Software Engineering or Organization Development: A Longitudinal Case Study of a Difficult CRM Implementation in a Knowledge-Based Organization

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ABSTRACT

Many companies have large expectations to the use of CRM systems, expecting to harvest benefits from dialogue marketing and internal knowledge synergies. How should these systems be implemented? And how easy do the benefits come? This paper tells a story of an early attempt, from the view of a practitioner. The perspective is from the inside of the project, focusing on behaviour, being informed but not objective. The research approach is a longitudinal, 6 years, case study of a company implementing CRM both as a marketing principle and as an information system. The implementation was from the outset regarded as an organizational experiment, and the case is told with some detail to give a somewhat "thick description" of the social setting and actors' behaviour. The analysis focuses on the two research streams in IS implementation, the software engineering and the organization development. Both approaches were used in the project, and it is showed that the organization development approach was the more successful. The reason for this is assumed to be the fact that user acceptance is crucial in a knowledge organization, where the users may chose if, and to what extent, they wish to use the system. Analysing further, it is proposed that an acceptance oriented approach is not enough. While the potential of knowledge systems like CRM seems to be large in knowledge based organizations, the real problem may be the observation that technical experts have ways of transferring knowledge that are not easily computerized. This observation does not imply that the CRM approach is futile, but that both the producers of CRM systems and the people that implement them, should focus more on the nature of knowledge work.

INTRODUCTION

Increasingly, the companies' ability to implement new IT solutions is of crucial importance for the company's ability to change (Applegate et al 2000). Economically, it is therefore vital that the company has the skills to implement information systems fast.

Unfortunately, implementing information systems into an organization is hard, and often unsuccessful (Markus & Benjamin 1997). In my opinion, as a practitioner, the implementation challenge is largely unsolved.

Since the introduction of Leavitt's diamond in 1965, there is a general agreement in the research communities that there is an intimate, but complex relation between information systems and organization. We say that IS changes the organization, because it enables new ways of production and cooperation. On the other hand it is the real people in the company who makes all the large and small decisions to make the changes happen. And lastly, both the technology and the people are influenced by the context and history we are situated

A way to try to understand the implementation challenge is to analyse single cases over a longer period of time. This paper tells the story of a Norwegian knowledge based organization, the Oslo-based Institute of Technology, (TI) that started implementing a CRM system in 1993. The focus is on the implementation process, that lasted a fully six years. The author was the IT manager at the institute in this period. Using Yin's (1994) case study approach, the study focuses on *behaviour* (following Silverman's (1998) recommendations) as a practitioner experienced the project, using only very simple theoretical concepts,

THE PROMISE OF CRM SYSTEMS

Theories on relationship marketing were developed at the end of the 1980s, under the motto "from transaction to

relation". Researchers showed that companies have both economic and social relations: In addition to economic transactions there is, usually, a development of trust. These relations may give benefits to both sides; among them are a higher degree of customer loyalty, lower marketing costs, mutual learning and other forms of strategic cooperation. Developing long-term customer relations is a part of the company's strategy development, and should involve every level of the company. (Hakansson & Snehota 1995)
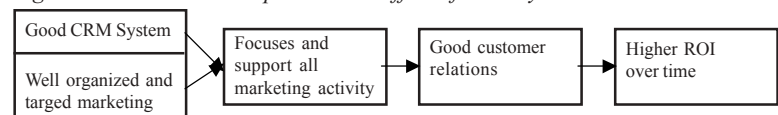
Since relationship marketing is heavily dependent on rich customer information, and also of frequent communications with the customers, the pioneers were early aware of the IT potential. Relationship marketing requires a coordinating of the marketing activities in the organization, and all marketing activities - telephone calls, emails, letters, and meetings - should ideally be documented.

This was the start of CRM systems, and today this is a large segment of the software industry. In Norway the packages mostly used are SuperOffice (low-end) and SalesMaker and Siebel (high-end).

Assumptions about the effect of CRM system, are, simplified in Figure 1.

