Designing Human Technologies

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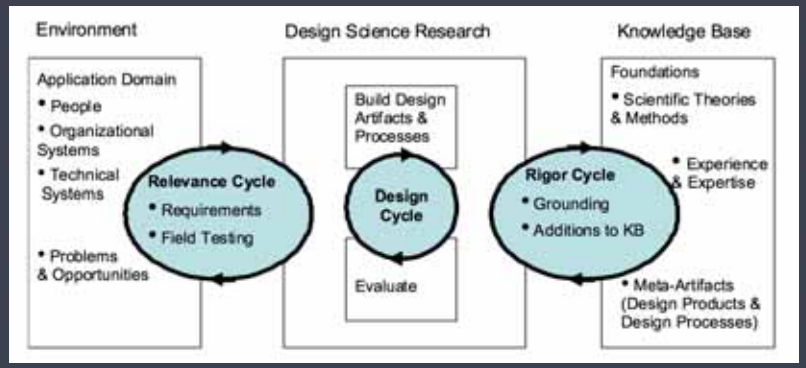
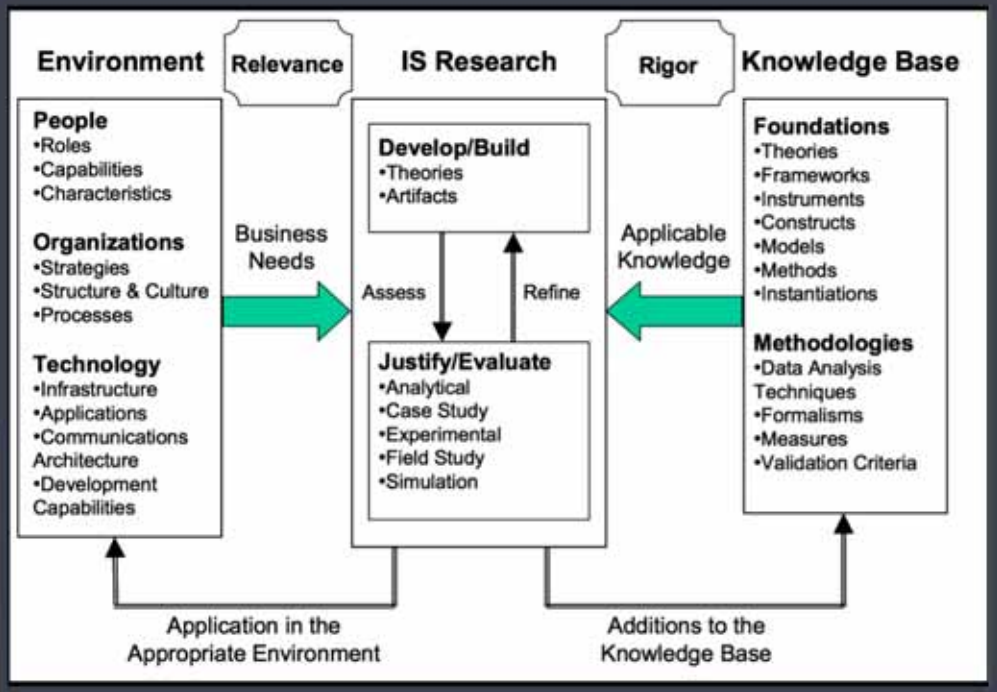
Outline

design schools
traditionally rooted in practice
now increasingly implement
academic criteria
(Simonsen et al. 2014)

- 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

IS and Design Science Research





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

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 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, …

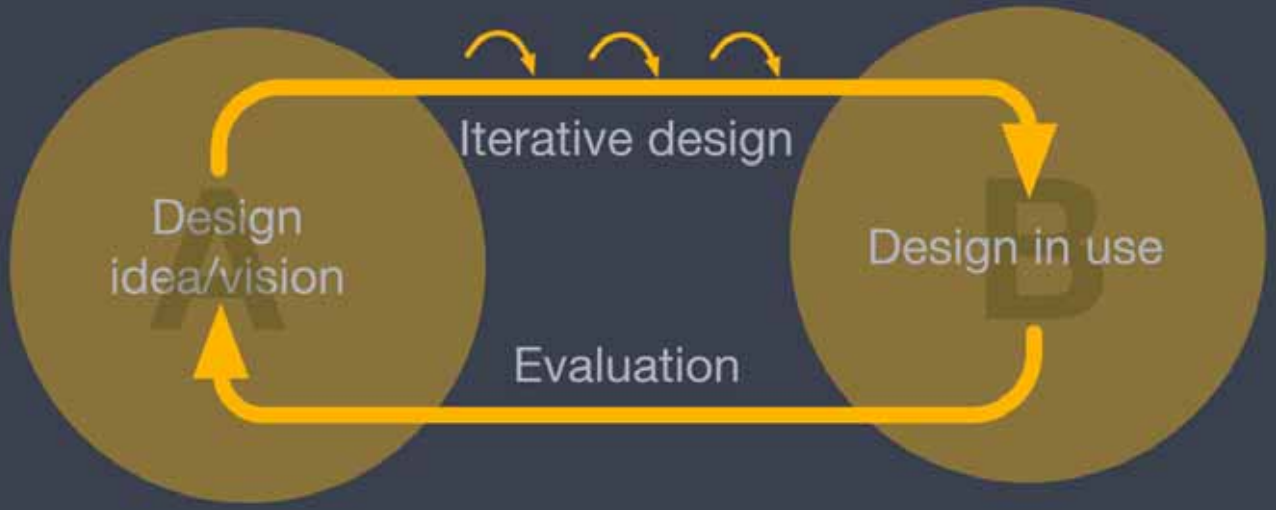
Designing Human Technologies

- at Roskilde Universtity

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)

- 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.)
- Design Research, Routledge (2010)
- Situated Design Methods, MIT Press (2014)
- 46 researchers reflections on 33 design projects

