Basics for Improving Business and IT Alignment
Managing innovations in IT/Business solutions

Jens Ohlsson
Department of Computer and Systems Sciences
Stockholm University
Kista, Sweden
joeoh@dsv.su.se

Björn Rosengren
Department of Computer and Systems Sciences
Stockholm University
Kista, Sweden
bjornr@dsv.su.se

Nevzat Ertan
Sandvik Tooling AB
Department of Enterprise Architecture
Sandviken, Sweden
nevzat.ertan@sandvik.com

Stefan Wernmo
CWS Partner AB
(former CIO Sandvik Tooling)
Stockholm, Sweden
swernmo@gmail.com

Abstract
The alignment of Business and IT has been well known, well documented and discussed since the late 1970’s. There are many reasons why the alignment gap still exists and is becoming more and more crucial. Luftman has proposed a tool to measure the alignment, called Strategic Alignment Maturity Assessment. His method is mainly a diagnostic tool to identify, compare and discuss the current state of business and IT alignment in an organization. We discuss how organizations can improve the business and IT alignment starting with necessary improvement of the information technology part. The discussion is based on general findings about innovation, socio-technical systems and soft systems perspectives. Some of these findings have been applied and compared with evolution of business and IT alignment at Sandvik Tooling, a global Swedish company. The major results show how a company can get high business value from IT by managing IT as an innovation capability. We have summarized our findings in an Innovation based Method for IT/Business Solutions.

I. INTRODUCTION
In order to be competitive a company needs to be efficient and effective. Today there is a discussion about the fast changing business environment and the need for innovation and agility. Implementing the right systems in the right way becomes more and more crucial. The alignment of Business and IT has been well known, well documented and discussed since the late 1970’s. Business-IT alignment refers to applying Information Technology (IT) in an appropriate and timely way where IT capabilities should be aligned with business demands and vice versa. There are many reasons why the alignment gap still exists and is becoming more and more crucial. One strong reason is the need for companies to be more agile. Another reason is the increasing part of the IT-budget that is spent on maintaining legacy systems, thus allowing less and less for new development.

Luftman has proposed a tool to measure the alignment, called Strategic Alignment Maturity Assessment[1]. The tool is mainly a diagnostic way to identify, compare and discuss the current state of business and IT alignment in an organization. We discuss how organizations can improve the business and IT alignment starting with necessary improvement of the information technology part. There is clear evidence that the success of today’s enterprises considerably and directly depend on the inner workings and capabilities of their IT function. This paper therefore addresses the challenging role of managing the IT function.

The starting point is to view the alignment as an innovation and analyze the alignment based on general findings on innovation and implementation strategies. A lot of the general findings were practiced at a global company, Sandvik, with significant results. Their implementation was very comprehensive and holistic based on several years of development. The innovation based method for IT/Business solutions that we have created is discussed and presented in this paper.

Innovation can be described as the successful exploitation of new ideas[2]. Micheal Porter discusses the importance of innovation when he stresses that companies achieve competitive advantage through the acts of innovation. He argues that companies approach innovation in its broadest sense, including both new technologies and new ways of doing things[3]. These changes are increasingly depending and influenced by usage of enterprise software and IT. Understanding of general implementation strategies for innovations can therefore be helpful to analyse implementation of complex system software and IT solutions.

II. IT SOLUTIONS VIEWED AS INNOVATION
The term “innovation” comes from the latin word innovare meaning in its broadest sense “to make something new”. When we talk about innovation with the help of IT solutions at least three conditions must be fulfilled. The innovation must be desirable to the user, it must be viable in the marketplace
and it must be technologically feasible. Procurement and implementation of IT systems could therefore be seen as an innovation. New ways and new technologies implies the importance of change. Change can take several forms, for example:[2]:

- Process innovation, changes in the ways in which they are created and delivered
- Position innovation, changes in the context in which the products/services are introduced
- Paradigm innovation, changes in the underlying mental models which frame what the organization does

All of these changes are more or less affected and influenced by implementation of IT. Important knowledge to the Innovation based Method for IT/Business Solutions came from Sandvik Tooling. Therefore the swedish case presented here is of special interest.

III. MANAGING IT AS INNOVATION

We argue that there are two important dimensions to consider when managing IT as an innovation capability. First the company needs to get innovation resources. This can be done by reducing the costs for operations and maintenance. Secondly, the company needs to manage the innovation process by having relevant methods and governance, just as for other R&D activities in a company.

![Figure 1. A stage – gate process for new product development. Modified after [2]](image)

Innovation research has long emphasized the importance of understanding user needs when developing new products. In the special case of advanced technologies and services potential users may not be aware of, or may be unable to articulate, their needs. We argue that in the case of implementing new IT and business solutions the users are limited in articulating their needs.[2] Thus there will be a greater burden on developers for example a CIO office to “educate” potential users.

