Business Transformation Through End-to-End Integration

An IDC e-business Case Study

THE RESULTS: CUSTOMERS

- IBM's e-commerce revenues generated $26.8 billion, up 15 percent from the previous year.
- IBM avoided more than $500 million in support costs through its Web-based support resources.
- 70 percent of PC orders are now "touchless"—processed without human intervention.

THE RESULTS: SUPPLIERS

- The company avoided costs of $405 million through e-Procurement and process-related improvements.
- More than 90 percent of all IBM purchasing transactions were conducted "hands-free" (without the intervention of procurement buyers).

THE RESULTS: EMPLOYEES

- IBM conducts nearly half (43 percent) of its entire employee training via e-learning, avoiding more than $395 million in related costs.
- More than 88 percent of IBM's US employees who enrolled for health benefits did so via w3, IBM's intranet.

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Since IBM embarked on its business transformation nearly a decade ago, the company has gone from a collection of siloed business units to an agile and integrated enterprise focused on the customer. IBM's business transformation has empowered the company to become an e-business leader, bringing together people, processes and technology to drive revenue and profitability. The company's experience drives home the message that e-business is real business and that smart organizations can leverage its power to create external and internal value, win in the marketplace, and enhance bottom-line results.

Transformation is hard work, however, and IBM's experience is no exception. Overwhelmed by its own complexity and faced with possible demise, IBM struggled to learn the lessons it needed to survive. Forced to examine and redraw virtually every aspect of its business model, the company realized, through both its successes and failures, that transformation held the key to its future.

> IBM's transformation success comes from aligning e-business investments with overall business strategy, viewing e-business objectives not simply as technology projects—but enabling processes that enhance and extend efficiency, profitability and business relationships of all kinds.

Today, IBM's e-business capabilities are firmly anchored in a philosophy of ongoing business transformation that reaches every corner of the organization. It has learned that the maximum benefits of e-business come from integrating technology into reengineered core business processes. Since IBM began its process-focused transformation, the payoff has been huge, with $14.5 billion in benefits achieved from $4.7 billion of investment since 1994. Recent returns on this e-business transformation are impressive:

- IBM's e-commerce revenues reached $26.8 billion, up 15 percent from the previous year.

- IBM continued to move procurement to the Internet, purchasing 95 percent of goods and services electronically, resulting in $405 million in cost avoidance.

- IBM handled 43 percent of all employee training via distributed learning, generating cost avoidance of more than $395 million.

IBM's transformation success comes from aligning e-business investments with overall business strategy, viewing e-business objectives not simply as technology projects—but enabling processes that enhance and extend efficiency, profitability and business relationships of all kinds. From e-procurement and e-learning, to B2B and the multifaceted ibm.com, significant value is created through transforming processes and integrating them end-to-end for e-business.

As IBM continues on the transformation path, it is also actively turning its e-business experience into e-business insight that can be leveraged by both IBM and its customers. By "eating its own cooking," and with the knowledge gained from thousands of customer engagements, the company is well-positioned to help others on their road to transformation and e-business enablement.

IBM at a Crossroads

In 1993, IBM was on the brink of break-up. The stock price had collapsed, hitting a 20-year low, and the company posted an $8.1 billion loss. The crisis was triggered primarily by profound changes in the mainframe marketplace, and the resulting collapse of profit margins. Unable to translate its sizeable intellectual property into products that were competitive and relevant in the new PC-dominated landscape, IBM saw the signs of trauma everywhere. In the early 1990's IBM operated 24 separate business units, which together sold an estimated 5,000 hardware products and 20,000 software products. Efforts to cut costs and stem losses were hampered by the sheer scope and complexity of operations. The fragmentation of IBM's business units had become a major vulnerability, and the company's break-up was increasingly seen as the only way out of the crisis.

> Inspired by new leadership and vision, IBM sought to refocus on the customer and the marketplace as the measure of success, and recreate itself as an integrator that could translate technology into business value.