The reason for the high expectations is that the CRM systems seem to connect the two central resources of the modern, "flat" and decentralized company: The core competence of the knowledge workers, and the company relations to its most important customers. (Kay 1993).

Figure 1: The basic assumption on the effect of CRM systems

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Good CRM System
                      →  Focuses and     →  Good customer  →  Higher ROI
Well organized and       support all          relations         over time
targed marketing         marketing activity
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The CRMs have three promises:

- It gives each worker a tool to manage her personal contacts, activities, documents etc. As Drucker (1999) has stated, "managing oneself" has become the management challenge for the knowledge worker.
- It provides a tool for dialogue marketing, making the company able to individualize the marketing activities: The customer gets only the information he wants and need.
- It represents a synergic potential for the company: If all this information could be utilized in analysis and concept development, it might be a basis for new products and markets, transcending the barriers of business functions and locations.

This is not trivial. If successfully implemented this implies that the CRM systems could be an important technology for the non-hierarchical, knowledge based organization of the 21st century.

THE CHALLENGE: COULD A FORMER GOVERNMENTAL INSTITUTE, BECOME A FLEXIBLE AND MARKET DRIVEN COMPANY WITH THE HELP OF CRM?

TI was made a private foundation in 1989. The main market was the small and medium sized companies in Norway (being 95% of all the Norwegian companies) that are too small to do their own technology development and transfer. The services provided were technical consulting, practical courses in disciplines like welding, testing and calibration, and also ISO certification. There were branch offices in other cities in Norway, and an international part, the Norwegian Technology Attachés.

As a private organization TI had to earn its own income, and the governmental support was gradually reduced during the 1990s from 50 % to 25%, while the total income increased from 125 mill NOK to 185 mill NOK.

The 260 employees were not used to marketing and selling services. After privatisation all the managers were recruited from the private sector, while the technical consultants survived from the old organization. They were largely technically interested, and regarded marketing as a, maybe necessary, but unwanted activity. The culture in the technical departments was practical and rather "manly": The manager of the furniture department, with a lifelong experience with electrical sawing tools was proud to say about job applicants: Well, it's OK that he has a PhD, but then at least he shouldn't have more than nine fingers left!

Figure 2: Features of Norwegian CRM system SalesMaker

TI's only real competitive advantage was the 8000 small and medium sized customer companies, and thousands of personal contacts. Could this asset be capitalized and thus develop TI into a modern and market driven company? And could CRM play an important role in this transformation? The director thought so, and in 1992 she commissioned a major project, The Customer Project. The objectives were:

1994: Better financial control of the consulting projects (about 4000 each year)

1995: More effective and efficient marketing by systematic dialogue marketing

1996: Develop long-term relations with the most important customers.

It was easier said than done. In 1992 the institute did not even have a LAN, and the workforce was absolute strangers to the concept of CRM. How was this to be accomplished?

SOFTWARE ENGINEERING - OR ORGANIZATION DEVELOPMENT?

Around 1990 IS projects were usually analysed in terms of success factors (Kwon&Zmud 1987). The critical success factors for the Customer System were assumed to be strategic alignment, cross-functional synergies (BPR inspired), workforce participation (Scandinavian school), technically competent implementers and a sound technical solution. This was rather by the books, and also the teaching of the TI staff.

The CSFs gives, however, not much guidance on *how* IS should be implemented. In practice there was a choice of two models, the Software Engineering or the Organization Development model.

The SE approach takes as a point of departure that an information system is developed and implemented into an organization (Sommerville 2001). The mainstream of the IT industry - like Microsoft - has traditionally focused on the functional attributes of the system (advanced, user friendly etc). The Scandinavian school has focused more on the user participation and acceptance. At both schools, however, the starting point is the technology and the emphasis is on structure and rationality.

The Organization Development model comes from the behavioural sciences, and the point of departure is that organizations are stable organisms that change slowly and reluctant (French & Bell 1984). To succeed, the organization should *prepare* for the change, then change slowly, and lastly institutionalise the changes, ("freeze"). The OD discipline has traditionally not been very interested in IS, and has focused on the irrational aspects of change processes, and that a normal outcome is a gap between intentions and results. The reason for this is resistance to change.

