

Syllabus
BIS6233 Digital Transformation
Prof. Dr. Peter Weiß
Winter Semester 2023/24

Level	Master	
Credits	3	
Student Contact Hours	2 academic hours: (2 x 45 minutes) / per week	
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	Wednesday, 15:30-17:00	
Room	W1.05.04	
Start Date	11.10.2023	
Lecturer(s)	Name	Prof. Dr. Peter Weiß
	Office	W2.2.25
	Virtual Office	MS Teams (upon appointment)
	Office Hours	<p>Wednesday, 11:30-13:00</p> <p>Please use my booking system to reserve a free timeslot: see TBA (new booking system and procedure explained during introductory lecture)</p>
	Phone	+49 723 128 6691
	Email	<p>peter.weiss@hs-pforzheim.de (preferred mode of communication)</p> <p>(Further details: here)</p>

Outline of the Course

Digital transformation challenges many incumbent companies by technology-driven and data-driven business models which nest new rules and business models. Digital technology has been rolling markets and disrupting companies for more than two decades, but despite that lengthy history, incumbents are still struggling to enact and deliver on digital transformation (HBR, 2017). In this lecture, we will shed light on typical challenges of digital transformation and what success factors exist. Furthermore, it will be looked into how digital business models challenge physical ones. Starting point for digital transformation is rethinking the companies value propositions and finding its individual way based on existing and new resources to transform the enterprise. Digital transformation requires new perspectives and companies have to introduce new capabilities to their organization in order to sustain in the digital age. Real and virtual worlds will be one building digital-physical mashups (Rigby, 2014).

Customers are increasingly demanding to interact with companies anytime and anywhere. Companies have to be more responsive and have to build an engagement layer above the layer “systems of record” by instantiating service platforms to enrich and redefine value creation processes by new integrated capabilities. Enterprise capability is an interesting because useful concept that will be further explored during the course. Enterprises need to evolve continuously. Capabilities needed to change are quite different from the capability needed to run its day-to-day business. Enterprise architecture (EA) has a vital role for the evolution of the enterprise towards its digital future. EA offers contributions to steering, controlling and/or guiding enterprise transformations (Proper and Lankhorst, 2014).

New digital technologies are emerging rapidly and have induced noticeably changes of customer behaviour and preferences. Those developments are fuelling change in the companies' environment and require transforming their information systems and invest in new capabilities, the so-called digital transformation. A major driver of this transformation are newly emerging technologies that challenge companies with unprecedented dynamics and change: new technology-driven business models are challenged by new rules and business logics. Digitization and digital transformation affect business in many companies. Students understand change drivers in the environment of companies. Based on case studies, the course will have a specific look at how companies are confronted with fast changing markets and customer behaviour; because digital technologies affect life events of consumers and producers.

New digital technologies are emerging rapidly. Thus, for companies' investments in their existing IT infrastructure and related capabilities remain a moving target. Students will get acquainted with Service-Dominant Logic (SDL) as an inspiring source which can be an inspiring source to envision the objectives and direction of digital transformation initiatives. In this way, SDL offers clear guidance to develop compelling digital strategies making use of service innovations. SDL can be used to analyse and to anticipate future strategic moves (of the company itself but as well of the company's competitors) to drive digital transformation. This requires leadership with respect to deciding on how the organization and its IT infrastructure has to adapt to support company's future digital strategies. adding a service systems' view and the concept of “service ecosystems”, results in a broader view of service innovation in the context of digital transformation and service systems. During the course, students will understand how service-based strategies drive digital transformation, and how service can make the difference in the digital era. Furthermore, the conceptualization of service innovations into service ecosystem, service platform, and value cocreation is a promising avenue of research to master digital transformation. During the course students know various approaches and conceptualizations how to drive digital transformation through investing in the "right" IT infrastructure capabilities to achieve strategic agility.

Prerequisites

There are no special pre-requisites for the course beyond basics in information 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. The course language is English; thus, you should be able to follow lectures in English as well as to read state-of-the-art academic literature in English.