With this plan on the table, IBM hired Louis V. Gerstner as CEO in April, 1993. Inspired by new leadership and vision, IBM sought to refocus on the customer and the marketplace as the measure of success, and recreate itself as an integrator that could translate technology into business value. The company began by cutting costs and driving common processes and systems that would be implemented across the entire global IBM organization. These efforts reflected IBM's goal of going to market as One IBM and were the guiding force behind IBM's business transformation.

Simplicity: A Key Theme in IBM's Early Transformation

IBM in the early 1990s was a company in dire need of simplification. Product designs called for little commonality of components, forgoing major cost efficiencies. On the IT operations side, fragmentation and inefficiency were equally rampant—pushing data processing costs to three times the industry average. Recognizing that complexity lay at the root of many of its problems, IBM adopted a strategy of streamlining its core business. This simplification reached across five key areas:

- *Internal Business Processes*—Beginning in 1994 with cost reductions achieved through consolidation and standardization, to global deployment of reengineered processes two years later, simplification yielded tremendous benefits. Over a five-year period, customer satisfaction jumped 5.5 points, time to market became 75 percent faster, and total savings exceeded $9 billion. Reengineering also allowed for the replacement of manual processes with automated ones. Web enabling of core business processes and internal systems began in 1998 and continues to unfold today.

- *Applications*—IBM's 16,000 unique applications, deployed company-wide, were reduced to under 6,000 in just under 10 years by embracing a standardized application architecture built around "best of class" products such as SAP for Enterprise Resource Planning (ERP) and Siebel for Customer Relationship Management (CRM). IBM's founda-

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tion for e-business solutions is provided through a common Web architecture that incorporates the company's leadership products such as DB2 Universal Database, a number of WebSphere and Tivoli offerings, and a common Domino/Notes architecture that leverages the scalability and capabilities offered by Lotus Domino and Notes products. The application strategy is built to optimize application performance through seamless integration.

- *IT Infrastructure*—With 155 data centers, 128 CIOs, 31 separate private networks, and hundreds of different PC configurations, the consolidation and standardization of IBM's IT infrastructure was a crucial element of its simplification strategy. Data centers were reduced to 12 worldwide, networks were reduced to one, PC configurations to four, and IBM now has one CIO. Over the last decade, IT spending has been cut by 31 percent, even after absorbing major investments and growth due to volume and resource increases, as well as enhanced functionality.

- *Management Processes*—IBM implemented a three-pronged approach to process transformation management. First, on an enterprise-wide scale, it replaced multiple, nonstandard processes with a single global process, pervasively deployed. Second, IT strategy was pushed to the business-unit level, along with mandated use of standard technology components. Third, management systems, processes, IT and Web initiatives were aligned with business strategies.

- *Operations*—Like many of its customers, IBM has outsourced IT services—including application development and integration as well as infrastructure deployment and management—to IBM Global Services, saving half-a-billion dollars to date. This approach has allowed IBM to focus on strategic issues and has helped enforce standards and reduce redundancies, resulting in both process and cost efficiencies.

IBM's initial transformation success also highlighted that self-contained or "siloed" process reengineering limited crucial end-to-end integration across the company. Simply streamlining processes and moving them to the Web, with little thought to where they fit into the big picture, did not address the need for complex cross-business initiatives—such as CRM, Fulfillment and the Integrated Supply Chain—that promised to fully leverage the size and scope of IBM. To propel IBM's business transformation forward, a new approach was needed to deliver the standardization key to seamless integration with customers, partners, suppliers and employees, while still allowing the individual brands to win against head-to-head competition in the marketplace. To achieve the full benefits of transformation and e-business, IBM shifted to an end-to-end value chain model in 2001.

