Business PF
Business School
Fakultät für Wirtschaft und Recht
Hochschule Pforzheim

HS PF

Syllabus
BIS3063E Digital Service Innovation
Prof. Dr. Peter Weiß
Summer Semester 2024

Level	Bachelor	
Credits	3	
Student Contact Hours	30 hours within class	
Workload	90 hours (30 hours within class and 60 hours for self-study and term project)	
Prerequisites	Basic knowledge in Computer Science and Information Systems	
Time	17:15-18:45	
Room	W1.2.06 - LABOR	
Start Date	Wednesday, 20 March 2024	
Lecturer(s)	**Name**	Prof. Dr. Peter Weiß
	Office	W2.2.25
	Virtual Office	MS Teams
	Office Hours	Wednesday, 11:30-13:00 Please use my booking system to reserve a free timeslot: see https://my.meetergo.com/prof-dr-peter-weiss/be-sprechung-meeting
	Phone	+49 723 128 6691
	Email	peter.weiss@hs-pforzheim.de

Summary

Service Innovations are an opportune strategy for companies to compete in the digital age and to transform their business models taking a service perspective on their value creation.

Digital business models require unique value propositions that incorporate digital technologies. Students will get acquainted with the conceptualization of Service Innovation in the context of the omnipresent fast acting digitization of our daily life, economy and society.

Simply put, Digital Service Innovation depends on a multi-relational approach using information technology (IT) to gain a better understanding of customers and deliver a differentiated customer experience across the entire relationship lifecycle. Think of it as turning your customers inside out, giving businesses a tool to learn what their history is, buying trends are, and interactions have been, allowing you to use this knowledge to plan ahead for your interactions with them. Linking Internet of Services (IoS) and Internet of Things (IoT), xRM provides the management layer for collaborative networks (CNs) and Cyber-Physical-Systems (CPS). The implementation of the Digital Service Innovation and related concepts are often based on platforms and modular, domain-specific applications building upon these platforms. However, this approach seems in times of digitization and digital transformation limited and not sufficiently broad to capture today's complexities of interacting service systems and business interactions in our digitized world. The lecture will look into some these challenges and will highlight how anything is connected and capable to participate in interactions.

Prerequisites

Besides basic knowledge in Computer Science and Information Systems, there are no special prerequisites for the course beyond basics in management and being interested in technological matters. Do not take the course if you expect to miss more than one class because attendance and active class participation is critical. As well, please consider that course language is English. Please ensure that you are able to read scientific articles in English and follow the lectures. As well, interventions and contributions from students are expected to be made in English.

Outline of the Course

"The greatest danger in times of turbulence is not the turbulence; it is to act with yesterday's logic. Yesterday's logic, which continues to linger, focused on separating the producer from the consumer." (Peter. F. Drucker).

"Think of your Business as a Service Business" (H. Chesbrough, 2011)

"Reconfigure or be reconfigured" (Richard Normann, 2001).

This lecture takes focus on Digital Service Innovation (xRM) as the next evolutionary step to design and implement new business logics as core of digital transformation endeavours. Digital Service Innovation as concept describes the holistic management of relationships or relational ties within and between organizations, human beings, and virtual and physical, technical objects. The relational management approach is a well-established discipline that has evolved over the past decades.

Service-Dominant Logic (S-D Logic) provides a solid theoretical base to explore current trends, developments and to analyse underlying business logics of selected business models and value creation constellations. New capabilities are required to establish new value creation paths and logics.

Major aim of the lecture is to get students acquainted with underlying business logic and conceptualizations of digital service innovations and discuss related design elements of business models. Business logics behind platform-business, sharing economy, digital services in connection with goods / products and the success of companies such as Alibaba, Amazon, Apple, Google will be

discussed and analysed by the students. The lecture prioritizes a Design Science Research approach (Hevner et al. 2004, Peffers et al. 2007).

From the perspective of S-D Logic (Service-Dominant Logic) all economic actors are resource integrators. But what does this mean to act strategically as a resource integrator, and how does this relate to platform-led businesses?

