Who matters anyway?!

The role of intra-organisational stakeholder dynamics in IT-based innovation adoption processes in hospitals

Tim R.F. Postema

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THE ROLE OF INTRA-ORGANISATIONAL STAKEHOLDER DYNAMICS IN IT-BASED INNOVATION ADOPTION PROCESSES IN HOSPITALS

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de graad van doctor aan de Universiteit Twente,

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Dit proefschrift is goedgekeurd door de promotoren:

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Prof.dr. A.J. Groen

Preface

A hospital is a complex system consisting of a large variety of specialized interacting professionals with own interests, needs and objectives. I like to use the metaphor of the blood stream of a human body. The delicate composition of different blood cells enables the organs of the human body to properly function in unison.

IT projects in hospitals are no different. The alignment of 'blood cells' in the project and organisation environment is key to project success and eventually, proper functioning of an organisation as a whole.

Interesting story, you might think, but what is this thesis about? Although there are many ways of introducing this thesis and its content, I would like to let the words speak for themselves. In the wordcloud[1] below, one can get an overview of the most discussed subjects in this thesis as a starting point.

As can be seen, the key words for this thesis are innovation, project and stakeholder. These three words separately and in combination mark my interests ever since I started my study and my working life in the healthcare sector.

The desire to translate these interests in an innovation project for myself, started several years ago, when I came to wonder how things work in relation to the people surrounding a project during my employment as a healthcare consultant. My steadily growing curiosity turned into a drive to explore the subject from a scientific angle and I decided to take on the adventure of starting a PhD on the subject.

Now, looking back after years of study, I wonder if one could really oversee the adventure that one dives into when starting a PhD. I certainly didn't. I frequently compare the adventure to the in this book mentioned and explained innovation journey. It implicates that steps forward sometimes lead to missing the right turn and to walk all the way back down the road and take another turn instead. At many times I have felt lost on the journey, looking for landmarks in my surroundings to advance or desperately trying to find a map or preferably GPS system to guide me.

[1] Created on http://www.wordle.net/ (august 2012)

Preface

It was in my second year of this study when I suddenly realized it is really not about finding the right way after all. As Greg Anderson[2] mentions in his bestsellers; it's about the focus on the journey, not the destination. Joy is found not in finishing an activity but in doing it. This is especially true when one is not even sure about the destination!

Although I am still very happy to have finished this activity, this small metaphor does mark my advancements, my lessons during this fabulous period of time. I was severely challenged intellectually but also in endurement and perseverance by my graduation professors Koos Krabbendam and Aard Groen. I want to thank them for their discussion and input and pulling me down the road every now and then. It were inspiring sessions I will not forget.

There are many, many people I want to thank for their involvement in my research. First of all, the case study respondents, project managers and PhD candidates I used as major sources of information for my research.

I owe much gratitude to my girlfriend and later on along my journey, my wife, for her patience and absorbing my swearing and depressions associated with my writings. Many respect for her bravery to take on the challenge to fully review my thesis and supplying many very relevant corrections.

And many thanks to my parents, sister and family-in-law, of course. For their support and motivational words to continue writing, especially at times when my job as a project manager seemed to leave no space for my PhD anymore. The latter, by the way, being mostly my own choice, since I do owe gratitude to my employers for allowing me to spend time on my thesis.

And of course, all others I did not mention explicitly, but did contribute to the book in your hands.

Tim Postema
The Hague, October 2012

[2] Greg Anderson, American best-selling Author and founder of the American Wellness Project, 1964

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Introduction

1

The introduction of new information technology in healthcare organisations seems to lead to mixed results in practice. For example, more than half of ICT implementations in hospitals lead to dissatisfaction, resistance or even failure (Aydin & Rice, 1991). In recent news articles in The Netherlands these findings are found to be reality in hospitals as well; many EHR[3] implementations fail, delay or cost more than budgeted, thus not leading to expected results like quality or efficiency improvement.

In daily practice, it seems project management often is unsure at what stage it is wise to involve certain kinds of stakeholders, while this management of stakeholder involvement in innovation projects is a task of growing importance according to a multitude of recent studies.

Management of an organisation or project continuously has to decide when and how to engage stakeholders within the innovation process, in order to improve the innovation outcomes or the process of innovation itself (Vos & Achterkamp, 2006).

But why is this so hard? Why is it so difficult to determine beforehand how people will engage during innovation implementations? Why do certain people oppose innovations and others contribute to the effectiveness of the same innovation? How can we influence these people in order to achieve intended results?

In our research we try to investigate the possible answers to these questions and are actually trying to find some methods to get closer to answering these issues, since these questions have great practical value. They might give insights to implementers on how to engage stakeholders, or, in other words, how to optimize their stakeholder management (and entailing activities) for the duration of an implementation project. This in turn may increase innovation adoption and thus decreases the chances of delays and non-conformance costs.

In this writing we will focus on *IT-based innovations* in hospital settings, where IT product innovations often support *process innovations*. We also focus on investigating what marks an innovation's success and what it is in comparison to an *implementation's* success.

According to Ferlie et al. (2005), high professionalization can retard innovation spread among stakeholders due to social and cognitive barriers. The healthcare sector, especially hospitals, are characterized by this high professionalization. The barriers are apparent, not only in-between the medical professions, but especially between two fundamentally different communities of practice; the hospital IT department and medical staff (as end users of the innovation). As argued by Ferlie et al. (2005) these kind of professional differences can only be overcome by means of social interaction, trust and motivation. In other words; through means of active engagement during the innovation journey. By identifying and managing social and cognitive boundaries between the communities of practice, one can actively attempt to overcome these differences that hinder innovation adoption and spread. This definitely demands a clear view of the stakeholder environment involved with the innovation implementation and their individual and clustered interests, power and values. Only then, active engagement strategies can take form and can be evaluated over the innovation journey.

[3] EHR: Electronic Health Record

Even though a variety of empirical research has been done in the area of individual technology acceptance predictors (Berta et al., 2005; Davis, 1985, 1989; Venkatesh & Davis, 2000; Venkatesh, Davis, & Morris, 2007; Venkatesh et al., 2003), little is known about stakeholder and stakeholder group (clusters of individuals) salience influences on innovation adoption factors or how stakeholder salience may evolve during the innovation adoption process, while at the same time research urges to take stakeholder dynamics during innovation implementation into account (Blake, Massey, Bala, Cummings, & Zotos, 2010).

This leads to the preliminary question of *what the role of stakeholders is in relation to the success of IT-based projects in hospitals*.

In a variety of empirical studies, the commitment and trust of the potential adopting population, and thus part of the stakeholder population, is seen as important in innovation adoption success. So, much can be gained in insight in stakeholder dynamics during innovation adoption processes. With these *stakeholder dynamics* we refer to the changing nature of stakeholder salience and changing role involvements of stakeholders on the one hand, and the changing nature of stakeholder-innovation interaction during the adoption processes on the other. In other words, the 'who-matters' as well as the 'how do they matter' questions are relevant in gaining insights in stakeholder management during innovation adoption processes.

The main objective of our research is to develop a practical methodology to evaluate stakeholder dynamics, in order to provide insights in the role of these dynamics during IT-based innovation adoption processes in hospitals. These insights may ultimately enable the formulation of engagement strategies to enhance IT-based innovation implementation success in hospital settings.

In this way, we aim to contribute to the body of knowledge of stakeholder theory research to investigate how to effectively gain insights in in these dynamics of stakeholders in a project environment. Most stakeholder analysis tools and models found are static, often one time, measurements. Furthermore, the combination of technology acceptance measures in combination with existing stakeholder salience measures is not found in literature. In literature, technology acceptance models are primarily focused on the individual, while we aim to aggregate measures to the stakeholder (group) level.

1.1 A GLANCE AT ICT IN HOSPITALS IN THE NETHERLANDS

There are 94 public hospitals in The Netherlands, of which 8 are academic hospitals. Beside these public hospitals, there's an increasing number of private for profit hospitals. With respect to staff salary structure; doctors in academic hospitals are civil servants receiving a fixed monthly salary. In not for profit hospitals you have both privately self-employed doctors paid on the basis of the volume of work provided and doctors employed by the hospital with a (more or less) fixed monthly salary[4].

In The Netherlands 9.6% of the GDP are considered healthcare expenses, this is a considerable amount per capita (Protti & Smit, 2006). In 2011 this has risen to a stunning 14,9% of the GDP.[5]

[4] http://www.ihf-fih.org/pdf/map/Netherlands%20HS_Layout%201.pdf (access 1-8-2010)

[5] http://www.cbs.nl/NR/rdonlyres/A3F2AAAE-38AC-4D39-941A-20EA5C5AFCF3/0/pb12n034.pdf (access 22-10-2012)

With respect to ICT expenditures, as appears in recent studies, an average of 4% of a Dutch hospitals total budget is used for information and communication technology. In the Unites States this is even more; a striking 10% of the total hospital budget[6]. In The Netherlands, this means an average of four thousand euro per hospital employee per year. This is three times more than 10 years ago.

A Dutch hospital has an average of 170 current ICT projects and a total of 50 FTE employed in the ICT department[2]. As these figures show, ICT is a theme of significant importance in Dutch hospitals. At the same time, there's much debate about ICT's contributions to quality of care or hospital productivity.[7] Some researchers argue that this is mainly a result of a lack of a proper business case before engaging in large ICT implementation projects. Other researchers indicate the gap between the world of IT and cure and care processes and the lack of activities to close this gap contribute to this lack of effectiveness (Walley & Davies, 2002).

Reasons for hospitals to engage in ICT innovation implementation projects are, among others (Suomi, 2001);

1. *Technological advancement in medical technology*, e.g. medical imaging modalities delivering high volume digital images that need to be available in the whole hospital.

2. *External institutional pressure*, e.g. government pressure in information exchange between care and cure institutions (i.e. the national EHR in The Netherlands) and between institutions and regulatory bodies (e.g. with respect to key performance indicators).

3. *Competitive pressure*, production of a Dutch hospital is largely dependent on GP referrals. Due to increased free-market financial triggers, hospitals are increasingly engaging in competitive marketing in the direction of these general physicians. Adequate communication channels facilitate this.

4. *Internal strive for process improvements*, partly due this aforementioned competition, a hospital is continuously looking to improve both quality of care and increasing process efficiency. The urgency for this strive can also be found in increasing demand (more people getting older) and decreasing workforce. Many ICT applications support planning and scheduling or replace administrative activities.

As can be seen later on in this document, these reasons connect to general triggers to innovate, as indicated in the research of Mitropoulos et al. (2000). (Mitropoulos & Tatum, 2000)

The majority of current ICT implementations are EHR related, PACS or PACS2[8] related or are aimed to support planning and scheduling of resources (Enterprise Resource Planning systems) or to enhance safety (electronic prescription systems, or safety management systems). These systems all impact a wide spectrum of the organisational processes,

[6] http://www.ictzorg.com/home/nieuw/808/ict-uitgaven-ziekenhuizen-ruim-4-procent (accessed 13-5-2010)

[7] http://www.automatiseringgids.nl/artikelen/2008/25/ict-levert-ziekenhuis-te-weinig-op.aspx (accessed 13-5-2010)

[8] Picture Archiving & Communication System (PACS): these are systems that capture digital images from for example radiology. PACS2 systems embrace all images in a hospital, also outside radiology; for example endoscopy images or ultrasound images of cardiology.

affecting many different specialties and care professionals. This increases implementation complexity significantly. The stakeholder spectrum becomes blurry when not only the amount of users multiply, but also the diversity of disciplines (physician vs. nurses vs. physician assistants, etc.) affected by the project increase. These facts, combined with the different worlds of IT and healthcare, with a different view on processes; collective process view (ICT) versus individual patient quality view (physician), makes the management of these kinds of projects and stakeholder management in particular, a highly complex activity.

1.2 DOCUMENT STRUCTURE; A COMPASS ON OUR JOURNEY

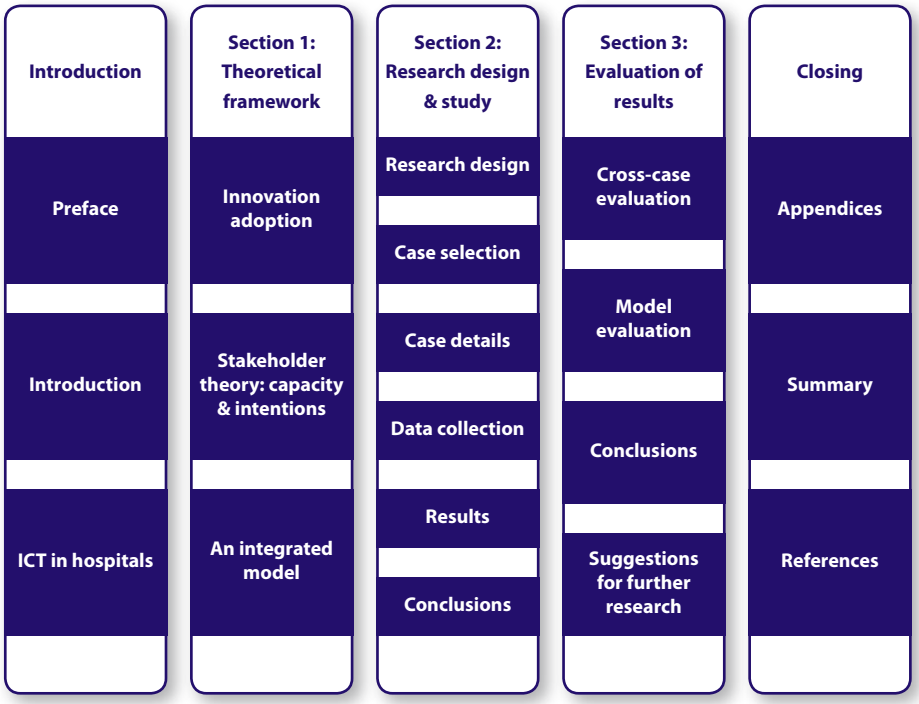
In the previous introductory paragraphs we used several terms and themes like ICT in hospitals, stakeholder theory (identification, classification and dynamics), innovation adoption and technology acceptance. While it might be dazzling to have a good understanding of these concepts in this early stage, later on in this thesis, these terms will be further defined and explored. We first explore our research domain; ICT innovation adoption and implementation in healthcare, or even more precise, hospital settings. Much attention will be given to the research domain of innovation adoption and the innovation adoption and implementation process. We will do so in the first section of this thesis. We will discuss these theories through a *stakeholder theory* lens, as will be further explained. We end the first section with our theoretical framework, our research model and our research design.

In order to investigate the discussed stakeholder dynamics, we need to investigate the field of innovation theory and stakeholder theory. The following questions serve as a guideline for our review;

1. What can be defined as an innovation?
2. How does the process of innovation adoption look like?
3. What factors hinder or facilitate innovation adoption, specifically in hospitals?
4. What dynamics take place during innovation adoption processes?
5. What stakeholder attributes need to be considered when trying to evaluate dynamics?
6. How do these attributes evolve over the innovation adoption process?
7. How can one capture, monitor and evaluate these attributes over time?
8. What theory regarding engagement strategies does exist in the field of stakeholder management theory?
9. How do these strategies connect to the previous investigated stakeholder attributes?
10. How can engagement strategies be embedded in a theoretical model of stakeholder attribute dynamics?

In the second section, our case study research will be presented. The casestudies are both to validate our research model in practice as well as analyzing the things that happen in the stakeholder environment during a hospital innovation implementation in general, to get a better understanding of the context of implementation projects. In this section both the case study context as well as the findings and conclusions are discussed. Detailed information is given about the data collection methods and the project as a whole in the light of our research purposes is evaluated. In the last section of our thesis, the evaluation of our research will take place. Both the research framework and the proposed evaluation model are critically examined and evaluated. The results of the case study in the light of our research questions are reviewed and evaluations lead to a final discussion with closing suggestions for further research.

Figure 1: *A reading guide to the thesis. The author agrees that this page may be torn out as a guiding compass through the reader's journey.*



Innovation adoption explained

2

In this chapter, attention is given to the theme of innovation adoption. First, different major theoretical points of view are investigated, both with respect to the concept of an innovation as the process of innovation adoption. After this discussion, we elaborate on main drivers for innovation; why does an organisation engage in innovations? We continue this chapter by elaborating on technology acceptance models. We conclude this chapter by a short overview of discussed literature and its usability for our research.

2.1 WHAT IS AN INNOVATION; PROCESS OR DISCRETE EVENT?

A growing number of practitioners and researchers define innovation as any idea, practice, or object that the adopting individual or organisation regards as new (Damanpour & Evan, 1984). From this perspective, the newness attached to an innovation remains a matter of perception; being first to adopt might not even matter (Cooper, 1998b). Nohria and Gulati (1996) provide another definition of an innovation, noting very broadly to include any policy, structure, method or process, product or product opportunity that the manager of the innovating unit perceived to be new.(Nohria & Gulati, 1996) Here, clearly, some sort of hierarchy within an innovating unit is implied. Both definitions show that an innovation is not bound to a product itself and that an innovation is perceived as such by individuals.

Many recent works on the adoption of innovation separate the term from measures of absolute time since the first use or introduction of the idea, practice or process. Additionally, although dated still relevant, Bigoness and Perreault (1981) provide convincing arguments that the adoption of a single process, product, or technology by a firm does not equate to a tendency toward innovativeness (Bigoness & Perreault Jr, 1981).

In order to understand innovation, the key question for the adopting unit involves uncertainty associated with the idea, process or object. Uncertainty arises because the adopter has incomplete knowledge with which to evaluate and make judgments about the appropriateness of the innovation and the long-term consequences of adoption (Gatignon & Robertson, 1989).

Researchers and practitioners have defined innovation in several different ways (Burgelman & Sayles, 1986), at times applying the innovation label to phenomena that involve radically different management styles and structures (Utterback, 1994). For example, it has been shown that organisational forms that favor the adoption and implementation of new manufacturing processes may be improper for the generation of new products (Kimberly & Evanisko, 1981).

The used definitions in research make it clear there's discussion whether to see innovation adoption as discrete event, a decision, or a process. As described by Frambach (2002), innovation adoption is the decision of any individual or organisation to make use of an innovation (Frambach & Schillewaert, 2002).

Consequently, the discrete event approach to studying innovation is appropriate for those seeking to differentiate between adopters and non-adopters of innovation. Use of the discrete event approach is fitting for assessing the merits of particular organisational structures and business strategies in the adoption of innovation (Cooper, 1998b).

In his influential research, Rogers (1995) however considers innovation adoption more as a process than just a discrete decision in time. He describes innovation adoption as "the process through which an individual or other decision making ***unit*** *passes from first knowledge of an innovation, to forming an attitude toward the innovation, to a decision to adopt or reject, to implementation of the new idea, and to confirmation of this decision*."

The general innovation adoption and diffusion process as described by Rogers (1995) in the innovation decision process model (IDPM) contains the five phases, as also noted and elaborated on by Cain et al. (2002). (Cain & Mittman, 2002; Frambach & Schillewaert, 2002; Rogers, 1995)

1. Knowledge

Knowledge occurs when the decision-maker or decision making unit is exposed to an innovation's existence and gains some understanding of how it functions. Acquiring knowledge occurs throughout the innovation-decision process.

2. Persuasion

Persuasion occurs when the decision maker forms a favorable or unfavorable attitude toward the innovation. Persuasion is when the decision-maker becomes psychologically involved and starts to feel something about the innovation.

3. Decision

Decision occurs when the decision maker engages in activities, such as partial trial of the innovation, that lead to a choice to adopt or reject the innovation.

4. Implementation

Implementation occurs when the decision maker puts an innovation into use and overt behavior change happens. The new user seeks information about how to obtain the innovation, thinks about what problems might be encountered, and seeks support in putting the innovation into place.

5. Confirmation

Confirmation occurs when the decision maker seeks reinforcement of an innovation decision already made, or reverses a previous decision to adopt or reject the innovation if exposed to conflicting messages about the innovation. At this point, the decision maker seeks to avoid a state of dissonance or to reduce it if it occurs.

Rogers (1995) describes the innovation adoption process also as a continuous process of uncertainty reduction. As can be seen in the above figure, multiple characteristics of the decision making unit (people involved in the decision) influence the innovation adoption process. Furthermore, perceived characteristics of the innovation also attribute to innovation adoption outcomes. In conclusion, individual involvement has an impact on the innovation adoption process, according to Rogers. In this document, we will further build on this notion, by further investigating characteristics of the people involved and exploring

determinants of innovation adoption in terms of perceptions by these involved people. Both the process approach and the discrete event perspective have merit in that adopters may be differentiated from non-adopters within a referent set of organisations. From the process perspective the issue of concern is the adoption stage or phase of implementation which ultimately spells success or failure for subsequent phases of the adoption and of the innovation itself.

Critics of the earlier given definition of Frambach (2002), stating that innovation adoption is a decision to make use of an innovation, argue that the decision on itself does not guarantee any embeddedness or usage of the innovation at hand. For that reason, Dillon (1996) describes innovation adoption (specifically in ICT contexts) as the proven willingness to use ICT for the intended tasks (Dillon & Morris, 1996). This means that innovation adoption seems to be related to the willingness of the adopter to actually use an innovation. Eventually, it must be an integrated part of an adopter's work processes. However, this kind of adoption does not implicate any level of success of an innovation. An innovation can have high usage, with high levels of willingness among users, and still can be a failure because it does not bring what it was supposed to.

Non-linear adoption processes: an innovation journey

Vos et al. (2006) describe a general four-phase model of innovation projects, consisting of comparable phases as the model by Rogers (1995). In their articles they added the maintenance phase, following the implementation phase of an innovation. Pelz (1983) presents evidence in his research that suggests a more complex nonlinear model for organisational innovations that are originated or highly adapted, or those that are complex and uncertain, the staging sequence (as described by for example Rogers (1995) will appear overlapping and disorderly (Pelz, 1983). This means that different parts of an organisation are likely to be at different stages in the innovation adoption process at the same point in time (Lewis & Seibold, 1993). According to Leonard-Barton (1988) this necessitates so-called 'cycles of adaptation' (Leonard-Barton, 1988). This strengthens the earlier notion of stakeholder dynamics (and salience changes) during the process.

This concept of non-linear adaptation is in line with the concept of the innovation journey as described by Van de Ven et al. (1989) (Van de Ven, Angle, & Poole, 1989; Van de Ven, Polley, Garud, & Venkataraman, 1999). In their work it is argued that innovation adoption is actually a journey, a dynamic process with no fixed paths or endings for the people involved.

Table 1: *The four phases of Vos et al. (2006) based on the innovation journey.*

The innovation journey phase	Definition
Initiation phase	This phase focuses on generating ideas
Development phase	This phase focuses on developing the innovation based on these ideas
Implementation or termination phase	This phase focuses on implementing the innovation (or terminating the project)
Maintenance phase	This phase focuses on applying and evaluating the innovation

In the viewpoint of Van de Ven (1989), the above mentioned phases and activities may occur sequentially, but always with feedback and feed-forward loops. Also, the identity of the 'travellers' (the actors as well as the technological options being developed) may change in the course of the journey (Van de Ven, et al., 1989). In the above innovation model, Van de Ven (1989) adopted a social action, non-linear view of organisational processes. For example, Van de Ven (1989) concluded that it would not be possible to map the innovation journey in detail in advance. The author also pointed out the journey will vary depending on the starting point, will prove to be complex and messy and hard to manage. During the phases of the innovation journey, the following temporal and cyclical processes may occur;

1. Exposing to an innovative idea
2. Embracing the idea
3. Extending knowledge and experience on the idea
4. Emerging of strategies to implement the idea organisation-wide
5. Enacting and adapting the strategies

In other words there's a continuous change and evolvement of both the identity of the actors as well as the innovation at hand; there's no path given in advance; *the actors create a path by walking*. (Rip & Schot, 2001; Van de Ven, et al., 1989)

This makes it very hard for project teams managing an implementation to anticipate design and implementation trajectories beforehand.

When does innovation adoption end?

As stated before, innovation adoption does not end at the moment in time of implementation and use of the product. A *product* innovation is successful when there´s continued (intended) usage of the product. This can be measured both in terms of frequency of use and degree of intended usage. In this way it is possible to verify and indicate for example non-optimal usage of functionality and frequency of usage decreases (fall back). Apparently, since we are talking about IT-based innovations, that implicates process reengineering as well, it is insufficient to only take usage variables into account. More importantly, the product must be used to serve a performance goal embedded in a new or altered working process. In other words, the achievement of predefined performance goals and criteria states more about the successful adoption of the innovation. Obviously, this achievement is enabled by the extent of usage of the IT product innovation.

This is contrary to the notion of the discrete binary adopt/not adopt decision. Instead of static indicators, more dynamic indicators are increasingly used in research to measure successful innovation adoption.

Lewis et al. (1993) mention fidelity and uniformity as measures for successful innovation adoption. Fidelity concerns the degree to which the innovation in use matches the use intended by the designers and sought by implementers. Uniformity concerns the degree to which the innovation in use varies across individuals and across user groups (Lewis & Seibold, 1993). Since our focus is on IT-based innovations these dimensions are too narrow; they focus solely on usage of an innovation and not on achieving performance outcomes as intended, which may affect more or other individuals than just the users of the IT innovation itself. We will further elaborate on this notion in the course of this document.

For the above reason, we are considering *goal fidelity* as major outcome measure for successful innovation adoption. This means reaching *prolonged* high levels of congruence between intended criteria and goals (that indeed may change during the innovation journey) and actual performance outcomes. The dynamics in goal definition over the innovation journey contribute to the complexity in measuring innovation adoption success. Also, in order to attain high goal congruence levels, high levels of *usage* fidelity and uniformity are considered essential.

Organisational drivers for innovation

Now we know more about what innovation adoption actually is or might be, we need to know more about motives or triggers for innovation processes. What drives an organisation to start up an innovation process or to embark on this innovation journey?

Mitropoulos et al. (2000) identified four main drivers for the initiation of innovation adoption processes; (1) to gain competitive advantage in the field of operation, (2) solving process problems, leading to inefficiencies or underperformance, (3) technological opportunity, a technology push, e.g. end-of life of application; a new release or (4) institutional requirements (e.g. Laws) (Mitropoulos & Tatum, 2000). As noted in the introduction of our thesis, these drivers are also seen in IT projects in hospitals.

As can be seen, three of the above forces originate from an organisation's external environment, except for solving process problems forming an *internal* drive for innovation. In following chapters we will further explore *individual* drivers for innovation.

Concluding remarks with respect to usability for our framework

Even though the innovation decision process model of Rogers (1995) also positions actor decisions and perceptions as contributing factors with respect to innovation adoption outcomes, it's still a seemingly deterministic and sequential model. For example, the perceived characteristics of an individual are not limited to be of importance during the persuasion phase, but may be in continuous change. Not much attention is given by Rogers (1995) to these kind of actor attribute dimensions and their continuous interaction during the innovation process. We do agree, however, on the notion and concept of Rogers (1995) that innovation adoption is more than a static yes or no decision, but more a process of thought and opinion forming of actors involved; or, as noted by Seligman, a process of continuous sense making by the adopters (Seligman, 2000).

The remarks made in recent scientific studies about the continuous interaction between the innovation and a variety of actors clearly indicates the dynamics and influences of actors during the innovation adoption process. We find this view on the innovation adoption process, as a kind of evolving journey, most suitable as a basis for our research model, since we are mainly interested in the central role of actor (stakeholder) influences during the innovation implementation process and the effect on the outcomes of this process taking as much as possible dynamics into account.

To meet the purpose of research, the concept of continuously evolving and preliminary unknown path-dependencies will be adopted in our research framework. The innovation journey phasing will therefore also be reflected in this line of thought when constructing the theoretical framework. For that reason we will use the earlier mentioned metaphor of an innovation journey, which, according to Rip et al. (2002) actually refers to the underlying phenomenon of emerging path-dependencies, to analyse dynamics. By adopting this point of view on the innovation adoption process, one can construct the innovation journey in terms of actor's perspectives and actions as well as interactions and their outcomes. However, the innovation journey concept of Van de Ven (1989) is mainly focused on new product innovations. In describing the initiation phase of the journey for example, he estimates an average of three years to start with ideas. In the light of our research, it is assumed that the product or technology is vaguely known to support in process innovations in mind.

So, in our case, the product does not need to be 'invented' nor comes up spontaneously in a pure sense. The product, however is further developed and designed that may result in a new 'variant' of the product. However, the initiation phase as described by Van de Ven does aid in conceptualizing the first stage of interaction between the technology (that just has been or hasn't been selected). This also holds for the other phases. In conclusion, the context of our research and the starting points of our targeted journey are different than that of Van de Ven (1989).

The higher the account for never halting dynamics, the more complex the models do appear for translation for empirical research. Even though the concept of the innovation journey and emerging path-dependencies seems suitable for analyzing stakeholder dynamics during the innovation adoption process, it does not explicitly supply methods to capture these dynamics. In this sense, the frameworks that are highly conceptual may pose problems in translating them during the operationalization of our framework.

The concept of the innovation journey in combination with stakeholder theory and the focus on hospital settings is not found in literature by the authors, even though evaluations based on the innovation journey hospital settings are present and applications of the innovation journey on combination with stakeholder analysis (X. X. Hu, 2005; Vos & Achterkamp, 2006). For this reason, more theory building based on these concepts might enhance the usability of the theory in specific settings.

2.2 TWO PARALLEL JOURNEYS

Since we are talking about *IT-based innovations*, we have to consider two separate but parallel, entwined and interactive innovation journeys; (1) the process innovation which the IT innovation is supposed to/may support and (2) the IT product/innovation as process innovation *enabler* and its journey through the organisation on its way to usage.

As noted in the previous section, internal inefficiencies or external pressures are considered main drivers in the formulation of process improvements. Through idea generation solutions or innovations are formulated and decisions are made how to enable these process innovations, for example through IT innovation usage. So the formulation of goals and performance criteria takes please before developing the actual process innovation. Therefore, this journey is considered to start at the idea generation phase of the journey.

When focusing on IT-based innovation adoption processes, we are mainly focusing on existing external party IT solutions which are bought and customized in collaboration with the customer. In other words, the idea generation stage of this product at the time of introduction in the hospital is not relevant in our case. However, this product can be further developed, implemented and maintained. Therefore, we are considering this part of the journey to start at the *development phase*.

Innovation adoption versus innovation implementation

At this stage, since we are getting closer to what innovation actually means in practice, we need to clarify the concepts of innovation adoption versus implementation.

As stated by Klein et al. (1996) innovation implementation within an organisation is the process of gaining targeted employees' appropriate and committed use of an innovation. Innovation implementation thus *presupposes* innovation adoption, that is, according to Klein et al., the decision, typically made by senior managers, that employees within the organisation will use the innovation in their work (Klein & Sorra, 1996). This implicates that implementation is the introduction of the *enabling IT product innovation* and attached process reengineering into organisational practice. In other words, implementation is the transition period during which targeted organisational members ideally become increasingly skillful, consistent, and committed in their use of an innovation. Therefore, implementation is the critical gateway between the decision to adopt the innovation and the routine use of the innovation within an organisation (Klein & Sorra, 1996).

Note the notion of *targeted organisational members*, since no elaboration is given of which members exactly should be focused on during this implementation.

Innovation effectiveness describes the benefits an organisation receives as a result of its implementation of a given innovation. Implementation effectiveness, on the other hand, is a necessary but not sufficient condition for innovation effectiveness.

The implementation of IT-based innovations is orchestrated by a set of activities undertaken by a body responsible for the implementation trajectory itself. In the line of Lewis et al. (1993) we call these activities *structured implementation activities* (Lewis & Seibold, 1993). In their line of reasoning, structured implementation activities are designed and enacted by internal and external change agents to specify usage of innovations and influence users' innovation-role-involvement; their formal (prescribed) and emergent patterns of interactions with and concerning the innovation (Lewis & Seibold, 1993).

According to Lewis (1993), these structured implementation activities, combined with innovation-role-involvement (compare stakeholder dynamics as discussed earlier) make up the two key components of the intra-organisational adoption process. Structured implementation activities (SIAs) are triggered by the formal decision to adopt the innovation that is made at some level of the organisation. These processes and their interaction yield the form(s) of the innovation at any point in time after structured implementation activities have begun (Lewis & Seibold, 1993).

The above concepts imply certain characteristics important for our research. Two concepts need some more elaboration; there's (a) a change agent leading and enacting (b) deliberate activities. These concepts imply that structured implementation activities do not include unplanned events that also may have an impact on the innovation's success.

Furthermore, the explicit mentioning of a *change agent* connects to the systems theory concepts of de Leeuw (2000) of a governing body and a governed system, where the governed system is in different states as a result of activities by the governing body (De Leeuw, 2000). These concepts help us to understand the relation between externally imposed activities or interventions on parts of the organisation during the innovation journey(s), resulting in possible changes in stakeholder salience and thus in DMU composition.

In addition, the term change agent implies a structure that may or may not be part of the organisation itself that is supposed to initiate (and sometimes orchestrate) the innovation journey(s). In the focus of our research this change agent could be the board of directors of a hospital or a project team leading the innovation process or implementation trajectory for a group of stakeholders, including the potential adopter population.

One must note however, that even though theoretically the governing and governed body are separate concepts, in practice members of the governed body can also be part of the governing body (e.g. end-user involved in steering or project committee).

Implementation activity specificity

When discussing structured implementation activities, it can be helpful to distinguish between organisation level activities planned within the implementation trajectory and activities differentiated for different stakeholders; so-called focused activities, connecting activities to stakeholder type. The difference between the levels lie in the specificity of the activities. The organization level structured implementation activities as described by Lewis (1993) may be mapped according the four-phase model by Vos and Achterkamp (2006). Important to note, however, is that the innovational journey as described by

Van de Ven (1999) is including both the innovation generation phase as implementation phases. In the light of our research, the information systems are not 'invented' within the hospital; further developed at best. This means that the initiation stage of an innovation as described as part of the innovation journey will included in our research model, with an altered content. We describe the initiation stage of the innovational journey as the stage where first ideas are generated within the organisation of how the innovation should look like. In this sense, the articulation and announcement of the innovation and its goals is one of the activities that could be part of this phase. Furthermore, we mapped the innovation journey phases (and corresponding implementation activities) on often used phasing of IT implementation projects, for example the ASAP method by SAP AG[9].

Table 2: *A comparison of the innovation journey with an IT implementation method and example implementation activities.*

The innovation journey (Van de Ven, et al., 1999; Vos & Achterkamp, 2006)	IT implementation phasing (ASAP)	Possible structured implementation activities
Initiation phase (generation of ideas)	Phase 1: Project initiation	SIA 1: the announcement and articulation of the innovation and its goals (Nutt, 1986) SIA 2: identification and/or selection of stakeholders[10] (Roberts-Gray, 1985)
Development phase (developing the innovation)	Phase 2: Blueprinting Phase 3: Realization	SIA 3: development and communication of performance criteria(Leonard-Barton, 1988) SIA 4: DMU-innovation confrontation (e.g. Keyuser testing) SIA 5: co-development of IT innovation itself (product customization, enhancement, content addition, etc.)
Implementation- or termination phase (implementing the innovation)	Phase 4: Final preparations Phase 5: Go Live (& Support)	SIA 6: training activities to develop users' task-related skills and innovation knowledge (Leonard-Barton, 1988)
Maintenance (applying and evaluating the innovation)	Phase 5: (Go Live &) Support	

Through participation in structured implementation activities surrounding an innovation, users' social information sources may widen or change; new peer groups and work groups may be established-new similar others "discovered." (Lewis & Seibold, 1993) In other words, a goal of these implementation activities is to socialize stakeholders in their role as users of the innovation. This may shape a stakeholders' intentions. This matches our earlier notion that implementation activities influence a stakeholders' intentions and salience.

[9] SAP is a market and technology leader in business management software, www.sap.com

[10] Even though in this literature the term users is used, in our research we focus on stakeholders.

2.3 A MULTI-LEVEL APPROACH

As seen in the previous chapter, there's a distinction between organisational and individual drivers for innovation adoption. Also in literature, for example Frambach et al. (2002), two types of innovation adoption can be identified; organisational innovation adoption and individual innovation adoption (Frambach & Schillewaert, 2002). In this chapter we will elaborate mainly on individual acceptance and adoption variables, since we mainly focus on a stakeholder point of view. We hypothesize, however, that not all individual acceptance decisions do matter. Only those individual decision's matter concerning (intra-organisational) stakeholder's with sufficient salience within the organisation.

The organisation & the individual

For the purpose of our research, we define an organisation as a person or group of people intentionally organized to accomplish an overall, common goal or set of goals. The members perform activities influenced by the norms and values (culture) and structure (hierarchy, rules and procedures) of the organisation. The organisation consists of certain formal and informal communities, which in turn consist of individuals. From an organisation's point of view an innovation adoption's success is achieved when desired and intended goals are achieved, usually formulated at the innovation's initiation phase. As is argued in literature, this organisational innovation adoption success is dependent on individual acceptance of the innovation.

In the large body of literature, as already discussed, individual innovation adoption is often described as the decision (-process) to either accept or reject a decision. In other words, it is seen as an *individual technology acceptance decision*. The dominant paradigm posits that the more individuals and organisations possess of the right independent variables, the more the IT-based innovation will be adopted (Jeyaraj, Rottman, & Lacity, 2006). The characteristics of users thus can play an important role in intra-organisational adoption. This connects to the innovation process model of Rogers (1995) as discussed earlier.

2.4 TECHNOLOGY ACCEPTANCE MODELS

Building towards our theoretical research model, we argue that not all individual technology acceptance decisions do matter from an organisational innovation adoption perspective, however, from those *who do matter*, we are highly interested in how their perceptions of the innovation and the meaning of the innovation for their work practice. In this line of reasoning, a lack of acceptance indicates sources for potential resistance.

Most influential models in this area are the Technology Acceptance-models (TAM, TAM2), the social psychology models TRA (theory of reasoned action), TPB (theory of planned behavior) and more recently the UTAUT model (unified theory of acceptance and use of technology) (Fishbein & Ajzen, 1975; Pijpers, 2002; Venkatesh, et al., 2003). In general, these models explain technology acceptance as a result of behavioral intention, which in turn is a result of attitude and beliefs with respect to innovations.

These causal relationships can be identified in for example the Technology Acceptance Model as described by Davis (Davis, 1985);

Empirically, this is one of the best tested *individual* acceptance models available (P. J. Hu, Chau, Sheng, & Tam, 1999), although it does not explain all variance in actual use.

The Technology Acceptance model describes two dominant beliefs as predictors for actual use of an innovation by an individual; *perceived usefulness*, the degree to which a person believes that using a particular system would enhance his or her job performance and *perceived ease of use*, the degree to which a person believes that using a particular system would be free of effort.(Davis, 1989)

In the TAM2 model, this TAM model is further enhanced by Venkatesh et al. (2000) by adding two mediating factors (experience and voluntariness of an individual) and decomposing the external variables in a set of five influencing factors. The factors are a combination of the impact of the technology characteristics on the individual (image, job relevance, output quality and result demonstrability) as well as influence from the individual's social environment (subjective norm). (Venkatesh & Davis, 2000)

In both models, product characteristics do have an effect on eventual usage behavior, like result demonstrability and perceived ease of use. Other studies focus solely *on product* related characteristics as predictors for eventual acceptance of the technology. For example, Moore en Benbasat (1991) defined a set of predictors or perceived innovation characteristics that determine a person's technology acceptance, based on, among others Davis (1963);

1. Relative advantage of the innovation
2. Ease of use
3. Compatibility of the innovation with current practices, needs and values of the adopter
4. Image impact of the innovation (enhancement of social status)
5. Result demonstrability)
6. Visibility
7. Triability

Comparable predictors can be found in the research by Venkatesh et al. (2003) and their unified theory of acceptance and use of technology model (UTAUT) (Venkatesh, et al., 2003). In their model, social influence plays a key part in predicting use behavior, as well as characteristics of the stakeholder itself (like gender and age). Hennington (2007) researched empirically that the constructs used in the UTAUT model are suitable to explain use in the evaluation of hospital innovations, like an Electronic Health Record (Hennington & Janz, 2007).

In this UTAUT model of Venkatesh et al. (2003), the TAM and TAM2 independent variables are extended and replaced by performance and effort expectancy, social influence and facilitating conditions. These variables are in turn mediated by four additional personal characteristics; gender, age, experience and voluntariness of use. In the UTAUT model, in contrast with the TAM models, these mediating factors mediate all independent variables, instead of just subjective norm. Furthermore, the TAM constructs of result demonstrability, output quality, job relevance and image are replaced by the general construct of facilitating conditions. Subjective norm is replaced by the more specific construct of social influence.

The strongest independent variables are proven to be performance and effort expectancy (Hennington & Janz, 2007; Venkatesh, et al., 2003). Performance expectancy can be defined as the degree to which an individual believes that using the system will help him or her to attain gains in job performance (Venkatesh, et al., 2003). The root constructs for this construct are perceived usefulness, extrinsic motivation, job-fit, relative advantage, and outcome expectations (Hennington & Janz, 2007). As can be seen, perceived usefulness is derived from the Technology Acceptance Model of Davis (Davis, 1989).

Extrinsic motivation is derived from the Motivational Model and is defined as the perception that users will want to perform an activity because it is perceived to be instrumental in achieving valued outcomes that are distinct from the activity itself, such as improved job performance, pay, or promotions (Venkatesh, et al., 2003)

Job-fit is derived from the Model of PC Utilization (Thompson, Higgins, & Howell, 1991), and is defined as "how the capabilities of a system enhance an individual's job performance" (Rogers, 1995). Relative advantage is derived from Innovation Diffusion Theory (Moore & Benbasat, 1991; Rogers, 1995), and is defined as "the degree to which an innovation is perceived as being better than its precursor" (Venkatesh, et al., 2003). Outcome expectations are derived from Social Cognitive Theory (Compeau & Higgins, 1995). They are differentiated into performance and personal outcomes, in which performance outcomes deal specifically with job related outcomes whereas personal outcomes address individual esteem and sense of accomplishment.

Figure 2: *The UTAUT construct of performance expectancy.*

Effort expectancy is defined as the degree of ease associated with the use of the system (Venkatesh, et al., 2003). Its root constructs are perceived ease of use and complexity. The construct perceived ease of use is derived from the Technology Acceptance Model (Davis, 1989). Complexity is derived from the Model of PC Utilization (Thompson, et al., 1991) and is defined as the degree to which an innovation is perceived as relatively difficult to understand and use (Venkatesh, et al., 2003).

Figure 3: *The UTAUT construct of effort expectancy.*

The constructs of the UTAUT model thus enhance the earlier innovation adoption factors and provide clear predictors based on perceptions of an individual.

Jeyaraj (2006) concludes in his review of technology acceptance literature that *four dimensions* of individual and organisational adoption predictors can be synthesized in the large body of research available, consisting of a large variety of independent variables (from among others TAM and UTAUT models). This is in line with the research of Hu et al. (1999) and Schaper (2007), who also distinguished comparable domains for innovation adoption variables.

1. Individual characteristics
2. Innovation characteristics
3. Organisational characteristics
4. Environmental characteristics

In his extensive literature review he extracts two sets of predictors for individual IT-based innovation adoption on the one hand and organisational IT adoption on the other. In total, he reviewed a total of 135 used independent variables across the above four dimensions.

In the work of Jeyarai (2006) all predictors present in the most dominant theoretical models, are tested for reliability and significance, leading to a comprehensive and small set of independent variables. He found the following sets of predictors, largely resembling the validity of the TAM and TAM2 models;

1. Individual characteristics
   a. Computer experience
   b. Behavioral intention
2. Innovation characteristics
   a. Perceived usefulness
   b. Perceived ease of use

3. Organisational characteristics
    a. Top management support
    b. User support
    c. Professionalism of IS unit
    d. External information sources
4. Environmental characteristics
    a. External pressure

As can be seen, the UTAUT model mentions the construct facilitating conditions, that largely comprises the environment characteristics of Jeyarai (2006). One note of caution on the work of Jeyarai (2006); the term innovation characteristics as mentioned by Jeyarai (2006) can be misleading, since it comprises users' innovation perceptions (Lewis & Seibold, 1993) and not factual innovation characteristics. For this reason, the innovation characteristics can be seen as user dependent and actually can be seen as individual characteristics.

2.5 CONCLUDING REMARKS WITH RESPECT TO USABILITY FOR OUR FRAMEWORK

In conclusion, as can be seen in the variety of the here discussed models and reviews, there's large congruence between the constructs determining individual technology acceptance decisions. The earliest models of TAM and TAM2 were further enhanced and validated in the research of Venkatesh et al. (2003), while still building on the same constructs.

As shown, perceived benefits are considered to play a role on innovation adoption outcome. As also described by Lapointe et al. (2002), users are keen to use a system that would fit their clinical and research needs while being able to provide improved care and better answer the needs of patients. (L Lapointe, Lamothe, & Fortin, 2002)

In evaluating the empirical research of the models described in this chapter, it appears that the constructs that explain the largest difference in variances in behavioral intention, are performance and effort expectancy. Because it is believed that these constructs have a major influence on the intention of the stakeholder, the constructs are relevant for our 'willingness' question of how stakeholders matter. Furthermore, these constructs encompass a collection of, in earlier research tested and validated, variables.

By choosing only two constructs, we automatically discard other relevant factors of both TAM and UTAUT models. We made this choice based on the fact that we tend to focus on measuring opinion directly related to perceptions of the technology. In our research, we are not primarily interested in the role and effect of for example, the mediating variables like age and experience. We take these variables as given facts, especially since we are hardly able to influence these. Remember that we primarily aim to visualize and gain insights in stakeholder dynamics, not so much in influencing individuals to modify their intentions or behavior. This could naturally, be the next step after being able to gain insights in these intentions. We must therefore, take into account this 'discard of constructs' when evaluating any results from our research framework.

With respect to technology acceptance literature we do build on existing models and theories by focusing on the notion that not all individual decisions do matter, while these models do not differentiate between individuals. The notion of a mediating level, the stakeholder Decision Making Unit approach, can support in better operationalizing studies to evaluate innovation adoption outcome for groups of actors. We do not add to the body of knowledge with respect to TAM-like content or constructs.

The introduction of a mediating level between individual and organisational innovation adoption

Now it is clear what constructs influence the individual technology acceptance decision, we need to look at how individual decisions actually matter for innovation adoption and implementation effectiveness. Not all individual technological acceptance decisions do have the same kind of impact on the organisational adoption. The degree of impact depends on, for example, environmental factors (e.g. Obligatory implementation by law) or salience factors (the degree of influence of a stakeholder in the organisational context). To account for the latter, it seems profitable to evaluate the stakeholder salience dynamics during the process, in order to predict adoption outcomes more reliably and bring the individual and organisational level of analysis together.

This line of reasoning connects to the conclusions of Ferlie et al. (2005) that there are strong boundaries between professional groups at the micro level of practice and slow innovation spread (Ferlie, Fitzgerald, Wood, & Hawkins, 2005). This implicates that considering the individual level may not account for the influence of these professional group differences.

Professional groups

At a group level, the models of political interaction (Markus, 1983) and system of professions (Abbott, 1988) provide valuable insight. In a professional organisation, power dynamics are mainly related to the struggle to maintain or expand professional domains. As explained by Abbott's system of professions, domains are constantly redefined in the work place through negotiations between professional groups. As shown in the political variant of the theory of interaction, resistance can then be explained by the interaction between the characteristics of the system and the power distribution in the organisation. In this model, five variables are used to explain resistance.

1. Through the *distribution of power* in the organisation, it is possible to understand the organisational balance of power before the implementation of a given system.
2. This variable will influence the *interests* of the actors to modify this balance and
3. The *power shift* implied by the use of the system. The interests of the actors are important because they have a direct impact on their
4. *Political tactics* and on their perception of the social significance of the system. In this model, resistance is explained by the potential of the system to *change the power distribution* in the organisation. If a group of actors considers that the use of a system will support its position of power they will be inclined to use a system while if they think that the implementation will result in a loss of power, they will resist. (L Lapointe, et al., 2002)

With the implementation of information systems in hospitals, there are numerous groups of actors that are impacted by the project. Consequently, there is a wide variety of interests that are promoted and the various perspectives are sometimes opposed. Not only is it important to take into account the various interest groups in this project (users, promoters, development team, private partners, etc.) but within each group, it is possible to identify sub-groups that will defend divergent interests (e.g. nurses vs. physicians; generalists vs. specialists, etc.) (L Lapointe, et al., 2002). We take this notion into account when developing our theoretical framework. Further elaboration on this subject will be included in following chapters.

The concept of decision-making unit

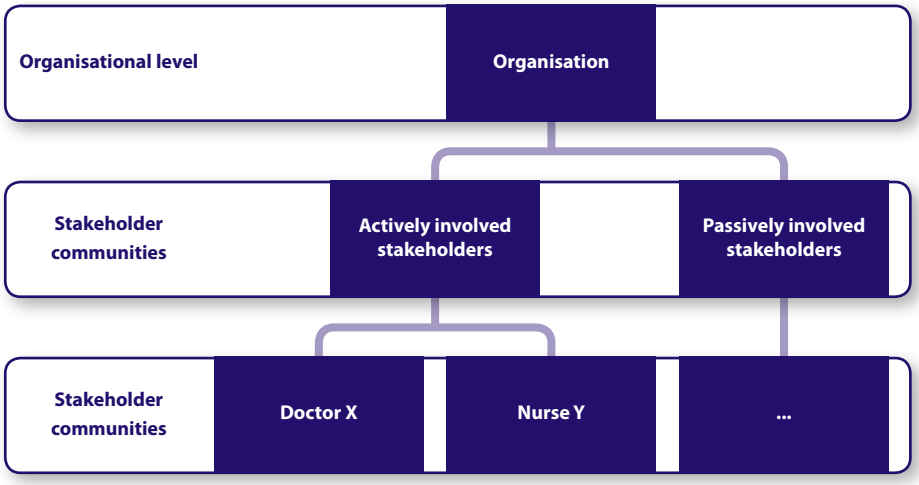
Organisational adoption of an innovation is dependable on the decision making unit, as also mentioned in Rogers'(1995) definition. Even though Rogers (1995) gives no further explanation of who to define as a decision making unit, he argues that every person involved in innovation adoption processes is a decision making unit on itself. In our research, we focus on a distinction between involved people based on their characteristics. In other words, involved people, differ in salience or importance. For practical purpose we will refer to a decision making unit as a group of people with high levels of salience. This decision making unit, consisting of *innovation influencers* (or as will be clarified later on; stakeholders with active role involvement) thus is composed of most-salient stakeholder groups with respect to the innovation at hand. This connects to the findings of Ferlie et al. (2005) where is shown that in multi professional organisations, certain groups of people (e.g. *healthcare professionals*) have the power to block change, so that it is crucial they must be engaged in the change process (Ferlie, et al., 2005).

In their analysis in a hospital context, they refer to the concept of *communities of practice* within a specific context of large organisations that contain multiple professions. It is argued that innovations are often enacted within such communities (Ferlie, et al., 2005). The configuration of these so-called dominant stakeholder communities, virtually present in each organisation, consists of individuals who in turn form their own stance, beliefs and behavior (as described in the technology acceptance models). Due to changes on this individual level (by e.g. activities or events), stakeholder saliences may change and therefore, the stakeholder clusters have dynamic configurations. This implies the presence of a dynamic decision making unit during innovation adoption processes. In this respect, the stakeholder cluster level (or DMU level) mediates between the individual acceptance influence on organisational adoption processes, by identifying which individual decisions actually matter and how influential these individual decisions might be on an organisational level.

Considering the above, a multilevel approach, where both the clustering of individuals as individuals themselves are considered, seems helpful to be able to explain the influence on innovation adoption outcomes. As confirmed by Lewis (1993), to be able to examine the mediating effects of stakeholders' involvement (seen as their role with respect to the innovation) requires examining how micro level appropriation processes impact macro level adoption (Lewis & Seibold, 1993).

By stating that this intermediate level consists of stakeholder communities with different levels of salience with respect to innovation adoption, we need to further investigate how to identify the composition of these salient communities and how to classify the role of these communities in the innovation adoption process. Since this configuration of the decision making unit is hypothesized to constantly change over the course of the innovation journey while interacting with the innovation, we also need to further understand how to gain insights in these dynamics.

Figure 4: *A multilevel approach to innovation adoption.*



Stakeholder theory; The role of capacity and intentions

3

As discussed earlier, the population of potential adopters plays a crucial part in IT-based innovation adoption. This population may consist of a variety of different stakeholder groups and stakeholders. Remember, in this perspective, Rogers (1995) who mentions a so-called *decision making unit* as being crucial in the innovation adoption process. As stated earlier, for practical purposes, we define the construct decision making unit in this research as ***the salient internal stakeholder community, which is crucial for successful innovation adoption***. This crucial factor, as will be explained later on, is correlated to a stakeholder's potential influence on the innovation adoption outcome.

So let's make clear what we actually mean by the term stakeholder. For the definition of a stakeholder we take the much used description of Freeman (1984); a stakeholder in an organisation is by definition any group or individual who can affect or is affected by the achievement of the organisation's objective. Clarkson (1995) extends the concept of stakeholder to "a person or groups that have, or claim, ownership, rights, or interests in a corporation and its activities, past, present, or future" (Clarkson, 1995). We define stakeholders as *individuals (alone or together as work units) who have direct and indirect influence on, or are affected by, the innovation in the course of their formal and informal activities within the organisation* (Lewis & Seibold, 1993). In this research, we are mainly interested in internal stakeholder dynamics. However, as stated earlier, not only users are considered stakeholders. In fact, it is possible that the most salient stakeholders will never actually use the IT innovation itself. As will be become clear in the remainder of this chapter, to define who are the dominant stakeholders, and thus take place in the decision making unit as mentioned here, we need to identify a stakeholder's capacity with respect to the innovation. The capacity determines who really matters for the innovation to become successful. This capacity is rooted in a stakeholder's salience, in turn a product of a stakeholder's power, legitimacy and urgency. These constructs are explained in this chapter.

Ulrich (1983) acknowledges two reasons anyone can claim belonging to a system, that is to say being a stakeholder.

1. The first reason is that they have some kind of resource (expertise, political or financial, etc.) to contribute to the system (Ulrich, 1983).
2. The second reason is that they are actually or potentially affected by the outcome of the system.

From a process perspective, the interplay between events and people at each stage of the process influences events in subsequent stages, determining whether the adoption process will continue or not (Cooper, 1998a). In other words, there's continuous interaction between the innovation and the stakeholders of the innovation. Lewis et al. (1993) calls this a process of innovation *modification*. Stakeholders may attain different roles during this innovation journey, that are related to their intentions, their coping tactic; their *dealing* with the innovation journey progression.

According to this approach, specific tasks and roles of organisational participants change as the process of innovation (the innovation journey!) continues in an organisation (Burgelman & Sayles, 1986).The roles of users may be created and defined by the innovation, or some individuals may be interdependent or sequentially dependent on the operation and functioning of the innovation.

Let us take a closer look at this introduction of a stakeholders' role in the innovation journey. According to Lewis et al. (1993), a stakeholders' innovation role involvement is both formal and emergent. A stakeholders' role involvement is conceptualized as an individual-level variable evidenced as the joint product of role perception (based on role expectations and personal role beliefs) and the enactment of that role. A stakeholders' formal role involvement will be determined in part by their existing roles in the organisation (for example formal hierarchical characteristics) and in part by the new roles as a result of the innovation prescribed by events or activities (Lewis & Seibold, 1993). A stakeholders' emergent role involvement will be a function of a set of factors including variability in attitudes toward innovation, proximity to the innovation and interactions with the innovation and with other stakeholders. Both kinds of *role involvements* thus play a part in determining *how stakeholders matter* in relation to innovation adoption success.

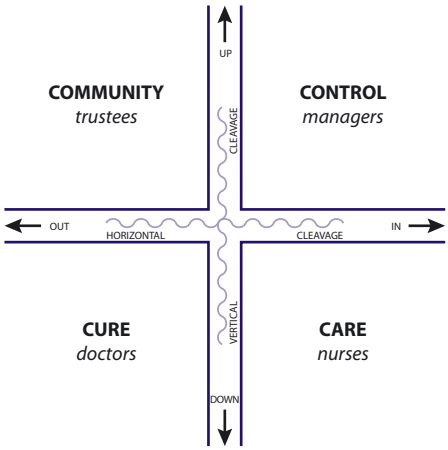
In the remainder of this chapter, the terms stakeholder *capacity* and *intentions* are further explored and explained and lead to methods to determine who really matters and subsequently, how they matter. The chapter is ended with a short elaboration on systems theory, in order to explain in stakeholder terms the relation between a 'body' steering and governing the implementation process and a 'governed body', undergoing the implementation process.

3.1 A STAKEHOLDER PERSPECTIVE ON HOSPITALS

A hospital can be seen as a highly complex, multi professional organisation. A hospital consists of large social and cognitive boundaries between professions, implying great effort to create a multidisciplinary community of practice (Ferlie, et al., 2005). Professions seem to seal themselves off from neighboring professional communities of practice. At the same time, one doctor cannot adopt significantly changed practices without discussion and consent from colleagues from the same specialty. Macro-institutions reinforce this identity of micro-groups (e.g. The national association for orthopedic surgeons). The presence of strong professional roles and identities makes it unlikely for knowledge to flow across social boundaries. These strong boundaries between professions favor the need for a methodology to identify who really matters and how they matter, within and between groups.

As mentioned before, a hospital is characterized by highly skilled professionals performing a very personal, interactive service; individual health care and cure of disease. Within hospitals there's a difference in viewpoint on delivering healthcare. In his two-part article, Glouberman (1996) mentions these differences in 'looking at the healthcare world' and urges managers to focus on overcoming these systemic problems first before engaging in anything else (Glouberman & Mintzberg, 1996).

Figure 5: *The differences between hospital stakeholders as described by Glouberman (1996).*



As stated by Glouberman (1996), in particular, the system tends to rupture itself along two lines, as shown in the above figure. A horizontal cleavage separates those who operate clinically, down into the system, from those who do not, but instead work up out of it, creating the "great divide" in health care. Underneath are those who respond to professional requirements as well as technological imperatives, while above are those sensitive to the needs for fiscal control. And a vertical cleavage separates those intimately connected to the institution, such as the nurses and the managers on one side, from those involved but not so formally committed, the doctors and the trustees, on the other.
As Glouberman (1996) puts it:

"(…) Doctors see the hospital as the location of their work if not specifically as their employer — as the saying goes, they work in the hospital but not for it. Yet that work is directly and intimately connected to the hospital. For they are charged with effecting cure — intervening to change the condition of the patient. This is not to imply that doctors lack involvement in the institution — many are obviously deeply devoted — but that such involvement is not rooted in formal commitment. (…) "(Glouberman & Mintzberg, 1996)

Physicians have frequently been identified as being one of the most important stakeholder groups, although their interests are not always accounted for during ICT implementation (Bhattacherjee & Hikmet, 2007). This may be caused by the increasing specialization of medical professionals (Nembhard & Edmondson, 2006), resulting in multiple needs for different physicians depending on specialty. A lack of physician involvement during implementation can lead to hostility and higher degrees of resistance to the newly implemented system on the part of that stakeholder group.

Like physicians, nursing staff is involved with the care of patients at the hospital. However, nurses tend to have much more frequent contact with patients via functions such as ongoing patient monitoring, advocating for the patient, and discharge after-care services (Garman, Leach, & Spector, 2006). While a physician's service to a hospital is measured through medical procedures, a nurse's service is often measured through hours of patient care and supervisory roles, leading to different issues/concerns.

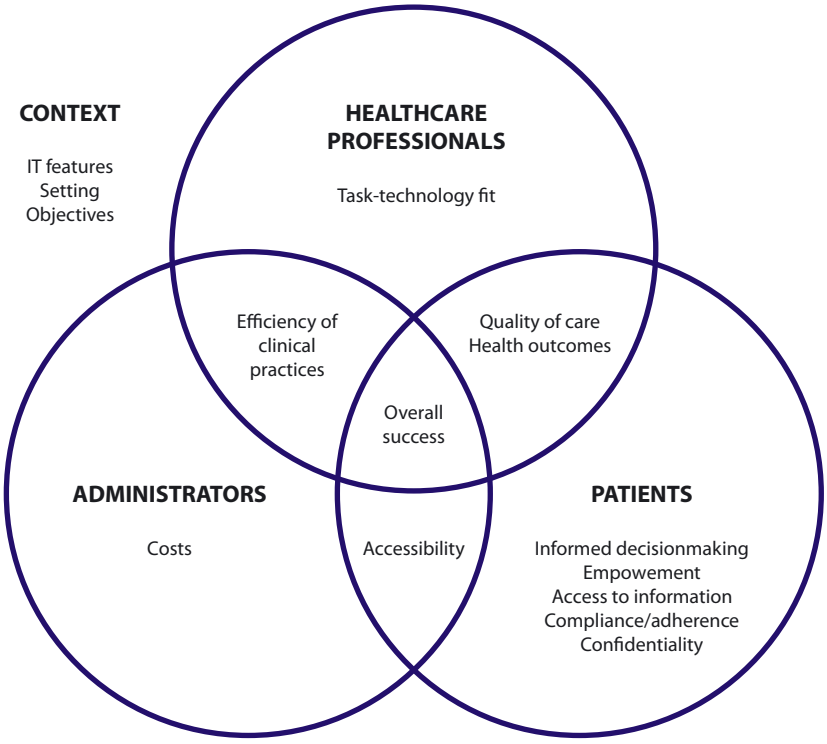
Also, healthcare professionals, medical specialists in particular, have a very individual health approach (wanting the best possible care for a single patient), while on the contrary, staff departments, like the IT department, have different goals and interests; supporting processes and the hospital as a whole. In addition, the medical specialists are grouped in separate 'professional chimneys' as Glouberman (1996) calls them. The interconnecting function of ICT in healthcare delivers some tensions between the difference in approach and focus.

Another difference between the communities of practice of medical specialists and IT professionals is the focus area; delivering care versus delivering and maintaining technology. These are completely different worlds that require complex and deep knowledge of the respective areas, creating experts with limited, but deep, expertise. This high specialization makes it hard to understand each other; each other's language, methods and processes. These are all differences in communities of practice, that may hinder innovation adoption in hospitals. This is further underlined by Ferlie et al. (2005) in their study.(Ferlie, et al., 2005)

Physicians, nurses, and administrators often share very different ideologies toward ICT (Dhillon, 2005). For example, Lapointe and Rivard (2005) found that the new system altered the behavior of nurses and, in turn, aggravated the traditional power structure between physicians and the nurses (L Lapointe, 2005).

The above elaboration reveals the importance of identifying and classifying the different communities of practice when evaluating the relevant stakeholder environment. Lapointe et al. (2010) describe an assessment model, taking into account the different stakes of the different communities (Kaplan & Shaw, 2004; L. Lapointe, Mignerat, & Vedel, 2010). In this model, the stakeholder group level (i.e. community) is taken as point of view. Knowing what impact the innovation might have on each of the stakes (areas) of the environment, makes it possible to better match interventions and innovation design. It furthermore aids in understanding individual needs and expectancies towards the innovation implementation. We will use the described model and insights in our research model design.

Figure 6: *The health information technology impacts assessment framework by Lapointe et al. (2010).*



3.2 THE STAKEHOLDER MANAGEMENT CYCLE

In this chapter, among others attention is given to activities relating to stakeholder analysis; the identification and classification of stakeholders. These are both activities that are part of *stakeholder management*.

According to the Association for Project Management, stakeholder management can be defined as *the systematic identification, analysis and planning of actions to communicate with, negotiate with and influence stakeholders. (APM, 2011)*. Taylor (2004) describes a stakeholder management cycle in his book, reflecting iterative activities to manage expectations and influence stakeholders from a project manager's point of view. (Taylor, 2004)

We use his model to further elaborate on the different stages or activities that are part of the stakeholder management cycle. In this research, we distinguish two main subjects; stakeholder analysis and the engagement of stakeholders by the use of engagement strategies. In the table below, it is explained what stakeholder management stages are discussed relating to the subject.

Table 3: *Subjects of research related to the stakeholder management cycle.*

Subject		Cycle stages
Stakeholder analysis	Identification	1. Identify stakeholders
		2. Gather information on stakeholders
	Classification	3. Determine stakeholders' positions
		4. Determine stakeholder strengths and weaknesses
Engagement strategies		5. Develop stakeholder management strategy
		6. Predict stakeholder reaction; develop alternatives
		7. Implement stakeholder strategy
		8. Evaluate results and adjust strategy

3.3 STAKEHOLDER ANALYSIS

Stakeholder analysis is a methodology that promotes ways to evaluate and to understand people, groups of people and institutions involved in the system, through the identification of stakeholder requirements. Stakeholder requirements express what stakeholders of a system require of the product, processes and the organisation of that system; these requirements may be expressed as needs, wants, expectations, desires, priorities, objectives, or capabilities. (Pires & Vidal, 2007)

Schmeer (1999) defines stakeholder analysis as being a systematic process of capturing and analyzing qualitative information, used for identifying interests of third parties when wanting to develop and/or implement a policy or a program (Schmeer, 1999).

