Knowledge as a part of improving internal communication: a case study Nokia Oyj

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Nowadays companies quite often face intense competition and rapid technological changes in order to attract new, and support current, customers. To gain success in this tough environment companies have to constantly search for ways to improve performance by leveraging knowledge assets more effectively. Intellectual capital is becoming the main source of sustainable competitive advantages of enterprises, increasing their potential value and to meet the rapidly growing consumer demand. A key element in the aspect of the creation of intellectual capital is knowledge management.

The main objective of the research is to prove that the knowledge is an effective and useful way of improving the company performance, customers’ relationship and communication. The study was took place at one of the Nokia accounting teams which is responsible for providing several services for internal customers. To achieve the objective of the study the internal data of the team’s activities was collected, elaborated and placed onto the intranet in order to share the team’s knowledge with the internal customers. The target group of the research was the internal customers from all over the world (i.e. subsidiaries or branches of Nokia Oyj).

The research is divided into two parts. The first one is the theoretical part, which provides the definition and framework of knowledge theory, and the characteristics of different knowledge networks, based on which the conducted survey was analyzed.

The second is empirical part, consisting of web page analysis. For this part of the study the qualitative method was chosen. The research was carried out in form of an emailed questionnaire, the questionnaire, sent to the internal customers. A questionnaire was designed to support the relevance of the research. The received data was analysed; the results of questionnaire was evaluated and the improvements were suggested.

Key words: knowledge, explicit and tacit knowledge, knowledge process, knowledge network modes, ICT
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1 INTRODUCTION

The research was conducted to improve the customers’ internal communication and relationship in the case of Nokia Oyj. Nokia Oyj is the world leader in mobility, driving the transformation and growth of the converging Internet and communications industries. Nokia makes a wide range of mobile devices with services and software that enable people to experience music, navigation, video, television, imaging, games, business mobility and more. Developing and growing our offering of consumer Internet services, as well as our enterprise solutions and software, is a key area of focus. (www.nokia.com)

The team in which the research was held provides different accounting services for Nokia internal customers all over the world. These accounting services are part of Nokia’s financial system and often the internal customers do not have good knowledge about the services the team can provide.

The lack of information about team’s responsibilities and duties regarding these services force customers to send a lot of emails. Most of the emails concern issues that could be solved by the customer itself, if he or she would have had some knowledge and experience in this problem before. The team’s mailbox is constantly overloaded by customers’ emails and requests, and a high proportion of the mails are versions of the same basic questions. So large amount of received emails made the team members spend a lot of their time reading and answering emails instead of concentrating on the main daily and weekly tasks of the team and constantly distract team members from other important issues. The average that team member spends on answering any one email is from 10-20 minutes (depending on the problem and the information provided in the email), and if during the day she/he responds to 10 emails, the time spent on answering emails that day would be from 100-200 minutes (1.5 hours to 3 hours and 20 minutes). That means during the working week it will be from 7.5 to 16.5 hours, which equates to one to two full working days (normal working day is 7.5 hours) where time is mostly spent on answering only email. This time spent on answering can be multiplied by six, if you bear in mind that six members of the team are responsible for answering a set proportion of emails.

The enlargement of the team mailbox stems from the high amount of Nokia’s mergers during the last years, when Nokia has been growing faster and new companies have joined to it. These merges influence the responsibilities, services and activities, which are distributed inside the company and between the different teams. The customers do not always have the previous knowledge of the team’s responsibilities and therefore should be provided with sufficient information to improve their competences.
In this phase of globalization, much manufacturing and back office work is being transferred across geographical boundaries, often to countries with new developing technological capabilities. At the same time, many firms are moving operations to the more developed world to create and offer knowledge and knowledge-based services that, at least at the present time, can be done only in these countries. This emphasis on change in the global environment puts knowledge management at the heart of what organizations need to do to cope with today’s fast-changing environment. Therefore, the success of a company in the twenty-first century will be determined by the extent to which its leaders can develop intellectual capital through knowledge creation and knowledge-sharing on a global basis. (Ichijo & Nonaka, 2007)

The idea of the research was to create the documentation or knowledge package concerning the team's responsibilities and services, which would allow customers to understand the processes inside the team and partly inside the company, and at the same time improve the customers’ communication and reduce the flow of customers’ emails. This documentation was placed on the team’s intranet page in order to share the team’s knowledge and experiences with the customers. The aim of the research is to prove that the knowledge and sharing of it via the intranet page, is a useful and effective way of internal communication.

The first part of the research is about what the actual knowledge is; the difference between tacit and explicit knowledge, and what knowledge processes currently existed in the organization. Nowadays sharing best practices across regions, functions and businesses will help global companies increase profitability by reducing inefficient overlap of work and moving effectively and efficiently. (Ichijo & Nonaka, 4)

Based on the above mentioned processes and frameworks, in the second part of the research the author is trying to find out if the shared and created new knowledge via intranet can be a sufficient and effective way of communication. The author also is trying to prove that this way of communication helps to improve the relationship between users in the network, as nowadays information technology plays an important role and is a key part of turning an organization from a corporate culture to a knowledge sharing one.

In many ways it is technology that has made knowledge sharing a reality - in the past it was impossible to share knowledge or work collaboratively with co-workers around the globe. If implemented well, and if people are trained and educated in its use, knowledge sharing technology is good. Not only can you find the information and knowledge you need quickly and effectively but you can post your knowledge on the system for access by others in the organization - be they at the next desk or on the other side of the world. (Gurteen, 1999)
Knowledge is not something that people possess in their heads, but rather, something that people do together. (Gergen, 1991, 270)

In his book Tsoukas (Tsoukas, 2005) emphasis that although most people intuitively identify knowledge with individual knowledge, it is not quite evident how knowledge becomes an individual possession and how it is related to neither individual action, nor it is clear in what sense knowledge merits the adjective organizational. Despite the insights gained through the research of leading experts on organizational knowledge, there are still crucial questions unresolved. For example, Nonaka and Takeuchi (1995, 58-9) argue that information is a flow of messages, while knowledge is created by that very flow of information, anchored in the beliefs and commitment of its holder. This understanding emphasizes that knowledge is essentially related to human action (emphasis in the original).

At the same time other researchers Davenport and Prusak (1998, 5) have provided the following definition of knowledge:

Knowledge is a flux mix of framed experiences, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of the knower. In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms.

While this definition correctly highlights the dynamic character of knowledge (i.e. knowledge is both an outcome - ‘a framework’ - and a process for ‘incorporating new experience and information’), it is not clear in what sense knowledge is different from information, nor how it is possible for values and contextual information to originate and apply in the minds of individuals alone. Moreover, Davenport and Prusak pack into knowledge too many things, such as ‘values’, ‘experiences’, and ‘contexts’ without specifying their relationships, thus risking making ‘knowledge’ an all-encompassing, and, therefore, little-revealing, concept. Also, while it is acknowledged that knowledge becomes embedded in organizations, it is not mentioned in what form, nor how individuals draw on it. (Tsoukas, 2005, 118)

For some researchers and practitioners (Gates 1999; Lehner 1990; Terrett 1998), organizational knowledge tends to be viewed as synonymous with information, especially digital information, in which case the interesting issue is thought to be how knowledge-as-information is best stored, retrieved, transmitted, and shared (cf Brown and Duguid 2000; Hendriks and Vriens 1999).
D. Hislop, in his book “Knowledge management in organizations”, is trying to come up with a definition of knowledge from the contrary. A useful way of arriving at a definition of what knowledge is can be achieved by differentiating it from what it is not. One of the most common distinctions in the contemporary knowledge literature is between knowledge, information, and data. Data can be defined as raw numbers, images, words, and sounds which are derived from observation or measurement. For example, data could be the raw numbers, and replies from a marketing survey of a company’s clients, aimed at establishing their changing preference. Information, in comparison, represents data arranged in a meaningful pattern, data where some intellectual input has been added. For example, where the raw data from the marketing survey has been analysed using a statistical technique, to produce some structured results. (Hislop, 2005,15)

Finally, knowledge can be understood to emerge from application, analysis, and productive use of data and/or information. In other words, knowledge can be seen as data or information with a further layer of intellectual analysis added, where it is interpreted, meaning is attached; and is structured and linked with existing systems of beliefs and bodies of knowledge.

