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Implementing Intranet 2.0: A study of knowledge requirements for external consultants in enterprise systems

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Abstract

This paper reports on a case study focusing on intranet implementation projects seen from a consultancy lens. SharePoint is an Intranet 2.0 platform which is a user-centric system based on functionalities adapted from Web 2.0 technologies. Intranet implementation projects are accompanied by a complex socio-technical organizational environment, and require changes in organizational structure and culture. While former studies mainly have focused on challenges seen from the implementing organization's perspective, this study focuses on the experiences from external consultants working with implementation projects and the challenges they need to confront. Our study identifies required knowledge and roles to be undertaken by external consultants working in enterprise systems' (ES) implementation projects with a special attention towards intranet projects. We present a framework comprising required knowledge and roles to be undertaken by the consultants to succeed in their efforts of implementing intranet systems. Findings demonstrate that the consultants had to possess a wide range of knowledge in addition to master several roles during an intranet project. Technical knowledge, organizational knowledge and knowledge about the end-users were required, and roles such as project manager, system developer, advisor and knowledge broker were essential and had to be mastered. Our study contributes to understand the different roles enterprise systems professionals need to have a command of, and the diversity of knowledge they need to possess during enterprise-wide implementation projects.

Keywords: Intranet 2.0 implementation, external ICT consultants, knowledge requirements, roles of ES professionals

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1. Introduction

Contemporary organizations recognize the importance of managing knowledge in an effective manner. Accordingly, information and communication technologies (ICT), such as best practice databases, intranets, collaboration technologies, and recently, social media, are increasingly implemented in organizations to support knowledge management (KM) and organizational learning [1-4]. However, organizations still struggle to effectively manage their knowledge in order to create competitive advantage. In reality, many KM initiatives have failed [1, 5], as the costs are high; furthermore, confirming the realization of benefits from KM is difficult. The situated and contextual character of knowledge work practices differs across organizations, so the task of designing appropriate knowledge management systems (KMS) is complicated [6].

One common KM initiative is the company intranet which is the joint organizational connection and main entrance to different types of collaboration technologies and enterprise systems. As a result, several organizations decide to implement an intranet to ensure having this backbone. Knowledge is difficult to share, however, an intranet may facilitate knowledge sharing [7, 8]. An intranet provides functionalities encompassing sharing, creating, storing identifying, distributing and exploiting knowledge and information. In addition, intranets create relationships between knowledge workers and contribute to a flatter communication structure. However, an intranet implementation leads to obligation for changes in working habits and there are several challenges that may arise. Seen from the consultant's perspective, there are several challenges that may impede intranet implementation. Issues related to internal competencies, composition of project team and roles, knowledge requirements, resistance and project management are factors that make influence on the outcome of the project [9, 10]. Consequently, there are high knowledge requirements for external consultants taking part in the intranet implementation. As an intranet consultant you need to have the right skills and competencies, and being able to handle different roles in an intranet project which can be crucial for the outcome of the enterprise system implementation.

Several empirical studies have focused on implementation of enterprise systems in general, and intranet implementations in particular. However, most of these studies have revealed challenges for the implementing organization and the end-users, and less focus have been directed towards the role of external consultants in these projects.

This study focuses on intranet implementations seen from a consultancy lens, and we conducted a case study in the company CONSULT AS (pseudonym) which has several consultants working as implementing experts of enterprise systems such as customer relationship management (CRM), business intelligence (BI) and intranet systems. Our aim was to increase our knowledge about the role of external consultants in enterprise systems projects, and which knowledge they need to possess for being able to contribute to a successful enterprise system implementation – which in this study was directed towards intranet systems.

Hence the attention is specifically heading for the external consultants' experiences from different intranet projects and the challenges they have encountered in their enterprise systems' careers.

The following research questions have guided our study:

What kinds of knowledge should an external consultant possess to contribute to a successful intranet implementation? What kinds of roles should he master? How does he utilize his knowledge and specific roles to tackle upcoming challenges during an intranet implementation?

