IBM

DuPont:

Increasing productivity and broadening
knowledge through collaboration

e-business

Putting e-business to Work

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DuPont

The Company

- Based in Wilmington

- 1998 revenues of $25 billion

- 90 lines of business

- 70 countries

Applications

- External and internal collaboration

- Workflow management

Business Benefits

- Increased productivity through shorter cycle times

- Increased companywide awareness of best practices

- Faster time to market

Software

- Lotus® Domino™ and Notes®

- IBM AIX®

Hardware

- IBM RS/6000®

Services

- IBM Global Services

- Lotus Consulting

OVERVIEW

e-business case studies: DuPont

Based in Wilmington, Delaware, E. I. DuPont de Nemours & Co., Inc. (*www.dupont.com*) manufactures chemicals and specialty products worldwide for use in such markets as food and nutrition, healthcare, agriculture, fashion and apparel, home and construction, electronics and transportation. With revenues of $25 billion in 1998, DuPont employs approximately 80,000 people worldwide, of which two-thirds are located in the United States. They operate 90 lines of business in more than 70 countries around the world.

This case study focuses on DuPont's rapid expansion of its Lotus Domino and Notes infrastructure, focusing on the unique teamwork necessary to pull together a large-scale Notes implementation.

BUSINESS DRIVERS

DuPont's IT team at the Lotusphere convention.

DuPont's Domino and Notes activities were driven by both technological and business factors, according to Steve Miller, Manager of Collaborative Computing and leader of the Communication, Collaboration, and Coordination Program Office, or C3PO, which leads the project. The most immediate driving force was DuPont's desire to consolidate its eight distinct electronic mail platforms, which prohibited the exchange of all but ASCII text and clouded the prospects for true collaboration. While the concrete need for more efficient messaging was the most visible driver, the primary underlying driver was a fundamental shift in DuPont's strategic focus, which in turn can be traced to changes in its competitive environment. DuPont's lines of business fall under three segments:

•Life sciences, the fastest growing business

•Differentiated products, which are specialized and compete on the basis of added value or performance

•Foundation businesses, which are high-volume, specification-based products.

DuPont's foundation businesses have come under the most intense competitive pressure from low-cost manufacturers. As a result of this pressure, DuPont sees increased fixed cost and variable cost productivity as a critical ingredient in its long-term competitive strategy. Competition in DuPont's differentiated products business, based less on cost than differentiation, also necessitates improved productivity and collaboration. This improvement is needed primarily to support marketing as it relates to product positioning, as well as research and development related to new products.

DuPont's life sciences business, its newest and fastest growing unit, considers applications such as data mining and data warehousing as key to its success in this business. Miller believes collaborative technologies are crucial as DuPont navigates a new course in increasingly competitive waters. "We are morphing from being strictly an energy and chemicals company into a life sciences and materials company, where applied knowledge is a significant competitive advantage, not just mortar and brick," says Miller of DuPont's Domino and Notes initiative. "We needed to provide an infrastructure that would facilitate leveraging and sharing knowledge. Domino and Notes are the vehicles through which groups, both inside and outside the company, collaborate with each other, and in which they develop best practices and are able to identify experts in a particular field."

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— Steve Miller, Manager of Collaborative Computing

ADOPTION STRATEGY

DuPont's Miller, who terms the present stage of its deployment a "migration phase," describes the 10-member C3PO as a group of "planners, evangelists and advocates." The group, which is a part of DuPont's corporate IS organization and reports directly to the CIO, is charged with articulating — at a high level — the vision of how DuPont will use technology to collaborate more effectively. While Miller's group spearheads the high-level planning, it also relies on DuPont's Global IS Leadership team, which effectively functions as a steering committee by reviewing and molding plans. Miller also receives valuable ongoing feedback, support and guidance from a worldwide network of over 70 DuPont project managers who are now in the process of implementing Lotus Notes.

