ANNUAL REPORT 2019

of the

CHAIR FOR DESIGN THINKING AND INNOVATION RESEARCH

Hasso-Plattner-Institut für Digital Engineering gGmbH
Prof. Dr. Falk Uebernickel
Chair of Design Thinking and Business Innovation
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Germany

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1. Introduction

Dear Ladies and Gentlemen,

First of all, I would like to thank all professors, academic staff and students for the warm welcome here at Hasso-Plattner Institute in Potsdam.

Leaving the University of St. Gallen (HSG) after a long journey and being appointed as a professor for the chair of Design Thinking and Innovation Research starting on the 1st of October, it was a pleasure to meet and connect with so many inspiring people.

Thus, accompanied by a small team, we directly started to build up the institute and were quickly capable of hosting some guests and events. Thanks to a close collaboration with the Chair for Enterprise Platform and Integration Concepts, we were able to host the Sugar Community at HPI in December.

Are you curious about what else we were up to? This annual report will provide you with insights about our activities in 2019. Furthermore, we also want to give you a glimpse of what you can expect from us this year!

All in all, I look forward to an insightful and fruitful collaboration, and I hope you enjoy the reading of this report!

Warm regards,

Prof. Dr. Falk Uebernickel and team,

Chair for Design Thinking and Innovation Research

2. Mission

Climate change and digitization are probably the two most important megatrends that humanity has to cope with in the 21st century. However, as liberal societies, one approach to master these challenges is the creativity of the human mind resulting in game-changing innovations. It's the ideas of individuals that have helped us to cope with changing environments for a long time. Also, in today's world, it is necessary to embrace the power of innovations in different dimensions and areas. However, addressing the mega challenges in front of us also needs a new way to think about innovations. Beyond addressing technical or financial issues, we need a more inclusive and holistic, *human-centered concept of innovation*.

To do so by scientific research and to reveal the secrets human-centered innovations in different areas is what is driving our chair! Like the Hasso Plattner Institute has committed itself towards the Sustainable Development Goals (SDG) of the UN, our chair understands our research especially contributing to SDG 3. Thus, we aim to foster human-centered innovation in our society.

Solving the riddle of innovation requires knowledge from different perspectives. Thereby we deploy an inter- and transdisciplinary approach in our way of working. This approach towards knowledge creation shall also be the aim internally. We strive to *cross bridges* between software engineering, computer science and application fields here at Hasso Plattner Institute. As a starting point, we want to increase the value of IT by deploying human-centered methodologies in the areas of Digital Health and Cybersecurity by different projects.

Thus, we collaborate with partners from other Universities, NGOs, and private companies to solve the urgent issues of our time for the next generation. Enabling young and talented minds in research and teaching is our mandate as part of an academic institution.

The Chair for Design Thinking and Innovation Research (DTIR)

3. Team

The team of the Chair for Design Thinking and Innovation Research works closely together towards the shared vision. To do so requires knowledge from different disciplines. Thus, our team members with backgrounds in Information Science, Computer Science, Psychology, Management and Digital Health share the ability to work in an international and interdisciplinary environment.

Building on the values of trust and collaboration, they have the goal of creating an environment that facilitates learning and research.

Position	Name	Background	Status
Chair for Design Thinking & Innovation Research	Prof. Dr. Falk Uebernickel	Business Administration and Information Science	HPI
Chair Assistant	Anne Klonower		HPI
Postdoctoral Researcher	Dr. Danielly de Paula	Computer Science	HPI
Ph.D. candidates	Christoph Gerling	Technology and Management (Business Administration) and Aerospace (Engineering)	Humboldt Institute for Internet and Society
	Selina Mayer	Psychology	HPI Academy
	Stefanie Gerken	Spanish Philology, HR, Entrepreneurship, Consumer Behaviour	HPI D-School
Affiliated Members of the Chair	Maia Kuhnen	Psychology	SUGAR
Student Assistants	Spoorthi Kashyap	Digital Health	HPI

4. Lecturing and Teaching Activities

Teaching provides us with the opportunity to discuss our research with passionate students and also offers us the chance to inspire the next generation with our topics. Therefore, the chair hosts many different lectures and seminars on different levels.

