

Platform re-engineering to improve homecare treatment for patients through a cutting-edge web application

Client is a leading pharmacy catering to major clinics and hospitals across Europe. The company is committed to provide customized software products to meet the pharmacy related needs of hospitals. They are specialized in providing homecare services to its wide network of patients.

Situation analysis

Client serves B2C and B2B clients and homecares across Europe to meet their pharmacy related needs. They are tied up with homecares who serve patients needing nursing services at home. Client's existing application that was built to help homecare nurses with timely prescriptions and medications include information of medications, patients, nurses, and has a list of medications approved by German government, with doses prescribed by doctors.

Client's existing communication framework that deals with homecares is based on a legacy system which is a Microsoft Access system where most of the processes were manual. Existing solution was slow when many users started to access. To avoid the delay in the treatment, the application tries to reduce communication hassles by keeping records of requests raised by nurses for new prescriptions and medicines. There was conflict about who raised the request for medication, either by nurse or pharmacists.

This prescription plan along with the patient's as well as doctor's information is then configured into the access system to define the intake criteria and monitor the plan. Based on the prescription plan they have the categorization of the medication such as wholesale, bulk, packet medicines and liquid medication. All these details are then entered into the existing system. They also use an ERP system that has all the details regarding number of patients who are registered with homecares. Based on the prescription plan they get from homecares, they prepare pricing model and subscription sales model within the ERP.

The application also provides add on service which connects the nurses to the assigned doctors for getting confirmation on medicines and intake criteria. This communication helps the coordination between doctors and pharmacies for dosage and medicine availability.

Client's existing legacy application and an ERP system though functional had many limitations; it was not scalable with a growing community of users. To address this communication hassles client thought of a web application that overcomes all the challenges faced by the existing system. Client desired for a responsive web application for Android and iPhone users with multi-lingual support mainly German language.

The vision

The vision was to make the ERP system highly customizable and also overcome all the technical limitations of the existing software solution. Client had a broad product vision and desired to replace the existing system with a web system.

Our solution

e-Zest involved its expert team comprising a scrum master, 2 scrum developer and 1 test engineer in the re-engineering of this system from scratch. The team understood the new scope and mapped the access requirements client asked. They also analyzed the existing system and consolidated the new requirements and proposed a solution.

The solution was to develop a responsive web system with MySQL as backend. Client was specific to use MySQL as a database as it is open source and comfortable using. We designed the system using .NET and MVC with responsive design and development.

The application is targeted at nurses so it had to be responsive that suits the device's form factor given to them. The application was hence built to provide the users with the ease to navigate and the flexibility to carry out the functions on multiple devices and form factors. We provided multi-lingual support for this app.

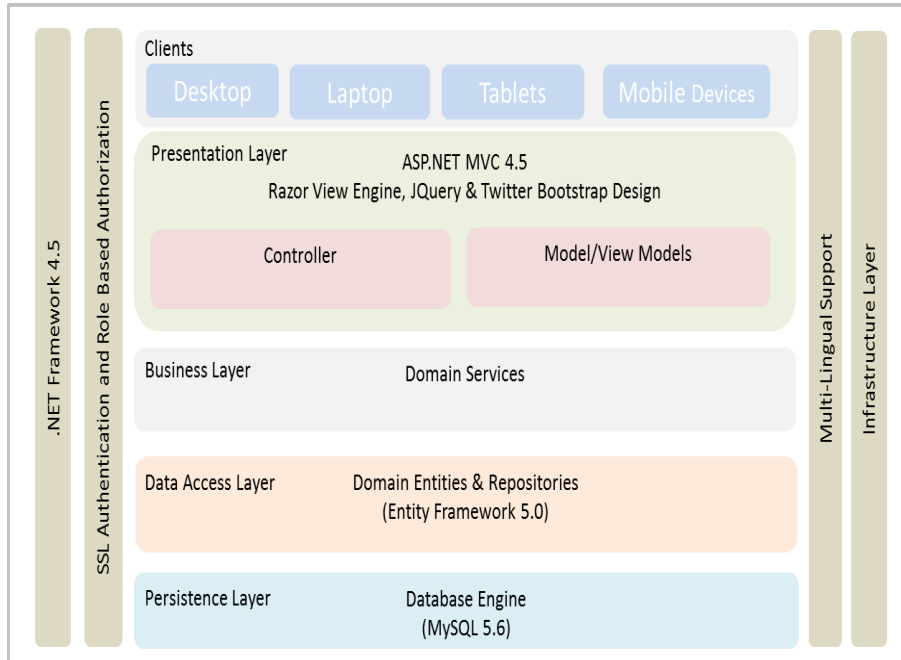
We did several mock ups of the web system and got the approval by the client.

The development was done in 2 phases:

Phase I - import the data in system and manipulations is data.

Phase II - implement the data flows based on how nurses will use it and pharmacies will review and dispatch and take sales order and close.

Solution architecture



This solution is for desktops, laptops, tablets and mobile devices. We used 3 layer architecture - business layer, data access layer, persistence layer along with infrastructure layer that integrates with ERP system.

Project highlights

- Agile/scrum with 2 week sprint for iterative development - took it to test environment and later took it to release.
- Categorize the inputs, enhancement and bugs, and have daily meetings, write down queries, and communicate the efforts and requirement understanding.
- Extensively use Team Foundation Server (TFS) for this. We have customized TFS template, customized priorities, efforts, progress. Going forward plan is to upgrade this to TFV 2013.

Challenges

- As the requirement and scope of work was very dynamic, the team at e-Zest had to articulate the needs based on regular integrations and recording the frequent changes which was highly challenging.
- To implement newer technologies for responsive and multi-lingual support without impacting schedules was another challenge.
- The requirement was evolving very fast with much iteration. This challenge was overcome by recording the requirement communication. All changes were recorded and archived for future audit. This is a significant business value added by e-zest.

Technology stack

- .NET Framework - ASP.NET MVC
- C#
- JavaScript
- JQuery and JQuery UI
- Twitter Bootstrap
- Entity Framework
- Foo Table grid
- Fax Suite API to send Faxes
- FTP Integration
- SMTP Server
- Structure Map IoC

Conclusion

e-Zest helped the client define the scope of the project, ultimately delivering the first multi-lingual and responsive web app and ERP solution for hospitals and homecares within the company's ERP environment. The different solutions provided by e-Zest team (1) Patient Individual Pouching of Medications (2) Automated Prescription Management for Refills (3) Electronic Medication Management.

The web application has ensured effective communication between doctors and pharmacies improving the speed of treatment to the patients. This has increased the client's reputation and trust significantly in the pharmacy and homecare space.

e-Zest was successful in delivering the web application as per the client's unique requirement helping them spread its base to over 80 homecares and 10000 patients and winning them many new customers. Client has a plan to sell this product to different pharmacies as licensed product.