DDP

Digital Design Professional

Foundation Level

Syllabus

2.0.1 | January 31, 2024

IREB

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Preface

The motivation for creating this syllabus lies in the ideas behind the Digital Design Manifesto that was developed by Bitkom (Germany's digital association) in cooperation with IREB and other organizations. This manifesto postulates the idea that digital is an original material that requires a holistic design profession. Such a profession is urgently needed in order to tap into the full potential of digital technology and to improve the ability of professionals to design and realize successful digital solutions. No doubt there are already practitioners today who are shaping digitalization in the sense of the manifesto, but there are far too few of them and their methods and techniques are not general knowledge. They have no clear job profile with clear responsibilities and relationships to other professions. Finally, they are not systematically trained in designing with digital materials.

The manifesto refers to an analogy to the professions of architecture and industrial design. Both professions are widely recognized and have clear job descriptions and education programs. This originality and this identity are central factors for the success and benefit of these professions for the economy and society. Just as architecture and industrial design already exist as professions today, Digital Design is needed as an independent and self-confident profession that improves our ability to build successful digital solutions. The authors of the manifesto want to initiate a process of change in order to achieve precisely this goal.

This syllabus is intended as a contribution to this process of change. We intend to help as many people as possible to profit from the ideas of Digital Design. The syllabus assumes that participants have practical experience in some aspects of creating digital solutions. Of course, a syllabus for a two-day course cannot replace university studies; it is therefore not intended for complete beginners but rather for people who already have some experience in certain aspects of this field, for example, UI design, software architecture, requirements engineering.

Due to the limited time available in a two-day course, the syllabus focuses on selected methods and techniques. Experts will be aware of other methods and techniques in their particular area. The aim of this syllabus is not to advocate specific methods or techniques, but rather to introduce the profession of Digital Design and to certify that participants have the following competencies:

A broad overview of the competence spectrum of Digital Design. This knowledge allows participants to assess their own competencies in Digital Design and to look for suitable further training opportunities according to their needs in Digital Design.

The basics of the practice of Digital Design, from the very beginning of an idea right up to the actual operation and evolution of a digital solution. This end-to-end understanding is an important learning outcome since it enables participants to understand the challenges and necessary competence of each step.

Practical competence in the actual integration of Digital Design into the realization of a digital solution. This hands-on understanding is important for tangible results since it enables participants to connect with all the technology people who do the important construction and realization work that brings a digital solution to life.

Finally, participants will have acquired all the knowledge necessary to act as ambassadors for the idea of Digital Design in their own organization and to contribute to the process of change initiated by the Digital Design Manifesto.

Kim Lauenroth, 1st Chair of IREB e.V.

Acknowledgements

IREB is grateful to all the people who contributed to the first and second versions of the Digital Design Professional syllabus by shaping the content, providing feedback, conducting content and language reviews, or being available as sparring partners in intense discussions.

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Version 2.0 was approved for release on September 20, 2023, by the Council of IREB e.V. upon recommendation of Martin Glinz.

We thank everybody for their involvement.

Purpose of the document

This syllabus defines the Foundation Level of the Digital Design Professional certification established by IREB e.V. The syllabus provides training providers with the basis for creating and structuring their course materials. Students can use the syllabus to get an overview of the intended content and the learning objectives. Content details for preparation of course material and for the examination can be found in the "Education and Training Handbook for the Digital Design Professional."

Contents of the syllabus

The Foundation Level syllabus addresses the needs of all people involved in the topic of Digital Design. This includes people in different roles, such as user experience manager, user interface designer, interaction designer, system analyst, requirements engineer, product owner or product manager, developer, project or IT manager, and anyone who wants to shape the digital age.

Level of detail

The level of detail in this syllabus allows teaching and examination to be consistent internationally. To achieve this goal, the syllabus contains:

- Educational objectives
- Contents with a brief description of the educational objectives
- References to further literature (where necessary)

Educational objectives and cognitive levels

All education units and educational objectives in this syllabus are assigned a cognitive level. The following levels are used:

- L1: Know (describe, enumerate, characterize, recognize, name, remember, etc.): remember or retrieve previously learned material.
- L2: Understand (explain, interpret, complete, summarize, justify, classify, compare, etc.): grasp/construct meaning from given material or situations.
- L3: Apply (specify, write, design, develop, implement, etc.): apply knowledge and skills in given situations.

! Higher cognitive levels include the lower ones. Note that all terms in the glossary [GlLa2023] that are designated as foundational terms must be known (L1), even if they are not explicitly mentioned in the educational objectives. The glossary is available for download at https://www.digitaldesign.org/en/downloads.

Structure of the syllabus

The syllabus consists of thirteen main chapters. Each chapter represents one education unit (EU) and several educational objectives (EO). Each educational objective is assigned to one cognitive level.

The cognitive level of each education unit is derived from the highest educational objectives of that chapter. The suggested duration indicates the time that a training course should invest at least for that chapter. Training companies are free to allocate more time but should maintain the proportions between the EUs. Important terms used in a chapter are listed at the beginning of the chapter.

Example of an education unit header

Chapter 1	Motivation for Digital Design
Suggested Duration:	30 min.
Cognitive Level:	L2
Important Terms:	digitalization, digital transformation, Digital Design, profession, role, digital solution

This example shows that education unit EU 1 contains educational objectives at level L2, and 30 minutes are intended for teaching the material in this chapter.

Order of topics in the syllabus

The order of chapters in this syllabus constitutes a logical order of topics. However, the topics do not have to be taught in exactly this order. Training providers are free to teach the material in any order (including interleaving of topics from different EUs) that they deem appropriate in the context of their training and that fits their didactic concepts.

The examination

This syllabus is the basis for the examination for the DDP Foundation Level certificate.

! A question in the examination can cover material from several chapters of the syllabus. All chapters of the syllabus and all terms of the DDP Glossary [GlLa2023] can be examined according to their cognitive level.

The format of the examination is multiple choice. Examinations can be held immediately after a training course but also independently of courses (e.g., in an examination center). A list of certification bodies can be found on the website www.digitaldesign.org.

Version history

Version	Date	Comment
1.0	2021/02/18	First version of the syllabus
1.0.1	2021/06/01	Minor updates: navigable references added, minor linguistic optimizations for comprehensibility, minor changes concerning gender-neutral language, update of definitions for construction and realization
1.0.2	2021/07/30	Minor language updates resulting from German translation
1.1.0	2022/03/01	Minor language updates
2.0.0	2023/10/01	Major update With this update, the recommended training duration has been reduced from a three-day course to a two-day course. For this purpose, the syllabus has been fundamentally revised and consolidated to focus on the most important skills and techniques for a Digital Design Professional at Foundation Level.
2.0.1	2024/01/31	Minor updates and new corporate design

Table of Contents

Overview

The syllabus of the Digital Design Professional Foundation Level (DDP FL) is structured into thirteen education units (EU). For each EU, the suggested training duration in minutes is given.

