Putting the Customer First

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CONTENTS

THE CUSTOMER-LED COMPANY

The new world economic scenario

Globalisation has been gathering pace for many years now, especially in a number of market sectors. The automobile industry, for example, is now dominated by a dozen major manufacturers operating on a worldwide scale. And yet the restructuring of this sector is not over. Ever seeking to court the highest stakes, the leading manufacturers are constantly seeking alliances which will allow them to further reduce costs or create synergies in terms of products, geographic coverage, etc. The best recent example is that of Chrysler and Daimler-Benz, whose merger created the fifth largest car manufacturer in the world. Analysts believe that there is a critical mass threshold of 2 million vehicles a year below which it is impractical to maintain an international presence. This is roughly the quantity of vehicles that Renault and the PSA group each produce. Another recent example, Ford's purchase of Volvo's automobile business, has led to the emergence of a group which manufactures almost 7 million vehicles a year, consolidating Ford's position as the second largest car maker in the world and, no less importantly, catapulting it to the number two spot in Europe as well.

In the commercial aircraft industry, only two global players remain: Boeing, which took over McDonnell Douglas, and Airbus, which owes its foundation and success to the will-power and co-operation of several major European countries.

Even though they extend beyond national confines, multinational companies sometimes rely on an image linked to a given country and to certain values which that country conveys. Mercedes, BMW and Siemens benefit considerably from the image of solidity and robustness of products made in Germany, while LVMH doubtless capitalises on France's strong reputation in the luxury goods industry.

The globalisation trend can be summed up by some very simple but revealing indicators. Since 1989, cross-border exchanges have increased almost twice as fast (6% versus 3%) as world trade itself. The world's leading 500 companies account for more than half of international trade overall. The same is true of direct overseas investments and financial trades involving stocks and bonds.

This process is far from over. If the current pace is maintained, or even accelerates, the economic environment in the 2020s is likely to be radically different from today's. The main change is likely to involve certain countries whose current growth rates will allow them to play a major economic role in the near future. First among these is China, whose growth rate, boosted by wholesale economic liberalisation over the last twenty years, is in the region of 10% a year. Today's tripartite economic leadership - Europe, the United States and Japan - will therefore expand substantially in the near future, with China, India, Brazil and even others joining the fray.

At present, though, almost nine out of ten of the world's top five hundred companies listed in the Fortune 500 are based in either Europe, the United States or Japan; only two are Chinese and one Indian.

The technological factors which foster the globalisation process

Other factors are contributing towards accelerating the process of globalisation, as well as intensifying competition, in particular the falling cost of information technology and telecommunications. With the growing popularity of business intelligene systems, companies are seeking to gain a competitive advantage through better knowledge of their customers. The technologies involved are available and accessible not only to the large, global players, but also to small and medium-sized companies. This adds to the competitive pressure.

Market liberalisation and deregulation

The frenzy of liberalisation which has engulfed many countries has radically affected a number of economic sectors normally controlled and regulated by Governments, which often amount to strict monopolies. Little by little, such markets have been opened up to free competition.

The trend began in the United States and the United Kingdom, first in the air transportation sector, then in telecommunications. The US airlines' playing field has been completely redrawn over recent years, with the emergence of new, sometimes short-lived carriers, and the disappearance of others. Two diverging stories illustrate the process. The first concerns Pan Am, one of the original pioneers of air transport, whose very name was once synonymous with the industry. The flagship of the US air transport industry, founded in 1927, Pan Am was bought out in 1991 by Delta Airlines, the fourth largest airline in the world, for a paltry US$ 400

The 34 insurance companies which operated in France before the Second World War were nationalised, with their numbers falling to nine in 1945, and then to four in 1968: UAP, AGE, GAN and Mutuelles du Mans. Today, the insurance sector has been totally transformed: the first three players have been sold off to the private sector, and only Mutuelles du Mans remains in the public sector. This is an industry where firms must compete Europe-wide, if not worldwide.

In the banking sector, the recent merger between Société Générale and Paribas is a classic example of the current consolidation. It should enable the new group to join the front line of leading European banks.

Currently, it is the turn of rail transport to be deregulated, and next will come the turn of the energy sector. SNCF, France's railway operator, has been reorganised into two companies, one responsible for managing the rail infrastructure, and the other the rolling stock and services. This development, combined with huge investment in high-speed pan-European railway lines, hints at the appearance, in the not too distant future, of multiple rail operators in both our own and neighbouring countries, offering customers a wider choice.

The energy sector is also in the process of being deregulated. In France, EDF is getting ready to relinquish a monopoly it has held for some fifty years. Corporate clients will soon be able to deal with other electricity producers.

Mergers and acquisitions: a high pace of activity

Mergers and acquisitions are increasingly taking place. Judge for yourself: in 1998, the cumulative value of all M & A activity exceeded US$2,500 billion, up 50% on the previous year, with stratospheric bids setting new records. Exxon's purchase of Mobil led to the formation of the biggest company in the world, with a turnover of around US$ 200 billion, equivalent to France's national budget.

Although French multinationals do not feature in the top ten world transactions, there were several notable acquisitions last year, involving for instance Rhone-Poulenc and Hoechst, Total and Petrofina, Sanofi and Synthélabo, as well as Vivendi and Havas.

Apart from the fact that they feature far higher sums than a few years ago, the bids also differ in another respect. According to Fortune magazine, more than 65% of mergers and acquisitions were financed by means of share swaps, compared to less than 10% just ten years ago.

Building a global presence

In certain sectors, having a worldwide presence is a necessity - for instance, where development and production costs are so high that they have to be spread across ever increasing volumes of goods. The automobile and electronic components sectors are good examples of this, with commonly accepted minimum thresholds of two million vehicles a year and 5% of the world market respectively needed to achieve the requisite critical mass. Critical mass makes it possible to achieve economies of scale. But it also has other benefits, such as giving a company a stronger position for negotiating with suppliers.

Being a world-class organisation does not necessarily mean selling the same products everywhere. Products must be customised for national markets to meet local consumer preferences and habits, and to overcome constraints such as local regulations. The adaptation required may be slight or very significant. In the case of accounting software packages, for instance, localisation is a major component of the overall product, involving both translation and harmonisation with national accounting principles and regulations.

Within companies, the trend towards globalisation is leading to a restructuring of staff into streamlined operational units, responsible for individual products lines at a worldwide level. This gives rise to complex organisations, since these new units are set up side by side with existing national structures, resulting in multiple levels of reporting. There are several ways of defining a strategy destined to acquire or maintain a world-wide position: the specialisation of units by their area of activity, product, customer profile or even function.

Predicting customer expectations

Customers are becoming both less loyal and more demanding. In the face of increased competition - sometimes referred to as mass-competition - companies must monitor developments in consumer tastes and habits and carry out increasingly accurate market segmentation with the aim of getting to know each customer individually. This approach starts with focusing on the most profitable customers. It isn't a new strategy. After all, airline companies have been launching customer loyalty programmes with frequent-flyer cards since the early eighties. They noti2ss (ogi 5(er 5(come) T Te)0(t ryyo staffesellingm the spe5(o(ittie) (v)d) (a)vityoomobphined opsector

Banks are in a comparable situation and are prepared, in the case of specific products - such as mortgages, for instance - to bend over backwards, occasionally operating at zero margin, rather than risk seeing a customer lured away by the competition.

Accurately predicting customers' expectations is not always easy. The runaway popularity of the Internet among end users, since the emergence of web technologies, came as a surprise to some leading companies in the IT sector, who had to go back to the drawing board to avoid losing ground to their competitors.

Moving towards a new relationship with the customer

To increase the value of a company you need to improve your relationship with customers. There is a consensus in this respect in the business world; traditional methods for securing growth are no longer sufficient. Companies can no longer stand out solely on the merits of their product, price and distribution method. Moreover, customers now expect more from companies and everyone knows that keeping an existing customer is easier than acquiring a new one.

In order for existing customers to be a profitable source of growth, efforts must be made to manage them efficiently. To create a genuine competitive advantage, profitable customers have to be identified, won over, and then kept loyal.

The results of a recent study conducted by two major market research companies, among two hundred companies around the world, reveal that these companies made genuine progress whenever they decided to focus their corporate strategy on their customers. The transition to a constant concern for one's customers is no trivial matter and often calls for a radical transformation of the entire organisation. In addition to the need to instill a new culture at all levels of the company, information technology plays an active role, providing a means for deploying innovative new processes. IT is also a vital resource for all company employees, enabling them to optimise their relationship with the customer.

Focusing on one's customers involves several fundamental principles:

- Getting to know one's customers, their environment and preferences better through greater proximity to them;
- Segmenting one's customer base to identify those with whom the company might build up the most profitable relationships;
- Understanding the challenges and benefits provided by new technologies, and how tools such as the Internet and new organisational models, based on a process-driven approach, can better help to meet customers' needs.

WHAT WILL THE IMPACT ON INFORMATION SYSTEMS BE?

By the Boston Consulting Group

Major upheavals shatter traditional value chains

Many sea-changes are currently affecting our traditional attitude towards industries and services. With the lifting of most trade barriers, companies are now seeking a global presence in each of their areas of activity. The huge trend towards deregulation is fostering the emergence of new competitors, who are challenging the traditional boundaries and territories of companies and economic sectors. Similarly, the deregulation of the financial markets and growing investor pressure are leading companies to systematically question their core business and activities.

Moore's law, and the IT technology which it refers to, illustrate what is perhaps the deepest and most radical change affecting the current boundaries of industries and their value systems: every eighteen months or so, the processing power and storage capacity of electronic components are doubled. Never before has there been such a powerful tool for improving efficiency.

As a result, an age-old compromise is in the process of being shattered. Information has traditionally been seen as the red line which determined the boundary of a company. In order for valuable, complex information to be communicated from one team to another, direct contact was needed, preferably within the same organisation. Whenever it was necessary to reach out to a very wide audience, on the other hand, the message had to be simplified if it was to be communicated; for example, for advertising, to be understood, only one or two messages could be conveyed at a time.

The drop in information costs and the boom in connectivity are changing this situation completely: thanks to the omnipresent PC and the Internet, valuable, complex information can be transmitted at very low cost to a very wide audience. The power that once linked the value chain within an industry is becoming considerably weaker. Independent companies can now share the design of a product, transfer the design parameters to a remote production site and communicate all the sales figures to an equally independent logistics organisation. From now on, each link of an industry can become a business in its own right.

The boundaries that hitherto clearly mapped out activities, companies and industries are now becoming blurred.

The example of fragmentation in the telecommunications industry

The world of telecom operators is one example of this phenomenon of fragmentation. In 1990, long-distance operators in the United States, such as AT&T, MCI and Sprint, were integrated companies which had designed and developed a long-distance network infrastructure, and were busy operating it.

At the same time as they offered their services direct to large companies and private individuals, they also sold them to local operators. The result is that the entire industry is currently in the process of fragmentation. The lucrative price policies practised by the established operators towards large companies and for international communications have attracted newcomers, and new technologies such as fiber-optics, the IP protocol and wireless transmissions, have all created new opportunities for more specialised competitors.

The pace of change is becoming phenomenal; we are witnessing an onslaught of new players offering networks, each with a different technology: Quest and Williams (fibre-optics), Worldcom (IP protocol) and Telligent and Winstar (wireless local loop). Most of these companies are building specialised networks and selling their capacity wholesale, without bothering to set up a distribution structure themselves. There is also a flurry of new operators further downstream, such as US Long Distance, which specialises in the sale of telecommunications services to hotels and hospitals, and ACC which focuses on institues of higher education. MCI itself has become a distributor of mobile services without having an installed network. What is more, the proliferation of operators at all levels of the industry has created new business opportunities for a large number of intermediaries. One such player, Premier Technologies, optimises the routing of communications on the cheapest networks.

New models of competition in a fragmented world

Three strategies are currently emerging. The Boston Consulting Group has singled out:

- The "layer mastery" strategy, which consists in identifying and becoming the world leader in a given sub-field of activity. One example is Intel, in the IT industry, which concentrates on microprocessors and supplies all the IT producers. It is thus breaking with the old IBM or Digital mold, which involved covering the entire added value chain, from components to systems installation;
- The "navigator" strategy, involving putting a large number of customers in contact with a large number of suppliers. This is what the Schwab brokerage house is doing when it provides all its private customers with low cost Internet access to the 600 best investment funds on the US market. Auto-By-Tel, which proposes that car buyers should compare manufacturers' and dealers' prices exhaustively (including each dealer's margin), is a fast expanding "navigator";
- The "orchestrator" strategy, which consists in subcontracting part of one's business, while keeping control of the whole. This is what Nike, the athletic shoes and accessories company, excels in. Without manufacturing itself, nor possessing its own distribution network, Nike manages to organise the entire process, thanks to its control of a strong brand and its capacity to forecast developments in customers' requirements on an ongoing basis.

The implications of fragmentation

The strategic implications of fragmentation run deep:

- The traditional definition of value chains and markets is becoming obsolete: from now on, conventional wisdom about competitors, customers and suppliers must be reworked at every stage of the added value chain in order to develop true competitive advantage;
- Horizontal strategies - which exploit a single added value stage across several sectors - are becoming a serious alternative to the traditional strategies of vertical integration within a single sector;
- Performance management in each added value phase calls for an overhaul of methods used to assess investments and activity portfolios; the outsourcing of a growing number of these means that companies are free to make new choices;
- The company's boundaries are becoming more blurred and permeable. It is no longer necessary that a company own all the elements of its business in order to effectively control or unify them;
- Consumer power and demands are increasing thanks to "navigators", giving them access to more comprehensive information via the Internet;
- Any intermediary which contents itself with merely transmitting information runs the risk of losing its relevance as an intermediary.

Fragmentation is thus bringing about a profound change in the competitive environment.

The key role played by information systems

Information systems, both within a company, and those used in its dealings with customers and suppliers, are indispensable for the success of fragmentation strategies.

Each strategy has its key to success: total mastery of a value-added stage, the smart integration of players or even mastery of a complete sequence.

There are countless bespoke software packages around, and their number is increasing constantly. But IT requirements are complex and costly, and can rapidly exhaust internal resources, both in terms of technical skills and project management, and end user involvement.

It is vital to carefully select the investment priorities for each strategy to manage internal operations by means of ERP software, set up a rich and efficient customer interface, organise and share knowledge by means of a knowledge management system or set up a battery of indicators to manage the whole. These are all crucial investments, and they need to be prioritised. Whilst a "navigator"'s survival is dependent on the quality of its customer interface, the success of an "orchestrator" may depend to a greater extent on its ERP system, which connects all the links of the chain.

Fragmentation causes such an upheaval in the value of the different information systems that, in order to define the priorities, three questions need to be asked:

1. On which elements in the value chain should I concentrate my strategy?
2. What products and services will form the key to my success, and for which customers?
3. What information systems do I need to be set up, and with which priority functionality, in order to optimise my technological and human resources in line with my strategy?

At stake is the ability to combine the strategic development of the company and IT skills in a world undergoing fragmentation.

The fragmentation strategies and their impact on information systems form part of the strategies developed by The Boston Consulting Group.

