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CO-ORDINATION OF BUSINESS AND IT DEVELOPMENT PROCESSES

- MANAGING STOVEPIPED ORGANISATIONS

HÅKAN P. SUNDBERG
Mid Sweden University
SE-871 88 Harnosand, Sweden
Hakan.Sundberg@miun.se

PATRIK WALLIN
Mid Sweden University
SE-871 88 Harnosand, Sweden
Patrik.Wallin@miun.se

Abstract

The background to the present study is supplied by two studies of a large Swedish public organisation. A strong hierarchy, which maintains a traditional view of functional departments as being the owners of IT products, creates stovepipes and silos, not only within the systems but also within the organisation. This tends to obstruct cross-functional projects and the ability to ascertain general needs and requirements. The present study considers the integration of business and IT processes, focusing on the development process and the purchaser-contractor relations. The purpose is to find success factors, good examples and areas of improvement from private companies relating to the problems from the studied public organisation. Sixteen interviews with five Swedish banks and one insurance company appeared to suggest that the problems highlighted in previous studies, e.g. stovepipe systems and departments, were not recognised as significant problems within any of the interviewed organisations. In general, the development processes were considered well-oiled with little friction between departments, system owners, purchasers and contractors. In almost all interviews, it was considered that the integration of customer, information and IT was more cohesive than previously. The findings from the interviews have been categorised into nine factors or areas. Three general business environment factors – the history of organisational change and mergers, the overall economic situation and the strong customer focus – seem to have broken the functional mind-sets and sharpened and focused the organisations into a collaborative culture. Furthermore, a great deal of hard work appears to have been centered upon three factors relating to processes and the management of projects: the development processes are generally very well defined and well known internally, projects are smaller with modules and releases, and there is an open discussion about stovepiped departments and general requirements. Lastly, there are three areas of improvement: The role and competencies of the purchaser, the infrastructure and the need for an enterprise architecture, and the document interface including the use of RUP and UML.

Keywords: Public information systems, systems development process, customer strategy, financial sector, e-government, Swedish case study

1. Introduction

Stovepiped systems and silos are legacies from the 1960's mainframe era, which are now showing weaknesses: systems were developed from zero and often supported only one or a few applications, independently of other activities or businesses. The development of these 'monoliths' was characterised by a strong focus on technology and inflexibility towards user requirements [SOU 2003:55]. Over the years, organisations have created more or larger databases, within functions or departments, leading to a wealth of disparate silos of customer information. The result is a fragmented and often unwieldy body of information upon which to base crucial management decisions [Knox et al., 2003]. Today, the IT departments are struggling with the integration of various legacy systems spread across the organisation.

The background to the present study is supplied by two studies of a large Swedish public organisation [Sundberg and Sandberg, 2004a; 2004b]. These studies show an organisation in transition, with many interesting initiatives, such as the introduction of e-services, a general process for management of the case workflow and a case management system that supports the general process. However, there are also problems. A strong hierarchy, maintaining a traditional view of functional departments as owners of IT products, creates stovepipes and silos, not only within the systems but also within the organisation itself. This obstructs cross-functional projects, such as the case management system and other general initiatives, e.g. there are problems in ascertaining general needs and requirements. Furthermore, many processes are not defined and projects are not synchronised to the purchaser-contractor relation. An example of this is the development process, RUP (Rational Unified Process) [Kruchten, 2000], which is not used consistently.

Altogether, the many initiatives in the customer front-line reveal deficiencies in the processes and organisation. Problems such as stovepipes are not new and not unique to this organisation, but they have now been highlighted. At one time, it actually appeared that IT and the customer frontline were actually drifting apart, which could be seen in the purchasing process and the early stages of the development process.