The DDP FL 2.0 is intended as a two-day course with six hours of training per day. This allows for a compact teaching format with an examination at the end of the second day. Other training formats are of course possible but are not outlined in this syllabus.

Table 1: Structure of the syllabus

Education Unit		Level	Duration
EU 1	Motivation for Digital Design	L2	30 min.
EU 2	The Three Competence Areas in Digital Design	L2	45 min.
EU 3	Fundamentals of Designing Digital Solutions With Digital Material	L2	45 min.
EU 4	Fundamentals of the Building Process	L2	60 min.
EU 5	Structuring the Building Process from a Digital Design Perspective	L2	75 min.
EU 6	Overview of Fundamental Digital Technologies	L2	45 min.
EU 7	Fundamentals of Design Work	L2	45 min.
EU 8	Design Work at the Solution Level	L3	75 min.
EU 9	Design Work at the System Level	L3	75 min.
EU 10	Design Work at the Element Level	L3	75 min.
EU 11	Holistic Design Work in the Building Process	L2	60 min.
EU 12	Frameworks for the Building Process from a Digital Design Perspective	L2	45 min.
EU 13	The Social Dimension in the Building Process	L2	45 min.

1 Motivation for Digital Design

Suggested Duration: 30 min.

Cognitive Level: L2

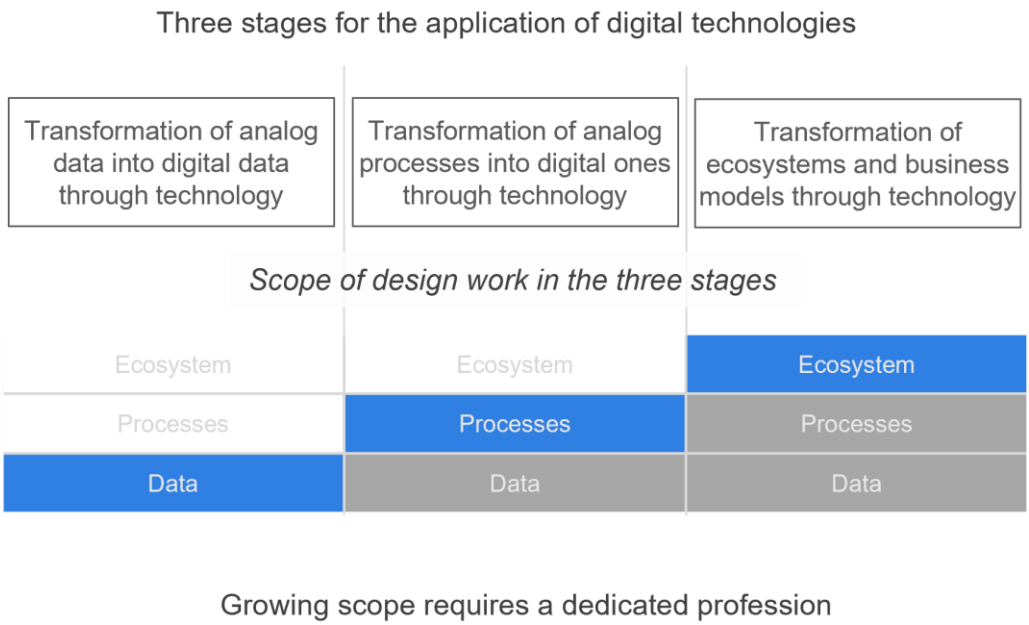
Important Terms: digitalization, digital transformation, Digital Design, profession, role, digital solution

Educational objectives of this education unit

EO 1.1 Justify the need for a dedicated design profession for building successful digital solutions (L2)

EO 1.2 Know that Digital Design is a profession and not a role in the building process (L1)

Visual sketch for this education unit



Summary of this education unit

Building digital solutions has evolved from the level of data digitalization through process digitalization to the transformation of ecosystems (digital transformation). Digital technologies are therefore no longer only realizing technologies, but also enabling technologies for new and innovative businesses and solutions.

Additional design skills are needed to address the broader scope of digitalization and digital transformation [Bloo2018]. Digital Design is the profession that aims at providing these new design skills [LBGH2018]. The digital design manifesto [Bitk2017] provides a guideline for good Digital Design and defines the principles that guide the values of Digital Design and the basic attitude of people working in the field of Digital Design.

Digital Design is to be understood as a profession and is not meant as a role. A role is a part played by a person in a given context (e.g., a project or a company). Roles are defined by skills, competencies, rights, and duties. A person often has one or more roles, and the

assignment of roles is typically limited to a certain period of time. A profession consists of an education, a skill set, a mindset, etc. A person works in a profession or becomes a member of a profession. A profession provides sufficient skills and competencies to allow people to take one or more roles.

2 The three competence areas in Digital Design

Suggested Duration: 45 min.

Cognitive Level: L2

Important Terms: Digital Design, digital material, design competence, material competence, cross-cutting competence, social dimension, product dimension, project dimension

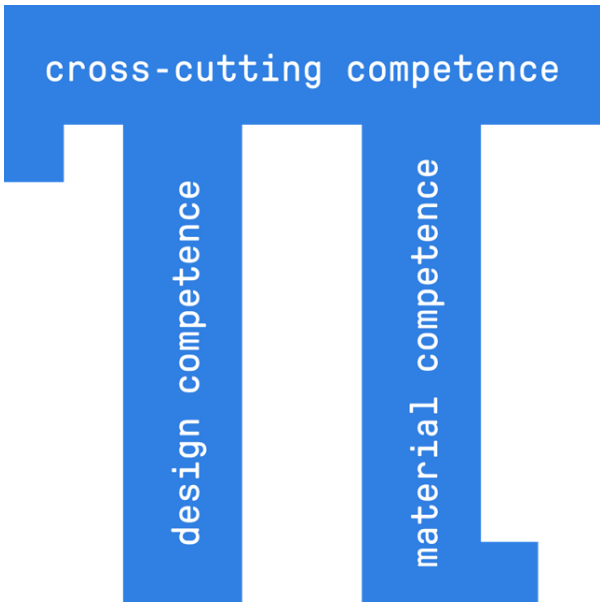
Educational objectives of this education unit

EO 2.1 Explain design competencies as part of the pi-shaped profile of Digital Design (L2)

EO 2.2 Explain material competencies as part of the pi-shaped profile of Digital Design (L2)

EO 2.3 Explain cross-cutting competencies as part of the pi-shaped profile of Digital Design (L2)

Visual sketch for this education unit



Summary of this education unit

Digital Design distinguishes three competence areas [Bitk2017]: design competencies, material competencies, and cross-cutting competencies.

