WAGO Kontakttechnik GmbH & Co. KG

Business Problem:

Increase customer satisfaction by extending core application directly to customers via the web without expense or risk of rewrite or replacement.

customer success

"COBOL proved to be extremely flexible because it was easy to implement required modifications and adaptations to extend our application to the web."

[Jürgen Meier, head of IT/Organisation at WAGO]

WAGO Kontakttechnik GmbH & Co. KG

WAGO Brings Core COBOL System To A Service Oriented Architecture with Web Services

Product Solution

Micro Focus Net Express®

Micro Focus Server Express™

Micro Focus Server™ for SOA

Overview

Following the creation of a Graphical User Interface to WAGO Kontakttechnik's COBOL-based merchandise planning and control system, WAGO needed to extend and provide access to the functionality of the application from the web. By using Web services, WAGO was able to expose the existing business logic, accessed via the web, through a COBOL interface generated using Micro Focus Net Express. WAGO customers can now use this service to gain access to the most current data online.

The Company

WAGO Kontakttechnik GmbH & Co. KG is located in Minden in the German state of Westphalia, and is one of the leading international producers of spring terminal connecting systems for the electrical and electronics sector; the company also produces connectors which are immune to vibration, electrical connector products and electronic components and sub-systems. The family-owned company has production sites in Germany, Poland, China and Switzerland and employs more than 3,900 people in all 18 subsidiaries of the WAGO Group; the group has an annual turnover of approximately €325 million (2005).

Challenge - Graphical User Interface Replaces The Character Screens For Online Access

"Leave well alone" goes the old IT saying, mostly because you were glad that the system was – finally – up and running at all. Unfortunately, this could not be applied in this instance, since the rapid and constant changes in business processes, business models, requirements, tasks and technology means existing applications have to be continuously redefined and reworked.

WAGO had been using a merchandise planning and control system developed in COBOL for many years. This critical application was running on the UNIX platform and included everything from order acceptance and production control to delivery of all central business process phases. WAGO developed this application in-house in the early 1990s because none of the available package-based solutions met all of their requirements. Compromise in this critical corporate sector was not an option.

The core COBOL application continued to meet their original requirements, which meant that WAGO had no need to replace the system in the foreseeable future; even less so since they had established a solid COBOL expertise base. Nevertheless new tasks had appeared in the "peripheral" applications for those requirements not immediately met by the existing COBOL system.

"In our case, COBOL proved to be extremely flexible because it was easy to implement the modifications and adaptations required to extend our application to the web" explained Jürgen Meier, head of IT/Organisation at WAGO.

A few years ago, the traditional character-oriented interface of the merchandise planning and control system was extended to include a graphical version, using mouse control and integration with Microsoft® Office programs. In the Graphical User Interface (GUI) version all the character input screens were replaced with graphical dialog windows while the application's business logic remained in place. Because the WAGO merchandise planning and control system consists of several thousand sub-programs a manual conversion of so many screens was not an option. In such a complex application it would also be too difficult and costly to replace one character screen after another using a Windows design tool.

Solution – Merchandise Management Meets The Web

WAGO turned to the Micro Focus Net Express® environment for COBOL development on Windows, together with a converter, which automatically converted the character screens to their GUI equivalent. The resulting GUI is run on the PC while the full processing logic within the existing (and unchanged) COBOL programs continues to run on the UNIX system.

The internal procedural program structure of the presentation layer had to be changed in accordance with

the event driven paradigm typically employed in GUI logic. For example, there are no longer any sequential decision tree processes,. Instead, the respective server process waits for a client to communicate with it. There was also no need for WAGO to change the COBOL code because the converter also provides the required communications logic. The connection between the PC and UNIX is established by means of a remote procedure call process, which is an integral part of Net Express and Micro Focus Server Express™, for UNIX based COBOL development. Net Express is used to establish and edit the graphical dialog, while on the application side, Server Express is used to maintain the business logic and to access the UNIX database.

Since the platform is completely separate from the application and the connection is established via a defined interface, the character-based user interface can continue to be used, if required, without any functional differences.

While the introduction of the GUI generally looks and feels like the original merchandise planning and control system, there are additional benefits that were triggered by new business processes. In the past, WAGO customers had to reach for the phone to obtain up to date information on orders, delivery status, prices or availability of products. However, with many customers now permanently online, direct access to this information via a web browser presents a much more efficient alternative.

WAGO had already implemented a special solution for this at the end of the 1990s, but this no longer met all the requirements of the business operations. Previously, the application was unable to provide all the information required by customers, was not available in several languages, was difficult to configure and modify and, most notably, used a different database, which had to be manually synchronised. "Customers were unable to access all current data," explained Meier. "This type of solution was simply no longer up-to-date."

