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Business Strategy in E-bussiness environment

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ABSTRACT

E-business is heralding what is being called "the new economy." To help managers negotiate this new business landscape, this article review the business and technologies requirements of modern extended organizations and discuss how adaptive business objects and controlled interoperability are the key enabling technologies to the challenge of integrated value chains. We know unlike previous decades where enterprises prized independence, the next decade will be one of business alliances and competing, end-to-end value chains. Enterprise value chains comprised of powerful business alliance partners will exceedingly compete as single entities for customers. Such extended corporations reach out not only with business relationships; they must integrate their value business processes and information systems to realize their business goal

Keywords*:* E-Business; Value chains; Business models; Business processes; Business objects; Workflows; Business transactions; Interoperability; Change management;

1. INTRODUCTION

BUSINESS HAS THE POTENTIAL to propel a company to "break out" of existing strategic constraints and radically alter business processes, strengthen customer and supplier ties, and open up new markets. However, to achieve this success, a company must rethink corporate strategy in a way that capitalizes on information asymmetries, leverages customer and partner relationships, and tailors the right fit of "co-opetition" in its business model.

In the discussion, we purposefully use the term E-business as opposed to E-commerce, because E-commerce has become synonymous with simply transacting business over the Internet, whereas E-business involves fundamentally rethinking the business model to transform a company into a digitally networked enterprise. An E-business is an enterprise with the capability to exchange value (goods, services, money, and knowledge) digitally. It has properly designed business processes for this new way of conducting business. Further, it understands the human performance challenges not only within its organizational boundaries but also for other people in its enterprise network: customers, partners, and suppliers. E-business is a new way of doing business that involves connectivity, transparency, sharing, and integration. It connects the expanded enterprise through a universal digital medium to partners, suppliers, and customers. It requires the integration and alignment of business processes, technology, and people with a continuously evolving E-business strategy. Becoming an E-business does not happen overnight. It typically follows an evolution from initial experimentations with Internet-related technologies to a transformation of the company with internet-related into an enterprise prepared to compete successfully in new environment.

As companies evolve, they integrate their value chains by redesigning their structures to move from hierarchical —with a focus on management control —to horizontal organizations—built around business processes, teamwork and empowerment. However, new patterns of cooperation between trading partners are necessary to successfully respond to new market demands. The concept of *supply chain* refers to the chain of activities, executed by two or more separate organizations, to fulfill customer orders. A supply chain that is fully customized will start its operations after customers place their orders. Jarvenpaa and Ives [16]call this ' thinking in reverse', meaning that organizations should base their production on actual customer demand rather than producing on stock.

In dynamic network organizations quick build-up and dismantling of inter-organizational relationships is a pre-condition for success. In this kind of structure, each organization will focus on a limited number of core competencies.. Each organization ultimately concentrates on those areas where it may have a unique competitive advantage; others are outsourced and bought in the market. Concentrating on a limited number of activities offers the possibility to stay lean and mean, and thus avoid unnecessary overhead. This requires that all partners keep a clear view of the coherence of the total system of competencies within the network. All actors should have an insight as to where and how value is created and what contribution they can make based on their own competencies .

As companies redesign their structures, what is the role of IT ? The application of various information-based technologies is both the cause and the effect of new ways to do business. The convergence of IT and telecommunications, and the availability of bandwidth supports and enables new organizational designs. The networked organization, linkages of supply chain partners and alliances exploiting uniquely grouped core competencies are all supported or enabled by modern IT. From a technology perspective, integrated value systems require a fully integrated framework and infrastructure support to provide access throughout the entire chain. Moreover, this type of universal access must be both transparent and adaptive. We show a layered approach to delivering a e-business enterprise framework.(see fig.1 the e-business enterprise framework).

The ' foundation technology layer' provides a secure and consistent business network that enables robust information sharing between employees, customers and suppliers. The ' enabling technology layer ' provides a standard set of technology and business components,

which are available across the department, and which combine with the foundation technologies layer to produce the networked business applications. The highest two layers in the enterprise framework can quickly form the core original business process and workflow applications that can be easily combined and extended to offer a complete cross-organizational business solution. And have full self-adaptive capability of quickly changing business process and workflow with environment and strategic goal shift.

