

Effects-Driven Participatory Design and Evaluation

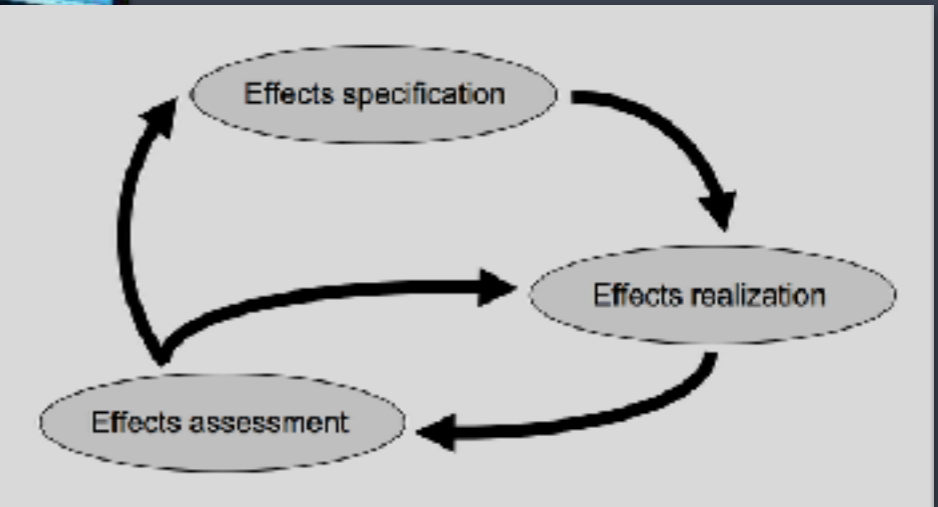
Lessons from a decade of research

- ▶ 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

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



Given (stable) national-regional quality goals and KPI's

Local (agile) quality goals obtained by interventions & experiments

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

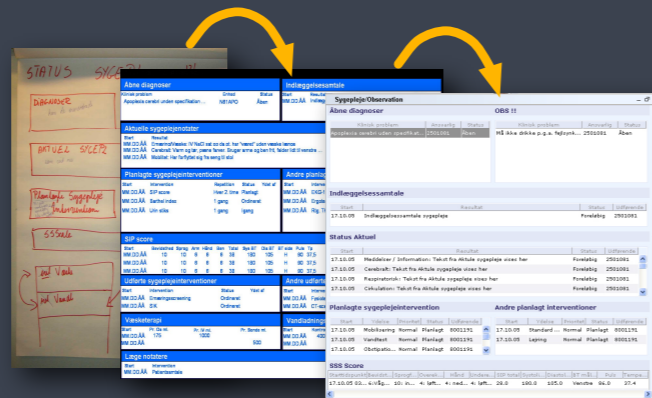
Initiation & specification

Development

Implementation

Use

Effects specification



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)



	Effect	Evaluation method
Planned/ realized ^[8]	Better overview of patients	Mental workload/TLX
	Better coordination	Counting # missing pieces of inf. & messages to pass on
Planned/ curtailed ^[8]	Improved NIP recordings	Record audit
	Improved medical treatment and nursing plans	Rating scale
Emergent ^[14]	From oral reporting to collective reading of EPR ^[14]	Observation
	Collective investigation of the EPR	Observation
Opportunity -based ^[14]	Sharing nursing observations during the team conference	Observation and focus-group interview
	Increased structuring of nursing record	Focus-group interview