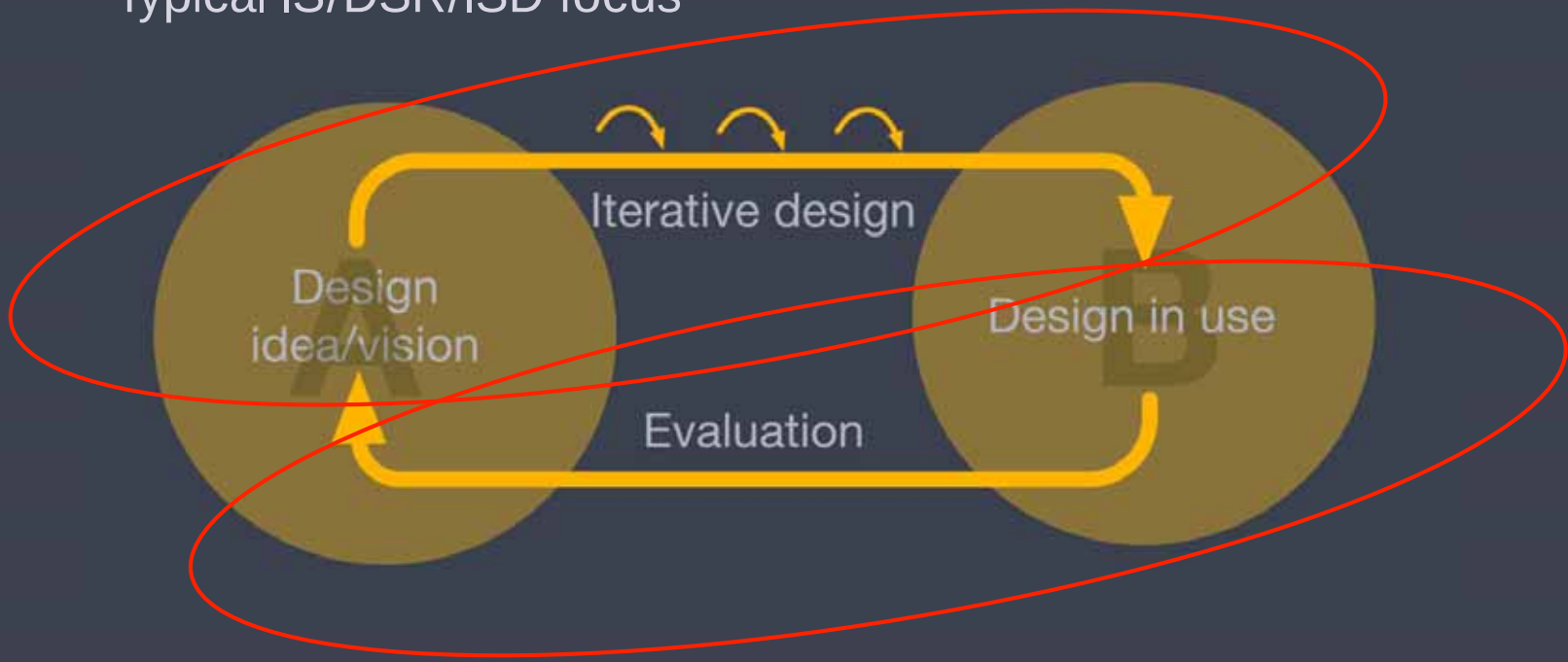
Design as ‘emerging’ change



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

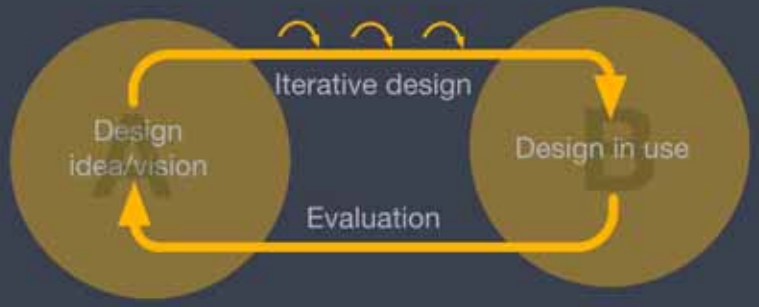
Design as ‘emerging’ change

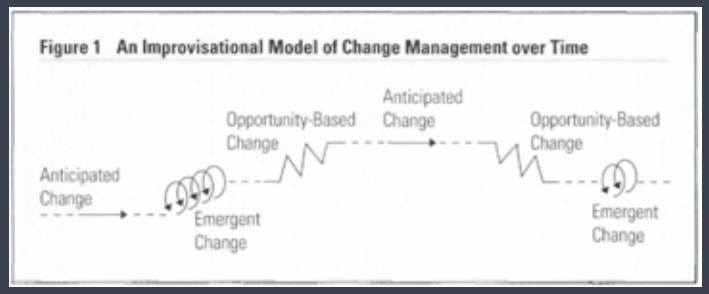
Typical IS/DSR/ISD focus



Typical technology evaluation (STS) focus

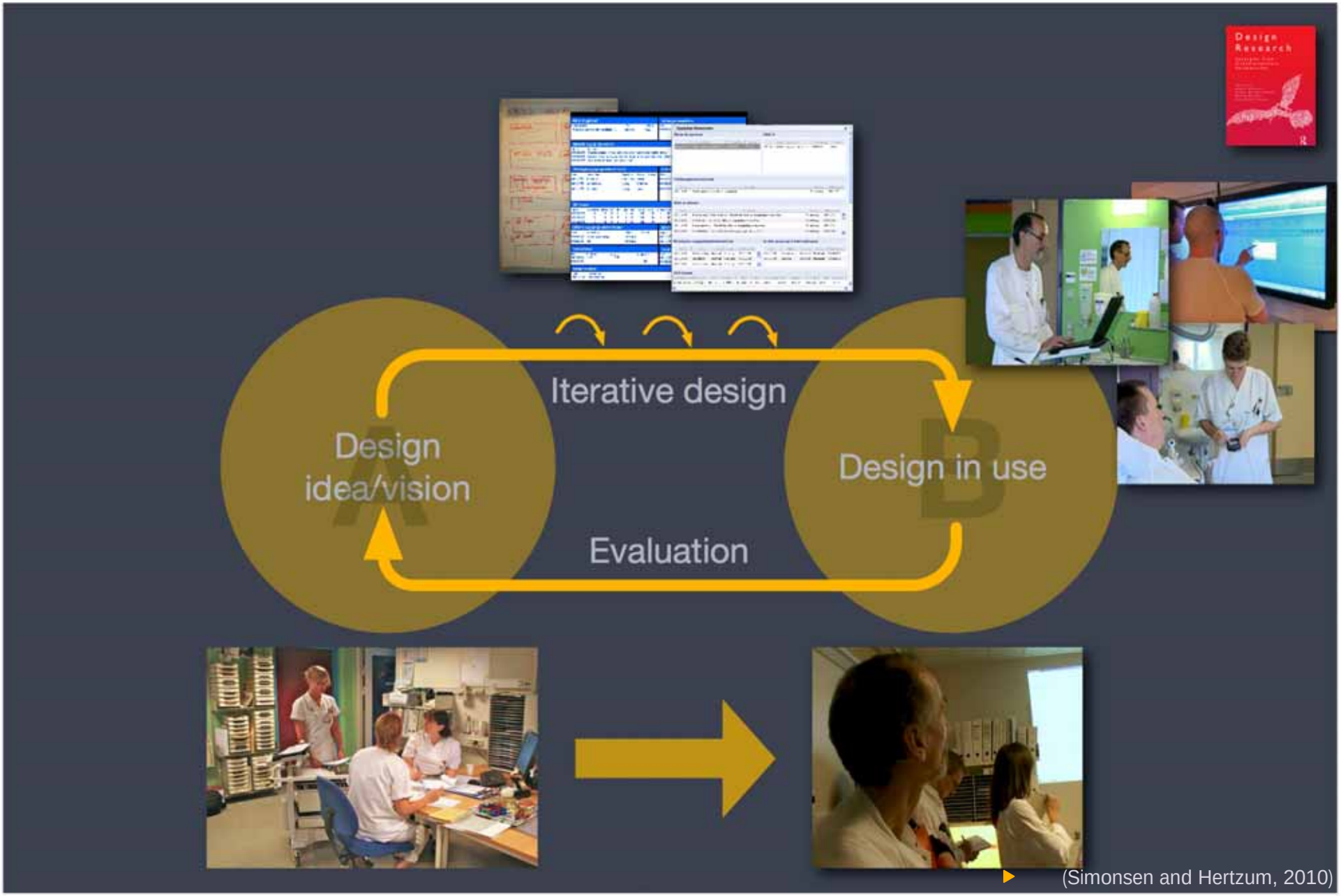
Design as ‘emerging’ change





Orlikowski and Hofman, 1997

- 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)