Research Seminar Series (Ph.D.)

The chair hosts the Research Seminar Series (RSS) aimed at students on a Ph.D. level and other researchers. The goal of the series is to support students pursuing their Ph.D./Doctorate by providing an environment that facilitates learning about research methods and designs. The support takes place through high standing contributions, well-prepared presentations and intense discussions by the participants. Furthermore, the series helps student to identify their research fields. Additionally, the RSS aims to foster networking among similarly minded researchers (all researchers from HPI and partner universities are invited to participate in the RSS program). Last but not least, Ph.D. students can also find collaborators within their community. Therefore, the chair has developed the concept of RSS consisting out of two seminars, bi-weekly research updates and a monthly journal club.
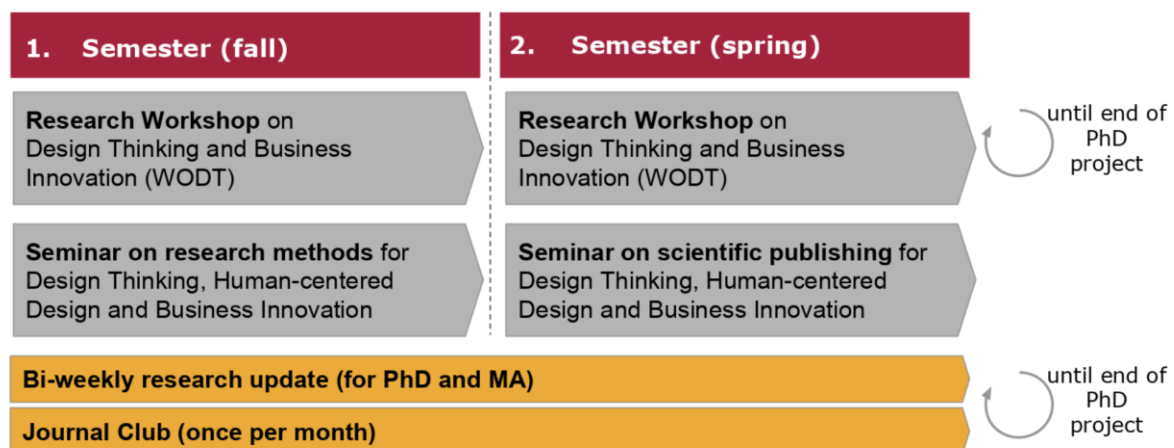
Research Seminar Series - Concept

Workshop on Design Thinking and Business Innovation:

The workshop on Design Thinking and Business Innovation aims to improve the dissertation projects along the Ph.D. / Doctorate life cycle. The workshop used different formats depending on the development stage of every Ph.D. candidate. The two-day seminar is prepared through previous review cycles. Thus, within the workshop, literature reviews and structured field analysis are conducted and Ph.D.'s have the chance to pitch their proposals and Research in Progress.

Seminar on Research Methods:

The idea of the seminar is to learn about state-of-the-art research methods in Design Thinking, Human-centered Design and Business Innovation. Therefore, students write a report about one research method and give a short presentation about the different techniques.

First RSS Workshop

The first meeting of the Research Seminar Series was held to introduce the participating students to the format, the supervising staff and also to each other. Besides clarifying formalities, they also got an introduction into the setup in which students will write their Dissertation.

Date: 27.11.2019

Participants:

Prof. Dr. Falk Uebernickel, Dr. Danielly de Paula, Babajide Owoyele, Selina Mayer, Stefanie Gerken, Christoph Gerling, Constantin Hartmann, Joaquin Santuber, Mirza Begherian Asieh

Research Update:

The biweekly research update meeting aims to regularly update students on Design Thinking and Business Innovation related research at HPI. Sometimes, also guest researchers join for discussions or presentations. Furthermore, students writing their bachelor or master thesis are invited a few times to present their status. Thus, students can get feedback and improve their research projects.

Journal Club:

The monthly gathering aims to facilitate regular exchange on foundational or newly published papers. Participants of the journal club receive the paper to be discussed in advance. During the session, the participants discuss the paper in terms of structure, methods, novelty, etc.. In terms of outcomes, participants get an overview and an in-depth understanding of high-quality research work.

