SAP AND THE ONLINE PROCUREMENT MARKET

A NEW STRATEGY

As 1999 drew to a close, German software giant SAP AG was trying to execute a corporate strategy that it had forged earlier that year. Faced with slowing growth for its core product—enterprise resource planning (ERP) software that automated corporate processes such as manufacturing, accounting, and human-resource management—SAP management devised a new business plan that involved three main thrusts. One was to continue expanding its offerings beyond ERP by developing enterprise software for the fast-growing customer relationship management (CRM) and supply chain management (SCM) markets, an initiative that the company first conceived in 1996 but had been slow to act upon. A second prong was to recast its entire product line with a unified Internet focus. The third element represented a more far-reaching departure from its traditional ERP business than the others: SAP had decided to enter the market for electronic-commerce software and services, including the creation and management of online trading communities.

A major target of SAP's new e-commerce strategy was the market for online-procurement software and services—tools that enabled companies to automate and manage their purchases of "operating resources" (i.e. goods and services such as office supplies, furniture, travel services, etc., which were not direct inputs into a company's products). The online-procurement market was still in its infancy—worldwide sales of online-procurement software and services totaled just $62 million in 1998 (compared to $16.6 billion for ERP software sales that year).[1] But analysts estimated that the procurement market could exceed $14 billion by 2003: sales of software and related services (e.g. support, consulting, training) would generate $5 billion,[2] and transaction fees from online trade could generate an additional $9 billion or more.[3]

Several companies had already established leading positions in the nascent market, most notably Ariba, Inc. and Commerce One, Inc., both of which had been started within the last five years

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[1] "Procurement Pays Off," Charles Waltner, *Information Week*, 7/26/99, p.65; AMR Research

[2] "Oracle Paves Procurement Path," M. A. Farmer, CNET news.com, 8/27/99

[3] Based on Forrester Research's projection of $900 billion of online indirect purchases in 2003, and estimating average transaction fees of 1%.

and both of which were exclusively focused on the procurement opportunity. Neither company had yet produced a profit—for the quarter ending September 30, 1999, Ariba had a loss of $9.9 million on sales of $17.1 million, Commerce One lost $10.4 million on revenues of $10.4 million and neither had more than a few dozen customers (Exhibits 1 and 2). By contrast, SAP had operated for more than 25 years and was now the world's third-largest software company, with 1998 profits of $631 million (on sales of $5.1 billion). Thousands of organizations used its ERP software. Still, SAP was a relative newcomer to the online-procurement market and its credibility in this space was in question: on December 23, 1999, SAP's market value stood at $5.3 billion, while Ariba and Commerce One—which had become publicly traded companies just months before—each had values exceeding $14 billion. Clearly, investors regarded Ariba and Commerce One, not SAP, as the most credible contenders for the online procurement market. (Exhibits 3, 4 and 5)

SAP was driven to its new strategy by a pressing need to find new sources of growth. The company commanded 30% of the market for ERP software, more than twice the share of the second-place vendor, Oracle Corporation. But after a record of scorching growth throughout most of the '90s, SAP had begun to stumble. In January 1999, the company reported that pre-tax profits for 1998 increased just 15 % over the year before—a performance that paled against profit growth that averaged 46% a year (compounded annually) over the prior five-year period (1992-97). Difficulties continued through 1999: in October, SAP reported that despite a 14% increase in sales from the prior year's period, profits for the first nine months actually fell by 24%. The company reduced its sales-growth forecast for 1999 and predicted that profits would end up lower than the year before. However, SAP management viewed the situation as a temporary setback and expected the new strategy to turn the company around in 2000 and beyond.

SAP BACKGROUND

SAP was started in 1972 by five ex-IBM engineers who wrote programs for mainframe computers to help industrial companies control their manufacturing processes. When the project they were working on was transferred to another unit, the group decided to step out on their own and founded SAP. By the 1980s, SAP's flagship product, R/2, was a leading mainframe application powering corporate information systems. But beginning in the mid-1980s onward, corporations were shifting away from mainframe computing. In accelerating numbers they were adopting so-called "distributed computing," using client/server architecture: client computers (desktop PCs and workstations) were connected by local- or wide-area networks to multiple servers (powerful computers that housed data and applications that the client computers could access).

SAP navigated this transition with flying colors. In 1992 it released the phenomenally successful R/3, a client/server version of its software, which fueled tremendous growth: the company's sales soared from $513 million in 1992 to $5.1 billion in 1998, and profits grew even faster, from $40 million to $631 million. (Exhibit 6) SAP's workforce also mushroomed, from 3,200 employees in 1992 to nearly 17,500 by the end of 1998. By 1999, some 12,000 companies around the world were using R/3 software at more than 20,000 sites. The next closest competitor, Oracle Corporation, had just 7,100 customers for its ERP software.

Though SAP's original focus was on manufacturing processes, its R/3 software encompassed a wide range of features and components for automating and controlling numerous aspects of corporate operations. The software comprised a core system, to which various modules could be

added that extended the system's functionality. The complete product line included 12 modules for:
- accounting and controlling;
- production planning and materials management;
- quality management and plant maintenance;
- sales and distribution;
- human resources management; and
- project management.

Each of the modules incorporated features that controlled a host of business processes associated with the relevant area of corporate activity. Corporations could customize the modules to reflect their specific processes, practices, and business rules.

Because ERP system requirements varied significantly among industries, SAP organized its product development and marketing around industry business units that it called "Centers of Expertise." The company had 19 such units, addressing specific industries ranging from aerospace to healthcare to retail.

ERP OVERVIEW

Like SAP's R/3, ERP software in general had its roots in programs first written in the '60s and '70s for mainframe computers, which manufacturing organizations employed to help automate production planning. A car-maker, for example, could use such software to calculate the precise type and quantity of parts required for various production runs of a particular vehicle. These programs were known initially as material requirements planning (MRP) systems, and later as manufacturing resources planning (MRP II) systems.

Over time, these applications evolved to incorporate a broad array of functions beyond manufacturing operations. In addition to automating processes in adherence with a company's preferred business practices, ERP systems also enabled companies to capture and analyze extensive internal data—such as inventory flow, production patterns, compensation levels, expenditures on equipment, investment and asset management statistics, etc.—which helped to inform managerial decisions. In this sense, ERP systems served as the backbones of corporate information systems: they controlled core aspects of business operations and provided managers with key data for strategic decision-making. (Exhibit 7)

Implementing an ERP system was an enormously expensive and complex undertaking. The cost of licensing the ERP software itself often represented less than 20% of the overall cost of implementing the system: additional costs included expenditures on hardware and, most significantly, fees paid to programmers, systems integrators, consultants, and other service providers. For large corporations—e.g. a Fortune 500 company—installing an ERP system could cost $30 million in license fees and $200 million more in professional services (plus millions more on hardware), and it could take three or more years to complete.[4]

Companies installed a system in a series of stages, beginning with an assessment and design phase: analysts identified and deconstructed the thousands of business processes that constituted the company's operations—manufacturing procedures, inventory-management rules, accounting practices, etc.—so that these could be adapted and automated via the ERP system. Installation

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[4] "The E-Ware War: Competition Comes to Enterprise Software," David Kirkpatrick, *Fortune*, 12/7/98, p. 103

efforts generally focused on one area of operations at a time, such as manufacturing or accounting, and were rolled out in successive stages.

While ERP software was designed to standardize an extensive range of business processes, each installation typically required extensive customization to reflect a company's unique procedures and situation. In addition, an ERP system had to interact with other software in the company's information system (referred to as "legacy applications," within the computer industry)—e.g. messaging systems, manufacturing control software, database programs—which required further customization. Before an ERP system could go online, its various components needed repeated testing and debugging at numerous points throughout the implementation process.