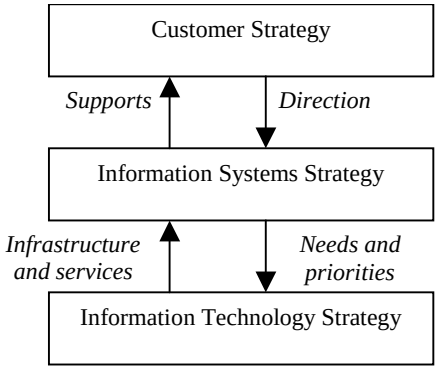

Figure 1. The relationship between customer, IS and IT strategies [Knox et al., 2003]

The theoretical background is supplied by another study [Sundberg and Wallin, 2005]. Theories from CRM (Customer Relationship Management) [Knox et al., 2003] coincide with e.g. government reports on e-services [SOU 2003:55] with reference to the means by which information and IT strategies integrate with customers and e-services, see Figure 1. These relations, and the order of dependencies, can also be

found in e.g. the Balanced Scorecard [Kaplan and Norton, 1996; 2001], adding the perspectives of processes, finance and measurement. A model consisting of the following aspects: IT strategy, information resources strategy and customer/e-services strategy is discussed and is exemplified by the CRM view in Figure 1 [Knox et al., 2003].

Today, organisations attempt to integrate their services via a variety of channels, such as the Internet, telephone, ATMs and offices, and in many cases crossing national borders. Customer strategies, aligned with and supporting the overall business strategy, offer a direction for the information systems, as shown in figure 1. Information management is concerned with collecting and collating information from all customer contact points and using this information to construct complete and current customer profiles. New information technology permits organisations to identify and manage large numbers of individual customers. The cost of data storage and processing continues to fall, while advances in data warehousing and mining software improve a firm's ability to learn from customer data. They have enabled greater individual customer insight and efficient responses to individual requirements [Knox et al., 2003].

1.1. The present study

Stovepiped systems and difficulties managing cross-functional boundaries are problems, which are hindering successful implementations of customer-centred systems and processes in public sector organisations [Sundberg and Sandberg, 2004a; 2004b]. The speed and strategy of the customer frontline changes have placed the focus on the processes and a possible need for a closer integration between IT and customer-close activities. The problems with stovepiped departments can be found in many large organisations, but the initiatives in the customer frontlines and the degree to which e-services are used vary.

The present study considers the integration of business and IT processes in private companies, focusing on the development processes and the purchaser-contractor relations. The target group is companies within the financial sector in Sweden, mainly banks. Most banks use new technology and multiple channels extensively to manage a large number of customers, and are, in general, large organisations with many inherited legacy systems. Thus they can provide an interesting comparison with public sector organisations.

The purpose of the present study is to find success factors, good examples and areas of improvement for the co-ordination of the business and IT development processes, by investigating:

- the development process, with a focus on early stages and the gathering of requirements up to the point at which projects are handed over to the IT departments,
- problems with, and solutions for, cross-functional initiatives across stovepipes and departments,
- problems, solutions and co-ordination of purchaser-contractor relations, and
- the possible effects of customer front-line changes with reference to the co-ordination of processes between the business and IT organisations.

This paper is only a first presentation of the results, with an initial analysis and categorisation of factors. Further analysis and comparison with public sector organisations will be covered in a future study, as discussed in the conclusions.

2. Research method

The present study is based on a series of interviews with a number of companies from the financial sector in Sweden. Since this papers aims to identify and understand experiences of the work processes, a qualitative research method has been employed (cf. [Hartman, 1998]). A total number of 14 semi-structured interviews were carried out between January 2005 and April 2005 in five major banks and one large insurance company.

In each organisation, personal interviews were carried out with individual persons from the IT organisation as well as those from the business organisation. This was in order to enable exploration and comparison of the internal processes and capabilities from two different viewpoints, i.e. the purchaser view (business) and contractor view (IT). 8 persons were interviewed from IT, e.g. department managers and IT architects, together with 8 from the business organisation, e.g. managers of the banks' Internet services, and one call centre manager.

Pre-interview preparation involved sending out a document describing the background and purpose of the interview. During each interview the background to the study was presented (see above), and the trinity model (see Figure 1) was used as a starting point and basis for questions in all interviews. The total length of each interview was between 1 and 1.5 hours with two interviewers and one interviewee.

The results from all interviews were recorded on tape and transcribed directly after the conclusion of the interview. The analysis of the empirical data was carried out in two steps. Firstly, the two interviewers performed the transcription as well as a initial analysis of the empirical data, categorising the results, in parallel sessions. Secondly, a final analysis of the data was conducted and reorganised into its present form.

3. Analysis of empirical data

This study's main result is that the problems identified in the previous studies, i.e. stovepipe systems and departments, described in the introduction, were not recognised as significant problems in any of the interviewed organisations. The problems were indeed well known and still exist in parts of some of the organisations. Examples of this were actually given, but in general, the development processes were considered well-oiled with little friction between departments, system owners, purchasers and contractors. Territorial product departments and silo thinking have been subordinated by overall business goals and collaboration introduced. The quote below from one of the interviews, freely translated from Swedish, is typical and illustrates the awareness.

