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Accreditation and Participatory Design: An Effects-Driven Road to Quality Development Projects

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Abstract

This paper presents a soft project management paradigm approach based on participatory design to assuring values and benefits in public projects. For more than a decade, quality development in the Danish healthcare sector has been managed with an accreditation system known as the Danish Quality Model (DQM). In 2015, in an attempt to reduce "bureaucratic process requirements" and "focus on specific goals and results," the Danish government decided to discontinue this system (The Danish Ministry of Health, 2015, p. 2). In this paper, we introduce a participatory design approach known as effects-driven IT development and suggest how this approach may form a cornerstone of project management in a new quality-assurance program for the Danish healthcare sector.

Keywords

Participatory design, quality development, improvement, accreditation, effects-driven IT development, soft project management, value and benefit realization management.

1 Introduction

A new quality development program is needed for the healthcare sector in Denmark. The Danish Ministry of Health (2015) has called for a program that includes few but ambitious national quality goals and combined them with influence and ownership of the quality improvement efforts, quality goals chosen locally by hospitals, freedom to find local methods for achieving quality goals, and continuous quality improvement, including the use of real-time data.

Since 2005, Danish hospitals have used a process-oriented accreditation system called the Danish Quality Model (DQM), developed and maintained by the Danish Healthcare Quality Program (ikas.dk, 2015; IKAS, 2013). Accreditation is a method of quality development of organizations in which an organization's compliance with quality standards is evaluated with external audits. The quality standards are known in advance and are checked by external auditors at regular visits to the organization. The part of the Danish Healthcare Quality Program that focuses on accreditation of hospitals is to be replaced by alternative models—partly due to doctors' criticism of this accreditation system as too bureaucratic and focused on measuring the quality of processes instead of focusing on outcomes in terms of the quality of the healthcare services delivered at the hospitals (Bundgaard, 2011; Læger.dk, 2015).

The aim of the 2nd Danish Project Management research conference is to start a dialogue between researchers and practicing project managers about "achieving organizational change with your project." This paper addresses this question and supplies possible answers by discussing how combining accreditation with an effects-driven participatory design approach (Hertzum & Simonsen, 2011a; Simonsen & Robertson, 2012) may assure better project management and effects of quality-development projects in hospitals. This paper thus addresses the Danish Ministry of Health's needs and the criticism that doctors have raised regarding the DQM. The combination of effects-driven and

participatory design approach and the DQM represent a soft project management paradigm for assuring value and benefits in public projects. This is a possible alternative to existing hard paradigm approaches. The paper contributes to the theme of the conference by suggesting a road to better management of process standards (from the now-abolished accreditation model) through participatory specifications, realizations, and measurements of quality effects at Danish hospitals.

Organizational management theory distinguishes between behavior and outcome control (Eisenhardt, 1985), which corresponds to two different coordinating mechanisms, the standardization of work processes and the standardization of outputs (Mintzberg, 1980). Behavior control is an effective management strategy if the work in the organization can be planned and “programmed” in a detailed way, so behaviors (processes) can be explicitly defined and readily measured (Eisenhardt, 1985, p. 135f). This corresponds to Mintzberg’s (1980) standardization of work processes: “Work is coordinated by the imposition [...] of standards to guide the doing of the work itself – work orders, rules and regulations, etc.” (p. 324). If the organizations’ tasks are more situated, characterized by exceptions, and the need for ongoing decisions, then behavior and process strategies are less effective. Outcome control is an appropriate management strategy if the goals or outcomes of the organizations’ work can be clearly stated and measured (Eisenhardt, 1985, pp. 136ff). This corresponds to Mintzberg’s (1980) standardization of outputs: “The work is coordinated by the imposition [...] of standard performance measures or specifications concerning the outputs of the work” (p. 324).

The DQM and its standards focus on assuring that certain processes are present and take place in certain ways. The DQM relies on behavior control (Eisenhardt, 1985) and on the standardization of work processes (Mintzberg, 1980). The model assumes that the wished-for outcome (better quality of services delivered to patients) will somehow surface automatically and by itself. In effects-driven IT development, the connection between results and processes is the reverse, that is, a strategy of outcome control (Eisenhardt, 1985) and standardization of outputs (Mintzberg, 1980). It is assumed that the processes that cause certain effects are complex and must be “discovered” during the iterative participatory-design process. Some standards and processes performed in certain ways may yield the wished-for effects; others may not. The needed interventions and the specific relationship between processes, standards, and wished-for effects are open and empirical questions. Moreover, the process standards of the DQM are introduced “top-down,” while the standards for processes and behavior in effects-driven IT development are developed “bottom-up,” with a special focus on their relevance for producing certain wished-for effects. As a consequence, we argue that, to a higher degree, effects-driven IT development assures implementation, because this type of development gets people to act locally, gives them a direction, and supplies legitimate explanations that are energizing and enable actions to become routine (Weick, 2000). The top-down introduction of the process standards of the DQM does not offer similar possibilities. Therefore, a combination of the DQM and the participatory principles developed in effects-driven IT development may lead to better implementation of quality-relevant process standards, as well as measurable, wished-for quality effects. These arguments are backed up by empirical research that showed people in organizations are more willing to accept organizational changes if the changes make sense to them (Weick, 2000). Participation and genuine involvement contribute to goal achievement and people’s feelings of commitment while, at the same time, reducing their resistance to change and propensity to organizational-change cynicism (Cole, Bruch, & Vogel, 2006). We suggest a combination of accreditation and principles from effects-driven IT development to offer a way to better management and assurance of effects of quality-development

projects at Danish hospitals and propose it as a possible soft project management paradigm approach to assuring value and benefits in public projects.