Global Team-Based Innovation (Master)

In close cooperation with the *Chair for Enterprise Platform and Integration Concepts,* we provide students with the opportunity to participate in the Sugar Network. This network of several Universities around the world aims to educate future Design Thinking practitioners by an interdisciplinary, experiential learning approach.

For nine months, three students of HPI team up with students from other universities and work on a challenging problem of a corporate partner using Design Thinking. Thus, students learn how to work in an interdisciplinary and international environment on real-world problems. Each team is facilitated by two teaching assistants closely accompanying the teams along the journey. In 2019, the chair supervised five student teams working on exciting and highly relevant problems with the following companies and universities:

Partner Universities 2019/2020:

Tongji University (China) is a comprehensive, research-oriented institution, covering more than ten academic disciplines. We are working closely with their Design and Innovation Department.	
The University of St. Gallen (HSG), Switzerland, is one of Europe's leading business schools. SUGAR projects take place with students having a strong business background.	
The Karlsruhe Institute of Technology is one of leading universities in engineering in Germany. Since many years, we are working together with our colleagues from the Karlsruhe Service Research Institute.	
Swinburne University of Technology, Australia, is a research-oriented university, offering studies in a wide range of fields. We are working closely with the Design Factory Melbourne.	

Partner Companies 2019/2020:

Bayerische Motoren Werke AG engages in the manufacture and sale of automobiles and motorcycles. Within the SUGAR project, we closely collaborate with representatives from BMW's Production Planning department.	BMW GROUP
Georg Fischer AG is a Switzerland-based company engaged in the development of systems for industrial applications. The project is represented by employees from the Innovation Management of Georg Fischer AG.	+GF+
HUK Coburg is a leading German insurance company. The project in cooperation with the representatives from HUK Coburg aims to help potential customers to deal more intensively with life and risk provision.	HUK-COBURG
The Munich based technology group develops, produces and sells a wide range of electronic capital goods for industry and government customers with a focus on solutions that contribute to a safer and connected world. We are working with their Innovation Department.	ROHDE&SCHWARZ
Takeda is a research-based global company with a main focus on pharmaceuticals. As the largest pharmaceutical company in Japan, Takeda is committed to strive towards better health for patients worldwide through leading innovation in medicine. We are working closely with their Strategic Patient Services Department.	Takeda

Team BMW | Data driven working model for center of competence

Team BMW

Challenge
How do we manage to bring our planning Centers of Competence to a data-driven working model?

Description
Students from the University of St. Gallen and the Hasso Plattner Institute have been investigating how BMW can have more data-driven production sites. The goal is to improve process efficiency, reduce time waste, and offer a better platform to facilitate knowledge sharing among different production sites. Since BMW cares about its employees, our students were asked to find a solution that both suits the business and the workers!

HPI Students: Eugenia Alleva, Jonas Bücker, Marvin Thiele
HPI Teaching Assistants: Danielly de Paula, Winfried Lötzsch
Partner University: University of St. Gallen (HSG)

Team Takeda | Improve the patient experience of people with narcolepsy

Team Takeda

Challenge
How might we support people living with narcolepsy to predict and manage their condition?

Description
Rare diseases such as narcolepsy, a condition that disturbs the sleep-wake cycle and is characterized by excessive daytime sleepiness, are often diagnosed too late or not at all. This project aims to accompany and support people with narcolepsy throughout the course of the disease.

HPI Students*: Julius Severin, Juan Carlos Niño Rodriguez, Wiktoria Staszak
HPI Teaching Assistants*: David Hahn, Christopher Hagedorn
Partner University: Swinburne University Melbourne

Team Rohde & Schwarz | Making radio frequency monitoring future-proof

Team Rohde & Schwarz

Challenge

How might we help the responsible authorities to fulfill their tasks to keep the RF spectrum well-regulated and clear?

Description*:*

How can a company like Rohde & Schwarz adapt to the rapid developments in times of 5G and a strong increase in participants in different radio frequency spectra. In this project, students work together with local authorities to ensure the regulation of the individual spectra and to make the reliability and security of the radio frequency spectrum easier to check.

