



Brenntag: An IBM Solution Produces Good Chemistry with Customers

An IDC e-business Case Study

THE SUBJECT

A division of German chemical giant Brenntag AG (a Stinnes Logistics Company), Brenntag, Inc. is the third largest distributor of chemicals in North America. The company also provides supply chain and inventory management, logistics, sales and related value-added services to its base of 40,000 customers.

THE GOAL

Brenntag's high-level goals were to: increase the ease and frequency of data sharing within the company; establish the foundation for its current and future B2B e-commerce initiatives; and improve its disaster avoidance readiness. By providing its customers with Web-based services, Brenntag sought to strengthen customer retention.

THE SOLUTION

Brenntag's e-business platform allows customers to browse product catalogs, generate customer-specific price quotes, place orders online, track order status, review and modify orders, request additional information about selected products and generate customized reports. The solution, based on IBM WebSphere Application Server, integrates with and fully leverages Brenntag's backend order entry system.

WHY IBM

"Our goal was to provide customers with realtime, up-to-date data and—in the backend—to have orders go directly into the system and automatically trigger other processes. Given this requirement, WebSphere was far and away the superior option for us."

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Executive Summary

Innovation Spotlight

By integrating its WebSphere-based e-business platform with Lotus Domino, Brenntag is able to automatically e-mail customers' order confirmations.

While the numerous acquisitions executed by Brenntag, Inc. have been a key source of growth for the company, the resulting decentralization of systems and processes made it increasingly harder to share and consolidate data within the company. This impacted numerous functional areas, including purchasing, the management of national accounts, and the sharing of best practices. Brenntag's fragmented infrastructure also placed a drag on its e-business initiatives. To alleviate this, Brenntag established a new, centralized architecture (employing standardized technology components), upon which it built a fully transactional B2B e-commerce solution that is seamlessly integrated with its backend order entry system.

Brenntag's Solution at a Glance

e-business Stage	Integrating (Internal, evolving into External via integration with suppliers' ERP systems)
Core Functionality	Brenntag's new architecture centralizes the processing and storage of mission-critical company data (replacing a highly fragmented, decentralized infrastructure). Brenntag's e-business solution is a B2B e-commerce system that is seamlessly integrated with the company's backend order entry platform. The solution allows Brenntag customers to browse a customized product catalog, generate customer-specific price quotes, place orders online, track order status, review and modify orders, request additional information about selected products and generate customized reports. The system automatically sends customers an e-mail notification upon receipt of an order.
Software	IBM WebSphere Application Server, Lotus Domino, IBM WebSphere MQ (formerly MQSeries), IBM DB2 Universal Database, IBM WebSphere Studio, IBM VisualAge for Java and IBM Toolbox for Java running on IBM eServer iSeries, Tivoli IT Director and Tivoli NetView
Servers	IBM eServer iSeries model 820, IBM eServer iSeries model 270
Services	IBM Global Services
Business Partner	Essex Technology Group
Key Benefits	<ul style="list-style-type: none">• Brenntag's e-business solution generated revenues of \$1.5 million in its first year of operation.• Brenntag's e-business solution is expected to increase customer satisfaction levels and customer retention rates.• Brenntag's e-business solution strengthens its position as one of the leading providers of value-added services among US chemical distributors.• Brenntag's new centralized architecture has led to an increase in the sharing of best practices across the company's business units.• Brenntag's centralized architecture made it feasible to create a fully redundant, mirrored architecture.• Brenntag's centralized architecture shortened the time required to integrate its largest (and most recent) acquisition.

Background

Brenntag, Inc. is the US chemical distribution division of Brenntag AG (a Stinnes Logistics Company), an international chemical distribution company headquartered in Mülheim-on-the-Ruhr, Germany. Based in Reading, PA, Brenntag, Inc. (“Brenntag”) has become one of North America’s largest chemical distributors; its base of 40,000 customers ranges from small mom-and-pop companies to the largest manufacturers. Brenntag’s general business model is built around purchasing chemicals in large quantities from chemical manufacturers, then breaking these shipments down to smaller quantities that are sold to end customers. Around this core service, the company also provides supply chain and inventory management, logistics, sales and related value-added services.