To provide the basis for these points and arguments, the paper is organized in the following seven sections: Section 2 describes the difference between hard and soft project management in order to position our approach to assuring value and benefits of public projects (section 2). Section 3 describes the accreditation regime in the Danish healthcare sector, giving an example of the DQM's accreditation requirements for patient transfers between departments. Section 4 outlines the effects-driven IT development approach, and Section 5 presents a case exemplifying effects-driven IT development "in action," with an example of patient transfers focusing on the concrete effect of obtaining "fasting periods closer to the required six hours before operation." Section 6 discusses how effects-driven IT development supports and differs from the DQM and outline the potential advantages of combining them as related to the soft project management paradigm. Section 7 concludes by summarizing the points made throughout the paper.

2 Hard and soft project management paradigms

Julien Pollack (2007) identified two main paradigms of project management: hard and soft paradigms. The hard paradigm is associated with a positivist epistemology, deductive reasoning, and quantitative or reductionist techniques. Practices tend to emphasize efficient, expert-led delivery, control against predetermined goals, and an interest in the underlying structure. The soft paradigm is associated with an interpretive epistemology, inductive reasoning, and exploratory, qualitative techniques, which emphasize contextual relevance instead of objectivity. In relation to practice, the soft paradigm emphasizes learning, participation, the facilitated exploration of projects and typically demonstrates an interest in underlying social processes. In the hard paradigm, goals are seen as stable and tend to be changed only if a significant stakeholder requires it. In the soft paradigm, project goals are not seen as adequately defined at the start of the project or stable throughout the life of a project but instead as continuously redefined as participants learn and build up knowledge. Implicit in the hard paradigm is the assumption that a detailed plan allows tighter control, and therefore, this is preferred. In contrast, in the soft paradigm, project managers must respond to change by using plans that are flexible enough to incorporate new ideas, developments, and changes in goals and direction. Instead of being an expert and giving orders that people are expected to follow, as in the hard paradigm project, managers in the soft paradigm are seen as facilitators continuously encouraging and engaging project participants. The project management approach adopted in this article is based on the soft paradigm, which is in line with the general principles of participatory design (Simonsen & Robinson, 2012).

2.1 Assuring value and benefits in public projects

A project may deliver a product or service on time, on budget, and according to specifications (and thus deliver in accordance with the "iron triangle") but may still be a failure because it does not create value and realize benefits for the host organization. According to Laursen and Svejvig (2014), project management researchers have thus started focusing on value creation and the realization of benefits in projects as a response to projects that fail to deliver the expected benefits and value to organizations. Project benefits are "the flows of value that arise from a project" (Zikael & Smyrk, 2012, p. 11). They concern the value created during or as a result of projects (Laursen & Svejvig, 2014) and are associated with an outcome of change that is perceived as positive by a stakeholder (Bradley, 2010). Target benefits are those set for a proposed project before it begins, with the expectation they will be realized at its completion (Chih & Zwikael, 2015, p. 352).

Following Bradley (2010), formulating and appraising project target benefits are considered the first and critical step to ensure successful benefit realization. Chih and Zwikael (2015), who focus on public projects in their research, refer to a leading benefit management approach developed by the British government that outlines four steps for formulating the target benefits of a project: 1. Identify the benefits. 2. Select objective measures that reliably prove the benefits. 3. Collect the baseline measure. 4. Decide how, when, and by whom the benefit measures will be collected. Chih and Zwikael (2015) criticized this approach and developed a more elaborate target benefit framework based on interviews with fifteen senior managers at Australian government agencies. It identifies seven criteria for appraising project target benefits in public organizations (see Table 1).

Table 1

Seven Criteria Proposed by Chih and Zwikael (2015, p. 356)

Criteria	Description
Strategic fit	Fit into the organization's strategy
Target value	Have a baseline, a target value with specific (positive or negative) direction
Measurability	Be measurable through the use of either a direct measure or an indirect indicator
Realism	Be realistic; given the context in which the organization is operating and its constraints
Target date	Have a set date for realization
Accountability	Have a benefit owner
Comprehensiveness	Be considered from a variety of aspects, for example, comprise financial and non-financial benefits, or comprise operational-, tactical- and strategic-level benefits

The study also identifies nine factors that may improve formulated target benefits: a formal benefit formulation process, individuals who are motivated (public service motivation), effective leadership (senior executive leadership and senior executive support) and an innovative climate in the organization.

2.2 A soft paradigm approach to assuring value and benefits in public projects

The approaches to assuring value and benefits in public projects seem to belong to the hard project management paradigm. They thus suggest and demonstrate a trust and a belief in the value of precisely identifying what value and which benefits should be achieved through a given public project before the project commences. The hard paradigm emphasizes the importance of making wished-for value and benefits measurable and holding someone accountable for their realization by a certain date.

