

# Teamcenter integration with Sparx Systems Enterprise Architect

## Managing software development from a PLM perspective

fact sheet

Siemens PLM Software

[www.siemens.com/teamcenter](http://www.siemens.com/teamcenter)

### ► Summary

The integration between Teamcenter® software's systems engineering capabilities and Sparx Systems Enterprise Architect (Sparx EA) bridges the gap between systems engineering and software development. The interface enables Sparx Systems' EA software development environment to interactively exchange information with Teamcenter's systems engineering and requirements management environment. Once captured, software modules can be managed as a part in the formal product configuration within the Teamcenter environment.

### Benefits

Facilitates whole product visibility by allowing product teams to capture and trace the metadata associated with EA-managed application codes/models and incorporate these definitions into a Teamcenter configuration.

Enables product teams to capture and trace requirements into EA-managed software while incorporating software models into Teamcenter's 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

Enables enterprises to tie all product requirements into the software design cycle, allowing software development teams to understand a product's total quality definition – and thereby, design-in quality and design-out defects

Allows software developers to perform their software development tasks in the Sparx EA environment 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

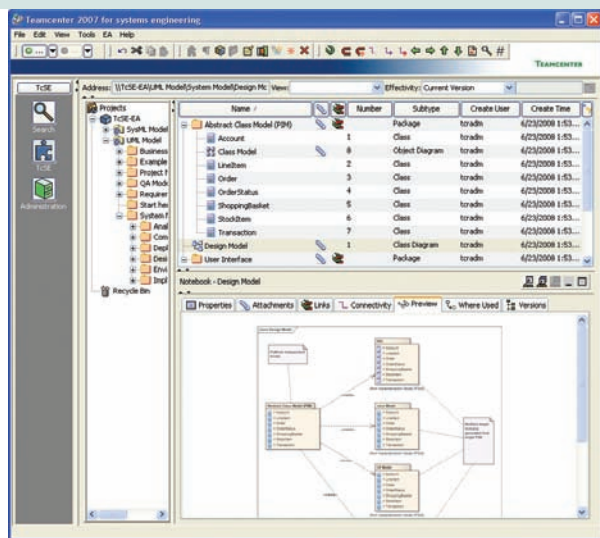
Sparx Systems Enterprise Architect (EA) is a leading SysML/UML (Unified Modeling Language) software modeling solution, recognized as best-in-class by developers and engineers in industries ranging from automotive and aerospace to medical and industrial automation.

By integrating software modeled in the Sparx EA modeling-driven development (MDD) environment with Teamcenter – the world's market-leading digital lifecycle management environment, software developers are able to use:

- Teamcenter's systems engineering solution to define a whole product including its software components and systems-level metrics. Developers also can capture all of the product's market, regulatory and design requirements and tie these requirements to fine-grain design elements and performance targets that can be tracked and updated throughout the product lifecycle.
- Teamcenter's product lifecycle management capabilities to configure, track and control all of the mechanical, electronic and software components that comprise complex mechatronic product offerings and their related product/process definitions.

With the Teamcenter integration, you can use Sparx EA to perform software development functions, including designing, developing, testing, collaborating and implementing high quality code in a MDD environment that supports multiple domain-specific modeling languages.

The process begins with a systems architecture; you use Teamcenter's systems engineering capabilities to design and model the whole product and the Teamcenter-Sparx EA integration to capture the software components and build them into an overall system.



### Benefits continued

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 to understand the impact of software design as early in the product lifecycle as possible

Automatically generates production quality code from the Sparx EA model for a variety of real-time operating systems – thereby shortening development times and improving code quality

Improves overall product quality by enabling integrated change management, which facilitates change planning, impact analysis, incorporation and verification across all product components (including software, electronic and mechanical components)

### Features

Data integrity ensured by vaulting Sparx EA metadata in Teamcenter while retaining the bulk of Sparx EA code/models at their source

Automatic data exchange between Sparx EA and Teamcenter initiated by ad-hoc user queries, as well as demand-driven and event-driven data requests; the EA interface uses a push/pull model to exchange data

Dynamic part support (ability to link Sparx EA repositories to Teamcenter parts) to ensure that every part query retrieves its related Sparx EA software component

Automatic synchronization between Sparx EA and Teamcenter to ensure that changes to a Sparx EA model results in a change to its related Teamcenter metadata; user initiated synchronization supported at the package level

Once the system components are defined and ready to be assessed and validated, you can use the Sparx EA integration to link these components (which you continue to maintain at their source) within the overall product configurations managed in Teamcenter's data management environment.