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	Responsible Leadership in Organizational Contexts			
1.1	... to know and to argue relevant leadership principles.	To know and argue why traditional and established management principles fail in the context of digital transformation. To explain and define new elements of digital transformation and related management activities. To know and specify roles, tasks and processes adequate to overcome the challenges of digital transformation	X	X
1.3	... to demonstrate their critical reflection of relevant leadership principles.	To actively contribute to discussions and to define strength, weaknesses of management principles and approaches.	X	X
2	Creative Problem Solving Skills in a Complex Business Environment			
2.1	... to identify, to demarcate, and to classify problems.	To know and describe typical problems in the context of digital transformation and argue possible solutions to solve them. To list challenges of digital transformation and to eluci-date how to overcome related challenges.	X	X
2.3	... to solve problems creatively and implement appropriate solutions in practice.	To know, analyse and argue implications of new man-agement paradigms such as service orientation (mainly S-D logic) and related strategic imperatives to design creative solutions and synthesize concepts to appropri-ate strategies to (re)position the company in the context of digitalization and digital transformation. To highlight and elucidate relevant approaches and frameworks, and models, respectively, which are relevant to master digital transformation endeavours.	X	X
3	Research skills and their Practical Application			
3.2	... to competently apply relevant research methods.	To explain and argue advantages of related research-based teaching approach. To know and describe relevant research methods and approaches, such as Design Science Research methods, Information Systems Engineering as Research Method (such as Numamaker et al.), Information Systems research, construction-oriented IS research .	X	X
3.3	... to demonstrate the ability to develop new knowledge and procedures, integrate knowledge from different areas to expand knowledge in the field.	To summarize and communicate results and outcomes of research papers. To highlight and explain respective insights, understanding and lessons learnt based on elicited knowledge. To explain, analyse, abstract and articulate effectively innovative results produced and decide on what is relevant to be published.	X	X
4	Design skills for specific IT management solutions or			

IT technology management architectures within complex process structures				
4.1	... to demonstrate specialised IT-specific expert knowledge and expertise to design and realize specific solutions or architectures within complex structures.	To know and argue appropriate methods and systematic ways to elaborate solution designs for complex problems.	X	X
4.2	... to demonstrate their ability to apply appropriate specialised problem-solving methods to IT-specific tasks.	To know and explain the pillars of new thinking and concepts which can be used and applied to develop solutions/ solution designs for given complex problems in an industrial context.	X	X
4.3	... to demonstrate their ability to identify causal problems for IT-specific tasks in complex process structures and to solve them aligned to professional standards.	To analyse requirements and to arrive at practical solutions, students learn new concepts and will be acquainted with conceptualizations of solutions designs, to understand that a systems perspective ("purposed systems") are fundamental for research and practice, respectively. To know, explain and evaluate relevant solutions components from the rigor cycle (body of knowledge) to span the solution space for design activities. To analyse and design own solutions based on synthesis of relevant solution components.	X	X

Teaching and Learning Approach

The course is organized as a lecture in form of seminar, thus throughout the course special emphasis is met on discussion and interaction with the students. Based upon profound knowledge of theory and its implications during the lecture critical discussions are in focus. This covers discussions concerning current

challenges of digital transformation. New paradigms and strategic implications will be discussed. The course introduces approaches, concepts and contributions informing about the challenges and potential ways to arrive at solutions to master digital transformation. In the course, we follow a research-based teaching approach, which is interactive and requires your participation and engagement. You will get assigned a topic (scientific paper) that you will prepare to present in class. Together we will learn and explore about the relevant concepts and how they can be applied in real life settings. Based on cases and use cases you will learn about applicability and relevance of presented theoretical concepts to solve some of the problems ahead.

The lecture materials such as slides, case studies and study texts are accessible for students via the e-learning platform (Moodle).

An important part of the learning process is presenting, discussing, and getting feedback. Your competence to conceptualize solutions and to research independently for concepts and solution designs will be strengthened. Often solution designs are derived from eclectic research approaches. An interesting research field is design science research and in particular design action research (Böhm et al., 2014).

You will work in groups, interact with the lecturer and your fellow colleagues. Each group is invited to come to my office during my office hours or based on an individual appointment to get my feedback concerning assigned tasks and produced results, e.g. term papers and presentation slides.

Literature and Course Materials

1. Normann, R. (2001). *Reframing Business: When the Map Changes the Landscape*. Chichester: Wiley.
2. Kagermann, H.; Oesterle, H.; Jordan, J. (2011): *IT-Driven Business Models: Global Case Studies in Transformation*. John Wiley & Sons.
3. Parker, G.P.; Alstyne, Van, M.W.; Choudary, S.P. (2016): *Platform Revolution*. Norton & Company, New York London.
4. Evans, E.: *Domain-Driven Design: Tackling Complexity in the Heart of Software*. Addison-Wesley, Boston, 2004
5. Ross, J.W.; Weill, P.; Robertson, D.C. (2006): *Enterprise architecture as strategy. Creating a foundation for business execution*. Harvard Business School Press, Boston, Massachusetts.
6. Chesbrough (2011): *Open Service Innovation: Rethinking Your Business to Grow and Compete in a New Era*. Jossey-Bass.
7. 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.
8. 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.