The Next Chapter: Value Chain-based Transformation

With $14.5 billion in benefits achieved from $4.7 billion of investment since 1994, IBM's process-focused transformation has clearly paid off. To continue

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building upon these impressive gains, IBM realized the need to shift its transformation from reengineering and deploying global processes, to a more direct link with the company's business models and product offerings. Today, similar products (hardware, software and services) are grouped into categories—or value chains—that best represent how value is delivered to customers. To date, IBM has defined several major value chains across the company:

- *High Volume, Easily Configured Products*—Includes PC products, low-end servers, and low-end printers.
- *Complex Configured Hardware*—Includes high-end servers, high-end storage, and high-end printers.
- *OEM Hardware*—Includes storage technology products and microelectronics technology products.
- *Distributed Software*—Includes all other software products (WebSphere, Domino, etc.).
- *Entitled Software*—Includes high-end eServer zSeries software.
- *Services*—Includes all services provided by the IBM Global Services organization.
- *Financing*—Includes asset and commercial financing as well as asset recovery services.

In addition, to create a single IBM experience, processes that directly connect with customers (e.g., CRM, fulfillment) and suppliers (e.g., procurement and integrated supply chain) are being standardized and integrated across these

IBM's Value Chain Transformation Model
A shift to value chain optimization with an emphasis on end-to-end integration.
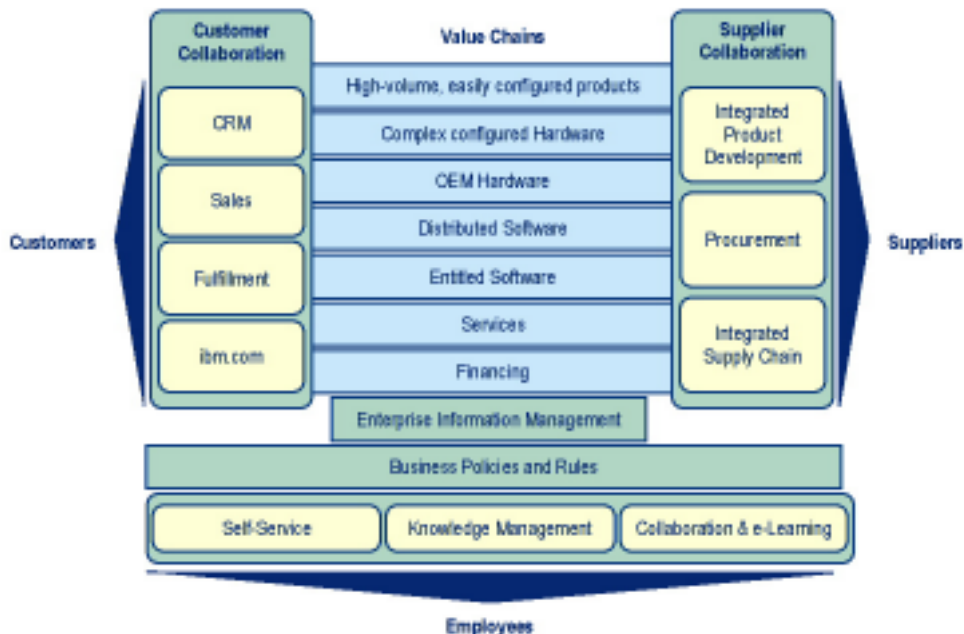
Source: IBM and IDC

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value chains. Customers expect to interact with the company as a single entity, and the collaboration that takes place between customer- and supplier-facing processes is critical to getting customers the information, resources, and products they want, when they want them.

Leading, Planning and Executing under the Value Chain Model

Value chains are part of a larger blueprint for transformation at IBM. With the move to value chain-based transformation, there needed to be corresponding changes made to its management systems and transformation policies. The Business Transformation and CIO office still drives the overall business transformation strategy, but has defined new roles and responsibilities in support of value chains. Roles new to the governance model include:

- *Value Chain Owners*—A senior line executive owns the transformation for each of IBM's value chains (e.g., Senior VP Server owns Complex Configured Hardware).

- *Business Transformation Executives*—Each value chain has a Business Transformation Executive, who establishes the value chain transformation strategy and drives its implementation and end-to-end business integration, from planning and prioritization to development, deployment, and post-deployment support.