Design competencies include:

- Incorporating design activities into the overall building process of a digital solution
- Applying concepts and prototypes as techniques for designing and evaluating digital solutions
- Communicating designs and design decision to target groups

Material competencies include:

- Understanding digital technologies as a shapable material for digital solutions

- Knowing the capabilities, limits, prerequisites, general conditions, and effects of digital technologies
- Awareness of the need to keep digital material competence up to date
- Awareness that hype technologies can quickly become obsolete or disappear again
- Knowing that digital material competence is not the same as programming skills

Cross-cutting competencies include:

- *Project dimension*: that is, managing the building process for a digital solution, including all activities, time, and budget
- *Product dimension*: that is, developing a short-term and long-term strategy for the evolution of the intended digital solution (market, customer segments, human factors, business model)
- *Social dimension*: that is, managing stakeholder expectations and needs as well as the process of understanding the solution, finding the right people and skills for the activity at hand (team diversity, skills, needs, fears)

3 Fundamentals of designing digital solutions with digital material

Suggested Duration: 45 min.

Cognitive Level: L2

Important Terms: form, function, quality, perceivable level, underlying level, goals, objectives, constraints

Educational objectives of this education unit

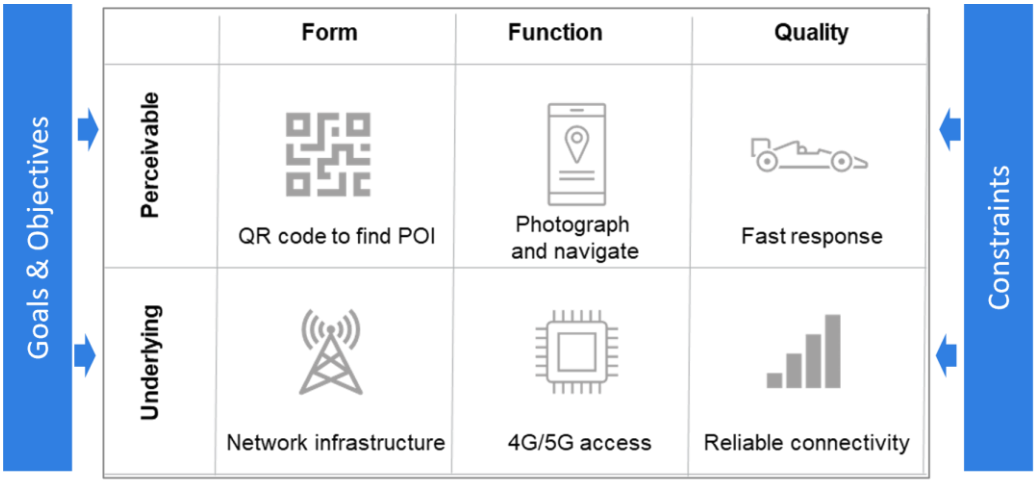
EO 3.1 Explain digital as a material for creating data structures, data flow, and data transformation (L2)

EO 3.2 Explain thinking in terms of form, function, and quality at a perceivable and underlying level as a model for digital solutions and digital technology (L2)

EO 3.3 Explain the general structure of design work for digital solutions in relation to goals and constraints (L2)

EO 3.4 Explain the mindset of understanding digital technologies as material for designing digital solutions (L2)

Visual sketch for this education unit



Design work in the field of tension between goals, objectives, and constraints

Summary of this education unit

Understanding hardware and software technology as digital material that can be shaped to design digital solutions is an important part of a holistic digital design competence. Technologies provide the technical backbone of digital solutions and have an important impact on their quality.

The model of form, function, and quality is a fundamental technique for understanding digital solutions and digital technology from a design perspective. Form, function, and quality occur at a perceivable level (i.e., perceivable by the user) and at an underlying level (hidden from the user). Designing digital solutions requires taking both levels into account.

To design a solution, both the objectives and the constraints to be considered for the intended digital solution must be known, that is, the design of a digital solution is always in

the field of tension between goals and objectives on the one hand and constraints on the other. Examples of important technologies are introduced in 6.

4 Fundamentals of the building process

Suggested Duration: 60 min.

Cognitive Level: L2

Important Terms: stakeholder, client, customer, user, building team member, design, construction, realization, management, evaluation, work product, design concept, realization concept, management concept, evaluation concept

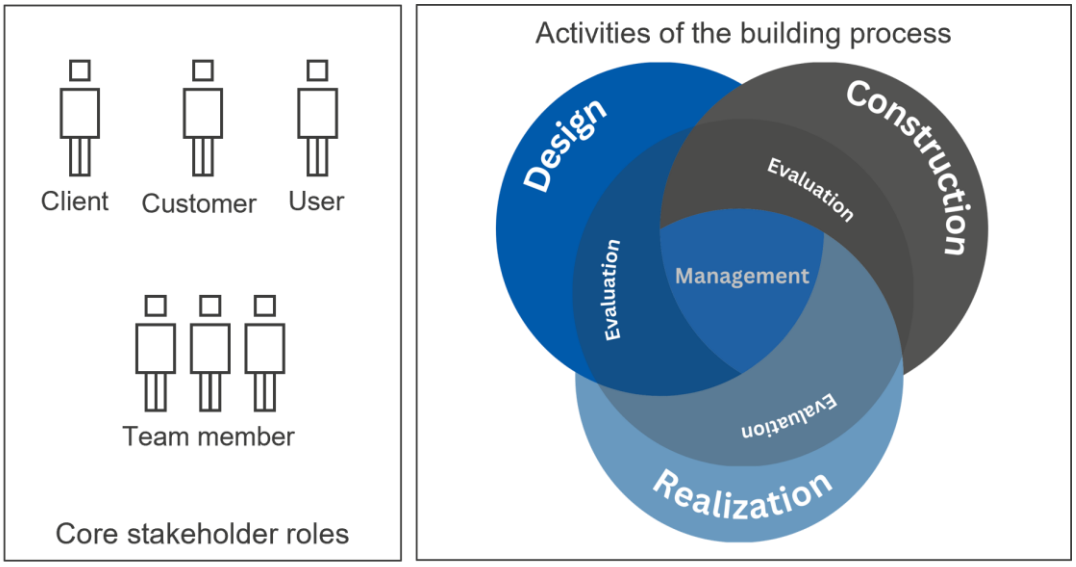
Educational objectives of this education unit

EO 4.1 Explain the different core stakeholder roles in the building process and their relationship to each other (L2)

EO 4.2 Understand the activity areas in the building process for digital solutions with their work products (L2)

EO 4.3 Describe the fundamental flow of the building process and the interaction of the activities (L1)

Visual sketch for this education unit



Summary of this education unit

A person or organization who influences the requirements of a system or is impacted by that system is called a stakeholder.

There are four core stakeholder roles involved in building a digital solution:

- Client
- Customer
- User
- (Building) team member

The building process for digital solutions consists of three core activities:

- Design
- Construction
- Realization

The process is supported by two cross-cutting activities:

- Management
- Evaluation

Each activity creates dedicated work products as results:

- Design concepts (design)
- Realization concepts (construction)
- Final elements for the system (realization)
- Evaluation concepts (evaluation)
- Management concepts (management)

5 Structuring the building process from a Digital Design perspective

Suggested Duration: 75 min.