Design Research
Iterative design
Design idea/vision
Design in use
Evaluation
A
B
(Simonsen and Hertzum, 2010)

	Change	Evaluation method
Anticipated -realized	Better overview of patients	Mental workload/TLX
	Better coordination	Counting # missing pieces of inf. & messages to pass on
Anticipated -curtailed	Improved NIP recordings	Record audit (paper and EPR)
	Impr. med.-treatment/nursing plans	Rating scale
Emergent	From oral reporting to collective reading of EPR	Observation
	Collective investigation of the EPR	Observation
Opportunity -based	Sharing nursing observations during the team conference	Observation and focus-group interview
	Task list supporting coordination	Observation and focus-group interview

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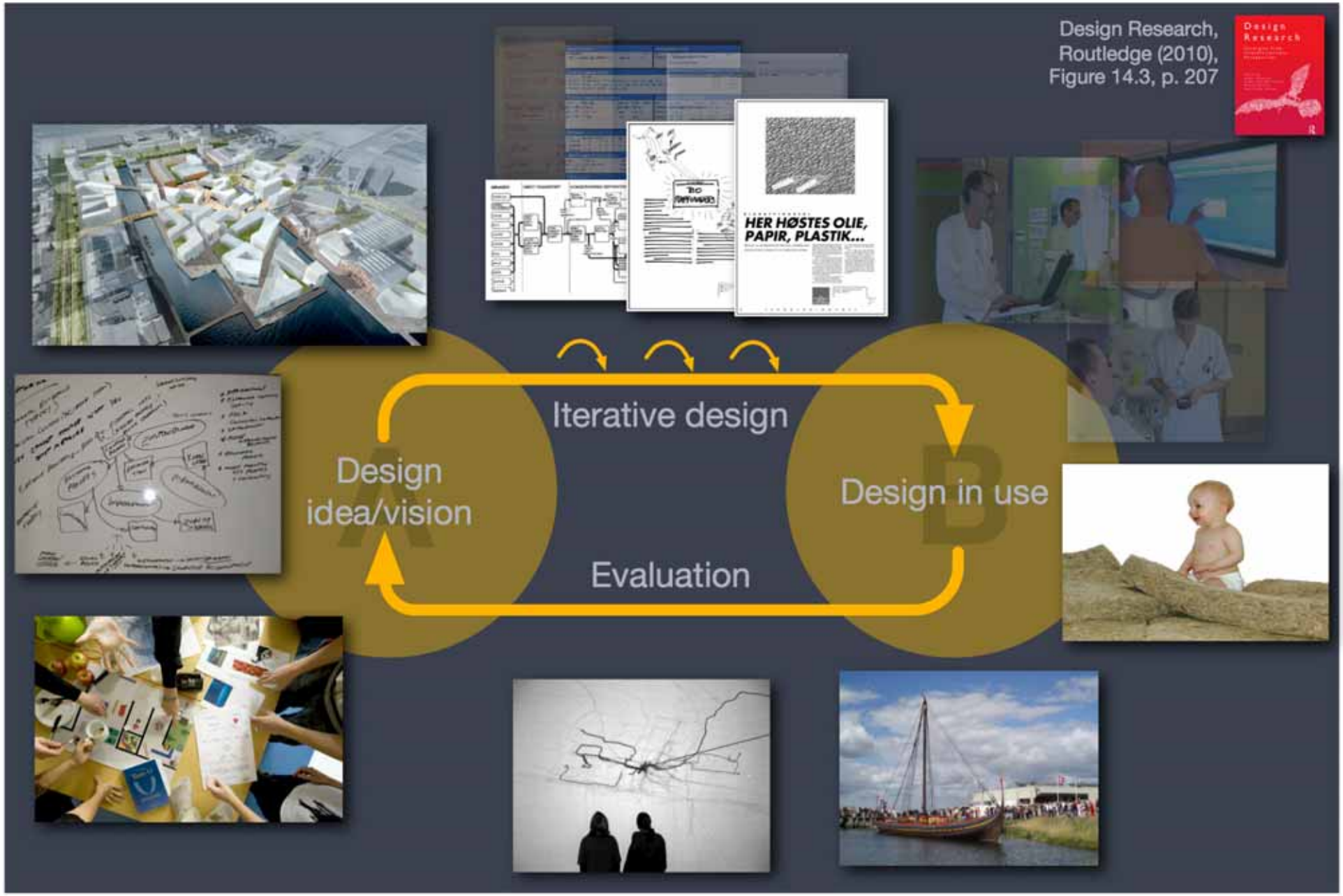
Quantitative assessment & documentation

Qualitative identification & evaluation


Design Research,
Routledge (2010),
Figure 14.3, p. 207
HER HØSTES OLIE,
PAPIR, PLASTIK...
Iterative design
Design
idea/vision
Design in use
Evaluation

Designing Human Technologies

- at Roskilde Universtity

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)

- 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’

