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TradeMatrix: The New Paradigm of Internet Business

The Internet is dramatically changing the way business is being conducted today. Web sites that initially provided only company information are becoming more sophisticated and complex. The Internet facilitates delivering solutions that provide collaboration, procurement, product ordering, and other inter-company processes. Companies are looking for ways to take advantage of leading-edge solutions and services that leverage the power of the Internet. With a plethora of Internet-enabling software companies offering solutions, businesses must choose carefully when deciding who offers them the best competitive advantage.

Today, companies are faced with a myriad of solutions that address some of these issues, including indirect procurement, collaboration, marketplaces or trading communities, and cataloging (for selling). Each solution is unique and lacks a consistent approach in solving a set of business problems. While point solutions, like indirect e-procurement, have generated significant savings for users, a holistic view of business-to-business e-commerce solutions has not been embraced. For example, direct material procurement, which represents a much larger portion of purchasing expenditures than indirect material procurement, is not being addressed by today's Internet commerce companies.

A number of other issues exist alongside these solutions including:

- Each solution is independent of the others, so there is no leveraging of information from one source to another, such as a consistent marketing message to the user.
- There is no cohesive information technology strategy. Each solution has its own architecture and standards.
- Typical e-procurement products only address a very small portion of the goods being bought by companies and are limited to office supplies and other simple items. The limited collaboration processes provided are not integrated with planning and forecasting systems.
- Digital marketplaces are transaction-oriented, supporting only spot buying and selling. Trading community participants are limited in their ability to access other marketplaces.
- Customer-facing solutions are not linked to fulfillment processes. This leads to reduced customer service and profitability.

In general, most e-commerce solutions focus on streamlining existing processes within a single company, rather than reinventing and linking processes across multiple companies.

To solve these problems, companies must have on-demand access to intelligent, role-based solutions that help them effectively plan and execute their business strategy. These services must provide:

- Buyers with intelligent, direct, and indirect procurement processes, along with planning and search tools that span multiple trading sites and portals. Buyers benefit from increased service levels, while reducing costs.
- Sellers with the ability to present not only their own goods and services, but also those of their partners, while portraying a unified brand to their buyers. Sellers must also provide their customers with value-added services and content, leading to increased service levels, revenues, and profits.
- Designers with access to product design and development collaboration. Design collaboration and workload planning assist with opti-

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mally deploying scarce resources to bring new products to market more rapidly.

- Service providers, including logistics providers, outsourced manufacturers and warehousers, with the ability to understand and be linked with the physical movement of goods. With this capability, service providers provide maximum customer service at minimum cost.

TradeMatrix is the only electronic marketplace that can bring all of these elements together as an integrated, holistic set of services. TradeMatrix is uniquely able to bring these services together through a consortium of best-in-class partners who have a common interest in bringing game-changing value to customers. Available with a common, personalized, thin client user interface, TradeMatrix quickly delivers a new paradigm to business. TradeMatrix's design is based on i2's secure and robust DecisionFlows' and workflows, incorporating intelligent planning algorithms. The net result is sustainable, maximized profitability levels for TradeMatrix participants.

The Evolution of E-Commerce

The single largest driver behind the explosive growth in e-commerce has been the Internet, which has emerged as the fastest-growing communication medium in history. International Data Corporation (IDC) estimated that there were 142 million Internet users in 1998 and anticipates 500 million by 2003. Business must react quickly to the Internet. The ability to dynamically and ubiquitously share information in real time, as well as buy and sell goods via a standard Web browser, provides corporations with a compelling competitive advantage.

Electronic commerce transactions will explode. IDC estimates that business-to-business transaction volume will increase to \$1.3 trillion by 2003. Fear is also a significant motivator. CEOs are afraid of being "Amazoned." For every eBay, Amazon, and Yahoo!, there is another dot-com emerging on the horizon. Traditional companies are changing old models and thinking in new ways. In the digital economy, the competition is only a click away.

Companies have struggled with how best to use the Internet to achieve high-impact business results. Selling over the Internet can be classified into the following four categories:

- Company Presence – Basic company information
- Product Ordering – Purchase products online from one vendor
- Collaboration – The ability for companies to share information in a one-to-many scenario for mutual benefit of all parties
- Marketplaces – The public or private exchange of information in a many-to-many environment

The cost, sophistication, and business value of enterprise Web sites have increased dramatically across all industries (particularly in the consumer-oriented sites) since 1996. As referenced in Figure 1.0, GartnerGroup forecasts that an even greater growth in value and cost is anticipated.