Stakeholder analysis is a methodology to identify key stakeholders of a project, searching for their interests, and verifying how these interests can affect the risk and the viability of the project (Grimble & Wellard, 1995; Pires & Vidal, 2007).

In Donaldson and Preston's (1995) terms stakeholder analysis can be descriptive, i.e., facilitating the description of the various, often conflicting interests and providing a richer understanding of who the relevant stakeholders are. Also, as stated by Atkinson et al. (2001) in citing Donaldson and Preston, stakeholder analysis is instrumental, in that it can be used by the stakeholders to achieve a particular goal. In information systems research stakeholder analysis usually accounts to either assisting in planning and strategy formulation or assisting with information systems development and implementation (Atkinson, Eldabi, Paul, & Pouloudi, 2001).

Donaldson and Preston argue, however, that the core of stakeholder theory is normative. This implies that stakeholder analysis should be driven by the understanding that "the interests of all stakeholders are of intrinsic value". In the context of healthcare, this calls for a stakeholder analysis approach that is not prejudiced and strives to 'give voice' to all relevant stakeholders. Indeed, the use of the principles presented by Pouloudi (1999) aims to facilitate this process. Furthermore, the normative aspect points out the importance of ethical issues.

Stakeholder identification versus classification

Now we know what can be called a stakeholder and that a stakeholder can attain different stances or roles, one might question how to actually identify who's a stakeholder and who isn't.

Vos et al. (2006) label stakeholders either as *actively involved or passively involved*. This kind of distinction is common in literature, even though they may be named differently; Savage et al. (1991) call these different sets of stakeholders primary and secondary stakeholders (Savage, Nix, Whitehead, & Blair, 1991)

Within a narrow circumscription those parties are situated who actively contribute to the outcome of the innovation project. Within the broader circumscription the parties are situated, in addition to the actively involved, who are affected by its outcome, i.e. the passively involved. This latter group ('the affected') can only be represented by means of representation, since, as argued, *this group can never be identified completely*. (Vos & Achterkamp, 2006).

In stakeholder literature, stakeholder identification is considered a classification problem. As described by Vos and Achterkamp (2006) identification is mostly about determining which stakeholder is salient with respect to the issue of investigation. (Vos & Achterkamp, 2006). Those authors describe a method, not focusing on identifying stakeholders in general, but focusing on identifying stakeholders in the particular context of innovation projects. In our research, we roughly distinguish two phases in stakeholder analysis methodology; (1) *the identification* and (2) *the classification* of stakeholders, based on stakeholder capacities and intentions. The identification of stakeholders in our research, thus only concerns the rough determination of *potential internal stakeholders* with respect to the innovation at hand. The classification of these stakeholders determines whether the stakeholder is a member of the decision making unit or not. In practice, these two seemingly separate activities will be executed in congruence.

For the above reason, stakeholder classification means placing the right stakeholders in the right 'salience' cluster (what specific stakeholders fit within a specific category?). This can only be done by classifying characteristics of stakeholders in the light of the innovation at hand. This is a matter of drawing justifiable boundaries between categories, which is a majorly unresolved issue in literature. Vos and Achterkamp (2006) argue that additional classification procedures are necessary to append existing classification, like the one described by Mitchell et al. (1997) (Vos & Achterkamp, 2006). This can be done through the analysis of role involvement.

As described by Savage et al. (1991) stakeholder assessments should include the *capacity*, *opportunity* and *willingness* of a stakeholder in relation to the issue (in our case: innovation) (Savage, et al., 1991). We will use these terms to verify our theoretical framework. By executing a stakeholder analysis (on multiple time intervals) a better insight in *the influences of the salient stakeholder community or decision making unit* can be gained in relation to the specific innovation; dynamics in role-involvement can be determined as well.

In this research context, we extend the definition of a decision making unit as those stakeholder groups with high degrees of all three attributes urgency, power and legitimacy.

In light of the here described research theme, stakeholder dynamics can be defined as changes in configuration of the relevant stakeholder community as well as changes in individual stakeholders' capacity and intentions.

These systems or stakeholder clusters have reciprocal effects on the independent predictors of individual and organisational IT-based innovation adoption.

Now, remember the notion by Lewis (1993) that different parts of the organisation are likely to be at different stages in the innovation adoption process at the same point in time. Each of possible changes during the innovation adoption process (as a result of for example a structured implementation activity) may be more salient or less salient for each user or work group, and each may differentially influence the attention and behavior of the user or work group. (Lewis & Seibold, 1993). This in turn, might lead to a change of stakeholder salience over the innovation adoption process, according to stakeholder theory (Mitchell, Agle, & Wood, 1997).

Stakeholder's dynamic role involvements may be summarized as follows as principles of stakeholder behavior (Pouloudi, 1999; Pouloudi & Whitley, 2000);

Table 4: *Propositions for stakeholder identification and analysis by Pouloudi (1999).*

Principles of stakeholder behavior	Implications for stakeholder identification and analysis
1. The set and number of stakeholders are context and time dependent	- Stakeholder map should reflect the context - Stakeholder map should be reviewed over time
2. Stakeholders cannot be viewed in isolation	- Consider how stakeholders are linked
3. A stakeholder's role may change over time	- Adopt a long-term perspective; study how perceptions change
4. Stakeholders may have multiple roles	
5. Different stakeholders may have different perspectives and wishes	- There are different versions of the stakeholder map to be drawn for different perspectives
6. The viewpoints and wishes of stakeholders may change over time	- These different versions should be studied over time
7. Stakeholders may be unable to serve their interests or realize their wishes	- Need to consider political issues (as well as technical, economic or other)

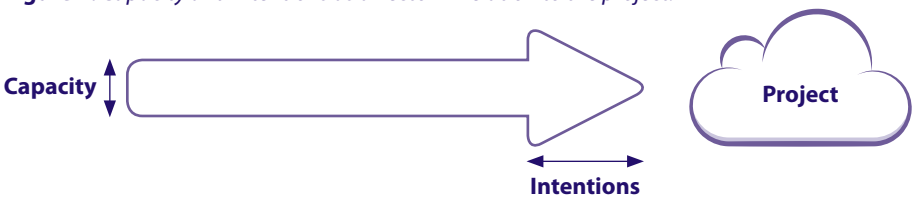
As noted before, a stakeholder's role may change over time and the set and number of stakeholders are context- and time dependent and viewpoints and wishes of stakeholders may change over time (Pouloudi & Whitley, 2000). In other words, the earlier mentioned decision making unit is susceptible to *continuous change*. This implicates the need for iterative, continuous stakeholder analysis and predictor valuation. This matches the continuous process view on innovation adoption processes as described earlier.

Stakeholder salience; considered a vector

When evaluating the salience or importance of a stakeholder with respect to, for example, implementation projects, one has to take into account two critical dimensions;
(1) a stakeholders capacity or potential influence on the project or outcomes and (2) what the *direction* of a stakeholder's intentions are in relation to the project; the direction.

This can be visualized in terms of a vector, where the gravity or thickness of the vector is determined by the capacity of a stakeholder and the intentions are described by the direction of the arrow (e.g. towards or away from the project).

Figure 7: *Capacity and intentions as a vector in relation to the project.*



3.4 STAKEHOLDER CAPACITY

In dynamic stakeholder theory, it is stated that the attributes (1) urgency, (2) power and (3) legitimacy are positively correlated to the earlier mentioned salience of stakeholders, as described by Mitchell (1997) and Bourne (2005) as *"the degree to which managers (must) give priority to competing stakeholder claims"*.

A definitive stakeholder possesses all three attributes; an expectant stakeholder possesses two; a latent stakeholder possesses one; and a non-stakeholder possesses none.
Their eight-way typology is dynamic, as stakeholders may shift from one class to another over time and across the issues facing the organisation (Brailsford, Bolt, Connell, Klein, & Patel, 2009), as is the case in our focus of the innovation journey that is undertaken by stakeholders. Bourne (2005) further expanded the framework of Mitchell et al. (1997) by arguing that urgency is dependent on a stakeholder's vested stake in a project (e.g. innovation implementation) and the importance of the stakeholder to the project. Furthermore, instead of legitimacy, Bourne (2005) argues that the concept of proximity gives a better classification of a stakeholder's salience (or priority as called in her articles).

Table 5: *The extension of the stakeholder classification model by Bourne (2005).*

Mitchell's attributes (Mitchell, 1997)	Bourne's corresponding attributes (Bourne, 2005)
Power	Power
Legitimacy	Proximity
Urgency	Urgency, Calculated through scores on - vested stake - importance to project
Salience	Priority, resulting from other attributes

The constructs of both theoretical models of Mitchell et al. (2007) and Bourne (2005) are explained below.

Table 6: *A summary of dynamic stakeholder theory as discussed by Mitchell et al. (1997) and Bourne (2005).*

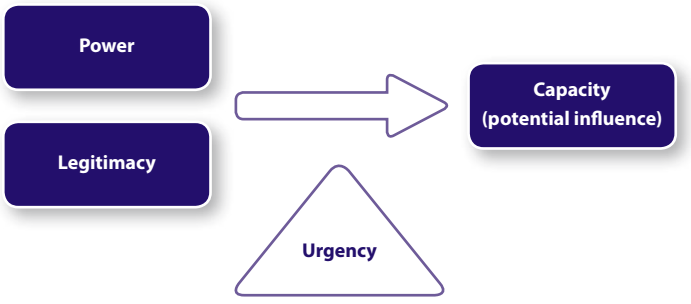
Construct	Definition
Power	The extent to which stakeholders are able to persuade or coerce others into making decisions, and following certain courses of action; having influence over the situation. Dependent on - Formal position (hierarchical position) - Informal position (social network position; centrality)
Urgency as a result of a stakeholder's - vested stake in and - importance to the project	Urgency is an indicator of the stakeholder's perceived attitude towards the importance or intensity of the problem and need to deal with it. In other words; feeling strongly enough about an issue to act. There are two conditions to be met: - when a relationship or claim is of a time-sensitive nature - when a relationship or claim is important or critical to the stakeholder
Legitimacy/proximity	Legitimacy is used for the extent to which a stakeholder has a legitimate right to be involved in the solution to the problem, with us taking an inclusive stance in the debate on whether such legitimate rights are based on authority, legal rights or by having 'something at risk' in the decision (Mitchell et al. 1997).

Special attention must be given to the construct of power. Power reflects the influence the stakeholder may have over the situation and in affecting the out-come, irrespective of whether they have ownership or legitimate claim over it. Power may derive from the nature of a stakeholder's organisation, or their formal position in relation to other stakeholders. Other forms of power may be more informal (for example, personal connections) (Mitchell, et al., 1997; Vasara, Krebs, Peuhkuri, & Eloranta, 2003). So, the construct of power is both dependent on *formal position* of a stakeholder and *informal position* ('relational power'). This relational power is related to social network characteristics; when stakeholders have high degrees of centeredness, interrelatedness and out-degree, they are influential in their social network. (Vasara, et al., 2003). Centrality also highly correlates with informal power of a stakeholder (Ibarra & Andrews, 1993).

With respect to power, one can look at the role a stakeholder might have in relation to the innovation implementation. We hypothesize that a stakeholder with high power (both formal and informal) in a decisional role has more influence on innovation implementation outcomes, than a stakeholder with high power but merely an informative role. Furthermore, a decisional stakeholder with low power will likely be dependent for his decisions of more powerful stakeholders. In conclusion, we argue that the role of a stakeholder might enforce and operationalize a stakeholder's power. In other words, the *power-function match* or *role appropriation (fit of the role)* is related to the total influence of a stakeholder towards the innovation adoption. We hypothesize that the better the match of a stakeholder's power levels with its formal role, the larger the influence of the stakeholder on innovation implementation outcomes, thus attributing to a stakeholder's priority for attention for a governing body, like a project team. We will use this relation in our eventual theoretical framework.

One must also note that the dimension of urgency (vested stake/importance to) is a moderating construct for the other mentioned capacity constructs; it determines whether or not a stakeholder feels the need to enforce its power. We will leave this construct as part of the capacity domain since it relates to the decision whether or not to act (exerting power or not). It does not state anything about the direction of this acting; in the intentional domain we aim to focus on evaluating these directions.

Figure 8: *The moderating role of urgency.*



So, strictly considered, only power and legitimacy determine a stakeholder's *capacity*, that is moderated by a stakeholder's urgency to enforce its capacity. In the remainder of our thesis, however, we want to investigate what this capacity might mean for our implementation and innovation success; urgency in that sense is crucial in determining the level of potential threat or support (or together; influence). Therefore, these dimensions in total determine the potential threat or support of a stakeholder; its potential influence.

For that reason, we will consider all three dimensions (or four when demarcating urgency) as indicative of a stakeholder's potential influence towards the project.

Concluding remarks with respect to usability for our framework

When we evaluate the body of literature concerning stakeholder salience classification, limited attribute models can be found. Even though general stakeholder typology models are available, for example, to indicate active or passive stakeholders or internal or external stakeholders, this does not provide the level of detail to formulate engagement strategies in practice. The few attribute models available (e.g. the one of Mitchell et al. (1997) that do describe a certain prioritization of stakeholders based on influence attributes, lack the intentions dimension.

The salience attribute-models as discussed here are not found to be used much in empirical research; no studies are found in healthcare settings using the attributes of the dynamic stakeholder model. For our research, we need more information than just the classification of the stakeholder salience in terms of power, urgency or legitimacy. Knowing what stakeholders do matter needs to be evaluated in congruence with how a stakeholder feels, acts and behaves with respect to the object of study, in our case, an IT-based innovation. We therefore will seek for additional constructs to capture these issues. Nevertheless, the constructs of Mitchell et al. (1997), and later enhanced by Bourne (2005), give a great starting point for a stakeholder classification scheme.

The operationalization of these models, since they lack a strong empirical basis, still raises some concern. Only empirically tested questionnaires executed by Bourne (2005) were found in literature. Especially in the light of the complexity of the constructs, like a stakeholder's power, this may lead to validity problems in operationalization of the model.

The general classification framework of Mitchell et al. (1997) and Bourne (2005) is very suitable for evaluating stakeholder contexts, even though not much empirical study has been done in healthcare contexts. Building on the existing body of literature concerning dynamic stakeholder theory, we will attempt to gather empirical data on the constructs. At the same time, we will try to enhance the dynamic stakeholder model by arguing that more 'intentional' constructs are needed to evaluate a stakeholder environment in order to be of value for engagement strategies.

3.5 STAKEHOLDER INTENTIONS

The salience of a stakeholder does not state much about its willingness or stance with respect to the innovation. For example, definitive stakeholders can both oppose or support the innovation. In terms of Mitchell's constructs; the **direction of the capacity** constructs are not taken into account in the dynamic stakeholder model. Differences in intentions have substantially different effects on how a stakeholder's capacity is enacted. According to Savage et al. (1991) beside a stakeholder's power, a stakeholder's intentions and values are essential to monitor to assess the potential impact of the stakeholder on the issue at hand. In other words, stakeholder willingness assessments may be used to define what kind of intentions a stakeholder may have.

Potential resistance

In addition to the technology acceptance domains as discussed earlier, role typologies are described in this paragraph to enhance understanding of stakeholder intentions in relation to IT-based innovation adoption processes.

Role typology

When discussing the intentions of a stakeholder, the formal or functional role of a stakeholder in the organisation has an effect on its intentions regarding the project. We consider a formal role as a role that is explicitly attributed to a stakeholder by the *governing body* or initiating part of the organisation.

This *role perspective* means that stakeholders can be classified, besides based on their capacity, on the basis of the role(s) or they are playing within an innovation project; a role has to be specified in a case in order to decide what individuals or groups of individuals stand for.

According to Vos et al. (2006) there are three possible functional roles actively involved stakeholders can play; client, designer and decision maker. As can be seen, these roles are increasingly actively involved in contributing to the system. The descriptions are given in the table below;

Table 7: *Role descriptions as identified by Vos et al. (2006).*

Role	Description
Client	A client is the party whose purposes are being served through the innovation
Decision maker	A decision maker sets requirements regarding the innovation and evaluates whether the innovation meets these requirements
Designer	A designer contributes expertise to the innovation process and is responsible for (interim) deliverables

Mantzana et al. (2007) classify stakeholder roles as either controller (compare decision maker), accepter (compare client), provider (compare designer) or supporter in their constructed stakeholder identification method. (Mantzana, Themistocleous, Irani, & Morabito, 2007).

Table 8: *An overview of role typologies in literature and participation levels.*

Mantzana et al. (2007) Role typology	Vos et al. (2006) Role typology	Green et al. (2003) Role typology
Supporter	-	-
Controller	Decision Maker	Decisional
Accepter	Client	Informative
Provider	Designer	Consultative

In our model we will use the functional role typology of Green et al. (2003); this typology is comparable to the typology framework as described by Vos et al. (2006). The main rationale behind the typologies is that along the scale from informative-consultative-decisional, the more involved the stakeholder is in the shaping of the innovation. (Green & Hunton-Clarke, 2003) We explicitly use it as a *functional* role typology, indicating that we use to typology to analyze the role attached to the function the stakeholder is attributed in light of the implementation of the innovation.

Participation level

Besides the role of a stakeholder, there are two identifiable extremes on the scale of acceptance; either cooperate and accept or threat and oppose or resist the issue at hand. As Hartwick and Barki (1994) argue, participation is a key factor for the success of the development of a system and the subsequent satisfaction of the users. For this reason, we aim to investigate the level of participation of a stakeholder as being of influence on the innovation adoption outcome. (Hartwick & Barki, 1994).

From the domain of *organisational development*, Passmore & Fagans introduce a *participation theory* that characterizes the different levels of participation and success factors for effective participation (Pasmore & Fagans, 1992).

Table 9: *The five levels of participation by Pasmore & Fagans (1992).*

Passmore & Fagans (1992) Levels of participation	**Definition**
Conforming	Simply joining and participating
Contributing	Helping to improve the system
Challenging	Attempting to change the system while retaining the existing structure and distribution of power
Collaborating	Seeking to involve or support others who share the agenda of changing the system while retaining its essential characteristics
Creating	Designing the system itself or even transcending the system to create a more hospitable environment for the system to inhabit

In this model, not conforming to an innovation is not seen as a level of participation, while in fact, regarding the ordinal composition of the model, this should be a level before the *conforming* level (i.e. Level 0). As is argued by the authors of this model, the higher the level of participation, the higher the estimated success of innovation deployment. The level of participation in turn is dependent on a stakeholder's coping tactic, its formal and informal role and intentions. The levels of participation of a stakeholder can be evaluated in relation to the perceptions of the stakeholder with respect to the innovation, as discussed earlier. For example, when a collaborating stakeholder has poor outcome expectations, the stakeholder is less likely to support the implementation, possibly leading to unfavorable outcomes, i.e. not achieving the performance goals as stated beforehand.

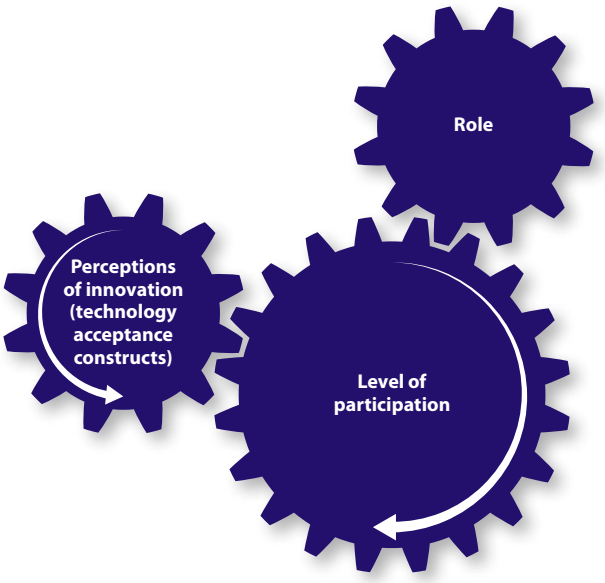
Concluding remarks with respect to usability for our framework

We use the term *potential* resistance for a reason. First of all, we did not include all validated constructs influencing acceptance behavior (as we have seen in the technology acceptance models), but only two with high predictory power. There are however more factors influencing a stakeholder's acceptance. Furthermore, as stated earlier, a stakeholder's intention is only partly related to actual resistance of the innovation after implementation. We only use the term *potential resistance* as an indicator for attention.

Also note that we only discuss *how* a stakeholder matters here. We do not compensate for the capacity of a stakeholder. In other words, even though a designer is not participating and does have poor performance expectations, the stakeholder might have low salience, indicating that he might not even matter in terms of influence on the innovation implementation outcomes. For that reason, we state that a stakeholder's participation level in combination with outcome expectations can indicate *the potential resistance* encountered to achieve the intended goals, what can indicate a possible risk of unfavorable outcome for the innovation implementation. With *unfavorable* we refer to low goal fidelity, as discussed earlier. In terms of the capacity constructs; *unfavorable capacity direction*.

So, the set of role typologies in combination with a stakeholders' level of participation, can be visualized as follows;

Figure 9: *The interaction between innovation perceptions, role and level of participation of a stakeholder.*



The roles of involvement (over the course of the innovation journey) can be considered a direct way of coping with dynamics in the stakeholder environment (Vos & Achterkamp, 2006). It may reveal that in a certain point of time the salient stakeholder community or DMU lacks accepter involvement or that salient stakeholders are merely conforming to the innovation, instead or actually contributing to it.

Remember the stakeholder capacity attribute of proximity, or degree of closeness to the project. The relation between proximity and participation level might be found in terms of a stakeholder's *eligibility for participation*. Stakeholder's close to the project but with no participation might be involved more.

One must note however, that the capacity of a stakeholder may have an influence on the intention of a stakeholder (as can also be seen in the individual technology acceptance models as described earlier). Together, the constructs of level of participation and role involvement may indicate the potential influence a stakeholder potentially exerts in shaping the innovation.

In this paragraph we discussed theory with respect to levels of participation of stakeholders. This level of participation model is helpful in evaluating a stakeholder's *contribution* towards the project or in our case, IT-based innovation. When high power, decisional stakeholders fail to contribute it may be wise to investigate why this is the case since they potentially can endanger the project. At the same time, the level of participation of a stakeholder as evaluative dimension, may provide insights in the effect of certain interventions aimed at commitment, acceptance and involvement of stakeholders. As was shown by Hartwick and Barki (1994), participation is a key factor for the success of the development of a system and the subsequent satisfaction of the users. (Hartwick & Barki, 1994)

One must note that role typologies are correlated with capacity attributes as described earlier. A decisional role may affect a stakeholder's influence, but it may also decrease it. These interactions are complex and hard to measure and are not in scope in the light of our problem statement. They are present however. The same holds for the level of participation of a stakeholder. Also, one must be careful to draw conclusions about a stakeholder's perception of the innovation based on the participation level. Conforming to an innovation does not necessarily mean that a stakeholder is not enthusiastic about the innovation itself. The conforming participation level may be caused by lack of time, low proximity or low urgency. For that reason, we included specific technology acceptance attributes to our model.

The combination of both capacity dimensions and intention dimensions in one integrated model of stakeholder classification is not found in literature. The 'direction of capacity' can be better understood by evaluating a stakeholder's level of participation *in relation to* its functional role with respect to the innovation. In this way our theoretical synthesis, as will be further described in the next paragraph, is unique.

3.6 ENGAGING STAKEHOLDERS: TYPES AND STRATEGIES

Stakeholder management capabilities

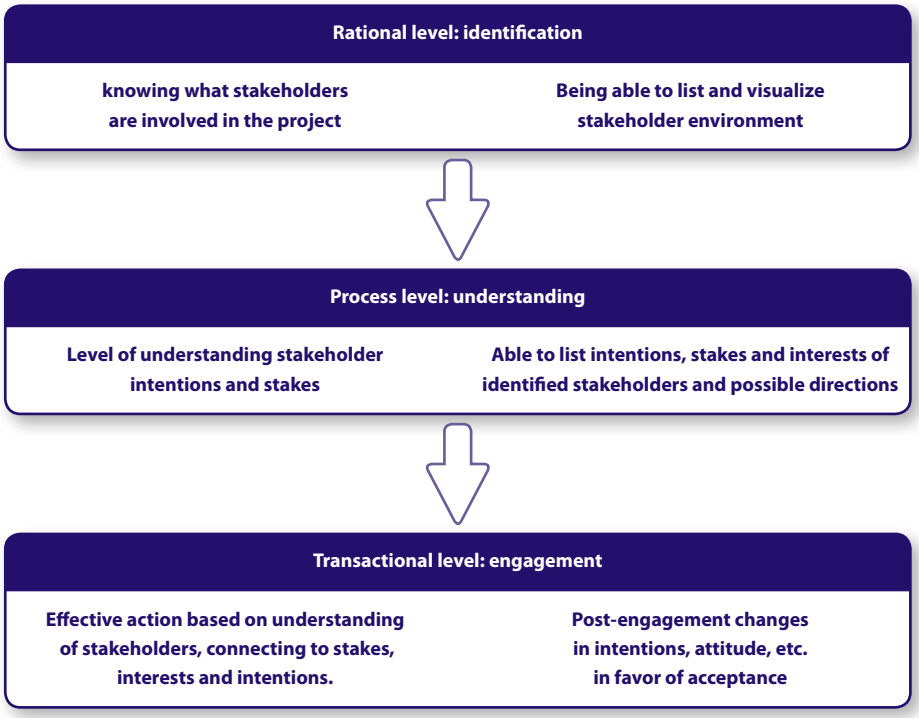
With stakeholder management capabilities we mean the ability to effectively deal with stakeholders through means of bargaining, negotiation or exchanges in favor of eventual technology acceptance. In other words, the ability of the project team at hand to transform a stakeholder's stake, intentions or interests through means of interventions (actions, communication, etc.). (Zakhem, 2008)

Connecting to the above, we formulate the following hypothesis for our research:

H1: More knowledge of the stakeholder environment leads to better alignment of engagement activities with stakeholder dynamics and characteristics.

Stakeholder management capability levels can be visualized as follows;

Figure 10: *Stakeholder management capability levels.*



Stakeholder engagement can be described as *an approach by which the project team implements the transactional level of stakeholder management capability*. Achieving a high level of capability largely depends on managerial ability to effectively bargain with stakeholders and establish solidarity vis-a-vis the successful negotiation, implementation, and execution of "win–win" transactional exchanges. (Zakhem, 2008)

Engagement strategy options

In this paragraph, we elabotrate on *how* to possibly engage the different stakeholders. Scarce literature is present combining both capacity and intention themes in a stakeholder typology scheme, as we discussed earlier. Richards et al. (2004) do indicate that different levels of engagement are likely to be appropriate in different contexts, depending on the objectives of the work and the capacity for stakeholders to influence outcomes (Richards, Sherlock, & Carter, 2004).

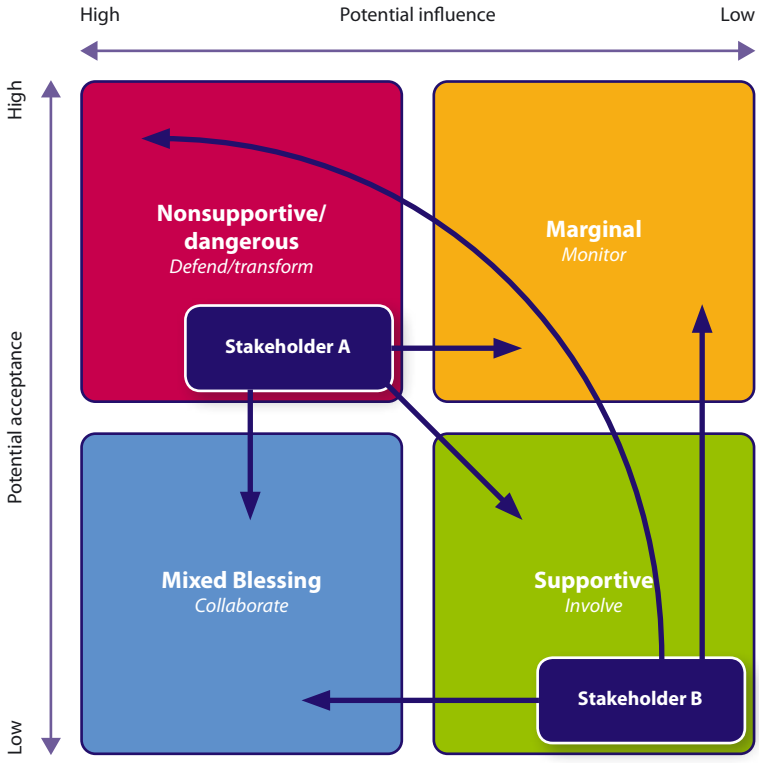
Some theory exists with respect to strategies for managing organisational stakeholders. Particularly the research done by Savage, Nix et al. (1991) tries to capture types of stakeholders in terms of collaboration and threat and translates these types to matching engagement strategies. They argue that the *potential threat* and the *potential to collaborate* make it possible to distinct stakeholders in four different types. In their article, Savage, Nix et al. (1991) describe the four types of stakeholders as either supportive, marginal, non-supportive or mixed blessing (Savage, et al., 1991) based on these dimensions of a stakeholder. This connects to our previous elaboration on what factors contribute to a person's behavior towards an innovation (e.g. remember the discussed technology acceptance models). We take the underpinnings of their model as a basis for our engagement strategy and stakeholder type matrix.

In previous paragraphs the capacity and intentions dimensions were discussed as providing insights in stakeholder relevance or salience towards the project. For this reason, the dimension *potential resistance* instead of potential to collaborate is used in the remainder of this research. Potential resistance can indicate potential to collaborate, but not necessarily.

The term *potential influence* instead of potential threat, matching the above elaboration on relevant literature concerning our research objective.

As argued in previous sections, the behavioral intentions (i.e. accept or reject/resist) determine whether the capacity is enacted or not and in what way (remember 'the direction of capacity'). This potential resistance is interesting to know beforehand, as we have seen in the theoretical background concerning both innovation adoption and technology acceptance theory.

Figure 11: *Stakeholder types and strategies based on the model of Savage, Nix et al. (1991).*



Each type of stakeholder demands a different type of engagement strategy, that can be operationalized in detail according to the project circumstances. According to this model, one of the engagement strategy fundamentals is to *transform stakeholder relationship from a less favorable to a more favorable one*. The least favorable relationship is seen as high potential resistance in combination with high potential influence. In the engagement of a stakeholder, one must not solely act upon the evaluated stakeholder quadrant, but should be evaluating the intended transformation direction of the stakeholder, i.e. *changing a stakeholders potential resistance or -influence*.

We argue, as discussed in the previous section, that the most favorable situation is when there's low potential resistance. This *might* possibly indicate a large potential to collaborate. Furthermore, the higher the capacity of a stakeholder the more valuable this is to the innovation implementation outcome. An influential, low resistance stakeholder can be enforced in a *champion* or *opinion leader* role. It appears that high capacity stakeholders often have a positive attribution of opinion leaders towards the innovation adoption outcome (Valente & Davis, 1999). This stresses the importance to being able to identify and enforce high capacity stakeholders.

Paradoxically however, the higher the capacity the higher the potential (possible negative) influence for the outcomes as well when the stakeholder is not managed properly. This means focusing on activity aimed at enhancing either capacity or acceptance.

The above implicates that the management of the dynamics described in this thesis can have an effect on innovation adoption outcome. In connection to this understanding, we formulate the following hypothesis for our research:

H2: Properly aligned and timed engagement activities lead to a positive influence on stakeholder dynamics in favor of stakeholder satisfaction.

Transforming potential resistance and influence

In terms of the constructs of our research, resistance can be transformed over the high-to-low continuum by changing (a combination of);
- Effort expectancy
- Performance expectancy
- Level of participation
- Functional role

Transforming influence means, in the light of our research framework, trying to alter a stakeholder's;
- Power
- Proximity
- Vested stake
- Importance to
- Functional role

In next sections we are discussing appropriate implementation activities that can be used to achieve these transformations, e.g. how to decrease or increase a stakeholder's potential influence.

As capacities and intentions change, the stakeholder typology is dynamic, as are the engagement strategies.

Another important notion with respect to the here described model, is that *there's always need for an engagement strategy*, even when potential influence is high and resistance of a stakeholder is low. This is why these kind of stakeholders are called *mixed blessing* stakeholders; they can easily shift to high resistance or low influence leading to a new situation.

In other words, not all transformations are deliberately induced by implementation activities, but can just happen because of other factors.

We will use the framework of Savage, Nix et al. (1991) as a basis in our evaluation model, since it is in congruence with our theoretical framework of stakeholder salience in terms of capacity and intentions. It may also help in shaping a stakeholder engagement strategy based on four easy to grasp modes. Even though this might seem an oversimplification of possible engagement strategies, it is this simplicity in itself that enhances the usability of the framework as a basis for further detailing the engagement strategy in practice.

Table 10: *Stakeholder types and connecting strategies.*

Stakeholder Type	Engagement Strategy	Strategy Modes
Supportive Supports (project) organisation goals and actions	**Involve** Involve in relevant issues, encourage cooperative potential; increase decision-making participation.	1. Maintain influence 2. Maintain acceptance
Marginal Not concerned	**Monitor** Monitor the interests of the stakeholder, involve in specific relevant issues.	1. Monitor/Decrease resistance 2. Only then: Monitor/improve influence
Nonsupportive (dangerous) Most distressing, high influence, low acceptance.	**Transform** Reduce dependence on the stakeholder. Try to change capacity status of stakeholder (by enhancing other stakeholders) or try to transform intentions by eliminating uncertainties.	1. Decrease resistance 2. Decrease influence
Mixed-Blessing Can swing both ways in terms of influence and acceptance	**Collaborate** Maximize collaboration. Not collaborating leads to the risk of transferring the stakeholder to a nonsupportive one.	At least... 1. Maintain acceptance 2. Maintain influence

As can be seen in the above summary table, every strategy has some key strategy modes based on the acceptance and capacity dimension. Later in this chapter, more attention will be given to these different strategy modes and connecting activities.

However, even though the model seems straight-forward, no further indications are given in the theoretical elaboration about how to classify the used dimensions. Merely the construct of power and the relevance of the issue to the stakeholder is mentioned as corresponding to one's potential influence (Savage, et al., 1991). No empirical evidence in literature is found relating to the model of Savage et al. This makes it hard to evaluate the model's usability in practice.

3.7 SYNTHESIZING CAPACITY AND INTENTIONS IN AN EVALUATION MODEL

The above discussed literature gives insights in the development of a way to determine who really matters and how the stakeholder matters by combining the capacity and intention theoretical bases. In this way, it synthesis a variety of insights of stakeholder and organisational development theory.

From the complete intra-organisational spectrum of individuals one need to preliminarily identify all actors that might be affected by the innovation process. This can be done during conversations and interviews with different organisational members (Vos & Achterkamp, 2006). Subsequently, the identified stakeholders need to be classified based on their capacity and intentions. In other words, all stakeholders need to be classified on the dimensions proximity, vested stake, importance to and power. This makes it possible to further *drill down* to those stakeholders that really matter. This determines the composition of the decision making unit (DMU), consisting only of high salience stakeholders.
Finally, we are interested in the roles and levels of participation in combination with their formal role of these important stakeholders. *How* do they matter; what is their role with respect to the innovation? What is their direction of capacity?

We discussed several items of the capacity and intention dimensions. These dimensions combined may gain insights in a *stakeholder's engagement priority* and engagement strategy.

By comparing capacities and intentions within the decision making unit over the innovation journey, one might gain insights in stakeholder dynamics. The here proposed assessment model captures the steps of the stakeholder analysis method of Vos et al. (2006). We will use this theoretical model of stakeholder assessment in our research framework, as will be elaborated on in following chapters.

Connecting to the acceptance models described earlier, satisfaction is closely related to acceptance of the process and technology provided. Considering the elements of this chapter, we formulate the following final hypothesis for our research;

H3: Dynamics in the stakeholder environment in the intentions domain influence stakeholder satisfaction with project results.

Remember that the practical value of our model lies in gaining insights in stakeholder dynamics and indicating areas of attention and appropriate strategies in order to ensure high goal fidelity. By being able to prioritize stakeholders that need attention or pose a risk for the innovation implementation outcomes, the governing body or project team may undertake specific implementation activities to influence these risks or give appropriate attention. The effects, in turn, may be measured.

When both dimensions of capacity and intentions are mapped, it is possible to formulate the stakeholder type and following a proper engagement strategy, using the theory of Savage, Nix et al. (1991). All these components combined, make it possible to design a methodology to analyze, classify and engage a stakeholder over time.

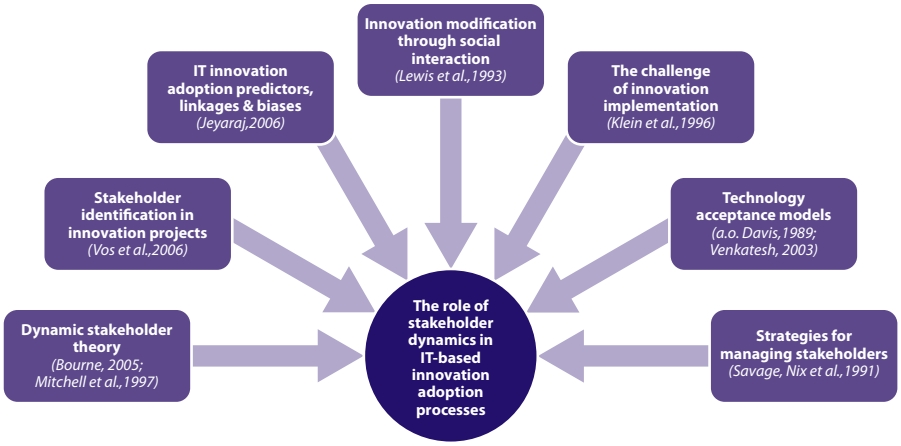
Now we investigated the possible capacity and intentions of stakeholders during the innovation journey, we will further describe some highlights of actor-network theory to better understand the relation between stakeholders and their social environment, further clarifying stakeholder dynamics.

Combining Insights

Now we are coming to synthesis of theoretical concepts, it is helpful to identify and recollect the most important literature that we discussed. Together, these theoretical bases are combined to construct our theoretical framework and research methodology. As can be seen, three main streams of theory are at the basis of our discussion;

- Stakeholder theory
- Innovation adoption theory
- Technology acceptance theory

Figure 12: *A summary representation of the dominant literature as discussed in this document.*



The above literature review and analysis leads to the general conclusion that it is likely that there's a fluctuation in stakeholder salience (entailing both a stakeholder's intentions and capacity) during the innovation journey an organisation is undertaking and that this fluctuating salience may have an impact (interaction) on innovation adoption success. At the same time, however, an individual's perceptions of an innovation alter. These alterations of perceptions during the innovation journey may well be a result of structured implementation activities. Insights in in both (a) fluctuations in DMU configuration; dynamics related to membership of the DMU and their roles (who matters and how they matter) and (b) fluctuations in stakeholder perceptions and expectancies of an innovation over time can give valuable insights for a *governing body*, like a project team, to alter or expand their structured implementation activities in order to enhance innovation adoption outcomes. It can help in focusing and shaping stakeholder management and optimizing stakeholder engagement during the different phases of the innovation journey.

Research design & study

4

In this chapter attention is given to the research design and its execution. We will discuss the research design; objective, research questions and hypotheses. Furthermore, we give attention to the key components of our research framework.

4.1 RESEARCH OBJECTIVE

Following the theoretical bases discussed, we focus on the role of stakeholder dynamics in implementation projects in hospitals. Relevance of findings in practice are key to this research assessment.

For this reason, the main objective of this research is described below;

The main objective of our research is to develop a practical methodology to evaluate stakeholder dynamics, in order to provide insights in the role of these dynamics during IT-based innovation adoption processes in hospitals. These insights may ultimately enable the formulation of engagement strategies to enhance IT-based innovation implementation success in hospital settings.

In that way, the subsequent research objectives of this research are three-fold;

1. ***The first objective of the research is to develop and validate a framework that is able to evaluate stakeholder dynamics over an innovation journey, in order to support stakeholder management during innovation implementations.***
   This is done through the analysis of stakeholder dynamics in order to see if patterns of stakeholder evolvements exist. This can done through the evaluation framework. This may lead to general guidelines or recommendations during innovation implementations.

2. ***Based on the framework and the evaluation results engagement strategies and connecting implementation activities can be formulated.***
   The insights in the stakeholder environment, based on a specific set of attributes lead to the formulation of engagement strategies. These strategies can be operationalized in intervention activities.

3. ***The effect of the activities needs to be monitored in relation to acceptance attributes over the journey in order to evaluate effectiveness of the stakeholder dynamics evaluation.***

By posing the above research questions, we aim to attain the following sub-goals:

1. Insights in stakeholder involvement during ICT based innovation implementation projects
2. The fit of engagement strategy modes to evolving stakeholder attributes
3. The establishment of a practical tool that can aid in capturing stakeholder dynamics over time and that can supply possible engagement directions

4.2 RESEARCH QUESTIONS

To achieve the posed research objective, we need to answer a set of research questions. The first research question is aimed at gaining more knowledge in the field of stakeholder dynamics. The second research question relates to how this knowledge can aid in the design of practical engagement strategies and activities. The theoretical sub questions are mainly already dealt with in the previous section of the thesis.

Research question 1: the role of stakeholder dynamics

The first research question reads as follows;

What is the role of intra-organisational stakeholder dynamics in IT-based innovation adoption processes in hospitals?

In order to investigate this 'role', we need to research the context of IT-based innovation adoption in hospitals and stakeholder dynamics in general. In the sub paragraphs below, both an elaboration in theoretical as well as empirical sub questions is given.

Sub questions

The following sub questions are related to this main research question and are mainly answered in previous literature review;

1. What can be defined as an IT-based innovation?
2. How does the process of innovation adoption look like?
3. What factors hinder or facilitate innovation adoption, specifically in hospitals?
4. What dynamics take place during innovation adoption processes?
5. What stakeholder attributes need to be considered when trying to evaluate dynamics?
6. How do these attributes evolve over the innovation adoption process?
7. How can one capture, monitor and evaluate these attributes over time?

To answer the questions above, we aim to use practical tooling to capture the desired information (including attributes) at the source. These questions help in shaping the research framework.

Connecting to an empirical validation, the following questions can be posed;

1. How do these stakeholder dynamics look like during an innovation implementation in an actual hospital implementation setting?
2. How can these stakeholder environments be mapped dynamically in this setting?
3. How can these stakeholder dynamics be easily visualized and tracked?

Research question 2: shaping engagement strategies

the second research question reads as follows;

How to shape and optimize engagement strategies connecting to stakeholder dynamics in order to support technology acceptance?

This research question tries to answer how insights in stakeholder dynamics support proper stakeholder management in terms of engagement strategies.

Sub questions

The following sub questions are related to this main research question and are already discussed;

1. What engagement strategies exist in stakeholder management theory?
2. How do these strategies connect to the mentioned investigated stakeholder attributes of research question 1?
3. How can engagement strategies be embedded in a theoretical model of stakeholder attribute dynamics?

In order to being able to answer these questions, we formulated following design questions to further shape our research framework;

1. Do the found engagement strategies from our theoretical framework match actual executed strategies in practice?
2. What can be said about this match or mismatch and the evaluated results in practice?
3. What structured implementation activities need to be undertaken in line with evaluated engagement strategies?

4.3 HYPOTHESES

By answering the above research questions we aim to assess the following statements;

H1: More knowledge of the stakeholder environment leads to better alignment of engagement activities with stakeholder dynamics and characteristics.

H2: Properly aligned and timed engagement activities lead to a positive influence on stakeholder dynamics in favor of stakeholder satisfaction.

H3: Dynamics in the stakeholder environment, in both capacity as intentions dimensions, influence stakeholder satisfaction with project results.

4.4 PRACTICAL & THEORETICAL RELEVANCE

In complex organisations, like hospitals, interesting questions for management entail *how* innovation adoption processes could be managed in relation to different stakeholder communities to attain optimal individual and organisational adoption. In other words, there's a continuous need in practice for the opinion of the stakeholder environment as an indicator for implementation (and acceptance) success. By supporting this need and making it possible to specify This means having insight in

- What stakeholders are member of the decision making unit?
- What does the decision making unit look like at different points of time during the implementation process?
- When to address what stakeholder groups during the innovation deployment process?
- How to manage the stakeholder environment to influence stakeholder satisfaction?
- What structured implementation activities support favorable innovation adoption outcomes?

As noted in the introduction of this thesis, the commitment and trust of the potential adopting population, and thus stakeholder population, is seen as important in innovation adoption success. For that reason, much can be gained in insight in stakeholder dynamics during innovation adoption processes.

Most currently available stakeholder analysis tools and models found in literature support static, often one time, measurements. In developing a model that is capable to capture developments of individual stakeholder characteristics over time, it is possible to gain deeper and more accurate insights in movements and developments in the stakeholder environment of a project as a whole. Our elaboration on the innovation journey stresses the continuous development of especially intentions of a stakeholder along the course of the project, making it virtually impossible to rely on static evaluations to formulate engagement strategies.

Dynamic evaluations provide more accurate insights in how and when to engage with the stakeholder environment. This makes it possible to continuously adjust communication and engagement strategies connecting to changing positions of stakeholders in the project environment.

Furthermore, the combination of individual technology acceptance measures in combination with existing stakeholder salience measures is not found in literature. Technology acceptance models are primarily focused on the individual, while we aim to aggregate measures to the stakeholder (group) level by combining different stakeholder intentions in one overview, using the capacity dimension to prioritize these intentions.

In other words, even though much attention is already given in literature to the *who* and *how* questions as separate research domains, no literature is found combining both aspects in one model for analysis. The relevance of doing so, is already elaborately explained in previous chapters.

The research in this thesis in a general sense may contribute to the sparse body of literature concerning stakeholder identification, classification and dynamics during innovation processes (Vos & Achterkamp, 2006). The research connects to the notions of scholars that further research should now focus on the boundaries between professional groups, individual professionals, and associated communities of practice in the local enactment of innovations (Ferlie, et al., 2005). In developing a model that is able to capture the same characteristics of different stakeholders in one overview, one may gain insights in the different communities of practice.

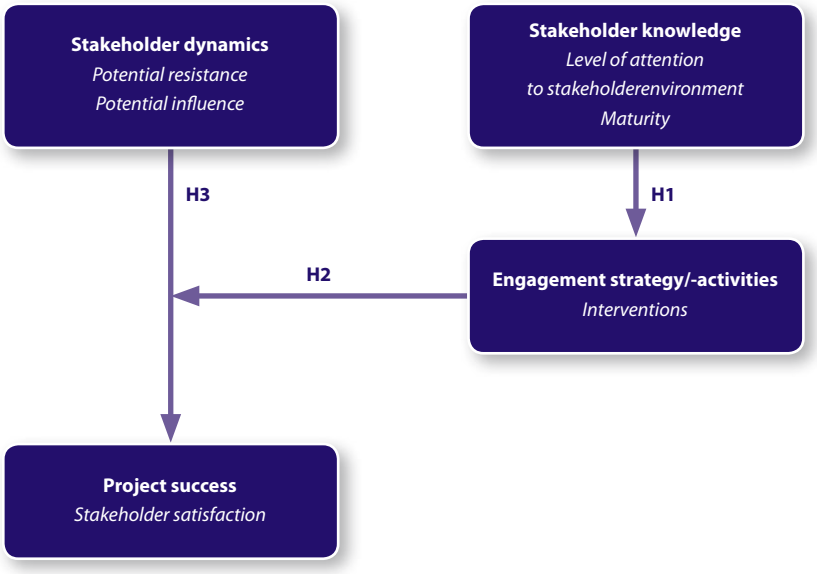
As a final note, available stakeholder analysis models found in literature are also considered difficult to use in practice (Jepsen & Eskerod, 2009). By using the developed theoretical model in practice and evaluating its usability, it is believed to specifically address this notion.

4.5 RESEARCH MODEL

The questions, hypotheses and review of literature can be summarized in a conceptual research model. Central to the research model are four distinct research domains;

1. Stakeholder dynamics
2. Stakeholder knowledge
3. Engagement strategy and –activities
4. Project success

Figure 13: *Overview of research hypotheses.*



These four key components will be described in the following paragraph; these domains can be related to the earlier discussed stakeholder management cycle:

Table 11: *Research domains related to the stakeholder management cycle.*

Research model domain	Cycle stages
Stakeholder knowledge	1. Identify stakeholders 2. Gather information on stakeholders
Stakeholder dynamics	3. (Determine) stakeholders' positions 4. (Determine) stakeholder strengths and weaknesses
Engagement strategy/- activities	5. Develop stakeholder management strategy 6. Predict stakeholder reaction; develop alternatives 7. Implement stakeholder strategy 8. Evaluate results and adjust strategy

Project success is described in terms of the earlier discussed definition; the level of satisfaction of relevant stakeholders, where the explanation of 'relevant' is explored by above cycle stages.

4.6 KEY COMPONENTS OF THE RESEARCH FRAMEWORK

In this paragraph we will explain how we will investigate and use the key components in the testing of our hypotheses and answering our research questions.

Stakeholder dynamics

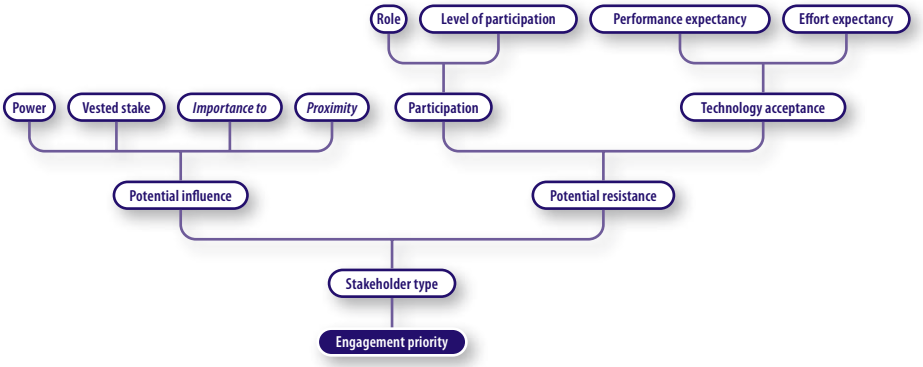
To investigate the described stakeholder dynamics, the earlier mentioned constructs need to be operationalized. In this way, several snapshots of the DMU can be constructed, as well as the changes in the mentioned innovation adoption dimensions, during different phases of the innovation journey. In this respect, we use stakeholder analysis to determine the group eligible for the user perception related predictor research (e.g. Perceived usefulness), conform actor-network theory principles.

The development of stakeholder configurations (changes in DMU composition and stakeholder role involvements), as well as projected innovation outcome can thus be analyzed.

Remember the research of Ferlie et al. (2005), where the conclusion was that high professionalization can retard innovation spread due to social and cognitive barriers. As argued by Ferlie et al. (2005) these kind of professional differences can only be overcome by means of social interaction, trust and motivation. Attention to these differences thus may speed-up or facilitate innovation adoption in organisations with high professionalization, like hospitals. We mentioned the existence of these barriers, not only in-between the medical professions, but especially between two fundamentally different communities of practice; the hospital IT department (as formal 'implementers') and medical staff (as end users of the innovation).

The key elements of the stakeholder dynamics domain can be visualized as follows;

Figure 14: *Overview of discussed theoretical framework.*



Potential influence (capacity attributes)

This demands for constructs that can aid in evaluating those stakeholders relevant with respect to the innovation and its (possible) outcomes. Following this line of reasoning, we first need to know who really matters. Based on (existing) stakeholder capacity attributes it is possible to rank stakeholders based on their possible impact or influence on an innovation's outcome. This does not state anything about the intended or exerted *direction* of the capacity or influence (remember the *salience arrow*).

Potential resistance (intentional attributes)

2A: Participation attributes

So, just evaluating stakeholder capacity does not help in evaluating a stakeholder's stance or intended capacity direction in the innovation adoption process; valuable information if we are looking for leads to form our engagement strategy. Insights in a stakeholder's intentions in terms of its participation are therefore useful in assessing how a stakeholder may or may not enforce its influence.

2B: Stakeholder innovation perceptions

Now we can evaluate who matters and how these stakeholders contribute to the innovation adoption process, we still do not have any knowledge about how these important stakeholders perceive the innovation at hand, even though the level (or mode) of participation may indicate a stakeholder's perception of the innovation. The lack of insights in these perceptions make it hard to act, while at the same time positive perceived benefits do positively correlate with innovation adoption success.

Remember that innovation adoption processes are socio-technical, interactive, processes. We are therefore interested in the *decision making unit's* perceptions of the innovation. By including innovation based constructs we are capable of evaluating dominant stakeholders' changes in perception.

We discussed several models aiming at relevant factors influencing the individual technology acceptance decision. Two constructs seemed highly correlated with a stakeholder's behavioral intention, acceptance and actual usage; performance expectancy and effort expectancy. We therefore will take both the intention component as the innovation perceptions into account when evaluating a stakeholder's level of acceptance, translated in potential resistance, as described by the framework of Savage, Nix et al. (1991).

Relevance of components in theoretical framework

So, in order to facilitate this evaluation, we build on a variety of existing and empirically well founded theories, among others organisational development theory, technology acceptance theories (TAM, UTAUT) and stakeholder theory.

In practice, only few tools are found to translate discussed theory in practical applications. One example of this is the Stakeholder Circle software application by Bourne (2005) The combination of the key components, as described above, in one model is unique and was not found in literature.

The value of the research framework thus lies in combining capacity, intentions, participation and innovation perceptions to compare stakeholder environment developments and dynamics.

Finally, remember the mentioned guidelines of Pouloudi et al. (1999) and implications for stakeholder analysis;

1. Stakeholder maps should reflect the context
2. Stakeholder map should be reviewed over time
3. Consider how stakeholders are 'linked'
4. Adopt a long-term perspective; study how perceptions change
5. There are different versions of the stakeholder map to be drawn for different perspectives
6. These different versions of the stakeholder map should be reviewed over time
7. Consider political issues (as well as technical, economic or other) (Pouloudi, 1999)

We use these guidelines in developing our stakeholder research framework, as can be seen in the following paragraph.

A method to assess stakeholder dynamics: the stakeholder-based acceptance radar (sar)

In order to establish the earlier described snapshots, we use a dimension based evaluation model. The relevant constructs of innovation adoption and technology acceptance theory are combined with the relevant and proven constructs of stakeholder theory.
Several existing and empirically validated questionnaires are used. In the following table the already discussed domains dimensions are presented as well as the literature reference of the question scales and content.

Table 12: *Stakeholder dynamics & innovation adoption: capacity domain.*

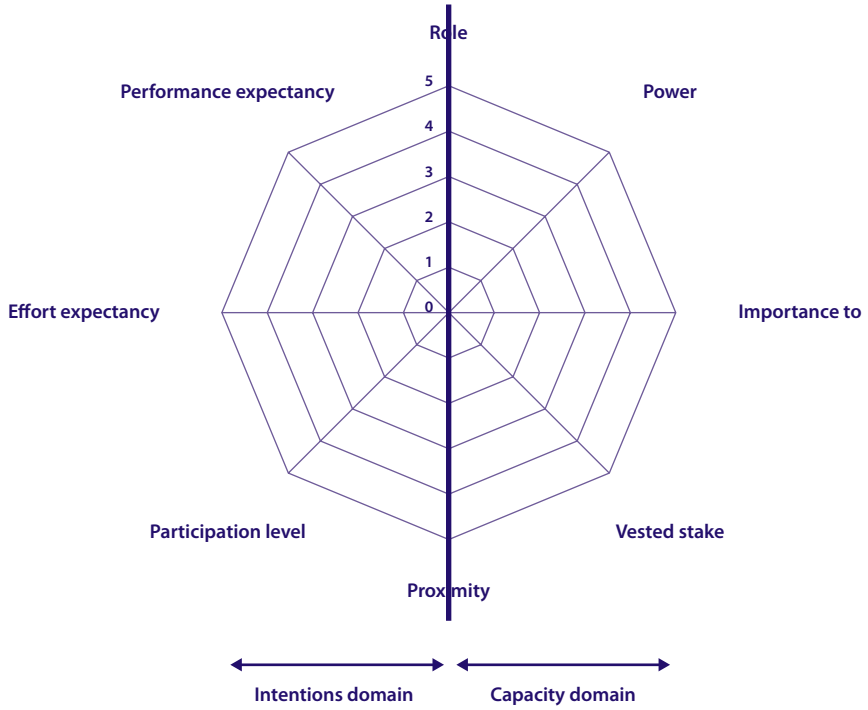
Construct	Definition	Scaling	
		1 means…	5 means…
Power *Ordinal*	Defines the stakeholder's ability to influence or change the project or innovation (Bourne (2005))	This stakeholder has a relatively low level of power (ie, cannot generally cause much change)	This stakeholder has a high capacity to formally instruct change (ie, can have the project stopped)
Importance to *Ordinal*	Defines the level of importance the stakeholder attaches to the innovation based on how likely the stakeholder is to take action to achieve its desired innovation outcome (including innovation success, changes or cancellation). (Bourne (2005))	The innovation's importance to this stakeholder is very low - is unlikely to attempt to influence the project	The innovation's importance to this stakeholder is very high - will go to almost any length to influence project
Vested stake *Ordinal*	Defines how much the stakeholder has to gain or lose based on the outcome of the project; the gain or loss may be financial, emotional or to the stakeholder's reputation (or a combination). (Bourne (2005))	This stakeholder's vested stake in the innovation is very low - has very limited or no stake in the innovation's outcome (e.g., potential visitors to a new development)	This stakeholder's vested stake in the innovation is very high - has great personal stake in the project's outcome (e.g., a vocal project champion or a committed client)
Proximity *Ordinal*	Defines how closely associated the stakeholder is to the innovation during the innovation journey (implementation) (Bourne (2005))	This stakeholder is relatively remote from the project (i.e., does not have direct involvement with the project processes; e.g., shareholders)	This stakeholder is directly working in the project (e.g., full time team members and contractors working as a part of the team)

Table 13: *Stakeholder dynamics & innovation adoption: intentions domain.*

Construct	Definition	Scaling	
		1 means…	**5 means…**
Role *Ordinal*	Defines the functional role of the stakeholder as attributed by the governing body. (Green et al. (2003))	The stakeholder's formal role in the project is: 1 = informative (only exchange of information) 2 = informative/consultative 3 = consultative (stakeholder aids in the design of the innovation) 4 = consultative/decisional 5 = Decisional (stakeholder decides directions with respect to the innovation)	
Participation level *Ordinal*	Defines the estimated level of participation of the stakeholder. (Pasmore & Fagans (1992))	1 = Collaborating/creating in 2 = Challenging 3 = Contributing to 4 = Conforming to the project. 5 = Non-conforming/participation	
Effort expectancy *Inverted, ordinal*	Relates to how easy the individual believes using the system is. Q1. My interaction with the innovation is clear and understandable. Q2. It is easy for me to become skillful at using the innovation. Q3. I find the innovation easy to use. Q4. Learning to operate the innovation is easy for me. (Marchewka, Liu et al. 2007, Venkatesh et al. (2003))	strongly **agree**	strongly **disagree**
Performance expectancy *Inverted, ordinal*	Defines the degree to which the individual believes that using the technology will help them improve their work performance. Q1. I find the innovation useful in my work. Q2. Using the innovation enables me to accomplish tasks more quickly. Q3. Using the innovation increases my productivity. Q4. If I use the innovation I will increase my delivered quality of care. (Marchewka, Liu et al. 2007, Venkatesh et al. (2003))	strongly **agree**	strongly **disagree**

We will use the above dimensions as graph vectors, where we separate the capacity and the participation/role domain. This can be visualized as follows:

Figure 15: *The SAR vectors and scales.*

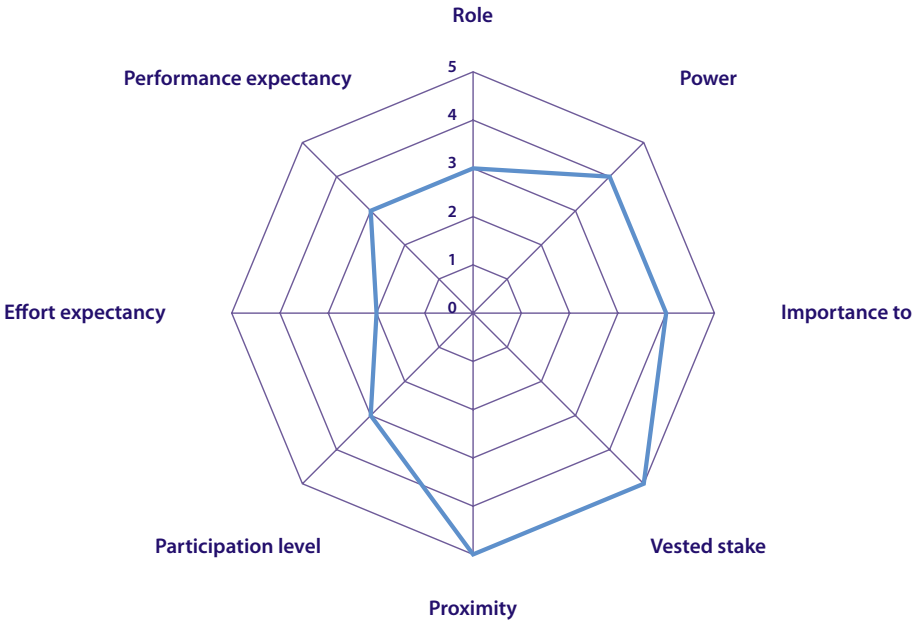


As can be seen, we use inverted scores for performance and effort expectancy constructs, this is done because we want to indicate the possible, potential *resistance* of a stakeholder and as indicated in this paragraph, higher scores increase engagement priority. This is a choice of evaluation; we chose to focus on stakeholders in need for attention because we want to avoid resistance. Another point of view could have been to identify those stakeholders with high acceptance and power that could be enforced to function as champions for the project; in that case, no inverted scores would have been needed.

In general, the larger the *total area covered by all the line vectors*, the more attention is needed with respect to the stakeholder under analysis; this will be explained in the following sections.

We will explain why this visualization aids in the establishment of outcome measures. In the following example a Stakeholder-based acceptance radar is constructed;

Figure 16: *A stakeholder profile mapped on the Stakeholder-based acceptance radar.*



This example graph visualizes a stakeholder is in a (functional) consultative role, with a contributional level of participation. The stakeholder has an intermediate performance expectancy and a fairly high effort expectancy. The urgency (vested stake and importance to) and proximity of the stakeholder with respect to the project is high, as well as stakeholder power.

In other words, the capacity of this stakeholder is high, while the intentions of the stakeholder are not indicating large potential resistance.

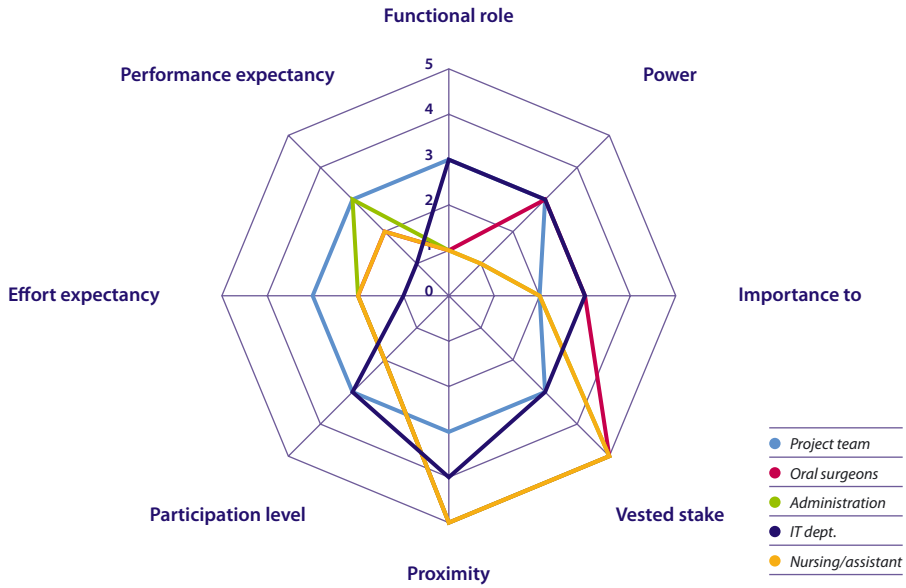
In the SAR, multiple stakeholders can be visualized in the same graph (e.g. by the use of different colors) in order to compare their level on the different attributes and their overall engagement priority.