While an aggressive acquisition strategy helped propel Brenntag to the number three chemical distributor in the North American market, it also produced a fragmented business structure made up of the subsidiaries of the acquired companies.

A key driver of Brenntag’s growth has been the aggressive acquisition strategy of its parent (Brenntag AG), culminating in the acquisition of Holland Chemical International (HCI) in November 2000. While these acquisitions have propelled Brenntag to the number three position in the North American market, they also produced a fragmented business structure made up of the subsidiaries of the acquired companies. The company’s 106 US locations are grouped into the following regional units:

- Brenntag Great Lakes (based in Milwaukee, WI)
- Brenntag Mid-South (Henderson, KY)
- Brenntag Northeast (Reading, PA)
- Brenntag Southeast (Durham, NC)
- Brenntag Southwest (Longview, TX)
- Brenntag West (Santa Fe Springs, CA as well as two facilities in the Baja Region of Mexico)

Brenntag also operates specialty chemical distributors, such as Eastech Chemical (Philadelphia, PA), Whittaker, Clark & Daniels (South Plainfield, NJ) and Coastal Chemical Company, LLC (Abbeville, LA).

The Need: A Unified Infrastructure for Sharing Data

As the degree of fragmentation within Brenntag’s business units grew, the proliferation of disparate IT systems presented a growing barrier to the sharing of data within the company. Brenntag also stood to gain on a number of other important fronts by improving its ability to aggregate and share information. For example, the fact that customer, product and vendor codes varied from region to region made the management of national accounts—customers spanning multiple regions—considerably more difficult.

While the above factors exemplify the importance of a coherent IT structure to improve internal efficiency, Brenntag was also reacting to the imperatives of the market. Among the many chemical distributors serving the North Ameri-

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— Todd Stewart,
MIS Director,
Brenntag, Inc.

can market, the primary source of competitive differentiation is in providing innovative customer services. Because many products are available from different sources, one of the primary goals of a chemical distributor is to distinguish itself from the competition by providing innovative services to its customers. Examples include the ability to provide customer-specific, volume-based pricing and other customized services. Of equal, if not most, importance is the ability to provide customers with Web-based B2B services such as ordering and order tracking. But for a chemical distributor to deliver B2B e-commerce services, having the proper e-infrastructure in place—one that provides the customer with a single interface with the company—is a crucial prerequisite. According to Todd Stewart, Brenntag’s MIS Director, the company’s decentralized architecture posed a barrier to the deployment of a B2B e-commerce platform. “Providing our customers with e-commerce services had emerged as a competitive requirement,” says Stewart. “So the need to centralize our IT architecture became an important strategic priority for Brenntag.”

Action Plan and Decision Process

First Steps

A consensus on the need for an e-business initiative first emerged within Brenntag’s senior management in early 1999. At this early stage, Brenntag’s key challenge was to establish the scope, timing and technology requirements of the initiative. Brenntag defined the project’s basic goals as:

- creating a centralized, redundant IT architecture based on standardized technology,
- building an modular, scalable e-business solution on top of this centralized architecture, and
- creating a standardized platform for intra-company communication, collaboration and workflow.

Prior to implementing these solution elements, however, Brenntag identified the need to retool its existing, highly-customized order entry system. Specifically, by rewriting the original Basic application in RPG (Report Program Generator) IV—using callable modules—Brenntag sought to put in place an order entry system that could more easily integrate with an e-commerce solution. Once the redevelopment of its order entry system was complete, Brenntag would then proceed with the e-business initiative.

Technology and Provider Selection

Brenntag’s decision process incorporated the selection of technology—i.e., server hardware, e-business middleware and messaging/workflow software—as well as a solutions provider to assist in the deployment of the solution. On the hardware side, Brenntag selected the IBM AS/400 to power the solution, largely on the basis of its long and successful history as an AS/400 user. As Stewart points out, Brenntag’s selection of IBM WebSphere Application Server

reflects the importance of integrating the solution with the company's backend systems. "Our goal was to provide customers with realtime, up-to-date data and—in the backend—to have orders go directly into the system and automatically trigger other processes," explains Stewart. "Given this requirement, WebSphere was far and away the superior option for us." Brenntag selected WebSphere over a Windows NT Server solution.

"Our goal was to expand from internal messaging to internal workflow and scheduling to integrating messaging with e-commerce. The Domino platform was unique in its strength in each of these areas."