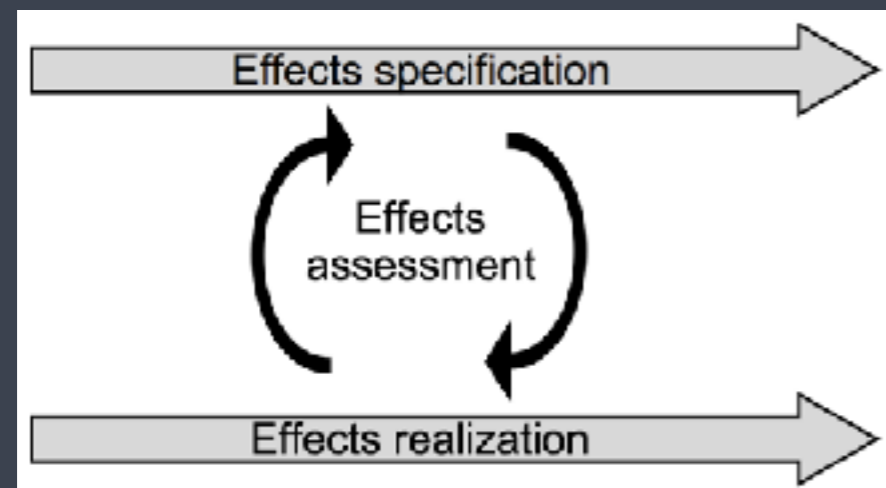
Lessons: Development and implementation

- ▶ 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

Published in [6, 10]
Forthcoming in [9, 11]

- ▶ 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



Data and visualizations for effects assessment

Kirurgiske operationer (OP A)

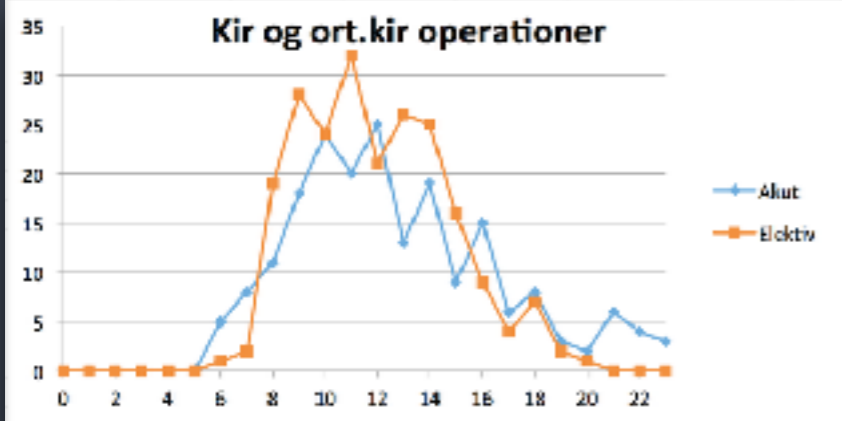
Periode: 11.05 - 14.08, 2015

		Fastetid (timer)	Fastetid registreret		Antal operationer
Akut		13,34	57	17%	345
	Alder<70	13,49	35	15%	228
	Alder>=70	13,10	22	19%	117
Elektiv		11,67	132	43%	305
	Alder<70	11,77	103	44%	235
	Alder>=70	11,31	29	41%	70
Total		12,17	189	29%	650