Since it is difficult to articulate the user and business needs one of the main problems is how to learn and understand the needs as quickly as possible through experimentation and testing, and thereby anticipate future requirements. (figure 1)

This general innovation process concept can be applied to business and IT alignment where there is a demand for Business and IT to interact closely. This is also the main idea behind Luftman’s Maturity Assessment. People from the business and people with IT competence have to interact to reach some consensus. This is very important because companies are still lacking what Keen called “hybrid managers”. This being people with both business and IT understanding. [6]

IV. SOCIOTECHNICAL AND “SOFT SYSTEMS” PERSPECTIVES

The problems and issues that organizations must deal with are not only the technological aspects but also the social and human facets surrounding and interacting with it. Technology and especially IT is embedded in an environment of human beings. They, in turn, can make decisions to develop, limit, alter, or stop technology. Organizations viewed in this way, as sociotechnical systems, need an understanding of the organizational, individual, and technical aspects.

Management science has been heavily influenced by the goal-seeking paradigm. Soft systems thinkers like Checkland regarded this as an inadequate formulation in terms of the actual practice of management. He and others pointed out that intervening in ill-structured problem situations required relationship maintenance that is at least as important as goal-seeking and answering questions about what we should do is as significant as determining how to do it. This approach has been called “soft systems methodology”. Soft systems thinker abandoned the notion that it was possible to assume easily identifiable, agreed-on goals that could be used to provide an objective account of the system and its purpose.[4]

Stakeholders have normally diverse opinions about the nature of the system they are involved with and about its proper purpose. The “soft systems” approach suggests that complex real-world problems should be discussed and analyzed with help of the “ideal-type” grid of the problem context. The participants and the complexity of the system in focus are the two primary sources in a problem situation in this approach. (Figure 2).

![Figure 2. Jackson’s extended version of Jackson and Key’s “ideal-type” grid of problem contexts. [5]](image)

The vertical axis expresses a continuum of system types conceptualized at one extreme as relatively simple and at the other as extremely complex. The horizontal axis classifies the relationships that can exist between those concerned with the problem context. The participants are then classified in three types, “unitary”, “pluralistic”, and “coercive”. When participants have relationships with similar values, beliefs, and interests they are defined as unitary. On the other extreme participants are called coercive when relationships have few in common and, if free to express them, would reveal conflicting values and beliefs. [5]

Since we are discussing solutions of a complex nature like sociotechnical systems a prerequisite for a dialogue is a common language between Business and IT. The combination of the Jackson problem contexts grid and the sociotechnical aspects implies the importance of the dialogue between user and developer, in this case business and IT people. This has been
consequently executed in the Swedish case discussed below, with the help of their redesigned IT-Architecture.

V. A SWEDISH CASE

BACKGROUND

A lot of the global corporations of today are more or less trapped in a multi-technological chaos. Too much is spent on operations and maintenance (75%), resulting in too little new development (25%). Taken together, this implies that the possibility for IT to support the business opportunities is poor. In this situation it is very difficult to create a foundation for Business and IT alignment in the sense that the business is in the driver’s seat. Or as Keen puts it “Thinking opportunity first then technology”. The company understood that it had to focus on IT first in order to become more agile and truly business and IT aligned.

Therefore they decided to bring more order into the multi-technological chaos and at the same time tried to create more resources for development. The situation was characterized by little synergies between the main business sectors with a legacy of many different heterogeneous platforms and systems. Most integration was within each business sector with “point-to-point” based hard-coupled systems integration. Different integration techniques where used with very little common metadata and master data defined. No “City plan” existed which lead to integration being a major part of every project. A survey on current IT status with C-level and key personnel showed:

• Lack of innovation height and building applications the old way
• No real strategic investment for the last decade
• Lack of business rules with less project efficiency
• Most system development projects ”great but late”
• Always lack of resources and end user training
• No clear roles of system ownership and support responsibility
• Lack of process owner’s understanding of clear business and information rules and impact on process value creation
• Lack of natural IT speaking partner
• Too little internal marketing of solutions and lack of reuse

Customers and business partners asked for more business information and seamless integration with their own business processes. Each such integration project proved very costly due to the lack of a modern and flexible information infrastructure. Follow-up of IT investments and annual spendings were not consistent. It was difficult to draw conclusions since IT costs were not categorized and reported correctly. Also, too much was spent on operations (50%) and maintenance (25%), resulting in too little new development (25%).

Therefore as part of the overall business strategy, IT got the task to create a strategy based on the vision of the “Real-Time Enterprise” that could enable business agility and harmonize common processes, as well as providing efficient IT spending. The starting point was therefore to create a service oriented enterprise architecture strategy that could provide a complete framework for translating the goals and objectives of the business into IT solutions. The strategy was broken down into the following three layers: business and information architecture, systems and integration architecture, development and infrastructure architecture.