Thus, Digital Service Innovation (xRM) needs to put the relational perspective in focus.

This relates to networked organisations, actor-to-actor networks and platforms. Complex interactions are nowadays feasible through enabling digital services and technologies. In the lecture, the link and interdependency between various concepts will be illuminated. The students will explore in a self-directed and research-oriented learning approach existing conceptualizations and theoretical explanations. A clear orientation towards practical needs and real life examples will provide guidance for the lecture.

Course Intended Learning Outcomes and their Contribution to Program Intended Learning Outcomes / Program Goals

Program Intended Learning Outcomes		Course Intended Learning Outcomes	Assessment Methods	
	After completion of the program the students will be able…	After completion of the course the students will be able…	Presentation	Term Paper
			50%	50%
			Individual	Individual
1	**Expert Knowledge**			
1.1	…to demonstrate their distinguished and sound competencies in General Business Administration.	To explain implications of new management paradigms such as service orientation (mainly S-D logic) and related strategic imperatives to design creative solutions	X	X
1.5	...to demonstrate profound expert knowledge in their field of specialization.	To synthesize concepts to appropriate strategies to (re)position the company in the context of digitalization and digital transformation.	X	X
2	**Digital Skills**			
2.1	...to know and understand relevant IT software tools used in business and their features and have a solid understanding of digital technologies.	To know, select and argue state-the-art and sophisticated new trends in digital technologies and argue embedded concepts, methods, techniques. To demonstrate to make conceptual designs based on analysis of key concepts applied by digital technologies and related tools as well as linking to associated body of knowledge / technology. To demonstrate the competence to initiate, plan, design, develop and communicate conceptual design and creative solutions effectively to an expert audience.	X	X
2.2	...to effectively use and apply information systems to develop solutions in business settings.	To apply and demonstrate methods and techniques of a techno-social analysis of given organizational context according to IT professional standards. To argue how state-of-the art tools, techniques, methods and concepts can be used in business.	X	X
2.3	...to effectively use digital technologies to interact, to collaborate and to communicate.	To use digital technologies and digital media, e.g. selected video content to support the presentation and elaborated use case (application scenario, use-case-based approach)	X	X
2.4	...to handle the professional use of digital technologies in a responsible manner.	To understand and argue the needs of socio-technical analysis and abstractions (e.g. use case analysis, modelling) in the context of information systems development and operation	X	X
3	**Critical Thinking and Analytical Competence**			
3.1	...to implement adequate methods in a competent manner and to apply them to complex problems.	To apply and demonstrate methods and techniques of a techno-social analysis of given organizational context according to IT professional standards.	X	X

		To argue how state-of-the art tools, techniques, methods and concepts can be used in business. To conceptualize and argue solution designs and propose high-level artefacts based on elicited requirements according to standardized procedures of information systems development (e.g. through applying basic modelling techniques, socio-technical analysis) reflecting realities and needs of information systems development processes in real-life organizational context and specific application domains.		
3.2	...to critically reflect and interpret findings and to develop comprehensive solutions for complex problems.	To conceptualize and argue solution designs and propose high-level artefacts based on elicited requirements according to standardized procedures of information systems development (e.g. through applying basic modelling techniques, socio-technical analysis) reflecting realities and needs of information systems development processes in real-life organizational context and specific application domains.	X	X
4	**Ethical Awareness**			
	...to develop sound strategies in the areas of ethics, sustainable development and social responsibility and are able to apply them to typical economic decision-making problems.	To develop critical thinking in relation to IT solutions and societal responsibility, in accordance with IT professionalism standards in industry.	X	X
5	**Communication and Collaboration Skills**			
5.1	...to express complex issues effectively in writing.	To prepare presentation material and to further elaborate presented material in class (presentation and conceptual / use case preparation) To read and summarize scientific papers and demonstrate ability to master the level of scientific language and respective academic level.	X	X
5.2	...to demonstrate their oral communication skills in presentations.	To conceptualize and argue conceptualizations and solution design for complex business problems related to xRM based on valid concepts and business strategies through the preparation of a small case study. To demonstrate and argue new thinking and concepts which can be used and applied to develop solutions and how they leverage the use of digital technologies to solve concrete business problems in a real-life industrial context.	X	
5.3	...to work successfully in a team by performing practical tasks.	To know and demonstrate how to prepare group tasks and to contribute to a team project. To reflect critically their ability to work in teams, coordinate and work collaboratively on a given problem or case, and finally, present jointly yielded results in small teams.	X	X
6	**Internationalization**			
6.2	...to articulate themselves in a professional manner in international business.	To present orally and write contents in English language in conformity to IT professional standards.	X	X

