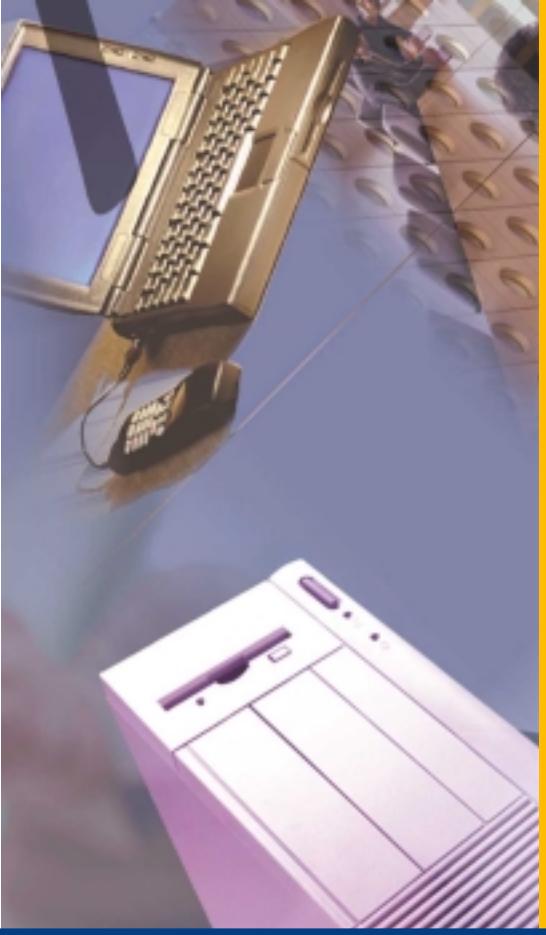

John Deere: IBM's WebSphere Revs Up the Dealer Extranet

An IDC e-business Case Study

THE RESULTS

"We expect our support costs to go way down—on the order of 30 percent of application support costs. With the success we've seen thus far, we will evaluate moving other mission-critical dealer applications into the S/390 environment, where we would expect a similar pattern of savings."

THE GOAL

NEAR-TERM:	Maximizing the performance of JDPoint, its dealer extranet (serves 5,700 dealers worldwide).
LONG-TERM:	Increasing revenue from parts sales through worldwide dealer network.

THE COMPANY

VITALS:	The world's largest producer of agricultural equipment, and a major supplier of forestry, construction and lawn and turf care equipment. John Deere employs over 37,000 worldwide.

THE SOLUTION

PROFILE:	Web-based, transaction-enabled dealer extranet
DEPLOYMENT TIME:	9 months (projected)
IMPLEMENTATION TEAM:	John Deere's Corporate Computer Operations and Parts Division and IBM Global Services

IDC
Analyze the Future

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Executive Summary

While John Deere's market presence has traditionally been strongest in North America, it has begun to increase its focus on opportunities outside of the increasingly mature North American market. A key element of John Deere's international growth strategy is centered on leveraging its worldwide dealer network to stimulate pull-through demand for John Deere products by making it easier for dealers to do business with the company. In 1996, John Deere launched its first major e-commerce initiative—a transaction-enabled dealer extranet known as JDPoint—as a means of reducing its dealers' cycle time for order processing, which had until then been conducted mainly through faxed communications for the dealers in Southeast Asia (excluding those in Australia). JDPoint is now used by approximately 4,000 John Deere dealers worldwide, and accounts for one-third of John Deere's total parts revenues.

Despite numerous improvements in its functionality, JDPoint had experienced a history of reliability and performance problems related to the linkage between its core legacy platform, running on IBM technology, and its Web server, which was Netscape Enterprise Server running on the Solaris platform. These problems undermined John Deere's goal of delivering a high-quality, high-performance system for its dealer network. As such, John Deere saw the clear need to provide its dealers with a simpler, more manageable e-business solution, with the ultimate goal of driving more parts business through dealers.

Driven by its Parts Division, John Deere's strategy was to consolidate around the IBM platform deploying IBM's WebSphere Application Server running on IBM S/390 as the front end of JDPoint. The S/390 Web server interfaces with John Deere's legacy back-end transaction processing systems, which contain such mission critical information as inventory tracking information. After going live as a production application in late 1Q00, the S/390 solution is being used by dealers in North America, Germany, France and the United Kingdom. Approximately 15 percent of John Deere's 5,700 worldwide dealers now use the OS/390 version of JDPoint.