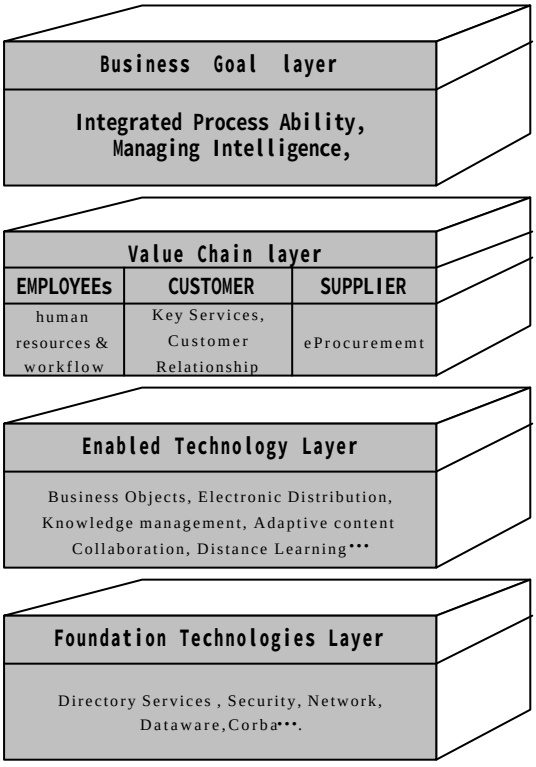

Fig.1 e-bussness enterprise framework

As companies evolve, their e-bussiness strategy have to pass through four levels of E-business development framework . Finally, Challenges must be surmounted to move to the higher level. The strategic E-breakout models, listed below, has four key driving forces that would help move an enterprise to successful ebusiness transformation and realize e-business strategy**.**

Adaptive business models: Integrated value-chain organizations seek to streamline their processes and improve customer service through greater connectivity between *both* business processes and key operational systems. An important business objective of strategic alliances with suppliers, channel partners and service providers is to eliminate supply chain discontinuities that produce delays and waste. Enterprises can only become an effective link in a leading value chain by re-conceptualizing the company as a collection of business operations and processes, by reshaping corporate structures around modern business processes and by making their internal processes align with and support the integrated value chain. This requires that *adaptive business models* are created to offer a new way to deliver value to customers. adaptive business models are needed and currently emerging.

Cross-enterprise interoperability: Another important requirement is that integrated value chains take advantage of existing and emerging technologies and systems that can be used to link and enable the entire value chain. Information systems play a major part in this drive for competitive edge as their interoperation allows business allied partners to use information much more effectively in the rapid delivery of goods and services to customers. The foundation of this barrier-free environment is *interoperability*: the ability of one system to process information from and to another at a syntactic and semantic level without requiring either system to make changes to accommodate the other. Thus, improved business processes and interoperability are core requirements critical to the success of e-business strategy.

Business intelligence*:* Business Intelligence (BI) is looked at as a subset of Customer Relationship Management (CRM). CRM enables the collection of customer data from multiple customer touch points, and the access, analysis and distribution of those data across the enterprise. BI is then the process that obtains and analyzes business and customer data. BI turns data into key information and actionable learning, makes them available to business decision makers and implementation personnel (management, marketing, sales, customer care, relationship management). BI supports definition and pursuit of key business objectives around customer intimacy.

Organization infrastructure: The organizations of today are confronted with the problem on how to strike a balance between local needs for different systems and overall needs for connectivity and share-ability of data and applications. Extreme de-centralization of application of IT will hamper business developments towards process oriented and flexible network structures. Attempts to centralized development of IT in "one fits all" type of applications will be costly to develop and will result in systems, which will not support individual business requirements. The solution to this problem is currently sought in a distinction between local information systems and information infrastructure.

This paper provides an overview of the business and technology considerations, as well as infrastructural support, that are required to enable the transition of organizations from relative independence and functionally oriented business thinking, and traditions, to integrated value chains. We first discuss five representative types of business models and then we introduce business objects and core business processes as the enabling technology for integrated value systems. Subsequently, we discuss business interoperability and business intelligence. Finally, we examine the major factors that drive this transition in some detail.

