Using the PetroVisor™ Platform and Solutions to Deliver Integrated Data Management and Decision Making for Unconventional Reservoirs

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Leveraging data automatically and more effectively supports better decisions and is critical to success for North American E&Ps

The amount of data generated from drilling and producing a single oil or gas well is staggering: up to 10 TB, according to a recent estimate by IHS Markit. A 2015 McKinsey study suggests that only a fraction of this data is ever analyzed. For many operators, the challenge of integrating and analyzing terabytes of information is insurmountable. Unconventional assets are complex and fast-paced, and the secret to what drives an asset is in the data. In a market that is more challenging than ever, operators who leverage their asset's data to make better decisions will thrive.

New challenges for unconventional operators

Business challenges

The critical business challenges for unconventional operators are:

- Maximizing CAPEX efficiency
- Reducing lifting costs and LOE
- Maintaining an efficient drilling schedule
- Mitigating underperforming wells
- Physics-based completion optimization
- Parent Child well placement

Current practices for managing unconventional assets are caught between traditional workflows and the big data era. In the instance of production management, the majority of the necessary activities, like updating opportunity registers and reviewing inactive or underperforming wells, are manual and siloed among disciplines and numerous point solution software. With no means to integrate across disciplines and systems, this results in limited scope, support, and scalability across the entire asset or organization. Furthermore, the work is done infrequently and inconsistently, largely because it's so time-consuming. Because reviews are done infrequently and on a well-by-well basis, companies lack a standardized and systematic screening approach for well optimization and intervention. Teams have been using multiple legacy systems to analyze single-well performance and operations because an integrated system was not available. Now, PetroVisor's advanced analytics and automation support these workflows.

Data challenges

Today, North American E&Ps have access to data from every part of an unconventional asset's lifecycle: seismic, core, well logs, drilling data, fiber, microseismic, completions, PVT, production, SCADA, accounting and more. The challenges to leveraging this data are greater than ever:

- Volume. it's effectively impossible using legacy tools for E&Ps to analyze the vast amount of data from their assets and the public domain.
- Data silos. The geosciences, drilling, completions, reservoir engineer and land departments are often siloed within companies, preventing data-sharing among disciplines.
- Data loading and QC. Data from multiple sources and vendors is in different formats and databases. The data must be standardized and quality-checked before use. Often, there is only a small group of people in a company who know how to load and QC each data type.

The PetroVisor platform is a new category of software that enables operators to fully leverage all of their data. PetroVisor's data abstraction architecture is truly unique to any current platform in the industry, allowing Artificial Intelligence (AI), Machine Learning (ML) and automated solutions to systematically deliver operational and financial results. This technology also allows operators to quickly distinguish and connect useful data from irrelevant data.

PetroVisor breaks down the barriers between disciplines by integrating all of an E&P's data in a single analytics platform. The platform (semantic layer) is compatible with all data sources and applications. When all of an asset's data is in one place, engineers can identify patterns and correlations, unlocking the driving factors behind an asset's production. Automation, ML and AI (not black box) allow engineers to dedicate their time to making decisions to optimize asset performance. These solutions are open, agnostic and configurable.

Unconventional fields require a different approach than conventional fields

Unconventional reservoirs are complex, with difficult to measure properties. Commercial production rates must be achieved through expensive and complicated multi-stage completion designs. These complexities create significant uncertainty in forecast production rates and development strategies. Layer in evolving completion technologies, steep initial production decline rates, large well inventories and volatile commodity prices, and the process of decision making in unconventional assets becomes excessively data-, analysis- and manpower-intensive.