In the late 1990s, e-commerce companies and dot-com Web sites focused on developing store fronts to stimulate sales. These predominantly B2C solutions included personalized Web front ends appealing to consumers and enabling sellers to increase up-selling and cross-selling opportunities. More recently, development work has concentrated on providing the dual back-end processes of fulfillment and, separately, customer care. Many of the newer applications include the returned goods process, required to accommodate unsatisfied shoppers.

Even though the B2B market is much bigger in terms of trade revenue than the B2C market, it has matured much more slowly. Only within the past two years have companies started to address B2B issues. Specifically, there has been the emergence of e-procurement solutions that help buyers manage and control purchasing processes. Separately, a few collaboration software vendors have been building simple, communication-based solutions relying on industry data standards such as RosettaNet, VICS, Opening Buying on the Internet (OBI), and others.

In the B2B world, marketplaces have experienced rapid growth and proliferation. Offering to bring buyers and sellers together, marketplaces or trading communities provide participants with the ability to post requirements and bid on goods and services. Marketplaces have typically evolved to meet the needs of a specific industry, such as eSTEEL (metals) or Chemdex (life sciences). C2C sites, such as eBay and Yahoo!, offer this same functionality enabling consumers to sell to one another directly.

These segments are beginning to converge. For example, more auctioning is taking place in the B2B world; at the same time, a growing number of companies are selling through direct and indirect channels. The result – a single multi-faceted virtual trading community – is emerging.

Improving on Current E-Commerce Solutions

Hardly a day goes by without news of an Internet-focused company reporting huge sales gains and negative profits. The profitability paradox results from:

A firm must spend a significant percentage of its revenue on advertising to attract new customers and gain market share.

Customer loyalty is virtually non-existent. To keep customers, a company must have a high order-fulfillment rate, which translates into high inventories and reduced profitability.

Fulfillment processes are de-coupled from the customer-facing solutions lead-

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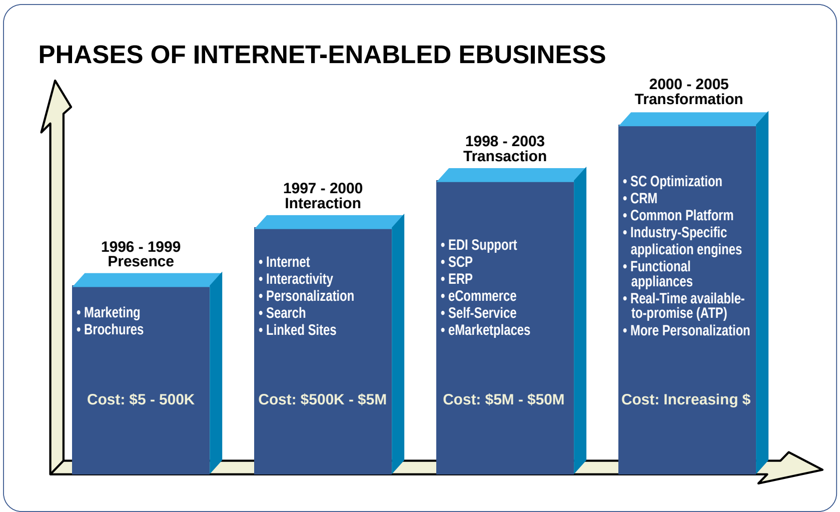

Figure 1.0 **Transformation Yields Value, Source: Gartner Group**

ing to overall increased operating costs.

The marketplaces for goods and services are limited to vertical industry segments. Greater corporate profitability could be achieved with more customers, content, services and sellers.

Processes or solutions currently provided by software companies do not leverage the transaction and collaborative powers of the Internet. Instead, they simply automate existing business processes at a lower cost.

Solutions offered are point solutions only – there is not a complete set of processes that span a company's extended enterprise.

Auctioning is used to drive to pricing for all goods.

The implication of each of these factors is discussed in detail below.

