Oil and Gas Field Production Optimization Product

The client functions in oil and gas domain. Many leading oil and gas companies rely upon their cutting-edge technology and technical expertise for production solutions, guidelines and best practices.

Situation analysis

The oil and gas companies gather a lot of data everyday through the sensors about their various oil fields, and the data gets stored in their local servers. The stored data is further analyzed with a key objective to improve the production optimization of oil and gas. The client offered these companies a unique product that processed the data and bring them valuable insights to enhance production. There were a lot of features missing in their existing product and required improvements.

Client partnered with e-Zest for the development of best-in-class version of the product for **predicting** (**using simulation**), **optimizing** and **visualizing** the production of oil and gas field, by means of data analysis.

As an engineering tool, this product is unique with the potential to save millions of dollars by optimizing the oil and gas field for the companies.

Solution Architecture

e-Zest offered its technical expertise and experience in similar projects and worked as an extended arm with the client's team located in the US. The client required a desktop application. Our team chose to use .NET for development and Windows Presentation Foundation (WPF) for the application interface for its attractive and visually stunning User Interfaces and for its compatibility with .NET framework. We provided business consultancy and desktop application development service to the client.

Application and solution overview

The desktop application is built with the following features:

- Easy way to import the various types of data coming from oil and gas field.
- Map view and grid view for getting a real view of oil and gas field and on the fly editing on the map which can be submitted to the simulation tool.

- Integration with simulation tool for getting up to 100% accurate prediction of production parameters based on various combinations of historic production data.
- Visualization in the form of charts, graphs and various views (map view, grid view, companion view) for a great representation of data which can be used to perform the accurate optimization.
- Query building and custom variables facility to visualize the right data.

Technologies and Tools

- WPF 4.5 for UI front-end
- C# .Net 4.5 for backend
- WPF Telerik controls

Technical Architecture
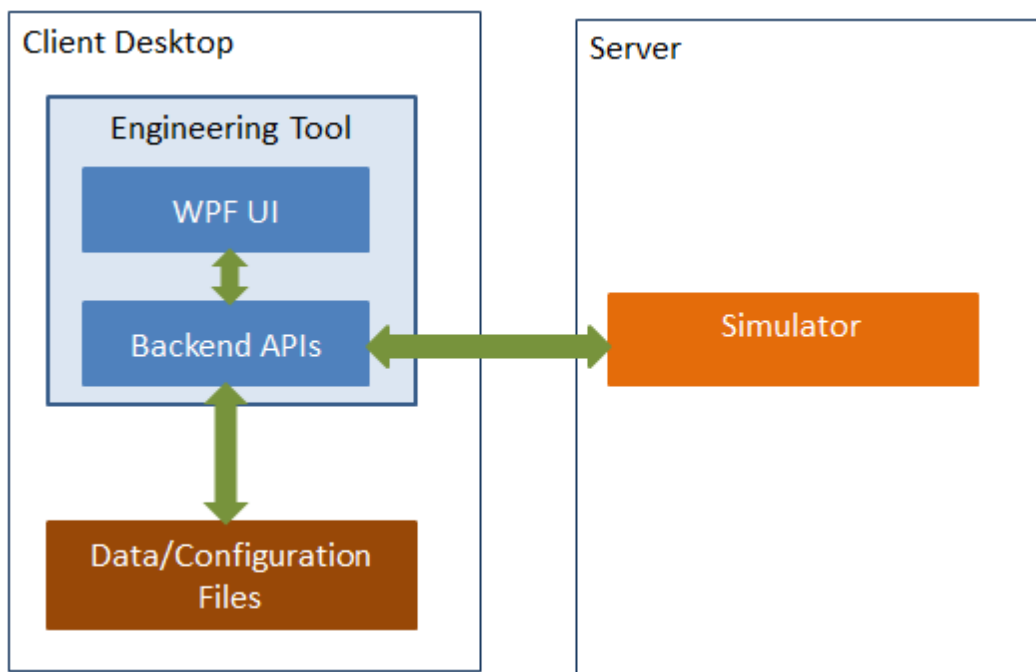
Challenges

e-Zest team delivered successfully in spite of following challenges:

- Tight timelines for faster time to market due to market conditions.
- Complex and entirely new domain for e-Zest.
- **Client does not have software background**. Client was not so much acquainted with software development processes. So it was difficult to justify all software processes and decisions to client.
- **Evolving requirements of the client**: A very detailed thought given on user requirements and user experience and UI is prepared based on that. So requirements got frozen very late and there was an overlap of requirements and development.

End User Benefits

The product successfully created a huge impact on its end users with its revolutionary features with the following benefits:

- The application helps the user take strategic decisions about the field (position of wells, width of the pipe or container, lifespan of the well etc) and view or modify the same on map view.
- The user gets more accurate analysis and representation of data to derive optimization suggestions, which has the potential to save millions of dollars.
- Great Visualization of data in the form of charts, graphs and map for a better representation of data can be used to perform the accurate optimization.
- Query building and custom variables facility gave a stunning visualization of the right data.

Bottom Line

e-Zest was involved in multiple areas of this product development and offered expert advice and consultancy. The product gave users accurate analysis and representation of data to derive optimization suggestions, which saves millions of dollars. Agile scrum development with parallel development and testing cycles brought in quick turnaround. Our development and testing teams followed strong code review process in place to catch defects early delivering the deployment on time.

The following teams were involved in the project:

- Business Analyst - Evolving and analyzing requirements with client and finalizing them
- UX team - Finalizing the user experience (wireframes and Visual Design)
- Project management team
- WPF team - Windows Presentation Foundation development
- Testing team - Quality control and testing

e-Zest