

Streamline model-based software engineering

Using Simcenter Embedded Software Designer to drive the design process

Benefits

- Provide an efficient solution for MBSE
- Create enriched architecture models to drive the design process
- Connect to your implementation tool of choice for code development
- Integrate, verify and validate your code to deliver onboard software quality

Summary

Short development and innovation cycles put a tremendous amount of time and cost pressure on software-intensive product manufacturers. They are faced with a trio of conflicting goals: delivering faster design time, higher quality and multiple product variants. Addressing these challenges requires a leading-edge approach to software engineering.

Simcenter™ Embedded Software Designer software offers you an efficient solution for model-based software engineering (MBSE). An architecture-centric approach allows you to model and analyze designs for early validation of requirements, architectures and onboard software behavior.

Simcenter Embedded Software Designer is integrated with other Simcenter solutions to provide enhanced closed-loop and multi-physics simulation capabilities, and with Polarion ALM™ software, which enables you to manage requirements, test cases, test-run records, development plans, quality metrics, dynamic reports and more for onboard software development.

Enabling a holistic software architecture

Simcenter Embedded Software Designer uses an architecture model as a central platform to efficiently support the entire value chain for embedded software development, and to enable integrated model-based software engineering by applying a design-by-contract methodology.

With a contract-based architecture design approach, Simcenter Embedded Software Designer helps you develop complex software systems using architecture analysis and test and verification frontloading, as well as closed-loop simulation and interoperability with other development tools.

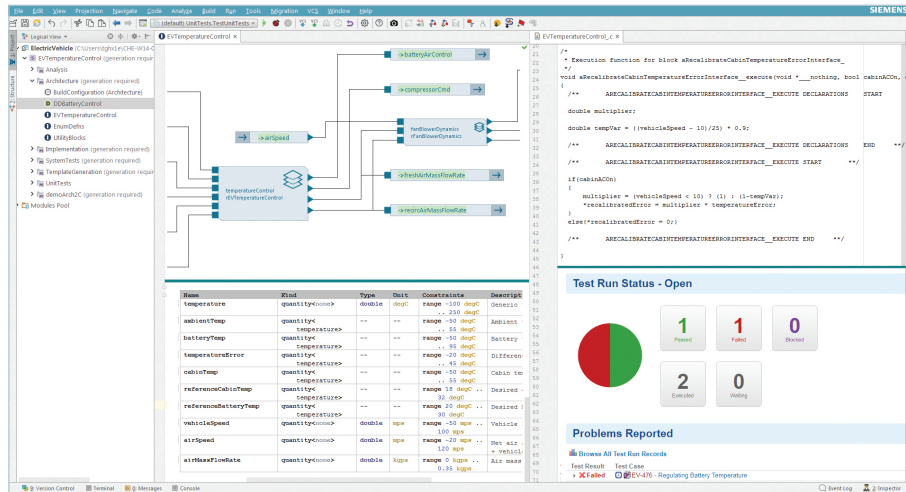
External or legacy architecture models can be imported into Simcenter Embedded Software Designer, which supports various tools and languages, including Systems Modeling Language (SysML) and Architecture Analysis and Design Language (AADL). These models can then be moved to rich architecture, thus enabling you to edit, refactor, enrich and analyze them.

Supporting an open development approach

Simcenter Embedded Software Designer allows software developers to work in the integrated development environment (IDE) of their choice, such as the Eclipse CDT framework, or to work in the Simulink® environment with the use of development templates.

In the case of external C programming, the templates come as C code and header files containing all required functions. For external Simulink implementation, the templates come as a Simulink model representing the blocks, ports and connections. In both cases,

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templates are strongly linked to architecture elements to facilitate change management and efficient integration.

Simcenter Embedded Software Designer helps you efficiently analyze, instrument and extract required software content

from the legacy C project, and convert it into a model for further reconciliation, verification and validation.

Enabling efficient integration

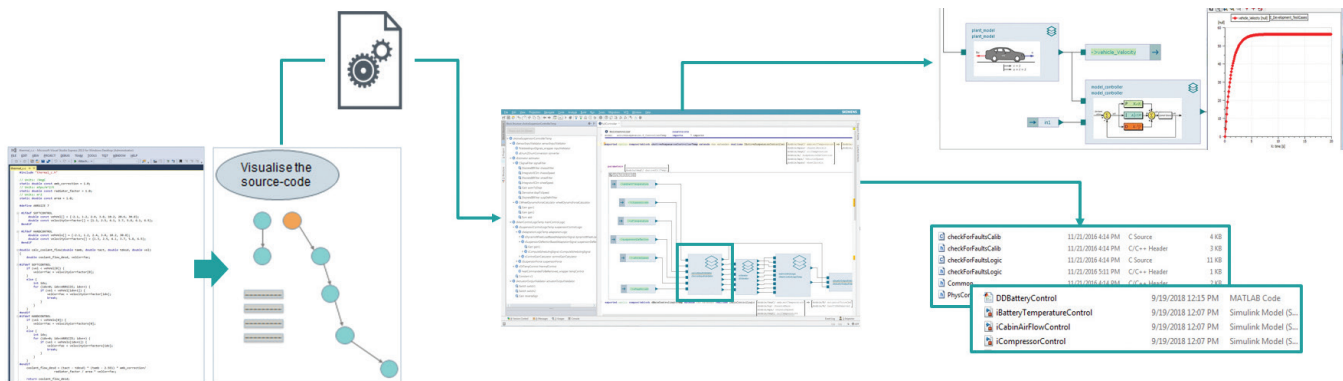
The software architecture created in Simcenter Embedded Software Designer

guides the integration of all incoming implementations in the integration phase. Whether the implementations come from external C coding or external Simulink design with code generation, in-house or outsourced, the incoming code is checked against the contract rules imposed by architecture, and inconsistencies are reported.

Delivering onboard software quality

Simcenter Embedded Software Designer lets you author tests using case templates and perform functional testing at the subsystem or system level. Advanced formal verification helps you prove that situations such as division-by-zero or range violations can't occur.

Closed-loop validations are supported by managing closed-loop harnesses for software-in-the-loop (SiL) testing, and leveraging the capabilities of Simcenter Amesim™ software, Simulink and Functional Mock-up Interfaces (FMIs).



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