THE ERP SOFTWARE MARKET

Along with the widespread adoption of client/server computing, the ERP software market exploded in the 1990s, soaring from worldwide sales of $2.1 billion in 1993 to $16.6 billion in 1998—a compound annual growth rate of 51.2%. Five companies dominated the market, accounting for nearly two-thirds of total sales:

Company	1998 ERP Revenues ($ B)	Market Share, Worldwide (%)	Number of ERP Customers[5]
SAP AG	5.1	30.1	12,000
Oracle Corporation[6]	2.1	12.7	7,100
PeopleSoft Corporation	1.3	7.8	3,300
J. D. Edwards Company	1.1	6.6	5,000
The Baan Company	.743	4.5	3,700
Worldwide ERP Market[7]	16.6	100.0	

As a group, these five firms—sometimes referred to by the acronym "JBOPS"—had increased their collective ERP market share from 44% in 1994 to more than 60% in 1998. SAP had consistently remained the market leader during that period, though its advantage over the second-place competitor had considerably narrowed (from more than a 4-to-1 lead in 1994 to less than a 3-to-1 margin in 1998). (Exhibits 8 and 9)

By late 1998, however, the ERP party had begun to wind down, due to three main causes. First, the market was maturing: analysts estimated that ERP installations had penetrated as much as 50% of the potential customer base. The manufacturing sector, which accounted for three-quarters of ERP revenues in 1998, had a penetration rate of 56% (versus 43% for the non-manufacturing sector).[8] Motivated buyers had already bought ERP systems; the remaining prospects would adopt ERP software at a slower pace. Analysts' forecasts for ERP sales growth over the next 3 to 5 years ranged from 17% to 36% (compound annual growth rates); most researchers predicted a rate of 30% or less. Second, companies were devoting greater IT resources to address the Y2K problem, thus siphoning dollars from ERP budgets. Though analysts expected this to be a temporary drain on ERP spending, most predicted that post-Y2K

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[5] *Enterprise Resource Planning Software*, R. J. Schwartz, A. C. Brosseau, and D. Gremmels, S. G. Cowen Securities Corp., 9/8/99, p. 9

[6] Among these firms, Oracle was the only one that derived the majority of its revenues from outside the ERP category. As the world's leading vendor of corporate database software, Oracle received three-quarters of its sales from database products and related services. The company's total 1999 sales were $8.83 billion.

[7] AMR Research (figures published in *Computer Reseller News*, 4/19/99)

[8] "ERP's Rough Waters," Eric Knorr, *Upside Today*, 11/18/99

funding for ERP systems would not reach its prior levels. Third, the explosive emergence and growth of the Internet that began in the mid-1990s was shifting corporate IT priorities toward Internet-based e-business software, an area of fervent innovation. Companies were rushing to build intranets and extranets, install email systems, and establish online stores. Whole new categories of e-business software had emerged— commerce platforms, web servers, web application servers, search engines, catalog engines, e-tail storefronts—with announcements of new products and new companies coming every day.

A fourth factor that had potential to affect the fortunes of ERP vendors was the emerging market of application service providers (ASPs). These firms provided companies with various IT services, on a contract basis: the ASP maintained both the software and hardware systems, and its clients would essentially rent the use of these IT resources as needed. This saved client companies from purchasing and installing their own systems. While most large corporations viewed ERP systems as mission-critical resources that required being owned and administered internally, the idea of outsourcing ERP appealed to many midsize firms—an under penetrated market segment increasingly targeted by ERP firms. The ASP industry was in its infancy, but already several ASPs were offering ERP services. In addition, a number of ERP vendors themselves had begun to offer their own hosting services. While the emerging ASP market opened a potential new opportunity for ERP developers, particularly with small and midsize companies, it also represented a possible threat to the overall number of ERP systems that could be sold and installed.

By early 1998, several of the JBOPS companies started to feel the effects of the slowing ERP market and investors turned on their stocks. Beginning in May, Baan and PeopleSoft saw their share prices implode, with each company losing three-quarters of its market value in just a few months. By year end, every JBOPS firm except Oracle had seen investors lop off 50-80% of their share prices. By contrast, Oracle's shares gained value in 1998, buoyed by its dominance in the database market: the boom in e-commerce was fueling demand for high-end databases to store rapidly expanding quantities of corporate data. In addition, despite the falling rate of growth in the ERP market, Oracle was increasing its share of that market—which was still growing at 20-30% a year—and the company was making credible bids for a share of the fast-growing CRM and electronic commerce markets.

Reacting to these unfavorable ERP market trends, the firms had begun to extend their product lines into other areas of enterprise software. Three fast-growing markets were particularly attractive:
- customer relationship management (CRM);
- supply-chain management (SCM);
- and e-commerce (EC) applications and services.

However, ERP firms faced several major problems with their expansion plans. First, other companies—many of them start-ups or very young concerns—had already staked out significant leads in each of these areas. In CRM, for example, six-year-old Siebel Systems had captured 35% of the $2.3 billion market; the company was highly profitable and was growing at 80% a year. In SCM, two established companies dominated the $2.6 billion market, i2 Technologies and Manugistics, whose combined market share exceeded 35%. The emerging EC market was a hotbed of competition among scores of companies both new and established. For example, in the commerce platform segment—the technology that enabled companies to build online stores—

leading providers included household names like IBM and America Online (via its Netscape unit), as well as lesser-known new entrants such as BroadVision and Blue Martini.

Second, many of the business processes involved in these areas—such as customer-service and supplier-relationship practices—were well outside the realm of ERP firms' expertise. Third, ERP software was designed to be used by a limited number of trained, internal specialists at a corporation. On average, for example, no more than 15-20% of a SAP customer's workforce ever used the R/3 software.[9] By contrast, CRM and e-commerce applications (and, to a lesser degree, SCM software) were often used by untrained, infrequent users—including individuals outside of the corporation, such as prospects, customers, and suppliers.

Nonetheless, ERP firms viewed these opportunities as natural extensions of their expertise in building corporate information systems. All five of the leading ERP players were moving into one or more of these segments, through internal development efforts, acquisitions, or partnerships.

THE ONLINE PROCUREMENT OPPORTUNITY

While many companies had automated (to a degree, at least) the purchasing of direct resources (i.e. materials and services that are directly used in the production of a company's goods), few companies had automated procurement of so-called "operating resources" (OR). These were the non-production goods and services that every company required to run its business—paper, pens, desks and chairs, janitorial and repair services, etc. Though virtually all businesses purchased a common set of operating resources—for example, standard office supplies such as paper, pens, staples, etc.—demand for other categories of indirect products and services varied widely by industry, location, and other factors. Federal Express, for example, was a large buyer of specialized printed materials (airbills and other forms), while IBM spent more than $3 billion annually on software.[10]

As a whole, U.S. businesses spent some 33% of their revenues on non-production goods and services—approximately $1.4 trillion in all.[11] Analysts estimated that a disproportionate share of the average company's purchase transactions—some 80%—were for indirect goods and services. In addition, 95% of these purchases were transacted using paper-based manual processes.[12] The overhead costs associated with these transactions totaled as much as 10% of the value of the purchases themselves.

The OR purchasing process was filled with time-consuming manual labor, multiple transfers of documents, and lengthy waits for approvals, processing, and fulfillment. In a typical scenario, an employee would fill out a requisition form, submit it to his or her supervisor, and wait for approval. The approved requisition was routed to a purchasing department, where it was transferred to a specialist, who then searched the approved vendor catalogs; this ensured that orders would go to suppliers with whom the company had negotiated discounts or otherwise favorable terms. Once the right item was found, the purchasing specialist made out the purchase order and mailed, faxed, or phoned the order to the vendor. On the vendor's end, the purchase

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[9] "SAP AG," B. Skiba and M. Johnson, Lehman Brothers, 5/24/99, p. 6

[10] "Who Spends How Much on What?" *Purchasing*, 11/4/99, p.59

[11] "Online Procurement: The Rise of the Market-Makers," *Electronic Commerce World*, 11/99, p. 24

[12] "Ariba," R. J. Schwartz and D. Gremmels, S. G. Cowen Securities Corp., 9/9/99, pp. 5 and 15

order was routed to an order processor, who would re-key the data into the vendor's order-fulfillment system.

