



RELEASE NOTES

Altair Activate[®] 2022

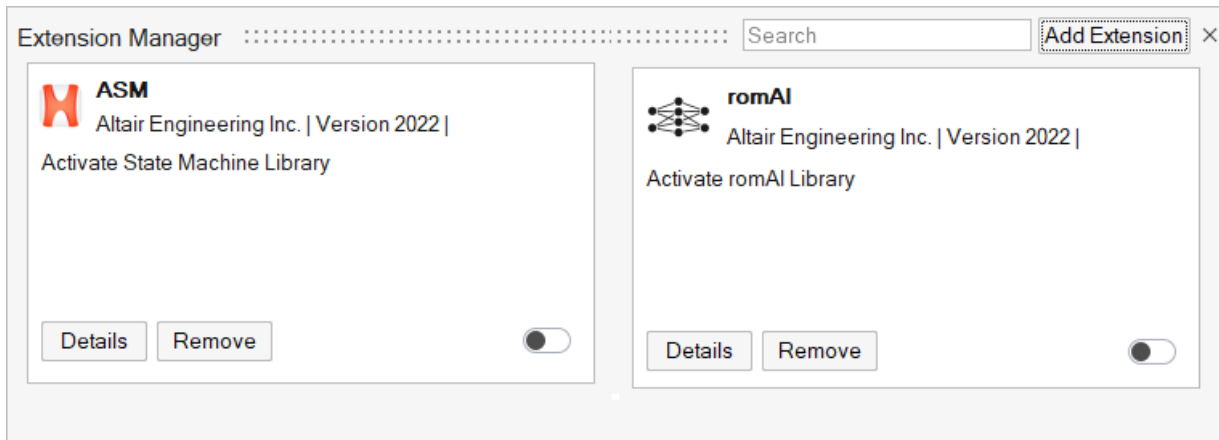
New Features and Enhancements 2022

Release Highlights

Extension Manager with Library Management

The Extension Manager lets you easily add, install, uninstall, and remove libraries.

- Location: **File > Extension Manager**:
- Quickly uninstall unwanted libraries from your Activate session. The libraries remain on your system and can be easily installed again with a simple toggle.
- Click a button to remove libraries that you no longer want associated with your Activate sessions.
- Install the Activate built-in State Machine and romAI* libraries on demand:



State Machine Library

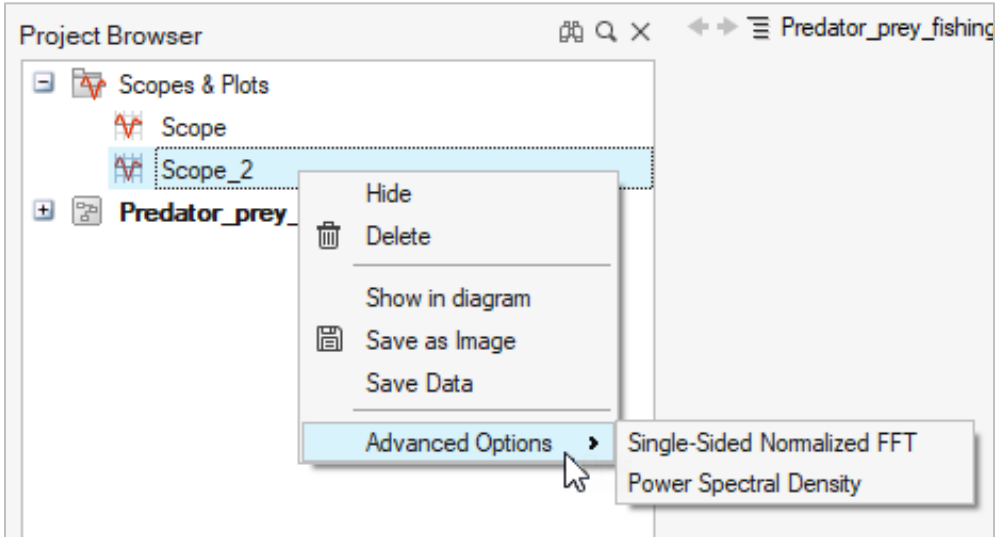
This block library provides a methodology for constructing finite state machines. The library supports concurrent state machines and hierarchical constructions as well as run-to-completion and history features. Fully implemented into Activate, the library lets you leverage all features of the software including parameterization and code generation. Documentation and demos are provided.