2. E-business models

Global competition, technology advancements, industry deregulation and increasing customer expectations are only a few factors that are placing unprecedented demands on business enterprises. Success in today's virtual marketplace will depend on creating networks of cross-industry partners to provide products and services related to the customer's basic needs. In order for companies to be successful, they need to evaluate innovative new strategies that capitalize on both the power

of the Internet and the changes in market demands. It is becoming increasingly evident that yesterday's business models, techniques, structures and philosophies are becoming irrelevant in responding to global market requirements. Thus, it is not surprising that many businesses are forced to rethink their on-line business strategies and their business models. Businesses hoping to expand their activities onto the Internet are re-engineering or refining their products and services in order to take advantage of the new opportunities, as well as face the new challenges, of the medium.

Over the past two decades, businesses had to adapt and transform their organizations. A number of change models have been introduced and tried during that time, but at best, they produced incremental improvements on the "fringes" with marginal bottom line results. Many involved change strategies that launched several change initiatives within the organization simultaneously, each narrowly focused on specific aspects of the organization with little or no preplanning and coordination. This approach tries to change the organization's parts but ultimately results in sub-optimizing the whole system for marginal bottom line performance. Constant change is now pushing into the very core of many corporationswith corresponding new business models emerging from the way in which organizations and people work together. Any initiative to transform or change an enterprise must consider how that particular enterprise operates as an integrated whole, and its relationships with its suppliers, business partners and customers.

Most traditional seller- or product-driven businesses create value primarily at the product or line-of-business level. In contrast to this, the integrated value-chain business model is customer-centric, where value is created at the relationship level across products and channels rather than at the individual product level. One important area of focus in the customer-centric model is on bundling different products and services within the same industry to create solutions. Many companies are adopting a customer-centric business model, becoming more responsive to and developing deeper relationships with customers. Relationships with suppliers, partners and customers need to be mediated almost exclusively using Internet technology, and the integration possible is becoming deeper, broader and more seamless than was ever deemed possible. Processes and value chains are evolving rapidly as companies outsource non-core activities and capabilities, leading to more sophisticated markets and a wider distribution of economic activity, i.e. the way we do business is undergoing a period of rapid change.

We can distinguish between five representative types of business models, which are typical of most common modern IT-based business organizations that engage in electronic business practices. These include:

1. the teleworking model;
2. the virtual organization model;
3. the collaborative product development model;
4. the process outsourcing model; and
5. the value-chain integration model.

2.1. Teleworking model

In the teleworking model, large number of individuals or groups work together collaborating with the assistance of networking and communications technologies. A classical example of the teleworking model is telemedicine which has become a business/technical/human paradigm for the transmission of health related information or services which may span university medical centers, hospitals, provider groups, clinics, doctors and nurses, financial and insurance specialists. For example, telemedical services can be delivered by collaborating with a radiologist from a remote site over specialized medical infrastructure or providing psychological consulting services to remote clinics or prisons from the medical office.

2.2. Virtual organization model

Effective contracting for complementary capabilities through a network of suppliers and subcontractors is a characteristic of virtual organizing . A virtual organization may be a temporary or permanent collection of geographically dispersed individuals, groups, organizational units, which do not necessarily belong to the same organization, or entire organizations that depend on electronic linking to complete the production process.

2.3. Process outsourcing model

Nowadays, organizations are starting to realize they can interact with customers, partners and suppliers, exchanging and leveraging knowledge in addition to undertaking transactions. Facilities that were once central to the business are now outsourced. Process outsourcing is the delegation of one or more business processes to an external provider who owns, manages and administers the selected processes.

For example, take Ford Motor who decided that the manufacture of cars will be a declining part of its business and instead they will concentrate in future on design, branding, marketing sales and service operations. Like all modern carmakers, Ford has outsourced the supply of entire subsystems —from engines and suspension assemblies to car interiors. In such situations, suppliers application systems are automatically kept abreast of requirements via EDI .

2.4. Collaborate product development model

A classical example of a collaborative product development model is that used by Ford. Ford recently launched the "A Ford 2000 program" aimed to make Ford a truly global company, that could centralize the development of global product categories
that would be customized to meet the demands of local markets . The company's central goals for this program were threefold. Firstly, a company-wide reorganization that established vehicle centers to take responsibility for the developments of a given class of vehicles and to design, engineer and test new technologies. Secondly, the shortening of new car development times through vertical and horizontal integration as well as by reducing the variety of parts that go into its vehicles. And finally, identification of the aspects of any car model that can be developed

commonly and those that are best customized for a given market.

Central to the new organization structure and product development processes was the need to coordinate disparate product development activities. This called for flexible information systems and an application for managing and transmitting design documents across various Ford Centers around the world. Installing such systems quickly meant a move away from the company' s traditionally heavy use of in-house
developed mainframe systems to more agile packaged client-server software and platforms.