Teaching and Learning Approach

Digital Service Innovation is an interactive lecture with discussion based on International Business case studies. To participate fully in class, students are expected to attend classes, read the assigned literature / cases and engage in discussion.

Literature and Course Materials

Contents of the course are oriented toward the following course literature, which will be referenced as appropriate:

- Wortmann, F., Jung, S., & Gassmann, O. (2024). The Platform Business Navigator. FT Publishing International, 296 Seiten.
- Beverungen, D., Kundisch, D., & Wünderlich, N. (2021). Transforming into a platform provider: strategic options for industrial smart service providers. Journal of Service Management, 32(4), 507-532.
- Beverungen, D., Müller, O., Matzner, M., Mendling, J., & Vom Brocke, J. (2019). Conceptualizing smart service systems. Electronic Markets, 29, 7-18.
- **Weiß, P.; Warg, M.; Zolnowski, A. (2023): Service Design Patterns for Transforming Business with Service Dominant Architecture (SDA): Insights from a Longitudinal Case Study. RESER 33rd International Conference, December 2023.**
- Warg, Markus; Frosch, Markus; Weiss, Peter; Zolnowski, Andreas (2023): Service innovation roadmaps as benchmarks for organizational learning. In: ITM Web Conf. 51, S. 4001. DOI: 10.1051/itmconf/20235104001.
- **Weiß, P; Warg, M.; Zolnowski, A.: Mastering Digital Transformation with Service Dominant Architecture. Chapter. IntechOpen, 2022.**

Students are recommended to read this book, as it is referred to its cases, concepts and foundations.

Additional Literature and Recommendations for further self-directed studies and research:

- J. Spohrer, P.P. Maglio, S.L. Vargo, M. Warg (2022) Service in the AI Era: Science, Logic, and Architecture Perspectives. Business Expert Press.
- Warg, Markus; Frosch, Markus; Weiss, Peter; Zolnowski, Andreas (2023): Service innovation roadmaps as benchmarks for organizational learning. In: ITM Web Conf. 51, S. 4001. DOI: 10.1051/itmconf/20235104001.
- **Rittweger, Roman; Kronibus, Anselm; Weiß, Peter (2020): Value Co-creation as the Core of Service Innovation: Impacts of a Case Study of a Fully Digitized Health Insurance Company. In: Jim Spohrer und Christine Leitner (Hg.): Advances in the Human Side of Service Engineering. Cham: Springer International Publishing, S. 86–92.**
- Parker, Geoffrey; van Alstyne, Marshall; Choudary, Sangeet Paul (2016): Platform revolution. How networked markets are transforming the economy - and how to make them work for you. First edition. New York, London: W.W. Norton & Company.
- **Weiß, P.; Warg, M.; Zolnowski, A. (2019): Building Systems of Engagement to overcome the challenges of digital transformation. Naples Service Forum 2019, 04-07 June 2019.**
- Warg, M.; Zolnowski, A.; Frosch, M.; Weiß, P. (2019): From Product Organization to Platform Organization: Observations of Organizational Development in the Insurance Industry. Naples Service Forum 2019, 04-07 June, 2019.
- Weiß, P.; Bulander, R.; Kölmel, B. (2016): Digital Service Innovation and Smart Technologies: Developing Digital Strategies based on Industry 4.0 and Product Service Systems for the Renewal Energy Sector. September 2016, Conference: RESER Conference Proceedings, Naples, Italy; 2016
- Lusch, R. F., Vargo, S.L. (2014): Service-Dominant Logic: Premises, Perspectives and Possibilities. Cambridge University Press, Boston.
- Chesbrough, H. (2011) 'Bringing Open Innovation to Services', MIT Sloan Management Review, 52(2), pp. 85–90. doi: 10.1177/1094670503257028.

