

Original cases

Appendix E: Case Magnus

Packaging of IT Services – Conceptual and Empirical Studies

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1 Introduction

“Write Once, Run Everywhere.”

– SUN MICROSYSTEMS, Inc.’s
mantra for Java.

“Write Once, Test Everywhere.”

– CYNICAL JAVA
PROGRAMMERS.

1.1 The subject of IT services – an empirical study

This research (Appendix E) provides a detailed description of an empirical case study called Magnus. It is strongly based on the previous researches of Nieminen (1997) and Nieminen and Auer (1998). The appendix has been written intentionally in such a form that it can be read irrespective of the doctoral thesis. Of course, the readers will benefit most probably from familiarizing themselves with the main research as well.

Case Magnus is related to services that are created, delivered, provided, enabled, or used with information technology (IT). The actual IT service of Magnus is to improve the customer’s personal productivity by offering a networked PC environment with a range of applications – and with it, the work is intended to be done quickly and productively. The IT service provider organization is the local IT unit, mentioned later also as Z, which operates in the internal (in-house) markets. In the course of years 1996 and 1997 when this case was conducted, it can be seen that the terminology was not yet well developed. An effect of Sipilä’s (1996) writings on the packaging of professional services is shown in the original case study research. At that time it was called “professional service product development“. The professional service domain in this study is delimited in the domain of IT and information systems (IS). The idea of starting from existing IT services and tasks, and packaging them into the IT service products is, of course, in place. It is not sound to jettison existing ideas and workable IT services for the sake of developing new IT services. But as noted the terminology was just emerging. So it is not a surprise that Magnus was already called “product” or “present product” in a starting phase. I think that it is better to refer to the “existing IT service” or “existing Magnus” than to the “present product”. Further, Magnus can be referred to as an “IT service product” only if the process of the packaging of IT services is finalized. Thus the original statement of the “new professional service product” has been repeated constantly but it is replaced by the better “IT service product”. This kind of terminology variation is seen especially in the form of the questionnaire and its specific topic-related questions. Nevertheless, a keynote for the total research is still the same. In addition, I intentionally dismissed some pieces of detailed information in this appendix. For instance, the detailed issues dealing with

prices and technical solutions are excluded. I also raised the level of abstraction in order to maintain confidentiality prerequisites of the case organization.

This is not a longitudinal study covering the life cycle of IT service products and their success in the market after packaging. Professional packaging of IT services does not necessarily guarantee success, although it raises the probability of success. There can be many factors involved, such as an inappropriate choice of technology, the correct timing of the launch, a “badly chosen” price and the situation of the market and competition therein, which affect the eventual success of the IT product. This study does not focus on these factors. Instead, it focuses on the development and adaptation of the chosen approach to the packaging of IT products and of the organization that produces it. It is not essential to discuss here the success of this IT service product in the long run, but rather whether the approach was practical and suitable to the IT service involved in the case.

1.2 Research interest – objectives and questions

As with this empirical study, it is important to achieve understanding both of how IT services are packaged and what an IT service product means in a particular situation. Whether it is worthwhile to use the packaging of IT services is also being studied along with this case. In fact, these are issues that are of concern in the main research. On the other hand, this empirical study has been carried out in premises of its own and in accordance with its terms. That explains why it has slightly differently formulated research objectives.

The main idea of the research case Magnus was to improve the customer’s personal productivity by offering a networked personal computer (PC) environment with a range of applications and various services. Magnus offered the user tools for word processing, spreadsheeting, drawing, mailing, and scheduling etc. But in order to work properly, Magnus required a local area and wide area network (LAN/WAN) in order to establish connections both to internal and external environment. Thus Magnus needed shared resources such as servers and printers from the network. These all make Magnus an IT artefact. Support, helpdesk, and other non-visible i.e., immaterial services like backup, were provided by Z personnel. The IT service provider organization was also supported by the third party suppliers. In this study, all of these elements make this product an IT service product. In addition, the professional service element of Magnus was based on high IT competence of the experts. Without these IT experts this product would not exist nor would it be utilized on a daily basis by the customers.

Z had seldom researched and described its own existing processes nor has it developed them consciously. Of particular importance are the processes of the packaging of professional services such as the packaging of IT services. The challenge for Magnus was how to adopt such an issue and rationalize the kind of the processes. Z had about 700 customers and accounts in the PC environment. On this basis, it indicated that Magnus was an important IT service product for the IT

unit as well as the case company itself. Both the Finnish subsidiary Oy L M Ericsson Ab (mentioned later as LMF) and Z as a part of it were interested in the subject of the “IT service product development” – that is, the packaging of IT services because it forced them to analyze and systematize their activities.

The packaging of professional services, in a professional domain of IT, has been quite an uncontrolled action previously within the case organization. The development of existing Magnus could be compared even to a self-organized system. Simply, it has been developed almost completely without a project plan of any kind, to say nothing of project management. Therefore, one potential way to approach the subject is to research both the IT service product and its development process since they are very strongly connected. Generally, this research is aimed at bringing some important issues to be taken into consideration for the end-product and also for the development process. Hence, the process is aimed at bringing concrete improvements to Z’s IT service offering. Also the research should provide a development process of IT domain – an outline for the IT unit service product development. The research can be judged successful if these issues turn out to bring an improvement to the present situation of the case organization. This case study research tries to underline the importance of the IT service product development: one should pay attention to the process all the time. And even more, the development is a continuous process. There is always an economical aspect: the IT service product produces revenues of some kind to the IT unit.

Despite the fact that the packaging of IT services is the main subject of this research, it was supported by the process of benchmarking. Benchmarking had hardly ever been carried out in Z. Thus, the research produced a pilot and a quick diagnostic benchmarking approach. Benchmarking was used as a tool for the IT service product development in order to get some information about the subject. The object of this study is defined mainly to the operational level, not to the strategic level. However, the strategic part of the processes and process management will be slightly considered, because withdrawing these aspects would not be useful in the frames of research. One should know something about the strategy before entering the operational level. Usually the processes of the company are not planned ahead but they are just gradually shaping as this case study research shows. Actually, the processes exist even though they have not been described before. But the processes are still essential to know – without knowing those processes, managing the activities of the IT unit is hard to handle.

Again, the main purposes of this case research are to develop the IT unit service as an IT service product and to generate a specific model for the IT service unit (the process of packaging IT services). Other purposes are to use benchmarking as a support for the IT service product development and to describe the processes related to Magnus. This will be achieved through a single-case study of Z within Magnus.

The empirical study appendix seeks to understand the following set of research objectives and questions:

1. How to develop the IT unit's existing IT service to an IT service product based on the ideas of Sipilä (1996)?
 - 1.1 How to use the benchmarking as a support for such an effort?
 - 1.2 What are the as-is processes of this particular IT service?
2. What kind of a process will the packaging of IT services be for the internal IT service provider?

1.3 Research process

Generally, this case study research can be divided into three major parts. This is the first part, "Introduction" (Chapter 1), which contains an introduction to the appendix as a whole. It also contains the basis for the research and the research problem as well as the purpose of this research. The part continues with the research methodology (Chapter 2). So it provides further insight into some issues related to the basis for this research. The research method and design of the case are introduced.

The second part is the empirical one, where the actual case is being introduced and studied. Chapters of the part are numbered from 3 to 6. It provides the initial situation and environmental description of the case dated back to the year of 1996 and a couple of years before that (Chapter 3). The existing IT service Magnus is being analyzed (Chapter 4) in terms of the internal description and its improvement with the IT artefact-oriented service entry. The theory of benchmarking is described and it is applied at the practical level (Chapter 5). With the help of benchmarking results, the new IT service product and in particular, the process of packaging IT services for the IT unit are introduced (Chapter 6).

In the third part, this appendix of Magnus Case will be completed with different chapter for discussion and conclusions (Chapter 7). Figure 1-A. depicts the completed research process as an empirical study of the Case Magnus.

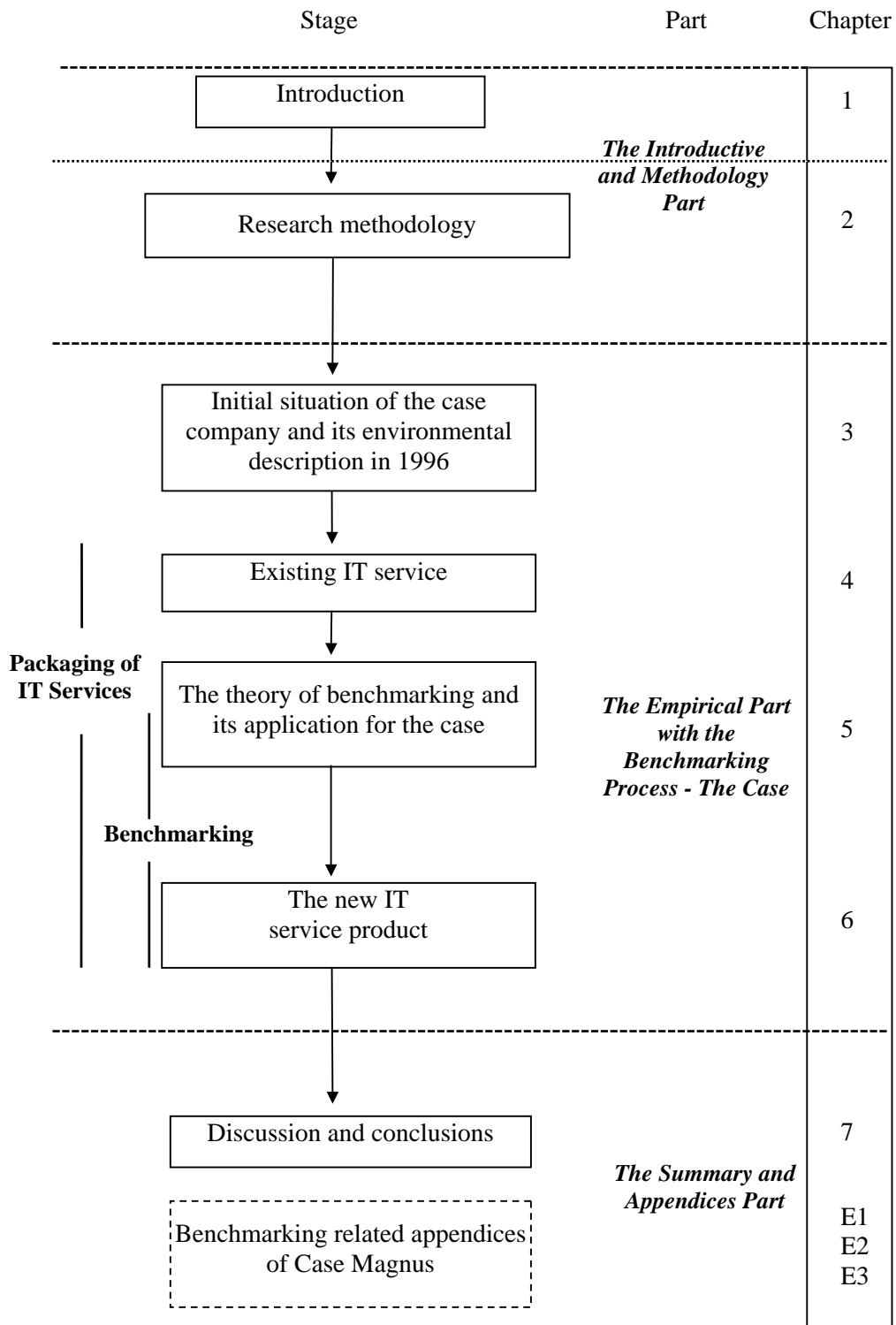


Figure 1-A. A completed research process of Case Magnus.

2 Research methodology

2.1 Research design and approach

The issues which have affected both the selection of the research approach and the application of methods to the research are discussed within the research methodology chapter. The purpose of the discussion is more to understand the standpoints of this research than to carry out a completed literature review of the related research methods. Quality of research design and approach as well as threats to validity are also considered.

Robert Yin (1984) defines a case study as an empirical inquiry that investigates a contemporary phenomenon within its real-life context, when the boundaries between phenomenon and context are not clearly evident, and in which multiple sources of evidence are used (Järvinen and Järvinen, 1995, p. 54). This particular study is a single-case research study, in which just one case is studied. Questionnaires, interviews, observations, and archives can be used as data collection methods. (Järvinen and Järvinen, 1995, p. 52) The multiplicity of sources used in this research study makes detailed reference definition almost impossible. Deductive research starts from the theory and ends with the confirmation, cancellation or improvement of theory (Järvinen and Järvinen, 1995, p. 53) such as this study. The linkage from the research design and the chosen methods are examined in more detail below.

2.2 Research methods

The research methods used are described in detail in this chapter. It is helpful to start the research by asking what others have done. In terms of a literature analysis, theories of the packaging professional services and benchmarking are linked to each other, but direct reference to the subject of the packaging of IT service for this research was in 1996 – and still is quite hard to find. To have an understanding of the research subject, I started a research case to package the IT services in a similar way that Sipilä (1996) suggested for the packaging of professional services. The principles of the internal description and the component view are chiefly composed of his theory. In conceptual analysis, I noticed that some of these ideas and theories need to be slightly modified to gain a better adaptation for IT services than in the more general field of professionalism-based services. As the IT artefact is distinctly present in this kind of IT service, the technical description of the internal description is suitable here. The required information for developing the process of packaging IT services for the IT unit is gathered throughout the various phases of the case study research.

The constructive approach of the research and the methods – in particular, a single-case study research was applied in the research. It was supported by the

benchmarking activity. Adoption of theories and their application to the research – that is, the empirical part - included lots of things to do. Similarly, the service product development such as in this very case has been said to be one of the most complicated processes of all (Turtiainen, 1995, p. 84). Benchmarking and the packaging of IT services are also very time consuming, so it kept my research of this case at a certain level trying to cover essentials of the wide scope research.

In general, the essence of applied research can be approached twofoldly. A research interest is, of course, obvious but there is another perspective as well. It is a development perspective of the actual work. In order to succeed in the applied research, there should be benefits for both perspectives. Further, both these perspectives can also be seen as two different constructions. First, a constructive objective at conceptual level to produce the concept of IT services development – that is, an application of the IT service design referred to as the packaging of IT services. Second, another and a bit more of a conventional constructive objective is the actual work (i.e., the real-world) construction of the suggested new IT service product developed on the grounds of existing IT service. Kasanen et al. (1993) consider that there is no point in going on with the study, if the researcher is not able to produce any new solution to the problem. My role as a researcher has been in tracing what has been developed and how this new solution has been constructed. The case in an actual IT environment acted as a sense-making instrument which served the research interest. I have been more like a bystander over the project since I have not participated actively on the actual work. However, every once in a while (not so often though) my role can be illustrated also as a mediator or facilitator. One example of this is what happened in the very beginning of the research. My summer job 1996 was to work as UNIX Administrator. Simultaneously, I was almost desperately seeking potential research domains and objectives for the next autumn. The research objectives had to be such that felt compelling to me as well as interesting enough in order to raise the interest with the management of the unit. I read on the subject in advance and introduced the ideas on the packaging professional services to be applied in our field of IT: the then Manager (Head of Unit) found it a beneficial idea to apply for the IT unit, and at the same time, it was an interesting enough theme to let me start out to research it more. Since I have so far explained the relevance of this research, another example is that I shared information of the benchmarking analysis among the IT personnel. It was their decision whether to adapt the ideas or not for the new IT service product.

In the empirical part, the customer requirements and needs are highly noticeable within the process of packaging IT services. This has been already emphasized and proved by the theories of the packaging of professional services and benchmarking. The empirical part continues with the same analysis by focusing on the existing IT service e.g., defining the related as-is processes and their effects on the particular IT service. In this case study research, benchmarking measures both the IT service product and its development process. The different stages of benchmarking are mainly located into chapter of its own “Theory of benchmarking and its application for the case”, in which the questionnaire design, the analysis, and other issues of

benchmarking are presented. With the support of two-way partnership and the internal benchmarking process, which is aimed at establishing relations with other IT units of the subsidiaries, the new IT service product is constructed for the benefit of the real-world. Although the main idea is to apply the principles of the packaging of IT services for this new IT service product. Hence, benchmarking only supports these activities. So it is an optional but not a mandatory activity of getting more valuable information about the subject. Furthermore, it is quite obvious that Z is the main organization responsible for the implementation of their new IT service product, especially when it comes to the technical details of it. At least at this point, Z is responsible for offering IT services to the rest of the LMF organization.

More specifically, the various information sources used in this research study are as follows:

- Intranet and Internet;
- Telephone interviews;
- Face-to-face interviews;
- Postal questionnaires; and
- Benchmarking partner site visit, which is an essential factor for succeeding in benchmarking.

Intranet and Internet are used especially during the benchmarking process in order to have information e.g., the prospect benchmarking partners and their present situations at their own IT units. Telephone interview is a flexible method of data collection. The telephone interviews are used when collected LMF/Z's answers to the questionnaire. Face-to-face interviews such as personal interviews and meetings are also used. Persons interviewed are presented in detail at the latter part of the research, from the topic of "Personal communications – case discussions". Personal interviews can be either structured, semi-structured, or unstructured. Structured interviews require the interviewer to ask specific questions of the interviewee in a particular order. On the other hand, in terms of unstructured interviews the interviewee is allowed to respond in almost a free associative manner. The interviewer can ask, of course, specific questions during the unstructured interview as the interviewer would do in a structured one (Gerson, 1993, pp. 78-79), and I also used precisely this method of semi-structured interviews. Personal meetings are the best method of data collection at a benchmarking partner site from a quality and quantity standpoint (Fitz-enz, 1993, p. 117). Postal questionnaires here mean both letter and e-mail interviewing. Letters were sent to the prospective benchmarking partners (the group composed of Ireland and selected Scandinavian countries) before the actual visit takes place. E-mails are also extensively used in gathering answers from the personnel of Z.

2.3 Quality of research design and approach

2.3.1 Empirical and validity challenges

Originally, the IT unit founded a project group for developing the new IT environment for their IT services. Mainly its function was focused on the technical level and implementation, neither for the processes nor for the other aspects of IT service product. The idea of approaching the subject somewhat holistically was a new for the IT unit, and as later noted, to the benchmarking partner as well. Some of the issues in this study had never before been carefully considered or documented. These things were taken into consideration in the case study research. So I had to collect the material for this study by interviewing several employees of Z. For instance, there were very few documents concerning the existing IT service. Hence, research success of this kind is always dependent on the others' commitment and willingness to cooperate. Representativeness of the study sample (the key informants) and their willingness to answer the questions cannot be estimated beforehand but those who attended the study were interested in the subject.

Validity regards the extent to which an observation measures what it purports to measure. Yin (1984) lists four criteria for judging the quality of research designs: construct validity, internal validity (in general, not for descriptive or exploratory studies like this one), external validity, and reliability. Construct validity is about establishing correct operational measures for the concepts being studied. To meet the construct validity criterion, a researcher has to select the specific types of changes that are to be studied, and demonstrate that the selected measures of the changes do reflect the specific type of change that has been selected. The degree of external validity is the extent to which the causal analysis and explanations offered by the theory may be applied to similar phenomena, and thus study findings can be often generalized. Reliability regards the extent to which observations by several researchers studying the same phenomenon with similar purposes will yield nearly the same results. Thus, the goal of reliability is to minimize the errors in a study. (Braa and Vidgen, 1995; Järvinen, 1999; Yin, 1984)

Consequently, the research design has its limitations to the methods which can be addressed by the following criterion. Construct validity of the research was improved by discussions with a group of those who participated in the case project and those who were interviewed. This validity criterion was improved by using multiple sources of evidence. In addition, the key informants reviewed some parts of the draft case study report, and during the interviews there will be a possibility for the key informants to review and verify their own answers. Yin (1984) argues that a theory should be tested through replications of the findings in order to be generalized. The outcome of the case study has not been verified independently. For example, the process of packaging IT services for the IT unit is based on the theories and experiences gained chronologically with this single-case research study. But being just a single-case, I do not argue that all contributions of the study are generalizable. More likely they are suggestive ideas that may be applied and tried

at other IT service provider organizations. From the reliability standpoint, there are typically different interpretations by different stakeholders, which create some problems for the methods. Notes were used during this case study research for improving this criterion.