Data - Raw images, numbers, words, sounds etc., which result from observation and measurement.
Information - Data arranged or organized into a meaningful pattern.
Knowledge - Means to analyse/understand information/data, belief about causality of events/actions, and provides the basis to guide meaningful action and thought.

Knowledge therefore provides the means to analyse and understand data/information, provides beliefs about causality of events/actions, and provides the basis to guide meaningful action/thought. Thus for example, knowledge is used and developed when the analysis of the statistical results from a marketing survey is done. This may be where the results are compared and contrasted with the previous surveys, where particular relations and systems of meaning are inferred (for example, maybe those between 18 and 25 years of age have quite specific attitudes towards consumption), and where the analysis of the results is used to justify a specific course of action (for example, focus the marketing of the product on the 18-25 age category).

Following the above definitions, one common way that data, information, and knowledge are interrelated is in a hierarchical structure, where the relationship is primarily unidirectional, with data supporting the generation of information, which is in turn used to generate knowledge. However, the interrelationship between these elements is much more complicated than this. While data and information can provide the building blocks of knowledge, equally knowledge can
be used to generate data and information, therefore the relationship between them is dynamic and interactive, rather than simply unidirectional. Further, the knowledge we possess shapes the type of information/data we collect, and the way it is analysed. Thus people with different knowledge bases may develop different interpretations of the significance of the same events/results. Examples of such situations include: competing political parties analyzing, post-hoc, election results; differing interpretations of why a new product release did not generate anticipated revenue levels; different interpretations of the results of marketing survey. (Hislop, 2005, 15-16)

2.1 Tacit and explicit knowledge

The tacit-explicit dichotomy is largely an analysis into the characteristics of organizational knowledge. Explicit knowledge, from an objectivist perspective, is synonymous with objective knowledge. Suffice to say that explicit knowledge is regarded as objective, standing above and separate from both individual and social value systems and secondly that it can be codified into a tangible form. Tacit knowledge on the other hand represents knowledge that people possess, but which is inexpressible. It incorporates both physical/cognitive skills (such as ability to juggle, to do mental arithmetic, to weld, or to create a successful advertising slogan), and cognitive frameworks (such as the value systems that people possess). The main characteristics of tacit knowledge are therefore that it is personal, and is difficult, if not impossible to disemboby and codify. This is because tacit knowledge may not only be difficult to articulate, it may even be subconscious. (Hislop, 2005, 19)

<table>
<thead>
<tr>
<th>Tacit knowledge</th>
<th>Explicit knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inexpressible in a codifiable form</td>
<td>Codifiable</td>
</tr>
<tr>
<td>Subjective</td>
<td>Objective</td>
</tr>
<tr>
<td>Personal</td>
<td>Impersonal</td>
</tr>
<tr>
<td>Context specific</td>
<td>Context independent</td>
</tr>
<tr>
<td>Difficult to share</td>
<td>Easy to share</td>
</tr>
</tbody>
</table>

Table 1 Tacit vs. Explicit
This distinction between tacit and explicit knowledge is by no means unique to the objective epistemology of knowledge, but the specific way that the distinction is theorized within this perspective is quite particular. Within the objectivist epistemological framework there is an ‘either/or’ logic to the dichotomy, with knowledge typically being regarded as either tacit or explicit. This characterization of the dichotomy is explicit in the following quotation, ‘[t]here are two types of knowledge: explicit knowledge and tacit knowledge’ (Nonaka et al. 2000).

Thus from this perspective tacit and explicit knowledge do not represent the extremes of a spectrum, but instead represent two pure and separate forms of knowledge. Typically, this polarized dichotomy is argued to be based on the work of Michael Polanyi (1958, 1983). Nonaka, for example, makes this reference explicit. However, there is another, distinctly different interpretation of Polanyi’s work, which questions this conceptualization of tacit-explicit dichotomy. (Hislop, 2005, 19)

One of the most distinguishing features of Polanyi’s work is his insistence on overcoming well-established dichotomies, such as theoretical versus practical knowledge, sciences versus humanities, or, to put it differently, his determination to show the common structure underlying all kinds of knowledge.

Polanyi, a chemist turned philosopher, was categorical that all knowing involves skillful action, and that the knower necessarily participates in all acts of understanding. For him the idea that there is such a thing as ‘objective’ knowledge, self-contained, detached and independent of human action, was wrong and pernicious. ‘All knowing’, he insist, ‘is personal knowing - participation through indwelling’ (Polanyi and Prosch 1975: 44, emphasis in the original). (Tsoukas, 2005)

According to Sveiby the Polanyi’s concept of knowledge is based on three main theses:
First, true discovery cannot be accounted for by a set of articulated rules or algorithms.
Second, knowledge is public and also to a very great extent personal (i.e. it is constructed by humans and therefore contains emotions, “passion”).
Third, the knowledge that underlies the explicit knowledge is more fundamental; all knowledge is either tacit or rooted in tacit knowledge. (www.sveiby.com)
2.2 Tacit and Focal Knowledge

Sveiby emphasis is, in each activity, there are two different levels or dimensions of knowledge, which are mutually exclusive:
Knowledge about the object or phenomenon that is in focus - *focal knowledge*.
Knowledge that is used as a tool to handle or improve what is in focus - *tacit knowledge*.
The focal and tacit dimensions are complementary. The tacit knowledge functions as a background knowledge which assists in accomplishing a task which is in focus. That which is tacit varies from one situation to another. For instance, when reading a text, words and linguistic rules function as tacit subsidiary knowledge while the attention of the reader is focused on the meaning of the text. ([www.sveiby.com](http://www.sveiby.com))

Sveiby suggested that inspired by Gestalt Psychology, Polanyi regards the process of knowing as fragmentary clues, sensorimotoric or from memory, which are integrated under categories. We make sense of reality by categorizing it. The patterns of categories contain theories, methods, feelings, values and skills which can be used in a fashion that the tradition judges are valid. We attend from the particulars to the focus upon which they bear. This act of integration is an informal act of the mind and can not be replaced by a formal operation. This integration of knowledge is a personal skill in itself and can not be disposed of. A special kind of meta knowledge is required for integration; knowledge about knowledge as integrated. It is possible to have this meta-knowledge without knowing its details. ([www.sveiby.com](http://www.sveiby.com))

2.3 Knowledge is derived from an intellectual process

The final major assumption is that knowledge is regarded as primarily a cognitive, intellectual entity (but which is ultimately codifiable). As Cook and Brown (1999, 384) suggest, knowledge, ‘is something that held in the head’. From this perspective, the development and production of knowledge comes from a process of intellectual reflection (individual or collective), and is primarily a cognitive process.
3 THE KNOWLEDGE CREATION PROCESS WITHIN ORGANIZATIONS