Both traditions, the SE and the OD, should ideally be combined. Christensen (1999) makes an interesting attempt, where Leavitt's diamond is used to illustrate how the two perspectives could be integrated.

Figure 3 illustrates both the elegance and the problem in Christensen's synthesis. Leavitt's diamond illustrates the need for an integrated approach, because the 4 variables are very integrated. The phases, however, shows how incongruent these schools are. The main problem is not to get accept for the integrated approach, but to implement it in real projects. The practitioner communities, being the IT consultants on one hand, and the OD consultants on the other, represents different cultures, with different tools and
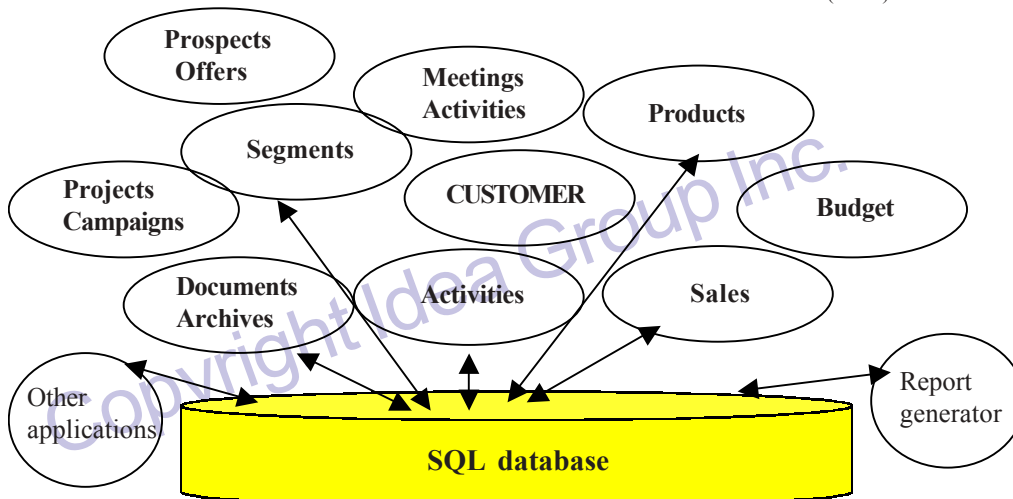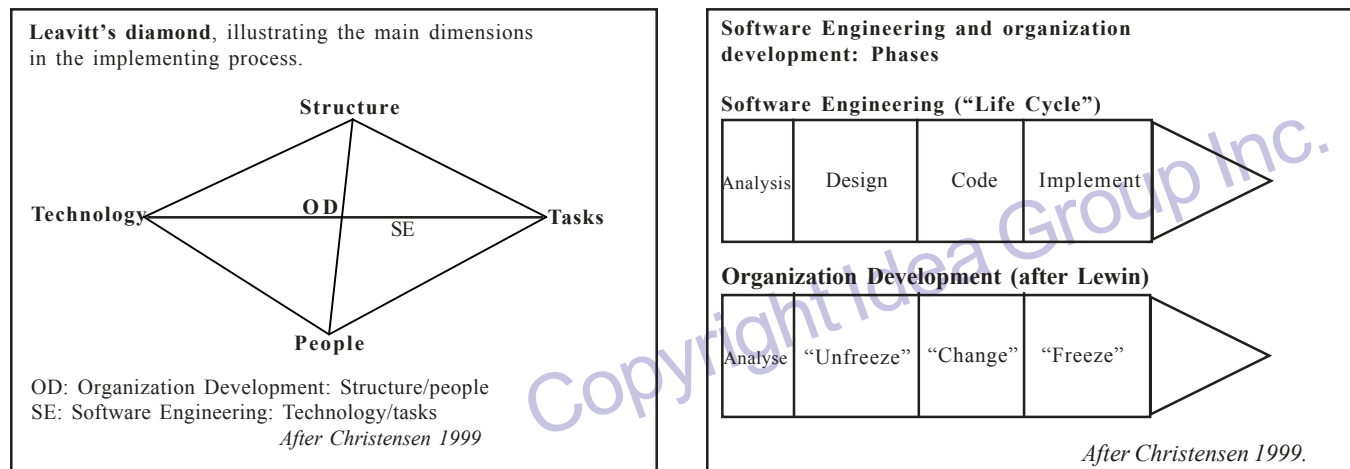
Figure 3: Two non-congruent frameworks: The organization development model and the software engineering model