designinghumantechnologies.dk

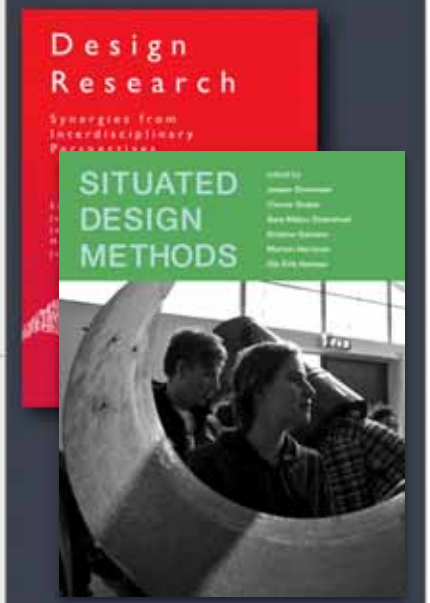
Themes from our collective reflections

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

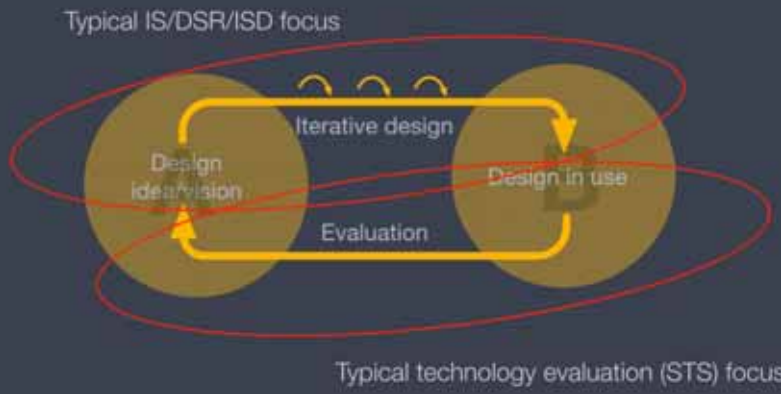


Simonsen, Hertzum, Nielsen, Riis, 2014

Situated Design Methods

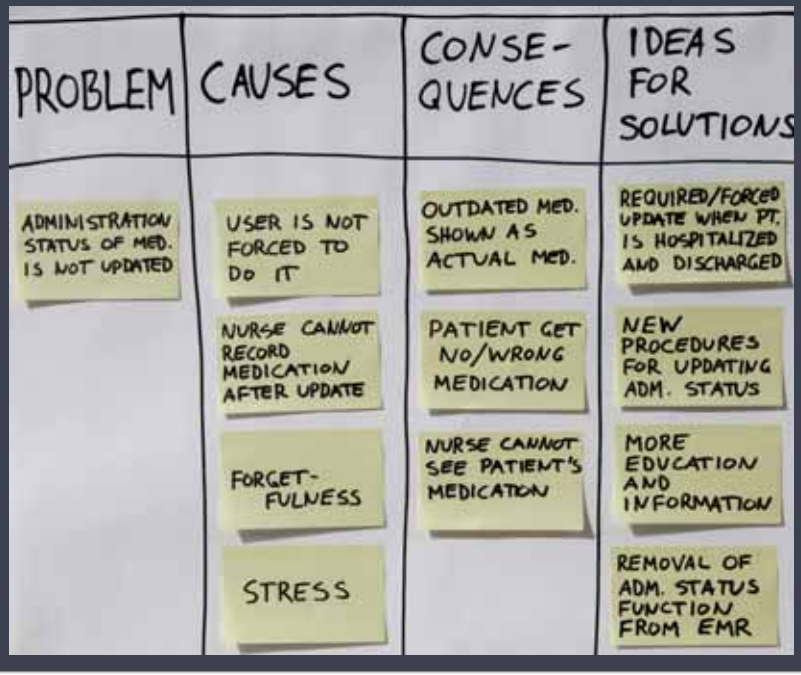
- Basic reading for interdisciplinary design programs
  - Requested from our students; acknowledged by reviewers and publisher
- 18 diverse situated design methods
- Methods for projects, collaborative processes, aesthetic experiences, and for sustainability
- Chapter structure: What-why-where-how; empirical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

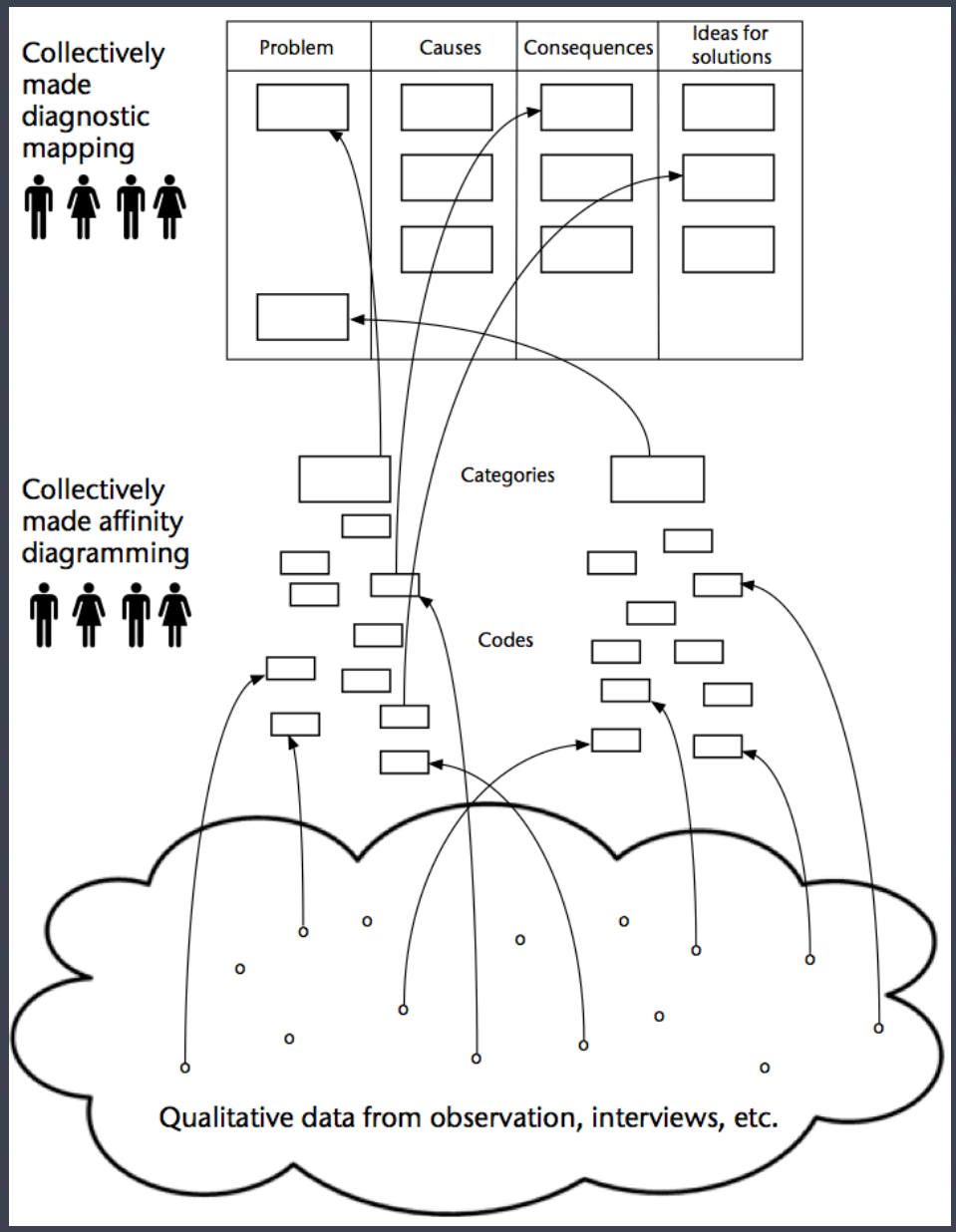
Example: Collective Analysis of Qualitative Data (Chapter 6, Simonsen and Friberg)