In terms of validity and reliability of benchmarking in this research – especially for information gathering and questionnaire design, they can be seen to meet both requirements. Although the development of appropriate benchmarking indicators is often a tricky task. As benchmarking is applied, validity can be divided into internal (yet applicable criterion especially here but not for the whole research) and external. Internal validity reflects chiefly researcher's control over science, and that researcher masters a subject. Material is externally valid at least in the following cases: the interviewees have provided realistic information, the researcher has drawn right conclusions from the perceived situation, or the researcher describes the situation as it exists. Speaking for validity, I had no previous experience on developing benchmarking questionnaires and indicators but I was supported by the instructor, who already had benchmarking experience. The questionnaire was pre-tested internally with a group of selected IT professionals. I interviewed the staff on the IT unit of LMF, then checked the gathered information, and re-checked it by developing more specific questions and asking again. In the benchmarking partner selection stage there were some refusals and without their contribution the results of the research study may lack some useful information. At the benchmarking site visit, I repeated the interview by questioning the staff of the Danish IT unit, then checked the information gathered, and re-checked it by developing more specific questions and asking again. One of the risks is typically related to the benchmarking partner – that is, do they give us enough needed information about their processes and their corresponding existing IT service. Benchmarking, however, was internally organized within the Ericsson Group so the parties involved have presumably no reason to withhold information. Therefore, the reliability of the benchmarking can also be considered to meet the requirements.

3 The empirical part of the case

3.1 Initial situation of the case company and its environmental description in 1996

In this chapter the initial situation of the Ericsson Group and Ericsson in Finland is presented. In that time, as the research case Magnus was conducted, Ericsson was a global company present in more than 100 countries with over 85 000 employees.¹ It had products and systems for wired and mobile telecommunications in private and public networks. The company was also a supplier of defense systems. Ericsson's major operations were organized into radio and public telecommunications, business networks, components, and microwave systems. The product portfolio covered all types of telecommunication equipment such as mobile telephones, digital exchange systems for mobile and wired networks and a family of communications systems for business networks. R&D was decentralized to 44 development centers in 22 different countries and over 18 000 employees were active in that function. The parent company, Telefonaktiebolaget LM Ericsson was located in Stockholm, Sweden. LMF developed, marketed, installed, and maintained systems and products for wired and mobile telecommunication networks, and business needs. LMF was – and still is one of the companies of the Ericsson Group specializing in R&D functions. Hence, the R&D unit of LMF is one of the most important research centers of Ericsson. At that time LMF had over 1000 employees, of which more than half worked in R&D operating in the context of converging IT, telecommunications, and mobile industry.²

3.2 The IT unit organization and its services

The Ericsson Group companies had full responsibility for all aspects of their IT function. This meant that they were quite independent of taking care of their IT service processes within each subsidiary. However, there were some mandatory regulations for IT given from the main company level. They also carried the cost for these activities. The IT unit within the Ericsson group has been seen as both a service and professional organization. Its mission was to secure continuous application and network support of the IT function to all employees of LMF. Thereby, the IT unit was an essential part of the LMF structure, specialized in providing IT services to the rest of the organization. IT had a remarkable role of support assisting the main processes of LMF such as marketing, sales, supply and implementation, product management, product provisioning, and customer services. In other words, the IT Unit's IT services include helpdesk, user support, network support, and applications development. It also handled IT planning,

¹ The Ericsson Group is present in more than 140 countries; the total number of employees in 2003: 51 583

² Number of LMF employees in 2003: around 900

hardware and software acquisition, development, implementation, and training services. What was important was that the IT unit did not have to yield a profit so it had a zero budget draft. Also according to the business plan of the unit, profit making was not the issue but keeping the costs at the reasonable level. The Z organization had approximately 50 employees. Further, the organization was divided into the teams, which were managed by Team Leaders. The teams were following: Helpdesk, User Support, Network Support, Applications, Development, and Special Projects. Team Leaders were responsible to the Director of the IT unit. Traditionally, the Secretary, Controller, and Quality Controller belonged to the staff of the IT unit. Furthermore, Z had a person in the User Support team responsible for acquiring software and hardware. The teams of Helpdesk, Applications, User Support, and Network Support were closely related to this study. The third parties i.e., the suppliers had also been taken into account in this research.

As a first step toward developing the existing IT service into a more tangible form, Z applied some tangibilization techniques related to marketing. There was, however, no strategy defined for the marketing of IT services. In 1993 when Magnus was launched to the internal market of LMF organizations, there was no marketing material such as brochure for the customers to have. Later on, a medium for the marketing of the existing IT service was “Z News” published in Finnish. Also the following methods were used to have more tangibility to this IT service:

- Ad hoc bulletins directed towards the customer for special purposes concerning the service package;
- The Helpdesk is an essential part of Magnus, therefore the following can add more tangibility to the service:
 - Helpdesk stickers which can be located near PCs; and
 - Members of the Helpdesk team wear shirts with text “Helpdesk” occasionally.

3.3 An IT environment of the case company

LMF’s IT environment was quite a complicated system with several platforms and operating systems. At that time, LMF’s LAN was a switched Ethernet network with a FDDI/ATM backbone, based on TCP/IP and NetBEUI protocols. UNIX was the basis for the development tools used by the designers of Ericsson’s major product families. The Ericsson Group had roughly 20 000 UNIX workstations and servers of which approximately 550 UNIX workstations and 30 servers were within LMF. The Ericsson Group employed an IBM mainframe environment and LMF had a mainframe system as well. It was used by the logistic and finance units. The PC environment was used by the sales and administration personnel, although PCs were used by all organizations gradually. LMF had approximately 800 PC workstations and 20 servers in use. The PC environment and its development has been quite an uncontrolled action. There were neither prototyping nor piloting executed for the whole IT service. And if there were, there is no documentation on this subject available. It can still be argued from the technical standpoint only that Magnus has been prototyped and piloted several times in its lifetime because it has

been improved step by step. But it seems obvious that there was no coordination or project management for these activities whatsoever.

4 Existing IT service

4.1 The internal description

Any new product development must be based on an analysis of previous products (Morral, 1996, p. 44). This is also the case with the new IT service product development in terms of the packaging of IT services, since it is based on the analysis of previous (existing) IT service. There were no analyses performed previously of the present Magnus. The aim of this chapter is to describe and thereby, familiarize the existing IT service situation that acts as a starting point for the packaging of IT services. So it is important to have a written analysis of existing IT service. Hence, the importance of the entries of the internal description by Sipilä (1996, pp. 74-78) cannot be underestimated. It was found in this case study research applying in the professional domain of IT, that there were some kind of gap in the internal description. There was no mention of the technical description, which was found to be important because knowledge of IT and information systems are essential core competence factors of the case organization. But this is not all. More importantly, these kinds of IT services are highly dependent on the IT artefacts, which speaks for the importance of the specific entry – that is, the technical description. Therefore it just cannot be excluded from the internal description within this study. Moreover, the internal description is primarily for the internal use of the IT service provider organization.

An existing IT service is here introduced in the spirit of the internal description. It is useful to try first to describe the existing IT services and tasks leading to the packaging of IT services. Some of the headlines of entries are slightly modified herein if compared with the original text (Nieminen, 1997). Similarly the headings are sorted into a bit more logical order. One reason for this can be found in a relatively weak underdevelopment of constructions at the time of starting to research the subject. Another reason is that it illustrates more accurately this part of the research dealing with the existing IT service.

Name of the IT service

Back in 1993, LMF employees used to call the system offered by the IT unit a “sales’ network” because there was no name specified for IT service at that time. There were a couple of reasons for the name “Magnus” – according to the inventor Mr. Thomas Witting. The name was internally unique and closely related to the Ericsson Group and it was not dependent on the organization’s hierarchy. It was also short, easy-to-remember as well as easy-to-spell. All these aspects together were good reasons for selecting the name for this purpose. So the name was selected but it did not make Magnus an IT service product yet.

General description

Magnus is an essential IT service for LMF because it has approximately 700 day-to-day users. This means it should maintain a certain level of quality and at the

same time, be reliable in daily use. Originally, it is one of the most visible parts of Z to the rest of the organization of LMF. It also produces revenue for Z.

Almost all the PCs of LMF connected to the LAN offer the possibility to use Magnus. It should be pointed out that there is no such term as a Magnus network – although Magnus is based on the LAN/WAN technology, but it just gives the backbone for the IT service product. It makes the standard part of the IT service product. LAN is often used to refer to e.g., file servers or printers, and often PCs that are networked to them. Customers typically just talk about saving their files on the Magnus network but the network should be used more specifically to refer to the data communications wiring and equipment that connect PCs to the file servers and printers. After all, it is the rule rather than the exception that people stated “a network failure”. In the majority of cases there is no problem with the LAN but somewhere else. Despite of these challenges, Magnus provides different tools for word processing, spreadsheeting, drawing, mailing, scheduling etc. It contains also services such as support, helpdesk, and non-visible services like backup of the customer files. These are the modules and on top of them, Magnus can be tailored (customized) for the special purposes of the customer.

The use of IT service and added value for the customer

The use of IT service is to offer a customer PC environment (the IT artefact-oriented service) in which work can be done quickly and productively. There are several reasons for the customer using the IT service product. These reasons will give added value to the customer:

- Allows the customer to do his/her own work without paying any attention to problem solving concerning e.g., technology of Magnus;
- User files are backed up regularly;
- IT security is better than it might be if IT functions are outsourced. Thereby, the information can be controlled internally and it is not accessible by the external parties. This is an important aspect in information intensive company;
- Offers possibilities for establishing connections inside and outside of the organization such as e-mail and Intranet/Internet;
- It can be tailored to the special purposes of the customers; and finally
- It is an enabler for the different customer activities.

Market potential and customers

There are approximately a total of 700 Magnus customers consisting of Z employees (they can be sometimes referred to as the internal customers) and employees from other LMF organizations (the external customers or the end customers in this case). Customers are sorted and segmented here from the employees of LMF. But on the other hand, a total service chain starts from the internal users and ends with the external users. Magnus is chiefly directed towards the LMF personnel but in the future it might be possible to sell Magnus outside as well. So it is even possible to argue that the internal customers could be the employees of LMF, and the end customers could be from the different organizations outside LMF: a short-term market potential are all the newcomers to LMF and a long-term market potential can be seen in the Ericsson Group. One can even imagine that the kind of external organizations might be the real paying

customers such as enterprises and operators. However, in this case study research the customer base is formed of the internal Z customers and the majority of the customers are the rest of LMF employees, although, the role of Magnus is slightly different for the internal customer because administration, monitoring of functionality, and IT service development of Magnus take place at Z. From the standpoint of the technical implementation, the segments are the following:

- *Workstation PC and portable PC* users – they use Magnus through the network connection or Integrated Services Digital Network (ISDN). This is the biggest segment with approximately 600 users;
- *UNIX WinDD* users – they use Magnus from UNIX workstations with WinDD application. Roughly 50 licenses for simultaneous use; and
- *WinFrame* users – Magnus can be used remotely with a WinFrame application and modem. There are 70 licenses for simultaneous use.

At this point of the section it is useful to discuss the customer satisfaction in terms of existing IT service. Customer satisfaction can be defined as (for instance, by Gerson's definition, 1993, p. 11): "Customer satisfaction is the customer's perception that his or her expectations have been met or even surpassed." Gerson (1993) continues in the following way on quality issues; quality is based on the perception of the customers. Therefore, it is defined as whatever the customer perceives as quality. Satisfaction measurement tells to the staff how well they are managing their customer service functions, and it also guides them in their marketing efforts. In order to achieve this, find out exactly by asking the customers what will satisfy them, and create and measure offered services or products accordingly. An idea is to learn about customer perception and then measure customer satisfaction: "What gets measured gets done, and what gets analyzed gets followed up". Customer satisfaction benchmarking can be used for improving service quality and increasing the levels of customer satisfaction. The organization can be proactive or reactive or both in managing service quality and customer satisfaction. Proactive means that the company can begin the service and satisfaction management process before they even come into contact with customers, or they can be reactive, and wait for customers to complain or tell them what to do. Customer service, quality, and service quality appear to be intangible items because they are based on perception. However, they do have tangible and visible aspects that can be managed and measured. For instance, what is the policy of the organization on customer exchanges and complaints? This is a tangible aspect of service quality and it can be measured. The customers will tell them what they are looking for and they judge service quality. Since service quality and satisfaction exist in the minds of the customers, an organization like the IT unit should develop standards and measurement systems to meet their perceptions. The benefits of measuring customer satisfaction can be summed up in the following items: it provides people with immediate, meaningful, and objective feedback, and it tells them what has to be done in order to improve customer satisfaction. There is a variety of tools for measuring customer satisfaction such as check sheets and graph charts – many of these can be used interchangeably. Once the customer satisfaction has been measured, the results have to be analyzed so that one can either implement improvements suggested in the surveys or follow up directly with

customers and ask them to expand on their comments. Analysis and follow-up will also provide the staff with indications as to the effectiveness of their performance and benchmarks against which to gauge future service performances. (Gerson, 1993, on the following pages accordingly; 14, 7, 61, 32, 92, 85, 93, 24-25, 40-42) On a practical level, there were researches conducted in 1994 and 1995 on LMF's employee satisfaction of the work of the IT unit, information systems, and their functionality. Researches also charted customer requirements and needs, and the IT staff's own satisfaction with their unit. In 1996 there were regular customers meetings arranged but they were neither as large nor as accurate as these previous researches were. Therefore, all the information is gathered from the previous well documented researches on 1994 (Market-Visio, 1994) and 1995 (Market-Visio, 1995). According to these surveys, the customers have the following requirements and needs for the information systems (these summarized points can be used for this particular study as well):

- *Customer training and guidance* – they should be organized especially for the newcomers. This element is often referred to as the good quality of service;
- *Clear instructions* – directions for use of information systems: more manuals and hints & tips for the customers, brochures etc.;
- *Informing of customer* – information about changes that has to be made and better informing in general;
- *System reliability* – reliability is an essential element e.g., backup should be well-organized;
- *Technical advance* – customers want to have modern and flexible information systems;
- *Time of delivery follow-up* – it comes along with the better project management;
- *Planning and development together with the customers* – this means piloting with customers in order to have more commitment. Planning and development of the IT service products should be done in a cooperation with the customers;
- *More closely tied to the products* – Z has to offer IT services that are closer to the products of the company;
- *Willingness to be of service*; and finally
- *Limitation of liability and attainable* – which are already improved by the implementation of Helpdesk.

IT services which compete with it and IT services it makes obsolete

The present role of the internal IT unit affects the situation because there is no competitor service providers at LMF yet. Z is the only service provider and Magnus is the only IT service in the market for the PC environment.

Fits for the strategies

This type of IT service such as Magnus is a part of the Z's strategy. It offers the customers the kind of IT services they need in their contexts.

Technical description

Yet technical IT skills play a great role in the core competence of Z, a strong presence of IT as an artefact can be found on this empirical case. On that account,

the technical description is added as one of the important entries into the internal description. It is notable that Sipilä (1996) does not argue for the technical description among other entries of the internal description. However, for certain reasons such as IT security, a presentation of the detailed technical description of existing IT service is excluded from the Case Magnus appendix. Despite lack of presentation of detailed information on this issue (although I had access to all the information needed for describing the existing IT service) – and excluding detailed information on pricing as well as the charges, it has no effect on the contributions of this case study research whatsoever.

IT service description: effects on the processes

The as-is processes of Magnus are researched and described in this section at least at the generic level, because they are an integral part of the existing IT service. Initially, there have been no process descriptions available at all. Therefore, I defined all the Magnus related as-is processes of the IT unit in the frames of this research. The processes concern the main processes of IT services and the processes from both Helpdesk team and the Applications team standpoints. The rest of the teams as well as external parties are presented in the following figures. The processes also form a foundation for the benchmarking of the existing IT service. Z's main processes of IT services for the Magnus customer are presented in Figure 4-A. (process owner: the local IT unit Z).

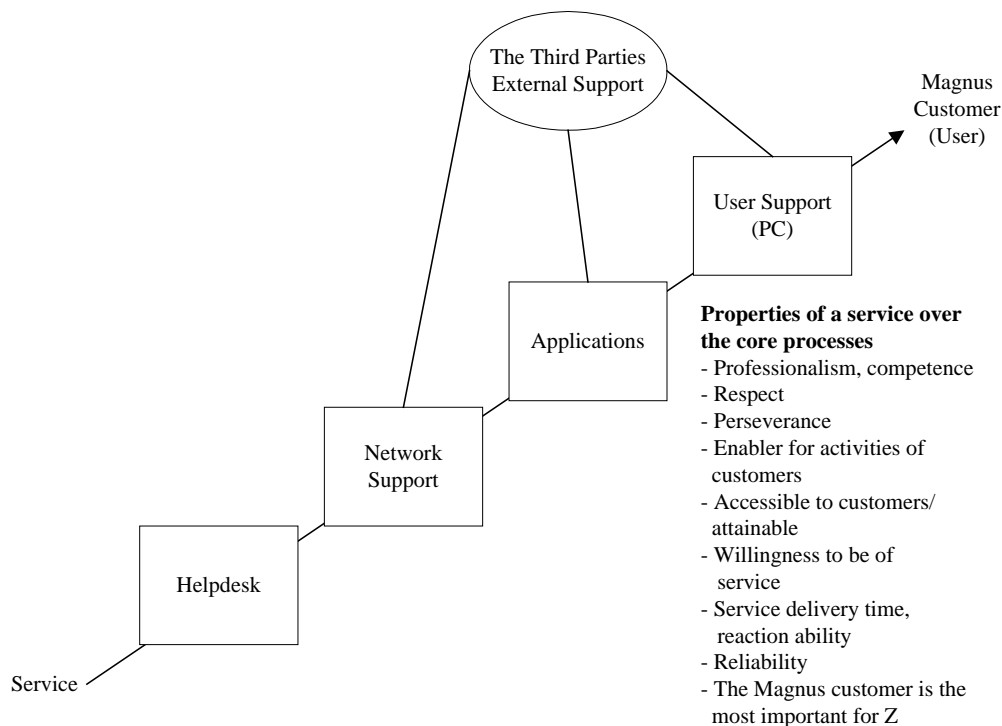


Figure 4-A. The main processes of IT services for the Magnus customer.

Teams such as Helpdesk, Network Support, Applications, User Support (primarily PC-oriented members of the team) and the third parties external support are located in Figure 4-A. Assistance of the external support is mainly used for the following teams: Network Support, Applications, and User Support. The list of properties, which can be also found in Figure 4-A. is founded on the information gathered during this case study research from the personnel of Z. The list presents the properties that IT services here should have. The offered IT service can be judged good-quality if at least these properties are in place. Some of the properties discovered such as professionalism, respect, and perseverance are the overall values of the Ericsson Group. There are also some important back office processes such as the backup and restore process, which takes care of customer data backup. It will not, however, be illustrated here because of its confidentiality. Figure 4-B. illustrates the problem solving service request of Magnus for the customer (process owner: the Helpdesk team). The Helpdesk team is the customer contact surface towards the organization of Z.

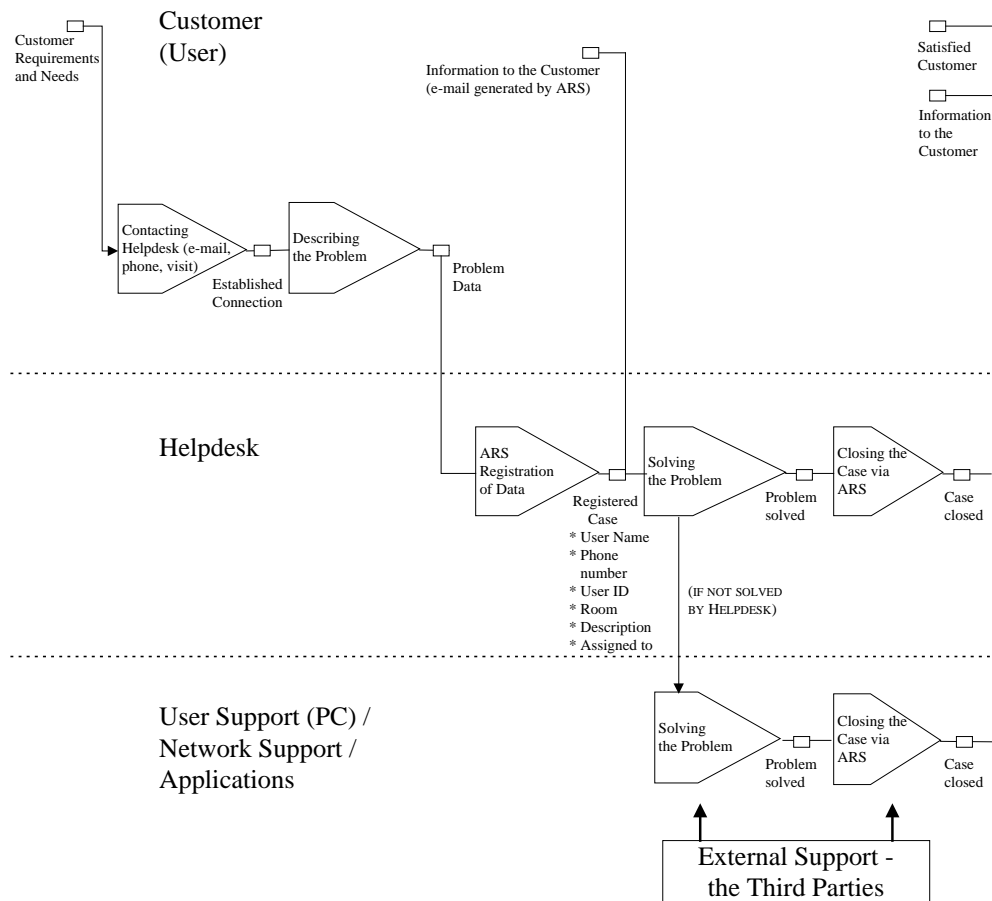


Figure 4-B. The process of a Magnus customer's problem solving request.

