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Information Technology Insights: IBM Targets the Chemical Industry

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Under the leadership of former chairman and CEO Louis V. Gerstner and the direction of current chairman and CEO Sam Palmisano, IBM has embarked on a strategy that has transformed the information technology giant from the world's eighth largest manufacturer to the world's largest services company. Still the number one information technology company in the world, IBM has shifted away from being simply product-focused to a solution-based business, which is represented in IBM's core strategy—e-business on demand. The e-business on demand concept, which was officially introduced to the marketplace last October, is the cornerstone of IBM's transformation. It offers a customer-centric rather than a product-centric approach in reaching key markets and industries, including chemicals and petroleum.

The evolution for IBM's e-business on demand concept dates back to the mid 1990s, when the company recognized that advances in network technology were fundamentally changing the way companies could manage their core business processes. Companies quickly realized that the Internet's value was not in Web pages, but in exploiting the technology to make those business processes more efficient—what IBM called e-business.

The Internet's role in providing a platform across an organization for the automation of business processes evolved as the limitations of the centralized nature of early enterprise resource planning (ERP) systems became apparent. "By the late 1990s, enterprise software companies had already returned to the centrally managed roots of their solutions opting for greater control over flexibility in the hope of better functionality," explains Mark Enzweiler, general manager, global chemical and petroleum industry, IBM. "But by centrally managing the databases, companies began making people work to match the software instead of matching the software to the way they did business," he explains. With attention drawn to Y2K in 1999 and the resulting difficulties in updating legacy databases, ERP software tried to create platforms that allowed for better integration and flexibility across enterprises.

"The establishment of open Web standards, such as HTTP, XML and HTTPs promised to ease the cross flow of information, but development of middleware solutions, such as the IBM WebSphere family launched in June of 1998, was a key development," explains Mr. Enzweiler. "Middleware allowed software companies to focus on their true competencies, and it set a balance between back office and externally focused applications," he says. "In the process, the e-business solution forged a workable architecture that had not been there before," he adds.

Following the development of IBM's WebSphere middleware solution, IBM then flowed with technology developments to reach the next critical phase—open source software, which is exemplified in its Linux operating systems. "This created a newfound ability for computers to share not only memory and software, but actual processing power over the Internet," says Mr. Enzweiler. This so-called grid computing leads to another capability that IBM characterizes as utility-based computing. Under utility-based computing, a company can outsource its entire IT infrastructure to an IT services company modeled after a power utility. "So a company's core enterprise applications are all hosted offsite as its data are made available in real time to workers over a secure Internet link," says Mr. Enzweiler.

Utility-based computing represents a paradigm shift from the large, costly mainframes of only a decade ago. Its key advantage is the ability to increase, decrease or maintain IT capabilities without large capital investments. "It provides an asset-light infrastructure that can scale up or down depending on business conditions and demand for IT capabilities," says James Kulbeda, strategy leader, Americas chemical practice, IBM Business Consulting Services.



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There are four key elements for a business under IBM's e-business on demand concept—integrated, virtualized, open and automated. First, integration means that data must maintain their integrity and will require transaction processing of the highest order across custom applications throughout the enterprise. Instead of integrating "vertically" (within the operating system of their computer), applications will integrate "horizontally," freeing them from the restrictive underpinnings of their underlying infrastructure.

Second, being virtualized means that companies will be able to access and pay for computing the same way they get electricity; when traffic or transactions spike, capacity can be added. Third, open means that open technical interfaces and agreed-upon standards are the only realistic way the many business processes, applications and devices will be able to connect.

Last, autonomic computing is from the body's autonomic nervous system. "The same way we take for granted the human body's management of breathing, digestion and fending off viruses, companies will one day take for granted the network's ability to manage, repair and protect itself automatically over the Net. When things are quiet, your company pays less, and capital is freed up to invest back into your business," explains Mr. Kulbeda.

The flexible architecture offered by IBM in its e-business on demand is one component of the e-business on demand concept. "An on demand business is one that is integrated in real time across the company and with its customers and its suppliers so that the business is responsive, focused, variable and resilient," says Mr. Kulbeda. To help realize the e-business on demand concept, IBM made several key acquisitions last year, which included the acquisitions of the consulting business of PricewaterhouseCoopers, the tools developer Rational Software and the integration software firm CrossWorlds. Earlier this month IBM agreed to acquire Think Dynamics, which provides infrastructure and automated provisioning. These pieces added key elements to IBM's implementation portfolio of the e-business on demand concept.

