IBM and e-business:
Preaching What It Practices

An IDC e-business Case Study

THE RESULTS

! *Through 3Q2000, IBM's e-commerce revenue totaled $14.6B, versus $9.9 for the same period in 1999.*

! *Through 3Q2000, IBM handled 66M self-service transactions on ibm.com, resulting in more than $1.4B in cost avoidance and productivity gains.*

! *Through 3Q2000, IBM procured $27.7B in goods and services over the Web, with cost savings of $246.6M.*

! *IBM's supply/demand planning time has been reduced from 45+ days to 20 days.*

THE STRATEGY

To transform, integrate and Web-enable its core business processes to increase revenue and profits, reduce costs and enhance customer satisfaction and loyalty.

THE COMPANY

With 1999 revenues of $87.5 billion and over 300,000 employees worldwide, IBM (www.ibm.com) is the world's largest information technology company.

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IBM has emerged as an e-business leader—integrating Internet technology into its core business processes. In the new millennium, IBM moves with more speed, agility, efficiency and intelligence than ever before, the result of enormous and often wrenching changes to its long-standing practices. Transformed for the e-business age, today's IBM is built to adapt to continuous change atop a foundation of simplified and cross-integrated business processes. The emphasis on simplified, integrated processes is manifested not only in IBM's internal operations, but in its seamless, "one IBM" approach to its customers which has strengthened relations with them. Thus, in the process of tearing down its operational "silos", IBM has built up both internal efficiency and customer satisfaction. This is the essence of IBM's e-business "transformation".

IBM in the early 1990s was a company in dire need of simplification and adopted a strategy of streamlining its core business processes by simplifying them. IBM's simplification initiatives fell under five general categories:

- Internal business processes

- Applications

- IT infrastructure

- Management processes

- Operations

As a result of its transformation, IBM is now better equipped to compete in the emerging information economy, which demands speed, flexibility and the effective leveraging of information. Another significant benefit of IBM's transformation experience has been the ability to apply its own lessons learned—as well as those gleaned from thousands of customer engagements— to other businesses. This has allowed IBM to effectively create a new model for companies seeking to embrace e-business. This model, called the e-business cycle, outlines four steps that organizations must address as they reinvent themselves for e-business. These steps are defined as:

- Transform business processes

- Build new applications

- Run a scalable, available, secure environment, and

- Leverage knowledge and information.

Of all the process transformation initiatives conducted by IBM thus far, none is more important than IBM's Web-enabling of its core business processes and internal systems. An ongoing part of its transformation process, IBM's Web-enabling efforts have yielded a series of highly successful programs targeted to customers (e-commerce and e-care for Customers), suppliers (e-procurement), partners (e-care for Business Partners), influencers (e-care for Influencers) and employees (e-learning and Knowledge Management).

! The Roots of IBM's e-business Transformation

The roots of IBM's transformation extend back to the early 1990s. The primary impetus for IBM's transformation came from the marketplace in the form of a double whammy: demand for mainframes—IBM's bread and butter at the time—was softening due to the rise of the client/server model, while competition from other, low-cost mainframe vendors was eroding margins. IBM's initial reaction to the looming crisis was to scale back its costs, but the task proved daunting due to, among other things, the extreme complexity that characterized IBM's operations. For example, in 1991 — when the need for draconian actions became apparent — IBM operated no fewer than 20 separate business units, which together sold 5,000 hardware products and 20,000 software products.

! Seizing the Initiative: Starting the Transformation Process

IBM realized the need for action on a wide number of fronts, but the issues of cost reduction and organizational change emerged as issues of paramount importance. A key milestone in IBM's transformation occurred on April 1, 1993, with the hiring of Louis V. Gerstner as CEO. IBM's selection of Gerstner—formerly chairman and CEO of RJR Nabisco and a top executive at American Express for 11 years—was noteworthy because it marked the first time IBM did not hire a CEO from within. This departure from standard practices foreshadowed a wave of organizational changes within IBM on a scale that had until then been almost unimaginable. The most dramatic change was a head count reduction of 85,000 for the calendar year 1993, leading to a charge against income of $9 billion.