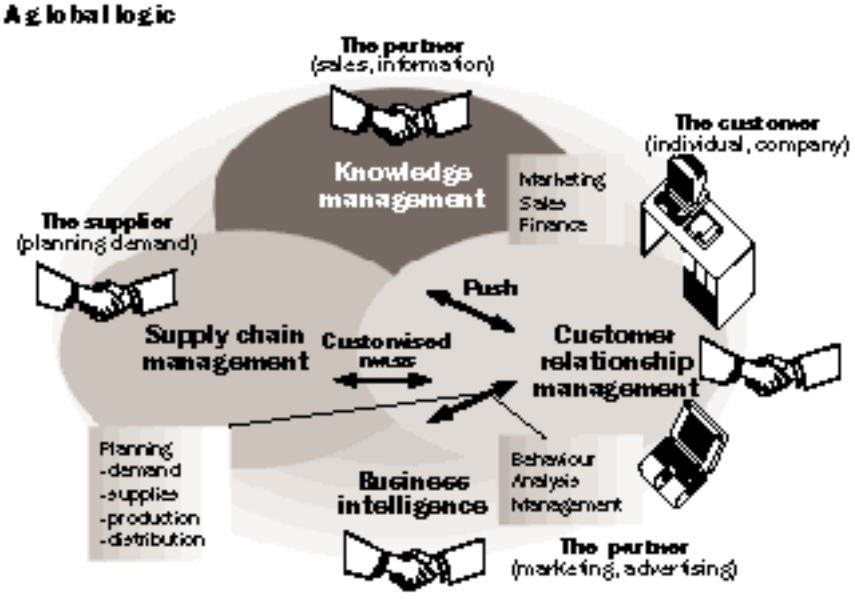
CUSTOMER INFORMATION SYSTEMS: THE FUNDAMENTAL TECHNOLOGICAL MECHANISMS

Written in conjunction with VALORIS

Introduction to four technological factors

Optimisation and rationalisation are no longer sufficient. The information society in which we live is forcing companies to maximise their resources, in order to dedicate themselves to their customers and establish an interactive and distinctive relationship with them. The benefits derived from innovation in products and services are short-lived; a company's true capital consists of the relationships it has with customers, this is capital on which it can build. A kind of ecosystem is evolving, bringing together all front-office functionality, backed by the enterprise resource planning packages which structure a company's organisation.

A customer's decision-making is affected by four elements: price, product, service and the quality of the relationship built up with a company. All too often, studies and resources focus on the first three elements alone. A customer-focused strategy must be founded on a methodology whose aim is the accurate awareness, without pre-conceptions, of the factors affecting decision-making, in order to fully satisfy the customer's expectations and concentrate efforts (investments, public relations, marketing, distribution channels, etc.) on the main factors identified, or those which have the greatest impact on purchasing behaviour.



It is with this in mind that the concept of customer value management came about - a set of methodologies, tools and know-how to help companies know their strategic customers better. The know-how required is three-pronged: strategic, operational and technological.

The techniques involved in this approach relate to customer relationship management, knowledge management and business intelligence, as well as enterprise resource planning, data warehousing and supply chain management solutions, in order to optimise distribution circuits.

Customer relationship management involves mobilising all available channels of interaction: call centres, e-commerce, sales force automation, tight management of marketing campaigns, etc. The purpose of customer relations is to optimise the contacts forged between the company and its customers interactively, through the use of channels as varied and complementary as the telephone, the Internet, personal contact, direct mail, etc. The aim is to manage every customer enquiry efficiently while, at the same time, gathering the information generated by that contact, whatever its source.

New technology plays an important role here and makes it possible to combine different channels, such as linking an e-commerce application to a call centre, so as to offer customers a source of information complementing that of the web site, and accessible by telephone.

All companies have a rich skills and knowledge base (conceptual or technical knowledge, organisational processes, competitor information etc.) which is, however, often dispersed and difficult to access. Nowadays, companies must be in a position to capitalise on that knowledge and rationalise it in a centralised corporate knowledge database. This is referred to as knowledge management; it calls for the use of a number of tools, such as search engines and relational and multidimensional databases. The collective intelligence stored can then be accessed using tools such as electronic mail, electronic document management (EDM) and workflow systems.

The question remains: how can a company use this information strategically in its relationships with customers? This is where business intelligence, or economic intelligence, comes in. This activity, which relies on recent technologies such as data warehousing and data mining, aims to provide a better understanding of customers' values. While every segment of a population shares common features, each individual customer possesses his or her own values. Setting up a knowledge database represents the first phase in this approach. Based on the information stored in databases, a company can deploy data mining and "intelligent agent" tools to understand and predict its customers' behaviour in order to derive maximum value from each.

In order to dedicate itself to this new Holy Grail which the customer represents, the company must have total control over its supply chain: from production to distribution. By modeling its constraints and those of its partners - subcontractors, transporters, distributors, etc. - a company can reflect the resulting effects smoothly and efficiently over this entire chain.

This is the aim of operations management, efficient customer response (ECR). ECR provides support to decision-making, making it possible to react more rapidly to a customer's enquiry and thus improve stock rotation, while at the same time avoiding the impact of stock breakdowns. It also provides optimal management of deliveries and maximises the number of points of sale, while at the same time reducing stocks.

With ECR, a company no longer undergoes the pressure of pre-planned production, switching instead to just-in-time production, i.e. production and delivery of goods in response to a customer's order. The key principles of ECR include doing away with paper flows through the use of electronic mail and EDI, and setting up a smooth flow of goods using a workflow system.

Microsoft's integrated platform is capable of supporting the information systems which companies need. This infrastructure enables technological building blocks, whatever their origin, to communicate and interoperate smoothly. It simplifies the deployment, administration and development of efficient solutions.

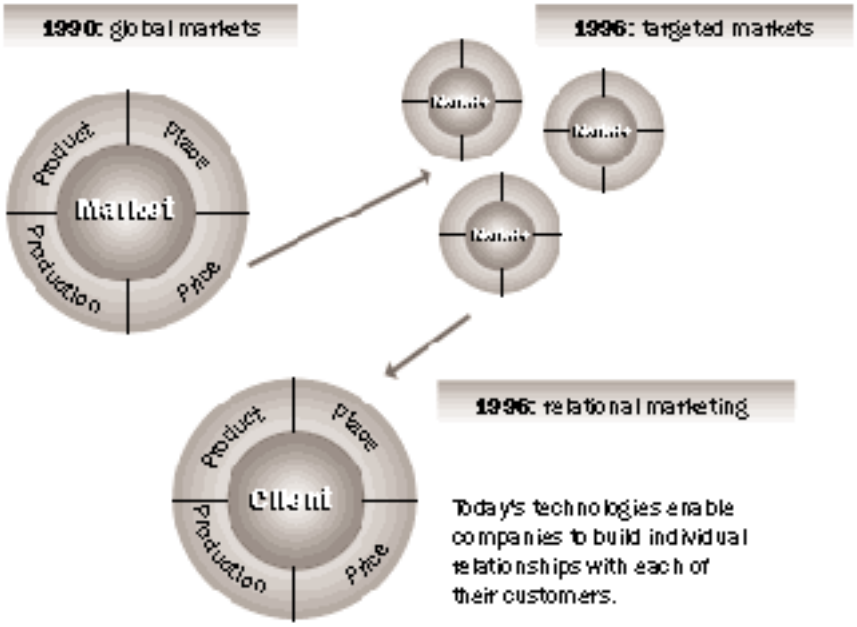
Customer relationship management

Assessing customer data

For far too long, companies have devoted all their efforts to their products and services, thinking that quality alone would naturally entice customers to remain loyal to the brand. In today's massively competitive world, the beneficial effect of a new product is short-lived. On the other hand, establishing a long-term relationship with customers constitutes a decisive factor in creating competitive advantage. Many companies have understood this and have now positioned the customer at the core of their strategy.

The methods and tools for what is known as Customer Relationship Management, (CRM), or more generally Enterprise Relationship Management (ERM), are being widely developed. They help companies to better segment their customer base by holding and expanding databases which include all the necessary information on each customer - their purchasing and enquiry profile, their behavioural profile, degree of profitability, etc.- all of which helps provide the best response to each customer's needs. One of the key aims, naturally, is to identify, attract and win the loyalty of the most profitable customers.

From mass marketing to precision marketing



Everything goes, but customers must stay
This involves setting up a structure entirely dedicated to the company's customers as, all too often, companies tend to break down a customer's details into functional or geographic structures. This hinders customer knowledge. Providing a free-phone number to access one's after-sales service is pointless if the teams manning the lines are not trained to respond accurately to callers' requests.

In order to render the ERM tools effective, a company must assess the key criteria at hand. Some, such as customer satisfaction or purchase levels, are obvious; others, such as an individual customers' relative importance to the company, are more difficult to apprehend. Thus, in certain cases, losing a customer may not be a bad thing if it means gaining more profitable ones. Also, an over-hasty analysis of customer satisfaction surveys may be misleading. For example, the difference between "very satisfied" and "satisfied" customers may be much more important than it seems, if the first segment is six times more inclined to continue buying the company's products and services than the second.

Hence some experts recommend having a "360 degree" view of the customer. This simply means recording all the information relating to the relationship and interaction between the company and its customer. Each interaction provides an opportunity to improve or, conversely, degrade the relationship. A sales representative who takes the trouble to check customers' profiles before visiting them may identify solutions to their problems, and then be in a better position to offer them new products and services.

With this 360 degree vision, the act of buying merely becomes part of the bigger picture, which must be complemented by other elements, such as the means of selecting, owning and using a product; a satisfied customer will be prepared to pay more for the same product than a new customer. Imagine a customer who is given the possibility of "assembling" their own

Depending on their strategy and the sector in which they operate, companies might focus on developing a particular element of their customer relationship management system. For example, a new telecoms operator will concentrate its efforts on the sales and marketing channels in order to gain new customers, whereas an existing operator will place more emphasis on service to win customer loyalty. To meet these different needs, Siebel is offering its Siebel 99 product, a modular solution specifically tailored to the requirements of five major sectors: finance, insurance, communications and the Internet, mass-consumption products, and the pharmaceutical industry.

One of Siebel's great strengths is to have emerged at a time when technology was making a significant qualitative leap forward with the appearance of the client-server model and, above all, the Internet. These innovations enabled a vendor to base products on a flexible and dynamic technological architecture - flexible inasmuch as it enables applications to be deployed on all existing client terminals: traditional workstations, portable workstations, workstations equipped only with a browser, and mobile, PC and pocket organisers.

Siebel 99 addresses this dual constraint, meeting the needs of end-users who may be mobile or sedentary, depending on their particular roles within the company, with functionality that can be easily customised to suit a company's culture and environment, but is not difficult to implement. The average duration of projects, regardless of company size, is around six months and never exceeds one year, and the investment is promptly recouped in under a year. The results achieved by Siebel customers reveal an average increase in turnover of between 15 and 25%, once the product is in production. Siebel's architecture was designed to be adapted to large organisations and to support scaleability, with several installations to date of over ten thousand workstations. However, Siebel's product is not restricted to large accounts. Under the right conditions, it can be considered for an environment of fifty workstations and over.

Mercedes-Benz deploys a customer relationship management project in Europe
The automobile manufacturer is integrating its subsidiaries and dealers as part of a major project designed to enhance customer relationships.

The Mercedes division of the Daimler-Chrysler group, the fourth largest automobile manufacturer in the world, made 925,000 cars in 1998.

Mercedes-Benz has, for many years, been known for its technical savvy and for its particularly caring approach to customer relations. One example of this is its after-sale service, which is much praised by users.

The customer relationship management project, first piloted at Mercedes-Benz in the United States, is currently being deployed in Europe. In what is clearly a very competitive environment, where the traditional advantages of Mercedes cars (quality and reliability) come under constant fire by other manufacturers, the company decided to combine its large number of local customer service initiatives into a pan-European project. "Our aim with this project is to position our customers at the heart of the company, to create strong and lasting relationships with each of them - whether they are newcomers or longstanding customers, companies or private individuals - and to provide the same quality of service across Europe", concludes Marc Ouayoun, relationship marketing manager for France, Switzerland and Belgium at Daimler-Chrysler.

Several hundred thousand calls processed
Today, using a database which cross-references all Mercedes customers in Europe, the first concrete elements of the Mercedes-Benz customer relationship management project have been developed, and are already operational in some European countries.

The company's customer assistance centre began operating on the 1st of August 1998. Based in Maastricht, Holland, it consists of a pan-European service platform employing nearly 350 people. Working round the clock, seven days a week, the centre can respond to any request for information, support and service from Mercedes' European customers. Calls can be answered in twelve languages, and the centre is designed to handle over 10,000 calls a day from the year 2000 onwards. Later, the call centre will conduct satisfaction surveys and outgoing calls may be cross-referenced and analysed with incoming calls.

For Mercedes-Benz, customer relationship management also means a new approach to communication, involving "relationship marketing", as shown by campaigns launched at the end of 1998. Using information in the database, the application enables targeted messages to be sent out in the form of mail shots, depending on far more accurately defined existing and prospective customer segments. "Our long-term objective is to do away with mass mail shots altogether, and keep in touch regularly with all our existing and prospective customers in order to let them know about the right products at the right time," explains Marc Ouayoun. This ability to interact with the customer will, of course, also be enhanced by a new delivery channel using Internet technology.

Given this framework, Siebel was singled out for its integrated solution which enables the entire customer relationship cycle to be managed and adapted, fairly seamlessly, to Mercedes' specific requirements. While it is still too early to assess the return on investment of such an implementation, Mercedes is nevertheless hoping that it will yield the kind of results achieved in America. There, the implementation of customer relationship management, combined with the launch of new, well-positioned vehicles, resulted in a doubling of car sales over a four-year period.

Knowledge management

Making the most of a company's information assets

"Dow Chemical, one of the world's leading chemical companies, has used knowledge management for thirty-five years," Jim Allen, director of the Dow Chemical Knowledge Management Group declared recently in a specialist magazine on the subject. "But it's only three years since the company started to formalise its approach in this field." During this period, the American chemicals giant has invested more than US$ 70 million in information systems to support its knowledge management strategy.

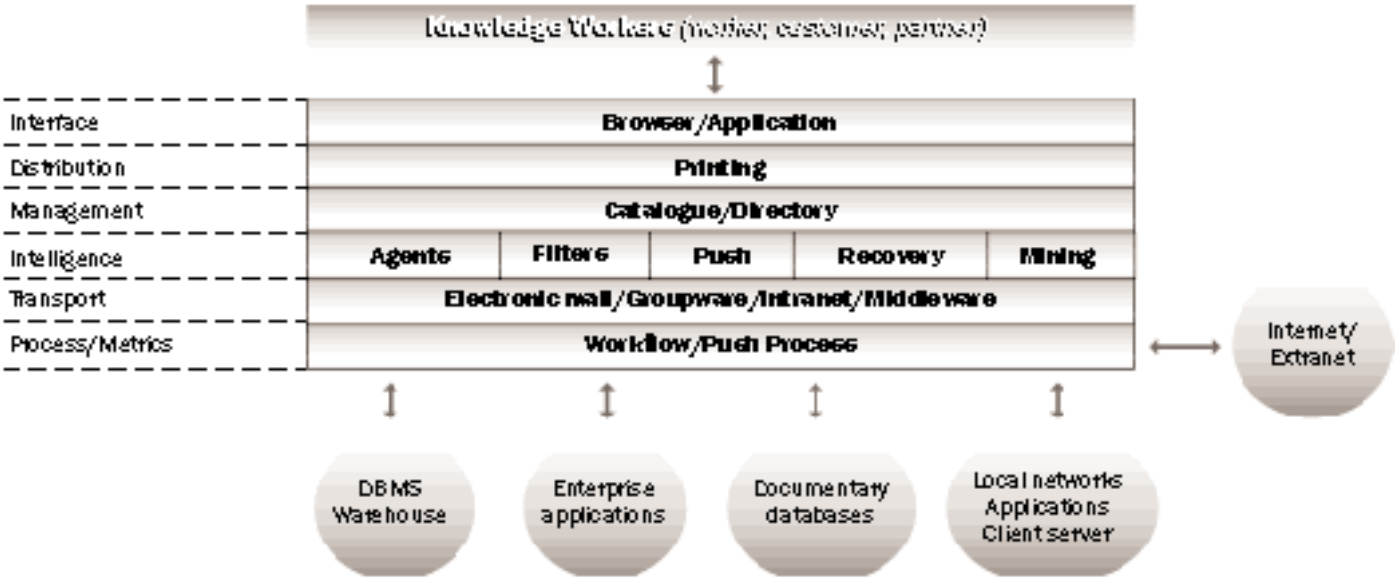
Companies have always had a documentation department. But the term once carried a rather old-fashioned connotation and its operation was seen to be out of synch with other departments. An initial technological revolution brought about by EDM3 substantially changed the operation and position of the documentation department within the organisation. These technologies are now in use throughout organisations.