As a result of this burdensome and time-consuming process, many departments bypassed the mandated procurement procedure and purchased items from vendors with whom the employer had not negotiated discounts or special terms. These so-called "maverick" or "rogue" purchases represented about one-third of all indirect procurement. The National Association of Purchasing Managers estimated that companies paid a 17-27% premium on maverick purchases.[13]

Several reasons accounted for the lack of automation in the OR procurement process. First, demand for OR purchases was spread across a company's operations, diffused among its many departments and divisions. Second, a large company typically purchased OR items from hundreds or thousands of different suppliers across a broad range of industries: unlike production operations, there was little regularity in the nature and timing of OR demand. Third, and perhaps most critical, companies historically had viewed OR procurement as an administrative detail rather than a strategic operation. Many companies simply were not aware of the inefficiencies of their procurement process; those that were typically regarded purchasing overhead as a necessary cost of doing business.

Prior to the web, electronic purchasing of operating resources was simply impractical for most organizations. Electronic data interchange (EDI), the technology that many large enterprises used to purchase production materials, was not an efficient method for most OR purchases. In order for two organizations to employ EDI between them, each had to install special software that enabled their computer systems to communicate with each other. Further, each had to write complex programs that translated their business documents into a format that the other company's computer could understand. A separate translation procedure was required for each of the dozens of different document types that a company used.

Moreover, the company's EDI translation programs also had to connect with the internal information system that ran its various back-office functions, such as billing and inventory management. This required further custom programming. In addition to these set-up costs, EDI transactions required the use of a special communications network—either a dedicated phone line or a private network maintained by a third-party company specializing in EDI services—to connect the trading partners' computers securely and reliably. Most EDI users opted to use a third-party network (called a "value added network," or VAN), which typically charged both a subscription fee and transaction fees. Given all these costs, companies typically conducted EDI only with a relatively small number of their largest and most frequent suppliers or customers, i.e. with other organizations able to afford and justify the high cost and complexity of EDI. As a result, few enterprises ever conducted EDI with more than 15-20% of their trading partners.[14]

Nonetheless, there had been some earlier efforts to make OR procurement more efficient. For example, many supplier companies, as well as third-party services, had created electronic product catalogs that were distributed on CD-ROM or could be accessed via dial-up modem. This enabled buyers to more easily search a vendor's product list. In addition, standalone procurement software had been developed to help purchasing specialists search for products and initiate orders. And when the web first appeared, many suppliers set up web sites where their catalogs

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[13] Ariba prospectus filed with SEC, 6/24/99
[14] "The EDI Legacy," Eric Knorr, *Upside Today*, 10/26/99

could be searched and orders entered. But none of these methods provided a solution that reached every employee in the organization and that fully integrated with the enterprise's information system.

In the mid-1990s, however, a number of entrepreneurs seized on the idea that web technology could provide an affordable and complete solution to OR procurement automation. The web browser provided an easy-to-use way for any employee to make a transaction, and the web provided the infrastructure for creating a digital marketplace, with easy access to products from multiple suppliers. The resulting value proposition was highly compelling. With an affordable, easy-to-use technology now available, companies could significantly reduce procurement costs, and the savings would go straight to the bottom line: a 5% savings from automated procurement could bump profits by 28%.[15]

Online-procurement systems produced savings in several ways. First, they reduced the cost of processing orders by eliminating manual, paper-based procedures. According to AMR Research, the typical corporation incurred a cost of $75-$175 to process a purchase transaction.[16] Ariba claimed that use of its software could bring that down to between $10 and $30. Second, by reducing the amount of maverick buying, companies stood to eliminate the 17-27% premium they paid on one-third of their purchases. Third, automation reduced the overall order-to-receipt cycle time, thus speeding up operations and improving productivity. Fourth, with less time spent on processing forms manually, purchasing personnel could spend their time on more strategic issues, such as building relationships with suppliers and negotiating better contracts.

Anecdotal accounts of user experiences corroborated the dramatic cost savings possible. At Cisco Systems, for example, online procurement reduced the cost of processing a purchase order from $130 to $25, while Microsoft reported that its cost went from $60 down to $5.[17] And according to a study by Deloitte Consulting, companies experienced swift and dramatic returns on their investments in online procurement systems, averaging 300% over the first two to three years of deployment. The average implementation cost was between $2 million and $4 million, and firms shaved about 9% from their annual procurement costs in the first two years of use.[18]

FROM ENTERPRISE TO INTER-ENTERPRISE: THE GENESIS OF MYSAP.COM

Even before SAP encountered sales and profits turbulence beginning in late 1998, it had expected that the frothy ERP growth of the '90s would not last forever. In 1996, SAP began to prepare for an inevitable downturn in ERP and developed a plan to tap other opportunities. That year, it internally launched an initiative dubbed "New Dimension," an effort to expand the company's product line beyond the traditional domain of ERP systems. Targeted areas of new product development included customer relationship management, supply chain management, and procurement. SAP expected that within a few years, New Dimension products would generate some 30% of the company's sales. Plagued by internal dissension and development delays, however, New Dimension progress was initially slow. But by 1998, SAP had started to ship a handful of New Dimension products. Two of the early products, SAP Business Information Warehouse (BIW) and SAP Advanced Planner and Optimizer (APO), were focused on supply-chain management functions and met with considerable initial success. Release of a suite of

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[15] "The Young Pretenders," *Supply Management*, 10/8/98, p. 23

[16] *Business-to-Business E-Commerce*, Douglas J. Crook, Prudential Securities, 9/28/99, p. 22

[17] "Revolution, or E-volution?" Conrad Nowikow, *Supply Management*, 9/23/99, p. 26

[18] "Massive Returns on e-Procurement Investments Aren't Just e-Business Hype, According to New Study," Canada NewsWire, 11/11/99

CRM applications, however, had been delayed, and December 1999 was given as the new release target.

By the beginning of 1999, SAP management determined that New Dimension by itself would not solve the company's problems. At a soul-searching retreat in January of that year, SAP executives concluded that the company needed a new strategy that was fully focused on the opportunities presented by the Internet. Over the next few months, SAP management crafted its Internet strategy; in May it unveiled what it called mySAP.com, and over the next several months SAP released further details about the new initiative. In line with the new plan, SAP shifted its R&D efforts—which consumed 14% of SAP's annual revenues—to concentrate on the automation of inter-enterprise business processes.[19] And the company planned to spend 25-30% of its revenues to promote the mySAP.com concept.[20]

The mySAP.com strategy was intended to provide a unifying framework and environment for SAP's entire range of products and services, under the company's new focus on the Internet. It included four main components:

1. mySAP.com Business Scenarios. These were templates that SAP customers could use to create and customize various processes using R/3 modules and other SAP applications.
2. mySAP.com Application Hosting. This was SAP's initiative to offer hosting services for R/3 and other SAP applications. Rather than install and maintain R/3 software on their own information systems, application hosting clients could access (via the Internet) R/3 resources from a computer system maintained by SAP and its hosting partners.
3. mySAP.com Workplace. This was a web-based enterprise portal, through which employees in an organization could access various aspects of the company's R/3 system, as well as information and other services, using a standard web browser. Corporations could customize mySAP Workplace for each employee, to reflect the employee's role, activities, authorizations, and other attributes.
4. mySAP.com Marketplace. This was a web-based online marketplace to enable business-to-business commerce. Participating vendors could connect their online sales operations, including catalogs and ordering systems, to mySAP Marketplace. Buyers could search mySAP Marketplace for vendor offerings and transact purchases online. While the mySAP.com Marketplace was created and managed by SAP, the company also intended to partner with other companies to create similar digital marketplaces to serve various industry-specific vertical markets. In late 1999, SAP reported that more than 2,000 supplier companies participated in the mySAP.com Marketplace.