Together with Micro Focus, the company developed the "WAGO Online Info System", which allows customers direct access to the merchandise planning and control system. The same database is used both internally and externally, which means that customers always have access to current information. There is no longer any need to manually synchronize the database, which was time-consuming and costly. Since customers access the information via a web browser, there is no need to install any programs as registered users can access the information immediately and the delivery status of dispatched goods can be tracked via a link to UPS.

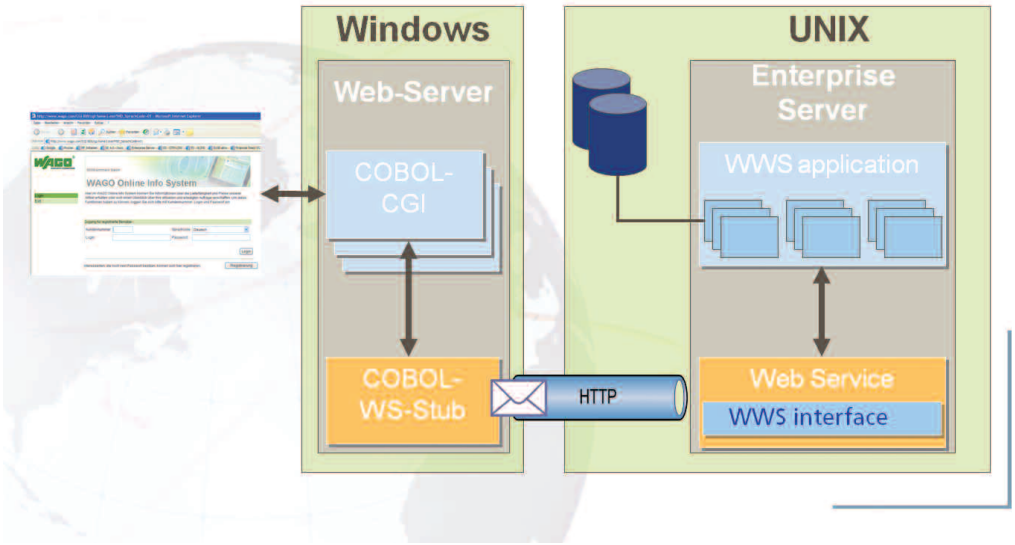
The solution had to be implemented with the minimum of outlay, which is why WAGO introduced its online system as a service-oriented approach with Web services. "Because we only needed an additional user interface, we didn't want to interfere with the application, nor did we want to duplicate online functionality. This is why we needed to find a way to provide access to the relevant COBOL programs via the web" notes Meier. The advantages of this approach are obvious: the relevant functionality has already been tested, is ready to use and can be re-used without any need to invest in development. In addition, the software can be maintained in-house.

Results - Cobol-Based Web Services

The only outlay relates to the development of HTML pages for the new online interface which naturally had to satisfy the requirements of the company's corporate identity. The technical connection between the web user interface and the back-end COBOL application running on UNIX is set up as follows: a new COBOL web service acts as a service provider on the UNIX side. This module constitutes the central interface for invoking the various functions within the merchandise management system. The HTML page data is accepted via the COBOL-CGI and invoked via a generated COBOL stub for the COBOL web service. This accepts the data and invokes the corresponding merchandise management system module.

The programming work is limited to establishing the central interface. Net Express is responsible for the COBOL-CGI, the COBOL stub components and transforming the interface program into a service component. Despite the complex requirements, this limited the actual work required and the new interface was ready for operation after only four weeks. "It was important for us to be able to do all the programming in COBOL, seeing as we had already built comprehensive core expertise in this area," explained Angela Schubert, project manager at WAGO.

The structure of the application, which consists of more



than 200 sub-programs, was also an important requirement if the existing business logic is to be reused without modification via web services. “Right from the beginning we built up our merchandise planning and control system as a modular system,” explained Meier. “If, for instance, the pricing logic is changed, then only the relevant module needs to be changed as program-internal access to this logic is only via defined interfaces.” The separation of business logic and technology was maintained throughout the entire application, which means WAGO can use the application in a very flexible manner: “We were able to change from one Unix derivative to another within a fortnight,” Meier said. A few years ago the company switched from Sinix to AIX and, if Linux ever becomes relevant to WAGO, the application will be able to work with this platform too.

The core application, which the company has been operating for 17 years, has proven to be extremely agile and flexible. The application has been able to adapt to new situations – for example, where new technology is used – which may not normally always be associated with a legacy environment. “We’ve managed to achieve a good balance between protecting our investment and remaining future-oriented,” added Meier.

About Micro Focus

Micro Focus provides innovative software that helps companies to dramatically improve the business value of their enterprise applications. Micro Focus Enterprise Application Modernization software enables customers’ business applications to respond to market changes and embrace modern architectures with reduced cost and risk.

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