Lectures and reading material
IN5210 - Fall 2023

Th. 6. Sep: Introduction to the course

Fr. 1. Sep: Introduction to Information Systems: Theories

Thu 7. Sep: Introduction to Information Systems: Methodology

Fr. 8. Sep: From IT to IS design and digitalization

Th. 14. Sep: From IT to IS design and digitalization

Fr. 15. Sep: Institutional Theory

Th. 21. Sep: Use of Theory in practice

Fr. 22. Sep: Systems Thinking: Soft Systems Methodology

Th. 28. Sep: Information infrastructures, digital innovation, and platforms

Th. 12. Oct: Responsible/Ethical AI

Fr. 13. Oct: Sustainable Digitalization

Th. 19. Oct: Data Justice in Research Design

Fr. 20. Oct: Digital Platforms

Th. 26. Oct: Building sustainable information systems - practical examples from implementing DHIS2 around the world

Th. 6. Sep: Introduction to the course

Lecturer: Petter Nielsen and Ragnhild Bassøe Gundersen

About the lecture:
This is an introductory lecture to the course. We explain the course's motivation, content, and practical issues.

Supplementary reading:
Nielsen, P., and Sahay, S. (2022). A critical review of the role of technology and context in digital health research. *DIGITAL HEALTH*. January 2022.

Sørensen, C. (2016). The Curse of the Smart Machine? Digitalisation and the children of the mainframe. *Scandinavian Journal of Information Systems*, 28(2), 1-12

Fr. 1. Sep: Introduction to Information Systems: Theories

Lecturer: Silvia Masiero

About the lecture:

This is an introductory lecture to the field of Information Systems (IS) and the main theoretical approaches within it. It aims to equip the students with an understanding of information systems as the social study of technology, as well as a mapping of five core thematic areas in the IS field: applications of IT to support organisational functioning; the process of systems development; information systems management; the organisational value of information systems; and the societal impact of information systems. Having done that, the students are introduced to four main theoretical approaches in the IS discipline: systems theory; organisational rationalism, structuration and critical theory. In conclusion, the lecture highlights the link between theory and methodology, the topic of the next lecture.

Theory and concepts:

Thematic areas of IS:
- Applications of IT to support organisational functioning
- The process of systems development
- Information systems management
- The organisational value of information systems
- The societal impact of information systems

Theories of IS:
- Systems theory
- Organisational rationalism
- Structuration Theory
- Critical Theory

Core reading:

Avgerou, C. (2000). Information systems: what sort of science is it?. *Omega*, 28(5), 567-579.

Supplementary reading:

Sørensen, C. (2016). The Curse of the Smart Machine? Digitalisation and the children of the mainframe. *Scandinavian Journal of Information Systems*, 28(2), 1-12.

Thu 7. Sep: Introduction to Information Systems: Methodology

Lecturer: Silvia Masiero

About the lecture:

In this lecture, the students are introduced to the three epistemologies (positivist; interpretive; critical) of information systems, as well as four methodological approaches: case studies; ethnography; action research and grounded theory. Links between epistemology, methodology and methods are illustrated, and the lecture ends with a recap that links together the concepts on methodology with those on theory, learned in the previous lecture.

Theory and concepts:

Epistemologies:
- Positivism
- Interpretivism
- Critical

Methodologies:
- Action Research
-Case Study
-Ethnography
-Grounded Theory

Core reading:

Myers, M. D. (1997). Qualitative Research in Information Systems. MISQ Discovery, 1-18.

Supplementary reading:

Aanestad, M., & Olaussen, I. (2010). Interdisciplinary research on technology. In Aanestad, M. and Olaussen, I. (eds) “IKT og samhandling i helsesektoren Digitale lappetepper eller sømløs integrasjon?” Tapir Akademisk Forlag, 2010.

Walsham, G. (2006). Doing interpretive research. *European Journal of Information Systems*, 15(3), 320-330.

Fr. 8. Sep: From IT to IS design and digitalization

Lecturer: Magnus Li

About the lecture:

The two lectures explore how successful digitalization involves the joint design and innovation of both IT and organizations. This 'sociotechnical' notion of design is a primary emphasis of the Information Systems discipline. We will examine what a sociotechnical approach to design and innovation might entail and identify the obstacles to its implementation.

