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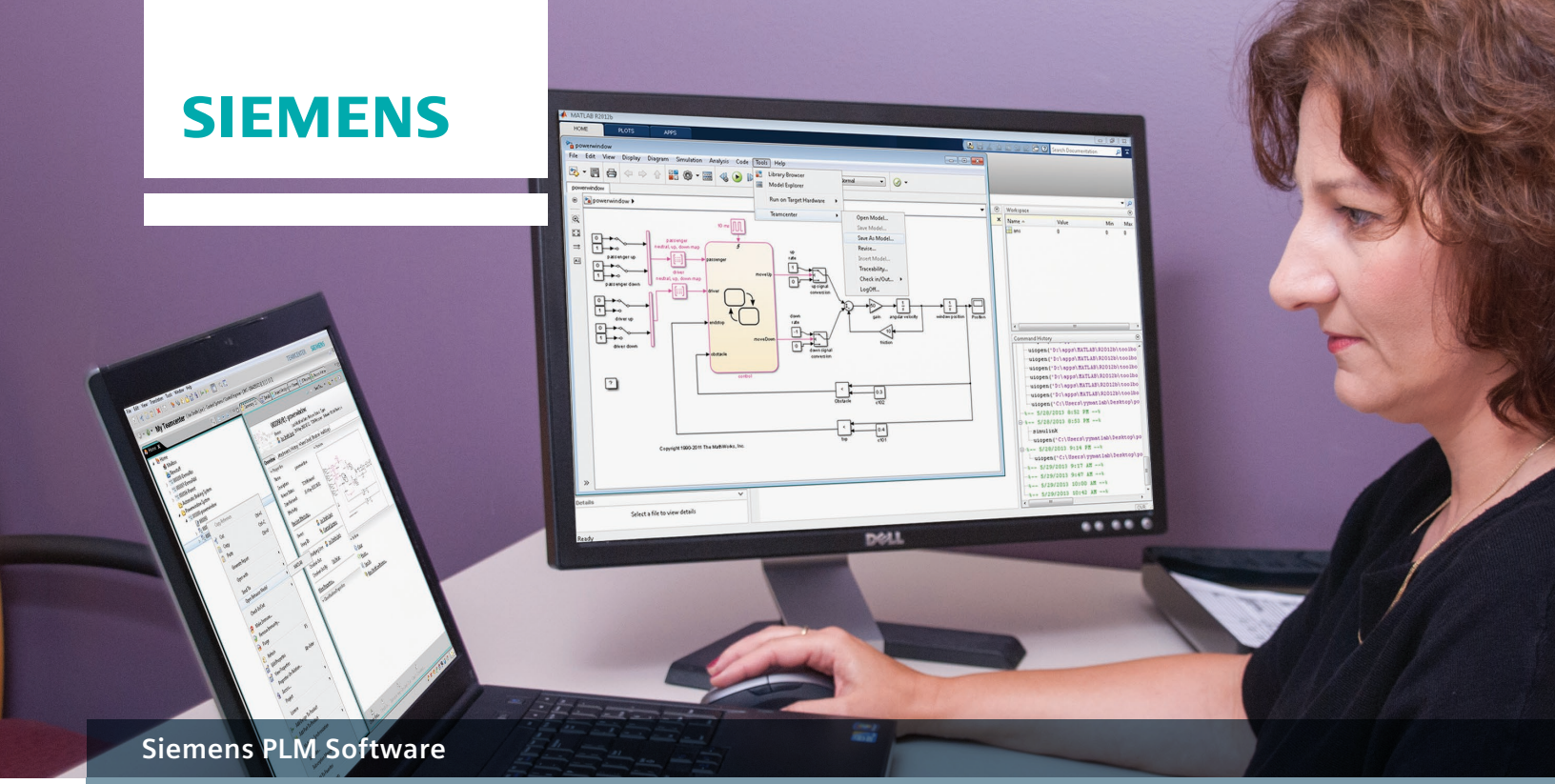