The process describes the activities of the different teams of Z regarding the service request from the customer. In terms of contacting and describing the problem to the Helpdesk, the service request is registered in the Action Request System (ARS), which is a database system used by Z internally for controlling the cases – whenever the problem is registered in ARS it can be called a case. A registered case includes the following information: user name, phone number, user ID (user account), location of the room, description of the case, and the employee of Z whom the case is assigned to. Information concerning the registration of the case is sent to the customer automatically by e-mail as verification. Often cases can be directly solved by the members of Helpdesk team. If not, then the case will be assigned to the other teams such as User Support, Network Support, or Applications or more often to the team members directly. In addition, these teams can sometimes use external support for solving the case like software suppliers or specific IT consultants. When the problem is solved and the case is closed ARS will inform the customer automatically by e-mail. The Applications team gives support to the customers but their main duty is to support the software that the team members have developed or implemented by themselves. An exception to the illustrated process can be found whenever the customers want to have an application for their purposes, they contact the Applications team directly - without first contacting the Helpdesk. Figure 4-C. is a process illustrating application development for Magnus by the Applications team (process owner: the Applications team).

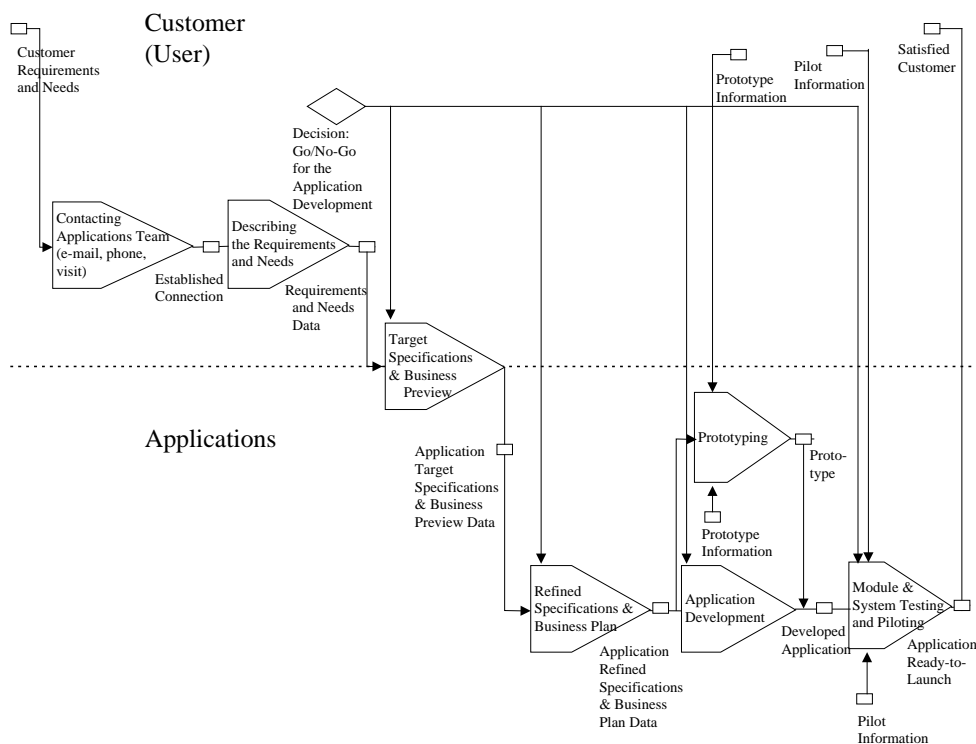


Figure 4-C. The process of application development for Magnus by the Applications team.

The customer contacts the Applications team and describes the requirements and needs. The Applications team together with the customer defines target specifications and the business preview of the assignment. The customer has a possibility to interrupt application development efforts if needed. However, if the rough estimate of specifications and business possibilities satisfies the customer, the next phase will be the re-definition of specifications and a business plan. Application development and prototyping will be done simultaneously. After previous phases, application will be both module and system tested, and the piloting phase is organized for a group or unit level. In general, software developed by the Applications team will not be launched to the whole internal market immediately. It is often piloted by the small organizations before installed to the others. Furthermore, the Applications team installs, develops, and tailors software purchased outside of LMF from third parties.

Versions

There is no kind of versioning or versions management whatsoever. However, configurations for the workstation PC or portable PC can be seen as different versions of Magnus from the technical point of view.

The most important references

Usually, this means successful and satisfied customers with good relations. Depicted from an internal IT service provider's perspective, the most important references are as follows:

- Z has personnel who have competence in the IT area;
- The personnel of Z are acquainted within the company;
- From the other organizations of LMF perspective, Z is already well-known and it can offer professional and tailored IT services for various customers purposes in each of the divisions; and
- IT security plays an important role. For example, external connections through the Internet are restricted by using firewalls. Ultimately, information security is an important aspect because the company operates in an information-intensive industry.

The price of the IT service

At the existing Magnus, the pricing model can be categorized into fixed operation price. The charges are not as realistic as they should be. Z has a zero budget draft and it has to keep IT costs for LMF at a reasonable level. The information of detailed charges and pricing are excluded here, as is detailed information of the technical description.

The IT service delivery time

Z supports customers on working days from 08:00 to 17:00. Off-duty support services are charged to the customer in their entirety. Those Z personnel who are on duty will be available in two (2) hours from the customer request call. In general, if the problem cannot be solved via phone, Z is responsible for arranging help within three (3) hours at the latest. For the new PC hardware delivery time is two (2) weeks beginning from confirmation of an order. For transport of PC

hardware delivery time is three (3) working days from an order. Customers will have accounts ready-to-use in two (2) days from an order. Software will be delivered to the customer depending on the agreement. Installations will be performed in two (2) days from an order or whenever shipment has been arrived.^{E1}

People in charge

According to the theory the packaging of professional services (Sipilä, 1996) the people in charge should be well-defined. However, this is not the case within the existing Magnus. So far, nobody has been clearly defined as a person responsible for Magnus. It is obvious that Team Leaders have in the end many responsibilities but those who have developed existing IT service have their responsibility. The present existing Magnus is a result of development efforts that took a long time. Therefore, almost all of those who have developed the existing IT service can no longer be responsible because of the long time of development and the replacement of staff. However, if one has to name the responsible person or persons, or at least those who are dealing with the existing Magnus, they are pretty much the same persons as those who have developed the new 32-bit Magnus environment.

Further actions plan and development suggestions

Magnus has been slightly reformed to its existing form. Hence, it can even be seen as some kind of self-organized system. This means that there have been countless short-range plans at the operational level but the strategy for developing the IT service product as a whole package has been missing. One can even say that the present Magnus has been shipped to the customers without planning ahead, or without any serious consideration for further IT service development actions. So there is plenty of room for improvement.

^{E1} The IT service delivery information provided by LMF/Z Juha Hartikainen.

5 The theory of benchmarking and its application to the case

5.1 Definitions and purposes

Benchmarking is known under various definitions, but all of them have a common factor: defining the best practices which can lead to achieve success in the company by that means to gain sustainable competitive advantage for a certain period of time. Benchmarking is not a “copycat” exercise, it is an adaptive process – adapting others’ practices to our process (Beauchamp, 1995, p. 3). It offers an opportunity to recognize and reward excellence. The American Productivity & Quality Center defines benchmarking as “the process of continuously comparing and measuring an organization against business leaders anywhere in the world to gain information that will help the organization take action to improve its performance” (Wiesendanger, 1992, p. 60). It could be also defined as a continuous systematic process, the purpose of which is to compare the company’s own productivity, quality, and the work processes to the Best-In-Class firms and organizations in order to make the company more efficient (Karlöf and Östblom, 1993, p. 7).

The starting point for benchmarking is the clear need for increased efficiency of activities (Karlöf and Östblom, 1993, p. 99). Hence, benchmarking is directed to the content of action. This will change the culture towards learning; development of learning and efficiency, which leads to the process of organization development (Karlöf and Östblom, 1993, p. 10). It is even about the change from benchmarking to benchlearning. Together these will affect both short-term operational and long-term strategic activity of the company (Karlöf and Östblom, 1993, pp. 193-195).

Probably the most important key to the success of benchmarking research is to view it primarily as a learning process (Gordon, 1994, p. 7). Benchmarking has turned out to be an excellent way to enable the organization to learn and adopt successful behavior (Karlöf and Östblom, 1993, p. 37). It is noted that in order to have success one has to start small. Benchmarking needs the commitment of all the involved parties. (Gordon, 1994, p. 7) Under the process of benchmarking one has to pay attention not to take all the ideas straight from the partner or partners. All the processes or methods of a partner would not necessarily suit our organization, even if they seem to be superb (Karlöf and Östblom, 1993, p. 133). Avoiding the following pitfalls one can increase the chances of succeeding with benchmarking, e.g. lack of commitment from parties involved, the mission of the organization and its goals are misunderstood or the benchmarking results are not well-analyzed. Last but not least, benchmarking research usually concentrates too much on numeric results instead of the processes themselves. Good numbers and results will follow good processes. (DeToro, 1995, pp. 21-23) The reasons for benchmarking commonly include evaluating the performance of the IT group and its management

and improving the IT functions within the organization and justifying the company's investment in IT. Many IT organizations require a justification of existing systems particularly with the increasing availability and popularity of outsourcing services. Benchmarking is a key to continuous improvement. (Gordon, 1994, pp. 2-3) It is a useful tool especially for an organization which does not lay open to competition (Karlöf and Östblom, 1993, p. 39) such as the internal IT units. IT units like Z here, have a nearly "monopolistic position" to the other units. There are almost none of those mechanisms which operate in the free market. Further, benchmarking provides one of the most effective ways to simulate free market businesses. The benchmarking process should start from the customers' requirements and needs. (Karlöf and Östblom, 1993, p. 52 and p. 41)

5.2 Various types

There are mainly four types of benchmarking: internal, competitor/competitive, functional/industry, and generic benchmarking. The method can also be divided into the strategic, performance and process benchmarking (Tuominen, 1993, p. 16). Internal benchmarking involves making comparisons with other parts of the same organization, e.g. other units or other companies within the same group. This type of benchmarking, especially two-way partnership is usually straightforward to arrange (Bendell et al., 1993, p. 69).

The advantages (+) and disadvantages (-) (Fitz-enz, 1993, p. 45):

- + data is relatively easy to access;
- + solutions are quite easy to adopt since they fit in one's culture;
- + an excellent opportunity to learn new methods and to add interest to the approach of the personnel (Karlöf and Östblom, 1993, p. 126);
- less likely to find a world-class example;
- internally biased, "not-invented-here"-attitude can stifle innovation.

Competitor/competitive benchmarking needs to have information about the way in which the competitors operate. Looking at available figures and outputs can give some information, but they can be misleading if the processes that deliver the output cannot be determined. (Bendell et al., 1993, p. 69)

The advantages (+) and disadvantages (-) (Fitz-enz, 1993, p. 45):

- + comparable practices;
- + data almost directly applicable;
- data difficult to acquire;
- the ethical considerations of data acquisition.

Functional/industry benchmarking involves making comparisons with typically non-competitive organizations which carry out the same functional activity that the active party is interested in (Bendell et al., 1993, p. 70). Those organizations have proved to have the best practices within the same industry.

The advantages (+) and disadvantages (-) (Fitz-enz, 1993, p. 45):

- + data generally applicable;
- + data easily shared;

- size and culture differences;
- background market conditions usually not well-known.

Generic benchmarking may compare business processes which cut across various functions and in quite different industries. They are the best-in-class organizations and firms in a certain function (Karlöf and Östblom, 1993, p. 73). This approach is likely the most innovative and it could create breakthroughs for unprecedented improvements. However, this is also the most challenging type of benchmarking (Bendell et al., 1993, p. 70).

The advantages (+) and disadvantages (-) (Fitz-enz, 1993, p. 45):

- + widest possible field for finding value from the best-in-class;
- + no problems with data sharing;
- time-consuming;
- difficulty in integrating finding.

5.3 The basic five-stage process

The benchmarking process can be divided into several phases depending on the model applied. However, the basic five-stage process is the general approach of benchmarking. I will also use it in this study. The stages are as follows:

- (1) selecting the benchmarking target;
- (2) selecting the benchmarking partner;
- (3) gathering information;
- (4) analysis; and
- (5) implementation.

5.3.1 Selecting the benchmarking target

The purpose of the first stage is to define and select the benchmarking target, i.e. area that will be benchmarked in the company. The target can be a whole activity or just a certain part of it. It is important to start from the customer requirements and to understand the way the business operates. One has to get good knowledge about the target areas to be benchmarked. (Karlöf and Östblom, 1993, p. 96) The specific subjects to be benchmarked are called Critical Success Factors (CSFs). They will have the greatest impact on the performance of the organization. They also are significant enough to warrant the use of the benchmarking. The determination of the CSFs will have impact on the performance of the organization. CSFs should be converted into measures, when possible. (Beauchamp, 1995, pp. 16-20) but this is not always possible in the qualitative benchmarking. Quantitative benchmarking is not necessarily a useful approach in process measurement, especially if the process has never been defined and described before. Disposition of the processes and description of the core components will create the valuable information for further action. CSFs are divided into the different levels and metrics. One has to decide what the right level of CSF specificity is. The right level is dependent on both the activity and the

available time/resources-combination (Karlöf and Östblom, 1993, p. 97 and p. 119); (Beauchamp, 1995, p. 24).

In order to have usable metrics, one should use the “old” metrics as the basis. In that way, the information is easily achieved and already well-known to the whole organization (Karlöf and Östblom, 1993, p. 114). However, there are no Z metrics at all to start with.

5.3.2 Selecting the benchmarking partner

The objective of the second stage is to search and select the benchmarking partner or partners. It is obvious that these partners should be better at the benchmarking area (Karlöf and Östblom, 1993, p. 123) but one cannot be sure of that without doing the benchmarking research. The most common sources for identifying partners are special awards, media attention, profession associations, independent reports prepared by reliable organizations, word of mouth at experts’ conferences, and consultants (Beauchamp, 1995, p. 57). The decision of what kind of benchmarking type – internal, competitor/competitive, functional/industry, or generic will be selected, also has to be made. A two-way partnership, however, is the foundation of benchmarking. It gives an opportunity to start the benchmarking cooperation and to improve it over a long-period of time. Also the process of benchmarking will be familiar to the IT unit. Therefore this study concentrates on just one partner. In search of a prospect benchmarking partner the compromises may affect the result. It is quite hard to find just the right partner, which suits the requirements and one that is willing to cooperate (Karlöf and Östblom, 1993, p. 133). After a suitable and cooperative partner has been found, contacting the partner might be an exciting moment, but creating opportunities for benchmarking always starts from the first contact. The partner, however, may refuse (Karlöf and Östblom, 1993, p. 137), but there is not much probability of that happening in this case because of the internal operation.

5.3.3 Gathering information

The objective of the third stage is to collect enough information before the analysis stage (Karlöf and Östblom, 1993, p. 139) from both the internal and outside parties involved. There are different reasons for the thorough internal investigation. It is very important to know our own processes and products before collecting data on other companies’ processes (Beauchamp, 1995, p. 61). After internal investigation we are able to make accurate decisions about the information to be collected. This stage also gives an excellent opportunity to take the employees i.e., players from the IT unit into the benchmarking process. Thus, it is possible to test the benchmarking model beforehand, and thereby get the employees of the IT unit firmly committed to the process. The tried and found weaknesses of Z’s activity can create new ideas for processes and IT service products. Since the internal investigation has been completed, it is time to seek out new information from the outside – from the benchmarking partner. It is a matter of great significance to

interview the right persons. There are several means of obtaining information such as telephone and face-to-face interviewing, and postal questionnaires including also e-mails. However, a benchmarking partner visit is an essential part of a good benchmarking process. (Karlöf and Östblom, 1993, pp. 144-155) Questionnaires should be well formulated, because it is the measuring instrument giving the information needed for the analysis. Both validity and reliability aspects should be taken into consideration. It is useful if the interviews and questionnaires have been made logically – they start from the general questions for a good overall picture and proceed to enter into details. (Karlöf and Östblom, 1993, pp. 140-142) The benchmarking information should be well documented. Also it has to be checked with the help of the benchmarking partner and the necessary corrections should be made afterwards. From the ethical point of view, benchmarking should always be a frank interchange of information. If the benchmarking partner gives us all the information needed, another partner has to be willing to give them all the information they want for their own benchmarking. (Karlöf and Östblom, 1993, pp. 155-157)

5.3.4 Analysis

The boundaries of gathering information and the analysis stages are sometimes flexible (Karlöf and Östblom, 1993, p. 159) but entering the fourth stage is the last step before implementation. At the analysis stage, the collected information will be organized and analyzed. The different measurement results are compared in order to find out the performance gap between activities and to have the content of processes understood. It is worth while using the previously defined levels of CSF specificity. (Karlöf and Östblom, 1993, pp. 161-163) The benchmarking data will be compared against original performance drivers. Similarities and differences will be noted. Although the misinformation has already been checked at the previous stage, some kind of rechecking of sources might be considered. Inaccurate, irrelevant, and unreliable data should be eliminated. (Beauchamp, 1995, p. 81 and p. 78) There are differences between the partners in the internal activities, extent of their activities, marketing circumstances, cost levels, and the international matters. The most important issue at the analysis stage is to understand the reasons for the existence of the performance gap – one should attend to the matter carefully. First, the realization of the gap is created with the performances, which have been used as an objective of benchmarking. Second, with the benchmarking measures applied in the study, the performance gap could be negative, which means the benchmarking partner has the better practices. The gap could also be neutral or positive; the former means that no difference was found, the latter means our own practices turned out to be better. (Karlöf and Östblom, 1993, pp. 165-170) The performance gap can be described and presented by a huge amount of different graphical charts and figures, but there is no absolute truth about it. It depends on the situation (Karlöf and Östblom, 1993, p. 177).

5.3.5 Implementation

After the stages mentioned before, it is about time to enter the implementation stage. The goal is to reduce the performance gap and transform the possibilities of development into visible results. These possibilities have to be transformed through the organization. Naturally, the results of the benchmarking have to be verified and reported to the benchmarking players. The possibilities of development will be stated in the benchmarking report, which will be found from this case study research. (Beauchamp, 1995, p. 85) Actually, this report will be a summary of the data collected and analyzed. It has to be decided what action to take as a result of a benchmarking activity. Answers to the following questions have to be found from the plan of realization. First, what performance is reachable from the benchmarking gap? Second, what is the possible or capable performance level of the organization? There are several factors for successful realization of the plan, like the understanding of the goals and strategies of the company, the perseverance of the implementation, and the management focusing on the project. All the parties should be involved and also be under contract to the plan. (Karlöf and Östblom, 1993, pp. 185-190) Finally, benchmarking is of a continuous and circular process nature. Therefore this last stage should be seen as a starting point of a new benchmarking process.

5.4 Internal benchmarking as a tool for the case

There are certain reasons for selecting the internal benchmarking for this particular case. The existence of parallel processes in many places within an organization provides an opportunity for benchmarking within organizational boundaries. Internal benchmarking levels out the differences in the processes. However, at the beginning of the approach it is profitable to describe the processes. (Karlöf and Östblom, 1993, p. 68 and p. 107) Although, before one can start an other type of benchmarking one has to know one's internal system (Fitz-enz, 1993, p. 44). As the local IT unit is beginning to benchmark, looking at the best external organization may not be as satisfactory as looking at organizations that are better but not too far ahead. Looking far ahead may result in attempts at changes that the organization is not prepared to make (Gordon, 1994, p. 5). Suddenly implemented and totally different steps for improvement might generate other problems such as resistance among employees.

Benchmarking of this study was organized as a two-way internal benchmarking. Objectives for the benchmarking were defined as follows:

- (1) the first objective was that the IT unit looked for improvement in its current IT services (during the benchmarking process this was labeled simply as a "product" or "service package") as well as the processes (again, during the benchmarking these areas meant both the specific IT service processes but mainly for the process of packaging IT services i.e., "a professional service product development process");
- (2) the second objective was to add interest to the approach of the personnel; and

- (3) the third objective was to create valuable synergy profits between Z and other IT units of the company.

I would, however, like to point out that the internal benchmarking is not the only proper approach for this research. The functional/industry benchmarking could also be a potential approach for a situation like this. Furthermore, the detailed implementation stage of the benchmarking results is presented in Chapter of “The new IT service product” in order to realize how to reduce the benchmarking gaps that have been discovered.