IBM Global Services provided critical assistance to the John Deere team in both the planning and design of the new WebSphere-based system, as well as in the troubleshooting and testing stages. IBM Global Services was also instrumental in helping John Deere optimize the functionality of the new WebSphere solution. John Deere believes that its shift to WebSphere on the S/390 has already produced solid, measurable benefits in performance and reliability, with the most dramatic benefit being an estimated six-fold improvement in system response time. John Deere sees this performance improvement as being especially beneficial in helping to smooth out daily peaks in the usage of its system related to its internal order entry cycles. Reliability improvements have been equally impressive, with John Deere already experiencing profound improvements in downtime recovery in the portions of JDPoint running on OS/390. Because of these improvements, John Deere sees reductions in support costs as an even more significant source of ROI, with support costs for the dealer parts ordering application projected to fall 30 percent.

The Solution

Software

- IBM WebSphere Application Server
- IBM IMS
- IBM DB2 Universal Database
- IBM OS/390

Hardware

- IBM S/390

Services

- IBM Global Services

Benefits

- Higher dealer satisfaction
- Increased parts sales through John Deere dealers
- 30% reduction in support costs for John Deere's extranet
- Improved system availability and performance

Situation Analysis

▶ Business Environment

e-business Challenge
Deere & Company

"We saw John Deere's e-business challenge as providing our dealers with a best-of-breed e-business platform that, in addition to making life easier for our dealers, would also drive more parts business through dealers. Ultimately, the search led to IBM's S/390 platform."

—Dave Kelley, e-Business Program Manager, Deere & Company

Employing over 37,000 worldwide, Deere & Company is the world's largest producer of agricultural equipment, and is a major supplier of forestry, construction and lawn and turf care equipment. Indeed, the John Deere logo—emblazoned on countless farmers' caps—has practically become an icon, as has its familiar green and yellow color scheme. John Deere's market presence has traditionally been strongest in North America, where it has long maintained a leadership position. In recent years, John Deere has begun to increase its focus on opportunities outside of the increasingly mature North American market. Indeed, John Deere views the expansion of its overseas business, which now accounts for approximately one fifth of its overall sales, as one of its most important strategic priorities. While the overseas market represents stronger growth opportunities, it also poses an increased competitive challenge from companies such as Komatsu, Caterpillar and CNH.

John Deere's core strategy for growing its international business is centered on leveraging its worldwide network of 5,700 dealers. According to Dave Kelley, John Deere's e-Business Program Manager, the crux of John Deere's strategy is to stimulate pull-through demand for John Deere products by making it easier for dealers to do business with the company. "The basic premise of our strategy is that by making information more accessible to our dealers, it becomes generally easier to work with John Deere," says Kelley. "Since our dealers also have the opportunity to sell parts from other manufacturers, we can't overemphasize the importance of providing our dealers with the most convenient, efficient and valuable e-business solution possible . That is our ongoing goal."

▶ Previous e-business Initiatives

The strategic importance of parts sales—and of dealers as a conduit for this business—is clearly reflected in John Deere's most prominent e-business initiative: JDPoint. Launched in 1996, JDPoint is a dealer extranet that enables dealers to place and track parts orders via the Web. Initially targeted to dealers in Asia and Latin America, JDPoint was conceived as a means of reducing the cycle time for order processing, which had until then been conducted mainly through faxed communications. In addition to practically eliminating errors in overseas ordering, JDPoint also provided instantaneous turnaround on orders and armed John Deere dealers with powerful inquiry capabilities, such as realtime information on inventory availability and order status. Used by approximately 4,000 John Deere dealers worldwide, JDPoint accounts for one-third of John Deere's total parts revenues (averaging $35 million per month).

As Kelley notes, JDPoint also became an important and valued tool to John Deere's North American dealerships, where it served as a low-cost alternative to John Deere's existing proprietary-and expensive-dealer communications platform. "The Parts Division was spending $8 million annually on line

charges between our dealers and John Deere corporate," says Kelley. "We saw JDPoint as means of substantially reducing these expenditures, and it has clearly helped us meet these goals."

▶ e-business Challenge

Since introducing JDPoint in 1996, John Deere has done much to improve the functionality of the system in thirteen subsequent upgrades, including the addition of tracking capability via shipment-tracking Web sites. However, as JDPoint's functionality grew, its reliability and performance failed to keep up. "The most fragile part of the solution was the connectivity between our core legacy platform, running on IBM technology, and our front end, which was Netscape Enterprise Server running on the Solaris platform," says Kelley. "Because of this, we had frequent communications problems and downtime. These problems were exacerbated by the difficulty we had in diagnosing the problems, since the [Netscape/Solaris] system gave us no response."