Complementary/ Additional Reading/ Case Material (tentative to be completed / updated):

1. J.W. Ross, I.M. Sebastian, C.M. Beath, "How to Develop a Great Digital Strategy", In: MIT Sloan Management Review, Vol. 58, No. 2, Winter 2017 Issue, pp. 6-10.
2. Böhm, T., Leimeister, J.M., Möslin, K.: *Service Systems Engineering*. Business & Information Systems Engineering 6, 73-79 (2014)
3. Moore, G.: *Systems of engagement and the future of enterprise IT: A sea change in enterprise IT*. AIIM (2011)
4. Akaka, M.A., Vargo, S.L.: *Technology as an operant resource in service (eco)systems*. Information Systems and e-Business Management 12, 367-384 (2014)
5. Galliers, R.D.: *Strategizing for Agility: Confronting Information Systems Inflexibility in Dynamic Environments*. In: Desouza, K.C. (ed.) IFIP International Working Conference on the Transfer and Diffusion of Information Technology for Organizational Resilience, pp. 361-362. Elsevier (2006)
7. D.K. Rigby, "Digital-Physical Mashups". In: Harvard Business Review, September 2014.
8. M.A. Akaka, S.L. Vargo, "Technology as an operant resource in service (eco)systems", Information Systems and e-Business Management, 12 (3), 2014, pp 367–384.
9. M. Warg, P. Weiß, A. Zolnowski, R. Engel, "Service Dominant Architecture based on S-D logic for Mastering Digital Transformation: The Case of an Insurance Company", RESER Conference Proceedings, Naples, Italy, 2016.
10. Weiß, P.; Zolnowski, A.; Warg, M.; Schuster, T.: *Service Dominant Architecture: Conceptualizing the Foundation for Execution of Digital Strategies based on S-D logic*. In: Proceedings HICSS 2018, 03-06 January 2018, Hawaii.
11. Kane, G.C., Palmer, D., Phillips, A.N., Kiron, D., Buckley, N.: *Coming of Age Digitally*. MIT Sloan Management Review and Deloitte Insights June, (2018)
12. Ross, J.W., Sebastian, I., Beath, C., Mocker, M., Moloney, K., Fonstad, N.: *Designing and Executing Digital Strategies*. Thirty Seventh Int. Conf. on IS, Dublin (2016)
13. G.C. Kane, D. Palmer, A.N. Phillips, D. Kiron, N. Buckley, "Strategy, not Technology Drives Digital Transformation", MIT Sloan Management Review. Deloitte University Press. Summer, 2015, pp.3-24.
14. Arthur, W.B., *The Nature of Technology: What it is and how it evolves*. Free Press, New York, 2009.

In this course, we use scientific papers, case studies published in MIT Sloan Management Review and Harvard Business School Publishing. Some of these papers are only accessible by fees or membership (e.g. AIS conferences and journals). For those papers, we have to pay a license fee and the papers are only issued for strict personal use within the course. You are not allowed and permitted to use the material for other purposes outside this course and the assigned tasks.

Assessment

The students will prepare and realize a presentation (term projects and use cases on digital transformation). The results will be discussed in class. To get credits for the course it is necessary that the student has to complete all the team assignments and foreseen tasks. The students will realize and master a digital transformation case (term project). To get credits for the course it is necessary that the student has to complete all the individual assignments (completed full-fledged documentation for the term project including the individual presentation (PPT) and discussion in class).

Development, preparation, and documentation of digital transformation case (including documentation (term paper))	50%
Presentation and discussion of conceptual paper and case study (presentation)	50%
Total	100%

Further details are overseen and concretized during the first sessions in the class room, including assessment criteria. Important criteria are presented and will be clarified during the first lectures.

Schedule

The topics will be the base for your scientific work and successful learning process. The case studies and learning material will be carefully selected to reflect current state of play, existing vantage points and current as well as future developments in information technology with the aim to show existing links and influences on digital transformation endeavours and in consequence on IT strategy management. The list of topics is still tentative, changes can happen. The complete list will be presented at the first class session.

	Date	Term Paper or Class Topic
1	Week 1	Introduction/ Preliminaries/ Organization/ Assignments
2	Week 2	Challenges of Digital Transformation Introductory case studies and examples
3	Week 3	Success factors for Digital Transformation Introductory case studies and examples
4	Week 4	Examples of Digital Transformation Introductory case studies and examples
5	Week 5	Design and Execution of Digital Strategies Ingredients and foundations to design and execute digital strategies

6	Week 6	Design and Execution of Digital Strategies Framework and Design Principles
7	Week 7	Design and Execution of Digital Strategies Framework and Design Principles
8	Week 8	Design and Execution of Digital Strategies Framework and Design Principles
9	Week 9	Foundations of Execution Case Studies and Solution Designs
10	Week 10	Foundations of Execution Case Studies and Solution Designs
11	Week 11	Foundations of Execution Case Studies and Solution Designs
12	Week 12	Foundations of Execution Case Studies and Solution Designs
13	Week 13	Digital Business Models Towards a Taxonomy of Digital Business Models Case Studies
14	Week 14	Digital Business Models Towards a Taxonomy of Digital Business Models Case Studies
15	Week 15	Digital Business Models Towards a Taxonomy of Digital Business Models Case Studies
16	Week 16	Digital Business Models Towards a Taxonomy of Digital Business Models Case Studies
17	Week 17	Capstone Session

