Dymola from the platform
  - Use platform as version system for models (like Git)
  - Integration with 2D/3D design, PLM, project mgmt., etc
- Still use Dymola for primary library development
  - Develop here, deploy anywhere including cloud

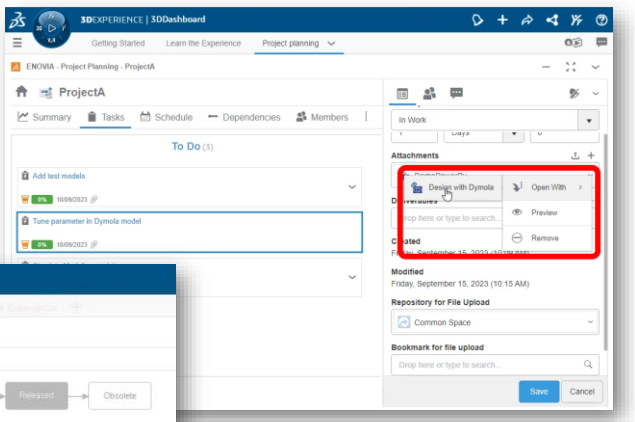


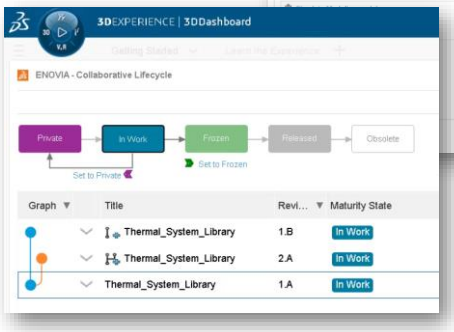





# EXAMPLES OF 3DEXPERIENCE INTEGRATION

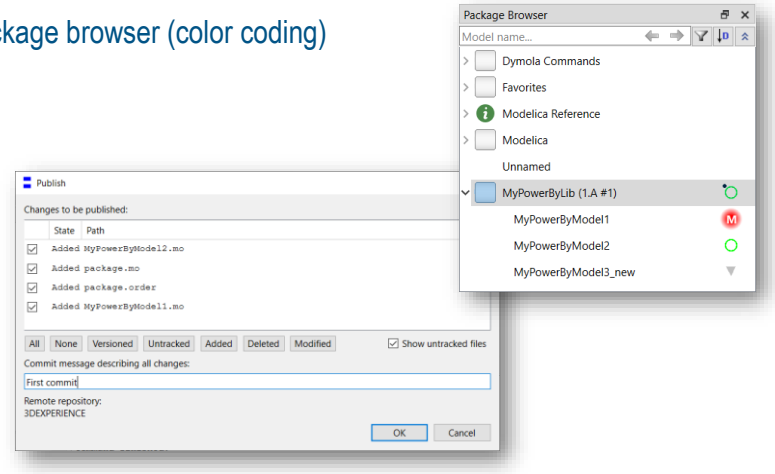
- Project management
  - Start Dymola from project tool to complete task
- Versioning and lifecycle management
  - Coupled to corporate PLM system



# IMPROVED GIT SUPPORT

- Branch and status visible in package browser (color coding)
- Improved publishing dialog
  - Select which files to publish
- Branch creation/switch
- Publish = Commit + Push
  - Simplified handling like SVN
  - Optional

