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Expand Energy Creates Real-Time Data Applications for Mission-Critical KPIs using Dash Enterprise

Executive Summary

- Expand Energy strategically implemented Dash Enterprise to address challenges related to real-time drilling data visualizations and secure mobile access.
- Dash Enterprise facilitated the creation of proprietary, mobile-friendly applications integrated with robust security features, empowering remote contractors to efficiently access live drilling data and quickly respond to critical alerts. Data sources for these applications included SCADA systems and Snowflake.
- The implementation drove 100% adoption of the drilling applications, delivering substantial cost savings and achieving a reduction in time-to-delivery from 16 weeks to just 4 weeks.

Wesley Priest

Data Engineering Specialist

“One thing that brought us to Dash is the fact that there is no ceiling to what your visualizations can look like. When you look at the visuals we made with Plotly, you cannot build that with other vendors. We had a need to evolve our data visually, and we achieved that with Plotly.”

Jay Luna

SCADA specialist

“I am not from a developer background, and one thing I appreciated about Plotly was how easy it was to pick up and get started. The resources available were great and I was able to quickly build my first production application in less than 2-3 months.”

Introduction

Expand Energy is an American company that specializes in the exploration, development, and production of natural gas and oil.

Dash Enterprise empowered Expand Energy's teams to build real-time, mobile-friendly, custom visualizations integrated into web applications that gave their remote contractors access to live drilling data, enabling them to respond to critical drilling alerts quickly, on-the-go.

Challenge

There were 2 main challenges that had to be addressed:

1. **Inadequate visuals for live drilling metrics:** Expand Energy was paying \$150,000 for an application that was charging them on a per rig per day basis. Expand Energy liked the data that the vendor was providing but the vendors visuals used for keeping track of the drilling metrics were not meeting Expand Energy's requirements based on what the field agents needed.
2. **Ability to view metrics securely on a mobile device:** Purchase and maintenance costs associated with the mobile version of SCADA (Supervisory Control and Data Acquisition) systems was over budget for the Expand Energy team. Desktop SCADA systems slowed the process of accessing crucial drilling metrics as agents lacked computer access in the field, creating a big need to introduce a mobile application.

Solution

Expand Energy's Drilling and SCADA (Supervisory Control and Data Acquisition) teams sought applications that provided adaptability and portability to align with their objectives. Dash Enterprise equipped them with the functionality and flexibility to create a custom solution with their users in mind.

- **Build in-house applications to reduce costs:** Expand Energy's Drilling and SCADA teams sought applications that provided adaptability and portability to align with their objectives. Dash Enterprise equipped them with the functionality and flexibility to create a custom solution in-house at a much lower cost than their previous vendor.

- **Mobile responsive secure applications:** With the help of Dash Enterprise, Expand Energy was able to create mobile-friendly applications integrated with security features that allowed their contractors in the field to access metrics using their mobile devices rather than having to go through a long logging process through their work computers.
- **Tailored data presentation:** Dash and Plotly enabled Expand Energy's drilling team to construct data visualizations based on the field agents' needs.

The visual depiction below, developed by Expand Energy's team, helps the team identify and avoid any potential tripping issues while drilling a live well, such as a Torque and Drag tracking and understanding the current position of drilling based on friction factor lines.

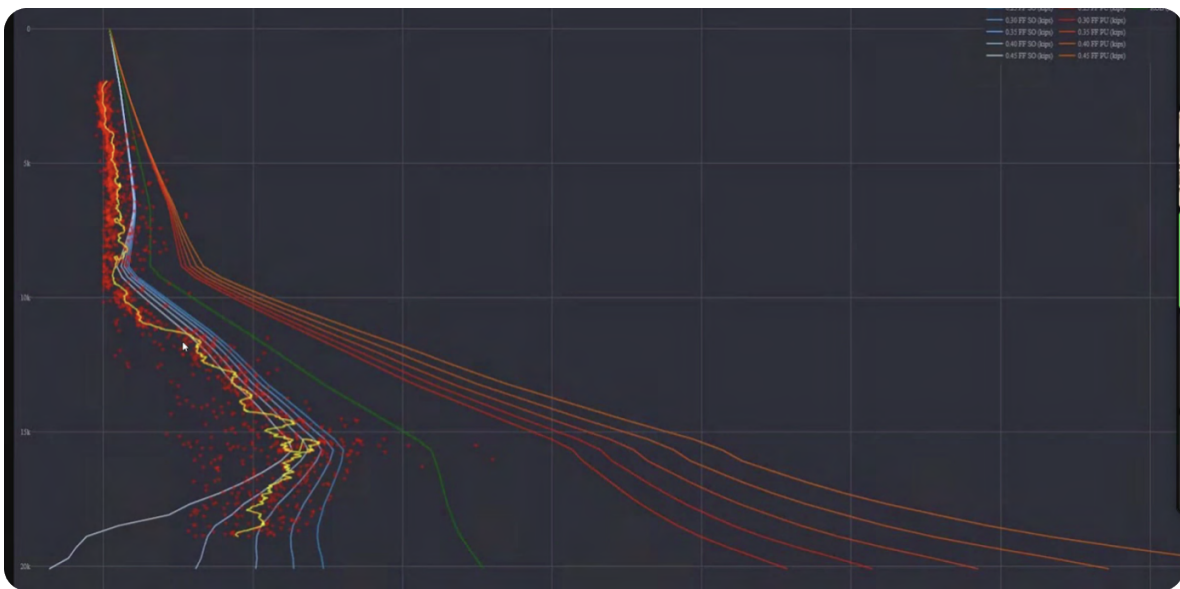


Fig: This application helps keep track of Torque and Drag using Friction Factor Line

Results

The Expand team needed more than basic visualizations to meet their goals. Dash Enterprise equipped them with the functionality and flexibility to create a custom solution with users in mind.