To explore these issues, we conducted interviews with consulting managers, project managers, system advisors and senior consultants in the company under investigation to reveal their experiences with respect to required knowledge and roles to be undertaken in an intranet implementation project. In the paper, we also discuss how the consultants apply their knowledge and mastered identified roles to meet upcoming challenges in a specific intranet implementation context.

The paper is organized as follows. Section 2 presents the concepts of intranet and knowledge management systems, and critical issues for intranet implementation. Section 3 introduces the research site and method, while Section 4 presents the main results of this study. Section 5 summarizes our results into a framework to highlight the most important issues regarding intranet implementation from a consultancy lens. In Section 6, we provide some concluding remarks.

2. KM, intranet concepts and critical implementation issues

KM is rooted in the concepts of organizational learning and organizational memory. The sum of all organizational knowledge represents the memory of KM; an organization is considered vulnerable if people leave the workplace and take part of the memory and organizational knowledge with them. Organizational memory comprises collective beliefs, behavioral routines, or physical artifacts that vary in their content, level, dispersion, and accessibility [11]. By its nature, organizational memory involves different degrees of dispersion throughout the organization. KM initiatives have focused on how to effectively utilize an organization's memory – the knowledge potential in terms of both tacit and explicit knowledge. Information and communication technology (ICT) solutions supporting KM are conceptualized as KMS and have been defined as tools to increase the efficiency of different knowledge processes in terms knowledge sharing, creation, storage/retrieval, transfer, and application [12]. Several KM initiatives have focused on the implementation of intranets to support employees in knowledge work activities and the provision of employees with access to all codified and formalized knowledge within an organization.

An intranet system is an internal corporate network and is defined as a network of interconnected computers that only a limited number of people in an organization have access to [13]. It is a "private version of the Internet" or an internal Internet confined to an organization. Intranets are used to convey information among employees of a company. They can be used as references for internal procedures and regulations, and they can be applied as collaboration tools. Intranets have transformed from being tools through which key personnel and management post information to becoming tools through which all employees generate content to obtain an updated and expanding intranet [14, 15]. Technically, an intranet system is defined as follows:

A network on TCP/IP protocols (an Internet) belonging to an organization, usually a corporation, accessible only by the organization's members, employees, or others with authorization. An Intranet's Web sites look and act just like any other Web sites, but the firewall surrounding an Intranet fends off unauthorized access (Webopedia 2007, cited in [14]). The use of intranet systems provides several benefits; the intranet has usually been the common organizational junction and entrance to different types of collaboration technologies and business systems within an organization [16]. Intranets help employees find critical information and updated documents, and they provide access to other colleagues and sources of expertise (ibid). In sum, there are three main factors that make intranet attractive to organizations; (1) access to a global organizational system regardless of where you are located; (2) easy integration of information and knowledge; (3) easy to connect to organizational resources, colleagues and expertise. However, the corporate intranets traditionally implemented in organizations have been organized in a top-down manner, and the information they provide is usually filtered by management [17]. Corporate intranets have been implemented as a KM initiative for the creation of a corporate memory that provides access to relational databases and for the development of document management systems. Their disadvantage is that they present only a formal understanding of the organization's expertise and best practices. They also lack dynamism and opportunities to catch real-time information based on employees' knowledge and experiences related to daily work practice (ibid).

By contrast, Intranet 2.0 is based on self-organizing principles and functionalities adapted from Web 2.0 technologies and the Internet. The intranet system is characterized as dynamic and user centric, in which the content is not pre-defined but is generated, changed, and developed further over time by different users [18]. An Intranet 2.0 aims at gathering the collective expertise and therefore distributes knowledge more quickly and efficiently. Furthermore, Intranet 2.0 introduces new communication tools that enhance knowledge workers' distribution of knowledge [8]. McAfee argues that Intranet 2.0 can create strategic advantage for organizations [8], and unlike traditional intranets, Intranet 2.0 focuses not only on capturing knowledge but to improve knowledge work by facilitating collaboration.