Cognitive Level: L2

Important Terms: business, people, technology, solution, system, element, scoping, concept work, development and operation

Educational objectives of this education unit

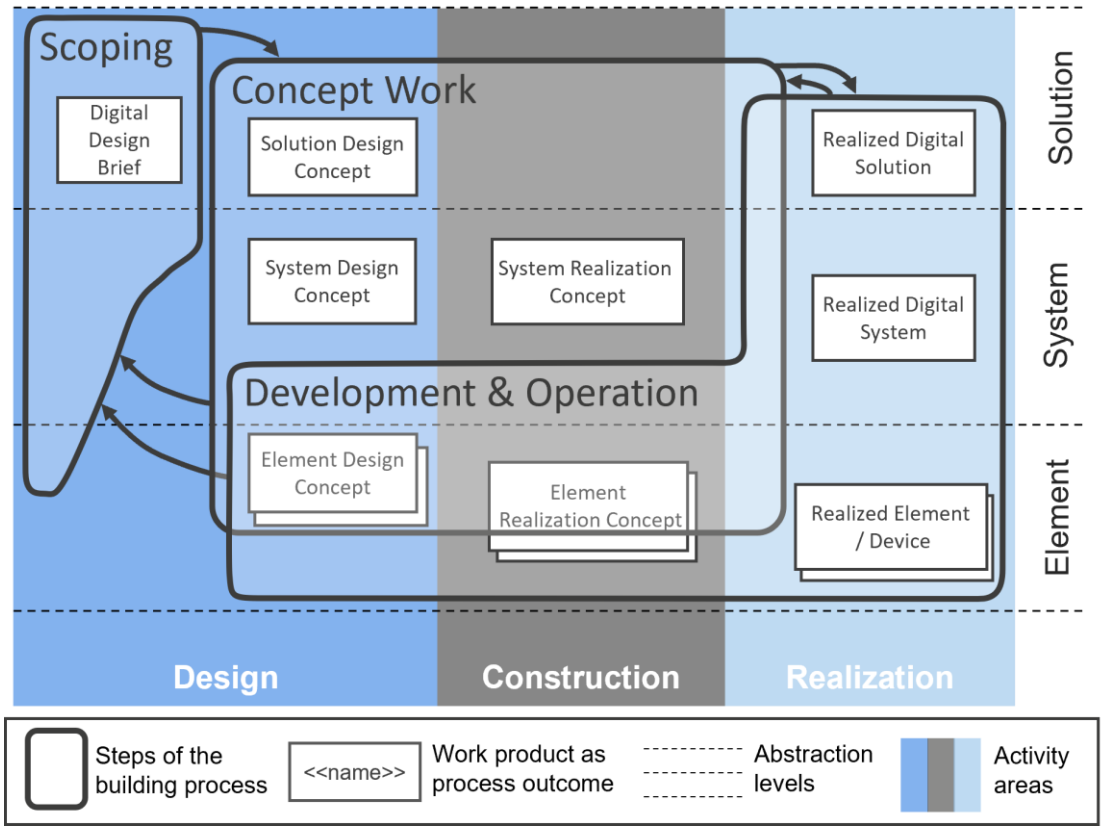
EO 5.1 Explain business, people, and technology as related design perspectives on a digital solution (L2)

EO 5.2 Explain solution, system, and element as three essential abstraction levels of a digital solution (L2)

EO 5.3 Explain the three steps of the building process for digital solutions (L2)

EO 5.4 Explain the interplay between the design perspectives, the abstraction levels, the activity areas, and the steps of the building process (L2)

Visual sketch for this education unit



Summary of this education unit

The shift from e-business (data digitalization and simple process digitalization) to digital business (digital transformation) requires a holistic view of digital solutions. The complexity of such digital solutions requires techniques to manage this complexity, and this can be done using the following:

- *Three different design perspectives*: people, business, and technology
- *Three* abstraction *levels* to structure digital solutions: solution level, system level, and element level
- *Three essential steps of the building process*: scoping, concept work, development and operation

Scoping means understanding the problem and scoping the solution space. *Concept work* means exploring and conceptualizing the solution. *Development and operation* means delivering and operating the solution. All steps are of equal importance for the success of a digital solution.

The three steps are not intended to be a linear process model—they are meant as activities of a process that mutually influence each other and contribute clearly to the success of the digital solution.

6 Overview of fundamental digital technologies

Suggested Duration: 45 min.

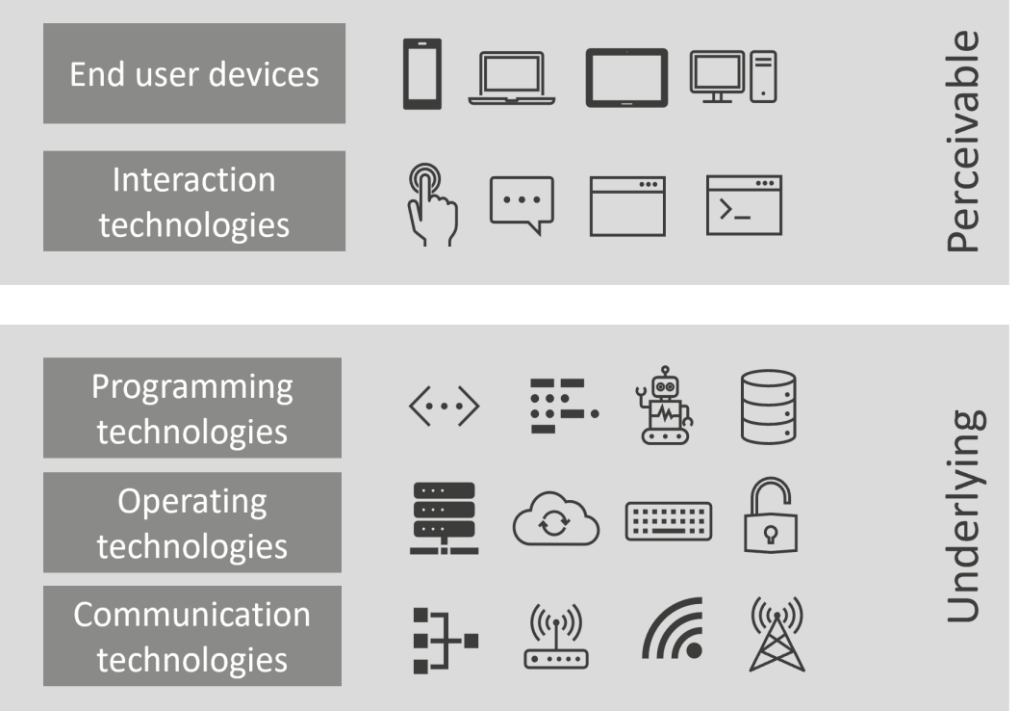
Cognitive Level: L2

Important Terms: user device, user interface, software interface, interaction technology, programming technology, communication technology

Educational objectives of this education unit

EO 6.1 Name examples of perceivable technologies (L1)
EO 6.2 Name examples of underlying technologies (L1)
EO 6.3 Explain capabilities and limits of communication technology and machine learning as examples of digital material competence (L2)

Visual sketch for this education unit



Summary of this education unit

Important examples of perceivable technologies are end user devices (e.g., PC, tablet, smartphone). Interaction technologies include, for example, touch, voice, gesture or any other user interfaces.

