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An integrative framework for managing project issues across stakeholder groups

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Abstract

The stakeholders and the issues associated with a project are different concepts but closely interconnected. Despite this, the project stakeholder management literature falls short in analyzing the linkages between the stakeholders and the issues they bring. This paper develops a multilayered stakeholder–issue framework that makes the connections between stakeholders and issues explicit with the aim of helping project managers analyze and prioritize the issues that stakeholders confront them with. The framework's usability is preliminary evaluated through a case study of a multi-stakeholder implementation of an electronic health record (EHR) system in an institutionalized hospital environment. The framework enables a coherent assessment of stakeholders' issues. Using the case study, we discuss how such an assessment could improve the management of stakeholders' issues and their influence on a project's progress and outcomes.

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1. Introduction

When managing projects, project leaders encounter a range of stakeholders with different interests and varying perceptions of the project at hand (Davis, 2014). During the project's lifetime, these stakeholders will come up with issues they expect project leaders to address. Some issues may be shared by several stakeholders; others may be raised by just one. Nevertheless, many issues will seem worthy of attention, but a project management's span of attention is limited and resources will generally be scarce (Jepson and Eskerod, 2009). For project leaders, this raises the question of how to prioritize within the complexity of issues emerging during a project's lifecycle. To this end, in this paper, we develop and preliminary evaluate a framework that connects a project's stakeholders

with the issues they voice. The aim is to enable a more systematic assessment, and thereby management, of the influence of stakeholder issues on a project's progress and outcomes.

The literature has shown that project stakeholder management is critical for project success (Boonstra et al., 2008; Bryson and Bromiley, 1993; Nutt, 2002). To identify critical types of stakeholders, and to distinguish between them, different classification frameworks have been developed (e.g. Achterkamp and Vos, 2008; Bourne and Walker, 2006; Cova and Salle, 2005; Freeman, 1984; Gray and Hay, 1986; Mitchell et al., 1997; Nadler, 1988). While being valuable and commonly applied, these instruments do not explicitly consider the issues that stakeholders raise. A parallel strand of literature focuses on issue management (e.g. Dutton and Jackson, 1987; Jaques, 2007; Oliver and Donnelly, 2007). In their turn, these studies, with the exception of Roloff (2008), similarly fail to offer a clear link between the stakeholders and the issues they bring. We see this as a shortcoming, as, in

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the literature, Aaltonen and Sivonen (2009) show that both characteristics of the stakeholders and of the issues they present influence project managers' choice of response strategies.

The current paper argues that a more integrated view is needed to tackle the dynamic complexity of managing multiple stakeholders and their issues. In our networked society (Castells, 1996), such complexity is inherent to many project settings (Aaltonen et al., 2008; Cooke-Davies et al., 2007; Yu-Chih Liu et al., 2011). Our key argument is that the stakeholders and the issues of a project are different but closely interconnected concepts (Luoma-aho and Vos, 2010). Based on this idea we develop a multilayered stakeholder–issue framework that explicates these connections and enables a coherent analysis of stakeholders and their issues as these emerge during a project. While the management of these two aspects cannot be separated, we would encourage clearly distinguishing between them as this provides a sharper view on the ways they are connected.

We lay out our argument following a design-oriented research approach (Van Aken, 2004). First, in Section 2, we argue how such a framework can complement and bridge gaps in the extant literature. In Section 3 we develop the framework. Then we preliminary evaluate its potential usability (Jepsen and Eskerod, 2009) through a case study of the multi-stakeholder implementation of an electronic health record (EHR) system in an institutionalized hospital environment. In assessing the framework's usability, we more specifically ask how its use in a multi-stakeholder project may contribute to prioritizing between stakeholder issues. Section 4 introduces the case setting and explains how the study was conducted. Next, Section 5 presents the framework's application in our case and its preliminary evaluation. In the concluding section, we critically reflect on the framework's added value for practitioners, and discuss avenues for its further development and for future research.

2. Theoretical background: bridging stakeholder management and issue management

2.1. A bridge from stakeholders to issues

In many projects, stakeholders are a primary source of uncertainties and of disagreements giving rise to what has been called soft complexity (Burnes, 2005): a dynamic situation of interrelated processes where there is a variety of stakeholders involved with different interests and views (Atkinson et al., 2006). A traditional approach to dealing with stakeholder-induced complexity is to identify the project's key stakeholders based on a consideration of which actors and parties can influence project goal attainment (Eden and Ackerman, 1998). In effect, such models take a project-focused perspective on stakeholder management and implicitly stress hard complexity: the project goals are known and hence there is a given set of stakeholders with fixed interests and power.

We take a complementary approach for the following reasons. First, models and instruments that adopt a hard

approach tend to overlook stakeholders who are affected by the project in favor of those who can affect it (Freeman, 1984; Jones et al., 2007; Waxenberger and Spence, 2003). Second, by focusing on fixed stakeholder characteristics, these models also ignore the uncertainties in a project's environment from which unforeseen issues will arise during its lifetime (Cooke-Davies et al., 2007; Yu-Chih Liu et al., 2011). Neglecting the affected stakeholders or the emerging issues can hinder the legitimate direction and successful progress of a project and endanger its ultimate effectiveness (Aaltonen and Kujala, 2010; Roloff, 2008). Finally, such models disregard the finding that “firms and managers do not respond to stakeholders and environmental characteristics per se. Instead they respond to specific issues and concerns advocated by stakeholders” (Bundy et al., 2013, p. 253). That is, project managers will often form an impression and act upon the ‘noise’ that emerges during a project.

In contrast, our approach takes both the ‘can affect’ and the ‘affected’ stakeholders (Freeman, 1984) into account and is directed at identifying the issues they raise at a certain moment in time. In building our framework, we take the position that it should be an issue's significance for those stakeholders that project managers need to consider, in order to safeguard project legitimacy and success that is important. In this way our framework can address the three above mentioned limitations of the existing models. By conceptualizing stakeholder legitimacy in terms of the extent to which stakeholders think they can affect a project and will be affected by it, we address Helin et al.'s (2013) criticism that stakeholder management often neglects power relationships and that project managers often fail to reflect on their own political role and responsibilities.

