

# How the business internet is reshaping the chemical industry

## Customers, suppliers—and even competitors—will integrate their operations

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**E**-commerce and e-business are heating up in the chemical industry. In fact, petrochemical business-to-business Internet commerce is expected to exceed \$600 billion dollars a year by 2003, according to a 1998 study by Forrester Research.

Evidence of that growth may not be apparent now, but it is a matter of time—and not much time—before the chemical industry undergoes the kind of transformation taking place in the computer and financial services industries.

Chemical industry executives are starting to ask difficult questions: What will my business look like in the future? What new trading partners will we work with? What investments in technology will be required? How will we train people in the new ways of doing business? Are we already behind?

Meanwhile, “e-entrants” are emerging in the chemical industry, such as Chemdex, ChemConnect, ChemMatch, eChemicals, VerticalNet and ChemTrade. A stream of press releases from chemical companies has announced Internet-enabled customer services for 7 x 24 order status and technical services. And new industry trading communities are continuing to emerge.

What does it all mean? E-business is here and growing. Every chemical company needs to answer four questions:

- ? How will e-business affect my company?
- ? What should we be doing in e-business now, next year and the year after that?
- ? Given all the options in e-business, what are the greatest leverage points for creating value?
- ? How do we get started?

### Five Forces model

Porter's Five Forces model can help assess the influence of e-business on the industry with views from four perspectives: potential entrants, customers, suppliers and substitutes.

**Customer Force:** Probably the single greatest force acting on the industry is the “shift of power to the customer.” More than ever, customers make demands that go beyond price cuts. They want order status, anytime, anywhere. They expect quick answers to technical questions, and they evaluate

suppliers on their ability to reduce customers' “total supply chain cost.”

**Supplier Force:** Suppliers are working to become “Internet enabled” to respond to what many consider “competitive threats or necessities.” Suppliers will expand vendor-managed inventory (VMI) to the next level, replacing phone calls and faxes with automatic demand signals transmitted from customer to vendor electronically. For large accounts, some suppliers will station their own employees at the customer's sites to monitor supply, value and product development.

**E-entrants Force:** E-entrants are third parties who offer a product or service that adds value for a business partner. It's made possible by the ability to disseminate information quickly across a broad network—often in real time. Examples include the e-entrants above.

**Substitute Force:** With information on alternative products on the Internet, chemical companies can choose substitute suppliers located anywhere in the world.

**Competitive Force:** Companies will strengthen relationships with their top suppliers and key customers by integrating their businesses. Those suppliers that are first to integrate may create entry barriers for other suppliers. Thus, having a “first adapter” advantage.

### Business forces

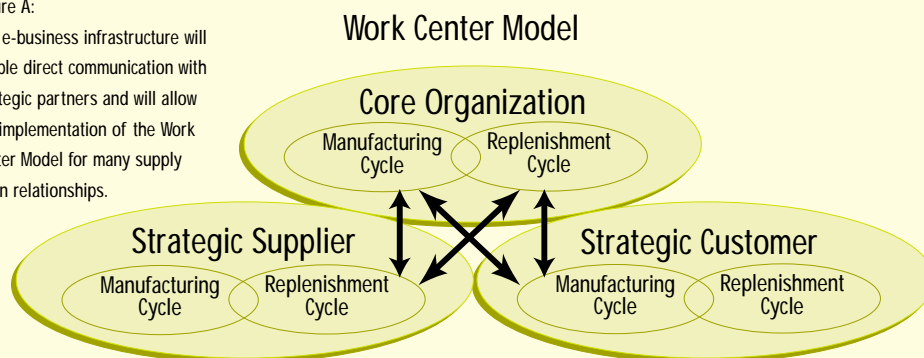
So what do customers, suppliers, e-entrants and substitutes mean to the competitive environment? Let's examine six trends:

**Trend #1: Sharper focus on customer relationships—**Companies will strengthen relationships with preferred customers by creating partnerships that tighten supply chains and create leverage points where “switching costs” are high. That will make it difficult for customers to defect to other suppliers because of price or service.