At the same time, IBM also initiated a series of realignments to its worldwide organizational structure and process framework that had even more far-reaching implications. These changes included the creation of a single, global IBM organization, increasing the accountability of line managers, and the "globalization" of IBM's sales force, reflecting IBM's broad goal of approaching the market as "one IBM."

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Simple is Better: A Key Theme of IBM's Transformation

IBM in the early 1990s was a company in dire need of simplification. Traditionally, the company had promoted country and unit independence and rewarded individual excellence often at the expense of overall corporate objectives. For example, IBM's product designs called for little commonality of components, thus squandering a major opportunity for cost efficiencies. On the IT operations side, fragmentation and inefficiency were equally rampant— pushing data processing costs to three times the industry average. The sheer numbers tell the story: In 1991, IBM operated 155 separate data centers worldwide, employed 128 CIOs, ran 31 private and separate networks, and had hundreds of different configurations of PC installations. To address this, IBM adopted a strategy of streamlining its core business processes by simplifying them. IBM's simplification initiatives fell under five general categories:

- Internal business processes
- Applications
- IT infrastructure
- Management processes
- Operations

! Simplified Internal Business Processes

IBM's efforts to transform its business processes—including such key processes as product development, supply chain management, procurement, and customer relationship management —unfolded in three phases. Begun in 1994, phase one focused on cost reduction through consolidation and standardization.   A couple of years later, the emphasis shifted to the global deployment of re-engineered processes, leading to significant results: over a five-year period, customer satisfaction jumped 5.5 points, time to market became 75% faster, and in total, savings exceeded $9 billion including over $4 billion from the re-engineering of the procurement process. The third phase —the Web-enabling of its core business processes and internal systems— began in 1998 and continues to unfold today.

! Simplified Applications

> IBM embarked on an effort that led to a reduction of its base of applications by nearly one half and began a practice of buying and running best-of-category applications.

IBM's initial focus was on reversing the unchecked proliferation of applications throughout the company. An audit, conducted at the start of the consolidation effort, provided a measure of the scope of the problem: approximately 16,000 applications were running within the company, of which nearly *one-third* lacked clear ownership. At the same time, the company, which had as a rule developed the majority of its software on its own, recognized that no single company could do it all alone. As a result of these revelations, IBM embarked on an effort that led to a reduction of its base of applications by nearly one half, and also began a practice of buying and running best-of-category applications from leading software developers. Examples of best of category third-party applications now used by IBM include SAP for ERP, Siebel for CRM, i2 for supply chain management, and Ariba for procurement.

IBM, like most other established companies, continues to rely on some key legacy systems and applications to run its business. To enable itself and its customers to develop and deploy e-business solutions in this environment, IBM created the Application Framework for e-business. Conceived as a foundation for developing and deploying e-business solutions, the Framework is built around a set of industry standards and technologies, proven methodology, and leadership products.

IBM's internal adaptation of the Application Framework for e-business is called Global Web Architecture (GWA), a common Web architecture for all of its internal and external Web hosting in support of IBM's e-business initiatives provided in partnership with IBM Global Services. Seven GWA centers in Raleigh, Southbury, Boulder, Schaumburg, Portsmouth, Kawasaki, and Sydney have been configured with standard hardware and software, systems management, and network and security components. Core elements of GWA include VisualAge for Java, Lotus Notes/Domino, the DB2 family of products (databases and connectivity to mainframe DB2 databases), and MQSeries, which is used to link IBM's newer solutions with legacy systems. More recent additions to the Application Framework include WebSphere Application Server and WebSphere Commerce Suite, as well as software products from NetObjects and Tivoli Systems, which are used to provide end-to-end application, system and network management. Having GWA in place allows IBM to build speed and flexibility for e-business into its processes.

> IBM's Application Framework for e-business, designed to facilitate the development and deployment of e-business solutions in a legacy environment, is built around a set of industry standards and technologies, proven methodology, and leadership products.