"On-demand services are really a business process enabler," says Mr. Kulbeda. "It is not just about buying computing—hardware, software and services. It is about transforming a business," he says.

The Dow Chemical Company is using an on-demand approach for its Web hosting services, and BP and Marathon Oil Corp. are using it for their finance applications. Earlier this year, the engineering and construction firm Fluor Corp. signed a \$351 million, seven-year technology services agreement, where IBM is providing Fluor with global information technology services on demand. IBM will provide Fluor support in four main

areas: network infrastructure support; desktop and LAN support; global server management and end-user management.

PwC Acquisition Key to IBM's Transformation

The e-business on demand concept has paralleled IBM's own shift from a product-focus company to a customer-centric approach. IBM transformed itself from the world's eighth largest manufacturer to the world's largest services company under the leadership of its former chairman and CEO Louis V. Gerstner. Under the direction of current chairman and CEO Sam Palmisano, IBM acquired the consulting business of PricewaterhouseCoopers last year and named it IBM Business Consulting Services, which now offers over 30,000 experts to provide solutions not only for technology but strategic business consulting.

IBM added considerable strength in consulting services from the PricewaterhouseCoopers deal. In fiscal year 2001, PricewaterhouseCoopers performed strategic consulting services for over 45 percent of the Fortune Global 500, 74 percent of the 2001 Fortune Global 50 and 82 percent of the 2001 European Financial Times 50.

Along with the acquisition, IBM reorganized around 19 customer-facing industries, which include chemicals and petroleum. The PricewaterhouseCoopers acquisition added 2,000 global staff members to the chemicals and petroleum practice of IBM Business Consulting Services, which now includes a total staff of 3,000 members. Within each of these 19 vertical industries, IBM offers a package of services and solutions across specific industries. For chemicals and petroleum, these key offerings include: financial management services, customer relationship management services, supply chain and operations services, human capital services, e-business, business transformation outsourcing and strategy (Figure 1, below).

Customer Centric Versus Product Centric

A key strategic focus for IBM in the chemical industry is to help trans-

form companies more into customer-centric organizations that better use customer segmentation. "The chemical industry as a whole is still very much asset-focused rather than customer centric," says IBM's Mr. Kulbeda. "It still tends to be product-focused rather than service-focused and siloed by function and strategic business units. While it is true that certain companies have reorganized along customer-facing organizations, these general characteristics still hold true in about 85 to 90 percent of companies."

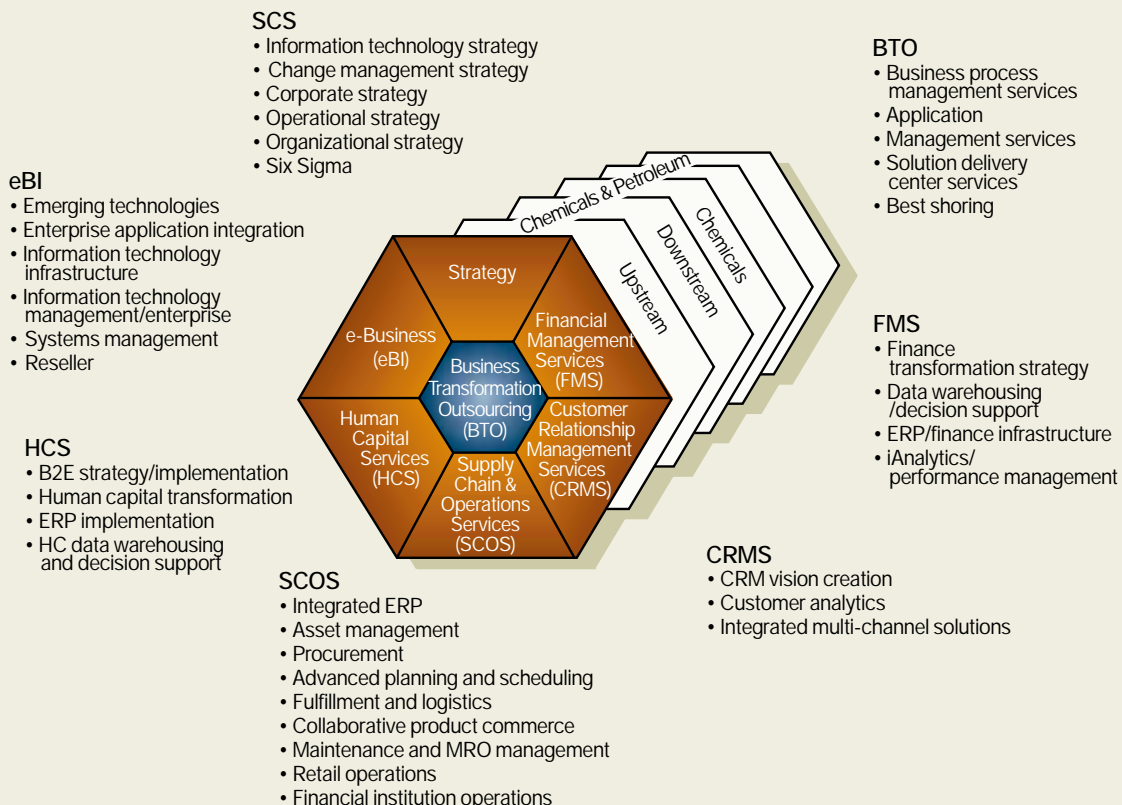
To specifically address how to transform chemical companies into a more-customer focused organization, IBM Business Consulting Services is emphasizing its Customer Value Management (CVM) as a value extraction initiative to grow top line and optimize the bottom line.

