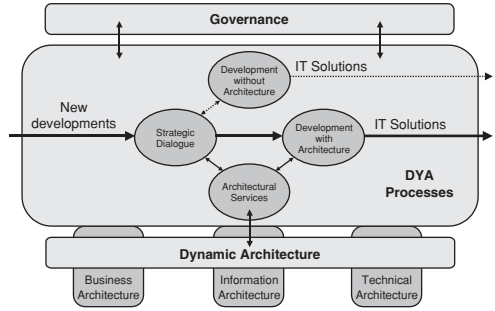
CHAPTER 1

Agility and Coherence: A Conflict of Interests?



POTENTIAL OF INFORMATION TECHNOLOGY

The importance of information technology (IT) has continually increased throughout the last decades. At the present level almost everyone makes use of IT daily, whether they realize it or not. In the pioneering days of IT, it was mainly used to ease the burden of repetitive administrative tasks. Today, IT creates new tasks and services and allows completely new business models to be designed. The most obvious examples are current developments concerning the Internet and e-business.

IT has great potential for influencing markets. It bridges time and distance in a completely new way, and opens markets that were previously unattainable because they were geographically too remote. Until recently, a small town would have no more than three banks competing with each other for the business of the town's residents. Today, we have a situation in which literally thousands of national and international banks compete with each other for customers in that same small town. Financial institutions, such as banks, no longer have to maintain a physical presence to be able to do business. Financial transactions, such as buying and selling shares, are being executed electronically and the customer can monitor the progress of such transactions on his or her personal Internet page. In 2000, more than half of all stock orders placed by individuals in the United States were initiated via the Internet.

In addition, IT has a great potential for expanding cooperation between individual units within an organization. E-mail has become the standard mode of communication and working from home has become a topical issue because of the progress that IT has made in

remote communications. At the same time, we see that organizations are beginning to join forces in several new ways. A number of organizations are actively engaged in setting up electronic marketplaces for commerce between companies (B2B, i.e., business-to-business commerce). An example is the Covisint initiative by Ford, General Motors, DaimlerChrysler, Renault, and Nissan.

IT also creates the possibility of shaping products and services to the exact requirements of the consumer. A number of car manufacturers are so far advanced with their information systems that they can provide interim progress reports to customers on the production and delivery scheme of their new cars. The customer has the opportunity to use an e-mail form on a webpage to change the color and the accessories of the car while it is being manufactured. A customer, therefore, can get fully involved (online and interactively) in the internal processes of the manufacturer.

The examples above illustrate the potential of IT. Our challenge is to realize this potential: through effective and efficient use of IT.

USING IT: A PROBLEM IN THE MAKING?

In everyday practice, effective and efficient use of IT is more of a challenge than one would expect. Many companies and organizations have difficulty in achieving effective and efficient use of their IT systems. We, the authors, are regularly confronted with this difficulty in our everyday dealings with companies and organizations.

An example is the debacle which took place around Christmas 1999 in the United States, when many Americans did their Christmas shopping via the Internet. Ordering presents using a website and a browser proved to be less of a challenge than most people expected, but unfortunately delivering the presents was a completely different story. Most of the Internet stores failed to deliver on time, the websites for ordering were perfect, whereas the logistic process for delivery was unable to cope.

There are more examples of the difficulties that companies have in using IT efficiently and effectively. Recently, customers of a telecom-

munications company received a reminder that they should pay their telephone bills promptly or face being cut off. To say the least, this was a strange state of affairs. The customers always paid their bill automatically using a "Direct Debit" facility. To be on the safe side, several customers undoubtedly paid the reminder. Several days later, it became apparent that the automatic debit payments had not been processed on time and, therefore, the next process in the chain of events automatically began to produce reminders. Consequently, a malfunction in the billing system wrongly accused a great number of customers of being overdue with their payments. The company had a lot of explaining to do!

Roger Moore's Bank Account Made Public

Zurich–Due to an error at a Swiss bank, Internet users were able to view the account information of the actor Roger Moore, the singer Udo Jurgens, and thousands of other celebrity customers. In addition to bank account numbers and financial transactions, the private addresses of these wealthy customers were also viewable on the Internet.

According to a spokesman of Credit Suisse, the sensitive information was accidentally placed on the pages of their Internet bank facility Direct Net. The information remained there a week for the world to see.

Source: *Eindhovens Dagblad* (daily newspaper), November 10, 2000.