! Simplified IT Infrastructure

Prior to IBM's transformation efforts, its sprawling IT infrastructure epitomized the fragmentation and lack of standardization that permeated the IBM organization as a whole. In the early 1990's, IBM was running 155 data centers. Outside the data centers, inefficiencies were equally common. For instance, the company operated 31 private networks and supported over 100 client configurations. Faced with the challenge of reining in its IT infrastructure, IBM embraced a two-phased approach: consolidation, followed by standardization. As a result of its consolidation efforts, IBM reduced the number of its data centers by close to 90%, to 16 worldwide and transitioned to one global network. Four standard client configurations were established. IBM'S IT costs which had once been three times the industry average were dramatically reduced.

The core of IBM's standardization initiative was a move toward a shared, TCP/IP-based architecture and a centralization of its knowledge management infrastructure. IBM's decision to run the same version of Lotus Notes worldwide has produced monumental improvements to the scalability of the system, by virtue of IBM's ability to centralize the maintenance and updating functions. IBM's worldwide Lotus Notes implementation runs on IBM RS/6000 SP2 servers running IBM's AIX operating system. Today, IBM's IT infrastructure is scalable, available, and secure, and is built to facilitate the rapid design, development, and deployment of new applications. Anticipating the proliferation of intelligent devices and the continued growth in e-business transactions,

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IBM continues to evolve towards what it calls an "intelligent infrastructure"—characterized by high-speed networks, seamlessly integrated applications, and powerful servers designed and optimized for specific computing workloads.

! Simplified Management Processes

The effort to simplify management processes within IBM's overall transformation effort was a reaction to the extreme state of fragmentation that had developed across business units and geographic regions. This fragmentation of processes included not only business-level processes but also IT-related processes, such as hardware and application deployment strategy. The fact that IBM had more than 100 CIOs operating with relative autonomy within the company is emblematic of the fragmentation and decentralization that prevailed prior to transformation. To address these issues, IBM devised a "top-down" approach to managing business process transformation and IT built on three pillars:

- *Enterprise-wide Process Re-engineering*—Replacing multiple, non-standard processes with a single global process (for a given function)—and deploying it pervasively—enabling the delivery of better services with fewer resources. This activity is led by senior executives who report directly into IBM line businesses.

- *Business Unit Transformation and IT Strategy*—Developing a transformation and IT strategy at the business unit level, using standard technology components.

- *Leadership, Integration, and Deployment*—Developing an e-business enabling strategy, including architecture and standards, ensuring cross-process integration, and deploying technology worldwide. This is a corporate function.

IBM's Framework for Simplified Management
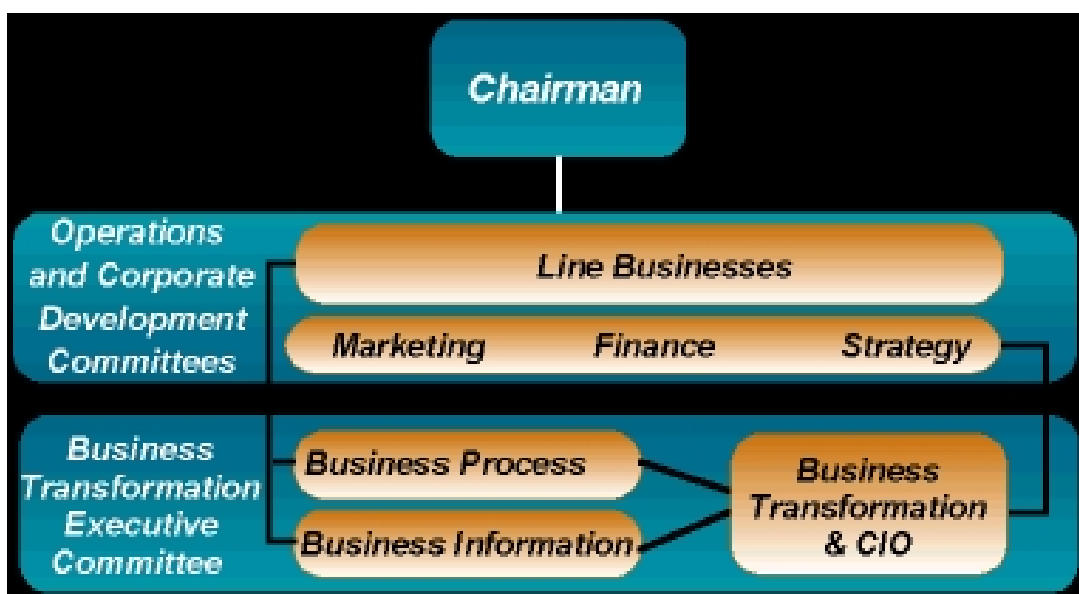
Source: IBM and IDC