The roots of DuPont's large-scale Notes rollout can be traced to late 1995, when it first rolled out a "boutique" implementation of fewer than 4,000 seats. During 1997, DuPont undertook a study designed to identify the optimal approach to develop a platform for companywide collaboration. In November 1997, DuPont's CIO named Notes/Domino its platform of choice, beating out Microsoft's Exchange and Outlook. While Miller cites Notes' existing foothold as a material factor in the choice, he is quick to point out that Notes' core capabilities — most notably collaboration and workflow management — played an even larger role in the CIO's decision. "Out of the box with Domino and Notes, we have templates and a similar look and feel to do all aspects of coordination, collaboration, and communication. Whereas with Outlook and Exchange, while the API is there, DuPont would have had to hire people to write custom applications. This requirement increased our risk of having significantly different interfaces from one application to the next."

In terms of key players, DuPont's initial implementation strategy was built mainly around what Miller calls the "3-legged stool" of Andersen Consulting (for application development), CSC (for managed operations) and DuPont, which acted as the integrator. IBM and Lotus were initially consigned to relatively minor roles. As the project progressed throughout early 1998, it became evident that the team lacked the necessary expertise in key areas, the most prominent of which was the ability to construct the kind of highly scaleable Notes platform that DuPont would need over the long haul. After attending Lotusphere 98 with CSC and the IBM team, DuPont became convinced of the need to expand the role of IBM/Lotus for architectural design and implementation consulting.

Miller considers the expanded role of IBM's business solutions core team, consisting of IBM Global Services, Lotus Consulting and the IBM e-business solutions organization, as crucial to the successful implementation of DuPont's Notes platform. "IBM's biggest contribution was the scaleable factor. We started out 1998 at 6,000 [seats], and we hit a wall at around 10,000 to 12,000, after which we couldn't scale. The servers were overloaded, and we did not have the right replication strategy." Miller sees IBM's most important contributions as:

•Consulting around domain strategy, server strategy and service level agreements

•Guidance around rules of the road for connecting external partners and customers

•Certificate taxonomy – specifically how DuPont names individual certificates that identify people's affiliation within the domain

•Various security issues, which IBM both discovered and helped resolve

Asked about the main source of his confidence in IBM, Miller points to the fact "IBM is the only vendor in the world that has experienced the scale of Lotus Notes implementation that would be comparable to DuPont's plans. Lotus has the product expertise and Lotus Consulting, the service company, has the collaboration expertise. But IBM's *implementation* of Lotus Notes provides DuPont with the confidence and the guiding light that DuPont needs. They've been there; they've done it. We need to learn from them."

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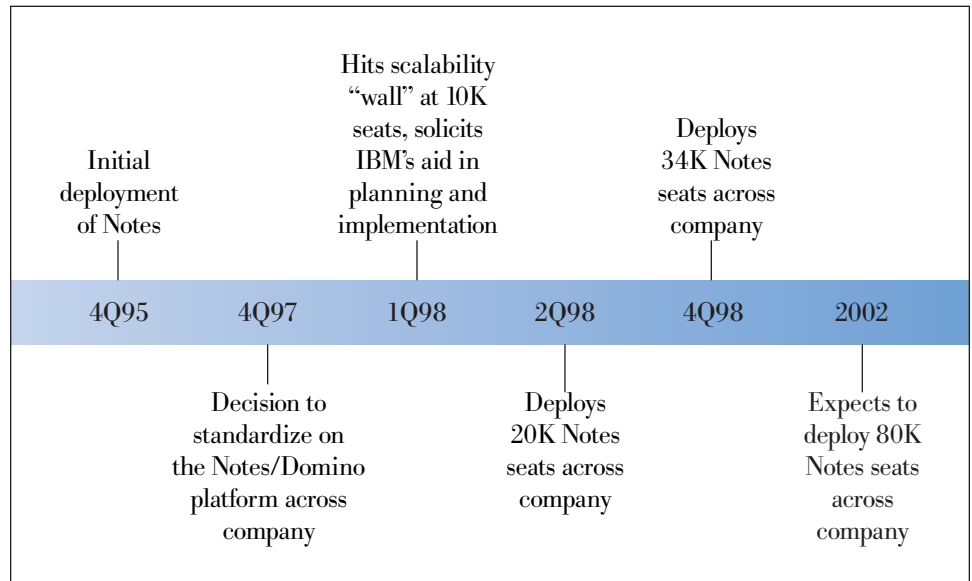
Adoption Timetable