— Todd Stewart

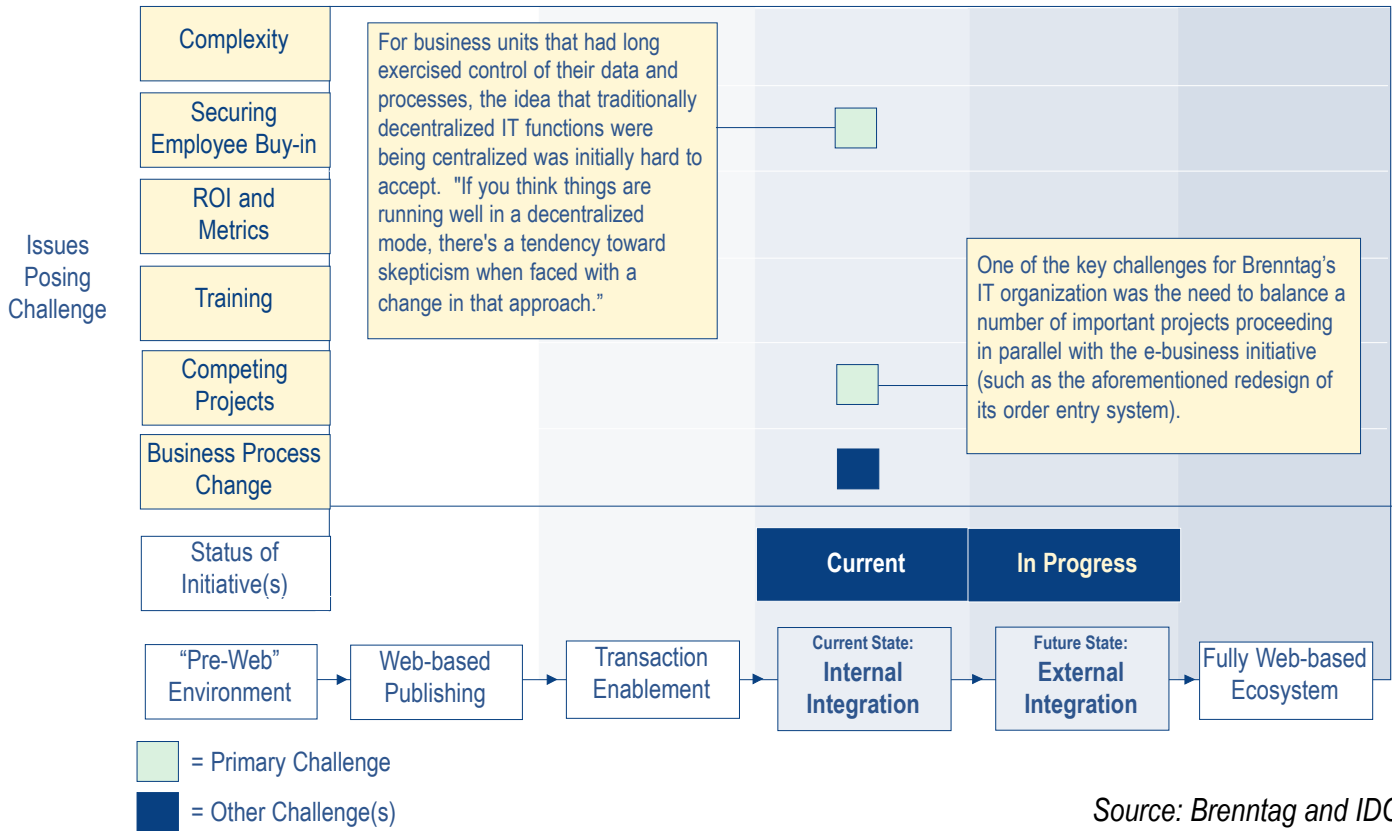
For its messaging platform Brenntag selected Lotus Domino. While Stewart sees the selection of Domino as a reflection of the inherent strength of Domino as an e-mail server running on the AS/400, he also points to Domino's robustness, versatility and ease of integration as being key for broader initiatives. "Our goal was to expand from internal messaging to internal workflow and scheduling to integrating messaging with e-commerce," says Stewart. "The Domino platform was unique in its strength in each of these areas."