- **Greater Value for Money:** Dash Enterprise helped Expand Energy replace a previous vendor, who charged approximately \$150,000 for supplying real-time drilling data for monitoring of live wells, while providing greater flexibility and compatibility for the Expand team. This software centralization included the ability to seamlessly integrate with Expand's Snowflake data warehouse and other corporate data repositories.

- **Reduced well cost by reducing tripping issues:** Applications built in Dash Enterprise for tracking drilling metrics such as creation of doglegs and key seats, hole instability, lost circulation, and excessive bottom hole temperatures, helped prevent drilling setbacks, saving several million dollars per unplanned incident.

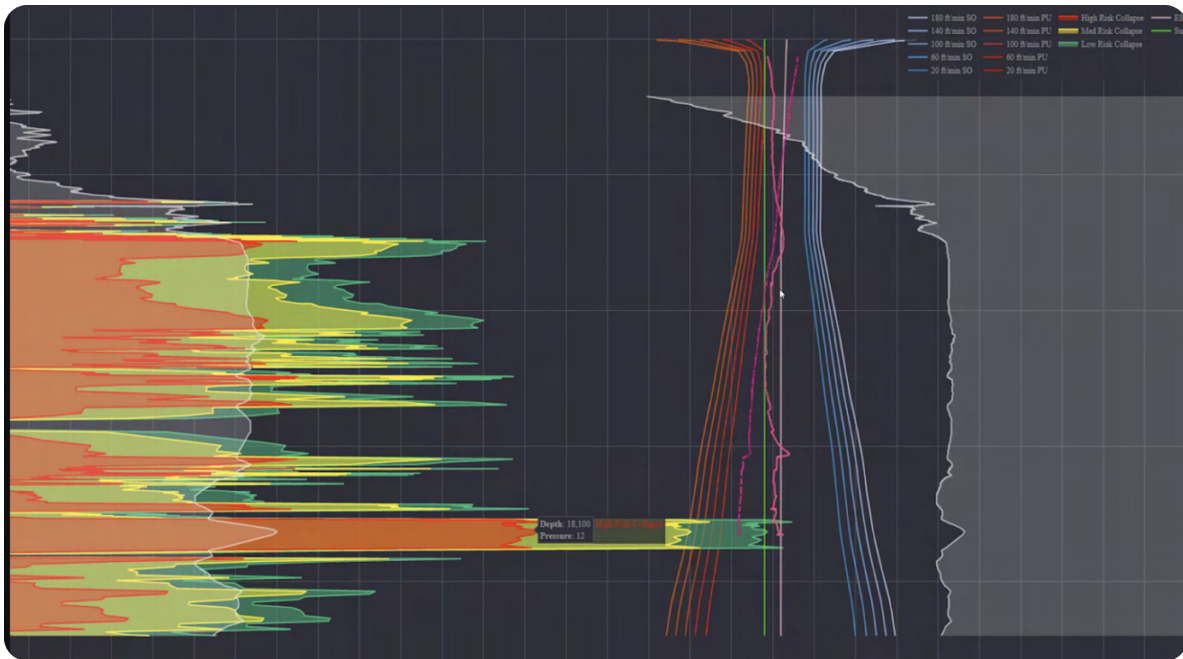


Fig: The graph helps identify areas of difficulty while drilling a live well

- **Adoption increased by 100%:** Adoption of the drilling applications rose by 100% as the development team built a tailored data representation for field agents. Plotly's customization capabilities allowed for personalized visuals. Four to five years ago, adoption was at just 50%. The agents found the data representations intuitive, improving their ability to respond to alerts. This led to increased adoption of the drilling applications, integrating them seamlessly into the agents' workflow.
- **Accelerate time-to-delivery from 16 weeks to 4 weeks:** Expand's team leveraged the guidance of [Plotly's Customer Success](#) team and documentation to accelerate their delivery after their first 2 applications were pushed to production.



Fig: This application allows users to view historical data for a well up to a month

- **Dashboard Sharing** is another capability that they were able to introduce within their applications, which [created a URL that a user could use to access a saved state](#) inside their application using the Dash Snapshot Engine. Between the SCADA app and the drilling apps, they have at least 150+ people using the visuals in one way or another for guidance and decision making. Expand Energy's team also has 6 full applications that are used frequently and three that are 24/7.
- **Ability to integrate ROP (Rate of Penetration) Predictor ML Models and Motor Failure Predictor:** They are currently looking to build predictive models on identifying different drilling metrics and more based on historical data using Dash Enterprise.

About Expand Energy

Expand Energy is a US oil and gas exploration company. It acquires, develops, and produces oil, gas, and natural gas liquids, with a focus on unconventional resources like shale formations. Expand employs advanced drilling techniques such as hydraulic fracturing to extract hydrocarbons. The company operates in multiple US states and has played a significant role in the energy industry's exploration and development efforts.

About Plotly

Plotly is a software company whose mission is to enable every company, around the world, to build data apps. Our product, Dash Enterprise, is a platform of best-in-class development tools to quickly and easily visualize data in Python from virtually any data source. With customers across the Fortune 500, Plotly is a category-defining leader in enabling data-driven decisions from advanced analytics, machine learning, and artificial intelligence. For more information, visit <https://plotly.com>.