- *Customer Collaboration Executive*—Charged with transforming all customer- and partner-facing processes at an enterprise level, driving opportunities for process simplification and integration, and ensuring that initiatives, policies and rules support One IBM goals.

- *Supplier Collaboration Executive*—Performs the same role as the Customer Collaboration Executive for supplier-facing processes such as procurement, supply chain and integrated product development.

- *Employee Collaboration Executive*—Charged with providing the One IBM view for IBM employees.

- *IBM Business Process Council*—With representatives across all value chains and business process areas, the Business Process Council sets enterprise process architecture, defines points of process commonality and integration, and drives compliance to enterprise processes and business rules.

- *IBM Enterprise Architecture Board*—Tightly aligned with the Business Process Council, the Architecture Board sets the end-to-end application and data architecture, drives the common control points across the value chains, and ensures compliance to architecture standards, as well as infrastructure compatibility.

Transformation and e-business investments are evaluated and channeled through the same model used successfully for managing development of the company's product and offering investments. Executives responsible for these investments build rigorous business cases to ensure they are in line with the business needs of the value chains, while generating the highest return to the overall business.

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e-business a Key Element of IBM's Transformation Model

As a result of its ongoing business transformation, IBM today is better equipped to capitalize upon e-business opportunities and compete in an information economy that demands speed, flexibility and the leveraging of business insight. The essence of IBM as an e-business can be seen in the robust, scalable, secure, open-standard infrastructure the company has put into place, as well as the sheer breadth and depth of the e-business initiatives it supports.

On the software side, IBM has deployed critical middleware components such as the WebSphere product line (Application Server, MQ and Commerce) and DB2 Universal Database offerings to quickly deploy new applications. IBM's middleware products have allowed the company to quickly, easily and cost-effectively integrate its e-business applications with third-party solutions like Siebel and SAP. Other key software building blocks of IBM's infrastructure include Lotus Domino and Notes and the full suite of Tivoli management products. New technologies such as Web services and Business Process Integration components (including those obtained through IBM's acquisition of CrossWorlds) are also being leveraged.

IBM's e-infrastructure is powered by its eServer systems, which feature mainframe-inspired reliability, capacity-on-demand scalability and cross-platform interoperability.

On the hardware side, IBM's e-infrastructure is powered by its eServer systems, which feature mainframe-inspired reliability, capacity-on-demand scalability and cross-platform interoperability. IBM eServers range from the zSeries for mission-critical data and transaction processing, to the xSeries, an affordable, Linux-ready, Intel-based server with mainframe reliability. In addition to server products, IBM relies heavily on its TotalStorage products, which—together with IBM's storage management software and database technologies—deliver true end-to-end e-business information management. IBM has configured these hardware and software elements to create an advanced application framework known as its Global Web Architecture, a highly flexible architecture whose use of standardized elements enables lower cost, ease of management and superior performance.

By integrating its e-business infrastructure with reengineered processes across the company, IBM has fundamentally changed the way it does business by changing the nature of its relationships and interaction with:

- *Customers*—The Internet now touches the sales, fulfillment, and service functions.
- *Partners*—Stronger links have been forged between IBM and Business Partners through the Internet, enhancing profitability of the channel as well as customer satisfaction.
- *Suppliers*—The use of Internet technology on the supplier side has tightened the degree of collaboration while cutting costs and cycle times.
- *Employees*—IBM has leveraged its Intranet and Lotus Notes deployment to strengthen employee collaboration and knowledge management.

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Customer Relationships

In 2001, IBM's e-commerce revenues generated $26.8 billion, up 15 percent from 2000, from sales to large enterprises, small and medium-sized businesses and consumers, as well as direct sales to IBM Business Partners and OEM partners. IBM focuses on targeting customer segments and needs: direct customers and business partners; and enabling processes such as CRM, Fulfillment, and B2B that create value for customers.

ibm.com: The Premier Internet Initiative for Customers

One of the most visible and important elements of the IBM's e-business transformation is ibm.com. In its early stages, ibm.com provided information about IBM's products and services, but was organizationally (not customer) driven. The fragmented nature of the site posed a barrier not only to content presentation and navigation, but to IBM's e-commerce objectives. Today, ibm.com is an integrated, robust place of business that allows customers to research, buy and receive support for a wide array of products and solutions. Built and run on IBM products with a 99.9 percent availability rate, ibm.com enables customers to transact business over the Internet on their terms.