3 Electronic document management: used to consolidate (acquire-convert-compress), archive (indexing), file (storage) and retrieve (viewing), administer (publication and monitoring) and secure (physical and logical access controls) documents originating from different sources (keyboard, pen, camera, telephone, micro-computer, fax).

Knowledge management constitutes the next step in this development and EDM is one of its key elements.

"Knowledge management consists in increasing, managing and transforming a company's intellectual capital in all its forms (people, know-how, techniques, procedures, files, information, etc) - anything and everything that can be labeled an information asset - into competitive advantage," explains Christophe Binot, a consultant at Elf-Aquitaine's information systems division.

Knowledge management architecture



Knowledge management fits in with the concept of corporate assets, covering both structured and unstructured documents. The former traditionally consisting of information managed by databases.

According to the experts, they represent between 10 and 30% of a company's assets. The latter, consisting of unstructured documents, are far less organised and come in a variety of forms: mail, e-mail, HTML documents, audio or video documents, faxes, etc. The three phases of knowledge management must be applied to these documents: consolidation, i.e. document capture, circulation and publication. Document capture involves preserving the document in the form of an unalterable image or, by means of optical character recognition tools (OCR), in the form of modifiable content. The choice between the two is determined by the type of activity involved and the application to be implemented. Circulation relies on electronic mail and workflow[4] technologies. Publication via the corporate intranet ensures that the maximum number of company employees can be reached, simply and efficiently.

4 Workflow: a system for automating administrative and workgroup processes. It involves a limited number of people, who must achieve a global objective, using a defined procedure within a set amount of time.

Filenet delivers a global solution for knowledge management
Filenet is mainly active in the field of unstructured information management, to which it applies the traditional knowledge management mantra: consolidation, circulation and publication. Its approach consists in integrating proprietary technology with off-the-shelf products, to achieve a global solution which can easily be implemented by the end-user.

This is the case with the company's "full-text documentary search" engines such as Fullcrum or Excalibur, which have become market leaders.

Grouped together under the Panagon brand, Filenet's products consist mainly of three server-side modules and one client-side access and viewing tool, called IDM Desktop.

The first module, Image Services, enables a variety of document formats to be scanned, with a view to their being stored in a digital format.

The second module, Visual Workflow, is a workflow engine which enables the creation of applications, incorporating both IT and functional-level processing tasks. It is a flexible tool, enabling department managers to monitor and alter the processing tasks, as and when needed.

The third module, Document Services, enables data to be stored and indexed in an archive and provides a means of consolidating relevant information in a single document, which can then be retrieved in a single transaction.

On the client side, IDM sports a graphical interface which allows end-users to view, manage, modify, share and publish any type of document. This interface may be run either in client-server mode or directly from the Web, with the same level of functionality. One key advantage of the Web version is ease of deployment and administration. The viewer component can be downloaded straight from the server.

In both configurations, IDM Desktop provides seamless integration with the Microsoft Windows® IT environment and Microsoft Office, and compatible applications. IDM Desktop supports viewing of more than two hundred different file formats, without requiring the presence of the native application on the workstation. It is possible, for instance, to view an architectural blueprint produced with Autodesk's Autocad without possessing that software. The operator can perform hundreds of manipulations on these documents (rotation, zoom function, enlargement, etc.) and make annotations on them.

Filenet understood the need to integrate Internet technology into its Panagon range. Using Web Publisher, documents can be published on a web site, whether on the Internet, an intranet or an extranet. Original documents are automatically exported direct from the Filenet archive to the web site, while complying with the company's presentation specifications and standards. Dynamic links are maintained between the two versions of the document - the original document and the HTML image - enabling changes to the original document to be reflected as and when they are made.

File management and sharing at Macif
Increasing productivity, in order to improve the quality of service to customers who are Macif shareholders, is a constant priority. The claims management application implemented by Macif Ile-de-France is no exception to this rule. After a detailed study of procedures and activities, the insurance company decided to develop an electronic document and process management application for part of its activities, relating to car accidents, negotiation and compensation between insurance companies. Macif opted for Filenet's tools: Imaging Services for document management and Visual Workflow for process management.

At an operational level, the first step consists of scanning all letters, faxes and other incoming documents, a task which Macif naturally entrusts to the mail department. Once scanned into digital format, the entire contents of all the documents can be accessed by underwriters from their workstations. Each document is provided with a bar code, followed by a complete document archiving process.

In each case, the document image is automatically assigned to one of the underwriters. The assignment takes place electronically, that is, the document appears in the electronic in-tray of the relevant employee's workstation. In the case of exchanges with other insurance companies, such as in the event of a dispute, transmission takes place through electronic data interchange (EDI) or electronic mail systems.

Before processing each file, the underwriter can check all the relevant elements, without having to launch into time-wasting and sometimes fruitless searches, simply by clicking on the electronic in-tray. The employee can then fully devote his or her time and effort to the task at hand, and provide the customer with the best service possible.

At team level, the manager can monitor the progress of the workload and reallocate tasks if necessary, in the knowledge that each file can be accessed by all the underwriters on a continuous basis.

Macif has also automated certain work processes thanks to the use of a workflow engine: Filenet's Visual Workflow. But this automation does not lead to rigidity, since the processes, which are displayed graphically, can be modified depending on the adjustments required. Furthermore, partial processes can be pursued unaltered, in order to accelerate the implementation of new processes. Encouraged by this first project, which turned out to be a success, Macif decided to extend the application to other departments of the company, in particular its fire claims section.

This development opens the way for yet more change, namely completely re-merging certain business processes as new needs demand, with a view to improving quality of service. This will be facilitated by new and emerging knowledge management technologies.

Business Intelligence

Developing awareness thanks to information

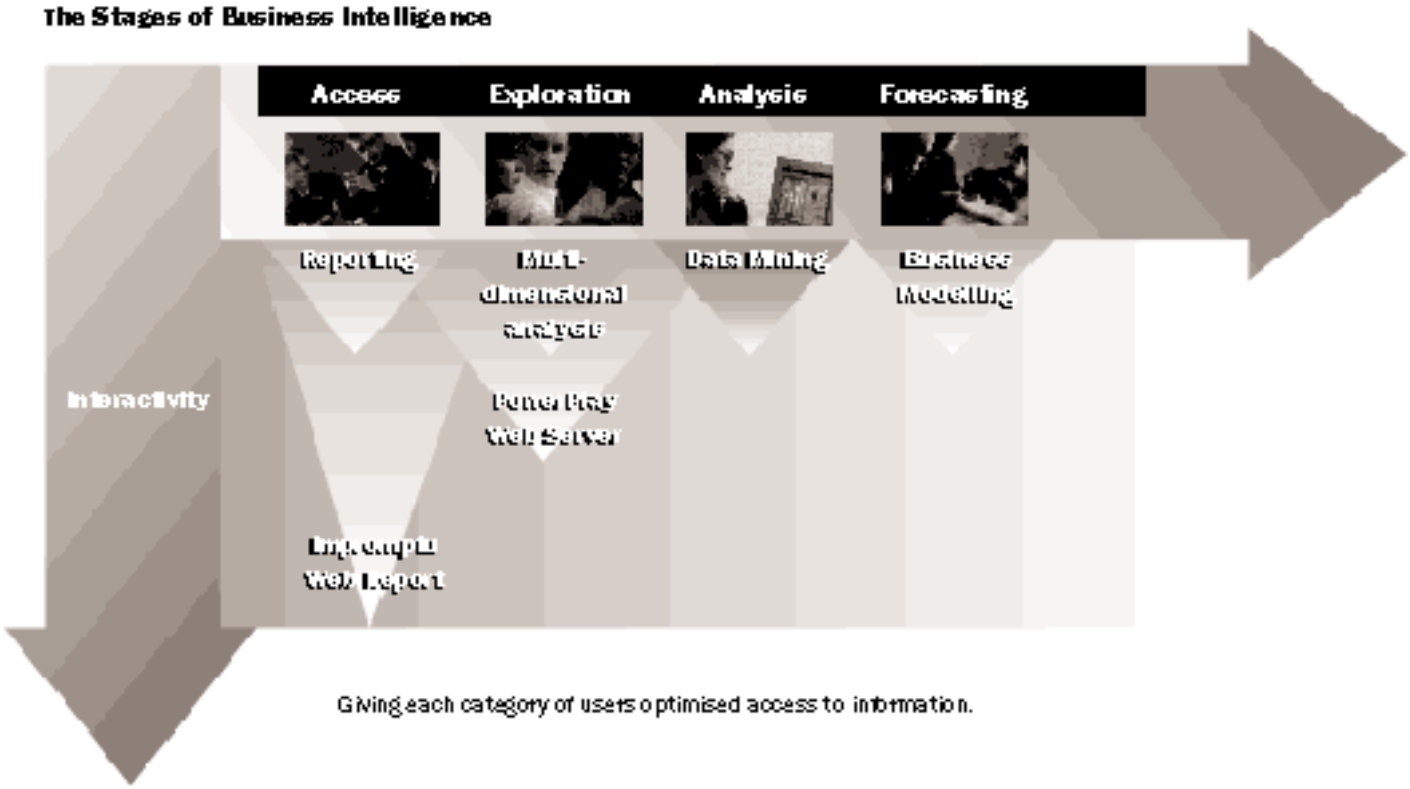
Faced with massive competitive pressures linked to market deregulation and globalisation, a saturation of needs and increasing consumer volatility, companies must implement mechanisms for getting to know their customers better, in order to win their loyalty. Marketing studies have shown that the cost of winning a new customer is around four to five times higher than that of keeping an existing customer. Many companies have already launched programs to win the loyalty of their most profitable customers. In 1997, the tour operator Nouvelles Frontières carried out a precise segmentation of its customers in order to implement precision campaigns, targeted according to customer profile. "By gaining a better knowledge of customers, we should be able to advise them better," explained Jacques Maillot, CEO of Nouvelles Frontières, commenting on the company's new marketing guidelines.

Facts should replace intuition

Introduced at the end of the eighties, business intelligence comprises a set of concepts and methodologies aimed to facilitate and improve the decision-making process based on factual information, and not merely on know-how and intuition. Using a business intelligence system, according to the Gartner Group, involves "gathering information from multiple sources and deploying the requisite expertise to build up hypotheses, for the purpose of evolving a business development dynamic."

Business intelligence brings together different and hitherto isolated concepts, some of which have already existed for many years, starting with the control panels which have been used since the Seventies by decision-makers to analyse large volumes of data graphically. These were followed by so-called "decision support" tools, which were mainly reserved for developers.

The parallel development of databases and micro-computing broadened the number of data manipulation tools into the plethora available today. Once separate, traditional decision support tools are now integrated into more comprehensive business intelligence systems, which incorporate technologies as divergent as data warehousing, data mining, data viewers and geographical information systems.



Cognos designs an architecture for data analysis

Cognos is noted for its global approach to business intelligence, which covers all decision-making requirements, from simple access to data, to modelling and reporting, not to mention the intermediary stages of processing and enhancement of data into the kind of contextual, useful information needed for decision-making. The concept of business intelligence is defined by Cognos as, "the possibility for a decision-maker to analyse his company's activity, at any time and from any angle, in order to take the right decision at the right time, based on adequate information." The raw data might relate to products, dates, customers, geographic spread and other criteria. Business intelligence makes it possible to cross-reference these different criteria on a continuous basis in order to isolate those which appear most relevant. "It provides a complete overview," explains Ron Zambonini, CEO of Cognos, "that is both accessible and flexible."

With its OLAP[5] PowerPlay multidimensional modelling tool and its Impromptu querying and reporting tool, Cognos has developed a business intelligence architecture which provides optimal access to information for any task and any user profile, from analysts to decision-makers, and even non-technical operators who are only consumers of information.

5 OLAP: OnLine Analytical Processing (a database dedicated to analysis). State-of-the-art technology decision-making system, characteristic of applications designed to deal with large volumes of information for relational and analytical purposes, OLAP uses multidimensional models (relational sorting, for example) which make data easier to comprehend.

The former can extract data directly from the relational database and analyse it from different multidimensional perspectives. The latter can submit simple requests using multidimensional analysis tools, which require no technical training. "Cognos' approach is characterised by a clear vision of the access infrastructure and users' different ways of interacting with the data," says Henry Morris, programs director for IDC, "be they report creators or end users who can make do with a simple device for subscribing to data dissemination lists."

Cognos provides a link between the two tools with its "Analyse-Then-Query" approach, which enables the data to be analysed at a multidimensional level, then in detail, thanks to Impromptu.

The sources of this data are very heterogeneous: data warehouses[6], data marts[7], multidimensional databases, management software packages, and production systems. A business intelligence solution must be capable of using all this data efficiently.

Until now, data analysed by decision support tools was internal to the company. The next phase will see the inclusion of external data concerning the market and the competition. This expansion is made possible by the Internet. But the Internet is not just a source of information, it is also a set of technologies at the core of which lie the TCP/IP and HTTP protocols, and HTML, the page description standard.