According to the soft paradigm on project management, this approach may probably not contribute to assuring that the wished-for values and benefits of the project are realized. In the soft paradigm, project goals are neither adequately defined at the start of the project nor stable throughout the life of a project but are continuously redefined as participants learn and build up knowledge. Identifying

wished-for final values and benefits from the start of a public project may not be possible or sensible (even though preliminary wished-for values and benefits may be identified). Moreover, in the soft paradigm, learning, participation, and (leader-) facilitated exploration of possibilities for realizing wished-for values and benefits are the focus instead of an attempt to achieve these goals through a formal benefit formulation process before public projects aimed at identifying measurable target values and benefits that someone is then held accountable for realizing.

In this paper, we suggest that the combination of effect-driven participatory IT design and the DQM may represent a soft paradigm approach to assuring value and benefits in public projects that represent a possible alternative to the hard paradigm approach. To what degree this may be the case is discussed in further detail in the following sections.

3 Accreditation in the Danish Healthcare Sector

Accreditation is a method of quality development of organizations where one evaluates the organization's compliance with quality standards through external audits. The quality standards are known in advance and are checked by external auditors at regular visits to the organization. If the organization is accredited, it is a recognition of the organization, in the sense that it is supposed to be competent and to be able to perform its tasks in accordance with the quality standards (Kjærgaard, Mainz, Jørgensen, & Willaing, 2001).

For many years, the DQM has been a central part of the national strategy for quality development in Danish healthcare. The model was developed and is maintained by the Danish Institute for Quality and Accreditation in Healthcare, established in 2005 (IKAS, 2013; ikas.dk, 2015). The aim of the DQM is to improve the quality of clinical pathways, to contribute to the improvement of clinical, organizational, and patient-perceived quality, and to make the quality of the healthcare sector visible and transparent. Another aim is to foster learning and quality development in the healthcare sector through continuous evaluation of hospitals and other healthcare organizations.

The DQM covers different areas of the Danish healthcare sector, including hospitals. The accreditation standards for hospitals are divided into organizational standards, general standards related to clinical pathways, and standards related to patient diagnoses. Organizational standards include standards for management, quality and risk management, documentation and data management, hiring, organization of work and competences, hygiene and infections, emergency plans, instruments and technology, and buildings and supplies. General standards for clinical pathways include standards for patient involvement, patient information and communication, coordination and continuity, reception, evaluation and planning, diagnostics, administering medicine, observation, invasive treatment, intensive treatment, nourishment, rehabilitation, prevention and health promotion, patient transfer, patient transport, and the handling of dying patients. Three standards are related to patient diagnoses: a standard concerning the production and use of clinical guidelines for the treatment of patient groups, a standard for treatment in the intensive care unit, and a standard for the hospitals' planning of concrete, clinical pathways.

The DQM builds on a circular model of systematic quality development, consisting of the phases plan, do, check, and act (see Figure 1).

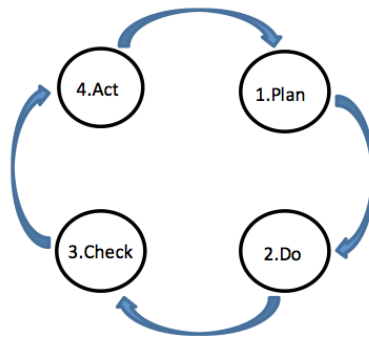


Figure 1. The four phases of DQM: (1) Plan, (2) Do, (3) Check, and (4) Act.

Standards in all areas are related to the phases of the quality circle, with one indicator for each phase (plan, do, check, act). The “plan” indicator checks whether the hospital has a document that describes how the quality goal of the given accreditation standard is to be obtained. The “do” indicator checks whether the hospital has implemented the standard. The “check” indicator examines whether the hospital monitors the quality of the hospital’s structures, processes, and delivered services. Finally, the “act” indicator checks whether the hospital evaluates the results from the monitoring and has prioritized and taken action in cases where quality problems have been identified.

For example, the standard for “information in relation to the transfer of patients between departments and hospitals” is described as follows: “When a patient is transferred to another department at the same or a different hospital, relevant and sufficient information is passed on” (IKAS, 2013, p. 163). The standard explains that all hospitals should, as a minimum, have a guideline describing the kinds of information that should be passed on. This guideline should, as a minimum, contain an overview of the information to be documented and passed on when patients are being transferred, including (a) the reason for the transfer, (b) an updated treatment plan with information about the patient’s diagnosis, pathway, treatment until now, and planned examinations, (c) an updated status from the nurses with information about the nursing plan and appointments made with the primary sector, (d) information about the patient’s current prescription medicine, (e) documentation of the information the patient has received about the cause for his/her transfer, and (f) information about relatives, including what information they have received about the transfer, who the closest relative is, and whether children or youngsters are involved.

