Web based e-ERP Business solution

A complete Supply Chain Management System.

Executive Summary

Our Belgium e-business client wanted to develop a web based "B2B and B2C Supply Chain and Content Management" framework suited for driving online shopping sites and the back-end business process to support the management of the supply chain. Our relation with the client started 3 years ago when they approached us for a small application development. The client was very pleased with the result and came back with a larger application, 'a legacy system built on Progress and PHP' to be re-built using .Net 3.5 and My SQL/ MS SQL Server, that would work on multiple databases. In addition to this, the application required to be multilingual.

Looking into the specifications provided by the client, Mindfire's team took charge of the project and proposed the client with a basic business flow. The final system that was built basing on this business workflow proved to be a very robust one with the client being very satisfied and extending its relationship with Mindfire Solutions by providing more and more development work.

About our Client

Client e-Business solution provider | **Location** Belgium | **Industry** e-Business Solution

Business Situation

The client's primary aim to develop this application was to create a web based B2B2C environment that supports the management of complete supply chain including cash register, e-commerce, e-invoicing, warehouse management, CMS and CRM. They had an existing legacy system built on Progress and PHP which was to be rebuilt using .Net 3.5 and My SQL/ MS SQL Server. The customer also wanted that the application would be multilingual as well as work on multiple databases.

Mindfire's technical team took up the work and started analyzing the scenarios and the necessary steps to be taken in order to fulfill the objective of the client. After certain brainstorming sessions among the developers, the technical team proposed the client with a business workflow that needs to be followed in order to develop the system so as to efficiently manage the system. The brain storming sessions included the legacy application walk through and database analysis in details. The client was a technical expert and needed in depth analysis and clarification on each situation and suggestion. Our technical team grasped the complete system understanding and proposed the new solution. The final outcome was agreed upon by the client with a lot of praise.
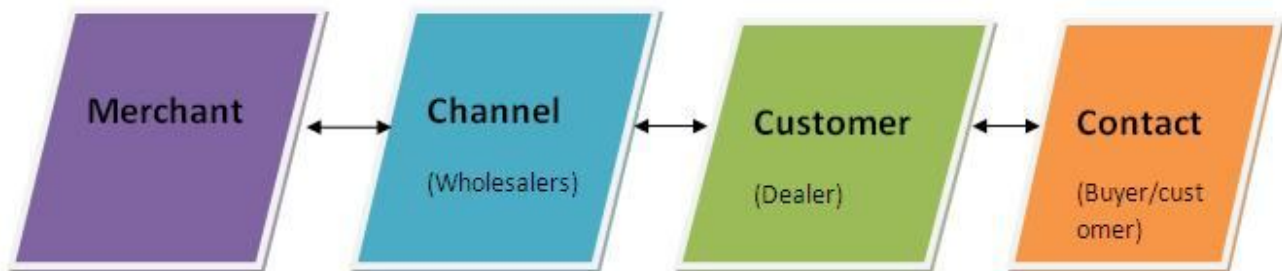
Solution Details

The Mindfire Solution

Looking at the objective of the client and the complexities of the project, Mindfire's team started analyzing the details to come up with a basic business workflow. The workflow is as follows:

Merchant <–> Channel (Wholesalers) <–> Customer (Dealer) <–> Contact (buyer in customer)

- Each merchant can have multiple Channels
- Each Channel can have multiple Customers
- Each Customer can carry one or more Contacts in it.

The system is built as two basic parts. First part is the product, stock maintenance and reporting section for managing the back end supply chain system by merchants, dealers and warehouse staff.

The second part is the front end public website with product catalogue drawn from dynamic pages out of the CMS system. When order is placed via the product catalogue, it generates a supply chain record for the backend system. The order processing chain from warehouse to dealers and then to customer is processed through supply chain cycle through the system. The complete website uses components of ASP.Net and Ajax ToolKit that provides a rich UI and performance benefit.

The system carries all the generic business rules and database tables in a package, that can serve most business needs with little merchant specific customization.