These are the visible effects of the problems that afflict many organizations and with which they have been struggling for some time. People in such organizations often ask themselves the same questions:

- How can I link up my applications so that the right information is available at the correct time and place?
- How can I shorten the time needed to produce new functionality so that the time-to-market for new products and services is correspondingly reduced?

- How can I lower my maintenance and support costs?
- How can I manage and organize my IT services so that I can outsource parts of it?
- How can I bring my project portfolio under control so that the relationships and dependencies between various IT initiatives are clarified and I can deploy my budget for IT to a better purpose?

Remarkably enough, we already know the answers to all these questions. We know how to link applications—for example, by using middleware. The quest for flexibility and reduction of development time is being answered by the component paradigm that shows great promise for further development. Maintenance and support costs can be reduced by a drastic reduction in the number of hardware platforms and development environments within an organization.

So why do we not use our hard-earned knowledge and solve all these problems?

AGILITY AND COHERENCE

We certainly have sufficient answers to the problems mentioned above but, unfortunately, we do not always put them into practice. This is mainly because we are not given enough time to do so. There always seems to be another urgent problem that needs an ad hoc solution, frustrating all our well thought plans and improvements.

Questions about sharing information, managing the number of development environments, and linking applications are all questions about *coherence*. Coherence is necessary to ensure the correct interaction of the various business processes and to allow the organization to present itself as a uniform entity. To obtain coherence, we need to consider the functioning of the organization as a whole, including its information systems. This means investigation, reaching consensus and planning. Such activities take time.

At the same time, the market demands *agility*. Products become obsolete at an alarming rate—for example, we can barely keep up with

the pace at which new types of cell phones are being introduced. Also, customers expect an answer to their e-mail messages within 24 hours and expect products to be delivered within a day of ordering.

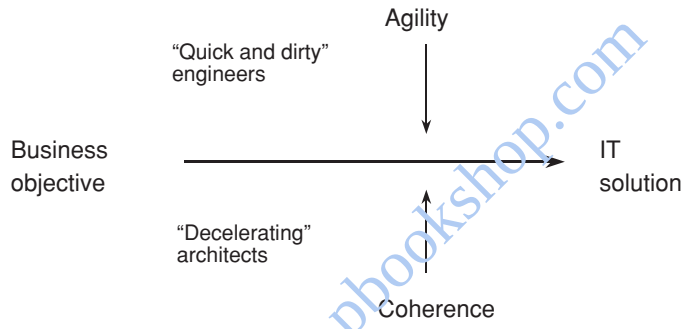
One of the main reasons for this is that the traditional barriers to entering a certain marketplace, such as time and distance, are constantly being eroded. As a result, competition increases. In addition, at a growing rate, the competitive edge is being provided by information and information systems. These can be copied easily. In a relatively short time, a competitive edge gained in this way can be effectively combated. This means that the advantage is short-lived and companies must seek new advantages more rapidly. In short, business keeps unfolding at an ever increasing pace, thanks to the new opportunities offered by IT and, as a result, the IT organization has to work even faster to keep up with the business.

In the 1970s and 1980s, business processes were redesigned on average once every seven years. This rate of change was easy for the IT department to follow. The time needed to alter the information systems that supported new or changed business processes stayed within acceptable limits. In the 1990s, the rate of change began to increase and information systems began to lag behind. In 2000, a manager succinctly remarked: "We can completely redesign our business processes every three months and subsequently our IT department needs a year to catch up with the supporting information systems."

What we encounter repeatedly in this kind of situation are the contradictory demands of agility and coherence. If we want to accomplish something quickly, we apparently have too little time to achieve consensus with others on what we would like to do or to make detailed plans about what we want to do. However, if someone considers aspects other than his or her immediate interests, he or she may decide not to follow the most direct route in achieving his goal, thus using more time than is strictly necessary. This tension between agility and coherence is perhaps best illustrated by examining the opinions of the traditional supporters of coherence and those of agility with regard to each other. In an insurance company, the architects, who are primarily engaged in ensuring that coherence has the highest priority, are regarded as "professional decelerators" by the development teams. The architects, in

their turn, never fail to remark on the latest "quick and dirty" solution provided by the developers. These opposing views are reflected in Exhibit 1.1, which illustrates that the process of achieving business objectives by developing IT solutions is influenced by the two demands of agility and coherence.