Knowledge creation process always begins with the individual. A brilliant researcher, for example, has an insight that ultimately leads to a parent. Or a middle manager has an intuition about market trends that becomes the catalyst for an important new product concept. Similarly, a shop floor worker draws upon years of experience to come up with a process innovation that saves the company millions of dollars. In each of these scenarios, an individual’s personal, private knowledge (predominately tacit in nature) is translated into valuable, public organizational knowledge. Making personal knowledge available to others in the company is at the core of this knowledge management model. This type of knowledge creation process takes place continuously and occurs at all levels of the organization. In many cases, the creation of knowledge happens in an unexpected or unplanned way. (Dalkir, 2005, 52)

According to Nonaka and Takeuchi, there are four modes of knowledge conversion that “constitute the ‘engine’ of the entire knowledge-creation process. Theses modes are what the individual experiences. They are also the mechanisms by which individual knowledge gets articulated and ‘amplified’ into and throughout the organizations (Nonaka and Takeuchi, 1995, 57). Organizational knowledge creation, therefore, should be understood as process that organizationally amplifies the knowledge created by individual and crystallizes it as a part of the knowledge network of the organization. (Dalkir 2005)

Figure 1 Nonaka and Takeushi model of knowledge conversion

<table>
<thead>
<tr>
<th>Tacit knowledge</th>
<th>Explicit knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socialization</td>
<td>Externalization</td>
</tr>
<tr>
<td>Internalization</td>
<td>Combination</td>
</tr>
</tbody>
</table>

To

From

Tacit knowledge

Explicit knowledge
3.1 Knowledge conversion

Nonaka and Takeushi argue that an organization has to promote a facilitating context in which the organizational knowledge-creation process and the individual one can easily take place, acting as a spiritual. They are interested not in knowledge per se but in the process through which knowledge is continuously created, modified, updated: the emphasis is, therefore, on the practice though which the members of a work group (or of a whole organization) increase their ability to perform individually and collectively. Their intention is focused on pragmatic knowledge, on knowledge for action, both when it is embodied in the capabilities of the group members (tacit knowledge), and when it is described in documents and/or information bases (explicit knowledge). Instead of considering new knowledge as something is added to the previous, they conceive it as something that transforms. (De Michelis, 124)

The Nonaka and Takeuchi model has proven to be one of the more robust ones in the fields of knowledge management, and it continues to be applied in a variety of settings. One of its greatest strengths is its simplicity - both in terms of understanding the basic tents of the model and in terms of being able to quickly internalize and apply the knowledge management model. One of its major shortcomings is that, through valid, it does not appear to be sufficient to explain all of the stages involved in managing knowledge. The Nonaka and Takeuchi model (Figure 1) focuses on the knowledge transformations between tacit and explicit knowledge, but the model does not address larger issues of how decision making takes place by leveraging both forms of knowledge. (Dalkir, 2005, 53)

De Michelis shows the Nonaka and Takeuchi knowledge creation model within cooperative processes (Figure 2). She argues that tacit knowledge is indirectly exhibited by the actors of a cooperative process when they are performing (i.e., when they are in perform position), while explicit knowledge is exhibited when they declare a condition they need to be satisfied (i.e., when they are in the customer position). On the other hand, a person performing an activity that falls within her domain of competence knows how to do it, even if she generally does not know how to explain it; and, in the social dimension, a group of persons performing effectively together are able to interact and/or synchronize silently without spending time explaining to one another what each must do. On the other hand, no person can make a request for a performance to another person (i.e., can be in the customer position) without making explicit her request in a document or at least in some precise words that could be formalized in a document; tacit customers do not exist! (De Michelis, 130)
Socialization and externalization are processes that emphasize the creation of knowledge. Socialization (from tacit knowledge to tacit knowledge) is a process of converging new tacit knowledge through shared experiences. Sharing the same experience through joint activities such as being together, spending time together or living in the same environment is a key for this conversion.

Externalization (from tacit knowledge to explicit knowledge) is a process of articulating tacit knowledge into explicit knowledge. By making tacit knowledge explicit, it can be shared by others and become the basis of new knowledge.

Figure 2 The SECI Model of Knowledge Creation and Utilization (Nonaka and Takeushi, 1995, Nonaka and Konno, 1999)
Combination and internalization focus on utilization of knowledge. Combination (from explicit knowledge to explicit knowledge) is a process of converging explicit knowledge into more complex and systematic sets of explicit knowledge. Knowledge is exchanged and reconfigured through documents, meetings, or communication networks. Data mining in large-scale databases is an example of this process.

Internalization (from explicit knowledge to tacit knowledge) is a process of embodying explicit knowledge into tacit knowledge. It is closely related to learning by doing. Through internalization, knowledge is shared throughout an organization; it broadens and changes organizational members’ mental models. When knowledge is internalized into mental models or technical know-how, it becomes a valuable asset.

The tacit knowledge of an individual is then again shared through socialization within group; the new knowledge created in the group expands outwards to the organization and its interorganizational networks. Creation and utilization processes continuously unfold side by side (synchronic) and in sequence over time (diachronic); they are not limited to one organizational level. Knowledge is commonly utilized in everyday business routines.

Routines emphasize repetitive action, replication, and standardization; they thus become barriers to the exploration and creation of new knowledge. Changing the static routines that influence the way people work is difficult; it is even more difficult to encourage innovation, improvisation, and continuously challenge the ways things are done. Therefore, the organizations need to develop creative routines, that is, action patterns for innovation. (Nonaka & Reinmoeller, 90-92)

3.2 Knowledge creation processes

Since knowledge is intangible, boundaryless, and dynamic and cannot be stocked, it has to be exploited where and when it is needed to create values. To exploit and create knowledge effectively and efficiently, it is necessary to concentrate knowledge at a certain time and space. Knowledge is created not just by an individual but through interactions among the individuals and with the environment. For knowledge to be created organizationally, knowledge within a particular individual needs to be shared, recreated, and amplified through interactions with others. (Nonaka, Konno & Toyama, 13)
In the context of organizational effectiveness the knowledge creation process should be purposeful, i.e. with a client for the outputs. The process of creation (Figure 3) requires innovative individuals, more often than not working in teams. These are networks of experts with access to knowledge technologies including those for knowledge capture, storage and transfer.

Outputs from knowledge creation are in the problem-solving domain for unknown problems and new knowledge, for instance in terms of process improvement. Measures of the success of knowledge creation need to include assessment of the reliability of the knowledge, the extent to which it solves a problem, timeliness, acceptability within the organization and readiness to exploit it should it lead to new opportunities, the cost of exploitation and potential value. Measures may also be in very concrete terms for research and development as the number of new patents. (Armistead, Volume 3, № 2, 1999, 146)

**Figure 3  Knowledge creation process**
3.3 Knowledge transfer process

The knowledge transfer process (Figure 3) has some of the aspects of creation in the sense of input being sources of existing knowledge. However emphasis is given to the role of individuals who facilitate the access and transfer of knowledge. They can often be identified at the hubs of groups or as individuals within networks and have been given different names, including knowledge brokers, gatekeeper, and pulsetakers. (Stephenson, 1998)

Knowledge transfer processes are also important in supporting organizational effectiveness in the field of best practice, where there is a close association with knowledge embedding processes. Measures of success for knowledge transfer are concerned with the reliability of knowledge its timeliness, completeness and accessibility. Lastly there are measures of and cost of transfer. Many of the examples in the knowledge management literature are concerned with these transfer processes. The notions of communities of practice encourage the trust required for individuals to share knowledge with colleagues. (Armistead, Volume 3, № 2, 1999, 146)

Figure 4 Knowledge transfer process
3.4 Knowledge embedding process

The knowledge embedding process (Figure 5) is concerned with organizational effectiveness through the incorporation of knowledge into the fabric of the organizational process and into its products and services.