Determination of stakeholder dynamics: iterative radar construction

The described kind of modeling in a radar-like graph makes it possible to construct stakeholder snapshots at different phases of the implementation trajectory. This makes is possible to compare stakeholder dynamics of (a) a group of stakeholders at a certain point in time and (b) the same stakeholder. In other words, the graph can be used in two ways:

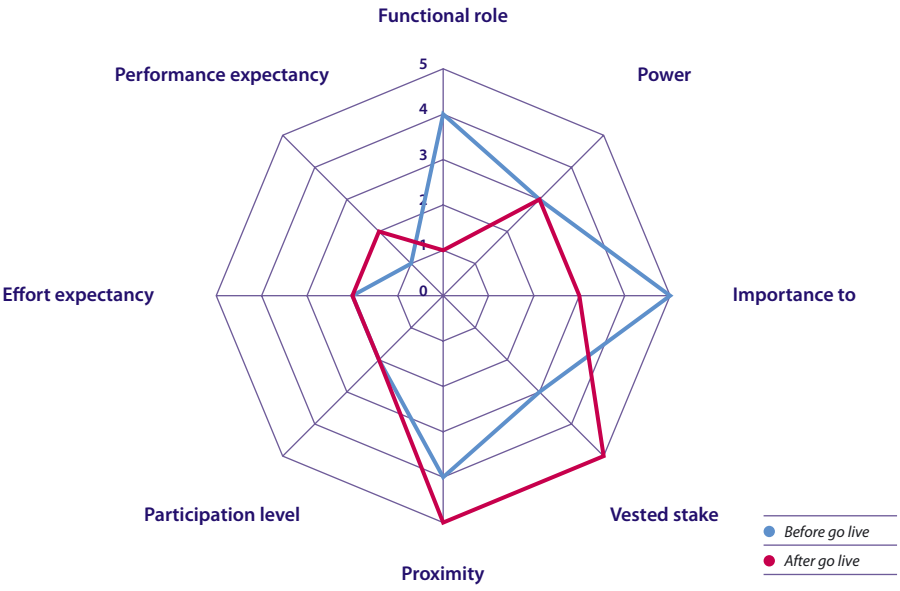
1. ***Phase snapshot:*** Using one graph to *model all stakeholders* at a certain point in time (e.g. The initiation phase of the innovation journey). This gives insights in what stakeholders are the most salient in a certain phase of the innovation journey.

Figure 17: *A phase snapshot.*



2. ***Stakeholder journey snapshot:*** Using one graph to *model one stakeholder*, with multiple radars corresponding to the snapshots of the one stakeholder's vectors over the innovation journey. This gives insights in an individual stakeholder innovation journey; how stakeholder characteristics developed over time. Furthermore, effects of structured implementation activities on certain stakeholders can be visualized.

Figure 18: *A stakeholder snapshot over two phases of the innovation journey.*



In the next paragraph, we will discuss four outcome measures that can be derived from the vector graph.

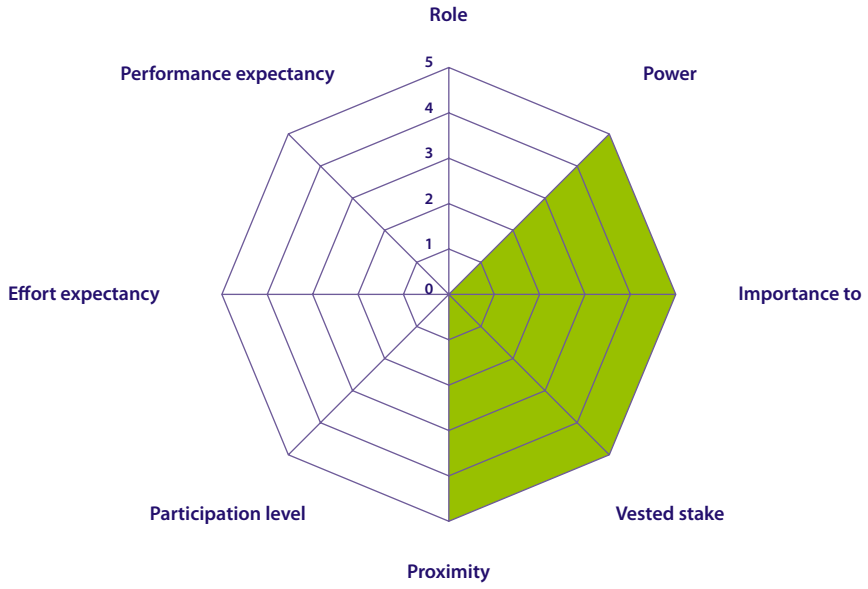
Determination of outcome measures from the graph

The vectors scored based on the profile of the stakeholder make it possible to investigate outcome measures from these scores. The rationale behind these outcome measures can be found in the aforementioned theoretical review.

SAR: Potential influence

The SAR can also support in easily determining a stakeholder's potential influence (e.g. In deriving which actors to target with specified implementation activities). As can be derived from the graph, the larger the area covered through the *capacity vectors* (right part of the graph) and the profile graph, the more salient the respective stakeholder is with respect to the innovation.

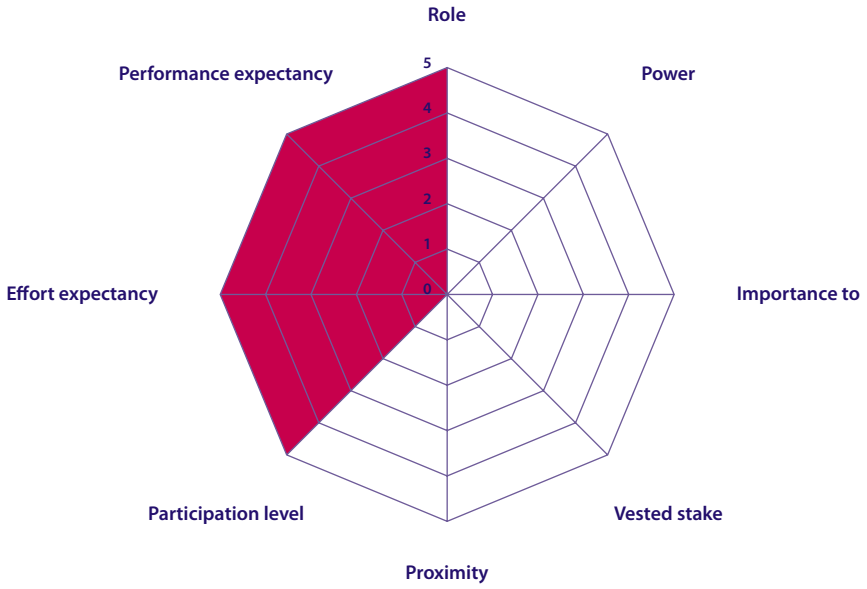
Figure 19: *A stakeholder's salience (capacity) as visualized in the SAR.*



SAR: Potential resistance

On the other side of the graph, it is hypothesized that the *smaller* the area bounded by the acceptance, role typology and level of participation vectors, the more favorable innovation adoption outcome. This ensures low resistance potential (Savage, et al., 1991). The scores on potential resistance attributes must never be seen in isolation but in conjunction with the other (capacity) attributes. In other words, the higher the total area bounded by the intention and innovation perception dimension vectors in the profile graph, the higher the potential resistance and the higher the risk of actual performance and expectancies mismatch. We can also call this area in the graph *the potential resistance*. When the area is small, there's high potential acceptance of this stakeholder (potential resistance demands for attention; this is indicated by the coverage of a large area between the respective vectors). This has an effect on the optimal engagement strategy.

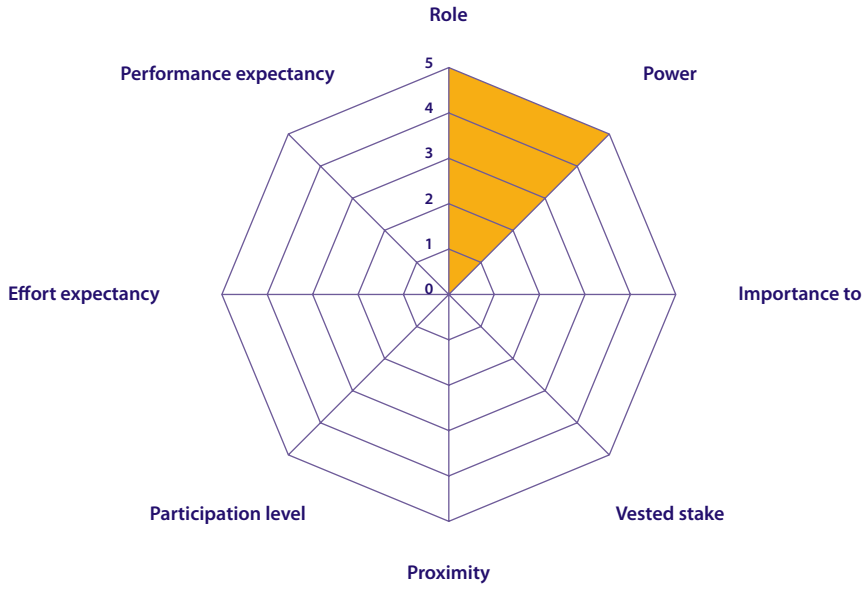
Figure 20: *A stakeholder's potential resistance as visualized in the SAR.*



SAR: Power-function mediation

When evaluating the power of a stakeholder, we are interested in whether this power mediates the stakeholder's functional (formal) role, as discussed in the chapters above. The higher the measure, the more formal and functional enactment of a stakeholder's informal power. High levels of power, while in a decisional formal role, may implicate major formal influence of the stakeholder on the innovation implementation process. In other words, the bigger the area covered in this segment by the stakeholder profile graph, the better the enactment of the role with the stakeholder's power; there's a good role appropriation. Poor matches (low power, decisional role) may lead to surpassing of this stakeholder or may lead to the risk of more informal decision making behind the back of the formal decision maker.

Figure 21: *A stakeholder's power-function match as visualized in the SAR.*

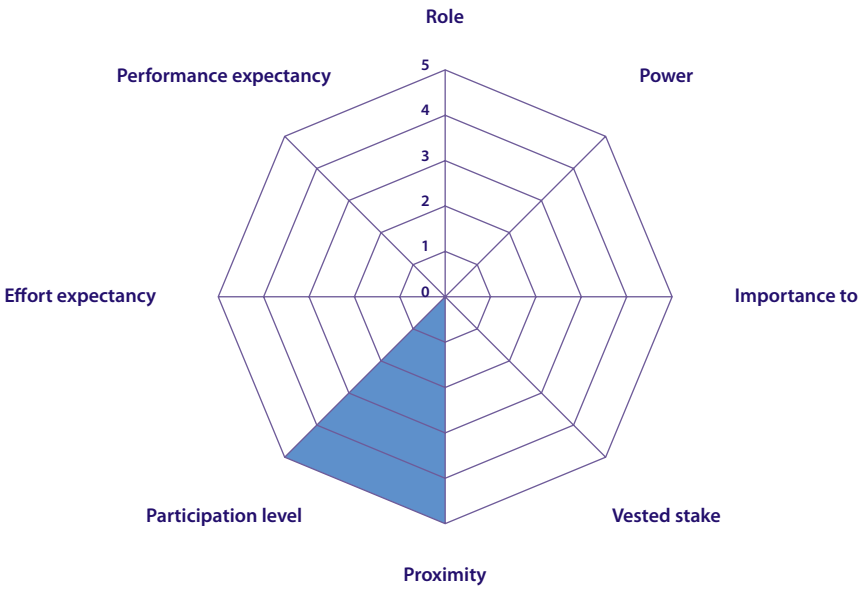


SAR: Eligibility for participation

As noted earlier, stakeholder's in close proximity of the project or innovation at hand may be involved more to enhance potential acceptance and decrease resistance.

This outcome measure may focus attention to those stakeholders that are closely affected by the innovation but do not participate in e.g. the design of the innovation. This measure has to be considered in congruence with the other factors in order to determine the type of action required. The larger the area covered by the two vectors, the higher the need for attention to the eligibility for participation. A large area means high proximity but low participation.

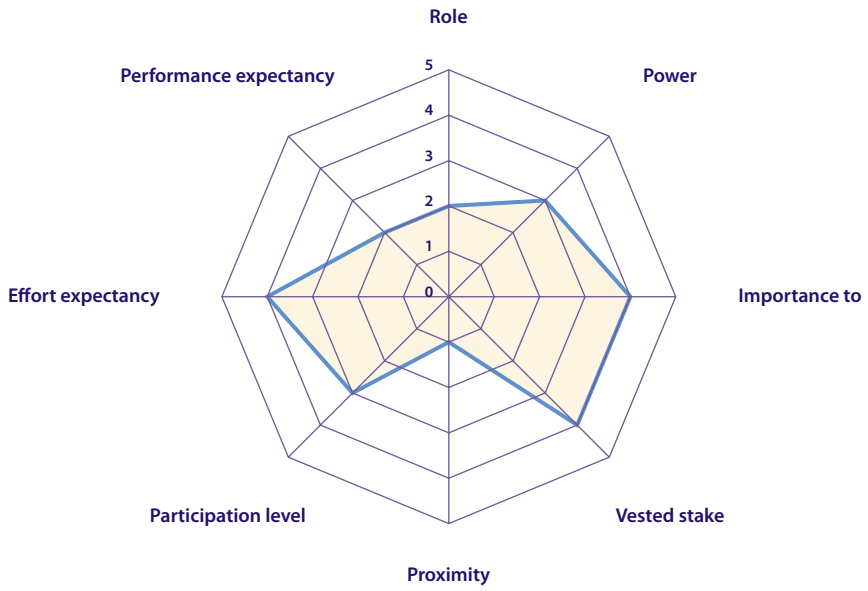
Figure 22: *A stakeholder's power-function match as visualized in the SAR.*



SAR: Engagement priority

At last, the larger the *total area covered by all the line vectors*, the more attention is needed with respect to the stakeholder under analysis; when capacity is high, while at the same time expectancies are low and the level of participation is critically low, this stakeholder is a potential danger for the implementation and innovation effectiveness. In other words, this stakeholder then has *a high level of need for attention or engagement priority* for the project team.

Figure 23: *A stakeholder's engagement priority as visualized in the SAR.*



The stakeholder capacity for the example stakeholder in the above figure is high, while at the same time the graph indicates low participation and low expectancies. This area can be compared with other stakeholders in order to determine attention or engagement priority of the total stakeholder population. By comparing this measure of total covered area, one might determine a priority for stakeholders to engage or involve in the project. This can be done, as described, by targeting specific structured implementation activities on these specific stakeholders. The effect of these activities, in turn, can be evaluated by comparing the total covered area of the subsequent phase of the innovation journey. The above visualization can also be shown in a stakeholder engagement priority thermometer, where scores are determined by the summation of the respective constructs. As a yardstick, we will use a relative score of above 50% of a stakeholder to indicate a ***strong*** need for attention.

In our data collection section, attention to the engagement priority outcome measure is important.

Evaluating the model-guidelines fit

When evaluating the fit of the proposed model with the stakeholder identification and analysis guidelines as put forward by Pouloudi (1999) and frequently cited by numerous authors, we can come to the following conclusions;

Table 14: *Stakeholder dynamics & innovation adoption: capacity domain.*

Principles of stakeholder behavior	Implications for stakeholder identification and analysis	SAR model coverage?	How
1. The set and number of stakeholders are context and time dependent	- Stakeholder map should reflect the actual project environment - Stakeholder map should be reviewed over time	Yes	By re-evaluating the stakeholder identification in every phase of the innovation journey, one may account for changes in the stakeholder environment.
2. Stakeholders can not be viewed in isolation	- Consider how stakeholders are linked	No	By the use of the SAR as evaluative model, linkages between stakeholders cannot be identified.
3. A stakeholder's role may change over time	- Adopt a long-term perspective; study how perceptions change	Yes	By the iterative use of the model (snapshots) changes between stakeholders or between phases can be identified.
4. Stakeholders may have multiple roles			
5. Different stakeholders may have different perspectives and wishes	- There are different versions of the stakeholder map to be drawn for different perspectives	Partial	Even though the SAR model supports the capture of different stakeholder stakes, the SAR is constructed based on the 'governing body' perspective
6. The viewpoints and wishes of stakeholders may change over time	- These different versions should be studied over time	Partial	Due to the above limitation this is not possible from all separate stakeholder perspectives. However, the changes in viewpoints of stakeholders can be captured by the different constructs used.
7. Stakeholders may be unable to serve their interests or realize their wishes	- Need to consider political issues (as well as technical, economic or other)	Partial	Even though the model does not account for political issues, it does consider power and legitimacy aspects of stakeholders.

Even though not all implications are covered in the here proposed model, we do believe that the dynamics indicated by Pouloudi (1999) in reviewing the stakeholder map over time and consider changing perceptions are well covered.

Summarizing outcome measures; an example

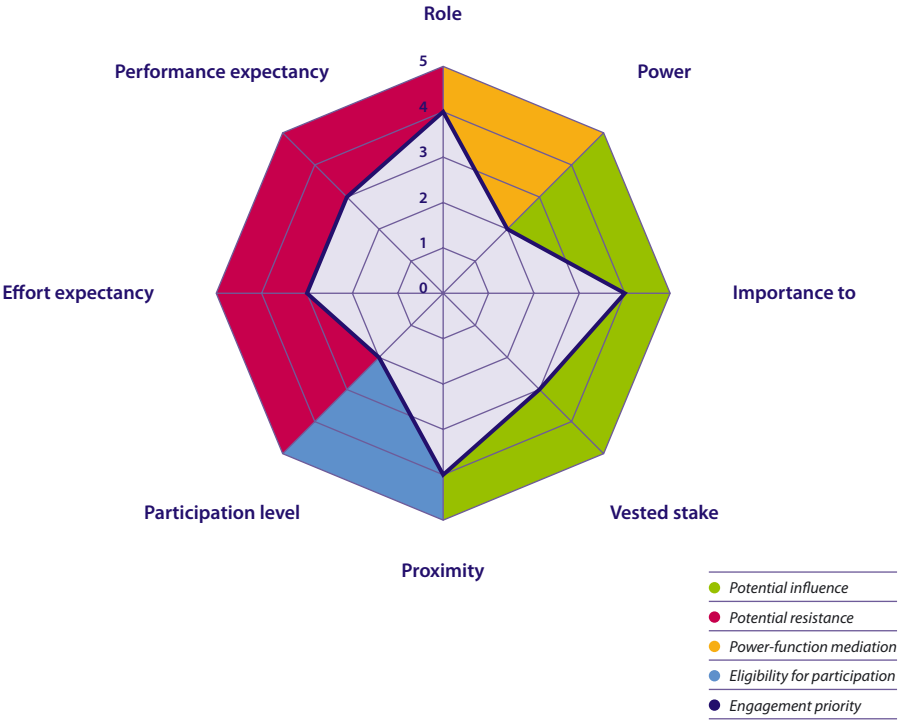
In the above paragraphs, four outcome measures were mentioned that can be used to compare stakeholders or to compare one stakeholder's profile over the sequence of phases during the innovation journey. We divide the measures in primary and secondary measures, based on their usefulness for the project manager or steering committee. Primary measures include the total measure of engagement priority, stakeholder salience and potential resistance. The power-function mediation and eligibility for participation is found to be secondary, since they are part of the other measures and cannot be used in isolation.

The table below summarizes the measures and its meanings;

Table 15: *A summary of the five primary and secondary SAR outcome measures.*

Measure	Vector dimensions involved in combination with stakeholder graph	Large covered area indicates…
Eligibility for participation	Proximity Participation level	The higher the need for attention to the eligibility for participation.
Potential influence	Power Importance to Vested stake Proximity	High capacity of stakeholder to exert influence with respect to the innovation during and after the implementation.
Potential resistance	Role Performance expectancy Effort expectancy Participation level	High potential resistance based on intentions of the stakeholder only. *So **not** adjusted for the salience of the stakeholder. Note that this is an 'inverted 'score, since we use the radar to indicate areas for attention.*
Power-function mediation	Power Role	Enactment of a stakeholder's power through the formal functional role of the stakeholder. (good role appropriation)
Engagement priority	Role Power Importance to Vested stake Proximity Participation level Performance expectancy Effort expectancy	High level of need for attention or engagement priority

Figure 24: *Outcome measures summarized.*



This model and visualization is part of the quick reference card as part of this thesis.

Stakeholder knowledge

The knowledge of the stakeholder dynamics at or before initiation of the project, determines the level of *alignment* of planned and unplanned activities. We will evaluate stakeholder knowledge of the project team by the use of the afore mentioned stakeholder management cycle and will use a stakeholder management maturity (SHMM) checklist before starting our research and around initiation of the project. The construction of this checklist is built on the constructs used in the stakeholder dynamics domain and the stakeholder management cycle (APM, 2011) as discussed in previous chapters. Furthermore, levels are determined based on earlier research relating to stakeholder management capability (SMC) (Zakhem 2008).

Table 16: *The stakeholder management maturity level checklist.*

Section	Items	Description
Identification	Familiairity	The Project team has an overview of direct stakeholders and indirect stakeholders; able to group and identify stakeholders of the project and project results (not prioritized yet).
Assessment & Prioritization	Stakeholder capacity awareness	The Project team is able to identify powerful stakeholders and their legitimacy.
	Stakeholder intentions awareness	The project team is able to describe the intentional modes of stakeholders.
	Stakeholder priority awareness	The project team is able to identify & prioritize critical stakeholders to be satisfied based on capacity and intentions; able to list ambassadors.
	Stakeholder interests awareness	The project team is able to list interests in terms of project or project result characteristics of most important stakeholders. Insights in were the interests for the project come from (the question that precedes the question).
	Stakeholder expectations awareness	The project team is able to list expectations and perceptions in terms of project or project result characteristics of most important stakeholders.
	Stakeholder (group) collaboration and conflict awareness	The project team is able to list and aware of groups and stakeholders in conflict and collaboration of most important stakeholders.
Engagement	Focused stakeholder activities	The project team plans and executes activities over time, explicitly related to specific stakeholder groups and their interests. Feedback of preliminary results is planned and given.
	Engagement strategy	Availability of specific engagement and communication strategies for resistant stakeholders or to improve acceptance.
	Participation planning	The project team deliberately involves stakeholders in specific stages of the project based on their stakeholder profile (related to capacity, intentions and interests).
Evaluation & monitoring of stakeholder dynamics	Use of tooling for SHM activities	The project team uses specialized sheets or to monitor and evaluate stakeholder dynamics (changes in acceptance, capacity or interests).
	Evaluation of activities and effects	Impact and effectiveness of activities is measured by deliberately evaluating stakeholder reactions after planned activities. (even after project results are delivered).
	Incorporation of stakeholder dynamics in altered engagement strategies	Insights in stakeholder changes lead to adjustment of activities and a new assessment of the stakeholder (result of analysis part of loop-back).

The items are scaled from level 1 to 5, based on the SMC levels;

Rational	Process		Transactional	
(none)	Individuals' skills		Project management processes	
1	*2*	*3*	*4*	*5*

The checklist helps in determining areas for improvement and can be used to evaluate progress.

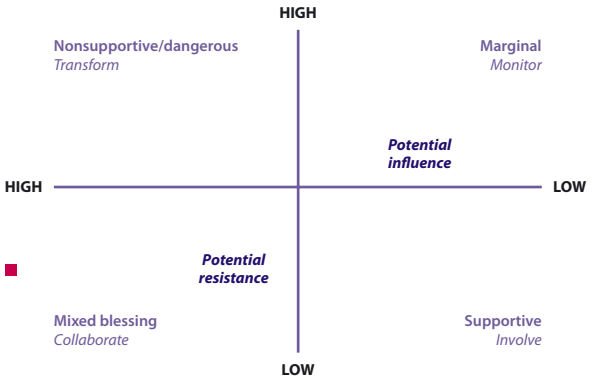
Stakeholder engagement strategy and - activities

Determination of stakeholde type and matching engagement strategy

As stated earlier, the components of the stakeholder acceptance radar lead to a classification of type of stakeholder and a corresponding strategy mode. Based on the outcome measures *stakeholder capacity* and *potential resistance* we are able to define the type and strategy in line with the earlier described theoretical model. The engagement priority may aid in deciding what stakeholder to engage first, the strategy supports in how to engage.

This may be visualized as below, where the x-axis value is derived from the stakeholder capacity score and the y-axis value is derived from the potential resistance. In the example graph, the capacity outcome measure of the stakeholder is high while the potential resistance is low. This indicates mixed blessing stakeholder that demands for a cooperative strategy. Even though effects of these implementation activities are hard to isolate, one may evaluate undertaken activities and evaluate changes in stakeholder type and connecting needed strategy.

Figure 25: *Stakeholder type and strategy map.*



Project success

Baccarini (1999) describes a project's success is the combination of project management and project product –success (Baccarini, 1999). Project management success focuses on the project management process and in particular on the successful accomplishment of the project with regards to cost, time and quality. These three dimensions indicate the degree of the efficiency of project execution. (Pinkerton, 2003). Project product success focuses on the effects of the project's end-product. Although project product success is distinguishable from project management success, the successful outcomes both of them are inseparably linked.

Other authors argue that key to a project's success is that it can mean different things for different people depending on their relation to the project.

From a different point of view, Wideman (1990) *defines project success as the combined degree of satisfaction of all the participants, customers or stakeholders. (Wideman, 1990). Other definitions indicate stakeholders' perceptions of the value created by the project and the nature of a stakeholder's relationship with the project team. (Bourne & Walker, 2005)*

Lim and Mohamed (1999) indicate that a project's success is dependent on a) proper project completion and b) stakeholder satisfaction (Zakhem, 2008).

The above definitions include the level of satisfaction of relevant stakeholders. In the research proposed here, we are mainly interested in the effect of stakeholder management on stakeholder satisfaction, not so much the effect of the project product characteristics and its effects. For this reason, we adhere to the definition of Wideman.

We aim to investigate stakeholder satisfaction of the 'most relevant' stakeholders for the project's purposes (as a result of our analysis), in order to qualitatively determine effects of stakeholder dynamics and engagement strategies. This connects to the notion at the beginning of this thesis that in order to understand the stakeholder environment, one must understand who really matters (the relevant ones) and how they matter.

Research approach

5

5.1 AN INTERPRETIVIST APPROACH

In general, research is based on assumptions about how the world is perceived and understood. For our research approach we closely take into account to major approaches in social sciences, as described by Guba & Lincoln (1994); the positivism and the interpretivism approach. Positivists generally assume that reality is an objective given that can be described by measurable properties. It allows the researcher to collect data from many subjects on well-defined questions. These kind of studies strive to be unbiased, reliable and rational.

Positivism based studies generally use quantitative methods to focus on facts and causes. They work best in identifying and isolating factors associated with the phenomenon at specific moments in time. (Guba & Lincoln, 1994)

The interpretivist approach assumes that features of the social environment are constructed as interpretations by individuals and that these interpretations tend to be transitory and situational. (Robson, 2002)

With this approach, knowledge is gained from inductive, hypothesis or theory generating mode of inquiry. This study adopted the interpretivist perspective, since it appears to be most suitable in the light of our research phenomenon.

Qualitative research methods are the main research strategy of this study. Qualitative methods are appropriate when a high degree of situational variation exists. (Hoff & Witt, 2000) Constant change indicates situational variations exist within an organisation. In our case, it is not achievable to control the many variables present. Qualitative techniques are useful for gaining insights into the processes and events that lead up to observed variations. (Patton, 2002)

5.2 STUDY DESIGN

In the following paragraphs we will describe the theoretical bases and backgrounds for the appropriate definition of our to-be-used research methodology. We will describe and discuss three empirical evaluation methods; case studies, action research and quasi-experimental designs.

Case study research

According to Stake a *case study is not a methodological choice but a choice of what is to be studied. (Stake, 1995)*

Yin defines a case study as an empirical inquiry that *investigates a contemporary phenomenon within its real life context when the boundaries between the phenomenon and context are not clearly evident and in which multiple sources of evidence are used. (Yin, 1994)*.

A case study examines a phenomenon in its natural setting, employing multiple methods of data collection to gather information from one or a few entities (people, groups or organisations). (Benbasat, Goldstein, & Mead, 1987) The evidence for case studies may come from interviews, archival records, verbal reports, observations or any combination of these. Case studies are most valuable for investigation of a real life phenomenon, as stated above, where the focus is on how and why a program succeeds or fails, where the general context will influence the outcome and where the variables cannot be easily controlled. (Robson, 2002).

Only case studies that typically use multiple methods can capture valuable aspects of complex questions. The case study design is especially appropriate when the intervention or strategy being investigated is ill defined or cannot be defined, at least at the outset. (Keen & Packwood, 1995)

Action research

Action research aims to contribute both to the practical concerns of people in an immediate problematic situation and to the goals of social science by joint collaboration within a mutually acceptable ethical framework (Rapoport, 1970). Susman and Evered (1978) view action research as a cyclical process with five phases: diagnosing, action planning, action taking, evaluating, and specifying learning. The infra-structure within the client system and the action researcher maintain and regulate some or all of these five phases jointly (Susman & Evered, 1978).

In our study, we aim to provide advice and thus to intervene in the project's process. In this way, our research can be considered action research.

In the research described in this thesis, feedback is provided through the use of the SAR model and formulated advice on stakeholder engagement. We therefore aim to *intervene* in some way or the other during the process. This makes the case study research evaluation method not entirely matching our research intentions.

In our action research, besides evaluating the stakeholder environment and dynamics, we aim to identify appropriate engagement strategies and possible matching implementation activities and support in introducing them along the process. However, we are not always capable of introducing the changes ourselves.

Our proposed research methodology therefore is not action oriented pur sang. The model constructed will be tested in an experimental design kind of way; we do not control the therapeutic stage, nor the enactment of proposed interventions. Besides that, the precise impact of executed implementation activities are hard to isolate. (Benbasat, et al., 1987)

Quasi-experimental studies can use both pre-intervention and post-intervention measurements as well as nonrandom selected control groups. These designs are frequently used when it is not logistically feasible or ethical to conduct a randomized controlled trial. Examples of quasi-experimental studies follow. As one example of a quasi-experimental study, a hospital introduces a new order-entry system and wishes to study the impact of this intervention on the number of medication-related adverse events before and after the

intervention. As another example, an informatics technology group is introducing a pharmacy order-entry system aimed at decreasing pharmacy costs. The intervention is implemented and pharmacy costs before and after the intervention are measured.

In medical informatics, the quasi-experimental, sometimes called the pre-post intervention, design often is used to evaluate the benefits of specific interventions. Although the randomized controlled trial is generally considered to have the highest level of credibility with regard to assessing causality, in medical informatics, researchers often choose not to randomize the intervention for one or more reasons:

1. ethical considerations,
2. difficulty of randomizing subjects,
3. difficulty to randomize by locations (e.g., by wards),
4. small available sample size. (Harris et al., 2006)

These reasons all seem to apply to our research context. As also stated by Campbell and Stanley (1963), there are many social settings in which the research person can introduce something like experimental design into his scheduling of data collection procedures (e.g., the when and to whom of measurement), even though he lacks the full control over the scheduling of experimental stimuli (the when and to whom of exposure and the ability to randomize exposures) that make a true experiment possible. This has to do with the practical context of these kinds of large-scale projects in practice and the complexity of the environment of hospitals.

In the social sciences literature, quasi-experimental studies are divided into four study design groups (Campbell & Stanley, 1963):

1. Quasi-experimental designs without control groups
2. Quasi-experimental designs that use control groups but no pretest
3. Quasi-experimental designs that use control groups and pretests
4. Interrupted time-series designs

Obtaining pretest measurements on both the intervention and control groups allows one to assess the initial comparability of the groups. The assumption is that if the intervention and the control groups are similar at the pretest, the smaller the likelihood there is of important confounding variables differing between the two groups.

Our first measurement using the model can be considered a pretest. We aim to use control groups with pretesting of both intervention as control groups.

Threats to establishing causality

As indicated by Harris, McGregor et al. (2006), the lack of random assignment is the major weakness of the quasi-experimental study design. Associations identified in quasi-experiments meet one important requirement of causality since the intervention precedes the measurement of the outcome. (Harris, et al., 2006) Another requirement is that the outcome can be demonstrated to vary statistically with the intervention. Unfortunately, statistical association does not imply causality, especially if the study is poorly designed.

Thus, in many quasi-experiments, one is most often left with the question: "Are there alternative explanations for the apparent causal association?" If these alternative explanations are credible, then the evidence of causation is less convincing. These rival hypotheses, or alternative explanations, arise from principles of epidemiologic study design.

5.3 DATA COLLECTION

In this document suggestions are made with respect to data collection and model testing. In this paragraph, an appropriate unit and level of analysis is proposed, the choice of research method and the step-by-step execution of the research method is described.

Triangulation

Due to the complexity of the phenomenon of our research. We aim to gather our data through triangulation methods.

Triangulation is broadly defined by Denzin (2009) as "the combination of methodologies in the study of the same phenomenon." (Denzin, 2009) The triangulation metaphor is from navigation and military strategy that use multiple reference points to locate an object's exact position (Smith, 1975). Given basic principles of geometry, multiple viewpoints allow for greater accuracy. Similarly, organisational researchers can improve the accuracy of their judgments by collecting different kinds of data bearing on the same phenomenon. (Jick, 1979) For our research, this would involve the use of multiple methods (interviews, documentation evaluation, web surveys, etc.) to examine the same dimension of a research problem.

As described by Jick (1979), in all the various triangulation designs one basic assumption is buried. The effectiveness of triangulation rests on the premise that the weaknesses in each single method will be compensated by the counter-balancing strengths of another. That is, it is assumed that multiple and independent measures do not share the same weaknesses or potential for bias (Jick, 1979). Although it has always been observed that each method has assets and liabilities, triangulation purports to exploit the assets and neutralize, rather than compound, the liabilities.

Triangulation provides researchers with several important opportunities. It allows researchers to be more confident of their results. This is the overall strength of the multimethod design. The use of multimethods can also lead to a synthesis or integration of theories. On the other hand, replication is exceedingly difficult. Replication has been largely absent from most organisational research, but it is usually considered to be a necessary step in scientific progress.(Jick, 1979; Smith, 1975) Replicating a mixed-methods package, including idiosyncratic techniques, is a nearly impossible task and not likely to become a popular exercise. Qualitative methods, in particular, are problematic to replicate. Second, while it may be rather obvious, multimethods are of no use with the "wrong" question.

Unit of analysis & multiple cases

when taking into account the earlier mentioned requirements, complexity of the research theme and the time-constraints posed on this research, we come to the conclusion that a relative small, isolated unit of analysis must be chosen. We therefore propose to evaluate the introduction of an IT-based innovation for one specific specialty (e.g. Neurology) in the hospital, hypothesizing that a specialty is sufficiently isolated from other specialties and is specific enough to have at least some different wishes and intentions than other specialties. Considering our research phenomenon, which specialty to investigate is of less importance. Our primary unit of analysis is the s*takeholder environment for introduction of the IT-based innovation for a particular specialty*.

The mentioned timing requirement of minimal exposure is hard to meet, since the trajectories we aim at are scarce, of long duration and infrequent in start-up.

We need to make sure that the case study units of analysis are comparable. As stated by Benbasat et al. (1987), first of all site selection should be carefully thought out rather than opportunistic. Researchers may begin site selection by considering the nature of their topic. Research on organisation-level phenomena would require site selection based on the characteristics of firms. These may include the industry, company size, organisational structure, profit/not-for-profit status, public or private ownership, geographic coverage, degree of vertical or horizontal integration, and so on. (Benbasat, et al., 1987)

For our research we have to make three general selections in order to being able to execute our case study research. First of all, we need to select a specific selection of hospitals that seem eligible for our purpose. Second, we have to determine an appropriate IT-based innovation project. Finally, we have to select our primary units of analysis. In the follow sub-paragraphs we will discuss some requirements and selection criteria for each of the three selection phases.

Figure 26: *Case selection phases.*

This means that the sites for the study need to have certain qualifications as well as the more specific site units of analysis. The sites suitable for our research are determined based on the requirements set out in the following paragraphs.

Hospital selection

We select a total of 10 hospitals at first to approach for participation. When evaluating a series of case study researches in healthcare, we take into consideration a maximum of 30% initial response. This means an estimate of three hospitals that invite the researcher for further explanation. We estimate that eventually two hospitals will remain as possible study sites.

We select the hospitals based on the following initial, general criteria;
- We scan the media for IT project announcements and the stage of implementation (further elaborated on later)
- We include both academic as well as general hospitals to possibly include both type of hospitals in our research

Sequentially, we investigate our social network for possible entries to the hospital IT organisation of the respective hospitals, to speed up research introduction.

Innovation process requirements

When selecting possible, eligible sites for our case study, we already try to take into account certain innovation characteristics based on e.g. media announcements.

Especially, we take into account;

1. The kind of innovation at hand
The here presented model focuses on IT-based innovations. Therefore, the innovation process must be centered around an information system or enhancement that is introduced in a hospital context. This may be e.g. A new personnel information system, electronic health record system or a new radiology information system. To limit the scope of investigation, the innovation as study object should preferably relate to specific domains (so hospital wide HER implementations are preferably out of scope, although decentral implementation of one specialty can be included in research). Furthermore, the system should not be isolated. In other words, it should not be contained to one stakeholder group only.

Examples
1. *Radiology information system (RIS)*
2. *Picture archiving and communication systems (PACS)*
3. *Enterprise content management systems (ECM) with decentral implementation*
4. *Modality related information systems (Echocardiography, Endoscopy, etc.)*

2. The stage of the innovation process (timing) of the innovation
Since we also want to evaluate the capacity to predict stakeholder role involvement dynamics at the initiation of the innovation process and evaluate the effect of early stage implementation activities, the innovation process at hand should be positioned *around the initiation phase.*

The following additional process requirements with respect to the innovation at hand can be made, comparable to Lewis' (1993) notions;
1. The innovation is one which requires coordination between users and may not practically be "adopted" individually; (this further implicates the urgency to investigate multiple individuals or groups as unit of analysis)
2. The formal decision to adopt and incorporate the innovation into the organisation has been made and this is not a "trial period";

3. Users have had only minimal exposure to the innovation before intraorganisational adoption begins;
4. The innovation requires an actual change in procedures and personnel responsibilities and is not merely an administrative definitional change.

These requirements are however hard to take into account in our first selection of hospital sites and need to be investigated in first conversations within the hospitals.

These requirements have implications for our case study selection as will be explained further.

Data collection methods

Ideally, evidence from two or more sources will converge to support the research findings. Yin (1994) identifies several sources of evidence that work well in similar research (Yin, 1994);

1. *Documentation*; written material ranging from memoranda to newspaper c clippings to formal reports.
2. *Archival records*; organisation charts; service, personnel or financial records.
3. *Interviews*; these may be open-ended or focused.
4. *Direct observation*; absorbing and noting details, actions, or subtleties of the field environment.
5. *Physical artifacts*; devices, outputs, tools.

The goal is to obtain a rich set of data surrounding the specific research issue, as well as capturing the contextual complexity. As explained in the next paragraph we will use a combination of the methods above in our research protocol. With respect to the interviews, we aim to take a longitudinal approach; at set time-interval we would like interview the same set of respondents.

5.4 A RESEARCH PROTOCOL

In order to use the framework within our research of an amount of case studies, we define a phased research protocol in which we determine the activities needed. The research protocol is identical for all case studies, with an iterative analysis of stakeholders in phase 2.

Figure 27: *Research phases.*

Phase 0 & 1: Preparation and context evaluation

The research preparation stage consists of six distinct activities to 'set the stage' for the further research for the case at hand. It is the preparation for the data collection and the first scan of the stakeholder environment. In the table below, the flow of activities is shown;

Table 17: *Research preparation phase stages.*

Activity
1. Final preparation of questions for vector scaling (of SAR)
2. Determine research population (units of analysis)
3. Installation and customization of (online) survey
4. Preparation of interview formats
5. Formulating initial documentation list for analysis
6. Draw conceptual stakeholder maps

In the context evaluation phase we aim to describe the project and the innovation at hand. We will analyze the main driver for innovation, the innovation characteristics and the project phasing. Furthermore the anticipated impacts are analyzed by using the impacts assessment framework of Lapointe et al. (2010).

Also, we assess the maturity of stakeholder management as part of the project management.

Table 18: *Phase 1 activities.*

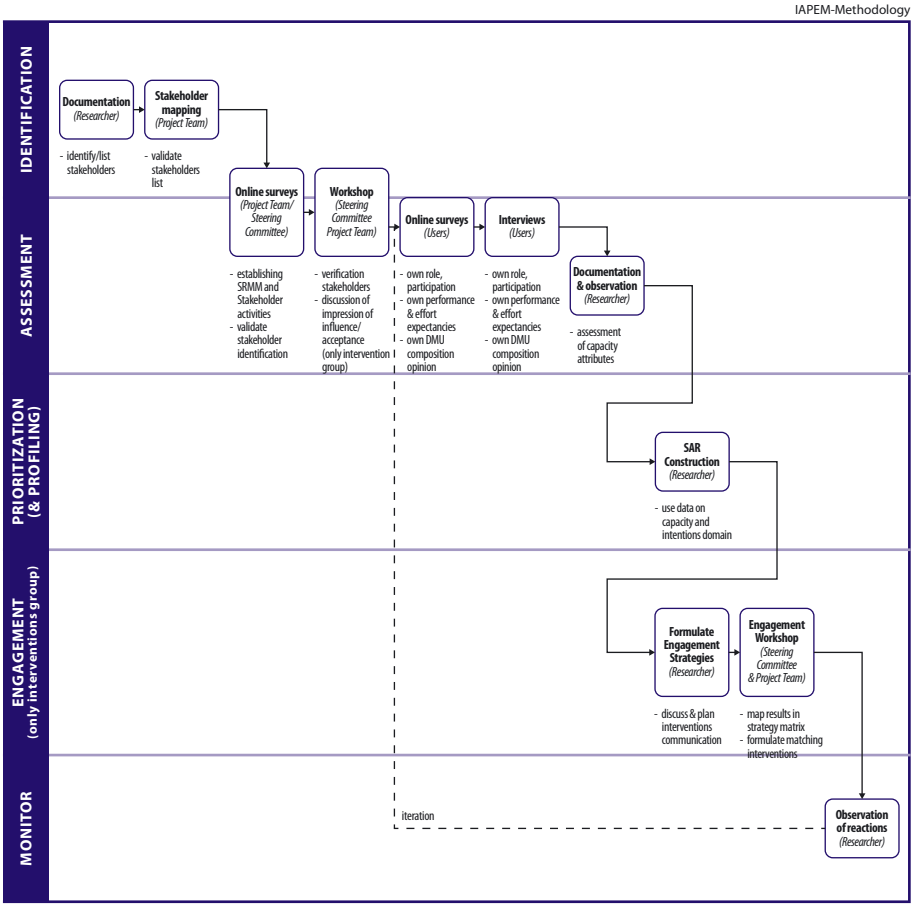
Activity	Result
1. Determine main driver for innovation	- Identification and description of driver
2. Determine (product) innovation characteristics	- Identification and description of innovation
3. Evaluate anticipated impacts on stakeholder communities of innovation results	- Description of impacts differentiated for affected communities of practice.
4. Evaluate implementation planning, strategy en project organisation structure	- Project/implementation description
5. Evaluate planned implementation activities	- List of activities and goals
6. Inventarisation of needed documents (minutes etc.)	- List of documents required
7. General involvement of units of analysis within project (in relation to innovation)	- Commitment expressed by people involved
8. Define stage of innovation (mapped on implementation/ASAP phasing) and boundaries in time for the specific project	- Insights in measure points for stakeholder assessments
9. Determine stakeholder management maturity level	- Completed stakeholder management maturity checklist, validated by the project team

Phase 2: Stakeholder analysis and strategy

Phase 2 is the core phase of our research data collection, since this is the stage where we collect the data needed to construct our research model. In the flowchart on the next page, the steps of the stakeholder management cycle are integrated with our data collection activities.

In this phase we aim to identify the relevant stakeholders for both the intervention as the control group and formulate guidelines based on our model outcomes (in the intervention group). This phase can further extracted into practical activities. With respect to the post-hoc evaluation we aim to execute as much data collection effort and methods as possible by the limitation of information.

Figure 28: *Phase 2 activities.*



The above activities are further explored and explained below.

Table 19: *Phase 2 activities.*

Activity	Description	Who involved?	Method	Tools
1. Identify stakeholders	Developing a list of stakeholders relevant for the innovation (during and after implementation) Evaluate general expectancies and needs Distinct: - Governed system stakeholders (e.g. Targeted users) - Governing body stakeholders	- Project team - End-users - Others involved	1. Identification of stakeholder thorugh documentation 2. Interviews: - Project team itself - Other involved as identified along the way project team to discover new/other stakeholders	MAXQDA software
2. Assess stakeholders *Check if new stakeholders evolve to include in interviews.*	The assessment of the stakeholders resulting from the identification phase.	- Individuals involved	1. Semi-structured interviews, 2. Online survey with specific constructs 3. Documentation	survey MAXQDA software
	Loop back results	- Individuals involved	4. Finetune results based on feedback of preliminary results	
3. Evaluate differences in assessment	When the first iteration has been done (and at least one assessment is executed)	-		Websurvey MAXQDA software
4. Comparing individual stakeholder differences in - SAR outcomes - Stakeholder type		-	Evaluation of dynamics of stakeholders and phasing	
5. Formulate engagement strategy	As a result of the stakeholder assessment, actions are discussed (only for intervention group) connected to SAR dimensions	- Project team	Meetings discussing outcomes and possible engagements - Not done in control group	

We record all interviews, script them and record them in the MAXQDA Qualitative Data evaluation application for final evaluation in later stages.

As can be derived from the table above, the assessment is done through the Delphi method (when possible), implying that results are looped back to the respondents, in order to fine-tune the preliminary results.

Stakeholder identification & assessment

We use triangulation (see previous section) as a method to identify the list of stakeholders, by using both documentation evaluation techniques as well as interviews and surveys to collect our data from different perspectives through different methods.

As indicated will a selection of stakeholders be followed and interviewed. They are asked to assess the stakeholder environment. Based on their perceptions, we will make appropriate interpretations in terms of the proposed research model. To triangulate these findings, we also use documentation and websurvey with scaled questions.

In this stage we will also analyze and evaluate stakeholder expectancies and needs with respect to the innovation's anticipated results. The answers together are combined in the same Stakeholder-based innovations acceptance radar. We use the Stakeholder Profile Card (Parts I & II) to evaluate stakeholder profiles (appendix C).

The Stakeholder Profile Cards consist of two parts:

- PART I: Assessment; in this part the expectations, experiences and assessment of here discussed constructs are collected. On the back page, the SAR can be constructed by connecting the scores.

- PART II: Evaluation; in this part of the Card, realization of expectations and assessment of the stakeholders is evaluated. This is intended to be done after deliverance of project results (e.g. after Go live) to determine stakeholder satisfaction.

Operationalization of research constructs

After the identification of stakeholders (as described in the model of Vos et al. (2006)), the stakeholders must be assessed in terms of constructs. We will use, among others, a survey tool to capture stakeholder attributes. The stakeholder analysis construct answer scales are adopted from the research of Bourne (2005). The innovation construct operationalizations are adapted from Venkatesh et al. (2003), Chau et al. (2002) and Marchewka et al. (2007) (Chau & Hu, 2002; Marchewka, Liu, & Kostiwa, 2007).

Please remember that the construct of urgency is the combined result of the variables vested stake and importance to.

Phase 3: Evaluation project success

In this phase, the success of the project (after go live or termination of the project) is evaluated. We adhere to the definition where project success is defined by the combined level of satisfaction of relevant stakeholders.

Furthermore, we reflect on this success by taking into account the development of the stakeholders' attributes during the course of the project.

Table 20: *Phase 3 activities.*

Activity	Result
1. Evaluate relevant stakeholders' degree of satisfaction with respect to the project (results)	- Overview of filled in profile cards/evaluations
2. Evaluate project success and the changes in stakeholder attributes and typology	- Documented satisfaction level of relevant stakeholder population - Visualized developments in the stakeholder community

Phase 4: Cross case comparison

In this phase we evaluate the causes and effects of changes in stakeholder attributes and typology and will investigate the differences between the intervention and the control group under research. We use the stakeholder management maturity of the project as a yardstick.

Table 21: *Phase 4 activities.*

Activity	Result
1. Compare results of both control and intervention group of hospital	- Conclusions with respect to the differences
2. Evaluate possible causes for differences	- Differences explained
3. Prepare conclusions and recommendations; engagement strategy advice	- Conclusions of research
4. Preparation of discussion of results with project management	- Conclusions of research

5.5 CASE SELECTION

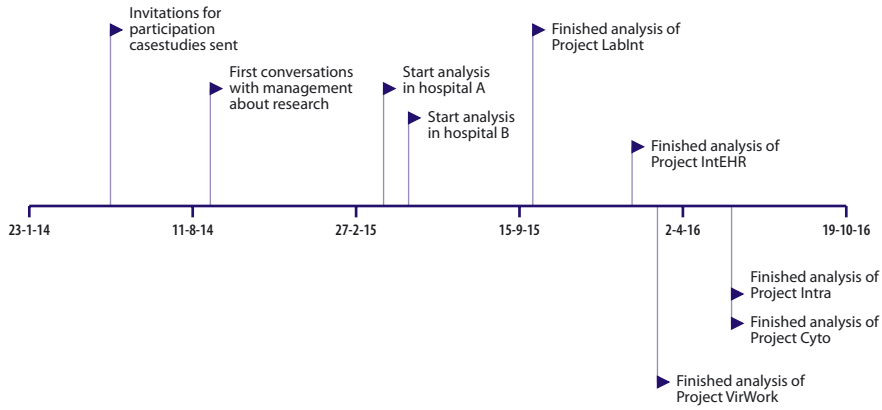
In 2010 we sent out a letter with the proposed research information to 10 hospitals. These 10 hospitals were selected randomly. We did make sure we included both academic and general hospitals. Letters were aimed at managers of the ICT department of the hospital. In some cases, the CIO, in some cases the head of application services. As advised by Benbasat et al. (1987), approaching the potential site is a crucial point in orchestrating a case research project. Here again, the topic of study is key to determining whom to contact. The researcher must eventually contact the individual with enough authority to approve the project.(Benbasat, et al., 1987) For this reason, after having the first conversation with the head of the application department, conversations with the manager of the EPD program took place.

In total, we were invited by four hospitals to discuss the possibilities. Eventually, one academic hospital retracted its participation in a fairly late stage as a result of lack of capacity. Another hospital did not see added value for itself in joining. At the beginning of 2011 we received two positive responses regarding our research. After intensive conversations, the hospitals decided to participate in the research. We classified 4 projects to be observed and analyzed; 2 per hospital. In agreement, a retro-spective analysis on a finished project was agreed to trial the research model and serve as a fifth case. We will therefore extensively reflect on the use of the methodology and the model after this first analysis and result discussion.

As can be noted in the timeline, the eventual start of the research took quite some time. This had to do with a number of reasons:

1. It appeared very hard to get into contact with the right people able to authorize this kind of research
2. The research itself was considered intervening in current high-risk projects, e.g. by the consumption of time of the interviews.
3. The decision making process after agreement to participate took several months.

Figure 29: *The general research timeline.*



Case details hospital A

6

Hospital A is a large generic, top-clinical hospital in The Netherlands. The hospital is undertaking major ICT infrastructural and application revisions and investments. Although a separate project organisation is put into place to realize the majority of the ICT projects, close interaction with the existing ICT organisation is present. The projects analyzed in this study are the following:

Table 22: *Casestudy summary hospital A.*

Project	Name	Description	Timeline	Deliverable(s)	Type of study
A1	LabInt	This project relates to the integration of lab values of the clinical chemical lab and microbiology in the EHR of the hospital for further use.	2009 - present	Possibility to review lab values in the EHR and re-use them (e.g. in correspondence)	Retrospective analysis: trial of the model
A2	VirWork	This project relates to the implementation of a virtual workplace environment at the oral surgery department	2011	Working virtual workplace at oral surgery department.	Analysis
A3	IntEHR	This project relates to the replacement/ upgrade of the current EHR of Internal Medicine to a new release with new data structures.	2011	Replaced and operational new version of the EHR at Internal Medicine.	Intervention

As mentioned before, the LabInt project was also considered a trial to test the model and improve or optimize any shortcomings that could be used in the other casestudies. This was also possible because the analysis was finished first of all cases.

6.1 DESCRIPTION LABINT (A1)

In this paragraph, a description is given of the LabInt project through means of project goals, implementation strategy and timeline of events.

Project description and organisation

The project concerned the development and implementation of IT functionality to view and reuse lab values in the Electronic Health Record[11] of the hospital.

[11] We choose for the term electronic health record (EHR), while much debate exist about proper terminology, like electronic medical record (EMR), personal health record (PHR), etc. In essence, it entails the digitalization of medical records of patient within the hospital.

The project or assignment was focused on a) enabling an overview of lab findings of patients integrated in the current version of the Electronic Health Record (EHR) and b) providing the functionality to include presented lab findings in other parts of the EHR, like release letters.

The first part was to be implemented by providing an integrated viewer of the laboratory system, the second part by developing new functionality that could integrate lab findings through means of message interfacing in the EHR system itself.

This version of the EHR was at time of initiation (only) operational for two specialties; General Surgery and Internal Medicine (including two subspecialties, Hematology and Rheumatology) and consisted of a large body of home brew programming by the hospital programmers.

Project organisation

The functionality design appeared to have evolved through adhoc agreement with the EHR application developer of the hospital and an internal medicine physician. The lab management or employees were initially not involved in the decision making process or functional design of the functionality.

Because of the adhoc nature of the project, no formal project organisation has been in place. No formal plannings, meeting minutes or descriptions were available. Some functional design documents were present but did not contain organisational or decisional information. No evaluation has been taken place.

There was no clear owner of the project and how the project fitted in the project agenda of the department, nor was there an appointed project manager.

After considering the functionality to have some safety issues as a result of an incident, a rapidly formed incident or solution working group was formed, which is further explained in the results section. The incident, according to some of the interviewed stakeholders, was related to the proper readability of the lab values in the EHR.[12] Therefore, the IT department was considered to be the owner of the problem. The composition of the group was mainly defined by the IT manager.

Innovation driver and characteristics

The main driver for the changes as mentioned above has to do with the shift of activities the EHR brings with its evolving implementation. More registrations occur at the source, implying that for example doctors themselves prepare and send release letters, instead of dictating them and letting the medical secretaries prepare the letters. Furthermore, by digitalizing systems, the need for integration of systems in general arises, to limit the amount of time needed to gather information and to avoid double registration of information.

[12] It is not the purpose of our research to validate cause and effect of the IT functionality and the patient safety incident. For our research, the incident marked a change in stakeholder activity and is therefore considered relevant.

In this specific case, one of the doctors of internal medicine pressed for better access to lab values while working in the EHR. The main driver for this request was originated from:

- The only other way to review lab values was through the portal of the hospital. Since no patient synchronization took place, there was a high risk of mismatching values with patients in the EHR.
- Furthermore, the retrieval of the proper lab values in the portal took a lot of time from the doctor (not very intuitive interface).
- Especially Internal Medicine (Rheumatology in particular) performs a lot of lab work, (blood work) resulting in numerous lab results, that are also used in further registration in the EHR and letters to, for example, General Practitioners. Without integrated availability of the lab results, doctors are forced to type over the results shown in the portal, leading to typo's and patient synchronization issues, with high risks for patient safety.

For this reason, an informal request was made to the ICT department to develop a solution to the above, with high priority.

Project goals

The goals were twofold and directly related to the request as described above:

- deliver functionality to integrate the possibility to view lab results in the EHR, without further need of the portal.
- deliver functionality to make it possible to select and copy lab results in EHR digital forms or letters.

This in order to both satisfy Internal Medicine physicians in terms of time reduction as well as to limit the risks for patient safety. The delivered functionalities would be made available to all EHR users, including General Surgery and all specialties to follow. However, whether the same requirements existed beside the specialty of Internal medicine is not investigated or checked during the development of the functionality.

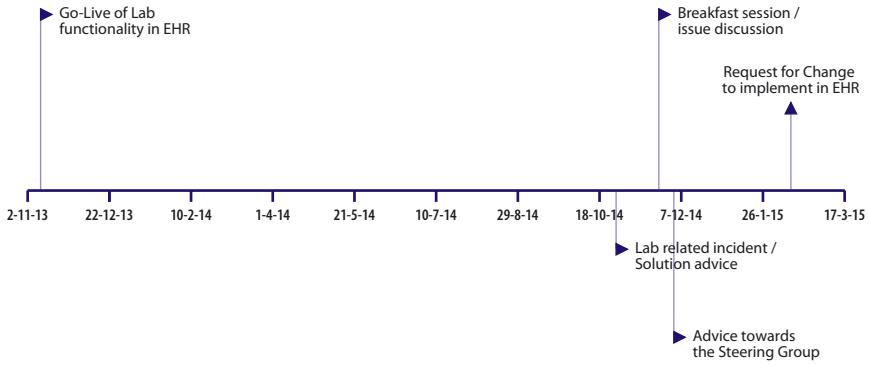
Implementation strategy and planning

In this paragraph an overview is given of the implementation planning and strategy of the project.

Planning

As can be seen in the planning below, the first go-live of the functionality was around 1 November 2009. Around October 2010 problems became apparent after an incident in the hospital. It then took around 2-3 months to actually formulate a formal functional solution for the problem.

Figure 30: *Project A1 timeline.*



Research initiation

We started our first research initiations on 30 may 2011. After consulting with the Board of Directors and the ICT manager this case for the analysis was selected. Mainly because the level of problems and resistance was considered to come completely unanticipated.

First steps included conversations with the ICT manager about the details of the case and meetings with the involved information advisor of the hospital to set the timeline and background of the case. From there on, people were interviewed based on what was discovered from the preliminary research.

Data collection

Since the project was no longer active at the initiation date of our research, a major part of our triangulation consisted of written sources, like reports, emails and meeting minutes. Information was very scattered and unstructured, making it hard to construct a proper timeline of events.

Furthermore, no proper project initiation document was in place or could be found at the time of our research examination.

A total of 10 in-depth interviews were held relating to the project.

Table 23: *Respondents case A1.*

Respondent type	N =
Lab	3
ICT department	3
Internal medicine Physicians (primary end-users)	2
Other EHR users	2
TOTAL	10

As can be seen in the results section, these respondents were identified as the primary stakeholders.

Overall timeline of research events

As can be seen above, most information is subtracted from the people involved in the design and problem-solving of the case. Multiple stakeholders were interviewed and much data was extracted from reports and meeting minutes.

Figure 31: *Project A1 research timeline.*

		31	32	33	34	35	36	37	38	39
		1 aug	8 aug	15 aug	22 aug	29 aug	5 sep	12 sep	19 sep	26 sep
A	**Project A1 - Lab/EHR integration (Cyberlab)**									
1	**Phase 1: Context evaluation/preparation**	PHASE 1								
1.1	Initiation with project management									
1.2	Case description; trigger, planning, etc.									
1.3	Preliminary stakeholder environment									
1.4	Documentation evaluation									
2	**Phase 2: Iterative stakeholder identification/classification**	PHASE 2								
2.1	Interviews with top-5 identified									
3	**Phase 3: Overall SAR and stakeholder type comparison**							PHASE 3		
3.1	Evaluate results: SAR construction									
4	**Phase 4: General conclusions**									PHASE 4
4.1	Loop back results									

6.2 RESULTS LABINT (A1)

In this paragraph, the results are highlighted with respect to the earlier formulated research domains of stakeholder knowledge (and maturity), engagement strategies and stakeholder dynamics during the course of the project.

Stakeholder knowledge

During the course of the project, no evidence could be found of structured identification of stakeholders by the project team. The gathering of information about stakeholders might have taken place, although there's no evidence found of a proper determination of stakeholders' positions. One could argue that if this had been the case, it would have been very unlikely the lab would have been ignored in the realization of the solution.

The stakeholders identified in our own desk research are confirmed during the in-depth interviews. The primary stakeholders are considered to be physicians of internal medicine and general surgery, other specialty physicians (with a read only view on the EHR), lab personnel/management and the IT department.

Table 24: *Primary and secondary stakeholders as identified in own research.*

Primary stakeholders	Secondary stakeholders
Internal Medicine staff (physicians, assistants, etc.)	Patients
General Surgery staff	Board of directors
ICT department	Administrative staff
Lab management/personnel	Nursing staff
Other EHR read only users	

Maturity of stakeholder management in project

Description

As can be noted in the previous paragraphs, no structural stakeholder management has taken place as part of project management during the design, realization and implementation phase of the project. Furthermore, during the held interviews, sometime after go live, all stakeholders indicated a lack in communication about the project itself and the eventual design. No knowledge was present about how the project was structured or controlled.

One of the internal medicine physicians involved in the design stages of the project indicated that he only addressed functional requirements from his point of view and perspective. This was the only physician involved in the design stages of the project.

Around the period of the lab related incident (2010), stakeholders were reactively involved in a 'breakfast session', but no firm agreements were achieved nor executed, even though information was shared about the problems and wishes related to the functionality.

In conclusion, the lack of knowledge by the project team/realization crew during the course of the project, was considered to lead to a lack of proper aligned communication, overview and eventual acceptance of the provided solution by the stakeholders.

Checklist

We scored the stakeholder management maturity checklist based on both the desk research, as well as the interviews. We did not have information of the maturity at initiation, but do have reflective feedback from the stakeholders involved. Since there was no formal project organisation, the stakeholder management maturity of this project can hardly be related to project management activities.

Table 25: *Stakeholder management maturity of the LabInt project.*

		Level (informal to formal/structural)				
Category	**Sub-category**	1	2	3	4	5
Idenfication	Familiarity	●				
Assessment & prioritization	Capacity awareness		●			
	Intentions awareness		●			
	Priority awareness	●				
	Interests awareness	●				
	Expectation awareness	●				
	Conflict awareness	●				
Engagement	Focused activities	●				
	Engagement strategy	●				
	Specific participation planning	●				
Monitoring stakeholder dynamics	Tooling	●				
	Evaluation of activities and effects	●				
	Incorporation of dynamics in engagement strategies	●				

As can be concluded, the maturity level of stakeholder management in this project can be considered low (level 1-2). At the same time, the intentions of the different stakeholders were positive on itself, but not aligned and the results do not match the expectations the different stakeholders possessed.

Stakeholder dynamics

In this paragraph we explore the stakeholder dynamics that took place during the course of the LabInt project. We use the SAR tooling we discussed and constructed in the previous section of this dissertation. The assessment of constructs and therefore the mapping differs from other cases discussed in this dissertation as a result of the retrospective nature of the analysis; we had to reconstruct the dynamics based on stakeholder opinions and desk research instead of witnessing them real time.

Description

Before we construct different stakeholder radars for the situation, we analyze specific intentions and expectations of the primary stakeholders. we distinguish between two moments in time: a) at initial design of the functionality and b) directly after the lab related incident.

Table 26: *Primary stakeholder intentions and expectations project LabInt.*

Primary stakeholders	Initial		After incident	
	Intentions	**Expectations**	**Intentions**	**Expectations**
Internal Medicine staff, represented by one physician	Realizing an optimal solution for the Internal Medicine daily practice .	Saving time by reduction of activities in the system. Integration of EHR information	Keeping an optimal solution for Internal Medicine daily practice.	Elimination of any patient safety issues. Reinstating functionality that has been stopped.
General Surgery staff	Realizing an optimal solution for the Surgery department daily practice.	In general: integration of EHR information.	Reducing patient safety issues.	Elimination of any patient safety issues.
ICT department	Realizing a working functionality based on client demand.	Satisfaction of end users Working and frequently used functionality.	Solving any problems and supporting suggestions to enhance patient safety.	Involved specialties and the lab will provide a solution for the hospital.
Lab management/ personnel	Making sure all 'clients' in the hospital receive timely and adequate lab results presented in a safe manner.	To be involved in lab related functionality design.	Discuss the division of responsibilities regarding lab information. Solve the existing problem relating to the functionality.	Close involvement in the solution of the current problems and in future developments relating the lab functionalities.
Other EHR read only users	Having access to digital information from across the hospital.	Reliable and good lab integration with existing systems in use.	Trying to get more involved in the design of lab related functionalities.	More involvement in the solution of the problem and future related functionality.

SAR

We constructed a stakeholder acceptance radar for two moments in time, in order to test our tool to be suitable to construct snapshots of the stakeholder environment. We constructed one Stakeholder Acceptance Radar at time of initiation of the new functionalities (dd. 2009) and one at present (2011). We used the developed and earlier mentioned stakeholder profile cards to visualize outcomes and determine outcome measures and engagement strategies. As mentioned before, scores were discussed with the stakeholders themselves and mediated by desk research.

Initiation of the project

In the following table the resulting scores are represented as based on the interviews and desk research.

The first table is followed by the table including outcome measure scores as described earlier.

Table 27: *Scores of SAR attributes for LabInt at initiation.*

	Lab	Internal medicine	IT department	Other EHR users
Role	1	5	3	2
Power	4	5	4	1
Importance to	5	5	3	3
Vested Stake	5	5	4	3
Proximity	1	5	5	1
Participation	5	1	1	4
Effort expectancy	3	2	1	3
Performance expectancy	3	1	1	3

See the Quick Reference Card how the outcome measures can be derived from the stakeholder radars by combinations of attributes on different dimensions.