SAP'S ENTRY INTO ONLINE PROCUREMENT

SAP's entry into the online procurement market began with the launch of its Business-to-Business Procurement (B2BP) application, development for which started in the first half of 1998—months before the company had even begun to hatch the mySAP.com plan. B2BP was part of the New Dimension initiative. An early version of B2BP was released for pilot testing in December 1998, and the first commercial version came out in March 1999. By the year's end, SAP had delivered B2BP to more than 200 customers, but only a handful had actually gone live with the application. In October, SAP launched the mySAP.com Marketplace, which gave the company a platform for developing an e-commerce network. With the beginnings of the network

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[19] "SAP," G. Gilbert, D. Clayton, B. Thill, M. Hammond, Credit Suisse First Boston Corp., 5/14/99, p. 4
[20] "SAP to Spend 30% of Revenue to Promote mySAP.com," P. S. Menon, *Financial Express*, 10/11/99

in place, B2BP now served as a complement to the company's strategy for the online procurement market: customers could use B2BP as its buying application to transact purchases over mySAP.com Marketplace. B2BP incorporated functions to automate purchasing—e.g., catalog search, requisition, approval, purchase order generation, etc.—and could be customized for each employee in the organization.

Of all the mySAP.com components, Marketplace was the company's most aggressive bid to enter the market for e-commerce services. SAP management believed the company was well positioned to take advantage of e-commerce opportunities such as online procurement. Its central argument was that full-scale e-commerce between large enterprises necessarily required complex interaction between companies' ERP systems: to trade efficiently online, buyers and sellers had to integrate their ERP functions such as inventory control, billing and payments, production planning, logistics, and distribution—i.e., the very functions that SAP's market-leading R/3 software handled. Moreover, SAP argued that customers benefited from having a single company provide their enterprise and inter-enterprise technology, to ensure interoperability of the various pieces. Some SAP customers agreed with that argument. "This is complicated stuff," said Colgate-Palmolive CIO Ed Toben, "and you have to do anything you can to simplify it."[21] That view was echoed by a Raytheon Aircraft manager, who emphasized that integration was critical, even if it meant compromising on features: "What you might give up in functionality ain't worth fighting about."[22]

SAP management further argued that the need for inter-enterprise integration was even more urgent if companies were to take full advantage of e-commerce to become collaborative trading partners—that is, to routinely and seamlessly exchange critical business information such as sales data, demand forecast, advance production schedules, and the like. The groundwork for creating this interconnected ecosystem was, in SAP's view, already in place. The company pointed to the fact that its R/3 software had more than 10 million users in thousands of organizations around the world—a customer base that collectively employed some 100 million workers. And many of the world's largest buyers and sellers of commercial goods and services already used R/3 software as the core of their order-processing and fulfillment operations.

In SAP's estimation, these factors added up to an unrivaled vantage point from which to extend its influence into other areas of corporate activity, including business-to-business e-commerce. And, in late 1999, the company appeared to be making headway on this front.

In mid-December, SAP announced two deals in which it would create business-to-business e-commerce networks based on the mySAP.com Marketplace platform. One venture focused on establishing an OR-procurement marketplace for chemical and pharmaceutical companies, which would begin operating in mid-2000. Participants included BASF, Bayer, and Siemens. The other deal involved a partnership with Neoforma.com, an e-commerce service provider in the market for medical products. SAP and Neoforma.com would build a global online network bringing together healthcare providers and medical suppliers to exchange information and buy and sell medical products. SAP also announced that it would soon unveil several more of these "Internet portal" deals. The company did not specify expected revenue from the marketplace deals, but it stated that within five years, e-commerce would generate 10-20% of its revenues.

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[21] "SAP Announces Customer Relationship Management Tools," Craig Steadman, *Computerworld Online News*, 11/10/99

[22] "SAP Takes Next Steps Beyond R/3," Craig Steadman, *Computerworld Online News*, 9/20/99

Though SAP was gaining some momentum in the procurement space, the two leading companies were not standing still: Ariba and Commerce One, with their singular focus on the procurement market, were making their own gains—and the stock market continued to reward their stories. SAP clearly did not have first-mover advantage in this market and would have to play catch up.

ARIBA, INC.: OVERVIEW

Ariba, Inc. was founded in September 1996 by a group of entrepreneurs, many of whom had worked with co-founder and CEO Keith Krach at Rasna Corporation, a maker of software to automate computer-aided design. Ariba was an early mover into the market for OR procurement software and services. It launched its first product in 1997, signing up chip-maker Advanced Micro Devices, Inc. as its first customer in May of that year. In less than three years' time it had assumed the lead position in this nascent industry. The company went public in June 1999.

Ariba based its business on two main offerings. First was its flagship online procurement software, Ariba ORMS (Operating Resource Management System). Running over a company's intranet, Ariba ORMS enabled employees throughout the organization to initiate OR purchases from their desktop computers, making the process highly automated. Companies could customize ORMS software to enforce their specific purchasing rules and procedures. Purchasing administrators could set up a profile for each employee in the organization that included, for example:
- pre-approved vendors from which the employee could order;
- the employee's spending limits;
- instructions for automatically routing the employee's requisitions to the appropriate supervisor for approval; and
- the account against which the employee's purchases would be charged.
Via ORMS, users were able to track and check the status of their orders.

The ORMS software also included tools for integrating the system with a company's back-office applications, such as its accounting program that handled payments. With this capability, procurement purchasing data automatically entered the company's information system without having to be manually re-keyed. This streamlined the process of issuing purchase orders and reconciling POs with incoming invoices.

Ariba derived its revenues from selling licenses for its ORMS software and from services such as installation, maintenance, and support. The license fee was based on the number of line items the licensee expected to purchase using the system. If the number of line items exceeded the expected amount, the licensee paid more. In mid-1999, the average license fee surpassed $1 million. More than 40 major customers used Ariba ORMS, including Hewlett-Packard and Cisco Systems. Ariba targeted corporations with more than $500 million in annual revenues, believing that the potential savings on the procurement volume of those companies easily justified the price tag of the ORMS software, plus several million more in implementation fees. As of October 1999, 50 customers used Ariba's procurement software.[23]

Ariba also offered a hosted version of ORMS, which it called ORMX (for Operating Resource Management Exchange). This was an outsourced version of the procurement application, which

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[23] "B2B E-commerce Battles Get Bloody," Om Malik, Forbes.com, 10/4/99

companies could access on a subscription basis rather than install Ariba ORMS on their internal system.

The second major piece of Ariba's offerings was the Ariba Network, which the company launched in March 1999. This was a single global network serving all Ariba customers, over which they could purchase goods and services from any participating supplier they chose. Companies were able to customize the Ariba Network so that their employees could access only those suppliers that the company authorized. Using the network, buyers could search authorized vendors' catalogs. They could then initiate a purchase request that, after online approval, would be electronically sent to the vendor, directly entering the vendor's sales system. These efficiencies helped to shorten the cycle time between purchase request and fulfillment. By late 1999, Ariba reported that users of its Ariba ORMS application could access products from nearly 85,000 suppliers via the Ariba Network.[24] Ariba did not charge suppliers to join the Ariba Network, nor did it charge transaction fees. Ariba designed its network as a proprietary closed system. That is, only users of Ariba ORMS procurement software could access the Ariba Network. This strategy differed significantly from that of Ariba's primary rival, Commerce One.

COMMERCE ONE: OVERVIEW

Commerce One was founded in January 1994 as DistriVision Development Corporation (DDC), a business specializing in creating product catalogs on CD-ROM. CEO Mark Hoffman, a West Point graduate, joined the company in 1997. Hoffman had started the database maker Sybase in 1984, taking that company to over $1 billion in sales by 1996. Under Hoffman's guidance, DDC reinvented itself as a provider of online-procurement software and services and re-launched in April 1997 as Commerce One. The company's solutions automated the procurement cycle between multiple buyers and suppliers. Commerce One's solutions consisted of: the BuySite enterprise procurement applications, the Marketsite Platform, and its Marketsite Commerce Services. The Company's customers included large enterprises in the public sector, as well as the utilities, finance, telecommunications, information services, travel and transportation industries.

It released its first products in 1998, and went public in July 1999.