IBM's sole CIO and vice president of Business Transformation manages this matrixed organization and is responsible for overall transformation results and IT performance.
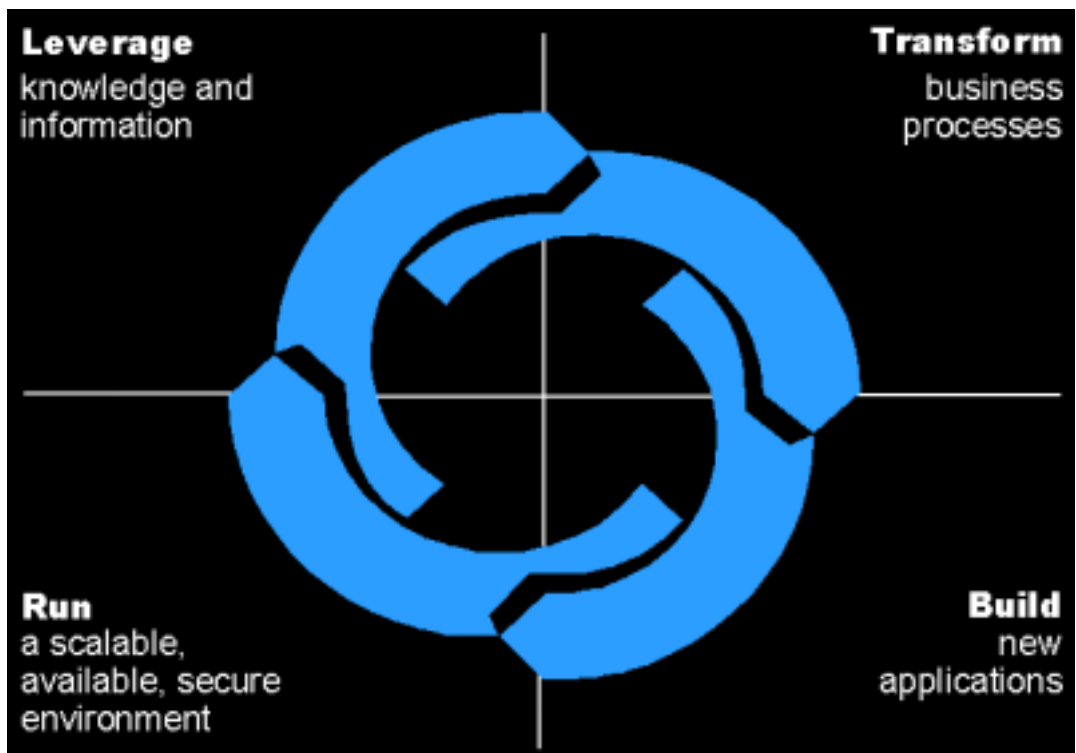
! Simplified Operations

One of the key outgrowths of IBM's transformation initiative was an increased willingness to outsource IT services—including application development and integration and infrastructure deployment and management—to IBM Global Services. This approach has allowed IBM staff to focus on strategic issues and has helped enforce standards and reduce redundancies, resulting in significant process and cost efficiencies.   Under this drive for "operational simplicity," IBM has essentially adopted the credo, "If it's not your main business, outsource it."

> IBM's decision to outsource IT services has enabled it to focus on strategic issues and reap major efficiencies.

