

## **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

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

### **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.