

Increase Oil & Gas Yield with TIBCO Spotfire® Analytics

Contents

- 1 Introduction
- 1 Challenges Can Lead to Better Analytics Solutions
- 2 Visualizing Wireline Data
- 2 Fast, Feature-rich Visualizations for Everyone
- 3 Analysis of Drilling, Geology, Trends, and Anomalies
 - 3 Spotfire Analytics and Smart Drilling
- 4 Using Insights to Deliver Data-driven Results
- 4 What Spotfire Delivers
 - 4 Immersive Visual Analytics
 - 5 TIBCO Spotfire Mods
 - 5 Embedded Interactive AI and Data Science
 - 5 Real-Time Streaming Analytics
 - 5 Strong Geo-Analytics
 - 5 Intelligent Data Wrangling
- 5 Entering a New Era for Oil and Gas
- 6 Let's Talk about How TIBCO Spotfire Can Help Your Company

Introduction

The start of the global pandemic caused unprecedented market volatility. Investors became more cautious. The resulting economic impacts have challenged the leadership of many oil and gas organizations to find new ways to do more with their existing assets.

A strong data analytics solution is critical to ensuring employees and shareholders alike have the data they need to make intelligent, actionable decisions.

This whitepaper describes how oil and gas companies today can get more from their data by bringing it into a powerful and easily accessible analytics tool: TIBCO Spotfire analytics. This is not merely a theoretical concept, but an actual industry solution that is already transforming O&G operations.

Challenges Can Lead to Better Analytics Solutions

The oil and gas industry is always looking for new ways to better characterize reservoirs. A clear understanding of geology, geophysics, engineering, logistics, and other information is necessary. Wireline data—resistivity, gamma ray, sonic, caliper, and other analyses of rock properties—help identify minerals, fluids, and structures at depth.

However, it is very challenging to visualize this data without the right analytics tools.

Visualizing Wireline Data

State-owned Brazilian [Petroleo Brasileiro S.A. \(Petrobras\)](#) sought a new way of allowing its users to access and visualize well-log data in the TIBCO Spotfire advanced analytics and visualization platform. The method had to be easy and reproducible, meaning it could not involve difficult coding that users had to translate or sift through to obtain information.

That identified need led Petrobras to establish a SWAT team. The team experimented with several other technologies and methods to produce and customize the well log data as Spotfire visualizations. Python, JsViz, and eventually the [TIBCO Spotfire](#) community-supported JavaScript visualization framework were tried. These technologies produced solid and useful visualizations, but all the software required heavy coding and setup that could not be managed by many of the company's users.

To get the job done, Petrobras needed something much simpler. For example, rather than spending time coding, developing, and customizing each visual well-log trace, the team wanted to drag-and-drop these kind of items into dashboards. In all, they identified five visualization features necessary to properly visualize log data to analyze potential oil sites:

- Zooming
- Mapping
- Highlighting
- Panning
- Marking

The problem was that these features were not always available in currently available software. In cases where they were available, the software tended to be too complicated for all stakeholders to use effectively.

Petrobras turned to the TIBCO LABS innovation team for help. Together, the teams worked to develop a new custom solution that would allow the company to accomplish important data evaluations more efficiently and faster in every capacity.

Fast, Feature-rich Visualizations for Everyone

With the help of TIBCO LABS, Petrobras created a Spotfire well-log mod with easy-to-understand, drag-and-drop capabilities. It simplified data analysis methods and made the coding effort a thing of the past.

The mod can be added to any Spotfire analysis for producing configurable well-log measurement visualizations. Users can then explore the data properly, saving time and money because another tool is not needed, also leading to faster results. Due to this centralization and data democratization of well-log traces, efficiency has also increased. Petrobras Data Analyst Rodrigo Mantovaneli Pessoa said, “Our initial results showed we reduced reservoir modeling steps by 80 percent.”

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—Rodrigo Mantovaneli Pessoa, Data Analyst, Petrobras

Analysis of Drilling, Geology, Trends, and Anomalies

Petrobras also chose Spotfire software for its ability to accomplish set tasks and surface very specific information that would be used for drilling analysis and spotting trends and anomalies.

To evaluate drill-bit performance, Petrobras needed to identify geological conditions. With this information in hand, the company could reduce downtime, increase performance, and improve production.

To find trends and anomalies, the company needed certain historical and operating data on hand. Trends could ultimately provide hints as to why certain well failures were occurring and lead to problem resolution and prevention. The data would also allow the company to react appropriately should a well shutdowns become necessary or if a large failure occurs.