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

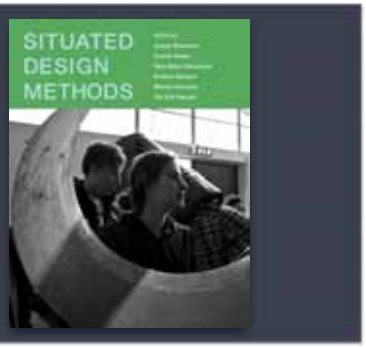
- Combining affinity diagramming and diagnostic maps
  - Inductive collective GT analysis of large amounts of qualitative data
  - Abductive collective process supporting intervention for change
- Case: Large EMR implementation with unexpected user experiences

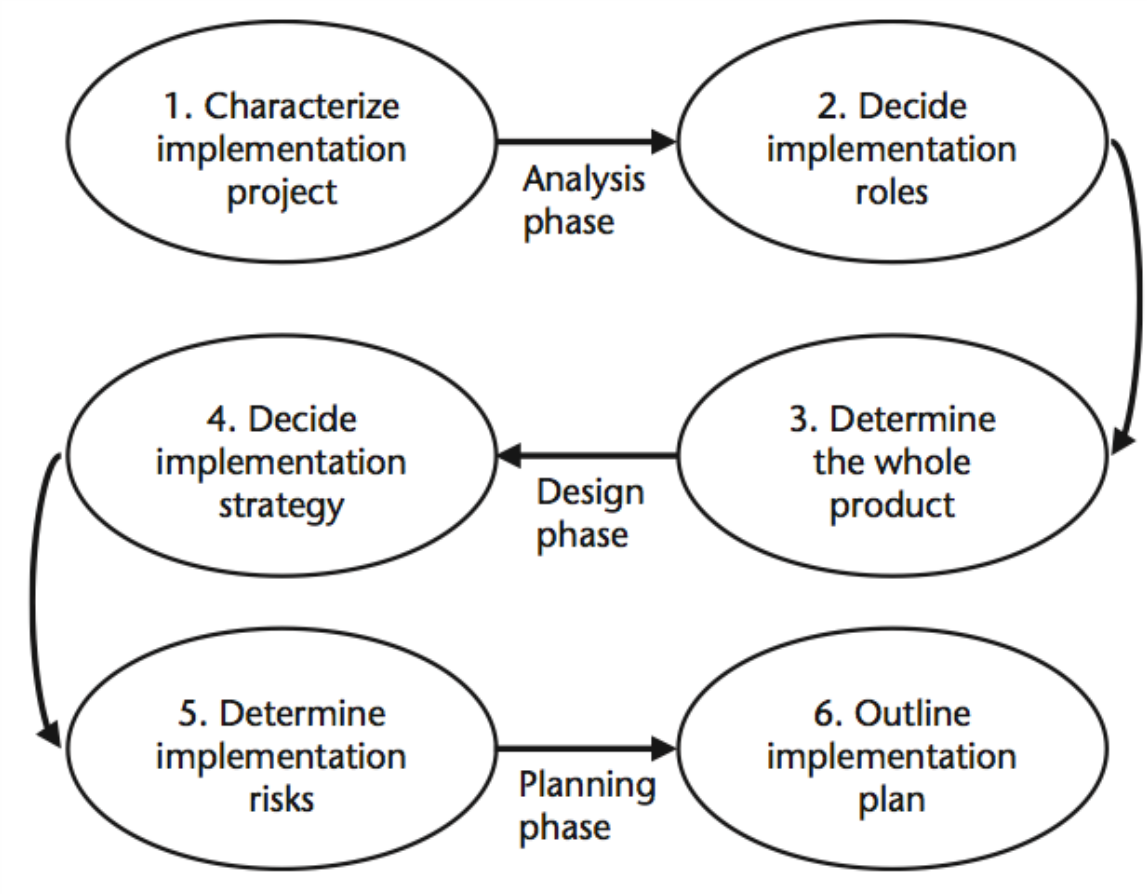

PROBLEM
CAUSES
CONSE-QUENCES
IDEAS FOR SOLUTIONS
ADMINISTRATION STATUS OF MED. IS NOT UPDATED
USER IS NOT FORCED TO DO IT
NURSE CANNOT RECORD MEDICATION AFTER UPDATE
FORGET-FULNESS
STRESS
OUTDATED MED. SHOWN AS ACTUAL MED.
PATIENT GET NO/WRONG MEDICATION
NURSE CANNOT SEE PATIENT'S MEDICATION
REQUIRED/FORCED UPDATE WHEN PT. IS HOSPITALIZED AND DISCHARGED
NEW PROCEDURES FOR UPDATING ADM. STATUS
MORE EDUCATION AND INFORMATION
REMOVAL OF ADM. STATUS FUNCTION FROM EMR


Collectively made diagnostic mapping
Problem
Causes
Consequences
Ideas for solutions
Collectively made affinity diagramming
Categories
Codes
Qualitative data from observation, interviews, etc.

Situated Design Methods

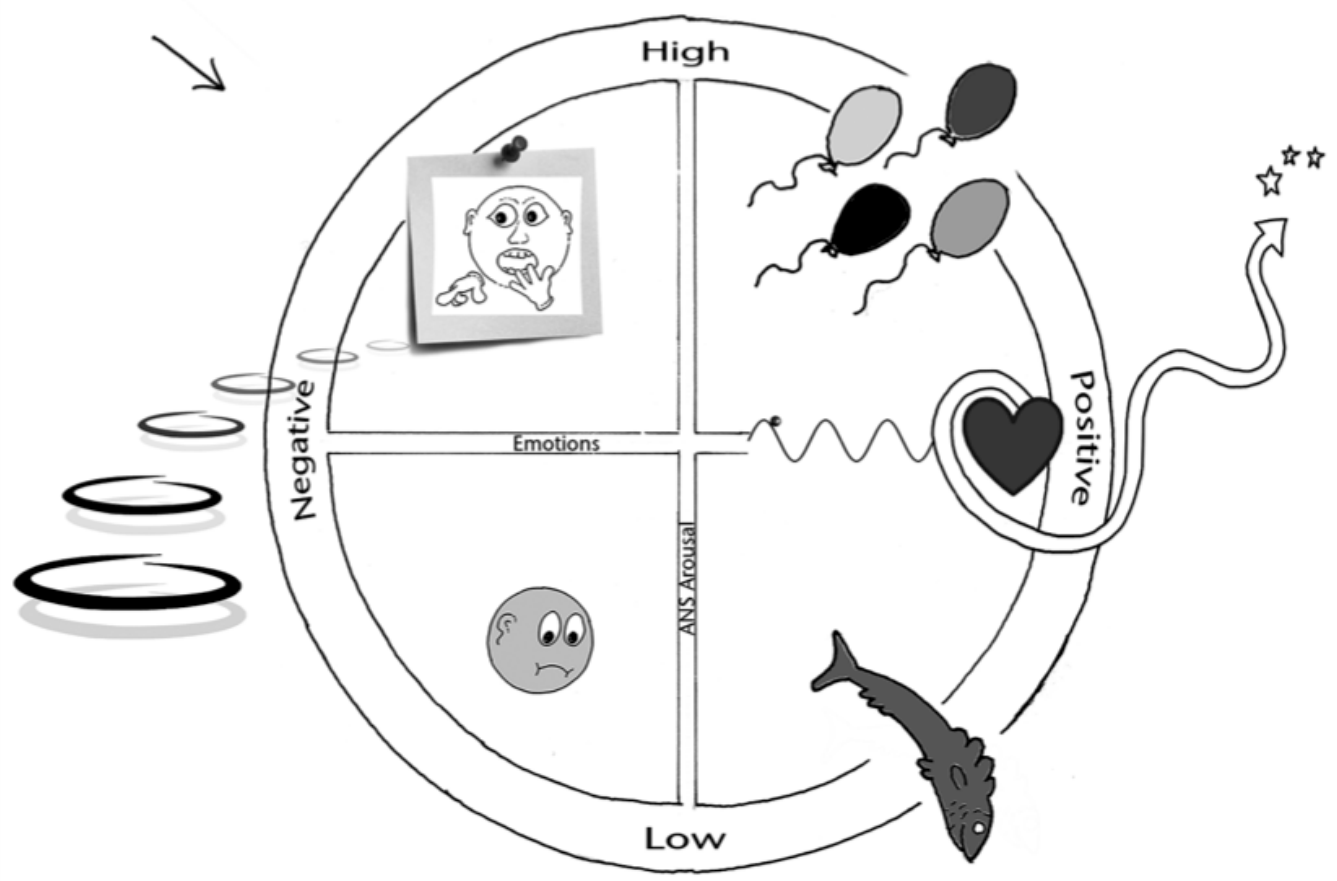
(Chapter 5, Pries-Heje, V enable, and Baskerville)





