

## RICH WEB BUSINESS SUITE FOR AEROSPHERES (UK)

### OVERVIEW

In 2003, UK software technology developer Mart Technology designed, developed and implemented a fully-integrated suite of rich web business applications on Linux for Aerospheres (UK) Ltd. ([www.aerospheres.com](http://www.aerospheres.com)), a supplier of time-sensitive materials to the global airline industry.

Notably, the applications provide an extremely rich forms-based GUI (graphical user interface), yet are deployed over Aerospheres' intranet. They handle sales orders, quotations, stock management, purchasing, order fulfilment and invoicing. They also provide management reports and interface seamlessly with the company's existing accounting system. This powerful suite of applications was developed and implemented within seven months by a team comprising one analyst and three developers using Mart Technology's revolutionary Linux-based rapid application development environment, MT Studio. One month after implementation, the customer felt sufficient confidence in the new systems to discontinue his old ones. The new systems run on Red Hat Linux and use Sybase's SQL Anywhere database.

By using its own RAD product, MT Studio, Mart Technology has been able to deliver these advanced rich web systems on a Linux platform at a fraction of the cost and far more quickly than would have been possible with any other development environment.

Ben Nemenyi, managing director of Aerospheres (UK) Ltd, said:

*"Our business is complex. We must be able to send specialised materials quickly to anywhere in the world. With the system developed using MT Studio, I am able to offer my customers a level of service and sophistication that surpasses even that provided by companies the size of Boeing."*

### CUSTOMER REQUIREMENTS

In 2003, Mart Technology, a UK software technology developer and solutions provider, developed state-of-the-art web-based Linux business systems for a leading supplier of maintenance materials to the aviation industry in record time.

The customer, Aerospheres (UK) Ltd., specialises in the supply of composite repair materials and serves over 100 airlines and maintenance outlets around the world. Aerospheres needed integrated order processing, stock management, purchasing and fulfilment systems. Not only was it critical for Aerospheres to keep development, licensing and operating costs down to a bare minimum, it was also important that the new systems used web-based technology. There were three reasons for this:

- 1) Managerial staff travel extensively and need to access the internal systems from outside of the office.
- 2) Aerospheres operates in a highly competitive sector and enabling key customers to place orders online, see stock availability, and track their orders over the internet – via a rich graphic interface in their local language – was deemed highly desirable.
- 3) By building the "back office" systems to run over an intranet, upgrades and enhancements to the systems are made centrally and with almost no impact on the end-users.

Aerospheres investigated a number of packaged products before deciding that there was nothing on the market that meshed with their business processes and satisfied their requirements.

## **SYSTEMS OVERVIEW**

The system comprises the following modules:

### **Sales Order Management**

Sales quotations and new orders are generated from a product-centric summary screen providing a single view of all the information required by the sales team to generate sales quotes. This view includes stock and purchase order summary positions, sales history of the product and a list of suitable alternatives. Once the required product has been located, the creation of purchase requisitions and sales quotations/orders is a few clicks away. The system manages the process of fulfilling sales orders, picking and despatching goods and raising the subsequent sales invoices. Importantly for the aviation industry, it maintains the traceability of stock from invoice, back through sales order to goods receipt and purchase order, so that the source supplier of any sales item can be identified. All stock is tracked in this manner at the manufacturing batch level. The system caters for multiple currencies and also includes an XML interface to the customer's accounting system.

### **Purchase Order Management**

The system manages the raising of requests for quotation from suppliers, purchase orders and the receipt of goods. It allows 'reservations' to be placed against purchase orders in order to satisfy outstanding sales orders. On receipt of the goods, these reservations are automatically converted into confirmed stock allocations, against the appropriate sales order. A notable feature of the system is the ability to place reservations against different pack variants of the product being sold, with the system automatically determining the re-packaging operation required once the goods are received.

### **Stock Management**

It is possible to manage stock across multiple locations with the user having all the facilities necessary to move stock, return stock to suppliers, record returns from customers and make any necessary ad hoc adjustments. The system also facilitates the manual re-packaging of products

### **Enhancements**

The system provides native support multi-lingual operations. Enhancements to the system to be delivered in 2004 will permit customers worldwide to view stock levels, place sales orders and track outstanding orders in their native language, via the Internet, using an advanced forms-based graphical interface.

## **BUILDING THE SYSTEMS**

The systems were built by Mart Technology's solutions team using its rapid application development product MT Studio. The team comprised one analyst and three developers. The analyst and one of the developers joined Mart Technology in January 2003, specifically to work on Aerospheres' project. The scope of the project had been agreed upon during the contract phase in December 2002.

The customer had previously been running two disparate systems built in MS Access and VBA which he had now outgrown. The new systems needed to integrate, include and extend the functionality of the existing systems. They were also required to perform a lot more efficiently.

The analyst was quickly able to complete the functional design and model the data and soon the developers could start 'prototyping' the user interface, using MT Studio's powerful form design tool. Because the customer was able to see exactly what the new systems would look like from early on, the team was able to eliminate costly design errors. Moreover, the prototype itself was not throw-away code; rather, it constituted a large part of the eventual client-side interface.

MT Studio's development tools – an IDE and a Visual Forms Designer – are themselves both rich Web-applications that run on Linux servers over an Intranet. All application code created by the developers was stored on centrally. Each developer could view the other's code at any stage of the project. Importantly, the analyst (who was also the project manager) could view and test the developer's applications whenever appropriate.

Program code created in MT Studio (including the Java code) is not compiled but interpreted at run-time. This brings enormous benefits at the time of development. Server-side logic is captured in pages stored directly on a database. Pages can be tested immediately through a browser. This allows developers to incrementally build and test their code and means that the coding and unit testing of pages occurs in parallel rather than sequentially.

In all, the team were able to build the core systems within seven months. At the end of July, these systems were installed on the customers' servers. The data from the legacy systems was converted into the new database structure and parallel testing commenced.

At the end of August, the customer was sufficiently confident in the operation of the new systems that he retired his old ones.

The systems run on two dual-processor redundant servers, using Red Hat Linux and Sybase's SQL Anywhere database. The systems are capable of supporting 70 concurrent users without any degradation in performance.

## **CUSTOMER BENEFITS**

The customer's previous systems had all been Microsoft-based. Even his email systems, on which his organisation relies heavily, had used Microsoft's Exchange Server.

With the new systems, the customer now only runs Linux servers. He has replaced the expensive dial-out lines to his former ISP with a 512K leased line at almost no increase to his monthly telecoms bill. Not only do all his mission-critical business systems now run on Linux; so too does his email.

His staff has much better Internet access, a better email service and the new business systems are faster, more accurate, more functionally rich, and far more reliable than the old ones.

Moreover, by running all his systems on Linux, the customer experiences a significant saving in licensing and ongoing operating costs. Aerospheres can now maintain its systems with very little in-house IT capability and minimal external support.