2.2. A bridge from issues to stakeholders

Issues arise from a range of project activities and can thus take various forms (Burchell and Cook, 2006). Dutton and Jackson (1987) argue that adequately classifying issues is a precondition for effectively addressing them in the context of change. It follows that, for project managers to be able to deal with issues, they have to understand the nature of these issues. First, those issues are associated with stakeholder interests (Freeman, 1984; Mitchell et al., 1997). However, stakeholders differ in how they define and perceive their own roles and interests. Some may, for example, pay particular attention to their wider interests as citizens (in a hospital setting, one nurse may worry about patient privacy when records are fully digitalized and widely accessible), while others may stress their interests as employees (in worrying about an increase in administrative workload due to digitized patient records). It is thus in the nature of issues that such interests are enacted by the stakeholders themselves, as emphasized by Crable and Vibbert (1985, p. 5): “... issues are not simply questions that exist; an issue is created when a stakeholder attaches significance to a situation or perceived concern ...”. As such, a dominant characteristic of an issue is that a stakeholder brackets

something from a stream of experience and articulates it over the course of a project (Weick et al., 2005, p. 415).

Focusing on the connections between surfacing issues and stakeholders clarifies how, in a social reality, issues have no existence apart from the stakeholders voicing them. If such an issue remains unrecognized, project managers risk suboptimal results, unnecessary conflicts, delays, or even failure. Over time, stakeholders will experience varying issues that they may or may not openly articulate and attempt to sell (Dutton and Ashford, 1993) to the project management (Jepsen and Eskerod, 2009, p. 341). In an unfolding stakeholder landscape, some actors may be better informed and more engaged than others (Floyd and Wooldridge, 1992), and this will also lead them to perceive different issues or to perceive issues differently. This dynamic and complex quality of issues makes it difficult for project leaders to determine which issues may endanger project success. Developing an eye for the varying nature of issues, the forms of interrelatedness between them, and how issues are intertwined with stakeholders' developing positions and views, may be a start in dealing with issues more consciously and choosing more deliberately and strategically which issues to prioritize. Given this possibility, the following section presents an integrative framework for identifying and analyzing the connections between stakeholders and the issues they raise.

3. Stakeholder–issue connections: framework development

3.1. A knowledge perspective on stakeholders' issues

The framework presented in this section draws together three progressively complex perspectives on describing and analyzing stakeholder–issue connections. In building this framework, we draw on the work of Shannon and Weaver (1949) and of Carlile (2002, 2004) that conceptualizes the nature and relational properties of knowledge at its boundaries. We argue that their work can be translated to address managing issues across stakeholders. A stakeholder's perception of an issue can be seen as a form of knowledge that this particular stakeholder possesses in the context of a project. More specifically, an issue can be seen as a subjective 'chunk of knowledge' enacted by a stakeholder in a particular place and time within the project (Weick et al., 2005). Viewed this way, an issue can be conceptualized as knowledge at a boundary in the sense that it being experienced by one stakeholder group does not automatically imply that the other stakeholders, including project management, are also aware of the issue and, even if they are, that they attribute the same meaning to it. Therefore, we assume that issues voiced by stakeholders have similar relational properties as knowledge, and this underpins our framework.

Carlile (2004) discusses three viable perspectives on knowledge boundaries: (1) an information processing approach (Galbraith, 1973) that focuses on knowledge as a thing to store and retrieve; (2) an interpretative approach (Weick et

al., 1999) that emphasizes the importance of a common meaning in order to share knowledge among actors; and (3) a political approach that acknowledges how different interests impede knowledge-sharing across boundaries (Carlile, 2002). These perspectives are progressively more complex (Carlile, 2004, p. 555) in terms of how issues are viewed – from syntactic, semantic, and pragmatic perspectives respectively – and each perspective introduces additional relational properties.

Viewing issues from the syntactic, semantic, and pragmatic perspectives, subsequently results in three types of 'stakeholder–issue' connections: issue-commonality among stakeholders; issue-induced dependencies between stakeholders; and issue weighting based on the legitimacy of the stakeholders raising the issue. This translation of the relational properties of knowledge to the context of issues and their stakeholders is further explained below.

3.2. Three perspectives on stakeholder–issue connections

By looking at issues from the syntactic perspective, project managers are able to discern which issues are being voiced at particular stages of a project. From this perspective, an issue's connection with the stakeholders involves the proportion of the stakeholders voicing that issue. This information can be synthesized in a criterion that we label the 'commonality of issues'. This commonality concerns the extent to which different stakeholders voice and recognize the same issues within a project episode (i.e., bracketed by time and place (Weick et al., 2005)). To give an example, if, in a project, Stakeholder A frequently voiced an issue that was never voiced by Stakeholder B this would reflect a lack of commonality. If none of the stakeholders shared any issues with any other stakeholders, this would amount to a situation of minimum issue commonality. At the other extreme, in a situation of maximum commonality all issues are enacted by all stakeholders. As such, the commonality of issues may be an indicator of cohesion and clarity as to what a project is about. This implies that the added value of the syntactic perspective for project management is that it sets the agenda as it unfolds over the course of a project.

The next perspective in the stakeholder–issue framework considers the semantics. Issues have to be interpreted in order to understand their nature and significance for a project's progress. From this semantic perspective, project managers evaluate the 'meaning of issues'. Looking through a stakeholder–issue lens raises awareness that stakeholders interpret issues in terms of their consequences for the project process and/or its outcomes. Moreover, it is only in interpreting the issues that their interdependencies will surface. Project managers cannot deal with issues on a one-by-one basis; they need to appreciate how addressing one issue might impact on others. Such dependencies are a major concern to project managers, and an ad-hoc approach to issues as they surface is therefore a risky strategy. From this semantic perspective, the dependencies between issues can be analyzed. Dependencies can take different forms as shown in Thompson's (1967)

deconstruction of task dependencies in work organizations: dependencies range from pooled, through sequential, to reciprocal.

In theory, an issue could stand on its own, and then its management would also be independent of any other issue. Usually, however, resource scarcity (Jepsen and Eskerod, 2009) will prevent all issues being accommodated, or at least being accommodated to the same extent. Project managers will need to consider each issue's resource utilization, and this reflects the loosest form of issue dependence: pooled dependence. The next dependency level is sequential: here, issue A should be solved before proceeding to issue B — or that a solution for issue B requires a specific solution for issue A. For project managers, these sequential dependencies lead to a chain of issues to address in which how one copes with one issue is in part determined by the solution to the previous issue, which may have imposed constraints. Reciprocal dependencies, the most complex dependencies to manage, are situations where solving issue B requires a solution for issue A and vice versa. The management of these issues cannot be decoupled in time.