Market Share

Market share and industry leadership means that a company must attract and retain a larger percentage of customers than its competitors. In the traditional world of one-to-one sales, it takes a great degree of effort for a sales representative to convert a competitor's customer. With the Internet, customers are equally as hard to attract, especially with the huge number of options "just a click away." Even with marketing on the Web, including banner advertising and special offers, conversion rates are typically in the low single digits, hovering just above one percent. Companies are forced to spend millions of dollars attracting customers. This is the single largest reason why e-commerce companies suffer negative profitability.

Customer Loyalty

Once a company has attracted customers, another vendor or competitor is just a click away. How does an Internet-based company keep its customers? Customer retention, also referred to as "stickiness", is related to the value the customer gets from the site. In both the B2B and B2C worlds, this means that the customers must get high-quality products and services at a competitive price, delivered on time. Customer satisfaction is vital for an electronic commerce site to be successful.

Since online customers demand immediate gratification, this means promising products and services immediately , even if the date is estimated. When more than one item is ordered, this becomes especially difficult. How does a company accurately inform buyers when the products and services will be delivered, and at what price? Existing Internet commerce solutions are unable to satisfactorily service multiple product shipments and often do not comprehend true transportation time and costs.

De-coupled Fulfillment

Typical e-commerce sites have the ability to take an order, but do not have the ability to see if fulfillment is possible, except at very basic levels . As most tend to have already promised delivery, fulfillment is executed at any cost. It becomes even more complex when considering multiple line items for an order. Does a company have to ship them all together? If a seller ships the products when they are available, who absorbs the extra shipping costs? Does a seller understand customer preferences? The procurement process is also impacted. One vendor may be able to ship all the items for a total lower delivery cost than multiple vendors.

Vertically Focused Marketplaces

Marketplaces focus on a specific type of product or service such as plastics, steel or travel. This clearly defines the participants, but it also excludes potential customers. For example, if a buyer is looking for a specialized machine tool, there are multiple marketplaces where he may be able to purchase the tool. Further compounding the problem, he may have to pay an access fee to search each site.

Existing Business Processes

Many Internet commerce solution providers simply automate existing processes. Electronic procurement is a good example of where this has occurred. In the previous example, when buying multiple line items, the procurement process should include the total delivered cost – not just the cost of each single line item. In another procurement example, maintenance and repair parts are usually handled as indirect goods. What is missing? The interdependency of parts usage and the integration with a company's planning applications. By not linking these processes together, excess inventory is carried and service levels suffer.

Point Solutions

In the long list of solutions on the Internet, there are no products or offerings that cover more than one or two processes. The result is companies are forced to link disparate vendor solutions, including their own legacy systems. This not only increases information technology costs and time-to-value, but also reduces the payback that can be obtained from a fully integrated solution. For example, if a company uses two different customer-facing solutions, can the solutions share personalization data? If not, this means that the firm does not have the ability to take “lesson learned” about a particular customer and apply it to some other process, where the same customer may be impacted. Additionally, this means that a company is asking the same customer for identical data, multiple times.

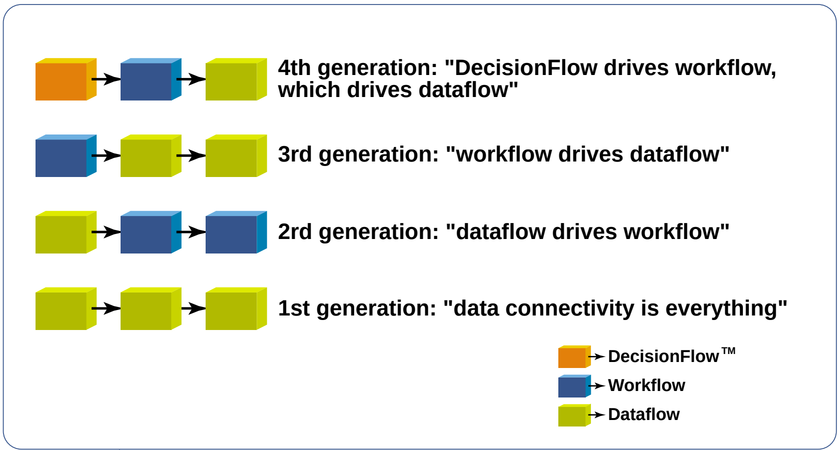

Figure 1.0 **DecisionFlow Example**

Auctioning Goods

Auctioning and reverse auctioning are important to electronic commerce. For the spot market, it is a mechanism for both buyers and sellers to maximize their value. Auctioning also assists with the vendor selection process of some indirect goods. However, for procurement of direct goods, auctioning is a poor solution as it assumes that all parts and components are commodities. Additionally, as Dr. Hau Lee wrote in his paper, “The Bullwhip Effect,” companies need visibility to reduce costs. Auctioning completely removes visibility, driving up costs, rather than down.