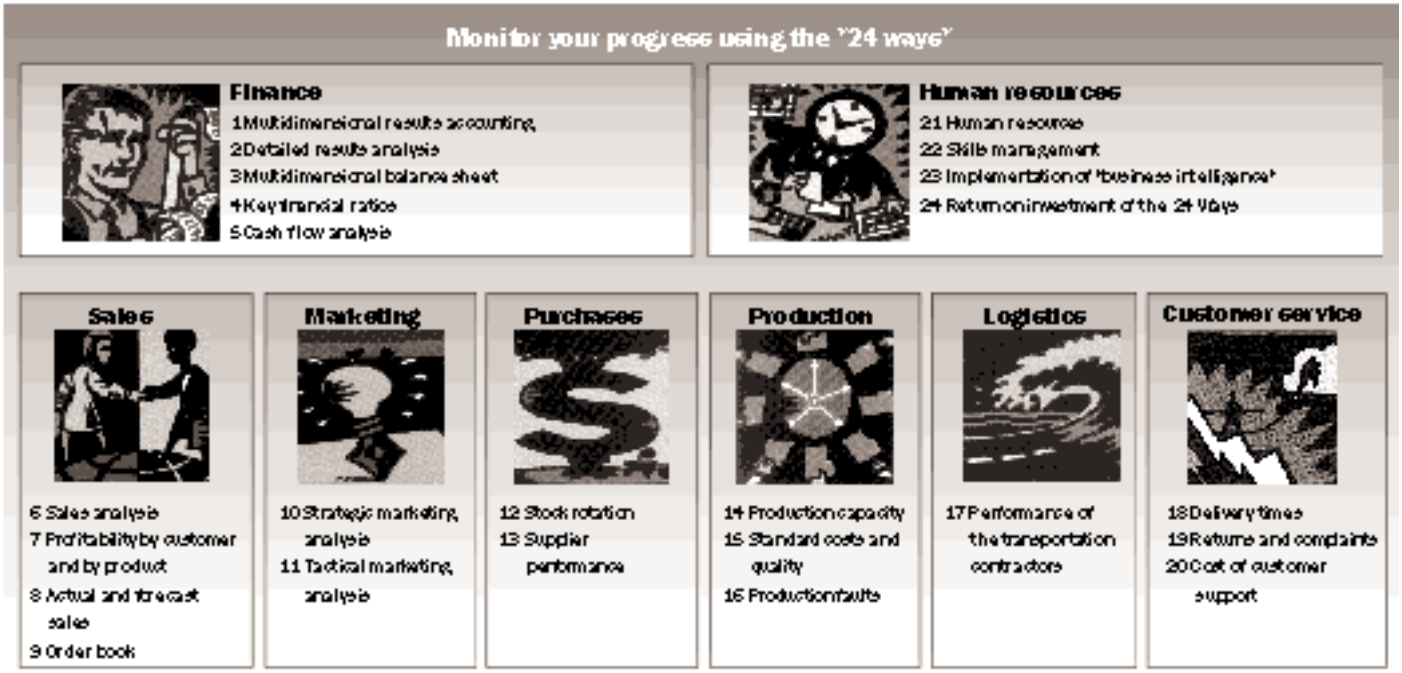
Cognos has opted for an open approach by providing both traditional client-server versions and web-based versions of its products. Once again, the version deployed must be determined in accordance with the profile and requirements of the end-user. Analysts will need the power provided by a server-based tool, whereas end-users will work more efficiently using a tool running on a web browser. Cognos offers web versions of its two flagship products, PowerPlay and Impromptu, called PowerPlay Server Web Edition and Impromptu Web Reports. These extend the power of decision-making reporting to the Web, though the traditional client-server versions allow greater interactivity and give end-users the possibility of creating their own reports and seamlessly navigating through the data.

Switching from the former to the latter is very easy, and is done using a simple add-on. For instance, PowerPlay's Server Web Edition can pick up all existing reports and display them on an intranet.

6 Data warehouse: An information system combining themed, integrated, non-volatile and archived data to facilitate strategic decision-making.

7 Data mart: A data warehouse sub-set, extracted from a main Data Warehouse and relating to a sector of the business (marketing, finance, human resources, etc.)

A global vision of the company



Business intelligence enables cross-referencing of all the company's data in order to pin point significant criteria.

Saft: a case in point

A world-beating maker of batteries, Saft implemented a worldwide re-organisation of its product lines in order to increase customer satisfaction through better reactivity and greater efficiency.

In all three of its product lines (portable batteries, industrial batteries and energy conversion systems), Saft has to deal with a range of heterogeneous sales and marketing structures: direct sales, indirect sales, mass-consumption.

Likewise, sales cycles differ widely from product to product. The sales cycle of portable batteries approximates that of consumer products, whereas the sales cycle of aircraft batteries, for instance, can be spread over several years.

The company's worldwide re-organisation has involved implementing new information circuits, which can no longer be based on national structures. The initial aim is to provide the company's 300 end-users with a tool for monitoring and analysing commercial data, before extending it to other domains.

In implementing its new decision-making system, Saft did not start from scratch, since it already operated an infocentre, but it wanted to go much further. The choice of tools was largely derived from running end-user test groups, which used scoring methods to select the PowerPlay multidimensional tool and Cognos' Impromptu querying and reporting tool.

These users, who were drawn from each of the company's operational departments, featured very different profiles: sales representatives, management auditors, marketing managers, senior management, etc. Implementation was rapid, with the commissioning of a pilot site in September and full production deployment four months later.

Choosing the system architecture was relatively straightforward: the company's major sites were equipped with the client-server version of the product. The smaller sites, and the sales representatives, who are itinerant by definition, were equipped with the Web version.

A total of fifteen cubes[8] were produced and installed on six servers, including one master, which replicates all the data on the secondary servers. The data derives from the company's production systems - eight in total - which feed a database daily, with automatic checks on the coherence and integrity of the data.

8 Cubes: multidimensional structures which store data in the form of tables and enable end users to browse through the data according to predefined guidelines (geographic zone, time, product, etc.).

Using this new decision-making tool, end users can monitor, far more accurately, data which is being continuosly updated. And indeed, users confirm that the tool enhances their ability to monitor day-to-day operations. Recently, for instance, the sales department was able to analyse the price index of portable batteries, in which the competition - which happened to be Asian - was making huge inroads, and reposition its sales policy in terms of price.

The monitoring of outstanding payments was completely overhauled at one of the company's sites by setting up check points, which provide greater control over day-to-day operations.

End-users realise that implementing new, performance-enhancing tools entails learning new working methods and contributes towards improving customer service. A training campaign was launched to teach employees to use the tools and make the most of the possibilities they afford.

Managing customer operations

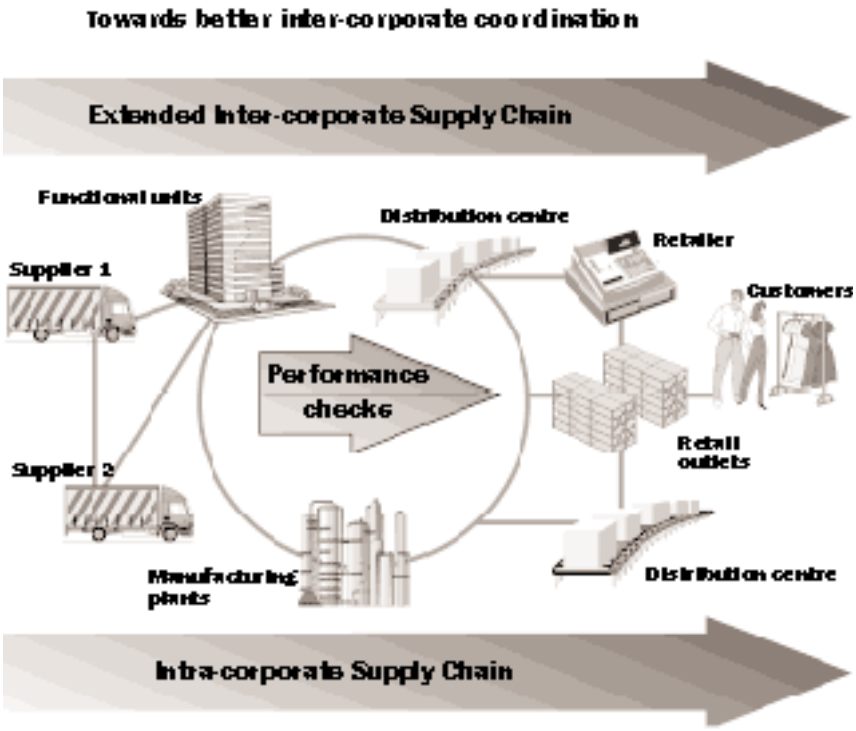
Steering the right course - that of the customer

After having placed great emphasis on improving productivity and controlling costs, companies are now concentrating all their efforts on satisfying their customers, as it is customers who, at the end of the day, determine the value of a product or service. "The customer is the real boss of the company," François Michelin explains in his book *Et pourquoi pas? [And why not?]*.

To satisfy its customers, a company must be capable, above all, of serving them efficiently. Effective management of the operations aimed at boosting customer relations involves implementing a set of tools which enable all the players in the supply chain to be "customer-led" and adapt to, as well as anticipate, changes in demand.

These tools are designed to deal with several challenges. First of all, a company must be flexible. It must be capable of reacting rapidly to its customers' requirements and expectations, which are constantly evolving, while at the same time controlling time-to-market, and maintaining a high level of personalisation in their products, despite continuously growing volumes. Secondly, a company must master new technologies, which boost its capabilities and increase the options for interaction with the customer: via mail, telephone, fax, e-mail, call centres, direct personal contact, etc.

Lastly, a company must undertake a major push in terms of consumer information and education in order to orient and adapt consumers' minds to the new environment.



Customer relationship management means all the players in the supply chain must be customer-led.

Setting up a process logic

A process is characterised by 3 key aspects:

1. A process is defined and characterised by a beginning and an end.
2. It consists of a set of multidisciplinary operations which are aimed at transforming an initial product (or service) into an end product (or service).
3. There can be no process without a clearly identified customer alone who determines and assesses the value and quality of the service provided.

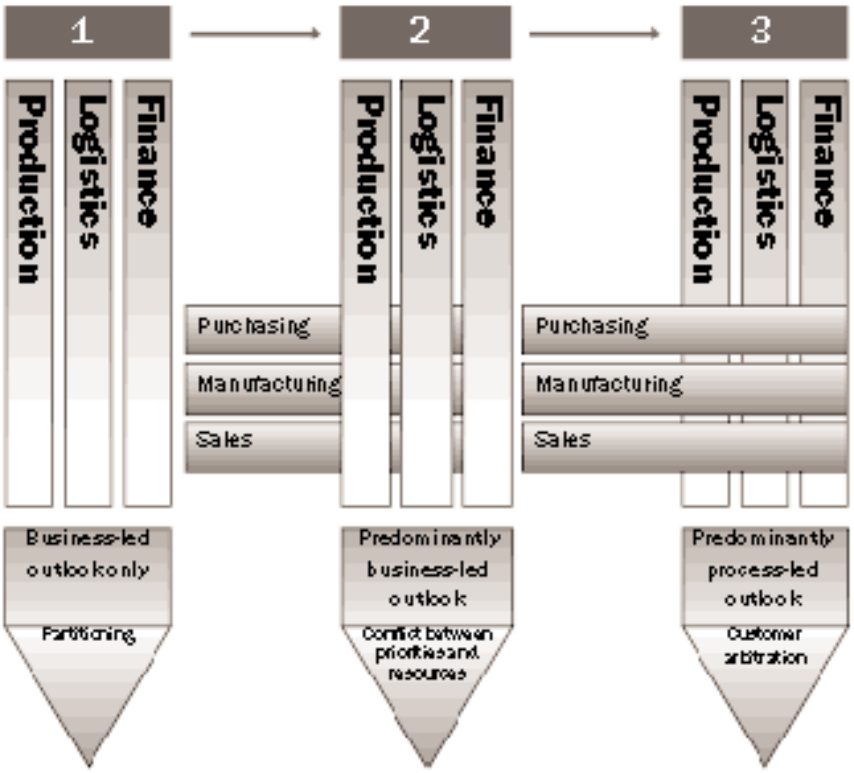
Companies are traditionally organised according to either of two kinds of outlook: a business-led outlook and a project-led outlook.

A business-led outlook implies that a company is structured along traditional tasks: marketing, finance, production, etc. This is the structure that has been the norm up to now and which has enabled companies to improve their efficiency and productivity.

In order to cope with the need for reactivity and cost control, companies have developed the project-led outlook.

In fact, these two types of outlook complement one another. The synthesis of the two results in what is known as a process-led outlook.

Using a process-led outlook, a company can truly position its customers at the core of its strategy.



Source: Le Client au coeur de l'organisation (The Customer at the heart of the organisation) - Les Editions d'organisation

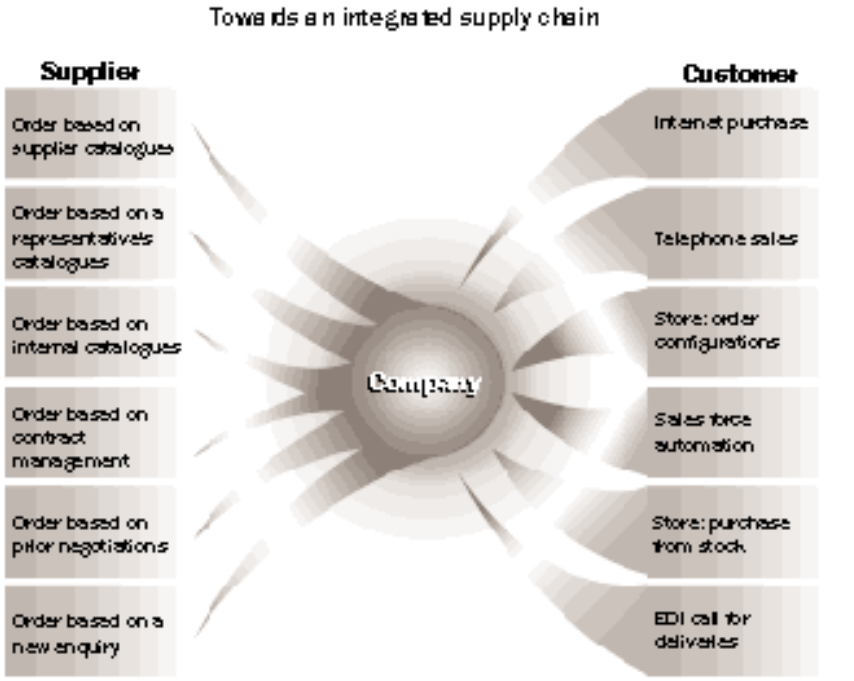
The growing integration of companies with their various partners - suppliers, subcontractors, distributors, dealers, retailers, etc. - calls for very precise logistical coordination. This inter-corporate coordination overcomes traditional fixed boundaries by integrating processes on both the purchasing side (from purchase order to payment) and the sales side (from the customer's order to the issuing of the invoice). It is matched by synchronising the physical flow of goods with the flow of information, and automating this process as much as possible to eliminate the need for manual intervention, which is often a source of errors.

It is thanks to this level of coordination that a company can balance the supply chain with demand, while overcoming the problems raised by the shortening of product life cycles, fluctuations in demand and growing pressures to reduce prices.

SAP introduces customer requirements to its software
SAP, the world leader in the field of enterprise resource planning (ERP) systems, launched three initiatives aimed at enhancing its back-office system by providing improved customer relationship management: Supply Chain Management (SCM), Business Intelligence and Customer Relationship Management (CRM).

In order to enable companies to tailor production to fluctuations in demand, SAP is offering an integrated solution to manage the supply chain, enabling decisions to be taken in real time. The component designed to improve efficient customer response (ECR) is only one of the elements of SAP's SCM initiative, the first two functional modules of which are now available: SAP APO (Advanced Planner & Optimiser) and SAP BIW (Business Information Warehouse).

SAP's APO comprises a set of tools for planning the supply chain.
APO implements inter-corporate coordination by creating a tight and synchronised interaction between all the participants in the supply chain, from suppliers to sales representatives and production planners, to buyers and customers. This software package is available commercially and has already been implemented by some fifty clients as part of pilot projects.



The use of Internet-based technology fosters the integration of the management of the logistics chain.