Commerce One's product line included three main components:

1. BuySite. This was an intranet-based online-procurement application that came in an Enterprise Edition and a Hosted Edition. In the Enterprise Edition, the buying organization installed BuySite on its intranet, which employees could access via a web browser. The Hosted Edition was marketed to commerce service providers (i.e. third-party firms such as Exodus Communications): CSPs offered BuySite on their systems as a subscription service to clients. Clients' employees could access BuySite from their desktop computers via a web browser to conduct online purchasing, without the client companies having to install and support the BuySite application on their own information systems. This was an attractive option for many small and midsize companies. As of October 1999, Commerce One had signed up 38 customers for its BuySite application.[25]

2. MarketSite. This was a technology platform for developing business-to-business online marketplaces. It provided tools to: manage supplier catalog content, including a standardized

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[24]Ariba website, www.ariba.com, 12/99

[25] "B2B E-commerce Battles Get Bloody," Om Malik, Forbes.com, 10/4/99

format for organizing and displaying product information; connect trading partners; and process transactions. MarketSite marketplaces were designed to be open systems: that is, buyers could use procurement applications other than BuySite (Ariba's ORMS, for instance) to conduct transactions in the marketplace.

3. MarketSite.net. Launched in March 1998, this was an online marketplace that Commerce One hosted and maintained, using its MarketSite platform. Around this core site, Commerce One had begun to build what it called a Global Trading Web—a network of interoperable MarketSite-based marketplaces, each hosted either by Commerce One or one of its licensed franchisees. Suppliers were charged a fee ranging from $.25 to $2.00 per transaction. More than 5,000 suppliers were registered on MarketSite.net.

Commerce One had aggressively pursued opportunities to franchise its MarketSite technology, and had signed up several large partners around the world. Its franchisees included MCI WorldCom, British Telecommunications, Cable and Wireless, Nippon Telegraph and Telephone, and Singapore Telecommunications. Under these arrangements, franchisees would use the MarketSite platform to host digital marketplaces in their regions, and they would share 10-30% of the transaction fees with Commerce One. Each of these companies had invested in Commerce One, and several held board seats.

Commerce One's emphasis on building marketplaces was a key component of the company's strategic focus, as stated in its public offering prospectus:

> Our objective is to create the leading global business-to-business trading web comprised of marketplaces…operated by both our strategic partners and us in targeted regional and industry-specific markets….Our strategy is to deliver the world's largest and most valuable business-to-business marketplace.[26]

Ariba, on the other hand, had focused the majority of its early efforts in developing and marketing its buyer application, Ariba ORMS. This difference in emphasis reflected a key divergence in their respective strategies. Ariba's tactic was to accumulate an extensive base of powerful buyers by installing large numbers of the ORMS buying application. Commerce One, on the other hand, believed that creating marketplaces built on its MarketSite platform would allow it to control the trading network and establish a recurring source of transaction-fee revenue, no matter which procurement application was used by trading partners. Hence Commerce One designed MarketSite as an open platform: any type of procurement system (including Ariba ORMS) could operate over a MarketSite network. By contrast, the Ariba Network required buyers to have Ariba ORMS installed. (Like Commerce One's MarketSite, SAP's mySAP.com Marketplace also was an open network that allowed access to non-SAP procurement applications.)

Commerce One derived revenues from four sources:
- license fees (70% from BuySite, 30% from MarketSite);
- maintenance and support fees;
- fees for professional services (installation, consulting, training); and
- transaction fees and royalties.

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[26] Commerce One Prospectus, filed with SEC 7/2/99

In 1999, revenues from software (license fees plus maintenance and support fees) accounted for 55% of total receipts; professional services generated the balance of revenues. Due to the still low volume of transactions over MarketSite.net, transaction fees were a negligible revenue source (but expected to become a significant revenue generator as network transactions ramped up over time).

A RACE FOR DIGITAL MARKETPLACES

In November 1999, Commerce One received a major boost to its business—and to its stock price—when it announced that General Motors had selected it to build GM TradeXchange, an online marketplace that would connect GM with its 36,000 suppliers of both direct and indirect materials. The companies expected that TradeXchange would start operating in the first quarter of 2000. The world's largest industrial enterprise and biggest carmaker, GM spent $87 billion on direct and indirect purchases in 1999. But GM's purchasing chief said that TradeXchange would not be limited just to GM's transactions with its suppliers: the company expected its trading partners to conduct non-GM business over the network as well. The potential volume of those transactions exceeded $500 billion. In addition, GM planned to open the site to businesses outside of GM's trading community altogether. Commerce One and GM did not specify how the transaction-fee revenues from the site would be shared.

In December, Commerce One announced several more e-marketplace joint ventures. In one deal, Commerce One was partnering with ERP vendor PeopleSoft and clothing maker Guess, Inc. to create the Apparel Buying Network (www.apparelbuy.com). Sponsored by Guess and powered by MarketSite, the site would facilitate e-commerce among Guess and its network of suppliers and retailers. PeopleSoft would provide the buyer application, PeopleSoft eProcurement (PeopleSoft's re-branded version of Commerce One's BuySite). Commerce One also entered separate deals to build digital marketplaces for Toronto Dominion (a large Canadian bank) and Grupo Financiero Banamex-Accival (a Mexican financial powerhouse).

On the same day that the GM-Commerce One deal was made public, Ford Motor Company announced a similar initiative in partnership with Oracle Corporation. Dubbed the Auto-Xchange, it would link Ford with its supplier base of 30,000 businesses, with which Ford spent some $80 billion in 1999. As with GM TradeXchange, Ford's suppliers would also use Auto-Xchange to transact non-Ford business; the extended supply chain represented some $300 billion in purchasing volume. Oracle predicted that Auto-Xchange would produce fee revenues of $1 billion in the first two years of operation, and would eventually generate fees of $5 billion a year. Oracle and Ford did not disclose how those fees would be shared.

GM was a user of Ariba's procurement software, and it had considered Ariba (and others, including Oracle) to build the TradeXchange site. But GM determined that Commerce One was better positioned do that job. GM did not release details about its evaluations, but analysts suggested that Ariba was passed over because Commerce One had developed more powerful technology for building digital marketplaces.   On January 4, 2000 GM announced that it had selected Commerce One for its online auction services. On the same day, Commerce One announced its acquisition of Mergent Systems for $200 million in cash and stock. Analysts believed that the acquisition would give Commerce One the ability to provide its users with rich

product catalog information culled from a variety of vendors, as well as advanced search tools that it had previously lacked.[27]

Ariba management had apparently perceived this relative weakness in its product line, and had already made some efforts to address it. In September, the company unveiled the Ariba Internet Business Exchange (IBX), a service for building online corporate exchanges. Then in November it acquired TradingDynamics, Inc., a developer of online-auction technology, in a stock deal worth $400 million. A month later, it acquired Tradex Technologies, Inc., a privately held developer of technology for creating "Net markets," Internet-based vertical markets for business-to-business commerce. The all-stock deal was valued at $1.86 billion. Tradex's software provided the platform for 18 digital marketplaces, including Chemdex, PlasticsNet, and MetalSite. Following the Tradex acquisition, Ariba rolled its IBX technology into the Tradex Commerce Center solution, and formed a Net Markets Business Unit to focus on market-making opportunities.

In December, Ariba announced two deals involving the use of its marketplace technology. One was with Spain's Telefonica, under which the telecommunications giant would use Ariba's e-commerce platform to create a series of business-to-business exchanges throughout the Portuguese- and Spanish-speaking countries in which Telefonica operated. The exchanges would be connected to Ariba Network. In addition to using Ariba technology to power the exchanges, Telefonica would also resell Ariba's buy-side solutions (ORMS and ORMX). The other deal was with American Management Systems (AMS), a Virginia consulting firm with numerous government clients. AMS would create an Ariba-powered network called Buysense.com, a marketplace for bringing state and local agencies and higher-education institutions together with their suppliers. (See Exhibit 10 for an overview of types of digital marketplaces.)

RISING COMPETITION FOR THE ONLINE PROCUREMENT MARKET

In addition to Ariba, Commerce One, and SAP, numerous other firms were competing in the market for online-procurement software and services. Like Ariba and Commerce One, many of these companies focused exclusively on the procurement market, often with a focus on a specific vertical market. Most of them offered both a buy-side procurement application and a buying network service. Few of these players, however, provided high-end platform technology comparable to Commerce One's MarketSite or Tradex Technologies' Commerce Center (acquired by Ariba).