The standard explains that it is to be used by all departments involved in the treatment of patients. Four indicators related to the standard. Indicator 1, “plan,” explains what the auditor should check for: “There exists a guideline for transfers between departments and hospitals.” Indicator 2, “do,” points out that what the auditor should look for is “when patients are transferred, relevant information is passed on in accordance with the hospital’s guideline.” Indicator 3, “check,” is formulated as “the hospital has goals for the quality of information passed on when patients are transferred between departments and hospitals, and whether goals met are evaluated at least twice during a three-year period, using quantitative or qualitative methods or a combination of these.” Indicator 4 states that the auditor should check whether “the hospital has taken steps to improve the quality of the information passed on in relation to transfers between departments and hospitals, and that the effect of the action taken is evaluated, and that it has been concluded that it had the ‘wished-for’ effect, or that new action has been taken if the ‘wished-for’ effect was not realized.”

The DQM model has been used in Denmark as the national accreditation method for more than a decade but it has been criticized by physicians (Bundgaard, 2011). The former head of the Union of Chief Physicians has criticized the lack of evidence and documentation for the positive effects of using the model. He has also questioned whether the economic resources used to administer it are well spent, just as he has complained about the amount of administrative work needed to run the model. Although the DQM standards primarily focus on processes, the former head of the Union of Chief Physicians thinks that the treatment results or outcomes should be the focus. He suggested that nationally developed clinical guidelines aimed at improving the quality of treatment outcomes represent a better alternative than the DQM. The Union of Chief Physicians stated: "Our proposal will mean that we will measure the result instead of processes and that the employees do not have to spend time on all kinds of non-relevant questionnaires" (Borch-Johnsen, 2013, p. 4).

4 Effects-Driven IT Development

In this section we introduce a participatory design approach known as effects-driven IT development as an alternative to DQM. Effects-driven IT development is a sociotechnical instrument for managing IT projects (Hertzum & Simonsen, 2011a) that has been developed in collaboration with the Danish healthcare regions during the last decade (Hertzum & Simonsen, 2011b). It aims to support sustained participatory-design processes by providing a focus on the effects to be achieved by users through their adoption and use of a system (Simonsen & Hertzum, 2012): "Simply put, the overall idea is to capture the purpose of a system in terms of effects that are both measurable and meaningful to the users, and to systematically evaluate whether these effects are attained during real use of the system" (Hertzum & Simonsen, 2010, p. 62). The overall process and focus of effects-driven IT development include three activities, as outlined in Figure 2.

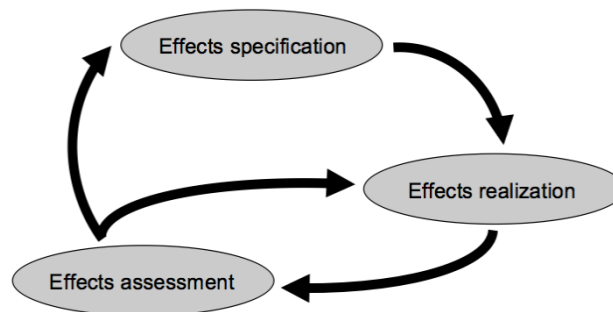


Figure 2. Effects-driven IT development (Hertzum & Simonsen, 2011a, p. 6).

During effects specification, the users (and their managers) specify and prioritize the effects they would like to obtain by using a specific system (Simonsen, Hertzum, & Barlach, 2011). Effects may be specified through workshops, and a desired effect may comprise a description of the effect, how the effect can be measured, the current status for obtaining the effect, a plan for the intervention needed to obtain the effect, who is responsible for the intervention, any known barriers and challenges for obtaining the effect, a list of stakeholders, and so forth.

Effects are realized through interventions where work processes and organization are changed and technology support is provided (Simonsen & Hertzum, 2012; Simonsen, Hertzum, & Karasti, 2015). The process of realizing effects might comprise new or reconfigured cooperative procedures, new or

reconfigured technologies, as well as communicating and implementing new practices for using the technologies.

Finally, and importantly, the effects are assessed periodically or, if possible, continuously based on available real-time data (Hertzum & Simonsen, 2008, 2015). The latter might be the case if information about whether the effect is obtained can be extracted automatically from the system and visualized in a manner that shows the evolving effect-achievement status.

The arrows in Figure 2 indicate that the specified effects, which provide the focus for the realization, shape the instrument. The assessments inform the interventions aimed at realizing the effects or lead to reconsideration of the specified effects. Although the effect—the target—is clearly identified, the way to obtain the effect—the process—is worked out by iteratively experimenting with different interventions, as indicated by the arrows.

Effects-driven IT development comprises an overall management instrument targeting specific and concrete results through an ongoing iterative process of interventions, including configuration and re-configuration of systems while they are in real use. It also supports a participatory-design process by involving users in all three key activities shown in Figure 2. The process can be viewed as sustained participatory design (Hertzum & Simonsen, 2010) or as support for local infrastructure activities (Simonsen et al., 2015).

5 Case: Effects-Driven IT Development at a Hospital

Effects-driven IT development is used to optimize clinical work processes at Nykøbing Falster Hospital in Denmark. Researchers (including the authors of this article), through action research projects, collaborate with clinicians in optimizing patient transfers between departments. Action research aims at solving practical problems while expanding scientific knowledge (Baskerville & Myers, 2004) through “an iterative process involving researchers and practitioners acting together on a particular cycle of activities, including problem diagnosis, action intervention, and reflective learning” (Avison, Lau, Myers, & Nielsen, 1999, p. 94).