In the latter case this is through the effect on customers. In a negative sense embedding might be seen as a way of reducing the mobility of knowledge through the loss of individuals to the organization, occurring through “downsizing” individuals with highly marketable knowledge. An alternative view of embedding as benefiting knowledge in use is greater productivity from the use of the knowledge, and the development of process practice through the incorporation of best practice through benchmarking.

The embedding process inputs access to knowledge through creation capture and transfer processes, with the will to use it through knowledge exploiters. Outputs from the process are in the domains of product- and process-designed learning in key stakeholder groups of employees, suppliers and customers. Measures for the process are concerned with learning at individual and organizational level, protection of the value of knowledge and the potential for knowledge productivity (Drucker, 1983). (Armistead, Volume 3, № 2, 1999, 146)

**Figure 5 Knowledge embedding process**

- **Inputs**
  - Product/Process/Customer Knowledge
  - Knowledge Technologies

- **Knowledge Embedding Process**
  - Individual learning
  - Organizational learning
  - Knowledge productivity
  - Evidence of best practice

- **Outputs**
  - Product/Service design
  - Process design
  - Customer learning
  - Stuff learning
  - Supplier learning
Knowledge, therefore, is the product of strings of actants, and how they are powered up. Knowledge processes cannot be readily broken down into discrete chunks of tacit or codified knowledge, or human versus non-human elements, but are the sun-in-interaction of chains of varying length of mobile and immobile actants - from lists and codes to machines, skills, and experts, from huge flows of people, information, and ‘immutable mobiles’ to connectivity between local knowledge clusters. What matters is the integrity of the network ... (Amin & Cohendet, 148)

4 KNOWLEDGE NETWORK MODES

In order to support the process or task with regard to knowledge and the management of knowledge, choosing the appropriate network mode is a key to determining the most prevalent type of knowledge in the process. Here the fact that the knowledge could either be explicit or tacit plays an important role, since explicit knowledge is more schematic and easier to transfer systematically than tacit knowledge. In addition, the function of the network mode is determined by its operational knowledge task.

In turn, the operational knowledge task has an impact on the appropriate facilitating conditions of the network. For example, if the knowledge network is mainly a network of experts supporting an innovation process by creating a new corporate innovation process description, the key operational knowledge task of the network would be to turn tacit (experts’) knowledge into explicit knowledge by codifying it. It is thus made accessible to others. The network mode would be a materializing network. There are four operational knowledge tasks and the resulting network reference types (Back, 2005, 113):

- Experiencing knowledge network: combines tacit knowledge and creates new tacit knowledge.
- Materializing knowledge network: transforms tacit knowledge into explicit knowledge.
- Resystematizing knowledge network: combines explicit knowledge and creates new explicit knowledge.
- Learning knowledge network: transforms explicit knowledge into tacit knowledge.

The result of the transforming and combining processes within the particular network is new knowledge. Back identified the contents of the knowledge created by the four network reference types based on adapted model of Nonaka and Konno.
Table 2 Content of the knowledge created

<table>
<thead>
<tr>
<th>Tacit Knowledge</th>
<th>Explicit Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiencing Network:</td>
<td>Materializing Network:</td>
</tr>
<tr>
<td>Sympathized knowledge</td>
<td>Conceptual knowledge</td>
</tr>
<tr>
<td>Leaning Network:</td>
<td>Resystematizing Network:</td>
</tr>
<tr>
<td>Operational knowledge</td>
<td>Systematic knowledge</td>
</tr>
</tbody>
</table>

In an experiencing knowledge network, sympathized knowledge, such as shared mental models and technical skills, is prevalent. On the other hand, in a materializing network conceptual knowledge is created in the form of analogies of metaphors. In a resystematizing network, systematic knowledge, such as prototypes or new technological components, is created. Finally, a learning network gives rise to operational knowledge, for example, project management, production processes, or policy implementation. (Back, 2005, 113)

The different network modes as described by their facilitating conditions. These facilitating conditions are the circumstances in which the knowledge network activities take place and can enable or disturb the operational knowledge task. The facilitating conditions within the network can be also influenced directly or indirectly.

4.1 The Experience Network’s Characteristics

When compiling the facilitating conditions of the network reference type experience network, an operational knowledge task of transforming tacit knowledge into tacit knowledge is a prerequisite. The following facilitating conditions characterize the experiencing network (Back, 2005, 115):
• Direct interaction between individuals within personal relationships.
• Shared experience and activities.
• Values associated with a “high-care culture” (e.g. shared trust basis, empathy and openness).
• A high degree of face-to-face contact, intensive commutation between the members, including both short- and long-term interaction (e.g. meeting versus one-week workshops).
• A low degree of lingual and cultural differences.
• Geographical and social proximity.

4.2 The Materializing Network’s Characteristics

An operational knowledge task of transforming tacit knowledge into explicit knowledge implies the use of a materializing network reference type. According to Nonaka and Konno (1998), dialogue and discussion are keys for this knowledge network reference type. The following facilitating conditions characterize the materializing network (Back, 2005, 116):

• An appropriate mix of special knowledge and skills, and interdisciplinary combinations of groups.
• Trust degree of the network.
• A high degree of communication.
• Shared values and interest between network members.
• Sufficient time to structure the knowledge and put it into a knowledge base.
• Appropriate organizational tools with which to support the materializing of tacit knowledge, i.e. clear-cut roles, and communication rules.

4.3 The Learning Network Characteristics

The operational knowledge task of transforming tacit knowledge into one’s own tacit knowledge is crucial in order to satisfy structural and cultural requirements. The following facilitating conditions characterize the learning network (Back, 2005, 117):
Central to this type of network is experiencing and experimenting with new knowledge while simultaneously applying and maintaining knowledge already obtained. Therefore, learning by doing, experimentation, trial-end-error processes, on-the-job learning, informal communications, and simulation of existing problems are typical courses of action.

Structural and cultural conditions should enable practice-oriented and continuous learning, should exercise and apply new knowledge, learn from experience and so forth.

Values such as tolerance of failures or experiments and openness should be fostered.

Sufficient time for individual learning and reflection, as well as for working together is of great importance.

There should be action-oriented processes to apply knowledge.

There should be learning within a learning environment.

4.4 The Resystematizing Network’s Characteristics

When configuring the facilitating conditions of the knowledge network reference type resystematizing network, the operational knowledge task of transforming explicit knowledge into new explicit knowledge is crucial in order to satisfy the structural and cultural requirements. The following facilitating conditions characterize the resystematizing network (Back, 2005, 116-117):

- The knowledge culture has to ensure that no information hiding of knowledge occurs, or that the hiding of explicit knowledge is at least minimized.
- Within the company knowledge can easily be accessed, there are not too many restrictions.
- ICT tools are widely used.
- A high degree of awareness of the possibilities and limitations of ICT tools is necessary. This must consider the resystematizing and structuring of knowledge, including measures to design the related knowledge work processes and adequately integrate them.
- There should be clear-cut and special roles.
- There should be a high degree of information.
- It could be rather large in size.
A network may be built around a specific purpose or mandate, such as improving year-end sales or developing a new product for a customer. Or it may be built around a very broad purpose, such as improving performance, given long-term trends in the global economy.

All the networks mentioned above need more or less technology in the form of technical infrastructure, communication networks and a set of information services. In the information age, there is both need and opportunity to match information and knowledge with availability in ways that have hitherto been possible. (Teece, 133).