Team Members: Leonard Pabst, Lukas Böhme, Nataniel Müller
Partner University: University of St. Gallen (HSG)
Teaching Assistants: Danielly de Paula, Winfried Lötzsch

Team Georg Fischer | Sustainable waste water treatment

Team Georg Fischer

Challenge

How might we enable factory businesses to set-up a industry 4.0 based waste water treatment solution for supporting sustainable production processes?

Description

Since Georg Fischer is continuously working on redesigning the process of wastewater treatment in China, students from the Hasso Plattner Institute and Tongji University are using the design thinking mindset to tackle the challenge of industrial wastewater pollution with modernized digital techniques while keeping in mind the concept of sustainability.

Team Members: Spoorthi Kashyap, Nina Kiwit, Anton von Weltzien
Partner University: Tongji University
Teaching Assistants*:* David Hehn, Christopher Hagedorn

Team HUK-COBURG | Design of life and risk provision service

Team HUK-COBURG

Challenge

How might we help potential customers to deal more intensively with life and risk provision and design an attractive service for them that convinces them to approach their provision together with HUK-Coburg?

Description

How does HUK-COBURG manage to introduce its motor insurance customers to the topic of old-age provision? The three HPI students Martin Meier, Johannes Hötter and Pascal Crenzin deal with these questions together with their partner team from the Karlsruhe Institute of Technology.

HPI Students: Johannes Hötter, Pascal Crenzin, Martin Meier
HPI Teaching Assistants: Tobias Wuttke, Keven Richly
Partner University: Karlsruhe Institute of Technology (KIT)

5. Supervision of Thesis

The chair for Design Thinking and Innovation Research supervises numerous thesis on bachelor and master level. Students work on interdisciplinary research topics in the area of technology and Design Thinking. By supervising these students closely, the chair aims to qualify the future generation for research in academia. Thesis are written in close collaboration with different organizations such as private or public companies or NGOs. The chair aims to deliver a master thesis written by the students that can be published in a conference.

Bachelor Level

Topic	Name	Status
Holistic measurement of organizational innovativeness - Analyzing the adequacy of performance measurement frameworks to assess innovativeness and its impact	Purucker, Franz	In Progress
Applications of human-centered design in the field of smart cities	Müller, Elena	In Progress

Master Level

Topic	Name	Status
Exploring Boundary Objects and their Affordances in the Context of Design Thinking Projects from a Multi-Stakeholder Perspective	Bosch-Herterich, Anna	Finished
Success Factors of Inter-organizational Collaboration in New Product Development: A Knowledge Worker's Perspective	Cernomoret, Alexandr	Finished
Design Thinking in Automotive Manufacturing - Using Q-Methodology to explore Behavioral Archetypes of Design Thinking Team Members	Haskamp Thomas	Finished
Human-centered design in information security Empathy for improved security control design	Hofmann, Tom	In Progress
Collaboration modes between Startups and established organizations	Misterli, Florian	In Progress
Survey on the Challenges of Design Thinking in Practice	Novakovic, Adrian	In Progress
Performance Measurement of Design Thinking efforts in organizations	Sabbioni, Tiziano	In Progress
The influence of diversity on team performance in Design Thinking teams	Salim, Karim	In Progress
Implementing Design Thinking for Digital Innovation in Practice - A Survey on Practices, Success Factors and Challenges	Seric, Ivan	In Progress
Design thinking coming of age - Exploring the implementation of design thinking for digital innovation in large organizations	Lu Wolf, Ela	Finished
Configuration and Application of Digitally Enabled Healthcare Service in Developing Countries: A Human-centered Case Study for Keyna	Zarske Bueno, Bastian	Finished
A framework to Reach the Underserved Population in Developing Countries with Healthcare Solutions: A Comprehensive Case Study in Rural Kenya	Zarske Bueno, Jan	In Progress

6. Publication

Publications:

Brenner, W., Uebernickel, F., Hehn, J. (2019) Design Thinking. *Enzyklopädie der Wirtschaftsinformatik*. Online Lexikon.