terms, for different contexts. It is hardly accidental that the school who has tried to integrate the two perspectives since the 1950s, the socio-technical school (Mumford 1985) has never been accepted by the practitioners on either side.

As a footnote I should add that this situation is quite different in the research community, where exotic concepts like DOI, duality of structure and actor-network theory have other answers. These, however, were not available at TI in 1993, and would probably not be available in 2001 either.

At TI we chose the software engineering approach, following the recommendations of the vendor of the CRM system. This did not imply that the Customer Project was seen a purely technical project. On the contrary, great effort was done to ensure user participation and organizational alignment. One of several measures was to merge the IT and marketing departments into one unit, with the responsibility for the CRM implementation.

THE FIRST ATTEMPT IN 1993/94: CRISES

Chronology

Autumn 1991: IT strategy. concluding with the Customer Project, is approved.

Winter 1992: A projects group and a steering group are established. Requirements document is made after interviewing all departments.

Spring 1992: Agreement with Software Innovation purchasing SalesMaker (first customer)
Analysis and design: A consultant firm produces a business model in DFD and E/R-diagrams. Central users participate.

Rest of 1992: Database is implemented and prototyping in a 4GL is done in close cooperation with different user groups. Installation of LAN, WAN and servers.

Autumn 1992: User training with in-house instructors. Managers were sent to courses to learn to use the report facilities.

Jan 1st 1993: System set into production.

Spring 1993: System in production, but technical problems in client/server technology

Autumn 1993: Data quality problems.

Spring 1994: Data quality problems attacked, but not solved. Confidence in system declining.

The Customer System was based on SalesMaker from the small Norwegian company Software Innovation, extended with an in-house developed module. The system was, at the time, very modern: Windows based, integrated with both the financial system and with office software like MS Word. For an organization not used to CRM systems it appeared complex, with many screens and a new terminology including words like "contacts", "relations" and "campaigns." All users were trained, concentrating on screens and terms.

The first problem was technical: The client/server technology at this time was not stable, and created a continuous demand for support. Also the quality of the in-house developed module was not satisfying, and demanded more support.

A larger problem was the fact that the core of the system, the customer information, had quality problems. The reason was trivial: When registering a new customer, the user should check if the company was already registered. If you don't, the result may be a double or a triple registration of the customer (spelled a little bit differently), which in short time creates chaos in the system.

This was the origin of a vicious circle: The existence of double and triple customers very quickly threatened the confidence to the system: "One cannot trust the new system - it is useless", became a common comment. The positive users became reserved in their use, and the negative ones had lots of arguments in the company canteen.

The result of these problems was that the system was not used as intended. In spite of several activities to increase the quality of information, parts of the organization lost faith in the concept. The system did not give the expected benefits because of incorrect information and lack of trust. It also became evident that the user participation strategy had given little effect: One reason why the data quality problem persisted was that the system was not considered *important* enough to spend the necessary time to learn properly. It was not integrated in the day-to-day working routines.

The investment was still financially sound, because the dialogue marketing, as a tool for the marketing department, was beginning to work. But the implementation had failed on important points, and we were looking for another way of doing it.

1995-98: SECOND ATTEMPT–ELEPHANTS AND GIRAFFES

Chronology	
Autum 1994:	The "Elephant Method" was developed: A step-by-step method to use the Customer System in dialogue marketing: Define your market, find the potential customers in the system, produce the brochure, mail it to the potentials, follow-up by telephone, register the response, correct any wrong information, summarise the learning. Easy when assisted by marketing staff.
1995:	The Elephant Method was a success in most departments.
1996-98:	The Giraffe Project: Aimed at changing organization and culture: - Marketing teams established - Each team had a marketing plan, with clear objectives - All customers segmented into groups, according to profitability. Main responsibility for each customer is assigned. - Marketing activities are focused on "A" customers, aiming on creating partnerships. - A number of motivating and learning activities are initiated by the IT/Marketing dept.
1998:	Project is evaluated partly successful, but local (department) culture is stronger than central push.