ICT are technologies which allow/facilitate the management and/or sharing of knowledge and information. Thus the term covers an enormous diversity of heterogeneous technologies including computers, telephones, e-mails, databases, data-mining systems, search engines, the internet, and video-conferencing equipment. (Hislop, 2005, 105)

Information and communication technology, during the last decades, has been widely utilized by companies and public administration and its use has become a part of daily life in many parts of the world. This technology was first used in the management of numerical data information, then later on in the management of fact and reference information for full-text materials and finally in the management of visual and sound-based-information. Almost all company information is already in a digital form. (Kauhanen-Simanainen, 4)

The operation of knowledge networks is also supported by a wide variety of ICT tools (Figure 6), which help to achieve the appropriate facilitating conditions. To support knowledge management in general, there are different knowledge technologies such as text mining, conceptual mapping, or intelligence agents. However, collaborative technologies, a category that includes groupware, intranets, videoconferencing, and document management, have delivered the most widespread benefits to knowledge practices. Information and communication technology (ICT) tools support processes that help fulfill the operational knowledge task and also influence, directly and/or indirectly, the network’s facilitating conditions. A knowledge base is a central element used to share knowledge within the community.
The necessary effort by the community to develop the online resource is critical for its success. The development and application of practice resources depend largely on the strength of the network - its members will determine the priorities, what material to develop, and how effectively it is used. An important point is whether or not the company has to create its knowledge base for its network as an online resource. A knowledge base includes and integrates all sorts of explicit and tacit sources of knowledge, and possibly different types of knowledge systems. Core documents, tools, methods, and courses that constitute the basic elements of the network practice are usually part of the knowledge base. Such a common platform or knowledge base helps to establish a network identity. Initially, to support knowledge networks tolls should be defined not just as technologies, but rather as ICT and organizational tools. (Back, 2005, 47-48)

Both ICT tools and organizational tools should be employed simultaneously in order to support the performance of knowledge networks. Knowledge networks need organizational tools as well to work successfully and ensuring that the tools were selected and used properly, both ICT and organizational tools require integrations. (Back, 2005, 47-48)
The combination of information technology and co-aligned organizational processes can significantly enhance learning and competitive advantage. In addition, the conversion of tacit to codified or explicit knowledge can make the firm more innovative and more productive (Nonaka and Takeuchi, 1995). Once knowledge is made explicit, it is easier to store, reference, transfer and hence redeploy. Once data is held electronically, it can be sent almost anywhere in the world in seconds. (Teece, 134)

5 RESEARCH

As was mentioned at the beginning of this thesis the research was conducted in order to prove that knowledge shared via the intranet can be an efficient way of improving communication and relationships with internal customer.

At the beginning the idea was to create and add only the section “Frequently Asked Questions” (further FAQ) to the team’s already existing intranet web site. Later on, the idea was changed to reorganize the whole existing intranet page as the current one did not cover all requirements and FAQ could cover all the subjects in which the customers were interested. To support this idea it was decided to create a package of documentation, which would include information about the processes provided by the team and a description of the processes. The documentation placed onto the intranet will be available for the internal customers of Nokia Oyj and Nokia Siemens Networks (NSN). Mostly this information is meant for internal customers like Nokia and NSN’s subsidiaries and branches, and different teams, who need this kind of information for their daily work. The team, in which the research was held, is a part of the financial department of Nokia Oyj and responsible for providing several accounting services for internal customers.

The idea of creating the Frequently Asked Questions and reorganizing the whole team’s intranet page was raised from spending too much time on team’s mailboxes (the mailbox consists of two mailboxes, one for Nokia Oyj customers, the other one for NSN customers). The internal customers, when they face a problem or issue usually send an email to the team asking for help to solve the issue. The customer’s emails in most of the cases concern the same issue and repeat each other. The teams’ mailboxes are always overloaded by hundreds of this kind of emails. Therefore the team puts a lot of effort into responding to all these emails as soon as possible and trying to keep them on track, there are always emails that need to be answered. The time spent on answering emails keeps the team members away from their main responsibilities.
5.1 Plan of the research

The research was started at end of July, when the research was approved by the manager of the team. The first step of the research was to collect emails relating to the team's services and duties, grouping and analyzing to find out what are the most frequent questions, problems and issues asked by the customers (Figure 7).

When the data was collected and analysed, a package of documentation was created (different documents related to the team’s activities) based the results. These documents were presented to the manager for approvals. When the approval was received, the documents were placed to the team’s intranet page.

To inform the team's customers and colleagues about recent updates, an info mail was sent to the team’s main contacts. As the contacts could cover all the customers, it was decided that after releasing the webpage it would be marketed using the following statement “the central role of marketing in enterprises stems from the fact that marketing is the process via which the firm creates value for its chosen customers. Value is created by meeting customer needs” (Silk, 2006, 3). The marketing included that every team member added her or his email signature to the marketing text with recent updates and a link to the new updated web page.

After releasing the web page in November and marketing it during December, a questionnaire regarding the usability and efficiency of the page was sent to customers in January, as was planned.

During February the responses were received back and the amount of answers received was enough to get reliable results from the survey.

The last step was the questionnaire’s analysis, based on which the research results, suggestions and recommendations were provided.

Figure 7 Research schedule.
July & August
Mailbox analysis

September & October
Documentation creation

November
Intranet web page created and released

December
Intranet web page promotion

January
Questionnaire sent

February
Collection

March, April
Research analysis
5.2 Mailbox

For the team in which the research was conducted the mailbox is the main tool for exchanging information and knowledge with other teams and customers. Most of the emails received and related to the services provided by team. Other ones are concerned issues and problems where the customers have faced a problem and did not know to which team to contact. Also, many of the emails were related to the same subject or concerned the same issues. The team provides services for customers all over the world, and consequently the customers’ requests ask for the same issues in general. Questions asked by customers in some cases could be solved by the customers themselves, but because of lack of information and especially knowledge, they were not able to solve it in the first place.

Recently the team has met difficulties in taking care of the mailboxes. Due to continuous changes and reorganization’s processes inside the company, and mergers, the flow of emails has been increasing constantly. Sometimes the team could receive 50 emails in one day. The team has started to spend more time and effort in answering these emails, which has impacted on the other duties of the team. So, it was quite obvious that something should be done in order to reduce the amount of the received emails.

At first the idea was to create a Frequently Asked Questions (FAQ) document and place it to the team’s intranet page.

“Frequently Asked Questions” - “a document routinely developed by a news group, which lists the most commonly asked questions and their answers. FAQs help a news group’s members avoid the repeated posting of the same information to the group.” (www.techiwarehouse.com)

The FAQ document should include the most repeated questions with short, but fully explained answers. To find out what were the most asked questions, it was decided to start collecting the emails, and then sort them out by the subject or issue they relate to. Finally, through analyzing the grouped emails the most asked questions were defined.

The emails were chosen based only on one criteria - the email should relate to the team's responsibilities. The customers' emails were picked up randomly from the mailboxes, sorted out and grouped by the subjects. The selected 80 emails were chosen, analyzed, and then the Frequently Asked Questions document was created based on them. According to the company confidentiality policy, neither emails nor Frequently Asked Questions can be placed in this case study.
Eight questions were chosen, which were most asked by customers. The answers for these questions were partly taken from emails, but also re-written and corrected by the author. The ready Frequently Asked Questions document was shown to the team, discussed and after some corrections, agreed.

During the creation of the Frequently Asked document, there were some problems in writing the correct and proper answers for questions. As FAQ should contain short answers, with some questions it was almost impossible to write short explanations. The answers were given regarding the asked questions, but in general could not provide the whole picture of the processes inside the team.