romAI Library *

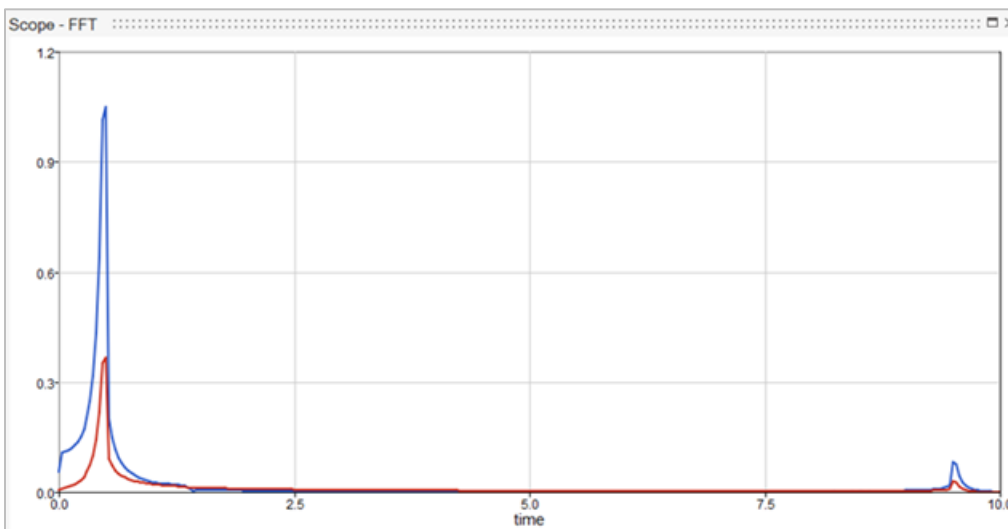
The romAI library helps you turn neural networks into Reduced Order Models that you can integrate into Activate, IoT and other platforms.

Time to Frequency Domain Utility

Displays data in a frequency domain for the Scope block. Select the Single-Sided Normalized FFT or Power Spectral Density option, then enter a sampling frequency in the Input Dialog.



A new window is generated with a frequency-domain plot and is named based on the primary scope window followed by FFT or PSD.



Kafka Communication Blocks

Kafka Consumer and Kafka Producer blocks have been added to the Communicate palette.

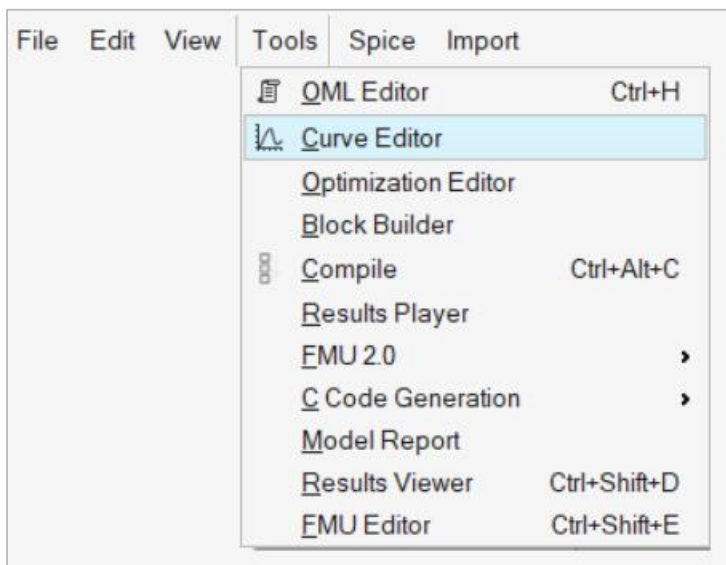
Compiler Selection

- Get a list of available compilers with `vssGetCompilerNames`.
- Get then name of the compiler that is currently in use with `vssGetCompilerName`.
- Set your compiler with `vssSetCompiler`.