Academic Integrity and Student Responsibility

Students are encouraged to discuss the course, including issues raised by the assignments. However, the solutions to assignments should be individual original work unless otherwise specified. If an assignment makes you realize you don't understand the material, ask a fellow student a question designed to improve your understanding, not one designed to get the assignment done.

Any substantive contribution to your work by another person or taken from a publication has to be properly acknowledged in writing and signalled in your contribution (presentation, term paper, discussion). This also applies to an internet source. Failure to do so is plagiarism and will necessitate disciplinary action. Typically, you get not credits for the whole course although you provided other output.

The same standards regarding plagiarism apply to team endeavours as to the work of individuals, except that the author is now the entire team rather than an individual. Anything taken from a source outside the team should be properly cited (see the School's guidelines).

In case of team work, typically, one additional issue that arises from the team authorship of reports is that all team members must stand behind all reports bearing their names. In case of group work individual contributions must be indicated and made transparent to the lecturer by inserting names of the students to the respective contribution/ material. All team members have individual quality assurance responsibility for the entire project even that preparation is done as a team. If there is irreconcilable disagreement or consensus is not reachable within the team it is necessary to indicate accordingly in the reports; individual opinions can be highlighted and elaborated or alternatively can

be labelled as ``minority opinion" or "dissenting opinion" section where appropriate. In general, group assignments to prepare study results are considered by the lecturer and final grading, for example each member of the group will in general receive the same grade on a group assignment. However, there may be times when one or more members of a group will “free ride” on the work of other members. The grades of such free riders will be substantially reduced if consistent evidence of free riding is found. Please try to avoid this situation or indicate at an early stage in the project so that we can resolve the situation jointly.

All submissions are individual submissions and hence students are free to quality check and enhance as well as improve the material where it is perceived necessary.

Teaching Philosophy

The lecturer will do anything to support your individual learning process. If you have problems or questions, please speak up in class or contact me personally or send an e-mail or see me at my office. If you have problems with your progress in the course or with a teammate or your team, please see me as early as possible. The longer you wait the fewer options I will have to intervene and to help you.

Student responsibilities and class behaviour

- Read the course syllabus
- Respect each other
- Take responsibility for your action
- Demonstrate professional attitude and professionalism
- Be open and fair
- Act with honesty
- Trust each other
- Demonstrate civility
- Arrive to class on time and do not leave early
- Please let me know in advance if you miss a class
- Demonstrate and respect divergent opinions

Learning Objectives

Upon completion of the course, the students are able to

- explain and define change drivers in the environment of companies that influence digital transformation
- define digital transformation and give concrete examples
- define, repeat and illustrate what digital strategies are based on concrete examples and use cases
- explain and discuss the key messages and research domains of service systems engineering and how it contributes to synthesize and evaluate solution designs
- recall and describe a systematic way how companies can transform their value creation processes
- summarize and argue the role of enterprise architecture to overcome challenges of digital transformation
- define and discuss new capabilities that companies need to execute digital strategies

- recall, name and define pivotal concepts and their impact on digital transformation
- classify digital business models based on introduced frameworks and dimensions
- analyse and discuss digital business models based on real life examples and referring to case studies of the course
- discuss and criticize existing business models and recommend how they value propositions need to be transformed to sustain in the digital age
- combine and integrate approaches and concepts to design digital strategies, digital business models
- point out and argue how S-D logic and service systems can be the basis to derive new capabilities to master digital transformation
- propose and validate independently solution designs to solve typical problems in relation to digital transformation
- analyse and formulate concrete requirements for solutions designs following an explorative and use-case based design approach.
- Describe and discuss pros and cons of service science research to master digital transformation and recall and explain main purpose and objectives of action design research as process model; including selection and comparison of alternative approaches

Course Topics

An excerpt of relevant course topics and key issues are:

- Digitization and digital transformation
- Digital Strategies and strategic agility
- Development of a compelling digital strategy (ingredients, elements)
- Foundations and theories to back up and inspire digital strategies
- Digital business models
- Enterprise architecture and enterprise coherence
- Foundations of execution
- Service systems engineering (architecture, interaction, mobilization)
- S-D logic
- Service-led strategies
- Digitally enabled services
- Digital service innovations
- Platform-based strategies
- Enterprise capabilities
- New perspectives and new capabilities
- Case studies on digital transformation