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As a result of its transformation, IBM is now better equipped to compete in the emerging information economy, which demands speed, flexibility and the effective leveraging of information. Another significant benefit of IBM's transformation experience has been the ability to apply its own lessons learned—as well as those gleaned from thousands of customer engagements—to other businesses. This has allowed IBM to effectively create a new model for companies seeking to embrace e-business. This model, called the e-business cycle, outlines four steps that organizations must address as they reinvent themselves for e-business. These steps are defined as:

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Key Elements of IBM's e-business Cycle

Source: IBM and IDC

! ibm.com

The underlying theme of "one IBM" has driven transformation efforts and supported the company's continuing e-business transformation. In an e-business environment, branding remains critical and requires special skills. One of the most visible and important elements of the company's e-business transformation centers on ibm.com, its Web site. In the first few years after its May 1994 launch, the site's purpose was to provide company and product information. Like many corporate Web presences in the mid-1990s, ibm.com was a reflection of the company's organizational structure. Nearly every organization and geography was putting content on the site. Many of these content pages had their own "look and feel" and while each of the sites had its own merits, they were organizationally driven, not customer driven. Over time, the disparate nature of the overall site was a barrier not only to content presentation and navigation, but to IBM's e-commerce ambitions. As the world of e-business experienced explosive growth, IBM needed to make ibm.com easier to use for its customers.

As it set to redesign ibm.com in September, 1998—its ninth redesign since 1994—IBM conducted extensive customer research and solicited the feedback of IT decision makers, developers, IT implementers, business and general users. A key finding of the study was that the majority of respondents visited ibm.com for product information, comparative shopping and support, and wanted relevant information presented in a unified and easy-to-use manner.

IBM has increasingly leveraged its Web sites into other customer channels in order to increase access and reach with all its customer segments. In addition, in 1999, IBM integrated its Web presences in more than 70 countries with its worldwide call center operations, to provide customers with a seamless pre- and post-sales and support experience, or what the company calls "e-relationships." The integrated ibm.com channel offers "teleweb" features that allow customers to browse for products or solutions on the Web and click on either a "Call Me Now" or "Chat Online" button that connects them to a call center sales specialist who knows what page and product the customer is considering. On the Web site itself, IBM has focused on developing a consistent "look and feel" and navigation scheme throughout the site. The site is organized in a way that makes sense to its customers including single click-throughs for key audiences like small businesses, consumers, developers, business partners and investors, as well as buttons for key functions like ShopIBM, Download and Support.

In May of 2000, IBM launched the 10th redesign of ibm.com, which included 200,000 new Web pages designed to provide customers and partners worldwide with a consistent user experience from information gathering to shopping, buying and support. An ongoing part of its transformation process, IBM's Web-enabling efforts have yielded a series of highly successful programs targeted to customers, suppliers, partners, influencers and employees, which are outlined on the following pages.

! e-commerce

The key goals of IBM's e-commerce programs are to build revenues and reduce costs by selling IBM products and services online. Through 3Q2000, IBM generated e-commerce revenue of $14.6B, versus $9.9B for the same period in 1999. In 1999, the total of IBM's e-commerce revenue was nearly $14.8B. E-commerce revenue is comprised of sales through ibm.com, including e-sites for enterprise customers, Small Business Centers for Small Business Customers and ShopIBM for the general public, all of which include both end-to-end Web and Web-assisted call center revenue, IBM Business Partners and OEM partners. Top product categories among IBM's e-commerce transactions include PC products, midrange servers, software and technology products.

! e-procurement

Under its e-procurement initiative, IBM procured $27.7B in goods and services over the Web through 3Q2000, yielding cost savings of $246.6M. Of the roughly 19,000 IBM suppliers now enabled for Web-based e-procurement, over 7,500 joined through 3Q2000. One of the major benefits of IBM's Web-based procurement approach has been a quantum leap in the efficiency of purchasing within IBM, and a commensurate increase in satisfaction among IBM employees. When IBM's e-procurement initiative began, 60 percent of IBM employees were dissatisfied with the existing process due to such factors as the time it took to process a purchase order (30 days) and the average length of a contract (more than 40 pages). As a result of these inefficiencies, one in three IBM employees engaged in "maverick buying"—bypassing the standard procurement process to avoid the bureaucracy—often incurring higher costs as a result. By Web-enabling the procurement process, IBM has reduced its complexity. Purchase order process time is now one day, maverick buying is down to 2%, internal employee satisfaction has increased by 45%, and the average length of contracts has been reduced to six pages.