The above mentioned attribute scores before the incident lead to the following visualization in our model;

Figure 32: *SAR at initiation LabInt.*

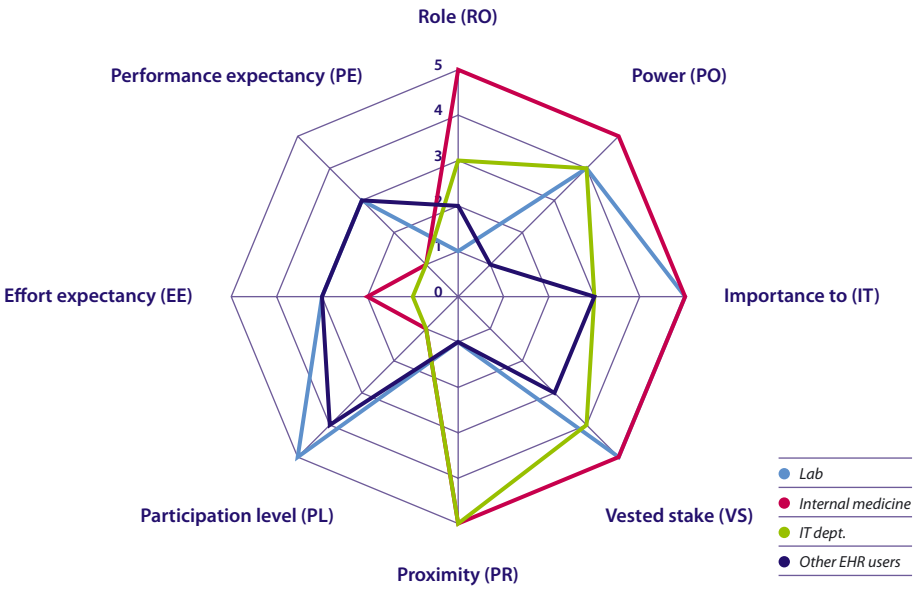


Table 28: *Outcome measures for LabInt at initiation.*

Outcome measure	Score			
	Lab	Internal medicine	IT department	Other EHR users
Power-function mediation	5	10	7	3
Relative	38% (3)	100% (1)	63% (2)	13% (4)
Potential influence	15	20	16	8
Relative	69% (3)	100% (1)	75% (2)	25% (4)
Eligibility for participation	6	6	6	5
Relative	50% (1)	50% (1)	50% (1)	38% (2)
Potential resistance	12	9	6	12
Relative	50% (1)	31% (2)	13% (3)	50% (1)
Engagement priority	27	29	22	20
Relative	60% (2)	66% (1)	44% (3)	38% (4)

The mentioned percentages reflect the relative score on the outcome measure, since the outcome measures have different scales (as a result of different combinations of attributes)

As can be seen in both the measures as the radar, there's large potential influence from Internal Medicine, while there's relatively high potential resistance from the lab department, mainly due to a lack of participation. These insights could have been used, if the SAR was constructed at time of initiation or during the design phase of the functionality.

At the time of initiation the lab has a high engagement priority, while they were not involved in these stages of the project. In other words, the design was (probably unintentionally) dominated by internal medicine and specifically one physician involved in the functional design. It can also be noted that other EHR users are not involved in the project at this point in time, while in fact, it could have been expected that they would be confronted with the new functionality sooner or later as well, since the roll-out of the related EHR functionality was advancing.

The engagement priorities as expressed by the outcome measures do reflect the stories by the stakeholders during the held interviews.

After incident developments

As noted earlier, the lab functionality related incident changed dynamics in the stakeholder environment as noted in documentation (increase in documentation activity, meetings, etc.) and in the interviews.

One may note beforehand that the composition of the stakeholder environment did not change significantly, although the general surgeon seemed more intensively involved. There were no new users of the EHR functionality where the lab functionality was integrated.

Table 29: *Scores of SAR attributes for LabInt after incident.*

	Lab	Internal medicine	IT department	Other EHR users
Role	4	3	5	3
Power	5	5	2	4
Importance to	5	3	5	4
Vested Stake	5	4	5	4
Proximity	5	5	5	3
Participation	2	1	1	4
Effort expectancy	4	2	1	3
Performance expectancy	5	2	2	4

The respondents were asked to reflected on the period directly after the incident occurred until present. This was captured again in the stakeholder profile cards. The above scores lead to the following representation in the radar:

Figure 33: *SAR after incident LabInt.*

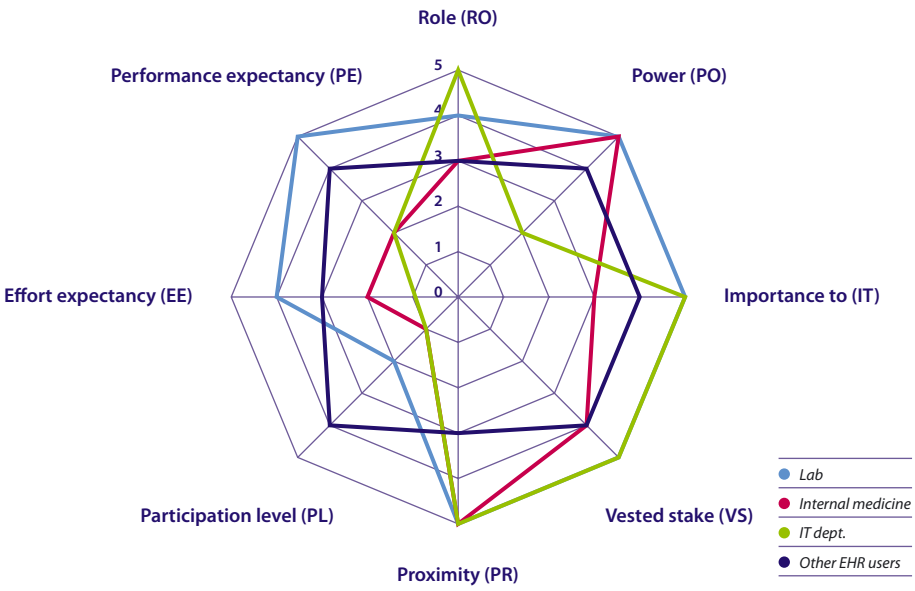


Table 30: *Outcome measures for LabInt after incident.*

Outcome measure	Score			
	Lab	Internal medicine	IT department	Other EHR users
Power-function mediation	9	8	7	7
Relative	39% (1)	33% (2)	28% (3)	28% (3)
Potential influence	20	17	17	15
Relative	100% (1)	81% (2)	81% (2)	69% (3)
Eligibility for participation	7	6	6	7
Relative	63% (1)	50% (2)	50% (2)	63% (1)
Potential resistance	15	8	9	14
Relative	69% (1)	25% (4)	31% (3)	63% (2)
Engagement priority	35	25	26	29
Relative	64% (1)	40% (4)	43% (3)	50% (2)

As can be seen in the radar clearly, there's an increase in potential resistance for both the lab as other EHR users after the incident occurred. This had to do with poor performance expectancy by the lab and the lack of participation by users other than internal medicine. This is not surprising, because of the events that occurred.

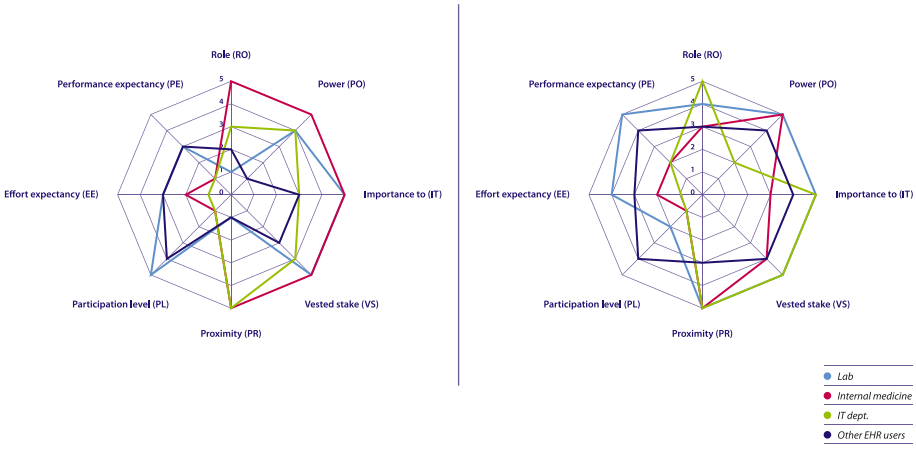
The two radars make it possible to compare the different snapshots and make it possible to analyze whether some predictory knowledge could have been derived from the initial visualization of the stakeholder environment.

Preliminary conclusions

Now we constructed two SAR's at different points in time, the following general conclusions based on the attribute assessments, outcome measures and SAR's can be made:

- Engagement priorities changed after the incident, as the lab became aware of the implemented functionality and started to mingle in the subject. The current presentation of the functionality was considered unacceptable
- Other EHR users commented on their lack of involvement in the design (a.o. pediatrics) and the lack of usability of the current solution for their specific purpose.
- Therefore, the above two stakeholder groups gained highest engagement priorities after becoming aware of the functionality. This awareness was sparked by an incident related to the new functionality.
- In general; potential resistance grew over time of relevant stakeholders, which can be seen in the increasing total surface area in the resistance/acceptance domain

Figure 34: *SAR Comparisons before/after incident LabInt.*



As shown in the paragraph relating to the maturity of stakeholder management, there was hardly no attention for stakeholder management as defined in this dissertation. The lack of knowledge about who mattered and 1how, and subsequently, how to deal with this fact most likely made the chain of events possible, influencing the project significantly.
This most likely can be attributed to the poor identification of the stakeholder environment in the initiation and design stages of the project. The use of identification tooling, like for example SAR's, may have prevented the rise of unanticipated stakeholders and could have stimulated engagement with proper stakeholders.

Stakeholder dynamics

In this paragraph we will zoom in to the different stakeholders. We constructed stakeholder specific radars to analyze the dynamics over time. These radars give us more details about stakeholder attribute mobility, based on the two snapshots made.

The lab

In general, one can see that both potential influence and resistance have increased at the second measurement. The potential influence was higher, mainly because of the fact that the lab was unaware of the project taking place. Not surprisingly, as owners of the lab findings, as soon as they found out about the functionality they exerted influence on the redesign and follow-up on the functionality. One may notice the overall increase in proximity and role. Expectancies decreased, leading to more potential resistance. However, also a decrease in participation level (the lab was involved more). The total area covered increased over time, resulting in a higher engagement priority of the lab.

Figure 35: *SAR of lab during LabInt.*

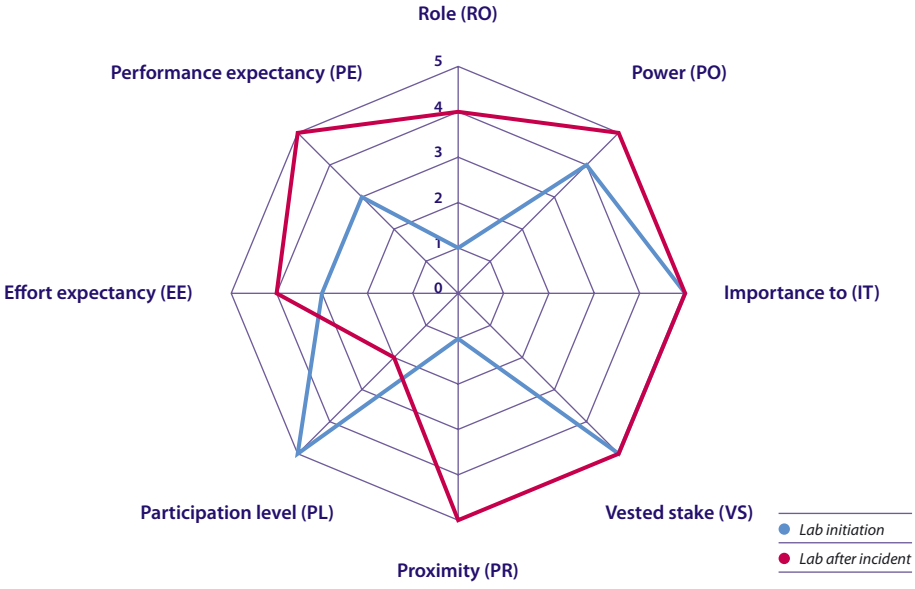


Table 31: *Outcome measures comparison Lab.*

Outcome measure	Lab (1)	Lab (2)	Delta
Power-function mediation			
Relative	38%	39%	+1%
Potential influence			
Relative	69%	100%	+31%
Eligibility for participation			
Relative	50%	63%	+13%
Potential resistance			
Relative	50%	69%	+19%
Engagement priority			
Relative	60%	64%	+4%

Internal medicine

With respect to the internal medicine department, most noteworthy changes can be observed in the potential influence domain; due to the involvement of other relevant stakeholders demanding their participation in the design and use of the functionality and at the same time the functionality already being used in practice, internal medicine's potential influence decreased. Their power however, also because of their heavy use of the functionality, remained.

Figure 36: *SAR of internal medicine during LabInt.*

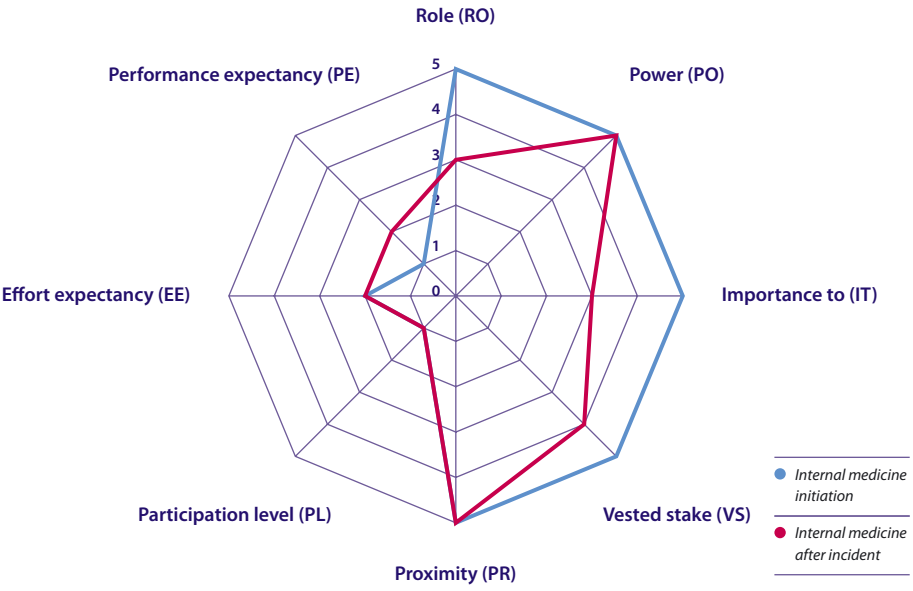


Table 32: *Outcome measures comparison Internal medicine.*

Outcome measure	Internal medicine (1)	Internal medicine (2)	Delta
Power-function mediation			
Relative	100%	33%	-67%
Potential influence			
Relative	100%	81%	-19%
Eligibility for participation			
Relative	50%	50%	0%
Potential resistance			
Relative	31%	25%	-6%
Engagement priority			
Relative	66%	40%	-26%

IT department

Although the IT department had a facilitative role in the project as a functionality 'creator', one may see reflected in the measures that after the incident, the other stakeholders still relied on the co-decision of the IT department to alter functionality, because of the technical requirements the different solutions would have. At the same time however, the power to actually shape the design was distributed more evenly involving the lab and other EHR users since initiation.

Figure 37: *SAR of IT department during LabInt.*

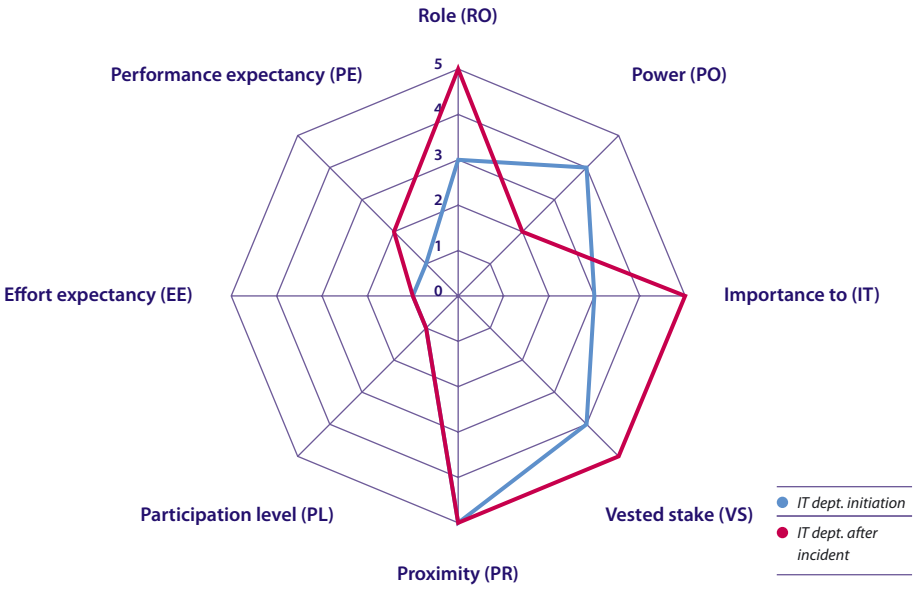


Table 33: *Outcome measures comparison IT department.*

Outcome measure	IT department (1)	IT department (2)	Delta
Power-function mediation			
Relative	63%	28%	-35%
Potential influence			
Relative	75%	81%	+6%
Eligibility for participation			
Relative	50%	50%	0%
Potential resistance			
Relative	13%	31%	+18%
Engagement priority			
Relative	44%	43%	-1%

Other EHR users

The potential influence and resistance of other EHR users increased. This can be explained by the increasing use of the functionality and the increasing sense of high risks for patient safety after the incident by other EHR users. As one can see in the radar, the urgency (combined attributes vested stake and importance to) increased. The proximity (or legitimacy) towards the project also increased substantially.

Like with other discussed stakeholders, the power of other EHR users increased as a result of an incident related to lab findings.

Figure 38: *SAR of other EHR users during LabInt.*

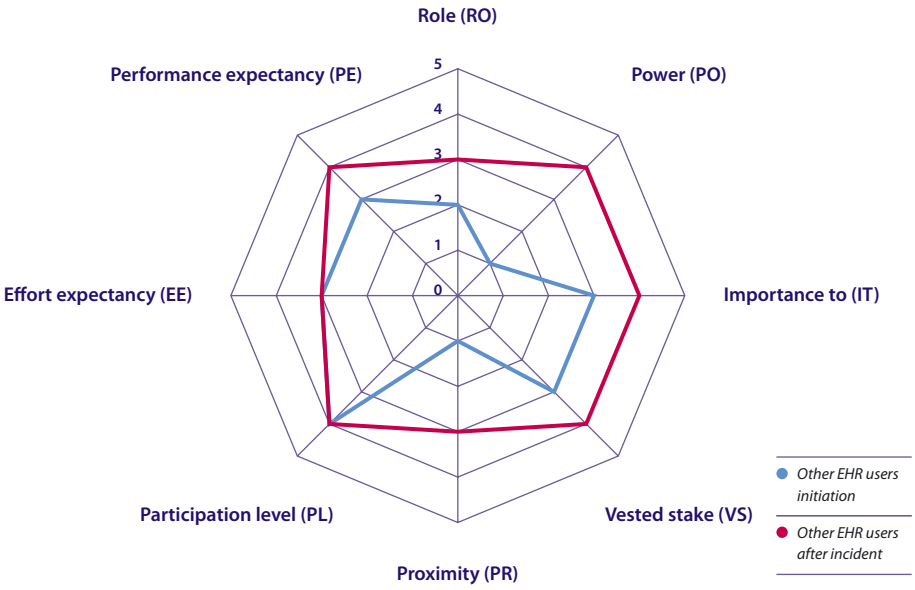


Table 34: *Outcome measures comparison other EHR users.*

Outcome measure	Other EHR users (1)	Other EHR users (2)	Delta
Power-function mediation			
Relative	13%	28%	+15%
Potential influence			
Relative	25%	69%	+44%
Eligibility for participation			
Relative	38%	63%	+25%
Potential resistance			
Relative	50%	63%	+13%
Engagement priority			
Relative	38%	50%	+12%

Engagement activities

In this paragraph we focus on activities employed, involving the stakeholder environment, in the realization of the solution. By using the engagement strategy matrix as developed in the previous section, we can evaluate the appropriateness of executed activities.

Events

Although no documentation has been available regarding an exact planning of activities, roughly, the following distinct activities have taken place:

Table 35: *Major activities in project LabInt.*

	Activity	Involved stakeholders
1	Design of functionality	ICT department, Internal Medicine
2	Communication of new functionality	ICT department, Internal Medicine, General Surgery
3	Breakfast session to evaluate the solution	ICT department (manager and information advisor), Surgeon, Internal Medicine physician, Board of Directors, Lab management
4	Development solution	ICT department, Surgeon, Internal Medicine physician

The breakfast session was not planned beforehand as part of the project but was initiated after the lab related incident. As can be seen, again, the lab is hardly involved in the earlier stages of the project.

In the table above, other stakeholders than the four primarily discussed here are present, like the board of directors and a surgeon. However, as indicated in the interviews as well, the four most dominant stakeholders were believed to remain the same with respect to the functionality.

One may also note that the design of the functionality was an iterative process, taking many meetings between the application developer and an internal medicine physician, together shaping the functionality.

Engagement strategies

Engagement strategy matrix at initiation

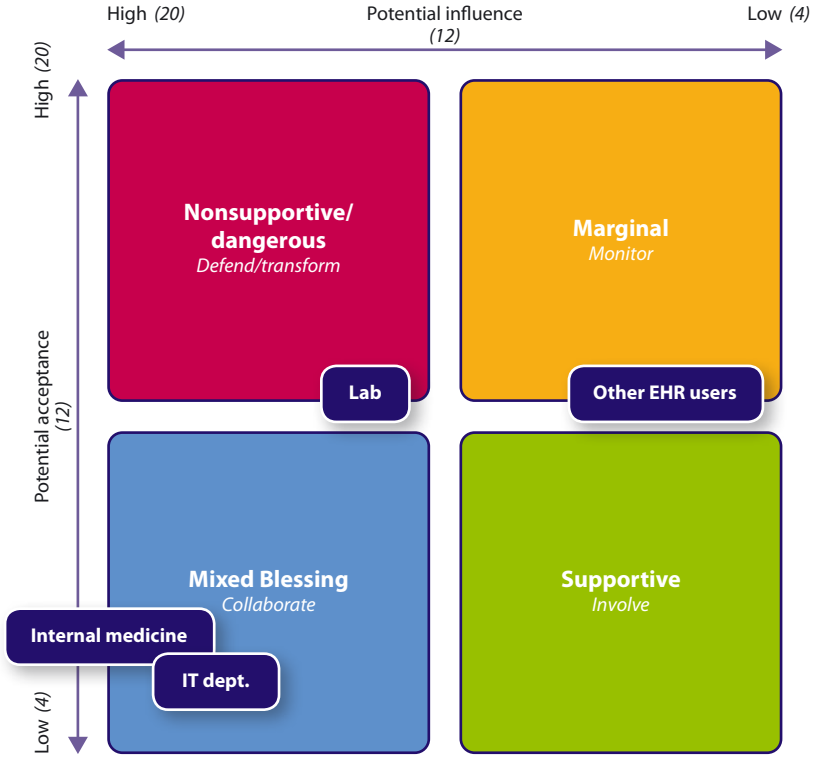
One may note the dangerous/mixed blessing position of the Lab at initiation. This should have been represented in activities to transform potential existing resistance. However, no signs of focused activities or attempts to address potential lab resistance are found. The matrix also indicates the involvement of other EHR users at initiation.

The collaboration between internal medicine and the IT department did take place.

In conclusion; even though activities at initiation of the project were in line with the matrix with respect to internal medicine and the IT department, no attention was given to the transformation of lab resistance or the involvement of other EHR users. No evidence was found of transformation or monitoring activities focused on these groups.

When mapping the outcome measures of potential resistance and potential influence, we gain the following matrix visualization:

Figure 39: *Engagement strategies at initiation of LabInt.*



Engagement strategy matrix after incident

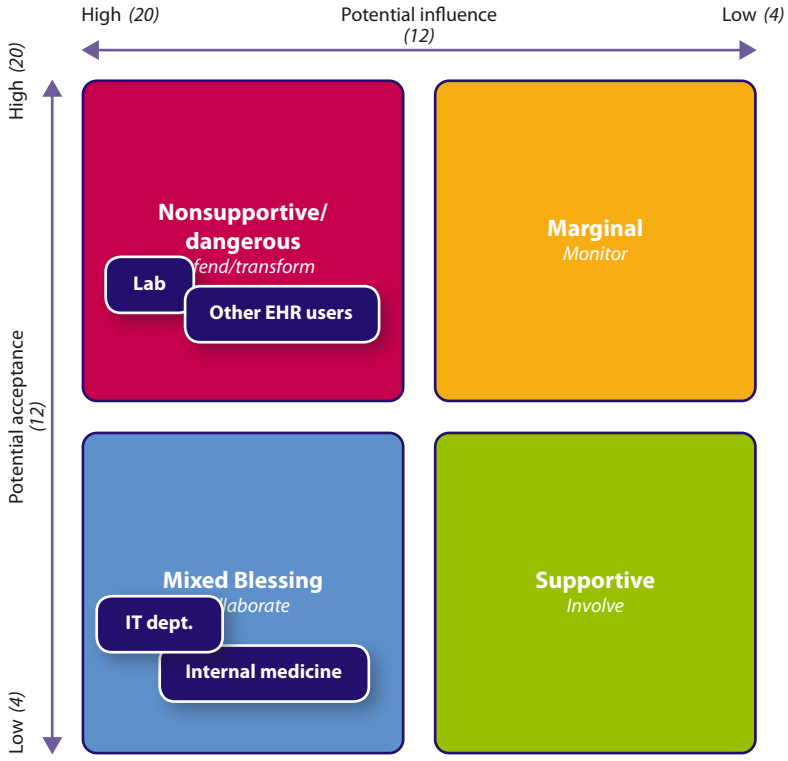
When evaluating the matrix connecting to the stakeholder environment snapshot made some time after the incident occurred, one can explain the changes in position of both the lab and other EHR users as a result of, among others, a lack of attention to engagement activities towards them from the initiation of the project.

At this moment, the lab and other EHR users can be considered dangerous or non supportive stakeholders towards the project. In the project, this was reflected in their urgency and initiative to re-discuss the functionality. After the incident, however, attempts were made to address the resistance of both other EHR users as well as the lab by preparing the breakfast sessions and investigating concerns and expectations (e.g. by phoning and emailing relevant EHR users).

The positions of the IT department and internal medicine are hardly changed. This can be explained by the close fit of the proposed engagement strategy with the actual executed activities.

During the design stages of the functionality, close collaboration took place between the IT department and internal medicine.

Figure 40: *Engagement strategies after incident of LabInt.*



Preliminary conclusions

Stakeholder satisfaction

Besides evaluating the attributes and positions of the stakeholders at two points in time, we also evaluated the satisfaction of the four stakeholders (groups) discussed here, as an indication of project success as discussed in the previous section.

In general, one may conclude that after the 'breakfast session', there's still a sense of an open ending mentioned by all stakeholders interviewed, but especially by the lab department.

Especially the lab as well as other physicians conclude that still no structured activities have taken place to alter functionality in order to increase patient safety.

The IT department however, did undertake functionality changes to the software. However, these changes are not implemented yet (at the moment of writing, November 2011).

In this alteration stage, the IT department *did* involve lab personnel to review the redesigned functionality in order to gain approval of the functionality. The lab however clearly indicates that they are not in the position to approve the functionality for all users in the hospital. In other words, there's still uncertainty about hospital wide acceptance and approval of the functionality by other (future) EHR users.

Preliminary conclusions

As can be noted in this chapter, there has been a lack of proper stakeholder engagement during the project. Nobody took the time to evaluate the stakeholder environment. On the contrary; developments were started right away with the client who asked for it (internal medicine). This can only partially be blamed on the two stakeholders involved in the initial design; their intentions differed from what the functionality eventually constituted when the intensity and frequency of use of the functionality grew substantially. One of the main causes, as mentioned in the interviews, is a lack of project management and centralized coordination. No safety 'valves' existed during the development and actual go live of the functionality. This leads to the question

What could have prevented the resistance and influence towards the project and could have increased satisfaction of relevant stakeholders?

One may argue that the preliminary involvement of other EHR users and the addressing of potential resistance of the lab could have prevented them from 'sliding into the red domain' of the engagement strategy matrix. Clear descriptions of the different project team members' roles and mandates could have prevented the resistance exerted along the way.

The involvement of all stakeholders in the design stage, including formulating clear goals and decision milestones, could have at least decreased the feeling of 'neglect' by both the lab as well as other EHR users.

Important to note is that the problems with the functionality and the outcomes of the breakfast session are *still* not enacted at time of writing, leaving a large feeling of dissatisfaction with the interviewed respondents.

Critical remarks

As indicated implicitly in this chapter, there were two main problems in analyzing this case:

- there was a lack of proper project documentation (including plannings, project assignments or approval documents)
- the project was not seen as a formal project by part of the stakeholder environment, but more as a one-to-one development activity; this makes it hard to distinguish between a 'governing board' and a 'governed system'

These problems together made it very hard to structure both the timelines as well as retrieving proper information from the identified stakeholders, possibly affecting scores found and plotted. Nevertheless, as also stated by one of the respondents, the dynamics are noted by everyone and retrospectively are explained in the same manner by the majority of the stakeholders involved in the case.

Another important remark can be made towards the scoring of the mentioned attributes. These are derived from the documentation used and are verified during the stakeholder interviews. However, the initiation of the project has almost been a year ago, having its effect on the reliability of the scores as estimated by the stakeholders.

Not all stakeholders involved in this project were included in the SAR and engagement strategy analysis. This had to do with the above remarks, but also because of scoping of the data analysis. In all documentation and conversations the analyzed four stakeholder groups were most frequently mentioned in relation to the project. This does, however, not implicate that these stakeholders are the only ones affected by the project. As mentioned before, during the analysis of the problem, due to large impact, more stakeholders, like the board of directors of the hospital, were involved.

6.3 MID-TERM EVALUATION OF RESEARCH MODEL

In the analysis of the LabInt project, we used all components of our research design, namely:

1. the stakeholder management maturity model
2. the stakeholder profile cards in preparation for the stakeholder acceptance radar (SAR)
3. the engagement strategy matrix

All tools were usable, although some adjustments or alterations in use can be considered. In this paragraph some general evaluation remarks are made. Furthermore, the different tools are discussed briefly. In conclusion, the alterations in the tools or the methodology are summarized.

General evaluation

As appeared in evaluation the LabInt project, the analysis of the complete stakeholder environment of a project remains a tedious job. The hardest task is always to decide which stakeholders to include and exclude in the analysis; the stakeholder list can potentially be endless.

Although through triangulation, one can achieve fair estimates on attribute scores, there's still an interpretive subjectivity of the researcher involved in scoring and/or mediating scores on the constructs used in the SAR. The subject of power is mostly avoided by the respondents, probably explicable by the sensed sensitivity of the subject in relation to their own position, as also found in earlier research as described in the first section.

We believe the first use of the tooling and methodology, provides the following valuable insights:

1. Stakeholder profile cards provide sufficient direction for the stakeholder interviews to construct the SAR's.
2. The SAR model in general proves to be easily to construct based on the profile cards and interviews held.
3. The SAR model proves to be capable of mapping individual stakeholder dynamics as well as mapping phase snapshots in a real life project situation.
4. Retrospectively, the effect of activities (or incidents) can be noted in the SAR model in terms of stakeholder dynamics.
5. The sharing of results from the SAR model leads to discussion about possible interventions with the stakeholders involved in the interviews.

In the following paragraphs, we will evaluate the different elements of our methodology and model in more detail.

The stakeholder management maturity model served as a quick-scan for analyzing stakeholder management activities in the project. The results set the baseline for analysis and served as an overview of focus areas during the case study. In this respect, the tool was useful in analyzing the stakeholder environment. No alterations are suggested at this moment.

The stakeholder profile cards were used during the interviews to, among others, capture expectations, intentions, experiences and attribute scores. The scores of other than the current respondent, were discussed during the interviews. The scores were mediated using the documentation analysis. The different constructs of the SAR were sometimes difficult to determine. Several reflections took place on the definitions used for the constructs in order to score them properly. After all interviews were held the SAR's were constructed.

The main scoring problems had to do with whether the construct relates the *actual*, *current* or *potential* score on the construct. This caused debate during the several interviews held. Clearer descriptions and explanations should overcome this debate. Still, especially with respect to the construct of power (the ability to exert influence), discussion was present; the ability to influence strongly connects to the role and participation level and cannot be seen in isolation.

Nevertheless, in conclusion, the SAR's themselves served very useful in determining stakeholder dynamics. It particularly served useful in finding causes and explanations for the visualized movements. However, in the following case studies more attention must be given towards these explanations.

After the SAR's were completed, the plotting of potential resistance and potential influence was done. The matrix served as a good mirror in reflecting executed actions with proposed strategies by the matrix. Retrospectively seen, the strategy matrix could have supported focusing activities. The lack of focus of activities in this case was reflected in the shift on the engagement strategy matrix.

Reflection on hypotheses

In our research design, we formulated a set of three statements to be either confirmed or declined. We must note however, that this case differs from other 4 cases since it was done retrospectively.

Knowledge leads to better engagement alignment

What can be concluded from the case description is the incomplete overview of the stakeholder environment by the team involved in the project. This lack of knowledge made it impossible to formulate focused activities addressed to different stakeholder groups.

According to the engagement strategy matrix, at initiation the project team should have collaborated with the Internal Medicine department and the IT department, which did happen. At the same time, the team should have involved other EHR users and collaborated with the lab. This did not happen sufficiently. Knowledge in the position of the stakeholders, e.g. by this matrix could have helped to deal properly with other parties in the stakeholder environment.

Engagement alignment leads to higher stakeholder satisfaction

In this case, due to the fact that there's no proper or proven alignment between stakeholder characteristics and engagement activities (relating to the presented matrix), we cannot conclude that engagement alignment leads to higher satisfaction.

Nevertheless, we can conclude two relating things; 1) there was no optimal engagement alignment and 2) there was no high stakeholder satisfaction. We can also conclude that the stakeholder groups with the largest 'mobility in the matrix' were not addressed in engagement activities by the project team. This may indicate the relation between proper alignment and satisfaction.

Stakeholder dynamics influence stakeholder satisfaction

Connecting to the previous, dynamics have taken place, especially relating to the Lab and Other EHR users. The stakeholders changed in terms of the attributes proximity and subsequently, among others, this influenced effort- and performance expectancy.

The poor performance and effort -expectancies did influence stakeholder satisfaction in relation to these groups in a negative manner.

2.1.1 Resulting alterations/areas of attention

After reflecting on the methodology and tools used, one can identify the following three main areas of attention:

Table 36: *Possible improvements for research.*

Area of attention	Action for next case studies
Subjectivity of attribute scoring	Use as much sources as possible to validate scoring
Sources/explanation of dynamics	Pay more attention to the evaluation of observed attribute dynamics and shifts in the engagement strategy matrix
Regarding the scoring of attributes: actual/current versus potential	Clear explanations of definitions whether the specific attribute concerns 'actual or potential' level; with respect to the construct of power, potential is meant. Score power attribute in conjunction with other attributes (e.g. proximity, role and participation level).

In the analysis of the other cases, we will integrate these areas of attention.

6.4 DESCRIPTION VIRWORK (A2)

Project description and organisation

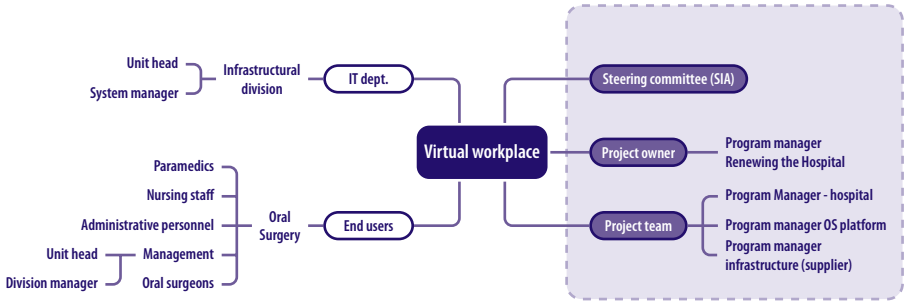
The Virtual Workplace (VirWork) project is concerned with the virtualization of the ICT workplace of all users in the hospital. The project is concerned with making the access to an estimated 450 applications location independent, while maintaining the last user session on the computer (saving login effort). Another aim of the project is to provide single sign-on functionality (one time authentication provides access to numerous applications without login prompts).

Furthermore, personalized access and authorization becomes mandatory through ID-card identification for computer access. For the purpose of this case study research, the scope is restricted to the implementation of the Virtual Workplace at the oral surgery department of the hospital.

Project organisation

The project organisation consists of a project team, with a lead project manager and two separate co-project managers responsible for specific subparts of the implementation. One of the co-projectmanagers is an employee of the chosen supplier of the technology, the other one is concerned with the technical realization of the Virtual Workplace and is a staff member of the IT department.

Figure 41: *General overview of the project organisation.*



There's close involvement of the IT department of the hospital, since the project implementation has a large technological/infrastructural component.

Innovation driver and characteristics

One of the main drivers for this project is the large scale 'renewing' program of the hospital. Included in this program is a major revision of the IT infrastructure and enabling more IT in the workplace to increase patient safety, efficiency and location independence.

With an increasing number of users of various applications and the presence of strict norms for privacy and data security (NEN7510, NEN7513), new ways of supplying entry to the enormous amount of applications (+/- 400 different applications in the hospital) needs to be realized for identity and access management. Furthermore, the solution is supposed to save maintenance efforts for the IT department as well as increased usability for the end-user (a.o. due to decrease in number of sign-ons per session).

Project goals

The project is concerned with the realization of a portal to the current application landscape. In that sense, it changes the way employees of the hospital access their own specific functionalities.

As stated earlier, the main goals the project aims to achieve through the use of software, are:
1. providing location independent access to same desktop with same functionalities
2. providing single sign-on to a large number of applications at once
3. by realizing this, maintenance of workstations is easier while investments in 'fat-client' computers can be reduced.

The deliverables of the total project include the hospital wide, iterative, implementation of the virtual workplace platform and the compatibility of the platform with the separate applications. In addition, together with the virtual workplace, a new version of the hospital's computer Operating System will be deployed.

Implementation strategy and planning

In order to achieve the above formulated goals, part of the scope of the project is
1. the design and formulation of requirements of the requested platform,
2. the selection of the software supplier and implementation partner and
3. the roll-out of the platform in the hospital together with the system supplier, starting with a pilot roll-out at one specialty

So, even though the project considers the hospital wide implementation of the virtual workplace, the pilot roll-out at the oral surgery department is considered to be the first part of the project. As stated, for the sake of our case study we only consider this part to be the scope of analysis. First part of this project constituted the description of requirements. The construction of this requirements list was primarily done by technical/functional ICT specialists and did not involve end-users. Some demonstration sessions were held, where the main focus of the end-user was on performance (maximum amount of time in seconds from sign in to ready time is set on 8 seconds).

The implementation is done together with the supplier. The supplier was chosen, among others based on the proposal made by the supplier in reaction to the list of requirements and the fulfillment of the requirements by the functionality.

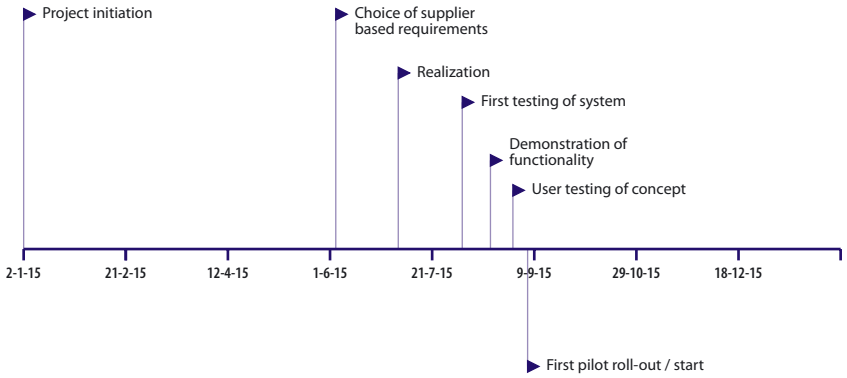
Since basically the product or innovation is a facilitator or a gateway to already existing applications and tools, the involvement and testing strategy is primarily focused on the specific *different application* user needs, that will access their familiar application through the new gateway. Among others for this reason, the choice was made to roll-out the Virtual Workplace iteratively. This is done 'specialty-wise', in other words, per department.

Planning

As can be seen in the planning below, the project started off around the beginning (January) of 2011. The actual go live of the oral surgery department was in September 2011. The period in between was used for selection of supplier and application, technical and infrastructural preparations and functional integration with the general applications within the hospital and specific oral surgery applications, like the electronic health record for oral surgery.

At the beginning of 2012 the platform should be ready for further roll-out in the hospital.

Figure 42: *Planning of events of the VirWork project.*



Research initiation

Data collection

We started off with the collection of relevant planning documents, project documentation and meeting minutes. After initial analysis, interviews with the project managers were held, followed by other members of the project team. Then we interviewed different end users (including physicians, nursing staff and administrative staff). In total we interviewed 11 stakeholders, each two times on average during the period between project initiation to a month after go live of the oral surgery department.

Table 37: *Respondents case A2.*

Respondent type	N =
Project team members	2
Physicians / oral surgeons	2
Administrative staff	3
Nursing staff	2
IT department hospital	2
TOTAL	11

These stakeholders were also identified in the different interviews as being the most salient stakeholders relating to the project, as can be seen in the results section.

In addition, we used detailed websurveys to validate stakeholder interview findings with scores of the websurveys. We used different surveys for the Project team members (appendix A) and other stakeholders (appendix B). In total 3 surveys were completed, 11 were sent out. Reasons for the low return are two-fold: end-users in general have very limited time for administrative tasks in addition to their work and the project deliverable (no change in functionality, just the access to existing functionality) is abstract to estimate expectancies as was mentioned in response to the survey questions relating to expectancies.

Table 38: *Websurvey responses VirWork.*

Respondent type	N =
Websurvey A	3
Websurvey B	0

The websurvey did have room for additional comments. We will discuss these and other parts of the survey in the course of this chapter. We could not draw general conclusions from this fairly low response rate. Nevertheless, we could use the scoring in the interviews with the respective respondents.

Overall timeline of research events

Comparable to the LabInt project, we distinguished different phases, in line with the research protocol as described in the previous section. We used two moments to evaluate stakeholder dynamics; before and after go-live. Where the 'before go live' measurement moment was just before the testing phase but after some demonstrations of the actual solution. In other words, some end-users could already form some image of the actual utilization of the solution in practice.

We used the VirWork case as a control group with no planned activities to share preliminary results or provide advice during the course of the project.

Figure 43: *Planning of events of the VirWork project.*

		31	32	33	34	35	36	37	38	39
		1 aug	8 aug	15 aug	22 aug	29 aug	5 sep	12 sep	19 sep	26 sep
A	**Project A2 - Virtual Workspace**									
1	**Phase 1: Context evaluation/preparation**	PHASE 1								
1.1	Initiation with project management									
1.2	Case description; trigger, planning, etc.									
1.3	Preliminary stakeholder environment									
1.4	Documentation evaluation									
2	**Phase 2: Iterative stakeholder identification/classification**		PHASE 2							
	Phase a		A							
2.1	Brainstorm about identification based on first view									
2.2	First phase interviews with top-5 identified									
2.3	First online servey									
2.4	Evaluate results						MS2			
	Phase b									
2.6	Second phase interviews with top-5 identified									
2.7	Second online servey									
2.8	Evaluate results (2)									
3	**Phase 3: Overall SAR and stakeholder type comparison**									
3.1	Comparing stakeholder differences / outcomes									
4	**Phase 4: General conclusions**									
4.1	Formulate findings and conclusions									
4.2	Model enhancements									
4.3	Final report									

		40	41	42	43	44	45	46	47	48	49	50	51	52	1	2
		3 okt	10 okt	17 okt	24 okt	31 okt	7 nov	14 nov	21 nov	28 nov	5 dec	12 dec	19 dec	26 dec	2 jan	9 jan
A																
1	**Phase 1**															
1.1																
1.2																
1.3																
1.4																
2	**Phase 2**	PHASE 2														
	Phase a															
2.1																
2.2																
2.3																
2.4																
	Phase b								B							
2.6																
2.7																
2.8																
3	**Phase 3**											PHASE 3				
3.1																
4	**Phase 4**												PHASE 4			
4.1																
4.2																
4.3																

6.5 RESULTS VIRWORK (A2)

In this chapter, the results are highlighted with respect to the earlier formulated research domains of stakeholder knowledge (and maturity), engagement strategies and stakeholder dynamics during the course of the VirWork project. As mentioned earlier, we chose one milestone to distinguish between two measurement periods; the go live moment of the virtual workplace (2 September 2011).

Stakeholder knowledge

At the beginning of the project we gathered project documentation about mentioned stakeholders and verified and further completed the list by information collected in the interviews.

Table 39: *Primary stakeholders of VirWork as identified in research.*

Stakeholders
Project team / -owner
Oral surgeons
Steering Committee of ICT (SIA)
IT department – infrastructure unit
Administrative personnel oral surgery
Nursing staff / assistants

The president of the Steering Committee of ICT (governing and prioritizing IT related projects) also happens to be an oral surgeon, making him a two-fold stakeholder for this specific roll-out. He was included as one of the respondents. The ICT manager is considered the delegated project owner of the project.

During the construction of the list of requirements, around initiation of the project, hardly any end users were involved besides IT technical employees. Arguments in favor of this approach were related to the technical nature of the implementation with hardly any functional requirements that had to be taken care of. At the same time requirements had to be made with respect to ease of use and performance (speed of processing). These requirements were suggested by the technology.

End users however are concerned by non-functional requirements like performance, reliability and quality of the solution, since it directly affects their access to vital applications.

It appears from the interviews that end users were involved in the project mainly after the selection of the supplier. There's no formal evidence found of stakeholder analyses done for the project stakeholder environment as a whole or specifically relating to the oral surgery department.

Maturity of stakeholder management in project

Description

First of all, the choice of the pilot specialty to be oral surgery was no coincidence; main reasons for this choice;

- Limited amount of applications used by oral surgery, limited workstations
- The IT minded surgeon was enthusiastic and wanted to participate
- By involving the president of the steering committee, wider commitment for the project could be achieved among committee members and medical staff.

This deliberate choice was explicated by the project manager. Furthermore, activities were included to involve stakeholders; like demonstrations in the hospital cafeteria and for the board of directors of the hospital. These activities, however, were not structurally planned in documentation, but were mentioned in interviews and executed in a seemingly adhoc manner. Initial user tests relating to applications used by the oral surgery department mostly involved the oral surgeon. This had a positive influence on his enthusiasm about the virtual workplace. He did consider it to be his role to further introduce the virtual workplace in the department. After go live, some minor technical problems arose; some functionality of used applications did not work properly. For these purposes, the project team left an old configuration PC at the oral surgery department to ensure a workaround for the encountered problems. Respondents indicated that they experienced to solution to be fast. The found issues were eventually resolved.

Checklist

Below the stakeholder management maturity checklist can be found as filled out for the VirWork project. This checklist is constructed based on the triangulation of information as extracted from the surveys, interviews with the project team and results from desk research.

Table 40: *Stakeholder management maturity of the VirWork project.*

		Level (informal to formal/structural)				
Category	**Sub-category**	1	2	3	4	5
Idenfication	Familiarity				●	
Assessment & prioritization	Capacity awareness			●		
	Intentions awareness			●		
	Priority awareness			●		
	Interests awareness			●		
	Expectation awareness			●		
	Conflict awareness	●				
Engagement	Focused activities		●			
	Engagement strategy		●			
	Specific participation planning			●		
Monitoring stakeholder dynamics	Tooling	●				
	Evaluation of activities and effects			●		
	Incorporation of dynamics in engagement strategies		●			

As can be derived from the table, an average score of 3 (individual, informal, pro-active) is achieved in relation to the identification and assessment of stakeholders. With respect to matching engagement, an average of level 2 is achieved (informal, reactive). In practice, this means that especially the project manager(s) have a good sense of who matters in the stakeholder environment and do involve these stakeholders in a way that commitment is created (as will be demonstrated in following results). At the same time, only part of the activities are planned beforehand and are more in reaction to events than that they are organized and planned proactively. Limited tooling or documentation was used to formalize activities.

Stakeholder dynamics

In this paragraph we explore the stakeholder dynamics that took place during the course of the VirWork project. Again, we use the SAR tooling we discussed and constructed in the previous section of this dissertation.

Description

Before we construct different stakeholder radars for the case, we analyze specific intentions and expectations of the primary stakeholders. We distinguish between the two mentioned measurement moments in time: a) at initial design of the functionality and b) after go live.

Table 41: *Primary stakeholder intentions and expectations project LabInt.*

Primary	Initial		After incident	
stakeholders	Intentions	Expectations	Intentions	Expectations
Project team / -owner	Realizing a hospital wide access gateway to all applications available.	Saving maintenance efforts, enhance application flexibility and saving end-user login time.	Speed up roll-out after initial pilot	Limited issues to solve, future rollouts should be faster/less intensive than the pilot specialty
Oral surgeons	Be the first with the flexible, virtual workplace	High performance, fast response times of the application and all functionality working	Making sure issues are resolved fast	Hassle free, reliable access to own functionality, with no performance delays
IT department – infrastructure unit	Making sure the project results fits the current architecture	Less maintenance and problems with applications and workstations	Limit the time of a hybrid situation (with both non- virtual workplaces and implemented virtual workplaces)	Fast roll out to all users,
Administrative personnel oral surgery	Stay informed through the oral surgeon about new developments	No difference noted in working practice; no delays or missing functionality	Making sure that day-to-day issues are resolved by the project team	Bug free system as soon as possible
Nursing staff / assistants	Stay informed through the oral surgeon about new developments	High performance, fast response times of the application and all functionality working	Making sure issues are resolved fast	Hassle free, reliable access to own functionality

SAR

Before go live

Websurvey results

Remember that for the purpose of our case studies we used two kinds of web surveys; one for the governing body (steering committee, project team) and one for the governed system. The surveys serve as a tool in triangulating data. Mainly, the surveys are focused on assessment of own expectations, own role and participation and in the case of survey A, an assessment of the stakeholder environment. Questions related to stakeholder management maturity are discussed later on.

In the following table, the web survey results are displayed, relating to a part of the SAR constructs. The expectancies are the aggregated result of earlier mentioned questions relating to each of the constructs.

Table 42: *Extract of responses on web survey VirWork.*

WEBSURVEY A: Governing body (n=3)					
Stakeholder group	**Respondent**	**Functional role**	**Participation level**	**Performance expectancy**	**Effort expectancy**
Project team/ -owner	Project manager hospital	Decisional	Create	2	2
	Project owner	Decisional	Create	1	1
IT dept.	Unit head infrastructure IT dept.	Informative	Contribute	3	3

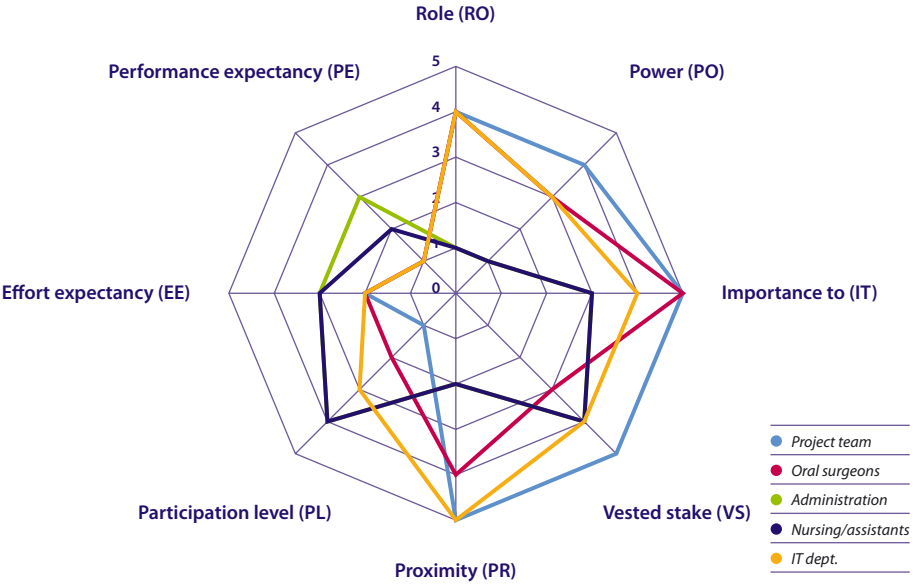
In the following table the resulting scores are represented as based on the interviews, surveys and desk research.

The first table is followed by the outcome measure scores as described earlier.

Table 43: *Scores of SAR attributes for VirWork during initiation/testing (before go live).*

	Project team	**Oral Surgeons**	**Administration**	**Nursing/ assistants**	**IT department**
Role	4	4	1	1	4
Power	4	3	1	1	3
Importance to	5	5	3	3	4
Vested Stake	5	3	4	4	4
Proximity	5	4	2	2	5
Participation	1	2	4	4	3
Effort expectancy	2	2	3	3	2
Performance expectancy	1	1	3	2	1

Figure 44: *SAR at initiation VirWork.*



The above scores lead to the following outcome measures:

Table 44: *Outcome measures for VirWork (before go live).*

Outcome measure	Score				
	Project team	Oral Surgeons	Administration	Nursing/ assistants	IT department
Power-function mediation	8	7	2	2	7
Relative	33% (1)	28% (2)	0% (3)	0% (3)	28% (2)
Potential influence	19	15	10	10	16
Relative	94% (1)	69% (3)	38% (4)	38% (4)	75% (2)
Eligibility for participation	6	6	6	6	8
Relative	50% (2)	50% (2)	50% (2)	50% (2)	75% (1)
Potential resistance	8	9	11	10	10
Relative	25% (3)	31% (3)	44% (1)	38% (2)	38% (2)
Engagement priority	27	24	21	20	26
Relative	45% (1)	38% (3)	31% (4)	29% (5)	43% (2)

With respect to eligibility for participation, one can conclude that the IT department could be included more. At the same time, however, purposely much of the infrastructural and technical activities are delegated to the technical project manager (vendor).

The infrastructural and technical nature of the project is reflected in the power dimension above. The surgeons and IT department do play a large part in shaping the project result.

After go live; reflective assessment

In the following table, the previous assessment is repeated for the period after go live.

Table 45: *Scores of SAR attributes after Go Live VirWork.*

	Project team	Oral Surgeons	Administration	Nursing/ assistants	IT department
Role	3	1	1	1	3
Power	3	3	1	1	3
Importance to	2	3	2	2	3
Vested Stake	3	5	5	5	3
Proximity	3	5	5	5	4
Participation	3	2	2	2	3
Effort expectancy	3	2	2	2	1
Performance expectancy	3	2	3	2	1

The above scores lead to the following representation in the radar after Go Live and outcome measures:

Figure 45: *SAR after go live VirWork.*

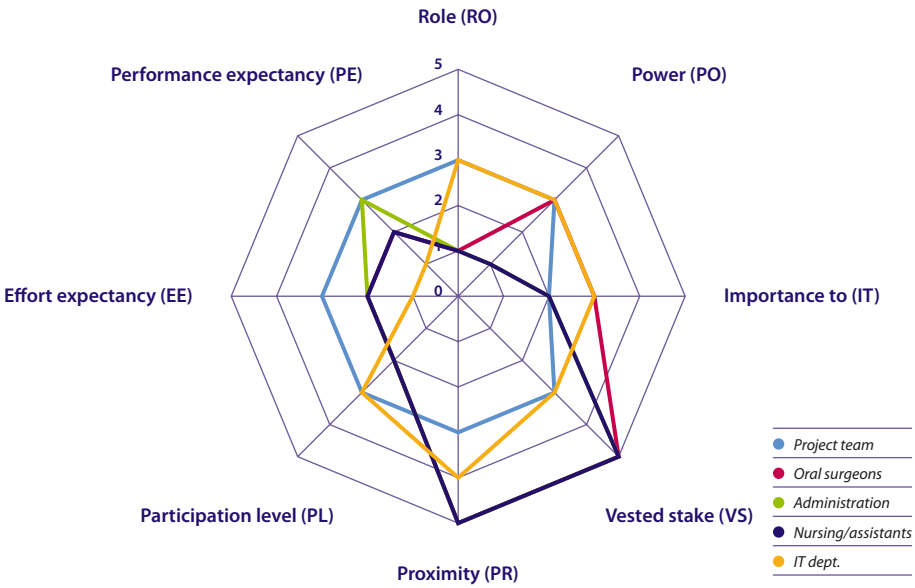


Table 46: *Outcome measures after Go Live VirWork.*

Outcome measure	Score				
	Project team	Oral Surgeons	Administration	Nursing/ assistants	IT department
Power-function mediation	6	4	2	2	6
Relative	22% (1)	11% (2)	0% (3)	0% (3)	22% (1)
Potential influence	11	16	13	13	13
Relative	44% (3)	75% (1)	56% (2)	56% (2)	56% (2)
Eligibility for participation	6	7	7	7	7
Relative	50% (2)	63% (1)	63% (1)	63% (1)	63% (1)
Potential resistance	12	7	8	7	8
Relative	50% (1)	19% (3)	25% (2)	19% (3)	25% (2)
Engagement priority	23	23	21	20	21
Relative	36% (1)	36% (1)	31% (2)	29% (3)	31% (2)

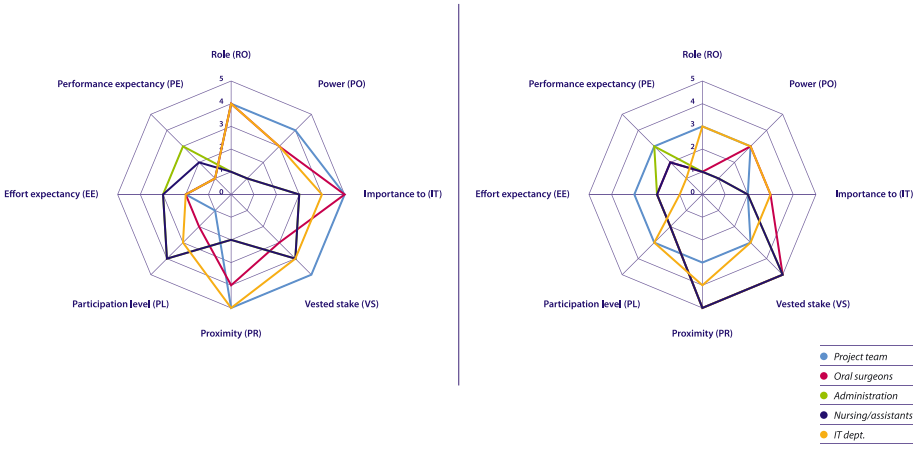
What can be note specifically is close proximity of the nursing staff and assistants, as well as their large vested stake. All other attributes seem to score average.

Preliminary conclusions

As can be seen in the comparison of radars below, the total capacity/potential influence surface area, of all stakeholder decreased over the course of the project. This is explainable, since the second radar is a representation of the situation after go live, where in terms of design and functionality less influence could be explicated. At the same time, proximity of stakeholders not directly involved in the period before go live increased after go live.

In general, potential resistance was lower after go live. This is in line with shown satisfaction of the stakeholders in the interviews held.

Figure 46: *SAR comparison before and after Go live VirWork.*



As discussed in the beginning of this paragraph, the stakeholder management maturity of the project team/organisation is fairly high (3 on average). This was demonstrated in actively and appropriately engaging stakeholders in the project.

No unanticipated stakeholder movements have been taking place as observed by the researchers over the course of the data collection period. The dynamics that have taken place can be summarized as follows;

- A reduction of *total* stakeholder potential resistance in the stakeholder environment as the project developed
- An increase of proximity of certain stakeholder groups can be observed as the project developed
- A decrease in *total* potential influence as the project developed, especially of those stakeholder groups involved in the design stages of the project.

These trends are in line with anticipated project developments; after go live more people are involved in the project result and thus closer, involvement early in the design process seemed to lead to better acceptance and the influence decreased since the project result was delivered.

Stakeholder dynamics

The project team/-owner

Before go live, the project team had much more potential influence on the project (result) than in the period after go live, this is reflected in the differences on the capacity attributes above. This can be explained by their formal position and their advantage in knowledge about the functionality, making it possible to steer design decisions. After go live, the *proximity* of the project team, as well as the *importance* to decreased.

Interesting to note is the increase in potential resistance; as stated in the interviews, the project team also grew aware of actual performance results and experiences of the end user, indicating areas of improvement, tempering the initial enthusiasm about the solution for the oral surgery department. Part of the increase is also due to the change in participation level; from a creating towards a contributing role inherent to the progressing of the project; eventually the delivered project result was carried over to the operational IT organisation.

Figure 47: *SAR developments of project team VirWork.*

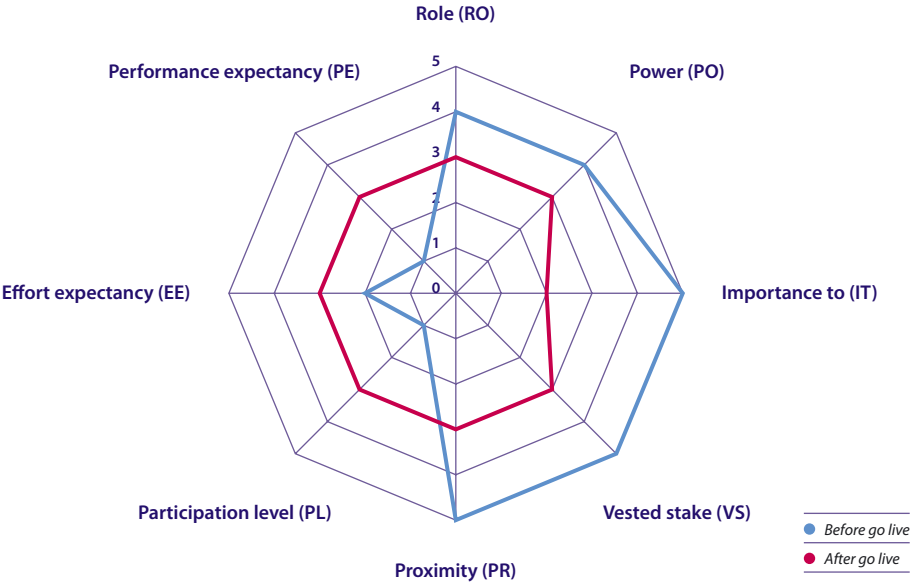


Table 47: *Outcome measures for project team VirWork.*

Outcome measure	Before	After	Delta
Power-function mediation			
Relative	33%	22%	-11%
Potential influence			
Relative	94%	44%	-50%
Eligibility for participation			
Relative	50%	50%	0%
Potential resistance			
Relative	25%	50%	+25%
Engagement priority			
Relative	45%	36%	-9%

Oral surgeons

As can be noted, the functional role of the oral surgeons changed from consultative/ decisional to informative. All decisions regarding requirements and functional implementation have been taken in the design and implementation phase before go live. After go live, only updates an bug fixes are communicated to the surgeons; their formal project role had ended.

The proximity and vested stake increased after go live, since they actually started working with the virtual workplace and the work dependence of the virtual workplace thus grew. At the same time, performance expectancy decreased a little; some differences in the functioning of the project appeared in testing and practice versus actual functioning and performance during the treatment of patients. Still, potential resistance remained fairly low, connecting to the respondents responses indicating good performance of the virtual workplace.