User Interface

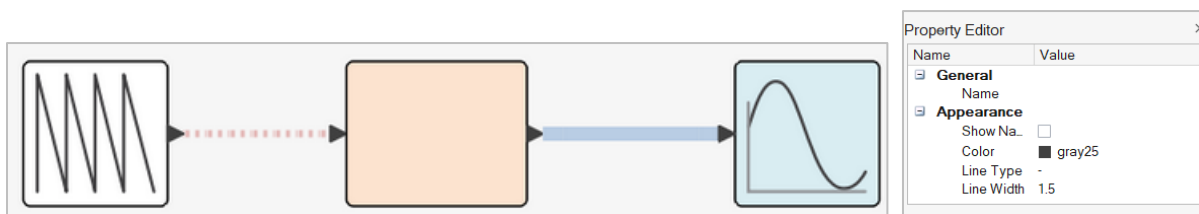
Curve Editor

You can now access the Curve Editor from the Tools menu as well as through blocks such as `FromCSV`.



Customization of Links

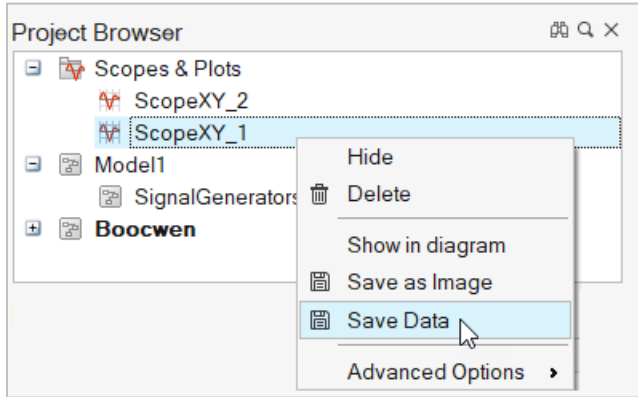
Line style and link color can now be customized through the Property Editor.



Additional Changes and Enhancements for the User Interface

Plotting

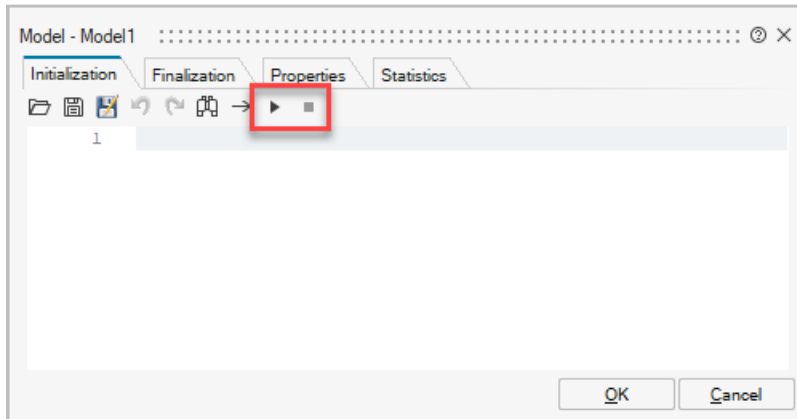
- Scope data can now be saved as a MAT or CSV file:



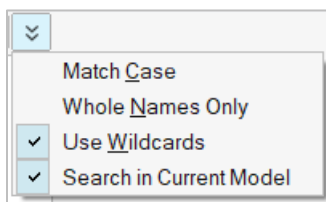
- Issue with Scopes inadvertently duplicating plots with the Reuse setting is resolved.
- Error handling and reporting of scope markers is improved.
- Double-clicking a plot opens or closes the plot.
- Issue with the subplot Y axis not aligning is resolved.
- Display issue with plot windows with 6 subplots is resolved.
- Issue with deleting old signals from a Scope is resolved.

General Enhancements

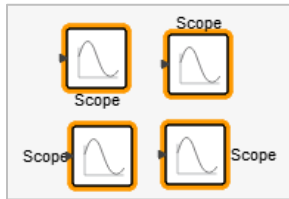
- Dark mode is now available.
- OML scripts can run directly from the Initialization, Finalization and Context dialogs:



- Search in Current Model** is a new option in the Project Browser.



- **Name Position** is a new option in the Property Editor. Now you can set the block name on the bottom, top, left or right of the block.

