Fundamentals of Design Science Research (IS 801)

Syllabus

Course Description
Since the 90’s information and communication technology (ICT) has fundamentally changed the way organizations are conducting business. Organizations and the entire society are challenged with the effective design, delivery, use, and impact of ICT. The IS discipline addresses this challenge and investigates the phenomena that emerge when the technological and the social system interact (Lee, 2001). A decade ago an intensive discussion on the relevancy and impact of IS research has started (Benbasat and Zmud, 1999; Davenport and Markus 1999; Applegate and King, 1999; Gill and Bhattacherjee, 2009). In this context, several scholars (e.g., Orlikowski and Iacono, 2001) have suggested that the IS community returns to an exploration of the “IT” that underlies the discipline. Design research has potentials to address the above mentioned challenge (Gregor, 2009, Purao et al., 2008). Design research as such is nothing new; it can be found in many disciplines and fields, notably Engineering and Computer Science, using a variety of approaches, methods, and techniques.

Course Objectives
The course intends to introduce PhD students to the exciting field of design science research in IS. It wants to provide insights into multiple perspectives of DSR: e.g., the theoretical foundation of DSR, frameworks and methodologies to conduct DSR and the contribution of DSR in form of design theories. Furthermore, the course will discuss actual design science research projects published recently. With this knowledge students will be enabled to assess the rigor and relevance of DSR in general, but also be prepared to plan and execute their own design-oriented research projects successfully.

Course Requirements
The course is offered as part of the Center for Doctoral Studies in Business (CDSB) at the Graduate School of Economics and Social Sciences (GESS). The course can only be attended by PhD students of the Business School at the University of Mannheim. Furthermore, MMM students participating in the Y-Model are also eligible to attend the course. The number of course participants is at minimum 4 and at maximum 8 students.

Grading
The course has the following grading components:
1. Summary of mandatory session papers (20%)
2. Session Presentation (50%)
3. Review of contemporary design science paper (30%)

The summary of the mandatory papers is due right before the corresponding session. Each student is also required to give a presentation on an assigned paper package and lead a following discussion on its content. In addition, students are given a post-assignment in which they are required to write a review on a current design science paper. The review should reflect on the paper under the light of the previous discussed topics.

Registration and Organization
Please register via GESS. For specific dates and location of the lecture, please check the website or portal. All questions regarding content, grading and organization can be answered by the associate organizer of this class.

Course Material
Course material is provided in the form of a list of reference papers. Furthermore, the design research books by Hevner and Chatterjee (2010) and Vaishnavi and Kuechler (2007) are a valuable addition to the class.
Course Outline

<table>
<thead>
<tr>
<th>Session</th>
<th>Slot</th>
<th>Topics</th>
<th>Readings in suggested order</th>
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</table>
| Kick-Off & Introduction Session | Kick-Off & Organizational Information and Introduction to Design Science Research | • Introduction  
• Organizational Information and Grading  
• Assignments  
• Q&A  
• Introduction to the design science approach on information systems  
• Overview of different conceptualization, frameworks and design theories | Mandatory:  
| Session I: Key Elements of Design Science Research | Conceptualization of Design Science Research | • Ontology of Design Science  
• Epistemology of Design Science  
• The artifact  
• Presentation and discussion of (*) by students | Mandatory for reading and summary:  
Recommended for reading:  
### Design Science Frameworks and Methodology

- Overview and comparison of the different DSR frameworks
- Different phases in design science research
- Use of methods in DSR
- Presentation and discussion of (*) by students

**Mandatory for reading and summary:**

**Recommended for reading:**

### Information Systems Design Theory

- Overview and comparison of the different DSR frameworks
- What is a design theory?
- How to build a design theory?
- Examples of design theories
- Presentation and discussion of (*) by students

**Mandatory for reading and summary:**

**Recommended for reading:**
| Session II: Design Science Research Examples | DSR Examples 1 | Examples for high quality DSR published in top journals | Mandatory for reading and summary:  
|---|---|---|---|
| DSR Examples 2 | Examples for high quality DSR published in top journals | Presentation and discussion of (*) by students | Mandatory for reading and summary:  
| DSR Examples 3 | Examples for high quality DSR published in top journals | Presentation and discussion of (*) by students | Mandatory for reading and summary:  

**Further References**  


