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The Context of Collaborative Digital Service Development

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Overview

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- Modeling Digital Service Design Contexts
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Motivation

- Transition to service economy
 - The digital transformation drives, and enables, the development / innovation of (new) service systems
 - Most services delivered in the service economy are digital services in the sense that they are IT reliant / enabled
 - Involve hybrid multi-actor system(s) delivering and using the services
- Challenge: implications on the way organizations operate and value is created
 - increased interdependence between different actors and the need for integration of their resources in creating value
 - changes in business models with a stronger involvement of users / customers in all phases of value creation
 - mix different stakes, interests, roles, work practices, and even differing cultural and linguistic backgrounds
 - high pace of change in technology and economy creates the additional challenge of how to keep up with these developments

Aim of this Work

Long-term

- contribute to the understanding of the dynamics of the socio-economical-technical environment in which the development of digital services takes place
- Vision: to be able to **discover changes** in the environment affecting digital service design and to **adapt digital service development accordingly**, for example by adjusting development processes, tools or practices or by offering assistive functions to the stakeholders involved.

This paper:

- understand **what changes actually are relevant** in what part of the socio-economical-technical environment and **how these changes can be discovered**
- Focus: understanding different aspects or viewpoints to be taken into account when analyzing service design contexts
- Conjecture: techniques from context modelling could be used for this purpose.

Research Approach

Research Question:

- What constitutes the socio-technical context of digital service design and how can this context be modeled?

Literature study

- Identification of research areas relevant for the research question
- Investigate what aspects and factors of collaborative design context were identified

Qualitative Case Study Research

- Facilitates exploration of a phenomenon within its context using a variety of data sources
- Descriptive nature
- Focus: collaborative digital service development in industrial practice

Literature Study

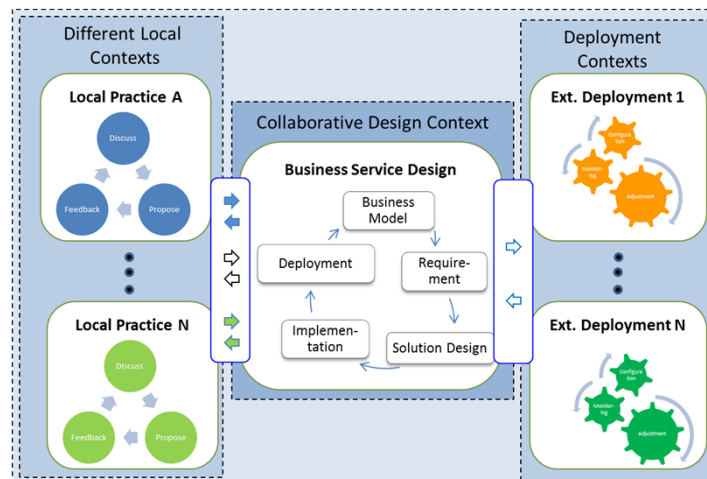
Areas investigated

- collaboration in information systems development
- support for collaborative modelling and decision making
- context modelling

Result

- no single, established and accepted theory, approach or model about the context of digital service design
- but a number of aspects which are expected to be relevant as part of the context.

Conclusion: Aspects of Service Design Contexts



Case Study Design

Case Study Subject:

- Service provider to utility industries in (Business Service Provider)
- Part of the EU-FP7 project Capability as a Service in Digital Enterprises

Questions investigated:

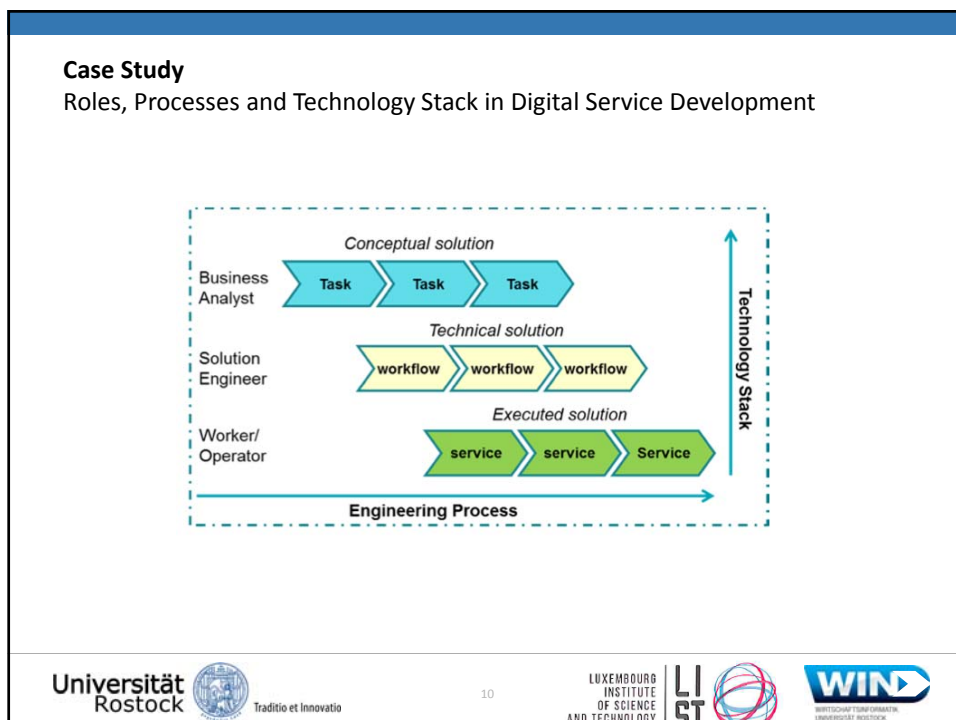
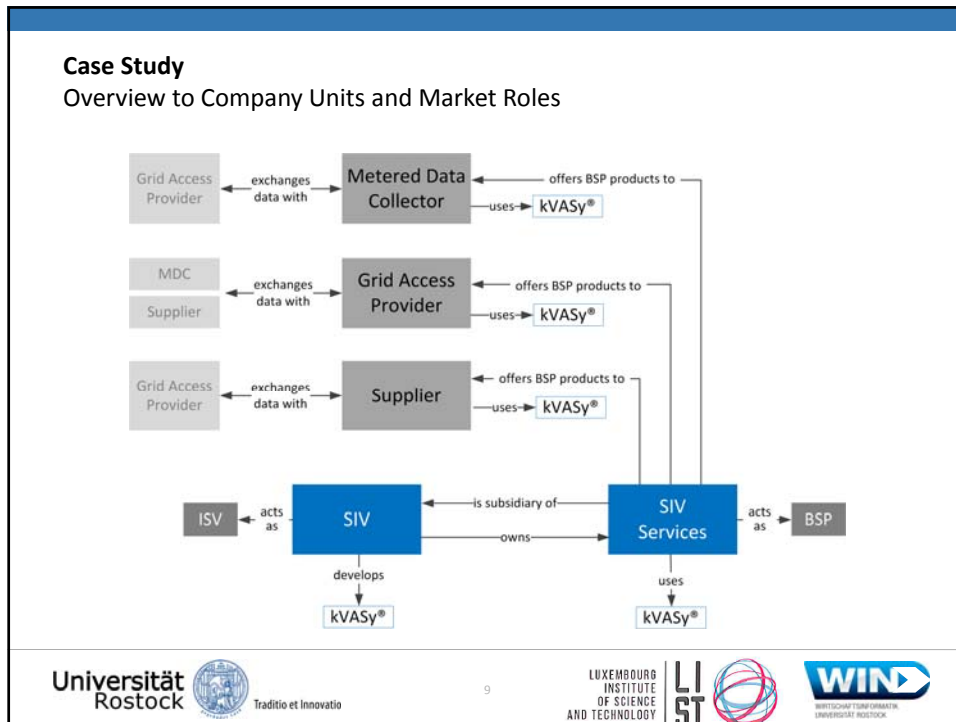
1. Can the aspects of digital service design contexts, i.e., actual development lifecycle, local practices of the involved stakeholder groups and the external environment of the organization for service deployment, be observed as affecting digital service design in the case study?
2. What factors affecting the digital service design can be observed for the different context aspects?

Information Sources

- One researcher worked during 3 months two or three working days every week at the BSPs facilities. The researcher was part of the team operating the business service and designing new business services
- CaaS deliverables: information about the actual business services, their development processes and aspects relevant for deployment.
- internal business processes at the BSP

Propositions

- P1: Context aspects identified in the literature study can be observed in the case study.
- P2: For each context, the case shows examples for potential factors.



Case Study Results

Revisiting the Propositions

Proposition 1: Context aspects identified in the literature study can be observed in the case study.

Aspect	Code	Description
Stakeholder Groups	[SG]	SIV group and management; SIV Utility Service; Architecture and Technology, Utility providers (BPO clients)
Development Life-Cycle	[DL]	Iterative process including development of conceptual solution, technical solution, executable solution and adaptation to new requirements
Local Practice Context	[LP]	Visible for all stakeholder groups shown in the first row of the table
External Deployment Context	[EE]	Visible in different deployment models and various deployments for different clients

Proposition 2: For each context aspect, the case shows examples for potential factors.

- Development life-cycle context: adjustments in business processes requiring the integration of new technologies, information sources or domain experts from the client's side.
- External deployment context: technical changes in the deployment environments or deployment models
- Local practice context: next slides

Modeling Service Design Context

Intention:

- investigate feasibility of capturing the context of digital service design by using the industrial case

Focus:

- stakeholder groups and their local practices - seems the most challenging one

Stakeholder group / local practice:

- SIV Utility Services (BPO service provider)

Factors influencing service design in this local practice:

- Adjustments in work procedures of knowledge workers for achieving more efficiency (for example triggered by new targets on management level)
- Necessity to adapt qualification profiles or to define new ones (for example triggered by new customer requirements)

Modeling Service Design Context (2)

Factor	Indicator	Origin
New BPO product	Annual strategy document for SUS informal discussions	SIV management
Changed work procedure	new process description	SUS management
	changed instructions for knowledge workers	SUS process owner
	changes in agreements with client	SUS management

- Above factors probably only are a fragment of all existing factors (no complete analysis performed)
- Possibility to produce an initial context model of the SUS local practice context using the CaaS CDT tool
- next step would be to identify operationalizations in term of machine-detectable operational indicators

Conclusion:

- **basic idea of analyzing variations and identifying their reasons is promising**
- **process-oriented viewpoint (of CaaS CM) is not sufficient and has to be complemented by, for example, role or responsibility-oriented viewpoints**

Contributions and Limitations

Main contributions

- to identify different aspects of the context of digital service development
- to show the feasibility of capturing contexts in a context model
- a case study for digital service design.

Limitations

- just one case for evaluation and motivation purposes
- Modeling was only performed for one aspect of digital service development context

Future Work

Theoretical work:

- understand the dynamics of collaboration in service development. The relevant changes in the service development environment might be related to each other
- way to identify relevant changes probably is different in the three context aspects

Methodology:

- methodology to capture all relevant context factors and indicators of the three context aspects,
- Establish in what situations changes are required and what kind of change this has to be

Technical work:

- set of instruments, like process adjustments, assistive tools or changes in group composition, which provide actual ways of adjustment in the situations identified

Thank you for your attention!

Time for questions!