Figure 48: *SAR developments of Oral Surgeons during VirWork.*

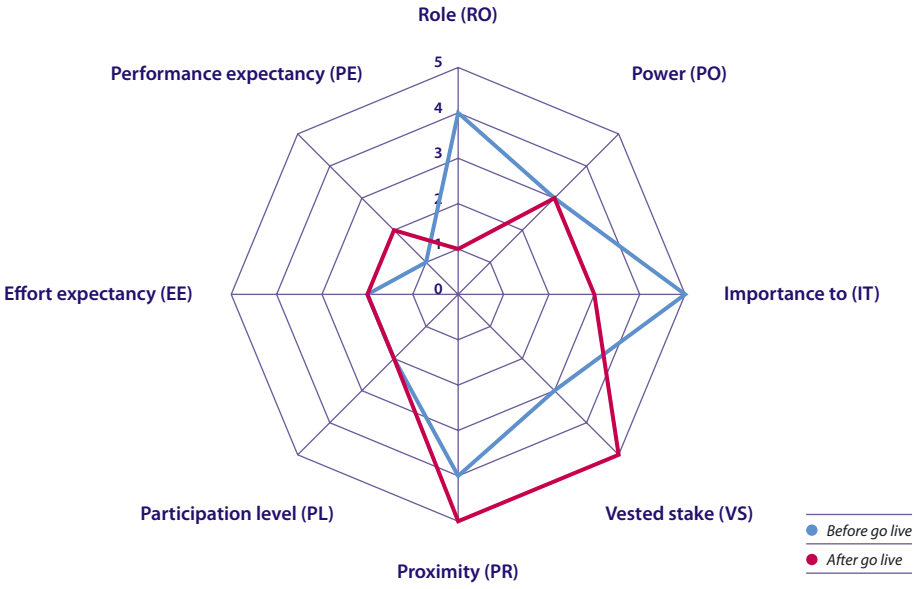


Table 48: *Outcome measures for oral surgeons VirWork.*

Outcome measure	Before	After	Delta
Power-function mediation			
Relative	28%	11%	-17%
Potential influence			
Relative	69%	75%	-6%
Eligibility for participation			
Relative	50%	63%	+13%
Potential resistance			
Relative	31%	19%	-12%
Engagement priority			
Relative	38%	36%	-2%

Administration oral surgery department

With respect to the administrative personnel, most dynamics took place on proximity and participation level attributes over the course of the project.

Proximity logically increased after go live; administrative personnel was partly involved in the design process (mostly through communication by the oral surgeon), but had to use the virtual workplace intensively after go live. With respect to their participation level, they considered their participation as conforming to the technical solution, while after go live they were actively challenging the solution; some frequently used functionality did not appear to work flawlessly and this became apparent through use. They were the primary gateway for other users in the department towards the project team/IT department to get the found issues fixed.

Figure 49: *SAR developments of Administration during VirWork.*

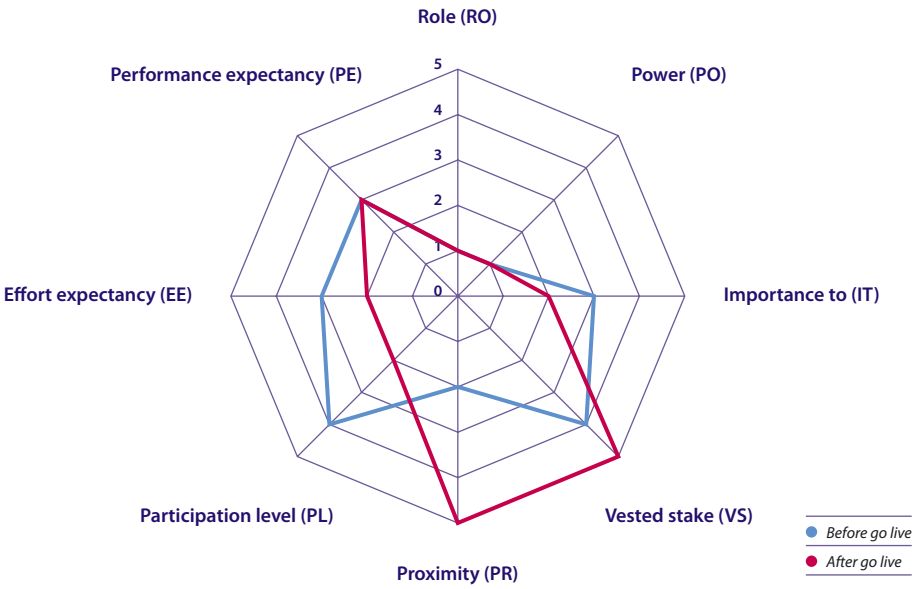


Table 49: *Outcome measures for administration VirWork.*

Outcome measure	Before	After	Delta
Power-function mediation			
Relative	0%	0%	0%
Potential influence			
Relative	38%	56%	+18%
Eligibility for participation			
Relative	50%	63%	+13%
Potential resistance			
Relative	44%	25%	-19%
Engagement priority			
Relative	31%	31%	0%

Nursing assistants

The developments in dynamics of the nursing staff/assistants during the VirWork project strongly resembles those of the administrative staff. This is explainable since their involvement in the project was comparable. Main difference between the two is the higher performance expectancies of the nursing staff. This can be explained by the frequency of use of the system by this stakeholder group, which is less intensive than the administrative group, posing less requirements on the system's performance. Their stake increased significantly, suddenly becoming dependent on the new gateway for their daily work.

Figure 50: *SAR developments of Nursing staff/assistants during VirWork.*

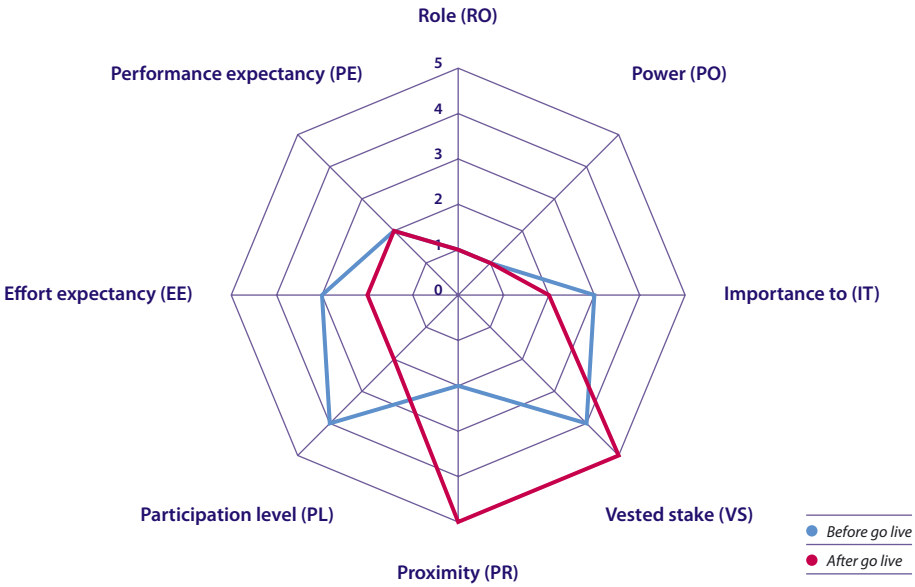


Table 50: *Outcome measures for nursing staff VirWork.*

Outcome measure	Before	After	Delta
Power-function mediation			
Relative	0%	0%	0%
Potential influence			
Relative	38%	56%	+18%
Eligibility for participation			
Relative	50%	63%	+13%
Potential resistance			
Relative	38%	19%	-19%
Engagement priority			
Relative	29%	29%	0%

IT department

The SAR demonstrates the intensity of activities of the IT department before and after go live. For the department, both the technology and functionality was new. From their point of view, the effort expectancy was mostly related to the effort they expected to realize the virtual workplace. It took the department considerable effort during this first implementation project of the virtual workplace to set the baseline for further deployment. After go live, the effort expectancies improved, as the department realized the benefits of the implementation of the virtual workplace and the effort additional rollouts would cost. The potential influence of the department in relation to the project after go live decreased; the basics designed and delivered, partly standardizing further implementation at other parts of the hospital in the future.

Figure 51: *SAR developments of IT Department during VirWork.*

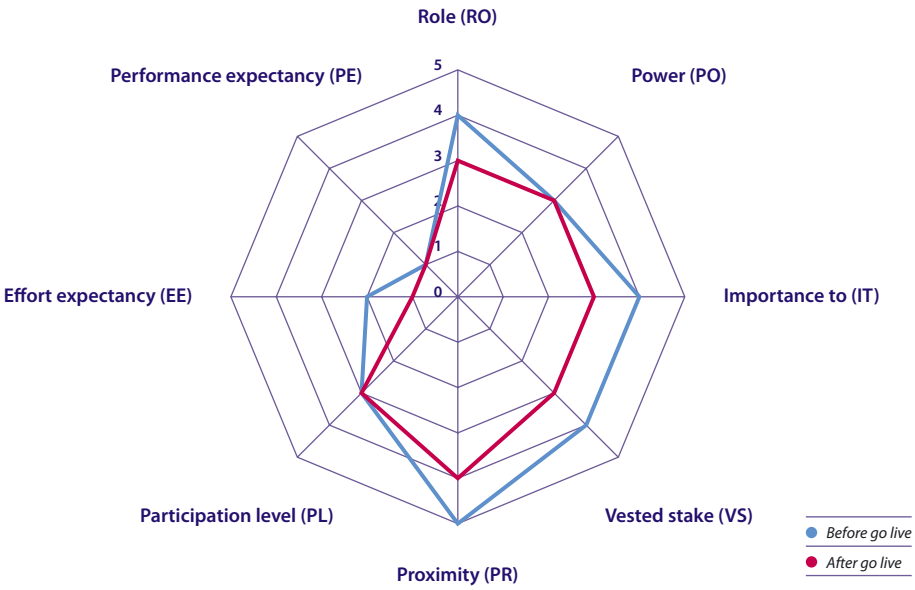


Table 51: *Outcome measures for IT Department VirWork.*

Outcome measure	Before	After	Delta
Power-function mediation			
Relative	28%	22%	-6%
Potential influence			
Relative	75%	56%	-19%
Eligibility for participation			
Relative	75%	63%	-22%
Potential resistance			
Relative	38%	25%	-13%
Engagement priority			
Relative	43%	31%	-12%

Engagement activities

In this paragraph we focus on activities employed, involving the stakeholder environment, in the realization of the virtual workplace for the oral surgery department. By using the engagement strategy matrix as a guideline, we can evaluate the appropriateness of executed activities.

Events

As stated before, no notable unanticipated events in the stakeholder environment took place during the course of the project. Events that took place are reflected in the overall planning at the beginning of the paragraph (requirements, selection of supplier, testing, etc.).

Only event that is worth mentioning in addition to the planned activities is the disfunctioning of some functionality directly after go live (e.g. reading radiology dvd's from outside the hospital). This did not lead to a significant drop in acceptance as stated by the respondents, due to a rapid response by the project team and IT department facilitating a workaround for the problem.

Engagement strategies

In the matrices below, the engagement strategies are shown connecting to the discussed stakeholder acceptance radars. The first engagement strategy matrix represents a picture of the stakeholder environment before testing and go live of the project.

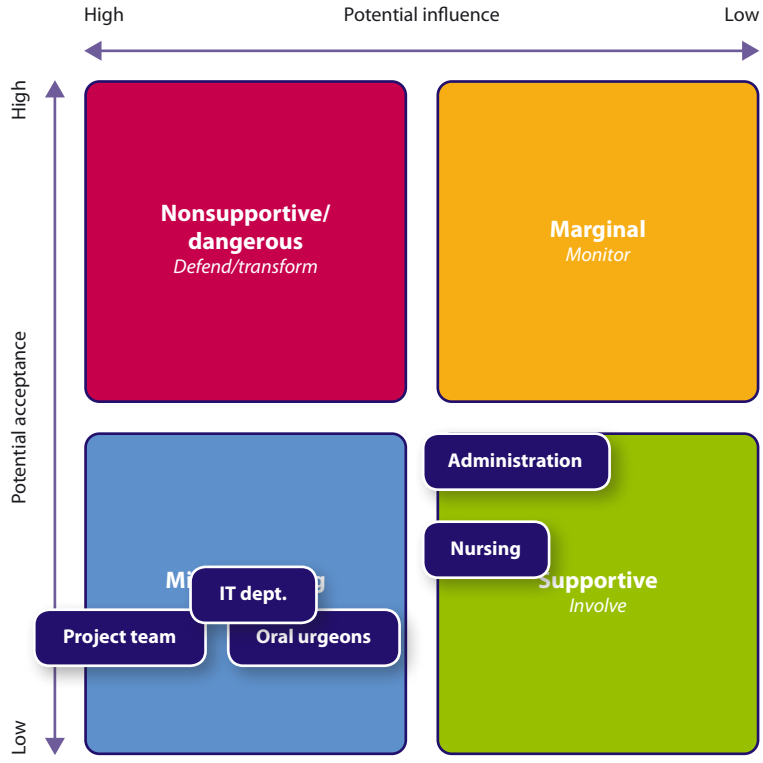
The second engagement strategy matrix presents the connecting strategies to the aforementioned 'snapshots' of the stakeholder environment after go live of the project.

Engagement strategy matrix before go live

Before go live, no stakeholder groups were present in either the red or orange areas of the matrix. The matrix does indicate the involvement of administration and nursing in some way. This mainly happened through communication by the oral surgeon involved in testing the project results. They were, however, not directly involved in (testing) the project. This could have prevented the administrative issues found directly after go live.

Collaboration did take place between the groups as indicated in the matrix.

Figure 52: *Engagement strategies before go live VirWork.*



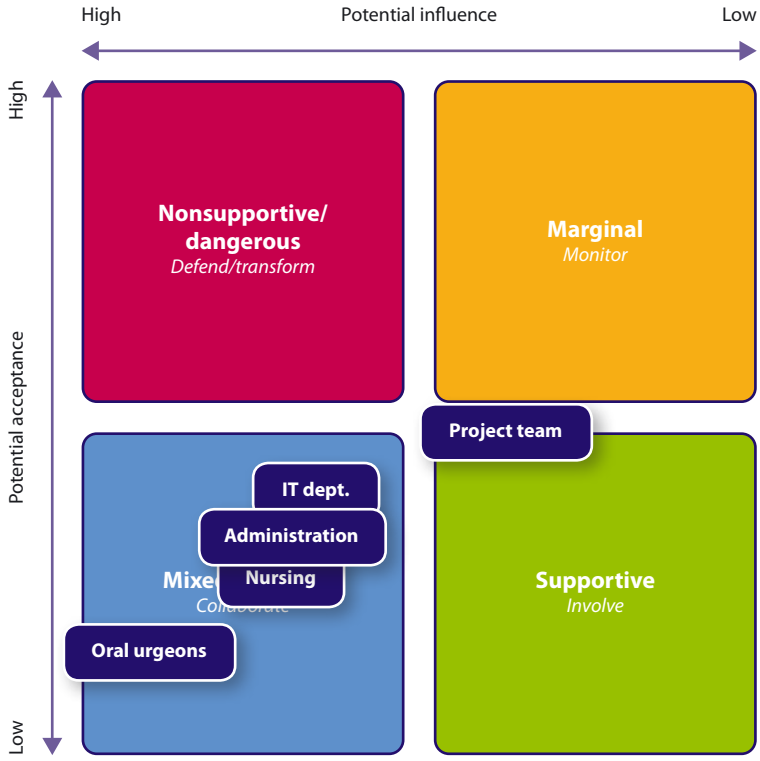
Engagement strategy matrix after go live

After go live, some minor shifts have taken place in the matrix. Administration and nursing demanded a more collaborative strategy and the project team shifted from collaboration to involvement mode. However, no stakeholder groups shifted to orange or red areas in the matrix, indicating that there's no urgent engagement priority found after go live.

Prescribed engagement strategies by the matrix were in line with executed activities. No unanticipated stakeholder movements occurred, which is underlined in minimal movement over the strategy matrix.

However, connecting to the strategy matrix before go live, the shift of the administrative and nursing stakeholders could have been reduced by closer involvement before go live.

Figure 53: *Engagement strategies after go live VirWork.*



Stakeholder satisfaction

The respondents involved in the study were all satisfied with the results after go live and after working with the virtual workplace for some time. All stakeholders consider the project to be a success, although some critical remarks were made with respect to better testing of the software beforehand. At both moments in time, respondents indicate to be satisfied with the way the project was organized.

Some remarks made in the conversations held relate to the solution of remaining issues after go live. These stem from the transfer of the project from the (temporary) project organisation to the IT department and the fear for lack of attention to the issues as the ownership is transferred.

Preliminary conclusions

Following the definition of a successful project used in this document, we consider this (pilot) project to be successful. Stakeholder management was performed in accordance to the stakeholder dynamics following the stakeholder engagement strategy matrix. In this case, therefore, the stakeholder management activities seemed in line with the project scope and stakeholder environment needs, with a minor remark regarding the better involvement of the nursing and administration stakeholders of the oral surgery department. Involving them during acceptance tests of the solution most likely would have revealed the issues found after go live. The surgeon involved in the acceptance test, only tested his daily activities, logically ignoring frequent activities by other stakeholders, like the composition of General Practitioner's letters or the upload of radiology DVD's onto the system. Insights in the stakeholder environment thus could have prevented the administrative issues found directly after go live.

Discussions have taken place on a regular basis between the project manager and the oral surgeon that served as point of contact for the oral surgery department. However, no specific additional actions were undertaken by the project manager to verify the involvement of the rest of the oral surgery department in the project (like additional presentations, conversations or demonstrations of the system) by the project manager.

At the same time, the end-users as well as the people involved from the IT department were satisfied with the way the project was executed, the way they were involved in the project (participation level) and the final results.

Critical remarks

To safely argue that the project mentioned here can be considered a success, one must take into consideration the selection made in the list of primary stakeholders. In other words; due to the selection, there still could be stakeholders that are not satisfied with the project results; they were just not present in our case selection. (e.g. other administrative staff than the respondents of this stakeholder group involved in our case).

Most agreements and decisions by the project managers were not recorded or documented, but discussed orally between the project manager and the oral surgeon, making it hard to analyze all engagement activities undertaken by the project team and whether things were deliberately planned or not.

Not taken into account in the case research here is the unanticipated consequences of the use of the virtual workplace. The use of the platform by the surgeons reduced the preparation time per patient by the back office. At the same time however, this meant less specific input for the oral surgeon. This implicates that more administrative work was needed by the surgeon him/herself after go live.

6.6 DESCRIPTION INTEHR (A3)

In this paragraph a description is given of the IntEHR project, a project executed in the same hospital as the two cases discussed previously.

Project description and organisation

The project described in this paragraph concerns the replacement of an old version of the Electronic Health Record for Internal Medicine. This old version was designed specifically for the hospital and tailored to the specific needs of Internal Medicine doctors. Both the old and the new version are based on the same software platform, but with different content and look-and-feel.

The new version of the EHR contains a more standardized look and feel (used throughout the hospital). Furthermore, to be able to use more advanced features, like clinical ordering and the integration with the Electronic Nursing Record, the new version of the EHR is a prerequisite. This new version is better supported by the EHR vendor, while the older version was built by the hospital itself.

Project organisation

The project organisation consisted of a

- *project team*; consisting of a project manager / functional consultant from ICT, a project manager from the process department (also a business consultant) and a programmer.

- *working group*; the working group consisted of two internal medicine doctors (one nephrologist, one rheumatologist), two medical interns and two administrative team leads, representing the outpatient and inpatient ward of internal medicine.

- *Steering committee*: the steering committee consisted of the sector manager (organisational manager) of the department where internal medicine is part of, as well as the medical manager of internal medicine. Furthermore, the Program Manager of the EHR Program in the hospital was part of the steering committee, as well as the overall project manager of the business consultants. The team leads of the outpatient and inpatient clinic were part of the steering committee as well.

Innovation driver and characteristics

The main driver for change comes from the implementation of new functionalities now and in the near future and the incompatibility of the old version of the EHR to integrate these new functionalities. Hence, the driver does not originate from internal medicine itself, but from the ICT department to limit the number of different versions to maintain and to ensure complete integration of functionalities throughout the hospital. This is an important departure point of the project.

The new version of the EHR for internal medicine implicates that the specialty will lose functionality. This is mainly because the old version was specifically tailored to their needs and wants, while the new version is more standardized for all specialties across the hospital. Furthermore, the data structure is changed in the new version; with the new version it is easier to reuse information across specialties in order to decrease redundancy of data and double registrations.

Project goals

The goal of the project is to replace the current EHR of internal medicine by the new version of the hospital wide EHR to be used in order to standardize release versions and making it possible to better share information across the hospital. This includes the inclusion of both hospital wide registrations and parts of internal medicine specific registrations.

From the point of view of the end users, the internal medicine physicians wanted to make sure that any loss of functionality would be minimal. This is further addressed in the overview table of expectations and intentions.

As part of the implementation, designing, creating, testing and education are part of the scope of the project.

Implementation strategy and planning

The implementation strategy can be divided in two parallel processes that were addressed; the design and the redesign of work processes.

Key to the implementation strategy of the replacement of the Internal Medicine Electronic Health Record were the iteration sessions with the working group. In total six iteration sessions took place. In these sessions, the scope of the new Electronic Health Record was determined and the different health record elements were discussed iteratively in detail through rapid prototyping of functionality in the information system.

After the design stage, the health record was built by developers. After this realization (development of software), the system was tested in different sessions by different key users. This lead to a list of fixes, that were addressed and retested.

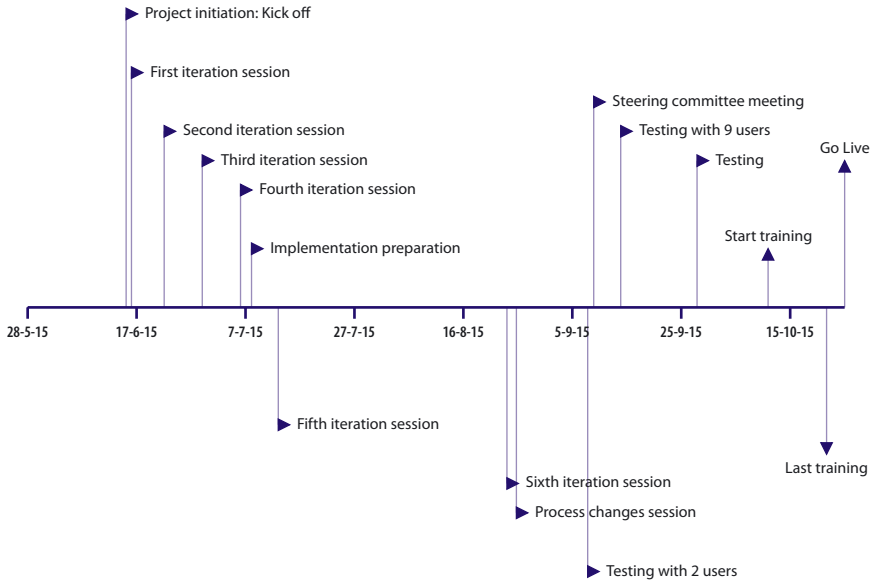
Subsequently, training was given to the whole population of physicians, administrative personnel, etc.

In addition to the design process, the 'way of working' with the new functionality was addressed; optimal workflows were discussed and, if possible, were taken into account in the redesign of the health record. In general, convergence to a standard way of working was desired and the new EHR was considered to contribute to this.

The analysis and redesign discussions and meetings were held with the help of business consultants from within the hospital. During the process it became apparent that even though the back office wanted to enforce changes and redesign measures in practice, the physicians did not always agree with the suggestions proposed. Their reluctance can largely be attributed to the effect of the measures on their administrative activities.

Planning

Figure 54: *Project planning IntEHR.*



Research initiation

Already before project initiation, meetings took place between the researcher and the project team. The implementation strategy was discussed and advice was given how to compose the (working) group for the iteration sessions.

As a basis for composition, the department was broken down into functional groups (inpatient/outpatient, nursing/physician/administration/management, the different subspecialties oncology/nephrology/hematology/rheumatology/infectiology) and based on formal/functional position of people within the group. This will further be explained in the results part of this case study.

Data collection

Through means of interviews and web surveys, just like the previous cases, data was collected. In total *two measurements* were undertaken; during the design stages and after go live. A total of 29 in-depth interviews were held relating to the project, with 15 different respondents.

Table 52: *Total amount of stakeholders interviewed IntEHR.*

Respondent type	N =
Administrative personnel	3
Outpatient management	2
Project team	5
Steering committee	2
Physicians/assistants	2
IT	1
TOTAL	15

These stakeholders were also identified in the different interviews as being the most salient stakeholders relating to the specific project. The physicians interviewed were also part of the working group.

In addition, we used detailed web surveys to validate stakeholder interview findings with scores of the web surveys. We used different surveys for the Project team members (appendix A) and other stakeholders (appendix B).

In total 4 'A' surveys were completed by project team members, 7 were sent out. In total 3 'B' surveys were completed by the *other* stakeholders, 4 were sent out.

Table 53: *Websurvey responses IntEHR.*

Respondent type	N =
Websurvey A	4
Websurvey B	3

The web survey did have room for additional comments. We will discuss these items of the survey in the course of this paragraph. Results were taken into account during the conversations with the different stakeholders.

Figure 55: *Research planning IntEHR.*

		24	25	26	27	28	29	30	31	32	33	34	35	36
		13 jun	20 jun	27 jun	4 jul	11 jul	18 jul	25 jul	1 aug	8 aug	15 aug	22 aug	29 aug	5 sep
A	**Project A3 - EHR Internal medicine**													
1	**Phase 1: Context evaluation/preparation**	PHASE 1												
1.1	Initiation with project management													
1.2	Case description; trigger, planning, etc.													
1.3	Preliminary stakeholder environment													
1.4	Documentation evaluation													
2	**Phase 2: Iterative stakeholder identification/classification**								PHASE 2					
	Phase a								A					GO LIVE
2.1	Brainstorm about identification based on first view													
2.2	First phase interviews													
2.4	Evaluate results													
2.5	Loop back results (1) / workshop													
	Phase b (after go-live)													
2.10	Third phase interviews with top-5 identified													
2.11	Third online servey													
2.12	Evaluate results (3)													
2.13	Loop back results (3) / workshop													
3	**Phase 3: Overall SAR and stakeholder type comparison**													
3.1	Comparing stakeholder differences / outcomes													
4	**Phase 4: General conclusions**													
4.1	Formulate findings and conclusions													
4.2	Model enhancements													
4.3	Final report													

		37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	1	2	3	4	5
		12 sep	19 sep	26 sep	3 okt	10 okt	17 okt	24 okt	31 okt	7 nov	14 nov	21 nov	28 nov	5 dec	12 dec	19 dec	26 dec	2 jan	9 jan	16 jan	23 jan	30 jan
A																						
1	**Phase 1**																					
1.1																						
1.2																						
1.3																						
1.4																						
2	**Phase 2**	PHASE 2																				
	Phase a	A					GO LIVE															
2.1																						
2.2																						
2.4																						
2.5																						
	Phase b (after go-live)										B											
2.10																						
2.11																						
2.12																						
2.13																						
3	**Phase 3**																PHASE 3					
3.1																						
4	**Phase 4**																		PHASE 4			
4.1																						
4.2																						
4.3																						

6.7 RESULTS INTEHR (A3)

In this paragraph, the results are highlighted with respect to the earlier formulated research domains of stakeholder knowledge (and maturity), engagement strategies and stakeholder dynamics during the course of the project. As mentioned earlier, we chose one milestone to distinguish between two measurement periods; the go live moment of the new EHR for Internal Medicine (24 October 2011).

Stakeholder knowledge

At the beginning of the project we gathered project documentation about mentioned stakeholders and verified and further completed the list by information shared in the interviews. One may note that no notion is made of the working group as such, since this is not mentioned as key stakeholder group of the project by both the project team as well as the people interviewed. Since the stakeholders involved are all reflected in the composition of the working group, we will follow this list of stakeholders for the evaluation of this case study.

Table 54: *Primary stakeholders of IntEHR as identified in research.*

Stakeholders
Project team
Internal medicine physicians
Medical students (interns)
IT department
Administrative personnel Internal Medicine (outpatient administrative)
Management team[13]
Project Steering Committee

The willingness of the internal medicine physicians to cooperate in the research was limited; only certain medical interns could be approached and the head of the department supplied names of possible respondents to be approached; we could not pick respondents at random from the mentioned stakeholder groups. Of these supplied respondents only a limited amount reacted to the invitations sent. Even calls that followed reminder emails, did not lead to further participation of physicians in the research, limiting the amount of physicians involved in the research to two (three when including the medical manager) of a total group of 12 physicians.

[13] With this we mean the heads of the administrative personnel. The total management team consists of a medical manager, a business/sector manager combined with the 'unit heads' (administrative personnel mentioned here).

Maturity of stakeholder management in project

Description

In preparation of the project conversations were held relating to the planning. The project manager of the project was a senior IT consultant, with a strong focus on the technical realization of the new functionality, this was strongly reflected in the planning and connecting activities.

The composition of the working group was suggested by the head of the department, who already was a knowledgeable key user of the previous version of the EHR of Internal Medicine. This may have led to a bias in composition. The researcher did advise in the definitive composition of the working group, but, as will be discussed later on, this was only partly adopted by the project manager.

At some point in time, pressure was exerted towards the Head of Internal Medicine by the EHR Program Manager (where the project was part of) that it was now or never; Halting the project at this point in time would lead to a replanning of the replacement to the end of 2012, possibly leading to problems in integration with future clinical ordering and the electronic nursing record (to be implemented in April 2012).

Checklist

Below the stakeholder management maturity can be found as filled out for the IntEHR project. This checklist is constructed based on the triangulation for information by the surveys, interviews and results from the desk research.

Table 55: *Stakeholder management maturity of the IntEHR project.*

		Level (informal to formal/structural)				
Category	**Sub-category**	1	2	3	4	5
Idenfication	Familiarity		●			
Assessment & prioritization	Capacity awareness		●			
	Intentions awareness		●			
	Priority awareness	●				
	Interests awareness	●				
	Expectation awareness	●				
	Conflict awareness	●				
Engagement	Focused activities		●			
	Engagement strategy	●				
	Specific participation planning	●				
Monitoring stakeholder dynamics	Tooling	●				
	Evaluation of activities and effects		●			
	Incorporation of dynamics in engagement strategies	●				

As can be seen in the table, an average score of 1-2 (individual, informal, reactive or non-existent) is achieved in relation to the identification, assessment, engagement and monitoring of stakeholders.

In practice, this means that the project teams is able to identify only part of the stakeholder environment and does not have a clear view of the expectations and intentions of the stakeholder environment relevant for the project.

Stakeholder dynamics

In this paragraph we explore the stakeholder dynamics that took place during the course of the IntEHR project. We use the SAR tooling we discussed and constructed in the previous section of this dissertation.

Description

Before we construct different stakeholder radars for the situation, we analyze specific intentions and expectations of the primary stakeholders. we distinguish between two moments in time: a) during the design stage of the functionality and b) approximately after one month of go live.

Table 56: *Primary stakeholder intentions and expectations project IntEHR.*

Primary	Initial		After go live	
stakeholders	Intentions	Expectations	Intentions	Expectations
Project team	Realizing a replacement for the current electronic health record for the Internal Medicine specialty.	Delivering a successful rollout of the internal medicine EHR	Making sure found bugs are resolved in a speedy and efficient manner	Less internal medicine specific adjustments to the software.
Internal Medicine staff (+ medical students).	Making sure the replacement is at least as usable as the current EHR with all the found issues and bugs solved.	Increased usability (ease of use) of the new platform	Speeding up issues found after go live	Experiencing more problems than before; expect speedy solutions
IT Department	Making sure the project results fits the current architecture	Saving maintenance efforts, enhance application flexibility and making it possible to integrate with future functionality	Limit the time of a hybrid situation (with old and new versions of the hospital EHR). Reduce maintenance, reduce future integration efforts	Fixing the issues will keep Internal Medicine satisfied.
Administrative personnel Internal Medicine	Standardizing support workflows for physicians	Less work in preparation of the different patient appointments	Trying to prepare patient appointments as efficient as possible	Saving time in preparation
(Outpatient administrative) Management team	Increase efficiency in back office	Through standardization more efficiency can be achieved	Focus on standardizing workflows	The amount of standardization is limited due to the lack of change in work practice by the physicians

SAR

Before go live

As part of the before go live assessment, web surveys were returned. In the first section of this paragraph, these results are briefly discussed.

Websurvey results

In the following table, the web survey results are displayed, relating to a part of the SAR constructs. The expectancies are the aggregated result of earlier mentioned questions relating to each of the constructs.

Table 57: *Extract of responses on web survey A IntEHR.*

WEBSURVEY A: Governing body (n=4)					
Stakeholder group	**Respondent**	**Functional role**	**Participation level**	**Performance expectancy**	**Effort expectancy**
Project team	Business consultant (II)	Informative	Create	2	1
	Project manager	Consultative	Create	2	1
	Program Manager	Decisional	Contribute	1	2
Steering Committee	Business consultant (I)	Decisional	Create	1	1

What can be noted is the high expectancies that are present within the governing body relating to both effort as well as performance expectancies.

Besides the Program manager, the respondents see themselves as (co-)creators of the solution and project result.

Table 58: *Extract of responses on web survey B IntEHR.*

WEBSURVEY A: Governing body (n=4)					
Stakeholder group	**Respondent**	**Functional role**	**Participation level**	**Performance expectancy**	**Effort expectancy**
Internal medicine physicians	Physician	Informative	Conform	5	5
Administrative personnel	Management assistant	Informative	Contribute	3	3
(outpatient) management	Head of administrative personnel	Informative	Challenge	3	2

As can be seen, both expectancies relating to the physician are low; the physician does not expect much performance or effort improvement of the project and/or solution. Striking enough, the head of internal medicine did not fill out a web survey, even after several reminders (also in person).

Furthermore, all respondents see their role as informative, while in fact, the purpose of the implementation strategy was to closely involve end users in the design of the end-product even though through the working group members. In the following table the resulting scores are represented as based on the interviews, surveys and desk research and checked with part of the project team in between.

The first table is followed by the outcome measure scores as described earlier.

Table 59: *Scores of SAR attributes for IntEHR during initiation/testing (before go live).*

	Internal medicine physicians	**(outpatient administrative) management**	**Administrative personnel**	**Project team members**	**Steering Committee**	**IT Dept.**
Role	3	1	1	4	4	3
Power	5	3	2	3	4	3
Importance to	5	4	2	4	5	4
Vested Stake	5	4	3	4	4	2
Proximity	4	4	3	4	2	4
Participation	3	2	4	2	3	1
Effort expectancy	5	4	3	1	3	3
Performance expectancy	5	3	3	2	3	3

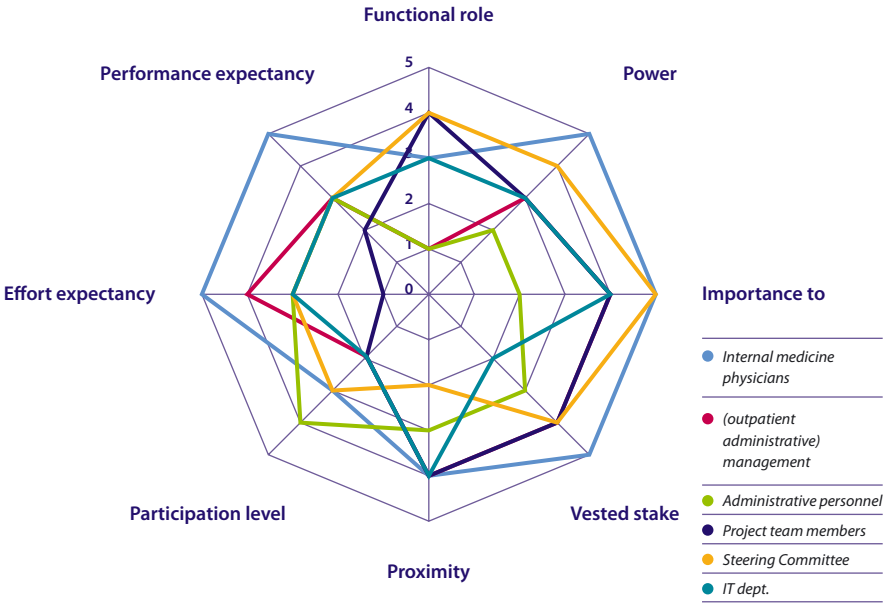
The above scores lead to the following outcome measures:

Table 60: *Outcome measures for IntEHR (before go live).*

Outcome measure	Score					
	Internal medicine physicians	(outpatient administrative) management	Administrative personnel	Project team members	Steering Committee	IT Dept.
Power-function mediation	8	4	3	7	8	6
Relative	33% (1)	11% (4)	6% (5)	28% (2)	33% (1)	22% (3)
Potential influence	19	15	10	15	15	13
Relative	94% (1)	69% (2)	38% (4)	69% (2)	69% (2)	56% (3)
Eligibility for participation	7	6	7	6	5	5
Relative	63% (1)	50% (2)	63% (1)	50% (2)	38% (3)	38% (3)
Potential resistance	16	10	11	9	13	10
Relative	75% (1)	38% (4)	44% (3)	31% (5)	56% (2)	38% (4)
Engagement priority	35	25	21	24	28	23
Relative	64% (1)	40% (3)	31% (6)	38% (4)	48% (2)	36% (5)

The above attribute scores lead to the following visualization;

Figure 56: *SAR before go live IntEHR.*



As can be concluded from the measurements above, the physicians do have a very large potential influence on the project (result) and do have a large eligibility for more participation. Together with the measure of high potential resistance, this stakeholder group attained a very large engagement priority for the governing body.

In the visualization above one can see the relative large distances on the capacity dimension between the physicians and the IT department/project team.

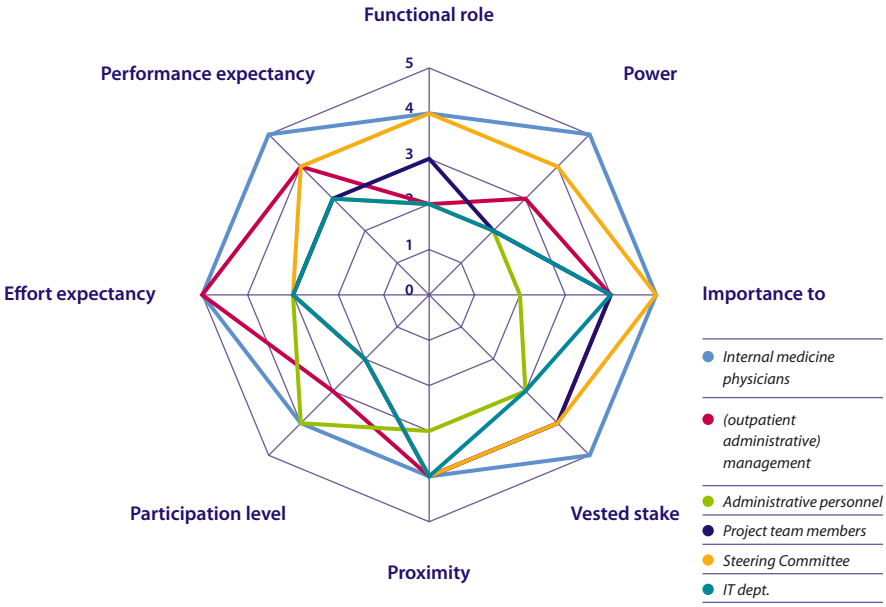
2.1.1.1.1 After go live; reflective assessment

Table 61: *Scores of SAR attributes for IntEHR during initiation/testing (before go live).*

	Internal medicine physicians	(outpatient administrative) management	Administrative personnel	Project team members	Steering Committee	IT Dept.
Role	4	2	2	3	4	2
Power	5	3	2	2	4	2
Importance to	5	4	2	4	5	4
Vested Stake	5	4	3	4	4	3
Proximity	4	4	3	4	4	4
Participation	4	3	4	2	2	2
Effort expectancy	5	5	3	3	3	3
Performance expectancy	5	4	3	3	4	3

The above attribute scores lead to the following visualization;

Figure 57: *SAR after go live IntEHR.*



The above scores lead to the following outcome measures:

Table 62: *Outcome measures for IntEHR (after go live).*

Outcome measure	Score					
	Internal medicine physicians	(outpatient administrative) management	Administrative personnel	Project team members	Steering Committee	IT Dept.
Power-function mediation	9	5	4	5	8	4
Relative	39% (1)	17% (3)	11% (4)	17% (2)	33% (2)	11% (4)
Potential influence	19	15	10	14	17	13
Relative	94% (1)	69% (3)	38% (6)	63% (4)	81% (2)	56% (5)
Eligibility for participation	8	7	7	6	6	6
Relative	75% (1)	63% (2)	63% (2)	50% (3)	50% (3)	50% (3)
Potential resistance	18	14	12	11	13	10
Relative	88% (1)	63% (2)	50% (4)	44% (5)	56% (3)	38% (6)
Engagement priority	37	29	22	25	30	23
Relative	69% (1)	50% (3)	33% (6)	40% (4)	52% (2)	36% (5)

Preliminary conclusions

The influence of the involved administrative personnel is limited, as can be seen across both before and after go live SAR diagrams. Their involvement in the design process was limited, while one of the aims of the project related to the standardization of the back office. In first interviews with this stakeholder group, some of the respondents were not aware of the replacement of the EHR, and thus of the project as a whole. Both effort and performance expectancies have decreased with respect to the physicians over the course of the project, leading to even higher (potential) resistance towards the project. At initiation these expectancies were already low.

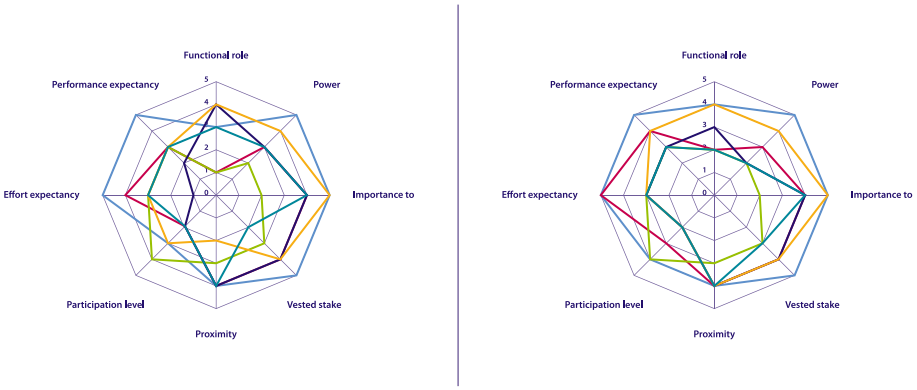
This in fact was also explicitly mentioned in the after go live interviews; the physicians experienced less usability and needed more time entering information in the new EHR in comparison to the previous version of the EHR. This was also partly expected before go live.

Other events relating to an increase in potential resistance of both the physicians, management and administrative personnel;

- the lack of support in the month after go live,
- the interference of the project with another project resulting in a development delay and
- the forcing of standard functionality leading to a detoriation in functionality.

The latter two were explicitly stressed during the design and implementation process through means of a letter of complaint signed by internal medicine physicians towards IT Management regarding this project. In turn, some pressure was exerted ('it's now or never, risk of incompatibility with nursing records later on, etc.') by the project team and EHR Program management. The project carried on, under the condition that any issues found directly after go live (no dates were fixed) would be solved immediately. This coercion was not appreciated among the end users (physicians, management and administrative staff).

Figure 58: *SAR's compared IntEHR.*



One could argue that, taking into account the initiation situation of the project, a fair share of stakeholder management activities (expectancy alignment, etc.) would have been justified. Important to note is that advice given over the course of the project, including one steering committee presentation and discussion did not lead to consecutive actions. This is striking, the more because the issues addressed were acknowledged by both the project team as by the steering committee.

However, these notions seem to be in line with the baseline analysis of the stakeholder management maturity as described earlier; no clear knowledge existed with respect to high and detailed levels of expectation and no structured stakeholder management activities were planned.

Stakeholder dynamics

Internal medicine physicians

The earlier mentioned increase in resistance is reflected in the SAR below. Interesting to note is the continuing functional role of even more internal medicine physicians after go live. This had to do with the fact that the go live was accepted by the physicians under the condition that remaining issues would be solved within a month after go live. Directly after go live, a larger group of physicians started to get involved in the issues to be delivered, since they were working with the EHR now on a daily basis and were confronted with the new functionality. Among the internal medicine physicians, different opinions and stances were observed by the researcher; some physicians not working with the information system yet, did have even lower expectancies of the system than the ones already working frequently and intensely with the older version. Naturally, the fear for loss of functionality does not apply to these 'paper' physicians. However, for the scope of our research and the timeline of the project we did not have the opportunity to further disseminate between the different physicians in this stakeholder group, what would have made the analysis more accurate.

As will be discussed in the engagement activities paragraphs, advice was given by the researcher at initiation to verify involvement of a large group of internal medicine physicians. This was not executed structurally.

Figure 59: *SAR of internal medicine physicians during IntEHR.*

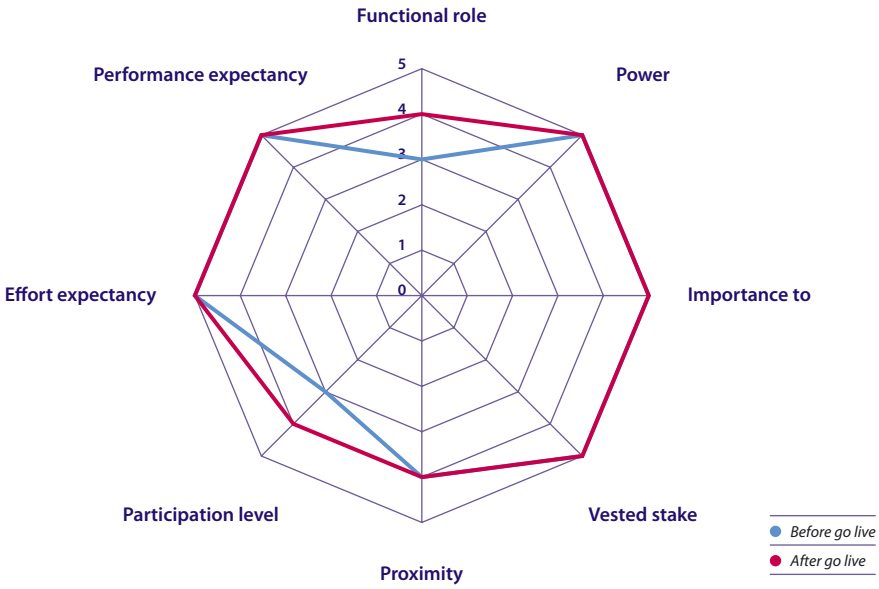


Table 63: *Outcome measures for internal medicine physicians IntEHR.*

Outcome measure	Before	After	Delta
Power-function mediation			
Relative	33%	39%	+6%
Potential influence			
Relative	94%	94%	0%
Eligibility for participation			
Relative	63%	75%	+12%
Potential resistance			
Relative	75%	88%	+13%
Engagement priority			
Relative	64%	69%	+5%

(Outpatient) Management team

In short; outpatient management was disappointed with the results. This is reflected in poor expectancies in the SAR above. Expectancies were already poor at initiation, which largely had to do with a lack of trust as a result of the previous EHR implementation.

In addition, after go live, anticipated and expected standardization of work processes was not achieved; because of a large variety of remaining technical and functional issues physicians did not change their work processes and administrative personnel was asked to prepare patient visits the same way as before go live.

Figure 60: *SAR of (outpatient) management team during IntEHR.*

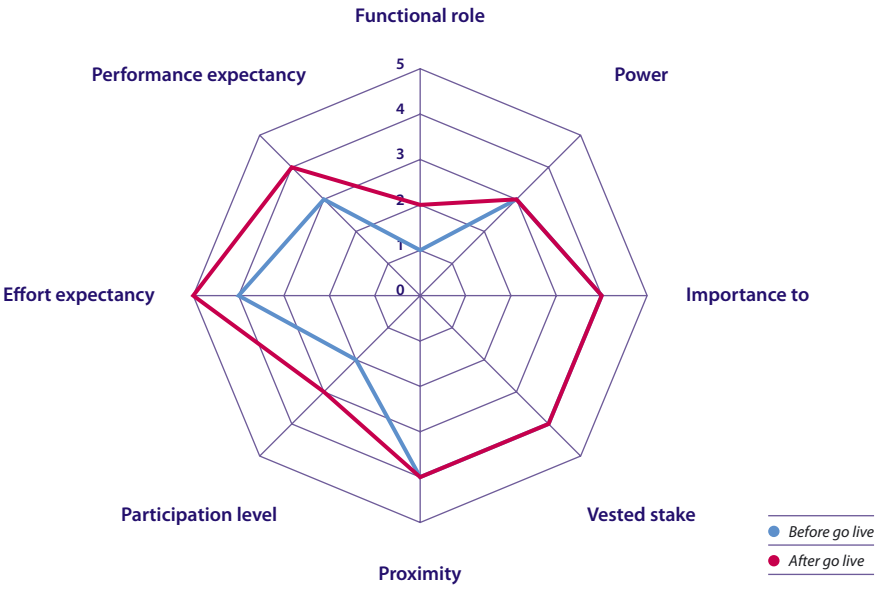


Table 64: *Outcome measures for internal medicine physicians IntEHR.*

Outcome measure	Before	After	Delta
Power-function mediation			
Relative	11%	17%	+6%
Potential influence			
Relative	69%	69%	0%
Eligibility for participation			
Relative	50%	63%	+13%
Potential resistance			
Relative	38%	63%	+25%
Engagement priority			
Relative	40%	50%	+10%

Administrative personnel

Administrative personnel was not actively involved during the project design phases. The challenging of the solution by the administrative personnel therefore started to take place just before go live (in trainings), but mainly after go live in practice. From this moment onwards, administrative personnel was confronted with the new functionality.

Figure 61: *SAR of administrative personnel during IntEHR.*

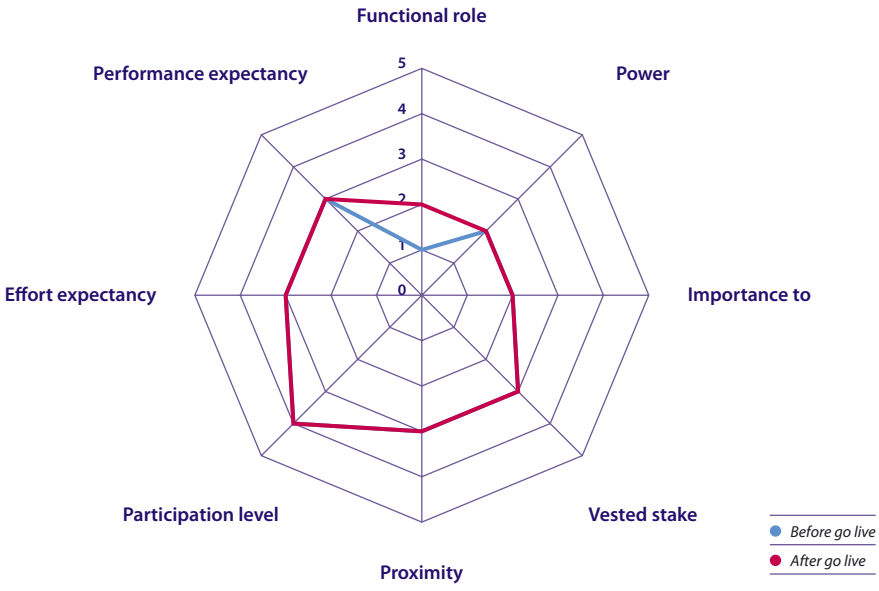


Table 65: *Outcome measures for administrative personnel IntEHR.*

Outcome measure	Before	After	Delta
Power-function mediation			
Relative	6%	11%	+5%
Potential influence			
Relative	38%	38%	0%
Eligibility for participation			
Relative	63%	63%	0%
Potential resistance			
Relative	44%	50%	+6%
Engagement priority			
Relative	31%	33%	+2%

Project team

As can be seen in the acceptance radar below, main dynamics took place on the expectancy, role and power attributes. After go live, the project team understood the effects of the new EHR on the daily work processes of the end user. This lead to the understanding that the solution was less user friendly than expected and anticipated.

The decisional role the team had in the beginning phase shifted more towards the end users. In general, the pressure from the physicians increased, forcing the project team in a more facilitating than steering role in the design (and later; fixing) the EHR.

Subsequently, this implicated a decrease in the power attribute of this stakeholder.

Figure 62: *SAR of project team during IntEHR.*

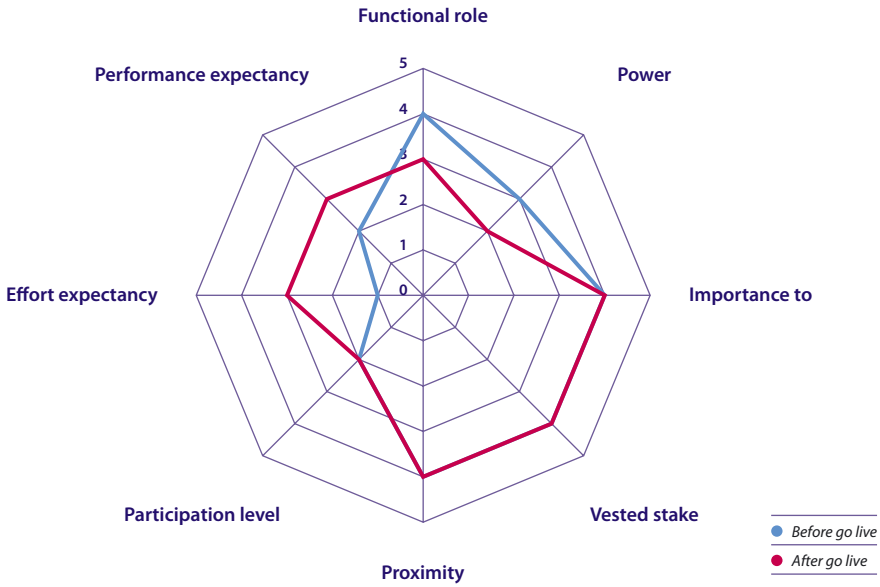


Table 66: *Outcome measures for project team IntEHR.*

Outcome measure	Before	After	Delta
Power-function mediation			
Relative	28%	17%	-11%
Potential influence			
Relative	69%	63%	-6%
Eligibility for participation			
Relative	50%	50%	0%
Potential resistance			
Relative	31%	44%	+13%
Engagement priority			
Relative	38%	40%	+2%

Steering committee

Of the case studies presented in this document, not all project organisations included a steering committee. This project did include a steering committee that did meet a couple of times during the course of the project.

The themes discussed with the steering committee included the overall status of the project, the acceptance level of the new solution and measures to deal with the process impact of the new EHR. Even though the steering committee did possess large potential influence on the project, this was not exerted. Some meetings were rescheduled or canceled and at most of the meetings some persons were absent. Their proximity to the project, therefore, was lower than e.g. the working group members or physicians.

Figure 63: *SAR of steering committee during IntEHR.*

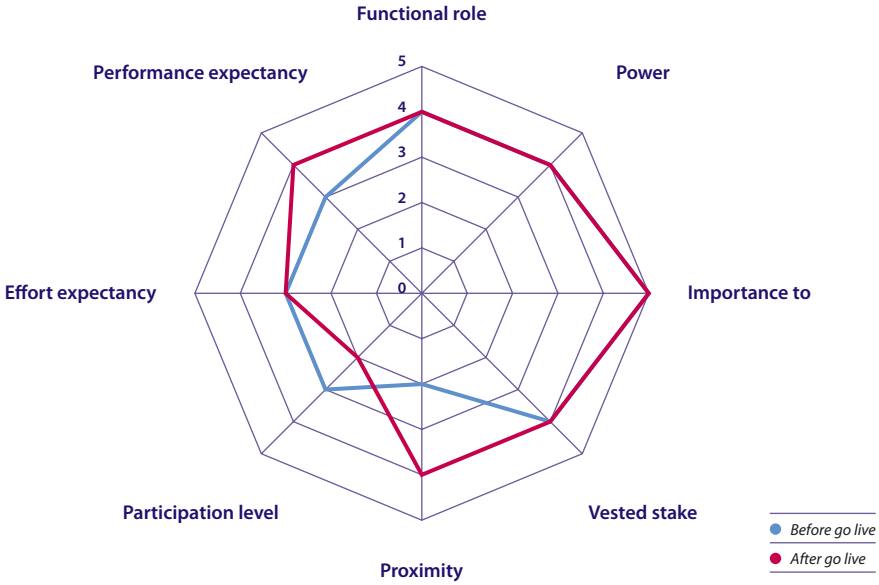


Table 67: *Outcome measures for steering committee IntEHR.*

Outcome measure	Before	After	Delta
Power-function mediation			
Relative	33%	33%	0%
Potential influence			
Relative	69%	81%	+22%
Eligibility for participation			
Relative	38%	50%	+12%
Potential resistance			
Relative	56%	56%	0%
Engagement priority			
Relative	48%	52%	+4%

IT department

The IT department of the hospital was involved in the realization of the new EHR, but was not in the lead in the design of the functionality of the new EHR. The role of the department shifted from a heavy realization mode to bug fixing mode, demanding less development effort, with a less consultative role towards the project team. Meanwhile, the vested stake grew because of the fact that the project deliverables were taking over from the project team.

Figure 64: *SAR of IT department during IntEHR.*

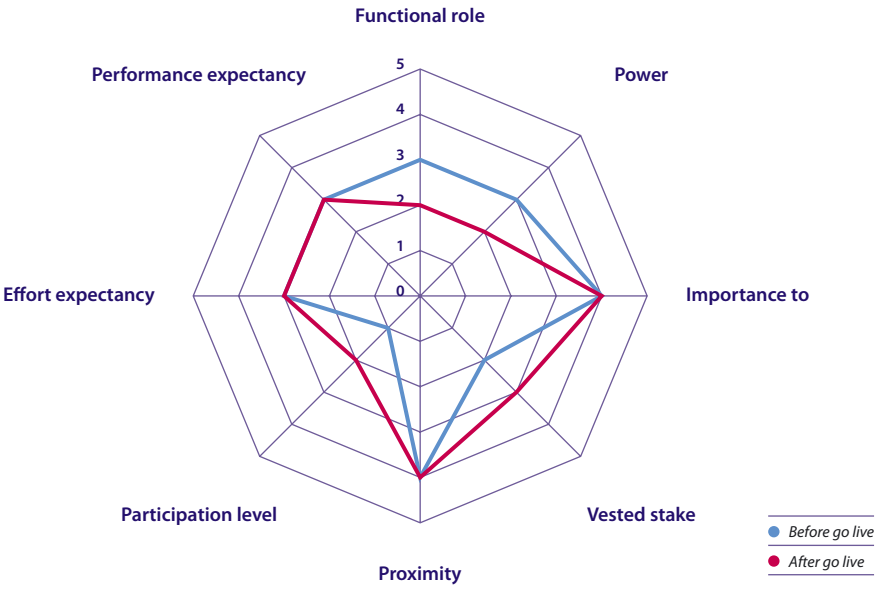


Table 68: *Outcome measures for steering committee IntEHR.*

Outcome measure	Before	After	Delta
Power-function mediation			
Relative	22%	11%	-11%
Potential influence			
Relative	56%	56%	0%
Eligibility for participation			
Relative	38%	50%	+12%
Potential resistance			
Relative	38%	38%	0%
Engagement priority			
Relative	36%	36%	0%

Engagement activities

In this paragraph we focus on activities employed, involving the stakeholder environment. By using the engagement strategy matrix, we can evaluate the appropriateness of executed activities.

Events

In the first iteration session, where the list of possible requirements was discussed, an impressive list of wishes and items that needed to be fixed in the new version in addition to the version they were already accustomed to, was proposed by internal medicine.

During the project it became apparent that the expectations of the project team delivering the project and the future users of the new EHR, represented in the working group (especially the physicians) were not aligned at all, leading to dissatisfaction of the Internal Medicine specialty. This became apparent during the discussions held about the contents of the new functionality in the iteration sessions held with the working group. Ultimately, this was expressed in a letter of complaint towards the manager of the ICT department, questioning the quality of the end result and stressing the possible risks for patient safety if certain functionalities would not be realized in the new EHR. Even though the dissatisfaction was noted by the project team during the different sessions held, the letter was not expected. Nevertheless, pressure was exerted towards the Head of Internal Medicine by the EHR Program Manager (where the project was part of) that it was now or never; Halting the project at this point in time would lead to a replanning of the replacement to the end of 2012, possibly leading to problems in integration with future clinical ordering and the electronic nursing record (to be implemented in April 2012).

Two ways of advice have been given; proactively (e.g. at initiation of the project) and reactively when something unexpected occurred. In the table below the most important events and advices are summarized. One of the advices given, for example, before initiation relates to the composition of the working group. For this purpose, the department was broken down by the researcher into functional groups (inpatient/outpatient, nursing / physician / administration / management, the different subspecialties oncology / nephrology / hematology / rheumatology / infectiology) and based on formal/functional position of people within the total end-user group.

Table 69: *Events per stage IntEHR.*

Stage	Event/situation	Advice	(re)action from project team	Result
Initiation	The project team was initiated from the IT department. Next, the working group was formed; the management team of internal medicine was asked to supply members.	To ensure a proper composition of the working group, advice was given related to who to involve.	The management of internal medicine supplied a list of members. The (IT) project team accepted this list, with no further additions, even though advice was given to include more physicians.	Only physicians with experience with the old EHR version were included in the working group, possible biasing functional results.
Design	Only one or two doctors were involved in eventual decisions about design and content of the EHR, with no assurance of the rest of the doctor population	Consult with more doctors, also beside the ones present in the working group to ensure the connection between them and the rest of the internal medicine physicians	For the specific subspecialties (a.o. oncology, infectiology, nephrology) sessions were planned to demonstrate functionality and discuss it	During some presentations given, valuable feedback was given related to specific subspecialty requirements towards the EHR. This was otherwise neglected.
	A letter of complaint was sent to IT management addressing specific issues to be solved in order to agree with the anticipated go live date	Explicitly formulate the answers, formalize actions and making them sign by representatives of internal medicine management as expectation alignment action. Plan and safeguard acceptance by internal medicine. If not achievable before go live, postpone go live.	A list was made addressing the issues mentioned in the letter of complaint and matching them with planned actions from the project team. Follow up on these issues were frequently discussed with the working group.	The internal medicine department accepted to go live on the projected date, under the condition that issues noted on the list were taken into account before or directly after go live.
Testing/ education	Education sessions	Make sure that there's additional attention to physicians/users that were not working with the previous version of the EHR. This includes both functional as well as process attention.	Personal attention was given regarding functional use of the EHR. The implications of the new EHR for the 'new' way of working for the physicians was not explicitly addressed.	No check was present that all users would understand the new processes that were not present in the earlier version or paper.
Go Live	Go live; start of HER use at the internal medicine department. Including first time 'digital' users.	Identify VIPs, persons where most resistance can be expected based on earlier reactions or absence during education and training sessions and adjust on-site support to these locations/ persons	VIPs were not identified explicitly. A support schedule was made to provide onsite support. Lack of support capacity made it impossible to provide support to all VIPs.	Especially the 'first time' EHR users (coming from paper) were very frustrated in first period after go live, with heavy delays in their schedule.

As can be seen in the table above, some advices were not enacted by the project team at all, other advices were taken over partially.

At the same time, a majority of events were not desired by the project team and could have been prevented by more attention to the stakeholder environment and dynamics therein.

Engagement strategies

As mentioned earlier, two measurements were made; before and after go live. Corresponding, two engagement strategy matrices are constructed, that can be found below.

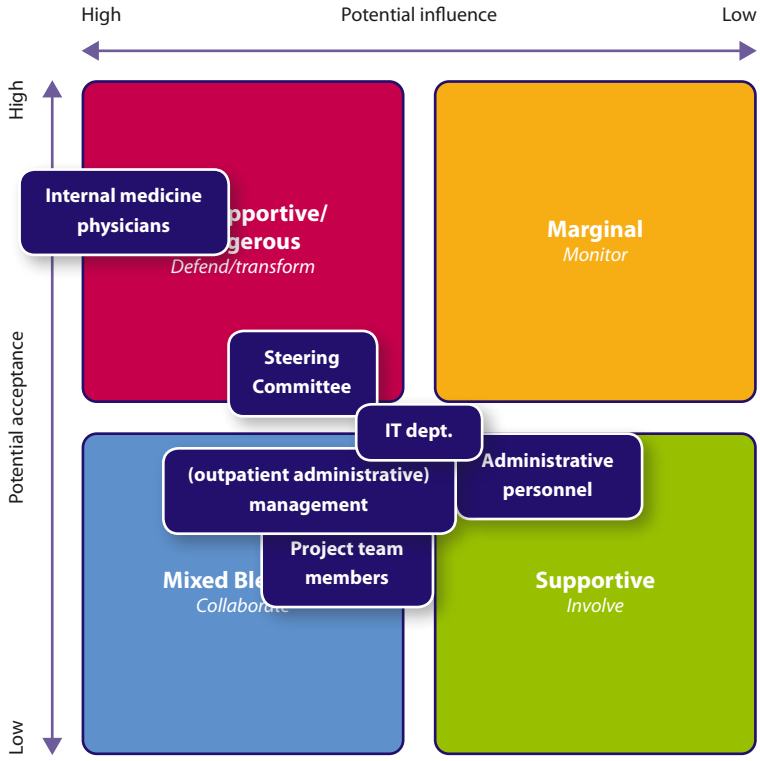
Engagement strategy matrix before go live

Considering the discussion of the different SAR's for the different stakeholder groups, it is not surprising that the Internal medicine physicians were in the red area before go live. Most physicians did not want a new version of the EHR, or, expected that all current issues with the EHR would be resolved in the new version. Both the issue of lack of willingness and incorrect expectations were advised to address in the engagement strategy and – activities, as mentioned in the table in the previous paragraph.