2.5. Value-chain integration model

Value-chain integration uses Internet technology to improve communication and collaboration between all parties within a supply chain. Value-chain integration is necessary if vendors are to coordinate between "upstream" suppliers, internal operations (e.g. manufacturing processes) , and "downstream" shippers and customers effectively. With this model, processes once perceived as internal to the company
must now span the entire value chain. Effective service providers integrate their operations directly into the processes of their customers.

With this model, every company in the chain performs a set or sequence of activities to produce its products. The links between those activities provide a prime opportunity for competitive advantage, whether due to exceptional efficiency or some form of product differentiation. This chain of partners that work in sequence to create, market and move goods and services grows even more complex.

Based on the sorts of intimate trading relationships central to the integrated value-chain model ,modern business partnerships are eradicating duplication, irrelevant hand-offs and rework, ensuring that processes run smoothly and effectively.

It is evident that these new business models have certain implications on business processes of individual organizations as the latter have to cope with this transition to a multiple enterprise environment. Business processes have to be redesigned as they now cross organizational boundaries and integrate other homogeneous and / or heterogeneous processes and services of diverse organizations in order to collaboratively achieve the desired result. The following section discusses how business objects can be used as the underlying technology in an integrated enterprise framework for enabling the required business process interoperability in a value-chain integration layer.

3. Enabling technologies: business objects and processes

I n addition to a set of sophisticated enabling IT tools, business objects are the key building block in the re-engineered (process-oriented) enterprise as they can realize domain business processes and default business logic that can be used to start building applications in these domains. Business objects provide pre-assembled business functionality that can be used to bring together and customize applications. They provide a natural way for describing application dependent concepts such as customers, products, orders, bills, financial instruments and temporal information, such as a quarterly earnigs period or annual tax cycle. Business objects add value to business by providing a way of managing complexity and giving a higher level perspective that is understandable by the business .

Business objects package together essential business characteristics such as business procedures, policy and controls around business data. This creates a
semantic construct that holds together in a coherent unit the right business policy with the right data and ensures that the data is used in a manner consistent with the business intent. We can separate business objects in two broad categories: conventional business objects, already described in the some articles[3,11,12],
and business process objects. *Business process objects* are a kind of active or control objects that bring together business objects to define a business process. They are characterized by a set of interrelated activities that collectively accomplish a specific business objective, possibly, according to a set of pre-specified policies. A business object is a data with behavior, while a business process object (henceforth referred to as business process)operates on business objects, i.e. it changes their states and
coordinates their interactions. Business processes interact in a predictable, repeatable manner to produce a recognized business activity of generic nature in a specific business domain, e.g. procurement management, general ledger, etc. Business processes are initiated by events that trigger activities in the organization[1] . These events can be internal (e.g. rules) or external(e.g. customer requests). The business
processes are initiated on the basis of an incoming event (e.g. a customer request) and result in an outgoing (event e.g. the notification that a product is ordered).

Business processes provide the basic ingredients that can be specialized and extended to capture domain or application specific processes —within a particular vertical domain, e.g. financial, manufacturing—which are realized by a workflow. Workflow management systems support the definition, execution and controlling of the business processes. Work-flow applications rely on an extensive foundation of
reusable components, viz. the core business processes that form the basis for building new applications. Workflow support for integrated value chains should provide the infrastructure to allow business processes to cooperate and execute distributively across enterprise boundaries. Workflow components will necessary be disparated, they will either be adapted from existing proprietary workflow products or will be newly developed specifically for the distributed business infrastructure.

4. Business interoperability

Workflow technology in integrated value chains manages long-running, process-oriented applications that automate b usiness processes over enterprise-wide networks. The workflow can be perceived as a *script* prescribing the combination, and subsequent interoperation, of business processes and objects to reach a joint business goal. The approach taken here is to develop possibly distributed

fragments of business
process with the relevant application functionality attached. These fragments are then combined on the fly, as required, to suit the needs of each application. Rather than having to compose ever more complex end-to-end offerings, the enterprise can leave it to the application developer to choose those elements that are most appropriate, combining the process fragments into a cohesive whole. At run-time, the workflow management system manages the flow of control and data between the business processes, establishes transaction boundaries around them as defined in the script and makes certain that the proper business process units of the enterprise utilize the services provided by the various business objects.