In the fall of 2014, the researchers held a series of workshops with clinicians to specify wished-for effects. The clinicians included physicians, nurses, and secretaries from multiple departments. Effects were specified through initial brainstorming, followed by discussion, gradual refinement, and prioritization. Throughout 2015, the researchers met with a core group of three clinicians in meetings every second week to plan and follow up on the realization of the prioritized effects and to prepare for the effects assessment. In between the meetings, the three clinicians (a nurse and two secretaries) were responsible for implementing the effects in their departments. In the following, we describe the content and current outcome of this project.

Nykøbing Falster Hospital, as one of the first hospitals in Denmark, recently deployed electronic whiteboards (eWBs) in all departments. The eWBs replaced the dry-erase whiteboards typical of all hospital departments in Denmark and abroad and are used to maintain an overview of the patients currently in the department.

The eWB in a department displays information about the patients in that department. This highly configurable technology that can display information targeted to the needs of individual departments, including patient location (room), triage level, diagnosis, attending physician/nurse, status of the

clinical care plan, and blood test results (Rasmussen, Fleron, Hertzum, & Simonsen, 2010). In addition to support for internal departmental communication and coordination, the eWB supports communication and coordination among departments. The eWB application is web-based and accessible through large wall-mounted touchscreens, the hospital's many PCs, and clinicians' smartphones and tablets. Thus, the eWB functions as a new information infrastructure (Karasti, 2014) and as a tool that connects the departments by providing shared access to transient and logistical patient information.

One of the overall aims of deploying eWBs throughout the hospital is to support patient transfers between departments. The project was initiated in the fall of 2014 by involving the departments that need the tightest coordination regarding patient transfers: the departments involved in surgery. The project includes the department performing the surgeries and the departments with patients admitted for parenchymal and orthopedic surgical treatment.

In a series of workshops, clinicians from these departments discussed and specified nine desired effects. Two effects were prioritized, and one of these was "fasting periods closer to the required 6 hours before operation." Patients must fast (abstain from food) for at least 6 hours before undergoing anesthesia. However, most patients fast much longer than 6 hours, because of complexities in operation planning, including the postponement and cancellation of planned surgeries due to the arrival of more severe acute cases. Fasting for a long time causes emotional and physiological stress to the patient and is a known clinical risk factor (Lambert & Carey, 2015) for elderly patients, malnourished patients, patients with diabetes, patients with an ulcer (e.g., decubitus ulcers), and others.

The group prioritized a shorter fasting period as an important effect for several reasons:

- It is a concrete, well-known, and common problem, generally acknowledged among clinicians, directly related to the quality of patient treatment, and thus easy to agree upon (for management and clinicians) as a desirable goal.
- The physicians know that long fasting periods are a threat to patients' health and recovery.
- The nurses experience, almost on a daily basis, frustrated patients who have been fasting for 10, 12, or 15 hours and still do not know when they will undergo surgery.
- The effect is simple to measure and assess.
- Optimizing the fasting period involves most of the coordination related to the transfer of patients to the operating department.

The way to realize the effect, however, is complex and requires changes in the procedures and practices for negotiating, coordinating, and communicating operating schedules, planning, and patient transfers. A core group of three clinicians (one from each involved department) was established to plan the realization, including (a) analyzing the three departments' procedures and practices, (b) suggesting interdepartmental models of cooperation, (c) initiating new cooperative procedures and terminology, (d) re-configuring the eWB to support the realization of the effect, (e) communicating new ways of using the eWB, and (f) monitoring, evaluating, and following up on changes, interventions, and the need for further initiatives. During 2015, the group completed two iterations of (a) through (f).

Effects assessment is possible, both continuously and periodically. The eWB was re-configured with two new columns that display the point when a patient started to fast along with the time (number of

hours and minutes) that have elapsed since the start of the fast. This way, the clinicians have continuous access to the fasting status of each patient scheduled for surgery and may take this information into account when planning the patient's trajectory. Periodically, the recorded start and end of the fast (recorded on the eWB as the start of the operation) can be used as input for reports showing fasting period statistics for different groups of patients, including the average length of fasting for the patients last week, for parenchymal or orthopedic surgical treatments, for acute patients or planned surgeries, and the like.

6 Discussion

The DQM builds on the quality model of plan-do-check-act. The model also builds on the assumption that if standards for processes are documented, and it is checked whether a hospital follows them, then the quality of the hospital's services, including treatments given to patients, will improve. Instead of focusing on the wished-for outcome or result in terms of quality, the DQM focuses on assuring that certain processes are present and take place in certain ways, and it merely assumes that the wished-for outcome (better quality of the services delivered to patients) will occur.

In effects-driven IT development, the connection between results and processes is the reverse. Here, it is assumed that the processes that cause certain effects are complex and must be "discovered" during the iterative participatory design process. Some processes performed in certain ways may yield the wished-for effects; others may not. The needed interventions and the specific relationship between processes and wished-for effects are open, and empirical questions remain.

According to the organizational psychologist Karl E. Weick (2000), any quality improvement framework will improve performance if the framework accomplishes three things (p. 163):

1. Gets people to act.
2. Gives people a direction (through values or whatever).
3. Supplies legitimate explanations that are energizing and enable actions to be repeated and over time become "routine."

