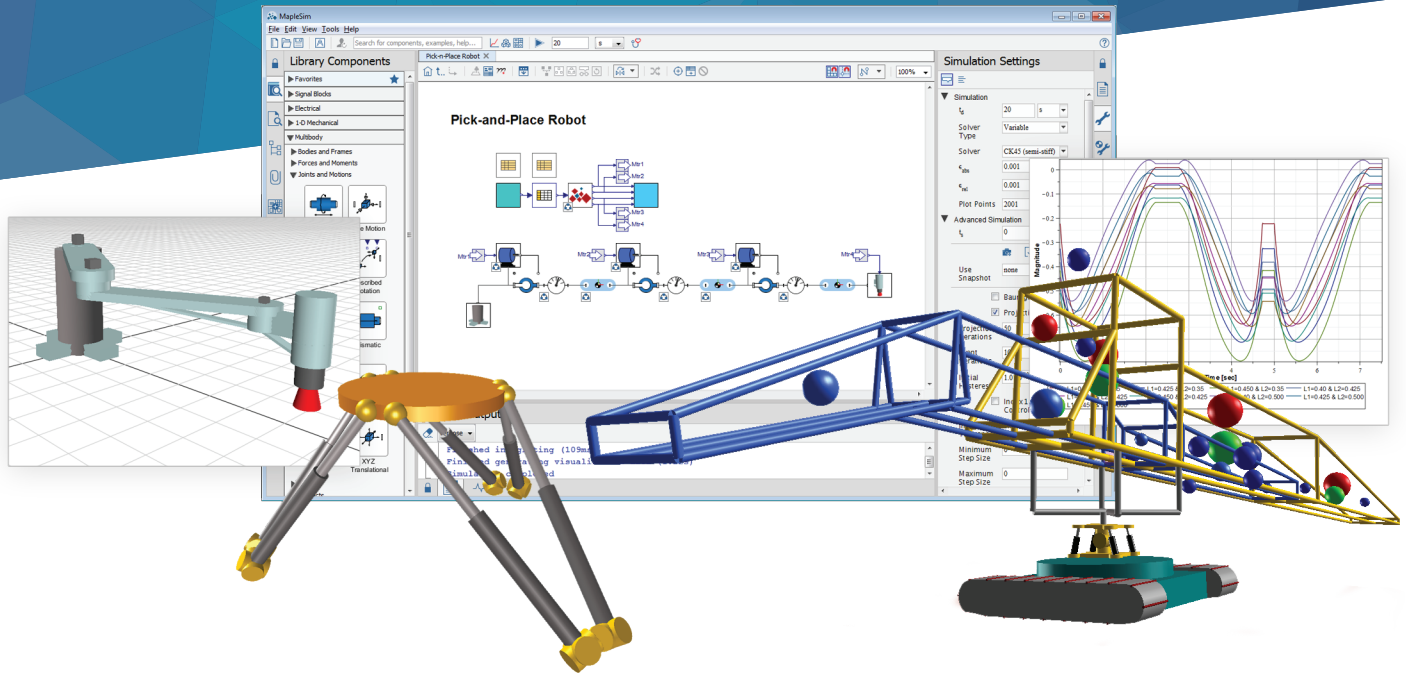# What's New in MapleSim™

Release 2016.2

The MapleSim™ 2016.2 family of products includes significant enhancements in the areas of model development and toolchain connectivity.

Model Development

MapleSim 2016.2 provides many valuable tools that improve engineer productivity when developing models, saving time and reducing development risk.

- **Live simulations** let you see results as the simulation is running, so you can track progress and react to problems immediately.

  - **Watch 2-D plots and 3-D visualizations unfold as the simulation progresses**, instead of waiting until all the computations are completed to see the results.

  - **Stop the simulation at any time to immediately investigate any unexpected results**. All data is saved so you can query the values of any variables of your simulation, including those that are not plotted.

- A new **3-D overlay option lets you easily compare simulation visualizations** by overlaying one visualization on top of another, using different tints to distinguish between them. For example, you can use overlays to visually compare the behavior of your plant model under different controllers.

- **Tools for revision control** enable a structured approach to managing and tracking changes to your model, making it easier to manage projects when multiple engineers are working on the same model and reducing development risk.

  - **Model comparison tools** can be easily hooked into any revision control system that supports external tools, such as Perforce™, Subversion®, Mercurial, and Git™.

  - Models can be saved "exploded", so **changes can be tracked at the component level**. You can compare different versions and revert to an earlier version of your component or subsystem using your revision control system.

  - A new **selective save** in MapleSim allows you to save the changes you have made to a specific subsystem while discarding changes to the rest of the model, so your work is less likely to adversely affect other parts of the model.

- The Multibody library includes an **enhanced flexible beam** that supports multiple cross sections, multiple frames of interaction, and options for damping. As well, equation formulation for flexible beams is now an order of magnitude faster.

- **MapleSim Apps**, which give you point-and-click access to powerful Maple™-based analysis and utility tools from within the MapleSim environment, have been expanded and enhanced.

  - A new **Equation Extraction App** automatically generates the system equations from a model diagram, and displays them within MapleSim. Further workflow improvements include more readable variable names that are also more easily customized, so the displayed system equations are easier to understand.

  - Many MapleSim Apps offer **improved workflow and increased functionality**, such as the ability to handle protected parameters in the Linearization App, and an Abort button on the Optimization App that cancels the computation while keeping the best solution found so far.

  - The **MapleSim Battery Library**, which is available as a separate add-on, now comes with MapleSim Apps for parameter identification, so you can easily determine model parameters from experimental data without leaving the MapleSim environment. These Apps are easier to use and provide additional functionality than the previous templates, including new individual temperature settings for imported data and control over data reduction.

Toolchain Connectivity

The MapleSim 2016.2 family of products includes significant enhancements to toolchain connectivity, including FMI import and the ability to analyze the results from an exported MapleSim model that was simulated in another tool.

- MapleSim **now supports direct import of models created in other FMI-compatible software**, providing even greater cross-tool compatibility and opportunities for co-simulation.

  - Models exported by FMI-compatible modeling tools, such as LMS Amesim™, Dymola®, and SimulationX® , can be easily imported into MapleSim and used like any other model or subsystem. In this way, you can immediately leverage models developed using other software while taking advantage of the advanced modeling and analysis tools of MapleSim in developing your system-level designs.

  - MapleSim can act as the master, as well as the slave, in co-simulations of dynamic models involving multiple simulation tools, so you can seamlessly connect models that run in other tools into your MapleSim system-level simulation.

  - Supports FMI 2.0 Model Exchange.

- The **MapleSim Connector**, for connectivity with Simulink®, and the **MapleSim Connector for FMI**, for exporting MapleSim models to other FMI-compatible tools, have been expanded to allow you to **explore simulation results involving exported MapleSim** models from within MapleSim, even though the simulation was done in the target tool.

  - When you export a model from MapleSim and use it as part of a simulation within Simulink or an FMI-compatible tool, the results can be brought back into MapleSim's Results Manager.

  - From inside MapleSim, you can see the results, debug the simulation, plot any variable used in the model even if it was not probed, and view 3-D visualizations of the simulation as it performed in the other tool.

- **MapleSim CAD Toolbox** has **improved Creo Parametric™ import** and provides better handling of densities obtained from CAD models.