In selecting a solution provider, Brenntag's approach was to select a vendor whose technology expertise filled in gaps in its own internal capabilities—the most important of which related to IBM WebSphere Application Server and Lotus Domino. Other more general capabilities sought by Brenntag were a strong track record in infrastructure planning and development. In December 1999, Brenntag selected IBM Business Partner Essex Technology Group (based in Rochelle Park, NJ) to assist in the deployment of the solution. "Our selection process was guided by very demanding criteria," notes Stewart. "To say their capabilities matched our needs is a strong endorsement of their qualifications and experience in providing industrial-strength e-business solutions."

Challenges

At the outset of the project, Brenntag faced a number of challenges to its successful completion and ultimate adoption. One of the key challenges for Brenntag's IT organization was the need to balance a number of important projects proceeding in parallel with the e-business initiative (such as the aforementioned redesign of its order entry system). Selling the idea of a new e-infrastructure was also a critical part of Brenntag's e-business initiative. "It was important for us to show management the value proposition and to get them to see the big picture." This 'big picture' was the promise of implementing an e-commerce solution, and the fact that e-commerce would not be practical until the decentralization of IT resources had occurred. To communicate this, Brenntag's senior management conducted a large kickoff meeting (attended by business unit presidents and key staff) in which all aspects of the company's e-business vision were laid out and discussed—"from the need for supporting infrastructure all the way to the e-commerce interface."

Challenges Encountered in Brenntag's e-business Evolution



Solution Profile and Implementation Strategy

The Project: Timetable and Approach

The deployment of the Brenntag solution was carried out by both Brenntag and Essex Technology Group staff. As mentioned previously, the preliminary phase of the deployment was the reconstitution of Brenntag's highly customized order entry platform using callable modules written in RPG IV. Performed primarily by Brenntag personnel, this modification would allow a front-end e-business solution to make transaction calls to the backend order entry module, which would contain the business logic and access the same backend databases. In parallel with the retooling of the order entry system, Brenntag was also conducting a number of planning sessions related to its disaster recovery goals and strategies (which would factor in closely with the design of the solution).

The actual development of the e-business solution began in April 2000, when Brenntag and Essex deployed and configured the server hardware on which the solution would be deployed. The next phase of the project, begun in May 2000, was the development (by Essex staff) of the e-business application

Development Timetable for Brenntag's e-business Solution

	February 2000	April 2000	May 2000	November 2000	December 2000
Brenntag begins the redesign of its order entry system	■				
Brenntag and IBM Business Partner Essex Technology Group begin building the solution; new eServers installed		■			
WebSphere Application Server installed; development of core e-business platform begun			■		
Pilot of Brenntag's e-business solution rolled out to a limited number of trial users				■	
Production application rolled out					■