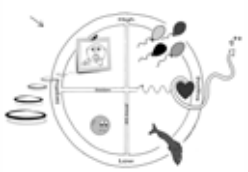
Situated Design Methods

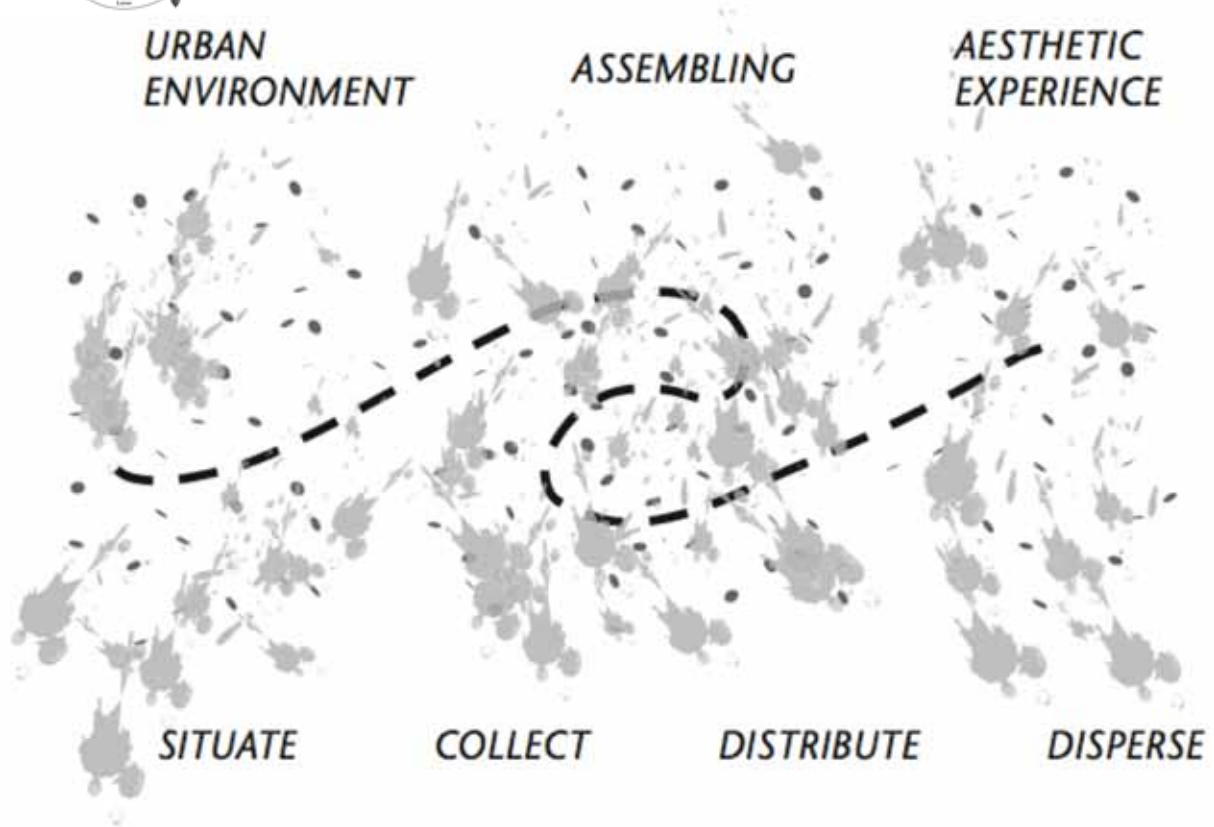
(Chapter 7, Christrup)



Situated Design Methods

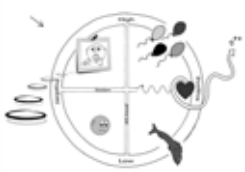
(Chapter 11, Samson)

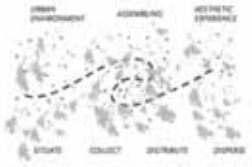


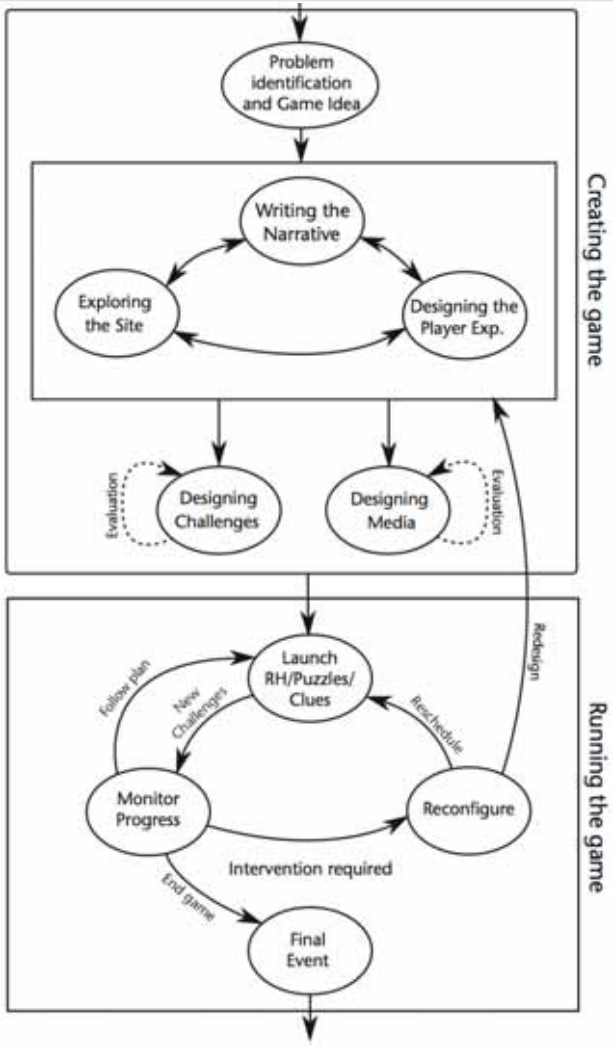


Situated Design Methods

(Chapter 13, Kristiansen)