Hehn, J.,Uebernickel, F. (2019). The Use of Design Thinking for Requirements Engineering: An Ongoing Case Study in the Field of Innovative Software-Intensive Systems. *49.GI Jahrestagung Informatik 2019*. Kassel, Germany

Lechler, R., Stöckli, E., Rietsche, R., & Uebernickel, F. (2019). Looking beneath the tip of the iceberg: The two-sided nature of Chatbots and their roles for digital feedback exchange. *ECIS 2019 Proceedings*.

Stoeckli, E., Dremel, C., Uebernickel, F., & Brenner, W. (2019). How affordances of chatbots cross the chasm between social and traditional enterprise systems. *Electronic Markets*.

Stoeckli, E., Uebernickel, F., Brenner, W., Weierich, A., & Hess, S. (2019). Digital Feedback for Digital Work? Affordances and Constraints of a Feedback App at InsurCorp. *Wirtschaftsinformatik 2019 Proceedings*.

Research Metrics of Prof. Dr. Falk Uebernickel:

h-Index: 20

i10-Index: 49

7. Research Projects

Hasso Plattner Design Thinking Research Program

Presentation: Connecting the dots

Title: Planning, measuring and steering the impact of human-centered design and Design Thinking in organizations

Start and End Date:

01.10.2019 till 31.09.2020

Description:

Over the last years, the role of design in organizations expanded from a form-giving activity to a strategic problem-solving and decision-making capability. Especially in light of the uncertain and complex nature of digital ecosystems with various stakeholders pursuing different and sometimes contradictory goals, human-centered design (HCD) is (re-)gaining traction. At the same time, today's dynamic world is characterized by volatility and change. Therefore, HCD is not only promising at the outset of innovation projects, but needs to be adapted continuously over the life cycle of projects. Accordingly, the main research question at hand is "How can software-driven organizations plan the systematic improvement and constant use of Design Thinking and HCD aligned and synchronized with the existing corporate strategy?" To investigate this question, we will apply the well-established and rigorous research methodology "Design Science Research" (DSR). As outcome, we plan high-level publications in the coming year along with practitioner reports.

Participants:

- Prof. Dr. Falk Uebernickel
- Dr. Danielly de Paula

8. Public Presentations and Discussions

Presentations and Panel Discussions

Presentation: Design-Driven Software Development by Dr. Danielly de Paula

Title: Why should you have a design-driven software development process and how can you do it? Lessons Learned from research and practice

Date: 18.10.2019

Location: Xitaso, Magdeburg

Description: While agile software development methods tackle the problem of how to deal with rapidly changing requirements, a core question of software development managers remains unsolved: How can we use design to overcome shortcomings in the software development process and deliver more innovative human-centric software solutions that address real user needs? To address that question, this talk aims to present recent findings from academic research and lessons learned from industry practice on how to have a design-driven software development process. By adopting a more design-driven software development process, companies throughout the world have significant cost savings due to reduced redesign work and shortened product-time-to-market.

Panel Discussion: 20 years HPI - Designing Digital Transformation Conference

Title: New strategies - How to create Innovation Friendly Ecosystems

Date: 29.10.2019

Location: Potsdam

Description: Prof. Dr. Falk Uebernickel hosted a panel discussion with Johannes von Borries (UnternehmerTUM), Liliana Gorla (Siemens AG) and Vera Schneevoigt (Bosch GmbH) about how we can create an ecosystem that drives innovation activities.

Panel Discussion - Designing Digital Transformation

Presentation: The chances of digitization in times of structural changes in german coal mining districts by Prof. Dr. Falk Uebernickel

Title: Die Chancen der Digitalisierung in Zeiten des Strukturwandels im mitteldeutschen Revier

Date: 02.12.2019

Location: Zeitz

Description: Prof. Dr. Falk Uebernickel provided an overview of the challenges ahead in this area. He also shared some cases of successful digital transformation of organisations and identified factors that are relevant to tackle the challenges related for the region. He also discussed findings and relevant topics with Dr. Reiner Haseloff, Minister President of the Federal State of Saxony-Anhalt, and representatives from other affected organisations.

Public Discussion with Minister President of Saxony-Anhalt Dr. Rainer Haseloff

Presentation: D-Flect by Prof. Dr. Falk Uebernickel

Title: Towards a "serious" Design Thinking - A critical reflection of our practices

Date: 02.12.2019

Location: Potsdam

Description: Prof. Dr. Falk Uebernickel gave an inspiring presentation about challenges within the deployment of Design Thinking in projects. Furthermore, he shared his learnings from over ten years of experience and many different projects.