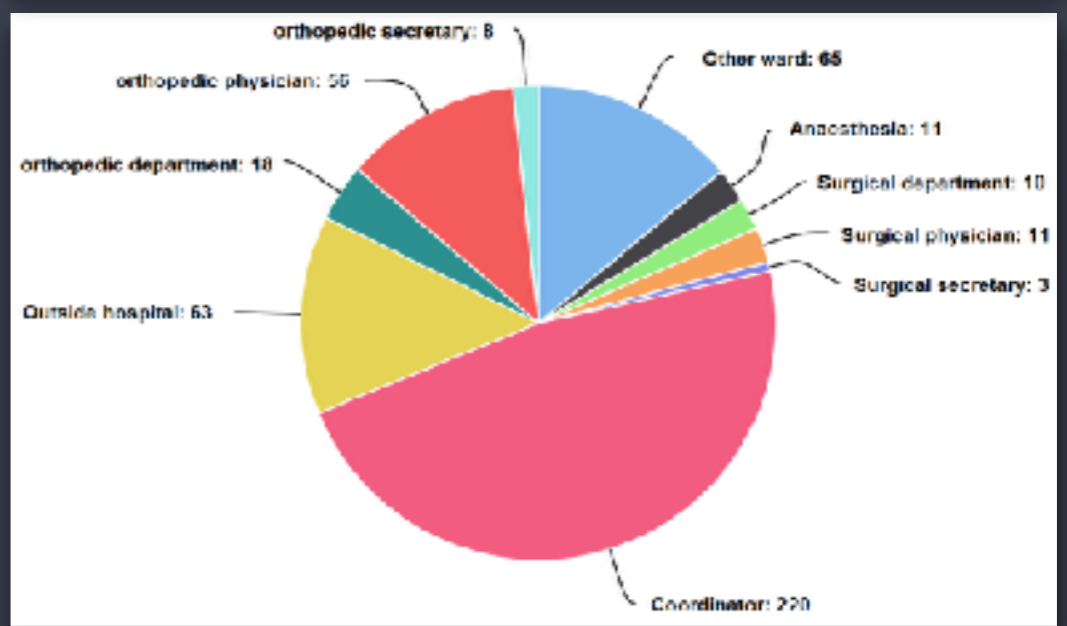
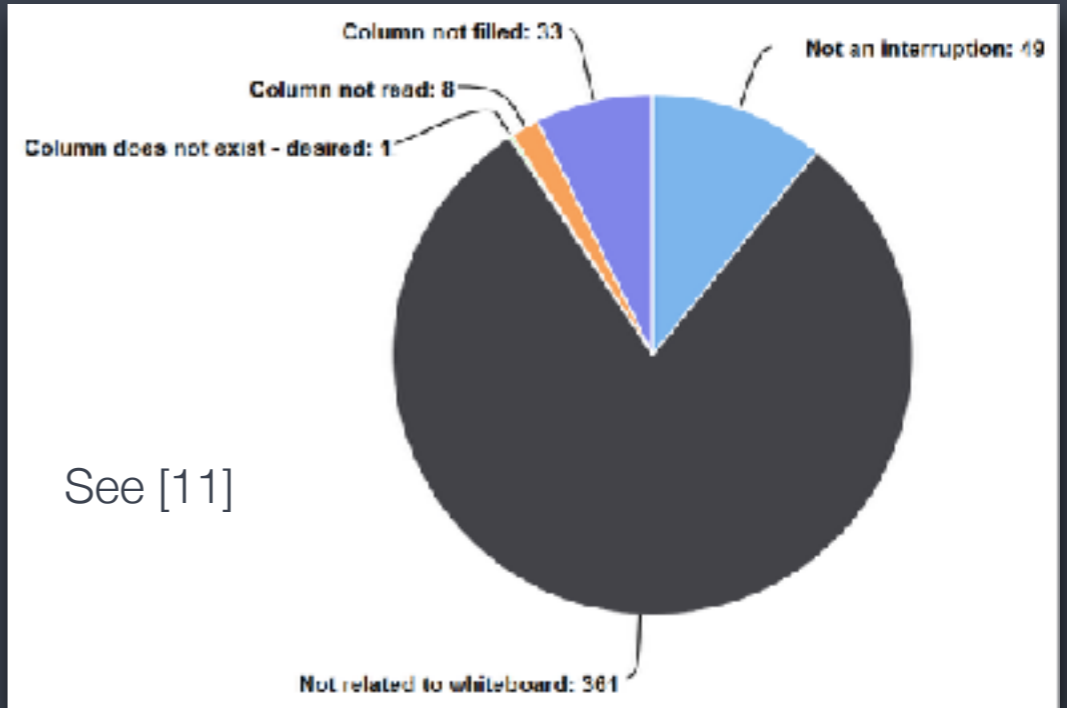
Ortopædkirurgiske operationer (OP D)

Periode: 11.05 - 14.08, 2015

		Fastetid (timer)	Fastetid registreret		Antal operationer
Akut		13,13	143	33%	434
	Alder<70	12,73	72	29%	245
	Alder>=70	13,54	71	38%	189
Elektiv		13,68	84	56%	149
	Alder<70	13,53	36	49%	74
	Alder>=70	13,79	48	64%	75
Total		13,34	227	39%	583



	Faste (timer)	Antal
Elektiv		216
	0	0
	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	2
%	9	19
	13	28
	11	24
	15	32
	10	21
	12	26
	12	25
	7	16
	4	9
	17	4
	18	7
	19	2
	20	1
	21	0
	22	0
	23	0



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 resources: Obvious but hard to establish
- ▶ Require local competencies – and an overall governance (our current research focus) [6, 9]

References (with links to download)

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