From a semantic perspective, it becomes apparent that multilayered trade-offs between issues, and thereby between stakeholders, are inevitable. These trade-offs constitute the starting point for the pragmatic or political analysis. Often, stakeholders will not wait passively for the outcome of such trade-offs, but will try to sell their issues through engaging in voluntary, discretionary behaviors so that the project manager pays attention to an issue (Dutton and Ashford, 1993). Project managers will find themselves in a situation where every conceivable route of action is characterized by an inability to resolve all issues (Gresov and Drazin, 1997). As a consequence, purely technical–economic arguments will not provide the answer to what is the optimal trade-off, and social–political arguments will co-determine how to proceed. This calls for the pragmatic perspective, where one also considers the extent to which the stakeholders voicing an issue can affect, or are affected by, the project (Freeman, 1984, p. 46).

The stakes of those affected can be managed through attending to the issues they raise. Those actors that can affect the project are kept on board by recognizing their stakes in the project and attending to the issues they raise. The trade-off between possible issues can be informed by the legitimacies of the various stakeholders in voicing their respective issues. This can steer the managing of trade-offs that were explicated from the semantic perspective. We employ a trade-off criterion that compares the proportions of stakeholders (commonality, from syntactic perspective) with these stakeholders' average legitimacy in terms of the extent they perceive themselves as both 'affected' and 'can affect'. These two criteria generate the issue weight in the trade-off. The contribution of this pragmatic perspective to project management is that it gives directions for trade-offs and project interventions in a complex world, characterized by dependencies between issues and scarce resources, in a way that safeguards continued project commitment by those that can affect and are affected by the outcomes. The resulting framework is depicted in Fig. 1.

4. Method

4.1. Research site and approach

In developing the framework we follow a design-oriented approach (Hevner et al., 2004; Van Strien, 1997). It has been argued (Holmström et al., 2009; Van Aken, 2004) that there are serious utilization problems with academic management theory, and that knowledge based on the paradigm of the “design sciences” would stand a better chance of being adopted for instrumental use. Unlike explanatory sciences, design sciences are not so much interested in what is, but more in what can be (Van Strien, 1997). Based on our theory-focused reflections during the field research and following a regulative cycle (Van Strien, 1997; see Fig. 2), we developed the framework.

We conducted our field research within the context of a program initiated within a large teaching hospital. The program was directed at buying and then implementing an organization-wide Electronic Health Record (EHR) system to replace various stand-alone applications and integrate all the paper-based and electronic records currently in use. From the outset, this program was seen as a multi-stakeholder project and was expected to take at least four years to complete.

The focus in our application of the framework was on five internal stakeholder groups that constituted the envisaged end-users of the system. Focusing on the end-users and their issues is essential for a successful implementation of such systems (McGinn et al., 2011) and an explicit wish of the project management in this case. Three of the user groups involved professional staff members (doctors, nurses, and paramedics); the other two groups were made up of managerial and administrative employees. The selected project was of particular value because of the high stakes for the organization involved and the soft complexity of the project. One aspect was that the supplier of the system had never implemented its electronic health record package in a hospital of this size. Further, the key actors were far from certain that all their requirements would be met. A steering committee member put it as follows: “*the system should have a large number of features; perhaps not everything is possible, but we'll do our utmost best*”. Moreover, the interviewed hospital employees seemed to agree that the system was necessary, but were aware there might be little agreement on what the system should accomplish.

4.2. Data collection and participants

The field data came from a survey, a complementary interview round with 13 representatives of the user groups that differed on dimensions relevant to the implementation, and seven survey feedback sessions: three with project managers (in total 20 participants) and four with representatives of the user groups (in total 19 participants). The survey was conducted during the pre-implementation phase among the five user groups and fueled the syntactic and pragmatic analyses. To capture the issues that the stakeholders perceived as relevant (syntactic perspective), the participants were asked an

Fig. 1. The stakeholder–issue framework.
Based on Carlile, 2004.

open-ended question: “What are, according to you, the key issues regarding the Electronic Health Record (EHR) system?” To measure the extent to which stakeholders felt they could affect and would be affected by the implementation (pragmatic perspective), participants were asked to score using a five-point Likert scale: (1) how they perceived their own influence regarding the system implementation; and (2) how the implemented system would impact on their way of working. The first scale (can affect) contained three items (Cronbach’s alpha: 0.77), the latter (affected) contained two (Cronbach’s alpha: 0.67). The interviews and the survey feedback sessions with the user representatives fueled the semantic analysis. Finally, the survey feedback rounds with project managers informed the evaluation of the framework’s usability.

In drawing up the survey sample, all the management staff of the professional groups were included plus an additional random sample drawn from the remaining four stakeholder groups (doctors, nurses, paramedics, and administrative employees). To discourage socially desirable answers, both in the survey and in the interviews, it was emphasized that the researchers were independent and were conducting the research for academic purposes. We also explained that, once we had anonymized the results to the stakeholder group level, we would feed them back to the project management. That is, we explained that we would pass on the issues raised but had no influence on the subsequent management of these issues or the stakeholders. To guarantee anonymity, the sample was drawn by a staff member of the hospital independent of both the

Fig. 2. Research approach.
Based on Van Strien, 1997.

project management and the research team. Encrypted four-digit respondent codes were used to prevent respondents being identified by the (project-)management.

This procedure resulted in 1964 employees being asked to participate of whom 583 individuals completed the survey (see Table 1): a response rate of 29.9%. A non-response analysis showed that the professional groups and gender were equally represented in the sample and in the response group. Only the ages of the doctors and the paramedics were slightly higher in the response group ($m = 43$, $SD = 11$ and $m = 45$, $SD = 11$) than in the sample ($m = 41$, $SD = 11$ and $m = 43$, $SD = 12$). It is possible that cynical and indifferent professionals are underrepresented as they may not have been willing to share their concerns with independent researchers, i.e., these individuals did not take the opportunity to voice issues. However, as we had achieved a reasonable distribution of stakeholders in terms of professional groups, and had also asked the interviewees about what they were hearing ‘through the grapevine’ and the general concerns they perceived around them, we were confident that the issue set generated was sufficiently comprehensive. As a further check, three interviewees from a small department that had not provided any survey respondents were included in the subsequent interview round.