Presentation at D-Flect

Podcasts and Videos

Title: HPI Neuland - Unternehmen auf Innovationskurs bringen mit Design Thinking

Title: Unternehmen auf Innovationskurs bringen mit Design Thinking - Prof. Dr. Falk Uebernickel im Gespräch im HPI Neuland Podcast

Date: 26.11.2020

Description: Prof. Dr. Falk Uebernickel was invited as a guest within the HPI Neuland Podcast. He gave an interview about how companies can remain innovative in challenging times. He provided insights on how organisations can master digital transformation.

HPI Neuland Podcast

9. Events

SUGAR Fall Presentations

Date: 09.12.2019 - 10.12.2019

Location: Potsdam, Germany

Description: Just before Christmas the chair had the honor to host the Sugar Community. At this event, students of the GTI course share their first results of different projects. Despite the presentations, we also conduct a workshop with the corporate partners.

Guest Lecture I - Prof. Dr. Matthias Söllner

Date: 20.11.2019

Location: Potsdam, Germany

Description: Prof. Dr. Matthias Söllner, chair for information systems and system development at the University of Kassel, visited us and conducted a workshop about how to publish in renowned journals. Prof. Söllner has successfully published numerous papers in conferences and journals in the area of management and information systems.

**Prof. Dr. Falk Uebernickel and Dr. Danielly de Paula welcome
Prof. Dr. Matthias Söllner at the DTIR Chair**

Guest Lecture II - Prof. Dr. Manuel Wiesche

Date: 27.11.2019

Location: Online

Description: Prof. Dr. Manuel Wiesche, Chair for Information Systems at TU Dortmund, visited us in December to conduct a Workshop about Research Methods. According to the Newspaper "Wirtschaftswoche" Prof. Dr. Wiesche belongs to the most successful researcher in the field of information systems in the german speaking area. We enjoyed having him and look forward to an inspiring collaboration.

Prof. Dr. Falk Uebernickel welcomes Prof. Dr. Manuel Wiesche at the DTIR Chair

10. Outlook

The chair has already planned many activities for the upcoming year of which many are open to the public. We look forward to welcoming you to one of our many events. Furthermore, the chair regularly hosts research-oriented events (tracks/mini-tracks/conferences) that allowed us the opportunity to learn and discuss our findings with the community.

SUGAR Winter Presentations

Date: 09.03.2020 - 10.03.2020

Location: Karlsruhe, Germany

Description: Within the Global Team Based Innovation course students from different universities meet with their corporate partners to present their project status and also to show developed prototypes.

SUGAR Expo

Date: 05.06.2020 - 08.06.2020

Location: San Francisco, USA

Description: The Sugar Expo in San Francisco is one important highlight for our students that take part in the Global Team Based Innovation projects. One last time all students from partner universities around the world and also many corporate partners participate to enjoy the final results of the student projects.

SUGAR+ Final Presentations

Date: 05.06.2020 - 08.06.2020

Location: Potsdam

Description: The Sugar Final Presentations mark the end of an insightful journey. Together with their corporate partners and students from other universities, we want to celebrate the results of the projects and the work of the students.

SUGAR GKO

Date: 21.10.2020 - 27.10.2020

Location: Kyoto, Japan

Description: The Sugar Global Kick-Off (GKO) meeting in Kyoto marks the start for a new class of GTI students from HPI. It's the first opportunity for the students to connect with their global partner team and also with many different corporate partners from different areas of the world. Thus, the event aims to create an inspiring atmosphere to Kick Off the projects for the year.

SUGAR+ Fall Presentations in December

Date: tbd.

Location: Potsdam, Germany

Description: The Sugar Fall Presentations present the first meeting where students present their findings from an extensive analysis need finding phase of their project.

HICSS Conference 2021

Date: 05.01.2021 - 10.03.2021

Location: Hawaii, USA

Description: The Chair of Design Thinking and Innovation Research got accepted to host a Mini Track for the Hawaii International Conference of System Sciences. We look forward to present findings from our research