One example of a widely implemented collaboration platform supporting Intranet 2.0 is SharePoint from Microsoft. SharePoint is a browser-based, document management platform incorporating several Web 2.0 technologies, such as wikis, blogs, and RSS feeds. In addition, the platform offers social networking features, such as creating personal profiles, tracking colleagues and generating team sites. SharePoint is a standardized, off-the-shelf enterprise information system that fits most businesses. Thus, it is different from an in-house built intranet, which can easily be customized and adapted to work practices in a particular organization.

Intranet implementation is also accompanied with challenges. It is important to prepare the organization with necessary initiatives before the implementation by developing an efficient knowledge infrastructure and establish a

knowledge-sharing culture. An efficient knowledge infrastructure involves efficiency in knowledge processes in terms of creating, storing/retrieving and applying knowledge. It is important that KM processes include both tacit and explicit knowledge [19], which an intranet can support. Specific roles must be defined to monitor these processes and knowledge-related activities [19, 20]. For some organizations the role of a CKO (Chief Knowledge Officer) should be established to take the main responsibility for KM projects. In addition, editors that create and maintain the content of KMS (e.g. an intranet) are important [10], as well as facilitators that support the end users of KMS [21, 22]. A different approach to organize these resources, is to set up a special steering committee, a centralized desk support in addition to unit managers responsible for the end users of KMS [23]. The purpose of establishing a suitable infrastructure, processes and roles is to make the most of the KMS, and to provide value to the end users [21].These are activities that mobilize knowledge through capturing, storing, transferring and applying knowledge [20, 23]. For knowledge sharing to take place in the organization it is important that the right ICT infrastructure is in place. Former KMS were often static archives; it is important that ICT not only enables the collection and storage of data, but also facilitate communication and knowledge sharing among the employees [23]. Utilization of new forms of ICT (e.g. web-based technologies and recently intranets with Web 2.0 tools) includes several opportunities for more dynamic systems that support collaboration and information exchange [20]. ICT must meet different needs of the employees and must be adapted to different situations [21, 24]. Although ICT can be important instruments for realizing KM, the organizations should be aware that ICT and intranet systems alone cannot contribute to effective KM [20, 23, 25].

Culture is described as a factor with great influence on KM in general. To successfully implement KM through an intranet solution in the organization, cultural changes might be necessary. These cultural changes involve creating a knowledge-sharing environment in the organization [19, 20, 22-24]. To implement these cultural changes, it is important that the organization is able to break with old traditions. This can be done by redesigning the processes to processes that are adapted to knowledge sharing [25].

It is important to create a positive attitude towards the value of knowledge and the existing organizational culture should be adapted to the new knowledge culture [21] Another aspect of creating a knowledge culture is to create a common understanding, or ontology, for what knowledge really means and does for the organization. This ontology defines the kind of terminology and the structure of knowledge which the organization should have [22].

Another aspect of knowledge culture is the importance of knowledge-sharing. It should be natural for the employees to share knowledge and communicate with each other [19, 25]. For knowledge-sharing to take place, employees must rely on each other [25]. It is therefore important to establish specific routines and/or social events that build trust between individuals and groups within the organization [20].

3. Research site and method

The site of this study is company CONSULT AS (pseudonym) which has several information technology (IT) consultants working as implementing experts of enterprise systems such as customer relationship management (CRM), business intelligence (BI) and intranet systems. The company has 60 employees working in two different locations. The company is a Microsoft partner, and has high expertise on implementing the SharePoint platform. The company has received several awards for their high knowledge, expertise, implementing skills and engagement within large and complex implementing projects.