It was obvious that this document could not solve the problem of the overloaded mailbox totally. After discussion with the manager of the team and the author, it was decided to reorganize the existing intranet page and create documentation with full information about the team’s responsibilities, duties and activities.

5.3 Intranet page reorganization.

The team’s page presented a limited amount of information about the team, e.g. team members and a short description of team’s services. The general idea of the reorganization was to create several documents which would cover all the team’s responsibilities and activities, every document would present a single service offered or provided by the team. These documents would be placed onto the team’s intranet web page. The creation of the page was based on the Nonaka and Takeushi model of Knowledge creation and Utilization (Figure 2). The process started with socialization, when the tacit knowledge of customers was accumulated. Such tacit knowledge is articulated into customers’ requirements through externalization. On the combination level, the requirements are gathering, integrating and transferring into explicit knowledge (the documentation). The knowledge created in the form of a new communication is then converted into tacit knowledge by the customers, who use it through internalization.

The intranet’s documents were created and based on internal team documentation, instructions, guides, and concepts. The information was also gathered from the company’s other intranet pages (e.g. concerning different project, in which team is participating).
The internal material is organized into different folders and subjects on the team’s network and only available for team members. Among other material, it contains the guides, concepts and documentation concerning the team’s activities.

This material is mostly used by team’s newcomers to get familiar with different team activities. They are used by the team members as well, when some changes in processes have happened and every member in the team can update the instructions.

As the documentation in this network cannot be placed straight to the intranet, because it also includes information that meant only for this team, it was decided to go through all the documents to collect the necessary information. Then to correct, edit or add the missing information, and create new documents which would be placed to intranet page.

The hardest part in this step was to find documents which would be up to date. Some documents were in duplicate with some small changes in contexts; some documents did not contain a full description of the process; some had only been prepared in rough, some documents’ names did not fit with the inside information. It would always take long time to find the needed document.

There was also another problem - the documents would need to be created from customers’ point of view, be clear described and contain efficient information and knowledge. The processes would need to be explained in a way that everyone could understand them. The mailboxes analysis, which was done previously, helped to emphasise the problem areas.

In the end seven documents were created and sent to the team manager for approval. The documents were corrected by the manager. Corrections were mostly related to areas in which the author had not been confident at the time. When the project started the author had been working for only 3 months in this team.

When all the corrections and editing were done, and the approval was received to place them onto the intranet, the documents were added to the team’s intranet page.

5.4 Web page marketing

Before releasing the webpage there was a question of how the new webpage should be promoted in order to inform the customers about the updated web page.

In actuality, promotion refers to any activity of an organization that intends to inform, persuade, or remind its target publics about the organization or what it offers, when and where they are or
will be available, and other pertinent information the target market may need in order to change its feelings, beliefs, or behavior. (Gomes, 152, 2006)

After discussion with the team’s manager it was decided that the best way to reach the internal customers would be to promote the updated page via email. Most of the customers are located in different part of the world, so sending via email would be the fastest and easiest way to inform them. Also sending emails does not require any investment or funding.

The infomail was sent to customers who are in contact with team on regular basis and who have a close working relationship with the team, in order to foster the customers’ awareness and interest in team activities.

Besides sending the infomail it was agreed that team’s members, when answering emails, add a promotion phrase to every letter (e.g. under their signature). This phrase advertises that the team’s internal web page has been updated recently with a link to the site.

When emails are received from some rare customers who contact the team only in special cases and are not included in the team’s mail distribution contacts, the inclusion of this phrase to every email would increase the amount of customers who know about updated team’s internal web page.

5.5 Questionnaire

The research was conducted in order to find out if the knowledge shared on the intranet is an effective way to improve the communication between customers and the team. To support it and prove the research idea, a questionnaire was sent to internal customers. The questionnaire was sent to customers one and half months after the team’s web page had been updated. During this time the page was actively promoted by team members.

The questionnaire (appendix 1) was designed in a simple way, including closed questions and with one open-ended question. The closed questions were chosen as they are “usually quicker and easier to answer, as they require minimal writing. Responses are also easier to compare as they have been predetermined” (Saunders, 2007, 368).

The questionnaires were sent to the team’s main contacts, who were included in the team’s distribution lists. These mail distribution lists were created for sending mails to other teams/customers to inform that services have been done. There are different mail distribution
mail contacts, depending on the team’s service and separate ones for Nokia and NSN customers or teams.

The answers were expected to be received back over a three weeks period. For the first two weeks, 32 questionnaires were received, and the final 45 were received on the week third, after sending a reminder to customers/teams. In total 77 questionnaires were received back.

In total the questionnaire was emailed to 102 teams, and received back from 50 teams. Several questionnaires were answered by persons working in the same team, but considering the fact that these persons are responsible for different area of work inside their teams and need different information, it was decided that all 77 emails would be used for analyzing. Based on these 77 questionnaires the survey analysis could be conducted and the validity and reliability of the collected data was not affected by any contamination answers.

6 SURVEY ANALYSIS

The main purpose of the survey was to prove that knowledge, shared via the intranet can improve customers’ communication. In this research the knowledge is presented by documentation which describes the team’s responsibilities, activities and provided services, and then placed onto the intranet for sharing the information with the internal customers.

To validate the research idea, the questionnaire was sent to customers to find out if the customers were satisfied with the updated web page and if the provided information could improve the communication between team and customers (e.g. decrease the flow of emails sent by the customers).

The respondents were asked to answer eight questions (appendix 1), which concerned the web page performance and quality of the shared documentation.

6.1 Question 1 How often do you use the web page?

The questionnaire started with the question asking how often the respondent uses the web page. (Table 3) The answers to this question would show how popular the web page is and how it has been used by the respondents.
The Table 3 shows that the webpage is visited quite often, 14.3 per cent of respondents use the webpage every day, 26 % of respondents answered that they look at it at least once week, and 24,7 % answered that they look once per month.

Table 3 How often do you use the web page?

<table>
<thead>
<tr>
<th>№</th>
<th>How often?</th>
<th>Team, person</th>
<th>Percent, %</th>
<th>Cumulative Percent, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Every day</td>
<td>11</td>
<td>14,3</td>
<td>14,3</td>
</tr>
<tr>
<td>2</td>
<td>Once per week</td>
<td>20</td>
<td>26,0</td>
<td>40,3</td>
</tr>
<tr>
<td>3</td>
<td>Once per month</td>
<td>19</td>
<td>24,7</td>
<td>64,9</td>
</tr>
<tr>
<td>4</td>
<td>Never</td>
<td>9</td>
<td>11,7</td>
<td>76,6</td>
</tr>
<tr>
<td>5</td>
<td>Other</td>
<td>16</td>
<td>20,8</td>
<td>97,4</td>
</tr>
<tr>
<td>6</td>
<td>No answer</td>
<td>2</td>
<td>2,6</td>
<td>100,0</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>77</td>
<td>100,0</td>
<td></td>
</tr>
</tbody>
</table>

11, 7 % of respondents said that they have never visited the webpage before, and from their comments it can be assumed that either they do not need more information in their daily work, so there is no need for them to use web page, or somehow they are new persons and did not receive the info mail about new web page before.

Figure 8 How often do you use the web page?
Based on the answers to this question, it is obvious that the web page is quite popular as 68 respondents use the web page and only 9 do not use it at all.

The results of this question also show that customers are aware of the current web page and the results that they visit it quite often indicates that there could be a lack of information on their side. (Figure 9).

6.2 Question 2 Was it easy to navigate the web page?

The second question was about finding out if it is easy to navigate the webpage.