EXHIBIT 1.1 Tension between Agility and Coherence

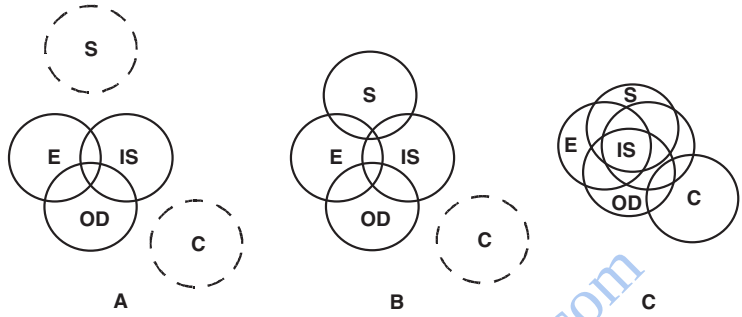


INCREASING TENSION

The tension between agility and coherence is becoming greater. We have observed that IT has permeated to the very roots of organizations and is becoming increasingly important for them as a whole. Where previously IT was only one of the many tools used to achieve business objectives, it has become crucial to many organizations. During the last 10 years, IT has made a major contribution to the progressive integration of the supply chain (e.g., organizations, their suppliers, and their customers). This is illustrated in Exhibit 1.2.

In the past, the relationship between businesses, suppliers, and customers was clearly demarcated. Within a company, employees, processes, and information systems were integrated to a certain

EXHIBIT 1.2 The Progressive Integration of the Supply Chain



extent. However, the customers and suppliers played no active part in the company's business processes.

Several years ago, the relationship evolved into that shown in Exhibit 1.2(B). Suppliers were no longer behaving as separate entities; and they made a clear move toward becoming a more or less integral part of a company's internal supply chain. This progress toward more integration was initiated by the arrival of *electronic data interchange* (EDI) several years beforehand. The supply chain that resulted from this integration between supplier and business led to more efficient business processes for both companies. For example, immediately after a six-pack of beer is paid for at the supermarket, the automatic stock control system of the supermarket places an order at the brewery for another six-pack. Stocks at the supermarket are kept to a minimum, and the brewery's processes are geared to produce the optimum amount of beer. The Internet has encouraged an even greater use of this trend for supplier integration.

At the same time, customers are moving closer to businesses. Telebanking and customers monitoring the manufacture of their new cars are good examples of customer integration. These trends will continue to evolve and the three parties will merge even further, resulting in an integrated relationship, as illustrated in Exhibit 1.2(C). Supplier, customer, and business form a close network within which both the supplier and the customer have a direct influence on the business processes of the company. This far-reaching supply chain integration is made possible by IT.

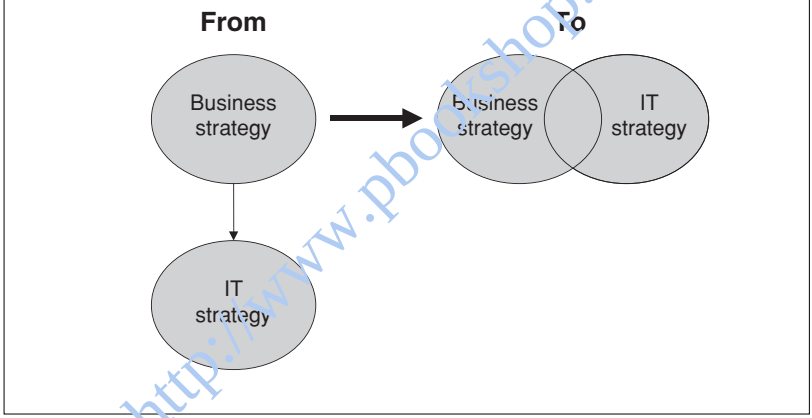
If we consider such developments further, we can conclude that IT is no longer just supportive to the business, but that it has become an integral part of the business itself, and has, as a result, a direct influence on the financial success of an enterprise. The influence of IT does not stop here. IT today enables completely new business models to be devised and implemented. The online auctioning and group buying models are examples of business models that have been created on the basis of modern IT techniques.[1]

An online auction house such as eBay creates a virtual meeting place for supply and demand and enables a bargaining process in cyberspace so that potential buyers can bid against each other to buy any of the offered items. This business model is only made possible by virtue of the Internet. The Internet removes the traditional geographical barriers, enabling many more people to take part in the auction. The essence of the group-buying model is the accumulation of the demand for a certain product. *Group buyers* try to bring together as many potential individual buyers for a certain product as possible and combine their orders to negotiate a volume discount from the sellers. Bringing potential buyers together is made possible by using the Internet—without it, the group-buying model could not have been realized.