**Trend #2: Tighter Integration with Suppliers—**Companies will create preferred supplier arrangements based on more than price and product quality. The truly “preferred strategic supplier” will not only deliver the right product at the best total cost of service but will also work proactively to reduce total

Figure A:

The e-business infrastructure will enable direct communication with strategic partners and will allow the implementation of the Work Center Model for many supply chain relationships.



supply chain costs. Cost reductions could come from e-procurement, e-logistics, product development, collaborative planning, product configuration, customer-customized Web pages, electronic document management and product life service.

To compete in the e-business age, companies must operate across the "extended enterprise." That means moving information throughout the supply chain, from suppliers to end customers. The core organization (see Figure A) can seamlessly share information with strategic suppliers and customers, providing speed, agility and flexibility at an attractive "cost of service." "Minimum manual interventions" is the simple way of looking at the model. The e-business enabled integrated supply chain will eliminate most hand-offs and "inefficiency points," such as faxes and telephone calls.

**Trend #3: Collapsing cost structures**—Companies will continue to look for more cost-effective means of fulfilling customer needs, leading them to outsourcing.

**Trend #4: Renewed focus on core competencies**—E-business will force chemical companies to decide where to compete: low-cost production, asset portfolio management, innovation and product development, or commercialization. In the past, companies have successfully competed in every dimension. In e-business, they'll focus on one and find alternatives to compete in the other dimensions that are not "core."

That trend is appearing in the producer-distributor-e-distributor space. The likelihood is remote that one company would be "best" as producer, as general distributor and as e-business distributor. The new e-business distributors, like eChemicals, could open new, more efficient channels.

**Trend #5: Strategic partnerships**—Dissected value chains are becoming a reality. Business partnerships are accelerating the changes in the competitive landscape. Companies share information about products, production and orders to provide added value to customers and to reduce overall supply chain cost.

**Trend #6: Virtual communities**—Communities are businesses coming together to share information and knowledge. They do it because of the need to strengthen relationships with customers, collaborate with former competitors, expand use of the

Internet, create new sales channels and integrate the extended supply chain.

Communities fall into two types. Open industry communities will change the way the chemical industry shares information. They will contain virtual marketplaces, where community participants will come via the Internet for information. This will bring together buyers, sellers and colleagues who will build relationships. These communities will share information and also facilitate commercial transactions among members.

Go-To-Market communities will begin in several variations: supplier extranets, common customer extranets, supply chain extranets, and e-distributors—all facilitating commerce among suppliers and customers.

### Responding to e-business trends

So, how are chemical companies responding? Most are at the starting line or running the first lap. Many are beginning to think about their options and their near-term focus.

Companies are forming dedicated e-business teams, launching e-business projects, determining direction, setting priorities and working out strategy. Many are continuing "foundation projects" that are not necessarily linked to Internet transactions but are key to long-term e-business strategy. The projects include Enterprise Resource Planning systems (ERP), Customer Relationship Management systems (CRM), Advance Planning systems (APS), Web site development and Electronic Data Interchange (EDI) projects.

### Getting started in e-business

The PricewaterhouseCoopers "Four Box model" for e-business describes the evolution companies will undergo (see Figure B). It's not necessarily a linear progression. Companies can be in various stages at the same time. Here are the stages:

**Stage 1: Channel Enhancement** — Stage 1 entails developing a Web site with some customer interface. The four main steps are secure transactions, online processing capability, online catalogs and published data on Web sites. The initial Web site provides basic corporate information. Catalogs allow purchasing



staff to streamline procurement. Selected suppliers begin to provide online processing of orders. Finally, selected customers can place and track orders online via customized Extranets linked to the company.

**Stage 2: Value Chain Integration** — Stage 2 transformation links Extranet sites with internal back-end systems and redesigns business processes to take advantage of the capabilities. The four steps in Stage 2 are disintermediation, reintermediation, value chain integration and outsourcing. During the stage, a comprehensive value chain analysis is performed. The cost and benefits of differing business models are assessed. E-Business solutions are applied. The e-business enabled value chain integrates suppliers and customers with the

ditional industries. Physical, capital intensive organizations are replaced by virtual entities. This stage is a bit undefined and has yet to evolve.

