Upgrading Legacy Systems to Enable Real-time Controls in Oil Fields

Deploy hydraulic fracturing software to optimize results

Client: One of the world's largest oil field service companies
Industry: Oil & Gas
Project Type: Legacy system upgrade

Overview

1 Challenge:

Shale oil and gas have become an increasingly important energy source, especially in the United States. The demand to have software that enables the efficient extraction of shale oil and gas continues to grow, as this kind of software prepares an effective fracking plan which directly increases well profitability.

Our client develops and sells a complex software product, which prepares the plan for hydraulic fracturing (also known as fracking) to extract shale oil and gas. However, the software was outdated and had no documentation, making it hard to support and add new functions. They needed a partner that could develop a roadmap to modernize the product and lead the modernization process.

2 Solution:

Bringing on industry and technology experts and using an Agile methodology, Fintego delivered the most critical system components and integrated them with the client's legacy components. Fintego delivered these components in just nine months.

The following enhancements were delivered:

• Integration with other systems to enable data exchange (before, it was done manually)
• Real-time data collection and reliable transmission of huge amounts of data to the central database for further manual and automated analysis
• Enhanced job management that enables real-time support of multiple wells at the same time (before, only one was supported)

3 Results:

Our client now offers an enhanced software solution for geologically driven modeling of natural fracture networks to optimize well planning and stimulation strategies, which gives the company a strategic advantage and niche in their industry.

With the new features, our client was also able to boost the sales of their software product, and can further modernize their product via a roadmap.

The product keeps track of the pumping schedule, water/sand/chemicals proportions, pressure, volume, and rate of fracking. The future roadmap includes migration of all functions to newest technologies and add machine learning for historical data analysis.

Challenge

When inefficient legacy systems need an update

Oil companies invest millions of dollars on site planning, drilling and cementing, and when it comes to shale oil and gas extraction, they want this process to be as productive and precise as possible. Our client develops and sells a complex software solution, which prepares the plan for hydraulic fracturing (also known as fracking).

Our client was well aware of the following market conditions:

• A greater demand for that kind of software product since shale oil and gas have become an increasingly important energy source, especially in the United States
• A need for users to make quick decisions while in the field, including effective integration with other products and the ability to collaborate
• The push for users to upgrade their outdated technologies, add a user-friendly UI, and increase performance and usability

Our client needed to upgrade its software solution for fracking jobs planning and real-time monitoring of the stimulation treatment. Without any documentation and being a 15+ year-old legacy system, it was impossible to make any changes without outside help.

Solution

A customized solution that enables real-time data collection from remote fields

By bringing on industry and technology experts and using an Agile methodology, Fintego developed and integrated the most critical system components with the client's legacy components. The solution keeps track of the pumping schedule, water/sand/chemicals proportions, pressure, volume, and rate of fracking. This way, engineers can monitor these parameters in real time, and can adjust them when needed while in the field.

The following features were developed by Fintego:

- **Integration with other systems** – Some steps of the process require data to be inputted from other systems. However, the lack of integration with these systems required data to be copied and pasted manually by engineers on the field. Fintego integrated the product with three other systems, eliminating the need for manual data copy/pasting, reducing human error and accelerating the process.
- **Enhanced job data management** – The legacy system had a limitation – the system is only capable of working with one well at a time. Fintego delivered a module to manage job data, enabling multiple wells to be supported simultaneously.
- **Big data collection** – It was critical for the business to collect and store real-time data from the fields for further analysis or for machine learning. The issue was unstable/unavailable due to poor internet connection, as fields are usually stationed in the desert or the ocean. Luxoft's delivered module allows data to be automatically transferred safely to the client's central database.

Additionally, with new, updated technologies the client can now update or add new functions to these modules in the future as they see fit. Our client has a roadmap to continuously modernize their product over time.

> *"Fintego is excited about our membership with American Petroleum Institute (API), as this gives Fintego the opportunity to network with professionals in the field and better understand the trends and technological challenges."*
>
> **Dmitry Vilchinsky,** Luxoft's Energy and Utilities Practice Lead

Result

Bringing fracking software to the next level

The newly enhanced software solution allows for:

- **Increased productivity:** Using data analysis and machine learning, our client can now improve their fracking processes using the data collected over time. This level of automation is a huge change from doing manual calculations in Excel – saving time and improving efficiency
- **Increased product sales**
- **Competitive advantage:** Our client now offers an enhanced software solution for geologically driven modeling of fracking to optimize well planning and stimulation strategies, which gives the company a strategic advantage and niche
- **Cost optimization**, along with process optimization, since effective fracking directly increases well profitability
- **Improved reliability and a user-friendly UX**

Ready for an upgrade?

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