Theory and concepts:

Information Systems
Sociotechnical design
Digital innovation
Digitalization management

Core reading:

Li, M. (2023). Developing a Notion of Sociotechnical Information Systems Design for Professional Digitalization Practice: A Research Agenda. Working Paper.

Supplementary reading:

Nambisan, S., Lyytinen, K., Majchrzak, A., & Song, M. (2017). Digital Innovation Management: Reinventing innovation management research in a digital world. MIS Quarterly, 41(1).

Lee, A. S. (2010). Retrospect and prospect: Information systems research in the last and next 25 years. Journal of Information Technology, 25(4), 336–348.

Th. 14. Sep: From IT to IS design and digitalization

Lecturer: Magnus Li

About the lecture:
The two lectures explore how successful digitalization involves the joint design and innovation of both IT and organizations. This 'sociotechnical' notion of design is a primary emphasis of the Information Systems discipline. We will examine what a sociotechnical approach to design and innovation might entail and identify the obstacles to its implementation.

Theory and concepts:
Information Systems
Sociotechnical design
Digital innovation
Digitalization management

Core reading:
Barthel, P., & Hess, T. (2020). Towards a characterization of digitalization projects in the context of organizational transformation. Pacific Asia Journal of the Association for Information Systems, 12(3).

Supplementary reading:
Wiener, M., Mähring, M., Remus, U., Saunders, C., & Cram, W. A. (2019). Moving IS project control research into the digital era: The “why” of control and the concept of control purpose. Information Systems Research, 30(4), 1387–1401.

Fr. 15. Sep: Institutional Theory

Lecturer: Johan Sæbø

About the lecture:

Humans do things. What we do and why and how we do things is typically following patterns, i.e. *behavior*. Institutional theory seeks to understand how patterns of behavior come to be and are upheld, and how they may change. The idea of *institutions* as sets of patterns and rules, formal and informal, is powerful to examine digitalization efforts in organizations. Institutions are everywhere in our life, like traffic rules and copyright laws, how we celebrate Christmas and go on vacation. Digital technology is constantly involved in shaping and being shaped by such institutions. Recent examples include large language models ("ChatGPT") and the institutions surrounding master theses and home exams, or digitally enabled electric scooters (relying on smartphones, GPS, online payment solutions, etc) and the institution of traffic.

Theory and concepts:

The lecture gives first a general overview of Institutional theory. The second half explores how it can be used to understand human and organizational behavior, exemplified by a case of capacity building for a health information system in Indonesia

Core reading:

Currie, Wendy L. Institutional Theory of Information Technology. Oxford University Press, 2011. https://doi.org/10.1093/oxfordhb/9780199580583.003.0008.

Chrysantina, Aprisa, Johan Ivar Sæbø, and Jens Johan Kaasbøll. "Introducing Online Training for Health Staff: An Institutional Perspective." THE ELECTRONIC JOURNAL OF INFORMATION SYSTEMS IN DEVELOPING COUNTRIES 2022 https://doi.org/10.1002/isd2.12233.

Supplementary reading:

Sahay, Sundeep, Johan Ivar Sæbø, Selamawit Molla Mekonnen, and Abyot Asalefew Gizaw. "Interplay of Institutional Logics and Implications for Deinstitutionalization: Case Study of HMIS Implementation in Tajikistan." Information Technologies & International Development 6, no. 3 (2010): pp-19.

Burton-Jones, Andrew, Saeed Akhlaghpour, Stephen Ayre, Payal Barde, Andrew Staib, and Clair Sullivan. "Changing the Conversation on Evaluating Digital Transformation in Healthcare: Insights from an Institutional Analysis." Information and Organization 30, no. 1 (March 1, 2020): 100255. https://doi.org/10.1016/j.infoandorg.2019.100255

Th. 21. Sep: Use of Theory in practice

Lecturer: Terje Aksel Sanner

About the lecture:
Use of theory and contribution to theory. Clarifying the difference between related research and theoretical perspective.

Theory and concepts:
Conducting literature review.
Related research vs theoretical perspective.
Theory, construct, concepts.