5.5 Selecting the target

Actually, there were two benchmarking targets selected at that time, which were called the professional service product and the professional service product development process for the IT unit (department). In other words, the benchmarking was targeted to the existing IT service as well as the packaging of IT services. The metrics and questions were designed in order to approach the benchmarking targets.

Questionnaire design is often a demanding task. Open-ended questions are found to yield better results when they are presented as requests for descriptions. Therefore, those kinds of questions were used at this inquiry as well. Leading questions were avoided. Questions are started with the most general and move to the more specific. (Fitz-enz, 1993, p. 103 and p. 107) The structure of the questions is quite similar to the issues of how the existing IT service is researched. Further, the questions are partly linked to the processes. Mainly the questions are qualitative but few of them are also quantitative. The questions are tested and answered by the local organization (as suggested by Fitz-enz, 1993, pp. 108-109) – in this case by Z.

The metrics and questions i.e., the benchmarking indicators were designed by the top-to-down method. First of all, the questions were arranged by category (again, suggested by Fitz-enz, 1993, p. 107) and five topics were discovered:

1. General information and questions
2. The internal description of the product i.e. service package
(an existing IT service)
3. Process
4. The professional service product development process
(the packaging of IT services)
5. Product portfolio of T/I (both IT units: LMF/Z, LMD/T/I)
(IT service product portfolios of the IT units)

In the topics two, four, and five there are also valid names mentioned with respect to dissertation research for the specific topics. In each category there were more specific questions, so there were over 60 questions taken all together. It is useful to have many questions in a situation like this because there was only one

benchmarking partner to interview. If there had been more than one partner, there could have been fewer questions in order to have a statistical meaning. The questionnaire is provided in the benchmarking related appendices of Magnus case (see Appendix E1).

5.6 Selecting the partner

In a case like this in which benchmarking is internally organized, the benchmarking partners have to be found inside the company. There were some reasons and criteria for locating the prospects or the potential benchmarking partners. The prospects should act in same kind of business – meaning that they should have both the sales and R&D functions. The whole company should be the same size, and their IT environment should consist of PC and UNIX technology – just like the Finnish IT unit. Benchmarking prospects were selected from the group composed of Ireland and Scandinavian countries: EEI at Ireland – DII (IT Manager: Mr. Per Nilsson), ETO at Norway – E/I (IT Manager: Mrs. Grethe Viksaas), and LMD at Denmark – T/I (IT Manager: Mr. Bent Bæk Jensen). One of the reasons for having DII, E/I, and T/I for prospects was that Z had been in contact with them before.

There were mainly two different methods for organizing the benchmarking players in the contacting phase. First, they were introduced to a subject for discussion in a meeting of the prospective IT Managers of the IT units. Second, I sent them two different letters, where the case was introduced and described as a whole. Ireland contacted first, and soon it was realized that in this particular case there was no use in visiting Ireland. Norway did not get in contact with me despite the second prospect letter. Denmark, however, took up a positive attitude towards benchmarking. Also in this qualifying phase, the questionnaire was submitted by e-mail to the benchmarking partner before the actual visit took place. Finally, T/I was selected to be a benchmarking partner.

5.7 Gathering information

The questionnaire can be employed in several ways to gather the benchmark information: telephone interviews, surveys, site visits, and others (Fitz-enz, 1993, p. 111). In this case study research, the suitable information-collection combination contained Intranet and Internet, telephone interviews, face-to-face interviews, postal questionnaires, and site visit to LMD/T/I (cf. chapter “Research methodology” for more on methods of gathering information). Benchmarking partner site visit is often an essential factor succeeding in benchmarking. I interviewed both IT Manager, Mr. Bent Bæk Jensen and Support Manager, Mr. Henrik Wulff at LMD/T/I. The former person had already seen the questionnaire but the latter saw the questionnaire for the first time during the interview.

5.8 Analysis and results

The following presents an analysis based on the detailed answers of LMF/Z and LMD/T/I which can be found on Appendices E2 and E3, respectively. All the five topics of the questionnaire are analyzed below by comparing the answers of LMF/Z to the answers of LMD/T/I. Particular indicators are stressed if the benchmarking gap is found, and vice versa if the performance is categorized as positive.

Topic 1. General information and questions

General information and questions topic contained 15 indicators (questions) and their answers. There are only few quantitative indicators among these questions but the indicator 1.1 is one them, telling some quantitative metrics like the number of employees at the IT unit. With the numbers presented in Appendices E2 and E3, it is possible to compare roughly the effectiveness of the IT units. Say, the number of employees (i.e., total amount of customers) of the company who generally need IT services of the IT unit is divided by the number of those employees of the IT unit who are dealing with the customers directly. It is obvious that this kind of calculation does not tell anything about the personnel's way to work but it indicates the overall effectiveness. The ratios for Z are roughly: $900/30 = 30$, and for T/I: $650/20 = 32.5$. This shows that the ratios as well as effectiveness are tolerably on the same level. Therefore, the first indicator can be categorized as neutral. The indicator 1.2 is developed in order to describe the organizations of the IT units. If the Z organization is compared to the T/I organization, some points can be found. The Z organization has more functions than T/I but some of them are organized in a different way. An example of this is the Controller of T/I, who is located into another organization at LMD. Z has also more teams than T/I has groups. At least, one reasonable lack in the Z organization can be easily noticed: there are no specific Project Managers like there are at T/I. T/I as a unit argues for Project Manager: they see it very useful for their organization (cf. Appendix E3: 2.17). So, there is a negative performance and benchmarking gap at this indicator. Analyzing the different indicators of 1.3 shows hardly any differences, they are more or less neutral. For instance, the Helpdesk aims to solve 50% of the cases, which is the same as at Z. Furthermore, a specific application (ARS) is used also at T/I. The teams of Z and groups of T/I operate almost in the same way, despite the different roles in PC and UNIX support organizations. Also the third parties' support is used similarly. In terms of the competence of the personnel (1.4) as well as personnel willingness to be of service (1.5), almost the same advantages and challenges can be found in each IT units of this inquiry. Therefore, these indicators can be categorized as neutral performance too.

Topic 2. The internal description of the product i.e. service package (an existing IT service)

The internal description of the service package topic contained 25 different indicators. The indicators 2.1 and 2.2 show positive performances because T/I has not been thinking about developing their IT services into IT service products at all in this particular case. Hence, there is no name defined either for their specific IT

service products. During the interview, in order to have some answers from T/I, the term 'product' was used in a broader sense than during other parts of the study. Therefore, it can be also defined as their existing IT services. Indicator 2.3 describes that the main idea of T/I's offered services is just to offer a standard LMD PC environment but that is all. In a broader sense, this remains the initial situation with Z as well, although Z has gradually adopted a more "product thinking"-oriented way. Indicators from 2.4 to 2.7 can be categorized as neutral performance. Indicator 2.8 indicates as a whole that despite different server operating systems, the environment of PC clients seems to be very similar to Z. But what is remarkable is that T/I uses more often shareware, even freeware software such as QWS3270 and Eudora Light. By doing this, T/I usually saves more money than by using normal-priced software – another small benchmarking gap and negative performance perceived for Z. The indicators 2.9-2.11 do not show anything special, they are categorized as neutral but when it comes to the plans for changing the technical concept in the future into another operating system (2.9), T/I will follow the events at Z carefully. So, the Finnish IT unit acts here like a pioneer. Both the service delivery time (2.12) and satisfaction at the service delivery time (2.13) indicate neutral performance. Although, T/I does not have yet service delivery agreements between other units of LMD but they are working on that subject during the spring 1997. The different indicators from 2.14 up to 2.18 can be categorized as neutral performance. Still, it might be useful to stress the indicator 2.17 – organizing of the prototyping and piloting, because it underlines the role of the Project Manager. The very same indicator tells us also that service development can be divided into prototyping and piloting phases. Separation of pricing at 2.19 indicates simply no differences between Z and T/I – a typical neutral performance again. However, the new IT service product of Z introduces the new ways of pricing to the customers, whereas hardware invoice price is not included in the price. The indicator 2.20 treats the subject of a monthly charge to the customer for using the IT service product. Remember that both T/I and Z have a zero budget draft. The prices of T/I are cheaper than those of Z at the moment, therefore this can be categorized as negative performance. On the other hand, the indicator does not tell us whether T/I has so called hidden costs, or are the prices of Z still more realistic than the prices of T/I. Yet another question is whether T/I can save so much money by using shareware and freeware because of the prices can be at such a low level compared to Z. Charges cannot be compared at 2.21 but they can be considered to be at much the same level because the corporate agreements of the Ericsson Group, such as an agreement with Netscape. The rest of the indicators at this particular topic do not prove any marked differences, they are just neutrals.

Topic 3. Process

Process topic contained three indicators. Analysis of this topic shows that the situation is much like it is in Z. Processes are not defined or described, and even if they are, they not updated. Capability indexes do not exist at the moment. Generally, this particular topic can be categorized as neutral performance.

Topic 4. The professional service product development process

(the packaging of IT services)

This topic contained 12 different indicators. Gradually, Z has been thinking about the packaging of IT services holistically, which T/I has not. T/I's idea is just to offer IT services that work but they are not so "product thinking"-oriented. As a result of this, the indicator 4.1 is categorized as positive performance. The indicators from 4.2 to 4.7 do not show anything remarkable, therefore they are categorized as neutral performance. Z can be considered to be a little sophisticated and to have positive performance when it comes to researching the customers' needs and requirements and their analysis (cf. the indicators 4.8 and 4.9). But there are reasons for this: Z has used third party independent investigations from time to time in order to discover certain facts about their customers. Obvious negative performances and benchmarking gaps are found on the indicators 4.10-4.12, because Z does not research nowadays customer satisfaction itself, except in the regular customer meetings. According to the interviewees, T/I personnel arranges research projects concerning customer satisfaction by doing questions by themselves. These kinds of researches are conducted once a year, and the results of the measurement are published internally. The results guide T/I in order to improve its activities in certain areas.

Topic 5. Product Portfolio of T/I (both IT units: LMF/Z, LMD/T/I)

(IT service product portfolios of the IT units)

Finally, this topic contained seven indicators. Services are not categorized (5.1) and there are no experiments of the packaging of IT services (5.2) at T/I. On the contrary, Z is packaging one of its IT services (Magnus, of course). Therefore 5.2 indicates a small positive performance when compared to T/I. By small I mean that UNIX environment does not offer comparable IT service product: there are no IT service products to offer to the customer at that specific IT environment. Product portfolio, or should I say, existing IT service product portfolio (5.3) is not defined at T/I. Hence, the IT service products of this kind of portfolio (5.4) do not exist. Despite of that, T/I still offers different IT services for their customers, cf. Appendix E3: 2.10. Z has also some versions of the IT service product in PC environment (cf. Appendix E2: 2.10). The rest of the answers from 5.5 to 5.7 can be categorized as neutral performance. In general, this topic can be categorized as neutral performance, except indicator 5.2 which shows a small positive, yet remarkable, performance in the domain of this research.

The results of the analysis

Performed analysis points out that the benchmarking performance gaps can be discovered when the answers of Z are compared to the answers of T/I. On the other hand, some of the indicators show that Z can be considered to be better in a certain areas. Figure 5-A. is a diagram showing positive, neutral, and negative performances of Z compared with T/I.

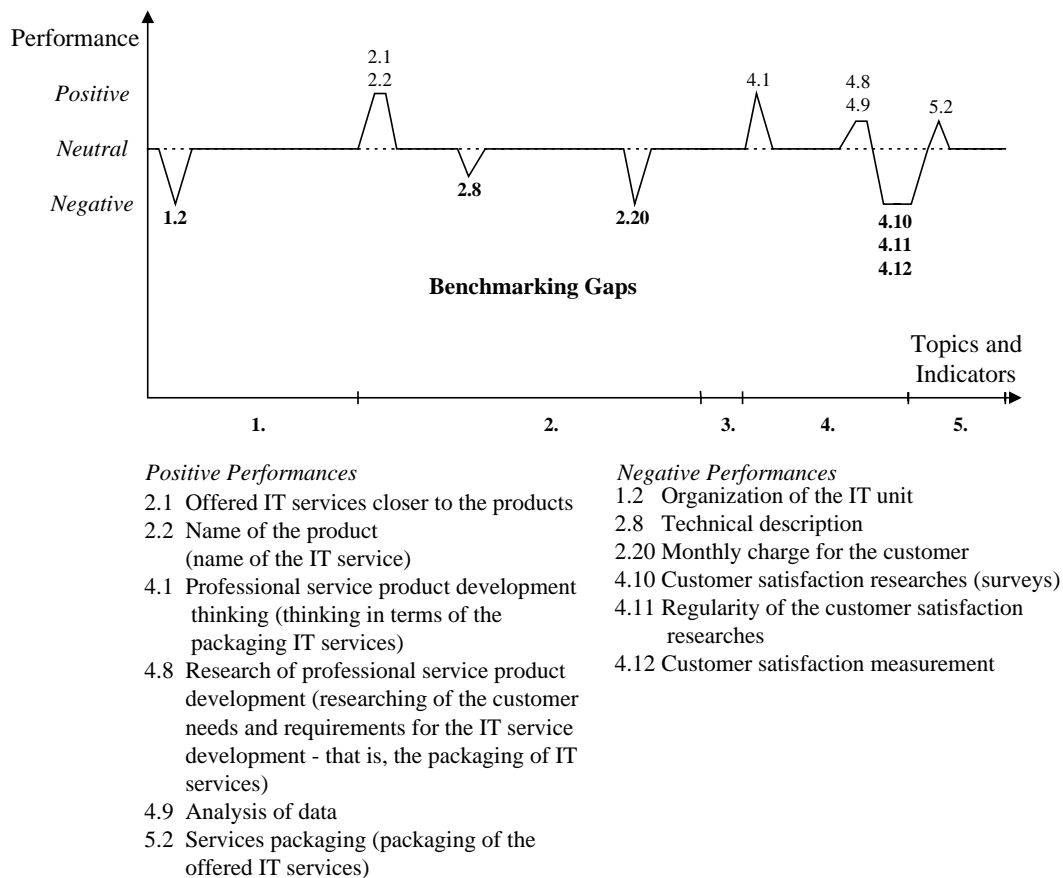


Figure 5-A. Positive, neutral, and negative benchmarking performances.

Positive performances indicate that Z is considered to be better in the following points, cf. Appendices E2 and E3: 2.1, 2.2, 4.1, 4.8, 4.9, and 5.2. Whenever performance is negative, the benchmarking gaps can be found, cf. Appendices E2 and E3: 1.2, 2.8, 2.20, 4.10, 4.11, and 4.12. The rest of the indicators are considered to be neutral, even though there are differences but they cannot be treated as either positive or negative performances. In general, the results of the analysis show that both IT units have an equal amount of benchmarking gaps (even though the depth of the gaps varies) in comparison with each other. They both have to make improvements in these subjects.

This diagram does not show all certain points where benefits can also be found in terms of synergy between the IT units of LMF and LMD. By this I mean, for example, plans for implementing a network management tool (cf. Appendices E2 and E3: 1.3.8). Z has also to decide what kind of network management tool it will acquire and same kind of decision has to be made in T/I as well. Since both IT units are in the situation, synergy will be achieved with this particular subject. Also the indicator 2.9, that is related to plans for changing the technical concept in the future, is under consideration at T/I. The reason for this is that they presumably

want to know Z's IT professionals' opinion about the new operating system. In addition, sections marked as "Remarks" in Appendix E3 could bring some necessary information for Z. These items were collected during the benchmarking site visit.

5.9 Implementation

The aim of this benchmarking study was to gain advantages both for the new IT service product and the process of packaging IT services. Therefore, the Chapter about the new IT service product and its section "Benchmarking results as a support" contain information about reducing the gaps and transforming the possibilities of development into visible results. Actually, these sections are part of the implementation stage and they can be seen as a part of the benchmarking report.

6 The new IT service product

6.1 Benchmarking results as a support

The new Magnus

The ultimate goal of the whole benchmarking process is to reduce the gaps and transform the possibilities of development into visible results. This chapter presents shortly those indicators which were already discovered to represent the gaps in Magnus. The indicator 2.8 describes IT service from the technical standpoint, and the indicator 2.20 defines the monthly charge for the customer for using the IT service (see Appendices E2 and E3). In terms of the benchmarking gap within the indicator 2.8, it can be reduced by using more shareware as a part of the IT service product(s) of Z – even freeware can be used if possible. Often these kinds of software can offer almost the same possibilities as more expensive software. According to LMD/T/I, shareware are useful sometimes in information system environments of the company. So there could be more shareware used for the following versions of the new IT service product. The main handicap is the trouble of finding the right and appropriate shareware because they are hardly ever advertised. They just have to be found and of course, tested before selection. Further, by using shareware more money can be saved. It can reduce the benchmarking gap of the indicator 2.20 because there was a little bit higher charge to the customer compared to LMD/T/I. However, this is a slight improvement – something else has to be done as well in order to reduce the charges of the IT service product. Therefore, the pricing model has to be improved and developed to be more realistic and informative. This contributes partly to the battle against the outsourcing of the IT unit although it will not solve the challenge totally.

The process of packaging IT services

The indicators 1.2 and the indicators from 4.10 to 4.12 (see Appendices E2 and E3), which represent the benchmarking gaps, can be utilized during the generation of the process of packaging IT services – that is, the professional service product development process. The indicator 1.2 describes the organizations of the IT units. The indicators from 4.10 to 4.12 link up with the customer satisfaction; researches, regularity of surveys (researches), and measurement.

The existing gap of the indicator 1.2 can be reduced by hiring a specific Project Manager for Z. The duties of this post are quite similar as they are at LMD/T/I: to manage the projects of the IT unit which actually are often in close contact with other organizations of LMF. According to the answer 2.17 in Appendix E3, the role of the Project Manager was found useful in order to organize prototyping and piloting. This indicates more generally that IT service development can be divided into different phases. The perceived benchmarking gaps of the indicators from 4.10 to 4.12 are reduced by organizing regular surveys on customer satisfaction. These kinds of researches can be organized and implemented by Z just like LMD/T/I does. The measurement and the results of the customer satisfaction will thereby steer efforts of Z into the right direction.

6.2 The internal description

This part of the research is dealing with a more tangibilized and developed new IT service product, which is based on the existing IT service. From the standpoint of the internal description, the new Magnus can be seen as a new technically updated version of the previous Magnus. Therefore, it will not have a large scale effect on all the entries of the internal description. Entries such as general description, fits for the strategies, versions, the most important references, and the IT service product delivery time are briefly described but the rest of the entries are described more accurately.

Ultimately, the main reason for the new Magnus was the different needs of the customers, and the technical advance was that what the customers and the IT unit wanted from this IT service product mostly. Customers already have their own new software which needs a 32-bit operating system in order to work properly. Also IT security has demands of its own: the new operating system should offer better security than the old one. Basically, administration of the whole system can be done more easily from the Z personnel standpoint. First the organization needs target specifications, and second, the refined specifications (Ulrich and Eppinger, 1995, p. 56). Target specifications for the new IT service product were e.g., an operating system which allows 32-bit software like MS Windows 95 and Windows NT 4.0. After considerations such as concerning various security aspects and other issues as well and the guidelines of the parent company, the choice was Windows NT 4.0. The choice can be labeled as refined specifications. Furthermore, both prototyping and piloting were organized on a certain level. On the other hand, time was the limit for ultimate success. The pilot group was organized so that it consisted of employees from Z and the other organizations of LMF. The pilot group gave feedback to the development project team. However, feedback was not organized as well as it should be. The technical implementation of the new IT service product was coordinated, but not managed as a project. The project had some difficulties concerning employee resources: there was lack of them because one should keep in mind that the customer service function has to be done simultaneously with developing the new IT service product. Some resources cannot be released from the line organization as flexibly as they should. Also, the new version of the operating system Windows NT 4.0 and software package MS Office 97 were not launched to the market until late 1996, despite the supplier's promises. Some software licenses were re-used for this new Magnus before the suitable version of software in question came to the market. Thereby LMF saved money by waiting the new version to come. As a result of all this, the project was late. Despite that, the updated IT service product was finally ready to be shipped to the customers.

Name of the IT service

The name is already familiar internally so there is no use to change it here. So the name can remain the same but some kind of differentiation for the names of the existing IT service and the new IT service product can be made. Z might call the new IT service product as *Magnus NT* in order to separate it from the present one. A separation of the names should be active as long as these almost similar IT

services of Magnus are used simultaneously. This is mostly because the Z personnel have to know the different IT environments. The transition stage is not clear because the hardware requirements: Magnus NT requires more from the hardware as the previous one. Hardware has to be updated and this will take some time. Finally, since the transition stage is over, Z will use merely the name Magnus meaning the whole IT service package.

General description

An object definition has been written based on the existing IT service. There will be some kind of a transition time for the customers to be, meaning that the existing Magnus will be used simultaneously with the new one for a while. Although, all the customers will use the new Magnus but only after the hardware has been changed or updated to the level of the new requirements. The number of customers for the new IT service product will be increased during the next few years.