CONSULT AS has developed their own implementation method to carry out SharePoint projects. The method is based on agile principles in addition to more structured project management principles (e.g. PRINCE 2). The method allows for incremental development and part deliveries within short time frames. The first stage involves an organizational pre-project in which all the requirement specifications and suggested solutions are developed. In this stage, the focus is on understanding the organizational context and the work processes. The benefits and aims of the implementing organizations are mapped, and how the benefits should be realized is a central issue in the customer communication process. Both a technical solution and a suggested solution for business process management are discussed. One of the participants stated: *"the main goal with our methodological approach is to manage the expectations from the customer and what they should expect from us. In addition, the different internal and external roles in the project much be clarified"*. Many of the projects start as small initiatives, however, based on

experiences, several of these projects escalate and it is important to be aware of that in the initial phase to be able to handle large amount of information and documents at a later stage.

According to CONSULT AS, the aim of implementing SharePoint in most organizations is to (1) to improve the information and communication flow, (2) to avoid local storing of documents, (3) to get a structure for collaboration, information sharing and document management. The most popular functionalities among the customers are document management, version control, co-writing, project rooms (team sites), and social networking facilities such as Mysite, Yammer and blogging.

We conducted interviews with consulting managers, project managers, system advisors and senior consultants. The interviews lasted from thirty minutes to one hour. In addition to interviews, field observations and document analysis were carried out. The activities on the company's internal intranet were observed.

 The process of data collection and analysis proceeded in iterative cycles following norms of interpretivism and hermeneutics [26]. This allowed themes to emerge and to be examined deeply. When new and surprising themes emerged, these were further explored and analyzed. Hence, the interview guides became more narrowly focused over time. All the interviews were digitally recorded and fully transcribed. The empirical material was further systemized, reduced, and categorized [27]. Finally, the themes were interpreted by mainly utilizing existing theoretical concepts within the literature. The emerging framework and conclusions were gradually developed and were tested against new interviews and documents.

This study employs a hermeneutic circle approach [28]; each iterative circle of statements and interpretations from the participants represents the parts, while the holistic understanding of the external consultants' role within intranet implementation projects emerged gradually when details were put together into a whole (the final framework).

4. Main results from the study

In this section we present key findings identified in this study in terms of knowledge requirements, project roles and key challenges that the consultants met during their intranet projects.

4.1. The consultants in CONSULT AS

All consultants working in CONSULT AS have a solid experience in implementations of intranet solutions, where experiences with SharePoint date back to 2002 when the launch of this portal started. The participants in the study were either directly involved as a consultant or had the role of project manager. Some of participants have been working for several years with intranets, and had therefore experienced the historical development of SharePoint. The development of the functionalities in the intranet went from basic document management functionality into a social intranet with a variety of web 2.0 technologies. The consultants characterize the social intranet as the future, and one of the participants describe the social technologies; *"The social part is clearly the core of any information today. When everything becomes more interconnected, we are creating a common workspace. We are getting a more vibrant intranet, which is essential for sharing information and knowledge".*

Several of the consultants started their careers and competence building by working with Lotus Notes, in which they got their first experience of intranet implementations. Gradually, SharePoint took the place for Lotus Notes in the market and consultants began to work in SharePoint projects. All consultants have therefore created a number of experiences which include several types of consulting roles. The typical roles and duties they hold in a SharePoint project are:

- Advice and support to end users
- System development and changes in the system architecture
- Customization of SharePoint solutions
- Project management in SharePoint projects
- Development of requirement specification and preparation of system solution
- Managing user expectations
- Training

- Business development - presentation of ideas where a company can leverage ICT to improve performance
- Maintenance and post-implementation support and deliveries
- Integration of SharePoint with legacy systems and related configuration
- Identification of functional requirements for different user communities
- Ensure internal project owners within the organization
- System architect – developing the system architectural solution
- Internal management of consultancy activities
- Product manager
- Evaluation of users' experiences
- Follow-up on project delivery
- Post mortem activities: follow-up and evaluation of intranet success in retrospect

The list of roles and responsibilities of the consultants shows that the company is involved in a wide range of activities in the implementation and delivery phase. Most of the projects are in smaller companies, which also have smaller risks. This increases the chances to obtain a successful intranet project.