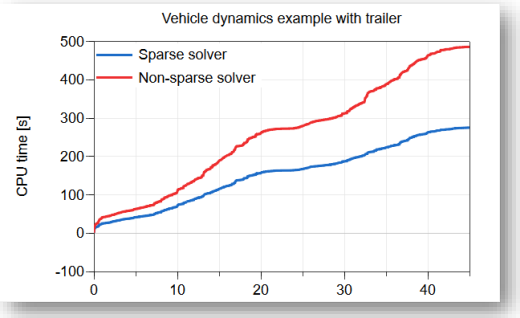






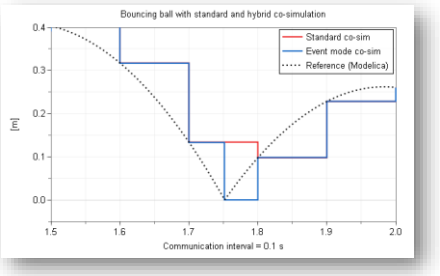

# SIMULATION

- Sparse solver for system of equations
  - Also notifies about near-sparse
- Improved start value prioritization
  - When there are both initial equations and start-values
- Grouping for nonlinear systems of equations with numeric Jacobian (beta)
  - Faster Jacobian approximation
- IDA solver from Sundials (beta)



# FMI 3 AND SSP

- FMI 3
  - Event mode: early return when an event occurs
  - Intermediate input and input interpolation
  - Variable step co-simulation (Beta-test)
    - Control FMU step from the model
  - Terminals, icons, arrays
- SSP
  - Improved support, more closely follows the specification
  - Support for multiple sections of SRMD meta data (also in Modelica)
  - Support for Modelica models in SSP (2.0-alpha)

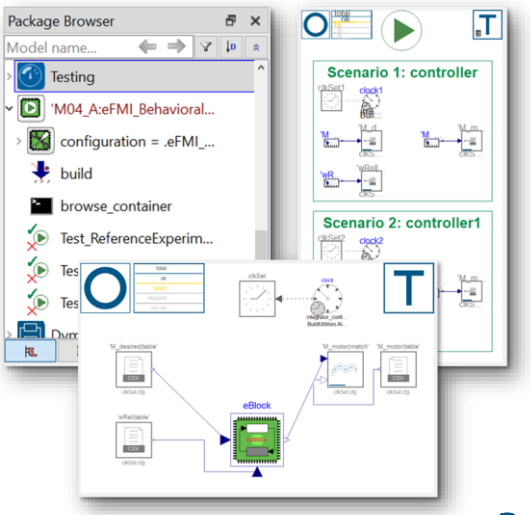






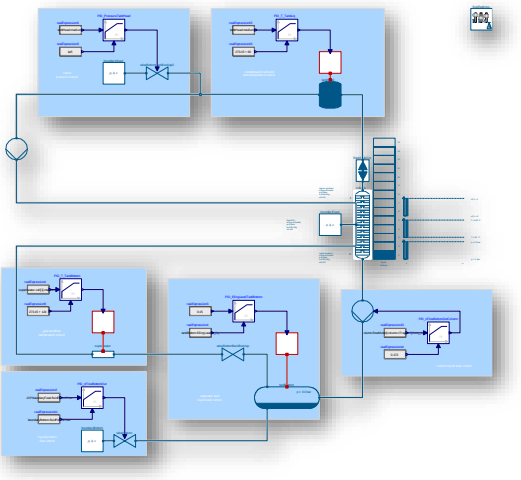

# EFMI

- eFMI behavioral models
  - Define test scenarios including floating-point tolerances
  - Run MIL and SIL tests, leveraging the Testing library
- Customized build environments
- Error-safe default initialization



# PROCESS MODELING LIBRARY

- Models to simulate thermal separation processes based on multi-phase multi-component equilibria
  - Predict the behavior of separation units
  - Analyze heat and mass transfer processes
  - Optimize operating conditions to maximize efficiency and minimize energy consumption
  - Troubleshooting, improve product quality, reduce environmental impact
- Uses the Multiflash software for the calculation of physical properties
  - "Dymola – Thermodynamics Connector" is a pre-requisite







# OTHER

- Modelica language 3.6
  - Clarification of several issues
  - Figure annotations (links)
- Improved diagnostics
  - E.g. logging of external function calls during translation
- Environment
  - Windows 11
  - Clang compiler (Linux, WSL, VS)