

Independent Oil and Gas Operator Gains Competitive Advantage with Development of New Geosteering Tool

The challenge

The Bakken asset team of an independent oil and gas operator needed a better way to communicate and collaborate with all members of the drilling and geology team during a geosteering project. While the operator had been using other geosteering solutions, their workflow involved manual collaboration using screenshots, emails and phone calls to communicate interpretations. Their system was lacking the ability to have everyone see the same data at the same time. Because there was no opportunity for everyone to be on the same page, it resulted in a time delay for interpretations and decisions to be made and communicated and often some ambiguity in direction. “When you send a text message about the operation with no visualization there is uncertainty in interpretation,” said Phoeun Pha, Petrolink project lead.

“They lacked a defined communication workflow that effectively brought people from the office together with those on the rig in a collaborative environment.”

The decision to develop

Two members from the operator’s geology team who were already using Petrolink’s real-time monitoring service approached Petrolink with the challenge and together the two companies started working to develop a solution. After researching other software and doing a thorough needs analysis, it was decided that Petrolink would create a geosteering tool that built on the company’s real-time capabilities.

Challenges to development

One of the first challenges was that the tool needed to be scalable to accommodate large teams. “We had a good programming team on this project,” said Pha. “While Petrolink software was already capable of supporting a multitude of users, the geosteering tool added a layer of complexity because multiple authors had the ability to update the interpretation. This meant we had to create a system to ensure those changes were displayed accurately for such large numbers of users. Additionally, Petrolink developed a “restore” functionality, unique to this type of software, where the user was able to revert back to previous interpretations from multiple authors. This had the added benefit of allowing the operating company to see a play-by-play snapshot of interpretations throughout the well.”

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What are the advantages of a Private Cloud infrastructure?

The client also had very high expectations. The requirement was that every actual trajectory station displayed in the geosteering environment was an accurate representation of the recorded stations coming from the directional company. “If there were any discrepancies, the operator would go back to depending on data from emailed surveys from the directional company and that’s what we were trying to avoid,” Pha said.

The last challenge was working with the numerous vendors and their variable data quality, and then converting everything into a format Petrolink could use. “Thankfully, by the time we picked up this project, we already had experience with the various logging systems the vendors were using and were able to leverage our relationship with the system’s developers to improve data transfer and quality,” said Pha. “Outside of this, we also developed tools to ensure that we were receiving the official survey shots which helped improve quality.”

The solution: A new geosteering environment

In a relatively short period of time, Petrolink was able to overcome the challenges and deliver a real-time geosteering collaboration environment that allowed the driller, the geoscientist and various contractors to all have eyes on the same data.

Now that everyone was looking at the same data, it was easy to define everyone’s role. And with the contractors all having access to the same data, they could make sure it was accurately represented on the screen increasing responsibility. Now that real-time communications through a geosteering software was possible, the company man was able to have his laptop on or the software visible at all times making sure communications was online.

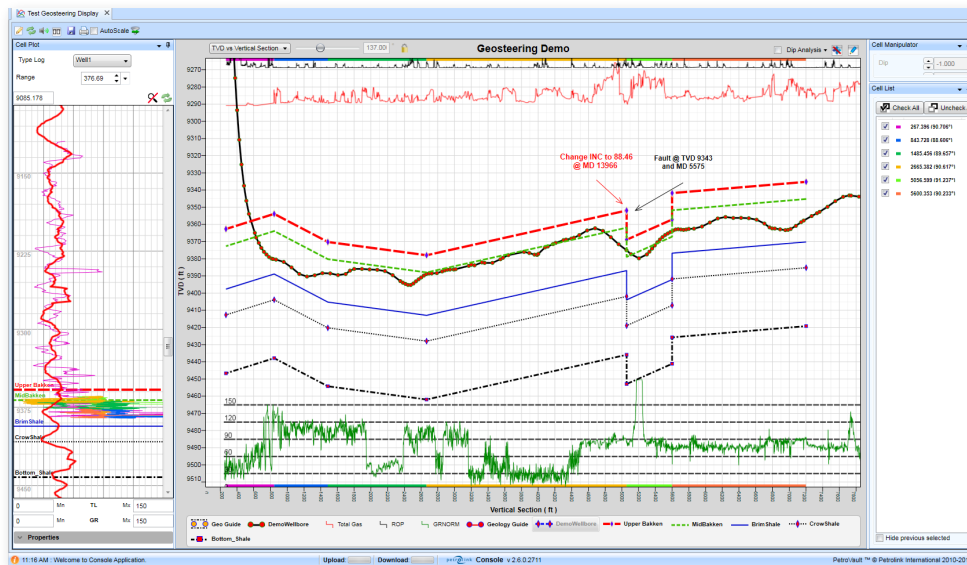


“What really made this solution work was that we also provided 24-hour support,” said Pha. “We kept track of bugs, took care of customer requests, patched bad data and sent out notifications to let users know the status of a job--whether there had been an interruption in the real-time data feed or when a new display was released.”

Operator gains clarity and accountability

One of the first benefits was that it significantly increased accountability among the project team. At any one time there is only one person making decisions and changes through the tool so it's clearly documented who is geosteering, at what time and finally, what decision was made. It clarified decision making as there was no room for ambiguity. “This was a pivotal point in the operations – this enabled the operator to put their communication workflow on paper and helped eliminate variability in understanding,” said Pha.

The tool made managers' jobs easier. They were in constant communication. They were able to keep track of the updates and pull up interpretations from any well at any time as opposed to making a phone call and waiting for a screenshot of an interpretation. The tool also allowed users to make multiple interpretations at the same time. When two geosteers are on a job and they each make an interpretation and it's decided which one to go with, everyone is able to see that final interpretation in real-time. This results in fewer emails, phone calls and text messages. Scalability was another key benefit. The tool can accommodate as many people as necessary without having to change the workflow.



“This operator was progressive in their thinking and were willing to break away from the “old school” way of doing things,” said Pha, “Better collaboration, communication and ultimately decisions were the result. Our client felt this environment gave them a competitive advantage because we allowed them to have so many eyes and SMEs on the same data. This benefitted them not just because they could make decisions quicker, but because you can have all this knowledge on one project resulting in better quality decisions.”

What's next

The tool will evolve to where there won't be a need for someone to always have eyes on the data. The system will have smart alerts that are raised when certain thresholds are breached. This will allow people to focus on other aspects of their job and increase productivity. “As we continue to develop this, we'll be providing an environment for the user to be able to write complex algorithms against the data,” said Pha, “This means that not only will you be able to write a simple ‘threshold met’ type of algorithm for alert purposes, but it will go beyond so you can write algorithms to check on the quality of the data, projections of trajectory and modeling.” The tool will also become a verification system so it's not just simple thresholds but Petrolink will be able to write data quality checks into the software, letting the system be a set of eyes, essentially making the system smarter.