STRATEGY AND VISION

The concept of the Service-oriented Enterprise Architecture was an important cornerstone in the IT strategy to respond to demands on increased business agility. The main purpose was to translate business strategy and objectives to describe business process and information models using common formats, so called business model blueprints. “Fit for purpose” information solutions could then be based on build/buy combinations of Web Services enabled components (composite applications). A communication strategy was also developed that explained the strategic objectives in terms of reason, strategic direction, responsibility and goals.

A CIO Office was introduced and given the task of analyzing, developing, implementing, and successfully managing IT solutions through:

• Understanding that 90% of the success lies in handling the complexity in dealing with cross-function, cross-company, cross-country, and cross-culture relations.
• Establishing normal business controlling methods for IT costs and investments
• Creating an efficient communication and interaction process
• Defining clear ownership of critical information and information solutions
• Identifying high impact projects that drives the strategy
• Recruiting talented people for the CIO Office roles
• Partnering with world-class IT R&D organizations

RESULTS

The Service Oriented Enterprise Architecture meets increasing business demands for agility. The costs and time to market were reduced through easier development and integration of new and existing information solutions.

In summary, the following results have been achieved:

• Agile and relevant information is delivered when needed reducing lead time from months to weeks
• Service level agreements that focus on the business value and provide productivity demands for the IT suppliers (4-6% per year)
• All business units can share information using a common integration standard.
• Integration lead time and costs in new projects are reduced > 30%
• A Service Catalogue for operational services based on ITIL framework that reduced operations cost > 25%
• A Common Business Platform was introduced over a four year period realizing total synergies of >0.2 billion EURO (based on business process KPIs) and > 10 million EURO in reduced annual IT costs
• A CIO Office with own R&D budget for applied research project
• A proven buy/build strategy based on SAP and Microsoft platforms that are now being implemented.
VI. THE INNOVATION BASED METHOD FOR IT/BUSINESS SOLUTIONS

The reason for setting up a method for R&D initiatives is that all too often initiatives become a mix of new technology with new business requirements, resulting in projects that are delayed because of real technology issues.

The Sandvik case has shown that the first important step is setting up rules:
- The R&D team should not commit the research project to a business project plan
- No dependencies should exist between the research project and development projects.
- The team is responsible for setting and agreeing the project plan with the Management Group sponsor.
- The CIO team should function as a reference board

The second important step is to set up an R&D process with roles and responsibilities and relevant Governance. (Figure 3)

The responsibility for the R&D team is to identify, define, deliver, publish and communicate the R&D initiatives based on business requirements. The responsibility for the project sponsor is to present the R&D project results and recommendations to the management group.

The responsibility for the management group is to validate R&D result and assure the business value.

![Figure 3. The Innovation based Method for IT/Business Solutions](image)

Some of the potential benefits of applying the method are:
- Enterprise Architect team can help the project to get started in a good way.
- Re-use of the developed solutions within the main development projects (where applicable).
- Research projects can uncover problems at a very early stage in the projects.
- Deliverables of research projects can be presented within a business context - easier for everyone to evaluate and understand the benefits.
- Skills and competences are secured for later projects within the subject
- Future sponsors are secured for larger roll-outs

VII. DISCUSSION AND CONCLUSIONS

The case study validates that a well managed architecture is a strategic asset. Sandvik Tooling achieved this by managing innovation principles and establishing an R&D function focused on “cleaning up”, cutting costs and stressing integration. By establishing a structured way of working with R&D, the company also “owned” their solution and thereby learned and stayed in the “driver’s seat”. Another important aspect was the formulation of methods and practices to work in a systematic way with business requirements. By doing this the company also has the basics in place for continuously managing business development and improvements supported by innovative IT.

The layer architecture has reduced complexity and enhanced the understanding between business and IT. The company has now achieved the basics for IT and business alignment. Next step for Sandvik is to further improve the relationship between IT and Business and reach what we call business and IT alignment, where business becomes a committed owner of solutions.

The proposed solution in this paper is an Innovation based Method for IT/Business Alignment. The combination of how to manage innovations and several years of practical experience at Sandvik has lead to the development of the method. The method has three main components, rules, processes and governance. This paper has been focusing on what a CIO can do and how a CIO can create more flexibility for IT/Business alignment. Well defined and managed processes and rules based on innovation principles are important parts of the method.

Due to its tight coupling, IT capabilities are either enabled or prohibited by particular architectural choices. The coupling to a very large degree determines current and future performance of a modern enterprise. There are strong reasons to believe that many global companies are in a similar situation with a lot of legacy in IT/business solutions. These types of companies need to create IT business alignment and simultaneously address IT as catalyst for business innovation and flexible business models.

Companies in this problem context need to create and manage a robust IT Architecture as a foundation for business development. We argue that our proposed Innovation Based Method for IT/Business Alignment can create a high degree of alignment that will speed up overall product, process and position innovation.

A managed architecture must be in place. Companies can then move on by thinking opportunity first and then technology.

References