! e-care for Business Partners

IBM's e-care for Business Partners is designed to promote loyalty and revenue growth through Web-based programs. Through 3Q2000, 20,000 partners used Global PartnerInfo and purchased $9.3B on the Web. IBM's PartnerInfo application allows Business Partners to access product and marketing information in 10 languages. PartnerCommerce, IBM's Web-based ordering tool for Business Partners, gives partners the ability to check on supply status, purchase products, and track orders on the Web. PartnerCommerce also offers Business Partners the means to apply for and receive credit and financing online through IBM Global Financing. IBM's QuickShip application has reduced Business Partners' order/shipping cycle from three days to less than 24 hours.

! e-care for Customers

IBM's e-care for customers initiative provides Web-based customer service and support to reduce costs and improve customer satisfaction. Through 3Q2000, IBM handled 66M self-service transactions on ibm.com resulting in more than $1.4B in cost avoidance and productivity gains. These Web-based self-service inquiries enable customers to obtain product information, installation and service information, and to download software updates, fixes, 'early release' or 'beta' code. Customers are also able to track the status of open problems and communicate with IBM via the Web. Through personalized technical support, PC users can put a profile of their PC on the PC Support site, which enables IBM to tailor its technical support to the customer's specific needs. Moreover, by integrating ibm.com and IBM's International Technical Support Organization (ITSO), IBM is now able to provide extensive online technical content through its Redbooks to customers and Business Partners worldwide, enhancing their online shopping experience. About 200,000 IBM Redbooks are downloaded each month from the ibm.com/redbooks Website, which experiences more than 11 million hits per month.

! e-care for Influencers

The e-care for Influencers program provides Web-based access to information and resources for such key stakeholders as the press, IT consultants, financial analysts and shareholders, and prospective employees, with tailored Web sites on ibm.com providing easy and worldwide access to information. IBM's Press Room for the media offers access to company press releases, executive biographies and speeches, high-resolution photography and a worldwide database of press reps by beat.

! Knowledge Management

With more than 300,000 employees, IBM has the largest deployment of Lotus Notes and Domino which have proven to be crucial tools for Knowledge Management. The centerpiece of IBM's Knowledge Management initiatives is ICM/Asset Web, a Lotus Notes/Domino application that supports the gathering, managing and publishing of intellectual capital. Used by professionals within IBM's Global Services organization, ICM/AssetWeb has thus far produced more than $27 million in productivity improvements as its base of users has nearly tripled since the beginning of 1998. The system also has increased win rates by as much as 90 percent for certain practice areas within Global Services and improved cycle times by up to 60 percent.

The highly mobile nature of the IBM work force (approximately 40 percent of employees overall) makes it an ideal proving ground for a variety of collaborative tools and applications, including instant messaging (Lotus Sametime), e-meetings, and virtual workplaces. The Notes/Web platform enables IBM employees to work with colleagues across time zones and geographic distances and improve team effectiveness and execution.

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! e-learning

One of IBM's key Knowledge Management initiatives, e-learning provides employees with Web-based services such as distance learning, whose features include online instruction, study groups and exams. Services such as Web-based distance learning dovetail closely with IBM's highly mobile workforce, which don't have time to spend in a classroom, but nonetheless need to keep up-to-date. Through 3Q2000, approximately 36% of all employee training was through distributed learning, for a total cost avoidance of $312M. IBM estimates that for every 1,000 classroom days converted to distance learning, more than $400K in costs can be avoided.

An area that has especially capitalized on e-learning technologies is management training. Today, IBM delivers Notes/Web-based management development programs to all new managers worldwide. This e-learning model, called Basic Blue, blends Web-based performance support, virtual collaboration and classroom experiences; it has won four major awards to date, including three best practice citations by the American Society for Training and Development, one of the world's premier professional associations in workplace learning and performance. Based on this success and to respond to customer demand, IBM modified Basic Blue and created a customer offering, called IBM Management Development Services. To date, more than 2700 courses (mostly developed on Lotus LearningSpace) have been delivered to IBM employees via its IBM Global Campus Web site.

