Using Integrity™ Modeler™ as a core platform for a global systems engineering strategy

ALSTOM TRANSPORT

A promoter of sustainable mobility, Alstom Transport develops and markets the most complete range of systems, equipment, and services in the railway sector. Alstom Transport manages entire transport systems, including rolling stock, signaling, and infrastructure, and offers "turnkey" solutions.

The challenge

Alstom Transport needed a SysML (Systems Modeling Language) tools supplier that truly understood the standard. Following a comprehensive evaluation of all the leading SysML tools on the market, Alstom Transport focused on several key criteria: conformance with the SysML standard, ease of integration and extensibility, collaborative design, ability to manage product lines, and quality of support.

The solution

During the evaluation process, it became increasingly evident to Alstom Transport that the Integrity Modeler would not only be able to significantly improve the quality of their overall systems engineering methodology, but would also reduce project design time and costs.

"Integrity Modeler significantly improved the quality, consistency, and reduced effort throughout the design life-cycle," said Marco Ferrogalini, Chief System Engineer in the Rolling Stock and Components Product Lines at Alstom Transport.

As a multi-national company, Alstom Transport's systems design projects involve teams in a variety of countries. A development environment truly capable of supporting collaborative working across dispersed teams was important to Alstom Transport, and Integrity Modeler has been the catalyst for improved collaborative working. Integrity Modeler's ability to use the same OMG SysML modeling language and the same models without the risk of unintentionally duplicated items was crucial in enabling Alstom to meet its goals for future projects.

PTC's flagship modeling tool delivered on Alstom Transport's technical requirements around compliance to the UML and SysML standards and OVM (Variability Modeling) in a single integrated toolset. With the tool, Alstom Transport implemented model-based product line engineering, i.e., modeling product lines and product families, making decisions on the variable options, and generating product instance models. These models were then able to be assessed with simulation and trade study analysis before being used to communicate and document the designs to be implemented as systems or software.

By implementing Integrity Modeler, Alstom Transport's design teams were able to work on requirement, system, and software elements using the same model at the same time to communicate and approve their designs in SysML.

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Benefits for Alstom Transport

- Improved design quality with better coherency and consistency

- Reduction in development risks thanks to rigorous traceability between requirements implementation, verification, and validation

- Increased productivity with better reuse of existing models, reducing errors and design time

- Improved communication between development teams and stakeholders

- Enhanced knowledge exchange, capturing standard architecture choices and justifications that can easily be accessed

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By choosing to adopt the Integrity Modeler, Alstom Transport has also embraced the latest techniques, such as model-based system engineering and model-based product line engineering."

Marco Ferrogalini
Chief System Engineer in Rolling Stock & Components Product Lines
Alstom Transport

What's next?

Alstom Transport plans to develop SysML's system model integration with other engineering design tools, such as software development and mechanical design, while sharing their SysML models with suppliers and partners. Alstom Transport plans to extend the use of the Integrity Modeler variability modeling and product line engineering in their future projects, enabling reuse capability, savings in design, and trade studies.