Change the Business Model

To efficiently leverage the vast of amounts of data generated on the Internet, solutions need to fundamentally change the way business is conducted. Instead of automating existing legacy processes, which are based on decades-old, manual execution workflows, solutions need to provide companies with processes that support strategic decision-making processes. Workflows also need to drive decision execution. Additionally, solutions must cross multiple marketplaces so that buyers can find all possible goods and services, while sellers need only participate in one place to gain worldwide exposure.

The value of any marketplace is dependent on the services provided. A world-class marketplace solution must support not only supply chain excellence, but also product life cycle and customer intimacy services. The marketplace solution must also be able to resolve conflict among any of these variables to achieve superior customer satisfaction. A technology framework that allows applications and services to be easily added, monitored, and removed is also a critical success factor.

DecisionFlows

A DecisionFlow is a decision-support process that evaluates multiple courses of action, and then helps arrive at an optimal decision before committing to a specific course of action. Successful collaboration between members of an e-business trading community begins with interaction at the planning level in order to make optimal decisions. In a simple example, if a buyer orders two books from an electronic retailer, wouldn’t it make sense to find out when the vendor can deliver the books before the buyer places his order? Correspondingly, the electronic retailer or seller should determine if it is going to make a reasonable profit on this order before it quotes the price. Both of these questions can be answered in a DecisionFlow.

By focusing on decision-making first and transactions second, a DecisionFlow integrates the decision and execution processes. This capability represents the next generation of thinking in e-business workflow management.

“Portal-of-Portals”

Electronic commerce buyers are demanding access to worldwide Web sites. They are also requesting single-portal entry that allows them to use or view the content of other portals and marketplaces. Using the technology described above, users can seamlessly access and use data from other sites, while leveraging services in both their single-entry portal and other marketplaces.

For sellers, the “portal-of-portals” concept is even more important because it allows them to market and sell their products and services to multiple customers and prospects. This capability enables sellers to market and brand goods of other suppliers in a virtual organization. For example, a company may want to sell additional up-scale products to “wine connoisseurs” with the knowledge that the wine-consuming segment has a propensity to buy expensive consumables. With the “portal-of-portals” concept, this company can sell cars, computers, books, and even tailored vacations, in addition to providing content about vintages, wineries, and other information that appeals to the wine drinker.

In a business-to-business example, a commercial carpet manufacturer may want to position the company as a new office fulfillment company. In this scenario, the carpet maker not only provides the carpet and its installation services, but also the decoration, furniture, electrical services, and security services. Virtually any business can re-invent itself emphasizing its core competencies.

Process Excellence

To succeed in today's increasingly competitive global market, world-class companies are concentrating on achieving process excellence. At a high level, companies focus on three main processes:

- Supply Chain Excellence
- Customer Intimacy
- Product Life Cycle Excellence

Top companies are striving to excel in two or more of the process classifications. To achieve top performance levels, the companies need advanced solutions that manage not only each set of processes, but also any combination, in an integrated approach. Winning companies will benefit from revenue and profit growth, high customer service levels, and increased agility.

Supply Chain Excellence

The processes of buying, making, moving and selling products and services comprise supply chain planning. For this set of processes, companies need superior DecisionFlows and workflows that can leverage the available data, and in real time, maximize performance. These processes need to support:

- Collaborative Forecasting and Planning
- Supply Planning
- Distribution Planning
- Master Planning – including Profitability Planning
- Procurement
- Detailed Factory Planning
- Transportation Planning
- Demand-Supply Matching

The net benefits of Supply Chain Excellence have been well documented and include:

- Improved customer service
- Increased revenues
- Decreased inventories
- Decreased logistics costs
- Decreased manufacturing costs

Customer Intimacy

In order to achieve best-in-class customer intimacy, businesses need to support the four core processes:

- Attracting customer
- Matching customer needs
- Fulfilling customer needs
- Servicing customer needs

Advanced Customer Management (ACM) planning systems are used to evaluate customer buying trends. The findings are then used to develop targeted marketing programs aimed at attracting a particular customer set. Once customer relationships are established, CM helps tailor the products and services offered – increasing the probability of a sale, or potentially, an up-sale.