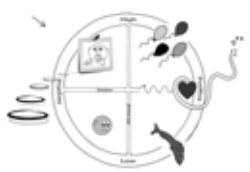


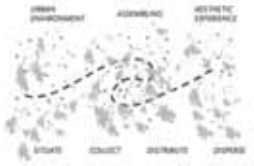


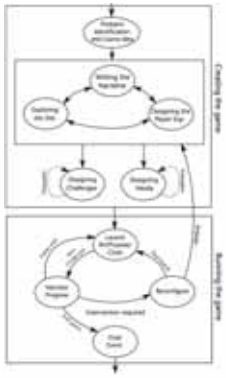


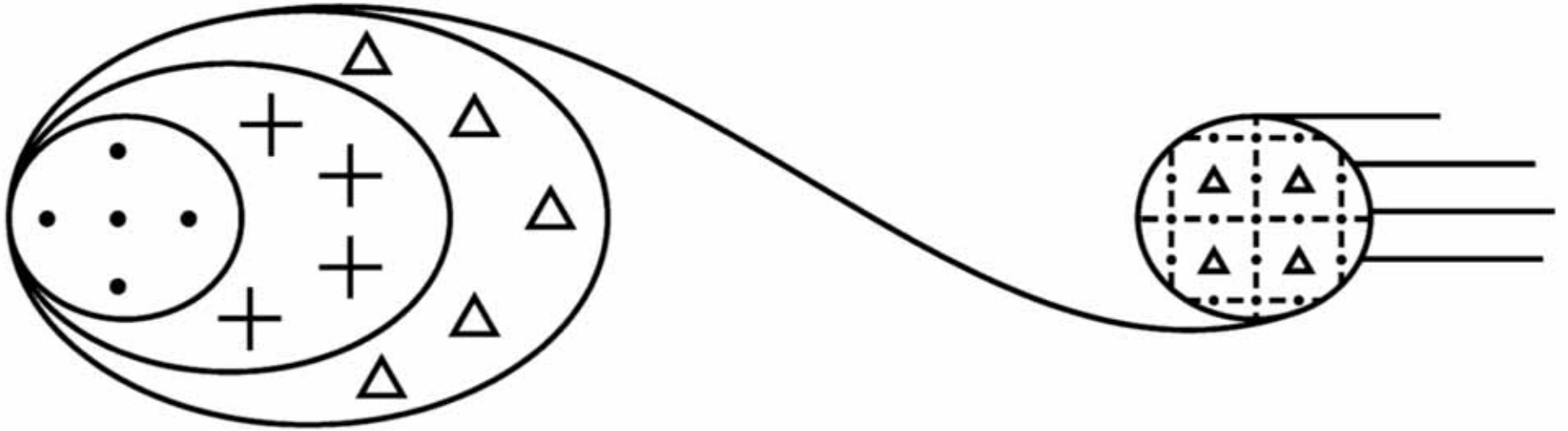
Situated Design Methods

(Chapter 15, Strandvad)



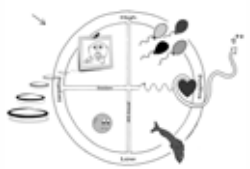


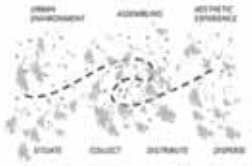




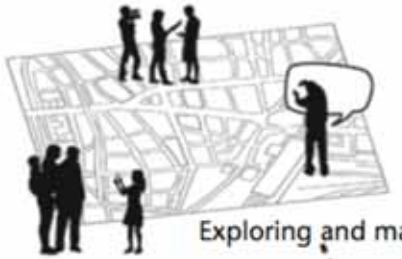
Situated Design Methods

(Chapter 10, Frandsen and Petersen)