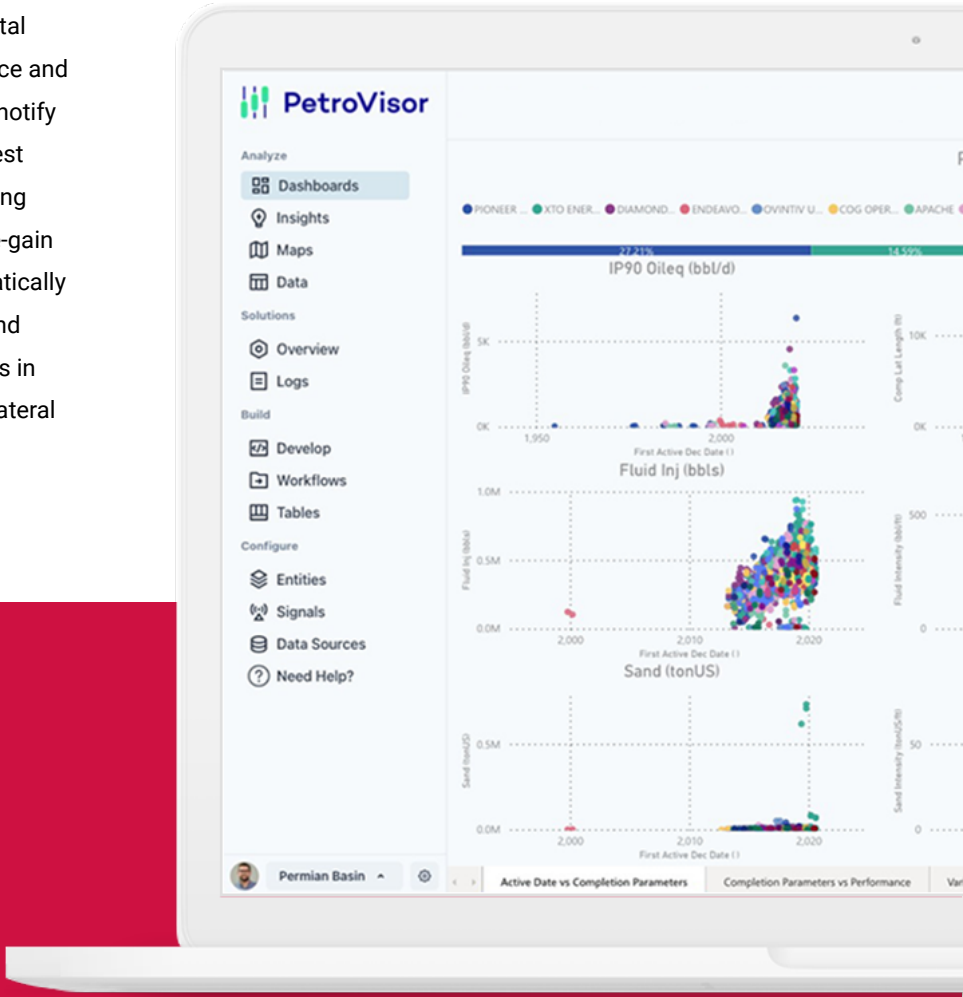
In unconventional assets, capital efficiency gains require fast, real-time assessments of the latest completion technology and lateral spacing field trials with solid engineering and economic underpinning. Operating cost improvements require quick identification of emerging production problems on individual wells with a rapid assessment of the best corrective action. Operators face the problem of too many wells, lots of data, complicated analysis and multi-discipline expertise. Companies with unconventional assets struggle to generate useful technical answers suitable for decisions in a timely manner. Thus, both capital and operating decisions are made with too much uncertainty and too little understanding of the impact of those uncertainties. Optimization becomes a guessing game, ripe for biases to take control.

The PetroVisor platform overcomes these challenges by solving the data problem, automating numerous complex tasks and allowing the engineer to spend quality time on true engineering analysis and decisions. Integral to PetroVisor, AI and ML open an array of solution paths in additional to the platform's physics-based solutions.

PetroVisor is built for unconventionals

PetroVisor is built to handle the unique challenges of unconventional assets: too much data, complicated reservoirs and completions, and too little time. The platform seamlessly integrates data from any database and application, from SCADA to seismic. PetroVisor's automated solutions streamline complex tasks like fracture modeling, multiple variable regression, decline curve analysis, reservoir simulation and sophisticated economics, just to name a few. Deploying artificial lift solutions or optimizing completion and development strategies is easily done once the data is linked into the platform. Automating repetitive and low-cognitive tasks allows engineers to spend more time making decisions with their data.