SAP's Advanced Planner & Optimiser modules

- Supply Chain Cockpit: an intuitive interface enabling the entire supply chain to be controlled;
- Demand Planning: a module used for monitoring demand and creating forecasts, capable of detecting the slightest early signs of any change in demand;
- Supply Network Planning & Deployment: synchronises demand with subcontractors and production, and maps out the product flow throughout the chain. This module enables the distribution network to be recognised and the load optimised;
- Production Planning and Detailed Scheduling: monitors the allocation of raw materials and resources to each production unit. This module enables operational production timetables to be set up;
- Global Available-to-Promise: supporting a multilevel strategy based on business rules. This module makes it possible to ensure that a company's products truly meet customers' expectations. It also ensures that delivery commitments really are met.

Combined with the R/3 software package, SAP's Business Information Warehouse provides all a company's units with rapid and reliable access to the information necessary for lining up processes to customer demand. The business models are the same as those of R/3, thereby building on a huge, existing corporate user base: analyses by market segment, financial, profitability and stock analyses, etc. The integration between a company's data warehouse and R/3 system enables data to be extracted, collated, transformed and grouped in formats customised for different end user groups.

SAP R/3 reinforces reactivity towards the customer
With the R/3 integrated management software package, SAP can assist companies in their effort to improve the awareness and reactivity of all their departments towards the customer.

Alcatel Converters, a company specialising in energy conversion, supplies other companies with power converters and power supplies. Its key strengths are a mastery of the latest technologies, the ability to innovate, and tremendous reactivity to customers. The company was able to homogenise its organisation and generate smoother exchanges of information over the past year thanks to SAP's R/3 product. Alcatel Converters monitors and manages its business through the use of key indicators, using R/3 to ensure coherence between its different activities.

The performance of Alcatel Converters' industrial process has increased, from initial customer contact and acceptance of an order, to the after-sale service provided to the customer, not to mention the development and production of the product itself. Last, but not least, SAP's R/3 is going to enable the company to implement an EDI solution, which will further foster direct contact with customers.

Aesculap France, a small to medium-sized industrial company specialising in medical instrumentation and the supply of orthopaedic prostheses, and the subsidiary of a German company, wanted to optimise the management of its vertical flows and to achieve an enhanced overall clarity of its processes in order to sustain its development strategy.

The company's thirty-five SAP R/3 users, drawn from senior management and the financial, sales, IT and production departments, can now toy with "business-related data" which they can analyse according to their requirements. Not only has the company's productivity risen and its service quality improved, but it has also simultaneously obtained ISO 9000 certification.

Furthermore, the implementation of the latest version of SAP R/3 will enable Aesculap France to offer its customers a facility for placing orders over the Web.

Pistons de Colmar, manufacturers of pistons for automotive engines, has to cope with both intense international competition and with rising quality requirements on the part of automotive manufacturers. An important part of the company's strategy is therefore focused on controlling its manufacturing costs, limiting cost increases and cutting costs.

The company's implementation of the latest version of SAP R/3 in 1997 brought Pistons de Colmar a much needed opportunity for growth and clarity. With real-time access to its accounting components, originating from manufacturing orders, stocks, purchases and sales, the company gained a highly enhanced overview of its costs.

The implementation of SAP software has thus led to improved productivity and autonomy for the company's workers in their day-to-day tasks. This has enabled Pistons de Colmar to exercise genuine control over costs and the quality of its products, to the benefit of its customers in the automotive industry.

Electronic commerce (e-commerce)
Allowing customers to benefit from a new quality of service
Electronic commerce promises unrivalled opportunities for growth, a fact which is already becoming clear thanks to a number of runaway success stories.

Yet even though e-commerce is the ultimate global sales and marketing tool for a world without borders, for most merchant sites, its growth is still currently based on local databases (Amazon.com derives 70% of its turnover from the United States, for instance). Cross-cultural problems and the costs involved in localising sites and products can sometimes limit the pace of globalisation.

France is making up for lost time
France and Europe experienced significant growth in e-commerce in 1998. Despite a late start compared to other countries, France gearing up and making up for lost time.

According to the Médiangles market research company, in 1998, the number of hits registered in France grew by 62% compared to 1997, versus 52% in the rest of the world. According to TMO Consultants, home-based Internet access represents 43% of overall use (versus 38% in the United Kingdom and Germany).

Furthermore, with regard to electronic commerce, 11% of French Internet users have purchased goods or services over the Internet over the past six months, with an average value of 750 francs per transaction (29% of purchases are worth less than 250 francs, and 20% are worth more than 2,000 francs).

Throughout Europe as a whole (according to Les Echos), the number of e-commerce sites has risen from 4,500 in 1997 to 19,000 in 1998 and is expected to reach almost 75,000 in 1999.

Business-to-business e-commerce
Business-to-business commerce over the Internet is a lucrative business. In 1998, it accounted for financial transactions of 136 million euros in Europe. In 1999, that figure is expected to reach 660 million euros, and then 2.5 billion in 2000.

For companies, the use of e-commerce sites can result in a more efficient management of logistics: a shortening of the supply cycle and an improved exchange of information, in particular faster processing - at electronic speed - of data from the customer. The result is reduced stocks and the "partitioning" of supply into a wider range of products, offering the consumer greater choice.

From the customer's point of view, the improved quality of service provided by the onset of e-commerce is the most obvious benefit. Not only do they benefit from faster transactions and greater possibilities for personalisation of products, but they also have a direct channel for feedback.

Reversal of the position of strength
Consumers thus gain the upper hand over suppliers or manufacturers. They select the model of their choice (either from a very wide range of goods offered on the site, or using extensive personalisation options), seek out the best price from their workstation, and place an order, triggering production.

Nowadays, the only barriers to the development of e-commerce are those which slow down the optimisation of the supply chain.

In order to make e-commerce a genuine success, the suppliers of technical hardware and services must improve the products currently on offer to companies. This involves improving equipment and software platforms, portal sites for the purpose of capturing a suitable audience, and integration of all the processes (secure payment, on-line marketing, etc.), by highly qualified partners, into the company's information systems.

Microsoft unveils its "3P" concept (Platform, Portal, Partnership)
The promises which many suppliers have made when arguing in favour of developing e-commerce have not always been kept. On the consumer side, e-commerce sites do not always offer sufficient speed and convenience for transactions, nor the same level of choice or cheaper products. On the supply side, the integration of Internet technology in a company's information system - ERP systems, management of the supply chain, etc. - is not always so simple, whereas it is an essential factor in harmonising all the distribution channels.

In order to overcome these difficulties, Microsoft has defined a strategy which breaks down into three major components: platform, portal and partnership.

The platform comprises all the technologies which make up the basis upon which a company can develop its e-commerce site. The platform proposed by Microsoft for building e-commerce sites includes all the necessary technologies, from the Windows NT® environment and the Microsoft Transactional Server, to a specialised applications server and development tools. Similarly, on the customer side, Microsoft guarantees payment authentication and security.

But the best technologies in the world are useless if the sites they have helped to create are not visited. That's where the concept of the portal comes in. This is somehow the equivalent of the physical location of a shop. With its MSN network, Microsoft is in a position to offer a widely-visited catchment area. In the US, more than 40% of Internet users visit the site each month. With MSN, Microsoft guarantees a very wide audience of Internet users, to whom suppliers can offer a range of products and services and thereby create a customer base. In addition, Microsoft has opened six specialist sites, in areas as diverse as automobile services and travel information.

The third fundamental component of Microsoft's concept involves a very active partnership policy which brings together all the skills required for setting up successful e-commerce sites: web site developers, systems integrators, ISPs, etc. Overall, there are more than 200 partners, contributing their skills to companies anxious to find their way in this new environment. Microsoft also intends to play the role of catalyst in improving standards. This is the framework within which the company's Value Chain Initiative or VCI is designed to operate, the aim of which is to promote inter-application communication.

Barnes & Noble sells its books on the Web

Even though it has yet to earn money, Amazon.com's success is quite spectacular. The company, an e-commerce start-up, had a turnover of over US$ 800 million in 1997, but made a loss. The large bookselling chains, which have established themselves successfully via traditional sales and marketing channels, had until recently maintained a conservative approach to e-commerce.

This was the case of Barnes & Noble which, with its one thousand points of sale in the United States and turnover of US$ 2.8 billion, shied away from the big leap into electronic commerce until 1997. The inroads made by competitors such as Amazon.com finally led the US special interest bookseller to realise the benefit of integrating the new sales channel in its commercial strategy.

To launch its strategy, Barnes & Noble relied strongly on its image, a new, highly innovative price structure, a book database of over five million titles from more than 50,000 publishers and a very sophisticated distribution set up.

Barnesandnoble.com has developed its on-line sales and marketing activity around Microsoft products. The application is built on a three-level architecture which comprises:

- The client interface, consisting of a Web browser, backed by a Windows NT server and Internet Information server;
- The business rules, supported by MTS and Site Server Commerce Edition;
- The data, stored and managed under Microsoft SQL Server™.

After just two years, BarnesandNoble.com is one of the twenty-five leading Web sites in the world in terms of growth and one of the five largest sites in terms of turnover, with sales of US$ 65 million last year. This is a modest figure compared with its direct competitor, Amazon.com, but one which is growing fast. Barnes & Noble has recently upgraded its supply chain management application in order to provide even faster delivery of goods ordered on-line. One of the site's key strengths, according to Alan Bourassa, who is in charge of the order management system, "is the extremely easy integration of the different products of the Microsoft platform".

Implementation of five fundamental factors

Transforming companies in order to improve customer relations

Once upon a time, companies fought to enhance their products and services, while paying scant attention to their customers. Today that situation is being reversed. Organisations want to attract customers and win their loyalty. This is far more than a mere statement which equates to an understanding that now "the customer runs the show". It entails a profound and complete change in the way companies operate - a change in their strategic vision, their organisation, their management, their information systems and the way they manage their relationships with their customers.

Organisations which once were inward-looking have now boosted the efficiency of their management and production processes. Today they are ready to turn their attention to their relationships with customers.

As many strategies as there are categories of customers

Nowadays it is clear that for the purpose of customer awareness, it is no longer viable for companies to have a single and unique customer relations strategy; instead, they need to have as many strategies as there are segments - or categories - of customers.

Ten reasons for placing your order with Barnesandnoble.com, according to Barnes & Noble

- Over five million titles
- Quick delivery, as 750,000 titles are kept in stock;
- Big discounts;
- A wide selection of 'low budget' books;
- A unique set of book reviews;
- A book title customer update service via e-mail by area of interest;
- A large stock of "out pf print" books available;
- A powerful search engine;
- A high level of reliability;
- A high level of security.

Alibabook storms the French market

Alibabook, the French online book retailer went live on the 7th of December 1999, and promptly registered 35,000 hits in its first month of business, of which more than 1,000 turned into firm orders for some 2,000 books dispatched postage-free. The site was designed by Hit It productions using Microsoft tools. Although the promotional campaign for the site's launch is over, Alibaboook continues to enjoy a rapid increase in visitors and has managed to generate a 3 to 5% incremental turnover in its first year of business.

It is very difficult to put this into practice at present, because companies do not yet know clearly what their customers expect of them.

Traditional satisfaction questionnaires, which have been around for years, do not provide the required answers, since they tend to ask customers about their satisfaction with products or services which have already been offered, not their buying intentions.

What is more, the results reached by studying such questionnaires reveal that there is no obvious correlation between consumer satisfaction and loyalty. In other words, the values affecting satisfaction are different from those affecting purchasing.

Building the future with your customers

At present, when a customer buys a product, companies have very few means of finding out anything about it. Companies must encourage their customers to explain their current purchasing criteria which would lead them to buy more, and over a sustained period of time. For here lies truly the Holy Grail for any company: the ability to act at the right time and in the right place so that consumers buy more and remain loyal to their supplier.

There are concepts and methods which companies can implement to take stock of their organisation and implement a vision where they work in partnership with their customers towards the future.

But customers are not merely economic players who just buy products. In addition to being customers in their free time, they are also suppliers. At work they may hold shares in their own company and also in other businesses. They are also a member of a family, of a community, etc. It is their decision-making strength as a multifaceted and three-dimensional being/customer which companies must begin to comprehend.

By understanding their customers companies can reconcile their activities with their surroundings: the environment, social issues, the city.

If companies are feeling confident enough to turn their attention to their customers and create wealth, it is because they have benefited from the implementation of ERP, of Supply Chain Management systems, etc. Likewise, in monitoring and fostering the relationship with customers, companies can rely on a wide range of tools.

These make it possible to structure the front-office element of the company, that is, all possible interactions with the customer: direct contact management, automation of sales forces, call centres, Web technology, etc.

Why it is indispensable to monitor change

However, these tools entail far more changes in the organisation of work than computerisation of companies' back-offices ever did.

This is why programs for monitoring change are particularly important in order to carry out these projects properly. Managing the change in the modus operandi sales representatives, who are accustomed to working autonomously, requires a thorough training and information effort as well as highly personalised monitoring by superiors.

Similarly, it is also important for a company to pay attention to "internal customers", if staff turn-over, which often means loss of know-how for the company, is to be avoided.

The same kinds of measures can enable worthy companies to attract and retain both workers and customers.

Towards the transformation of corporate models

The concept of Business Intelligence should be implemented whenever it is important to make sense of the millions of basic items of information about customers which companies acquire and accumulate. These technologies, linked to Data Warehousing, make it possible to understand and analyse this information and to act accordingly.

Moreover, knowledge management is an effective factor for attracting the loyalty of workers, or 'internal customers', each of whom ends up having all the information linked to his or her mission within easy reach. It is an additional tool for decompartmentalisation, to the benefit of the operation as a whole.

A customer relationship strategy, deployed as part of a well-defined corporate strategy, starts off by defining the purchase values of each category of customer and on that basis, adopting the most pertinent course of action. This will affect the organisation and the management, the sales representatives and the marketing department as well as the company's information system.

This is what is meant by the wholesale transformation of the corporate model; it encompasses, on the one hand, the implementation of projects for bringing about change which are indispensable for the success of this transformation, and on the other hand, the implementation of technological projects based on appropriate tools, which will form the backbone of the transformed company.

To ensure a successful transition through this transformation of the corporate model, the teams responsible for the projects as well as the end-users must be in a position to regularly witness a quantifiable and substantial qualitative (and/or quantitative) increase in their output.

A number of experiments are now underway, with the aim of changing both people's mentalities and day-to-day working habits. Banque Transatlantique, for one, a subsidiary of Crédit mutuel CIC, is already at an advanced stage of transforming its corporate model. A painstakingly designed and targeted customer strategy covering ten categories of customers has spawned a project for transforming the organisation and the channels of interaction with the customer. Such channels are designed to enhance the company's ability to respond to current and emerging values held by these different categories of customers, and consequently to improve performance through a sustained growth in turnover.

The bank's personality and its unique characteristics will emerge strengthened by this transformation, which will enable greater personalisation of relationships, underlining the professionalism and enhancing the reputation of Banque Transatlantique, which deservedly maintains a very loyal customer base.

MICROSOFT: A UNIFYING ARCHITECTURE

Information technology customised to meet companies' challenges

Companies are approaching a time when IT is finally becoming aligned to their operational processes and strategies.

Thus, IT, managerial and strategic concerns can today be synchronised. In this context, what are the customers of a technological partner like Microsoft entitled to expect?

Companies' preoccupations have evolved during the last few years under the continuous pressure of deregulation, market globalisation and ever-fiercer competition. Whereas the value chain is in the process of fragmentation, companies must at the same time integrate customers and suppliers far more closely in a new space called "the extended company".

