



IBM Customer Reference

METRO AG

Synopsis:

A large German-based retailer opens an outlet to demonstrate how future stores can reduce costs, improve productivity and enhance loyalty using leading-edge technology like radio frequency identification (RFID) tags to communicate with smart shelves and the ERP system through a Web services infrastructure and IBM WebSphere MQ messaging technology

Location:

Duesseldorf, Germany

Industry:

Retail

Focus Area:

e-business infrastructure, Web Services, On Demand Business, on demand Business Transformation

URL:

<http://www.metrogroup.de>

<http://www.mgi.de>

Customer Background:

METRO Group is a highly competitive, capital market-oriented retail group with an international profile. The fifthlargest trading group in the world and third-largest in Europe, METRO Group generated sales of €51.5 billion in 2002. The Germany-based retailer has more than 2,300 locations in 28 countries and employs 235,000 people around the world.

METRO Group has a structured portfolio of group companies, including Metro and Makro Cash & Carry wholesale stores, Real hypermarkets, Extra food stores, Media Market and Saturn electronic consumer stores, Praktiker DIY-stores and Kaufhof department stores. METRO AG is the strategic management holding company.

The operating business is divided into four units with six sales divisions that act independently in the market with their individual brands. Cross-divisional service companies, like procurement, logistics, information technology (IT), advertising, financing, insurance and catering provide services to all sales divisions across the group.

One of METRO Group's primary goals is to meet demands for the highest quality and customer satisfaction. For example, its Future Store Initiative tests new technologies that are intended to make retailing more efficient and shopping more convenient.

Business Need:

During a time when the economic outlook is gloomy and investments have been cut to a conservative level, METRO Group decided to buck the trend and unite with a group of technology partners to define a vision of the future shopping experience. As part of this effort, METRO Group created a store environment that uses a combination of leading-edge technologies to provide a glimpse of things to come at supermarkets of the future. When customers enter the store, they're greeted with a high-technology welcome. Computers are lined up at the entrance so that

customers can swipe their Metro cards before entering the main store. The Metro cards provide details about frequently purchased goods and alert shoppers about special offers.

Metro cards employ Radio Frequency Identification (RFID) tags, which are similar to bar codes and can be recognized from some distance. Key elements of the future store concept, the RFID tags are small radio transmitters that are attached to individual product items to track movement. Each tag consists of a tiny wire antenna coiled around a microchip. The tags issue a unique identifier, standardized through the automatic ID center. When the chip moves through a low radiation field, the electronic product code (EPC) is retrieved. So the movement of a single product item, like a DVD or razor blade, can be automatically tracked from the manufacturer's production line through the distributor's shipping system and onto the supermarket shelf.

RFID devices can be active or passive. The devices include a labeling mechanism that provides information, such as serial number, color and assembly location, from a distance. RFID devices are used for inventory control and tracking as well as for micro payments and homeland security. Use of RFID technology is expected to expand dramatically as costs drop from 50 cents to less than five cents. Used in combination with other technologies, such as sensor technology and Global Positioning Systems (GPS), RFID technology applications are likely to expand drastically in the future.

Solution:

After considering solutions from various vendors, METRO Group chose an IBM infrastructure for its RFID technology-based concept store. IBM provided the RFID middleware, overall systems integration and a new kiosk information system for this ambitious project with METRO Group. The company runs Intel-based servers running Red Hat Linux 7.2 as the operating environment.

Shelves in the concept store are labeled "smart shelves" because they're equipped with RFID readers. Smart shelves are connected to a smart shelf server that collects information from each tagged item moving on or off the shelf. The smart shelf server is based on a Linux operating system that collects and stores data generated by the RFID readers. This data is sent to the SAP warehouse application so that action is taken when stock runs low. By automatically restocking at a low-threshold level, the store avoids losing sales due to empty shelves.

To move the data collected by the smart shelf server to the SAP system and transform it into the required format, the IBM team designed an infrastructure that included a series of RFID controllers and an RFID server. The RFID server runs under Microsoft Windows 2000. To accommodate future requirements and allow for portability, the RFID controllers were designed to be Open Service Gateway Initiative (OSGI) compliant.

To unite these diverse technologies and platforms, IBM used Web services as a key part of the connecting infrastructure. WebSphere MQ Version 5.3 serves as the reliable transport for the Simple Object Access Protocol (SOAP) connection. Highly flexible Web services are used to communicate between Windows and the Linux environment, with the Windows server acting as the central receiver station. Approximately 30 different RFID infrastructure components send data through WebSphere MQ to the server, which bundles the data and sends it to the customized SAP system that was set up for the future store initiative.

A Java technology-based Web services requestor inside the RFID controller polls the smart shelf server frequently to see if any data needs to be retrieved. If available, data about the movement of items on the shelves is collected and passed to the RFID controller through Web services. After the data is transformed, the information is sent through WebSphere MQ to the SAP warehouse application.

Benefits of the Solution:

With an integrated RFID system, METRO Group streamlined its supply chain and created effective inventory management throughout the store. Personal digital assistants (PDAs) now

give in-store staff members easy access to information about the supermarket's inventory and storage.

The new system automatically sends supply information from the shelf to the SAP system, where new products are automatically ordered. Automatic restock frees staff members from the task of physically checking the shelves, which gives them more time to focus on customer service. With reduced costs, improved productivity and enhanced customer loyalty, the future store helps prove the value of leading-edge technology for retailers around the world.

The Web services-based infrastructure provided a perfect technology for this demanding integration task, proving both versatile and easy to implement. For example, applications running on the Linux software-based RFID server were connected flawlessly with the OSGI and SAP systems that are key application components of the future store. Combined with Linux and WebSphere software, the new system's open-standards foundation helps assure flexibility for future compatibility and expansion.

Customer Quote:

"Adding Web Services to our infrastructure has provided seamless integration between different technology components in an efficient manner. This is truly a future-proof technology and serves perfect for our requirements for the Future Store concept."

--Dr. Gerd Wolfram, Manager of IT Strategy, MGI METRO Group Information Technology GmbH