According to Kelley, these performance and reliability problems undermined John Deere's goal of delivering a high-quality, high-performance system for its dealer network. "We realized early on that for us to provide dealers with an optimal e-business solution we needed to make it simpler, more manageable and less prone to failure and—in the event of failure—easier to bring back up," says Kelley. "We saw John Deere's e-business challenge as providing our dealers with a best-of-breed e-business platform that, in addition to making life easier for our dealers, would also drive more parts business through dealers. Ultimately, the search led to IBM's S/390 platform."

Action Plan and Decision Process

▶ First Steps

The pivotal point came in 1997, when representatives of John Deere's Corporate Computer Operations approached IT staff within John Deere's Parts Division with a proposition: running the entire JDPoint solution on the IBM S/390 platform. "Our Corporate Computer Operations people advanced the idea that we run our applications on the S/390, since it could run UNIX services and has a Web server," says Christopher Houtakker, a project manager in John Deere's Parts Division. According to Houtakker, the concept had a strong appeal from the outset, given John Deere's long-time use of the IBM S/390 platform to run mission critical legacy applications, such as inventory management.

Key Decision Criteria In Selecting IBM

"We set a high threshold for performance, scalability and reliability. We set forth about thirty different parameters for our support requirements, which shows how important the area of support had become to us."

—Chris Houtakker, Project Manager, Parts Systems, Deere & Company

Kelley and his team saw consolidation around the IBM platform as the most effective remedy to JDPoint's performance and reliability problems. "Our expectation was that by putting the entire environment on S/390—with all solution elements running on the same operating system—it would be a simpler, more manageable solution." While generally amenable to the idea, Houtakker—representing the Parts Division that administered JDPoint—needed to be convinced. "Our initial response was that it sounds great, but we needed to be shown that it would actually work reliably," notes Houtakker. "Our objectives were improved availability—100 percent up-time—as well as improved manageability, so that when there is a problem we can react swiftly and effectively." John Deere's desire to achieve improved performance by embracing IBM technology at all levels of its solution—from IMS to WebSphere Application Server—follows the core principles of IBM's Application Framework for e-business, a proven technical approach designed to help customers enable better integration between e-business applications, and faster implementation of e-business platforms.

▶ Decision Criteria and Process

John Deere's Parts Division, which drove the decision process, drew up a long list of requirements it needed satisfied before embracing Corporate Computer Operation's single-platform proposal. "We set a high threshold for performance, scalability and reliability," says Houtakker, adding that his support requirements were perhaps the most stringent. "We set forth about thirty different parameters for our support requirements, which shows how important the area of support had become to us."

As Houtakker points out, developers in John Deere's Parts Division were also looking for a solution that incorporated both a development and a debugging environment. "We envisioned a single platform to do all our development," says Houtakker. Under the initial JDPoint platform, any changes to John Deere's core legacy code (written in IBM's IMS) also necessitated code changes at the JDPoint Web site. While John Deere had developed procedures to automate changes to the core IMS code, no such functionality existed on the Web side. "We wanted a way to incorporate the functionality we had today in

IDC Market Focus
The Worldwide Market for Application Server Software

"The prize for most impressive growth from 1998 to 1999 was IBM. Driven by WebSphere Application Server, IBM's revenue growth was almost 8 times faster than next fastest growing competitor (BEA Systems) in '99: 4600% vs 583% There is less than 6% share difference between top 4 leaders: Sun Microsystems (15.2%), BEA (12.4%), Oracle (10.5%) and IBM (9.5%). While a clear leader has yet to emerge, IBM's growth puts it on the path to attaining a leadership position."

—Abstracted from the June 2000 IDC Report *"Application Server Software Platforms Forecast and Analysis, 2000-2004"*

the IMS world into a Web environment. This was our grand vision, and we saw IBM WebSphere Application Server and S/390 as a way to achieve that vision."

According to Dave Hocamp, John Deere's Manager of S/390 Support Services, IBM Global Services provided critical assistance to the John Deere team in both the early stages (planning and design of the WebSphere-on-S/390 initiative) and the later stages (troubleshooting and testing). As Hocamp points out, IBM played a major role in testing the viability of John Deere's plan—a key milestone in advancing John Deere's decision process. An important task of this process was the porting of the application from the Netscape environment (the initial Web platform) to WebSphere Application Server. In being selected as the new JDPoint Web server, WebSphere beat out such competing products as BEA Systems' WebLogic Application Server.