In the autumn 1994 the steering group initiated a task force to help a troubled department to do their marketing activities more systematically. This attempt was gradually developed into the "Elephant Method" (after the how-to-eat-an-elephant-joke), which was a stepwise method for market segmentation and Direct Marketing.

This method was gradually implemented in most departments during 1995, and led to a more sales of TI's course portfolio, while the volume of DM was cut by half. Together this was the first visible success of the system, and this was also acknowledged.

The experience showed us two things: Firstly, the departments needed hands on guidance in using the CRM system in a way that gave a commercial effect. Secondly, it showed that only very specific results could change the attitudes in the departments. Traditional user training and general information had very little effect.

In 1996 the perspective was broadened. Under the motto "stretching a little further", the Giraffe project was started. The aim was to concentrate the marketing activities on the most important customers ("A" customers) to increase the profitability of the institute, that is, to make it less dependant on government money.

All managers, secretaries and key consultants were taken to kick-offs and follow-ups, listening to national "relationship gurus" and discussing the concept. All departments were organized into marketing teams, and systematic reporting to the top management group every month was instigated.

The following two years the Giraffe-1 and Giraffe-2 were run continuously, with a focus on changing the culture from focus on technical disciplines to focusing on the customer. The whole bag of OD tricks were used, like the image and brand building, team building, leadership development, skills development, parties and prizes.

The results were on the positive side, but progress was slow. Some departments worked very systematically, and achieved good results. Others were more half-hearted, and gave priority to other activities. A few were ignoring the whole project, and worked with other concepts. The attitude of the manager and the most senior consultants seemed to determine the culture. Also important was the fact that the CRM system did not support all kinds of products, and that two departments lacked loyal customers altogether, and were working in a spot market.

Summing up, in 1998 the CRM strategy had worked for five years. While having a partial success, the process was not self-sus-

tained. It was still dominated by central staff pushing reluctant technicians into the market. The local cultures were stronger than the central push, and only when the commercial perspective was very short, there was a real commitment to the project. Thus, while the DM activities continued to be rather successful, the more long-term approach of using the customer relations more strategically was much harder to achieve. The Giraffe ambition of changing the culture was therefore mainly a failure.

We scratched our heads again, now wondering if the whole concept was wrong, not only the implementation. Our concept was built on releasing the potential synergies in cross-functional coordination. Did such a potential really exist - or is it, at the end of the day, only within the individual *projects* there are synergies? Is the modern knowledge organization too culturally complex, and immune to this kind of standardization? Should the focus be changed to satisfy the more immediate needs of the knowledge worker?

THIRD ATTEMPT 1998-99, AND SUMMING-UP THE CASE

A new version of the Customer System was introduced at the start of 1999. The emphasis was now changed to the consultant users, and focused on calendar, document support and personal contacts. This was well received, but also signified a lower ambition on the organizational level.

Of the three original goals of the system, the two first ones, financial control of projects, and more efficient direct marketing, were achieved. The DM activities were concentrated in a new unit, and the "A customers" concept was implemented in the whole organization.

The third and most important goal, to establish partnerships with the A customers, in a cross-functional cooperation, and use this systematically in changing the organization, had mainly failed. This goal was more or less abandoned, and the departments were left to develop their customer relationships individually.

The planned three year implementation became a six year continuing effort. Is there something to learn from the story?

LESSON LEARNED: IMPLICATIONS FOR OTHER COMPANIES

The first lesson is that implementing CRM is hard, and that successful implementation requires a different strategy than systems development. This is a problem, because mot CRM vendors still use a systems development implementation framework.