Important examples of underlying technologies are programming technologies (e.g., software interfaces, machine learning, databases), hardware and software for operating technologies (e.g., operating systems, cloud technology, encryption hardware), and communication technologies (e.g., 5G, Wi-Fi, Bluetooth).

Communication technologies are an essential material for digital solutions as they provide the capability to enable communication between the different elements of a digital solution. Communication technology may be limited by availability, bandwidth, and latency. These

limitations must be taken into account during design to mitigate possible functional limitations.

Machine learning is an innovative technology that provides capabilities to automate processes and realize functions based on a learning technology. Machine learning relies on learning by example, that is, it is essentially based on training data and on feedback on delivered results. The efficiency of machine learning is limited by the quality of training data available and the quality of the feedback provided on delivered results. This learning process must therefore be incorporated into the building process and the operation of the solution appropriately in order for the technology to deliver high-quality results.

7 Fundamentals of design work

Suggested Duration: 45 min.

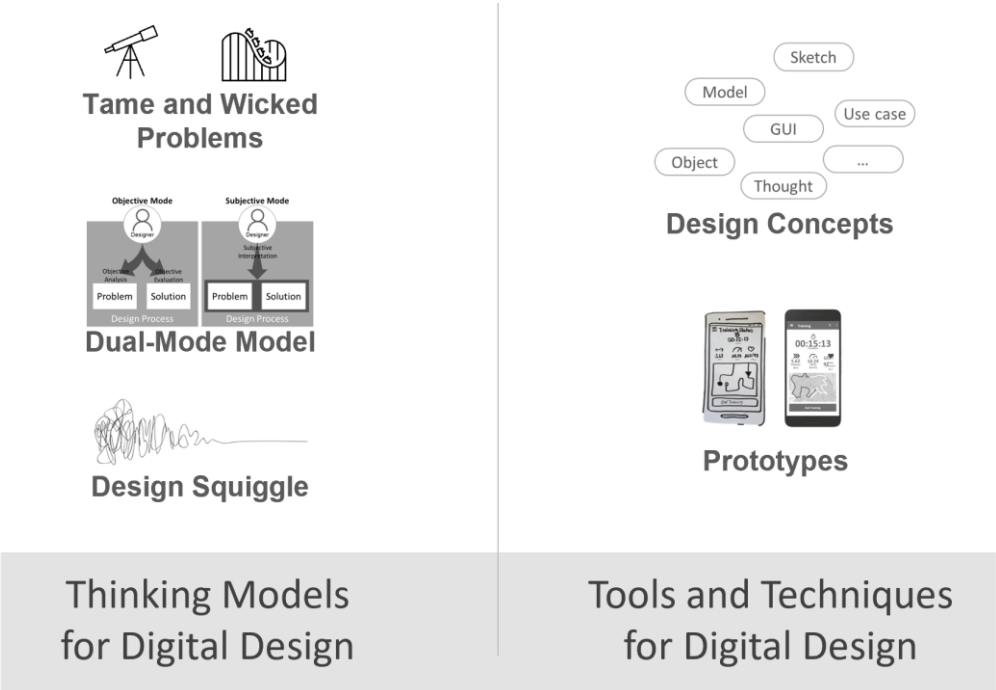
Cognitive Level: L2

Important Terms: tame problem, wicked problem, prototype, design work, conceptual design, design concept, design squiggle, dual-mode model

Educational objectives of this education unit

EO 7.1 Explain the fundamental thinking models of design work (L2)
EO 7.2 Explain design concepts as a core design tool for design work (L2)
EO 7.3 Explain prototypes as a core design and evaluation tool for design work (L2)
EO 7.4 Know the usage of prototypes in different disciplines (L1)

Visual sketch for this education unit



Summary of this education unit

Design work for a digital solution requires that the design process is exploratory and experimental [StNe2014] to clarify the problem by means of exploring alternative solutions.

The following thinking models are useful in understanding design work:

- *Design squiggle*: [Newm2020] explains the design process as a process that starts as very chaotic and then becomes clearer step by step and ends up with a solution.
- *Dual-mode model*: [Dors1997] states that design can be understood both as a problem-solving process and as a reflective practice about the design task.
- *Tame and wicked problems*: [RiWe1973] provides a classification for problems that are quite clear and stable (tame) and those that are vague, unclear, and contradictory (wicked).

Conceptual design and prototyping are two core techniques for design work [Cros2006].

- *Conceptual design* means creating design concepts, specifications, models, etc. of the intended digital solution. These concepts can be used to communicate, evaluate, and discuss the design with all relevant stakeholders.
- *Prototyping* means creating preliminary instances (prototypes) of a digital solution and using them to elaborate and evaluate certain aspects of a design solution.

Prototypes, however, vary widely depending on the particular discipline [McEl2017].

8 Design work at the solution level

Suggested Duration: 75 min.

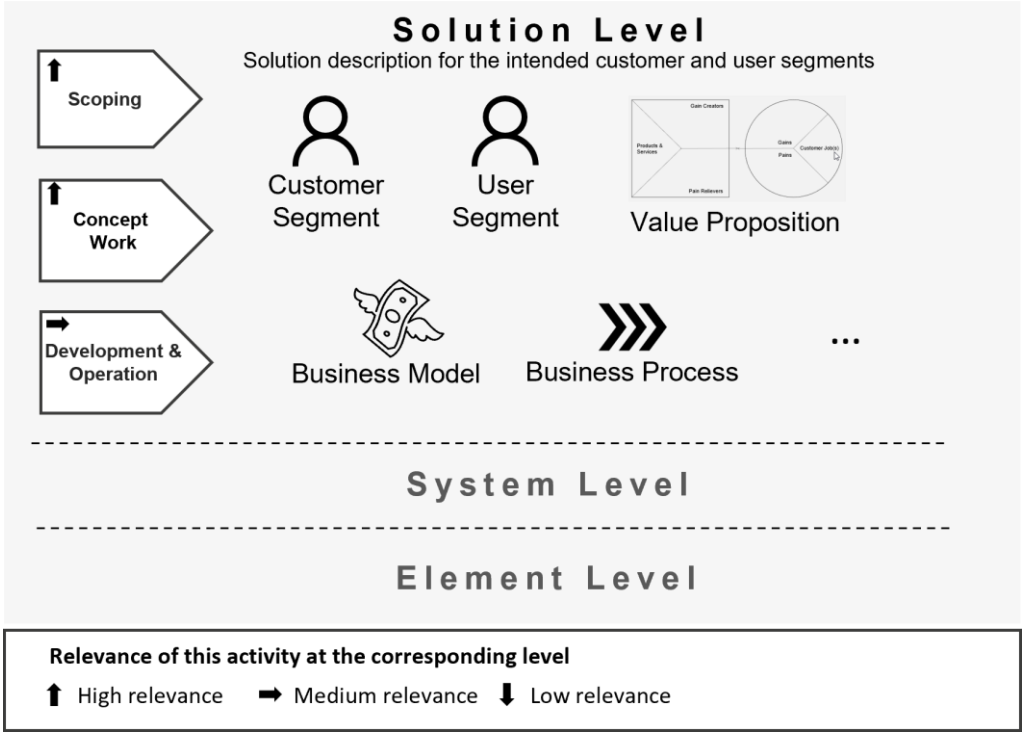
Cognitive Level: L3

Important Terms: vision, customer and user segments, value proposition, value creation architecture, business process, quality requirement, solution constraint