The descriptives for the stakeholders’ perceived levels of ‘affected’ and ‘can affect’ in Table 1 suggest an imbalance between the stakeholder groups. Given that these legitimacy measures are central in the weighting of the issues, we tested the significance of these differences among the means of the subpopulations, i.e., of the five stakeholder groups. Here, two robust tests for the equality of means (Good, 2005) showed that these differences were in fact significant for some of the groups. As regards ‘affected’ (Brown–Forsythe 13.82; Welch 14.72; $p = .000$) both the physicians and the administrative staff had above average expectations of being affected (mean 3.54, SD 0.83 and mean 3.37, SD 0.88 respectively), which were significantly higher than those of the other three user groups. In terms of ‘can affect’ (Brown–Forsythe 9.97; Welch = 10.07; $p = .000$), those in a managerial position felt most able to influence the change process (mean 3.65, SD 0.86), and significantly more so than the other four user groups.

4.3. Data coding and analysis

The issues collected, as voiced by the participating stakeholders, formed the basis for the syntactic perspective. The participants not only voiced different numbers of issues

Table 1
Descriptives of the response group per stakeholder.

	Stakeholders					Total
	Nurses	Doctors	Paramedics	Management	Admin.	
n	166	160	116	33	108	583
n (%)	34.7%	34%	24.4%	6.9%	19%	100%
Age, mean (SD)	43 (12)	43 (11)	45 (11)	49 (9)	46 (11)	44 (11)
Gender, % female	80.1%	43.1%	69%	51.5%	93.5%	37%
<i>Legitimacy</i>						
Can affect, mean (SD)	2.95 (.89)	2.83 (.93)	2.49 (.99)	3.65 (.86)	2.94 (.93)	2.87 (.95)
Affected, mean (SD)	3.07 (.76)	3.54 (.83)	2.56 (.82)	2.57 (1.08)	3.37 (.88)	3.14 (.91)

Legitimacy measures; both scales range from 1 to 5, with 5 indicating high influence (Can affect) and high impact (Affected) respectively.

(between 0 and 11), they also had different ways of voicing them (some provided a clear list; others included them in a short story). An initial task was therefore to decompose the stakeholders' answers in such a way that each text phrase by a respondent from a stakeholder group would represent a specific matter of concern. Subsequently, through inductive coding (Bauer and Gaskell, 2000), all the text phrases were related to a specific group of issues, resulting in 21 issue categories. In Table 2 (see section 5), these categories are described and a representative quote is provided per category. A complementary round of deductive coding helped in validating the inductive categorization of the issues. Here, based on Lapointe and Rivard (2005) and on Jensen and Aanestad (2007), we distinguished three impact levels: self, the organization, and the system, on top of which we added a fourth impact-level, namely the patient. This deductive classification served to enrich the definitions of the 21

inductive categories and, thereby, improved the consistency when assigning issues to these categories.

This coding process took place in three steps, and involved both authors of this paper and a research assistant. The research assistant performed the initial inductive and deductive coding. During this first step, particularly the way the issues were to be grouped was extensively discussed in the larger team. In the second step, all the issues as coded were checked by the two authors independently, each noting a number of points warranting further discussion. The discussion points concerned both the categorization of issues and the impact level. In the third step, these identified points were collaboratively resolved and coded. In some cases, the source text phrase was further decomposed. The categorization served to manage the complexity of the large number of issues.

Once the issue categorization was complete, a qualitative analysis of the dependencies between the issues within the

Table 2
Syntactic perspective: overview of the voiced issue categories.

Issue category	Issue description, expressed concerns about:	Representative quote
New features and expectations	Expectations of the system and new features that the system is expected to have.	"I expect no unnecessary reporting, and also not to have to write anything twice in the system — or even more."
User-friendliness	Whether the system will be easy-to-use and will not complicate the work of healthcare professionals.	"The system should be fast and easy-to-use."
Provision of information	Informing users about the system and its implementation.	"I know next to nothing about the system; here and there I can read something about it; at this point it's still a far end of my bed show."
Change in work tasks	Changes in work tasks for healthcare professionals.	"As a doctor, I seem to evolve into an IT person; I am not trained for that and it's not my job."
Privacy	The privacy of patient data.	"I believe that ensuring privacy is the most important issue."
Implementation process	How the implementation will be organized.	"Extensive attention should be paid to the workers on the shop floor when the system is being implemented."
Integral EHR	Whether a comprehensive, overall, system is possible.	"The system should be integral in the sense that it can be integrated with other systems when they arise."
Security	Security of the system regarding patient data.	"For the sake of patients, I hope that security is guaranteed."
Employee involvement	How the employees are involved during the implementation.	"It is crucial to involve the employees in its development, actually in the entire process."
Required (changes in) resources	The (changes in) resources that are needed for (implementing) the system.	"Tablets and/or laptops should be available for every nurse and doctor, to provide access to the system at any time."
Training	Training of healthcare professionals regarding system use.	"To me, an important issue is that all employees are well trained in working with the system before it is actually implemented."
Authorization	Access rights for healthcare professionals.	"How can we organize correct access rights, so that not everyone can inspect sensitive data?"
Patient Care	Computer use versus patient care (the system should not endanger or disrupt patient care).	"I worry about needing to spend much more time on the computer doing administrative tasks and having less time available for my patients."
Expected technical problems	Technical problems that may occur when the system is implemented.	"What if the system breaks down? Then we cannot do anything!"
IT support	The presence and support of IT regarding the system.	"The availability of IT support should be extended; it should be on a 24/7 basis."
Implementation support	The support that the user organization receives during the implementation of the system.	"The support during the implementation is crucial (e.g. by having key users available in all departments)."
Cooperation between disciplines	Collaboration between different disciplines.	"I expect better communication between disciplines, particularly between doctors and nurses."
Uniformity	The system's uniformity.	"There should be uniformity in the use of terminology for all departments, which is clearly something we now do not have."
Role of the patient	The influence of patients on their personal data in the system.	"The influence that patients have should be extensive."
Employee commitment	Employee commitment (or lack thereof) to the system.	"I observe quite some resistance and that worries me a lot."
External cooperation EHR	Whether the system will be integrated with other healthcare institutions.	"It should be easy to connect the system to external data sources."