While the decision to go with Domino and Notes was made in November 1997, the expansion of DuPont's Domino and Notes deployment began in earnest in January 1998, when DuPont had 6,000 seats deployed. After six months (July 1998), DuPont had deployed approximately 20,000 seats. The present number of seats (January 1999) stands at 36,000 and will reach at least 48,500 by the end of 1999. DuPont's future deployment schedule is equally robust (Figure 1):

•60,000 seats by end of 2000

•70,000 seats by end of 2001

•80,000 seats by end of 2002

Miller says that while its seat growth is impressive, the true value of Notes in the organization will come from the increasing number of Notes databases. "The number of databases [at DuPont], where the real power of Notes exists, is now at 2,200," says Miller, "and is expected to reach 20,000 by the end of 2002."

Under the DuPont culture, it's up to individual lines of business to decide when they want to migrate from their legacy mail platform to Notes. According to Miller, C3PO's approach was "to put into place a compelling, scaleable infrastructure and put out a sign saying 'come get your Notes account, if you want it.' It's one of those 'if you build it, they will come' situations, and they came."
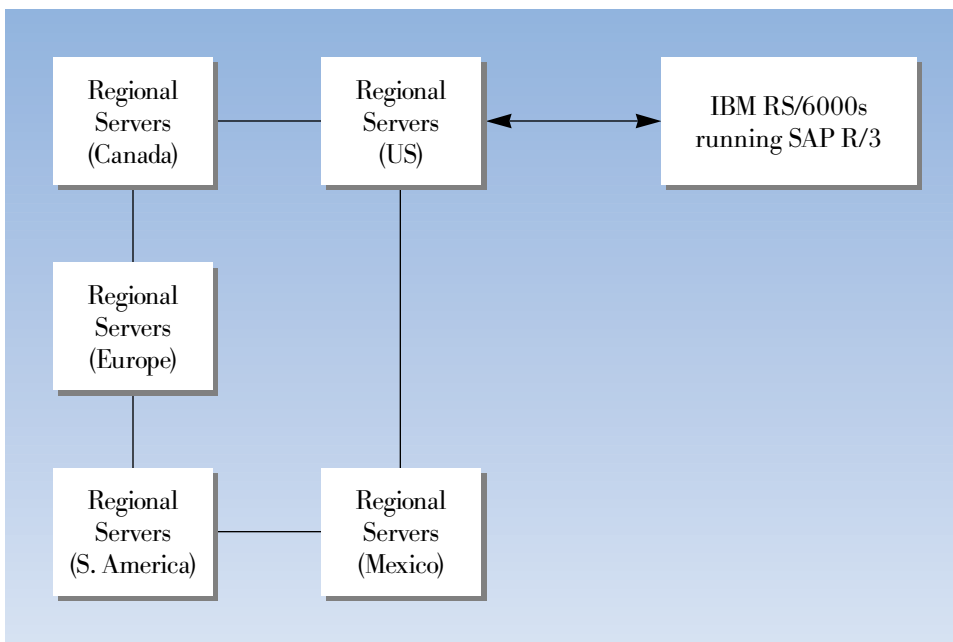

Source: DuPont, 1999

Figure 1. Notes/Domino Implementation Timetable for DuPont

Architecture

DuPont's Notes architecture resides on its private worldwide network, with server hardware (70 Domino servers running Microsoft® Windows NT®) distributed in Canada, Europe, Mexico, South America and the United States. While DuPont is unlikely to integrate its Notes platform with its mainframes, one business has already integrated Notes with SAP R/3 running on IBM RS/6000 servers using AIX (Figure 2). The main reason for this integration, says Miller, is to use Notes as a presentation vehicle to allow casual users to get at their particular need for SAP data. "While the people that will be using SAP routinely will use it in native SAP R/3, the interface is really for the management team who are casual users of SAP."