Workflow-enabled business processes can track transactions across department, company and enterprise boundaries. This type of distributed workflow layer provides the sequence of business activities, arrangement for the delivery of work to the appropriate organizational resources; tracking of the status of business activities; coordination of the flow of information of(inter- and intra-)organizational activities and the possibility to decide among alternative execution paths . Workflow activities may invoke components from existing applications, for instance, legacy (wrapped) objects, and combine them with newly developed applications comprising business objects and policies.

A key activity in integrated value chains is the collection, management, analysis, and interpretation of the various commercial data to make more intelligent and effective transaction-related decisions. Examples include collecting business references, coordinating and managing marketing strategies, determining new product offerings, granting /extending credit and managing market risk. Performance of these tasks requires involving collaborative computing technologies to support distributed workflow processes. The requirements of transactional work flows have been described in Ref. [37] . Workflow implementations of business processes can be not only transactional processes, or classical transactions, but also non-transactional processes. Transactions as activity implementations frequently appear when the business model represents one of the core business processes (order entry, etc). of an enterprise. Non-transactional activity implementations are frequently found within support processes (travel expense accounts, etc.).

An area of growing interest for the distributed computing infrastructure , which provides conventional support, is the integration of Object Request Brokers(ORBs) with Distributed Transaction Processing (DTP) monitors. DTPs are important to enterprise-wide and cross-enterprise applications in which a business procedure may be broken into a set of processes. DTPs provide an open environment that supports a variety of client applications, databases, legacy systems, networks and communications options. Monitors can support large numbers of users requesting concurrent access to transaction programs and services, e.g. database, security, workflow; balance local and distributed loads to optimize performance; and efficiently synchronize data updates to multiple databases during transaction using standard protocols.

Transactions in the business to business electronic commerce are usually long-lived propositions involving negotiations, commitments, contracts, floating exchange rates, shipping and logistics, tracking, varied payment instruments, exception handling and customer satisfaction. *Business transactions* have two basic distinguishing characteristics. Firstly, they extend the scope of traditional transaction processing as they may encompass classical transactions, which they combine with non-transactional processes. Secondly, they group both classical transactions as well as non-transactional processes together into a unit of work that reflects the semantics and behavior of their underlying business task. In addition to these basic requirements, business transactions are generally govemed by contracts and update accounts and may include the exchange of bills and invoices, and ex-change of financial information services. As a consequence, business transactions must provide modeling support and mediate communication, interaction, and coordination among collaborating people and business activities within and between organizations. Hence, business transaction characteristics are better addressed by a process-centered approach to transaction management that supports long-lived concurrent, nested, multi-threaded activities .

Business transactions usually operate on document-based information objects such as *documents* and *form*s. A document is traditionally associated with items such as manuals, letters, bids and proposals. A form is traditionally associated with items
such as invoices, purchase orders and travel requests. Both these media are arranged according to some predefined structure. Forms-based objects are closely aligned with business transactions, which have numerical content, while document-based objects are associated with contracts or bids. This allows business transactions to interchange everything from product information and pricing proposals to financial and legal statements.

Business transactions exhibit two broad phases: *onstruction* and *enactmen*t. Construction involves the collection of information based on catalogs and brokerage systems to locate sources; agreement leading to terms and conditions through *negotiation* mechanisms; and engagement resulting in a formal contract. Enactment involves deployment across the group of participants in the transaction; service execution in the context of the contract and management of exceptions; and termination involving validation and closing the contact across all participants. In the
world of electronic business, traditional database transactions are replaced with long-lived, multi-level collaborations. It is thus not surprising that they require support for a variety of unconventional *beha ioral* features, which are summarized in the following:

1. General purpose characteristics
   (a) who is involved in the transaction;
   (b) what is being transacted;.
   (c) the destination of payment and delivery;
   (d) the transaction time frame; e permissible operations.
2. Special purpose characteristics
   (a) links to other transactions;
   (b) receipts and acknowledgments;
   (c) identification of money transferred outside national

boundaries.

3. Advanced characteristics

(a) the ability to support reversible (compensatible) and repaired (contingency) transactions;
(b) the ability to reconcile and link transactions with other transactions;
(c) the ability to specify contractual agreements, liabilities and dispute resolution policies;
(d) the ability to support secure EDI, e.g. SET, transactions that guarantee integrity of information, confidentiality and non-repudiation;
(e) the ability for transactions to be monitored, logged and recovered.