4.2. Knowledge requirements for the consultants

Several different elements of knowledge were identified in the study. The knowledge elements are classified into three main categories: (1) technical knowledge, (2) organizational knowledge, and (3) knowledge about the different end users. Technical knowledge involves different skills related to the implementation method and application of this, developing requirement specification and a system solution, and having knowledge about the functionalities and the technological infrastructure behind it. It is also important to know when it is necessary to customize the solution or if a standard solution is to prefer. In addition, technical knowledge is about applying appropriate testing methods, to give technical advices and suggest decisions, and to know the facilities of Web 2.0 technologies.

Organizational knowledge comprises the understanding of contextual issues such as organizational structure, culture, IT maturity, business processes and a general business understanding. The consultants need to know when changes in processes are necessary, the knowledge-sharing culture, and how to initiate maturity and change processes. The consultants do not take responsibilities for organizational development projects, however, they need to inform the customers about important required changes and they are involved with changes of some key processes. They want to contribute to establishment of a knowledge-sharing culture which is urgent to get the maximum potential of the intranet system. It is also important to know about how to realize the benefits and manage the expectations of the users.

Change management is emphasized as one of the most important skills that the consultants need to be aware of, and this must be communicated to the customers. In larger project, there are special organizational developers dedicated to the change management process. The consultants in our study communicate how the system enables new ways of working, and they design both system and processes so they can fit. It is most important that the implementing organization owns the change process and the implementation project is also a maturity process.

The third category of knowledge elements concerns the users and the user adoption. It is important that the consultants understand the different user communities and their needs. The consultants need to create a positive atmosphere to make the change processes go smoothly, and make the technology understandable for the users. One of the consultants stated: *"we have a special program regarding user adoption. It focuses on the different user communities who are going to use the technology. We need to get commitment for the project in the right departments, and we need to identify ambassadors in the management group and in the local units."* It is important to prepare the users for what the new system will give them of benefits and challenges and to be able to set up appropriate training programs is urgent. In addition, to identify ambassadors who can become power users and contribute to the training and change processes, are important.

4.3. Different project roles for the consultants

CONSULT AS takes on a wide range of different implementing projects. Some projects last more than a year; others have a shorter time schedule. The size of the project group varies, and in some projects the consultants need to take on several roles. The most important project roles were project manager, advisor, and system developer. The project manager has several responsibilities related to coordination of the project participants, business development issues, management of expectations, evaluation of user experience, follow-up on deliveries and being the main responsible for the whole implementation process.

The role as an advisor will involve supporting the end users, provide advices about how SharePoint should be organized and integrated with other systems and processes in the organization. They will also give advices about business development, change management and what kind of intranet functionalities the company should implement.

The role as a system developer is dedicated to the technological development of the solution including architectural issues and changes, requirement specifications, customization, and to identify certain needs for the users. In addition, the system developer should have skills on organizational processes to understand how the technology will bring along changes.

The roles will have overlapping activities and responsibilities.

4.4. Challenges in an intranet project

The consultants highlighted several challenges that normally turned up during an intranet project. These challenges were related to well-known pitfalls and critical success factors within the enterprise systems literature [see e.g, 29, 30]. To obtain a successful implementation it is important to get commitment from the management in the implementing organization, they need to act as ambassadors and be involved in the project. To achieve an expected user adoption can be difficult if the value of the system is not communicated well enough. To customize a SharePoint solution can be risky, and the solution will become difficult to maintain in the future. It is challenging to convince customers that want to keep old routines and processes – they often prefer a customized solution which is a costly choice. Implementation of SharePoint will cause a standardization of the working environment, which gives less flexibility for individual configurations. The implementation project causes a difficult period for the organization, and it can be a challenging learning process for the users. It is also a big distance between the consultants and the end users when it comes to knowledge and understanding of the system. This is a challenge for the consultants, to always remember the differences in skills and behave thereafter.