Although DuPont is presently using a fat client, it plans to seriously consider opting for a pure browser interface with Notes Release 5. DuPont would be most likely to use a pure browser approach in places where poor infrastructure would affect the speed of Internet mail transmissions.

Source: Dupont, 1999

Figure 2. Basic Notes/Domino System Architecture: DuPont

RETURN ON INVESTMENT

Miller describes DuPont's Notes implementation as "an integrated set of tools that allow businesses to communicate, collaborate and coordinate within, around and along their value chains." While Miller sees electronic mail as a "'Trojan horse" that provided the catalyst to DuPont's Notes expansion, he sees DuPont employees already beginning to harvest real business value in their core processes. "People are now beginning to discover the power of being in dialogue with each other asynchronously," says Miller. "The real power of Notes is beginning to unfold, and that is the ability to do workflow control." Miller cites document authorization as one of the key areas in which Notes' workflow capability has exerted a measurable impact. Some examples:

•*Procedural changes* – Previous to Notes, changes in operating procedures would require weeks to approve, with signatures obtained through traditional routing techniques. These changes can now be authorized in hours or days.

•*Price changes* – Previous to Notes, requests for price changes to meet a competitive threat required weeks to approve, thus limiting DuPont's flexibility to capture market opportunities. These changes can now be authorized in hours.

•*Virtual team decision making* – Using Notes, DuPont's virtual teams, often operating across the world, have cut their decision cycle time down dramatically – in one case by 50 percent. In some instances, DuPont's rapid decision making has been translated into reduced cycle time for installing new facilities, which in turn enables DuPont to capitalize on revenue opportunities faster by bringing products to market in less time.

Overall ROI Benefits	
Function	**Benefit**
Administrative functions	Faster authorization of procedural changes
Research and development	Improved collaboration on product and process development and best practices
Production planning	Reduced cycle time for new facilities planning
Sales and marketing	Ability to more flexibly seize market opportunities through aggressive pricing and faster time to market

Source: DuPont, 1999

Figure 3. Benefits of DuPont's Notes/Domino Implementation

As DuPont moves from high volume, specification-based business toward more value-added areas such as life sciences and materials, it recognizes the need to improve its knowledge management to fully leverage its intellectual capital. One of the prime examples of this need is coordinating and disseminating best practices within and across its many lines of business. Miller sees Notes as a means of overcoming the phenomenon known as "NIH," or not invented here, under which lines of business tend to be unwilling to adopt practices generated elsewhere in the company, a practice Miller sees as characteristic of companies geared toward discovery and innovation. In terms of Notes benefits, Miller calls DuPont's attempt to overcome the culture of NIH "the really big one." "What this means is that once these best practices are agreed to, they can be replicated and continually improved, thus avoiding duplication of effort and adoption of practices that are less than best."

Overall benefits of DuPont's Notes/Domino implementation are illustrated in Figure 3.

FUTURE PLANS

DuPont's most basic plans are to complete the rollout of Domino and Notes by the end of 2002, providing nearly all employees worldwide with Domino and Notes access. As the breadth of DuPont's implementation increases, so will the depth of its functionality. According to Miller, the planned capability arguably generating the most excitement is the imminent "massive" upgrade of its transaction systems, which governs DuPont's underlying accounting systems and related transactional processes. The shift, unfolding over the next five years, will move DuPont from its existing transaction systems, which Miller calls "unintegrated, outdated and hard to maintain," to one where Notes is integrated with SAP R/3. Says Miller, "Employees will be able to use Lotus Notes as their interface into the SAP database, which will give them a common look and feel with all other aspects of their work. That's the dream."

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