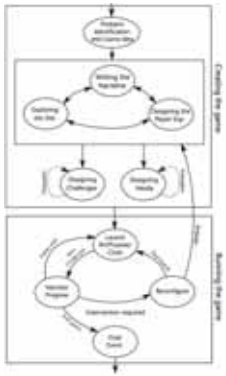




Testing and evaluating



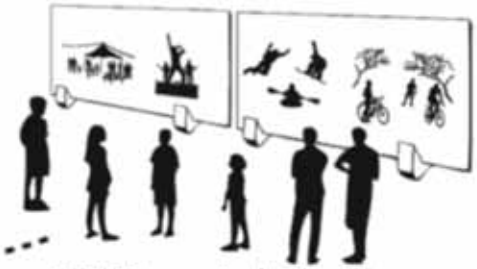
Exploring and mapping



Inaugurating and publicizing

Developing ideas

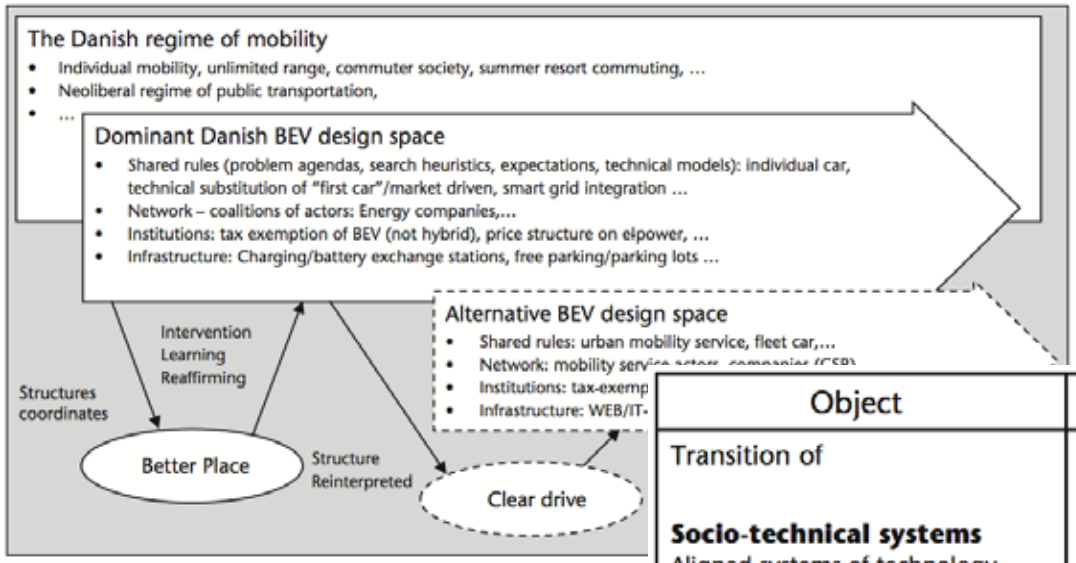
Prototyping and co-constructing

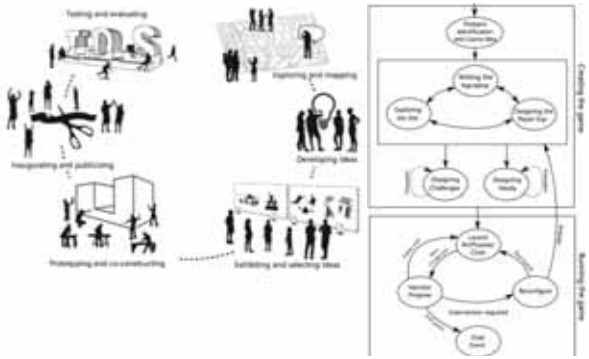


Exhibiting and selecting ideas

Situated Design Methods

(Chapter 17, Hansen and Søndergård)

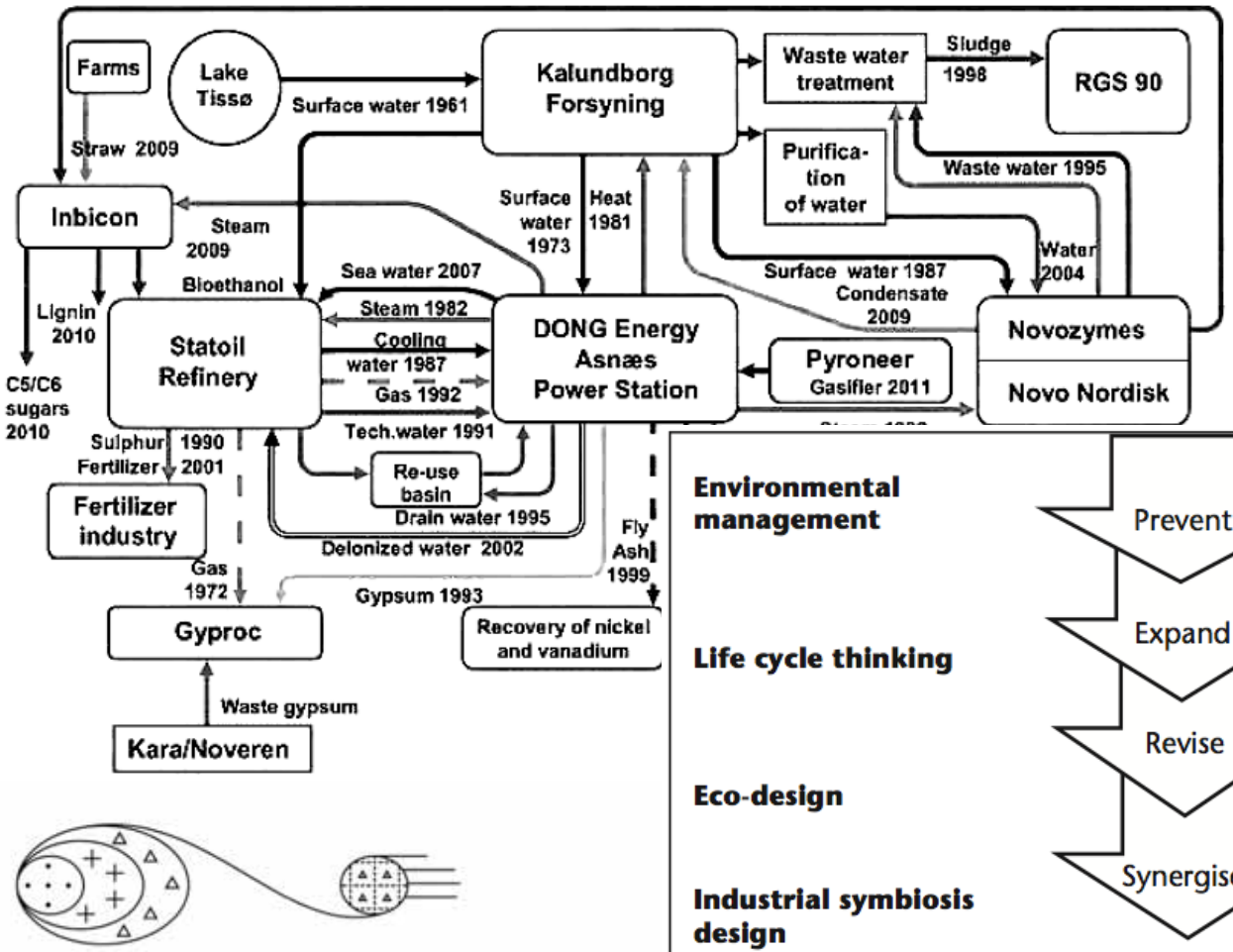


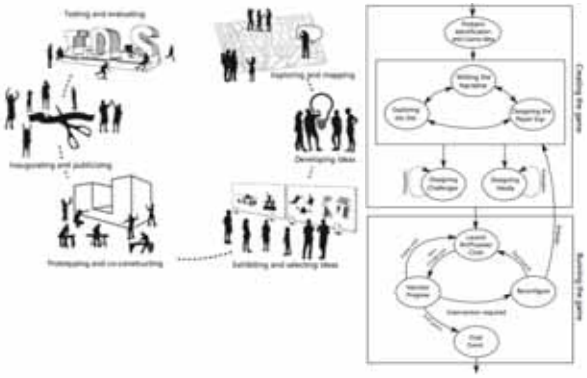


Object	Design practice	Context
Transition of		Enacted within and changing
Socio-technical systems Aligned systems of technology, production systems, markets, user practices, policies, infrastructures, and cultural meaning	Normative/intentional design	**Regimes** Dominant practices, norms, and shared assumption structuring the conduct of actors
Social practices Specific configurations of "material artefacts, conventions, and competences"	**Designing for sustainability**	**Design spaces** Specific (situated) configurations of agendas/visions, institutions, actors, and technologies
⇨ **Reconfigured socio-technical systems and social practices**	Reflexive design, meta design	⇨ **Alternative design spaces**

Situated Design Methods

(Chapter 18, Christensen, Kjær, and Lybæk)





Environmental management

Life cycle thinking

Eco-design

Industrial symbiosis design

Design focus
Site specific solutions, focus on design of production processes and process optimization

Design focus
Lifecycle environmental aspects, eco-efficiency

Design focus
Integration of environmental concerns into product development

Design Focus
Production system

Summary

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

References

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