Hocamp also cites IBM Global Service's role in helping John Deere to optimize the functionality of the new WebSphere solution. "IBM was extremely helpful when it came time to test the conversion functionality," says Hocamp. "A great example was IBM helping us to understand the data filter functionality of IBM's Web server . It provided us with feedback on how the Web server was actually running that we never had before with Netscape Enterprise Server."

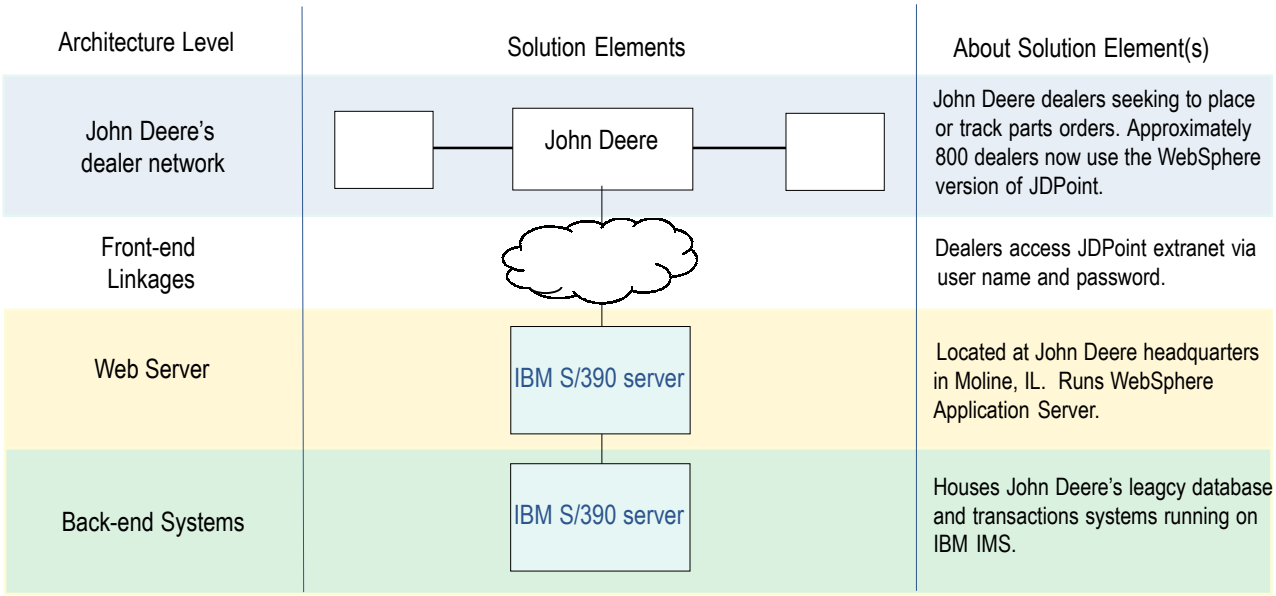
Solution Profile and Implementation Strategy