Integrated value chains demand advanced transaction paradigms that relate to their business processes. An important requirement of business transactions which deserves mentioning is *business commitment*s. Business commitments comprise the "glue" that binds businesses and other organizations at their boundaries. A business commitment is the result of an agreement between business parties that may bring about contractual agreements. Business commitments, viz. contracts, mandate certain outcomes that are to be produced by the business. They have a strong recursive element that says that agreements are composed of more granular agreements such as terms, conditions and obligations, viz. conditions of fulfillment and conditions of satisfaction. It is important for a distributed workflow application to be able to express varying types and extents of business commitments. It is therefore convenient, as shown in Ref.[4] , to represent such commitments as special purpose transactions including their own semantics and communication protocol. Termination of these contracts may be a long-lived activity as these may include ongoing service agreements with on-line customer service delivery and other complex aspects of overall customer relationship management. Much of the workflow structure and the partitioning of work can be driven by an understanding of the business commitments.

5 Bussiness intelligence

To fully grasp and understand new technologies and their business impact, business executives require business intelligence, foresight, and insight. They face two obstacles to obtaining this critical information:

(1)*Rapid change*—Business innovation and new learning occur on a daily basis;

(2)*Information proliferation*—Executives have hundreds of legitimate sources of information.

Existing sources of information are generally fragmented, biased and not focused on the needs of business process executives. Traditional business partners can provide some answers; however, consultants, marketing agencies, systems integrators and technology vendors provide only part of the picture and often have a stake in a particular technology, strategy or decision. Media and IT advisory services are numerous and are generally focused on specific technologies rather than on the issues and solutions relevant to the business function.

Focus, relevance and context are lacking. Making decisions based on the glut of available information about developments in technology, customer buying behavior and best-practice technology deployments can be overwhelming. There is too much information, while too few sources of comprehensive, objective, strategic and actionable insight.

While data may be abundant within an organization, the process of effectively obtaining and utilizing information can be challenging. The challenge may stem from the management philosophy that information is power and should only be in the hands of key decision-makers.

We identifies four models that govern information within an organization. They are dictatorship, anarchy, democracy and embassies. Your organization may fit distinctly into one of these models, or it may be a blend of models.

An *information dictatorship* makes information readily available – but only to a few individuals within the organization. Information is provided to senior management, to the information technology group that controls it centrally, or to both. For the most part, information is not shared within the organization other than through standard reports. At one of our clients, for example, the tax director requested information from the IT group to make quarterly decisions about tax planning and estimated tax payments. He waited more than a year without receiving the information he had requested. In this case, the IT group controlled the data and doled it out based on its own priorities.

When managers and other individuals lack access to the information they need, they base business decisions on gut instinct rather than on actual data. An information dictatorship eventually fosters information anarchy within an organization.

Information anarchy occurs when managers and others within an organization develop their own reporting systems to obtain the information they need to make good business decisions. Information anarchy is a grassroots uprising against information dictatorship. Users create separate and disparate reporting systems that seldom, if ever, agree with one another. Information from different reporting systems is rarely comparable because it has been drawn from different sources, at different points in time or via different transformation processes.

In the previously mentioned situation, the tax director and his group developed a series of spreadsheets to address their information needs. They identified data from several standard reports, manually selected the data and entered the data they needed into a new report. This solution was time consuming, labor intensive and error prone. However, it was the best available solution available needs because the IT group was ignoring the director' s request.

As senior management becomes aware of data redundancy within an organization – as well as duplication of efforts, wasted resources and information discrepancies, their support for correcting information anarchy grows until they are willing to sponsor an enterprise reporting solution.

An information democracy is best supported by an enterprise reporting architecture that can share information among individuals, groups and departments within the organization. BI becomes valuable as an ad hoc query and reporting tool when individuals within an organization can access data, analyze it and make business decisions based on data rather than gut instinct. According to a recent study by Business Objects, three factors highly influence the value

of an organization's BI:

- The level of democratization of BI software within the organization (measured by the ratio of BI-enabled users to the total number of desktops).
- The level of empowerment (measured by the number of users entitled to perform ad hoc requests for data vs. the number of total users).
- The cultural propensity to break organizational stovepipes (represented by the number of departments involved in the deployment of the solution multiplied by the capacity to get access to other departments' information).