In addition, every major ERP vendor—as well as many second- and third-tier players—had entered the procurement market. Two JBOPS companies, J. D. Edwards and PeopleSoft, had partnered with the established leaders, Ariba and Commerce One, respectively, rather than develop their own procurement offerings. Baan offered a buying application, E-Procurement, which was an extension to its E-Enterprise suite of Internet-enabled ERP software. It did not have a marketplace-platform product.

Oracle, on the other hand, offered a suite of products that included a buy-side application (Oracle Internet Procurement), a trading network (Oracle Supplier Network), and a marketplace platform (Oracle Exchange). Oracle was an early convert to the Internet: over the last few years it had

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[27] Commerce One, First Union Securities, January 5, 2000

aggressively shifted its focus to Internet-related opportunities, including a massive effort to "webify" its entire product line. Like SAP, Oracle too was extending its product line beyond ERP and had entered the SCM, CRM, and EC markets. As evidenced by its deal with Ford to develop the Auto-Xchange site, Oracle was intent on becoming a major player in the online procurement market. Like SAP, Oracle's ERP business provided a large customer base for potential procurement business: 7,100 customers and 11,500 installations. Moreover, with some 120,000 database customers, Oracle had extensive reach into corporate IT systems. Indeed, a large chunk of its database customer list overlapped with SAP's: 75% of all R/3 installations used Oracle as the database engine.

TECHNICAL CHALLENGES OF ONLINE PROCUREMENT

Developers of online-procurement systems faced a number of technical challenges in creating well-functioning products:

Integration with other enterprise applications. To reap the full benefits of automation, online procurement systems had to connect with the organization's networking system and financial software. Procurement documents—requisitions, approvals, and the like—needed to travel electronically among various individuals and departments of the organization. Automation of the payment function further required the procurement system to pass data to the accounting system. In addition, the exchange of documents between enterprises (i.e. the buyer and seller) required a standard format that could be read and processed by their respective information systems. No dominant standard yet existed. Procurement-system vendors, therefore, created their own standards (typically based on an emerging technology called XML, for "extensible mark-up language").

Ability to adapt to different business processes and workflows. Every organization had its unique rules and procedures for purchasing, which were often complex and involved many conditional scenarios. Procurement systems therefore needed to have the tools and customization capability to reflect these processes. This also meant that the implementation of procurement systems generally required extensive custom programming to incorporate the organization's rules.

Management of supplier catalog content. One of the thorniest challenges concerning procurement systems was the question of how catalog content, which changed frequently, would be managed and who would do it. Several issues were involved. First was the need to standardize the format of catalog files from the multiple suppliers on a system. These files contained data such as product name, SKU number, price, and description. There was no single standard for catalog file format (though the Catalog Interchange Format was fairly common). Second was the issue of which party was responsible for updating catalog content; on this point, there were three options: the buyer, the seller, or a third party. Some buying organizations preferred to maintain a customized catalog on their intranet, drawing product data from a list of preferred vendors. Others relied on supplier catalogs maintained on vendors' websites. With managed procurement networks, however, it was possible for suppliers to post their catalogs on the network, where they were accessible to buyers. Under this arrangement, it was still generally the suppliers' responsibility to keep catalog contents up to date.

Developers of online procurement software addressed these technical issues in different ways; the degree to which their systems solved these problems was a differentiating factor for each developer.

XML: PART OF THE STANDARDS SOLUTION

To operate efficiently, digital marketplaces required a certain set of standards for the presentation and exchange of information, including product data and transaction documents (e.g. invoices, purchase orders, requests for proposal, etc.). The web was a new medium for commerce, however, and standards were still being developed. One promising technology for addressing the information-standards issue was "extensible markup language" (XML). Adopted by the World Wide Web governing body in 1998, XML was a flexible means for defining different types of documents. Similar to the hypertext markup language (HTML) that was widely used to create web pages, XML employed the use of pairs of tags to describe various aspects of a business document. But while HTML was used primarily to format the appearance of web pages for a web browser, XML was used to define the types of data in a document. For example, the tag-pair "<INVOICE NUMBER> </INVOICE NUMBER>" indicated that the numerals between the two tags represented an invoice number. An XML-enabled application, when encountering this document, would correctly interpret the invoice number and handle it appropriately.

While XML provided a standard *method* for defining data types, it did not actually *define* data types themselves or specify what an XML-enabled application should do once it encountered a defined data element. That work was left to various industry groups—including buying organizations, sellers, and developers of e-commerce software and services—who had to agree on the kinds of documents and data definitions required for e-commerce in their industries. Some groups had made considerable headway toward establishing standards for their industry, but there was still much competition on many fronts for setting standards. Ariba, for example, had developed a set of definitions, which it called cXML (for Commerce XML). At the same time, Commerce One was propounding an XML-based standard called CBL (for Common Business Library), originally developed by a company that Commerce One acquired in January 1999.

Vendors of e-commerce technology had a keen interest in having their own XML variant become the standard, because their software could then take advantage of features they had built into the standard. For e-commerce buyers and suppliers, the question of standards was also important: they wanted their e-commerce applications to be fully interoperable with those of their trading partners, which required a common standard. Suppliers, for instance, would prefer having a standard format for online catalogs, so that they only needed to produce a single version, thus simplifying the job of maintaining and updating information.

PUTTING THE PAST BEHIND

In addition to its sales and profit woes and its stock-market misfortunes, SAP had also been plagued in 1999 by a few highly publicized glitches with the company's software. A newly installed R/3 system at Whirlpool Corporation had hiccuped, causing the company to delay shipment of some of its most popular appliances. At Hershey Foods Corporation, problems with its R/3 system prevented it from fulfilling some candy orders in advance of Halloween. Though the problems were soon resolved (and part of the blame sat with the client companies and other parties as well), the unflattering headlines did not help SAP's image in an otherwise challenging time.

Perhaps more troubling than the spate of bad press, however, was the continuing hemorrhage of personnel from the company. Dozens of managers and salespeople had fled SAP's ranks, many of them to join direct competitors such as Oracle and Siebel Systems. Though SAP management downplayed the situation, many analysts viewed the exodus of talent as a serious issue that SAP needed to address. One key to the problem was stock options: German law made it difficult for German corporations to award stock options. By contrast, American competitors were using options to attract and retain critical talent. In December, SAP devised a plan to offer stock options to key personnel, but the plan required shareholder approval; it had scheduled a special shareholder meeting in January 2000 to vote on the proposal.

Though 1999 had been a year of considerable misfortune, SAP management remained sanguine about the company's future. It believed that its new strategic focus on the Internet and e-commerce would lift the company to new highs: it planned to double its sales within three years, and even suggested that its Internet strategy might accomplish this in just two years. Though the company's stock had rallied in the last weeks of 1999, it still remained about 20% lower than its high in mid-1998. Meanwhile, Ariba's and Commerce One's stock appeared to defy gravity, arming the companies with powerful currency to make acquisitions and lure managerial and executive talent. Nonetheless, if the market-research firm Gartner Group was right in its prediction that some 7,500-10,000 new digital marketplaces would arise over the next few years,[28] SAP management appeared determined to take what it considered its rightful share of that emerging business.