"CVM is strategically focused on optimizing the solicit order to cash (SO2C) process," explains Mr. Kulbeda. "When you think of typical transactions for a chemical company, it consists of three main components: solicit to order (handled by sales), order to invoice (handled by customer service) and invoice to cash (handled by credit/finance departments). While the chemical industry as a whole has handled the order to invoice and the invoice to cash components well, it has room to improve the solicit to order process," says Mr. Kulbeda.

The key to optimize the SO2C process is to unbundle products and services and segment customers based on their willingness to pay for these value-added services and products. "This is a lesson already learned in the airline and banking industries," says Mr. Kulbeda. "However, the chemical industry as a whole has tended to have a 'one size fits all approach.' However, best practice companies differentiate customers based on value rather than revenue alone," he says. "It is a move away from traditional 'sales' push to 'customer' pull focus. CVM evaluates customer value by including profiting contribution over the life of the relationship. You have to look not only at the revenue derived from a customer, but the costs associated with servicing that customer and appropriately price technical and service packages and other offerings."

Using that framework of customer lifetime value, customers can be seg-

IBM: Leveraging Services and Solutions Across Specific Industries Focus: Chemicals and Petroleum



Source: IBM Corp.

Figure 1

Chemicals: IBM's Solution Focus for 2003

Business Trends

- Mergers & Acquisitions
- Globalization
- Decreased margins
- Commodity prices
- Environmental pressure
- Regulatory requirements

Technology

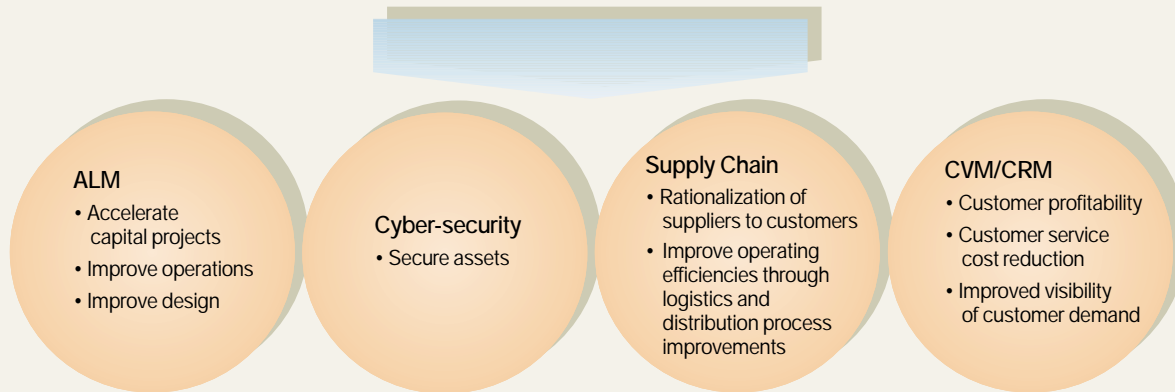
- Complex integration issues
- Information vs. data
- Power of the web

Market Pressure

- Capital efficiency
- Environmental responsibility
- Competitive advantage

Workforce issues

- Shortage of knowledge workers
- Lack of new talent infusion
- Company and cultural differences



Source: IBM Corp.