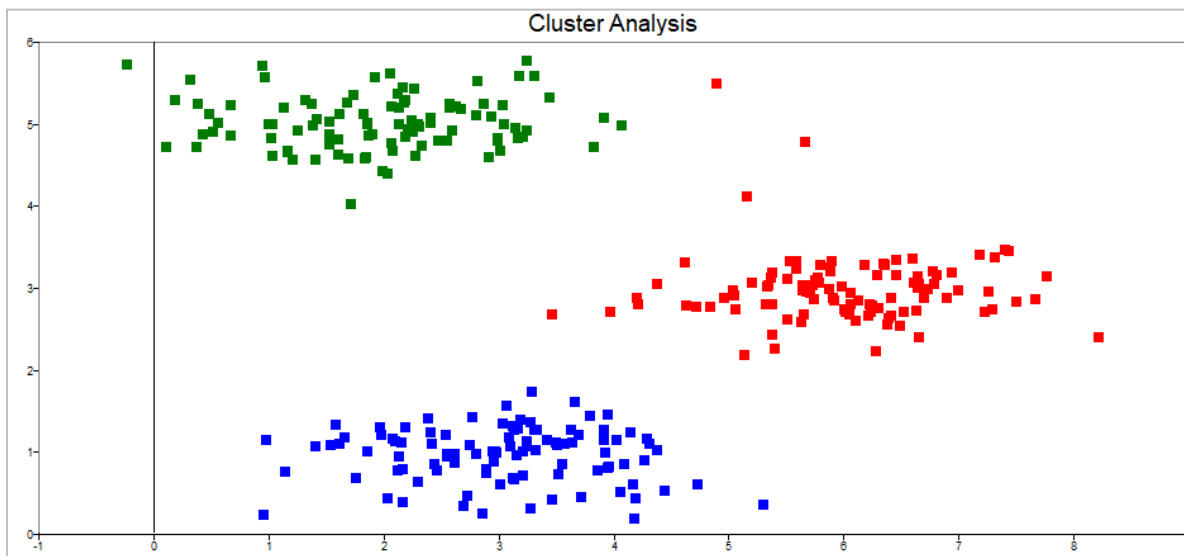


Libraries

Machine Learning Library *

The Machine Learning library is comprised of a set of methods for predictive data analysis and is available in OML. The library features various algorithms for:

- Pre-processing
- Regression
- Classification
- Clustering
- Decomposition
- Distance calculation
- Evaluation metrics
- Model selection



Modelica

The embedded compiler TCC can now be used to run models, including Modelica models and all demos, therefore installing a Visual Studio compiler on Windows is no longer mandatory but is recommended.

HydraulicsByFluidon *

The following new components are available in the Hydraulics by Fluidon library:

Components for load sensing applications

- **PropValve33LS**: 3/3 proportional valve with additional LS port.
- **PropValve33LSTableAx**: 3/3 proportional valve with definition of cross section via look-up table and additional LS port.
- **PropValve33LSTableQpx**: 3/3 proportional valve with definition of flow vs. stroke and pressure difference via look-up table and additional LS port.

Volumes and pipes

- **PistonAccumulator**: Accumulator with a piston as separator between fluid and gas. In contrast to the bladder accumulator the piston has its own mass and dynamic.
- **VolumeExt**: Extension of the basic volume: the bulk modulus of housing is defined separately; the total bulk modulus is a combination of housing and fluid bulk modulus.
- **Hose**: Extension of pipe similar to VolumeExt: the bulk modulus of pipe wall is defined separately. In this way, a low stiffness of hoses can be taken into account.

Pressure valves

- **PressureReducingValve**: Model of a 2-port pressure control valve reducing the supply pressure to a desired level at working port.
- **PressureControlValve**: Model of a 3-port pressure control valve that not only reduces the supply pressure to a desired level at working port, but also limits the working pressure to the desired level.
- **PropPressureControlValve**: Model of a 3-port pressure control valve with an input of set pressure.