Once an organization realizes the benefits of information democracy, it can extend its BI to user communities outside the organization.

Information embassies extend the information democracy to other user communities – such as customers, vendors and business partners – that are interested in an organization's information. With information embassies, or extranets, user communities outside of the organization can access the information they need.

these deployments can be grouped into three application areas:

- **Supply chain extranets** – Enable users to view the distribution cycle from supplier to distributor to end user. For example, customers who buy computers from Dell Computer Corp. can check the status of their order via Dell's Web site, which leads them from the manufacturing process to the date of shipment.

- **Customer relationship extranets** – Allow customers to easily access data about their activity and transactions with an organization in which they do business. For example, customers of Wells Fargo Bank can access their account information and perform online banking from Wells Fargo's Web site.

- **Information brokerage extranets** – Give organizations that are in the business of collecting and selling information a fast, secure way to deliver goods to customers. For example, customers of Dun & Bradstreet (D&B) can purchase credit reports or find new customers via D&B's Web site.

Whichever model of information governance your organization uses, the progression from information dictatorship to information democracy and embassies requires the leadership directive of the chief executive officer. Without the CEO's leadership or approval, organizational change from one model of information governance to another is extremely difficult, if not impossible.

By understanding which model of information governance fits your organization, you can determine the course of progression toward realizing the value of the information being captured by your organization's information systems. Organizations that want to survive in today's competitive environment must provide their employees with BI applications and begin developing an extranet strategy.

6. The role of the infrastructure

IT and business developments have influenced the IT management practices. Throughout the computer age, businesses developed IT management practices based on centralization. For the first 30 years, the emphasis was on technology management, and the major challenges focused on getting the technology to work reliably and as efficiently as possible. As a consequence, information technology developed and. was managed as a centralized resource in most companies. In the 1970's and 1980's, most businesses had adopted centralized, bureaucratic, strict functional structures with little or no needs for lateral communication between functions. This organization structure became the logical basis for many information systems. Functional departments developed "stove pipe"-like information systems, which did not allow any exchange of data between them, leading to an "island perspective".

More recently, personal computers began to focus attention on the users, and on the spread of decentralizing technologies. The 1980's produced new technologies for the end user, and the 1990's confirmed trends to end user computing, with communication emerging as a critical technology to disperse information throughout the enterprise. Local networks, enterprise networks and nationwide networks serve to make it easier to move information around within and among enterprises and their components. A primary reason for the dispersion of information technology throughout the enterprise is cost. The history of information technology is characterized by constant reductions per unit price and substantial in-creases in capabilities. A second more important reason for the strength of IT's dispersion into the enterprise is the business requirement for IT-enabled solutions to competitive and marketing pressures .

Also, business conditions changed. Market and customer demands for flexibility, responsiveness, quality, time-cycle reduction, and cost reductions have produced a considerable range of enterprise responses. Many of them have taken the form of business innovations described with terms like business process focus, lateral organization, networked organizations etc. These typical enterprise responses have the general effect of breaking down the hierarchical organization in fundamental ways. Enterprises move to a larger number of smaller business units or legally independent businesses, unconnected to the traditional hierarchy. Changing the organization from the traditional structure to a more responsive lateral, process oriented structure was in most companies severely hampered by the existing information systems architecture based on functional "islands".

In the late 1980's, the alignment/impact model was developed, which described the relationships between the business organization and IT . This model acknowledged that business strategies could be supported or even be changed by applying IT in line with market demands on the business. Because different lines of business within a company operate in different markets with different requirements, this notion has lead to a widespread decentralization of IT management to lines of business.

Information technology and business organizations had characteristics leading to a widespread proliferation of different IT solutions throughout the company.

In the second half of the 1990' s, an increased emphasis on the customer instead of on the product, confronted many organizations with fact that information systems across lines of business were not compatible. For example, insurance companies selling different services or products to the same customer were not able to get an overall view of the relationship of that customer with the company. The problems of lack of connectivity and compatibility became even more apparent when independent companies began to cooperate on a more permanent basis and the need for external integration came up.

The organizations of today are confronted with the problem on how to strike a balance between local needs for different systems and overall needs for connectivity and share-ability of data and applications. Extreme decentralization of application of IT will hamper business developments towards process oriented and flexible network structures. Attempts to centralize development of IT in "one fits all" type of applications will be costly to develop and will result in systems which will not support individual business requirements. The solution to this problem is currently sought in a distinction between local information systems and information infrastructure.