- Chesbrough (2011): Open Service Innovation: Rethinking Your Business to Grow and Compete in a New Era. Jossey-Bass.
- Chesbrough, H. and Spohrer, J. (2006) 'A Research Manifesto for Service Science', Communications of the ACM, 49(7), pp. 35–40. doi: 10.1145/1139922.1139945.
- Chesbrough, H. (2011) 'Open Services Innovation: Rethinking Your Business to Grow and Compete in a New Era', Presentation, p. 37. doi: 10.1017/CBO9781107415324.004.
- Lusch, R. F. and Vargo, S. L. (2008) 'The Service-Dominant Mindset - Goods to Service', Service Science, Management & Engineering, pp. 89–96.
- Spohrer, J. C., Demirkan, H. and Krishna, V. (2011) 'Service and Science', The Science of Service Systems, pp. 325–358. doi: 10.1007/978-1-4419-8270-4.
- Stauss, B., Gouthier, M. and Seidel, W. (2007) 'Satisfaction measurement within the customer relationship life cycle', Advances in Services Innovations, pp. 205–220. doi: 10.1007/978-3-540-29860-1_11.
- Van Alstyne, Marshall W.; Parker, Geoffrey G.; Choudary, Sangeet Paul (2016: "Pipelines, Platforms, and the New Rules of Strategy". In: Harvard Business Review, April.
- Vargo, S. L. and Lusch, R. F. (2004) 'Evolving to a New Dominant Logic for Marketing', Journal of Marketing, 68(1), pp. 1–17. doi: 10.1509/jmkg.68.1.1.24036.
- Britsch, J., Schacht, S. and Mädche, A. (2012) 'Anything Relationship Management', Wirtschaftsinformatik, 54(2), pp. 83–85. doi: 10.1007/s11576-012-0315-5.
- Maglio, P. P. et al. (2006) 'Service Systems, Service Scientists, Ssme , and', Communications of the ACM, 49(7), pp. 81–85.

Selected excellent case studies (Harvard, MIT) and high-level research papers (articles published in leading research journals) to introduce major concepts following an action-oriented approach.

Students will acquire required conceptual basis to strengthen their problem-solving capabilities and independent thinking relevant for their professional career development. This is seen as critical and fundamental for future digital service innovation capabilities in order to lead required transformations in industry and in given real life contexts. Following this approach, students are acquainted with scientific literature and related standards.

Theory and related concepts will be discussed and explained in classroom with reference to real life examples and industrial cases.

Assessment

The students will realize a term project. Details are outlined during the first sessions in the class room, as well as assessment criteria. Important criteria are presented and will be clarified during the first lectures.

In general, the assessment will be as follows:

- Term Project/ Presentation: 50%
- Term Paper: 50%
- Total: 100%

Assessment is based on a term project which includes a written scientific term paper (elaborated learning papers based on assigned xRM topic) and a presentation of the assigned xRM term project.

Further information will be provided during the first lecture. You will be prepared for the exam during the lectures. Also, the style of the exam will be explained during lectures.

Schedule

The following time schedule is tentative.