Also, connecting to the engagement strategy matrix, a careful balance of the working group and close involvement of the total group of physicians to transform their resistance was advised.

To further investigate expectations, the researcher compared project team expectations, project team perceived expectations of the physicians and the expectations of the internal medicine physicians themselves. These were all three far apart; nevertheless no further action was undertaken to further discuss the differences by the project team. Engaging in this expectation alignment activity *could* have prevented the letter sent.

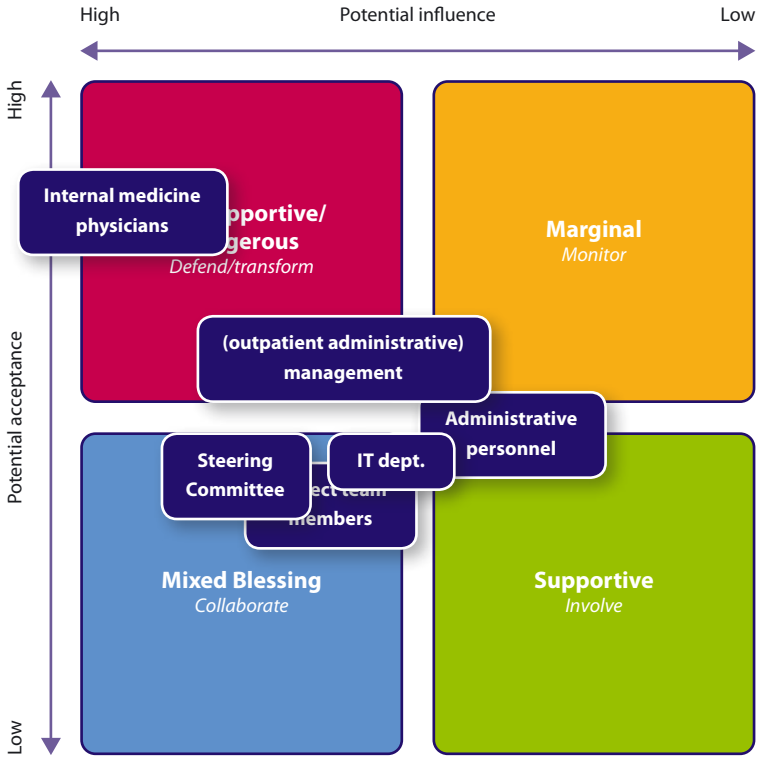
Figure 65: *Engagement strategies before go live of IntEHR.*



Engagement strategy matrix after go live

After go live, the resistance of the physicians was even higher than before, indicating that insufficient measures could have taken place to manage the already high potential resistance and influence. Important to note as well, is the increase in potential resistance of the outpatient management. This has to do with unfulfilled expectations regarding back office efficiency improvements. The decrease of potential resistance of the steering committee can partially be explained by the decrease in proximity of the steering committee from the project (a.o. due to cancelled meetings) and the agreement of the internal medicine department to go live definitively after agreement on the list of issues.

Figure 66: *Engagement strategies after go live of IntEHR.*



Preliminary conclusions

In the opinion of the researcher, not enough activities were undertaken to transform the position of the internal medicine physicians. Several intermediate conclusions were shared with both the project team as well as the steering committee, but this did not result in sufficient additional engagement activities, although some additional measures were undertaken (e.g. the additional presentation of the EHR to the subspecialty of infectiology).

In other words, the project team did not succeed in transforming the resistance or potential influence of the internal medicine physicians, even though the status of the stakeholders in the matrix were known around initiation. At the same time, one can argue that due to a lack of collaboration with outpatient management, this group developed to become a more dissatisfied group. This can also be partially explained by the dependence of the work of their staff on the way physicians work with the EHR.

One can also question the coercing effect of putting pressure on the dissatisfied groups by 'threatening' with delays in delivery of the functionality. This provided a sense of distrust and tension between the project team and the end users and did in fact not transform resistance nor influence.

Stakeholder satisfaction

In the interviews held before go live, it was explained that there were two reasons to engage and invest time in the new EHR from the internal medicine point of view;

1. the expectation to receive a new product that would be an upgrade in functionality as well as performance and effort and (i.e. high performance and effort expectancies)
2. the pressure from IT developments that new 'outside' functionality (like order communication and the electronic nursing record) could not be integrated in the old version of the EHR.

This indicates the starting position of the project does not know a strong desire by the internal medicine physicians to let go of their old, but still well working functionality.

As soon as became clear that the new solution would not be an improvement of their current situation, the resistance started to rise, specifically with the heavy users; the physicians. Outpatient management, also after initiation, had high expectancies of the new EHR. They strongly believed the new version would standardize processes and would eliminate the paper way of working, since all physicians would use the system.

The first expectation left them dissatisfied after go live, since many issues remained, forcing the physicians and back office to fall back on old procedures and ways of working (e.g. relating to the preparation of GP discharge letters). They were however satisfied with the fact that all physicians participated in the use of the EHR and that many documents could now be digitalized.

The satisfaction of both the project team as the IT department was two-fold; even though the system was delivered and used, the to-be solved issue list was long and time consuming. In fact, three months after go live, the IT department was still working on the resolution of issues promised to be solved before go live.

Preliminary conclusions

Critical remarks

Summarizing the developments in the stakeholder environment, one can conclude that even though the stakeholder dynamics were not immense, it was an eventful project. The lack of engagement activities following the first stakeholder assessment can explain less dynamics than expected by the researcher.

The numerous events and its effects and consequences, as mentioned in this paragraph, could have been analyzed in more detail if more measurements would have taken place instead of the two presented here. Unfortunately, both the project as well as the research timeline did not allow for more measurements. Furthermore, halfway the project the situation was estimated to be too delicate to assess the set of stakeholders about resistance and influence attributes.

With respect to granularity of the stakeholders, one could argue to further distinguish the internal medicine physician population, since large differences in expectancies were found. For example, the 'loss' of functionality and associated expectancies do not apply to the 'paper' physicians.

However, for the scope of our research and the timeline of the project we did not have the opportunity to further disseminate between the different physicians in this stakeholder group, what would have made the analysis more accurate. Nevertheless, this notion will be taken into account in recommendations with respect to further use of the model and methodology.

Case details hospital B

7

The hospital is a large, top-clinical hospital in in The Netherlands. The hospital employs around 4000 employees and more than 200 physicians. The hospital also possesses certification for the medical education of medical students.[14] The hospital has a project office with project managers that are assigned to a variety of different IT related projects. The cases discussed in this chapter were both executed by project managers of this project office.

The cases under study were provided by the information manager in collaboration with the head of the project office in response to the demand for possible cases studies by the researcher. One may note that one of the case studies, the intranet, was not a medical application as described in the case study requirements in the first section of this thesis. Nevertheless, as will be described, the case was considered relevant and interesting enough to include as a case study for our research.

Table 70: *Case study description hospital B.*

Project	Name	Description	Timeline	Deliverable(s)	Type of study
B1	Cyto	The project is concerned with the implementation of an application that supports the prescription, preparation and administering of cytostatic drugs.	2011-2012	Working application for cytostatic drugs	Analysis
B2	Intra	This project relates to the implementation of a new intranet platform in the hospital	2010-2011	Working intranet platform for the hospital with a set of new functionalities	Intervention

7.1 DESCRIPTION CYTO (B1)

In this paragraph, one of the two projects in hospital B is described. In the first part a general introduction is given about the case and the project organisation involved in the project.

The second part of this paragraph demonstrates results relating to the case assessment of stakeholder management maturity and stakeholder dynamics.

The project managers, as well as the members of the steering committee remained the same over the project.

[14] The so-called STZ certification for top clinical, non-academic hospitals; www.stz.nl

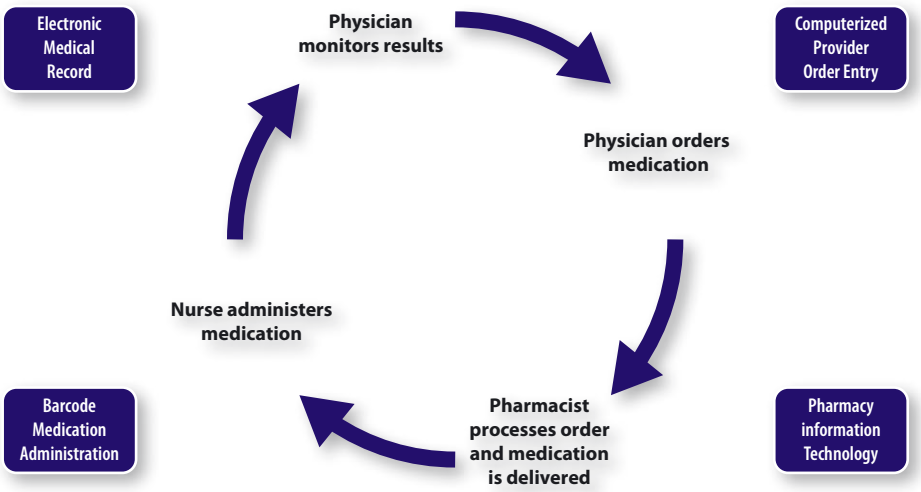
Innovation driver and characteristics

One of the main triggers to start this project relates to obligatory requirements as posed by the Health Inspection Authority in The Netherlands. Two directives in particular are relevant in this respect:

- The directive to being able to prescribe medication electronically within the hospital, before 2012
- The directive that all *high-risk* medication must be IT *supported* from the preparation stage onward.

This support of the whole medication process is also called the support of a *closed loop* system for medication.

Table 67: *Closed loop cytostatic medication process support.*



CPOE: Computerized Provider Order Entry
BCMA: Barcode Medication Administration
EMR: Electronic Medical Record

Furthermore, the project aims to contribute to elevating patient safety by improved medication management, by for example, automatic interaction checks by the system.

As appeared along the way, the first directive could not be met, among others due to planning issues. It is, however, expected by the project manager and the steering committee that the directive could be met in 2012.

Project goals

The project deliverables can be described in relation to the three main phases related to cytostatic drugs process as mentioned in the figure above;

1. Prescribing drugs (i.e.. by oncologists / lung specialists)
2. Preparation of the cytostatic drugs (at the pharmacy)
3. Administration of cytostatic drugs to the patient (nursing staff)

Primarily, it was planned to realize the following order of deliverables at the end of 2011 / beginning of 2012;

Before end 2011 (phase 1):
- Working and implemented medication *preparation* system at the hospital pharmacy, with respect to cytostatics at the pharmacy.

2012 (phase 2):
- Hospital wide, working and implemented cytostatic drugs *prescription* system (i.e. internal medicine/oncology and lung disease department)
- Working and implemented medication *administration* system at the hospital pharmacy, with respect to cytostatics at the pharmacy.

As the planning was delayed significantly, the scope for both phase 1 and 2 changed in;

Phase 1:
- Prescription of cytostatic drugs
- Preparation of cytostatic drugs

Phase 2:
- Administration of cytostatic drugs

As will be discussed in the results section, this change in scope had significant influence on the stakeholder environment and who should be involved at what moment in time.

Besides these main goals of the project, related sub goals can be described as follows;

- The composition of functional requirements in relation to the different parts of the process as input for information system selection
- The eventual selection of a supplier and corresponding system solution
- Successful fulfillment of integration- and user testing
- The execution of training and education in the customization and use of the system
- The installment of a proper organisation with respect to application management of the new application

As noted before, the planning was not met to realize the initial scope on time; the prescription system was not up and running as of January 2012, indicating that all scope items were postponed to later on in 2012.

Implementation strategy and planning

Key feature of this project and the implementation of the specific information system, is that the cytostatic drugs process involved supersedes different departments with different stakeholders, work practices and activities. This means that all stages in the processes and connecting stakeholder must be appropriately fitted with the implementation activities and engagement strategies. The change in scope stresses this need even more.

One of the main planned activities as part of the project was the translation of current (paper hardcopy) cytostatic protocols and connecting process activities to the information system. As will be discussed, the effort needed for this activity had a major impact on the original planning.

Planning

In this paragraph, both the planning at initiation of the project as well as the changes in the planning as the project developed will be discussed.

Roughly we can distinguish five stages in the planning of the project; (1) initiation, (2) design & realization, (3) testing & education, (4) implementation and (5) support/ after go live.

Initiation
The project started in February 2011 with an initial project organisation steering committee, project team consisting of the aforementioned project managers and the working group to formulate the different requirements relating to their usage and process characteristics. The requirements formed the basis for the selection of a supplier of appropriate software. In July 2011 the supplier was selected to deploy its system.

Design and realization
After this selection of the supplier, stakeholders were involved to further supply and enter the required protocol related content in the system. The three main end-user groups (physicians, pharmacists, nursing staff) were included in this further shaping and customizing of the software.

Before these relevant stakeholders were able to enter the protocols, preliminary 'key user' training took place to familiarize these stakeholders with the system.

Besides the effort needed to enter these protocols in the application (system customization), the protocols themselves in relation to system possibilities led to numerous discussions about both limitations of the system as well as about alignment of the processes between the different organisational units; the outpatient lung diseases department, internal medicine department, the oncology wards and the pharmacy.

Possible solutions for the found limitations of the system were discussed with the supplier of the system. One of the main problems with the system (and/or supplier) related to the limited experience of the supplier with Dutch specific requirements. This implicated frequent contact moments between the hospital (pharmacy) and the supplier.

These discussions also lead to the decision of the project team to allocate additional capacity to analyze and map the processes involved to make sure all process steps and activities are covered with the system.

During this stage, it became apparent that the initial planning could not be met. This delay can be contributed to a variety of causes;

- the amount of protocols was larger than estimated and expected
- the entering and verification of protocols was a more tedious job than expected
- During the entering of the protocols the software suppliers announced a new release of the software. This version appeared to have new bugs, leading to additional delays.
- during the translation of the paper protocols in the system, several incompatibilities were found in the system, leading to discussions how to deal with the limiting functionalities of the software. Also, numerous phone calls took place between the hospital (pharmacy) and the supplier to overcome found issues.

In conclusion, the planning projected for these activities did not seem to reflect actual needed efforts, leading to a substantial larger amount of time needed.

The delay in this stage of the planning led, among others, to the decision to limit the scope to only one of the two departments to start with the prescription of cytostatic drugs; the lung disease department, in order to contain the delay as much as possible. This meant that the internal medicine department would not start with the prescription of cytostatic drugs as part of the scope of this project. The implementation of the system at this specific department was postponed to later date.

Testing and education
Even though some adhoc preliminary testing did take place during the entering of the content in the system, the testing of complete processes or real life simulations took place around April 2012.

Some unanticipated events presented themselves in this part of the project. These had to do with IT related difficulties;

- a delay in hardware configuration (/storage) by the own IT department
- a delay in realization of required system connections (between the cytostatic application and the hospital information system, supplying among others patient identification details).
- A delay in the roll-out of the updated software release of the supplier on the hospital infrastructure

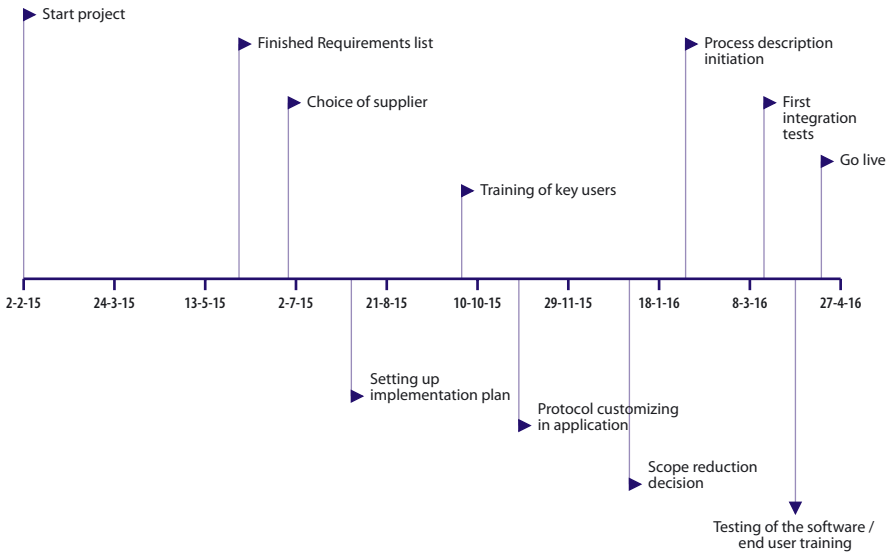
This lead to the postponement of planned integration tests. After the rescheduling of these tests, again problems arose with the system connections.

Implementation and after go live
Implementation was projected to take place around may/June 2012. Unfortunately, this postponement lead to problems for the planning of the researcher to fully evaluate this implementation as part of the study. As can be seen in the planning below, the project consisted of clearly defined activities and phases; from initiation to design to testing/ training to implementation.

In the construction of the planning below, we extracted those activities that marked a change in roles of participants or a change in participation (e.g. testing versus design, etc.). The activities together map with the official project planning.

As can be seen in the planning below, the project consisted of clearly defined activities and phases; from initiation to design to testing/training to implementation. In the construction of the planning below, we extracted those activities that marked a change in roles of participants or a change in participation (e.g. testing versus design, etc.). The activities together map with the official project planning.

Figure 68: *Project events project Cyto.*



Research initiation

In June 2011 we started our desk research at the hospital. This was around the time the project team together with the working group finished the requirements list. In the period that followed the supplier was selected. The period between the final composition of the list of requirements and actual design/customization of the application implicated a period of minimal activity for the stakeholder environment, since this mostly involved the project managers in the selection and negotiations with the supplier.

The moment the software was installed together with the IT department and the supplier, first efforts were made to fill the application with appropriate content. This was the initiation of the interviews with relevant stakeholders by the researcher.

Data collection

Data was collected in the same way as other case studies; first through an intensive desk research, where project plannings, meeting minutes and lists of requirements were analyzed.

After the selection of the supplier had taken place and content discussions started (around august 2011), semi-structured interview protocols were prepared and the Stakeholder Profile Cards were used in the interviews with a careful selection of stakeholders.

The second point in time for the interview round was directly after go live. In other words, the go live of the functionality was taken as yardstick. However, this second point in time appeared to be much later than anticipated beforehand, possibly missing changes in stakeholder attributes. We tried to compensate this limitation by monitoring documentation more closely and intensifying contact with the project manager.

The two designed web surveys were used to supply additional input to the stakeholder radar construction and to triangulate found information by other sources (desk research, interviews). More measurements could have been executed, but were methodologically not possible, due to the availability of respondents and the available time of the researcher. In total we interviewed 11 stakeholders.

Table 71: *Respondents case A2.*

Respondent type	N =
Project team members	1
IT department	1
Steering committee	1
Internal medicine Physicians	2
Pharmacy	4
Nursing staff	2
TOTAL	11

These stakeholders were also identified in initial brainstorms with the project managers and were put forward in the different interviews as being the most salient stakeholders relating to the project. The stakeholders can be further grouped by their activities in the cytostatic process;

- Prescribers (physicians)
- Preparers (pharmacy)
- Administerers of medication (nursing staff)

And of course the stakeholders needed for the realization of the project and the maintenance after go-live;

- steering committee
- project team
- IT department.

The web survey that was sent out to both project team, steering committee and other closely involved stakeholders lead to very low response rates, even after several reminders. For this reason for this case, the results as can be derived from the web surveys can be considered to be of limited use.

Overall timeline of research events

As can be seen in the overall timeline of research events, it took around 6 months of data collection to prepare the findings as presented here.

Figure 69: *Research planning of Cyto.*

		31	32	33	34	38	39	40	41	42	43	44
		1 aug	8 aug	15 aug	22 aug	19 sep	26 sep	3 okt	10 okt	17 okt	24 okt	31 okt
A	**Project B2 - Cytostatica**											
1	**Phase 1: Context evaluation/preparation**	PHASE 1										
1.1	Initiation with project management											
1.2	Case description; trigger, planning, etc.											
1.3	Preliminary stakeholder environment											
1.4	Documentation evaluation											
2	**Phase 2: Iterative stakeholder identification/classification**					PHASE 2						
	Phase a					A						
2.1	Brainstorm about identification based on first view											
2.2	First phase interviews with top-5 identified											
2.3	First online servey											
2.4	Evaluate results											
	Phase b											
2.5	Second phase interviews with top-5 identified											
2.7	Evaluate results											
3	**Phase 3: Overall SAR and stakeholder type comparison**											
3.1	Comparing stakeholder differences / outcomes											
4	**Phase 4: General conclusions**											
4.1	Formulate findings and conclusions											
4.2	Model enhancements											
4.3	Final report											

		45	46	47	48	49	50	51	52	1	14	15	16	17	18	19	20	21	22	23	24
		7 nov	14 nov	21 nov	28 nov	5 dec	12 dec	19 dec	26 dec	2 jan	2 apr	9 apr	16 apr	23 apr	30 apr	7 mei	14 mei	21 mei	28 mei	4 jun	11 jun
A																					
1	**Phase 1**																				
1.1																					
1.2																					
1.3																					
1.4																					
2	**Phase 2**	PHASE 2																			
	Phase a	A																			
2.1																					
2.2																					
2.3																					
2.4																					
	Phase b										B										
2.5																					
2.7																					
3	**Phase 3**															PHASE 3					
3.1																					
4	**Phase 4**																	PHASE 4			
4.1																					
4.2																					
4.3																					

7.2 RESULTS CYTO (B1)

Stakeholder knowledge

This assessment reflects the knowledge and awareness of the project manager and project team as a whole of the stakeholder environment.

Maturity of stakeholder management in project

The maturity of stakeholder management as part of the project management activities are assessed by the Stakeholder Management Maturity Checklist and include measures relating to repeatability, documentation and the use of tooling to visualize and assess the stakeholder environment as well as the fit between stakeholder attributes and engagement strategies and – activities.

Description

In the conversations held with the project manager, it appeared that much attention was given towards the identification and assessment of stakeholders. The project manager constructed stakeholder maps on his tablet pc and marked resistant stakeholders in this map. During the case study, it also appeared in the various interviews held with both pharmacists as well as the head of the nursing department that they felt poorly informed about the project progress. Also, they were worried about the feasibility of the planning as the project developed.

The postponement of activities in the planning and the change in scope affected stakeholders substantially, demanding an alteration of specific stakeholder management activities. We will discuss this in detail below.

Checklist

Based on the checklist derived from our literature review, we rated the maturity of stakeholder management as part of project management.

Table 72: *Stakeholder management maturity of the cyto project.*

		Level (informal to formal/structural)				
Category	**Sub-category**	1	2	3	4	5
Idenfication	Familiarity				●	
Assessment & prioritization	Capacity awareness				●	
	Intentions awareness			●		
	Priority awareness			●		
	Interests awareness			●		
	Expectation awareness			●		
	Conflict awareness			●		
Engagement	Focused activities			●		
	Engagement strategy			●		
	Specific participation planning			●		
Monitoring stakeholder dynamics	Tooling			●		
	Evaluation of activities and effects		●			
	Incorporation of dynamics in engagement strategies		●			

As can be seen in the table, an average score of 3 (formal, but still fairly reactive) is achieved in relation to the identification, assessment, engagement and monitoring of stakeholders.

Even though formal tooling is used by the project manager to identify and map the stakeholder environment, the researcher did not find evidence of this information being used in the specific planning of engagement activities.

Preliminary conclusions

The planning being considered unrealistic by some of the key stakeholders (a.o. the involved pharmacists) did have a large effect on the atmosphere in the project.

One could argue that a more thorough mapping of expectations and intentions might have helped in the earlier notification of the planning concerns by the relevant stakeholders. The notion of some stakeholders that they were not properly informed might also been noticed earlier, as will be discussed in the SAR evaluations.

Stakeholder dynamics

For the Cyto project we constructed two SAR's, even though we would have liked to include an after go live measurement as well. Important to note is that the role of the internal medicine physicians as stakeholder group changed in between the two measurement moments, since another specialty was chosen for the first roll-out of the functionality.

Description

Before we construct different stakeholder radars for the situation, we analyze specific intentions and expectations of the primary stakeholders. When changes were observed and noted during the project, these are noted and shown in the table below.

Table 73: *Primary stakeholder intentions and expectations cyto project.*

Primary stakeholders	Initial		Just before Go Live	
	Intentions	Expectations	Intentions	Expectations
Project team members	Realizing a working functionality based on client demand	A working functionality for the first go live phase	Making sure the Go live date can be set and that all (technical) issues can be resolved	Fast resolving of the remaining issues.
IT department	Contribute to the project when asked for, specifically aiming at installation and interfacing.	Clear description of needed assistance from the IT department	Realizing necessary interfacing between the cytostatic drugs application and the hospital information system	Feedback on interfacing and installation through user testing
Steering committee	Making sure the new platform is realized in time with enough attention to new functionality	A working cytostatic functionality	Ensuring the system is safe and stable and suitable	Supplier and IT department do everything they can to ensure proper functioning of the software.
Internal medicine physicians	Making sure the prescription of cytostatic drugs and the check of the protocols is user friendly and efficient	The functionality makes it easier and safer to prescribe and monitor the administration of cytostatic drugs.	(unknown)	(unknown)
Pharmacy	Providing input to make sure the preparation of cytostatic drugs is safer and more accurate with the new system.	Less mistakes and more efficient preparation of cytostatic drugs.	Force the supplier to fix issues, forcing clear answers to achieve enough trust in the supplier/ vendor.	A clear plan of the supplier to fix found issues.
Nursing staff	Providing input for the administration of drugs in the new system.	Easier and more efficient registration of administered cytostatic drugs	Getting more involved in the project to ensure the match between the different process activities.	The administration registration process will remain on paper in the first phase of roll out.

SAR

Initiation

One can conclude that the project around initiation is primarily pharmacy driven; physicians in this stage of the project are little involved in the project. The pharmacy sees itself as owner of the project and possesses a strong responsibility for drug safety. At this point in time the nursing staff is involved in the preparation and entering of the protocol content. The table is followed by the outcome measure scores for the cyto project around the initiation phase.

Table 74: *Scores of SAR attributes for Cyto around initiation.*

	Project team	IT dept.	Steering Committee	Internal Medicine physicians	Pharmacy	Nursing staff
Role	4	3	5	2	5	3
Power	2	2	4	3	5	2
Importance to	4	2	4	3	5	3
Vested Stake	5	2	5	4	5	4
Proximity	5	2	4	2	5	4
Participation	1	4	2	4	2	3
Effort expectancy	1	3	3	3	3	3
Performance expectancy	1	3	2	2	2	3

The above attribute scores lead to the following visualization and outcome measures;

Figure 70: *SAR at initiation Cyto.*

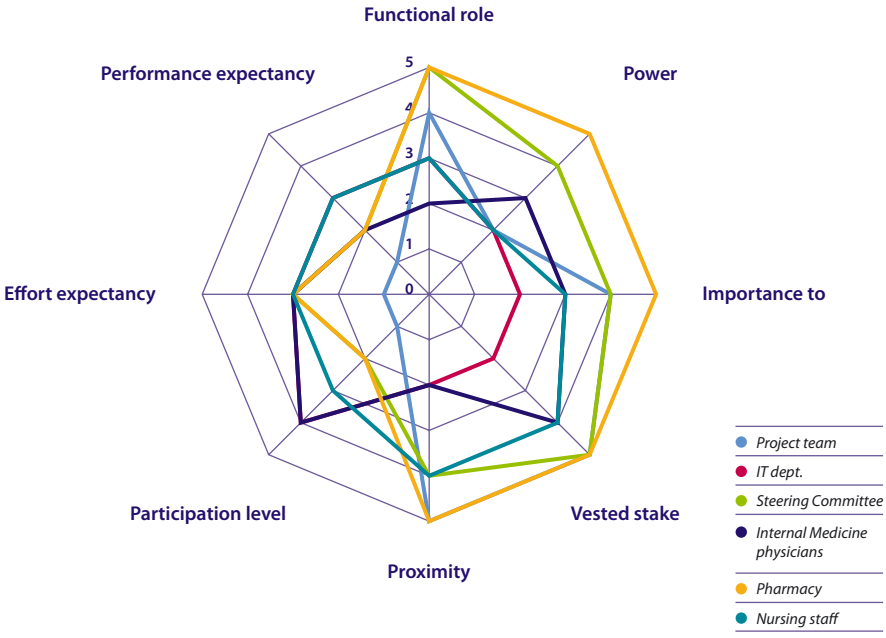


Table 75: *Outcome measures for Cyto around initiation.*

Outcome measure	Score					
	Project team	IT dept.	Steering Committee	Internal Medicine physicians	Pharmacy	Nursing staff
Power-function mediation	6	5	9	5	10	5
Relative	22% (3)	17% (4)	39% (2)	17% (4)	44% (1)	17% (4)
Potential influence	16	8	17	12	20	13
Relative	75% (3)	25% (6)	81% (2)	50% (5)	100% (1)	56% (4)
Eligibility for participation	6	6	6	6	7	7
Relative	50% (3)	50% (3)	50% (3)	50% (3)	63% (1)	63% (1)
Potential resistance	7	13	12	11	12	12
Relative	19% (4)	56% (1)	50%(2)	44%(3)	50%(2)	50% (2)
Engagement priority	23	21	29	23	32	25
Relative	36% (4)	31% (5)	50% (2)	36% (4)	57% (1)	40% (3)

At initiation, the hospital pharmacists played a crucial role in shaping the project, this is reflected in the capacity domain of the SAR. Only in later stages of the project, other stakeholders, e.g. the end users, were involved. The head of the pharmacy department was also a member of the steering committee, together with the head of the oncology department. Around initiation their influence on the scope of the project was fairly large. The internal medicine physicians were partly involved and skeptical at first.

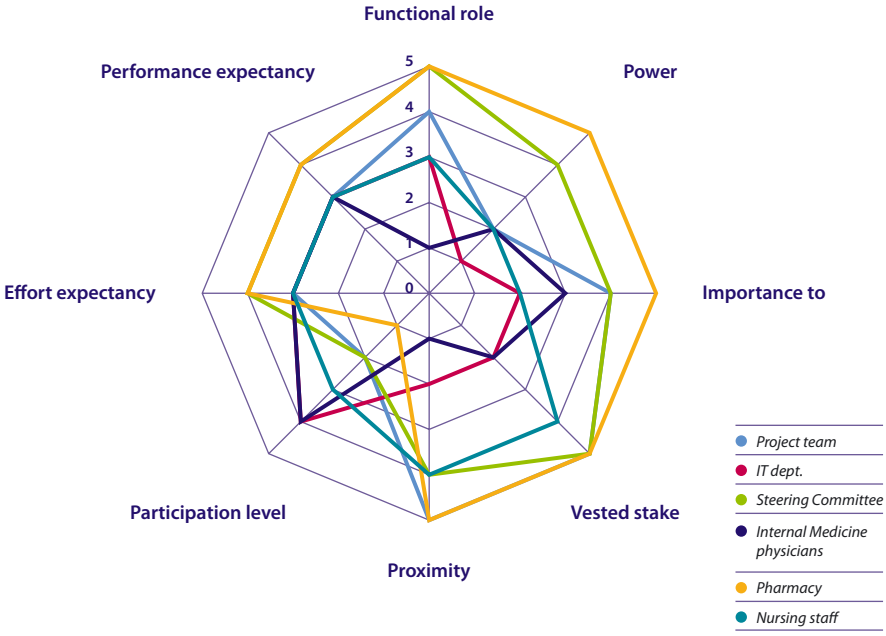
Design

In the following table, the previous assessment is repeated for the period around the design and content provision of the functionality. This was around the time issues with the software were brought forward and discussions with the supplier of the software were held intensively. This lead to considerable delays in the planning of the project and affected the expectancies of especially the pharmacy substantially.

Table 76: *Scores of SAR attributes for Cyto around design.*

	Project team	IT dept.	Steering Committee	Internal Medicine physicians	Pharmacy	Nursing staff
Role	4	3	5	1	5	3
Power	2	1	4	2	5	2
Importance to	4	2	4	3	5	2
Vested Stake	5	2	5	2	5	4
Proximity	5	2	4	1	5	4
Participation	2	4	2	4	1	3
Effort expectancy	3	3	4	3	4	3
Performance expectancy	3	3	4	3	4	3

Figure 71: *SAR around design phase Cyto.*



The above scores lead to the following outcome measures:

Table 77: *Scores of SAR attributes for Cyto around design.*

Outcome measure	Score					
	Project team	IT dept.	Steering Committee	Internal Medicine physicians	Pharmacy	Nursing staff
Power-function mediation	6	4	9	3	10	5
Relative	22% (3)	11% (5)	39% (2)	6% (6)	44% (1)	17% (4)
Potential influence	16	7	17	8	20	12
Relative	75% (3)	19% (6)	81% (2)	25% (5)	100% (1)	50% (4)
Eligibility for participation	7	6	6	5	6	7
Relative	63% (1)	50% (2)	50% (2)	38% (3)	50% (2)	63% (1)
Potential resistance	12	13	15	11	14	12
Relative	50%(4)	56% (3)	69% (1)	44% (5)	63% (2)	50% (4)
Engagement priority	28	20	32	19	34	24
Relative	48%(3)	29%(5)	57%(2)	26% (6)	62%(1)	38% (4)

What can be noted in the visualization of the design phase is the decreased stake among the internal medicine physicians.

The role of the steering committee remains, but resistance increased due to encountered problems in this stage with the functionality used.

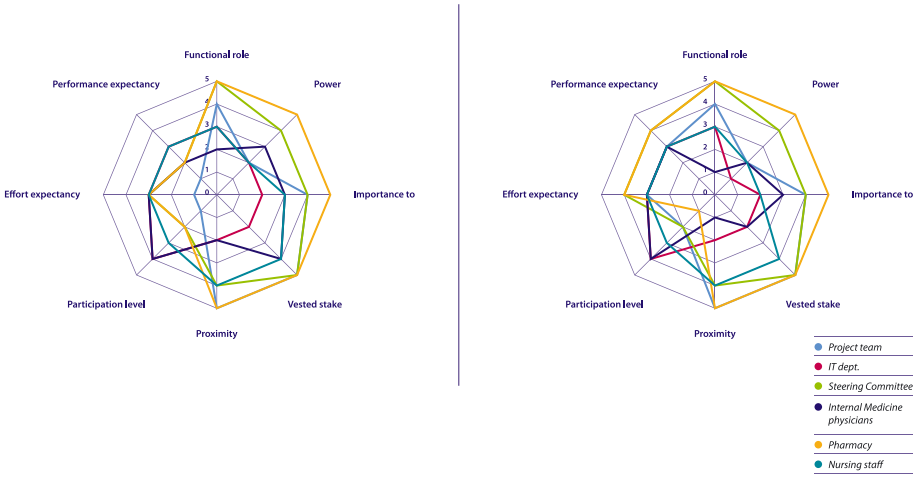
Preliminary conclusions

The moment in time the latter assessment was performed, was around the period of time problems arose with respect to the match of the functionality with the hospital medication processes. Some actions were undertaken after the planning appeared to be delayed. Stakeholders were brought together more intensively and simulation sessions were proposed to ensure the connection of the different activities and domains in the total process. However, no date was set for go live because of the amount of technical problems still encountered during the preparation and testing of the system.

Because of this the planning was delayed considerably, affecting expectancies of other stakeholders as well. This can be seen in the SAR's by the increase in the total expectancy area, as well as the outcome measures on potential resistance. The capacity of the pharmacy, or the potential influence, of the pharmacy remained large on the project deliverables. Logically, this has to do with their responsibility for the preparation and distribution processes and their involvement in registering and providing input in the system.

Noteworthy as well is the decrease in influence and proximity of the internal medicine specialty, what can also be attributed to the fact that due to planning issues it was decided to postpone the go live at internal medicine and to start with the department of lung diseases. As a result, the engagement priority decreased.

Figure 72: *SAR comparison during Cyto.*



Stakeholder dynamics

Projectteam

The project team was mainly concerned with the coordination of activities between the different professional domains; the pharmacists, physicians, nursing staff and the IT department.

The dynamics of the SAR of the project between initiation and design are restricted to changes in the expectancy and participation level attributes. Due to the issues found, the effort and performance expectancies declined; the product did not appear as user friendly and proved to be inflexible in supporting the hospital related protocols.

This, among others, had an effect on the participation stance of the project team from a creation to a more challenging mode; the project team itself started to challenge the provider. This is reflected in the increase of the potential resistance of this stakeholder.

Figure 73: *SAR of project team during Cyto.*

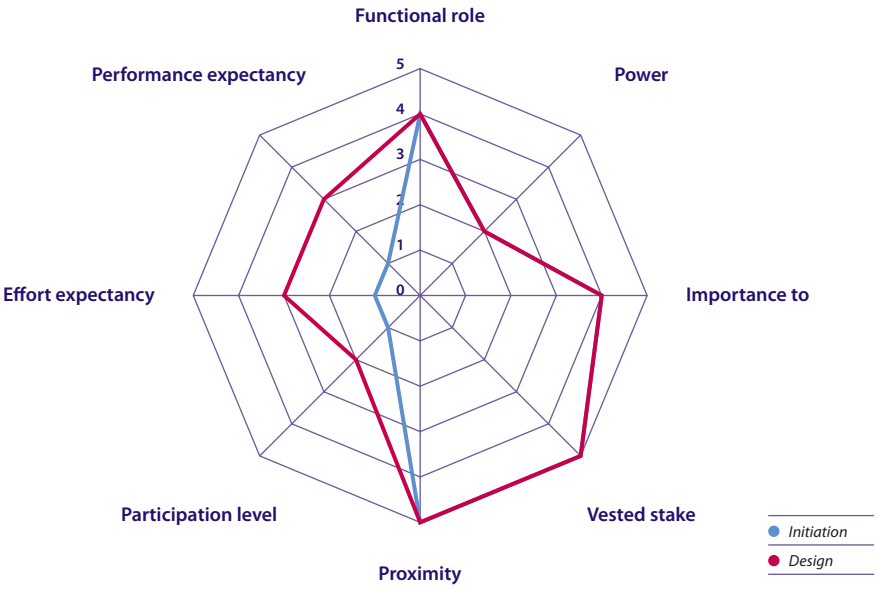


Table 78: *Outcome measures for project team Cyto.*

Outcome measure	Initiation	Design	Delta
Power-function mediation			
Relative	22%	22%	0%
Potential influence			
Relative	75%	75%	0%
Eligibility for participation			
Relative	50%	50%	0%
Potential resistance			
Relative	19%	50%	+31%
Engagement priority			
Relative	36%	48%	+12%

IT department

The IT department did have a role in the project as it was responsible for the initial installation of the software and, later on in the project, the realization of the connection between the cytostatic module and the core hospital information system (HIS).

Their influence on the project decreased somewhat as the decisions for installation and connectivity were made and executed.

Their participation in the project was mainly adhoc and issue/question driven and did not include fulltime involvement in the project team.

Figure 74: *SAR of IT department during Cyto.*

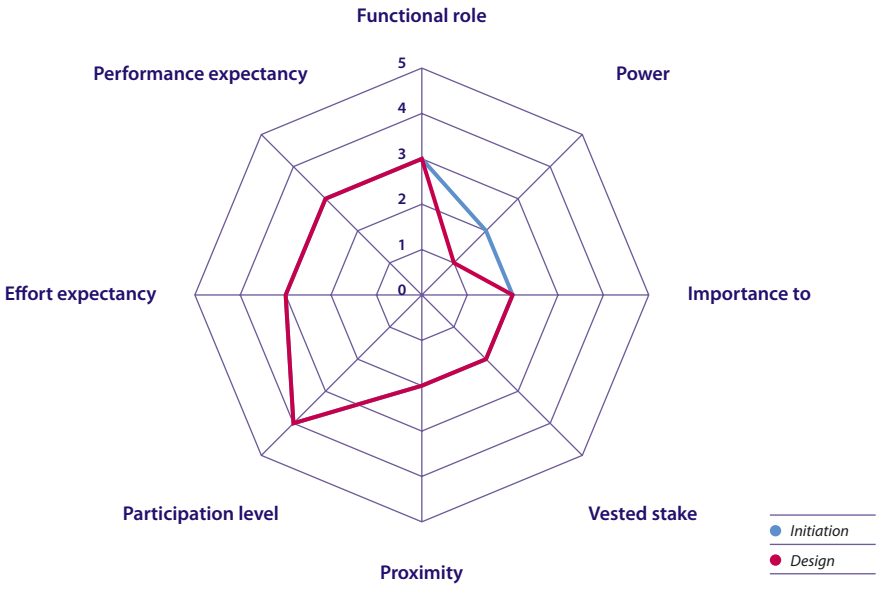


Table 79: *Outcome measures for the IT department Cyto.*

Outcome measure	Initiation	Design	Delta
Power-function mediation			
Relative	17%	11%	-6%
Potential influence			
Relative	25%	19%	-6%
Eligibility for participation			
Relative	50%	50%	0%
Potential resistance			
Relative	56%	56%	0%
Engagement priority			
Relative	31%	29%	-2%

Steering committee

The earlier mentioned assessment of functionality has the same effect on the steering committee members as on the pharmacists and project team. Congruently, the incident lead to a decrease in expectancies. The decisional role of the steering committee is reflected in the functional role and the influence attributes in the SAR below.

Figure 75: *SAR of steering committee during Cyto.*

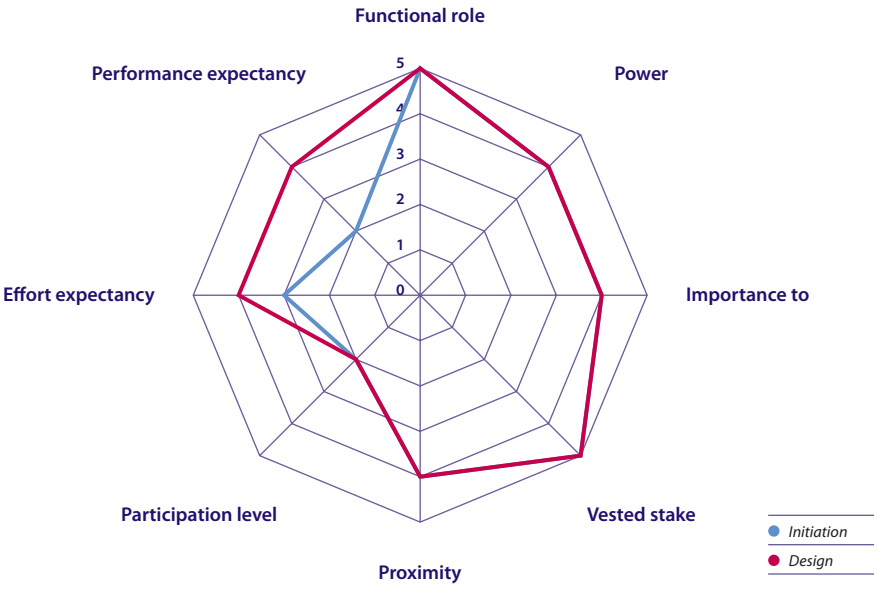


Table 80: *Outcome measures for the steering committee during Cyto.*

Outcome measure	Initiation	Design	Delta
Power-function mediation			
Relative	39%	39%	0%
Potential influence			
Relative	81%	81%	0%
Eligibility for participation			
Relative	50%	50%	0%
Potential resistance			
Relative	50%	69%	+19%
Engagement priority			
Relative	50%	57%	+7%

Internal medicine physicians

The role of the internal medicine physicians was anticipated to be more active and involved after preliminary content discussions were held with the pharmacy. However, as explained before, they were only involved at the initiation of the project and were told that the roll-out for their specialty would be postponed, due to the difficulties encountered. This event had a substantial impact on the attributes of this stakeholder group. Although they were still important to the project, the proximity decreased in relation to the project. Their functional role in the project from a more consultative to a more passive informative role. Their stake decreased as became apparent that they had more time to think over the protocols and it became apparent that they were not the first specialty that had to work with the system.

Altogether, this decreased the engagement priority of internal medicine.

Figure 76: *SAR of internal medicine during Cyto.*

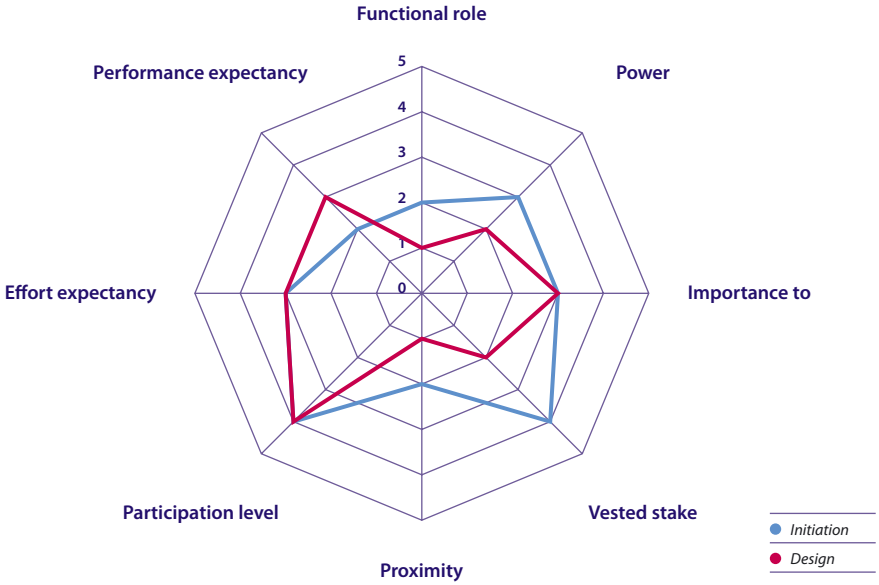


Table 81: *Outcome measures for the internal medicine during Cyto.*

Outcome measure	Initiation	Design	Delta
Power-function mediation			
Relative	17%	6%	-11%
Potential influence			
Relative	50%	25%	-25%
Eligibility for participation			
Relative	50%	38%	-12%
Potential resistance			
Relative	44%	44%	0%
Engagement priority			
Relative	36%	26%	-10%

Pharmacy

The main responsibility for the project originated from the pharmacy. The head of the pharmacy department was member of the steering committee. At the same time, as part of the team that entered, tested and validated the protocols, pharmacists and pharmacy assistants were involved.

Figure 77: *SAR of the pharmacy during Cyto.*

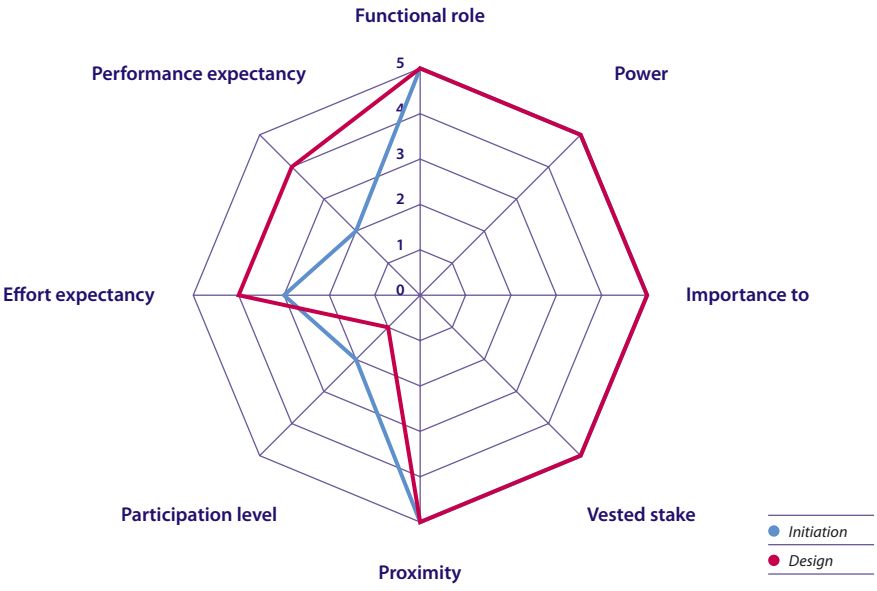


Table 82: *Outcome measures for the pharmacy during Cyto.*

Outcome measure	Initiation	Design	Delta
Power-function mediation			
Relative	44%	44%	0%
Potential influence			
Relative	100%	100%	0%
Eligibility for participation			
Relative	63%	50%	-13%
Potential resistance			
Relative	50%	63%	+13%
Engagement priority			
Relative	57%	62%	+5%

Nursing staff

The nursing staff was involved on two levels; the head of the nursing department relating to oncology was involved in the design of the administering process of the cytostatic drugs and oncology nurses were involved in the entering of the protocols in the system.

Figure 78: *SAR of the nursing staff during Cyto.*

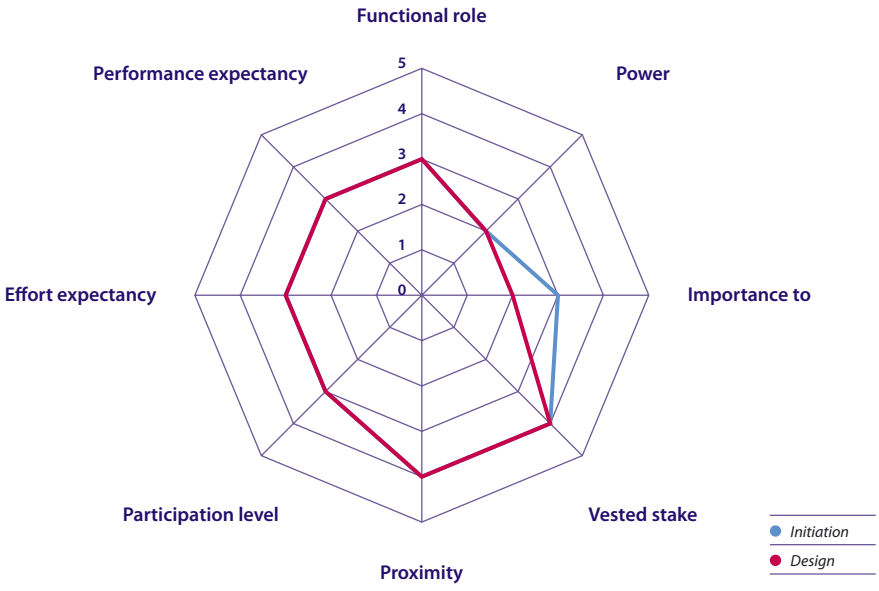


Table 83: *Outcome measures for the nursing staff during Cyto.*

Outcome measure	Initiation	Design	Delta
Power-function mediation			
Relative	17%	17%	0%
Potential influence			
Relative	56%	50%	-6%
Eligibility for participation			
Relative	63%	63%	0%
Potential resistance			
Relative	50%	50%	0%
Engagement priority			
Relative	40%	38%	-2%

Engagement activities

In this paragraph we focus on the events and engagement strategies employed during the cyto project, in the stakeholder environment. By using the engagement strategy matrix as a guideline, we can evaluate the appropriateness of executed activities.

Events

Major events include the technical difficulties with the functionality and the mismatch with pharmacy requirements. Most important event can be noted as major changes in scope. The decision to shift the roll out from internal medicine to the lung department can be considered an event that resulted in changes in the SAR dimensions.

Around design, some stakeholders indicated that it was unclear what was expected of them and how the project result would affect their daily activities.

Important to note is there was no formal action from the project team towards internal medicine indicating they were no longer candidate for the first roll-out. Although this message became clear for them months after the decision was made, no negative consequences in the stakeholder environment were noted by the researcher.

Table 84: *Events and results during Cyto project.*

Stage	Event/situation	(re)action from project team	Result
Design	Indication by stakeholders they were worried about their involvement and consequences of the project after go live	After indication by these stakeholders, a sessions was planned to discuss the process of communication towards these groups from the project team and the effects of the project for the specific stakeholder groups were discussed.	Sessions took place with a broader range of stakeholders to discuss expectations, worries and project outcomes.
	Change of scope	Closer involvement of lung disease department, by involving them in the meetings planned.	Closer involvement of lung disease department
Testing/ education	Testing resulted in the notion that not all functional and technical issues were solved.	Close contact was sought between the vendor headquarters and the pharmacy to solve found issues. Internal issues were intensively discussed with the internal IT department.	Eventually most pressing issues were solved.

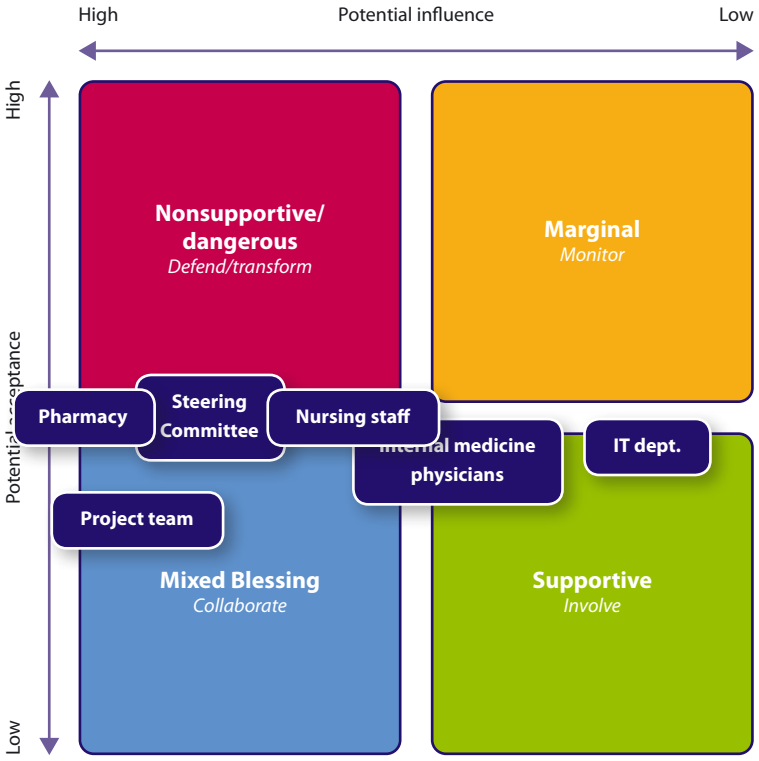
Engagement strategies

In the matrices below, the engagement strategies are shown connecting to the discussed stakeholder acceptance radars.

Engagement strategy matrix at initiation

As can be seen in the engagement strategy matrix below, around initiation several groups needed close attention. In particular, the pharmacy, the steering committee and the nursing staff. The latter mainly because of their large role in the eventual use of the system (especially administering medication).

Figure 79: *Engagement strategy matrix at initiation project Cyto.*



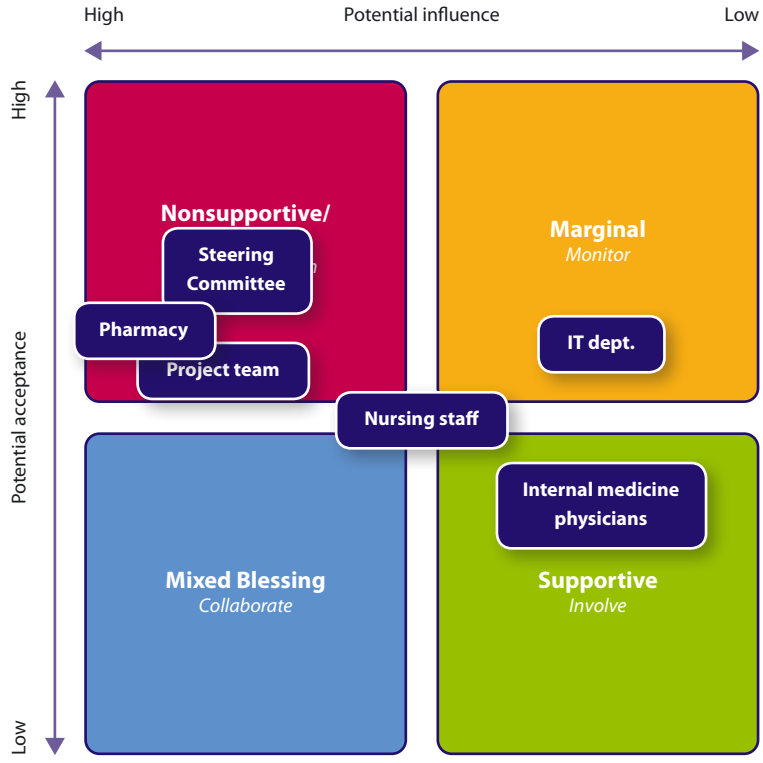
Engagement strategy matrix during design

As can be seen there were some developments in the influence and resistance domain around the design stage of the project.

Resistance increased at the pharmacy and steering committee, due to delays in the planning, partly as a result of missing functionality for the preparation activities in the pharmacy and due to the large amount of time necessary for protocol entering in the system.

The engagement strategy does indicate the involvement of internal medicine physicians at this stage. One may note the absence of the lung disease department in this stage of the project. They did have a role, unfortunately in this stage of the project we did not have the opportunity to thoroughly investigate and interview this stakeholder group. Their involvement and collaboration in the project, however, was considered sufficient and no unanticipated events took place in this respect. They were closely involved in the design of the prescription activities.

Figure 80: *Engagement strategy matrix during design project Cyto.*



Preliminary conclusions

As appears from the analysis above, along the course of the project the steering committee and pharmacy possessed large engagement priority. This was enforced by the project manager by planning many meetings with both stakeholder groups. Nevertheless in the conversations held, key stakeholders indicated a lack of trust in the planning and end result of the project. According to the people interviewed this mainly had to do with a lack of communication about priorities, their role and responsibilities in the project and the uncertainty about the project planning.

Stakeholder satisfaction

One must note that we were not able to do a post-implementation measurement, due to time restrictions. This makes it difficult to draw any conclusions about stakeholder satisfaction with respect to the project outcome / results.

We do note however that satisfaction with the project process was severely affected around the design stage. As mentioned earlier this dissatisfaction related to a) the technical difficulties encountered and b) the lack of confidence in the project planning and communication.

Furthermore, some stakeholders noted the lack of communication towards the internal medicine physicians and their expectancies, since they were put back in the roll-out planning.

Preliminary conclusions

Key question relating to this case is whether the period of dissatisfaction could have been influenced by more focused stakeholder management activities by the project manager.

Some confusion about involvement and responsibilities on the side of the nursing staff could have been prevented by structural engagement of the head of the nursing department during the project. After the dissatisfaction was exerted, the project manager did take action to closely involve this stakeholder. In the light of prospective stakeholder management, this maybe too late.

The fairly late communication towards the internal medicine physicians could have been prevented, but did not lead to any disturbances from their direction in this specific case, although other stakeholders interviewed did pose questions about this subject.

7.3 DESCRIPTION INTRA (B2)

Project description and organisation

Like many other organisations, the hospital provides an intranet platform, that contained company information, forms (e.g. HR forms) and informational content of the different hospital specialties. Furthermore, the intranet serves as a gateway to quality related information and even pharmacy protocols, etc.

In the years following the initial implementation of the intranet platform, the maintenance of the existing intranet platform of the hospital proved very time consuming for the around 100 (decentral) web editors of the hospital. Furthermore, the functionality of the platform appeared to be limited; the lack of a proper search engine as part of the platform complicated the retrieval of information. The difficulty in retrieving information was further strengthened by the lack of structure of the intranet; all web editors could develop their own pages and upload any kind of information they wished.

Around 2010 the first plans to upgrade the platform arose from the central communications department. During the development of this project, however, the current platform supplier stopped its support and vendor activities for this platform in The Netherlands. This event forced the hospital to reconsider the platform as a whole. A new project was initiated, again by the communication department of the hospital in 2011.

Project organisation

The project organisation consisted of a project team, a steering committee, a user working Group and a mirror-group. The project team consisted of a project manager, a project support employee, a functional application advisor and a policy advisor of the communication department.

The course of the project and project team composition can be roughly divided in two stages; preparing the requirements and realization of the product using agile (or participatory) design methodologies.

In the second stage of the project the project organisation changed; the user group and mirror group were merged into one mirror group. Furthermore the composition of both the project team as the steering committee changed:

- The project manager changed (due to maternity leave)
- A functional advisor and test consultant left the project
- The Operating Room (OR) manager was included in the Steering committee
- At the same time a new manager of the IT department was employed and joined the steering committee.

In conclusion, the project organisation changed significantly in structure, but still a large number of previous participants was involved.

The (earlier) user group consisted mainly of the present and future contributors to the intranet content, the so-called decentral webeditors. These 12 people are representing the majority of all editing departments of the hospital.

The mirror-group consisted mostly of the users of the intranet. These people aid in defining functional and practical requirements of the platform from the user point of view.

The steering committee consisted of three people; the head of the communications department, the OR manager and the manager of ICT. More details about the group composition will be explained in the following paragraphs.

Innovation driver and characteristics

The reason the project for the intranet platform was initiated was because of total cost of ownership of the current intranet platform and the need for additional functionality, like search options as signaled by hospital employees (current users).

Furthermore, parts of the current intranet platform are not- or under-used, like the absence of a link between the intranet and the document management system available in the hospital.

Project goals

One of the main deliverables of the project is a working new intranet platform with updated content. Initially, the intranet platform entailed a limited scope to provide a basis for further enhancements in the future.

Other sub goals included the organisation of the editorial activities, like training and educating the (de) central webeditors and migrating the static content from the old platform to the new one. An initial content structure and hierarchy was also constructed as a template for the decentral webeditors.

Implementation strategy and planning

As noted earlier, the project can be divided in two stages:

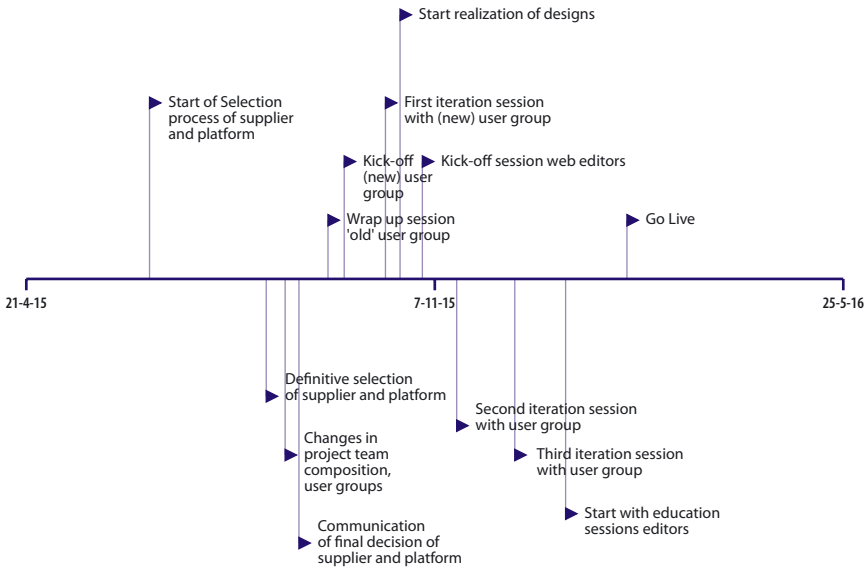
1. preparation and formulation of requirements and
2. realization of the platform (including design, testing and training).

One key feature of the implementation strategy is *participatory design*. This implicates an urgency for the involvement of a representative mirror group from the stakeholder environment. At the same time, preliminary results are discussed frequently with the mirror group, so people can monitor progress.

Planning

In 2010 the communication department formulated a new intranet project proposal, after a fairly long period of discussion about functionality and solutions. Furthermore, a previously selected supplier was not able to complete the requested solution, delaying the process and forcing the hospital to select a new supplier. In 2011 requirements were finished together with the user- and mirror group. In June 2011 the selection process of possible vendors/suppliers started, consisting of a list of requirements, demonstrations of functionality and conversations with the different platform suppliers. In August 2011 a provider was selected based on the results of the entire selection process. The month August was also used to restructure the project organisation in collaboration with the supplier, as needed for the design and realization stage. The period until November/ December was used to further design the intranet together with the mirror group, to test, to train key users and to migrate existing content.

Figure 81: *Overview of events of Intranet project.*



Research initiation

Data collection

As described in the research design chapter, data collection was done by reviewing documents, interviews, web surveys and active sharing of findings in workshop sessions and in bilateral sessions with the project manager.

We started off by reviewing documents of (historical) previous attempts to realize the intranet platform. This included;

- meeting minutes,
- current platform analyses,
- earlier requirements, etc.

Furthermore, documents were reviewed relating to the new project;

- the new project plan (Project Initiation Document)
- (conceptual) planning documents
- Selection documents (list of requirements, service level descriptions, etc.)

Along the course of the project, a fairly large number of in-depth interviews was held. In the period before September, this only included steering committee members and project team members, since the new mirror group was not officially initiated and therefore members were not known yet. After these interviews, the stakeholder population for further investigation was defined. More detailed results about the composition of the environment are described in the next paragraph. In the following period, from September till December 2011, among others, mirror group members were interviewed.

In addition, several workshops and plenary sessions were attended by the researcher, where adhoc questions and conversations took place relating to the subject of research between the different stakeholders and the researcher. In January 2012, the previously interviewed respondents were approached by telephone for follow up questions relating to previous answers.

