



**e-business case studies**

## BOC Gases:

Serving customers through e-business  
on the Internet



***Putting e-business to Work***



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## BOC Gases

### The Company

- Part of the BOC Group based in the UK
- Leading provider of industrial gases, vacuum technologies, and distribution services
- Sales exceeding \$6 billion in 1997
- Operates in more than 60 countries

### The Web Site

[www.boc.com](http://www.boc.com)

- Unites BOC's 8 divisions under one central resource
- Internet-based procurement and accounting system
- Information on over 20 technological fields
- Provides 24 product galleries
- Online customer solutions

### Business Benefits

- Increased account penetration and higher revenues
- Strengthened customer loyalty and decreased costs for BOC and its customers
- Increased revenue 55% and decreased inventory expenditures by \$250,000 for a client

### IBM Products and Services

- Lotus® Domino™
- IBM RS/6000®
- IBM Global Services

## OVERVIEW

### e-business case studies: BOC Gases

BOC Gases, part of BOC Group based in the UK, ([www.boc.com](http://www.boc.com)) provides industrial gases, vacuum technologies and distribution services worldwide, targeting industrial customers such as semiconductor manufacturers, oil and gas production companies, pharmaceutical companies, chemical manufacturers, food processors and research organizations. With operations in more than 60 countries, BOC generated sales of \$6.4 billion in 1997.

This case study focuses on BOC's close collaboration with its key customers and IBM Global Services to develop an Internet-based platform for procurement. BOC has successfully expanded the initial customer-focused platform to address its own internal procurement needs.



*BOC Gases supplies customers with over 20,000 different gas mixtures.*

## BUSINESS DRIVERS

To Fulton Wilcox, BOC's Director of Information Management-Consulting, all e-commerce investments are predicated on the expectation of concrete business benefits. According to Wilcox, BOC has followed the principal that when it comes to using technology to support its core business processes, the real value comes about when the whole (*i.e.*, the benefits) is not just the sum of the parts (*i.e.*, investments).

BOC defines the focus of its e-commerce efforts as the streamlining of nearly every aspect of its extremely complex supply chain, including administration, physical inventory and logistics. BOC's supply chain initiatives have taken place against a backdrop of industry change, where industrial gas customers have moved toward reducing their vendor base. According to Wilcox, this trend toward "vendor reduction" has raised the strategic importance of achieving either sole source or Tier 1 vendor status, where BOC's customers rely primarily on BOC for their industrial gas needs. BOC sees its customers' vendor reduction efforts driven by the need to cut costs associated with supplier management and procurement order processing.

Within this climate of vendor reduction, BOC saw an opportunity to use information technology as a means of strengthening its position with customers. In general, BOC's strategy was to focus on two distinct opportunities:

- *Increasing account penetration* by selling more products and services to a given account; and
- *Resale*, where customers purchase the gas products of smaller Tier 2 suppliers *through BOC*, thus limiting the number of suppliers with which customers have to interact.

In both cases, Wilcox views information technology as the strategic asset that enables BOC to lower its customers' total cost of acquiring industrial gases, thus strengthening relationships with them.

BOC's ability to assume the lead supply position for customers – despite the fact that it does not produce certain specialty products – attests to the strategic advantage inherent in its advanced information technology capabilities. Wilcox points out the overall benefits for customers that consolidate their supplier base by purchasing through BOC: "Even though there's still product coming in from this Tier 2 vendor, the customer no longer has to deal with that vendor. More importantly, their systems don't have to deal with that vendor. If you're setting up an electronic interaction process, it's a lot easier to deal with fewer vendors."

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— Fulton Wilcox, BOC's Director of Information Management-Consulting

## PLATFORM DEVELOPMENT STRATEGY

**“In accounts where the [Web-based] service is in place, there is a very clear revenue pull-through.”**

— Fulton Wilcox



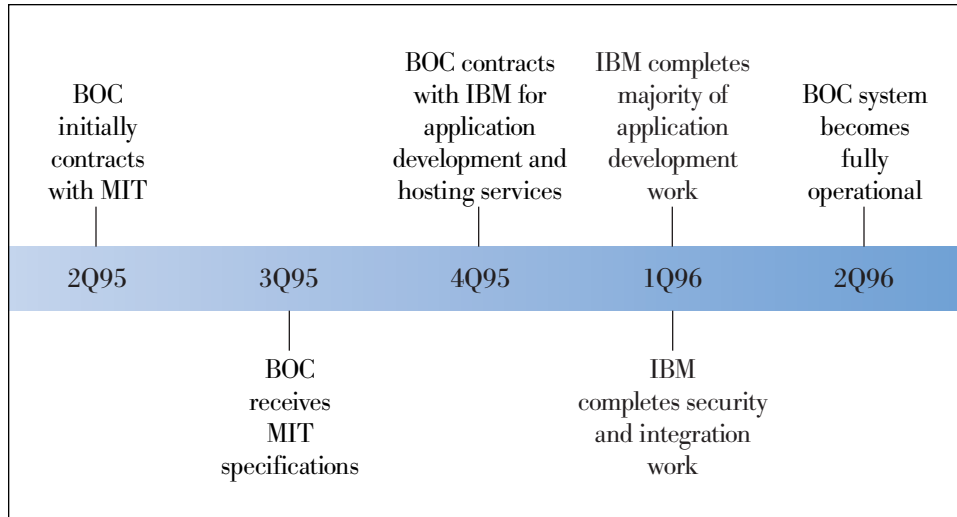
*IBM's e-commerce fuels BOC Group's eight divisions under one central location.*