In another major change, the company is increasingly turning to more and more versatile customers to establish lasting relationships.

This evolution can be described in four major phases where companies have changed strategies in order to attain new objectives.

The four phases of companies' concerns

- Companies initially took an interest in the value chain by focusing on their core business, their own skills and the areas where their added value was higher;
- Then they reorganised to obtain more efficient processes, to meet the needs of their customers. Many applied Business Process Reengineering, which implies in particular the concepts of time to market, response time to customer inquiries, etc.;
- Then came the time to take an interest in priority partners in the company, suppliers, partners and customers, by putting into practice the concepts of the extended company. Each company then had to facilitate communication between the different players in order to better integrate them in the new value chain;
- Today they are turning their efforts towards the customers, not only to obtain new ones but also to increase their loyalty and maximise sales according to each customer's potential. This is the concept of the customer-led company.

How IT has adapted to these different concerns

In a sometimes anarchical way, IT has also evolved over the years, and today meets the needs expressed by companies.

Firstly, with the transition to the client-server, IT has enabled end-users to dispose of more information, allowing them to improve their personal productivity and thus to be in a position to respond better to customers' requests.

With electronic mail and Groupware technologies, IT has combined means of communicating with the requirements of information circulation inferred by Business Process Reengineering (BPR)[9]. The increased popularity of integrated management software packages has also led to the implementation of the new processes defined by the BPR operations.

9 Business Process Reengineering: consists of rethinking the work processes of a company in order to obtain major performance improvements in terms of customer service, quality, cost, response time and productivity, and to simultaneously develop the associated information system.

Today, the Web, Internet, intranet, extranet and electronic commerce technologies are placing the company at the centre of a value chain ranging from the supplier to the end customer, passing by all the participants in the value chain (partners, subcontractors, distributors, etc.).

With the Internet and the Web technologies, the value chain becomes immediately expandable to transform the organisation into an extended company, and can easily integrate customers and suppliers with whom it is easy to exchange information.

A company which adopts this IT vision is capable of responding very rapidly to its customers. It harnesses the demand, passes it on to its internal processes and triggers the production, possibly subcontracted. (We then come closer to the concept of the Zero Latency Enterprise which analysts, including Gartner Group, are currently examining). Backed by all these new tools, the company can react practically in real time to modifications in customers' demand and thus be capable of providing a better service. This means that the response time to customer stimulus is getting shorter all the time.

Microsoft's vision: the metaphor of Digital Nervous Systems (DNS) or company nervous system

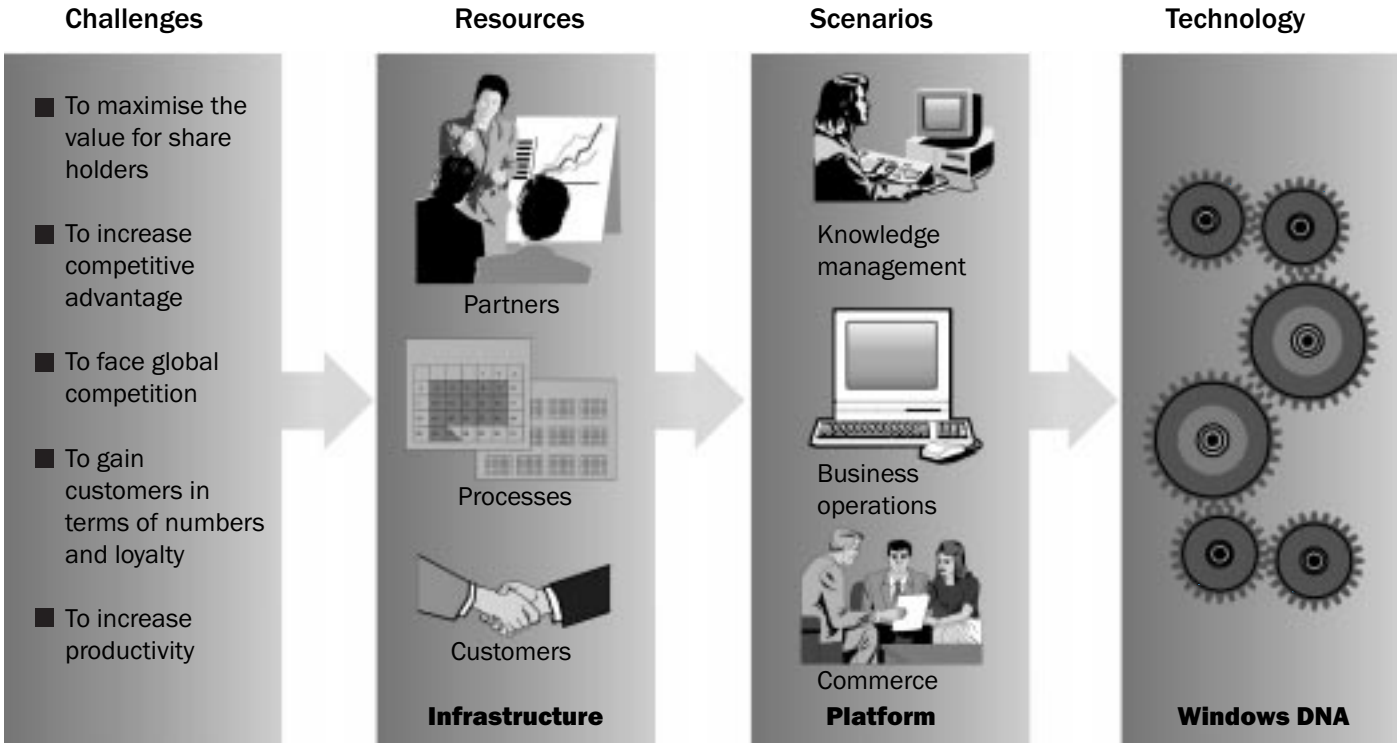
The information system can be perceived as the nervous system which reacts to stimuli, foreseen and unforeseen, by instantly triggering the appropriate actions. Likewise, the company must have sensors relayed to the outside world, pass on the customer data internally and react rapidly to demand. This metaphor conditions the company's productivity.

In the same way as the nervous system propagates the actions decided by the brain, the information system is the tool which enables the company's decisions to be transformed into actions. The company's nervous system ensures that information is circulated smoothly from customers to suppliers and vice versa. Microsoft intends to share this vision with those customers, and the range of solutions it proposes enables such a system to be built up.

Companies' expectations

In the light of this veritable explosion of technologies, companies now have all the building blocks to make their IT production system evolve into a true information system which facilitates decision-making. This transition assumes that the company undertakes the de-partitioning of its organisation, which more often than not is structured into major functions and does not allow for the implementation of cross-disciplinary processes.

Components of the Digital Nervous System



This evolution must address a number of constraints. Firstly, the new system should enable the company's strategy to be implemented. Indeed, this is its raison d'être, but it is a means to an end, and not an end in itself.

It must enable the existing system, which it is not possible to replace in one go, to be integrated, while at the same time ensuring that it can absorb future improvements. It must also transform this existing system, often made up of blocks of information, into a coherent and integrated system. Lastly, this system must be economical, both in terms of purchase cost and ownership cost. Above all it must be simple to use, implement and administer.

In this context, where IT is designed to adapt to the organisation’s set up and improve their operation, companies have important expectations vis-a-vis their supplier of IT platforms:

- The supplier must offer a vision which is in line with the company's concerns and which provides a genuine answer to the formidable issues of the information society;
- It must supply a large choice of available solutions on its platforms. This wide palette includes close cooperation with the producers of applicational solutions and also with SSIIs;
- The supplier must offer platforms which are capable of absorbing new technological developments and which enable applicational building blocks to be added which communicate effectively with the existing system;

- The supplier must offer quality products, in terms of performance, reliability, security and solidity. The IT platform is the foundation which enables the company to function. It must be reliable and robust;
- The solution proposed by the supplier must maintain the cost of ownership at the lowest possible level. This entails in particular solutions which are easy to install and utilise by reducing the training needs of IT operators responsible for administration and of end-users.

Microsoft's answers

Microsoft, as a leading technology partner, is committed to accompanying businesses in their transformation process, providing a number of benefits:

- A vision of the company information system which corresponds to its strategic vision and is adapted to the value chain. (In particular, Microsoft's traditional vision, which has always consisted in giving the end-user as much information as possible concerning their customer);
- A company model which integrates a volume logic for reducing costs, and close cooperation with partners. At the same time, Microsoft focusses on its business as a supplier of platforms, providing neither service nor applicational solutions;
- A commitment to standards, because a platform only exists if it is adopted by the producers of solutions and by end-users. For these different players, a standard platform will be less expensive, in terms of purchase price, training and installation costs. These standards are of two types: those accepted by the standards institutions or by the Microsoft market (TCP/IP or XML), and those which are the result of initiatives grouping together different suppliers anxious to promote solutions of applicational interoperability. It is within this framework that Microsoft’s "business initiatives" (OPC: Ole for Process Control, in the field of industry or OPOS: Ole for Point of Sales in the distribution field) aimed at both producers and customers must be redeployed. These initiatives work on a description of common applicational objects in terms of data and communication protocol formats and serve to facilitate a dialogue between the company's different functional applications (such as the Value Chain Initiative);
- Lastly, major investments in research and development enable reliable products to be put on the market (US$ 3 billion are devoted to R&D, i.e. 17% of Microsoft's turnover).

Microsoft BackOffice: an infrastructure for communication and interoperability
In the light of these new needs and in view of technological developments, Microsoft intends to supply an infrastructure that is capable of supporting the information systems companies want to set up, and that can support their strategy.

This infrastructure enables the technological building blocks, whatever their source, Microsoft or others such as DBMS, electronic mail server, intranet server, etc. to communicate and interoperate with ease. Above all Microsoft Back-Office is intended to simplify the deployment, administration and development of efficient solutions.

This technical platform also enables a genuine information system to be built which stores, manages and circulates information, and also facilitates group work independently of the organisational structures, within or outside the company. These applicational building blocks correspond to the functions of company process management and customer relationship management including knowledge management activities, business intelligence, etc.

The components of Microsoft Back-Office

Areas of use	Functionalities	Products
Internet/intranet	Products which enable connection to the Internet as well as the development of electronic commerce sites	Internet Information Server, Proxy Server, Site Server
Infrastructure	Products which enable the basic operation of servers, workstations and networks	NT, SNA Server, SMS
Groupware	Inter and intra-company electronic mail and collaborative work	Exchange, Outlook®
Data management	Data management and mulitdimensional analysis engine	SQL Server

The standard specifications of the Microsoft Back-Office platform guarantee and extensive lifespan and enable it to integrate with a wide range of products.

This integration enables seamless connection between the workstation and servers. The extreme ease of use of the workstation places within reach of all the users, whatever their position within the company, data which enables them, at individual level, to provide their customers with better service. Above all the workstation is becoming a universal interface available to all workers.

	The benefits of Microsoft Back-Office
Integration:	Benefits provided by the Microsoft BackOffice platform:
With Windows NT Server	A unique login for accessing the network Reduced costs and improved performance
Some of the output elements	Reduces development an deployment times Supports applications capable of integrating data, structured or otherwise, management rules and transactions
With standards	Protects investments at applications, data and systems level
Comprehensive:	
Complete	Reduces software costs. Reduces integration costs. Supports the development of a work group to the entire company
Potential for development	Enables flexible deployment Authorises the deployment of a work group to the entire company
Reliable	Minimises idle time and offers a better service. Reduces support costs
Ease:	
Of use	Reduces training and support costs Improves user productivity
Of administration	Reduces training and support costs Improves IT productivity
Of purchase	Simplifies licence administration Provides flexibility Enables components to be added easily

Microsoft Back-Office totally conceals the complexity of the technologies which the server is capable of managing, while providing access to the multiple data and applications available in environments that are heterogeneous by nature (large systems, UNIX systems, AS/400, Netware, etc.).

The Internet/intranet technologies are becoming an essential element in Microsoft's offer, both for the customer who uses the Microsoft Internet Explorer browser to access all information within and outside the company and for the server, where all the building blocks of Microsoft Back-Office are capable of supporting this information.

Value Chain Initiative

The Value Chain Initiative (VCI) illustrates the IT value chain which benefits the customer, in particular by using web technology.

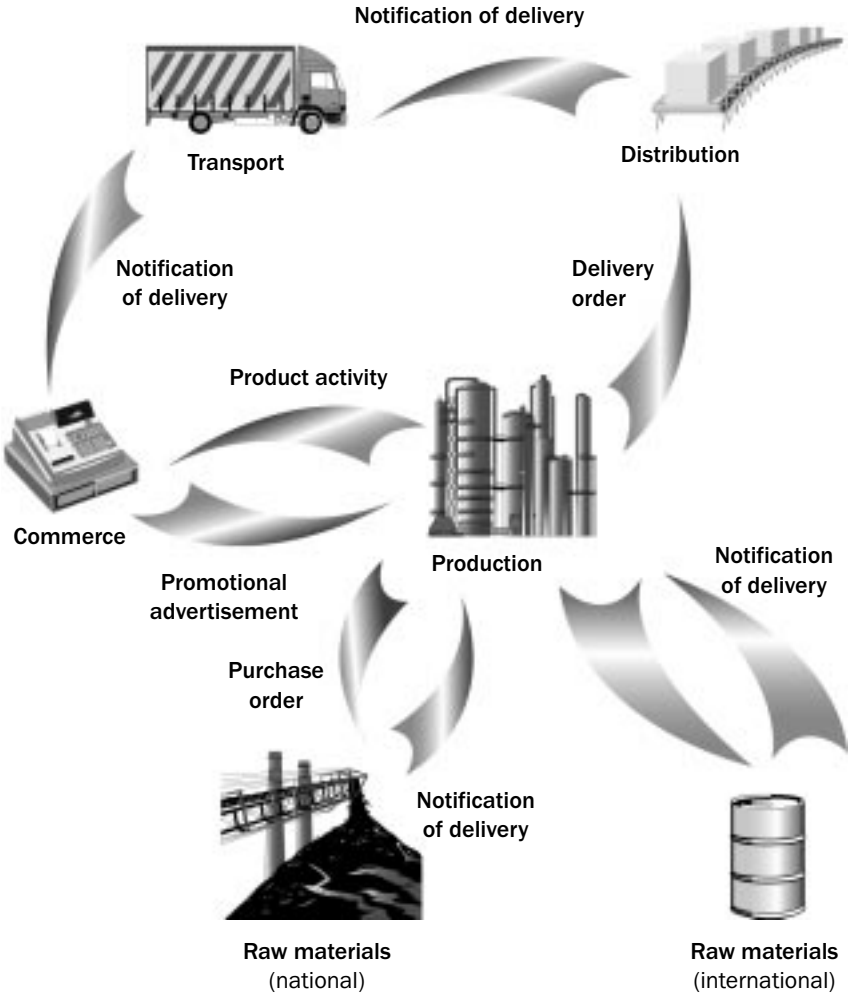
Within the VCI framework, Microsoft links together innovative partners whose ambition is to simplify integration between companies. VCI aims to make data formats as universal as possible and ensure that the vital data will be understood and interpreted by all companies which have to work together, even if they do not have the same system. This is why Microsoft is collaborating with the bodies responsible for defining data formats (EAN, Gencod, etc.).