The webpage was designed in a simple way making it simple to use; it is one page with a short description about the team’s responsibilities, with links to documents. According to the participants’ answers they found that it is easy to navigate, but some would like to see it in an even simpler format. 92.2% of the respondents were happy with webpage navigation and only 2.6% found it difficult for navigation. (Figure 9)

Figure 9 Was it easy to navigate the web page?
For example, some respondents who found the web page too complicated to navigate mentioned that there is a “Done” button which needs to be pressed every time you have finished reading the document to return to the main page. Some respondents would like to see the web page more colourful, as current web page is presented in plain color, without any pictures.

6.3 Question 3 Were you able to find suitable answers to your questions from the website?

The following question was to find out if the respondents were able to find the necessary information they were looking for. In Figure 10 it clearly shows that most of respondents were able to find suitable answers to their questions; 68 respondents (88.3%) said “yes”, and only 5 respondents (6.5%) failed to find the answers from the webpage.

Figure 10 Were you able to find suitable answers to your questions from the website?
The results of this question indicate that the information provided on the web page is relevant for the customers. That means the webpage contains the required and needed information. It was mentioned by one participant “Now I know where to look for information e.g. whom to contact”.

6.4 Question 4 How satisfied are you with the usability of the documentation provided?

Question four was to find out if the documents placed on the web page provide suitable information and if the customers are satisfied with the documents. According to the results (Table 4), 72.7% of respondents think that usability of information is good, and only one respondent was dissatisfied. This dissatisfaction can be explained from the respondent’s comment that s/he had a specific question, the answer to which could not be found in the presented documents.

Table 4 How satisfied are you with the usability of the documentation provided?

<table>
<thead>
<tr>
<th>№</th>
<th>How satisfied</th>
<th>Team, person</th>
<th>Percent, %</th>
<th>Cumulative Percent, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Very satisfied</td>
<td>5</td>
<td>6.5</td>
<td>6.5</td>
</tr>
<tr>
<td>2</td>
<td>Satisfied</td>
<td>56</td>
<td>72.7</td>
<td>79.2</td>
</tr>
<tr>
<td>3</td>
<td>Average</td>
<td>12</td>
<td>15.6</td>
<td>94.8</td>
</tr>
<tr>
<td>4</td>
<td>Dissatisfied</td>
<td>1</td>
<td>1.3</td>
<td>96.1</td>
</tr>
<tr>
<td>5</td>
<td>No answer</td>
<td>3</td>
<td>3.9</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>77</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

The created documents, which were decided to be added onto the web page, include general information about services and responsibilities provided by the team. Nokia is one of the biggest corporations in the world, with constantly growing and merging processes. All the operations and services inside the company are done on a global level and should be based on the global standards. These standards are also changing according to company’s activities, which make them hard to follow. In these documents, provided on the web page, the information given was up to date and explained and described to give a clear picture of processes running in the team. For a person who does not have a basic understanding of the financial processes inside the company, reading these documents is not easy. This was also one of the reasons for creating this
kind of documentation which is describes as clearly as possible the processes inside the team, but also partly the financial processes inside the company.

6.5 Question 5 How satisfied are you with the appropriateness of the documentation to your needs?

To find out if the documents provided were suitable for the customers' needs, the respondents were asked to answer question five. 66.2 % of participants thought that the documentation contains the appropriate information (Table 5).

<table>
<thead>
<tr>
<th>№</th>
<th>How satisfied?</th>
<th>Team, employee</th>
<th>Percent, %</th>
<th>Cumulative Percent, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Very satisfied</td>
<td>6</td>
<td>7.8</td>
<td>7.8</td>
</tr>
<tr>
<td>2</td>
<td>Satisfied</td>
<td>51</td>
<td>66.2</td>
<td>74.0</td>
</tr>
<tr>
<td>3</td>
<td>Average</td>
<td>14</td>
<td>18.2</td>
<td>92.2</td>
</tr>
<tr>
<td>4</td>
<td>Dissatisfied</td>
<td>2</td>
<td>2.6</td>
<td>94.8</td>
</tr>
<tr>
<td>5</td>
<td>No answer</td>
<td>4</td>
<td>5.2</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>77</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

As Table 5 shows most of the respondents are satisfied with the provided documentation. According to the participants' comments, they would like to see the team's web page on NSN intranet as well. Different intranet networks are provided for Nokia and NSN companies, even NSN though is a part of Nokia Oyj. The team's intranet page is available only for Nokia employees, and most of the Nokia Siemens Network's employees do not have access to this web page, even though the team provides services for both Nokia and NSN companies. In some small countries the same employees are taking responsibilities for Nokia and NSN companies; this means they are able to go to the team's Nokia intranet web page. And also depending on employees' responsibilities, the access can be granted for both Nokia and NSN intranet sites.

So for most employees on the NSN side, who do not have access to Nokia intranet web page, the information is not available, and this is one of the reason why the team’s mailbox for NSN side still remains full while the Nokia mailbox content went down after the documents were released.
on the intranet. This redundancy in receiving emails to Nokia mailbox was seen clearly and was confirmed by team members.

6.6 Question 6 How satisfied are you with the overall quality, look, feel, and functionality of our webpage?

Question 6 was about the webpage’s performance in general. As was mentioned above, the website was designed in a simple way, with short descriptions of the team’s services and links to the documents. As this intranet web page is only for internal use, it is not necessary, or required, to place any advertisement banners or commercial pop-up windows; it should just be functional.

In Figure 12 it can be seen that 45 (58.4%) of the participants are satisfied with the overall performance of the webpage, while only 3 (3.9%) are dissatisfied. From the respondents’ comments it can be seen that some still would like to see the page not so plain - “the design of the page it is not "colorful", but the information is useful”.

Figure 11 How satisfied are you with the overall quality, look, feel, and functionality of our webpage?
6.7 Question 7 If you need any assistance concerning our team’s duties and responsibilities, would you first …

As the aim of creating/re-organizing the team’s web page was also to decrease the mailboxes sizes (i.e. amount of emails received by team), the respondents were asked the question “If you need any assistance concerning our team’s duties and responsibilities will you first...”

From the below Figure 13 it shows that 55.8 % of the respondents will still send an email to the team if they have a problem or need an assistance. Almost 30.0 % of users will go and check the team’s website first. Only 10.4 % will call or chat with someone from the team.

These numbers show that even when most of the respondents are satisfied with the web page’s usability and appropriateness, they prefer to send an email to the team in the first place, instead of going and checking the documentation on the intranet page. Therefore, as it was mentioned before, there was obvious evidence in decreasing mailboxes sizes. In NSN side the redundancy went slightly down, but in Nokia mailbox the flow of emails regarding the team’s responsibilities had been decreased noticeably.

Figure 12 If you need any assistance concerning our team’s duties and responsibilities, will you first ...
6.8 Question 8 Suggestions

The last question, question eight, was designed as an open-ended question. The purpose of this question was to get any suggestions, advice and comments from the participants in order to improve the team's web page performance.

21 of the 77 answers received had valuable comments. Most of the users would like to see more information on the web page, and provided suggestions and comments, and asked the questions on which they would like to find more information.

From the respondents’ point of view the provided documentation is sufficient, but they would like to find more detailed and deeper information about the services and responsibilities the team provides, which in turn would clarify further for their responsibilities split between this team and other teams. They also suggest that in the future less abbreviation could be used in the documents. From this aspect, creating a list of abbreviation would help the customers in their answer seeking.