Core reading:
Watson, J. W.R.T. “Analyzing the Past to Prepare for the Future: Writing a Literature Review,” 2002.

Supplementary reading:
Sanner, Terje Aksel, Tiwonge Davis Manda, and Petter Nielsen. “Grafting: Balancing Control and Cultivation in Information Infrastructure Innovation.” Journal of the Association for Information Systems 15, no. 4 (2014): 220–43.

Fr. 22. Sep: Systems Thinking: Soft Systems Methodology

Lecturer: Sune Dueholm Müller

About the lecture:
Introduction to Systems Thinking as a problem-solving approach that involves analyzing and understanding complex systems in their entirety. The Soft Systems Methodology is presented as an exemplary Systems Thinking approach.

Theory and concepts:
Ripple effects; events, structures, mechanisms, and structures; root definitions; and conceptual models.

Core reading:
Checkland, P. B. (1988). Information systems and systems thinking: time to unite? *International Journal of Information Management*, *8*(4), 239-248.
https://www.sciencedirect.com/science/article/pii/026840128890031X

Supplementary reading:
Mathiassen, L., & Nielsen, P. A. (1989). Soft systems and hard contradictions. *Journal of Applied Systems Analysis*, 16, 75-88. http://larsmathiassen.org/wp-content/uploads/2014/10/10.pdf

Th. 28. Sep: Information infrastructures, digital innovation, and platforms

Lecturer: Egil Øvrelid

About the lecture:
Comparison between research streams (all of them framed as socio-technical perspectives) from a theoretical and practical perspective.
Cases from health care

Theory and concepts:
Information infrastructures, digital innovation, and digital platforms

Core reading:
Bygstad, B., & Øvrelid, E. (2020). Architectural alignment of process innovation and digital infrastructure in a high-tech hospital. European Journal of Information Systems, 29.

Bygstad, B. Hanseth, O. (2018) "Transforming Digital infrastructures through Platformization",Twenty-Sixth European Conference on Information Systems (ECIS 2018), Portsmouth, UK, 2018

Supplementary reading:
Henfridsson, O., Nandhakumar, J., Scarbrough, H., and Panourgias, N. 2018. "Recombination in the Open-Ended Value Landscape of Digital Innovation," Information and Organization (28:2), pp. 89-100.

Jacobides, Cennamo, Gawer (2018) Towards a theory of ecosystems, Strategic Management Journal, Vol 39, 8, 2255-2276

Th. 12. Oct: Responsible/Ethical AI

Lecturer: Miria Grisot

About the lecture:
In this lecture we will discuss an IS perspective on AI and how to understand the implications of AI for organizations, learn the current debates about the design and use of AI, and develop a critical understanding on AI.

Theory and concepts:
Data-driven work
Augmentation and automation
Human-in-the-loop

Core reading:
Grønsund, T., & Aanestad, M. (2020). Augmenting the algorithm: Emerging human-in-the-loop work configurations. The Journal of Strategic Information Systems, 29(2), 101614.

Waardenburg, L., Sergeeva, A., & Huysman, M. (2018, December). Hotspots and blind spots. In Working Conference on Information Systems and Organizations (pp. 96-109). Springer, Cham.

Supplementary reading:
Tarafdar, M., Beath, C. M., & Ross, J. W. (2017). Enterprise cognitive computing applications: Opportunities and challenges. It Professional, 19(4), 21-27.
Raghupathi, W., & Raghupathi, V. (2021). Contemporary Business Analytics: An Overview. Data, 6(8), 86.

Rahwan, I. (2018). Society-in-the-loop: programming the algorithmic social contract. *Ethics and information technology*, *20*(1), 5-14.

Raisch, S., & Krakowski, S. (2021). Artificial intelligence and management: The automation–augmentation paradox. Academy of Management Review, 46(1), 192-210.

Fr. 13. Oct: Sustainable Digitalization

Lecturer: Troels Sune Mønsted

About the lecture:
Digitalization has recently gained widespread interest as an approach to realize sustainable developments in society. In this lecture we will look into some of the key definitions of sustainable digitalization that exist as well as the implications that the different theoretical perspectives have on actual development and design of technologies and practices. You will be introduced to two main approaches, 'sustainable digitalisation' and 'digital sustainability', and discuss the differences between these two.