Among the projects launched by VCI, some are already operational. In England, producers and distributors Nestlé, Procter & Gamble and Salisbury have joined forces to implement an application intended to improve promotions management. These companies share information and in particular, are able to monitor promotions more thoroughly, with the analytical methods at their disposal.

Within VCI, Microsoft participates in the technological design of an interpretation building block, the CIP (Commerce Interchange Pipeline).

Independently of transport protocols and the format of exchanged data, CIP helps improve a company’s integration with its suppliers by encouraging interapplication dialogue. Each producer which joins VCI undertakes to interface its software package with CIP.

Microsoft's Value Chain Initiative



BizTalk

BizTalk is an industry initiative started by Microsoft and supported by a wide range of organisations, from technology vendors like SAP and CommerceOne to technology users like Boeing and BP/Amoco. BizTalk is not a standards body. Instead, it is a community of standards users, with the goal of driving the rapid, consistent adoption of XML (extended mark-up language) to enable electronic commerce and application integration.

The BizTalk™ Framework, a set of guidelines for how to publish schemas in XML and how to use XML messages to easily integrate software programs together in order to build rich new solutions is being defined. Our design emphasis is to leverage what organisations have today - their existing data models, solutions, and application infrastructure - and adapt it for electronic commerce through the use of XML.

The BizTalk Framework can help an organisation become more customer focused in a number of ways - below are a few examples:

Building a consolidated information portal
In building a central information resource (e.g. for all sales people), there are many systems that need to contribute information. The traditional challenge is that when individual applications change the whole process of consolidating information must be reexamined and reprogrammed. By implementing a loosely coupled BizTalk Framework messaging architecture, where information is described in XML and imported via any protocol, it will be fundamentally easier to build and maintain an up-to-date information portal.

Placing orders
To be able to live up to customer expectations, it is no longer enough to only have the company's own sales people being able to enter orders, check status etc. A full set of options need to be provided to the demanding customer, e.g. order entry via extranet web, order entry via mailed Excel spread sheets, order entry via digital telephones or custom built customer terminals. A central order entry system will be a lot easier to develop, maintain and extend to provide a diverse set of order entry options, if the architecture allows a loosely coupled XML message passing model based on the BizTalk Framework.

Synchronising customer data between systems
Most large enterprises suffer from a plethora of CRM systems that were not built to integrate well with each other, either because they were built for different platforms or databases, or because the information content solves different problems. By allowing the applications to update each other by sending XML messages in a flexible but reliable way, it is possible to automate tedious retyping and extend the lifespan of existing applications. A concrete example is the ability to make address changes permeate to different systems or even organisations.

Microsoft Windows CE and sales force automation
Many sales representatives need immediate access to contacts, appointments, email and other business information while mobile. Until recently, the viable options included paper-based information and personal computers. But a new option has emerged in Microsoft Windows CE-based Handheld PCs and Palm-size PCs. Now mobile sales personnel have access to light weight devices that turn on and off instantly, run all day on a singe battery charge, use the familiar Windows interface, and keep important data automatically synchronised with PCs or corporate servers.

Enhancing the effectiveness of a sales force is the core value these devices bring to the table - more productive use of customer time, improved customer service, more customer visits per day, better application of marketing knowledge, less down time and help desk impact, and faster flow of accurate sales data into an organisation.

These are examples of the possibilities when sales professionals use Windows CE-based devices:

- Complete all steps of a sales transaction in one customer meeting;
- E-mail annotated digital photos or quick voice notes to colleagues or customers while on the go;
- Accurately communicate delivery times to a customer;
- Customise terms while at a customer site by live access to a corporate application;
- Capture a customer's signature directly on a handheld PC or palm-size PC;
- Quickly reference or update contact phone numbers and addresses, appointment details, map-based information, meeting notes, or E-mail;
- Deliver presentations to customers from a handheld PC;
- Instantly access key product/sales data stored on the corporate network.

Since the interface is familiar to users of Windows on desktop PCs, it is easy for sales personnel to get up and running without additional training. The scaleability of the devices, from pocketable palm-size to handheld PCs, enables mobile sales professionals to choose the device that best fits their needs. This range of devices also gives businesses planning a deployment to mobile professionals a choice of platforms.

A rich array of wired and wireless connectivity options make it easy to stay in touch with customers and the home office from virtually anywhere. With dial-up, cellular, packet radio, low-power wired and wireless Ethernet, infrared, and serial connectivity options it is easy to be mobile yet stay connected.

Sales force automation vendors such as Aurum (Baan), Cognitech Corporation, Dendrite International Inc, Goldmine, Maximizer Technologies, Pivotal, Remedy Corporation, Sales Vision, Siebel Systems, Thinque Systems, and Vantive Corporation have been creating solutions based on handheld PCs and Palm-size PCs. Also, Microsoft certified solution providers with Windows CE expertise like Forte Systems (in partnership with Horizon Systems) are developing custom sales force automation solutions based on Windows CE PC Companion devices.

Companies are seeing financial savings and productivity gains as a result of deploying sales force automation (SFA) solutions on PC Companion devices. One company that created an in-house solution is Hoechst Marion Roussel, a pharmaceutical manufacturer, that equipped its sales reps with Windows CE-based Handheld PCs to enable them to easily capture sample distribution details and exchange sales information with headquarters - saving approximately US$ 5 million annually.

An understanding of users' needs and an alliance strategy
Microsoft's strategy is based on a very active partnership policy which affects all categories of professionals concerned by IT: end-user, developer, IT departments and operational departments of companies.

For each of these targets, Microsoft has formalised an approach tailored according to their requirements. For operational departments Microsoft has set out to show how the Back-Office infrastructure and its different components make it possible to deal with current technical issues and to build up an efficient information system capable of implementing the company's strategy and support any changes to it.

As for end-users, they only perceive the IT from their workstation, which forms a window onto this information system. For this group, communication will be chiefly orientated towards the Office package and the different elements of which they utilise on a daily basis.

In the last category, developers participate in the design and development of applications. Microsoft is committed to giving them all the information they need. Synthesised in the Windows DNA (Digital Network Architecture) architecture, this information covers both middleware and the development tools.

Microsoft's sales model is based on a dense network of producers and SSIIs
As its customers' technological partner, Microsoft cannot meet all their needs, which differ widely by definition according to their sector of activity, specific needs, and their existing setup.

Thanks to a network of partnerships built up with the producers of software dedicated to business applications, customers will have at their disposal a wide range of solutions customised to their type of business.

Thus, whatever their field of business - banking, health, local councils, industry or distribution - and whatever their needs - decision support, project management, commercial, accounting or financial management, human resource management or ERP application - Microsoft and its partners can offer them a set of applicational solutions tailored to their precise requirements.

To support its customers in deploying information systems, Microsoft has joined forces with SSIIs which contribute their project management and implementation skills.

Lastly, together with the large integrators, Microsoft has created links aimed at providing companies with the means of implementing solutions which will have a major impact on their organisation. These integrator partners are committed to ensuring the harmonious coexistence of these new solutions with the existing information systems.

GLOSSARY

A

Applets
Mini-applications located on a 'server' and executed on a 'client' under a browser-type environment. Applets can be used to provide Internet access to a client-server application, part of whose code is generated in the form of an applet. The most prominent technology is the Java programming language, which being an interpreted language, provides for optimal security and platform-independent operation.

Applications server
A dedicated platform which hosts the application (business rules), separate from the Web server. The aim is to increase performance and availability, enable the rapid development of distributed applications and simplify administration and access to existing systems (see Client-server).

B

Banners
Banners are small rectangles on Web pages which redirect the user to another site by a simple click of the mouse. There are three types of banners: static banners, which display the same message continuously, dynamic banners, which fluctuate between different ads consecutively, and Internet Link Exchange banners, whose members have agreed to display each other's ads, and which rotate between ads automatically.

Bar codes
A system for encoding characters in the form of a series of parallel bars of varying thickness positioned in close succession. Widely used in the retailing and logistics sectors, this system's main drawback is that the codes cannot be read by the human eye and are therefore unsuitable for use in personalised correspondence.

BBS (Bulletin Board System)
A local on-line service accessible by modem.

Bookmark
An electronic marker used to index a Web page by name. The page in question can be accessed subsequently simply by clicking on the bookmark within the browser, obviating the need to enter the page's address again.

Browser
An Internet navigation interface. The leading browsers are designed by Netscape and Microsoft. They operate by retrieving data in the form of HTML pages on any computer linked to the Internet, whatever its location.

Business Intelligence
A set of technologies designed to assist decision-making, by rationalising the value-added chain whereby data is transformed into information, knowledge, decisions and finally, action (see Data Mart, Data Mining, Data Warehouse and CBR).

C

Call centre
A unit dedicated to making or taking telephone calls. It enables calls to be forwarded and processed. A call centre is the only one-on-one interface between a company and its customers other than personal, face-to-face contact.

CBR (Case Base Reasoning)
Added-value extrapolation of experience to extract prospective trends, rules and analyses.

CGI (Common Gateway Interface)
A standard which enables HTML clients to run scripts stored on a server in order to access databases. CGI scripts which are used to process HTML forms can be written in any programming language supported on the server.

Client
A workstation linked up to one or more shared IT resources (see Server, Client-Server).

Client-server
An IT architecture model where the data and processing are divided up respectively among servers and terminals known as 'clients', which are used to input and retrieve information. This type of architecture is evolving towards a three-tier configuration: presentation, data and processing.

Componentware
The development of new software by assembling component applications. According to the Gartner Group, by the year 2001, 60% of new applications will be developed by assembling such component applications.

Container
'Page' mode - used to search for a document based on key criteria defined during the document's indexing phase.

Content
'Text' or 'character' mode - used to search for a document based on a sequence of words or characters.

Cookies (local personalisation files)
These are tiny bits of software used to monitor the progress of Web users. Cookies contain a unique identifier and are sent to the local drive of a person connected to a Web site, in most cases automatically, without the user's knowledge, to be stored in a directory of the browser specially destined for that purpose. If the user then accesses the site again subsequently, he or she is recognised by the unique identifier. A cookie does not record the actual identity of the user, simply his or her actions (pages accessed, frequency, sequence) and the relevant times/dates of previous connections.

CRM (Customer Relationship Management)
The combined implementation of strategies, specific organisation modes and technologies to focus a company's efforts and concerns on its customers. This involves setting up processes and facilities which meet customers' current and future requirements.

CTI (Computer Telephony Integration)
The coupling of telephony and IT, based on standards known as 'Middleware'. These include TAPI, TSAPI programming interfaces, the ECMA CSTA (Computer Supported Telecommunications Applications) protocol and the SCSA (Signal Computing System Architecture).
The most widespread use of this technology involves spontaneously displaying a caller's records. It is also used to provide interactive voice-activated services, automatic call forwarding, or automated outgoing calls.

Customer care
Also known as CRM (Customer Relationship Management). A set of resources designed to increase awareness of one's customers and satisfy their requirements in the most effective manner possible.

CVM (Customer Value Management)
The combined implementation of strategies, specific organisation models and technologies to focus a company's efforts and concerns on its customers, involving setting up feedback and communication channels with customers, and implementing benchmarking across companies and distribution channels, so as to adapt the company's processes and distribution channels to its customers' stated requirements. CVM involves the use of Business Intelligence, Knowledge Management, ECR and CRM.

D

Data marts
Data Warehouse adjuncts, consisting of excerpts from the main Data Warehouse relating to a particular activity of the company (marketing, finance, human resources, etc.).

Data mining
This concept is an extension of the Data Warehouse, whereby sparse data is analysed and correlated to yield its hidden significance.

Data warehouse
An IT system used for storing topical, integrated, non-volatile and archived data, for the purpose of helping management to make strategic decisions.

Data Web
A notion which brings together the concept of Data Warehouse and the Web, and refers to the use of decision-support applications on the Web. Generally speaking, this involves having access to a universal database, regardless of the platform used or of its location (internal/external or Internet), or even of the data (numerical, alphanumerical, HTML, graphical, etc.).

Digitising
The binary encoding of images or sounds so as to make them available for handling on IT systems. Digitising is the process whereby an analogue signal (sound or picture) is converted into a digital signal.

Document
A document is a coherent sequence of information (a note, a plan, a check, an order form, a photograph, a CV, etc.). Unlike the fragmentary but structured data used in EDP (Electronic Data Processing), which is ASCII-encoded and formatted, a document can comprise several encoding protocols (ASCII, EDEDIC, vector graphics and bitmaps, etc.) which enable text, images, sound, graphics and video to be stored and mixed.

Document database (GEIDE)
A set of references to documents including descriptive summaries. A summary comprises indexes by keywords, the name of the author, the date, the title, etc.. It also includes the address of the document on the relevant optical storage medium enabling it to be called up and viewed.

E

ECR (Efficient Customer Response)
This involves the integration of tasks to form a coherent process involving all a company's partners to improve reactions to customer requirements. This model depicts a company in terms of constraints, so that the impact of an unexpected event on a company's activity can be simulated. Associated decision-making aids then provide a means to:

- React more quickly to a customer's request;
- Improve stock rotation and minimise shortages;
- Optimise deliveries through enhanced management of vehicle fleets, their itineraries and the way they are loaded;
- Optimise the location of points of sale and warehouses.

The key principles involved include a shift towards paperless transactions, and a smooth, uninterrupted supply process (manufacturing chain) from supplier to point of sale.

EDI (Electronic Data Interchanges)
The electronic interchange of data between remote sites in accordance with predetermined standards.

EDM (Electronic Document Management)
Electronic Document Management is the process whereby documents originating from a variety of sources (keyboard, pen, camera, telephone, microphone, fax) are integrated (acquisition, conversion, compression), identified (indexing), archived (storing), retrieved (viewing), managed (publication and monitoring) and secured (both physically and through the implementation of access controls).
EDM is the generic term used to refer to information systems which bring together various optical media, a scanner and a printer, and provide storage/archiving and viewing/publication functionality. Such systems manage digitised documents as well as electronic files, office documents and CAD and DTP files.

EIS (Executive Information System)
A decision-support information system designed to assist decision-making through the use of a multi-dimensional proprietary database, which requires prior modelling of data (often used to monitor key indicators, provide a comprehensive, on-going overview of processes, etc.).

Electronic commerce
Electronic commerce refers to the remote trading of goods and services by means of electronic media (servers, protocols and terminals), via the Internet, Videotex or EDI. The term has been extended to cover any Internet-borne interaction between a company and third parties which generates added value. E-commerce can be business-to-business (B2B - trade between a company and its corporate clients, distribution network, suppliers and
business partners) or business-to-consumer (B2C - trade between a company and its end-user customers).

Electronic wallet
A system whereby credit is stored on a chip so as to be transferable to third parties via electronic payment and clearing systems.

ERM (Enterprise Relationship Management)
A global CRM application.

Extranet
A system which extrapolates the Internet to the concept of the extended company, linking a handful of suppliers, partners and valued customers by means of an information system based on Internet technologies.

F

Form
EDM: an electronic record comprising all the criteria required to access a database of images. The form's fields are filled during the indexing process (after digitising), either manually, or by means of OCR, or through queries submitted to an external database.
Internet: a set of instructions grouped within an HTML page which generate graphical I/O objects such as text boxes, radio buttons, check boxes, etc., when the page is displayed on a browser. The user can then enter the relevant data required, which is processed on the Web server by a specific application.

Full text
A search mode involving scanning through the entire contents of a text in order to detect a preset string of characters. There are four basic search modes:

- Search by keyword: used to locate a document by means of the information input during indexing (which might be partly automatic, e.g. title, author, etc.);
- Full text search;
- Native language search;
- Search using intelligent agents.