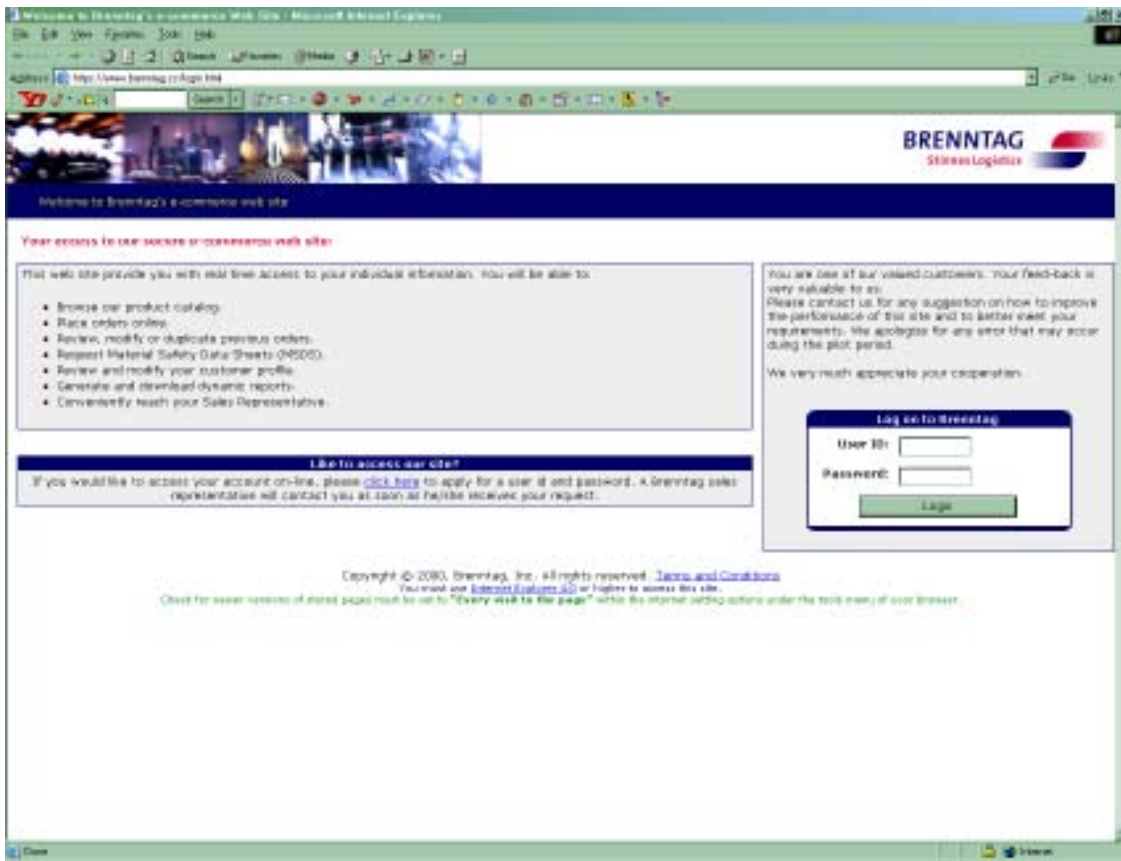
Source: Brenntag and IDC

environment using WebSphere Application Server, WebSphere Studio, VisualAge for Java and IBM Toolbox for Java running on IBM eServer iSeries (for application integration). After the WebSphere deployment was completed in the end of May 2000, the Essex team turned their focus on the deployment of Domino and Tivoli IT Director and NetView (which proceeded essentially in parallel). An important aspect of the Domino deployment was the integration of Domino e-mail with the WebSphere-based solution, which enables Brenntag to automatically send order confirmation e-mails to customers.

After completing the Domino and Tivoli implementations in October 2000, Brenntag was assisted by IBM Global Services personnel in the deployment of IBM WebSphere MQ, which integrated the e-business solution with a legacy Hewlett Packard 3000 server located in one of its regional facilities. The Brenntag team completed a working prototype of the e-business solution in November 2000. The e-business solution was released to production December 2000.

The Solution in Action

Customers using Brenntag's e-business platform can browse a customized product catalog, generate customer-specific price quotes, place orders online, track order status, review and modify orders, request additional information about selected products and generate customized reports. The company is in the process of rolling out a new service through which customers are automati-



cally sent material safety data sheets and certificates of analysis (important safety-related documentation pertaining to the product(s) being shipped) along with their invoice. By virtue of the integration of IBM WebSphere Application Server and Lotus Domino, customers also automatically receive order confirmations via e-mail immediately upon submitting an online order. When a customer enters an online order, WebSphere submits a call to Brenntag's backend order entry system, which in turn triggers a Lotus Domino Agent to send an e-mail to the customer.