> Everybody realises that we can't continue with silos. It's not just a question of threats; I also believe that it's important to discuss the issues, we actually have silos, let's see to that in the future we work across the borders. This discussion has been beneficial for us […] It has increased the awareness. Now one looks more carefully over the borders […] It's a combination of a number of factors that have made it much better.

The figure presented during the interviews, see figure 1, was generally accepted and recognised as a good description of the relations between the three parties: customer, information and IT. All interviewed organisations have customer strategies and activities to enable the integration of all the organisations' services via a variety of channels such as the Internet, telephone, ATMs and offices and in many cases crossing national borders. At the other end, IT departments have invested tremendous

efforts into the integration of legacy systems and silos into three-layer architectures, cleaning up the "backyards" which is shown in the quote below.

> Many fail in the orderliness in their backyards. If one maintains stovepipes throughout, and doesn't integrate the backside, it's meaningless to attempt IT-controlled technical customer front changes. […] From a strategic point of view we did a lot in the 1980's and 1990's […] We have a rather well structured, very integrated service based architecture […] All our channel systems, or customer front systems, use the same services behind, in exactly the same ways.

A shift has taken place in all of the organisations, from a situation ruled by the IT organisations to a situation where the business organisation gives direction, translating needs and setting priorities. This shift took place only a few years ago, five or six years ago according to some interviews, seven or eight years ago according to others. Some talk of a transition that has taken place over the last decade. During the transition, there has been a pendulum movement, where the business organisations at sometime become too technology-focused, while at the same time the IT organisations have become rather too passive. Today the pendulum has swung back towards more pro-active IT organisations, taking a clearer role – something desired by all parties – and with the business organisation focusing on business and processes.

In almost all interviews, it was considered that the integration of customer, information and IT, as in figure 1, was much tighter than previously. As self-service systems grow, both the digital and physical world must become integrated. Information technology is now on a daily agenda with reference to on-going management decisions. A few interviewees expressed the opinion that integration suffers from the ever-growing complexity of systems and environments, and the introduction of more intermediaries between the business and IT organisations pushes the parties further apart.

General business environment factors	• Organisational changes and mergers • Economy and financial situation • Customer focus
Factors related to project and process	• A well defined and well known development process • Project size, modules and releases • Open discussion about stovepiped departments and general requirements
Areas to improve	• The purchaser role • Infrastructure and the need for an enterprise architecture • The document interface and the use of RUP and UML

Table 1. Categorisation of factors and areas to improve

In the following, the results will be discussed and further analysed. The findings from the interviews have been categorised into nine factors or areas. See table 1. There are three factors in the general business environment not only providing background

information, but also explaining the results and the success of the organisations. This is also expanded by three other factors relating to the project and process. Lastly, three areas for improvement are discussed. The nine factors or areas are further discussed in the following.

3.1. General business environment factors

3.1.1. Organisational changes and mergers

The interviews told of a very active decade, or decades, with several mergers and acquisitions within the financial sector. Several of the Swedish banks are now international banks with offices and branches in several countries. There is a clear ambition to show a united face towards the market, regardless of the market character. Many front and back office units have had to be merged and the distribution channels cultivated, sharing processes and uniform products over the borders.

This unification has, in many cases, been pushed hard and communicated by top management, something that appears to have worked well. It has inspired the studied organisations to work with shared solutions and to adapt processes at all management levels and despite possible cultural differences. In some interviews, the unification and inner focus was, together with the focus on development of systems for the customer, considered the banks' central effort, and even as constituting its core values.

One interviewee pointed out a disadvantage of uniform products and services. A given product or service may not function in a specific market because of differences in customer behaviour. This may require changes to be made or additions being made to that product or in having a uniform product that functions in only two or three markets. This insight has allowed product and service differences within different markets.

In several interviews, it was related that the unification process has also had positive effects on system owners and in stovepipe thinking. Work appears to be very well integrated with mature system owners understanding that working together in the same direction generates advantages with reference to both cost and time in, as stated by one interviewee, "the new world".