For all customers, and particularly those purchasing products from the Internet, fulfillment is vitally important to maintaining customer loyalty. CM solutions must provide real-time fulfillment planning, comprehending any constraints in a seller's supply chain. Finally, self-service and other customer care processes must be supported, ensuring customer loyalty and add-on sales. Who needs a CM solution? Certainly any company that wants to sell on the Internet, plus those firms with complex and dynamic sales and marketing channels.

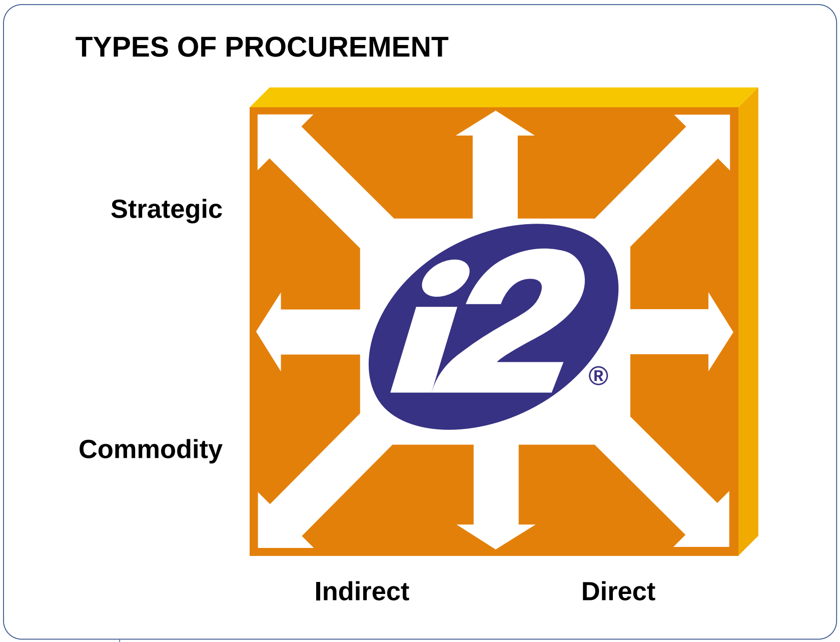

Figure 3.0 **i2's procurement options**

Product Life Cycle Excellence

Product Life Cycle Management (PLM) solutions work by managing four basic processes:

- Strategic Product Management
- Resource Planning and Scheduling
- Design Optimization
- Product Transition Planning

PLM solutions direct the efforts of the Research and Development function to ensure that scarce resources are focused on efficiently producing new and innovative products. The first step is to match new ideas and projects to long-term, strategic business goals. Second, once projects are launched, it is essential that people and resources are coordinated with project requirements, including both design and trading partners. The third step includes providing designers with access to component design specifications and design partners' resources. Next, product introduction planning takes place. This activity involves new product planning, along with the replacement of older products. The product life cycle process must be tightly integrated with the Supply Chain Management planning (SCM) processes. Finally, there is product phase-out period. During this time, the demand for any of the remaining product inventory may be significantly impacted.

What makes these PLM solutions unique? Like SCM and CM solutions, they are built with algorithms embedded into their DecisionFlows that help plan tasks and activities more effectively. Additionally, the collaborative planning flows, within the PLM solution, address needs across multiple organizations and companies.

Benefits of PLM solutions are:

- Reduced time-to-market for new products
- Unprofitable product development activities stopped earlier in the development cycle
- Better coordination between design partners resulting in higher quality
- Reduced design costs

Open Technology Framework

Technology, along with the companies developing and using new technologies, is changing at an ever-increasing pace. With this climate of constant change, information technology departments are looking for solutions that can be quickly implemented, provide on-going support, and link disparate vendor software in an open architecture, based on industry standards.

Summary

Some companies are finding ways of leveraging the Internet to speed up business processes. They are challenging their competition by inventing and executing new business paradigms. Based on the vast number of Internet-enabling software companies, how does a company find and integrate the right set of products to achieve competitive advantage? Additionally, how can a firm use these tools to make a profit, which is virtually unheard of in the Internet world?