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[28] Ariba press release, 12/99

EXHIBIT 1: ARIBA INCOME STATEMENT ($ 000)

	ANNUAL		QUARTERLY				
	09/30/97	09/30/98	09/30/98	12/31/98	03/31/99	06/30/99	9/30/99
REVENUE:							
License	630	6,040	3,540	4,827	5,673	6,439	9,829
Maintenance/Service	130	2,323	1,145	2,025	3,813	5,454	7,312
Total Revenue	760	8,363	4,685	6,852	9,486	11,893	17,141
Cost of License	13	165	61	53	197	331	143
Cost of Maintenance	927	1,373	501	902	1,607	2,113	3,467
Sales/Marketing	2,235	10,311	3,938	4,399	6,903	9,796	12,761
Research/Development	1,899	4,499	1,339	1,649	2,200	3,462	4,309
General/Administrat.	588	2,580	1,149	1,201	1,497	2,396	2,823
Amortization	50	956	473	1,113	2,932	5,285	5,254
Total Expenses	5,712	19,884	7,461	9,317	15,336	23,383	28,757
Interest, Net	289	568	149	106	81	197	1,835
Other Income	(16)	0					
Income Before Taxes	(4,679)	(10,953)	(2,627)	(2,359)	(5,769)	(11,293)	(9,781)
Income Taxes	0	0	0	0	0	0	98
Income After Taxes	(4,679)	(10,953)	(2,627)	(2,359)	(5,769)	(11,293)	(9,879)

Source: Wall Street Research Net (WSRN.com)

EXHIBIT 2: COMMERCE ONE INCOME STATEMENT ($ 000)

	ANNUAL					QUARTERLY				
	12/31/94	12/31/95	12/31/96	12/31/17	12/31/98	09/30/98	12/31/98	03/31/99	06/30/99	09/30/99
REVENUE:										
License Fees	112	90	152	742	1,633	450	678	1,456	2,270	7,778
Services	108	349	660	1,004	930	276	336	648	1,932	2,585
Total Revenue	220	439	812	1,746	2,563	726	1,014	2,104	4,202	10,363
Cost of Revenues	181	232	782	2,887	4,369	1,352	1,382	1,668	3,096	4,768
Sales and Marketing	89	146	862	6,055	13,108	3,329	3,895	4,078	6,319	9,361
Product Development	179	314	516	2,172	6,839	1,724	2,464	3,362	3,609	5,353
General/Admin.	25	57	432	1,805	1,941	534	615	827	923	1,226
In Process R&D		0	0	0	0	0	0	3,037	0	0
Amort. Dfrd.Comp.	0	0	0	0	1,102	348	429	584	663	531
Amort. Intangibles		0	0	0	0	0	0	875	1,049	1,053
Total Expenses	474	749	2,592	12,919	27,359	7,287	8,785	14,431	15,659	16,697
Interest, Net	0	(31)	(25)	9	156	73	144	16	217	1,5737
Income Before Taxes	(254)	(341)	(1,805)	(11,164)	(24,640)	(6,488)	(7,627)	(12,311)	(11,240)	(10,356)
Income Taxes	0	0	0	0	0	0	0	0	586	0
Income After Taxes	(254)	(341)	(1,805)	(11,164)	(24,640)	(6,488)	(7,627)	(12,311)	(11,826)	(10,356)

Source: Wall Street Research Net (WSRN.com), Prudential Securities

EXHIBIT 3: SAP STOCK PRICE CHART
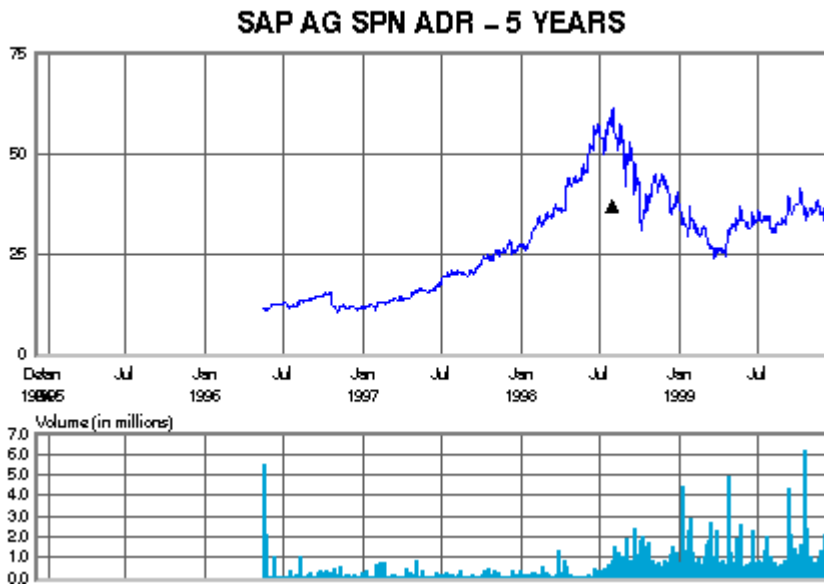
Source: Netscape Netcenter

EXHIBIT 4: ARIBA STOCK PRICE CHART

Source: Netscape Netcenter

EXHIBIT 5: COMMERCE ONE STOCK PRICE CHART

Source: Netscape Netcenter

EXHIBIT 6: SAP INCOME STATEMENT

Annual Income (Currency=German Marks, 000s)

	12/31/1996	12/31/1997	12/31/1998
REVENUE:			
Sales Revenues	3,722,150	6,017,466	8,465,294
Inc. in Inventories	961	2,472	20,300
Other Income	73,712	79,966	169,271
Total Revenue	3,796,823	6,099,904	8,654,865
Supplies/Goods	13,967	16,485	23,604
Purchased Services	380,417	589,234	1,156,539
Personnel Expenses	1,338,473	2,074,920	3,043,564
Depreciation/Amort.	164,591	195,321	271,348
Travel	191,973	292,029	424,008
Other Operating	658,954	1,110,484	1,520,289
Licenses/Commissions	104,819	209,215	322,363
Total Expenses	2,853,194	4,487,688	6,761,715
Interest Expense	(2,618)	(3,782)	(6,923)
Other, Net	26,202	58,502	33,995
Income Before Taxes	967,213	1,666,936	1,920,222
Income Taxes	399,677	741,582	867,874
Income After Taxes	567,536	925,354	1,052,348

Quarterly (Currency=Euros, millions)

	3/31/99	6/30/99	9/30/99
Product revenue	615	736	611
Service revenue	453	504	488
Other revenue	8	20	24
TOTAL REVENUE	1,076	1,260	1,123
Cost of product	96	107	103
Cost of service	389	417	401
Research and developmt	138	170	173
Sales and marketing	225	278	287
General and admin	42	59	67
Other expenses	12	6	10
TOTAL EXPENSES	1,790	1,037	1,041
Other non-op inc/exp, net	-6	-7	-6
Finance income, net	4	32	3
INCOME BEFORE	172	248	79
Income taxes	74	105	33
Minority interest	0	1	1
NET INCOME	98	142	45

Source: Wall Street Research Net (WSRN.com), Merrill Lynch

EXHIBIT 7: EXTENDING THE ENTERPRISE INFORMATION SYSTEM

From their traditional focus on internal corporate processes—manufacturing, distribution, financials, and human resources—ERP firms were extending their business strategies and product development to the inter-enterprise functions of supply-chain and demand-chain management, including e-commerce.

Supply-Chain Extension   **Traditional ERP Focus**   **Demand-Chain Extension**

Supply-Chain Management		Electronic Commerce
Online Procurement	Manufacturing	Customer Service
Stock Management	Distribution	Interactive Marketing
Integrated Forecasting	Financials	Demand Forecasting
Quality Systems Management	Human Resources	Order Management
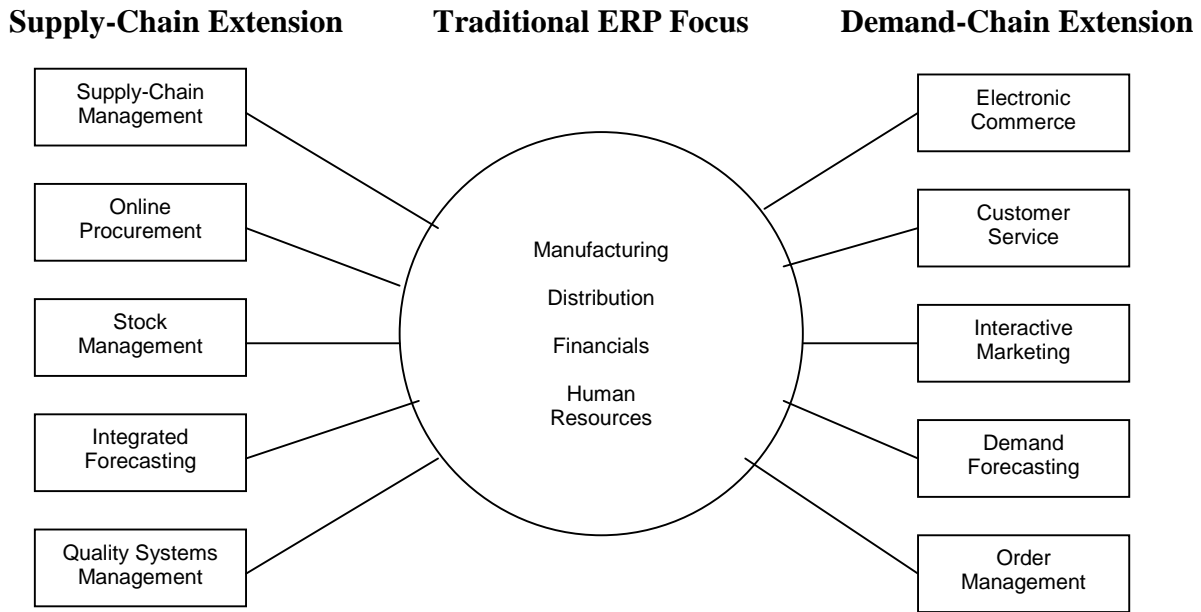
Source: Diagram adapted from *The Economist*, 6/26/99

EXHIBIT 8: SELECTED FINANCIAL DATA, LEADING ERP VENDORS ($ 000)

Oracle Corp.