Some important database tables that give a clear picture of the business management chain are:

- Merchant: *Business owner*
- Channel: *Business Network (Wholesaler)*
- Customer: *Dealers*
- Contact: *Individual buyer (person) of a Customer network*
- Product: *List of Products and its properties ranging from wine, magazines, car rental to anything*
- Channel-Product: *The Channel to Product Assignment for custom pricing of products per channel*
- Customer-Product: *The Customer to Product Assignment and custom pricing of product per customer*

- Order: *individual order placed by buyers*
- Order-Details: *details of the order entry*
- Supplier: *Suppliers*
- Supplier-Product: *The Supplier to Product management - which supplier supplies what product.*
- Warehouse: *Warehouse*
- Warehouse-Product: *The Warehouse to Product management - which warehouse stocks what product*

There are approx 100 tables in total defining the B2B and B2C system along with CRM.

Some more tables are: Access level, Menu, Submenu, Pages, Channel Attributes, Country, City, Currency, Language, Product-Type, Product-Category, Product-Type-Cat-Assignment etc.

The systems admin site is a set of around 70 to 80 table maintenance pages that directly deal with single and multiple tables internally doing insert, update, and deletion of records on them. Everything is done through custom Object Relational Mapping (ORM) classes to meet the complex multi column joins.

The systems Super Admin, Merchant Admin, Channel Admin can browse into the table data for their business needs. All the page access is checked with access level security checks as per the contact privilege and scope.

Total abstraction of database layers from the business and UI layer helped to achieve multiple database situations. Now, it supports both My SQL and MS SQL Server and can be extended to run on top of other databases.

To support multiple languages,

- For fixed texts, resource files (.resx) are used. The site is capable of handling Dutch, Spanish apart from English now and can be easily extendable to deal with more languages.

- Changing site UI culture automatically change the date and time, currency formats etc to make it convenient for users.

- The dynamic site content is also made multilingual making every text pattern customizable and database driven.
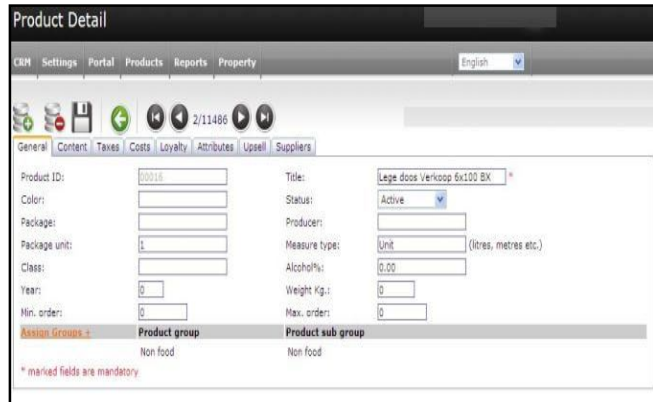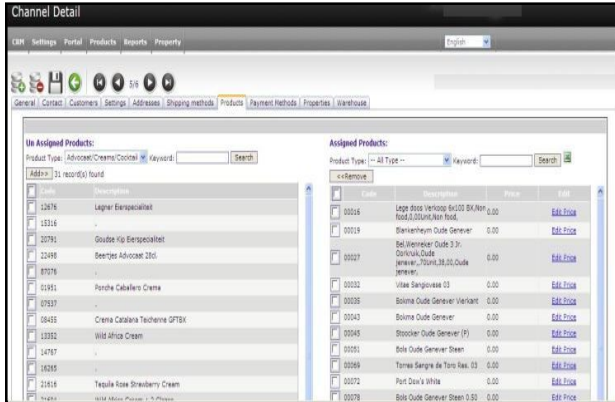
Achievements

Supporting multiple languages as well as functioning of the application for multiple databases was the significant challenge of this project. Mindfire's efficient technical team did well to overcome these barriers and built a stable system for the client. Within 3 months of the start of project the core was developed and 5-6 sites were ported. Currently this system holds around 15 sites and still growing.

Technologies

C# .Net, ASP .Net 3.5, Java Script, Ajax ToolKit, My SQL 5.0, MS SQL Server 2005

Final Results
Software System

Customer Benefits

Re-building this application the client got rid of the legacy system built in an ad-hoc manner. Ajaxfied UI helped client to get a faster and more robust application. Database refactoring and redesigning of new indexes was eminent for faster database processing.

Future relationship

This client started off with Mindfire Solutions with a 1 month project and later on came back to develop a larger application which involved 2 developers at first. After first month's work they suddenly increased the team size to 6 (5 developers and a QA Tester). The client had also visited our ADC and spent a week's time with us.