Educational objectives of this education unit

EO 8.1 Explain the key aspects of conceptual design at the solution level (L2)
EO 8.2 Apply conceptual design to create design concepts at the solution level (L3)
EO 8.3 Explain the essential questions for evaluation work at the solution level (L2)
EO 8.4 Explain the design work at the solution level along the three steps of the building process (L2)

Visual sketch for this education unit



Summary of this education unit

The solution level is about the socio-technical system and focuses on the business perspective of the digital solution. The goal of design work at the solution level is to design a viable digital solution that offers a desirable value proposition for its customers. This goal is achieved by having a clear understanding of the case for action, the vision for the digital solution, the target group, and the business model of the digital solution [OsPi2010].

For the conceptual design at the solution level, the following key aspects have to be considered:

- Vision
- Customer and user segments
- Value proposition

- Value creation architecture
- Business processes
- Quality requirements
- Solution constraints

These aspects can be represented by specific work products (e.g., a business model canvas) for documenting them as part of a solution level design concept.

Evaluation of work products at the solution level is also an integral part of the design work. Prototypes can be used to evaluate different aspects of the solution (e.g., the attractiveness of the value proposition). Evaluation at solution level must be considered for all three design perspectives: people, business, and technology.

Design work at the solution level is a joint effort with various business experts (e.g., business analysts, service designers).

The case for action and the vision are the main focus of the solution level during scoping. During concept work, a consistent and agreed solution level design concept should be developed between all relevant stakeholders. During development and operation, the solution level is refined further and optimized based on the feedback from customers and other stakeholders.

9 Design work at the system level

Suggested Duration: 75 min.

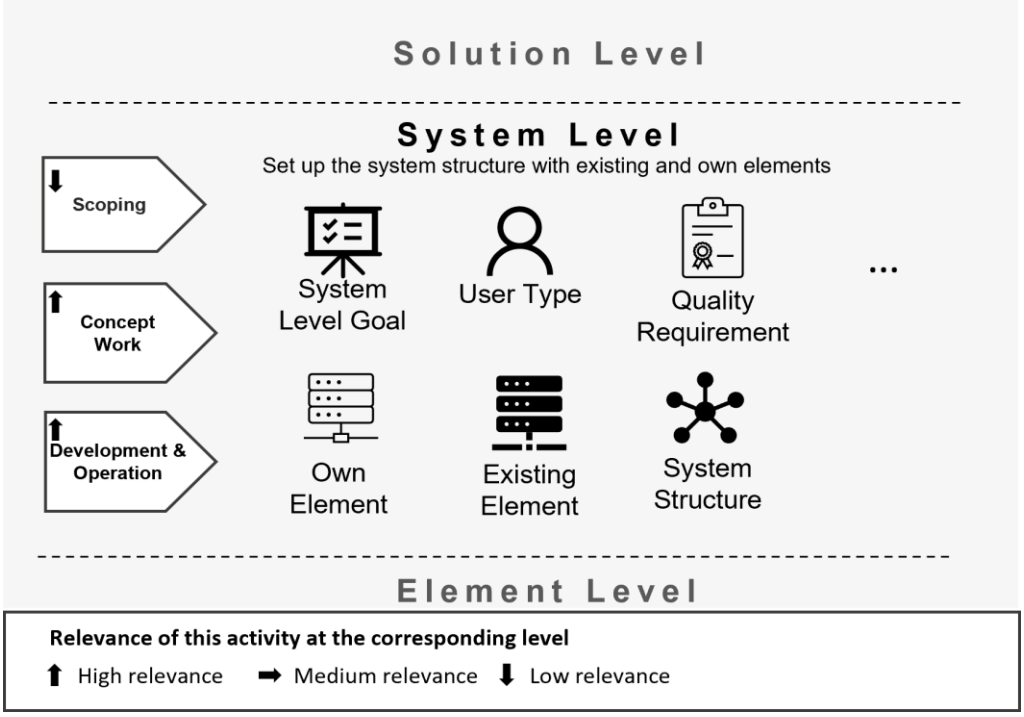
Cognitive Level: L3

Important Terms: system level goal, user type, existing element, own element, quality requirement, system constraint

Educational objectives of this education unit

EO 9.1 Explain the key aspects of conceptual design at the system level (L2)
EO 9.2 Apply conceptual design to create design concepts at the system level (L3)
EO 9.3 Explain the essential questions for evaluation work at the system level (L2)
EO 9.4 Explain the design work at the system level along the three steps of the building process (L2)

Visual sketch for this education unit



Summary of this education unit

The system level is about the overall technical system including the interfaces to all user types. The goal of design work at system level is to design a technical system that is feasible and capable of realizing the desired digital solution in the desired context, with the required quality, and within the client's resources and constraints. This goal is achieved by having a clear understanding of the context of the system, the goals and constraints for the system, and a proper design of the form, function, and quality of the system.

For the conceptual design at the system level, the following key aspects have to be considered:

- System level goals
- User types
- System structure with all own and existing elements

- Scenarios
- Quality requirements
- System constraints

These aspects can be represented by specific work products (e.g., a system model) for documenting these aspects as part of a system level design concept.

Evaluation of work products at the system level is also an integral part of the design work. Prototypes can be used to evaluate different aspects of the system (e.g., the feasibility of certain scenarios). Evaluation at system level must be considered for all three design perspectives: people, business, and technology.

Design work at the system level is a joint effort with various technical experts (e.g., requirements engineers, software architects).

During scoping, the system level is of minor importance; instead of focusing on a concrete system, scoping explores the possible solution space. During concept work, a consistent and agreed system level design should be developed between all relevant stakeholders. During development and operation, the system level is refined further and optimized based on the feedback from users and other stakeholders.

10 Design work at the element level

Suggested Duration: 75 min.

