

Enabling Predictive Maintenance in Oil Fields

Saving millions by avoiding expensive downtime for hydraulic fracturing equipment

Client: Major oilfield service company that provides equipment and software solutions for hydraulic fracturing

Industry: Oil & Gas

Project Type: End-to-end software development and testing

Overview

1 Challenge:

To extract shale oil and gas, specialized equipment is used to fracture rock via a process called hydraulic fracturing (or "fracking"). To do this efficiently, users must know when their equipment needs maintenance. If the equipment stops working while in the well, **millions of dollars are lost** due to downtime and logistics.

Additionally, our client, a major oilfield equipment company, needed a way to make their product stand out. They wanted to accomplish this by providing oil and gas software solutions but had no idea on how to develop and deliver software in the cloud.

2 Solution:

Bringing on industry and technology experts and using an Agile methodology, Luxoft developed an end-to-end hydraulic fracturing hardware controls and automation software suite. Using IoT, big data collection and analysis, cloud and predictive maintenance technology, this solution monitors the fracking equipment, determining if it's in good working order or not long before breaking down. When the software detects abnormal parameters or determines it's time for scheduled maintenance, users automatically receive a preemptive alert with suggestions on the next steps.

3 Result:

- **Increases sales**
- **Significant cost savings:** Avoids failures valuing millions of dollars
- **Operational efficiency:** Users gain powerful insights that help improve processes
- **Transparency:** Provides a platform where our client's customers can view raw data and integrate their own analytics software
- **Improved scalability:** All thanks to the cloud
- **Competitive advantage:** By bundling oil & gas software with hardware, their product stands out

Challenge

Faced with costly equipment downtime

Shale oil and gas have become an increasingly important energy source, especially in the United States. To extract shale oil and gas, specialized equipment that can withstand immense pressure is necessary to fracture rock miles below the surface of the earth; this process is called hydraulic fracturing (also known as fracking). But to do this efficiently, users must be aware of when their equipment is due for maintenance. If the equipment stops working while in the well, **millions of dollars are lost** due to costly downtime and expensive logistics related to delivering replacement equipment to the field.

Additionally, the market for oil and gas extraction equipment is highly competitive. Our client, a major oilfield service company, needed a way to make their product stand out to increase equipment sales. To achieve this, they wanted to start providing oil and gas software solutions that support their equipment. Being an equipment-focused company, our client understood what kinds of software services were needed but did not know how to develop and deliver software in the cloud.

Solution

The power of predictive maintenance

Bringing on industry and technology experts and using an Agile methodology, Luxoft developed an end-to-end hydraulic fracturing hardware controls and automation software suite, with the minimum viable product delivered in under four months. This project included IoT architecture development, cloud architecture development, data gathering and visualization development, manual and automated testing, and ongoing support for the hydraulic fracturing software.

Using IoT, big data collection and analysis, cloud and predictive maintenance technology, this solution monitors each time the fracking equipment is being used, determining if it's in good working order or not long before the equipment is on the verge of breaking down. When the software detects abnormal parameters or determines it's time for scheduled maintenance, users automatically receive a preemptive alert with suggestions on the next steps. This predictive maintenance solution, paired with hydraulic fracturing equipment, has made monumental changes.

“In oil and gas, you drill a well, build facilities and connect the well to those facilities. But by connecting machines together through the Industrial Internet of Things (IIoT), we can obtain invaluable insights, allowing us to make incremental changes that create monumental impacts.”

Dmitry Vilchinsky, Energy & Utilities Director at Luxoft, and **Morgan Eldred**,
Managing Partner at Digital Energy

Result

A game-changing solution that boosts sales

- **Increases revenue:** Our client has sold more hydraulic fracturing equipment as a result of bundling this new oil & gas software solution
- **Significant cost savings:** Avoids costly failures valuing millions of dollars through a predictive maintenance solution, by determining when the equipment will fail long before it actually fails
- **Operational efficiency:** Through a user-friendly dashboard, equipment health report and automated notifications, users gain powerful insights that help improve processes over time
- **Transparency:** Provides a platform where our client's customers can view raw data collected from hydraulic fracturing equipment and integrate their own analytics software to analyze that data, if they wish
- **Scalability:** Thanks to a cloud-based infrastructure with an SaaS model and a competitive price point
- **Helps gain a competitive advantage:** By bundling their hardware with hydraulic fracturing software, it makes our client's product stand out

Interested in gaining a competitive advantage?

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