At the lecture we will investigate the case «Tidlig Opsporing og Forebyggelse» (Early Detection and Prevention) which was a Danish initiative aimed at developing a digital platform for attracting citizens to preventive healthcare offers. Through this case we will discuss the challenges of balancing the interest for serving important sustainability goals (in this case health and equality) with the long-term scalability of the digital platform.

Theory and concepts:
The lecture will revolve around two central concepts:

- Sustainability *in* design (making the digital innovation longer-lasting)
- Sustainability *through* design (influencing sustainable lifestyles, decision-making or developments)

Core reading:
DiSalvo et al (2010)
Dourish (2010)
Meurer et al. (2018)

Th. 19. Oct: Data Justice in Research Design

Lecturer: Silvia Masiero

About the lecture:
In this lecture, the students are introduced to core consideration of how to enact data justice (fairness in the way people are visualised, represented and treated through their production of digital data) in the process of designing and executing IS research. We go through considerations of justice towards participants, research ecosystems and the public opinion, also reviewing scenaria in which achieving a just research design can be problematic.

Theory and concepts:
Data justice:
-Data visualisation
-Data representation
-Data-based treatment

Theories:
-Principles for design justice (Design Justice Network)
-Pillars of data justice (Taylor, 2017)

Core reading:
Taylor, L. (2017). What is data justice? The case for connecting digital rights and freedoms globally. *Big Data & Society*, 4(2), 1-14.

Supplementary reading:
Costanza-Chock, S. (2020). *Design justice: Community-led practices to build the worlds we need*. The MIT Press. Chapter 1.

Dencik, L., Hintz, A., Redden, J., & Treré, E. (2019). Exploring data justice: Conceptions, applications and directions. *Information, Communication & Society*, 22(7), 873-881.

Fr. 20. Oct: Digital Platforms

Lecturer: Alexander Moltubakk Kempton

About the lecture:

In this lecture, we will discuss digital platforms as a socio-technical pattern for organizing technology and people. We will go through different forms of platforms – transaction platforms (like Uber) and innovation platforms (like Android) – and we will discuss why the platform pattern has become a dominant way to organize both the way innovation and transactions between people occur.

During the lecture, the platform pattern will be explained using typical consumer-oriented cases like iOS and Uber. But we will also go into how the pattern is used to solve problems in other domains, exemplified by cases in the Norwegian public sector.

Theory and concepts:

Digital platforms
Boundary Resources
Platform Ecosystems
Network Effects

Core reading:

Gawer, Annabelle, and Michael A. Cusumano. "Platform leaders." *MIT Sloan management review* (2015): 68-75.

Supplementary reading:

De Reuver, Mark, Carsten Sørensen, and Rahul C. Basole. "The digital platform: a research agenda." *Journal of information technology* 33.2 (2018): 124-135.

Th. 26. Oct: Building sustainable information systems - practical examples from implementing DHIS2 around the world

Lecturer: Anne Asmyr Thorseng

About the lecture:
Designing, building and supporting information systems that work over time (sustainability) requires consideration to both social, economic and technological aspects - many covered through previous lectures in this course. In this lecture we will look at practical examples from implementing DHIS2 (www.dhis2.org) for various use cases in health and education. We will discuss the "invisible" work that is important to support sustainable systems and how concepts from IS theory are useful in this day to day work.

Theory and concepts:
Sustainable development and resilience
Practical aspects of planning of information systems projects

Core reading:
Amarakoon, P., Braa, J., Sahay, S., Magodarathna, L. and Moorthy, R., (2021). Building Resilient Information Systems for Child Nutrition in Post-conflict Sri Lanka during COVID-19 Pandemic, https://arxiv.org/ftp/arxiv/papers/2108/2108.09726.pdfl

Supplementary reading:
The use of DHIS2 for contact tracing Covid-19 cases in Norwegian municipalities

WHO bulletin on the implementation of DHIS2 in Iraq in 2022

Other DHIS2 stories: https://dhis2.org/category/impact-stories/