G

GIS (Geographical Information System)
A set of hardware and software tools used to carry out geographical analyses and display geographical images, such as maps and charts, backed by a geo-economical database which models reality. Applications include: determining a hypermarket's catchment area, coverage by a land-based broadcasting or hydrographic network, the duration of a journey, etc.

Gopher
A character-based Internet protocol pre-dating the Web. Browsers are in principle compatible with 'gopher' servers. This protocol is now redundant.

Groupware
A set of hardware and software tools used to foster and structure the work of a group of employees (workgroup IT integration). Groupware encompasses several families of functions: messaging, the sharing of data and know-how, time and diary management, electronic conferencing, workflow, etc.
Warning: a mere collection of tools does not lead to a better organisation (see Workflow).

Groupweb
Groupware which runs on the Web. Data is shared internally over a company's intranet and made available via a browser. The data in question can also be shared with authorised external partners over an extranet (for instance, to allow GPs to access a laboratory's database), or enriched using topical databases on the Internet (for instance pharmaceuticals research groups).

GUI (Graphical User Interface)
A graphical interface providing intuitive access to applications. Such an environment usually involves the use of icons, a mouse, and windows, etc.

H

Help desk
A term used to denote a system (hardware, software, services and staff) used to handle users, to identify their problems and resolve them. Most 'Help Desks' interact with their clients via the telephone, but some also rely on messaging (the Internet can be used to collect, identify and annotate a client's problem, with the telephone being used by a supplier to call back and solve the problem).

Hit
On the Internet, a hit refers to a request issued by a user for an element of a page (HTML page, image or sound file). For instance, when a page containing five pictures is opened up, six hits are recorded.

Home page
The gateway page on any given Web site. This often contains general information about the contents of the site, as well as all the HTML links required to operate/activate the underlying Internet or intranet application.

HTML (HyperText Mark-up Language)
A language used to describe hypertext pages and describe/define the multimedia data which is stored on a Web server and made accessible to browsers via the Internet.

HTTP (HyperText Transfer Protocol)
The HTTP protocol is used to transfer HTML pages across a network or between a Web server and an HTML-compatible browser. The HTTP protocol is supplied by the server (HTTPD under Windows 3.11, Windows NT and Windows 95, HTTPS under UNIX, Netscape dual version servers, etc.).

Hypercube
In the real world in which we live, three dimensions are all that is needed to identify the co-ordinates of a given point in space (or a cube). In decision-support IT systems, a database might comprise more than three dimensions (e.g. 6 or 7). To define a point in such an environment, or 'hypercube', requires the same number of data co-ordinates. Sample analysis dimensions might include:

- Management dimensions (products, suppliers, distribution channel, geographical considerations);
- Organisation dimensions;
- Time-related dimensions;
- Management cycles dimensions (done, forecast, budgeted);
- Time-based presentation methods (flows, cumulative values, averages).

Hypertext
An Internet-based search process based on intuitive, associative links. This technique mimics the human brain by forming links between several items of data. Within an application which uses hypertext, a page on Beethoven for instance might comprise keywords or keys which once they are selected (by indexing the key or clicking on a keyword), would direct the user to information about the man's works (nine symphonies, etc.), Germany in Napoleonic times, German romanticism, etc. When extended to other forms of data, the process is referred to as Hypermedia, and the links direct the user towards sounds, still or animated images.

I

ICR (Intelligent Character Recognition)
A process whereby any type of character can be recognised using sophisticated algorithms (neural networks, structured and contextual approaches, etc.). In order to assess the effectiveness of any given solution, four fundamental factors must be taken into consideration:

- The recognition rate (characters correctly analysed, i.e. without uncertainty);
- The rate of substitution or confusion (erroneous interpretation);
- The type of document supported (with pre-printed boxes, handwriting, sizes, coherency checks);
- The recognition speed.

IDSS (Interactive Decision Support System)
An information system which focuses on a specific type of decision (as opposed to EIS which involves a general overview of the company as a whole), by providing access to data and means of extracting it and displaying it contextually according to pre-defined parameters (used in compiling statistics, running simulations, setting targets, etc.).

Infocentre
An infocentre is an information system which brings together topical, integrated, volatile and up-to-date data to assist with day-to-day decision-making.

Intelligent agent
An application which handles repetitive tasks on request, with the ability to scan the World Wide Web for information. The user interface is often designed to mimic certain human characteristics. These dedicated applications act as electronic assistants handling all network-accessible functions.

Internet
A set of interconnected networks, technologies and services enabling interactive multimedia communication and data interchange from a PC or other suitable device. The tools enabling such exchanges of information are messaging (e-mail), file transfer (FTP) and forums, etc. More recently, the Internet has been opened up to commercial and multimedia applications (World Wide Web).

Internet telephony
The Internet can be used to relay a telephone conversation. In addition to the obvious financial savings possible, added value functions are available: split electronic notepads on which one can draw interactively using a mouse, file transfer, etc. MCI estimates that 15% of its traffic consists of its customers using the Internet to place calls (see WebPhone).

Intranet
Refers to the implementation of Internet technology for a company's internal use. An intranet server provides the same functionality as an Internet one, except that its content is only accessible to authorised users of the company's LAN (or WAN). A secure link can be established to a company's intranet via the PSTN (through an RLN communication server, for instance). The basic infrastructure of an intranet consists of an internal TCP/IP network linking servers to clients, and running the following open protocols:
- HTTP navigation;
- SMB files server (Microsoft);
- IMAP4/SMTP message server;
- DNS/NIS+ X.500 domain name server;
- DNS/LDAP directory server;
- Bootp/DHCP boot-up server;
- SNMP network administration;
- DCOM object server.

K

Knowledge management
A set of organisation methods and technologies aimed at creating, collecting, organising, storing, publishing, using and transferring knowledge in a company, involving both internal and external documents, and the know-how and experience of the staff or experts in a given field.

M

Metadata
Information describing data itself, its content, location, structure, rules and processing.

Middleware
A software layer between an application and a network which governs the interaction between distributed applications hosted on heterogeneous platforms (for instance, Software AG's Entire X, together with Microsoft, enables Windows applications to communicate with UNIX sites or IBM mainframes).

MIME (Multipurpose Internet Mail Extensions)
Extensions enabling e-mail messages to carry audio or video data, etc. This is also the name of the file transfer format used by Web servers and browsers.

N

Natural language
A facility whereby a computer can be given instructions using the kind of wording and syntax used in everyday language.

Netiquette
The voluntary code of conduct defining what is considered acceptable behaviour among Internet users while surfing the Net.
For instance, any attempt at self-promotion by a user can result in punitive reprisals against that user (e.g. saturation of his or her mailbox with thousands of insulting messages).
Also, wherever one may be in Cyberspace, the systematic use of capital letters is perceived as inappropriate, just like shouting into someone's ear, except for the purpose of abbreviations, such as F2F (Face To Face), IRL (In Real Life), etc.

O

OCR (Optical Character Recognition)
The recognition of characters by optical means (offset, fonts, standardised characters). Certain optical characters are designed to meet pre-defined standards (many checks, for instance, abide by the OCR 'A' standard, and in France, TIPs (French bank payment forms) follow the OCR '13B' standard).

OLAP (On Line Analytical Processing)
A database dedicated to analysis. State-of-the-art feature of decision-support systems, typically found in applications or technologies designed to process huge volumes of data for the purpose of analysis. OLAP comprises a set of 12 criteria defined by E.F. Codd in 1993 to describe SIAD-type products.

Unlike OLTP, where data models are optimised in terms of on-line response times, OLAP makes use of multidimensional models which simplify understanding (cross-referencing, for instance).

OLTP (On Line Transaction Processing)
Traditional transactional applications which process large volumes of relatively straight-forward transactions (e.g. reading and updating a small number of entries in under a hundred tables). Contrast with OLAP.

One-to-one
A marketing concept made famous by Don Peppers and Martha Rogers in their books The One to One Future and Enterprise One to One. The principle consists in organising an individual approach to each customer. The technologies used to that end on the Internet consist of a mixture of CTI, e-commerce, Push and Webcasting. When customers contact the company, their records are fed through to the person who is taking the call. In the case of an Internet session, users are shown a personalised electronic catalogue matching their marital status, socio-economic category, purchasing habits, etc., and displaying prices that are personalised according to the customers' loyalty or the cumulative amount they have already purchased. {www.marketing1to1.com}

P

Push (publishing)
An automated method for supplying information [on an Internet portal]. Users receive content by subscribing to information channels. The first time they connect to the portal, they are prompted to indicate their preferences. Subsequently, each time they go on-line, they will automatically receive, on the portal home page, information on, for instance: the weather forecast for London and the south coast where they have a summer home, the stock market quotes for their shares together with a record of price fluctuations for the past week or month, and press articles on any topics of their choosing. This system is used by commercial sites offering ancillary services to guarantee user loyalty.

R

RAD (Rapid Application Development)
An environment enabling the rapid development of applications through the use of advanced tools and prototyping approaches involving end-users at every step of the way.

Reporting
The analysis of data or actions after an event. A reporting indicator is a measurement tool which focuses on existing situations, as opposed to steering, which is designed to anticipate future situations.

ROLAP (Relational On Line Analytical Processing)
A decision-support system architecture designed to carry out multidimensional analyses directly on standard databases (see OLAP).

S

Scanner
A peripheral which can translate the appearance of a physical page of information into binary data. (An A4 document, scanned in at 300 dpi, typically yields a 1 megabyte file after compression).

SCM (Supply Chain Management)
A decision-support application layer which brings together all supply chain management solutions. It is often used to complement integrated ERP applications to plan for:

- Demand (using modelling techniques which generate anticipated statistics taking into account future promotions, new products, the competition, the market, geographical marketing, and changes in consumer behaviour);
- Distribution via DRP - Distribution Resource Planning (monitoring of restocking, quantities of stock);
- Production (materials planning, purchasing, production planning);
- Transportation (choice of mode of transportation, of a haulage firm, of the loading method and itinerary).

This is the natural next step up from MRP (Material Requirement Planning) and MRP II (Manufacturing Resource Planning).

Search engines
In order to locate data on the Internet, one can use a search engine or index. Search engines operate on the basis of a full-text search (Alta Vista, Excite, HotBot, Lycos, Magellan, Webcrawler, etc.). An automated process continuously scans through millions of Web pages and indexes their contents in a database by following the links. Thematic indexes (Yahoo, Nomade, etc.) sort information by theme. Each new address is approved prior to publication by a specialist document handler. There are also virtual shopping malls providing a similar service on a smaller scale: (www.globeonline.com, www.wanadoo.com).

Server-side applet (servlet)
An applet which is executed on the server itself.

SFA (Sales Force Automation)
IT solutions designed for use by sales teams (remote access to information, activity management, client records, availability of strategic information, campaign follow-up, etc.).

SOHO (Small Office, Home Office)
An increasingly widespread working environment involving working in different locations or from home.

T

TCP/IP (Transmission Control Protocol / Internet Protocol)
Levels 3 and 4 protocols (network, transfer) invented by Vinton Cerf. Every message is cut up into packets of data of less than 2,000 characters and sent by means of two alternative modes of communication:
- Connected TCP/IP;
- Non-connected TCP/IP. In this mode, the data packets can travel along different paths (cabled telephone or IT networks, satellite transmissions) prior to being reconstituted on the recipient's terminal.

Text to speech
A tool used to convert a digital text into speech in real time.

Thesaurus
A dictionary of terms organised mainly according to hierarchical semantic and synonymous relationships. Such tools usually feature specialised vocabulary, and enable automatic, topical tree-structure searches (e.g. a search on the word 'grains' would include texts on wheat, barley, etc.).

U

URL (Uniform Resource Locator)
An intuitive Internet navigation technique using hypertext links. A URL is the address of a file, rendered in a format which can be interpreted by a Web server. A URL consists of a file name and a locator which enables this file to be retrieved. For example, the locator ‘http://’ refers to a remote file; ‘file’: refers to a local file (on the same server).

V

Videoconferencing
A process consisting in displaying the moving image and voice of one or more people for the purpose of holding a remote conversation. The image of the remote contact appears in a window on the PC's monitor. Users at either end don a headset incorporating a microphone and earphones to converse. This remote service (just like a videophone) enables meetings to be held over long distances between several sites and participants. It complies with the H321 standard for multiple point-to-point communications.

Virtual wallet
A system whereby credit is stored on the memory or disk of a computer which can then be accessed remotely from a PC or Electronic Payment Terminal (EPT).

VOD (Video On Demand)
A process which enables users to retrieve the film of their choice, which they can then view on demand.

W

Web
The informal name of the WWW. The word 'Web' evokes both a finely woven fabric and a spider's web. The image of the spider's web is often used as a visual analogy for representing the Internet (see Webcrawler: www.webcrawler.com). Another commonly-used analogy is that of a column of ants climbing up a cargo net - they will reach the top regardless of which strings are cut.

Web casting
The pre-programmed uploading of Web pages. A process which consists of sending each Internet user a personalised digest incorporating a large dose of advertising, and which corresponds to the user's main interests, based on an analysis of that user's behaviour on their most frequently visited sites.

Web centre
The next step from a call centre, involving a mix of telephony and Internet technology. In the United States, incoming calls often take the form of Internet messages (for instance, a customer reporting a specific kind of breakdown on his washing machine, serial no. xxxxx), with outgoing calls made by phone (a repairs specialist calls back, to provide the caller with a repair date).

WebPhone
A virtual phone emulation running on an IT platform. An application running on an intranet emulates the physical and logical routing of messages over the Internet (PABX and ACD), which are then reconstituted by a multimedia workstation (see Internet Telephony). In France, this is sometimes confused with the 'screenphone': a telephone with an Internet/Minitel screen and some advanced functions (support for incoming faxes, personal number directory, etc.).

Web server
An application which runs on a network server and responds to HTML requests sent by client terminals. A Web server is allocated a name known as its URL. In the case of an intranet server, this name consists of a simple TCP/IP address.

World Wide Web (WWW)
A multimedia interface, created by Tim Berners-Lee, enabling navigation through the Internet network by means of hyperlinks and page interpreters such as HTML and Mosaic (see also HyperText).

Workflow (EPM: Electronic Process Management)
A system for automating administrative or workgroup processes. Applicable to a set number of people who must achieve a given goal over a set period of time, by means of a pre-defined procedure, or ad hoc. The IT tool involved consists of several modules:
1. Flow modelling by formalisation:
- Of a 'map' and 'routes', laying down the procedure;
- Of stages (or 'worksteps') describing the processes;
- Of tasks;
- Of rules which are associated to selected data or components ('workset').

2. Simulation, enabling the process to be tested and improved.
3. Execution, i.e. the real-life implementation of tasks throughout the company's networks, involving circulating associated electronic documents on a workstation.
4. Administration:
A workflow:
- Performs queue management;
- Administers routing or conditional processing rules (access authorisation level, load, deadline);
- Provides a link with the information tools required for the proper staging of the process (central site, office automation, EDM, e-mail, departmental IT systems, etc.).

X

XML (Extensible Mark-Up Language)
A W3C project aimed at simplifying SGML, while maintaining all the functionality of DTD and retaining style sheets (CSS) as well as the characteristics of hypertext links (bi-directional, aggregate, or logical) regardless of the physical positioning of the objects.

(Source: Valoris)