Spotfire analytics makes it possible for Petrobras to quickly analyze large datasets using technologies such as artificial intelligence (AI) and clustering methods for multi-dimensional analyses of complex datasets and to ensure that statistical methods remain accurate and up-to-date.

Spotfire Analytics and Smart Drilling

Petrobras is not an anomaly. [Hunt Oil](#) also turned to TIBCO, with dramatic results. The problem was that the company’s inflexible vendor-supplied applications weren’t providing the agility needed to remain competitive. It needed fresh insights, and it needed them right away.

Over the course of just six short weeks, using Spotfire software and the TIBCO Drilling Accelerator, Hunt Oil established a new smart-drilling system that gave it access to real-time views of geological analyses. The enterprise was able to obtain data at faster speeds, ensuring it saved time and money.

As Brian Alleman, senior drilling engineer, explained, “We are combining sets of data in ways we were never able to do in the past, leveraging data from our reporting and engineering databases. With TIBCO, we take data from the server and turn it into an asset that is going to make a difference.”

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Using Insights to Deliver Data-driven Results

TIBCO Spotfire is built to:

- Help you develop deeper insights with AI-infused visual analytics and customized apps that enable your company to reach its full potential
- Combine both streaming and historic data so you can better predict trends with embedded analytics and data science

TIBCO Spotfire enables:

- Predictive decision-making
- Proactive intervention response
- Process optimization
- Improved operational excellence

Spotfire analytics can help you make the most of your data to generate real-time insights and make more informed decisions about how you can extract necessary resources safely and efficiently. Armed with up-to-date information and insights, you can do more with less and ensure your oil and gas company continues to thrive.

What Spotfire Delivers

As the most complete analytics platform available today, TIBCO Spotfire can give your oil and gas company [access to several tools](#) including:

Immersive Visual Analytics

A single-pane-of-glass experience that offers:

- Visual analytics
- Data discovery
- Point-and-click insights

The Spotfire solution offers clear imagery and visuals of historic and real-time data that you can use to make educated drilling decisions.

TIBCO Spotfire Mods

Used to build innovative “grab and go” customized visualizations and analytics apps, mods give you easy access to customized functions and stronger interactivity, plus visualization libraries, APIs, and workflows.

Embedded Interactive AI and Data Science

The power is in the science, and through smart analytics. Identify unique patterns in your data stream, spot anomalies, and take proper precautions. Spotfire custom expressions and data functions let you manage and write scripts using native R and Python engines without dealing with difficult coding. Let end users leverage these functions in a graphical way and without coding.

Real-Time Streaming Analytics

Data is never static. It flows constantly, making it difficult to pin down the information that may help your company perform better. Bring all your data together through the single, powerful Spotfire tool to analyze and digest the streaming and historical data and keep your enterprise on track.

Strong Geo-Analytics

Multi-layered map charts can bring deeper insights about the locations you’ve chosen to explore. Use real-time data to recalculate models and update plans on the fly.

Intelligent Data Wrangling

Spotfire data wrangling capabilities deliver all data through the fastest methods possible, pulling information from multiple sources. Data is auto-recorded, shareable, and editable, thereby simplifying future changes and audits. Basic tasks such as AI-powered smart joins are automated to ensure data preparation stays easy.

Entering a New Era for Oil and Gas

Over the past months, the state of the world has changed drastically, with war affecting oil reserves and causing prices to rise in every part of the globe. Evolving supply challenges are forcing many upstream oil and gas organizations to rethink how they extract resources. The key to getting as many barrels of oil as possible through existing assets is to have access to the right data and the insights it can yield — insights such as:

- Promising assets and sites
- Geology most likely to present barricades
- Prevalent trends for making more accurate predictions

Leveraging your data optimally can help your upstream oil organization engage in better drilling and extract more oil, leading to:

- Favorable fuel prices
- A healthier global economy
- Surging investor confidence

Let's Talk about How TIBCO Spotfire Can Help Your Company

Spotfire analytics was built with companies like yours in mind. When you use the most complete analytics solution available, you'll find yourself exploring and visualizing new data discoveries through tools like advanced analytics and immersive dashboards. TIBCO is presently offering a 30-day trial, giving you a prime opportunity to try the Spotfire solution risk-free.

Take that opportunity today; sign up for your free 30-day trial and learn more about our energy and utilities solutions.



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