The ranking is based on the number of respondents raising one or more issues in that category.

generated set could be made. We first sought out dependencies between categories and then searched for possible dependencies within categories. We used the transcribed interviews and feedback sessions with participating stakeholders to help interpret the meaning stakeholders attribute to the issues they voiced. Finally, per issue category a quantitative analysis of the commonality and weight was conducted (see Tables 3–4 in section 5).

5. Stakeholder–issue connections: applying the framework and evaluating its usability

In this section, we first report on the analysis of the connections from each perspective, i.e., the application of our framework. As explained above in the Method section, and given the nature of each perspective on stakeholder–issue connections, the syntactic analysis is quantitative, the semantic one qualitative, and the pragmatic analysis again quantitative in character. We conclude this section with implications for project management that follow from the analyses and, in this way, evaluate the framework's usability by project managers.

5.1. Syntactic perspective: determining issue commonality within and across stakeholder groups

The syntactic perspective conveys information on which issues the stakeholders perceive, how these issues can be categorized, and to what extent these issues are shared among the stakeholders. The analyses yielded 21 issue categories (see Table 2).

Table 3 provides an overview of the commonalities within and across the stakeholder groups for the 10 most voiced categories. Significantly ($p < 0.05$) more doctors and managers

have issues than the paramedics and the administrative staff. Further, significantly ($p < 0.05$) more doctors raised issues than nurses. If we look at the issues voiced, we see that the 'new features and expectations' category has the highest commonality across the stakeholder groups, and is especially prevalent among the doctors. The second ranked category of issues was User-friendliness (or rather potential lack thereof) since this is seen as essential for successfully integrating the system in the working routines of such a hectic environment. Within the administrative staff, this concern was the most voiced one. Managers more often voiced concerns related to the implementation process (implementation process; provision of information) than the other stakeholders. Paramedics voiced the fewest issues and maybe this is reflected in the issue they voice the most: worries about an experienced lack of information provision during the pre-implementation process.

5.2. Semantic perspective: identifying dependencies to create awareness of required trade-offs

To grasp the meaning of issues requires an interpretative perspective and, therefore, we undertook qualitative data analysis. A number of potential dependencies surfaced when scanning the issues on the category level, other dependencies were identified within issue categories. Below, we discuss some apparent dependencies, both across and within issue categories.

5.2.1. Pooled dependencies: competing for resources

In terms of pooled dependencies, the clearest contest is between stakeholder issues that put pressure on the available budget [issue category 'Resources']. From the analysis, it is apparent that professionals from a number of departments have

Table 3
Syntactic perspective: the commonality of the top 10 issues, within and between stakeholder groups.

Issue category	Stakeholders					
	Nurses (n = 166)	Doctors (n = 160)	Paramedics (n = 116)	Management (n = 33)	Admin. (n = 108)	Total (n = 583)
New features and expectations	32 (19.3%)	63 (39.4%)	18 (15.5%)	10 (30.3%)	12 (11.1%)	135 (23.2%)
User-friendliness	39 (23.5%)	45 (28.1%)	9 (7.8%)	4 (12.1%)	13 (12%)	110 (18.9%)
Provision of information	22 (13.3%)	29 (18.1%)	22 (19%)	10 (30.3%)	10 (9.3%)	93 (16%)
Change in work tasks	7 (4.2%)	21 (13.1%)	7 (6%)	4 (12.1%)	8 (7.4%)	47 (8.1%)
Privacy	12 (7.2%)	8 (5%)	14 (12.1%)	2 (6.1%)	8 (7.4%)	44 (7.5%)
Implementation process	13 (7.8%)	17 (10.6%)	2 (1.7%)	6 (18.2%)	5 (4.6%)	43 (7.4%)
Integral EHR	10 (6%)	20 (12.5%)	6 (5.2%)	3 (9.1%)	4 (3.7%)	43 (7.4%)
Security	15 (9%)	14 (8.8%)	4 (3.4%)	1 (3%)	8 (7.4%)	42 (7.2%)
Employee involvement	6 (3.6%)	14 (8.8%)	3 (2.6%)	5 (15.2%)	6 (5.6%)	34 (5.8%)
Required (changes in) resources	19 (11.4%)	8 (5%)	0	3 (9.15%)	0	30 (5.1%)

costly demands for highly advanced and specific software right from the start: “without interfaces to our 22 machines this new EHR will be useless” [‘New features and expectations’, interview], while others might manage with more basic system functionality provided investments in better hardware and network capacities: “I only have x minutes per patient and I see x patients per hour” [‘IT support’, interview]. Depending on the elasticity of the budget, trade-offs between issues will occur.

Similarly, there is also pressure on the time available. Doctors in particular worry about an increase in administrative tasks, which they expect to decrease the time available for patients: “administrative work will probably be put on my plate and I expect this may jeopardize the ‘production’ of our hospital” [‘Change in work tasks’, ‘Patient care’, respondent 1311]. Others worry about the extra time needed to implement the system: “the only way to implement the system is to facilitate extra personnel; otherwise we cannot guarantee patient care during this transition phase” [‘Implementation support’, 2258]. That is, as soon as the system ‘goes live’, extra human resources will be needed for various reasons and, therefore, choices will have to be made. Initially, care professionals will need more time per patient, requiring higher staffing levels in production, but the management also wants to free up the best-trained ones to act as troubleshooters during the transition, which will reduce the staff available for the production.

5.2.2. Sequential dependencies: setting requirements

Issues can also be connected in a sequential way, meaning that one issue may lead to another or that certain issues have to be resolved before another issue can be successfully dealt with. As one of the project leaders recognized: “we should be well aware of the fact that when we change something in the beginning of the process, this impacts on the system and will affect all users; we have to view this process as a chain.”