The respondents also suggested creating some news flashes, which could be pop-up windows when the users open the team’s web page. They would like to receive a newsletter when updates have been done or when there are some upcoming changes.

The respondents’ comments, concerning that documentation placed on the web page should be updated in a timely and regular fashion, should be taken by the team into serious consideration. Whenever customers visit the team's web page he or she should find the information they are looking for. If a customer did not find what he or she was looking for on the intranet page, next time s/he might chance to visit it again, and if in the case, that there is still no information again, s/he would send an email about a problem. And after that it is likely that the customer will bother to go and check the web page again as they were assume there is no up-to-date information or no updates visible.

Some of the respondents were thankful for the creation of these documents and shared them with other users. This is one of the respondent’s comments “I just realized that there are pages like this. They seem very good to me and now I know where to look for information e.g. whom to contact”.
7 FINDINGS AND CONCLUSION

Based on the questionnaire’s analysis it is obvious that in general the customers are satisfied with the documents provided and overall performance of the web page. Their comments and results of how often they visit the webpage show that knowledge and information placed there is considered as useful and efficient.

The created package of documentation (in other words, knowledge warehouse) was the most effective way of improving customer communication in this research. There is no other direction in which the provided information can be spread out between the customers equally. Even though the team offers some other different support for the customers such as conference calls, Power Point Presentation and training, these are only done when a new company has recently joined Nokia Oyj or in case of internal reorganization, when the responsibilities from one team have been transferred to new team. Usually these support sessions present the general information about team performance and cannot cover all the subjects. And also, the provided documentation given to the customers at the time of the session will not be updated, if unless the customers updates them by themselves.

The created knowledge warehouse is a critical resource not only for the team, but also for the customers. The starting point of organizing the web page was mainly to reduce the mailbox flow, but it was also important to distribute and share the team’s knowledge and competence. In these processes, tentative and partial knowledge created out of the team’s values and experiences are shared and justified by the members of the organization in order to create new knowledge, so the knowledge keeps expanding.

Creating and sustaining a culture in which knowledge is valued is one of the most difficult challenges in practice. Appropriate cultures are those that engender change, innovation, openness, and trust. People are recognized and rewarded for their knowledge contribution. Conditions for effective knowledge creation and sharing require more flexible, networked organizational structure; multiple teams; and a climate of intensive and purposeful networking. Several factors help create the conditions that encourage knowledge-sharing-systems for moving people (e.g. job rotation), appropriate learning events, effective teaming, and comprehensive technology infrastructure. (Amidon, 212)

The changes that had been taken during this research proved that sharing knowledge and experience via the intranet is one of the sufficient ways in which to support the customers’
relationship and communication. Sharing the team’s competence with colleagues and customers within the organization enhanced the productivity of the team and the redundancy in team’ mailbox evidence of it. After research took place the amount of received mail has dropped and the team members have more time to concentrate on more important tasks.

Knowledge sharing does not simply happen unless there are number of measurable tangible and intangible benefits not just for the organization but for the individual as well. (Amidon, 273) This clearly shows in respondents’ answers for question 8 that over 50 % of respondents would still prefer to send emails if they have met some problems and need assistance. This could be challenging for the team, as soon as there have been some changes inside the organization and the web page has not been updated according to these changes the amount of emails again went up. It is also difficult to convince the customers to visit the team’s page first, and then to contact the team if the answers cannot be found in the provided documentation. Thus the customers and team will not see the benefit of this kind of collaboration, the team will continue to suffer from overloaded mailboxes.

Nowadays, knowledge is increasingly being recognized as the most important asset of organizations. … innovation, learning, and creativity are increasingly seen as key assets for corporate survival, based on the distribution of competences and authority in small teams across the organization, as well as the mobilization of individual and social potential and commitment. Distributed competences, rule-free and flat organizations, social capital, employee autonomy, information sharing, connectivity, results orientation, flexibility and adaptability, continuous learning, and visionary leadership have become new watchwords of knowledge-based success (Amin, 70)

This can be solved if the team will continue to promote web page. But there should be some more drastic actions. Firstly the provided documentation should be up-to-date; secondly some other documents should be added to the web page according to the asked questions or recent changes. These documents should contain sufficient context to enable customers to make connections between related documents, thereby indentifying other material that might be useful or make the document itself meaningful. Thirdly, info mails should be sent out to customers when changes or updates have happened.

But to be able to keep the web page updated and the mailboxes under a reasonable level of received emails, the team should be more motivated. It seems that inside the team not all of the members consider the web page seriously and the mailbox being overloaded essential.
Therefore, new knowledge has to be created continuously. At the same time, the manager of the team should encourage its members to share the knowledge they develop across geographical and functional boundaries in an effective, efficient and fast manner.

If the team would have time or ability to concentrate on this communication problem and understand how to manage, perform, and improve the web page better, it would help the persons responsible for mailboxes, to save time for other tasks, and the communication and collaboration with customers will be more effective. Otherwise, the team will continue struggling with exceeding mailboxes in the future.

The team has to recognize and continue to grow a sense of priority and importance to the web page. They need to realize that the customers should be able to get the proper documentation and understand the processes inside the team. Collaboration inside the organization, between different teams, should also be considered as collaboration with external customers. If the internal customers have questions or knowledge to share, they should be able to get answers or provide insight.

Knowledge in an organization is both explicit and tacit, and because of tacit aspect, it is not so easy to share knowledge, especially across functional, business, and regional boundaries. Recognizing the value of tacit knowledge and figuring out how to use it is the key challenge in sharing knowledge across geographical regions... (Ichijo, 85)

It can be vividly seen that the research subject was so wide and the knowledge creation processes can be applied differently in the organization. Nevertheless, in this research the author was trying to show that nowadays knowledge competence and knowledge sharing has become more important in business processes. Thus the thesis in its whole context shows that knowledge processes directly influence on relationship and communication inside the organization. The theoretical part of this thesis can be applied for different types of organization. The practical part can be used for continuous improvement of described in this work processes.
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APPENDIX 1

Questionnaire. Improving of team’s intranet page performance.

We would like hear your views on our team intranet web page, including both its good features and anything that needs to be improved. Please complete the short questionnaire below and send it back by (date). It will take about 5 minutes to complete.

Please mark with X the answer is most suitable to your opinion

1. How often do you use the web page?
   - [ ] Every day
   - [ ] Once per week
   - [ ] Once per month
   - [ ] Never
   - [ ] Other __________

2. Was it easy to navigate the web page?
   - [ ] Yes
   - [ ] No
     If no, why? ____________________________________________

3. Were you able to find suitable answers to your questions from the website?
   - [ ] Yes
   - [ ] No
     If no, why? ____________________________________________

4. How satisfied are you with the usability of the documentation provided?
   - [ ] Very satisfied
   - [ ] Satisfied
   - [ ] Average
   - [ ] Dissatisfied
   - [ ] Very dissatisfied

5. How satisfied are you with the appropriateness of the documentation to your needs?
   - [ ] Very satisfied
   - [ ] Satisfied
   - [ ] Average
   - [ ] Dissatisfied
   - [ ] Very dissatisfied
6. How satisfied are you with the overall quality, look, feel, and functionality of our web page?
   - Very satisfied
   - Satisfied
   - Average
   - Dissatisfied
   - Very dissatisfied

7. If you need any assistance concerning our team’s duties and responsibilities, would you first:
   - go to check the team’s intranet web page
   - send us email
   - make a call or chat with someone from the team

8. We would like to hear your suggestions on how we can expand or improve our site. What other information would you like us to provide?

   ________________________________
   ________________________________
   ________________________________
   ________________________________

Thanks for your time.
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