Formalizing Organization Implementation

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Proposition

- EEWC 2013: Organization implementation variables (OIVs) are crucial for
  - Traceability in governing enterprise transformations
  - Generic IT support
    - Enabling agile IT

- EEWC 2016: The formalized and validated OIV framework
  - is suitable for organization implementation modeling
  - provides insights in the implications of implementation choices on the operation of an organization
  - has possibilities for designing software in which implementation choices can be made explicit and variable
Background and problem statement

- Organizations are required to be able to respond to change, such as:
  - Increasing customer demands
  - Changing law and regulations
  - Technological advancements

- Most of the time, change occurs in *implementation* and not in *essence*:
  - E.g. organizational unit, work location, authorization, ICT support

- Organization implementation variables describe implementation

- In 2013 a list of variables was drafted, based on literature research:
  - Not validated (in practice)
  - Not formalized
Approach

Environment

Application Domain
- People
- Organizational Systems
- Technical Systems
- Problems & Opportunities

Relevance Cycle
- Requirements
- Field Testing

Design Science Research

Build Design Artifacts & Processes

Design Cycle
Evaluate

Rigor Cycle
- Grounding
- Additions to KB

Knowledge Base

Foundations
- Scientific Theories & Methods
- Experience & Expertise
- Meta-Artifacts (Design Products & Design Processes)
Framework concepts

- **Organization Implementation**: all design decisions that are taken to create the lowest level and most detailed white-box model of an organization
  - including the assignment of technological means

- **Variable**: a placeholder of some element in some set

- **Layers**
  - **Implementation**: organization structural elements (organizational unit, work location, etc.)
  - **Means**: all technological means, including human-beings and ICT artifacts:
  - **Installation**: the assignment of specific means
  - **Operation**: the assignment of specific agenda to specific means
## Validation by case studies

<table>
<thead>
<tr>
<th>Organization</th>
<th>Results</th>
<th>New OIV(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rijkswaterstaat</td>
<td>Clearer definitions</td>
<td>Region</td>
</tr>
<tr>
<td></td>
<td>Observation instructions</td>
<td></td>
</tr>
<tr>
<td>Jeugdzorg Nederland</td>
<td>Clearer definitions</td>
<td>Region</td>
</tr>
<tr>
<td>European parking law enforcer</td>
<td>Clearer definitions</td>
<td>Agenda cluster</td>
</tr>
<tr>
<td></td>
<td>Ways of instantiating variables</td>
<td></td>
</tr>
<tr>
<td>Dutch municipal subsidy providers</td>
<td>Clearer definitions</td>
<td>Only some domain specific</td>
</tr>
<tr>
<td>EU-Rent</td>
<td>Clearer definitions</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>CM and FM of implementation</td>
<td></td>
</tr>
</tbody>
</table>
Example OIVs
# Example OIV definitions

## Functionary type

<table>
<thead>
<tr>
<th>Definition</th>
<th>A functionary type is a call sign intended for the assignment of agendum types</th>
</tr>
</thead>
</table>
| Examples   | 1. Desk officer  
             2. Distributor |

## Logical unit of work

<table>
<thead>
<tr>
<th>Definition</th>
<th>A logical unit of work is then union of agendum types of which instances are usually dealt with by a single person as being an inseparable unit of work.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Examples</td>
<td>1. T1/pm, T1/ex and T1/st are combined in LWU ‘T1 dealing’</td>
</tr>
</tbody>
</table>

## Organizational unit

<table>
<thead>
<tr>
<th>Definition</th>
<th>An organizational unit is a named element or segment of an organization, possibly with an hierarchical relation to another organizational unit.</th>
</tr>
</thead>
</table>
| Examples   | 1. Sales  
             2. Logistics  
             3. Distribution, part of Logistics  
             4. Transportation, part of Logistics |
Other findings

- In DEMO a coordination act is addressed to a specific addressee.
- In reality a coordination act can be addressed to a non-specific addressee, e.g.
  - info@company.com
  - ‘the CEO of company X’

- The role of dispatcher is identified in the operation layer to deal acts with a non-specific addressee.
  - Can be implemented by a secretary, any person in the organization or some automated system.
Prototype
Reflection, conclusion, discussion and future research

- We have modeled 5 organizations (and >10 implementations) in terms of OIVs
  - enabling informed decision making and traceability in governing transformations
- We have audited 3 ICT systems on the possibility to quickly change organizational implementation decisions
- We have built a prototype that supports changing implementation at run time
- The framework is firmly grounded in EE theories

- Case studies are limited to public organizations
- Variables are limited in the means layer, extension by e.g. looking at Archimate
- Prototype needs to be extended by more variables (if necessary and worthwhile)
  - And support for revocations and time-outs
- Designing agile enterprises using evolvable organization and ICT building blocks
THANKS FOR YOUR ATTENTION!

QUESTIONS?

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BACKGROUND & BACK-up
Changes have a very diverse impact in an enterprise

Changes in environment → changes in several aspect systems and perspectives
Change is needed ... fast ... and in what exactly?

- Agility – the ability to change quickly – is vital
- Everyone wants agility, but what exactly is changing?
- Most literature on change and agility is about
  - The process of change
  - Change drivers (environmental)
- Variablity in essence between ‘comparable organizations’ has been researched earlier
- Normalized Systems theory adresses IT implementation variables explicitly
  - 8 anticipated types of change
  - Cross-cutting concerns

No list of organization implementation variables currently exists
EU-rent (1)

<table>
<thead>
<tr>
<th>transaction kind</th>
<th>product kind</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1  rental contracting</td>
<td>P1 Rental is contracted</td>
</tr>
<tr>
<td>T2  rental payment</td>
<td>P2 the rent of Rental is paid</td>
</tr>
<tr>
<td>T3  car pick up</td>
<td>P3 the car of Rental is picked up</td>
</tr>
<tr>
<td>T4  car drop off</td>
<td>P4 the car of Rental is dropped off</td>
</tr>
<tr>
<td>T5  penalty payment</td>
<td>P5 the penalty of Rental is paid</td>
</tr>
<tr>
<td>T6  transport completion</td>
<td>P6 Transport is completed</td>
</tr>
<tr>
<td>T7  transport management</td>
<td>P7 transport management for Day is done</td>
</tr>
</tbody>
</table>
EU rent (2)

BRANCH
- location [LOCATION]
  - the pick-up location of Rental is Branch
  - the drop-off location of Rental is Branch

CAR GROUP
- the car group of Rental is Car Group

CAR
- the car of Rental is Car

BRANCH
- location (LOCATION)
  - the actual drop-off location of Rental is Branch

RENTAL
- starting day [DAY] ending day [DAY]
- rental charge* [MONEY]

CONTRACTED
- Rental is contracted

P1

PICKED UP
- Rental is picked up

P3

DROPPED OFF
- Rental is dropped off

P4

PAID
- the rent of Rental is paid
- rental amount [MONEY]

P2

RENTAL

PAYMENT
- the penalty of Rental is paid
- location penalty charge* [MONEY]
- late return penalty charge* [MONEY]
- penalty amount [MONEY]

P5

PERSON
- day of birth [DAY]
  - the renter of Rental is Person
  - the driver of Rental is Person
  - the driving license of Person is Driving License

DRIVING LICENSE
- 1..1
  - license of Person is Driving License
  - 0..1