BOC designed its Internet-based transaction management platform to suit existing customers, with the general goal of reducing costs and solidifying relationships. BOC's present e-commerce program grew out of a three-year-old initiative with the Massachusetts Institute of Technology (MIT), now a major customer. In early 1995, BOC pitched MIT with a large-scale proposal for onsite gas management, under which BOC would manage all their gas cylinders. MIT, in response to the proposal, specified that BOC would also provide Internet-based ordering as well as support for an American Express procurement card (as an authorization vehicle).

After reviewing the MIT specification, BOC began to look for a vendor that would assist them in creating the platform. They selected IBM Global Services after they considered a number of application development companies. "IBM won the account by meeting the whole need as opposed to a piece of the need," says Wilcox. These needs included a high capacity Web server to ensure adequate performance as well as the expertise to develop a customized application to suit BOC's well-defined needs. According to Wilcox, the platform "had to hang together and had to run on a realtime basis."

**Adoption Timetable**

After first contracting with MIT for the platform in May 1995, BOC received MIT’s specification in August 1995. The BOC/IBM relationship began in October 1995, with the majority of IBM’s application development work completed by the end of January 1996. IBM then focused on issues related to security (MIT used its own Kerberos authentication protocol) as well as realtime links with American Express in Tucson, Arizona, both of which were completed by the end of March 1996. The system went “live” in April 1996. Figure 1 illustrates BOC’s implementation timetable.



Source: BOC Gases, 1998

Figure 1. e-business Implementation Timetable for BOC Gases

**“Clear cases of where, if the value-added offering was not there, BOC would have lost out on substantial revenue opportunities.”**

— Fulton Wilcox



### Featured IBM Products

#### Lotus Domino

The Domino family of servers delivers messaging, applications and online collaboration fast and reliably for organizations from the smallest businesses to the largest enterprises. Domino helps you reduce costs by making the server easier to administer and the desktop easier to manage. With Domino, you'll get the flexibility and openness you need to harness the power of the Web, along with the security you want to keep systems running smoothly and to prevent unauthorized access.  
[www.lotus.com/domino](http://www.lotus.com/domino)

#### RS/6000

As the fastest UNIX enterprise server available, IBM's RS/6000 delivers business value while supporting the newest applications in e-business, business intelligence (BI) and enterprise resource planning (ERP). If you are looking for industry-leading UNIX performance for your e-business applications, you don't need to look any further than RS/6000, the engine behind millions of e-business transactions completed every day.  
[www.rs6000.ibm.com](http://www.rs6000.ibm.com)

#### IBM Global Services

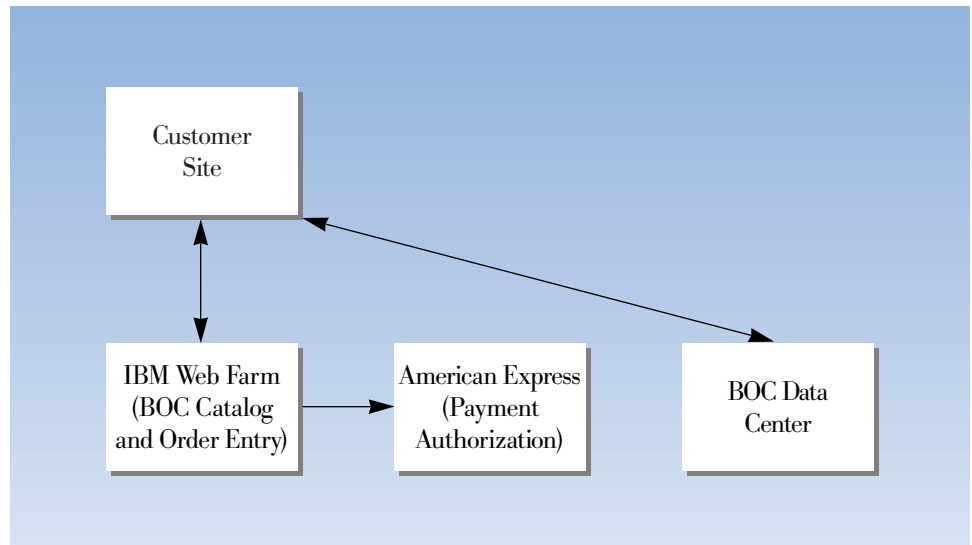
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[www.ibm.com/services](http://www.ibm.com/services)