Week 1	**Introduction and Motivation/ Overview** Introduction to course and material Time planning and assignment of tasks (own read and term project)
Week 2	**Digital Service Innovation (1)** Introduction and overview to digital service innovation and its conceptualizations Open up the value chain and value creation systems
Week 3	**Digital Service Innovation (2)** Challenges of managing and orchestrating the complex inter-organizational relationships
Week 4	**Digital Service Innovation (2)** Challenges of managing and orchestrating the complex inter-organizational relationships
Week 5	**Foundations of Digital Servitization and Service Dominant Logic** Platform approaches increase in future with progressing digitization and information intensity
Week 6	**Platform Business and Economy: Connected Customers and Systems (1)** Platform approaches assist in externalizing of resources and capabilities, and to provide structure for network orchestration
Week 7	**Platform Business and Economy: Connected Customers and Systems (2)** Platform approaches assist in externalizing of resources and capabilities, and to provide structure for network orchestration
Week 8	**Digital Servitization: Service Strategies and S-D logic (1)** Connected customers: engagement and experience **Analysis of use cases and examples**
Week 9	**Digital Servitization: Service Strategies and S-D logic (2)** Connected customers: engagement and experience
Week 10	**Digital Servitization: Service Strategies and S-D logic (3)** Connected customers: engagement and experience
Week 11	**Digital Servitization: Service Strategies and S-D logic (4)** Connected customers: engagement and experience
Week 12	**Digital Servitization: Service Ecosystems and Service Systems (1)** Rationale for use of platform approaches in service-driven manufacturing context, demonstrating how identified logics have special role in value creation in service networks
Week 13	**Digital Servitization: Service Ecosystems and Service Systems (2)**. Rationale for use of platform approaches in service-driven manufacturing context, demonstrating how identified logics have special role in value creation in service networks
Week 14	**Digital Servitization: Open Service Innovation** Customer engagement and experience Why companies should have Open Business Models Rethinking companies' business from a service perspective

Week 15	**Platform-based Business Models**
Week 16	**Capstone Session/ Recap**

Academic Integrity and Student Responsibility

The lecturer appreciates a substantial exchange between the students, because the fellow students may have valuable contributions to the comprehension of occurring problems or questions.

Following the arguments, collaboration and also an autonomous exercise solving or the discussions on upcoming questions within the lectures are fundamental for a clearer understanding of the subject matter.

Especially large class sizes and foreign languages imply a risk of a high noise level, which has a strong negative influence on the work climate, knowledge acquisition and collaboration. Predominantly a high noise level is caused by a few group members. These 'troublemakers' hinder the other ones from being able to concentrate and therefore won't be tolerated and will be ejected from the class.

Teaching Philosophy

My aim is to ensure that you succeed in your training. Therefore, my aim as lecturer is to interact with students in the classroom and to provide support to their individual learning process. In the case of occurring problems or questions, feel free to contact me, for instance by e-mail. I will answer promptly and if required schedule an appointment.

My aim is to establish a fundamental comprehension for the common topics in Digital Service Innovation, especially interconnected products, customers and interacting service systems. As well, I will get students acquainted with new paradigms to view management challenges through the lens of service management and Service-Dominant (S-D) logic. My aim is to enable students to synthesize solution approaches to typical problems and challenges of networked businesses.

My aim is to enable students to follow eclectic research approaches and conceptualize solutions design to improve planning activities that are across functions and process borders in order to pursue the overall optimum instead of a suboptimal company optimum. Therefore, I want to encourage students to take a holistic view and service-led view, which may be a competitive advantage towards business partners and competitors (service makes the difference).

My lectures are research-led not losing focus concerning essential aspects to apply results in real life industrial contexts. Students on bachelor level are encouraged to use scientific literature and to work with state-of-the-art material and concepts from the emerging transdisciplinary service science. In this way, students will strengthen and improve their analytical and conceptual skills.

Service-led thinking and to use service strategies to achieve competitive advantage is a major paradigm of my teaching and research.

Additional Information (optional)

Globalization, increasing automation, the growth of the Internet, and the dynamic componentization of business are driving the reconfiguration of service value networks at a scale and pace never before seen in history. The opportunity to innovate in services, to realize business and societal value from knowledge about service, to research, develop, and deliver new information services and business services, has never been greater. The challenges are both the multidisciplinary nature of service innovation, which combines business, technology, social-organizational, and demand innovation as well as the lack of formal representations of service systems.