Similarly, marketing training has heavily leveraged IBM's e-learning technologies, with one third of its curriculum delivered through Web-based distance learning. In the market intelligence area, a new 18-month training and accreditation program is all done on the Web. This program, called Core Body of Knowledge, has resulted in 60-70% cost savings and significantly improved program effectiveness.

IBM realized that its transformation initiatives would only take root if they were driven by a passionate executive team, embraced by all employees in the company, and were framed within a new leadership model.

IBM's transformation efforts have resulted in radical changes to every aspect of the company, including its organizational model, core processes, and IT systems. Perhaps most importantly, they have also affected the way employees work at IBM. The company realized that its transformation initiatives would only take root if they were driven by a passionate executive team, embraced by all employees in the company, and were framed within a new leadership model. The framework, centered around a "passion for the business" and emphasizing accountability, straight talk, and working as a team, represents a major shift from a culture where individual excellence had always been rewarded.

Despite this, IBM's changes met resistance. Some employees had lost some control and some—having lived through many reorganizations before—were skeptical. The pace of change was relentless and employees were expected to learn new skills in both leadership and collaboration. Likewise, a new performance evaluation system was implemented, stressing execution and relying on a forced curve. Ultimately, however, the company's passionate leadership, commitment to driving change, and sustained focus on consistent and frequent communications led most employees to adopt the new IBM culture. This was arguably one of the most remarkable achievements of IBM's transformation.

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IBM's transformation into an e-business has resulted in valuable lessons that have enabled it to identify with, and better serve, other companies engaged in a transformation process. These key lessons include:

! Embrace a holistic, customer-centric view

The Web has spawned an economic environment that is customer-centric. With the explosion of Internet technologies and faster and better communication via the Web, customers are regularly raising their expectations. To connect with customers in today's dynamic e-business environment, companies must develop a holistic view which is customer-centric and characterized by speed and flexibility.

! Start small, grow fast—everywhere

An e-business environment recognizes experimentation and learning from mistakes. In transforming a business, a company needs to pick specific projects, begin small, learn from mistakes early on, and grow fast—everywhere. Because the competition is unrelenting, this must be done at lightning speed.

! Outsource for speed and business value

In examining a company's strengths and weaknesses, strategic decisions should be made on what can be done internally vs. what should be outsourced. This will facilitate the reallocation of resources, help in leveraging those resources and achieve the company's goals faster.

! Commit to success through leadership, culture, communication

In transforming a company, top executives and managers at every level need to be committed and involved. Moreover, issues such as the corporate culture, specifically the need to change the company's collective mindset and way of operating in a fast-paced environment, need to be addressed. The rule of thumb: expect resistance, but recognize that one of the best ways of overcoming resistance is through effective communications—not just from manager to employee or employee to employee—but at every level.

> Knowledge management and management will become synonymous as the process of inventorying, classifying and sharing knowledge becomes the generally accepted way of running a company.

As the Web continues to produce new value models that will fundamentally transform relationships with customers, partners, suppliers, and employees, adaptability and speed will remain key competitive advantages. IBM also expects changes in technology—both evolutionary and revolutionary—to alter the landscape of Web-based computing. For example, IBM expects the Next Generation Internet (NGi) to become so pervasive, reliable and transparent that it will be taken for granted. Moreover, as part of what it calls "pervasive computing," IBM expects a far wider range of devices—from appliances to cars to products—to contain embedded semiconductor devices and interface with the Internet.

Within enterprises, more powerful processors married to more sophisticated algorithms in powerful software will enable enterprises to "data mine" for new insight and competitive advantage—including more personalized customer relationships—while voice recognition will link with automatic translation to all but eradicate the issue of language differences as a barrier to communications. If "knowledge management" still seems like an awkward phrase, it won't be for long. Knowledge management and management will become synonymous as the process of inventorying, classifying and sharing knowledge becomes the generally accepted way of running a company. IBM is well positioned to exploit these trends and many others as it continues its transformation journey.

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