The Project team advised against interviewing other end-users in the early stages of the project because of possible influences on expectations. Data was gathered indirectly, e.g. by the project team members who did check intermediary results with random users in the hospital. Reactions on information bulletin or other communication messages were also taken into account to assess this stakeholder group.

Table 85: *Respondents Intranet project.*

Group	Number of interviews (during project/before go live)	Number of phone surveys	Number of interviews (after go live)
Steering committee	4 (2 interviews with 2 persons)	2	1
Mirror group	7	6	2
Project team	8 (2 interviews with 4 persons)	4	3
Users not directly involved in the project	0	0	6
Editors not directly involved in the project	0	0	2
TOTAL	**21**	**14**	**14**

In addition to the first interview session, respondents were asked to fill out a web survey following the initial interview. This made it possible to reflect on the interview result and verify them. Results appeared to be comparable. One respondent opted out for the interview (n=1), others did not react even after two reminders were sent.

Table 86: *Web survey responses Intranet.*

Group	Number of completed surveys
Steering committee	0
Mirror group	3
Project team	4
Users not directly involved in the project	0
Editors not directly involved in the project	0
TOTAL	**7**

Sessions with project team and steering committee

In the preparation of several plenary sessions, a total of 2 workshops were held to discuss findings; one with the project team and one with the steering committee.

Beside these sessions, weekly bilateral meetings were held with the project manager to (1) discuss the course of events in the current and previous weeks from the project manager's point of view and (2) discuss findings, remarks and observations of the researcher and (3) the formulation of possible interventions or alterations in activities towards stakeholders.

A closing presentation for the project team, steering committee and mirror group members took place to share evaluation results.

Figure 82: *Research planning Intranet.*

		31	32	33	34	35	36	37	38	39	40	41	42	43	44
		1 aug	8 aug	15 aug	22 aug	29 aug	5 sep	12 sep	19 sep	26 sep	3 okt	10 okt	17 okt	24 okt	31 okt
B	**Project Intranet**														
1	**Phase 1: Context evaluation/preparation**	PHASE 1													
1.1	Initiation with project management														
1.2	Case description; trigger, planning, etc.														
1.3	Preliminary stakeholder environment description														
1.4	Documentation evaluation														
2	**Phase 2: Iterative stakeholder identification/classification**			MS1		MS2	PHASE 2								
	Phase a					A (NA BEKENDMAKING BESLISSING)									
2.1	Brainstorm about identification based on first view														
2.2	First phase interviews with top-5 identified														
2.3	First online servey														
2.4	Evaluate results														
2.5	Loop back results (1)														
	Phase b												MS3		
2.6	Second phase interviews with top-5 identified														
2.7	Second online servey														
2.8	Evaluate results (2)														
2.9	Loop back results (2)														
	Phase C														
2.6	Third phase interviews with top-5 identified														
2.7	Third online servey														
2.8	Evaluate results (3)														
2.9	Loop back results (3)														
3	**Phase 3: Overall SAR and stakeholder type comparison**														
3.1	Comparing stakeholder differences / outcomes														
4	**Phase 4: General conclusions**														
4.1	Formulate findings and conclusions														
4.2	Model enhancements														
4.3	Final report														

		45	46	47	48	49	50	51	52	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		7 nov	14 nov	21 nov	28 nov	5 dec	12 dec	19 dec	26 dec	2 jan	9 jan	16 jan	23 jan	30 jan	6 feb	13 feb	20 feb	27 feb	5 mrt	12 mrt	19 mrt	26 mrt	2 apr	9 apr
B																								
1	**Phase 1**																							
1.1																								
1.2																								
1.3																								
1.4																								
2	**Phase 2**	PHASE 2																						
	Phase a																							
2.1																								
2.2																								
2.3																								
2.4																								
2.5																								
	Phase b	B (NA ITERATIES/TESTEN)																						
2.6																								
2.7																								
2.8																								
2.9																								
	Phase C						MS4							C (NA GO LIVE)										
2.6																								
2.7																								
2.8																								
2.9																								
3	**Phase 3**																		PHASE 3					
3.1																								
4	**Phase 4**																				PHASE 4			
4.1																								
4.2																								
4.3																								

7.4 RESULTS INTRA (B2)

Stakeholder knowledge

At initiation of the project in scope here, many stakeholders were already known by the project team members. This was mainly due to the fact that earlier attempts existed to realize the new Intranet platform; the same stakeholders were asked to get involved in the project. In previous project plans, detailed communication analyses had been described, focusing specific activities to specific stakeholders.

The composition of the new Mirror group was carefully selected based on their usage of the end product (heaviness of use) and their role (as web editor of a department). To reflect not only supporting departments within the hospital (like the HR department e.g.), a pharmacist was asked to take place in the working group as well.

The researcher proposed an initial stakeholder environment. Together with the project team and the Steering committee, the lists were discussed and agreed upon.

In following interviews (and the web surveys) different stakeholders were mentioned. Based on frequency and estimated importance by the respondents, we identified the top 5 stakeholder groups as primary stakeholders of the project.

Table 87: *Primary and secondary stakeholders of the Intra project.*

Primary stakeholders	Primary stakeholders
Steering committee	IT department
Mirror group	Board of Directors
Project team	Operational Managers of hospital departments
Users not directly involved in the project	Communication department
Editors not directly involved in the project	

Maturity of stakeholder management in project

As can be noted in the previous paragraphs, at initiation of the project several stakeholder management activities were present. Along the course of the project this was confirmed by the respondents; almost all respondents indicated in the interviews that they appreciated the way the project was organized. In the weekly meetings of the project team, developments in the project stakeholder environment were discussed. In the weekly meetings between the researcher and the project manager, discussions were held relating to events in the environment that would need action based on the engagement strategy position. Most advice given was translated in actions towards the different stakeholders.

In conclusion, much effort was undertaken by the project team to gather information about the stakeholder environment, to evaluate unanticipated events and formulate appropriate engagement activities.

Checklist

We scored the stakeholder management maturity checklist based on both the desk research, as well as the interviews.

Table 88: *Stakeholder management maturity of the Intra project.*

		Level (informal to formal/structural)				
Category	**Sub-category**	1	2	3	4	5
Idenfication	Familiarity				●	
Assessment & prioritization	Capacity awareness			●		
	Intentions awareness			●		
	Priority awareness		●			
	Interests awareness			●		
	Expectation awareness			●		
	Conflict awareness		●			
Engagement	Focused activities				●	
	Engagement strategy				●	
	Specific participation planning				●	
Monitoring stakeholder dynamics	Tooling		●			
	Evaluation of activities and effects			●		
	Incorporation of dynamics in engagement strategies		●			

As can be concluded, the maturity level of stakeholder management in this project can be considered medium to high (level 3-4). In specific, in the domain of monitoring stakeholder dynamics, no structural activities were part of the project management, indicating an area for improvement.

Stakeholder dynamics

In this paragraph we explore the stakeholder dynamics that took place during the course of the Intranet project. We use the SAR tooling we discussed and constructed in the previous section of this dissertation. As can be seen in the research planning before, we developed the SAR for three moments in time; (1) around initiation of the project and (2) just before Go Live (and after testing and education had taken place) (3) approximately a month after Go Live.

Description

Before we construct different stakeholder radars for the situation, we analyze specific intentions and expectations of the primary stakeholders. When changes were observed and noted during the project, these are noted and shown in the table below.

Table 89: *Primary stakeholder intentions and expectations project Intranet.*

Primary	Initial		Just before Go Live		After Go Live	
stakeholders	Intentions	Expectations	Intentions	Expectations	Intentions	Expectations
Steering committee	Making sure the new platform is realized in time with enough attention to new functionality	A robust-future proof intranet	Making sure the Go live date will be achieved	Elimination of any patient safety issues Reinstating functionality that has been halted.	Finishing the project and the steering committee.	Able to discharge the project manager and - team
Mirror group	Contribute to the design and functionality of the new intranet platform	By contributing to the project, it is expected to have a more user friendly platform both for the web editor as well as the regular user	Making sure that own demands can be fulfilled with the new platform	It is expected that the platform offers the same performance and takes similar effort in use as the old platform	Start working with the new platform on a daily basis	Limited issues to be found.
Project team	Realizing a working functionality based on client demand	Satisfaction of end users	Solving any problems and supporting suggestions	Limited issues to be found, content migrated in time.	Finishing up the project, reduce open issues after go live.	Good satisfaction/ acceptance of the new intranet platform.
Users not directly involved in the project	(unknown)	(unknown)	Getting to know the new platform, experiencing the new platform	Better experience with the new platform: addition of functionality, like a search function	Getting used to the new intranet	Equal or better functionality than the previous platform.
Editors not directly involved in the project	(unknown)	(unknown)	Finding out what to do when the platform is live. What effort is needed to edit web content.	Better possibilities to edit content in the new platform.	Getting used to the new intranet	Equal or better functionality than the previous platform; easier (daily) updates.

SAR

At initiation

As part of the evaluation at initiation of the project, we received a set of survey results. In the section below, these results are discussed.

Websurvey results

In the following table, the web survey results are displayed, relating to a part of the SAR constructs. The expectancies are the aggregated result of earlier mentioned questions relating to each of the constructs.

Table 90: *Extract of responses on web survey at initiation of Intranet project (A).*

WEBSURVEY A: Governing body (n=4)					
Stakeholder group	**Respondent**	**Functional role**	**Participation level**	**Performance expectancy**	**Effort expectancy**
Project team	Project manager hospital (first)	Decisional	Create (1)	1	2
	Project manager hospital (second)	Decisional	Create (1)	2	1
	Project team member 1	Consultative	Contribute (3)	3	2
	Project team member 2	Decisional	Create (1)	2	2

Table 91: *Extract of responses on web survey at initiation of Intranet Project (B).*

WEBSURVEY A: Governing body (n=4)					
Stakeholder group	**Respondent**	**Functional role**	**Participation level**	**Performance expectancy**	**Effort expectancy**
Mirror group	Editor 1	Consultative	Contribute (3)	2	1
	Editor 2	Informative	Contribute (3)	1	2
	Editor 3	Consultative	Review (2)	2	1

We used these results in the discussion and to validate results given in the interviews.

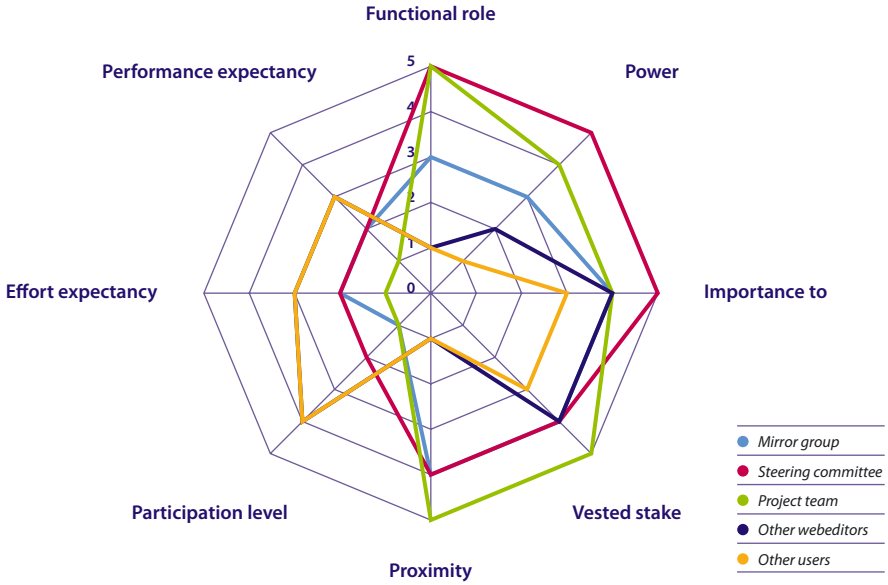
Apparently, before go live, the editors had good performance and effort expectancies of the new platform. In the following table the resulting scores are represented as based on the interviews, surveys and desk research. The first table is followed by the outcome measure scores as described earlier.

Table 92: *Scores of SAR attributes for project Intranet (around initiation).*

	Mirror group	Steering committee	Project team	Other webeditors	Other users
Role	3	5	5	1	1
Power	3	5	4	2	1
Importance to	4	5	4	4	3
Vested Stake	4	4	5	4	3
Proximity	4	4	5	1	1
Participation	1	2	1	4	4
Effort expectancy	2	2	1	3	3
Performance expectancy	2	2	1	3	3

The above attribute scores lead to the following visualization;

Figure 83: *SAR at initiation project Intranet.*



The above scores lead to the following outcome measures:

Table 93: *Outcome measures for project intranet (at initiation).*

Outcome measure	Score				
	Mirror group	Steering Committee	Project team	Other webeditors	Other users
Power-function mediation	6	10	9	3	2
Relative	22% (3)	44% (1)	39% (2)	6% (4)	0% (5)
Potential influence	15	18	18	11	8
Relative	69% (2)	88% (1)	88% (1)	44% (3)	25% (4)
Eligibility for participation	5	6	6	5	5
Relative	38% (2)	50% (1)	50% (1)	38% (2)	38% (2)
Potential resistance	8	11	8	11	11
Relative	25% (2)	44% (1)	25% (2)	44% (1)	44% (1)
Engagement priority	23	29	26	22	19
Relative	36% (3)	50% (1)	43% (2)	33% (4)	26% (5)

The infrastructural and technical nature of the project is reflected in the power dimension above. The surgeons and IT department do play a large part in shaping the project result.

Just before go live

As explained earlier, we performed a second measurement just before go live, after education and testing sessions had taken place (January 2012).

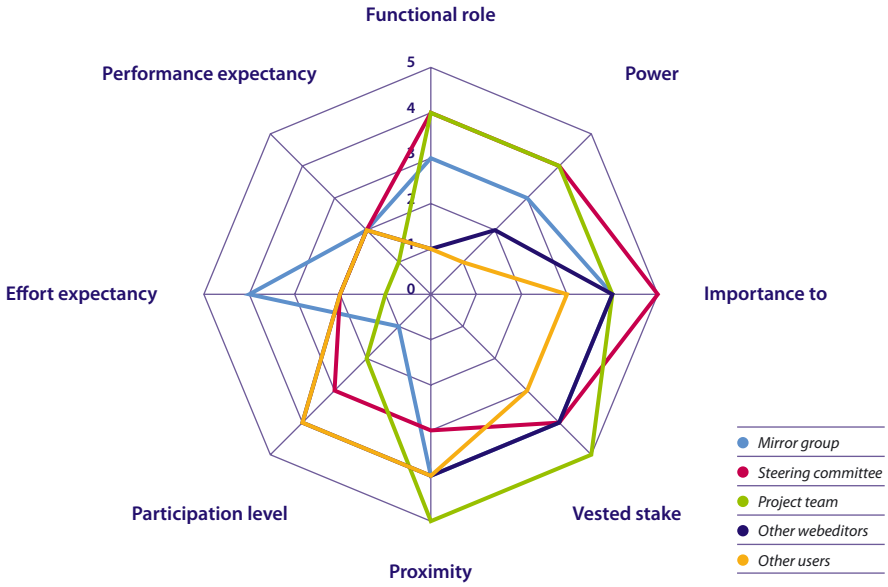
The first table is followed by the outcome measure scores as described earlier.

Table 94: *Scores of SAR attributes for project Intranet (just before go live).*

	Mirror group	Steering committee	Project team	Other webeditors	Other users
Role	3	4	4	1	1
Power	3	4	4	2	1
Importance to	4	5	4	4	3
Vested Stake	4	4	5	4	3
Proximity	4	3	5	4	4
Participation	1	3	2	4	4
Effort expectancy	4	2	1	2	2
Performance expectancy	2	2	1	2	2

The above attribute scores lead to the following visualization;

Figure 84: *SAR just before go live project Intranet.*



The above scores lead to the following outcome measures:

Table 95: *Outcome measures for project Intranet (before go live).*

Outcome measure	Score				
	Mirror group	Steering Committee	Project team	Other webeditors	Other users
Power-function mediation	6	8	8	3	2
Relative	22% (2)	33% (1)	33% (1)	6% (3)	0% (4)
Potential influence	15	16	18	14	11
Relative	69% (3)	75% (2)	88% (1)	63% (4)	44% (5)
Eligibility for participation	5	6	6	8	8
Relative	38% (4)	50% (3)	63% (2)	75% (1)	75% (1)
Potential resistance	10	11	8	9	9
Relative	38% (2)	44% (1)	25% (4)	31% (3)	31% (3)
Engagement priority	25	27	26	23	20
Relative	40% (3)	45% (1)	43% (2)	36% (4)	29% (5)

Some measures appeared to have changed; dynamics have been taking place especially with respect to the steering committee, other web editors and other users.

Remember that especially engagement priority scores above 50% indicate strong attention to the respective stakeholder (group). As appears, no engagement priority exceeded 45% for the stakeholder groups indicated in this case study.

Increased scores

- As appears, both other web editors and users (not involved in the mirror group) gained more potential influence and became more eligible for participation. This influence was attained by exerting opinions about the intranet on central meetings (demonstrations).
- The steering committee gained a higher engagement priority, mainly because of the decrease in the power-function mediation, indicating an additional effort to keep the steering committee informed.
- Potential resistance of the mirror group increased. This had to do with the fact that the content migration was executed right before go live. This forced members of the mirror group (who were the heavy users) to wok intensively with the new functionality. This led to the encounter of performance issues and the experience of lack of functionality. Hence, a reduced expectation with respect to effort expectancy.

Decreased scores

- The steering committee had a decreased power-function mediation and (connecting) decrease in potential influence. Although the formal functional role of the steering committee did not change, the power on the project was more distributed to other stakeholders (like the working group). This could be observed by the advisory role the working group developed towards the steering committee with respect to acceptance of the functionality.
- The other user and content editors had a decrease in potential resistance and engagement priority.

This can be explained by the events that have been taking place before this analysis was performed; more educational sessions were held for the different web editors and more communication took place through means of posters, invitations and notifications by email and on the old intranet platform, sparking curiosity with different projected users. The decrease in potential resistance leads to a decrease in engagement priority.

After go live; reflective assessment

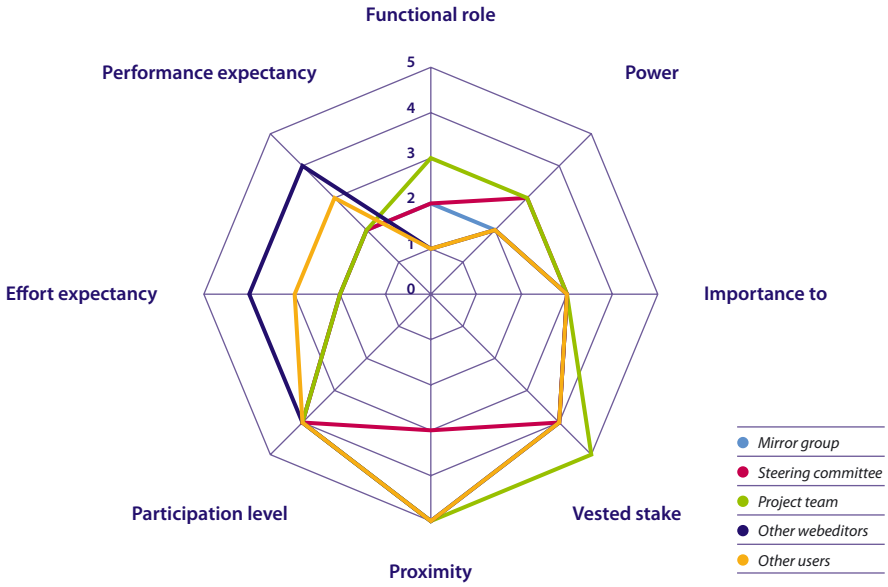
After go live, we performed a reflective assessment. We did this through interviewing as much people as possible also involved in the previous assessments. Also, we spoke to people in the hospital not involved during the course of the project, but who were users of the new intranet platform. A month after go live, we interviewed seven people in this category and asked them several questions related to the new intranet. We will discuss aggregated results of this 'satisfaction' survey in following paragraphs. In the table below, this increased proximity of other webeditors and other users is reflected, as well as the expectancies relating to the performance and effort involved in using the new intranet platform.

Table 96: *Scores of SAR attributes for project Intranet (after go live).*

	Mirror group	Steering committee	Project team	Other webeditors	Other users
Role	2	2	3	1	1
Power	2	3	3	2	2
Importance to	3	3	3	3	3
Vested Stake	4	4	5	4	4
Proximity	5	3	5	5	5
Participation	4	4	4	4	4
Effort expectancy	2	2	2	4	3
Performance expectancy	2	2	2	4	3

As the project has come to a close, with only an open issue list remaining, the influence on the project has decreased significantly of the steering committee, the mirror group as the project team itself. Engagement priorities are not supplying reasons for increased engagement activities. The above attribute scores lead to the following visualization;

Figure 85: *SAR just after go live project Intranet.*



The above scores lead to the following outcome measures:

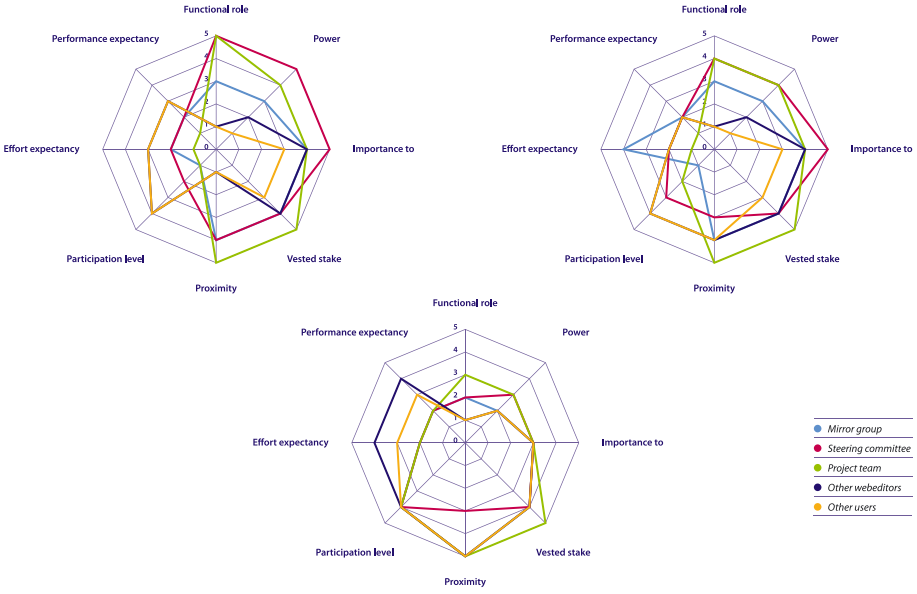
Table 97: *Outcome measures for project Intranet (after go live).*

Outcome measure	Score				
	Mirror group	Steering Committee	Project team	Other webeditors	Other users
Power-function mediation	4	5	6	3	3
Relative	11% (3)	17% (2)	22% (1)	6% (4)	6% (4)
Potential influence	14	13	16	14	14
Relative	63% (2)	56% (3)	75% (1)	63% (2)	63% (2)
Eligibility for participation	9	7	9	9	9
Relative	88% (1)	63%	88% (1)	88% (1)	88% (1)
Potential resistance	10	10	11	13	11
Relative	38% (3)	38% (3)	44% (2)	56% (1)	44% (2)
Engagement priority	24	23	27	27	25
Relative	38% (3)	36% (4)	45% (1)	45% (1)	40% (2)

Preliminary conclusions

As appears from the different SAR assessments, the dynamics in the stakeholder environment were limited. In the figures below, the different measurement periods are visualized. Not surprisingly, dynamics are clearly present of other web editors and –users. One may note as well that the functional role of involved stakeholders developed over time, in line with the project stages from initiation through design to deployment.

Figure 86: *SAR comparison at three moments in time.*



Stakeholder dynamics

Mirror group

The mirror group was involved in the design of the intranet and connected functionalities. Some highlights based on the visualization below;

- effort expectancy was high at initiation, decreased somewhat during design and testing (a.o. due to problems in performance and functionality) and was better again after deployment (and main issues were fixed).
- participation level decreased significantly after go live
- The capacity domain attributes decreased after go live (in connection with the end of the project)

Figure 87: *SAR of the mirror group during Intranet.*

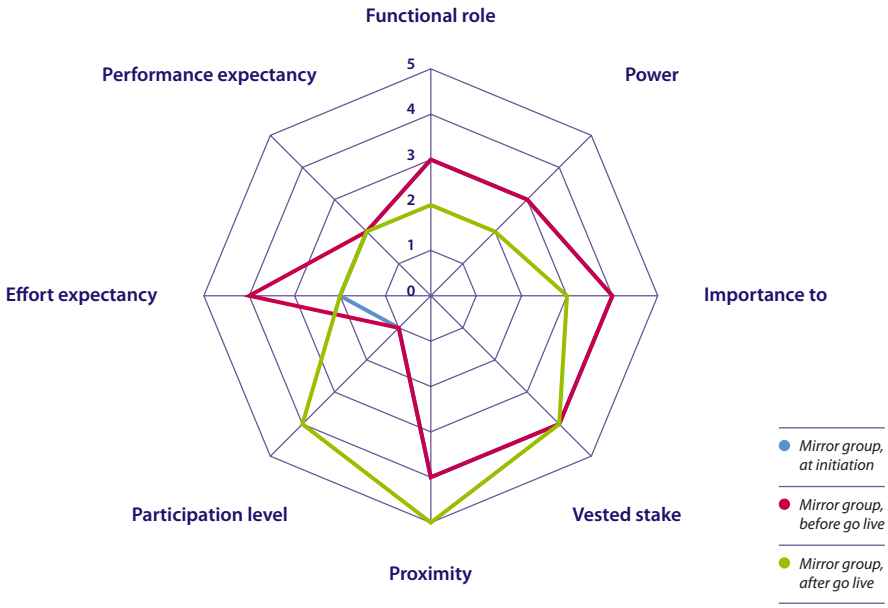


Table 98: *Outcome measures for the mirror group during project Intra.*

Outcome measure	Initiation	Before go live	Delta 1	After go live	Delta 2
Power-function mediation					
Relative	22%	22%	0%	11%	-11%
Potential influence					
Relative	69%	69%	0%	63%	-6%
Eligibility for participation					
Relative	38%	38%	0%	88%	+50%
Potential resistance					
Relative	25%	38%	+13%	38%	0%
Engagement priority					
Relative	36%	40%	+4%	38%	-2%

Steering committee

The Steering Committee was mainly involved in monitoring the project and provide resources for project execution. A range of decisions was made that were put forward by the project manager. At initiation, the steering committee had a clear decisional role in the startup of the project. This decreased over time, as main decisions on an operational level were made by the project team supported by the mirror group. This is also expressed in the decrease of the score on the power dimension. Proximity increased as the new intranet site became visible along the way.

Figure 88: *SAR of the steering committee during Intranet.*

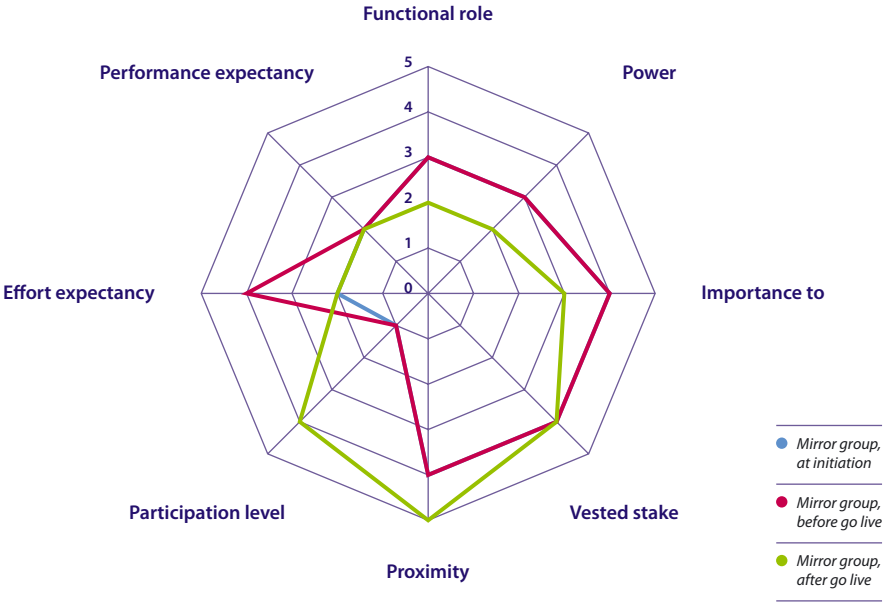


Table 99: *Outcome measures for the steering committee during project Intra.*

Outcome measure	Initiation	Before go live	Delta 1	After go live	Delta 2
Power-function mediation					
Relative	44%	33%	-11%	17%	-16%
Potential influence					
Relative	88%	75%	-13%	56%	-19%
Eligibility for participation					
Relative	50%	50%	0%	63%	+13%
Potential resistance					
Relative	44%	44%	0%	38%	-6%
Engagement priority					
Relative	50%	45%	-5%	36%	-9%

Project team

No significant changes were noted on the dimensions between the initiation and before go live stage, only in the functional role and participation level domain, as less and less functional decisions could be made (as the product matured).

After go live, still some concerns remained in open issues, that were also addressed by the mirror group during the go/no go sessions before go live. This is reflected by a slight increase in the expectancy dimensions below.

Figure 89: *SAR of the project team during Intranet.*

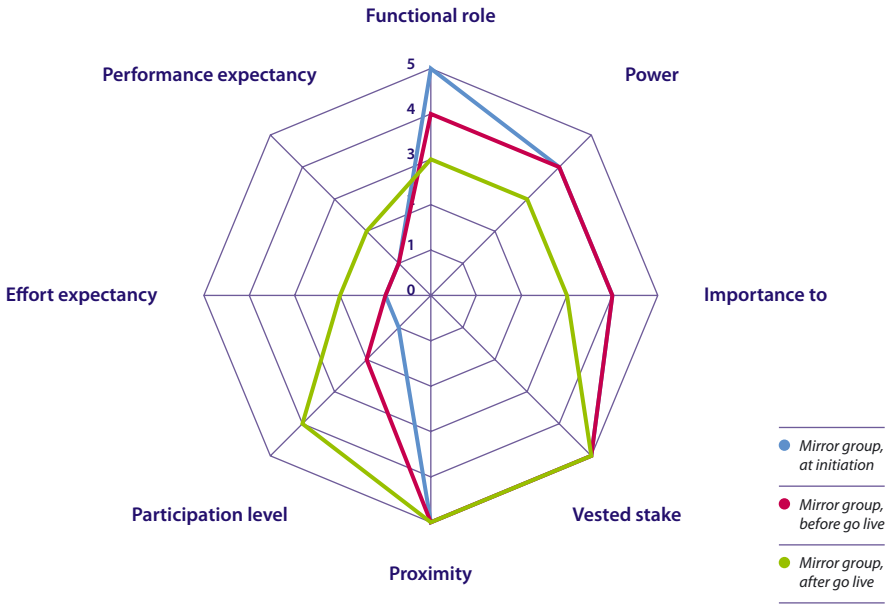


Table 100: *Outcome measures for the project team during project Intra.*

Outcome measure	Initiation	Before go live	Delta 1	After go live	Delta 2
Power-function mediation					
Relative	39%	33%	-6%	22%	-11%
Potential influence					
Relative	88%	88%	0%	75%	-13%
Eligibility for participation					
Relative	50%	63%	+13%	88%	+25%
Potential resistance					
Relative	25%	25%	0%	44%	+19%
Engagement priority					
Relative	43%	43%	0%	45%	2%

Other web editors

The web editors of the hospital, other than the ones involved in the working group, were not directly involved in the earlier stages of the project (low proximity). The role of the other web editors after go live grew more important, since the intranet site was live and was dependent on their contributions to the site. Just before go live they became more acquainted with the site as a large session was held by the project team to show the design and functionality.

Figure 90: *SAR of other webeditors during Intranet.*

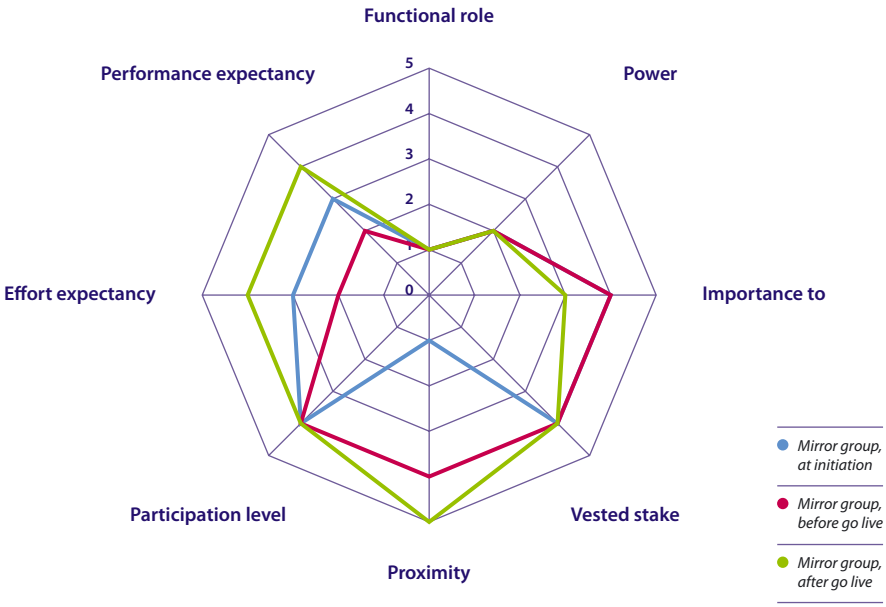


Table 101: *Outcome measures for the other web editors during project Intra.*

Outcome measure	Initiation	Before go live	Delta 1	After go live	Delta 2
Power-function mediation					
Relative	6%	6%	0%	6%	0%
Potential influence					
Relative	44%	63%	+19%	63%	0%
Eligibility for participation					
Relative	38%	75%	+37%	88%	+13%
Potential resistance					
Relative	44%	31%	-13%	56%	+25%
Engagement priority					
Relative	33%	36%	+3%	45%	+9%

Other users

As can be seen, the SAR's of the other users (not involved in the mirror group during the project) strongly resembles the one of the other web editors. Major difference between the two is the participation level. The users are not involved in contributing to the content on the intranet.

Proximity increased after go live, when all users were confronted with the new look and feel and content of the intranet site.

Figure 91: *SAR of other users during Intranet.*

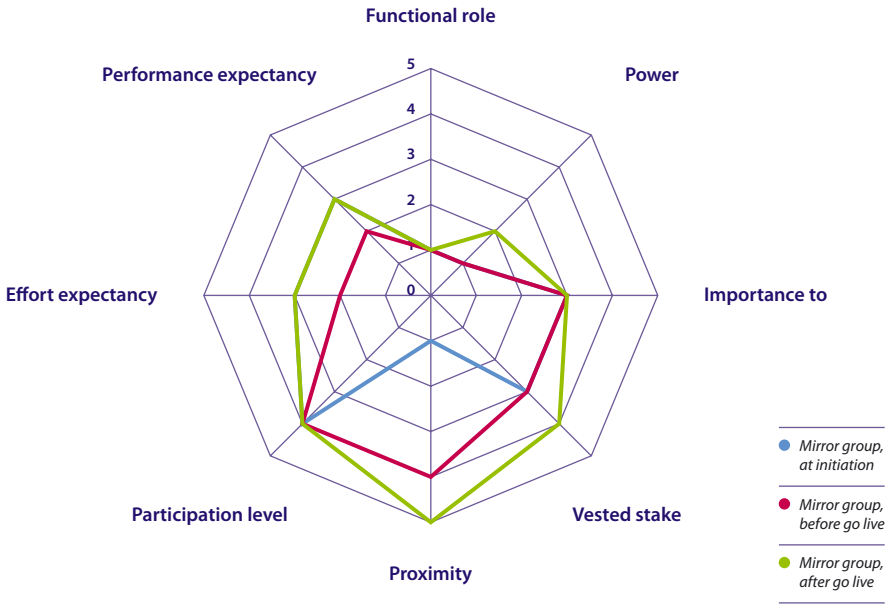


Table 102: *Outcome measures for the other users during project Intra.*

Outcome measure	Initiation	Before go live	Delta 1	After go live	Delta 2
Power-function mediation					
Relative	0%	0%	0%	6%	+6%
Potential influence					
Relative	25%	44%	+19%	63%	+19%
Eligibility for participation					
Relative	38%	75%	+37%	88%	+13%
Potential resistance					
Relative	44%	31%	-13%	44%	+13%
Engagement priority					
Relative	26%	29%	+3%	40%	+11%

Engagement activities

Events

We held several discussions when the selection of the supplier was performed and activities were planned. The following advice set was given:

Table 103: *Event description Project Intra.*

Stage	Event/situation	(re)action from project team	Result
Initiation	Initially two groups were involved in the design of the new intranet; a mirror group and an end-user group. After selection, it was decided to merge these two groups into one, with less members.	To avoid demotivation of active contributors, the advice was given to communicate and engage the original group members in a wrap-up session	The wrap-up was planned and held, as well as a kick-off for the new group.
Design	The new end-user group will accept the functional side of project deliverable; this means that the end-user group must be able to represent the total group of end-users targeted	Evaluate critically the composition of the end-user group and identify weak spots	Workshop initiated to examine representativeness of end-user group in relation to total group of end-users
Initiation/ Design	Physicians were not reflected in the composition of the mirror groups or engaged	Check if the pharmacist involved in the working group is sufficient to reflect physician involvement	Conversations with the pharmacist were held to assure its link to the medical staff.

During the course of the project several small events lead to adhoc moments of advice. For example:

- Email from a respected physician addressing concerns about the reflection of the patient safety activities on the intranet. This was encountered, partly based on advice, by making an appointment and specifically addressing this issue and the possibilities of the intranet platform to encounter this.
- Lack of response in the end phase of the project of one working group member, representing one of the main information suppliers in the hospital (the 'academy'). Advice was given to follow-up in person, this was done but did not lead to a better involvement of the member

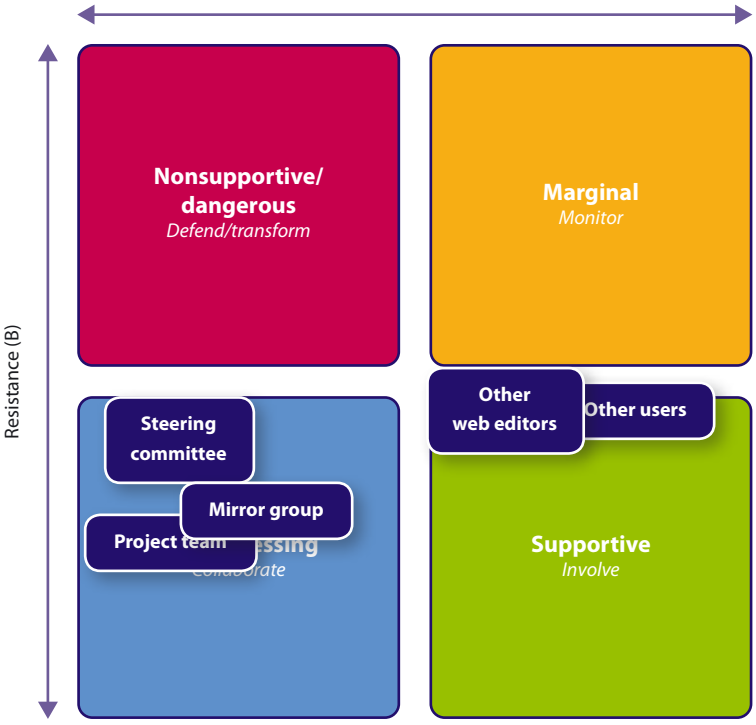
Other general engagement activities included newsletters, communication messages on the former intranet site and the facilitation of so-called 'walk-in' sessions for all hospital employees to provide a means to ask questions if necessary.

Engagement strategies

Engagement matrix at initiation

Before go live, no stakeholder groups were present in either the red or orange areas of the matrix. Nevertheless, the matrix does indicate signs to monitor the not-directly involved editors and users. At initiation, this is hard to do, since no previews or designs can be shown. Collaboration with the other stakeholder groups at initiation was orchestrated in the work formats.

Figure 92: *Engagement strategy matrix at initiation Project Intra.*



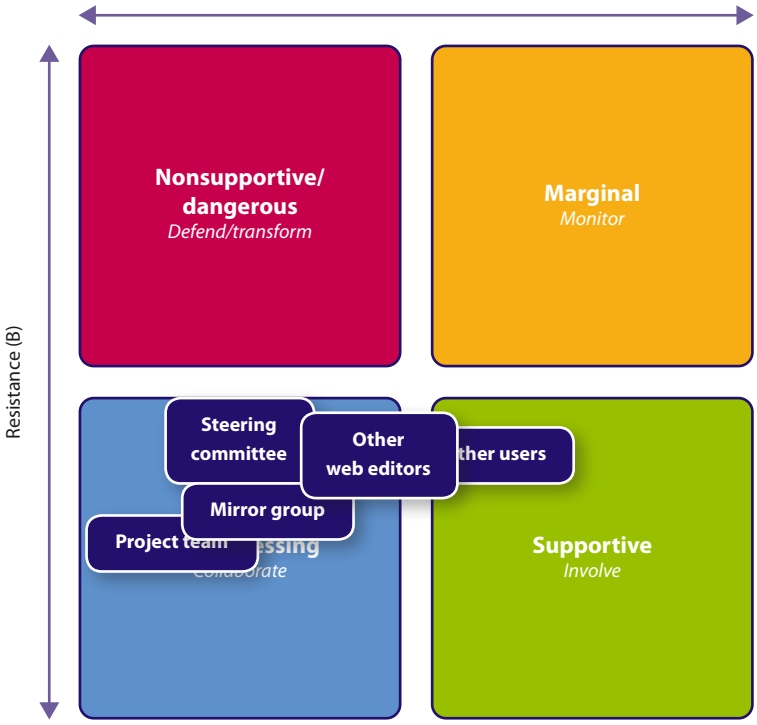
Engagement strategy during design (just before go live)

Changes in the matrix mainly concern the other web editors that were more closely involved in the project, by introducing the new intranet in a demonstration session and by training the main web editors in using the new intranet and placing content. The potential resistance of the mirror group and steering committee did grew a bit due to the issues encountered during the content migration activities of these people.

This did not lead to a different advice in engagement strategy for these groups, taking into account the events as discussed in this paragraph to encounter these issues.

In other words, the undertaken activities may have prevented these two stakeholder groups from sliding into the red zone.

Figure 93: *Engagement strategy matrix just before go live Project Intra.*

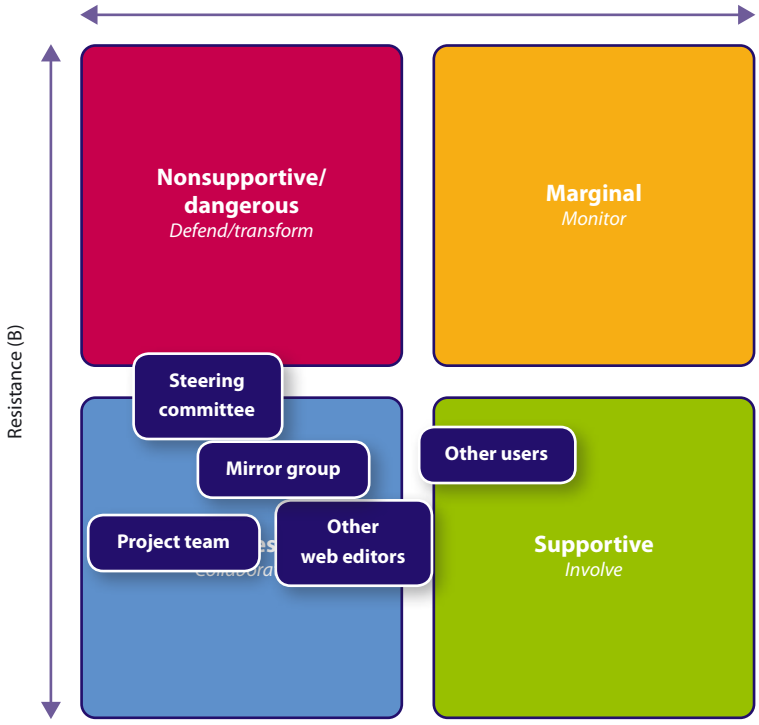


Engagement strategy after go live

After go live, it became apparent that users had to get used to the new intranet. This appeared from calls relating to users not able to find the information needed.

This was addressed by the project team by providing tips on the new intranet, explaining how to reach information and how to use the search option. Other issues were related to the functionality provided itself. These were addressed and solved quickly. During the survey among other users and web editors a month after go live, respondents indicated that they had to get used to the new system and that, in general, they did not have an opinion about scoring of the new system.

Figure 94: *Engagement strategy matrix after go live Project Intra.*



Preliminary conclusions

Most advice was given between the initiation stage and go live. Most advice was followed-up by the project team by undertaking activities towards the different stakeholder groups. As can be seen in the engagement strategy matrix just before go live, no stakeholders were present in the orange or red areas.

While no firm conclusions can be drawn on the causal relation between the two, the broad array of stakeholder management activities present in this project may have caused the stakeholders to remain in the green areas of attention in the engagement matrices over time.

Stakeholder satisfaction

Besides evaluating the attributes and positions of the stakeholders at three points in time, we also evaluated the satisfaction of the five stakeholders (groups) discussed here, as an indication of project success as discussed in the previous section.

At the end of each interview held, attention was given towards the satisfaction of the respondent in relation to:

- The development of the product and the functionality and the performance and effort expectancies
- The way the project was orchestrated; clarity of information provided, structure of the mirror group meetings, etc.
- Satisfaction in relation to the way people were involved in the project.

In nearly all interviews, people were satisfied with the above and indicated that the way the project was organized very well and the level of involvement was experienced as very positive.

Some critical remarks related to the role of the vendor in the project; the mirror group members felt that the vendor sometimes remained vague in addressing issues/questions posed by the mirror group members. In the end phase of the project, just before go live, the vendor was still working in fixing found bugs in the system, sometimes causing disruptions in the system. The latter influenced the work of the web editors, since in this stage of the project, they were migrating content from the old to the new intranet platform. This lead to questions relating to poor performance of the system.

As indicated by one of the steering committee members;

"... the project serves as an example for other projects the way it is organized and the way things are communicated..."

Preliminary conclusions

The involvement of a communication advisor in the project was considered a very valuable function in the mirror group, this may have had a positive influence on the satisfaction of the involved stakeholders. The level of satisfaction of the whole array of stakeholders involved in the project is remarkably high, from the period between initiation to before go live.

A lot of effort was put into the active involvement of and communication with relevant stakeholders. Advice given during the project by the researcher was incorporated in the project planning and activities of the project team.

Cross case evaluation

8

In this chapter, we will compare the results of the different cases presented in the previous section. We draw conclusions based on the case analyses. First, we start by comparing case results and SAR outcomes.

8.1 EVALUATION VARIABLES

In order to being able to compare the cases, we aim to focus on an isolated set of variables to reduce complexity, but at the same time taking into account the different contexts of the cases.

In short, we aim to evaluate;

- whether the use of among others the SAR model did help in leveraging stakeholder management
- whether the insights led to enhanced stakeholder satisfaction,
- if stakeholder management maturity of the project management proved to be a mediating factor in the effect of stakeholder dynamics on stakeholder satisfaction.

These aims are in connection with our hypotheses we described in the first section of this thesis;

H1: More knowledge of the stakeholder environment leads to better alignment of engagement activities with stakeholder dynamics and characteristics.

In evaluating the case results, we may analyze the level of operationalization of SAR advice into engagement activities by project management. Stakeholder management maturity is hypothesized to have a mediating effect in the capacity by project management to operationalize SAR output and following stakeholder engagement advice.

H2: Properly aligned and timed engagement activities lead to a positive influence on stakeholder dynamics in favor of stakeholder satisfaction.

The operationalization of SAR advice is hypothesized to have an effect on weighted engagement priorities in the stakeholder environment during the course of the project, since capacity and intention attributed are hypothesized to be affected.

In the end, alignment of activities to stakeholder attributes ultimately leads to an effect on stakeholder satisfaction. The baseline complexity of the stakeholder environment, however, might have a mediating influence on this. This is further explained below.

H3: Dynamics in the stakeholder environment, in both capacity as intentions dimensions, influence stakeholder satisfaction with project results.

This hypothesis primarily can be evaluated by assessing the relationship between potential resistance developments and level of satisfaction of relevant stakeholders.

Summarizing, we assess the different cases by evaluating the following variables;

Table 104: *Cross case evaluation variables.*

Variable	Connecting hypothesis	Relates to…	Content
Level of operationalization of SAR advice*	H1	- The capacity of project management to understand insights in stakeholder environment and translate these insights into interventions - Whether something is done with the advice or not - Usability of the model	Openness towards advice and formulating connecting activities; did the project manager intervene or took action towards stakeholder with high engagement priorities? What is the feedback received in the cases?
Baseline stakeholder management maturity level		- Knowledge and tooling of the project management to deal with stakeholders in general	Comparision of stakeholder management maturity level as indicated by the proposed checklist provided in this thesis.
Reduction of potential resistance	H2 H3	The development of the stakeholder environment on the potential resistance dimension along the project as predictor for after project satisfaction	We look at the potential resistance scores in the different SAR's adjusted by case and in comparison
Stakeholder satisfaction**		The effects of stakeholder management	As evaluated and described in the sections above, translated into a likert score relative to the other cases.
Baseline stakeholder environment engagement priority		The attention needed towards the stakeholder environment is an indication of stakeholder management complexity at the initiation of the project	Average engagement priority at initiation of the project of most dominant stakeholders included in the SAR assessment

** this item can only be assessed in the intervention cases A3 and B2, where advice was given and insights were frequently shared*

*** no proper assessment could be done for case B1, as explained in the case description*

As can be noted, only part of the variables can be assessed by evaluating scores derived from the SAR results and outcome measures used. Other assessments are based on the close observations and interview results as described in the case analysis section.

The cross-case assessment of the variables is translated into an easy to interpret 5 item scale, in order to gain a useful overview across the cases;

Table 105: *Scoring items cross case assessment.*

Very low/worst	Low/worse	Neutral	High/better	Very high/best
--	-	o	+	++

More detailed scales for comparison would not be justified in relation to the scoring used in the cases themselves. More detailed or more quantitative measurement scales would increase the risk of misinterpretation of results and may provide false 'truths'.

The likert scale makes it possible to compare the cases on the provided variables in a relative manner, compared to each other as references.

8.2 LEVEL OF OPERATIONALIZATION SAR ADVICE

As indicated earlier, the translation of SAR advice into activities or actions by the project manager or project as a whole can only be assessed in the intervention cases (A3 and B2).

As appears from the case descriptions, the level of operationalization and adherence to the advice given in hospital B was much higher than in hospital A. In case B2, the planning was adjusted by adding or replanning activities as to focus on stakeholders with high engagement priorities. In other words, the SAR insights and following advice from the engagement strategy matrix was used to develop and plan level-1 implementation activities.

In case A3, some sessions were held and some advices were picked up, but no focused attention was given to the 'red' stakeholders from the engagement strategy matrix. It was indicated that the results were understood by project management, but were not followed-up by altered or new implementation activities.

In conclusion, in comparison, project management in the B2 case did much more with the advice given and the operationalization of the provided strategies than the project management in the A3 case.

Table 106: *Level of operationalization SAR advice.*

	A3	B2
Score	-	++

8.3 BASELINE STAKEHOLDER MANAGEMENT MATURITY LEVEL

One may have already noted the differences between the two hospitals, where both the projects from hospital B were assessed as more mature in stakeholder management activities at baseline. This was noted by, among others, the adherence of the project team to standardized project management procedures and templates that included detailed stakeholder communication plans and activities to be spelled out. This meant that go/no go moments and other activities specifically aimed at stakeholder acceptance measurement were planned and included in the project beforehand and part of regular procedure. None of the projects in hospital A did have communication plans or specified 'acceptance measurement' activities as part of the overall project planning.

In the table below, one may find the summary of the stakeholder management maturity levels of the assessed cases.

Table 107: *Baseline stakeholder management maturity level.*

	A1	A2	A3	B1	B2
Result SHMM level	Level 1	Level 2	Level 1	Level 3	Level 3
Score	--	-	--	+	+

8.4 REDUCTION OF POTENTIAL RESISTANCE

In the cases, we elaborately discussed stakeholder dynamics of a subset of the stakeholder environment, on the capacity and intention dimensions. Together, measures on these dimensions, provided a stakeholder's engagement priority for (project) management.

Considering our theoretical elaboration on constantly changing configurations of the stakeholder environment, might never be possible to zero out engagement priorities. Remember that with the proposed engagement strategies, it is aimed to transform a stakeholder's influence or resistance.

We aim to notice and evaluate the developments of *potential resistance* to gain more insights in the effectiveness of engagement activities. Merely evaluating reduction of potential influence, does neglect the activities aimed at increasing influence to enforce a *champion*, as noted earlier.

In other words, the ability of the project management to transform relevant stakeholders as much as possible to the green domains of the engagement strategy matrix.

In our case, a simple comparison of mean values does not suffice to account for variability or distances between stakeholders in the case populations. We use boxplots to investigate a combination of measures. Boxplots make it possible to compare the cases and visualize key measures in this respect.

The box length in the boxplot gives an indication of the sample variability and the line across the box shows where the sample is centered. The position of the box in its whiskers and the position of the line in the box also tells us whether the sample is symmetric or skewed, either to the right or left. For a symmetric distribution, long whiskers, relative to the box length, can betray a heavy tailed population and short whiskers, a short tailed population.[15]

We are mainly interested in the variability in the environment as indication for stakeholder management complexity and the overall reduction of potential resistance median. The mean of the potential resistance scores does not state much since large variability across stakeholders level each other out, providing unreliable outcomes.

The symmetry of the potential resistance scores can indicate the grip on the environment; proper overall stakeholder management should ultimately lead to homogeneous potential resistance across all stakeholders, since all engagement activities are perfectly aligned with stakeholder needs and stakes.

Potential resistance hospital A cases

In order to being able to construct a boxplot, one need to calculate the median and quartile measures, based on the relative potential resistance scores as presented in the case descriptions of chapter 7.

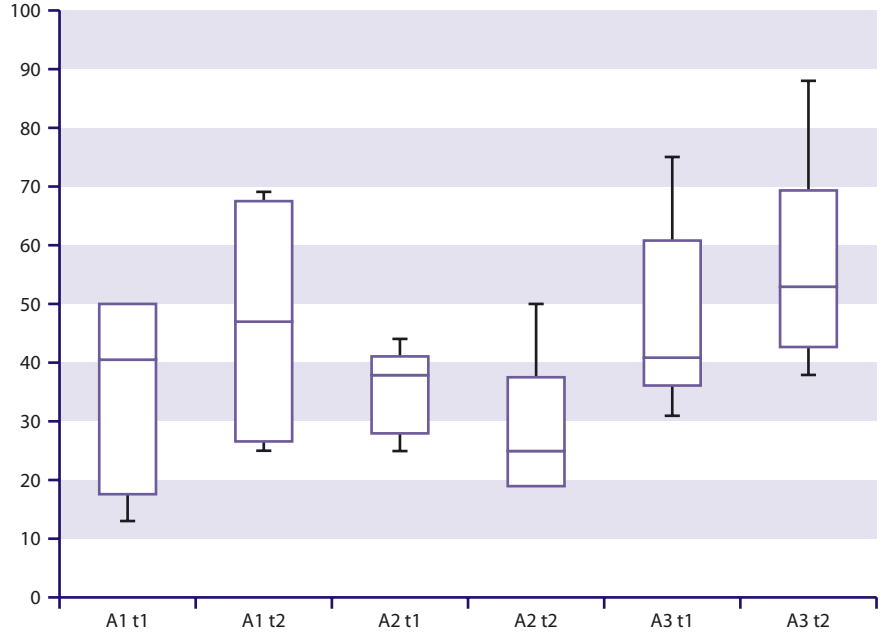
Table 108: *Boxplot measures as calculated from the potential resistance measures of the hospital A cases.*

Labels	A1 t1	A1 t2	A2 t1	A2 t2	A3 t1	A3 t2
Min	13	25	25	19	31	38
Q_1	17,5	26,5	28	19	36,25	42,5
Median	40,5	47	38	25	41	53
Q_3	50	67,5	41	37,5	60,75	69,25
Max	50	69	44	50	75	88

These measures, in turn, can be plotted pairwise in the graph below. The cases are presented in pairs, relating to the two measurement points in time of each case.

[15] http://www.cms.murdoch.edu.au/areas/maths/statsnotes/samplestats/boxplot.html (accessed 13 July 2012)

Figure 95: *Paired boxplots for hospital A cases for two measurement moments in time.*



When taking a closer look at the boxplots, one may notice the following developments on the three measures explained above;

Table 109: *Assessment of development of three key boxplot measures for hospital A cases.*

	Case A1	Case A2	Case A3
Reduction in median	-	+	-
Reduction in variability (length of box)	-	-	o
Symmetry	+	+	+
Concluding score	-	+	o

The concluding scores whether a positive (+, reduction of potential resistance) or negative development (-, increase in overall potential resistance) can be noted. One may note the reduction of the median in case A2, implicating a reduction of potential resistance over time. In case A1 an increase of median and variability is noted, implicating an increase of potential resistance and larger variability between stakeholders of the case. Case A3 shows an increase in potential resistance but a same distribution (variability) within the stakeholder population.

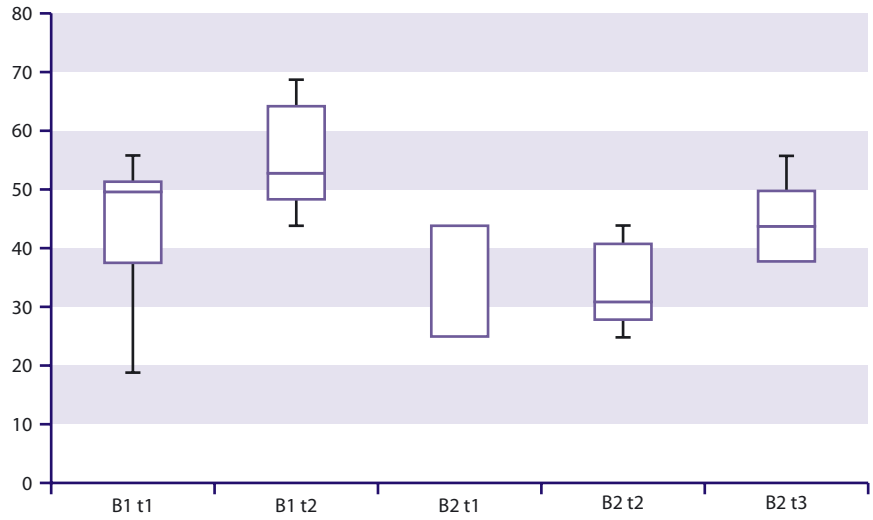
Potential resistance hospital B cases

For the cases performed in hospital B, we can perform the same analysis. Important to remark is the inclusion of three points of measurements for the B2 case, in comparison with two points of measurement for all other cases. In analyzing the developments of the B2 case, we only take the first and last measurement into account, in order to connect to the way the other cases were analyzed. We do however take the intermediate measurement into account when discussing the dynamics during the project, in the conclusion section.

Table 110: *Boxplot measures as calculated from the engagement priorities of the hospital B cases.*

Labels	B1 t1	B1 t2	B2 t1	B2 t2	B2 t3
Min	19	44	25	25	38
Q_1	37,75	48,5	25	28	38
Median	50	53	44	31	44
Q_3	51,5	64,5	44	41	50
Max	56	69	44	44	56

Figure 96: *Paired boxplots for hospital B cases for two and three measurement moments in time.*



As the concluding scores indicate, in the B2 case a positive development took place, even though the median of potential resistance remained the same, the heterogeneity (symmetry) of the environment increased.

Table 111: *Assessment of development of three key boxplot measures for hospital A cases.*

	Case B1	Case B2*
Reduction in median	-	o
Reduction in variability (length of box)	o	+
Symmetry	+	+
Concluding score	o	+

** as mentioned earlier, the development between t1 and t3 is taking to account, neglecting t2. This will be taken into account in the conclusion section, since dynamics in between have been taking place.*

8.5 STAKEHOLDER SATISFACTION

With stakeholder satisfaction we specifically aim at the results of the evaluation of the relevant stakeholders with respect to perceived project process (*the journey*) and satisfaction with the overall project outcome (and not just the 'IT product'). Of course, it is hard to isolate only those aspects that could have been influenced by stakeholder engagement activities, since a variety contextual issues could not be addressed in the scope of the research (like legal obligations, interconnected social or financial pressures).

As can be seen, in the case analyses we paid attention to this aspect. The general perception of the project was assessed. The second parts of the stakeholder profile cards were used to score the projects (see appendix C).

Summarizing, in comparison with each other, stakeholders of A2 and B2 were satisfied with the process of the project as well as the end result (as far as measured for the period of time of the research). Stakeholders of the A1 and A3 cases were not satisfied with results and the way the project was organized or how they were involved. In the B1 case, some stakeholders were satisfied with the project process and results, some were dissatisfied. This varied greatly over time, also due to changes in scope and target end-user population.

Table 112: *Stakeholder satisfaction.*

	A1	A2	A3	B1	B2
Score	-	+	-	o	+

8.6 BASELINE STAKEHOLDER ENGAGEMENT PRIORITIES

In order to have some idea about the starting point of the project in relation to the stakeholder environment, we looked at one aspect of the environment; the stakeholders' overall engagement priority. We argue that having insights in the overall need for attention for the stakeholder environment (measured by the level of aggregated stakeholder engagement priorities), indicates the starting position of the project. This is necessary to being able to measure 'stakeholder management heaviness' of the project; high overall engagement priorities demand for complex, diversified engagement strategies and activities.

As a basis, we take the t1 boxplots of aggregated engagement priority scores of the cases as visualized and explained above and assess measures of symmetry and variability for each. The assessment is relative, the cases are scored in comparison to each other.

Summarizing, the cases A2 and B2 had the best starting positions in terms of how much attention was directly needed for the stakeholder environment at initiation. Cases A1 and A3 had the worst starting positions. This notion is strengthened by the remarks of the project management itself of these respective cases relating to environment complexity and need for attention.

What stands out is the centeredness of case A1, indicating a symmetric distribution of engagement priorities over the stakeholder environment at initiation. This does not necessarily mean a low distribution; on the contrary, the median of the A1 case is high.

Table 113: *Cross case boxplot measures at baseline (t1).*

Labels	B1 t1	B1 t2	B2 t1	B2 t2	B2 t3
Min	38	29	31	31	26
Q_1	39,5	30	34,75	34,75	29,5
Median	52	38	39	38	36
Q_3	64,5	44	52	51,75	46,5
Max	66	45	64	57	50

Figure 97: *Cross case baseline boxplots.*

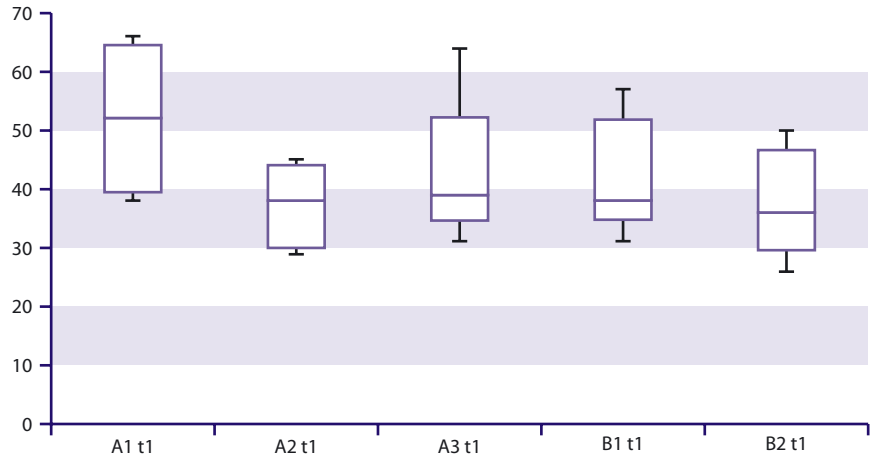


Table 114: *Cross case outcome measures at baseline.*

	A1	A2	A3	B1	B2
Low median (relative)	--	O	O	O	+
Centered mean/symmetry	++	O	--	-	O
Low variability (box size)	-	+	O	O	O
Concluding score	-	O / +	-	- / O	O / +

8.7 CROSS-CASE CONCLUSIONS

In the table below, the cross case results are aggregated. In this paragraph we will use these results to investigate the hypotheses posed in our research study.