Rethinking customer-firm interactions and related business logics. Based on Service-Dominant Logic (S-D Logic), the customer is primarily an operant resource. Customers are active participants in relational exchanges and coproduction. In the core, it is about from thinking about the purpose of firm activity as making something (goods or services) to a process of assisting customers in their own value-creation processes. From thinking about value as something produced and sold to thinking about value as something co-created with the customer and other value-creation partners. From thinking of customers as isolated entities to understanding them in the context of their own networks.

Technology and Digital Service Innovation: Technology has revolutionized the way that companies perform service, enabling the development of long-term individualized relationships with customers. Advancements in computing have allowed companies to improve both profits and financial accountability by providing high quality, personalized service more easily and affordably than ever before. A computing-driven revolution is under way in the global economy guided by the principle that ever y business must become a service business in order to survive.

And indeed, many of observable innovative services and digital business models are explainable through taking a service lens on value creation activities. Noticeably, we observe the emergence of service ecosystems (networks of business partners and in general entities), and platform-based businesses. But how can platform-based businesses and related business models be conceptualized and explained? This will be in focus of this lecture.

S-D Logic and Digital Service Innovation. The students will get familiar with selected concepts derived from S-D Logic and Service Science literature. Service Science is an upcoming interdisciplinary field integrating insights from academics and practitioners alike. As the world becomes more and more globally interconnected and turbulent, business strategy and operations have to reflect and respond to the challenges of digitization and digital transformation. Against these background scholars such as Peter F. Drucker state that the, “The greatest danger in times of turbulence is not the turbulence; it is to act with yesterday’s logic.” Yesterday’s logic, which continues to linger, focused on separating the producer from the consumer.

This described increasing interconnectedness and the emergence and evolution of interacting (service) systems requires to rethink company’s strategy to review underlying business logic and to make strategic decisions to newly or (re-)position the company in a digital and interconnected economy. Nowadays, we observe the emerging of complex system of systems which rely on service-are-exchanged-for-services as primary value creation logic. In the digital age, companies are competing through service innovations and new value propositions which question the prevailing business logic and business models.

Learning outcomes:

This course provides a strategic perspective of the challenges and advantages of global manufacturing in multinational and networked companies. In this course the students will learn:

- Introduction and Motivation to Digital Service Innovation and xRM: challenges, perspectives and strategic directions
- Digital Transformation: fundamentals, change drivers, new capabilities, examples
- New business logics: contributions of Service-Dominant Logic (S-D Logic) to foster Digital Service Innovation
- Design Science Research (DSR), Service Science, Service Systems and Digital Service Innovation
- Origins and foundations of Digital Service Innovation
- Conceptualization relational business approaches / platform mechanisms and purpose
- Business Networks / Service Ecosystems
- Digital Business Models and Value Co-Creation
- Case Studies

Upon completion of the course, the students are able to

- Define and characterize various types of actor-to-actor networks relating to presented concepts and vocabulary of the course material.
- Name and recall foundational premises and theories explaining anything relationship management and value chain constellations.
- Define and repeat the concept “anything relationship management” and describe its strategic and operational aspects as well as its objectives.
- Define and classify major constituent properties of service ecosystems and service systems.
- Define and characterise product service systems and transfer how they extent the total offering of companies through new value propositions and integrating service components.
- Define and evaluate the design of platform-based strategies in manufacturing industries.
- Know and propose strategic imperatives and opportunities but as well risks viewing value chains through a service-lens.
- Know and apply concepts to concrete examples and conclude how transformations and improved competitive positions are achievable.
- List and discuss major drivers of change and influencing factors for transformations of value chains.
- Understand and argue major drivers of change as well as to characterise potential risks for anything relationship management.
- Name and conceptualize anything relationship management concepts derived from S-D logic principles and mechanisms.