Siemens PLM Software

Teamcenter integration for Matlab/Simulink

Benefits

- Facilitates whole product visibility by allowing product teams to capture and trace Matlab/Simulink models and incorporate these definitions into a Teamcenter-managed source of product information
- Enables product teams to capture and trace requirements into Matlab/Simulink models while incorporating software models into the Teamcenter database
- Enables enterprises to establish a single source of product information that includes a product's software models and definitions, as well as its mechanical and electrical design definitions and requirements

Summary

Teamcenter® software's integration for Matlab enables Matlab/Simulink models to exchange information with Teamcenter system engineering and requirements management. You can employ Teamcenter to embed systems requirements into these models and codes – as well as to generate MathWorks models/codes into complex systems architectures that product teams can leverage to understand how software, electronics and mechanical systems work together in a complex mechatronic product structure to meet customer needs.

Integrating systems and engineering requirements with the Matlab modeling environment

MathWorks is a leading supplier of technical computing and model-based design software, including today's highly popular Matlab/Simulink.

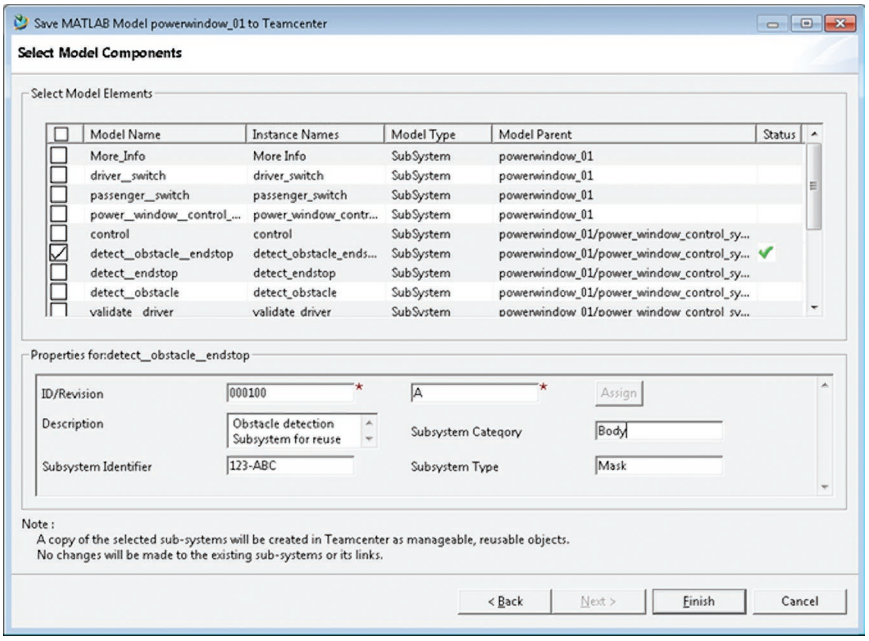
By integrating models and code created in the MathWorks environment with Teamcenter – the world's leading digital lifecycle management environment, software developers are able to use:

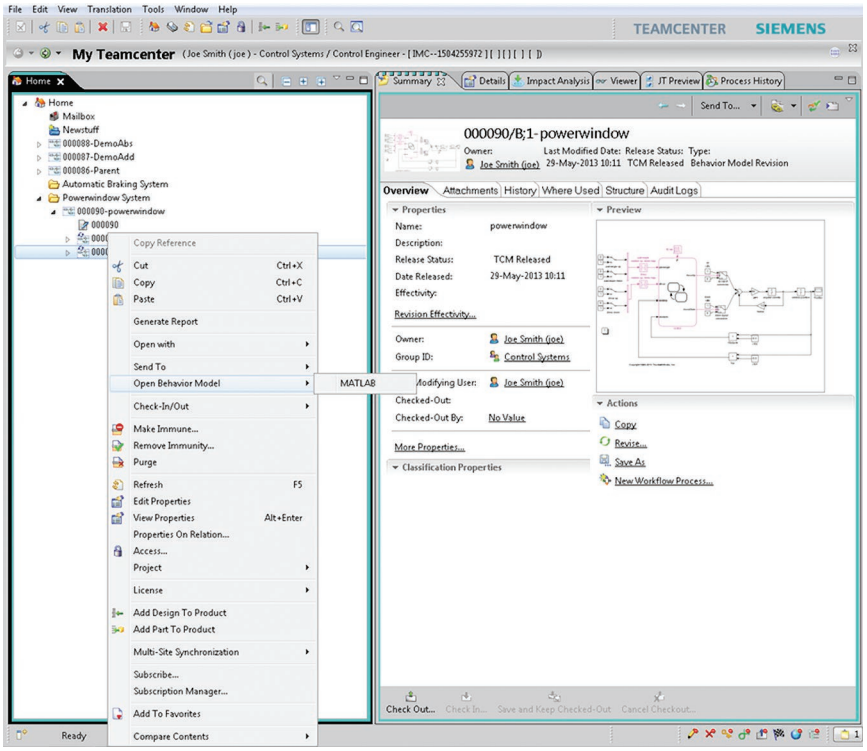
- Teamcenter capabilities for systems engineering – to define the whole product's systems architecture, capture all of a product's market, regulatory and design requirements and relate these requirements to fine-grain design elements and performance targets that can be tracked and updated throughout the product lifecycle.
- Teamcenter capabilities for data management – to integrate Matlab/Simulink designs, as well as Simulink verification and validation tests, with the rest of the software, mechanical and electronics components that Teamcenter manages to track and control complex mechatronic product structures and their related product/process definitions.

Teamcenter integration for Matlab/Simulink

Benefits *continued*

- Enables enterprises to tie all product requirements into the software design cycle, allowing software development teams to understand a product's total quality definitions – and thereby design-in quality and design-out defects
- Allows developers to perform their software development tasks in their Matlab/Simulink environments and their integrated design tasks in an enterprise PLM environment
- Enables cross-discipline teams to participate in an integrated design environment that accounts for the entire product configuration as it evolves across all of its lifecycle states
- Allows enterprises to incorporate software development processes within their global product development cycle, including processes that require change management, software problem reporting and release level tracking
- Enables enterprises to accelerate their product lifecycle, improve its quality and reduce its cost by allowing product development teams to understand the impact of software design as early in the product lifecycle as possible

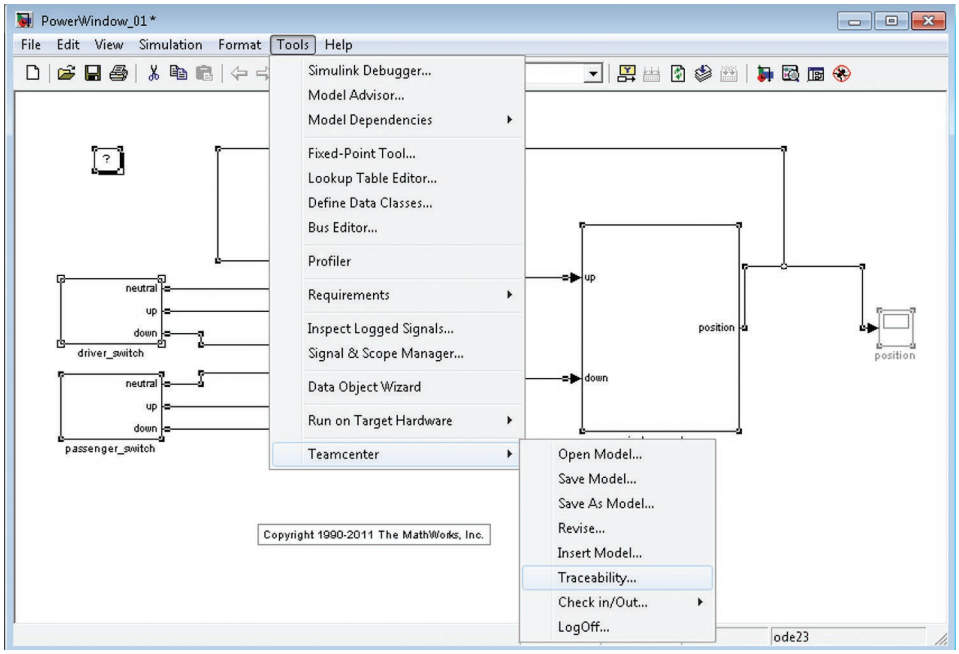




The overall process begins with a whole-product systems architecture that you can create using Teamcenter capabilities for systems engineering.