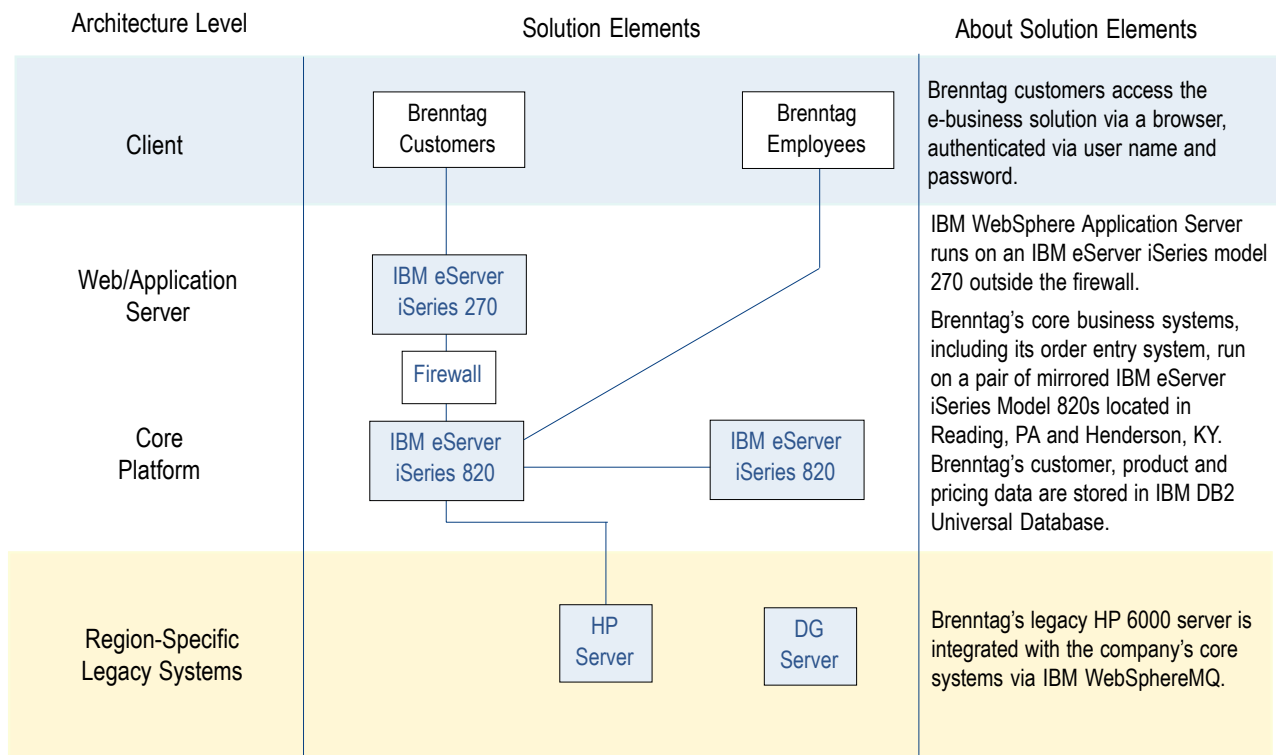
On the heels of its current solution, Brenntag is also in the process of deploying a unique, portal-based B2B solution known as Elemica that facilitates both selling to its higher-end customers and procurement from its chemical suppliers. On the sell side, the solution will allow Brenntag customers to automatically generate orders from their ERP system that are then routed directly to Brenntag's order entry system. Once received by Brenntag, the order will automatically be confirmed, processed and fulfilled with no human intervention. In similar fashion, Brenntag's order entry system will generate its purchasing requirements, which are then automatically sent to its suppliers. Based on IBM WebSphere Application Server and running on an IBM eServer iSeries, the Elemica solution will exchange data with affiliated suppliers via XML.

Solution Architecture

Prior to its recent e-business initiative, Brenntag's architecture consisted of six AS/400s (of various models), one Hewlett-Packard server and one Data General server, all of which were linked via a dial-up connection to the company's headquarters in Reading, PA. Under the new architecture, Brenntag replaced its six AS/400s with two IBM eServer iSeries Model 820 servers—one of which (located in Reading) is linked to the legacy HP server via WebSphere MQ, the other (located in Henderson, KY) serves as a mirror system for the first. [These two servers are also linked via a frame relay and employ Vision Suite™—a high-availability, mirroring application from IBM Business Partner Vision Solutions—for disaster recovery back-up.] Both servers, protected by a firewall, run Brenntag's order entry system, as well as Lotus Domino and WebSphereMQ.

At the Reading facility, outside the firewall, is an IBM eServer iSeries model 270 server running IBM WebSphere Application Server that is integrated with Brenntag's order entry system running on the 820 server. The Brenntag solution employs IBM DB2 Universal Database to house the company's backend data, which includes all customer, product and pricing data. [Enterprise Java Beans is used to move data between the DB2 database and the Web application.] Brenntag deployed Tivoli NetView to manage its nationwide WAN and Tivoli IT Director to distribute and configure Notes clients for new internal users.

