As of 16.05.2026

SysML: Model-Based System Analysis and Design with the Systems Modeling Language - Live Online Training

Systems analysis and system design are the foundation for the further development and test of embedded systems with any degree of complexity. A standardized representation of results, such as the system architecture, facilitates documentation, communication and comprehension.

Objectives

You are able to implement system analysis and system design (comprising mechanics, hardware, software and other development domains) in your projects using SysML - from requirements to the verified system architecture. You know the system views that are relevant to practical application as well as the aspects of model-based systems engineering (MBSE).

Participants

The SysML training addresses system architects as well as hardware and software architects.

Requirements

Experience in development projects for technical systems.

Live-Online-Training

* Price per attendee, in Euro plus VAT

Training code: LE-SYSML

Face-To-Face - English

Duration
3 days

Live Online - German

Duration
3 days

Face-To-Face - German

Duration
3 days

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Content

Requirement Diagrams and their SysML Notations
- Requirement diagram

- Use case diagram
- Practical tips and examples for use in a project
- Exercise: Development of a contextual and functional requirements view by means of the use case diagram, based on drawn up textual requirements for a real embedded system

Structure Diagrams and their SysML Notations

- Block definition diagram
- Internal block diagram
- Parametric diagram
- Package diagram
- Practical tips and examples for use in a project
- Exercise: Developing and refining a system architecture for a real embedded system using various diagrams

Interaction/Behavior Diagrams and their SysML Notations

- Sequence diagram
- State machine diagram
- Activity diagram
- Tips and examples for practical use
- Exercise: Developing a scenario and modeling it with a sequence diagram based on the system requirements and system architecture

SysML Tools

- Tool requirements
- Overview of functions
- SysML model setup
- Current tool overview
- Tool demonstration

Practical Use of SysML Diagrams in the Development Process

- System views: structure, behavior, functional view, physical view, distribution view (functional to physical)
- Systematic procedures in system development
- System analysis/ system requirements analysis: identification, documentation and modeling of functional and non-functional requirements; employment of the use case and requirement diagram
- System analysis/ system architecture analysis: identification, documentation and modeling of system architecture elements and their interactive behavior (communication); employment of the block definition and sequence diagram
- System design/ system architecture design: identification, documentation and modeling of details and instances of the system architecture elements and their generic (individual) behavior; employment of the internal block, parametric, state machine and activity diagram
- System design/ system decomposition: identification, documentation and modeling of the development projects resulting from the system architecture; employment of the block definition diagram
- Insight into the SPES methodology (model-based engineering of embedded systems)

Practical Exercises

- Consistent modeling of a distributed embedded system (electric motor with motor control system) using SysML, from system requirements to system architecture
- Development steps: system analysis and system design
- The exercises are performed using the professional modeling tool Enterprise Architect (Sparx Systems) or paper and pencil.

MicroConsult PLUS:

- We will provide you with a download link for your exercises and the solutions developed by MicroConsult from this workshop.
- You get the entire SysML software model of the electric motor application.
- You also get a current overview of SysML tools.
- You get helpful notation overviews for UML and SysML.