REVENUE:	05/31/1996	05/31/1997	05/31/1998	05/31/1999
Licenses	2,296,572	2,896,696	3,193,490	3,688,366
Services	1,926,728	2,787,640	3,950,376	5,138,886
Total Revenue	4,223,300	5,684,336	7,143,866	8,827,252
Total Expenses	3,318,409	4,421,351	5,899,666	6,954,371
Income After Taxes	603,279	821,457	813,695	1,289,758

PeopleSoft Corp.

REVENUE:	12/31/1995	12/31/1996	12/31/1997	12/31/1998
License Fees	137,808	252,799	433,195	576,467
Services	94,331	197,253	382,456	737,206
Total Revenue	232,139	450,052	815,651	1,313,673
Total Expenses	190,151	394,228	649,475	1,092,164
Income After Taxes	27,338	35,861	108,263	143,218

The Baan Co.

REVENUE:	12/31/1995	12/31/1996	12/31/1997	12/31/1998
License Revenue	118,894	226,135	367,101	285,778
License Rev.-Parties	0	14,532	66,325	50,600
Maintenance/Service	84,434	174,875	246,170	399,271
Hardware/Other	23,357	0	0	0
Total Revenue	226,685	415,542	679,596	735,649
Total Expenses	207,562	355,358	568,061	1,067,719
Income After Taxes	10,899	36,612	77,156	(315,192)

J. D. Edwards Co.

| REVENUE:	10/31/1995	10/31/1996	10/31/1997	10/31/1998
License Fees	134,138	180,366	248,707	386,081
Services	206,628	297,682	399,105	547,901
Total Revenue	340,766	478,048	647,812	933,982
Total Expenses	311,888	434,421	587,556	827,344
Income After Taxes	18,209	26,326	37,228	74,468

Source: Wall Street Research Net (WSRN.com)

EXHIBIT 9: STOCK PRICE CHARTS FOR LEADING ERP VENDORS

ORACLE SYSTEMS CORP – 5 YEARS

PEOPLE SOFT INC – 5 YEARS
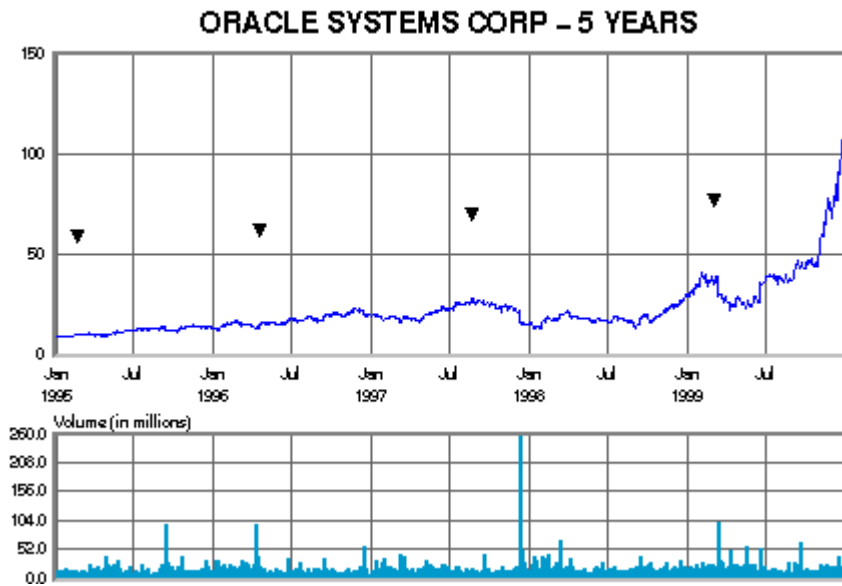
Source: Netscape Netcenter

EXHIBIT 9: STOCK PRICE CHARTS FOR LEADING ERP VENDORS (CONTINUED)
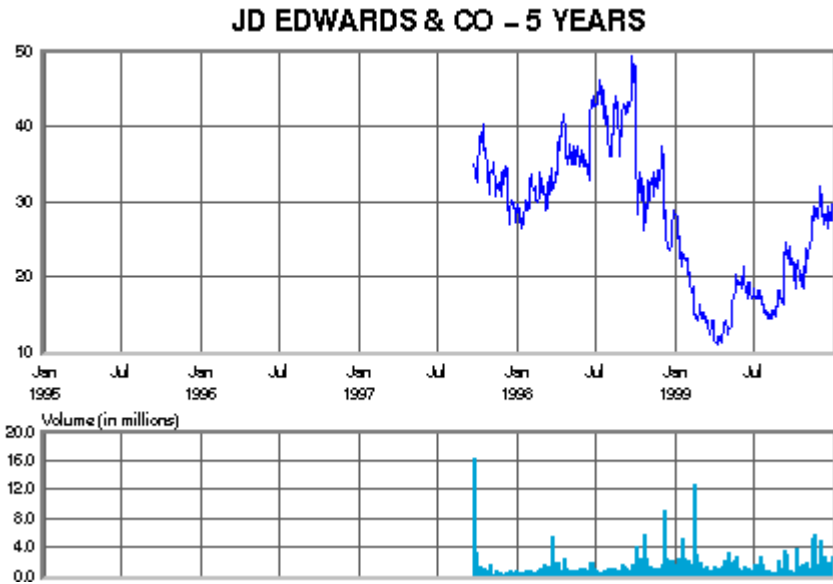
Source: Netscape Netcenter

EXHIBIT 10: TYPES OF DIGITAL MARKETPLACES

Multi-Vendor Catalogs

Use   Aggregates multiple independent suppliers

Product Types   Specific items, whether simple or complex

Price   Defined by Seller

e-Revenue   Transaction-based or by referral fee

Benefits to Buyers   * Wider product selection
                         * Allows product and price comparisons
                         * Convenient
                         * Single purchase order for multiple vendors

Benefits to Sellers   * Access a larger pool of buyers
                         * Reduces marketing expense

Auctions (forward and reverse)

Use   Sell unique products

Product Types   Perishable goods, excess inventory, discontinued goods, collectibles

Price   Dynamic Bid/Offer to identified point in time

e-Revenue   Transaction-based

Benefits to Buyers   * Access to unique or hard-to-find items

                         * Reduced search cost
                         * Competitive bidding brings best price (reverse auction)
                         * Potential to buy below retail price

Benefits to Sellers   * Access to a larger pool of buyers
                         * Competitive bidding brings best price (forward auction)
                         * Speeds transaction process
                         * Move excess inventory quickly

EXHIBIT 10: TYPES OF DIGITAL MARKETPLACES (CONTINUED)

Exchanges

Use   Sell Standardized Products

Product Types   Well defined commodity products

Price   Continuous Price Discovery

e-Revenue   Transaction-based, Membership fee and/or advertising

Benefits to Buyers * Speedy access to goods and services in a volatile market
                        * Real-time price information
                        * Provides most competitive price

Benefits to Sellers * Accelerates process of finding buyers
                        * Broadens customer base
                        * Real-time pricing information

Source: Xcelerate.