

Engineering Modules (EM)

State-of-the-Art Technology Expertise in Service Management



EM 1: Information & Service Management

Nowadays service markets are characterized by a close interrelation with **information service management** due to the original set-up of service markets. Therefore, the overall objective of the module is to provide the fundamentals of market engineering with an emphasis on the **design and the further development of information markets and services**.

The module enables participants to understand and analyze **business innovation & adaption processes** and thus get an idea of, among other things, innovation diffusion. Innovation driver analyses make participants systematically identify the difference between invention and innovation.

Since the structure of information markets is discussed, participants are able to develop an **understanding of how market actors operate**. In addition, the consideration of service competition as a business strategy helps participants structure the impact of **service competition** on business design, markets, products, processes, and services.

EM 2: Service Technologies

This module focuses on two important aspects: first, the **design and engineering principles behind current networking technologies** and second, on **security problems and solutions** identified regarding those technologies thus far.

The knowledge imparted in *Advanced Computer Networks* enables participants to understand the **interactions of network components** and apply the relevant facts to design principles for current service technologies and networks.

Current modeling and programming languages e.g., HTTP, SOAP or WSDL, explain the **architecture of web applications**. In terms of security, **fundamentals of cryptography and their applications in complex safety systems** are introduced. **Cloud computing concepts and technologies** taught within the module enable the participants to assess the opportunities and challenges of web-scale service applications while keeping the current state-of-the-art IT safety and security technology in mind.

EM 3: Digital Services

This module focuses on advanced **concepts and methods that are essential in digital service systems and e-applications**. Understanding the need for information and knowledge management in businesses, participants of the module are able to implement concepts for the modeling, representation, and administration of information and knowledge. Based on the acquired methods and systems to support **e-commerce**, the participants are qualified to select, evaluate, design, and apply these methods and systems according to the situation at hand.

A reliable functionality of the networked digital services requires the management of complexities. In this specific part of the module, participants become acquainted with the **framework**

conditions of complexity management and, after the analysis of the psychological, computer-related, dynamic, and managerial aspects, are enabled to further develop complexity management according to the businesses' demands. After having learned the meanings of "information" and "pricing", the participants can develop a differentiated **view on the pricing of goods and information goods**. Based on a case study involving the price elasticity of demand, they develop application and implementation strategies which, in turn, require suitable team & communication skills.

EM 4: Business Processes & Software Engineering

In business organizations, business process and software engineering are known to be closely linked to one another. The participants in this module gain the ability to effectively and efficiently adapt the particular demands of business processes using a **technical approach that applies both the tools and methods of business process engineering and of software systems**. They obtain a detailed overview of the stages of software systems development and they are qualified to apply the tools and methods of the development process.

EM 5: Regulations & Economics of Networks

The fundamental knowledge of **communication law** supports participants in the **adaptation of business strategies to today's media and information industry** and is in the focus of this module. The participants are able to identify and solve relevant problems in the areas of information, data protection, and business law.

In the part *Network Economics*, they implement **price models and business strategies as economic concepts reacting to changed market conditions** in the transportation or telecommunications sectors, for example. The participants are qualified to identify and take into account the problems (e.g. "moral hazard" and "adverse selection") that are linked to contract design.



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Engineering Modules

EM 1: Information & Service Management
Courses: Introduction to SME
Digital Transformation of Service Systems
Innovation of Services
Information & Market Engineering

EM 2: Service Technologies
Courses: Advanced Web Applications
Modern Network Infrastructures
IT Safety & Security
Cloud Computing

EM 3: Digital Services
Courses: Information & Knowledge Management
IT Aspects of Mobile Business
Information Pricing
Service Pricing
Big Data

EM 4: Business Processes & Software Engineering
Courses: Business Process Engineering
Software and Systems Engineering

EM 5: Regulations & Economics of Networks
Courses: Communication Law
Industrial & Network Economics
Economics of Contracts