We use Weick's framework to compare the DQM and effects-driven IT development and summarize this comparison in Table 2.

In the DQM, people document and learn the accreditation standards so that the institution will be accredited when the auditors visit every third year. The direction in which people are impelled to act has to do with knowing and performing according to the accreditation standards. As a consequence, employees' attention may drift from effects to standards. Moreover, the DQM has been criticized by physicians. They want quality improvement systems that more directly target patients' health instead of "converting" quality improvement into filling out questionnaires (such as those related to the DQM), which do not directly target patients' health and may, therefore, appear irrelevant. Thus, the accreditation system represented by the DQM does not supply legitimate explanations that are energizing and are reliable to generate new routines—at least not among physicians. Instead, physicians appear to perceive the standards as foreign to medical work, something imposed from the "outside."

Effects-driven IT development gets users, designers, and sometimes researchers to act by involving them in analyzing the design problem, formulating measurable, wished-for effects, and searching for solutions. The participants identify measurable wished-for effects, and thus, they make sense to those

involved and provide a shared sense of the direction. Moreover, the effects and the actions required to realize these effects make immediate sense to those involved, because the effects are the result of a collective process. Users and designers (and sometimes researchers) thus formulate the wished-for effects from the “inside.” Legitimate explanations that are energizing and hold the potential for repeatable actions are more likely to result.

Table 2

A Comparison of DQM and Effects-Driven IT Development

Characteristic	DQM	Effects-driven IT development
Aim and concern	Quality improvement through documented process standards and standards related to patients’ diagnoses	Effects-driven, participatory, and technology-supported optimization of clinical work processes
Focus	Processes: Indicators of four phases – plan-do-check-act (behavior control; standardization of work processes); see Fig. 1	Outcome: Specifying, realizing, assessing effects (outcome control; standardization of outputs); see Fig. 2
Weick 1: Gets people to act	By directing attention toward documenting and learning the accreditation standards and by auditor visits every third year	Through involving people in specifying and prioritizing measurable, wished-for effects – on an ongoing basis
Weick 2: Gives people a direction (through values or whatever)	People should learn and comply with the standards	People should systematically pursue the wished-for effects
Weick 3: Supplies legitimate explanations that are energizing and enable actions to become “routine”	Legitimate explanations from the “outside”; approval/accreditation to enable actions to become routine	Effects specified from the “inside” form legitimate explanations that have the potential to become routine
Contribution if DQM and effects-driven IT development is combined	Contributes knowledge about process and patient standards that may influence wished-for effects	Contributes a sustained focus on whether current processes serve wished-for effects

A combination of the DQM and its standards with effects-driven IT development could provide the strengths of both models and counter the drift of participants’ attention from effects to standards. The DQM and its standards focus on the quality of processes but connect only indirectly to outcomes and results. Effects-driven IT development focuses on effects and devises processes specifically targeted at producing specified effects. As a general instrument for managing quality-improvement projects, effects-driven IT development does not make statements about which clinical processes are most relevant for producing high-quality outcomes at hospitals. Combining effects-driven IT development with the DQM could, over time, lead to a more contextualized approach that ties together the process standards of the DQM with the concrete measurable effects of effects-driven IT development.

Participatory design builds on a learning and motivation theory, suggesting that people are more inclined to implement solutions if they are involved in defining what the problems are, what may solve them, and what the wished-for effects may be (Simonsen & Robertson, 2012). An effects-driven approach involves participants and creates ownership of the problems, solutions, as well as wished-for effects related to the implementation of hospital standards. The standards and the concrete results that the standards should help the hospital to obtain would be the focus for the joint quality-improvement activity. The relevance and quality of standards and processes would be measured in relation to their consequences for specified, wished-for outcomes, instead of based on whether specified processes take place.

Combining the DQM and effects-driven IT development implies a quality-assurance system, where quality standards related to processes (but not necessarily outcome effects) might be suggested top-down through the DQM, but where standards that do not contribute to the production of the wished-for outcome effect in the local PD processes should be allowed to be altered, circumvented, or ignored by the employees involved in these processes. Moreover, such standards should be systematically identified and removed from the suggested standards of the DQM so that only standards that have a direct and thus evidence-based relation to and effect on wished-for outcomes were allowed to remain as part of the DQM. Finally, such a combined quality-assurance system would entail that new effects and outcome-related standards developed bottom-up as outcomes of participatory-design processes should be systematically identified and included as new potential standards.

This combined quality-assurance system is a good idea, in the light of recent research in organizational-change management. The effects-driven IT development approach builds on learning and motivation theory, suggesting that people are more inclined to implement solutions if they are involved in defining what the problems are, what may solve them, and what the wished-for effects may be. In accordance with this view, Lines (2004) found a strong, positive relationship between participation, goal achievement, and organizational commitment and a strong, negative relationship with resistance to change in a study of a major, strategic reorientation of a national telecommunications firm in Norway. In addition, in accordance with this view, Balagun and Johnson (2005) showed that outcomes of planned change-implementation processes are highly dependent on middle managers' interpretations and ability to make sense of suggested changes. Finally, Brown and Cregan (2008) showed that employee involvement is necessary to avoid organizational-change cynicism. Cynicism toward organizational change consists of two elements: a view that change is futile (Reicher, Wanous, & Austin, 1997) and placement of blame for the failure of change programs on the facilitators of change—usually management. In such circumstances, management is regarded as “being unmotivated, incompetent or both” (Wanous, Reichers, & Austin, 2000). Cole et al. (2006) suggested that cynicism is “an evaluative judgment that stems from an individual's employment experiences” (p. 463) and that “irrespective of the accuracy or validity of the individual's perceptions on which the employee cynicism construct is based, it is real in its consequences” (p. 464). The criticism of the DQM raised by the former head of the Union of Chief Physicians might imply that the top-down implementation of the model and its standards may have caused organizational-change cynicism among physicians at Danish hospitals toward the DQM in its present form (Læger.dk, 2015).

