

Win in the flat world

Tomra Integrates its Operations with Infosys to Improve Efficiency, Agility

Client Overview

TOMRA is a leading global provider of recycling solutions with subsidiaries in over 45 countries. Headquartered in Asker, Norway, it designs and operates innovative and cost-effective systems for the recovery and recycling of materials. The technology consists of a wide range of products and services which complement its principal offering – Reverse Vending Machines (RVMs).

RVMs supply a technology-based solution for handling returned containers in supermarkets by identifying, collecting and processing them. Since these used containers have a deposit amount, RVMs offer an efficient method to identify the deposit amount of each container and refund the customer.

For more information, contact askus@infosys.com



Business Need

Tomra's recycling operations are systemized into four distinct business segments:

- Collection technology
- Materials handling
- Collection technology non-deposit solutions
- Industrial processing technology

After used containers are sorted and collected by the RVMs, they need to be transported to bottlers or plants for reuse or recycling. The containers must also be processed to make them recyclable.

Tomra's existing materials handling system lacked efficiency and seamless processes. This deprived it of the much-needed agility in reconciliation of what could have been picked and processed. As a result, it was impacting productivity and revenues. Some of the pain-points faced by Tomra in this segment were:

- TOMRA didn't have end-to-end application for its Material Handling systems. They did have few independent systems to address a part of their operations and some manual operations though
- Lack of an integrated system to track materials in order to streamline end-to-end workflow for all types of operations under one roof
- Several manual interventions at various stages in the process made the process inefficient and costly
- Inaccurate data in existing systems was impacting customer billing
- Systems were unable to handle exceptional business scenarios based on plants and small recycling companies it was catering to
- Reporting was time-consuming leading to decision-making delays and missed opportunities

Facing inefficiency and high operating costs, Tomra realized that only an integrated material handling system could provide it with a significant business advantage. The recycling industry leader went into action mode and invited Infosys with its strong domain knowledge and technical expertise in the area of recycling technology, to analyze and overhaul the existing system.

Infosys devised an advanced, automated mobility solution for recycling plants to address the problem areas.

Challenges

Certain challenges were faced by TOMRA during the early project stages to ensure shorter development cycles. It had to ensure 100% offline capabilities enabling the user to perform all operations when in offline mode. The performance of the Plant Handheld Application (PHA) had to be checked during screen navigations. It had to integrate with other applications such as Material Handling System (MHS), Driver handheld applications etc. Also the PHA had to ensure bulk data retrieval, synchronization and optimization of its performance. The PHA client updates had to be deployed to the plant handhelds without any manual intervention for a set of all devices in one particular plant. The handheld had to be tested for various scenarios including but not limited to offline mode, concurrency, scalability and intermittent wireless connectivity.

The Infosys Approach and Solution

The Infosys team worked closely with Tomra to thoroughly understand and analyze its requirements. Based on an intensive evaluation of the materials handling system, Infosys defined a comprehensive solution architecture that would fulfill Tomra's needs.

Infosys helped design and develop a web based Intranet application for material handling business operations and developed a Plant Handheld Application to handle plant operations. This ensured continuity in tracking and building a seamless workflow for TOMRA.

The solution included:

Plant Handheld Application - Smart Client

Plant Handheld Application aids TOMRA's plant users and managers in managing the plant operations of materials management system. This application would enable the users to capture information of the materials unloaded from different types of trailers, load pickup materials during trip start and sample count materials. The team designed an application that would run on the plants' Symbol mobile computers and handle plant operations. It enabled the handheld device to scan and capture bar codes on the materials and send the data over a wireless network to the central database that resides on the server. The data can be also sent in the offline mode when a wireless connection is unavailable.

Critical for seamless plant operations, the data obtained from scanning is captured in a mobile database. It is sent to the central database and synchronized with it, thus updating the data repository frequently in case of a wireless connection.

Smart client application was developed using the .Net compact framework on Windows Mobile 5.0 platform. The auto updater component explain further can be customized or upgraded as a reusable one.

Auto-updater Application

This application runs on Symbol mobile computers and authenticates plant users so that this device can launch the Plant Handheld application. It also enables the automated software update to Plant Handheld Application on its mobile computers.

Auto updater is developed using .Net compact framework on Windows Mobile 5.0 platform. It is part of the Infosys solution to provide domain authentication and software update to plant handheld application.

Plant Handheld Application - Server Component

The Infosys team developed the server as an ASP .Net-based web service to cater to and support the Plant Handheld Application and the Auto-updater inputs. The server enables the synchronization of the data sent from the Handheld devices, thus allowing the central database to be updated every time.

During the delivery phase, Infosys engaged with stakeholders to smoothly complete the project life-cycle and adopt quality processes and best practices as needed. It provided an end-to-end solution by designing, building, testing and implementing the interfaces to carry out the critical integration of the system. The interface is a driver hand-held developed & supported by a product vendor. It provides route information for each driver and stop details (accounts from which material needs to be picked up). Driver also enters the details about containers that are picked up with quantity, timing details. The same information is synched with the server immediately.

Solution Architecture

Infosys utilized the following in its solution for Tomra:

Technology: .Net framework 2.0, .Net compact framework, C#, ASP.Net, SQL Server 2005, SQL Mobile CE 3.0, Symbol Mobile SDKs, Active Sync

Platform: Windows Mobile 5.0, Windows Server 2003

Hardware: Symbol MC 9097/9090, WPA-enabled wireless access points

Client Benefits

The use of right technology, intelligent design, and management practices ensured that the solution met all Tomra objectives, helping the client process 75% of its customer transactions successfully. By integrating and automating the materials handling process and providing visibility to materials as they are tracked, Infosys helped increase Tomra's efficiency and productivity levels.

The benefits to Tomra are as follows:

- **Gain in efficiency:** Infosys' automated system tracks the entire materials handling business process, thus enhancing productivity, efficiency and reducing costs
- **Greater agility:** The integrated system has given Tomra the ability to handle exception business scenarios and increase its decision-making capabilities
- **Reduced costs:** The solution has helped increase revenue per account. Moreover, the accuracy of the system's data has helped the customer in the billing process
- **Technology solution definition for new system:** Most of TOMRA systems/applications are desktop based applications. This is the first web application and Mobile application for TOMRA IT services

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