Flow valves

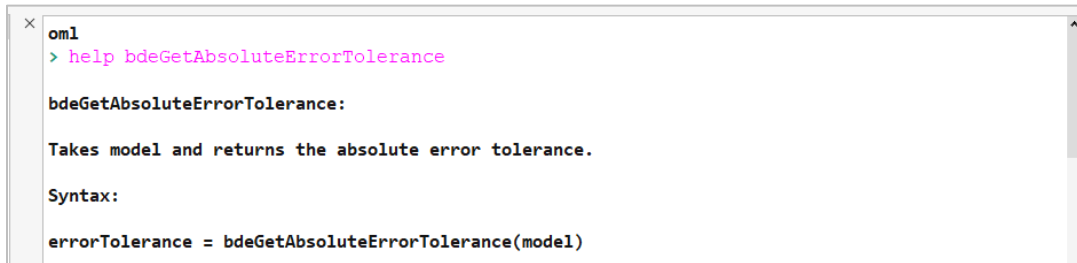
- **TwoWayFlowControlValve**: Model of a 2-way flow control valve maintains a largely constant outlet flow even at a variable (higher) inlet pressure.
- **ThreeWayFlowControlValve**: Model of a 3-way flow control valve maintains a largely constant outlet flow even at a variable (higher) inlet pressure. In contrast to a 2-way flow control valve, the 3-way flow control valve opens a discharge to the tank as soon as the set volume flow to the consumer is reached).

Additional Changes and Enhancements for the Libraries

- Display all errors raised by Spice in a single pop-up window.
- Support added for XNOR operation in the `Logical` block.
- `FMU` block optionally offers inner variables as output.
- New API to explode Super Blocks was added: `bdeExplodeSuperBlock`.
- Option added to set port label visibility from the GUI for Super Blocks.
- When getting the path of a file, both relative and absolute paths are now supported.
- The `FromCSV` block can read CSV files without a `TIME` column.
- Link names are now displayed in the Property Editor.

Additional Changes and Enhancements for the Documentation

- New tutorial for the Extension Manager.
- More content is available about installing libraries and managing libraries through the Extension Manager.
- Documentation of new solvers.
- API help can be displayed directly through help API name in the Command Window:



```

oml
> help bdeGetAbsoluteErrorTolerance

bdeGetAbsoluteErrorTolerance:

Takes model and returns the absolute error tolerance.

Syntax:

errorTolerance = bdeGetAbsoluteErrorTolerance(model)

```

- Several articles were improved:
 - Block Builder
 - Viewer Blocks
 - Results Viewer
 - Results Player

Resolved Issues

- Crash when closing DOS window after running MotionSolve cosimulation.*
- BDE is slow when resizing the window with many outputs in OML Command Window.
- [Linux] Activate installer fails because too many files overrun Linux open files limit.
- Undo/redo operation with `Spice` block results in crash.*
- Issue with links between 2 blocks after reopening a model.
- Property Editor not updated after inline operation.
- Search results should be cleared after clicking **X** button in search box.
- Link issue: unconnected link and non-selectable link.
- Result viewer fails to read certain MTSF files.
- Issue with the detection of MotionSolve and MotionView paths under Preferences.
- Crash when statements in OML Command Window are repeatedly copied/pasted.
- 3D animation display bar is not properly shown when window is too small.
- Missing option to enter partial derivative in `LookupTableND_port` block.
- Error messages printed in Info tab of Message Center.
- Select columns in Curve Editor from `FromMatFile` doesn't work.
- Inconsistent diagram following a copy/paste operation.
- Tooltip on blocks does not work properly.
- Simulation doesn't run correctly when Running APIs in batch mode.
- `.scm` should not be displayed in the model name in the Message Center.

- Results Viewer legends are large, cover the plot, and cannot be removed.
- Modulo Counter parameter is exposed in FMU but doesn't take effect.
- Crash on Results Viewer if a certain MTSF file is loaded.
- `FromCSV` block should return NaN when an empty field or bad field is read.
- [Linux] double-clicking matrix or string in Variable Browser doesn't work.
- Animation window size error when creating new model.
- Copy/paste commands in OML window should not paste block in diagram.
- Opening a CSV file from the Curve Editor doesn't show the curve immediately.
- Exposed parameters in FMU do not work for Modelica blocks.
- `MatrixExpression` with constant outputs resulting from logical operations is incorrect.
- FMU checker fails to run FMU generated from `FromCSV` block.
- Typo in co-simulation Error.*
- Inline code does not generate correct C code.
- Issue resolved with documentation of `SignalType`.
- Incorrect line number reported in Initialization script when error is present in an OML function.
- Palette Browser display issue with icons is resolved for experimental mode.

* *Applies to Business Edition only*