Small and medium-sized customers can learn about and shop for IBM products and services two ways: through dedicated portals on the public Web site; or through specific "territory" Web sites that aggregate relevant customer set products, resources, and services in a single location. Large enterprise customers are served through personalized, private portals, which provide pricing, product information, special offers and company standards. IBM's largest customers buy directly through their own electronic procurement systems.

e-business Metrics

**Focus on:
ibm.com**

- In 2001, IBM's e-commerce revenues generated $26.8 billion, up 15 percent from 2000.

- In 2001, customer visits to IBM support sites enabled cost avoidance of more than $500 million.

- In 2001, the ibm.com site received more than 370 million visits.

The ibm.com Web site

Integrated telephone and Web (TeleWeb) capabilities, such as Call Me Now and Text Chat interfaces, as well as innovative features like Web-assisted buying, make this integration seamless. The benefits of ibm.com reach beyond sales generation to include:

- *Sales productivity*—Customers' ability to get product and solution information and get answers to commonly asked questions has resulted in a 26 percent productivity improvement for telesales brand specialists for 2001. In addition, the average sales cycle has been cut by 50 percent.

- *Support Cost Savings*—In 2001, customers visited IBM support sites 121 million times. 18 million of these visits were from customers who were entitled to call through a prepaid contract, representing a cost avoidance of more than $500 million.

- *Customer Acquisition*—ibm.com extends IBM's reach to new customers through the home page, which received more than 370 million visits last year, as well as through banner ads on affiliate Web sites, auctions and group sites.

IBM designed its self-service platform to be both highly interactive and content-rich. IBM technical manuals were downloaded more than 6 million times in 2001.

Business Partners: Extending IBM's Value Proposition

Business Partners have steadily grown in importance to IBM, as evidenced by $16.6 billion in e-commerce revenue generated in 2001. Including Business Partners in IBM's transformation efforts means ensuring they have the best tools available to maximize their productivity as a channel and to enhance customer satisfaction. A CRM-based program, known as PartnerWorld Lead Management, has been designed to allow IBM's internal telesales employees to work seamlessly with Business Partners in the management and execution of sales leads. The initiative marks the first time IBM employees and Business Partners have had the same customer "view." IBM has leveraged the Web to strengthen the programs and services offered to Business Partners, including:

- *PartnerWorld*—IBM's Business Partner Web portal provides consolidated access to IBM support and resources for Business Partners worldwide. Benefits include education, technical support, co-marketing opportunities, sales tools, incentives and financing for a broad audience including developers, resellers, distributors, service providers, consultants and integrators. Recent content and navigation enhancements have resulted in an approximately 6700 percent increase in traffic.

- *PartnerCommerce*—An Internet-based ordering tool that allows Business Partners to check supply status, buy products, and track orders on the Web. IBM processed more than 418,000 orders via PartnerCommerce in 2001, a 96 percent increase from year end 2000. The number of partners registered to place orders through PartnerCommerce increased 34 percent from year end 2000, to 1925 in 56 countries.

- *QuickShip*—A self-service order entry portal with 24 by 7 availability

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that guarantees delivery within three days.

- *B2B*—Business to Business capability is being implemented between IBM and partners to move high volume, manual processes to an integrated electronic solution via the Internet, with early results showing reduced order error rates and improved cycle times.