The consultants are aware of the most important challenges, and they use time to reflect upon how they should meet upcoming challenges during the project. This involves in short terms to work on getting the users involved, to obtain top management support, to offer appropriate training programs, to communicate necessary changes in business processes, to clarify the different project roles in the project group, to develop an efficient information structure to avoid chaos and a uncontrollable hierarchy in the system, to set up success metrics and manage expectations, to increase the competence of the consultants on a continuous basis, to establish a knowledge sharing culture in the implementing organization, to follow-up on benefits and project metrics in the post-implementation stages, to tackle resistance to change, to deeply root the project in the organization, and manage to carry out a structured implementation process. The consultants highlighted the importance of who should own the project in the organization; it was emphasized that the business groups should own the project, and not the IT department.

5. Discussion and implications

In this section, we gather the results into a framework that will contribute to an increased understanding of what is required during intranet implementation, from a consultant's point of view.

To succeed as consultant, it is required that they are knowledgeable and can take on various roles in an implementation process. The results also indicate typical challenges that they may face. It is important that they can handle these challenges by putting their knowledge into practice. Figure 1 summarizes the empirical data into a framework that serves as a guideline for how consultants may achieve success in intranet implementation.

5.1. The framework

The framework is divided in two parts: project roles and knowledge elements. Each project role has their own areas of responsibility, some of which may be performed by more than one role. Each role also has several knowledge elements required to perform these responsibilities. Despite being divided into three categories, it is necessary for consultants to apply and integrate knowledge elements across these fields.

Once the roles with associated knowledge have been established, the participants create a project group and follow the three outlined steps of intranet implementation. First, their combined knowledge of implementation methods should be applied to establish a good project foundation with plans, requirements specifications, solution descriptions and processes of change. Next, the consultants apply their individual knowledge while executing the implementation process itself. There is not necessarily a strict ordering in the use of this knowledge, although some elements are naturally dependent of others. The final point is to use relevant knowledge to address the various challenges that may arise during implementation.

5.2. Applying and conveying knowledge

It is essential that the consultants are able to convey their own knowledge onto the project so that it will benefit the end user. The consultants may act as negotiators between various fields and user groups, to achieve a solution that satisfies the needs of the individual groups [9].

In addition to applying their own knowledge to the project, the consultants also need to transmit knowledge onto the organization undergoing change. Several of the consultants in the study stated that they are not organization developers. Their task was not to change the organization directly, but rather to convey their knowledge to top-level management, supervisors or otherwise. This grants knowledge ownership to key people in the organization, allowing them to further their own development given this new understanding of processes and technology.