### Service Elements and Architecture

The platform IBM Global Services developed, in Figure 2, for BOC Gases performs transaction processing with the following capabilities:

- *Internet-based ordering* accomplished through realtime access to the IBM-hosted BOC Web site. Once logged on, customers build order forms by selecting purchases from a catalog and price list customized according to the terms of their contract. Customers see a catalog customized for their company, which the Web server accesses through a customer profile database. Customers who routinely order the same items can access their order history and use past orders as a pattern for a new one.
- *Billing*, including maintaining all customer inventory and billing data with the ability to provide customized reporting on current consumption, costs and usage trends. Completed orders can be charged against a corporate charge card. Through a back-end connection with American Express, the site enables immediate, secure online payment authorization.

The platform's main architectural elements are dedicated IBM RS/6000 servers located in an IBM hosting facility in Schaumburg, Illinois.



Source: BOC Gases, 1998

Figure 2. BOC Gases Systems Architecture Designed and Implemented by IGS



## RETURN ON INVESTMENT

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To understand the full extent of the benefits flowing from BOC's Web transaction platform, all points along the BOC value chain must be examined. For BOC's customers, the major benefits have been lower administrative costs for procurement and accounting, as well as lower inventory carrying costs, since customers no longer have to stock inventory at their site. While the magnitude of these savings will vary, BOC estimates that MIT, for example, will save more than \$250,000 annually in these areas.

For BOC, a significant portion of the business benefits from its Internet ordering platform has come in the form of strengthened customer relationships, which in turn has led to increased account revenue, see Figure 3. Since its collaboration with MIT three years ago, BOC has increased its revenue share of the MIT account from 25 percent to 80 percent. "In accounts where the [Web-based] service is in place, there is a very clear revenue pull-through," says Wilcox.

Wilcox further believes that BOC's implementation of the Web ordering platform has also enabled them to garner new business. While BOC has not tracked all the new business linked to its Web platform, Wilcox declares that there are "clear cases of where, if the value-added offering was not there, BOC would have lost out on substantial revenue opportunities." This benefit is further heightened by the fact that – since most organizations purchase industrial gases under long-term contracts – these new accounts effectively provide a stream of revenue over a period of years.

While BOC's Internet ordering system was initially developed to serve its industrial gas customers, BOC also created a platform to support its own internal supply management function. The company uses the platform for all aspects of procurement, but has given the highest strategic priority to purchasing associated with resale opportunities. A key element of this platform is a Lotus Domino application that supports global management of extremely specialized commodities. While Wilcox is unsure of the total volume of BOC's Internet-based purchasing, he notes that two key vendors account for "thousands of transactions."

***"We see benefits such as lower costs, higher quality of service and faster ordering cycles. And like our customers, [these benefits] allow us to reduce the number of vendors on the supply side."***

— Fulton Wilcox

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Overall ROI Benefits	
Function	Benefit
BOC Customers	Lower administrative and procurement costs Lower inventory carrying costs
Sales and Marketing	Increased customer loyalty Increased revenue per customer Increase in new customers
Administrative Functions	Lower costs
Purchasing	Faster order cycles Increased productivity

Source: BOC Gases, 1998

Figure 3. BOC's overall ROI for implementing the IGS model

As with its customer-oriented initiatives, BOC's Internet purchasing programs focus squarely on supply chain improvement. Wilcox sees a wide range of benefits from BOC's Web-based purchasing. "We see benefits such as lower costs, higher quality of service and faster ordering cycles," says Wilcox. "And like our customers, [these benefits] allow us to reduce the number of vendors on the supply side." In the bigger picture, Wilcox sees BOC's ability to extend its Internet transaction capability for internal use as a way to broaden the overall base of benefits flowing from its investments in Web technology – thus shortening the payback cycle. "If we can attack both the buying side and the selling side," says Wilcox, "then we can amortize some of that same expertise and resource."

## FUTURE PLANS

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Since rolling out its Internet ordering platform in 1996, BOC has made relatively few modifications to the system. “This platform has had real staying power. For us it has really met the need,” says Wilcox. The platform’s next iteration will feature customized accounting information, enabling BOC’s customers to use their own accounting terminology for various forms. BOC has also laid the foundation for providing Internet-based ordering and accounting services to its distributors. As part of a trial begun in July 1998, BOC provided a distributor with the core component of the IBM-developed platform, which enabled it to do business with BOC more efficiently over the Web.

The real power of the IBM-developed system may emerge as BOC completes a global reorganization with the main goal to configure the company’s resources to better compete in world markets. According to Wilcox, the current Internet ordering system will prove useful by serving as the core of its common platform for worldwide Internet commerce.

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— Fulton Wilcox



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