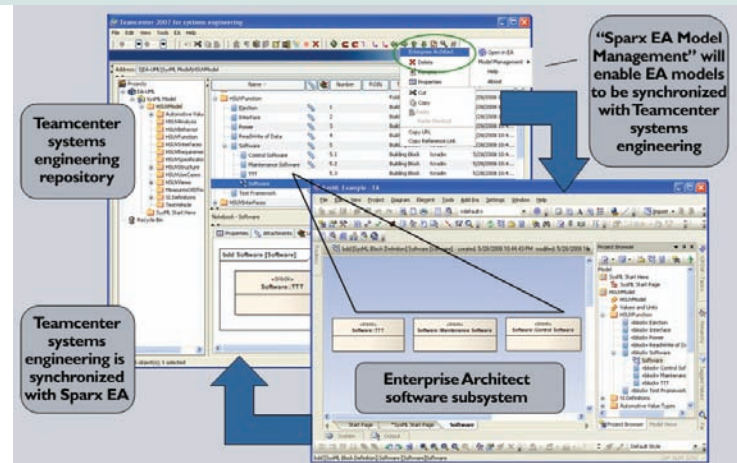
After the metadata associated with EA-created software is captured in Teamcenter, any changes to the Sparx EA model automatically result in updates to Teamcenter (and vice versa) – creating a “living” integrated model of the systems with its software. At any time, Sparx EA can be used to generate production quality C++, C, and Java code for the target operating system.

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 complete product configuration that defines your product in terms of its mechanical, electrical and software design elements and their interactions, which has never been possible before.

### Use case

Teamcenter enables you to establish an interdisciplinary environment for facilitating systems engineering with web-based groupware, 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's systems engineering capabilities and its graphical building blocks to create/capture product architectures that represent a product and its processes from multiple system-level perspectives including high-level product structures, program-related organizational assignments, supplier relationships, manufacturing process views, project management perspectives, cost analyses and documentation views. Teamcenter's system engineering capabilities can be used to model the system, identify its functional requirements, define the relationships between these elements and allocate budgets (constraints) to these elements.
- **Provide whole product visibility.** Once the product and its processes are captured, systems engineers can use Teamcenter's linking capabilities to interrelate 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's requirements management capabilities allow product teams to capture requirements documents from multiple sources, parse these documents for individual requirements and allocate these requirements to fine-grain design elements within a Teamcenter-managed product configuration. Product teams can use Teamcenter to determine the impact that design changes will have on the product's requirements and communicate this impact to individual team members.



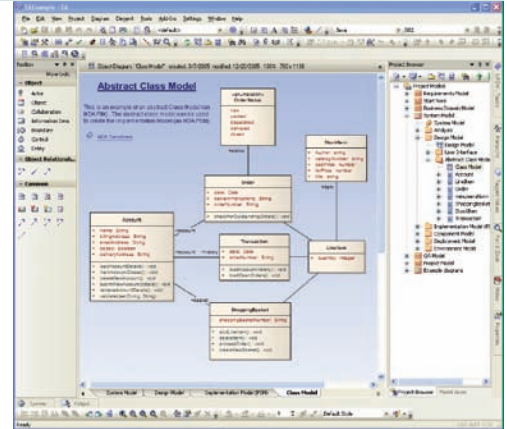
**Features continued**

Dynamic version support

Ability to integrate Sparx EA software components into Teamcenter's standards-based change process, thereby facilitating a unified CMI change process

Ability to integrate Sparx EA software components into Teamcenter-managed product configurations that facilitate derivative and variant management

- **Establish quantitative program constraints.** Product teams also can leverage Teamcenter's requirements management capabilities to link the product's system-level hierarchies to quantitative program/project constraints. These constraints define metrics that can be tracked and reported across the development cycle.
- **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 how these relationships impact one another. This approach enables you to make downstream development decisions in the context of the whole system.
- **Manage production.** You can use Teamcenter to plan and develop manufacturing processes for harnesses, printed circuit boards and software flashing, as well as to track systems configurations and quality.

**Contact**

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