The use of IT service and added value for the customer

The use of IT service remains the same as the existing Magnus by offering the customer PC environment whereas work can be done quickly and productively. The customer can get more added value through the improved 32-bit operating system performance, usability of the new interface of the system, and reliability as well as better security than before. One should, however, remember that the advantages of the new IT service product can be obtained more easily through a systematical and well-organized training period.

Market potential and customers

There were no significant changes in the market potential and customers (see Chapter of “The existing IT service” on this entry).

IT services which compete with it and IT services it makes obsolete

Magnus is still the only service package of Z operating in a PC environment.

Fits for the strategies

Magnus suits Z’s strategy well. It offers the customers the kind of IT services they need.

Technical description

The technical description is an essential part of constructing the new Magnus. The transition from the 16-bit operating system environment to the 32-bit requires updating both software and hardware. The minimum requirements of the hardware increase considerably e.g., more memory is needed for PC. Also several shareware programs will be implemented in the possible versions of the IT service product.

In terms of tangibilization as referred to typically in the services marketing literature, there will be a new concretization aspect for the customers to have in the near future. It is called “Z-Guide” where the new IT service product will also be introduced. Magnus will be marketed in “Z News” just as before but it is published also in English nowadays. Other marketing methods, such as Intranet, are not yet solved. Intranet is a very useful medium for IT services marketing in this context.

All the employees of LMF will have in the near future a manual called “Z-Guide”. It is especially designed for the new employees of LMF. “Z-Guide” gives the customer e.g., some general information about Magnus. So it can be seen as a kind of brochure informing the customers about the IT service product. There are also some new ideas for tangibilizing the new IT service product, such as Magnus stickers that can be located on PCs. Also mouse pads with relevant texts can be used.

Again, due to certain reasons such as IT security, a presentation of the detailed technical description of the new IT service product is excluded from the Case Magnus appendix. The fact that detailed information on this issue (although I had access to the new IT service product information as well) – and on pricing and the charges have been excluded here has no effect on the contributions of this case study research.

IT service description: effects on the processes

At this point, most of the processes do not vary from the present Magnus’s as-is processes. The reason for that is, in general, the updating of the technical elements of the IT service product does not affect the general IT service processes so much from the customer perspective. However, there are some (internal) changes to those processes that are highly dependable on the technical environment. The processes of Magnus are described in Chapter “The existing IT service”. In the near future, the to-be processes could be innovated and implemented.

Versions

There are no different versions of the IT service product on the market. But still, the configuration of the system (workstation PC or portable PC) can be seen as different versions of Magnus.

The most important references

The most important references are much the same as before in terms of existing IT service. However, Z can be seen as a technology leader for developing an IT service product based on a new version of the Windows operating system. Other IT units of the Ericsson Group have been interested in this kind of technology solutions and the implementation of an operating system for portable PCs. Thereby, Z can diffuse its competence and knowledge to others.

The price of the IT service

For the new Magnus, the model can be categorized into time and capacity charge. Despite the fact that this is against the theory of professional services development (Sipilä, 1996) and their pricing, it is a useful pricing model for this particular case. One reason for this is that Z operates internally and in a monopolistic environment. However, within the new IT service product the charges can be more realistic than before, and they are easy to compare to the outsourced services. The pricing will be based on the real costs, not on the estimated costs. Z has also a new application for controlling the charges of various services offered to the customers. This leads to the real time invoicing information. However, similarly as illustrating the existing

IT service, the detailed charges of the new IT service product on pricing are also excluded here.

The IT service delivery time

Service delivery times are identical to the existing Magnus, see Chapter “The existing IT service”.

People in charge

As argued, the Team Leaders have in the end many responsibilities but those who are packaging the IT service also have responsibility. The new IT service product was developed by the ad hoc IT service product development project team. One could, however, say that there was not such a well organized project management but it can rather be seen as project coordination.

Further actions plan and development suggestions

The development suggestions were collected. Windows NT 4.0 is in many ways a more advanced system than the previous operating system of Magnus. Naturally, a new system of that kind demands more skills and competence of the employees of Z and the rest of the organization (the customers of Z) as well. Therefore some courses will be arranged simultaneously with the launching of the new IT service product in order to teach the customers to use the updated operating system and specific Magnus applications. The courses will be arranged by the external training organization in close cooperation with Z.

6.3 The component view

In the following Figure 6-A. I illustrate the components of Magnus. All of these components together offer the customer the whole IT service package.

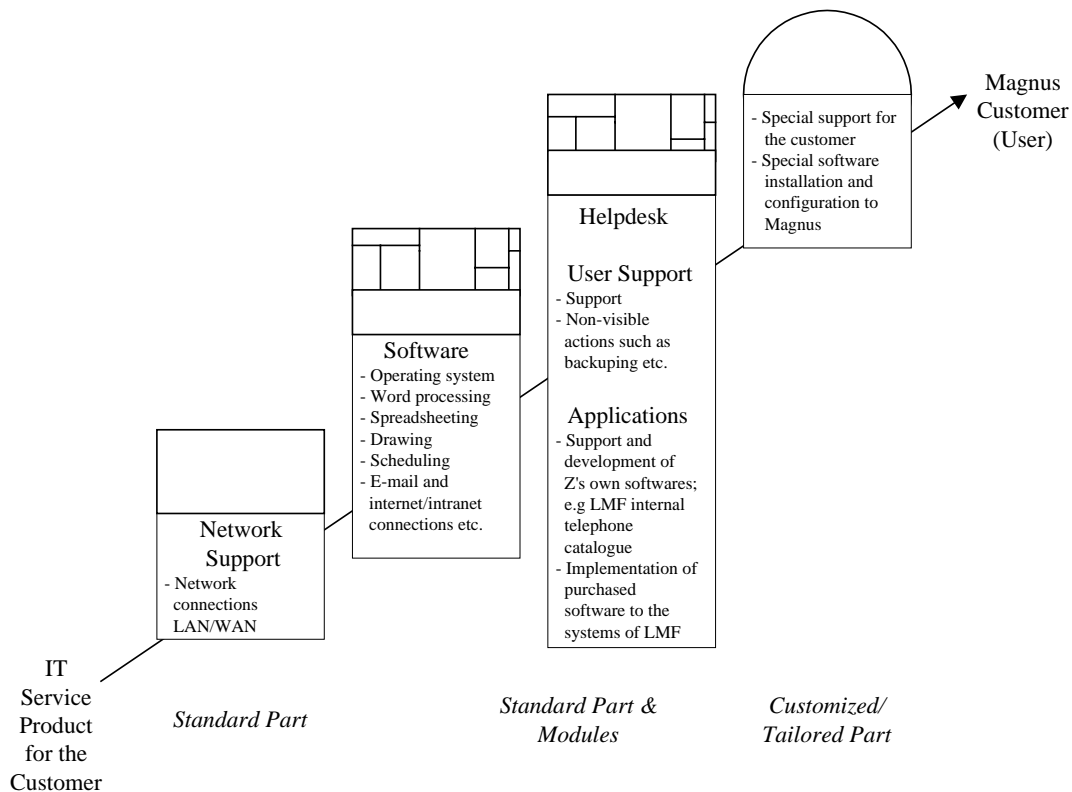


Figure 6-A. The component view of Magnus.

6.4 The process of packaging IT services

The process of packaging IT services for the IT unit is founded on to the theories (e.g., Sipilä, 1996), and the empirical study – including the support of benchmarking. The idea of the packaging of IT services is to develop an IT service as an IT service product through the process whereas many issues have to be considered, decided, and implemented. A summarized and one level higher process chart of the packaging of IT services (than the more detailed illustration of the same process, see Nieminen, 1997; Nieminen and Auer, 1998) is presented in Figure 6-B. (process owner: the IT unit). The process is generated on the grounds of the case. It has a circular nature: the cycle of the packaging of IT services. Thus, it assumes that the IT unit has already some kind of IT services and tasks to start with. The internal description and the component view are generated through the process. They are iterative by nature. Therefore, it is not possible to notify exact locations in which the description and the view are constructed.

Moreover, the process can be divided into three different levels of actors: the customer, the management activities, and the IT service product development (ad hoc) project team (i.e., a team responsible for the packaging of IT services). The term ad hoc means here that the team is formed of different kinds of employees

such as IT unit and marketing personnel, and other professionals as well. These various levels have different activities yet they should work in a cooperation. The process starts with IT services and information gathering (e.g., information regarding to customer requirements and needs). It ends with the packaged IT service that hopefully satisfies the customer. Customer satisfaction should be measured from the beginning to the end, both proactively and reactively.

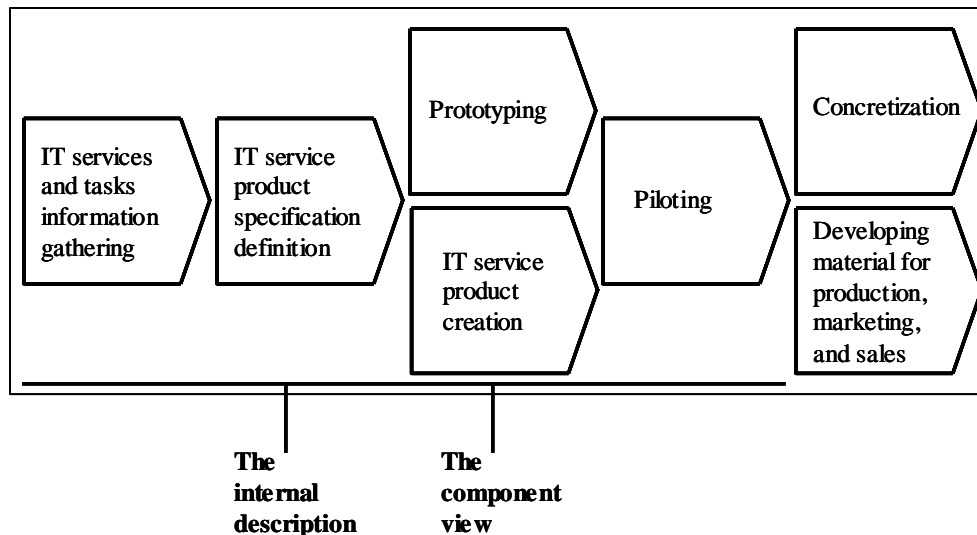


Figure 6-B. From the existing IT service to the new IT service product:
Case Magnus.

The management should bring some kind of a vision statement or a vision for the future for the development of IT services. Management has to define the strategies for both the business and the IT service product development. Strategies affect the whole process. There has to be an economic analysis also in place. It means a business preview or a business plan in which the economical aspect will be considered. Generally, it is a guide as to whether the process of packaging IT services will be started or not. A final decision whether to start the program (process) or not belongs to the management level. It can be stopped or even terminated in the course of the process. But before that, the management should know what kind of requirements the market and customer have. However, the IT service product development (ad hoc) project team is responsible for the program. The role of Project Manager for the IT unit is essential in order to obtain good results. Table 6-A. describes these phases in detail.

Table 6-A. Description of the phases of the packaging of IT services in Case Magnus.

Phase	Description
IT services and tasks information gathering	It is often possible that there are some preliminary IT services and tasks to start with. Hence, related information and knowledge on the market, the customers, and of course, this existing IT services is gathered around the organization by the project team. The project team should also have information collected from the following issues: the internal description, something about prototyping and piloting (if possible) and marketing. Thereby, an overview is generated on what already exists and what has to be created. This information will form the basis for the high level specification of the new IT service product. At this point, there could be the benchmarking process in place for the benefit of the development effort.
IT service product specification definition	The new IT service product has to be defined first before creating it. Basically it means that there should be some target specifications defined. Thus, the team sets target specifications, by reviewing issues such as market potential, customers and the business logic, for the forthcoming IT service product. This phase sets boundaries and aims at a common understanding of the goals among the project members.
Prototyping	An IT service product can be prototyped with internal organization, in order to test and evaluate its usability. Information concerning the prototypes is gathered from the customers as well as the ad hoc project team. Its purpose is to make sure that no essential issues have been forgotten.
IT service product creation	In the creation phase of the new IT service product, early specifications should be refined because there can exist some technical demands that cannot be estimated beforehand. In addition, the management should make clear decisions such as the models used for pricing. They largely affect the creation phase.
Piloting	A heterogeneous pilot group should be formed from the customers and the members of the IT service product (ad hoc) project team. Piloting gives valuable feedback of the IT service product e.g., its service delivery time. Both piloting and prototyping activities are aimed at ensuring that the new IT service product is functional, at least at a satisfactory level, before it is shipped to the customers.
Concretization	In the concretization phase the often difficult IT service is transformed into as concrete an IT service product as possible for the customer. The concretization policy should be common for all the IT service products that the IT organization offers.
Developing the material for production, marketing, and sales	The material for functions such as production and marketing have to be developed. In particular, the IT unit should have some kind of brochure for their customers. Moreover, some kind of an internal marketing campaign for the IT service product should be organized. Thereby the new IT service product will be known throughout the organization.

Lastly, the following issues may be included in the further actions plan: training services for the new IT service product, an evaluation of the performance of the completed project (a review called a post-mortem project evaluation: see Ulrich and Eppinger, 1995, p. 279), and a customer satisfaction survey, like the one organized by LMD/T/I. The survey of customer satisfaction indicates the level of customer satisfaction with the new IT service product. It will also report the short-

term and long-term improvement possibilities. The results of the customer satisfaction survey will also guide the following packaging of IT services approach.

In sum, the process of packaging IT services should have to be done in a fairly tight time frame. That is because of constantly changing environments and situations have their effect on topics of the process as well. For instance, customer needs and requirements will vary as the context changes, and these kinds of variations have to be taken care of within the process.

7 Discussion and conclusions

7.1 Research summary

In this empirical study the targets were defined as to develop an IT service product from the existing IT services to a new one and to have an outline of a specific transition process for the IT unit derived from established customer requirements. The sub-purposes of this study were defined as using benchmarking as a support and describing the processes related to this specific IT service. The problems stated in the first Chapter have been solved – as shown in Chapters 3 to 6. This study aims to underline the importance of the packaging of IT services for the internal IT service provider. In more detail, the study is focused on the kind of IT services that can be referred to as the IT artefact-oriented services.

The personnel of the unit should pay attention to the process continually. By packaging IT services the case organization can improve the effectiveness of its work and increase the profit of the customers. Generally, a success of consultant organizations in the long run, especially US-origin consultant companies, reveals profitability of service packages. Certain lines of action have been planned almost as ready as possible in the main companies. These courses of action are then transferred to other countries and locations where they are slightly tailored to fit the different cultures and environments of the customers. To be put it clearly: the standard components are the same in spite of who the customer is, only the modules and the customized/tailored parts make the differences to the service product. Another example of service products in a more general service business is McDonald's, which acts as an example in the food business. Its philosophy is to provide a sort of service packages for the masses. Franchising is close to the philosophy of packaging services because with it, the necessary skills of doing business can be sold to others. McDonald's lines of action and the whole concept are pretty much the same in any country – similar preparation phases of hamburgers and the sales process even with the smile of the sales staff. A common factor for both of these companies is that they all sell their competencies and their service packages effectively to the external customers. Why cannot this be done also inside the company? There are no reasons why it would not be possible. The principles of approach described in this appendix of Case Magnus can be applied both externally and internally. Ultimately, it is a matter of strategy and tactic decisions.

7.2 The comparison between the existing IT service and the IT service product

What is the difference between an “ordinary” IT service and the IT service product that the IT unit provides to its customers? It is not so easy to sell IT services and

tasks that are neither systematized nor concretized, and which customers found hard to understand. Sipilä (1996) argues that ultimately the service product is in such a form that it can be sold forward (to another organization). Often the ordinary IT service is developed for a long period of time, and it does not necessarily contain those issues which may improve the profit of the customer. The various benefits – as simple as the customer knowing precisely what he/she gets when buying the IT service product – allows him/her to make decisions more easily than earlier. A situation like this can be achieved with the packaging of IT services. It increases the quality of customer relations.

This study has been written on the basis of the theory related to a professional service package. On this perspective, immaterial (intangible) IT services form a part of Magnus by constructing it as an IT service product. IT is such an extensive field that it often requires special competence from the personnel i.e., professionalism. So it can be suggested that Magnus can be seen as an IT service product and also as a professional service product. Moreover, the standard part, modules, and the customized/tailored parts constitute a model of a professional service product. The components can be also found in Magnus as addressed by this study. There were several needs for developing existing IT services further such as different customer requirements and needs, the need for a technical advance in a 32-bit environment, the need for better information security, and the need for sophisticated administration capabilities for the case organization. The comparison between the existing IT service and the new IT service product indicates no remarkable differences within the following entries: name of the IT service, general description, market potential and customers, IT services which compete with it and IT services it makes obsolete, suits the strategies, IT service description: effects on the processes, versions, the IT service delivery time, and people in charge. In more detail about the use of the name – it had a short transition period because there were two different IT services in the internal market at the same time: the present Magnus and the new Magnus NT. Since the rollout project was accomplished, all the new installations have been called Magnus. In terms of the general description, the difference was basically that it is available in a documented form but more importantly, the content was not specifically changed. However, the importance of customer requirements and needs had a big effect on the development of the new IT service product. There were no significant changes on the market potential and customers. As far as competition of IT services is concerned, there was no specific effect on the monopolistic market. Strategies were not changed during the transition from the existing IT service to the IT service product. From the process perspective, for some as-is processes there were certain effects but the rest of them were still applied as previously. In the near future it is possible to start some kind of improvement activities as well as develop the implementation of selected to-be processes. There were no specific new versions introduced in the market. The IT service delivery times are the same as previously. Finally, the arrangements for people in charge – only minor modifications took place.

Of course, there were improved attributes as well. The advantages and improvements based on the customer requirements and needs for the new IT service product are presented in Table 7-A.

Table 7-A. Advantages of the new IT service product compared with the existing IT service.

Entry of the internal description	Advantage – specific improvements based on the customer requirements and needs
The Use of IT Service and Added Value for the Customer	More added value than previously with 32-bit based operating system performance, usability of the new interface of the system, reliability, more security features - Improved system reliability - Marketed and informed by “Z-Guide” for all the employees
Technical Description	A detailed documentation: The new IT service product is based on a real 32-bit operating system environment with improved applications - Technical advance opens an opportunity for LMF to use the latest 32-bit software ^{E2}
The Most Important References	Documented for marketing purposes – the other IT units of the main company have been interested in the technology solutions applied to the new IT service product - Personnel has high competence, particularly in the technical domains
The Price of the IT Service	The charges are more realistic and market-driven: they can be compared to outsourced service charges more easily. There is also an application developed for controlling the charges.
Further Actions Plan and Development Suggestions	Potential development suggestions were listed e.g., training held in the initialization phase of the new IT service product - Improvement of customer skills by effective training and guidance

For the internal marketing purposes, the brochure “Z News” is available also in English – not only in Finnish. This version of “Z News” supports better information for the customers, especially for expatriates working at LMF. As a new concretized aspect, a manual called “Z-Guide” was introduced. It consists of instructions for the new IT service product. Moreover, prototyping and piloting were organized to a certain degree but it could be done even more accurately in the forthcoming projects. There is also the other side of the coin with the new Magnus. The disadvantages with the new IT service product are presented in Table 7-B.

^{E2} For those organizations that use Microsoft’s products and services, MS Windows NT 4.0 was a new intended OS in 1996 - similarly as MS Windows XP was a new OS in 2002.

Table 7-B. Disadvantages of the new IT service product compared with the existing IT service.

Disadvantage	Definition of disadvantage
Acquisition Costs	Hardware and software costs are more expensive than before because of the need to have more effective PCs, in particular portable PCs. This is due to the fact that the new operating system requires upgraded hardware. There are also costs for updated software licenses for this new environment.
Totally New Parts of the IT Service Product	Customers need a specific training period and more support activities in the launching and growth stages.

As a summary, the disadvantages are mainly associated with the economic aspect and costs.

7.3 Research findings and contribution

Did the theory of the packaging of professional services keep its promises and what was gained with it? Sipilä presents in his book (1996, p. 12) the following definition for the packaging of professional services: "...defining, planning, developing, describing, and producing services that are offered to customers, so that customers' benefits from the (service) product are maximized, while the profit requirements of the company are realized". The basis of his theory was not written exactly from the standpoint of the internal IT service provider organization like the IT unit. Therefore, I had to improve the theory with an entry which I found useful for this particular case – the technical description. The theory claimed that there are benefits which can be achieved with the packaging of professional services; it forces us to analyze and systematize strategies, activities, and processes, and thereby it improves the competitive ability, efficiency, and quality. I noticed that an understanding of the different processes of the existing IT service is important over the packaging of IT services. That is because it underlines for the personnel what kind of existing processes (as-is) there actually are, and thereby the IT personnel can begin to reconsider how the efficiency of the processes (to-be) could be increased. The service product thinking helps the harmonization of the views of internal organization. The customers' expectations are also more precisely defined than previously. All those signs indicate that each of the previous issues was addressed and promises kept. Therefore, the packaging of IT services – especially in this case – is a way of starting to think and act radically. It is controlling the wholeness, which follows the life cycle of the IT service product. It is obvious, however, that this IT service product Magnus will be someday replaced with a new one. Nothing lasts forever, especially in the fast developing field of IT services.