At the time of our measurements, many employees felt ill-informed, for example: “I hear next to nothing about the project, communication probably runs through some intermediaries, would an update through our house magazine be an idea?” [‘Information provision’, 1197]. As a consequence, such staff members found it difficult to express their expectations in terms of delivering input for the functional requirements specification. In terms of sequential dependencies, several respondents voicing concerns regarding the lack of information provision, also felt this would lead to a lower level of commitment and possibly even resistance to the system: for example, “I did not receive any information so far and I observe quite some resistance and that worries me a lot” [‘Information provision’, ‘Employee commitment’, both 1823].

Many respondents called for the provision of improved hardware: “many more computers, laptops, and tables are needed” [5099], before the new software was implemented: “first, before the EHR gets implemented, we just might have to update our IT” [5238]. As such, the IT platform available [‘IT support’] places constraints on the EHR implementation [‘Implementation process’]. Similarly, the issues raised highlighted groups of employees, especially the physicians, as

having a lack of computing/typing skills: “If you do not have typing skills ... working with the system will undoubtedly cost more time” [2382]. Training is thus an issue that needs to be resolved before implementing, or even testing, the system with them. Conversely, the system is also perceived as facilitating the work as mentioned by a nurse: “I think it improves my work; I don't have to decipher doctors' handwriting. So less mistakes will be made” [‘Change in work tasks’, 2304]. This issue amounts to a sequential sequence between changes in work tasks and patient care where the first issue contributes to the second in a positive way. However, again there is a constraining factor in play, namely the User-friendliness of the system: “some of our colleagues cannot even work with the previous system” [2304].

One of the ambitions with the system is to achieve higher levels of cooperation between professionals in their care of patients. As such, it was noted that the greater the uniformity that can be achieved in user demands, the more integrated the EHR design can then be such that people recognize multiple benefits: “more attention to uniformity across the hospital ... instead of every single (sub)department having its own process. Most of the time, in their bare essentials, the processes are similar for 80% ... would not only result in quite some efficiency gains but also increase our opportunities to work in different departments [as administrative workers] and thus would increase our employability” [5207].

Sequential dependencies also occur within categories. For example, an issue is who will have access rights. A medical secretary wonders: “will this only be the doctors ... if so, how can I support them?” [‘Authorization’, 5188]. However, the more employees that have access, the harder it will be to address the accountability, an issue that also falls within the category ‘Authorization’. This accountability issue relates to concerns about how information, once entered, can be traced back to specific professionals: “doctors need to be able to supervise what has been entered on their behalf” [4048].

5.2.3. Reciprocal dependencies: requiring mutual adjustment or compromises

In addition to sequential requirements, issues may also impose requirements in a cyclical way. Many respondents worried about the balance between solving current administrative problems and new technical problems that might arise: “the system may solve many problems we have and I support it [‘Employee commitment’, 2330], but it puts us at risk as well (and may cause problems through system failure); in that sense it is also our Achilles heel” [‘Expected technical problems’, 2330]. Professionals also raise issues that have conflicting consequences for the implementation approach. One doctor was hoping for flexibility during implementation: “only through a flexible system design approach can one address the problems that will emerge in patient care” [‘Implementation process’, 1386], which would lead to a better system. A nurse, however, recalled experiences with earlier experimental piloting in her department “so much additional work we had to do ... it reduced my time available for patients” [‘Patient care’, 4022]. Thus there was a view that, to ensure smooth system

operations, piloting would be crucial, but that this would, at the same time, hinder patient care.

Another issue raised was the importance of the EHR system being quickly accessible anywhere, anytime: “*easy access!*” [‘User-friendliness’, 1386]. If the system meets this requirement, it will be considered user-friendly leading to greater use and employees putting their trust in the system rather than maintaining their own shadow registrations: “*no duplicate registrations anymore*” [‘Change in work tasks’, 1932]. This user-friendliness issue and the design choice of ‘*registering patient data at the source*’ [feedback meeting] placed requirements on each other. Professionals will only rely on the system if they are certain the information is there, and professionals will only put that information in the system if it is immediately accessible.

Achieving such uniformity requires the exchange of ideas and demands. Working together toward uniformity stimulates the exchange of ideas and best practices, leading to a better system. A better system will, in turn, be accepted more quickly in that it may seduce professionals into trading maximum customization for optimal quality.

5.3. Pragmatic perspective: determining stakeholders' legitimacy to weigh issues and make trade-offs

The pragmatic perspective concerns the weighting of issues to set priorities and to inform trade-offs. It is acknowledged that political arguments will supplement the functional arguments provided from the semantic perspective. First, in allocating their attention, project leaders will have to prioritize. Second,

‘keeping all the balls in the air’ is not possible when issues are competing or even conflicting and, therefore, trade-offs will be necessary. The proposed framework weighs issues by taking not only their commonality but also the legitimacy of the stakeholders selling the issues into account. The legitimacy was determined by the extent to which stakeholders perceive they ‘can affect’ and are ‘affected’ (Table 1).

Table 4 shows the results for the stakeholder–issue connections from the pragmatic perspective, i.e., the weight assignment to each issue category based on the discussed legitimacy and the issue’s commonality established from the syntactic level.

Can affect — From a pragmatic standpoint, the issues that influential stakeholders raise warrant attention. In our study, those stakeholders who felt they were more influential than others during the change process raised more concerns regarding the management of the change process ($r = .11$; $p < .05$) and over the support they received in this process ($r = .13$; $p < .05$): perhaps, a cry for help from the more active stakeholders. Moreover, they also raised more issues about the system’s features and their expectations of the system ($r = .11$ $p < .05$). Those stakeholders who found themselves less influential during the implementation process worried more about privacy issues ($r = -.19$; $p < .01$) and sensed a lack of information provision during the implementation process ($r = -.15$; $p < .01$).

Affected by — Another relevant angle on stakeholder–issue connections is to look at the extent to which stakeholders think they are affected by an issue. In our study, the stakeholders who expected the greatest impact on their own work also raised the

Table 4
Pragmatic perspective: issue weighting based on issue commonality and stakeholder legitimacy.