A case that starts to fit the stage is the convergence of the oil and gas, water, utilities and telecommunications industries. Companies in those sectors are trying determine what businesses they will be in and who their competitors and partners will be.

The Four Box model offers a framework with reference points. Here's a description of each of the five phases in a "road map" for getting starting:

**Baseline:** The purpose is to agree on the facts, including current initiatives, business unit strategies and objectives.

**Visioning:** The purpose of this phase is to establish direction with an e-business vision, strategies and priorities.

**Analysis and Design:** The company designs the e-business program by evaluating alternatives, developing and validating a business case and drawing a road map.

**Implementation:** The purpose is to implement the e-business program.

**Evaluation:** To adjust the plan as developments unfold, the company evaluates results, technological advancements and evolving business conditions—and adjusts priorities and path forward as needed.

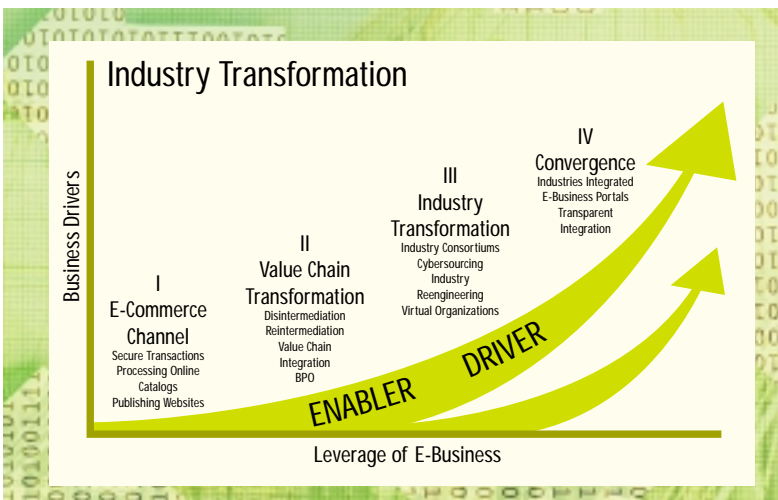


Figure B:  
The E-Business Adoption Curve for Chemicals.  
The Adoption Curve Encompasses:  
E-business market dynamics, Organizational strategies and approaches, E-business best practices, Key opportunities, Timelines.

core organization via custom-designed Extranet sites. Steps are taken to integrate with the ERP systems of strategic partners. Business processes are redesigned to optimize e-business. Changes in the role of suppliers and distributors result in the disintermediation and reintermediation of value chain participants.

**Stage 3: Industry Transformation** — Stage 3 links businesses with strategic partners to form virtual organizations. The four steps are industry consortiums, cybersourcing, industry reengineering and virtual organizations. During this stage, e-business enabled strategic partnerships are formed. Each participant has a clear vision of its core competencies and picks complementary strategic partners. Business processes are executed with minimal intervention.

**Stage 4: Convergence** — Stage 4 transformation goes beyond the integration of companies and starts to integrate the value chains of industries. Two steps are involved: industry integration and transparent integration, where virtual organizations link across tra-

#### Challenges for an e-business initiative

Companies need to grasp the broad impact of e-business, including new sources of shareholder value, improved customer loyalty, reduced costs, new markets, new products and services, the chance for market leadership, the streamlining of business processes and management of risk.

Tomorrow's business model is fundamentally different from today's. The new model will be based on relationships that have been built and maintained over time. We are witnessing the first stages of the globally networked business enterprises—virtual business communities.

That's why companies must understand the interdependency of every component of the organization when creating, implementing, and integrating e-business initiatives. Complete buy-in from management at the highest level is vital to succeeding in a transformation to e-business.

E-business will require investment and attention to developments. To succeed, organizations have to embrace change. ▴

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