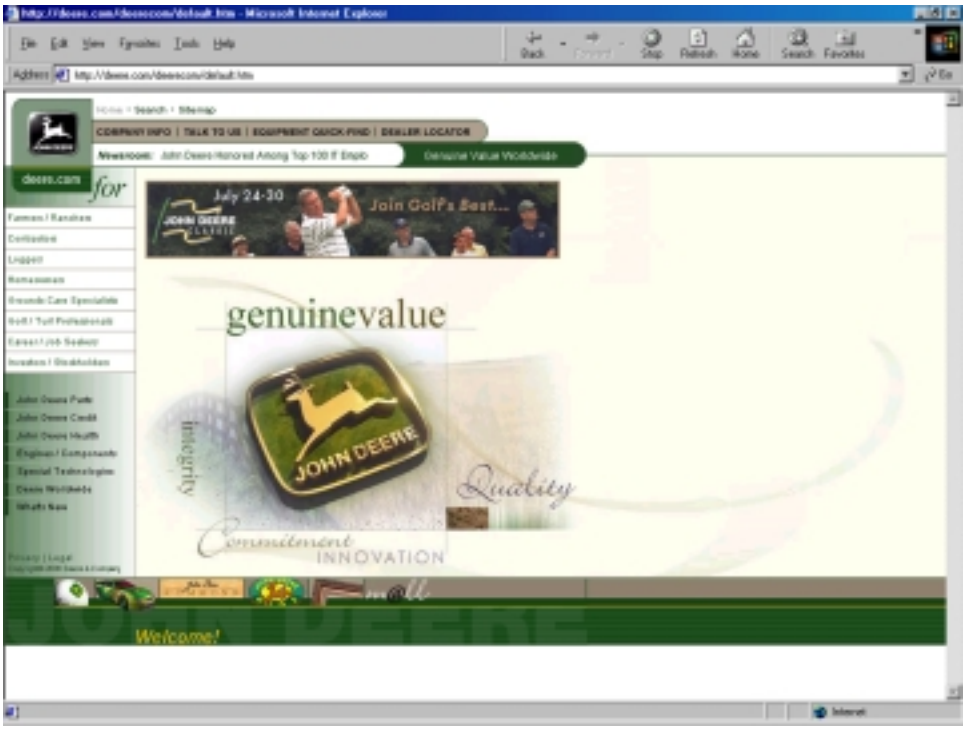
▶ John Deere's New JDPoint Solution

After a successful round of proof-of-concept testing, John Deere's S/390-based JDPoint extranet solution went live as a production application in late 1Q00. At present, the S/390 solution is being used mainly by dealers in North America, although John Deere recently rolled out the new solution to its dealers in Germany, France and the United Kingdom. Approximately 15 percent of John Deere's 5,700 worldwide dealers now use the OS/390 version of JDPoint, with the remainder using the original Netscape/Solaris platform.

Under the new architecture, the front end of the JDPoint solution is comprised of IBM WebSphere Application Server running on an IBM S/390 server located at John Deere's Moline headquarters inside the firewall. The S/390 Web server interfaces with another S/390 running John Deere's legacy back-end transactions processing systems running on IBM's IMS database and transaction management system. John Deere's legacy systems contain such mission critical information as inventory tracking information (for both finished goods and work-in-process inventory) and parts information. John Deere's parts-related legacy systems are also comprised of a limited number of IBM DB2 databases, which house data such as invoices for parts orders, although most data is stored in IMS.