One point of view presented was that the unification not only takes place over organisational borders, (e.g. in the case of international mergers) but also that it unites different countries mores strongly. This is generally considered to be good, but it could lead to competition if countries or other parts of the organisations fight hard for their own requirements. One interviewee looked upon this as another level of stovepipes. A general conclusion is that external changes or threats affect the organisation's readiness for change, which is recognised as a factor for or facilitator of change management, e.g. [Pennington ,2003].

3.1.2. Economy and financial situation

The focus on the economy and financial situation is pointed out by most of the interviewees as being a factor that not only controls their organisations, but also greatly affects information technology and related processes. In many of the studied organisations, top management has placed an absolute limit on the costs. In reality, with increasing salaries and the increasing costs of IT-related services, there is now less and less resources available for investment by the business organisation in IT or, alternatively, "doing more for less", with the attendant impact on quality. The total cost of IT is one of the most important key ratios set by top management and is clearly

and distinctly measured. At the same time, the business organisation, or purchaser, is also controlled by a strict purchasing mandate, controlling the strategic direction of ventures and selecting customer segments – and it does not indeed allow for any extravagancies. One issue is to find profitability, or rather, facilitating large investments that are actually only profitable from a longer perspective.

This situation seems to affect the relations between the business organisation and the IT organisation. The business organisation does not accept the costs of IT as it did previously. Instead, a maximum of deliverables is expected, always at the lowest prices. At the same the IT organisation requires better control and better quality. Mistrust between the parts is a general problem [Falk and Olve, 1996]. Benchmarking the internal IT department by comparison with external contractors was one idea suggested in one of the interviews to deal with possible mistrust. Some interviews suggested that instead of merely cancelling parts of an order to reduce costs, a change of behaviour and work processes might be beneficial. This has the possibility of affecting processes both within the business organisation and within the IT organisation. Sometimes, a business organisation is not prepared to implement such changes and this will be further discussed later.

The economic incentive is strong and also works as both a stick and carrot with positive effects on system owners and on stovepipe thinking. Stovepiped product departments seek synergies over the borders and start communicating over possible development collaboration.

3.1.3. Customer focus

Throughout the interviews, the organisation's focus on the customers, meaning an integration of services in all channels with the customer at the focus, was frequently discussed. This was particularly evident when discussing Internet services, in which the end-users and the customers are one and the same. In many of these cases, services are firstly developed for the customers and secondly for the internal administrators, e.g. in the first instance the customer interface to a particular service is developed and then additional buttons are added for internal management. The banks have had several years of experience in developing systems where the customers are also the end-users.

Beyond Internet services, the inside-out perspective has slowly and deliberately been twisted to an outside-in perspective, e.g. by organising by customer and customer segments and by shifting control to units with close customer relations, as shown in figure 1. The shift has increased the impact of customer influence; ideas for improvement and development of new products and services are gathered from all units with customer contact.

The customer focus was present in and permeated throughout the interviews, as is exemplified in this quote from one of the interviews:

> The customers don't care how we are organised. When we develop products […] we must have the same focus and forget how we are organised. We must look from the customer's perspective and build upon collaboration across the borders. This requires humble and pragmatic leaders to avoid territorial thinking, because, if we do a great job together, it's favourable for all parties. The customers become satisfied, we can make more money and we have produced a better solution. So this part I believe is crucial, look from the customer's perspective, co-operate over borders, with the main focus on co-operation.

The quote also indicates that customer satisfaction is not something achieved without hard work; it requires empowering the co-workers to co-operate over the borders.

This, in turn, requires strong focus from leadership upon overall goals and objectives and requires them to be capable of both leading and motivating.

The customer's expected use of all services through all channels was questioned in some interviews, e.g. is a regular customer from one country expected to step into a bank office in another country asking for a loan with the real estate in the first country as security? Nevertheless, the banks' ambitions towards providing the customers with seamless services, regardless of the channels used, are very high as is the focus on the customer's demands.

Discussion

The three general business environment factors are, indeed, general, but all appear to have made considerable contributions to the progress of cross-functional collaboration. When comparing these with general success factors from change management (e.g. [Pennington, 2003] and [McAdam and Donaghy, 1999], resemblances can be observed:

- Management commitment and communication appears to have been a factor in the organisational changes and mergers, but also for empowering organisations to work together towards customer satisfaction.
- The organisations have been in general open and ready for change, increased by the organisational changes and mergers regarded as threats, but also by the economic incentives.