The internal benchmarking can be judged successful for several reasons: it created a promising start for the possible forthcoming benchmarking activities and proved that it will serve as a learning process for IT personnel. It increased information exchange of the IT related issues between both IT units. For example, some

information about the acquisition of suitable applications. Therefore, it increased cooperation and synergy between the Finnish IT unit and the benchmarking partner the Danish IT unit. Furthermore, benchmarking supported the creation of the new IT service product and the process itself. It also proved that there are gaps and performance differences but they can be reduced and transformed into the visible results. The benchmarking questionnaire development – especially the qualitative one just like in this case – takes time. Even though it is often more difficult to analyze the qualitative indicators than quantitative, it proved that the qualitative indicators can provide useful information. Another significant issue came up with benchmarking: the partner and the other potential partners (the benchmarking prospects) have not been thinking about the packaging of IT services at all. The philosophy of the subject seems to be quite new to them because it has not been initiated yet. On the other hand, adaptation of the philosophy was unique to the Finnish IT unit as well (at the time of the empirical case). Magnus can be seen as the only IT service product in the internal IT market at the moment. The more the local IT service provider organization wants to provide IT services of good quality, the more important the role of packaging IT services should be in the forthcoming future.

As discussed, the theories of the packaging professional services are applied to the case, the findings are documented and interpreted for the specific field of IT services in which the IT artefact has a remarkable role. The needs for the new IT service product have been widely met and several advantages and improvements can be found compared with the existing IT service. This conclusion can be also judged from Table 7-A.

The summarized contributions of this empirical study can be listed as follows:

- Applying the ideas of the packaging of professional services (Sipilä, 1996) in the field of IS/IT (a confirmation of applicability of the general theory);
- Expanding those ideas successfully by developing a specific adaptation for our field e.g., inserting one entry of the technical description as a part of the internal description for the IT artefact-oriented services (a confirmation of applicability of the specified theory and its constructions); and
- Developing the process and the program of packaging IT services for the internal IT service provider.

The process of packaging IT services is a continuous and customer-driven process of change with several sub-processes. As minor contributions of the study, the benchmarking activity was for the first time conducted at the IT unit level of the case organization and the as-is processes of the IT service in question were defined. Last but not least, the case showed that there were ideas with a lot of potential and thoughts on the principles of the packaging of IT services.

The use of Magnus made it possible to create added value for the internal customer. Most importantly, as noted in the end of the case study, Magnus was treated as a transferable and repeatable IT service product – that is, a construction for the purpose of the real-world. However, it appeared that the material for

production, sales, and marketing were not created as intensively as it could be by the IT unit for the rest of the organization. Licensing costs were also considered at some level but the role of pricing was not so important after all. Generally, this suggested an interpretation for future empirical studies that the degree of the packaging of IT services was not so high if compared to IT services developed for the external customer.

7.4 Limitations of the research

There are a couple of limitations that need to be considered in this case study research. The major empirical limitation is its sample of one case company. It is not reliable to argue that the process of packaging IT services can be generalized and thus, applied blindly to other kinds of IT services and their development. On the other hand, it makes a good starting point for such an effort anyway. This is especially true if the IT service provider organization has no previous experience of the packaging of IT services.

In general, the Case Magnus has been conducted at the very beginning of an entire dissertation research program as it is the first case. At that time the specific terminology was not established yet. This can be seen especially in the form of the benchmarking questionnaire and its topics. Even if one could think so, the lack of coherent terminology has not been such a big issue after all in this case. This is due to the fact that the topics are concentrated on appropriate issues for both the perspectives of IT services and the development of IT services. In this appendix the questionnaire and the answers are fine-tuned but in a manner that highly respects the original research material i.e., Nieminen (1997). Only minor adjustments to the original text have taken place, such as proofreading and terminology clarification (but of course, no revamping or fabricating evidence in order to have better results!). This is described with the following example of the topics of the questionnaire. The original topics of the benchmarking questionnaire by Nieminen (1997) are as follows:

1. General information and questions
2. The internal description of the product i.e. service package
3. Process
4. Professional service product development process
5. Product portfolio of T/I

In order to address the more suitable terminology in respect of my doctoral thesis as well as making this appendix easier to read than the original research text, I have added the current terms in brackets for the topics two, four, and five. Topic two refers to an existing service, topic four to the packaging of IT services, and finally, topic five is related to the IT units both in Finland and Denmark – in particular, their IT service product portfolios.

For the entries of the internal description, there are some variations compared to the original theory of Sipilä (1996). As opposed to the view on the pricing models

and a suggested goal for the fixed operation price, time and capacity charge proved to be useful in the internal market at least in this particular case. It is a step towards the real costs, which also indicates that the suggested pricing models are not so evident.

For those careful readers there is a potential conflict to be found in claiming that Magnus is a total IT service package – and yet simultaneously they discover that PC hardware was not included in Magnus. But this deviation can be explained fairly. In practice, related IT services and the software components were attached firmly to hardware. There were pre-requirements in place for portable PCs, desktop PCs, and LAN/WAN connections. Without fulfillment of such requirements Magnus PC was not implemented to the customer. For instance, before the installation, the implementation and the real usage hardware needed to be updated and often upgraded. As the local IT unit was the only IT service provider for the customers the internal market was monopolistic. This meant that hardware was in each and every case supplied by Z. The customer was not allowed to bring their own PC hardware nor have them installed as a Magnus IT service product. Consequently the total Magnus package (in brief: the IT artefact i.e., software and hardware plus other IT services) was provided to the customers. But it was only the Magnus prices that were separated from the hardware prices, not the rest of the essential issues. This also proves that it is often hard to differentiate software from hardware when referring to the concept of an IT artefact.

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Acronyms and abbreviations

ad hoc	For this special purpose.
ARS	An application called Action Request System, which is made by Remedy Corporation. Action request means a collection of information that describes an event such as a problem or service request.
as-is	The existing (initial) state of service processes.
ATM	Asynchronous Transfer Mode: a network switching and transmission technology.
CA	Computer Associates
CSF	Critical Success Factor
DII	The IT unit at EEI in Ireland
DOS	Disc Operating System
EEI	Ericsson Systems Expertise Ltd. in Ireland
Ethernet	A local area network architecture developed by the company of Xerox Corporation in cooperation with companies of DEC and Intel in 1976.
ETO	Ericsson AS in Norway
E/I	The IT unit at ETO in Norway
FAT	File Allocation Table
FDDI	Fiber Distributed Data Interface: these kind of networks were typically used as backbones for wide area networks.
IS	Information Systems
ISDN	Integrated Services Digital Network. A system of digital phone connections used to provide higher bandwidth.
IT	Information Technology
LAN	Local Area Network
LMD	L.M. Ericsson A/S in Denmark
LMF	Oy L M Ericsson Ab in Finland
MS	Microsoft
NetBEUI	Network Basic input/output system Extended/Enhanced User Interface: a protocol originally designed by International Business Machines for their Lan Manager server and later extended by the companies of Microsoft and Novell.
NT	New Technology: MS Windows NT 4.0 operating system in the Case Magnus.
PC	Personal Computer
Protocol	The “rules” or format by which two network elements trade information in order to communicate.
R&D	Research and Development
SLA	Service Level Agreement
TCP/IP	Transmission Control Protocol/Internet Protocol
T/I	Organization code: the IT unit at LMD in Denmark in the

to-be	Case Magnus. The defined future (goal) state of service processes, which is based either on incremental improvement or radical transformation.
UNIX	A multi-user and multitasking operating system. It was originated at Bell Labs in 1969 as an interactive time-sharing system, developed further in the early 1970s. Ken Thompson and Dennis Ritchie are considered the inventors of UNIX. The emergence of a version called Linux is revitalizing UNIX across all platforms.
WAN	Wide Area Network
Z	Organization code: the IT unit at LMF in Finland in the Case Magnus.

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Personal communications – case discussions

Case entry and exit: September, 1996 - March, 1997

Discussions and benchmarking interviews held in September, 1996 - March, 1997

Researcher: Petteri Kaitovaara (the author)

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Benchmarking related appendices of Case Magnus

Appendix E1: Benchmarking questionnaire

This appendix contains the questionnaire applied in the case study research as a part of benchmarking. The questionnaire was sent to the benchmarking partner T/I at LMD before the actual visit took place.

Disclaimer: Only minor adjustments to the original text have taken place - such as proofreading.

Questionnaire

1. General information and questions

The Magnus product is the case of this study. The product i.e. the service package is developed by Z and it is used by LMF internally. Magnus offers the PC environment tools for word processing, mailing, scheduling etc. User support, helpdesk, and other non-visible actions such as network support are taken care of with this product as well. PC hardware is not included in this product.

In general, this benchmarking study constitutes a part of the Master's thesis. The following questions concern the IT department (T/I) at LMD and the rest of the organization as well.

- 1.1 What is the number of employees at T/I?
- 1.2 How is T/I organized?
- 1.3 Z (IT department at LMF) has been organized into the teams such as Helpdesk, Network Support, Applications, and User Support. If these teams somehow correlate with the organization of T/I, please answer the following questions:

Helpdesk

- 1.3.1 How is it organized?
- 1.3.2 Do you have a system for registering information about problems users may have with the offered services and products?
- 1.3.3 How do you inform the user about the progress of the case?

User Support

- 1.3.4 How are things such as routines and responsibilities organized in the PC environment?
- 1.3.5 Are the people in charge well-defined?

Applications

- 1.3.6 Do you have an internal application development for the products you offer to the users?

Network

- 1.3.7 How is the LAN/WAN support organized?
- 1.3.8 Do you have any plans to have a network management tool (e.g. Intel LanDesk Management Suite, MS Systems Management Server) to centrally manage and troubleshoot your networked PCs and distributing software to desktops?

The Third Parties

- 1.3.9 Do you use external IT services (as support from the third parties such as consultants and suppliers)?
- 1.3.10 What kind of support do you get?
- 1.4 Are you satisfied with the competence of the personnel of T/I in general?
- 1.5 What about personnel willingness to be of service?

2. The internal description of the product i.e. service package (an existing IT service)

These questions are defined from the Magnus point of view. Even if you do not have IT service product a similar to Magnus, please answer as many questions as you can.

- 2.1 Generally, have you considered offering (service) products rather than IT services?
- 2.2 Do you have a name for the product?
- 2.3 Please, describe the product in general.
- 2.4 How many users or accounts has the product?

- 2.5 What is the use of the service i.e., the purpose of the service?
- 2.6 Can you describe what the added value is for the customer for using the product?
- 2.7 How does the product fit for the IT strategy of LMD?
- 2.8 How can you describe the product from the technical point of view?
 - 2.8.1 - Operating system
 - 2.8.2 - Applications
 - 2.8.3 - LAN & WAN connections
 - 2.8.4 - Fax, e-mail, and calendar (scheduling) applications
 - 2.8.5 - Internally developed applications
- 2.9 Do you consider changing the concept in the future e.g., into another operating system? Why?
- 2.10 Do you have different versions of the product for the customer?
- 2.11 Can you define any references of the product and your service?
- 2.12 What is the service delivery time?
- 2.13 Are you satisfied with the service delivery time?
- 2.14 Are the responsibilities of the product clearly defined?
- 2.15 Have you considered further actions for improving the product?
- 2.16 What kind of actions?
- 2.17 How is the product prototyping and piloting organized?
- 2.18 What kind of pricing model do you use for the customer e.g., time and capacity charge, fixed price etc.?
- 2.19 Do you have separate pricing of hardware, software, and offered services?
- 2.20 What is the monthly charge for the customer for using the product?
- 2.21 What is the charge to T/I concerning the software licenses of the product?
- 2.22 Do you have a marketing strategy for the IT service?
- 2.23 How is the marketing of the new service packages done internally?
- 2.24 Do you have a brochure for marketing purposes?

- 2.25 What different ways do you have in order to make the (service) product more tangible for the customer?

3. Process

These questions are linked with the process theory and the processes of T/I.

- 3.1 What kind of processes are defined at the moment concerning your services and products?
- 3.2 Process owner?
- 3.3 Are there capability indexes for your processes?

4. The professional service product development process (the packaging of IT services)

One reason for this research is to generate the overall professional service product development model for the IT department purposes.

- 4.1 Have you been thinking about the professional service product development as a whole?
- 4.2 Have you defined your professional service product development process?
- 4.3 Do you have the product and product development strategy defined?
- 4.4 How many users i.e., customers do you have for your offered IT services and products internally at LMD?
- 4.5 How can you describe the users of the product?
- 4.6 What kind of customer segments can be discovered?
- 4.7 How do you define the customer needs and requirements?
- 4.8 Have you researched it in any way?
- 4.9 How is the analyzing of data done?
- 4.10 Have you researched customer satisfaction?
- 4.11 Do you have researches of that kind regularly?
- 4.12 How is customer satisfaction measured?

5. Product portfolio of T/I (both IT units: LMF/Z, LMD/T/I)
(IT service product portfolios of the IT units)

The product portfolio describes all the organization's service products as a whole. It should contain various service products in a way they together level out the risks in the business. These offered products in the product portfolio should also support each other. If there is little demand for a certain service product, another service product from the product portfolio replaces it.

- 5.1 How are your services categorized and for what reason?
- 5.2 How are your services in these categories packaged?
- 5.3 Do you have a product portfolio defined?
- 5.4 What kind of products does it contain?
- 5.5 What kind of advantages or challenges do you get from this?
- 5.6 What is your present and future policy for different kind of products?
- 5.7 What kind of products and services are essential in the future for T/I?

Final questions

Is there something we have not quite covered: an entity or just a small detail I might not have realized to ask, but would still be important to know and understand?

Thank you very much for the chance to interview you!

Appendix E2: Benchmarking answers – LMF/Z

This appendix contains the answers of the IT unit in Finland for the benchmarking questionnaire applied in this case study research.

Disclaimer: Only minor adjustments for the original text have taken place such as proofreading.

Questionnaire

1. General information and questions

- 1.1 Number of employees at Z
Almost 50 employees: approximately 30 employees are in close contact with the customers through giving e.g., support.

There are in total roughly 1 000 employees at LMF, approximately 900 of them need Z in their operations.

- 1.2 Z organization
Z organization is divided into teams, which are managed by Team Leaders, see Figure 0-A. They are responsible to Max Björkgren, Director (Head of the Unit). The Secretary, Controller, and Quality responsible belong to the staff of the IT department (unit). Also Z has a purchaser function in the User Support team for buying software and hardware.

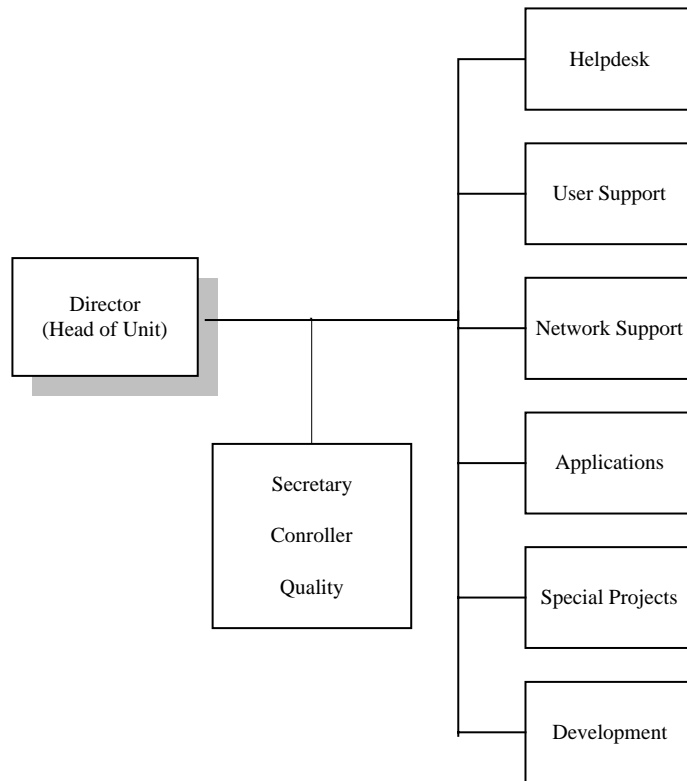


Figure 0-A. Z organization.

- 1.3 Z (the IT department/unit at LMF) has been organized into teams such as Helpdesk (ZH), Network Support (ZN), Applications (ZI), and User Support (ZU). These teams are closely related to this study. The third parties i.e., the suppliers have also been paid attention to.

Helpdesk

1.3.1 Helpdesk organization

The Helpdesk has 9 team members. Some of the members are on duty serving the customers by phone at the desk. At the same time, the rest of the team support the users. Mainly, the team members have work shifts in order to do both the service and support. The Helpdesk team can be seen as the customer interface to the organization of Z. The Helpdesk aims to solve 50% of the cases by phone immediately, but it will be increased to 65% during 1997. The Helpdesk has an average of 1 500 calls a month, the maximum amount is roughly 2 000 calls a month (reference: Team Leader).

- 1.3.2 A system for registering information about problems users may have with the offered services and products

The process shown in Figure 0-B. describes the tasks of the different teams of Z concerning the service request by the customer.

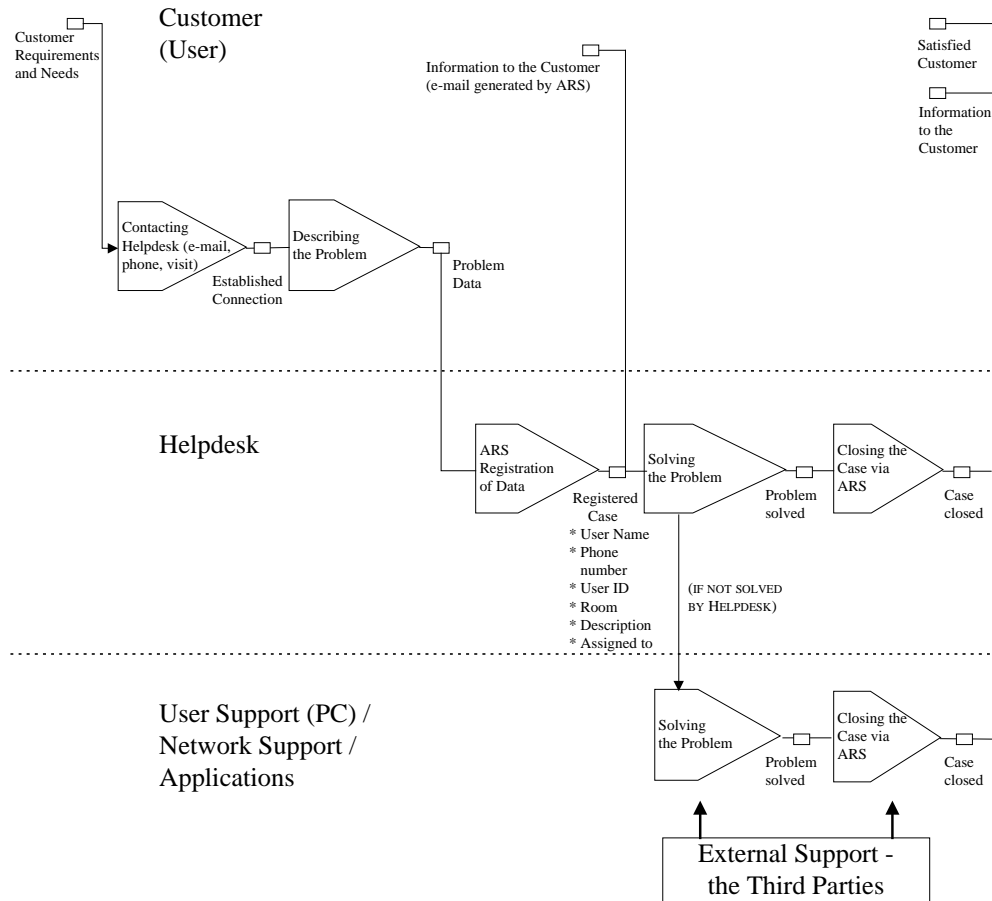


Figure 0-B. The process of a Magnus customer's problem solving request.

After the user has been contacted and described the problem to the Helpdesk, the service request is registered in ARS, which is a database system used by Z internally for controlling the cases. Note that whenever the problem is registered in the system it can be called a case. A registered case includes the following information: user name, phone number, user ID i.e., user account, location of the room, description of the case, and the employee of Z to whom the case is assigned. Often cases can be solved by the members of the Helpdesk team. If not, then the case will be assigned to other teams such as User Support (especially those team members who are acquainted with PCs), Network Support, or Applications or more often to the team members directly. These teams might use external support for solving the case e.g., software suppliers or consultants.