Figure 1:
Basic Architecture of John Deere's WebSphere-based Extranet





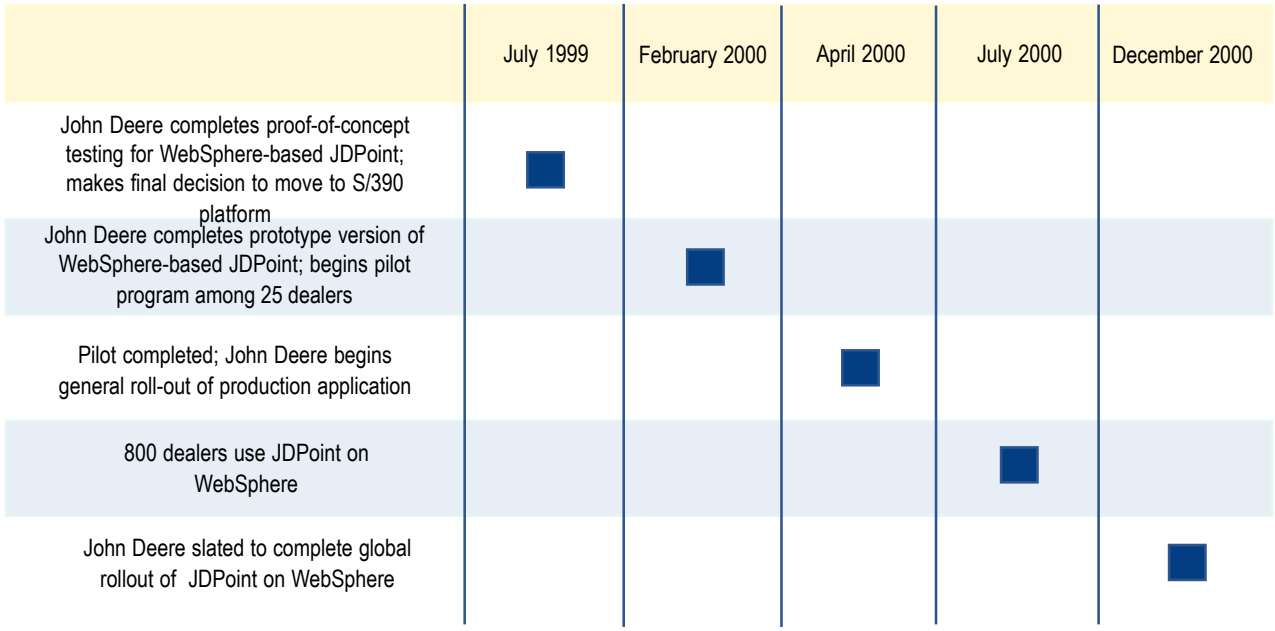
▶ Implementation Approach and Timetable

After completing proof-of-concept testing in July, 1999, John Deere made its decision to port its JDPoint code to the System S/390 environment official. The next step was to develop a solution that it could pilot among a select number of dealers. The first phase of this development, begun in July of 1999, involved porting the code from John Deere's previous (i.e., Netscape) environment to the new OS/390 environment. During this phase, the John Deere implementation team encountered complications related to differences in the caching techniques between the old and new Web server environments. As Hocamp points out, IBM played a key role in facilitating the resolution of the problem by helping John Deere to enhance WebSphere Application Server's data filter function. "IBM's dedication and resourcefulness in helping us to resolve the caching issue reaffirmed our confidence in IBM's support capabilities," says Hocamp, "which in itself was a major reason we decided to go with an IBM Web server solution." Following this, the team needed to create a solid, stable set of routines governing the connection between IMS and WebSphere—a formidable task given the large number of requirements for these routines.

With the initial development work completed in early 2000, John Deere introduced the new S/390-based platform as a pilot program in February.

Targeted to approximately 25 North American dealers, the pilot program was designed to measure perceived improvements in speed and availability over the previous version of JDPoint. After completing the pilot program in early April, 2000, John Deere began rolling out the application, now in controlled production stage, to its dealers. As of July 2000, approximately 800 dealers in the United States, Germany, France and the United Kingdom had adopted the WebSphere version of JDPoint. John Deere expects to have all 5,700 of its dealers on board by year-end 2000. "Team members from John Deere's Computer Operations and the Parts Division did an outstanding job of developing the S/390 infrastructure and porting this high-profile Web-based application to the mainframe," notes Bob Brissman, overall project manager for the port to S/390. "IBM's partnership in the project was equally instrumental in its success."

Figure 2:
Implementation Timetable for John Deere's WebSphere-based Solution



Source: John Deere and IDC

Business Results

Hocamp believes that John Deere's shift to WebSphere on the S/390 has already produced solid, measurable benefits in performance and reliability. According to Hocamp, the most dramatic benefit of the move to WebSphere on S/390 from Solaris has been a six-fold improvement in system response time. "When we tested the execution of WebSphere version of JDPoint back-to-front, we achieved a much higher level of improvement than we anticipated," says Hocamp. "This really attests to the benefits of running WebSphere along with our other IBM applications on the S/390 platform." As Hocamp points out, this performance improvement will be especially beneficial in helping John Deere smooth out daily peaks in the usage of the system related to its internal order entry cycles. "During these peaks, the performance of the old system would degrade noticeably," he adds. "We've already seen an almost complete disappearance of this type of impact on JDPoint's performance."

On the reliability front, results have been equally positive. As Houtakker explains, John Deere has already experienced profound improvements in downtime performance recovery in the portions of JDPoint running on OS/390. "Under the Solaris system, an expected recovery time of 15 minutes was considered fairly good," says Houtakker. "We've seen a comparable standard for the OS/390 segment of JDPoint of about 30 seconds. So we're looking at a roughly 30-fold increase in expected recovery time."