Combining DQM and effects-driven IT development is a soft project management paradigm approach to quality development in public hospitals. It assures that standards are implemented and outcome effects are identified, made measurable while ongoing processes are monitored and changed if the

wished-for outcome effects (i.e., participants' wished-for values and benefits of the quality development project) are not achieved. This is not likely to happen for projects managed with the hard project management approach (i.e., a formal benefit formulation process before the project aimed at identifying measurable target values and benefits for which someone is then held accountable). In our suggested approach, learning, participation, and the facilitated exploration of possibilities for realizing local wished-for values and benefits are the key focus points. During the project, the participants gradually learn and build up knowledge about what outcome effects might be feasible and about how they may be achieved through the use of relevant standards. Standards experienced as not relevant to achieving these effects might then be identified, removed, or substituted by revised standards relevant for pursuing the effects.

7 Conclusion

The Danish Ministry of Health has specified the overall requirements for a new national-quality program, asking for less focus on process demands and more focus on developing local quality-improvement 'cultures' (Danish Ministry of Health, 2015). We have presented effects-driven IT development, rooted in the tradition of participatory design, as a project management approach to reach the needs for a new quality program. We see this approach as a supplement instead of a complete alternative to the DQM. Effects-driven development offers an outcome-based management strategy as a supplement to the behavior control and process standardization of the DQM that must be expected to form a vital part of the quality assurance in the healthcare sector in the future.

Effects-driven IT development offers a participatory and bottom-up approach that may well support and combine the DQM tradition of top-down process standardization and control. Process standardization prescribes processes only at abstract, high level "guidelines." The healthcare sector, characterized by highly skilled work, constant exceptions, and continuous assessment and decision-making, leaves these high-level process guidelines with plenty of room for local configurations, adaptations, and implementations to obtain measurable effects and standardization of outputs. However, local experimentation in obtaining, assessing, and documenting specific effects, including the use of real-time data for this purpose, might provide substantial input to revise process standards or propose new guidelines and standards.

Although a DQM approach might be efficient in scaling, disseminating, and enforcing standard processes on a national level, effects-driven IT development supports experimentation, development, and implementation of quality improvement efforts at the regional hospital level. In this way, this development might pave the road to better management and meet the ministry's call (Danish Ministry of Health, 2015) for freedom to find local ways of obtaining quality goals, influence and ownership of local quality-improvement efforts, and establishing continuous quality improvement using real-time data.

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References

- Avison, D., Lau, F., Myers, M., & Nielsen, P. A. (1999). Action research. *Communications of the ACM*, 42(1), 94–97.
- Balagun, J., & Johnson, G. (2005). From intended strategies to unintended outcomes: The impact of change recipient sensemaking. *Organization Studies*, 26(11), 1573–1601.
- Baskerville, R., & Myers, M. D. (2004). Special issue on action research in information systems: Making IS research relevant to practice-foreword. *MIS Quarterly*, 28(3), 329–336.
- Borch-Johnsen, K. (2013). *Can the effect of accreditation be measured and how?* Paper presented at the annual meeting of The Danish Society for Quality Development in Health Care.
- Bradley, G. (2010). *Benefit realisation management* (2nd ed.). Farnham, England: Gower.
- Brown, M., & Cregan, C. (2008). Organizational change cynicism: The role of employee involvement. *Human Resource Management*, 47(4), 667–686.
- Bundgaard, B. (2011). The Danish quality model will be more “macro” than “micro.” *Journal of the Danish Medical Association*, 173(41).
- Chih, Y., & Zwikaël, O. (2015). Project benefit management: A conceptual framework of target benefit formulation. *International Journal of Project Management*, 33, 352–362.

Cole, M. S., Bruch, H., & Vogel, B. (2006). Emotion as mediators of the relations between perceived supervisor support and psychological hardiness on employee cynicism. *Journal of Organizational Behavior*, 27, 463–484.

Danish Ministry of Health. (2015). *Nationalt kvalitetsprogram for sundhedsområdet 2015-2018* [The National Quality Program for the Healthcare Sector 2015-2018]. Retrieved from <http://www.sum.dk/Aktuelt/Nyheder/Sygehusvaesen/2015/April/Sundhedsministeren-og-regionerne-vil-have-mere-kvalitet-og-mindre-bureaukrati.aspx>

Eisenhardt, K. M. (1985). Control: Organizational and economic approaches. *Management Science*, 31(2), 134–149.