Implementing CRM affects almost every employee. Even simple synergies, like the use of customer information used in dialogue marketing, are dependant on the correct use of the system, by every user. Our experience was that this is not possible to achieve with a technology-driven implementation approach. On the other hand, it could be done with a more integrated organization development approach. A CRM system is no "magic bullet", but is an important component in organization change. The rest is, sadly, hard work.

The second is that use of CRM-like systems requires a high level of organizational knowledge and competence. This body of knowledge is complex: Key personnel need skills in both the technology and the business issues, and the ability to show users that this is really working. As most users are highly educated experts in their own fields, they are not likely to be "persuaded" to use a system that they do not like or need.

These organizational skills are a scarce resource in any company. They are not easy to buy, and should preferably be developed in-house over a period of time.

LESSONS LEARNED: A QUESTION FOR THE IMPLEMENTATION RESEARCH

The findings supports the now generally accepted wisdom that the human and social aspects of IS implementation is as important - or

more so - than the technological. In Walton's (1989) words, it is the alignment with business goals, the commitment of employees and the competence of the users that ensures the success of an information system. Or is it?

The case highlights the question of knowledge synergies in CRM systems: Do they really exist and how could they be made available? Posed differently - it is possible to standardize the knowledge organization with the CRM-like systems, to coordinate knowledge and actions?

The point of departure is that the CRM systems release marketing and knowledge synergies. This is what Groth (1999) calls "implicit coordination" by the means of a central database. The coordination is both trivial (DM cooperation) and more advanced, using shared customer information to build new concepts and products.

On the other hand this approach requires the organization to define its knowledge and actions in rather standardized classes that could be registered into the system, and that the employees loyally kept this information up-to-date. Our experience was that while this may be possible, it is expensive and time-consuming, and we never succeeded in making this a self-sustainable process.

A reason for this may be that the average knowledge worker *does not want* to work that way. The technical teams at TI were small and tightly knit, and the members preferred, vastly, projects to formal cross-functional coordination meetings. The most important learning was in the projects, and it was shared with the other members by the irregular coffee break. Such teams have, seen from within, no need for a CRM system.

Are the knowledge synergies, then, only an empty conjecture on the part of the top management? I think the answer is no, but this story shows that the unsolved challenges of CRM are not solely about implementation. I think the producers of the CRM systems need to learn more about the nature of knowledge work and the habits and values of the knowledge worker. This is a field well suited for more cooperation between IS researchers and software developers.

REFERENCES

Sources from Institute of Technology
Annual Reports 1989-98
Project documents from the Customer Project
User satisfaction evaluations

Applegate, McFarlan FW, McKenney J (1999): Corporate Information Systems Management. Boston.
Irwin McGraw-Hill.
Christensen, Grønland, Methlie (1999) Informasjonsteknologi 3.utg. Oslo. Cappelen Akademisk.
Drucker, Peter (1999): Managing Oneself. Harvard Business Review, March/April.
French,W & Bell,C (1984): Organization Development. Prentice Hall.
Groth. Lars (1999): Future Organizational Design. Chichester.Wiley.
Kwon, TH & Zmud W(1987): Unifying the Fragmented Models of Information Systems
Implementation. *Critical Issues in Information Systems Research. Wiley. Chichester.*
Leavitt, H.J.(1965) Applied Organizational Change in Industry. Chicago. Rand McNally.
Kay, John (1993) The Foundation of Corporate Success. Oxford University Press.
Markus, M..L & Benjamin, R (1997): Markus, M. L. B., R (1997) (1997) The Magic Bullet of IT-
Enabled Transformation. Sloan Mangement Review.
Mumford, E (1985) Sociotechnical Systems Design. Manchester Business School.
Hakansson, H, I.Snehota (1995): Developing Relationships in Business Networks.London. Routledge.
Silverman, D (1998) Qualitative Research: Meanings and practices. Information Systems Journal nr 8.

Sommerville, I (2001): Software Engineering. Hartlow. Addison-Wesley.
Walton, Richard (1989) Up and Running. Boston. Harvard Business School Press.
Yin, Robert K. (1994): Case Study Research. California. Sage Publications.

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