Figure 2

mented into four main areas: champions (high revenue, low cost customers), demanders (high revenue, high cost customers), acquaintances (low revenue, low cost customers) and losers (low revenue, high cost customers).

“Sub-segmenting customers into these value categories in turn drives the development of value-driven strategies,” explains Mr. Kulbeda. “Loyalty-oriented strategies can then be directed toward higher value customers.” A set of business rules that cover sales and marketing (account coverage and relationship building), technical support (custom development, standard, online), solution development (custom and developed), order and inventory (minimum order size and vendor managed inventory) and credit and pricing (flexibility and terms) can then be set for each value segment.

Mr. Kulbeda says IBM is the only consulting firm to specifically offer a CVM initiative for the chemical industry. Eastman Chemical, Degussa, Hercules, and J.M. Huber are some examples of chemical companies that have employed IBM's CVM approach.

CVM is one element of IBM's solution focus for the chemical industry for 2003. In addition to CVM and customer relationship management, other key areas are asset lifecycle management, supply chain improvements and cyber security (Figure 2, above).

Asset Optimization

One specific focus for improved asset management offered by IBM is Strategic Profit Improvement (SPI), a methodology that provides an approach to drive cost efficiency, improve working capital, optimize asset management and set the groundwork for growth.

“Generally SPI is a large-scale project that is driven by a client's corporate strategy,” explains Mr. Kulbeda. “It is a top-down approach to profit improvement, where depending on the product, we assess the entire value chain and target high impact areas to generate savings and improvements.”

Reducing manufacturing costs can be a target in an SPI, but it first involves larger, strategic issues. At the first level, there is a review of businesses to determine unprofitable, low margin and non-strategic businesses. Then a product profitability review identifies low margin and/or non-strategic products, followed by an operations and supply chain review, which includes a manufacturing plant review and a strategic sourcing review. Finally, an overhead infrastructure review looks to restructure the selling, general and administrative functions to align the resources with the revised

business, product portfolio, manufacturing and supply chain requirements.

Cyber Security

Another major focus for IBM in the chemical industry is cyber security. In January, IBM joined forces with the Chemicals Sector Cyber-Security Information Sharing Forum to speed development and execution of industry benchmarks for cyber-security. The forum's work with IBM will enable further implementation of two components of the forum's chemicals sector cyber-security program—establishing sector practices and standards and encouraging acceleration of improved security technology and solutions development.

“In helping the forum craft these important security standards, IBM is leveraging a substantial body of knowledge acquired during years of working with the chemical industry,” says Rusine Mitchell-Sinclair, general manager of IBM Safety and Security Services. “Together, we will develop benchmarks that will help raise the security of the industry's vital information and manufacturing control systems.”

Through its cyber-security program, the forum is charged with evaluating a wide variety of recommendations and tools to determine a common industry standard to enhance cyber-security for intellectual properties while simultaneously enabling broad-based multinational collaboration. The forum consists of 10 chemical industry trade associations representing more than 2,000 chemical companies.

IBM's Safety and Security practice is working with the Chemical Industry Data Exchange (CIDX) to establish an initial chemical industry benchmark as part of the recently formed CIDX Cyber-Security Practices, Standards and Technology Initiative. The CIDX initiative is responsible for implementing the Standards and Practices component of the Chemicals Sector Cyber-Security Program.

The program has endorsed the ISO/IEC International Standard 17799 as voluntary guidance for companies in the industry to follow in devising risk-based cyber-security plans for their organizations. ISO 17799 is the framework for establishing cyber-security management practices for program participants. IBM is acting as a consultant to help the companies participating in this initial benchmarking to assess themselves against the standard. The self-assessments will provide the basis to establish benchmarks by which cyber-security practices can be measured within the industry. 