3.2. Factors related to project and process

3.2.1. A well defined and well known development process

All the interviewed organisations have development processes that are well defined, well structured and, in most cases, well known within the organisations. These processes were pointed out by several of the interviewees as being important resources for their organisations and critical factors for success, as is shown in these quotes from two of the interviews.

> Success factors are […] the adoption of the model in our organisation and also that all decisions taken in accordance with the model when working with it. You can't skip the model when working, then there will be no decisions and no money.

> Success factors are […] having a well defined and accepted, and applied, development model, something everybody knows, and something everybody can use like a handrail.

There are common threads running through the different organisations with regards to the overall processes. These range from the purchaser to the contractor, stipulating milestones and decision points, roles and check lists and the use of documents and templates.

It is difficult from the interviews to obtain one clear and unanimous picture of the roles and organisation of development projects. The standard basic approach is that the business organisation initiates and creates the projects. Development projects consist of several parts, e.g. new organisation, new processes, and training, and the IT project is just one part of this delivery. From this perspective it is clear that the business organisation has one all-embracing project that, at some stage in the proceedings, hands over one part to an IT sub-project.

This approach is, however, inconsistent in the sense that the project culture and knowledge of project management is very much stronger within the IT organisations. Furthermore the IT organisations, in general, possess better knowledge with regards to

description and documentation requirements and, in general, production of other necessary artefacts. It was thought that the business organisations in general had a poor knowledge of this, even at the initial stages of the project when their responsibility was clear, and this in turn led to situations where the IT organisations sold resources in project management and documentation to the business organisation. Although most of the interviewed organisations could pinpoint the exact stage where the project responsibility would be transferred to the IT organisation, in reality, it is actually a seamless transfer with involvement from the IT organisations from day one. This was not thought of as being untoward, as it aligns rather well with the desire for IT pro-activity. Traditionally the IT organisations have ruled all parts of the development, but the pendulum has swung towards the business side who are now seeking advice and suggestions from the IT organisations, whilst, at the same time, not relinquishing the power to make the decisions.

The picture becomes more scattered as more details are revealed. There are variations in the organisations of the projects. In addition to the approach consisting of one overall project with an IT sub-project, it is also possible for there to be two separate projects – one on the purchaser side and one within the IT organisation. Sometimes there is only one IT project preceded by some short purchasing process within the business organisation. Nevertheless, the projects appear to work in the majority of cases, explained in the interviews by the well defined and well known processes and roles.

Considering the actual use of the development processes, a few interviews showed glimpses of variations in the applications of the processes. Interviewees from different parts of the same organisation could describe different views and applications. One part of the process, involving large variations, is business modelling, in which the business organisation may have little experience or have inappropriate tools for its implementation. This relates to the discussion (see following chapters) concerning enterprise architecture and the use of RUP [Kruchten, 2000] and UML [Fowler, 2004]. Other differences appeared to depend more on the types of projects rather than on the misunderstanding of the processes or a general insubordination. Small improvements to an existing system are naturally easier to deal with than large development programmes; Internet services differ from administrative systems etc. Business units appeared to have the ability to introduce variations of the processes, which are best suited to their individual applications, and a majority of the interviews described the processes, with or without variations, as being used consistently.

One model, used in one of the organisations, was the use of integration managers acting as intermediaries between the business organisation and the IT organisation. The integration managers are the go-betweens between the parties when deciding upon the requirements, and also at the later stage when projects are followed up. They possess knowledge, not only concerning the customers' processes and modelling, but also with reference to the systems and tools. These managers were considered a success factor, but at the same time, they can be seen as an intermediary link which reduces the integration between business and IT.

3.2.2. Project size, modules and releases

The view concerning large projects was clearer. Any large organisation has probably been involved in large projects which tend to live lives of their own, growing ever larger in complexity without ever, apparently, producing any useful results and which ultimately have a tendency to crash. In projects spanning a number of years the

conditions and requirements are continuously changing, possibly as much as 1-2% per month [Wiktorin, 2003], which results in projects rarely achieving their goals. In some interviews the view was given that it is probably better to stop a failure-prone project as soon as possible, even when considerable money and prestige has already been invested.

