MADe-Teamcenter Integration

Closed-loop Automation with Teamcenter for Safety & Reliability Analyses.

Key benefits

- Rapidly update and share modelled systems with multiple users (cost and schedule impact)
- Consistency of model transfer process
- Usability – ease of use for importing/exporting models and modelling data
- Traceability – analysis model directly linked to TC design configuration

Key features

- Extensibility of system – configuration management. across design variants & platform lifecycle
- Automated process – leveraging BOM data
- Incorporate a central modelling repository

The Problem: With the increasing complexity and specialisation of system design, it is imperative to concurrently leverage all data and information for a configuration to optimise a design. Teamcenter is a Product Lifecycle Management (PLM) solution that holds the engineering data and information required to support the safety, reliability and supportability analyses required at each stage of the product lifecycle. If engineering analysis is not integrated with the PLM system it will impact on the speed, consistency and configuration management of the design process.

The Solution: MADe has an integration with Teamcenter that enables the PLM data and information to be used to generate analysis models and populate relevant parameters required to conduct safety, reliability and supportability analyses. The MADe-Teamcenter integration automatically. identifies and displays matching items and hierarchies during the import/export process, based on the current design state. Automated updates and changes to the system model in MADe then enable configuration management of the analysis required to optimise safety, reliability and supportability capabilities at each stage of the product lifecycle.

Teamcenter Models: Importing BOM Structure from Teamcenter

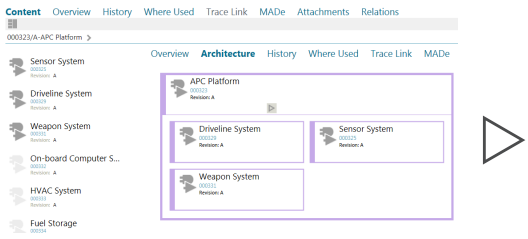

Figure 1: Teamcenter

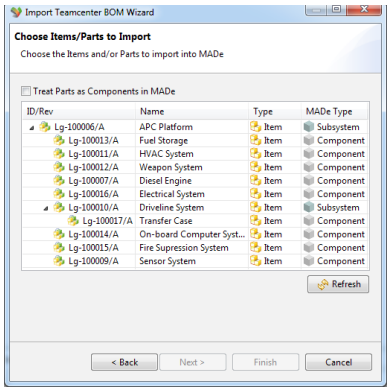

Figure 2: Import wizard

How does the MADe–TC Integration work?

Information from the Bill of Materials (Logical or Physical BOM) is imported from the Teamcenter server and is matched against the MADe Palette or Library. Once imported, the user connects the model items in MADe to perform engineering analyses (e.g. Failure Simulation, FMEA/FMECA, RAM analyses, Sensor Optimisation). Reports or modelling changes as a result of these analyses are then exported back into the Teamcenter solution. This process ensures that the Teamcenter model has all the relevant analysis changes and outputs required to analyse and optimise the design.

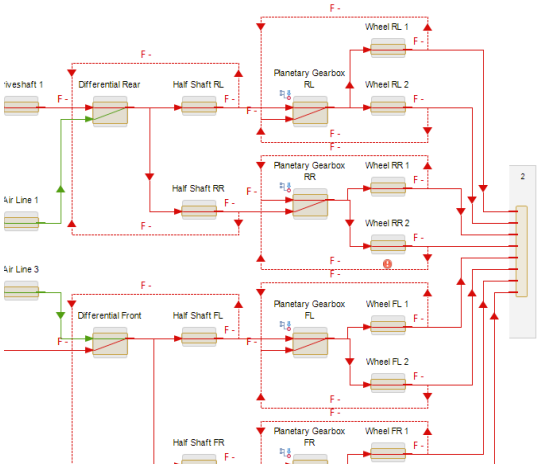

Figure 3: MADe system model

Why is the MADe–TC Integration important?

If a model or the results of an analysis cannot be easily shared, it will duplicate modelling effort and extend the analysis schedule. The ability to perform the following analyses rapidly is crucial to improving a design:

- Safety Analysis – considering all potential failures & potential safety impacts.
- Reliability Analysis – determining the frequency of identified failures.
- Maintenance Analysis – establishing countermeasures for identified failures.
- Diagnostic Analysis – understanding which failures need to be monitored.