5.3. Framework summary

The framework devised in the study gathers key project roles with relevant knowledge, and puts them up against the challenges of an intranet implementation projects. We gain insight into the high complexity of these projects. In particular, we notice how consultants need to possess a wide variety of knowledge, not to mention being able to apply it across different fields of expertise. Thus, it also becomes clear that these projects require a high degree of collaboration, both within the consultant group and with the target organization.
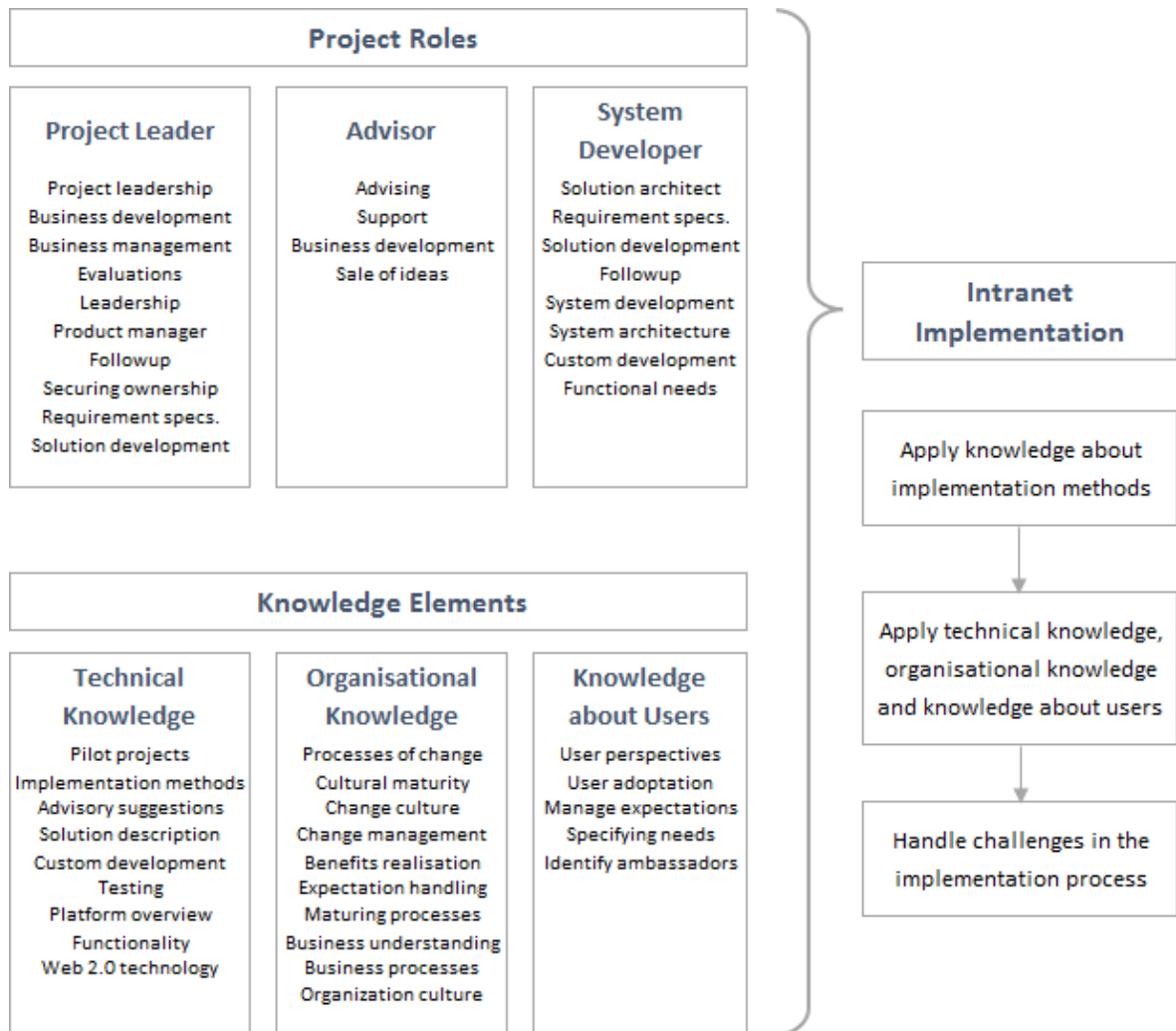
Fig. 1. A framework to understand intranet implementation based on experiences from external consultants

6. Conclusions

This paper has reported on a case study conducted in the company CONSULT AS which offers ICT implementation services. We have identified knowledge requirements and roles to be undertaken by external consultants working in ES implementation projects. Findings comprise experiences from consultants working in intranet implementation projects. We present a framework comprising different kinds of required knowledge that consultants need to possess and different roles they need to master to succeed in their efforts of implementing intranet systems across different organizational contexts. Findings demonstrate that the consultants had to possess a wide range of knowledge in addition to master several roles during an intranet project. Technical knowledge, organizational knowledge and knowledge about the end-users were required, and roles such as project manager, system developer, advisor and knowledge broker were essential to manage the tasks given in an intranet project. Our study contributes to understand the different roles enterprise systems professionals need to have a command of, and the diversity of knowledge they need to hold to tackle challenges during enterprise-wide implementation projects.

We believe that this study can be of use in broader implementation practices, as lessons learned and the framework can be used by other consultancy companies to support their own intranet implementation efforts. However, while our research is somewhat limited as it is exploratory, our results can serve as input for subsequent

qualitative studies focusing on external consultants' experiences regarding ES implementation and can be further examined to consider whether our findings can be applied by ICT consulting companies in general.

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