Hertzum, M., & Simonsen, J. (2008). Positive effects of electronic patient records on three clinical activities. *International Journal of Medical Informatics*, 77(12), 809–817.
doi:10.1016/j.ijmedinf.2008.03.006

Hertzum, M., & Simonsen, J. (2010). Effects-driven IT development: An instrument for supporting sustained participatory design. In: *Proceedings of the 11th Biennial Participatory Design Conference* (pp. 61–70). New York, NY: ACM Press.

Hertzum, M., & Simonsen, J. (2011a). Effects-driven IT development: Specifying and measuring usage effects. *Scandinavian Journal of Information Systems*, 23(1), 1–26.

Hertzum, M., & Simonsen, J. (2011b). Effects-driven IT development: Status 2004-2011. In M. Hertzum & C. Jørgensen, *Balancing sourcing and innovation in information systems development* (pp. 165–192). Trondheim, Norway: Tapir Academic.

Hertzum, M., & Simonsen, J. (2015). Effects of electronic emergency-department whiteboards on clinicians' time distribution and mental workload. *Health Informatics Journal*.
doi:10.1177/1460458214529678.

IKAS. (2013). *Danish Institute for Quality and Accreditation in Health Care: Accreditation standards for hospitals* (2nd ed.). Aarhus, Denmark: IKAS.

ikas.dk. (2015). *Institut for Kvalitet og Akkreditering i Sundhedsvæsenet, IKAS* [The Institute for Quality and Accreditation in the Danish Healthcare Sector]. Retrieved from <http://www.ikas.dk>

Karasti, H. (2014). Infrastructuring in participatory design. In: *PDC2014: Proceedings of the 13th Biennial Participatory Design Conference* (pp. 141–150). New York, NY: ACM Press.

Kjærgaard, J., Mainz, J., Jørgensen, T., & Willaing, I. (2001). *Quality development in health care*. Copenhagen, Denmark: Munksgaard.

Lambert, E., & Carey, S. (2015). Practice guideline recommendations on perioperative fasting: A systematic review. *Journal of Parenteral and Enteral Nutrition*. doi:10.1177/0148607114567713

Laursen, M., & Svejvig, P. (2014). Taking stock of project value creation: A structured literature review. In A. Ghazawneh, J. Nørbjerg, & J. Pries-Heje (Eds.), *Proceedings of the 37th Information Systems Research Seminar in Scandinavia (IRIS 37), Ringsted, Denmark, 10-13 August*. (USB) 1–15.

- Lines, R. (2004). Influence of participation in strategic change: Resistance, organizational commitment and change goal achievement. *Journal of Change Management*, 4(3), 193–215.
- Læger.dk. (2015). *Lægeforeningen* [The Danish Medical Association]. Retrieved from http://www.laeger.dk/portal/page/portal/LAEGERDK/Laegerdk/Nyheder?public_visningsType=1andpublic_nhedsId=96389
- Mintzberg, H. (1980). Structure in the 5's: A synthesis of the research on organization design. *Management Science*, 26(3), 322–341.
- Pollack, J. (2007). The changing paradigms of project management. *International Journal of Project Management*, 25, 266–274.
- Rasmussen, R., Fleron, B., Hertzum, M., & Simonsen, J. (2010). Balancing tradition and transcendence in the implementation of emergency-department electronic whiteboards. In J. Molka-Danielsen, H. W. Nicolajsen, & J. S. Persson (Eds.), *IRIS selected papers of the Information Systems Research Seminar in Scandinavia - Nr. 1 (2010): IRIS 33, engaged Scandinavian research* (pp. 73–88). Trondheim, Norway: Tapir Academic.
- Reicher, A. E., Wanous, J. P., & Austin, J. T. (1997). Understanding and managing cynicism about organizational change. *Academy of Management Executive*, 11(1), 48–59.
- Simonsen, J., & Hertzum, M. (2012). Sustained participatory design: Extending the iterative approach. *Design Issues*, 28(3), 313–328.
- Simonsen, J., & Robertson, T. (Eds.). (2012). *Routledge international handbook of participatory design*. London, England: Routledge.
- Simonsen, J., Hertzum, M., & Barlach, A. (2011). Experiences with effects specifications. In M. Hertzum & C. Jørgensen (Eds.), *Balancing sourcing and innovation in information systems development* (pp. 145–164). Trondheim, Norway: Tapir Academic.
- Simonsen, J., Hertzum, M., & Karasti, H. (2015). Supporting clinicians in infrastructuring. In E. M. Piras & G. Ellingsen (Eds.), *Proceedings of the Fifth International Workshop on Infrastructures for Healthcare (IHC): Patient-centred Care and Patient Generated Data, 18-19 June, 2015, University of Trento, Trento, Italy* 1–4.
- Wanous, J. P., Reichers, A. E., & Austin, J. T. (2000). Cynicism about organizational change. *Group and Organization Management*, 25(2), 132–153.
- Weick, K. E. (2000). Quality improvement – A sensemaking perspective. In R. E. Cole & R. W. Scott (Eds.), *The quality movement and organization theory* (pp. 155–172). Thousand Oaks, CA: Sage.
- Zwikael, O., & Smyrk, J. R. (2012). A general framework for gauging the performance of initiatives to enhance organizational value. *British Journal of Management*, 23, 6–22.