Figure 3:
Overview of John Deere's Business Results Achieved

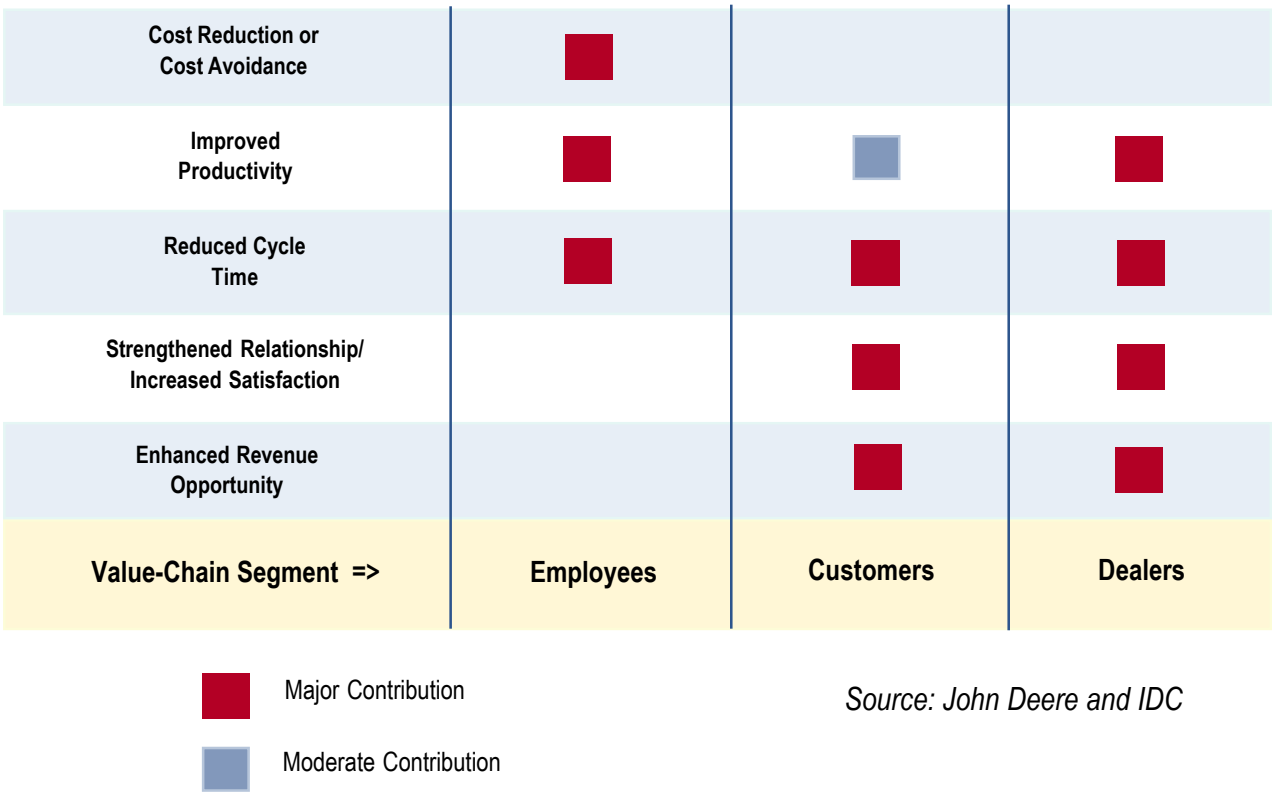
Business Process Area	Nature of Benefit	Description or Metric
Channel Development	Improved Relationship	Increased satisfaction among John Deere dealers
Sales and Marketing	Increased Revenue	Increased parts sales through dealers
IT Administration	Cost Reductions	30% anticipated reduction in JDPoint support costs
IT Administration	Improved Performance and Reliability	30-fold improvement in system time-to-recovery and 6-fold improvement in response time.
IT Administration	Improved Diagnostic Capabilities	Ability to "self-diagnose" problems.

Source: John Deere and IDC

Houtakker sees improved diagnostic capabilities as an area of especially marked improvement. "One of our major complaints with the Solaris/Netscape version of JDPoint was the difficulty of getting and understanding feedback from the system in the event of problems," says Houtakker. "In addition to not being able to get 'dumps' from the Netscape system, we also couldn't get Netscape to help us read them. In contrast, we enjoy an outstanding relationship with IBM because first we are generally able to diagnose problems on our own, and when we can't, IBM is there to help us. On the support side, IBM has really proven itself invaluable."

While the move to WebSphere on the S/390 has already left a mark on performance and reliability, Kelley sees reductions in support costs as an even more significant source of ROI. "With this more reliable solution, we expect our support costs to go way down—on the order of 30 percent of the cost of the supporting the dealer parts ordering application," says Kelley. He sees even more opportunities for cost savings as John Deere moves other major dealer-focused applications—warranty reporting, sales reporting, and accounts

Figure 4:
Expected Contribution to John Deere ROI by Value Chain Segment



Source: John Deere and IDC

receivable— from the Solaris to the S/390 environment. "With the success we've seen thus far, we will evaluate moving other mission-critical dealer applications into the S/390 environment, where we would expect a similar pattern of savings."

