

## System Design Training

# Module design: a team effort in system context

This training aims to equip system design professionals with a comprehensive understanding of essential concepts, processes, methods, and techniques. It focuses on designing subsystems/modules, emphasizing an interdisciplinary approach to develop functional modules from ideation to disposal.

The process begins with comprehending the broader system and organizational context. The system designer identifies stakeholders' needs, defining functionality, performance, behavior, and interfaces of the module(s). Subsequently, the designer transforms this understanding into a coherent design. The approach also encompasses solution verification and transitioning to subsequent engineering disciplines.

### Learning objectives

- Gather requirements from stakeholders for functional modules
- Design system behavior to meet specified requirements
- Translate design into module requirements and communicate with component teams
- Develop a test plan based on the design and communicate with the integration team

**WHAT**  
System Design Training

**WHO**  
Lead engineers  
System designers

**FORMAT**  
Group: 2-5 participants  
Duration: approx. 12 weeks  
Load: 3-4 hours/week  
Location: online  
Inhouse or multi-company  
Costs EUR 2100 p.p.

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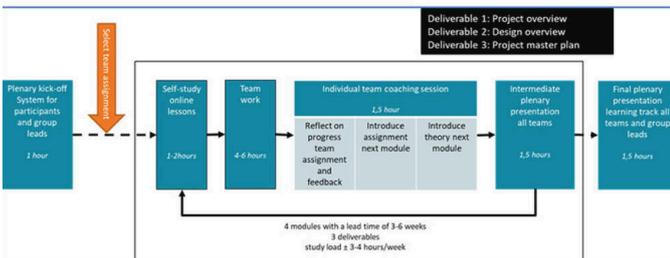
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## Intended for

Lead engineers and system designers that collaborate closely with system architects, integrators, engineering teams, and other stakeholders throughout the system's life cycle. They play a crucial role in translating requirements into module designs, ensuring compatibility within the broader system architecture.

## Program

Participants will work in small teams of 2-4 people on a company-specific, self-selected system design case. The training consists of five modules, each with a three-week duration. Each module concludes with a case-related deliverable. Online lessons will cover theory and provide additional information about the required deliverables. Additionally, team coaching sessions will be available for extra team support in each module. At the end of each module, teams will present their completed deliverables to fellow trainees. The training will culminate in a final presentation.



## Training modules and deliverables

The training consists of 4 modules, focusing on different phases of the design process. At the end of each module, all teams are expected to present their (intermediate) deliverable.

### Module 1: Project Overview

In the first lesson, teams will create a project draft, focusing on

- Scope and system context
- Project goals and key performance parameters
- Stakeholders and organization
- Requirements
- Functional analysis
- Master planning, interactions, and dependencies

### Module 2: Design overview

The second lesson centers on the design of the module, with each team expected to present an A3 design overview covering:

- Introduction
- System partitioning, block diagrams, and interfaces
- Functional decomposition
- Physical overview
- System concerns
- Key parameters and requirements
- Design strategies, issues, and concerns Roadmap

### Module 3: Refine project and design overview

The third lesson delves deeper into the design, focusing on aspects such as

- Performance
- System qualities
- Conflicting KPPs, trade-offs, and decisions
- Risks and uncertainties

### Module 4: Project integration plan and update

The final lesson concentrates on integration of the module into the broader system. Key topics include

- System Integration fundamental
- Integration strategies
- Incremental integration, KPPs, uncertainties, and risks.
- Balancing system quality and time. Integration plan and visualization.

### Design case specification

The training employs a self-selected system design case. General specifications for the system design case are

#### Context

- The module is a part of a larger system.
- The module has multiple interfaces.
- Multiple stakeholders (across the lifecycle) are involved.

#### Module

- Real-life case (product/module) from daily work.
- The case must be challenging and specific enough to entail design decisions/dilemmas (not too obvious).
- The problem domain must include quantitative requirements.
- Envision at least 2 or 3 specific use cases.

#### Sponsor

The case must have a "sponsor" or "case-owner" who requires the case and is available to answer questions/present the customer or business view.