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# Tangible Ecosystem Design – Developing Disruptive Services for Digital Ecosystems

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## ABSTRACT

The epoch of the platform economy has arrived. Companies face the question of how to build up disruptive digital services with disruptive business models and establish a digital ecosystem. Traditional UCD methods concentrate on the conception of particular services. Nevertheless, most of these are isolated solutions of single companies. Building services for the digital transformation era requires additional methods to come up with end-to-end consumer experiences and sustainable business models across boundaries of single companies for benefiting consumers. In this course participants learn the “Tangible Ecosystem Design” Method (TED), that supports the conception of Digital Ecosystems by using tangible elements.

## CCS CONCEPTS

• **Human-centered computing** → User centered design

## KEYWORDS

Innovation Methods; Workshop; Creativity; Digital Transformation; Disruptive Business

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**1 INTRODUCTION**

Digital Ecosystems are much more complex than closed software systems. The technological, business and legal implications are far more difficult to understand if products and services have to be designed across companies. In more than 20 ecosystem projects, we have repeatedly encountered challenges in the conception and modelling of such digital ecosystems and their consumer experiences. This led us to the development of a method, called “Tangible Ecosystem Design” (TED), that promotes the cooperation between stakeholders in the definition, design and analysis of a Software Ecosystem with the help of Playmobil® toys in a workshop context [3].

Innovation methods for developing new services (e.g. Design Thinking) often end with the definition of a service from the user’s perspective, focusing on new and innovative ways of delivering user experience. A growing number of services relies on the cooperation and contribution of several partners that form a Digital Ecosystem. TED builds upon the results of innovation methods for service design and helps shaping the business, technical and legal structure of Digital Ecosystems. We believe that a positive end user experience relies on a strong foundation of end-to-end quality focus within the Digital Ecosystem design phase.

**2 BENEFITS**

Conceiving digital ecosystems is a hard challenge for people working with the development of software systems. On the one hand, the complexity of such digital ecosystems is higher than that of traditional software systems. On the other hand, digital services have the potential of delivering end-to-end service experience and, thus, instigating the adoption of more consumers than isolated solutions can do.

In this course people interested in the development of digital services, will:

- Understand the challenges in building such digital ecosystems, going beyond the traditional service design
- Learn new methods and tools for conceiving and analyzing digital services and their supporting business models
- Experience different tools and techniques for modelling digital ecosystems
- Dig deeper into the design of disruptive digital services and coherent business models of digital ecosystems

### 3 INTENDED AUDIENCE

This course is designed for:

- People involved in creating new digital services in the era of the digital transformation
- People working with innovation methods in user experience design and research
- User Experience Designers, Service Designers, Digital Designers, Digital Business Managers, Innovation Managers, and Design Thinking Adopters

### 4 PREREQUISITES

Participants need a basic knowledge on platform economy as well as digital ecosystems. People with previous knowledge on innovation methods (e.g. Design Thinking or Sprint) may have some advantage when experiencing the proposed tools and techniques over participants without experience.

Content. The course consists of four 80-minute blocks:

#### Part 1 - Introduction:

- Presentation of the Main Concepts: Digital Service, Digital Transformation and Platform Economy
- Presentation of the main challenges in the Conception of Digital Ecosystems
- Definition of the Ecosystem Purpose
- Tool: Ecosystem Purpose, based on Ad-Lib Value Proposition Template of Strategizer [4]

#### Part 2 – Digital Service Modelling:

- Modelling the end-to-end consumer experience within the digital service
- Modelling the background activities of the digital services and the non-technical pre-requisites for supporting the interaction of the end consumer within the service
- Tool: Adaption of Service Blueprint [1]

#### Part 3 – Business Flows Modelling:

- Identification of all companies and partners in the execution of the service
- Identification and modelling of the goods flows, data flows, money flows and contract agreements
- Identification of the critical assumptions and potential problems
- Tool: Service Map (own development) [3]



**Figure 1. Participants using the tools in real situations: a) Ecosystem Purpose, b) Service Blueprint, c) Service Map, and d) Motivation Matrix**

#### Part 4 – Platform Motivation and Added Value

- Identification of the partners advantages of participating in the digital ecosystem
- Identification of the benefits exchanged between the partners
- Tool: Adaption of the motivation matrix from Manzine et al. [2]

#### 5 PRACTICAL WORK

The course is very hands-on. Participants will be grouped in teams (max. 7 people for each team) and will experience every single tool and technique used in the method by modelling an existing, known digital service (see Figure 1). The theoretical background will be presented after each exercise. A reflection session will be held.

#### 6 INSTRUCTOR BACKGROUND

Claudia Nass is industrial and graphic designer. Since 2001 she has been engaged in User Experience (UX) Research and Design, especially in the conception and design of software systems. Since 2006, her focus has been on the development and testing of various UX methods and their implementation in research and consulting projects for numerous industrial clients from different domains at Fraunhofer IESE. There she works in the fields of innovation, UX design and research as well as interaction design. Since 2017, she is lecturer for two courses within the bachelor's program "IT Analyst" at the University of Kaiserslautern: (1) Human-Computer Interaction and (2) Usability Engineering.

Dr.-Ing. Marcus Trapp studied computer science at the TU Kaiserslautern with a minor in economics. He currently heads the User Experience and Requirements Engineering (UXR) department at Fraunhofer IESE. There he leads industrial and public projects in the field of user interface design for various user groups, the revision of existing user interfaces, as well as the evaluation of user interfaces in various areas. He advises companies in the areas of user experience for business applications, creativity & innovation workshops, requirements engineering, interaction design and user interface prototyping.

#### 7 RESOURCES

For a better understanding of the method, participants can read Nass and Trapp (2018) [3]. Further information about the authors can be found on following networks:

Linked-In

- Claudia Nass: <https://linkedin.com/in/claudia-nass-a7251a114/?originalSubdomain=de>
- Marcus Trapp: <https://linkedin.com/in/marcus-trapp-1707836b/?originalSubdomain=de>

#### Research Gate

- Claudia Nass: [https://www.researchgate.net/profile/Claudia\\_Nass](https://www.researchgate.net/profile/Claudia_Nass)
- Marcus Trapp: [https://www.researchgate.net/profile/Marcus\\_Trapp2](https://www.researchgate.net/profile/Marcus_Trapp2)

### 8 ACKNOWLEDGEMENTS

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