CRM: Maximizing Customer and Partner Relationships

IBM's CRM initiative, one of its most high-profile customer-facing projects, allows the company to integrate such front-office functions as sales, marketing and customer service and to present one knowledgeable face to the customer. At the heart of this transformation is Siebel's packaged solution, which allows IBM to maintain an end-to-end focus on the customer from the time a campaign is launched and/or lead is identified all the way through the post-sale support process. Today, IBM's Siebel implementation is the world's largest, with thousands of users, including 26 call centers worldwide, as well as over 2,000 enabled Business Partner firms.

Fulfillment: Enabling End-to-End Order Management

IBM has also transformed its fulfillment processes, addressing customer needs ranging from simplified contracts to common global support, and the ability to get a firm delivery at the time the customer places an order. Through this customer-focused transformation, and the integration of enabling technology, the number of fulfillment applications worldwide has been reduced by 42 percent. Fulfillment orders flow from various front-end applications such as Siebel, IBM's Web portals or directly from a customer's procurement system, to backend systems running SAP. Revenue recognition is then initiated via a common interface to IBM financial systems. This transformation has reduced the Internet and B2B response times for hardware fulfillment from 20 minutes to realtime. In addition, 70 percent of PC orders are now "touchless," meaning they are processed without human intervention.

B2B: The Next Phase of e-business Integration

In 2000, IBM recognized the need to expand its e-business transformation strategy to include B2B: the seamless electronic integration of processes and transactions among multiple businesses. IBM initiated B2B capability with large enterprise customers, distributors, Business Partners, suppliers, and OEM trading partners. The e-business capability of ibm.com is being extended to enable enterprise customers to buy IBM products and services directly through their own e-procurement systems. In 2001, 65 of ibm.com's worldwide large enterprise customers generated $441 million in B2B revenue. In 2002, IBM engaged in B2B with three US distributors to order complex, configured servers, reducing cycle time from hours to minutes. The company is expanding this capability to enable customers and partners to change, cancel and view the status of their orders, and receive shipping information—all almost instantaneously. Successful external and internal B2B integration will be accelerated by the widespread adoption of industry standards by IBM and its partners. To start, IBM helped found and is implementing RosettaNet with key global suppliers and distributors. RosettaNet is a standards consortium with over 400 global partners in the electronics industry who are implementing

B2B processes within their supply chains. Combining this standards effort with business transformation efforts, IBM continues to reduce costs, improve responsiveness and greatly enhance its trading partner relationships.

Supplier Relationships

While providing a better experience for customers is crucial, transformation of the supply chain benefits IBM's suppliers in significant ways. At one time, supply was handled individually by brand. Today, it's being synchronized and standardized across the company, which makes things easier for suppliers and provides for a more cost-efficient way to procure goods. IBM's supplier-facing initiatives have been specifically aimed at improving the effectiveness and efficiency of procurement operations, supply chain and accounts payable. IBM's focus remains on the streamlining and integrating collaborative processes from early design through customer shipment. Since the mid-1990s, the importance of transforming the procurement process has gained momentum and shifted from solely hardware to align with IBM's shift to selling solutions.

Enabling suppliers for e-business extends the benefits of improved effectiveness and efficiency throughout the supply chain. With e-procurement, suppliers are able to receive forecasts and order, process invoices, and receive payment—all without the use of paper. The span of e-procurement covers all aspects of the purchasing process from up-front collaboration, through source selection and the fulfillment phases. In production procurement, suppliers are able to download IBM 3-D graphic models to their systems, reducing leadtimes, improving quality, and allowing suppliers and IBM to jointly monitor quality performance during manufacturing. In general procurement, e-business applications have dramatically reduced the time it takes to order and receive goods and services through the use of online catalogs of pre-negotiated items. Suppliers have increased their flexibility and responsiveness, providing an enhanced competitive advantage for both parties.

For IBM, the value of procurement transformation has resulted in year-over-year declining procurement expenses, lower commodity costs, and increased buying efficiencies. In 2001, the company avoided $405 million in costs through e-Procurement and process-related improvements. For example:

- Less than one half of one percent of transactions bypass the procurement process, compared to 30 percent in the mid-1990s.
- Procurement cycle times have fallen from an average of 30 days to a matter of hours.
- More than 90 percent of all IBM purchasing transactions were conducted "hands-free"—without the intervention of procurement buyers—thereby freeing up resource to focus on more strategic, value-added procurement activities.