Issue category	Issue–stakeholder connections				
	Commonality (n = 583)	Δ average Can affect ^{#,*} M = 2.87	Δ average Affected ^{#,*} M. = 3.13	SH-based weight ^{**} Can affect	SH-based weight ^{**} Affected
New features and expectations	23.2%	1.14	1.25	26.45	29.00
User-friendliness	18.9%	1.03	1.14	19.47	21.55
Provision of information	16%	0.73	1.01	11.68	16.16
Change in work tasks	8.1%	0.9	1.49	7.29	12.07
Privacy	7.5%	0.45	0.77	3.38	5.78
Implementation process	7.4%	1.31	1.24	9.69	9.18
Integral EHR	7.4%	1.19	1.25	8.81	9.25
Security	7.2%	1.04	0.91	7.49	6.55
Employee involvement	5.8%	0.97	1.36	5.63	7.89
Required (changes in) resources	5.1%	1.19	0.14	6.07	0.71
Training	5%	1.22	1.23	6.10	6.15
Patient Care	5%	1.17	1.28	5.85	6.40
Authorization	4.8%	0.88	0.78	4.22	3.74
Expected technical problems	4.3%	0.84	1.19	3.61	5.12
IT support	3.9%	0.86	1.22	3.35	4.76
Implementation support	3.1%	1.54	1.34	4.77	4.15
Cooperation between disciplines	2.9%	1.55	1.16	4.50	3.36
Uniformity	1.7%	1.57	1.26	2.67	2.14
Role of the patient	0.5%	1.24	0.37	0.62	0.19
Employee commitment	0.5%	0.63	0.62	0.315	0.81
External cooperation EHR	0.2%	2.7	1.47	0.54	0.29

[#] <1 = below average legitimacy; >1 = above average legitimacy.

^{*} In calculating the Δ averages we used the following formulas: (m-M ‘Can affect’) + 1, and (m-M ‘Affected’) + 1. Note that 1 was added to avoid negative values.

^{**} To calculate the overall stakeholder-based issue weight we used the product of Commonality and (relative legitimacy ‘Can affect’ + relative legitimacy ‘Affected’).

most issues ($r = .16$; $p = 0.001$), especially about the expected ‘Changes in work tasks’ ($r = .16$; $p < .001$) and the ‘New features and performance expectations’ of the system ($r = .15$; $p < .001$). Privacy issues seemed to bother them less than it did other stakeholders ($r = .12$; $p < .05$). The stakeholders who felt most affected by the change process were in fact more concerned with ‘Employee involvement’ than others ($r = .10$; $p < .05$).

5.4. *Evaluating the framework's usability: implications for project management*

In this subsection, we discuss some implications of our analyses for the project management involved. We derived these implications from the feedback sessions with the project managers (see Method).

The information-processing view reflected in the syntactic analysis was already relevant to the project managers in the hospital studied. Reflecting on the issue categories and their communalities allowed the project managers to recognize the following. First, the project's management saw the high commonality attached to ‘New features and expectations’ as a positive sign, reflecting the hospital staff's professional attitude toward innovation and quality improvement. They interpreted this as an asset on which the project could build. The fact that ‘User-friendliness’ was ranked second, made project managers more aware of this issue's significance. They realized how especially the administrative staff would feel burdened by a low User-friendliness given the recent downsizing of this employee group. Furthermore, the fact that the paramedics had raised the fewest issues led the project management to recognize that this somewhat scattered group had thus far been relatively neglected: they initiated actions to better identify and target them. It was also noted that it were mainly the managers that had raised issues related to the ‘Implementation process’, which the project managers took as an indication that the “*managers are picking up their role in the process*”.

The contributions made by the semantic analysis were twofold. First, the semantic analysis offered a more comprehensive understanding of the issues that had been placed on the agenda by the syntactic analysis. For example, that the lack of involvement experienced by the employees may have fuelled their worries about changes in their tasks related to the system (sequential dependency). Further, looking at the emerging pattern enabled the project managers to generate an overview of the trade-offs that would have to be made in managing the issues on the agenda, such as in balancing the authorities given to administrative staff with the increased administrative duties placed on physicians. Second, through the issue–stakeholder connections, at the semantic level stakeholders also get connected, i.e., the dependencies between issues generate dependencies between the stakeholder groups raising the respective issues. In the example above, we saw that the task division between physicians and administrative staff depends on the design choices being made.

Finally, the results from pragmatic perspective provide several implications for project management. Establishing the

different legitimacies of the stakeholders enables the project managers to differentiate between issues raised by stakeholders with high legitimacy and those with less. As already noted, the study identified an imbalance between physicians' perception of their ability to ‘affect’ and expectation to be ‘affected’. The project management has reacted to this imbalance in a number of ways. For example, two project managers stated that they are now investing more heavily in directly communicating with the medical departments to compensate for the top-down approach previously followed [feedback meeting]. Similarly, it had particularly been the stakeholders who experienced little influence who had raised privacy concerns. Here, it was hypothesized that the privacy issues had been tackled satisfactorily, and that the real issue was that this had not been communicated sufficiently well to the less involved stakeholders.

6. Discussion and conclusions

In this paper, we have laid out a framework for analyzing stakeholder–issue connections from a knowledge perspective (Carlile, 2002; 2004). With this framework, we aim to fill a gap in the literature and offer support to project managers in disentangling the intertwinedness of stakeholders and issues. To demonstrate its use, we have applied it to issues raised in the pre-implementation phase of an electronic health record project in a hospital setting with high uncertainties and diverse interests. We have shown how the framework enables one to map the stakeholder–issue landscape from three perspectives on knowledge, thereby providing insights into project management challenges from each perspective. Addressing the challenges from each of the three perspectives will make specific contributions to a complex project: determining issue commonality contributes to agenda setting; identifying issue dependencies increases awareness of the required trade-offs, not only between issues but notably between the underlying stakeholder interests; and weighting issues based on the legitimacy of the stakeholders raising them can help in making these trade-offs.

In a political setting, the prudent analysis of the interdependencies between stakeholders has been shown to be crucial (Gray and Hay, 1986): a stakeholder–issue landscape shows where stakeholders might compete for resources, where they have conflicting or similar concerns, and where settling the issues of one stakeholder imposes constraints or helps in solving the issues of other stakeholders.