Table 115: *Summary of cross case outcome measures.*

		A1	A2	A3*	B1	B2*
H1	Level of operationalization of SAR advice			-		++
	Baseline stakeholder management maturity level	--	-	--	+	+
H2	Reduction of potential resistance	-	+	O	O	+
H3	Stakeholder satisfaction	-	+	-	O	+
	Baseline stakeholder environment engagement priority	-	O / +	-	- / O	O / +

** intervention cases*

The specific results are discussed in relation to the hypotheses posed, in the paragraphs below.

H1: More knowledge of the stakeholder environment leads to better alignment of engagement activities with stakeholder dynamics and characteristics.

The first hypotheses assumes a relationship between comprehensive insights in the stakeholder environment and the ability to better fit implementation activities with stakeholder characteristic. When evaluating this first hypothesis, one can find that the B2 project team put the most effort in scanning the stakeholder environment and adjusting communication activities and personal interventions connecting to the advice supplied by the researcher. The satisfaction of interviewed stakeholders after go live with their own involvement and project communication towards them, proved the planned and executed activities to be successful.

Even before the advice was given, there was a fairly good understanding of the stakeholder environment by the B2 project team and willingness to pay attention to, as indicated by the stakeholder management maturity level. Although it is hard to isolate cause and effect in these cases, interviewed stakeholders did express their gratitude towards the project team for the way they involved the stakeholder environment and how they prevented resistance by the large variety of interventions undertaken. Especially the personal attention of the project team towards stakeholders in this respect was highly valued.

In the A3 case, hardly any advice about the stakeholder environment was taken into account or did lead to changes in planned activities or interventions. At initiation, there was no attention to project team or working group composition or involvement of a large variety of stakeholders. There was also no willingness to spend time analyzing this. This was suspected by the low stakeholder management maturity level and could have had influence on the poor satisfaction with both the project process and project results. With respect to the non-intervention cases, one can evaluate the satisfaction levels in relation to baseline stakeholder engagement priorities and stakeholder management maturity level. In the A2 case satisfaction was evaluated as fair to good, although maturity level was low. On the other hand, the starting position of the stakeholder environment does indicate that not much attention was needed in the first place.

The results of the case studies indicate that a comprehensive insight in the configuration of the stakeholder environments does support the formulation of properly engagement activities.

Furthermore, what we noted was that the stakeholder management maturity level of the project team does indicate a project team's own willingness and capacity to deal with knowledge about the stakeholder environment. In other words, knowledge of the environment alone is not sufficient to being able to suit activities to stakeholder characteristics, one must be able to understand how to enact this knowledge into strategies and interventions.

The results of the case studies indicate that a project team with medium to high stakeholder management maturity has the capacity to properly operationalize knowledge about the stakeholder environment into aligned engagement activities.

H2: Properly aligned and timed engagement activities lead to a positive influence on stakeholder dynamics in favor of stakeholder satisfaction.

Insights and actual operationalization of these insights alone are not sufficient to achieve enhanced project success. In order to draw any conclusions in this area, one must evaluate the presumed relationship between engagement activities and its potential effect on stakeholder dynamics and satisfaction.

When evaluating positive influences on stakeholder dynamics, we particularly look at the reduction of potential resistance. In addition we evaluate a possible increased level of satisfaction.

In cases A2 and B2 a clear reduction in overall potential resistance was measured over the course of the project. This could indicate effective stakeholder management. With respect to satisfaction levels, only in A2 and B2 there was fair to high satisfaction with the results. During the interviews held, only stakeholders involved in the B2 case, attributed part of their satisfaction towards the activities employed by the project team. When comparing the B1 and B2 cases, in similar starting positions, one can note slightly better outcomes in the intervention case. However, as we will discuss later on, it is hard to isolate cause and effect in these cases.

We did expect a lower reduction in overall potential resistance at the intervention hospitals (when there was sufficient adhering to the advice given, of course). However, the relation between advice given and reduction of overall potential resistance is hard to prove, since large differences in the baseline situation existed. Furthermore, we see poor satisfaction scores where no activities were properly aligned (A3) with the advice given.

In conclusion;

The cases indicate that properly aligned and timed engagement activities lead to a positive influence on potential resistance.

The intervention cases indicate that properly aligned and timed engagement activities lead to increased project process satisfaction.

To further strengthen this notion, one must further try to isolate the indicated relationship between variables.

H3: Dynamics in the stakeholder environment in the intentions domain influence stakeholder satisfaction with project results.

As stated earlier, this hypothesis can primarily be evaluated by assessing the relation between potential resistance developments and satisfaction.

In two cases, A2 and B2, did both a reduction in stakeholder potential resistance as well as good satisfaction occur. In two other cases (A3 and B1) did an increase in overall stakeholder potential resistance and poor satisfaction scores occur.

A reduction in potential resistance however can never be seen as a guarantee for satisfaction (as is illustrated by case A1). This has to do with the baseline engagement priority, the size of the reduction (high baseline engagement priorities with minimal reduction leads to still fairly high priorities) and the fluidity of the capacity and intention dimensions in the stakeholder environment; we only have two intensive measurement points per case on average.

For example, in the B2 case, where three measurements existed, one can clearly see the effect of dynamics in the environment in the intermediate measurement point, stressing the fluidity of the scores on the attributes in the stakeholder environment.

The developments of stakeholder potential resistance over time do have an influence on stakeholder satisfaction.

Model evaluation

9

In this chapter we will evaluate the model used for the purpose and objectives of our research. We will evaluate the usability and validity of the model and will evaluate the methodology used to execute our case study research. We will end this chapter with overall conclusions and suggestions for improvement of the model.

9.1 USABILITY OF MODEL

In this paragraph we will discuss the experienced usability of the components used as part of our case study research. We distinguish between five components; 1) *the stakeholder management cycle* as iterative flow-model for our research, 2) part I of *the stakeholder profile cards* (assessment), 3) *the SAR tool* for constructing the stakeholder environment radars, 4) *the engagement strategy matrix* as a result of the SAR outcomes and 5) part II of *the stakeholder profile cards (evaluation)*.

The stakeholder management cycle

The iterative phases of the cycle proved very useful in the planning of the activities for executing the stakeholder analyses during the case studies. It proved useful in explaining the respondents involved in the research what steps were undertaken to formulate the advice. So the primary benefit of the cycle was to inform about the research undertaken.

For the project team, it also provided insights in how to structure stakeholder management as part of the total project management. In hospital B, discussions were held with the project team how to embed the phases of the model in template project plannings in order to ensure structural attention towards the different components of stakeholder management.

The stakeholder management cycle is useful in structuring all activities around stakeholder management and the other tools used and constructed as part of this research.

Stakeholder profile cards (Part I)

The stakeholder profile cards were meant as interview guidelines during the case studies, providing the themes that needed to be discussed. Furthermore, they aided in the scoring of the dimensions needed for the stakeholder acceptance radar tool. During the cases studies it sometimes proved difficult to completely fill out the cards, due to either time restrictions or level of involvement of the stakeholder at the time of the interview.
The items included in the profile cards were adjusted after the first case study by further clarifying the descriptions of the various subjects. Nevertheless, the cards proved to be a useful structured guideline in comparing the stakeholders and the different measurement phases of the projects.

SAR tool

With the SAR tool we mean the construction of the different stakeholder acceptance radars used. The insights provided by the tool were commonly received as very useful by project team members, also by the teams not involved in the intervention studies. It served as a relatively simple dashboard for the stakeholder environment at different points in time. Most debate around the model focused around the way the vectors were scored. This had to do with the unfamiliarity with the constructs used and the subjective scoring of the vectors themselves. In fact, the scoring of the vectors of the different dimensions of the model remains a tedious and ambiguous job, since they are based on a selection of stakeholders. Nevertheless, it was believed that the method of triangulation did provide some (if not the only) insights in the actual stakeholder environment.

Furthermore, one must not overestimate the value of the representation given by the SAR. The input for the different vectors drawn is based on interpretation and estimation by a selection of stakeholders in the environment. The SAR may suggest, based on the use of numbers and fixed lines that the representation is true and fixed while in fact, much debate about the scoring may still exist.

However, the primary purpose of the SAR *is to arise attention for the stakeholder environment and its composition* in stimulating discussion about the engagement priorities of the stakeholders. For that reason, verification of the outcomes by a large variety of stakeholders involved in the project team and higher management (to provide triangulation) is mandatory in order to properly interpret results and formulate connecting engagement strategies. Otherwise, the risk of acting in the wrong direction, by over-valuing of the results, could be large.

Engagement strategy matrix

The engagement strategy aims to translate the results of the stakeholder environment in the stakeholder acceptance radar to engagement strategies. The main purpose is to give some direction in how to engage the different stakeholders with different engagement priorities. In that sense it provides insights in *who* to engage first and what strategy should be the main focus.

The most discussion about the matrix was centered around the translation of suggested strategies in practical and realistic intervention activities. Most actions in practice were aimed at further investigating the position of the stakeholder by scheduling appointments (case B2). These actions alone were highly valued by both project team as other stakeholders involved. Most of the time, these appointments served beneficial in eliminating worries on the side of the stakeholder.

In practice, there's often no time to formulate proper actions following the suggested engagement strategies for all stakeholders mapped. Especially when dynamics were taken into account, sometimes leading to different strategies over short periods of time.

However, just like the SAR tool, the goal of the matrix is to provide insights in both developments of stakeholders over time as well as providing insights in possible engagement modes. One must always trade off the time and organisational /political space to formulate practical interventions. In the B2 case, only attention to 'red' or 'orange' stakeholders was given due to these tradeoffs.

Stakeholder profile cards (Part II)

Part II of the stakeholder profile cards, served as a guideline for executing the evaluation of the stakeholder's satisfaction and SAR vectors. The time needed to fill out the cards proved to be too long. As will be discussed in the conclusions around the methodology, the stakeholders involved in the executed case studies are generally characterized by busy, time-pressed people, mostly on standby for acute care duties. This has had its effects on the time available for filling out the profile cards for evaluation. In the evaluation conversations held, it appeared difficult to focus the conversations on the specific dimensions proposed by the profile card.

Unfortunately, in case B1, we did not have the opportunity to execute this final stage of our model, due to planning and political reasons.

9.2 METHODOLOGY REFLECTION

In this paragraph we will comment on some methodological issues and draw conclusions about the effect of these issues on the validity and value of the results.

Researcher bias and subjectivity

As mentioned in the first section of this thesis, a major drawback of this kind of social research is the subjectivity involved in transcribing and interpreting results. Although we did try to involve as many sources as possible to triangulate findings, we a) never know the effect on unsaid and thus undiscovered developments in the stakeholder environment and b) we always need to interpret the sources found and have to put them in the right context in time. This introduces a risk in validity of found results. We tried to counter this bias by discussing interview results with experts, like the respective project team members and experts from the university.

Another drawback is the position of the researcher during the course of the projects. Even in the non-intervention cases, the researcher and the research itself has potential effects on the project management of the projects, since it focuses attention to a specific theme. This may influence the results.

Nevertheless, to focus attention to the environment and providing insights into how to deal with the environment, does not seem to have significant effects on the results. However, these drawbacks do need to be taken into account, in valuing the model itself and the results produced.

Statically evaluating dynamics

In our theoretical framework we argued that the stakeholder environment is a *perpetuum mobile*. There's constant movement in stakeholder characteristics and attributes, potentially influencing the project process and eventual project outcome.

It is virtually impossible to dynamically monitoring all these movements and dynamics, let alone translating this knowledge into actions.

For this reason we chose a couple of measurement points to evaluate dynamics. These snapshots at certain points in time may be already be dated at the time of actual SAR construction. As can be seen in the B2 case, where we had one additional measurement point between initiation and go live, these dynamics are significantly present. This notion leads to the discussion how to properly account for these dynamics in our research method. In theory, real time measurement of the stakeholder environment dynamics would provide the most reliable information. In practice, this is far from achievable. Nevertheless, this implicates that in fact with the model provided we can only provide retrospective analysis.

The practical tradeoff of value of the generated results must also be taken into account; more measurements increase the burden on the stakeholder environment (in generating the input data for the model) and do not necessarily lead to actions by the project team due to lack of time (can we materialize the outcomes of the analyses?)

In other words, *the stakeholder management methodology and tooling as proposed here may never form a project on itself, in terms of time and resourcing, but must always remain in support of the project executed*. This statement must always be leading in the tradeoffs made in the elaborateness of the analyses and measurements executed.

Data sources and collection methods

The data used to evaluate the cases described here, were gathered from both documents as online surveys and physical interviews.

From our case studies and the poor response rates on the web surveys we may conclude three things;

a. we did not put enough effort in convincing respondents to join in the survey,
b. the survey itself proved to be complicated or too long,
c. online surveys do not prove to be suitable for our research proposed here.

We believe that we put a large amount of effort in convincing and reminding respondents to fill out the surveys. This did lead to additional surveys to be filled out, but response rates remained low. With respect to the complexity of the survey, we asked actual respondents how they experienced the questions used and the duration of the survey. Both were estimated as 'do-able'. Since the survey was based on proven questionnaires from previous research (Venkatesh, et al., 2003), this further strengthens the notion that the survey questions were understandable.

We did have some discussions about the suitability of web surveys in the collection of data about the stakeholder environment. Most concerns relate to the sensitivity of the answers in prioritizing or scaling stakeholders, even though the answers were anonymous. Stakeholders did not feel comfortable about answering questions about others or themselves relating to influence or capacity attributes. This 'discomfort' was felt to be less in the personal conversations held. The timing of the surveys, right after or just before personal contact with the research might have impacted the response rates as well. The personal connection or understanding generally has a major impact on response rates as indicated by Marcussen (Marcussen, 2001). This was indicated by a couple of stakeholders in response to why they didn't fill in the survey. Besides the above, the interviews held were felt to be very intensive by both the researcher as well as the stakeholders. The average interview took about an hour and on average two interviews were held with each stakeholder of each of the case studies. Since most case studies took place around the same time, this put a large stress on the researcher during the data collection phase of the research.

We do believe however, that these kind of interviews are the only way to approach the actual dynamics in the stakeholder environment as close as possible. Again, a drawback of this collection method, is the actual (unintended) influencing of the population by the data collection itself. The project environment must however allow for this kind of data collection.

9.3 CONCLUSIONS WITH RESPECT TO THEORETICAL MODEL

Remember, in our theoretical model discussed in the first section of this thesis, we mapped our three hypotheses on cycles of the stakeholder management cycle. To execute the activities as proposed by the stakeholder management cycle, several tools and models were developed based on the literature review in the first section of this thesis.

Figure 98: *The stakeholder management cycle summarized.*

Research model domain	Cycle stages
Stakeholder knowledge	1. Identify stakeholders
	2. Gather information on stakeholders
Stakeholder dynamics	3. (Determine) stakeholders' positions
	4. (Determine) stakeholder strengths and weaknesses
Engagement strategy/- activities	5. Develop stakeholder management strategy
	6. Predict stakeholder reaction; develop alternatives
	7. Implement stakeholder strategy
	8. Evaluate results and adjust strategy

The stakeholder management cycle used proposed a good basis for the formulation and construction of the tools. The model provided tools for the assessment for the analysis of the environment and proposed a structured phase-model as a 'walkthrough' along the project. However, during our evaluations of the case studies, we lacked good measures to evaluate project success in terms of stakeholder satisfaction. This is of high importance in order to properly evaluate the effects of engagement strategies and interventions on the stakeholder environment.

Along the course of the project, we discovered that the engagement strategy matrix was seen as the most practical overview for project management to translate outcomes of the stakeholder assessment into action. At the same time, there was high demand in more specific advice regarding the strategies. For example, if a reduction of resistance was proposed, what intervention actions could help a project team to operationalize this strategy? To enhance usability in project management practice, it is advised to further elaborate on these interventions.

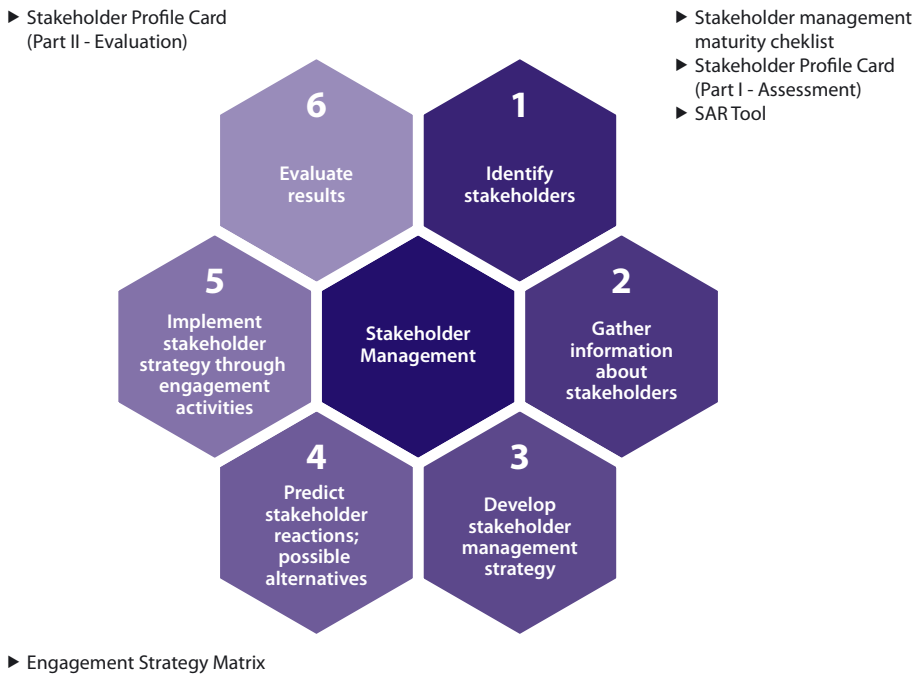
9.4 A TOOLKIT FOR PROJECT MANAGERS

Combining insights gained in the case studies performed with our theoretical model, we are capable of providing a practical toolkit that can be used in practice by project managers/ and –teams engaged in comparable projects.

The basis of the toolkit is the stakeholder management cycle, providing the steps that need to be planned and integrated in the overall project planning. The set of tools is combined in a so-called toolkit, separately developed by the researcher.

Before using the toolkit, one must discuss the complexity of the project, both in terms of intended deliverables as well as the stakeholder environment. The *Quick Reference Card* supplied with this thesis, serves as a good starting point for using the toolkit as well.

Figure 99: *The stakeholder management cycle combined with developed tools.*



All stages described are supported by different tools, trying to support project management in shaping overall stakeholder management. The different components are all previously discussed in this thesis.

Table 116: *Stages and tooling of the toolkit.*

Stakeholder management cycle activities	Tool
1. Identify stakeholders 2. Gather information about stakeholders	- Stakeholder Management Maturity Checklist - Stakeholder Profile Card (Part I) - SAR Tool
3. Develop stakeholder management strategy 4. Predict stakeholder (alternative) reactions 5. Implement stakeholder strategy through engagement activities	- SAR Tool - Engagement Strategy Matrix
6. Evaluate results and satisfaction	- Stakeholder Profile Card (Part II)

Conclusions

10

In this chapter we will summarize the key findings of our research and will reflect on the research questions and – objectives posed at the beginning of our thesis. In addition, attention is given to a variety of items of discussion to follow up on the conclusions. Finally, areas for improvement and suggestions for further research are described.

In the first part of this thesis, we discussed the context of IT-based innovation adoption processes in hospitals and formulated a research objective with connecting research questions as a guideline for our study;

The main objective of our research is to develop a practical methodology to evaluate stakeholder dynamics, in order to provide insights in the role of these dynamics during IT-based innovation adoption processes in hospitals. These insights may ultimately enable the formulation of engagement strategies to enhance IT-based innovation implementation success in hospital settings.

As hypothesized, achieving this objective may increase innovation adoption and thus decreases the chances of delays and non-conformance costs.

By developing and testing our model composed of several components we gained insights in developments in different stakeholder environments during five different projects, in adherence of our research objective. We used the insights to map stakeholders on the engagement strategy matrix to evaluate specific strategies. In two cases we used this matrix to advise the project team. The executed research resulted in a practical methodology as described above. We evaluated the project after go live with the stakeholders involved. Stakeholders interviewed regarding their satisfaction with project outcome and – process, did mention the effect of certain interventions on their resistance and influence on the project.

Based on the above, we believe we largely met our research objective as posed at the initiation of our research. In relation to our objective to minimize the risk of delays and non-conformance costs, two commonly found phenomena are addressed in our research;

1. ***"Stakeholder management is considered necessary as part of project management, but project teams indicate that it is hard to translate this notion into practice, let alone taking into account the dynamics in the environment."***
2. ***"Why is it that only after unintended events happen in a project we wonder why crucial events or stakeholder dynamics were not seen and encountered during the project?"***

Regarding the first phenomena, we see that elaborate attention to the specifics of the stakeholder environment is often ignored or statically discussed (often only at the initiation of a project in initiation documents). Our conclusion is that this has to do with a lack of knowledge about the stakeholder environment, not so much the desire to get this information. The project manager may not have the skills or the resources required to carry out the tasks involved in making the necessary inquiries. As stated earlier by Jepsen and Eskerod (2009), this is often the case in using stakeholder analysis tools in practice.

In other words, there's hardly any knowledge in the discussed cases about how to structure stakeholder management. Our methodology does help in the evaluation of the stakeholder environment and does generate knowledge that can be used in this respect. It does supply suggestions for dealing with the dynamics in the form of engagement strategies. At the same time, this does also illustrate that stakeholder management is not a static paragraph in the project initiation document, but an iterative and dynamic activity in line with the developments in the stakeholder environment itself.

In discussing the results of among others the LabInt case, the second phenomenon was often discussed. It was concluded that '*stakeholder blindness*' can slowly creep in during any project. During project execution, developments are often not noted or are noted but are not properly estimated. Both phenomena can be addressed by the methodology and tooling developed in our research;

1. ***As the case studies suggest, knowledge about the stakeholder environment and acting connecting to this knowledge has a positive effect on stakeholder satisfaction.***

2. ***By using the methodology and toolkit proposed, knowledge about the stakeholder environment can be generated at several points in time, thus taking into account developments in the stakeholder environment.***

3. ***By integrating stakeholder assessments and evaluation moments in project planning templates, one can keep an up to date overview of developments in the stakeholder environment and can be supported in prioritizing stakeholder attention.***

4. ***The methodology supports the formulation of intervention activities by suggesting engagement strategies.***

5. ***The methodology is only effective when stakeholder management maturity of the project team is adequate.***

We do not intend to suggest that our methodology is the 'holy grail' of stakeholder management methodologies in the described settings. We do believe however that the methodology aids in the awareness and consciousness about the stakeholder environment; *it's the thought of the stakeholder environment that counts*. Furthermore, as clearly indicated, the stakeholder management maturity level of the project team is significantly influencing the added value of the proposed methodology. Assessment of this maturity level should indicate whether to engage in stakeholder management activities like these in the first place.

In using the toolkit as proposed here, one must carefully consider the intensity of performing iterative stakeholder analyses and the willingness and capacity of the project team to deal with the results. The tool always needs to be in support of project management and must not form a project on its own.

The performed research does indicate that the subject of stakeholder management does not receive the attention it deserves and requires, since most project managers agree that stakeholder management in projects in fact might be more important than actually mastering skills to contain time or money or even scope of a project. This discussion highlights the importance of our research and findings.

10.1 THEORETICAL RELEVANCE

In chapter 4 we mentioned specific areas of contribution to literature through our research. We noted that hardly any stakeholder model is effectively capable of dynamically capturing stakeholder movements during a project.

As noted earlier, stakeholder analysis models found in literature often capture a) one domain (i.e. capacity) and b) provide a static evaluation.

One of the main contributions of our research is the development of a model that proves to being able to gain dynamic insights in a project's stakeholder environment, by uniquely combining both intentions and capacity domains. We believe that in combining the two domains, one can get deeper insights in stakeholder movements along the innovation journey. Furthermore, the model shows that it is possible to adjust engagement strategies based on these dynamics in a relatively simple manner.

Another area of attention related to the usability of the model in practice. As mentioned earlier, we believe the model is suitable for real life project environments and is minimally invasive in the project process. At the same time, one must carefully balance the time put into analysis versus time needed for other project management activities.

10.2 SUGGESTIONS FOR FURTHER RESEARCH

Many detailed suggestions for improvement and further research in relation to the models and tooling are already given along the course of the thesis (e.g. at the closure of the LabInt case). In this paragraph the major general areas of attention will be discussed that can improve the methodology and tooling as described in this research.

First of all, the fluidity of the stakeholder environment leads to the discussion whether acting on snapshots may actually benefit a project at all. The snapshots are dated the moment they're taken, due to the notion that the stakeholder environment is in continuous movement on one or multiple stakeholder attributes. Even though accuracy may increase with an increase in snapshots, real-time information is never available. This means that in fact, strategies are proposed based on historical information thus acting on them may possibly impose adverse effects. Subsequently, one can argue and investigate whether acting on historical information could do more harm than not knowing or acting at all.

In this research we suggested engagement strategies along the axis of potential resistance and potential influence. Interesting to know is what activities or interventions are most effective in supporting these strategies in the context of specific projects. Reduction of resistance of stakeholders can be achieved by a variety of interventions, e.g. by changing formal role of the stakeholder in the project, in enhanced communication, participatory design, etc.

As stated earlier in our cross-case analysis, we have good indications that properly aligned and timed engagement activities do lead to a positive influence on stakeholder dynamics in favor of stakeholder satisfaction. However, to strengthen this notion, one must further try to isolate the indicated relationship between stakeholder attribute dynamics and the response to these intervention activities. The continuous movement in the stakeholder environment is sparked by a variety of variables, both within as well as outside the stakeholder community at hand. For example, changes on attributes of one stakeholder may or may not impact other stakeholders' attributes. The above intervention effectiveness issues did not fit in the scope of our research, but may certainly enhance the usability and effectiveness of the toolkit proposed here.

At the same time, new information introduced from outside the community, like government laws, may significantly alter the composition of the environment as a whole. A better understanding of the significance of potential influential factors can help in better understanding stakeholder dynamics. Methodologically, the scoring of the informal attributes remains a tedious job, as also indicated in previous comparable stakeholder research (e.g. Bourne, 2005). The stakeholder profile cards proposed here do provide some scoring mechanisms, but may not be sufficient enough to capture the attributes as thoroughly as possible. The validation of the scoring is hard, since the constructs are valued subjectively. Furthermore, the constructs are often considered complex to understand by respondents involved, increasing the risk of misinterpretation. One must also note that we took a combination of attributes to describe a stakeholder's engagement priority, while this is only a subset of actual stakeholder characteristics and attributes. Even though the researcher believes that the attributes do provide a good general understanding of the position of the stakeholder and its developments in terms of acceptance and influence, much more attributes can be taken into account to better understand dynamics. On the other hand, one must always be careful not to over-analyze, not taking into account the purpose of the exercise in practice.

Summarizing, the subject of stakeholder dynamics is a very interesting field of study that needs to be further explored to be of optimal value for project managers.

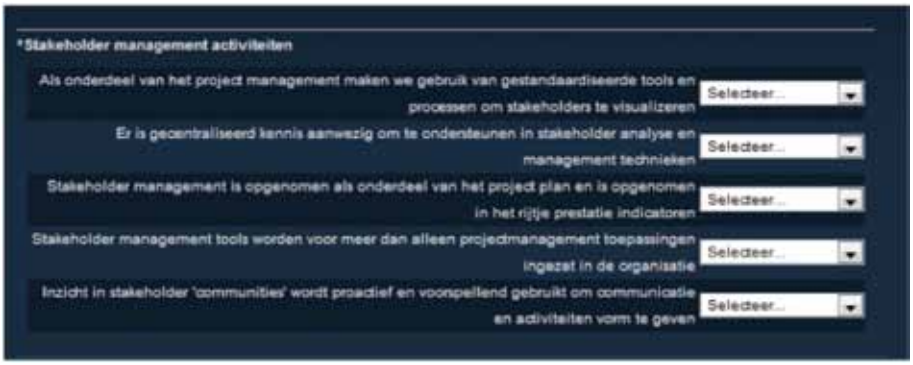
Who's up for the continuation of this adventurous journey?

Appendices

Appendix A: Web survey project team/steering committee

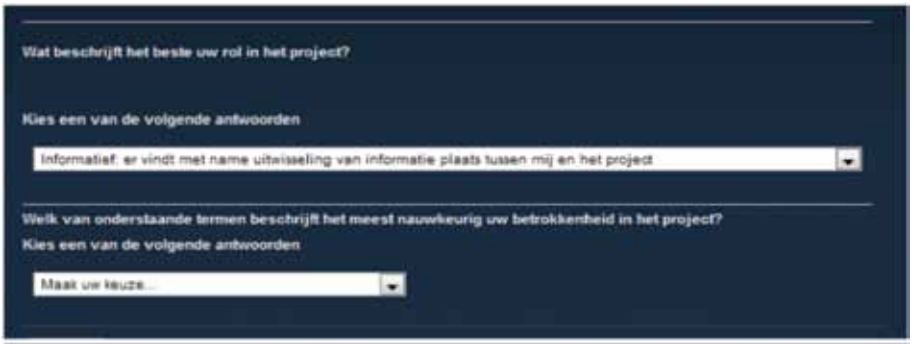
Below, an excerpt of the most important questions of the survey are presented.

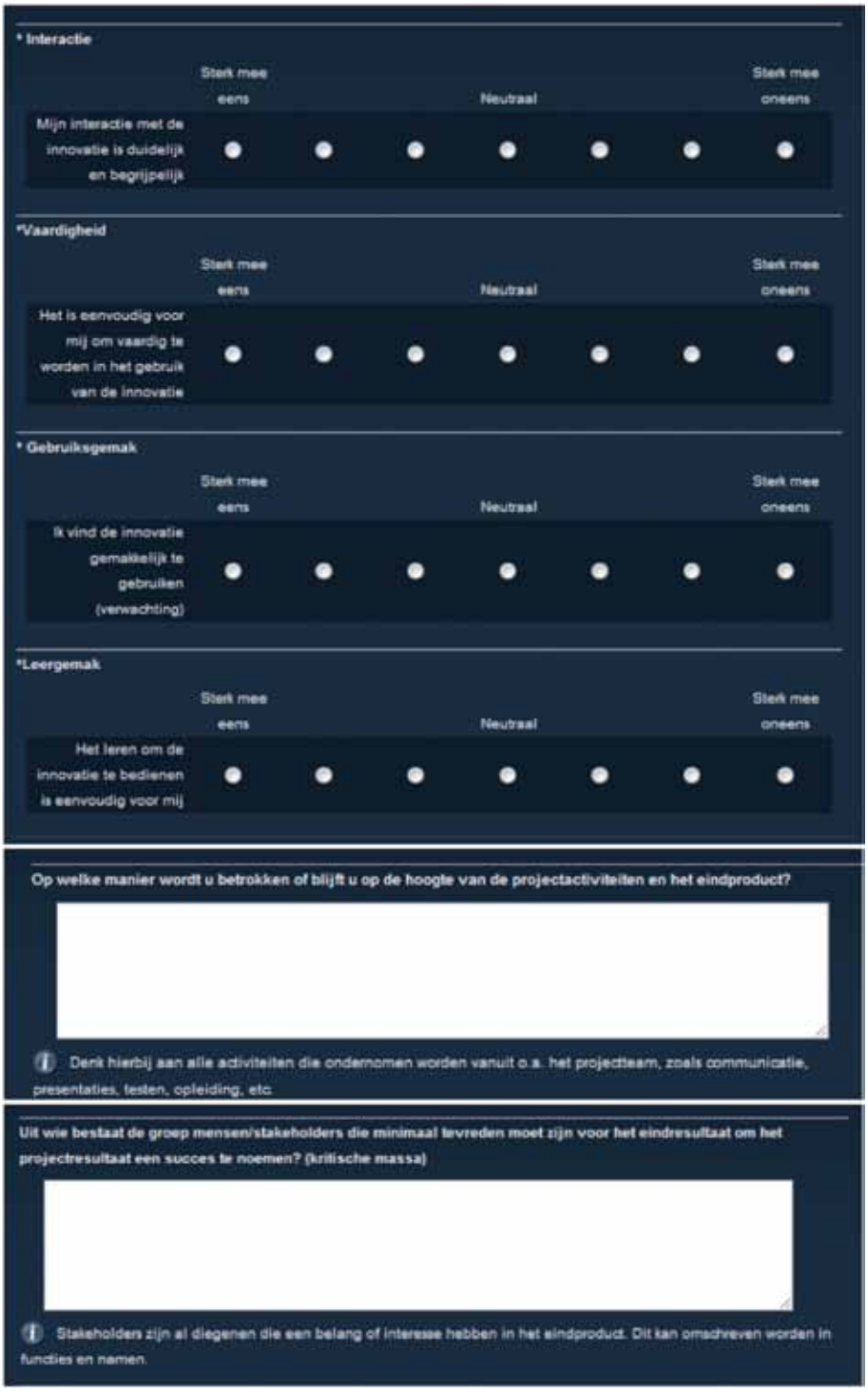

* Interactie
Sterk mee eens
Neutraal
Sterk mee oneens
De interactie met de innovatie is duidelijk en begrijpelijk
*Vaardigheid
Sterk mee eens
Neutraal
Sterk mee oneens
Het is eenvoudig om vaardig te worden in het gebruik van de innovatie
* Gebruiksgemak
Sterk mee eens
Neutraal
Sterk mee oneens
De innovatie is gemakkelijk te gebruiken
*Leergemak
Sterk mee eens
Neutraal
Sterk mee oneens
Het is eenvoudig om de innovatie te leren bedienen


*Stakeholder management activiteiten
Als onderdeel van het project management maken we gebruik van gestandaardiseerde tools en processen om stakeholders te visualizeren
Selecteer...
Er is gecentraliseerd kennis aanwezig om te ondersteunen in stakeholder analyse en management technieken
Selecteer...
Stakeholder management is opgenomen als onderdeel van het project plan en is opgenomen in het rijtje prestatie indicatoren
Selecteer...
Stakeholder management tools worden voor meer dan alleen projectmanagement toepassingen ingezet in de organisatie
Selecteer...
Inzicht in stakeholder 'communities' wordt proactief en voorspellend gebruikt om communicatie en activiteiten vorm te geven
Selecteer...


Welke activiteiten onderneemt u al met betrekking tot stakeholder management en op wie en/of welke groepen zijn deze activiteiten gericht?
Denk hierbij aan alle activiteiten die ondernomen worden vanuit o.a. het projectteam, zoals communicatie, presentaties, testen, opleiding, etc.

Appendix B: Web survey other stakeholders




* Interactie
Sterk mee eens
Neutraal
Sterk mee oneens
Mijn interactie met de innovatie is duidelijk en begrijpelijk
*Vaardigheid
Sterk mee eens
Neutraal
Sterk mee oneens
Het is eenvoudig voor mij om vaardig te worden in het gebruik van de innovatie
* Gebruiksgemak
Sterk mee eens
Neutraal
Sterk mee oneens
Ik vind de innovatie gemakkelijk te gebruiken (verwachting)
*Leergemak
Sterk mee eens
Neutraal
Sterk mee oneens
Het leren om de innovatie te bedienen is eenvoudig voor mij
Op welke manier wordt u betrokken of blijft u op de hoogte van de projectactiviteiten en het eindproduct?
Denk hierbij aan alle activiteiten die ondernomen worden vanuit o.a. het projectteam, zoals communicatie, presentaties, testen, opleiding, etc.
Uit wie bestaat de groep mensen/stakeholders die minimaal tevreden moet zijn voor het eindresultaat om het projectresultaat een succes te noemen? (kritische massa)
Stakeholders zijn al diegenen die een belang of interesse hebben in het eindproduct. Dit kan omschreven worden in functies en namen.

Appendix C: Stakeholder Profile Cards

Figure 100: *Part I of the stakeholder profile card.*

<table>
<tr><td colspan="4">STAKEHOLDER PROFILE CARD
PART I: ASSESSMENT</td></tr>
<tr><td colspan="4">NAME:

FUNCTION:</td></tr>
<tr><td colspan="2">1. Trust /confidence in the organisation in delivering results (previous experiences)</td><td colspan="2">2. Prior commitment with comparable projects/activities</td></tr>
<tr><td colspan="2">3. What problems need to be addressed?</td><td colspan="2">4. Expectations: addedvalue</td></tr>
<tr><td colspan="2">5. Expectations: possible losses</td><td colspan="2">6. Willingness to contribute to the project (result) or parts</td></tr>
<tr><td colspan="2">7. Interests in terms of the project (results)</td><td colspan="2">8. Collaboration partners</td></tr>
<tr><td colspan="2">9. Present conflicts? With what stakeholders?</td><td colspan="2">10. Comments</td></tr>
<tr><td colspan="2">Attributescores / estimation (SAR)</td><td colspan="2">Engagement strategy</td></tr>
<tr><td>Potential Power/ influence</td><td>low 1 2 3 4 5 high</td><td rowspan="2">Why should this stakeholder be engaged?</td><td rowspan="2"></td></tr>
<tr><td>Importance to</td><td>low 1 2 3 4 5 high</td></tr>
<tr><td>Vested stake</td><td>low 1 2 3 4 5 high</td><td>Idealrole of this stakeholder</td><td></td></tr>
<tr><td>Proximity</td><td>low 1 2 3 4 5 high</td><td rowspan="2">Intended engagement strategy?</td><td rowspan="2">Involve/empower
Cooperate
Transform
Monitor</td></tr>
<tr><td>TOTAL A (sum)</td><td></td></tr>
<tr><td>Participation level</td><td>1 Create /Collaborate
2 Challenge
3 Contribute
4 Conform
5 Non-conform/participate</td><td>Interventions

Planning</td><td></td></tr>
<tr><td>Functionalrole</td><td>1 Informative
2 Informative/consultative
3 Consultative
4 Consultative/Decisional
5 Decisional</td><td>Priority of gifts</td><td>1.
2.
3.</td></tr>
<tr><td>Effort expectancy (interaction clear/ understandable/easy)</td><td>Low/no 5 4 3 2 1 high/yes</td><td rowspan="2">‘Stakeholder manager’
Who can influence this stakeholder?</td><td rowspan="2"></td></tr>
<tr><td>Performance expectancy (useful/productivity/ quality of work)</td><td>Low/no 5 4 3 2 1 high/yes</td></tr>
<tr><td>TOTAL B (sum)</td><td></td><td></td><td></td></tr>
</table>

Figure 101: *Part II of the stakeholder profile card.*

STAKEHOLDER PROFILE CARD PART II: EVALUATION			
NAME: **FUNCTION:**			
1. Did the project results match expectations?		2. Experienced bottlenecks	
3. Did the project elevated the amount or severity of problems/bottlenecks?		4. Are you satisfied with the way you are or were involved in the project and the result?	
5. Did the project contribute to the elemination or reduction of problems/bottlenecks?		6. Wouldyouparticipate in the same way in comparable projects in the future?	
Attributescores / estimation (SAR)		**Engagement strategy**	
Was the estimation of influence correct?	Yes / No,	Did the stakeholder attain the intended role in the project?	
Was the estimation of importance to the project correct?	Yes / No,	Would you consider the executed engagement strategy a success?	
Was the estimation of vestedstake of the stakeholder correct?	Yes / No,	How were the planned actions/ interventions received by the stakeholder? (positive/negative)	
Was the estimation of proximity of the stakeholder correct?	Yes / No,	What gifts were actually realized for this stakeholder?	1. 2. 3.
Was the estimation of the participation level of the stakeholder correct?	Yes / No,	Did the projected stakeholder manager exert any influence?	
Was the estimation of the functional role of the stakeholder correct?	Yes / No,		

Samenvatting

12

INLEIDING[16]

De introductie van nieuwe informatietechnologie in ziekenhuizen lijkt te leiden tot wisselende resultaten in de praktijk; zo worden regelmatig projecten uitgesteld of kosten ze meer dan begroot. Dit heeft dikwijls tot gevolg dat ook de initiële doelen van kwaliteits- of efficiency verbetering niet worden behaald.

Het lijkt erop dat, hoewel dit onderwerp reeds jaren grondig is bestudeerd, er een grote kloof bestaat tussen het theoretische inzicht dat succesvolle innovatie implementaties worden gekenmerkt door een goede omgang met weerstand, versus de operationalisatie van deze constatering in de dagelijkse praktijk.

In een groot aantal empirische studies wordt de participatie en het vertrouwen van de relevante stakeholders[17] beschouwd als een belangrijke factor voor het succes van innovatie adoptie.

Het projectmanagement dient continu afwegingen te maken wanneer en hoe stakeholders te betrekken in het proces van implementatie, om zo de uiteindelijke resultaten van het project te kunnen bewaken of verbeteren.

Het onderzoek beschreven in dit proefschrift, richt zich op aspecten met betrekking tot omgang met stakeholders. Er wordt onderzocht waarom het zo moeilijk is voor projectmanagers om te voorspellen hoe mensen zich zullen gedragen gedurende innovatie implementaties en hoe de voornaamste stakeholders te beïnvloeden zijn om beoogde resultaten te bereiken.

Dit leidt tot nieuwsgierigheid naar wat de rol van de stakeholder omgeving eigenlijk is in relatie tot het succes van IT-projecten in ziekenhuizen.

THEORETISCH KADER

In hoofdstuk 2 wordt het concept van innovatie, met name de niet-lineaire processen die samenhangen met innovatieadoptie, besproken. De metafoor dat het proces van innovatie adoptie gezien kan worden als een reis, waar reizigers van dezelfde groep dezelfde route op een eigen wijze en in eigen tempo doorlopen, wordt gezien als een belangrijk concept voor het theoretisch raamwerk van het onderzoek beschreven in dit proefschrift.

In hoofdstuk 3 wordt er aandacht besteed aan stakeholder theorie om een beter inzicht in de complexiteit van de implementatie-omgeving te krijgen en de verschillende standpunten van stakeholders gedurende projecten te onderzoeken.

[16] Om de leesbaarheid van de samenvatting te verbeteren, zijn de literatuurverwijzingen weggelaten. Deze kunnen in het proefschrift worden terug gevonden.

[17] Er is bewust voor gekozen om in de samenvatting in plaats van de tem belanghebbende de Engelse term stakeholder te hanteren, vanwege de bekendheid van dit begrip in algemeen taalgebruik en literatuur.

Zowel technieken voor de uitvoer van stakeholderanalyses, als methodes om stakeholder attributen te meten, worden beschreven. De conclusie wordt getrokken dat de *stakeholder omgeving* van een project voortdurend in beweging is, zowel in termen van samenstelling van stakeholders als in termen van de *capaciteit* en *intenties* van individuele stakeholders in relatie tot het project. We noemen dit fenomeen *stakeholder dynamiek*.

ONDERZOEKSMODEL

In deel 2 van dit proefschrift wordt het onderzoeksmodel beschreven. Het onderzoeksdoel, de vragen en hypotheses worden geïntroduceerd.

Op basis van de theoretische uitwerking in deel 1 van dit proefschrift, worden twee onderzoeksvragen geformuleerd;

1. *Wat is de rol van stakeholder dynamiek binnen ziekenhuizen in IT-gebaseerde innovatie adoptie processen?*

Op basis van stakeholder dynamiek wordt er onderzocht hoe de betrokkenheid van de stakeholder omgeving bij het project geoptimaliseerd kan worden. Dit is mogelijk door interventiemaatregelen af te stemmen op deze dynamiek. Daarom wordt de tweede onderzoeksvraag als volgt geformuleerd;

2. *Hoe kunnen benaderingsstrategieën optimaal worden vormgegeven in aansluiting op de aanwezige stakeholder dynamiek om zo de acceptatie van technologie te ondersteunen?*

De vragen helpen om de belangrijkste doelstelling van ons onderzoek te bereiken; *de ontwikkeling van een praktische methode om stakeholder dynamiek te evalueren, om zo inzicht in de rol van deze dynamiek te verkrijgen tijdens IT-gebaseerde innovatie adoptie processen*. Deze inzichten kunnen het projectmanagement uiteindelijk in staat stellen om benaderingsstrategieën te formuleren om zo het succes van IT implementaties in ziekenhuizen te beïnvloeden.

In de beschreven hypotheses wordt verondersteld dat de dynamiek in de stakeholder-omgeving de tevredenheid van stakeholders met het project proces en -resultaat aanzienlijk kan beïnvloeden. Verder wordt in deel 2 uitgelegd dat *succes van een project* kan worden gedefinieerd als het gecombineerde niveau van tevredenheid van relevante stakeholders. Dit versterkt de gedachte dat niet alleen de vraag *hoe* stakeholders betrokken dienen te worden, maar ook de vraag *wie van belang* is moet worden beantwoord. Antwoorden op deze vragen leiden tot een potentieel betere afstemming van activiteiten met de aanwezige stakeholder dynamiek in de projectomgeving, wat uiteindelijke stakeholder tevredenheid kan beïnvloeden.

Op basis van deze hypotheses en de relevante theorie zoals besproken in deel 1, wordt het onderzoekskader gebouwd in hoofdstuk 4, bestaande uit drie belangrijke componenten in relatie tot de gegeven definitie van projectsucces.

1. De component van *stakeholder kennis* heeft betrekking op de methode om de juiste informatie over de stakeholder-omgeving te verzamelen op het juiste moment. We beschrijven een stakeholder management cyclus met stappen om deze informatie te genereren. Een van de beschreven stappen is de bepaling van de volwassenheid van het stakeholder management van een project bij aanvang. We stellen een *checklist voor stakeholder management volwassenheid* voor om dit te evalueren.

2. *Stakeholder dynamiek* wordt beschreven in termen van constructen met betrekking tot de *capaciteit* van stakeholders in de projectomgeving om het project te beïnvloeden en de *bereidheid* en *intentie* van stakeholders om deze capaciteit in te zetten. De combinatie van deze twee domeinen bepaalt de benaderingsprioriteit van een stakeholder voor het project management. Deze benadering geeft inzicht in de vragen *welke* stakeholders betrokken dienen te worden en *hoe*. In deel 2 van dit proefschrift is hiervoor een geïntegreerd model ontwikkeld, de *Stakeholder Acceptatie Radar (SAR)*.

3. Na het verkrijgen van inzichten in de stakeholder-omgeving, o.a. door middel van de SAR, wordt deze kennis gebruikt om mogelijke benaderingsstrategieën te formuleren voor de meest relevante stakeholders. Dit wordt gedaan door het projecteren van prioriteiten en mate van betrokkenheid van stakeholders op ontwikkelde *benaderings-strategie matrices*, waar de mogelijke invloed ten opzichte van potentiële weerstand van de meest relevante stakeholders wordt gevisualiseerd.

ONDERZOEKSAANPAK

In hoofdstuk 5 wordt de onderzoeksaanpak beschreven. Het onderzoeksontwerp leent zich voor een *interpretatieve* benadering, waarbij er van wordt uitgegaan dat de kenmerken van de sociale omgeving worden samengesteld als interpretaties van individuen en dat deze interpretaties meestal van tijdelijke en situationele aard zijn. Er wordt voorgesteld de benodigde data verzameling uit te voeren middels *kwalitatief case studie onderzoek*. Op basis van het concept van triangulatie, is het de bedoeling om gegevens te verzamelen door middel van web enquêtes, semigestructureerde diepte interviews en analyse van documenten. Stakeholder analyses worden uitgevoerd en besproken, activiteiten binnen de projecten worden geanalyseerd en interventies, gebaseerd op de benaderingsstrategie matrix, worden geformuleerd.

Vijf case studies werden geselecteerd, bestaande uit vijf verschillende IT-implementatie projecten in twee grote ziekenhuizen in Nederland. Het verzamelen van gegevens nam meer dan een jaar (2010-2011) in beslag, met in totaal meer dan 65 geïnterviewden. Een aantal 'foto's' van de stakeholder omgeving werd genomen, tijdens de voortgang van het project ten behoeve van evaluatie en advies. De cases werden onder andere beschreven op het gebied van project doelstellingen en de tijdlijn van relevante gebeurtenissen. Onderzoeksresultaten zijn gepresenteerd door middel van de componenten zoals hierboven beschreven. Twee van de cases werden behandeld als interventie gevallen, waar, op basis van de snapshots, advies is gegeven over te initiëren of te wijzigen interventies.

CROSS CASE ANALYSE

In de laatste sectie worden de resultaten van de case studies geëvalueerd. Eerst wordt in hoofdstuk 8 een *cross case analyse* gemaakt op basis van een reeks beoordelingscriteria. De cross case conclusies kunnen als volgt worden samengevat:

- *De resultaten van de cases studies laten zien dat een uitgebreid inzicht in de configuratie van de stakeholder omgeving de formulering van goed passende benaderingsstrategieën ondersteunt.*
- *De resultaten van de case studies geven aan dat een project team met een gemiddelde tot hoge stakeholder management volwassenheid in staat is om de kennis over de stakeholder omgeving correct te operationaliseren in termen van benaderingsactiviteiten.*
- *De cases geven aan dat goed op elkaar afgestemde en getimede benaderingsactiviteiten een positieve invloed hebben op stakeholder acceptatie.*
- *De interventie cases geven aan dat goed afgestemde benaderingsstrategieën leiden tot een verhoging van tevredenheid van de stakeholder met het project proces.*
- *De ontwikkeling van de mogelijke weerstand van een stakeholder gedurende het project heeft invloed op de tevredenheid van de stakeholder tijdens het project en na oplevering van het project.*

Dit betekent dat de rol van stakeholder dynamiek op het succes van een project groot is zoals ondervonden in de casestudies. *Goede kennis van de stakeholder dynamiek en de juiste omgang met deze dynamiek, maken het mogelijk om de rol van de stakeholder in een project en zo de tevredenheid over het project, te beïnvloeden*.

In hoofdstuk 9 wordt er gereflecteerd op de gereedschappen en methoden die zijn gebruikt om de gegevens in het kader van ons onderzoek te verzamelen. Onderdeel van de geformuleerde doelstelling is de ontwikkeling van een praktisch instrument om zowel de evaluatie van de stakeholder omgeving te kunnen meten, alsmede om passende benaderingsstrategieën voor te kunnen stellen. De stakeholder management cyclus die gebruikt is, vormt een goede basis voor de formulering en de bouw van de gebruikte analyse tools. Er wordt geconcludeerd dat de bruikbaarheid van de tooling (waaronder de eerder beschreven SAR) voldoende rekening houdt met project omgevingen in de dagelijkse praktijk.

In de reflectie op de methodologie, wordt het probleem van '*onderzoeker partijdigheid*' en de beperkingen van onze methoden voor gegevensverzameling besproken. De kwestie van het alleen maar statisch kunnen evalueren van daadwerkelijke dynamiek wordt verkend, evenals het delicate evenwicht tussen relevantie van de stakeholderanalyse resultaten versus geïnvesteerde tijd. Een van de conclusies is dat web enquêtes niet geschikt zijn voor dit soort onderzoek zoals blijkt uit de case studies.

CONCLUSIES

Hoofdstuk 10 bevat de algemene conclusies van het onderzoek en suggesties voor verder onderzoek. Er wordt geconcludeerd dat de bij aanvang geformuleerde doelstelling om een praktische tool te ontwikkelen om inzicht te krijgen in de stakeholder omgeving en het verkrijgen van inzicht in de rol die stakeholder dynamiek speelt in IT gebaseerde

projecten in ziekenhuizen, is behaald. Twee fenomenen die tot uiting kwamen gedurende het onderzoek, worden behandeld als illustratief voor de relevantie van de studie;

"Stakeholder management wordt als noodzakelijk onderdeel beschouwd van project management, maar projectteams geven aan dat het moeilijk is om deze constatering te vertalen naar de praktijk, laat staan rekening te houden met de dynamiek in de omgeving."

"Hoe komt het dat pas na onbedoelde gebeurtenissen in een project we ons afvragen waarom deze cruciale gebeurtenissen of dynamiek niet eerder werd gezien tijdens het project?"

Met betrekking tot het eerste verschijnsel zien we dat uitgebreide aandacht voor de specifieke kenmerken van de stakeholder omgeving vaak wordt genegeerd of statisch, eenmalig wordt besproken, vaak alleen bij de start van een project. Onze constatering is dat dit te maken heeft met een gebrek aan relevante kennis over de stakeholder omgeving en *hoe* we deze kennis, kunnen verkrijgen. De wens om deze informatie *te verkrijgen* is in alle cases uitgesproken.

Met betrekking tot het tweede fenomeen is de conclusie dat '*stakeholder blindheid*' langzaam een project kan inkruipen en van grote invloed kan zijn op het projectresultaat. Tijdens de uitvoering van projecten worden ontwikkelingen vaak niet gezien of wel gezien maar niet correct op waarde geschat, door verschillende situationele omstandigheden.

Beide fenomenen kunnen worden geadresseerd met de in dit proefschrift beschreven methodiek en met de ontwikkelde *tooling*;

- Zoals de beschreven casestudies suggereren, heeft kennis over de stakeholderomgeving en het acteren op deze kennis een positief effect op de tevredenheid van stakeholders met het project resultaat.
- Door het gebruik van de methodologie en de voorgestelde toolkit, kan kennis over de stakeholderomgeving worden gegenereerd op verschillende momenten van het project, waarmee rekening gehouden kan worden met ontwikkelingen in de stakeholderomgeving.
- Door de integratie van stakeholder analyses en evaluatiemomenten in project planning templates, kan men een gestructureerd overzicht houden van de ontwikkelingen in de stakeholder omgeving, dat het benaderen van stakeholders kan prioriteren.
- De methodiek ondersteunt de formulering van de interventies door het voorstellen van benaderingsstrategieën.
- De methodiek is alleen effectief wanneer het project team een hoog niveau van stakeholder management volwassenheid heeft.

Het geconstrueerde model draagt bij aan de wetenschap door de mogelijkheid om met het model de dynamische werkelijkheid van de projectomgeving in kaart te kunnen brengen. Daarnaast geeft de combinatie van acceptatie- en capaciteitsdomeinen een dieper inzicht in de bewegingen van stakeholders tijdens een project. Dit maakt het mogelijk om benaderingsstrategieën te formuleren, die actueler en beter bij de omgeving aangesloten zijn.

Suggesties voor verder onderzoek hebben onder meer betrekking op het verkrijgen van een beter inzicht in de vloeibaarheid van de stakeholderomgeving en de verdere isolatie van variabelen om de causaliteit tussen stakeholder dynamiek en interventies te verkennen.

Summary

INTRODUCTION[18]

The introduction of new information technology in hospitals seems to lead to mixed results in practice; projects are delayed or cost more than budgeted thus severely affecting projected goals of quality or efficiency improvement. It seems that even though this subject is thoroughly studied as the body of literature proves, it seems there's a large gap between the theoretical understanding that successful innovation implementations are characterized by properly managed resistance and the operationalization of this understanding in daily practice.

In a variety of empirical studies, the commitment and trust of the relevant stakeholder population is considered an important factor in innovation adoption success.

The management of an implementation project continuously has to decide when and how to engage stakeholders within the innovation process, in order to maintain or improve the innovation outcomes. The research described in this thesis focuses on aspects relating to this management of stakeholders. In this study, it is investigated why it is so difficult for project managers to understand how people will engage in innovation implementations and how to influence key stakeholders to achieve intended results.

This leads to curiosity of what the role of the stakeholder environment actually is in relation to the success of IT projects in hospitals.

THEORETICAL FRAMEWORK

In Chapter 2 the concept of innovation and specifically the non-linear processes associated with innovation adoption is discussed. The metaphor of innovation adoption as a journey, where travelers of the same group may be far apart along the road at any given point in time is seen as a key concept for the research framework.

In Chapter 3, stakeholder theory is discussed to better understand the complexity of the implementation environment and to investigate different stakeholder views on implementation projects. Both stakeholder analysis methodologies as well as stakeholder attribute measurements are described. The conclusion is drawn that a project's stakeholder environment is in continuous movement, both in terms of stakeholder composition as well as in terms of an individual stakeholder's *capacity* and *intentions*. This phenomenon can be described as the *stakeholder dynamics* of a project.

RESEARCH MODEL

In the second part of this thesis, the research- and study design is described. The research objective, questions and hypotheses are introduced.

[18] To enhance readability of the summary, references are omitted. These can be found in the thesis.

13 Summary

Based on the theoretical elaboration in the first chapters, two key research questions are formulated;

What is the role of intra-organisational stakeholder dynamics in IT-based innovation adoption processes in hospitals?

And connecting to this role, aiming to optimize the engagement of the project team in order to align intervention actions with these dynamics. Therefore, the second research question is formulated as follows;

How to shape and optimize engagement strategies connecting to stakeholder dynamics in order to support technology acceptance?

The questions help to achieve the main objective of our research; to develop a practical methodology to evaluate stakeholder dynamics, in order to provide insights in the role of these dynamics during IT-based innovation adoption processes in hospitals. These insights may ultimately enable the formulation of engagement strategies to enhance IT-based innovation implementation success in hospital settings.

It is hypothesized that the dynamics in the stakeholder environment may significantly affect stakeholder satisfaction with project process and -results. Furthermore, it is explained that project success can be defined by the combined level of satisfaction of relevant stakeholders. This strengthens the notion that not only the question of how stakeholders matter, but also the question of who matters needs to be answered. Answers to these questions leads to potential better alignment of engagement activities with stakeholder dynamics, which in turn may influence stakeholder satisfaction.

Based on these hypotheses and the relevant theory discussed in the first chapters, the research framework is built in Chapter 4, consisting of three key components in connection to the definition of project success.

1. The component of *stakeholder knowledge* relates to the methodology to gather the right information about the stakeholder environment at the right time. A stakeholder management cycle is described containing stages to generate this information. One of these stages is the determination of the stakeholder management baseline of a project at initiation. A so-called *stakeholder management maturity checklist* is proposed to capture this.
2. *Stakeholder dynamics* are described in terms of constructs relating to the capacity of stakeholders in the project environment to influence the project process and outcome and the *willingness and intention* of the stakeholder to enforce this capacity. The combination of the two domains may determine a stakeholder's priority or degree of relevance. This helps us in answering the *who* and *how* questions as stated above. For this purpose an integrated model is developed, the *Stakeholder Acceptance Radar (or SAR)*.
3. After gaining insights in the stakeholder environment, this knowledge is used to develop possible engagement strategies for the most relevant stakeholders by determining engagement priorities and by mapping stakeholders on *engagement strategy matrices*, where potential influence versus potential resistance of the most relevant stakeholders is analyzed.

RESEARCH APPROACH

In Chapter 5 the research approach is further explored. The phenomenon under study demands for an *interpretivist* approach, assuming that features of the social environment are constructed as interpretations by individuals and that these interpretations tend to be transitory and situational. Action research is proposed as appropriate to answer the research questions. Based on the concept of triangulation, it is aimed to collect data by means of web surveys, in-depth semi structured interviews and document analysis, to optimize validity of results. Stakeholder analyses are performed and discussed, events are analyzed and interventions based on the engagement strategy matrix are formulated.

Five case studies are selected, comprising five different IT implementation projects in two large hospitals in The Netherlands. The data collection took over one year (2010-2011), involving over 65 interviewees. Several snapshots during the project's progress are taken for evaluation. The cases are described, among others, in terms of project goals and timeline of events. Research results are presented through means of the key components as described above. Two of the cases are treated as intervention cases, where, based on the snapshots, advice was given to initiate or alter interventions aimed at the stakeholder population involved.

CROSS CASE EVALUATION

In the last section of the thesis, the results of the case studies are evaluated. First, in Chapter 8 a cross case comparison is made, based on a set of evaluation criteria. Cross case conclusions can be summarized as follows:

- *The results of the case studies indicate that a comprehensive insight in the configuration of the stakeholder environments does support the formulation of properly engagement activities.*
- *The results of the case studies indicate that a project team with medium to high stakeholder management maturity has the capacity to properly operationalize knowledge about the stakeholder environment into aligned engagement activities.*
- *The cases indicate that properly aligned and timed engagement activities lead to a positive influence on potential resistance.*
- *The intervention cases indicate that properly aligned and timed engagement activities lead to increased project process satisfaction.*
- *The developments of stakeholder potential resistance over time do have an influence on stakeholder satisfaction.*

This means that the role of stakeholder dynamics on a project's success is large as estimated in the case studies. In other words, *proper knowledge of stakeholder dynamics and acting upon these dynamics make it possible to influence a stakeholder's role in the project and thus may influence project success*.

In Chapter 9 a reflection is made on the tooling and methods used to collect the data as part of our research framework. Part of the research objective included to provision of a practical tool to both evaluate the stakeholder environment as well as to propose matching engagement strategies.

The stakeholder management cycle used proposed a good basis for the formulation and construction of the tools. It is believed that the usability of the tooling provided sufficiently takes into consideration real life project environments.

In the reflection on the methodology, the issue of researcher bias and the limitations of our data collection methods are discussed. The issue of only being able to statically evaluating dynamics is explored, as well as the issue of the delicate balance of relevance of stakeholder analysis results versus time invested. One of the conclusions is that web surveys are not suitable for this kind of research as appears from the case studies.

CONCLUSIONS

Chapter 10 contains the general conclusions of research as well as suggestions for further research. It is explained that the formulated research objective of designing a practical tool to analyze stakeholder dynamics and to effectively formulate engagement strategies is considered to be achieved.

Two phenomena found during the research analysis phase are broadly discussed as indicative for the added value of our study;

"Stakeholder management is considered necessary as part of project management, but project teams indicate that it is hard to translate this notion into practice, let alone taking into account the dynamics in the environment."

"Why is it that only after unintended events happen in a project we wonder why crucial events or stakeholder dynamics were not seen and encountered during the project?"

Regarding the first phenomena, elaborate attention to the specifics of the stakeholder environment is often ignored or statically discussed, often only at the initiation of a project. Our conclusion is that this has to do with a lack of knowledge about the stakeholder environment and *how* to obtain this knowledge, not so much the desire *to get this* information.

With respect to the second phenomenon it is concluded that '*stakeholder blindness*' can slowly creep in during any project that may significantly affect project outcome. During project execution, developments are often not noted or are noted but are not properly estimated, due to a variety of situational circumstances.

Both phenomena can be addressed by the methodology and tooling developed in the research;

- As the case studies suggest, knowledge about the stakeholder environment and acting connecting to this knowledge has a positive effect on stakeholder satisfaction.

- By using the methodology and toolkit proposed, knowledge about the stakeholder environment can be generated at several points in time, thus taking into account developments in the stakeholder environment.

- By integrating stakeholder assessments and evaluation moments in project planning templates, one can keep an up to date overview of developments in the stakeholder environment and can be supported in prioritizing stakeholder attention.

- The methodology supports the formulation of intervention activities by suggesting engagement strategies.

- The methodology is only effective when stakeholder management maturity of the project team is adequate.

One of the main contributions of our research is the development of a model that proves to being able to gain dynamic insights in a project's stakeholder environment, by uniquely combining both intentions and capacity domains. We believe that in combining the two domains, one can get deeper insights in stakeholder movements along the innovation journey.

Suggestions for further research include the further investigation to better understand the fluidity of the stakeholder environment and the further isolation of variables to explore the causality between stakeholder attribute dynamics and intervention activities.

Publications

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Stellingen behorend bij het proefschrift

The role of intra-organisational stakeholder dynamics in IT-based innovation adoption processes in hospitals

Door T.R.F. Postema
Oktober 2012

1. Het beheer van een project is niet alleen te vatten in harde meetbare aspecten zoals geld en tijd, maar zou voor het grootste gedeelte uit stakeholder management dienen te bestaan, gezien de constatering dat stakeholdertevredenheid project-succes bepaalt (dit proefschrift, pagina 89).

2. Het uitgebreid inzichtelijk maken van informele stakeholder attributen en structuren kan leiden tot hogere lasten dan baten in een project (dit proefschrift, pagina 254).

3. Bij het uitvoeren van stakeholder analyses bestaat er een spanningsveld tussen de tijd die benodigd is voor de uitvoer van de analyse en de kwaliteit en bruikbaarheid van de resultaten voor projectsturing (dit proefschrift, pagina 254).

4. Het gestructureerd uitvoeren van projecten conform bestaande project-managementtechnieken is het negeren van de dynamische werkelijkheid (dit proefschrift, pagina 254 & 255).

5. Het beschrijven van veronderstelde waarheden over afhankelijkheidsrelaties tussen variabelen in een model, is een stuk minder interessant dan het beschrijven van ware, variabele afhankelijkheidsrelaties tussen actoren.

6. De huidige verdeeldheid van macht in de gezondheidszorg leidt in de som dikwijls tot onmacht over de gedeelde operatie.

7. De inzet van IT toepassingen in een ziekenhuis ontbeert een gelijke behandeling als cliënten; een goede differentiaal diagnose, multidisciplinair overleg, een gedegen behandelplan met goede nazorg, met een optimale doorloopsnelheid.

8. De zorgen over toenemende kosten van de gezondheidszorg, zouden plaats moeten maken voor het geluk dat velen nu kennen van het bezit van een eigen huis wat men er voor in kan zetten.

9. De milkshake leert ons dat het luchtig benaderen van opschudding tot tevreden gezichten leidt in een verhitte omgeving.