What benefits does the MADe–TC Integration have over standalone tools?

Teamcenter models can be automatically transferred into the MADe modelling environment for simulation analyses, Reliability, Availability, Maintainability (RAM) analyses, and sensor analyses (PHM). Conversely, MADe projects and their resulting analysis reports can be saved back into Teamcenter using the MADe-TC Integration.

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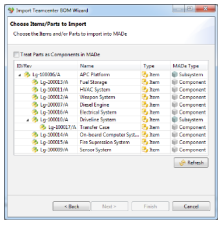
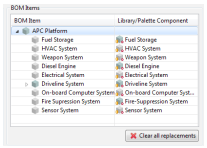
How MADe performs integration tasks with Teamcenter

What is required to conduct the MADe – Teamcenter Integration?

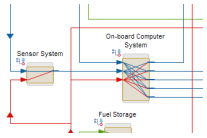
Teamcenter Import



Item Matching



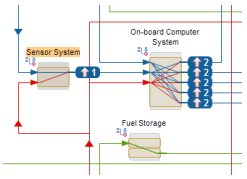
MADe Model



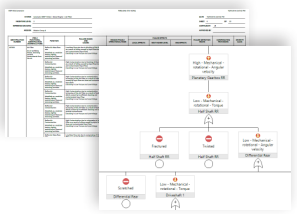
1) Teamcenter model is imported into MADe.
2) The import process performs item matching between TC model items and MADe Palette or Library.
3) User imports model into MADe and connects functional flows.

What does the MADe – Teamcenter Integration provide?

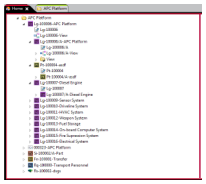
MADe Engineering Analyses



MADe Engineering Reports



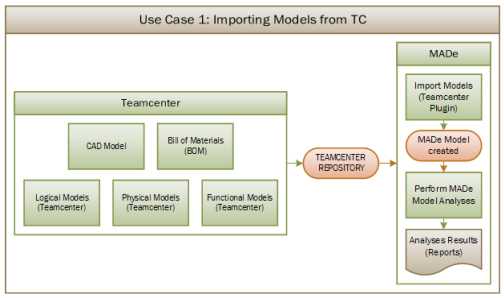
Updated Teamcenter Models



1) Engineering Analyses are performed in MADe.
2) MADe engineering reports are generated in MADe.
3) Updated model and analysis reports are saved in Teamcenter.

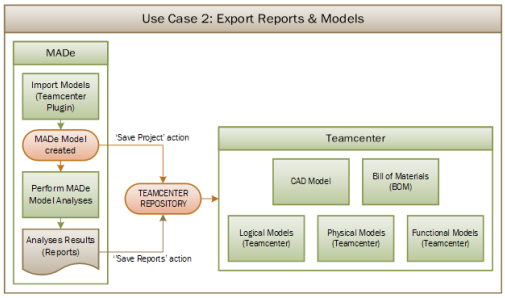
How are the results of the MADe – Teamcenter Integration used?

Use Case 1: Model Import from Teamcenter



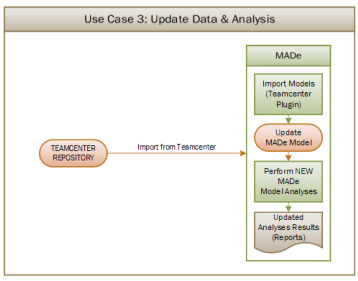
Integration enables automated sharing of model-based FMECA from MADe

Use Case 2: Exporting Reports & MADe Models



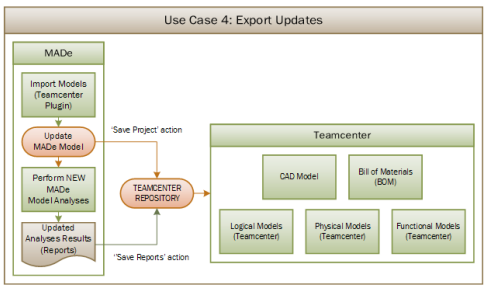
Automated sharing of Hardware and Functional FTA.

Use Case 3: Update Model Data & Run New Analyses



Integration shares specific end-effects & maintenance of system failures.

Use Case 4: Export Updated Model/Reports



Integration between a Teamcenter repository and a MADe model.

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