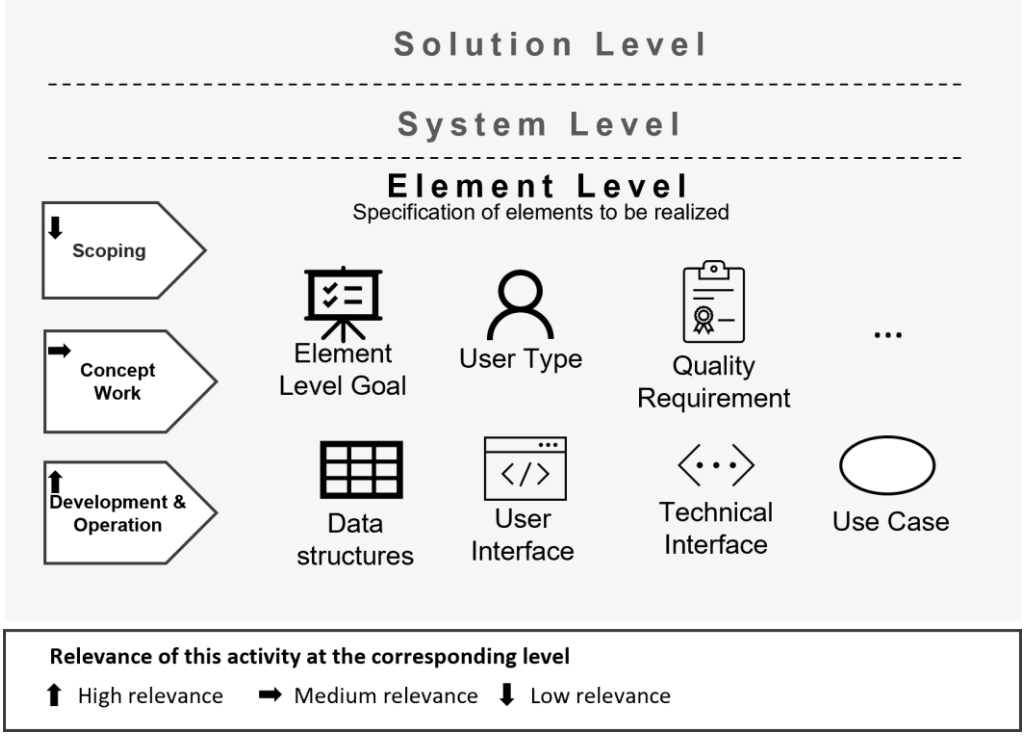
Cognitive Level: L3

Important Terms: element level goal, user interface, technical interface, data, physical structure, use case, technical function, quality requirement, element constraint

Educational objectives of this education unit

EO 10.1 Explain the key aspects of conceptual design at the element level (L2)
EO 10.2 Apply conceptual design to create design concepts at the element level (L3)
EO 10.3 Explain the essential questions for evaluation work at the element level (L2)
EO 10.4 Explain the design work at the element level along the three steps of the building process (L2)

Visual sketch for this education unit



Summary of this education unit

The element level is about the technical details of the elements to be realized including their interaction with users. The goal of design work at the element level is to create a technical element design that is attractive to users, that is feasible, and that is capable of realizing the desired digital solution in the desired context, with the required quality, and within the client's resources and constraints. This is achieved by having a clear understanding of the context of each element, the goals and constraints for that element, and appropriate design of the form, function, and quality.

For the conceptual design at the element level, the following key aspects have to be considered:

- Element level goals

- User and technical interfaces
- Data and data structures
- Physical structure
- Use cases and technical functions
- Quality requirements
- Element constraints

These aspects can be represented by specific work products (e.g., use case templates) for documenting these aspects as part of an element level design concept.

Evaluation of work products at the element level is also an integral part of the design work. Prototypes can be used to evaluate different aspects of the element (e.g., the feasibility of certain functions, the usability of certain user interfaces). Evaluation at element level must be considered for all three design perspectives: people, business, and technology.

Design work at the element level is a joint effort with various design experts (e.g., interaction designers), technical experts (e.g., software architects), and the people involved in the realization (e.g., software developers).

During scoping, the element level is of minor importance. However, selected elements of related solutions can be used as inspiration or for exploring the solution space. During concept work, element level design concepts should only be created if the element design is necessary for understanding critical aspects of the overall system. During development and operation, the element designs are elaborated to a level of detail that is necessary for the realization. In addition, the design of each element is further refined and optimized based on the feedback from users and other stakeholders.

11 Holistic design work in the building process

Suggested Duration: 60 min.

Cognitive Level: L2

Important Terms: viable, desirable, realizable, holistic design work, co-design

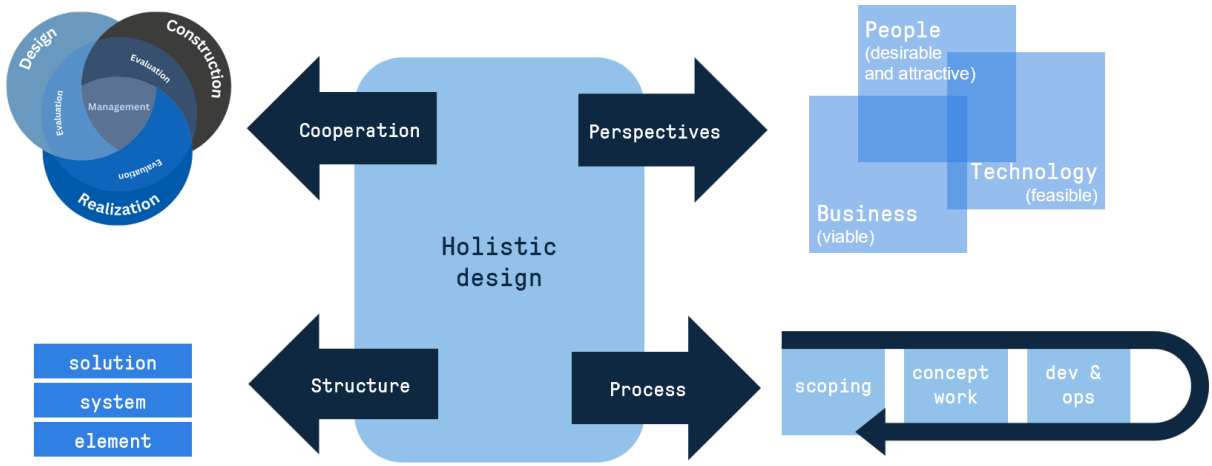
Educational objectives of this education unit

EO 11.1 Explain the importance of co-design across the solution, system, and element level for holistic design work (L2)

EO 11.2 Explain the importance of the joint consideration of people, business, and technology across the three levels for holistic design work (L2)

EO 11.3 Explain the iterative nature of scoping, concept work, and development and operation for holistic design work (L2)

Visual sketch for this education unit



Summary of this education unit

Holistic design work is essential to build a viable, desirable, and realizable solution. This requires:

- Considering the three perspectives for a digital solution (business, people, and technology) equally.
- Structuring the digital solution using the three levels of abstraction (solution, system, and element level).
- Understanding the iterative nature of design work along the three steps (scoping, concept work, development and operation) of the building process.

Design work across the three levels solution, system, and element must not be understood as a hierarchical process. Working in a holistic way means working at all three levels in parallel and considering the appropriate level when necessary. For example, a significant share of the costs of a digital solution originates from development and operation. Understanding these types of costs requires an understanding of the system level and the element level. The desirability of a solution is driven by an attractive value proposition and

usable realization of this value proposition. This means that a joint design of the solution at the solution and element level is needed.