The trend, nowadays, is towards smaller and more manageable projects which can be brought into the market within a brief and well defined time cycle. Six months was considered "short" in one organisation but was considered "long" in another. This view of the timespan appeared to differ according to the type of service and project being discussed, rather than according to the type of organisation, e.g. when interviewing managers of Internet services, a shorter time horizon was evident. The projects are generally brought to the market in releases, something that was considered important when making the projects manageable and productive, and thus enabling continuous production of results. A given release is defined as containing a selection of functions brought to the market within a well-defined time period. Functions that do not fit into a certain release must inevitably be postponed until the next release.

This is also in accordance with previous studies [Sundberg and Wallin, 2005]. The reduction of platforms is backed-up by a modular structure. The development of a shared infrastructure (technology and shared services) is accompanied by the development of services and processes specific to particular target groups. Based on the concept of a platform and modules, projects can be made smaller and more manageable. The purchasers have greater freedom to define and change their information requirements.

3.2.3. Open discussion about stovepiped departments and general requirements

Gathering general requirements and co-ordinating stovepiped departments and systems was no longer recognised as a major problem. This issue has also been commented on under other headings, but a brief discussion will be given here. There is, of course, a tension in the intersections between vertical business units and the horizontal solutions. However, this is not a problem; merely a difference of perspective. There is no magic spell for making this work, what is required is a meeting place and a discussion during normal working hours. There has been an open discussion within some of the organisations, which has increased the awareness of the necessity for horizontal co-operation. In general, there is no rivalry regarding information. However, with regards to economic considerations, there can be discussions about the division of costs between business units.

As in change management generally, the involvement of all interested parties during the initial stages is considered to be a positive factor [Chapman, 2002], e.g. one interviewee described the regular involvement of the system owners during the early stages of a project. However, a balance must be achieved between the degree of participation and efficient decision-making.

Decisions concerning the necessary requirements must be made at an early stage in the project. The responsibility lies with the business organisation, but the processes in these stages can be ad hoc and there was a variation in where this actual work took place. Generally, the work is carried out by the IT organisations, or with participation from the IT organisations. One of the IT departments had, together with competencies from interested business units, attempted to create a model project with well defined

processes and requirements, which then was marketed to other business units in order to improve modelling and requirements.

3.3. Areas of improvement

3.3.1. The purchaser role

All of the interviewed organisations work with purchaser-contractor relations. There is one relation between the business organisation and the internal IT organisations regarding development and a second between the IT organisations and the external contractors regarding the operation. The formalities of the purchaser-contractor relations were pointed out, by some, as being possible obstacles to the process, but in general the co-operation achieved was not considered to be a problem. Again, this is accounted for by well defined and well known processes. It is not something achievable by default, one interviewee pointed out that it requires daily discussions about roles and responsibilities.

The purchasers can sometimes, however, be relatively new to the process or be inexperienced, and in such cases the IT organisations generally take an active role and are helpful. With reference to the roles, it was pointed out that it requires the possession of certain competencies to be a good purchaser. The purchasers often place too great an emphasis on deliverables, thus making the projects somewhat short sighted in their aims. Instead the main focus should initially be on risk and design. A limited knowledge of, or even interest in, the responsibilities, processes and business rules, associated with the projects, revealed weaknesses on the purchaser side. In general, the purchaser is expected to take full responsibility for knowledge of his or her own business and processes. The importance of the processes is further emphasised, generally, by the historic past with mergers.

The ownership of systems is generally distributed over different departments on the purchaser side. Processes, or functions, within the banks, often involve several systems, resulting in no-one taking overall charge of whole processes. Only the IT organisations have had a complete overview of the number of systems affected by one process, resulting in an increased workload in helping the purchasers. This was suggested during one of the interviews as one explanation as to why IT organisations had retired into the background a couple of years ago. A suggested solution is to introduce orders or changes of complete functions, rather than systems.

3.3.2. Infrastructure and the need for an enterprise architecture

An increasing number of the IT projects in the studied organisations relate to infrastructure. There is a general trend towards harmonisation and reduction of platforms. One of the organisations had a goal to reduce the variety of platforms by over 80%, a change performed consecutively in small steps. A general problem is that the initial project, which requires a particular infrastructure, must tackle the infrastructure investments. There is a need for a model to manage infrastructure requirements and estimates. One organisation could foresee the need for investments in infrastructure being of the order of a billion SEK.