- 1.3.3 Informing the user about the progress of the case
Information concerning the registration of the case is sent to the customer automatically by e-mail. After the problem is solved and the case is closed, the system will again inform the customer automatically by e-mail.

User Support

- 1.3.4 Organized routines and responsibilities in the PC environment
The User Support team consists of 16 members supporting both PC and Unix environments. Most of the cases are received via ARS by each team member.
- 1.3.5 The people in charge
The members of the team have certain areas which they are in charge of, such as administration and support of different systems and applications. However, one should remember that Team Leaders have many responsibilities in the end.

Applications

- 1.3.6 An internal application development for the products that Z offers to the users
There are 7 members at Applications team giving support for the customers but chiefly for software that team members have developed or implemented. If customers want to have an application for their purposes, they contact the Applications team directly without contacting Helpdesk first. The customer contacts the Applications team and describes the requirements and needs, see Figure 0-C.

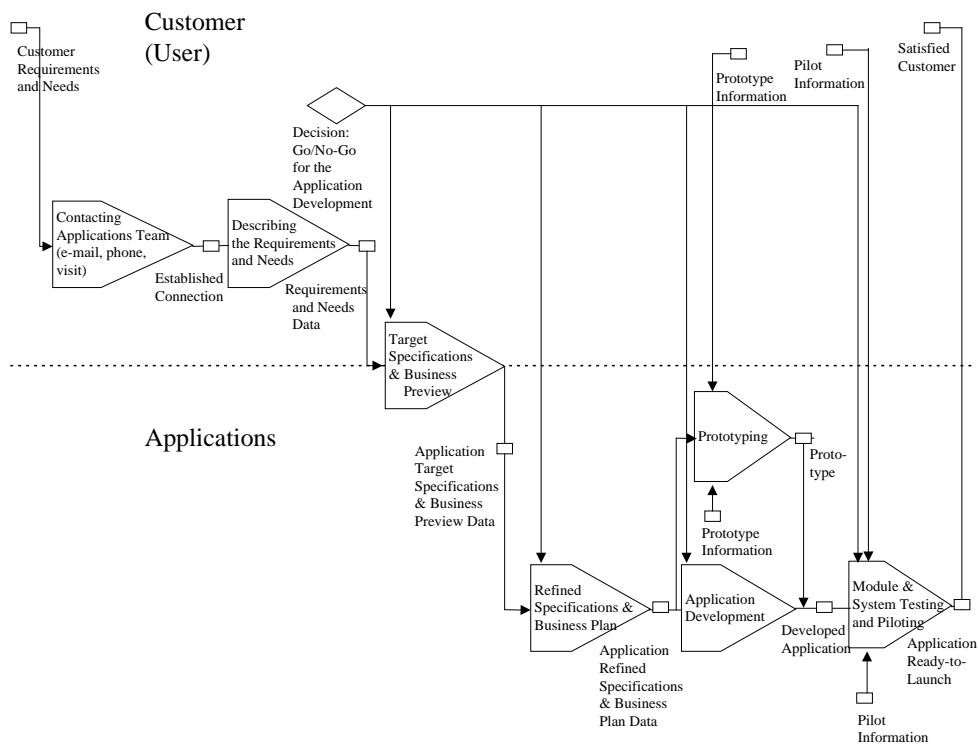


Figure 0-C. The process of application development for Magnus by the Applications team.

The Applications team in association with the customer defines target specifications as well as business preview of the task. The customer always has a possibility to interrupt application development efforts if needed. However, if this rough estimate of specifications and business possibilities satisfies the customer, the next phase will be re-definition of specifications and business plan. Application development and prototyping will be done simultaneously. After the previous phases, the application will be both module and system tested, and the piloting phase is organized for a certain group or department. In general, software developed by the Applications team will not be launched to the whole market immediately. It is often piloted by the small organizations first before being delivered to others.

Furthermore, the Applications team implements software purchased outside (the third parties) the company to the information systems of LMF. Some tailoring for this software will be applied by the Applications team when needed.

The average project resource is around 7-8 months/person workload (reference: Team Leader).

Network

- 1.3.7 LAN/WAN support organization
The Network team consists of 4 members. Team is responsible for installation and maintenance as well as development of network for LMF purposes.
- 1.3.8 Plans for implementing a network management tool (e.g. Intel LanDesk Management Suite, MS Systems Management Server) for centrally managing and troubleshooting LMF's networked PCs and distributing software to desktops
There is no decision made yet. However, Intel LanDesk Management Suite might be a potential management tool for LMF purposes.

The Third Parties

- 1.3.9 Support of external IT services for Z (as support from the third parties such as consultants and suppliers)
Z uses external IT services sometimes in order to release its own resources from standard activities like installation of software to new PCs. Also support of consultants for some areas are occasionally used when there is a need for "special" competence.
- 1.3.10 The support that Z gets
Z uses the third parties e.g., with support of software installation of workstation PCs and portable PCs. MS Windows NT 4.0 as well as MS Office 97 will be installed by hardware suppliers for new workstation PCs: nowadays ICL. Other Z teams, like Network, sometimes use consultants in order to implement a new system.
- 1.4 The competence of the Z personnel in general
It can said to be adequate enough at the moment. However, this is generally dependent on large replacements in certain teams.
- 1.5 The Personnel's willingness to be of service
There seems to be no problem with the staff's willingness to be of service.

2. The internal description of the product i.e. the service package (an existing IT service)

- 2.1 General consideration of having offered IT services closer to the products
Z is interested in having more products for its internal markets. One purpose of this thesis is to evolve the model for the professional service product development process.

- 2.2 Name of the product
Back in 1993, employees used to call a system offered by Z the “sales’ network” because there was no name specified for the product at that time. There was a couple of reasons for the name “Magnus” according to the inventor, Mr. Thomas Witting. The name was internally unique and closely related with the Ericsson Group, and it was not dependent on the organization’s hierarchy. It was short, easy-to-remember, and easy-to-spell. All these aspects together formed a good name for this particular purpose.
- 2.3 General description of the product
Magnus offers the user the PC environment tools for word processing, spreadsheets, drawing, mailing, and scheduling etc. Magnus has also a support service included, which is provided by Z. Backup and other non-visible actions for the user are taken care of with this product. Z is supported by the third parties such as the suppliers. Magnus requires a network i.e., LAN/WAN in order to establish connections both to the internal and external environment. Hence, Magnus needs resources such as servers and printers from the network to work properly. The product should be at least good quality and reliable because it has hundreds of users at LMF. So it is one of the most visible things of Z to the rest of the organization of LMF. Moreover, it provides Z with income.
- 2.4 The number of users and accounts of the product
Approximately 700 day-to-day users.
- 2.5 The use of service i.e., the purpose of the service
The use of service and the product as well, is to offer the customer a PC environment where work can be done quickly and productively. Magnus is based on the LAN/WAN technology forming a backbone which the professional service product is founded on. It makes the standard part of the professional service product. Magnus provides different tools for word processing, spreadsheets, drawing, mailing, scheduling etc. It also contains services such as support, helpdesk, and non-visible services like backup of the user files. All these together form the modules of the product. On top of that, Magnus can be customized/tailored to the customer’s special needs.
- 2.6 The added value for the customer for using the product
There are several reasons for the customer to use the product. The following reasons will give added value for the customer:
- Allows the customer to do his/her own work without paying any attention to problem solving concerning e.g., the technology of Magnus;
 - User files are backed up regularly;
 - Information security is better than it might be if the IT functions are outsourced. Thereby, the information can be controlled internally and it

is not accessible by the external parties. This is a very important aspect in the information intensive company;

- Offers possibilities to establish connections inside and outside the organization such as e-mail and Intranet/Internet;
- It can be tailored to the customer's special needs; and
- It is an enabler for the activities of customers.

2.7 Fit for the IT strategy of LMF

Magnus is well-suited to the strategy of Z. This statement is based on the document regarding the activities and operations of Z.

2.8 The technical description [the detailed description is not shown here]
Due to reasons such as IT security, a detailed list of the technical description of the particular IT service is excluded from the answers.

- 2.8.1 - Operating system
- 2.8.2 - Applications
- 2.8.3 - LAN/WAN connections
- 2.8.4 - Fax, e-mail, and calendar applications
- 2.8.5 - Internally developed applications

2.9 Plans for changing the technical concept in the future e.g., into another operating system

Z is changing the present 16-bit software to the new 32-bit technology. Again due to the IT security reasons, a list of technical description of the existing IT service of Z is excluded among the answers.

2.10 Different versions of the product for the customer

There is no kind of versioning or versions management whatsoever. Although, the configuration of the system of workstation PC or portable PC can be seen as different versions of Magnus from the technical point of view.

2.11 References of the product and service of Z

The most important references are:

- Z has personnel who have competence in the IT area;
- The Z personnel are acquainted with the company;
- From the other organizations of LMF point of view, Z is already well-known and it can offer professional, tailored services based on customers' purposes in each division; and
- Information about LMF is secured e.g., external connections via the Internet are restricted by using firewalls. Information security is an important aspect because LMF operates in an information-intensive industry.

2.12 Service delivery time

Z supports customers on working days from 8.00 to 17.00. Off duty support services are charged to the customer in their entirety: Z personnel

on duty are available within two (2) hours from the call. In general, if the problem can not be solved by phone, the response time of Z is three (3) hours at the most. The new PC hardware delivery time is two (2) weeks from the order confirmation. PC hardware delivery time is three (3) working days from the time of order. Customers will have accounts in two (2) days from the time of order. Software will be delivered to the customer by agreement. Installations will be done in two (2) days from the time of order or whenever shipment has arrived.

- 2.13 Satisfaction at the service delivery time
There is no “official” research arranged on this subject. Everything, however, seems to be in order.
- 2.14 Clear definition of the responsibilities of the product
Nobody has been clearly defined responsible for Magnus solely. It is obvious that Team Leaders have in the end many responsibilities but those who have developed the existing IT service have their responsibility. The present Magnus is a result of long term development efforts. Therefore, almost all of those who have developed the existing Magnus cannot be anymore be responsible because of the long time of development and the replacement of staff. However, if one has to name the responsible person or persons, or at least those who are dealing with the existing Magnus, they are pretty much the same persons as those who have developed the new 32-bit Magnus environment.
- 2.15 Further actions for improving the product
Z has considered further actions for improving the product, but mainly at the technology level. Windows NT 4.0 is in many ways a more advanced system than the previous operating system. Naturally, a new system of that kind demands more skills and competence from the employees of Z and also the rest of the organization (the customers of Z). Therefore, courses will be arranged simultaneously with the launch of the new product in order to teach the customers to use the updated operating system and its Magnus applications. Courses will be arranged by the external training organization (Kasanen Koulutusyhtiöt) in co-operation with Z.
- 2.16 Actions taken
Magnus has been slightly reformed to its present state (existing IT service). In other words, it can be seen as a kind of self-organized system. This means that there have been countless short range plans at the operational level but the strategy for developing the IT service product as a whole package has been missing. One can even say that the existing Magnus has been shipped to the customers without planning ahead, or any serious consideration of further IT service development actions. So there is plenty of room for improvement. These aspects should be considered with the new IT service product.

- 2.17 Organizing the product prototyping and piloting
There was neither prototyping nor piloting executed for the present product. And if there was, there is no documentation available on this subject. At least, it is obvious that there was neither coordination nor project management for these activities whatsoever. On the other hand, technically Magnus has been prototyped and piloted several times in its lifetime. Despite that, it has been quite an uncontrolled action.
For the new product both prototyping and piloting are organized at a certain level. However, time will be the limit for ultimate success. The pilot group is organized so that it consists of employees from Z as well as other organizations of LMF. The pilot group gives feedback to the development project team. However, feedback is not organized as well as it should be. The technical implementation of the product is coordinated - not managed - as a project. The project has some difficulties concerning e.g., employee resources. There is a lack of them because one should keep in mind that customer service has to be done simultaneously with developing the new product. The same resources cannot be released from the line organization as flexibly as they should. Also, the new version of the operating system Windows NT 4.0 and software package MS Office 97 were not launched onto the market until late 1996, despite the supplier's promises. Licenses for software such as OnNet were re-used for this product until a suitable version of software (OnNet32) came onto the market. Thereby LMF saved money by waiting for the introduction of a new version. From all this it follows that the project is late.
- 2.18 Pricing model for the customer: time and capacity charge, fixed price etc.
For the existing Magnus, the pricing model can be categorized into fixed operation price. The charges are not as realistic as they should be. For the new Magnus, the model can be categorized into time and capacity charge. The charges can be more realistic than before and they are easy to compare to the outsourced services. Z has also a new application for controlling the charges of various services offered to the customers. This leads to the real time invoicing information.
- 2.19 Separating the pricing of hardware, software, and offered services
The IT department has not sorted out the hardware from the existing Magnus. The pricing has been separated by the type of computer. For the new product, pricing will be founded on the real costs, not for the estimated costs. The hardware invoice price is not included in this product pricing.
- 2.20 Monthly charge for the customer for using the product
The Existing Magnus
A portable PC invoiced amount is FIM [not shown here] per month (quarterly FIM [not shown here]) for the customer. A workstation PC invoiced amount is FIM [not shown here] per month (quarterly FIM [not shown here]) for the customer.

Note that the pricing related information and the charges are excluded from the answers.

- 2.21 Charge for Z concerning the software licenses of the product
 In order to compare software costs for Z between the present Magnus and the new Magnus, the following Table 0-A. includes only those software licenses and prime costs, which differ from the cost of the new Magnus software licenses. Therefore, license fees for software such as HP OpenMail, OpenTime, and Netscape browser are not shown in the following tables. The reason for this is that the license fees are the same despite of the versions used. Note also that support and other costs are excluded from the calculations herein.

Table 0-A. Costs for Z concerning the software licenses needed for the existing Magnus.
 (License fees information provided by LMF/Z Jari Koivumäki)

Software	FIM (VAT 0%)
MS WfW 3.11	[not shown here]
MS Office, 16-bit	[not shown here]

What is the charge for Z concerning the licenses needed for the new product then? The following Table 0-B. includes the software licenses and prime costs which differ from the cost of the existing Magnus.

Table 0-B. Costs for Z concerning the software licenses needed for the new Magnus.
 (License fees information provided by LMF/Z Jari Koivumäki)

Software	FIM (VAT 0%)
MS Windows NT 4.0 Client (new license)	[not shown here]
MS Windows NT 4.0 Client (updated)	[not shown here]
MS Windows NT 4.0 Client Access	[not shown here]
MS Office, (maintenance for 2 years)	[not shown here]
MS Office, 32-bit (new license)	[not shown here]

Z has to buy new licenses for the new operating system, but part of the licenses will be updated from MS WfW 3.11. MS Windows NT 4.0 Client Access license is needed for using PCs as a client. Z has licenses for that kind already [250] per each MS Windows NT 3.51 Server. After servers' operating systems are updated new licenses have to be bought. Z has a so called maintenance agreement with Digital, which allows updating [120] MS Office software packages into the new 32-bit versions. Z, however, needs new licenses as well.

Note that charges of various software licenses are excluded among the answers.

- 2.22 Marketing strategy for the IT service
There is no specific strategy defined for marketing the products and service packages of Z.
- 2.23 Internal marketing of the new service packages
A medium for marketing of the existing Magnus is called “Z News”, which is published in Finnish. It is a LMF internal information booklet. The new Magnus will be marketed in “Z News” as before but it will be published also in English. Other marketing methods are not yet (fully) applied – although Intranet is very useful media for IT marketing purposes.
- 2.24 A brochure for marketing purposes
In 1993 when the existing Magnus was launched onto the internal market of LMF organizations, there was no marketing material such as a brochure. There are still no brochures available. In the near future, “Z-Guide” can be seen some kind of brochure informing the customers for the new Magnus.
- 2.25 Making the (service) product more tangible for the customer
In order to have a tangible (IT) service, Z uses an internal bulletin as previously described. Also the following methods are used to have more tangibility in the service:
- Ad hoc bulletins directed towards the customer for special purposes concerning the service package;
 - The Helpdesk is an essential part of Magnus, therefore the following can add more tangibility for the service:
 - Helpdesk stickers which can be located near PCs; and
 - Members of the Helpdesk team wear shirts with text “Helpdesk” occasionally.

In addition, Magnus stickers can be attached to PCs in order to increase tangible elements for the customer. The idea of this is to have the customers more acquainted with the name of the product as well.

All the employees of LMF will have a manual called “Z-Guide”. It is especially designed for the new employees of LMF. “Z-Guide” tells the customer e.g., some general information about Magnus. These manuals will be delivered to all the employees of LMF.

3. Process

- 3.1 Processes defined at the moment concerning services and products of Z
At this moment only few processes of Z are described (cf. Figure 0-B. and Figure 0-C.). In the near future, a particular process team will be formed and at least the main processes will be analyzed and described.

3.2 Process owner
Processes of Z and the owners of the processes are not defined, except those which are introduced by this research study.

3.3 Capability indexes for the processes of Z
Not yet but will be formed during 1997.

4. The professional service product development process (the packaging of IT services)

4.1 The professional service product development as a whole
Z has not been thinking of the professional service product development as a whole before this case study research.

4.2 The professional service product development process
Z has not been considered on the processes of the IT unit earlier. However, it is one of the reasons for this study. Hopefully the process will be generated through this research.

4.3 Definition of the product and product development strategy
There has been no specific product and product development strategy defined. Still, Z has Magnus already so it can be seen as a basis for the future product and product development strategy.

4.4 The number of the users i.e., customers for the offered IT services and products internally at LMF
As described earlier, roughly total 900 users in both PC and UNIX environments.

4.5 Description of the users of the product
Magnus users consist of employees of Z and employees from the other organizations of LMF. In this case study research, users are sorted and segmented from the internal employees of LMF.

4.6 Discovered customer segments
Segments for the internal and end customer can be much the same for each party. Although, the role of Magnus is slightly different for Z because of administration, monitoring of functionality, and product (based on IT services) development. The segments are as follows:

- *Workstation PC and portable PC* users - they use Magnus through the network connection or ISDN. This is the biggest segment with approximately 600 users;
- *UNIX WinDD* users - they use Magnus from UNIX workstations with WinDD application. Roughly 50 licenses for simultaneous use; and

- *WinFrame* users - Magnus can be used remotely with WinFrame application and modem as well. There are 70 licenses for simultaneous use.
- 4.7 Definition of the customer needs and requirements
Z has researched customer needs and requirements with the support of an external party (a company called Market-Visio Oy). Z also arranges regular customers (feedback) meetings.
 - 4.8 Researching of the customer needs and requirements
Inquiries - conducted in 1994 and 1995 - explored customer requirements and needs. Nowadays regularly arranged customer meetings give feedback information to Z.
 - 4.9 Analysis of gathered data
Inquiries were analyzed by Market-Visio Oy, the same company which arranged the inquiries in the first place. There are discussion about the feedback and information received afterwards regularly arranged meetings.
 - 4.10 Research of the customer satisfaction
In 1994 and 1995 there were two different inquiries conducted regarding the satisfaction of the LMF's other organizations to the work of Z, information systems, and their functionality.
These researches also look at the work satisfaction of Z (employees).
 - 4.11 Regularly arranged researches
There are regular customers meetings arranged but still they are neither as extensive nor as accurate as these previous inquiries were.
 - 4.12 Measuring the customer satisfaction
According to the theory, customer satisfaction is the customer's perception that his or her expectations have been met or even surpassed. Customer satisfaction can be measured through organized surveys. Further, customer satisfaction can be improved by learning about customer perceptions, determining customer needs and requirements, closing the gaps, and continuous improving.
5. **Product portfolio of Z** (both IT units: LMF/Z, LMD/T/I)
(IT service product portfolios of the IT units)
 - 5.1 Service categorization and the reason for that
Support services of Z can be roughly categorized into PC and UNIX services.

- 5.2 Packaging of the offered services in these categories
At PC environment, the only offered service product (i.e., the service package) is Magnus. Other offered services are not so near to the concept of (IT service) products. There are no similar service packages in the UNIX environment at the moment.
- 5.3 Definition of the product portfolio
There are no product portfolios of Z defined. However, it might contain at least PC and UNIX segments.
- 5.4 Products of the product portfolio
This particular study defines three various user segments for Magnus: workstation PC and portable PC, UNIX WinDD, and WinFrame. They all can be seen as different products as well as versions of Magnus.
(What about the UNIX environment - how can the IT service products be defined? Well, this study will not tell us that exactly.)
- 5.5 Advantages and challenges
Advantages: customer knows what he/she gets by using different products, pricing is already known, clear instructions and brochures can be made of different products etc. Technology changes constantly - it is a big challenge for the IT departments. Generally, it is always a challenge to generate (an IT service) product for that area.
- 5.6 The present and future policy for different kind of products
There are no answers to that regarding Z because the decisions have not been made yet.
- 5.7 Essential products and services in the future for Z
It will be important to offer those kind of products and services that support the constantly changing needs and requirements of customers. What does this really mean? For example, it is possible that Z will offer an Intranet solution for the Helpdesk (a product called ARWeb). ARWeb is the first Web-enabled helpdesk application providing direct access to ARS. Through this product the customer can fill a form and then send it to the Helpdesk, which forwards it to specific IT specialists. Thereby, all the customers can have direct access to the Helpdesk whether they use PC or UNIX environment. However, Z will increase its competence in the domain of Web-technology (Intranet, Internet).