IBM's supply chain initiatives focus on deploying three critical processes: *Demand Management* for forecasting market requirements; rules-based *Demand/Supply Rationalization* for supply optimization; and instantaneous customer response through the resulting *Available to Promise* supply commit

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and near realtime order status. IBM is deploying integrated demand/supply processes at the business unit level, aggregating information for enterprise processes where necessary, and extending the supply chain through closed-loop collaboration processes and integrating our contract manufacturers. These initiatives enable demand/supply collaboration with IBM's suppliers throughout product life cycle, improve responsiveness to customers, reduce planning cycle times, improve asset utilization, and ultimately reduce product cost. Since 1996, on-time delivery for configured hardware products has improved to 97 percent, an increase of 33 percentage points, while order entry-to-delivery cycle time was reduced by 48 percent to 10.6 days. Inventory turnover has improved as a result of improved processes and shorter cycle times, freeing up $1 billion in cash, and ongoing committed initiatives have a 78 percent internal rate of return.

Employee Relationships

Using IBM's intranet as the foundation, IBM's employee collaboration initiative integrates e-business and knowledge management capabilities. Technology is leveraged to provide a virtual workplace on the company's "w3" intranet where people can connect, work and learn, enhancing the productivity of employees worldwide. Employee collaboration capabilities fall into the following core groupings:

- *Expertise*—IBM aims to efficiently leverage the knowledge and skills of its over 300,000 employees through expertise location. IBM's worldwide employee directory, BluePages, provides searchable employee-created

The Home Page of w3, IBM's Intranet

"Persona Pages" that facilitate the identification and location of a subject-matter expert based on an individual's projects, teams, expertise and business interests. There are currently 92,000 Persona Pages, with 1,500 new pages created each week. Lotus Discovery Server is being piloted to extend this expertise location capability.

- *Content*—Via the intranet's "e-Workplace," employees can access profile-driven, customized portals—or "portlets"—which enable employees to receive personalized internal, industry, and competitor news, as well as collaborate, learn, find knowledge and/or experts, and share and access productivity-enhancing tools. IBM's internal research found that 65 percent of employees rate the w3 e-Workplace as critical to doing their job, while 63 percent say it saves them time.

- *Collaboration*—The Intellectual Capital Management Asset Web, Knowledge Cafes and TeamRooms provide a centralized system for information sharing as well as intellectual capital management. The IBM TeamRoom—a versatile and user-friendly collaborative database—is now in use by 15,000 teams and more than 150,000 IBM employees around the world. The latest version, TeamRoom Plus, has over 70,000 new users in its first nine months. Web Conferencing provides a virtual space for collaboration with other employees or customers, with over 30,000 worldwide participants joining more than 6,000 internal and outbound Web conferences each month.

- *e-Learning*—IBM conducts nearly half (43 percent) of its entire employee training via e-learning, avoiding more than $395 million in related costs in 2001. IBM has used the Web exclusively to deliver programs such as the Core Body of Knowledge training and accreditation program (market intelligence education), improving the program's effectiveness, and reducing costs by nearly 70 percent.

- *Employee self-service/self-support*—The strong transactional capabilities and rich information of IBM's intranet have led to widespread usage of self-service functions. Indeed, more than 88 percent of US employees who enrolled for health benefits did so via the intranet. The company's Travel Web site allows employees to research travel policies and resources and make airline, car rental and hotel reservations. The site is also integrated with Expense Accounting 2000, IBM's online expense reimbursement application, radically streamlining the travel expense accounting processes. To date, three quarters of IBM's expense accounts flow through this system.