The capture of general requirements, for systems able to traverse the range of stovepipes, e.g. workflow and case management systems, often raises infrastructure and architectural issues. Most of the organisations have architectural units within their IT department, however this is not often the case within the business organisation. One of the interviewed organisations was satisfied with their two units within the IT department.

Other interviews raised the issue of the enterprise architecture, revealing a general need for enterprise architects. The business organisation is often focused on the applications instead of the data or information, but the applications exist only to perform operations on the data. The role of the enterprise architects is to tie the business processes, the information and the requirements together. The enterprise architecture, and a business and IT alignment competency, was considered a very necessary responsibility of the business organisation.

> If we are to cut IT costs and reduce complexity […] we must do something about the gigantic amount of systems and try to merge them, and have general shared systems. This everybody thought was a great idea – why can't IT just do it? But the business organisation eventually found out that the systems exist and it's not just to suddenly remove a system and replace it with another, it's are there for a reason. OK, we have processes and products supported by the applications which means that they realise that we also have to unify processes and products within the business organisation […] Therefore the project's focus has been changed […] the main purpose is to unify processes, and start there, and later attack the complexity behind.

The quote shows that one of the banks' platform harmonisation projects actually had changed focus, from systems, to processes. Before removing or replacing systems, processes have to be unified, often over organisational borders. This change of focus also reveals the need for enterprise architecture.

All systems are supposed to have a corresponding owner within the business organisation, which is a problem when building infrastructure. Ownership of general systems is not easily distributed and questions were raised: Should an existing business unit be picked and designated as the owner of a particular system, or, should a common unit, e.g. the CIO organisation, possess the ownership? Or should perhaps new units or departments be started?

3.3.3. The document interface in the project and the use of RUP and UML

Almost all of the interviewed organisations had decided to use the Rational Unified Process, RUP [Kruchten, 2000] as systems development process. In reality, RUP is used mostly in newly started projects and the whole standard is not generally adopted, but only an adaptation for each organisation. Previously, a great variety of development projects had been managed by a large variety of processes; using a unified process increases control over both solutions and the economy. There are however parts of the organisations that never use RUP. In general, the IT organisations are accustomed and faithful to RUP, while the business organisation is inexperienced.

Consequently the use of Unified Modelling Language, UML [Fowler, 2004], is scattered. Although RUP is an adopted standard and the business organisation is, in many cases, supposed to model its cases in UML, in reality, the knowledge lies within the IT organisations. The interviews gave different pictures of the use of UML. Business modelling is seen as a responsibility for the business organisation, but one organisation had held back on the introduction of RUP and UML in its workflow, while another possessed experienced business modellers and also used UML and use cases. In one organisation use cases had inspired the business organisation with regards to its modelling requirements, but on the other hand the experience was also that the business organisation was not aware of the level of detail required. In many cases the IT organisations helped the business organisation with modelling and documentation. Altogether, the use of tools and methods for business development seemed to be scattered and inconsistent.

The documentation is thoroughly specified in the organisations' development processes, whether or not it is UML. As the processes are moved through, the documentation, by necessity, must become more detailed. The level of detail when a project is handed over to the IT organisation shows great variety. In one organisation, the business organisation prepared detailed "Photoshop" illustrations of the screen interface, containing detailed specifications of actions and data affected by each button, and containing detailed specifications of input fields and numeric control of input, etc. This level of detail was not considered to be appropriate by other interviewees. Instead, as discussed previously, a given business unit is supposed to know its business and processes, and need not be involved in detailed screen layouts and numeric field control.

3.4. Summary of findings

Table 2 summarises the findings from the interviews; i.e. success factors, problems and issues remaining to be solved.

