Training	A4.Lead1 - Systems Engineering for Leaders

Keyfacts	

Duration	2 days
Language	English or German
Setting	On-site or remote

Target Group	Leaders (Project and Line Managers) that are responsible for interdisciplinary development

Training Goals

The ultimate goal of this training is to learn how to structure and lead the successful development of interdisciplinary systems. It is designed as overview and trailsign for managers to leverage the capabilties of "Systems Engineering". Asides understanding the concepts of this field a particular focus is put on the organizational aspect and it's influence on the successful development of interdisciplinary systems.
The particular goals of this training are:

#1 - Problem Understanding
Participants are able to understand the different types of systems and their present and future challenges as basis for deriving individual solution strategies.

#2 - Introduction to Systems Engineering
Participants have an understanding about the the ideas and concepts of "Systems Engineering" as interdisciplinary engineering discipline. They know the state of the art and are able to identify relevant topics and strategies for interdisciplinary development

#3 - Fundamental Systems Engineering Concepts
Participants have an overview on the fundamental engineering concepts required for successful Systems Engineering. They are able to reflect the individual capabilities of their organisation against the existing state of the art and by such can (i) name blindspots and (ii) know concepts how to improve

#4 - Quality, Dependability, and differences between the disciplines
Participants understand the different challenges introduced by different discipines. They are aware of the different challenges of different disciplines corresponding with Quality, Dependability, and Quality Assurance and understand the influence on work organizations driven by these differences.

#5 - The Role of Organizations and individuals in interdisciplinary development
Participants understand the significant influence of work organization for implementing successful Systems Engineering. They understand the challenges introduced by interdisciplinary development and are able to derive individual solution strategies. Further, they are able to reflect on their individual role as leader who is challenged by the inherent limitation of not being an expert in every aspect.

Training Content

Introduction
- Understand the challenge first: Classification and Evolution of of Cyber-Physical Systems
- Systems Engineering as interdisciplinary discipline and it's meaning for work organizations

Requirements Engineering
- Understanding Requirements Engineering as engineering discipline
- Fundamental concepts and methods of Requirements Engineering

Quality, Dependability and Quality Assurance
- Quality in Hardware, Software, and Cyber-Physical Systems
- Specification of Quality Characteristics
- The different Role of Quality Assurance in Hardware and Software
- Constructive, Analytic, and Organizational Quality Assurance
- The future of Quality Assurance: "Shift Left"

Architecture Development
- Architecture, Architecture Description and Architecture Development
- Architectural Drivers as basis for sustainable architectures
- Architecture Development and the role of Architects
- From "Document-centric" to "Model Based": Introduction to MBSE
- How to achieve good architecture
- The consequences of Technical Debt for future Products

Training Content

Design & Development
- Challenges encountered by interdisciplinary development
- How to deal with these challengs
- Modern Development Logics and their influence on organizations

Integration, Verification, and Validation (IVV)
- "Shift Left": Q
- Enabling virtual and physical integration: the key to success is on the left side of the V
- The incresing importance of integration in the future

Platform und Variante-Management
- Fundamental Concepts for Platform and Variant-Management
- Feature Trees und Variable Architectures
- Product Roadmaps as driver for variable architectures

The Role of Organizations, Leaders, and Experts
- The Importance of Organizations in Systems Engineering: Conway's Law
- Shaping Work Organizations: BAPO vs. OPA
- Understanding the challenges of Engineers: Active Blindspot-Management as key to success
- My Role as leader: how to lead interdisciplinary development

Learning Methods and Didactics	•Theory Inputs combined with discussions and reflections •Awareness Exercises •Examples
Your Benefit	One of the main challenges of leaders in interdisciplinary development is the inherent inability of knowing all methods in all disciplines. As such, it is difficult to understand where and how to improve or shape the own area of responsibility. In this training you will gain an overview on the concepts of Systems Engineering and a better understanding of the different challenges introduced by different disciplines. This overview will help you to reflect on individual room for improvement on both, the technical and the organizational dimension Further, it will help you to reflect on your individual role as leader in an interdisciplinary development setting and provides you with direction for further development of your role.

Your Trainer

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Christian is Professor at the School of Information Technology and Digitalisation at Salzburg University of Applied Sciences. As head of the "Center for Dependable Systems Engineering" he is an expert in this field and has profound knowledge on the matter.

Asides his academic role, Christian has 10+ years of experience as consultant and trainer

at the Successfactory Consulting group with a particular focus on Leadership, Software, and Systems Engineering related topics.