Designing in a holistic way requires going back and forth in the different steps of the building process where necessary. Anticipating the end of life of a digital solution is a useful technique for designing the solution in a sustainable way, that is, what should happen to the data collected, how to deal with existing customers and users, how to deal with other systems that use this digital solution, what happens to devices at the user's site, etc.?

The building process for a first version of a digital solution is an iterative process that goes back and forth between scoping, the concept work, and development and operation—even if the process logically starts with scoping and usually ends with development and operation when launching the first version of the digital solution.

Once the first version of the digital solution has been launched, the building process will restart as soon as additional parts (e.g., features) are needed for the digital solution. Although the digital solution that has already been launched remains in development and operation, the building process for additional parts of the digital solution starts again with scoping.

12 Frameworks for the building process from a Digital Design perspective

Suggested Duration: 45 min.

Cognitive Level: L2

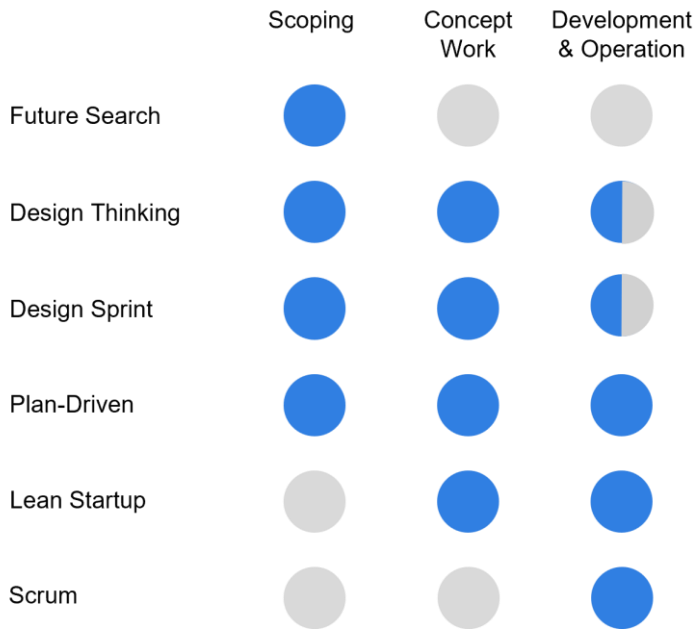
Important Terms: future search, design thinking, design sprint, plan-driven, scrum, lean startup

Educational objectives of this education unit

EO 12.1 Compare and contrast future search, design thinking, design sprint, plan-driven, scrum, and lean startup approaches as frameworks for the building process from a Digital Design perspective (L2)

EO 12.2 Explain the possibility of combining frameworks in the building process (L2)

Visual sketch for this education unit



Summary of this education unit

In practice, there are a number of frameworks for building digital solutions. In this EU, various examples are described from the perspective of Digital Design to show how the frameworks relate to the building process:

- *Future search* [WeJa2010]: emphasis on understanding the context and the case for action with a large group of stakeholders. Useful for the step of scoping.
- *Design thinking* [Brow2009]: emphasis on understanding users/customers, fast feedback cycles based on early prototypes, very little focus on actual realization. Useful for the scoping and concept work.
- *Design sprint* [KnZK2016]: highly compressed variant of design thinking in five days. Useful for the scoping and concept work.
- *Plan-driven* [Royce1970]: emphasis on structured work, evaluated concepts, and long-term planning. Process model for all three steps of the building process.

- *Scrum* [ScSu2020]: Iterative and value-driven work, delivering good quality results to the user/customer for feedback. Useful for the step of development and operation.
- *Lean startup* [Ries2011]: focus on validated learning with fast feedback cycles, delivering minimum viable products to early customers to obtain fast feedback. Fast feedback is more important than technical quality. An approach with a different philosophy for building a solution. Useful for concept work and development and operation.

Most frameworks are NOT necessarily mutually exclusive. Some can be combined sequentially or even in parallel. A substantial understanding of the solution and the system enables the parallel application of several frameworks at the same time. For example, an existing and well understood element of a system may be enhanced in a plan-driven approach, whereas a new and innovative element of a system is developed through a lean startup approach. This kind of combination of frameworks requires a high maturity level of the organization and a correspondingly experienced management.

13 The social dimension in the building process

Suggested Duration: 45 min.

Cognitive Level: L2

Important Terms: mindset, social dimension, human perspective, teamwork

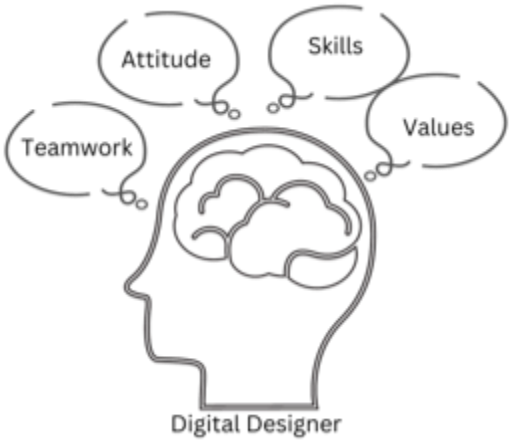
Educational objectives of this education unit

EO 13.1 Know the importance of the mindset as the foundation for the social dimension (L1)

EO 13.2 Justify the importance of the social dimension in the building process for a digital solution (L2)

EO 13.3 Describe key aspects of the mindset that are important when designing a digital solution (L1)

Visual sketch for this education unit



Summary of this education unit

An essential part that people bring with them is their personality or their mindset, in particular, their mentality, their value system, and their attitude in dealing with problems and with other people. Everyone thinks and communicates differently depending on their personality, field of activity, and situation. Therefore, the mindset that people apply during Digital Design is an important factor for success.

The social dimension (sometimes also called the human perspective) is an important factor in the design of digital solutions that is not limited to user and customer experience. Therefore, not only users and customers, but rather all people in the context of the overall building process must be adequately considered.

Building a digital solution is a challenging task that requires a wide range of competencies and poses various challenges for everyone involved. It is important to understand that people handle the tasks and challenges of the building process differently based on their education, prior experiences, and personality. When planning and executing the building process, attention must be paid not only to the skills of the people, but also to ensuring that each individual as well as the designated team fit the tasks and challenges in terms of their mindset and skills.

In addition to the required skills and practices described, the process of designing a digital solution also benefits from a specific mindset.

The mindset needed for Digital Design implies that people understand that:

- Design is an activity that requires looking through other people's eyes.
- Communication must be targeted and tailored to achieve shared understanding.
- Exploring alternatives is an important factor in avoiding wrong paths at an early stage.
- Maintaining creative tension is important to be innovative.
- Proper team composition and leadership are essential for the final result.
- Design requires a continuous process of cognition.
- Design is teamwork.

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