Effects-Driven Participatory Design and Evaluation

Lessons from a decade of research

- Initiation and specification \[^{1,4}\]
- Development and implementation \[^{1,8}\]
- On-going use, quality assurance and improvement \[^{9,10}\]

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Effects-Driven Participatory Design and evaluation

- Result- and user-driven instrument for technology supported improvement of (clinical) work practices [1]
- Developed through action research projects since 2004 [2, 3]
- Effects are specified locally by clinicians — can be related to hierarchies [4]
- Effects are realized through local experiments and interventions [5, 6, 9, 11]
- Effects are assessed from available data (formative vs. summative) [7, 8, 15]
## Effects specification hierarchies

<table>
<thead>
<tr>
<th>Means/end</th>
<th>St. plans [5, 8]</th>
<th>Emergency Dept. [7, 15]</th>
<th>Fasting and new quality model [9, 10]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>National level</strong></td>
<td>Shared care Knowledge sharing</td>
<td>Emergency department as central entrance to new “Super” hospital structure</td>
<td>Porter’s Trippel aim Value = outcomes / cost per patient</td>
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<tr>
<td>(Environment: Political demands, organizational culture, national standards, legislation, etc.)</td>
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<tr>
<td><strong>Regional level</strong></td>
<td>Standard plans</td>
<td>Increasing the citizens sense of security when reducing # of emergency departments</td>
<td>Patient-experienced value (less thirst) Fewer complications Shorter recovery time</td>
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<tr>
<td>(Business Strategy: Relation/ function/response to environment)</td>
<td></td>
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<tr>
<td><strong>Clinical process</strong></td>
<td>Well documented patient trajectories</td>
<td>Safe phase transition between primary and secondary sector (moving the ED to patient)</td>
<td>Pre-medication Pre-operative care Operation</td>
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<tr>
<td>(Business Processes: Recurrent, familiar input-output relationships)</td>
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<tr>
<td><strong>Clinical activity</strong></td>
<td>Emergency department with patient in need of an acute operation</td>
<td>Communication between paramedic and emergency department</td>
<td>Coordination regarding the patient to be operated</td>
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<tr>
<td>(Work Process: Critical with regard to IT support)</td>
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<tr>
<td><strong>Technology support</strong></td>
<td>Templates with checklists</td>
<td>Ambulance system reports to emergency departments - e.g. ECG (apoplexy)</td>
<td>Sharing data between emergency-anesthesia- and operation departments</td>
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<tr>
<td>(IT requirements: Functions, information, categories, computations, GUI, standards, etc.)</td>
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Lessons: Initiation and specification

- Effects from using IT can be specified, related to, and agreed upon by different stakeholders \[4\]
- Effects can be aligned and comply to national and regional goals \[4\]
- Used as management instrument in large commercial projects \[1, 13, 17\]
- Contracts may be based on measurable effects: Vendors are ready but customers more cautious & reserved \[2\]
Development and implementation

Initiation & specification

Development

Implementation

Use

Effect types[1]:
- Planned/realized
- Planned/curtailed
- Emergent
- Opportunity-based

Published in [5, 8, 12, 13, 14]
Documentary YouTube movie:
- In Danish (25 minutes)
- In English (23 minutes)
<table>
<thead>
<tr>
<th>Planned/realized[^8]</th>
<th>Effect</th>
<th>Evaluation method</th>
</tr>
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<tr>
<td>Better overview of patients</td>
<td>Mental workload/TLX</td>
<td></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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<tr>
<th>Planned/curtailed[^8]</th>
<th>Effect</th>
<th>Evaluation method</th>
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<tr>
<td>Improved NIP recordings</td>
<td>Record audit</td>
<td></td>
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<tr>
<td>Improved medical treatment and nursing plans</td>
<td>Rating scale</td>
<td></td>
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<th>Emergent[^14]</th>
<th>Effect</th>
<th>Evaluation method</th>
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<td>From oral reporting to collective reading of EPR[^14]</td>
<td>Observation</td>
<td></td>
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<tr>
<td>Collective investigation of the EPR</td>
<td>Observation</td>
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<td>Sharing nursing observations during the team conference</td>
<td>Observation and focus-group interview</td>
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<tr>
<td>Increased structuring of nursing record</td>
<td>Focus-group interview</td>
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Lessons: Development and implementation

- Effects are instrumental for early design activities, and during development and configuration – can replace for example use cases [17]
- Effects can be measured and assessed in pilot implementations – before roll-out [12, 16]
- Effects may be anticipated, emergent, and opportunity-based [2, 5, 12]
- Many innovative effects are unanticipated & enabled after implementation – during on-going use [14]
On-going use and improvement

- Effects are specified, fasting times & interruptions were prioritized
- Recording fasting time with eWB - interruptions on smartphones-app
- Data is reported and analyzed
- Assessment of results, suggestions for interventions
- Implementation of interventions

Published in [6, 10]
Forthcoming in [9, 11]
Data and visualizations for effects assessment

See [11]
Lessons: On-going use and improvement

- Support mutual investigation, learning, and experimentation with local interventions – based on assessments from on-line data \([9, 11]\)

- On-going use & effects-driven improvement: Maybe the largest potential for value creation \([10]\)

- Require ressources: Obvious but hard to establish

- Require local competencies – and an overall governance (our current research focus) \([6, 9]\)
References (with links to download)


