ParaMagic™ - SysML Parametrics for MagicDraw

The ParaMagic™ plugin makes MagicDraw SysML models come alive! Using the quantitative information and constraint relationships displayed in SysML parametric diagrams, plus legacy models in tools like MATLAB® and Simulink®, SysML model-builders can run simulations and trade studies from the earliest stages of system design. Links between SysML and Excel® make it easy to import and export data, create reports and generate graphs and charts.

In traditional domains of system engineering like aerospace and transportation, users can explore system performance, check requirements, estimate cost and allocate resources. Developers leveraging MagicDraw's UPDM and business modeling capabilities can add parametric simulation using SysML submodels for defense planning, business process analysis and computational finance.

ParaMagic is packaged as a plugin to the MagicDraw UML/SysML tool and is available for separate purchase by new and existing MagicDraw customers. Price is $999/€699.

Constraint Relationships

Mathematica is used to solve basic mathematical constraints. Because many equations can be solved non-causally, i.e. in any direction, ParaMagic™-based models can be explored fully, with easy exchange of inputs and outputs. Mathematica can be installed on the local computer, or ParaMagic™ can support server-based licenses or web services.

MATLAB functions, MATLAB scripts, Simulink models and Mathematica functions can all be treated as constraints, as well. Existing validated simulation and cost models can be easily incorporated into the SysML framework.

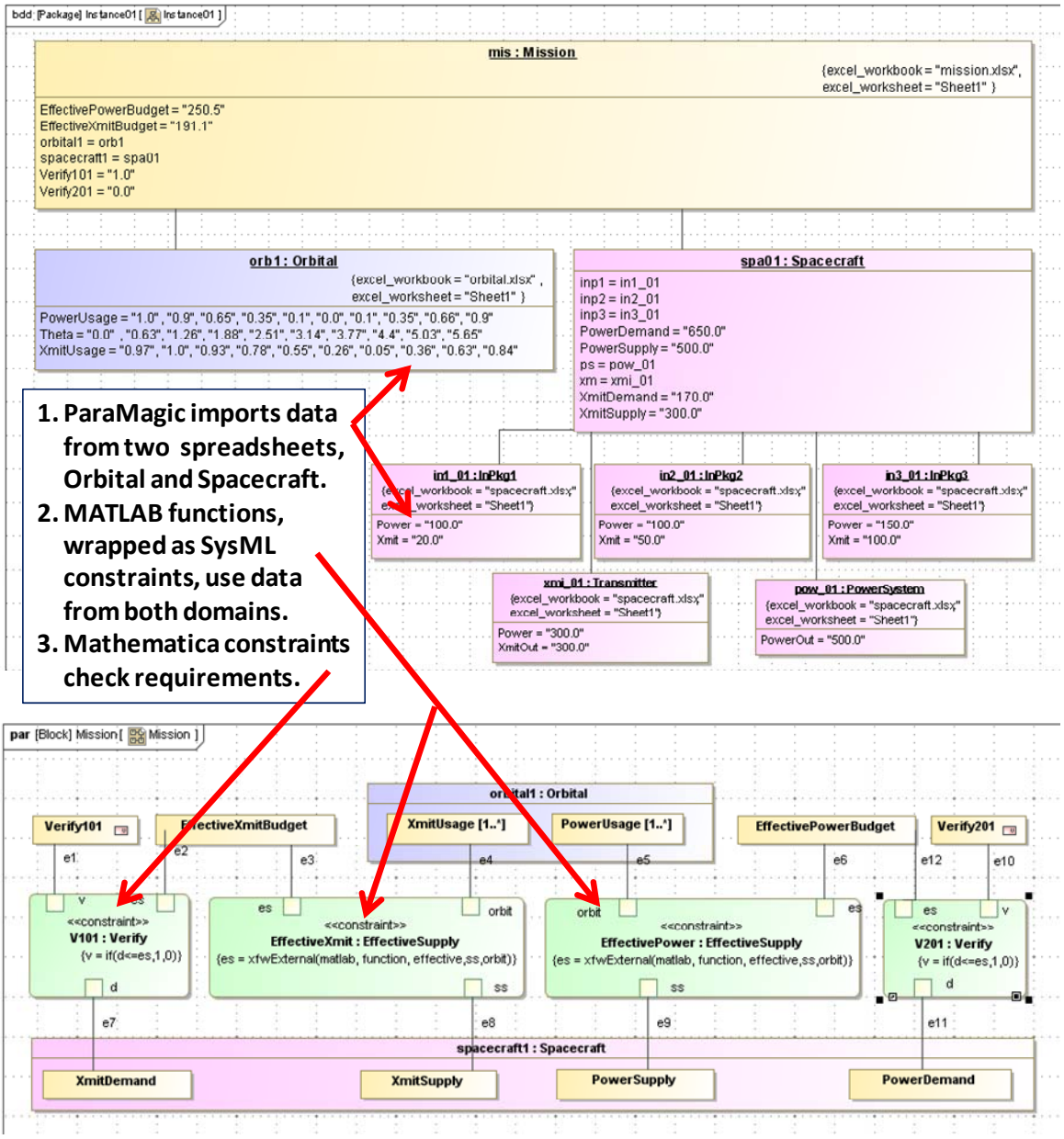
Links with Spreadsheets

In ParaMagic™ 16.6, data can be imported and exported from multiple Microsoft Excel workbooks, using SysML's parametrics to integrate and process data from multiple domains of expertise. Trade studies to evaluate multiple design alternatives can be easily set up, plotted and post-processed in Excel.

Functionality	SysML	MagicDraw SysML + ParaMagic
Structure Diagrams	X	X
Behavior Diagrams	X	X
Requirements Diagrams	X	X
Parametric Diagrams	X	X
Model Simulation		X
Requirements Checking		X
"What If" Scenarios and Trade Studies		X

Examples of SysML Diagrams and ParaMetric Results

A simple example shows how ParaMagic combines Excel, MATLAB and Mathematica to integrate spacecraft engineering and orbital mechanics data in a MagicDraw SysML model, calculate system performance, and check that performance against system requirements.



Questions?

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