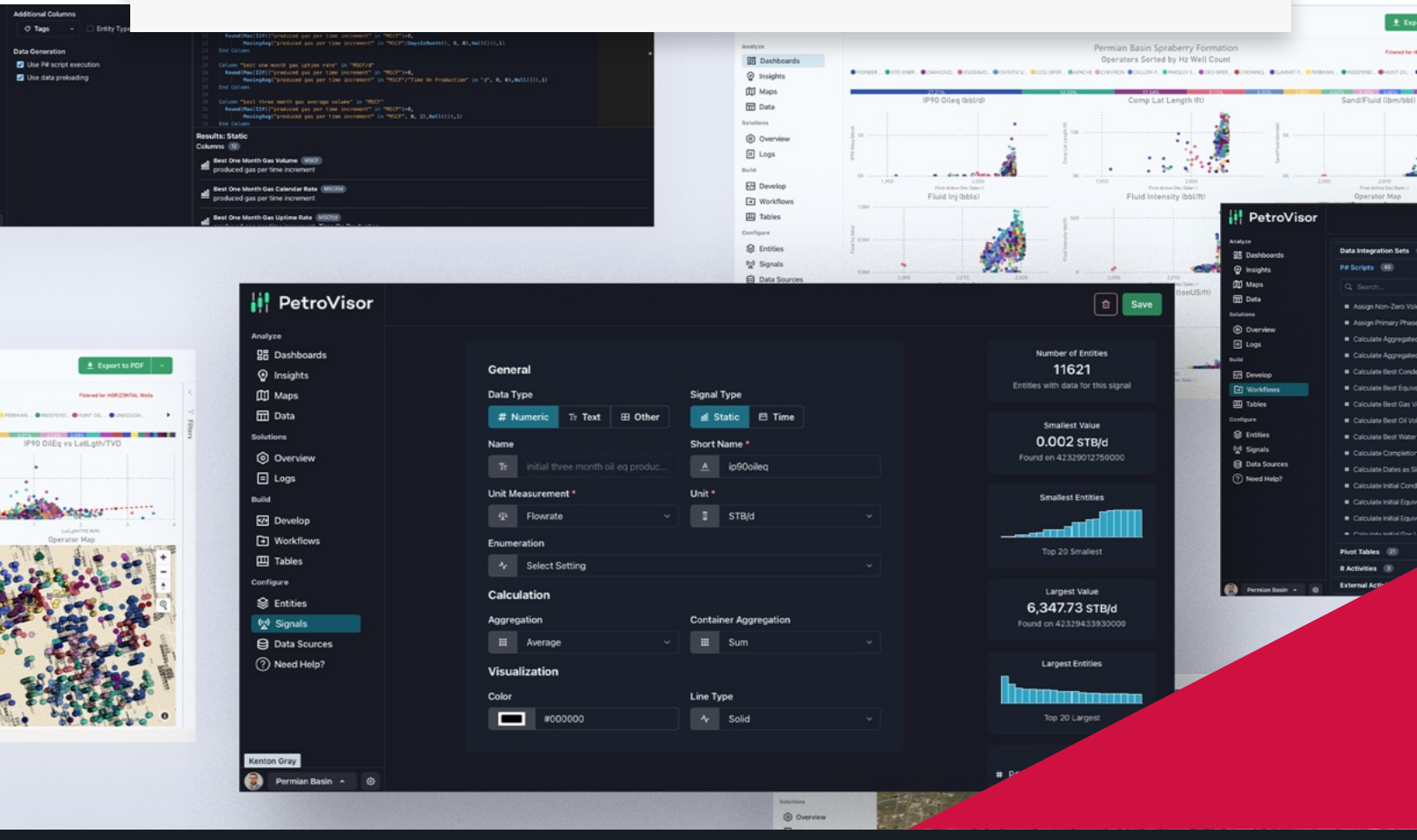
PetroVisor solutions optimize both operating and capital costs. A comprehensive suite of production surveillance and evaluation tools automatically identify problem wells, notify the appropriate operational staff and rank-order the best corrective action. Direct daily operational activities using management by exception, targeting the highest value-gain work each day. With PetroVisor, engineers can automatically evaluate and rank the most capital efficient reworks and blend empirical, physics-based and economic analyses in highly automated solutions to optimize completions, lateral spacing and development plans.



Data-driven operators are the future of US shale

The energy market is changing, according to consulting firm Deloitte. In their 2021 Oil and Gas Industry Outlook, Deloitte refers to the latest trend as “the great compression.” Mass layoffs, changing public perception and governmental policies towards clean energy and long-term decline of oil demand in the U.S. are just some of the headwinds shale operators face today.

Companies must be agile and be able to generate superior financial performance with minimal resources in order to survive. Digitalization is key. Deloitte predicts that the U.S. shale industry will look very different in the coming years, perhaps dominated by a high-graded or integrated portfolio of data-driven operators. Leveraging data to make smart decisions quicker will enable shale companies to succeed as the industry undergoes unprecedented transitions.



Advantages of using PetroVisor

PetroVisor solutions and workflows are deployable out of the box, on the cloud, in about eight to 10 weeks. Future modifications to accommodate new data or implement evolving solutions are quick and cost effective because of the platform's open architecture. PetroVisor automatically brings all the relevant data to bear for a solution without the manpower intensive shuffling of data between data sources, analyses, and visualization packages. Rapid data-to-decision is achieved through automation of complex engineering workflows, including ML solutions, physics-based models, and sophisticated economics.

PetroVisor is built for collaboration. Designed to function within Teams, everyone has permission-based access and can receive event-driven notifications within Teams channels or by email.

The cost of PetroVisor is more than offset by manpower efficiency gains, but the significant value creation occurs in the capital and operating efficiency gains derived through timely and better-informed decisions. Focus your manpower efforts on the right problem every day and enable that manpower to be more efficient by enjoying the PetroVisor advantage.

PetroVisor Leads to Better Business Decisions

Data-driven operators will rise to the top and outperform their peers. PetroVisor customers have seen up to 70% reduction in time spent screening data, leading to significant decreases in overall project time, increased capital and operating efficiencies and, most importantly, higher production.

The platform is open, agnostic, lowers costs and enhances productivity. PetroVisor is in a category of its own, enabling better decision making from the C-Suite to the field.