In addition to these new forms of enterprise, we increasingly see well-established organizations using IT to offer new services and to open new markets. IT has gained strategic importance for the enterprise. Previously, IT strategy was defined as a direct result of business strategy. Today, business strategy and IT strategy have so many common interests and objectives that they frequently overlap and should be developed simultaneously, as illustrated in Exhibit 1.3.

The possibilities created by IT are increasingly responsible for the direction chosen in determining a business strategy. E-business is currently the best example of how IT can determine the business strategy of an enterprise. Almost all enterprises are or will be involved in doing business on the "information superhighway," either directly, because they have taken the plunge and are developing their own plans for e-business, or indirectly, because their traditional marketplace is being gradually eroded and replaced by an electronic version.

EXHIBIT 1.3 Relationship between Business Strategy and IT Strategy



What is becoming increasingly evident, especially in respect to e-business, are the heavier demands on both agility and coherence due to increased transparency of the market. Customers can now easily compare which supplier offers the best deal. Internet sites can be found where the prices, terms, and conditions of the various suppliers of almost any kind of product can be conveniently compared, enabling consumers to select the supplier that best suits their needs. Insurance policies, books, CDs, vacation packages, and many other products can be compared in this way using the Internet.

The pace of change in the marketplace has increased rapidly and the effects of these changes are becoming more widespread. The moment that an enterprise brings a new product into the market, it is immediately visible to a potential customer and he or she can immediately react to this new product. In order not to lose customers, the competition will also have to act swiftly. This leads to a rapidly evolving and increasingly aggressive market, in which customers are supported in their decision making by completely new tools such as search engines and intelligent agents.

The increased transparency of the market also results in increased demands on coherence. The ease with which consumers can compare products and services means that a company should only offer those in which it excels. A product that is too expensive or a service which only offers half a solution is a waste of effort. The company must ensure that it can keep the promises it makes to its customers. One single wrong step and the customer is gone! He or she can easily find alternatives. This requires that the internal business processes are properly attuned to each other and that there is a clear understanding of mutual expectations within the organization. In addition to the increase in competitiveness, we see that organizations are once again concentrating on their core business and that less profitable activities are being contracted out to partners. This results in network organizations that are in fact an extension of the development illustrated in Exhibit 1.2, adding the *P* for partner. Together with partners, an organization will continually search for ways to increase the value-for-money of its products and services. The most distinctive characteristics of a network organization are (1) continually changing internal and external affiliations and (2) shifting organizational boundaries because of flexible in- and outsourcing in reaction to the opportunities that arise. IT is no longer purely an internal affair. To a great extent, IT determines the effectiveness of collaborating within a partnership ("from IT to exT").

In all this, we recognize an increasing importance of IT and a corresponding increase in the tension between agility and coherence. Both are essential conditions for an efficient and effective IT use, but both conditions must be held in balance.

If the balance is tipped in favor of agility, costs will rise astronomically; partners will no longer be aware of what the others are doing; key information will no longer be available; the customer in search of information will be "sent from pillar to post"; and it will be increasingly difficult to introduce good products and services into the market.

If the balance is tipped in favor of coherence, the organization runs the risk of creating the best products and services on the market, but making them available for sale far too late. The customer either no longer needs the product or has already chosen from one of the competitors.

THE CHALLENGE

The challenge facing the modern organization is finding the correct balance between coherence and agility. The object of this book is to help organizations solve this puzzle and find that balance. Later in the book, we examine the answers that have already been found for the increasing demands for both agility and coherence. Because these answers focus on only one side of the scale (either agility or coherence), there is no answer yet for how to achieve a continuing balance between the two forces. Therefore, the lion's share of this publication will be dedicated to providing an answer to this urgent question. As a first step, the idea of Dynamic Architecture must be introduced and developed into a practical model. This model, by keeping agility and coherence in balance, helps utilize IT to such an extent that its full potential in helping to achieve business objectives will be realized.

Note

1. C. Holland, H. Bouwman, and M. Smidts, "Back to the Bottom Line: Onderzoek naar succesvolle e-businessmodellen" [Back to the Bottom Line: Investigation of Successful E-Business Models] (ECP.NL, 2001).