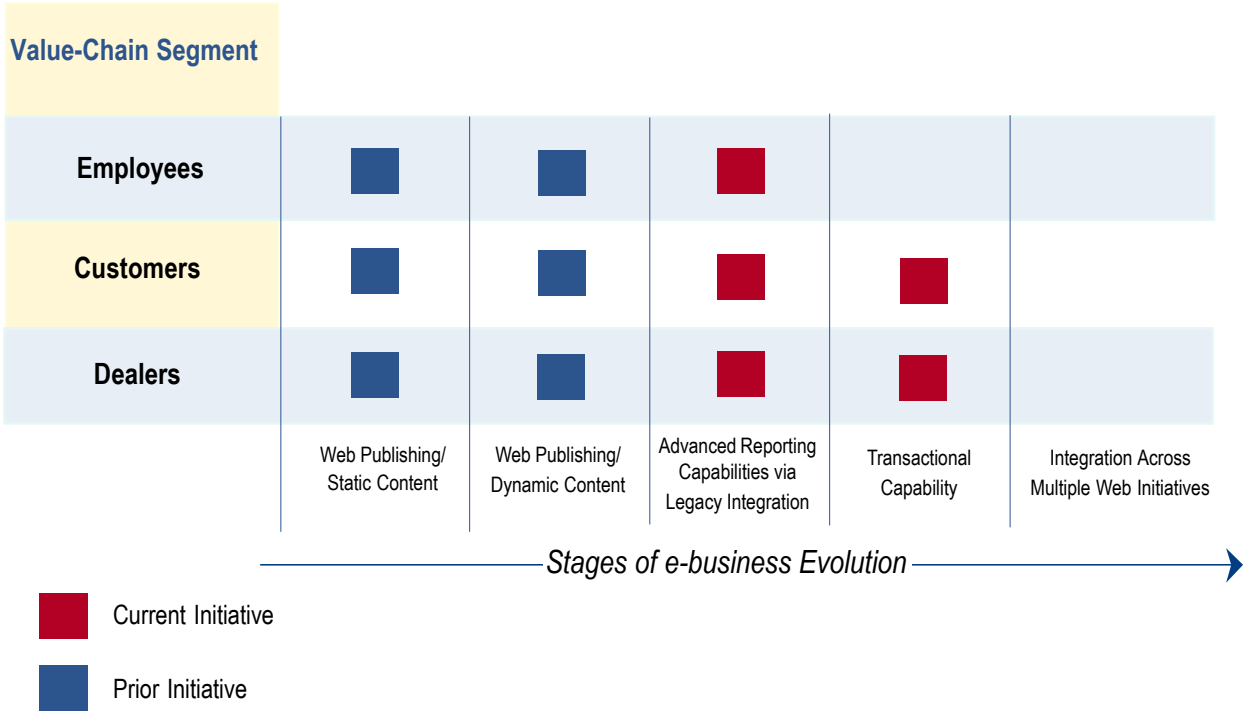
While extremely satisfied with the diverse benefits pointed out above, Kelley is quick to affirm that the fundamental aim of John Deere's JDPoint repositioning is to better serve the dealer, thus stimulating more parts sales. "In the end, we see dealer satisfaction as our most important guidepost," says Kelley. "Since our dealers can also sell parts from our competitors if they choose to, it's certainly in our strategic interest to invest in making it easier to do business with us."

Case Epilogue

John Deere's immediate plan for JDPoint is to complete the migration from Netscape/Solaris to WebSphere and S/390 platform by year-end 2000, thus providing improved performance and reliability to its 5,700 dealers across the world. While its dealer community will likely remain the primary focus of its e-business initiatives, John Deere plans to place a stronger emphasis on providing Web-enabled services to its end customers. Kelley explains: "The fact that we have over 200 dealer-oriented Web sites and applications in place today—each of which is designed to make it easier for our dealers to do business with John Deere—shows our commitment to the channels portion of our value chain," says Kelley. "Going forward, we're going to see a lot more focus on the space between John Deere and the customer."

Signs of this shift in focus can already be seen—and IBM is playing a central role in helping John Deere realize its e-business vision. John Deere is currently using IBM WebSphere Application Server and Net.Commerce (now called WebSphere Commerce Suite) to build a B2C e-commerce solution that sells parts directly to farmers. John Deere's Lawn and Grounds Care division is also in the process of building a B2C e-commerce site. As Kelley points out, John Deere's reasons for selecting IBM as the linchpin of its B2C e-commerce initiatives closely mirror the factors that led John Deere to choose

Figure 5:
John Deere's e-business Evolution and Value Chain Focus



Source: John Deere and IDC

IBM technology as the engine of JDPoint. "To put it simply, we chose IBM technology because we were convinced it was the best. In our key requirement areas of scalability, availability, and support, we were convinced that IBM was the best of breed."

08-00

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