Features

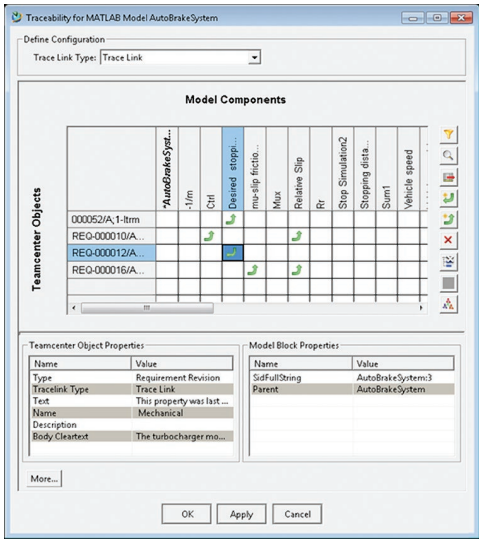
- Data integrity ensured by vaulting Matlab/Simulink models/code in Teamcenter
- Automatic data exchange between the MathWorks applications and Teamcenter initiated by ad hoc user queries, as well as demand-driven and event-driven data requests
- Dynamic part support (ability to link Matlab/Simulink files to Teamcenter parts, thereby ensuring that every part query retrieves its related software component)
- Automatic synchronization between Matlab/Simulink and Teamcenter to ensure that changes to a software model results in changes to its related Teamcenter data (and vice versa)
- Ability to integrate Matlab/Simulink models into Teamcenter standards-based change process
- Ability to integrate Matlab/Simulink models into Teamcenter-managed product configurations that facilitate derivative and variant management
- Establish links and view traceability of models or blocks with other Teamcenter objects from within the Matlab/Simulink environment



You can use Matlab/Simulink to perform all of your modeling and coding functions. Once these components are defined and ready to be assessed and validated from a whole product perspective, you can use the Teamcenter integration to link and trace these components to the overall systems architecture and requirements from within your native Matlab environment. In essence, the Teamcenter integration captures your MathWorks models and connects them into an overall systems architecture that you manage in Teamcenter.

After the MathWorks models are captured in Teamcenter, any changes to the Matlab/Simulink model automatically result in updates to the Teamcenter database – and vice versa. In essence, this establishes a "living" integrated model of the system with its software.

Teamcenter enables you to establish high-level product configurations that identify all bill of material (BOM) views



and underlying design elements that comprise a product. The end result is a complex product configuration that defines your product in terms of its software, mechanical and electrical design elements and their interactions.

Use cases

Teamcenter enables you to establish an interdisciplinary environment for facilitating systems engineering, collaboration and information-linking capabilities that your product teams can use to:

Model a product and its related processes into high-level hierarchies

Typically, systems engineers use Teamcenter and its graphical building blocks to create/capture a systems architecture that represents a product and its processes from multiple perspectives, including high-level product structures, program-related organizational assignments, supplier relationships, manufacturing process views, project management perspectives, cost analyses and documentation views.

Provide whole product visibility

Once the product and its processes are captured, systems engineers can use Teamcenter to link these views together to provide a whole product perspective that planning, project management, development and manufacturing teams can leverage for cross-discipline optimization.

Leverage linked product requirements

Teamcenter enables product teams to capture requirements documents from multiple sources, parse these documents for individual requirements and allocate them to fine-grain design and model elements within a Teamcenter-managed product configuration.

Establish quantitative program constraints

Product teams also can link the product's system-level hierarchies to quantitative program/project constraints. These constraints define metrics that can be tracked and reported across the design, modeling and simulation lifecycle.

Manage product development

You can use Teamcenter to establish controls over such business factors as cost, resource allocations, work functions, system functions and scheduling limits – as well as engineering controls over such factors as performance, reliability, throughput, material/substance restrictions and many other considerations. Most importantly, connected constraints enable product teams to understand the interdependent relationships that exist between different aspects of the product and models, and how these relationships impact one another.

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