Basic Architecture of the Brenntag Solution



Source: Brenntag and IDC

Business Results

Since going live in December 2000, Brenntag's e-business solution generated nearly \$1.5 million in revenue and a steady stream of benefits—most of which relate to a strengthened relationship between the company and its customers. As Brenntag's Stewart points out, the company continues to view its e-business initiatives first and foremost as a means of providing additional value to customers—and an edge over its competitors. “Our goal is to use e-business to establish and maintain a decisive market advantage,” relates Stewart. “Put simply, if a customer wants to order from the Web—and we have the ability to support that—we're more likely to keep that customer.” Indeed, while Brenntag expects to achieve cost savings and internal process improvements, it points to increased customer retention as the most valued outgrowth of its e-business initiative.

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Brenntag has also begun to reap concrete benefits from an increase in knowledge exchange across the company, one of the key goals at the outset of the project. Sharing of best practices across the company is a prime example of such exchanges. While impossible to quantify, the benefits of more easily disseminated best practices have been significant—and at times dramatic. In one example, Stewart cites one business unit's practice of sending detailed confirmation letters to customers that provide important information about the product strength, grade and other properties. “If a chemical distributor like Brenntag sends the wrong product to a customer—even if it's the customer's fault—the potential ramifications are significant,” explains Stewart. “It could easily disrupt the customer's manufacturing process and in doing so hurt our relationship with the customer. By adopting this one practice across the company, we've taken a step that strengthens our customers' trust in us.”

Brenntag has also reaped a number of important benefits from its architectural redesign, the most important of which was a quantum improvement in its disaster recovery capabilities. Under the previous decentralized architecture—with data spread out across each of Brenntag's regions—a true disaster avoidance scheme was a practical impossibility due to the difficulty of managing it. The current architecture, which employs mirrored systems, provides Brenntag with a highly manageable disaster avoidance framework. Stewart also sees the company's centralized architecture as an important factor in the successful integration of the HCI acquisition. “Because we were able to tie directly into HCI via our frame relay network we were able to streamline the process of integrating our systems,” says Stewart. “If we had our old point-to-point infrastructure, we never would have completed the integration in the timeframe we did.”

Overview of Brenntag's Business Results Achieved

Business Process Area/Issue	Nature of Benefit	Description or Metric
Solution Utilization	Online Revenue	Brenntag's e-business solution generated revenues of \$1.5 million in its first year of operation.
Customer Service	Improved Customer Satisfaction	Brenntag's e-business solution is expected to increase customer satisfaction levels and customer retention rates.
Competitive Advantage	Increased Competitive Differentiation	Brenntag's e-business solution strengthens its position as one of the leading providers of value-added services among US chemical distributors.
Internal Collaboration	Increased Sharing of Best Practices	Brenntag's new centralized architecture has led to an increase in the sharing of best practices across the company's business units.
IT Infrastructure	Improved Redundancy	Brenntag's centralized architecture made it feasible to create a fully redundant, mirrored architecture.
Business Integration	Faster Integration of Acquired Companies	Brenntag's centralized architecture shortened the time required to integrate its largest (and most recent) acquisition.

Source: Brenntag and IDC

Case Epilogue

“Given a very challenging mandate, Essex rose to the occasion and delivered a solution that fully met our demanding expectations. Essex and IBM have helped put us near the front of the pack as an e-business innovator in our market.”

— Todd Stewart

With its new e-business solution in place, Brenntag plans to aggressively expand its scope and functionality. On the e-commerce front, the company’s Elemica solution will further tighten—and extend—Brenntag’s relationship with its customers. To encourage adoption by customers, Brenntag has embarked on an awareness and promotional campaign, spearheaded by the Vice President of National Accounts, to communicate the opportunities and benefits of doing e-commerce with Brenntag. Internally, Brenntag plans to expand its use of Lotus Domino from e-mail to scheduling, workflow and eventually salesforce automation. In the latter example, Brenntag plans to leverage Domino’s replication capability to download sales information onto the laptops of sales representatives in the field.

Looking back on the Essex Technology Group engagement, Stewart expresses strong satisfaction with his company’s deliverable, the IBM technology used to build it and the expertise that helped make Brenntag’s vision a reality. “Given a very challenging mandate, Essex rose to the occasion and delivered a solution that fully met our demanding expectations,” says Stewart. “Essex and IBM have helped put us near the front of the pack as an e-business innovator in our market.”

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