Designing Human Technologies

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Outline

- Introduce the theme ‘Designing Human Technologies'
- Design as main subject area at the university
- How we approach this at Roskilde University
- Present some of our shared empirical experiences - when engaging with or studying design processes
- Inspire your IS “horizon” and the discussions at IRIS 37/SCIS 5

Design schools traditionally rooted in practice now increasingly implement academic criteria (Simonsen et al. 2014)
The framework is accompanied by seven general guidelines “in order to illustrate how authors, reviewers, and editors can apply them consistently” (p. 76).

Hevner et al./Design Science in IS Research, MIS Quarterly, 28(1), 2004
Designing Human Technologies

- Designing as reality construction
- Designing as processes and practices
- Designing as knowledge development
- Designing as normative interventions
- Designing as embedding values, ethics, politics, …
- … as taking responsibility for the design, intervention, reality construction, …

design does not build on a priori knowledge, but continuously needs to reflect on previous design experiences and its own history (Simonsen et al. 2014)
Designing Human Technologies
- at Roskilde University

- New main subject area initiated in 2008 as new bachelor program
- Researchers gather and initiate ‘grass root’ community
- Designing (constructive), Human (participation), Technologies (ICT, experiences, urban planning, climate adaption, etc.)
- Situated Design Methods, MIT Press (2014)
- 46 researchers reflections on 33 design projects

Design as a science where reflections on aesthetics, ethics, values, connections to politics, and strategies for enabling a better future should be recognized as legitimate (Simonsen et al. 2014)
Design as ‘emerging’ change

Design Research, Routledge (2010), Figure 14.3, p. 207

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Design as ‘emerging’ change

Typical IS/DSR/ISD focus

Iterative design

Design idea/vision → Evaluation → Design in use

Typical technology evaluation (STS) focus
Design as ‘emerging’ change

- Improvisational change management
- Generic, configurable IS platforms; Industrialized ISD (Bansler and Havn 1994; 1996)
- Business logic standards (e.g. HL7, SNOMED-CT)
- Extending the iterative approach, pilot implementations, effects-driven IT development (Simonsen and Hertzum, 2012; Hertzum et al., 2012, Hertzum and Simonsen, 2011)

Orlikowski and Hofman, 1997

Figure 1 An Improvisational Model of Change Management over Time

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Iterative design

Design idea/vision

Evaluation

Design in use

(Simonsen and Hertzum, 2010)
<table>
<thead>
<tr>
<th>Change</th>
<th>Evaluation method</th>
</tr>
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<tbody>
<tr>
<td><strong>Anticipated-realized</strong></td>
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<tr>
<td>Better overview of patients</td>
<td>Mental workload/TLX</td>
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<tr>
<td>Better coordination</td>
<td>Counting # missing pieces of inf. &amp; messages to pass on</td>
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<td><strong>Anticipated-curtailed</strong></td>
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<tr>
<td>Improved NIP recordings</td>
<td>Record audit (paper and EPR)</td>
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<tr>
<td>Impr. med.-treatment/nursing plans</td>
<td>Rating scale</td>
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<tr>
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<tr>
<td>From oral reporting to collective reading of EPR</td>
<td>Observation</td>
</tr>
<tr>
<td>Collective investigation of the EPR</td>
<td>Observation</td>
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<td>Observation and focus-group interview</td>
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Design idea/vision

Evaluation

Iterative design

Design in use

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IRIS 37/SCIS 5
Designing Human Technologies
- at Roskilde University

- Joint ‘project’ developing new bachelor program, teaching and supervising students
- Strategic research initiative funding collaborative projects
- Presenting and sharing empirical experiences from engaging with or studying design processes
- Facilitate a systematic empirical approach to theorizing ‘Designing Human Technologies’

Design as a science where reflections on aesthetics, ethics, values, connections to politics, and strategies for enabling a better future should be recognized as legitimate (Simonsen et al. 2014)

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Themes from our collective reflections

Change
- Planned
- Emergent
- Opportunity-based
- Sustainable

Participation
- Different knowledges
- Mutual learning
- Joint goal negotiation
- Infrastructuring

Situatedness
- Situated knowledges
- Situated learning
- Situated action
- Situating contexts

Scope
- Personal
- Collaborative
- Organizational
- Societal

Simonsen, Hertzum, Nielsen, Riis, 2014
Situated Design Methods

- Basic reading for interdisciplinary design programs
  - Requested from our students; acknowledged by reviewers and publisher
- 18 diverse situated design methods
- Methods for projects, collaborative processes, aesthetic experiences, and for sustainability
- Chapter structure: What-why-where-how; empirical case example; summarizing method figure
Example: Collective Analysis of Qualitative Data

Combining affinity diagramming and diagnostic maps

- Inductive collective GT analysis of large amounts of qualitative data
- Abductive collective process supporting intervention for change

Case: Large EMR implementation with unexpected user experiences
Collectively made diagnostic mapping

<table>
<thead>
<tr>
<th>Problem</th>
<th>Causes</th>
<th>Consequences</th>
<th>Ideas for solutions</th>
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Collectively made affinity diagramming

Categories

Codes

Qualitative data from observation, interviews, etc.

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Situated Design Methods

1. Characterize implementation project
2. Decide implementation roles
3. Determine the whole product
4. Decide implementation strategy
5. Determine implementation risks
6. Outline implementation plan
Situated Design Methods

(Chapter 7, Christrup)
Situated Design Methods
(Chapter 11, Samson)
Situated Design Methods

(Chapter 13, Kristiansen)
Situated Design Methods

(Chapter 10, Frandsen and Petersen)
Situated Design Methods
(Chapter 17, Hansen and Søndergård)

The Danish regime of mobility
- Individual mobility, unlimited range, commuter society, summer resort commuting,...
- Neoliberal regime of public transportation,

Dominant Danish BEV design space
- Shared rules (problem: agendas, search heuristics, expectations, technical models): individual car,
  technical substitution of "first car"/market driven, smart grid integration ...
- Network – coalitions of actors: Energy companies,...
- Institutions: tax exemption of BEV (not hybrid), price structure onelpower, ...
- Infrastructure: Charging/battery exchange stations, free parking/parking lots ...

Alternative BEV design space
- Shared rules: urban mobility service, fleet car,...
- Network: mobility service
- Institutions: tax exemptions
- Infrastructure: WEBIT...

Intervention
- Learning
- Refining

Structures coordinates
Better Place
Structure
Reinterpreted
Clear drive

Object

Transition of

Socio-technical systems
Aligned systems of technology, production systems, markets, user practices, policies, infrastructures, and cultural meanings

Social practices
Specific configurations of "material artefacts, conventions, and competences"

Reconfigured socio-technical systems and social practices

Design practice

Designing for sustainability
Normative/Intentional design
Reflexive design, meta design

Context

Enacted within and changing

Regimes
Dominant practices, norms, and shared assumption structuring the conduct of actors

Design spaces
Specific (situatd) configurations of agendas/visions, institutions, actors, and technologies

Alternative design spaces
Situated Design Methods

(Chapter 18, Christensen, Kjær, and Lybæk)
Summary

- Introduce the theme 'Designing Human Technologies'
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References

- Simonsen, J., J. O. Bærenholdt, M. Büscher, and J. D. Scheuer: Design Research: Synergies From Interdisciplinary Perspectives, Routledge, 2010