6.1. *Theoretical contribution*

In their conceptual analysis, Bundy et al. (2013) took the connection between stakeholders and issues as a starting point. Key in their approach to issue salience is the manager's cognitive interpretation (p. 353) of how an issue resonates with the organizational strategic frame. Complementary to this strategic perspective, we conceptualize an issue as representing stakeholder knowledge and, as such, emphasize the meaning that stakeholders attribute to issues rather than management's

interpretation (Helin et al., 2013). If issues represent stakeholder knowledge that is relevant for project managers, then it becomes a prerequisite for project managers to identify issues and to open up to stakeholders' interpretations of these issues. We recognize the existence of knowledge barriers (Currie and White, 2012) between project management and stakeholder groups, and our framework sees issues as a vehicle for knowledge transfer, translation, and transformation across these boundaries (Edenius et al., 2010).

Our framework differs fundamentally from dominant models in the stakeholder theory literature such as the salience model of Mitchell et al. (1997). Mitchell et al. describe salience as the degree to which managers give priority to competing stakeholder claims or issues. Our conceptualization of 'issue weight' explicitly takes the connections between stakeholders and issues into account by offering operational measures based on matching criteria. Another distinct difference is that we follow Gray and Hay's (1986) suggestion by taking account of stakeholders' views of their own legitimacy (covering both 'can affect' and 'affected') whereas others have relied on project management's perceptions (Bundy et al., 2013; Mitchell et al., 1997). This feature and the examination of the dependencies between issues and thus between stakeholders sits well with Aaltonen and Sivonen's (2009, p. 140) finding that project management's response strategy is not formed in the dyadic interaction between project managers and one stakeholder, but evolves from sequences of interaction among multiple project actors.

In conclusion, our multilevel framework makes two contributions to the literature. Firstly, our framework invites a more integrative and balanced look at approaches to stakeholder management and to issue management. Our approach accords with Turner's (2006) premise that a project is a temporary organization being governed on behalf of its stakeholders. Further, Aaltonen's (2011) evidence that interpretation processes play a central role in project stakeholder analysis suggests it makes sense to view issues as stakeholder-owned knowledge that is relevant to project leaders. Indeed, our view opens up a new avenue to theoretically frame the management of issues and their stakeholders as the management of knowledge across boundaries. Our paper offers a way to build theoretical connections (Smith and Graetz, 2011) between two literature strands, project stakeholder management and issue management, and in so doing to enhance theory by benefitting from insights in the literature on managing knowledge across boundaries.

6.2. Practical contribution

We believe that our framework will enable project managers to identify stakeholder issues, grasp their meaning and their related interdependencies and assign weights to them, thereby informing the trade-offs these interdependencies necessitate. Our framework complements blueprint project management approaches, which lack the ability to address emerging stakeholder issues, whose interplay will be hard to manage satisfactorily given the diversity in interests and interpretations (Cooke-Davies et al., 2007). It answers Jepsen and Eskerod's

(2009) call for less superficial models that support project managers in seeing stakeholder analysis as a learning process and an opportunity to engage in stakeholder dialogue. Bourne and Walker (2004, 2005) also make a plea for more attention to the needs and expectations of a diverse range of stakeholders. Unlike the latter authors, however, we also draw attention to the issues commonly voiced by those affected.

Our case results already offers examples of how the project managers involved acted upon the information such an analysis provided. This demonstrates the framework's ability to facilitate practitioners in reflecting upon a project in hand (Winter et al., 2006). Using a framework that explicitly takes the stakeholders' sensemaking and legitimacy into account may further contribute to establishing a genuine stakeholder dialogue that goes beyond information exchange (Helin et al., 2013).

One note of caution is that applying the framework takes significant time and will, therefore, only pay off in large complex projects such as the one studied here. In our application, we identified issues with the help of a short questionnaire that provided input to the stakeholders' issues and experienced legitimacy. To carry out analyses from semantic perspective, project managers need to spend time talking with stakeholder representatives to properly understand the meanings attributed to the issues. Jepsen and Eskerod (2009) earlier found such interviewing to be valuable for project managers. In our study, we used interviews and survey-feedback approaches (Cummings and Worley, 2001) for this purpose. Survey-feedback sessions for stakeholders show that the project managers are serious about stakeholders' views. This may also convince disadvantaged stakeholders to interpret the project context as fruitful for bringing their own issues to the fore (Dutton et al., 2002).

6.3. Limitations and future research

While we consider the proposed framework to be a step forward, our study has limitations worth reflecting upon. First, while the findings give support for the framework's usability, we cannot claim with any certainty that the framework has added value in terms of project management performance. It could be argued that complex project environments call for creativity and flexibility in the form of intuition-based ad hoc management (Atkinson et al., 2006; Stacey, 1996) and, as such, there is no need for an analytical framework that considers the connections between stakeholders and their issues. In contrast, we believe that a sensitizing framework can contribute to understanding the complexity in large projects and to choosing suitable response strategies (Aaltonen and Sivonen, 2009). To verify this, comparative field research is needed (Van Aken, 2004), although a more subjective appraisal by project managers in a pilot study might offer initial insight.

A second limitation is that, for the purposes of this paper, we took a fixed set of internal stakeholders into consideration when determining issue commonality and stakeholder legitimacy. This was acceptable because our main objective was an initial evaluation of the framework's usability and the kinds of information it offers and so, for the sake of simplicity, we

included only a limited set of stakeholders and the dynamics between these stakeholders within that phase. External stakeholders, in this case patients and insurance companies, and their issues were not included in our analysis, and their issues may well also warrant attention and priority.

Finally, in demonstrating our framework, we presented an analysis for one project phase. Thus, we only unraveled the interconnections between stakeholders and issues within that phase and not the dynamics throughout the entire project's lifecycle. That is, we were not able to show the likely changes in the issues raised and the accompanying shifts in interdependency patterns in the next phases of the project. To further investigate these dynamics, future research could also include a 'Novelty' stakeholder–issue connection in the framework. Novelty has been proposed as a relational property of knowledge on the pragmatic level by Carlile and Rebentisch (2003). It is not only that a stakeholder may come to experience a new issue, it is also possible that an existing issue is unknown to project management until it is openly voiced (Weick et al., 2005). Studies suggest that issues that stakeholders consider relevant do not always surface in the formal processes of a project (Burchell and Cook, 2006). Adding this relational property would therefore draw explicit attention to the dynamic nature of issues.

Conflict of interest

The authors declare no conflict of interest.

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