IBM's employee-facing initiatives are designed to integrate information, applications, and services from across the IBM enterprise enabling easy access anytime, anywhere—no small feat of application integration. A common services architecture model has been deployed underlying the intranet, which will continue to be leveraged to allow for greater integration of applications and services, and enhanced workflow across value chains, thus bridging the gap between business towers with enterprise-wide solutions. In this way, employee collaboration capabilities advance IBM's goal of end-to-end integration.

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Lessons Learned

As IBM looks toward the next phase of its transformation journey, it can also look back at valuable lessons learned from previous transformation efforts.

- *Payoff for e-business is real*—Throughout the rise and fall of the dot coms, the essential truth—that the payoff for e-business investments is real—has remained unchanged. The integration of reengineered processes and Web technology delivers bottom-line profit, top-line sales and unprecedented reach to customers, partners, suppliers and employees.

- *The Web forces a holistic, customer-centric strategy*—As the ideal platform for collaborating with customers, a company's Web solution needs to be designed in a holistic fashion around customers' needs. A company's information and resources must be presented seamlessly to customers (and suppliers) to make it as easy as possible to do business with a given company.

- *Integration is key to success*—To unleash its full potential, a company's e-business infrastructure must be seamlessly integrated with processes, applications and systems. It is critical to achieve end-to-end integration within value chains as well as across them to effectively deliver bundled offerings to customers.

- *A scalable, robust infrastructure is essential*—A reliable, scalable, available, secure and adaptable infrastructure is the heart of an effective e-business. Establishing a secure, privately managed, bullet-proof infrastructure enhances the confidence of customers, partners, and employees. Failure to put this in place frustrates customers through downtime and decreases confidence—and ultimately endangers valuable customer relationships.

- *Outsource for speed and business value*—IBM's experience in utilizing the business insight of IBM Global Services, like that of many of the company's customers, demonstrates the inherent payoff of leveraging core competencies of other service providers.

- *Proactive leadership is needed for cultural change*—Companies implementing changes in processes and systems invariably encounter deep-seated resistance at all levels of the organization. The key to successfully overcoming this cultural inertia is proactive involvement on the part of senior management in leading these changes, including aligning drivers of accountability such as compensation and performance appraisal.

The Future: Positioned for Growth

IBM is shaping its strategies to thrive in an environment where serious e-business is expected to yield serious, measurable results. By virtue of its solutions focus, the company is well positioned to respond to this evolving landscape. IBM has also identified other critical emerging issues around which it has framed its market strategies and technology investments. They include:

- *The importance of infrastructure*—The requirements of advanced, dynamic e-business computing have re-emphasized the increasing importance of the

movement toward open, secure, reliable, enterprise-scale systems built on integrated, industrial-strength technologies that adapt to changing business requirements—the kinds of computing systems that have defined IBM's strengths.

- *The importance of business insight*—Customer investment decisions increasingly are being made in favor of partners who can provide industry-specific insight (e.g., on financial services, life sciences or retail), in addition to technical expertise. This implies that companies like IBM that deliver this industry-based know-how will be able to add significant value to customers' technology investment decisions.

- *Technical innovation*—In the future, the computing infrastructure for e-business will be orders of magnitude more complex, dynamic and sophisticated than anything that preceded it. These demands play directly into IBM's technical competencies.

IBM is positioned to lead and further strengthen its market share and mind share in the next phase of IT evolution. This leadership is already seen in IBM's efforts to create an e-utility approach to the computing infrastructure that is also based on open industry standards. It's seen in IBM's "autonomic" computing initiative, designed to enable self-managing, self-healing networks. It's seen in IBM's Web services initiative designed to enable applications integration in a networked world. It's seen in IBM's leading edge research in the custom logic business, which will fuel the growth of smarter devices from tiny medical devices to billions of Net-enabled consumer electronics products. It's seen in IBM's pioneering work in "grid computing" architectures, which will turn the Web into a single virtual computer able to leverage IT resources across multiple enterprises. All of these investments, together with IBM's internal transformation experiences, are critical to helping the company deliver greater value to IBM and its customers. As the future unfolds, IBM continues to prove it has the capability to transform itself to capitalize on these and other new opportunities.

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