Information infrastructure describes the basic information systems elements intended to be common. Infrastructure is intended to support common needs and not individual needs; infrastructure is intended to be a relatively stable provision. Traditionally, infrastructure is related to hardware, physical networks, data base management systems etc. We propose a broader view. We define information infrastructure as relatively permanent, and commonly available IT resources and arrangements. This definition covers different types of information infrastructures: (1)
common hardware, physical networks, e.g. the organization uses one type of servers, PCs and network(the traditional view) ;(2) common information, data and data definitions; examples are data about customers, products(like product definitions), resources etc;(3) common applications and application components, not only standard software packages (like MS office, when used as the application in the . company)but also application components . Commonly available standard software components are infrastructural resources, which can be used by decentrally operating development teams; and (4)common organizational arrangements and procedures, for example, security and log in procedures.

There is no such thing as one common infrastructure. As not all information and communication demands need to be solved on a company or industry level, there may be infrastructures different organizational levels. For example, what is available as a departmental infrastructure is not necessarily infrastructure for another department. What is infrastructure for one business unit, may not be infrastructure for another. EDIFACT is more or less the generally accepted EDI message standard for Europe, and as such a European IT infrastructure element; it is not for the US, where ANSI is the accepted standard. In other words, infrastructure is a layered concept: there are different layers of infrastructures. For example, the higher-most layer in the integrated value chain could be collaborating industry networks. The lower most could be an intra-company enforced for EDI applications.

Dependent on the layer, different stakeholders, with diverging objectives, are involved in the planning and implementation of IT infrastructures. Infrastructures require negotiation, coordination and commitment. Also, the benefits of infrastructures are not immediately clear; they are dependent on the use, which is made of it. Infrastructure projects are, almost by definition, difficult not necessarily from a technical point of view, but from an organizational point of view and for that reason costly. The higher the layer, the more difficult and costly the infrastructure is to build. For this reason, it would be wrong to assume that the infrastructure approach will result in "heavy" centralized systems.

Infrastructures can be classified by the concepts of Reach and Range[18]. Reach refers to the locations and the number of people the infrastructure is capable of connecting. Reach can extend from a departmental layer, to the business unit layer, to
the enterprise layer and even to national and international layers. Range refers to functionality in terms of business activities that can be completed and shared. Range can extend from simply sending messages and receiving messages, to accessing stored information, to ultimately executing complex transactions. Every information infrastructure is a combination of a specific reach and range.

New business models, based on cross-enterprise (and cross-functional) interoperability, depend highly on the availability of infrastructures. New business
models and cross-enterprise interoperability, thus, can be differentiated depending on the concept of Reach and Range. Implementing right combinations of reach and range is crucial for different types of intra- and inter-company cooperation. For example, an electronic business application supporting simple transactions and exchanges of data may be realized on a global scale. But to what extent is this possible for an integrated value system comprising complex supply chains and manufacturing processes? Is an Integrated Enterprise Framework applicable on a global scale? From systems theory, it is known that increased coordination requirements go together with an exponential cost curve . Agreements on complex functionality with many participants seem very difficult and costly to accomplish. Obviously, different types of 'doable' infrastructures emerge. Simple electronic commerce transactions can be supported by low range and high reach type of infrastructures; complex value system integration seems doable on a more restricted scale and thus by high range, low reach type of infrastructures. Typically, these types of infrastructures will be found between companies that are each others major business partners.

7. Summary

Enterprise computing is about consolidating and harmonizing the many islands of disparate business processes and information systems scattered through-out an organization and its partner enterprises into a unified

whole. Nowadays, company value chains are transformed to integrated value chains if they are designed to act as an "extended enterprise", creating and enhancing customer-perceived value by means of cross-enterprise collaboration. Companies thus face a variety of changes ranging from streamlining business processes to enabling outward facing information systems.

In the previous discussion, we have given a de-tailed account of the business and technology considerations, as well as infrastructural support, that are required to enable the transition of organizations from relative independence and functionally oriented business thinking to integrated value chains. We argued that the combination of new business models with controlled cross-enterprise interoperability and change management are the driving forces that will eventually transform relatively independent organizations into cooperating enterprises. We also illustrated how adaptive business objects and processes are the key components of these enabling technologies.

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