Organisational changes and mergers	• Unification pushed hard by top management • Work with shared solutions and processes • Inner focus pushed by outer changes (or "threats"), core values, central efforts
Economy and financial situation	• Cost limits • Costs of IT distinctly measured • Strictly controlled purchasing processes • Effects on the relation between business and IT: Focus on deliverables, possible mistrust
Customer focus	• Integration of services in all channels with the customer in focus • Long experience of developing systems where end-users and customers are one and the same • Customer focus permeates • Leadership and motivation necessary • Organisation after customer and customer segments • Shift of control from IT to business units • Ideas gathered from all units in customer contact
A well defined and well known development process	• Seamless transfer business to IT in projects • IT organisations general competent in projects, documentation and modelling – business generally less competent and uses models less consistently • Wish for pro-active IT organisations
Project size, modules and releases	• Large projects often miss their goals • Trend towards small, manageable projects • Bring releases to the market in short time cycles
Open discussion about stovepiped departments and general requirements	• Needs a meeting place and discussion in everyday work • Open discussion, increase awareness • Involve interested parties at early stages • Create model projects
The purchaser role	• Needs well defined, roles and processes, daily discussions • Purchaser competence needs to be increased with less focus on deliverables and taking responsibility for knowing own business and processes • Align processes with systems
Infrastructure and the need for an enterprise architecture	• Harmonisation and reduction of platforms • Need for a model to manage needs and estimates • Architectural units within IT departments – seldom in the business organisation • Enterprise architects needed to tie the business processes, the information and the requirements together • Question of ownership of general systems
The document interface and the use of RUP and UML	• RUP is the general choice for new projects • Business organisation is less experienced in RUP • Use of UML is scattered • Varying level of detail

Table 2. Summary of factors and improvement areas

4. Conclusion

In conclusion, customer strategies and the internal IT solution providers appear to be well integrated. The development process, in general, functions very well across stovepipes and departments. It was perhaps somewhat surprising that none of the interviews felt that any significant problems remained, particularly in relation to the previously studied public organisation [Sundberg and Sandberg, 2004a; 2004b].

All of the factors from previous chapters appear to contribute towards an explanation for this situation. The general business environment factors – the mergers, the overall economic situation and the strong customer focus – have broken the functional mind-sets and sharpened and focused the organisations towards, in comparison to previous studies, a collaborative culture. Majchrzak and Wang [1996] argue that no one approach is more appropriate than any other with regards to cultivating a culture; what counts is how well they are implemented. Hammer and Stanton [1999] conclude that it does not mean that existing vertical units should simply be disbanded; they continue to play essential roles. The horizontal and vertical management structures have to co-exist in partnership.

Furthermore, a great deal of hard work appears to have been involved in the processes and management of projects. The development process and management of projects were, if not totally uniform throughout the organisations, at least well defined and well known. Stovepiped departments are, or have been, problems that are now being openly dealt with.

Although generally functioning well, areas for improvement were found within both the purchaser's role and the architecture. Comments from the IT organisations suggest that the business organisation must improve their process definitions and enterprise architecture. On the other hand, there were few comments, besides comments with regards to costs, from the business organisation that the IT organisation should be more flexible and responsive. Perhaps, this is because the shift of control from IT organisations to the business organisation is relatively young, something which also shows itself in business development projects. The business organisation seems to lack structured project experience and the IT organisation often has to manage both the IT sub-projects as well as parts of the business projects.

In addition, there appears to be work in progress to align information and processes with IT architecture and systems. Gulledge and Sommers [2002] conclude that the information owners within the stovepipes inhibit effective process management. Given this scenario, there is tremendous pressure to revert to hierarchical management practices. However, the reverse is also true. If systems are aligned with processes, then it is much easier to maintain a process-oriented culture. That is, the stovepipe owners have less power, and it is difficult for them to inhibit the process management efforts.

The present study raises questions. How large are the differences within public sector organisations in general? The study's results indeed show differences compared to the previously studied public organisation [Sundberg and Sandberg, 2004a; 2004b], but in order for a comparison to be made, it would be necessary to study more than one public organisation. Perhaps there may be a general time lag between public organisations and the banks. Indeed, it might be possible that the public organisations are in a rapid transition period towards becoming more focused on their customers and pursuing greater collaboration. Can the banks' greater experience in developing systems directly for customers be an explanation? This leads to an idea for a future

study of a selection of public organisations, using the same research method and questions.

Perhaps differences concerning public sector organisations should be expected? Hutton [1996] argues that the cultural change for the public sector is perhaps greater than that required for other sectors. The rigid hierarchical structures militate against any change to looser, flatter structures. Values such as continuity, predictability and fairness are stressed rather than change and innovation, making these organisations more suited to process improvement and simplification, rather than more radical approaches. Authority is shared among a number of stakeholders and processes often extend beyond the boundaries of a department or agency. Changes in policy direction can be sudden and dramatic. Solutions adopted must be flexible in order to cope with widely differing political circumstances.

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