Appendix E3: Benchmarking answers – LMD/T/I

This appendix contains the answers of the IT unit in Denmark for the benchmarking questionnaire applied in this case study research. The persons interviewed during the benchmarking visit to LMD (February 5th – February 7th, 1997) were IT Manager, Mr. Bent Bæk Jensen and Support Manager, Mr. Henrik Wulff. The former will be referred to here as BBJ and the latter as HW.

Disclaimer: Only minor adjustments for the original text have taken place such as proofreading.

Questionnaire

1. General information and questions

- 1.1 Number of employees at T/I
24 employees, but it will increase soon to 27. For PC support approximately 11 and for UNIX support 9 employees.

There are a total of 900 employees at LMD, roughly 650 of them need T/I in their operations. [BBJ]

- 1.2 T/I organization
T/I is a part of T-division (T stands for “Technology”). However, T/I is used by the whole LMD. The T/I organization is divided into groups, which are managed by Group Leaders, see Figure 0-D. They are responsible to Bent Bæk Jensen, IT Manager. Secretary and Project Manager belong to the staff of the IT department (unit).

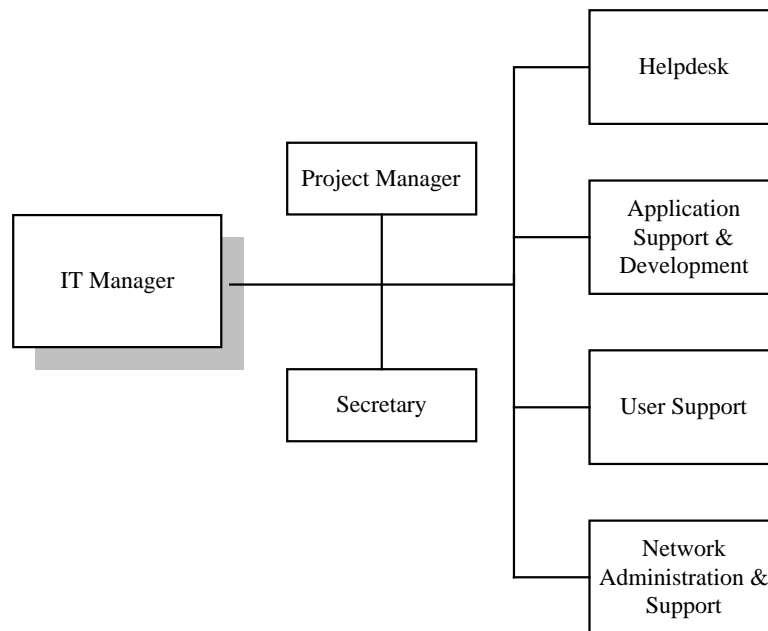


Figure 0-D. T/I organization.

The User Support and Helpdesk groups have a common leader, Henrik Wulff. There is no particular employee at T/I for buying software and hardware. The role of purchaser belongs to the one employee at the purchasing department. He is specialized in buying IT products. The Controller of T/I belongs to the financial department, and the quality responsible manager comes from the division level. [BBJ]

- 1.3 T/I (the IT department at LMD) has been organized into groups such as Network Administration & Support (T/IN), User Support (T/IB), Application Support & Development (T/IU), and Helpdesk (T/IH). [BBJ]

Helpdesk

1.3.1 Helpdesk organization

The Helpdesk group consists of 4 members. They operate merely by phone: they do not give support to the users locally. At the moment, all the members operate at the back office but soon they will have a physical desk as well. The Helpdesk group can be seen as the customer interface to the organization of T/I. The Helpdesk aims to solve 50% of the cases by phone immediately. [BBJ] Helpdesk has average 1 200 calls a month, maximum amount is roughly 1 600 a month (reference: Group Leader HW).

- 1.3.2 A system for registering information about problems users may have with the offered services and products
T/I uses ARS, which has been used for 1½ years already. The process is the same as LMF, see Appendix E2: Figure 0-B. Those cases which can not be solved by the Helpdesk group will be sent to the groups like User Support. At the time, individual members of each group pick up active cases for themselves. If the cases are not selected in a certain time frame, they are sent back to the Helpdesk. Therefore, Group Leaders monitor their group cases and also see that the cases are picked up regularly by each individual. [BBJ]
- 1.3.3 Informing the user about the progress of the case
User is informed at registration and case closing situations automatically. T/I has made some modifications to ARS concerning the information the user gets. Nowadays users get more information about the case than before the modifications were made. [BBJ]

User Support

- 1.3.4 Organized routines and responsibilities in the PC environment
The User Support group consists of 4 members. The mission of this group is to be responsible for the PCs. [BBJ]
- 1.3.5 The people in charge
Members of the group have specific areas for which they are in charge. However, Group Leaders have in the end many responsibilities. [BBJ]

Application Support & Development

- 1.3.6 An internal application development for the products that T/I offers the users
There are 5 members at Application Support & Development. The purpose of the group is to develop applications for internal use, implement purchased (the third parties) software to the systems of LMD, and consult in order to help the users to specify and buy new applications. Of course, the group supports the customers as well. The average project resource is around 3-5 months/person workload, not more. [BBJ]

REMARKS: One of the newest projects of the group is to have a data warehouse system released in the first quarter of 1997. The system is based on IQ (Sybase) technology, which is an "official" technology for databases used at T/I. Sybase is also used with ARS and [Name not shown here] applications, see 2.8.5 for more information. [BBJ]

Network Administration & Support

1.3.7 LAN/WAN support organization

At this very moment, the group have no leader of their own. Still, the group consists of 10 members. The Network Administration & Support group is responsible both the network (LAN/WAN) and UNIX environments. Some 4 members of this group are responsible merely for the network operations such as monitoring. The rest of this particular group are responsible for UNIX. Still, the borders are not so clear in the real-world. Generally, the group is responsible for the installation and maintenance as well as development of both the network and UNIX environments for LMD purposes. [BBJ]

1.3.8 Plans for implementing a network management tool (e.g. Intel LanDesk Management Suite, MS Systems Management Server) for centrally managing and troubleshooting LMD's networked PCs and distributing software to desktops

There is no decision made yet. However, it is a necessary investment in the future to have a network management tool. T/I is interested in Computer Associates (CA) Unicenter software, which can be used for managing distributed, heterogeneous computing environments. [BBJ] MS Systems Management Server seems to be interesting because it is supposed to operate well with ARS [HW].

The Third Parties

1.3.9 Support of external IT services for T/I (as support from the third parties such as consultants and suppliers)

T/I uses external IT services sometimes e.g., in order to ease the too high workload of employees. As a rule of thumb, external support is used whenever it comes to PC, UNIX, and network hardware. T/I does not use e.g., Andersen Consulting because it is quite expensive. [BBJ]

1.3.10 Support that T/I gets

T/I gets support from the beginning of March 1997 from those whose PCs the department buys: ICL-Fujitsu. They install the necessary software beforehand for the workstation PCs. At the time, T/I uses external WAN consultant for the Network Administration & Support group. [BBJ]

1.4 The competence of the personnel of T/I in general

T/I is generally satisfied of the competence of the personnel [BBJ].

1.5 The personnel's willingness to be of service

It needs improvement occasionally. The personnel of T/I should form a homogenous image for the whole department. The internal information flow between employees of T/I should work well. [BBJ]

2. The internal description of the product i.e. the service package
(an existing IT service)

2.1 General consideration of having offered IT services closer to the products
At the moment, T/I has not considered it. The purpose is merely to offer services that work for the customer. [BBJ]

2.2 Name of the product
There is no specific names for their offered services. Despite that, some kind of “service package” can be seen to exist, even if it has no specific name. [BBJ]

2.3 General description of the product
As described earlier, there is no certain product - T/I just offer a standard LMD PC environment. This networked PC environment contains tools for word processing, spreadsheets, drawing, mailing, and scheduling etc. They also have support services and other non-visible actions for the user as well. [BBJ]

REMARKS: During the benchmarking site visit the term product is used in its broader sense in order to have some answers to the topic of “The internal description of the product i.e., the service package”.

2.4 The number of users and accounts of the product
Approximately 650 day-to-day users [BBJ, HW].

2.5 The use of service i.e., the purpose of the service
Its purpose is to offer the customer a PC environment where work can be done quickly and productively. [BBJ]

2.6 The added value to the customer for using the product
It is very vital to have an environment that works. T/I becomes more and more important for LMD. One of the best added value is to allow the customer to do his/her own work without paying any attention to problem solving concerning the technology of the PC environment. [BBJ]

2.7 Fit for the IT strategy of LMD
Those services that T/I offers are well-suited for the IT strategy of LMD [BBJ].

2.8 The technical description [only some of the descriptions are shown here]
Due to the reasons such as IT security, a detailed list of technical description of the particular IT service is excluded among the answers – but with some minor exceptions.

2.8.1 - Operating system

2.8.2 - Applications

2.8.3 - LAN/WAN connections

- 2.8.4 - Fax, e-mail, and calendar (scheduling) applications
- 2.8.5 - Internally developed applications

The Application Support & Development group has developed a delivery and logistic application recently. They have been decided that every internally developed application is generated with [Name not shown here] from now on. [Name not shown here] is an “official” application development tool for T/I. The [Name not shown here] family of products provides a comprehensive development environment for building applications, especially for client/server development.

REMARKS: *T/I has no [Name not shown here] software in use, which is quite expensive. Therefore, T/I saves money by using sharewares more often. There are also other benefits for using sharewares which are easy-to-test in one’s own IT environment, and they are often well supported and updated. T/I has an agreement with a local software provider in order to have the latest versions of suitable sharewares delivered to them by CD-ROMs and disks.*

The group has been in touch with the following applications: [Name not shown here] is used by LMD for economic, sales, purchase, and logistic purposes. Actually, it is not internally developed but still a “heavily” configured (tailored) application for LMD purposes. [Name not shown here] is running on UNIX but it can be used by PCs with QVTterm, which is a shareware software. T/I and the users, however, are not fully satisfied with this application. Still, there are no plans to change it for another system. [Name not shown here] is an application for the course administration. [Name not shown here] is developed for T/I by the external (the third party) supplier. The Application Support & Development group has been in contact with the software company during the development of the system. [HW]

- 2.9 Plans for changing the technical concept in the future e.g., for another operating system

T/I will change the operating system in the future despite of T/I is satisfied with the file sharing capabilities of the present operating system Novell 4.10. The decision has not been made yet but it might be MS Windows NT 4.0 or Windows 95/97, or even a mixture of them.

Reasons for changing the operating system: [HW]

- In general, it is the best to have just one operating system for PCs, so they can be more easily controlled, maintained, and administrated; and
- A need for 32-bit environment for (using) new software.

- 2.10 Different versions of the product for the customer

T/I has 3-4 different kind of versions of the offered PC services. Each version is based on a standard environment, but they differ a little bit e.g., from the mail applications and accesses to the specified information systems. [BBJ, HW] If the customer is familiar with a certain mail application, he/she can have it, if it is accepted on the so called “Positive

list”. That is a list of allowed software, it contains all software that can be used in the LMD IT environment. [BBJ]

2.11 References of the product and service of T/I

The most important references are: [BBJ]

- T/I having competence in IT area;
- T/I knows the culture of LMD and the company as well;
- T/I is already internally well-known and it can offer professional services that customers want.

REMARKS: *An example of the culture of LMD and the company as well. In other companies only those departments (units) that are in close contact with the core business of the company will have the latest available software and hardware. LMD and the company provide all the employees access to the latest available IT.* [BBJ]

2.12 Service delivery time

T/I supports customers on working days from 8.00 to 17.00. Off duty support services are charged from the customer in their entirety depending on time used for solving the problem. T/I personnel on duty are available in a quarter of an hour (15 minutes) by phone. Primarily, on duty personnel try to solve the case from home by phone or PC which is connected by ISDN to LMD. If this does not work, it will take one (1) hour maximum to respond locally. At this moment the situation is just described, but when the next two or three new buildings are ready-to-use and some of the employees of LMD are shifted to other (physical) locations, the situation will change. Other service delivery times are not yet carefully considered. For example, whenever the customer wants to have a new account, it will be delivered to him/her in two days from the order at the latest. If the customer wants to have a certain type of application, his/her wish will be first checked from the “Positive list” (cf. 2.10). If that particular software cannot be found on the list, the customer needs to have a signature from his/her superior in order to have the application delivered and installed. [BBJ]

2.13 Satisfaction at the service delivery time

There are no official agreements yet concerning service delivery time. Agreements will be made between T/I and other departments. Response times are now at internal testing phase at T/I. The IT department checks what is possible and the agreement will be based on these specific experiments. Response times will be afterwards monitored and changed if needed. [BBJ, HW]

2.14 Clear definition of the responsibilities of the product

There are not so clear definition of the responsibilities of the product. Their responsibilities are defined more for the groups, not for the individuals. But still, Group Leaders have many responsibilities in the end. [BBJ]

- 2.15 Further actions for improving the product
Service level agreements seem to be the most useful improvement for improving the product at T/I [BBJ, HW].
- 2.16 Actions taken
Service level agreements between T/I and other organizations of LMD will be made during 1997 [BBJ, HW].
- 2.17 Organizing the product prototyping and piloting
Group Leaders and Project Manager form together a steering committee for prototyping and piloting. For example, forming a service level agreement is organized as a project which started on autumn 1996. At that time, response times are prototyped. After prototyping phase it will be followed by the piloting phase, which is started on the first quartile of 1997. [HW]

REMARKS: *Project Manager is a useful employee for T/I* [BBJ, HW].

- 2.18 Pricing model for the customer: time and capacity charge, fixed price etc.
T/I has a basis of fixed price. In addition, there is a time charge to solve the existing problems. [BBJ]
- 2.19 Separating the pricing of hardware, software, and offered services
The pricing of hardware and software has not been separated. Offered services such as services for support are separated from the pricing. [BBJ]
- 2.20 Monthly charge for the customer for using the product
The amount for a workstation PC is DKK [not shown here] per month (quarterly DKK [not shown here]) and for portable PC is DKK [not shown here] per month (quarterly DKK [not shown here]). Special support for the customers is priced at DKK [not shown here] an hour.
Original reference: "Prisliste for IT/IS Ydelser i 1997 (Prices of 1997 at LMD/T/I)"
Note that the pricing related information and the charges are excluded from the answers.
- 2.21 Charge for T/I concerning the software licenses of the product
Accurate prices were not available during benchmarking. There is a zero budget draft for T/I by charging the customers roughly as much as the fees are for them. T/I has an agreement ("Select") with the local MS supplier. In general, there are corporate agreements for most of the software used in the company. Therefore, most of the prices do not vary such as prices of Netscape. [HW]

REMARKS: *UNIX workstations are more expensive than PC workstations. Therefore it might be reasonable to have more PCs for a certain kind of action like for project management purposes. In that kind of*

activity PCs and their specific applications are more suitable for project administration purposes. [BBJ]

- 2.22 Marketing strategy for the IT service
There is no specific marketing strategy defined for the marketing of offered IT services. Other departments are so largely depended on T/I that there is no need for marketing. [BBJ]
- 2.23 Internal marketing of the new service packages
There is no internal marketing arranged but there is an internal information booklet for the users of LMD. It is called "LMDnyt". T/I uses more and more Intranet for information purposes. [BBJ]
- 2.24 A brochure for marketing purposes
There is no brochure available for marketing purposes. They rely heavily on Intranet. [BBJ]
- 2.25 Making the (service) product more tangible for the customer
Generally, a continuous improvement of the offered services is essential for a department like T/I [BBJ].

3. Process

- 3.1 Processes defined at the moment concerning services and products of T/I
Some of the processes are described, mainly those related to the Helpdesk. Processes are not updated as often as they should be: therefore, they do not always represent the real situation. [BBJ]
- 3.2 Process owner
In the case of Helpdesk and PC support, Mr. Henrik Wulff can be seen as a process owner. The processes of T/I are not clearly defined or described, so there can not be said just nothing about the owners of the processes either. [BBJ]
- 3.3 Capability indexes for the processes of T/I
There are no capability indexes for the processes defined at the moment [BBJ].

REMARKS: If the benchmarking activity continues in the future, indexes should be developed. The capability indexes should be easy to compare e.g., between the IT departments of the company. [BBJ]

- 4. The professional service product development process**
(the packaging of IT services)
- 4.1 The professional service product development as a whole
It has been considered at a certain level, though it will not produce a “clear” product when it comes to this case. It (thinking of the employees at T/I) is not so product development oriented. [BBJ]
- 4.2 The professional service product development process
It might be useful to have this particular process described in the future. At the moment, there are any process described when it comes to this particular issue. [BBJ]
- 4.3 Definition of the product and product development strategy
In this context, T/I have neither of them defined. On the other hand, they still have a strategy for services to offer. [BBJ]
- 4.4 The number of the users i.e., customers for the offered IT services and products internally at LMD
Approximately 650 [BBJ, HW].
- 4.5 Description of the users of the product
Users of the offered services are consist of the employees of T/I as well as other organizations of LMD - the scale of the users is very wide [BBJ].
- 4.6 Discovered customer segments
T/I have not discovered their different customer segments. Rough level segmentation can be made - if wanted, between PC environment and UNIX environment (customers). [BBJ]
- 4.7 Definition of the customer needs and requirements
Often needs and requirements come along with the IT projects e.g., new tools – that is, applications need new hardware for the customers. The IT Council of LMD with top management defines guidelines for the needs and requirements as well. [BBJ]
- 4.8 Researching of the customer needs and requirements
T/I has regular meetings with the customers but it does not arrange inquiries or write any specific documents regarding the subject. The IT unit has never used the third parties in order to investigate their customer needs and requirements. [BBJ]
- 4.9 Analysis of gathered data
Naturally, there are always discussions about the information and feedback when it comes to the regular meetings with the customers. [BBJ]

- 4.10 Research of the customer satisfaction
T/I researches the customer satisfaction based on the questions developed by the IT unit itself. [BBJ, HW]
- 4.11 Regularly arranged researches
Researches are conducted once a year. The employees of T/I think that if those kind of researches are arranged too often, the customers might get bored. So, twice per year at most. [HW]
- 4.12 Measuring customer satisfaction
The questions are sent to the customers as part of “LMDnyt”. Some of the questions are typically the same but the rest of them are adapted to the current situation. Recently, the questions have primarily concerned the Helpdesk, therefore they were made by Mr. Henrik Wulff assisted by the group members. At the analysis stage, they check together the pitfalls and try to figure out how to improve them. In order to have more participants in the measurement a draw takes place. Last time, T/I gave away the prizes - a couple of bottles of red wine. The results of the measurement are published in “LMDnyt” as well. [BBJ, HW]
- 5. Product portfolio of T/I (both IT units: LMF/Z, LMD/T/I)**
(IT service product portfolios of the IT units)
- 5.1 Service categorization and the reason for that
There is no service categorization but it can be made on the grounds of technology: PC services and UNIX services. [BBJ]
- 5.2 Packaging of the offered services in these categories
There are no officially packaged services. Therefore deeper categorization cannot be made at the moment. [BBJ]
- 5.3 Definition of the product portfolio
There is no product portfolio of T/I defined. At least, it might contain PC and UNIX segments too. [BBJ]
- 5.4 Products of the product portfolio
Products of the product portfolio are hard to describe because they do not exist [BBJ].
- 5.5 Advantages and challenges
It is essential to stress the importance of the product because the customer knows what he/she gets with it, although T/I has not adopted a (professional) service product development thinking so distinctly. One of the biggest challenges is constantly and rapidly changing IT technology. [BBJ]

5.6 The present and future policy for different kind of products
There is no policy for that. On the other hand, the main idea is to offer services that work. [BBJ]

5.7 Essential products and services in the future for T/I
In general, the offered service concept should be high quality and well-working in a rapidly changing IT environment and it should also satisfy the customer needs. T/I is more and more vital for LMD. Furthermore, the role of the network is very essential and crucial as well. Hence, T/I should have more resources and competence for that particular area. Some day, hopefully, the Helpdesk group will monitor information systems (including networks) of LMD as a whole through one single system. In the future, the IT department will need more Web-technology competence as well. Project management is an essential operation for T/I. Therefore, it should remain at the organization of T/I. [BBJ]

REMARKS: *T/I has not bought ARWeb (a specific application for ARS) but they will have some negotiations with the supplier during the spring 1997.* [HW]