DATAGRATION

PETROVISOR APP

Completion Optimization

Optimize your completion designs using MVR/ML to achieve the optimal economic scenario based on your desired outcomes.

Optimization of completion designs in horizontal hydraulically fractured wells in tight rock is a challenge. Complex multi-variable analysis models are necessary to achieve optimal results due to various completion and geologic factors for each well or area and the inherent uncertainty in the hydraulic fracture geometry. This analysis is a very time-consuming and manual process, requiring multiple disparate software applications and advanced skill sets to run, frequently leading to incomplete analyses.

PetroVisor addresses these challenges through the automation of manual tasks and connecting of many disparate data sources into a Unified Data Model (UDM). PetroVisor does this by integrating all necessary well, production, completion, geology, and accounting data into the UDM, extracting the material data, and then running advanced multi-variable and economic processes in a single automated app.

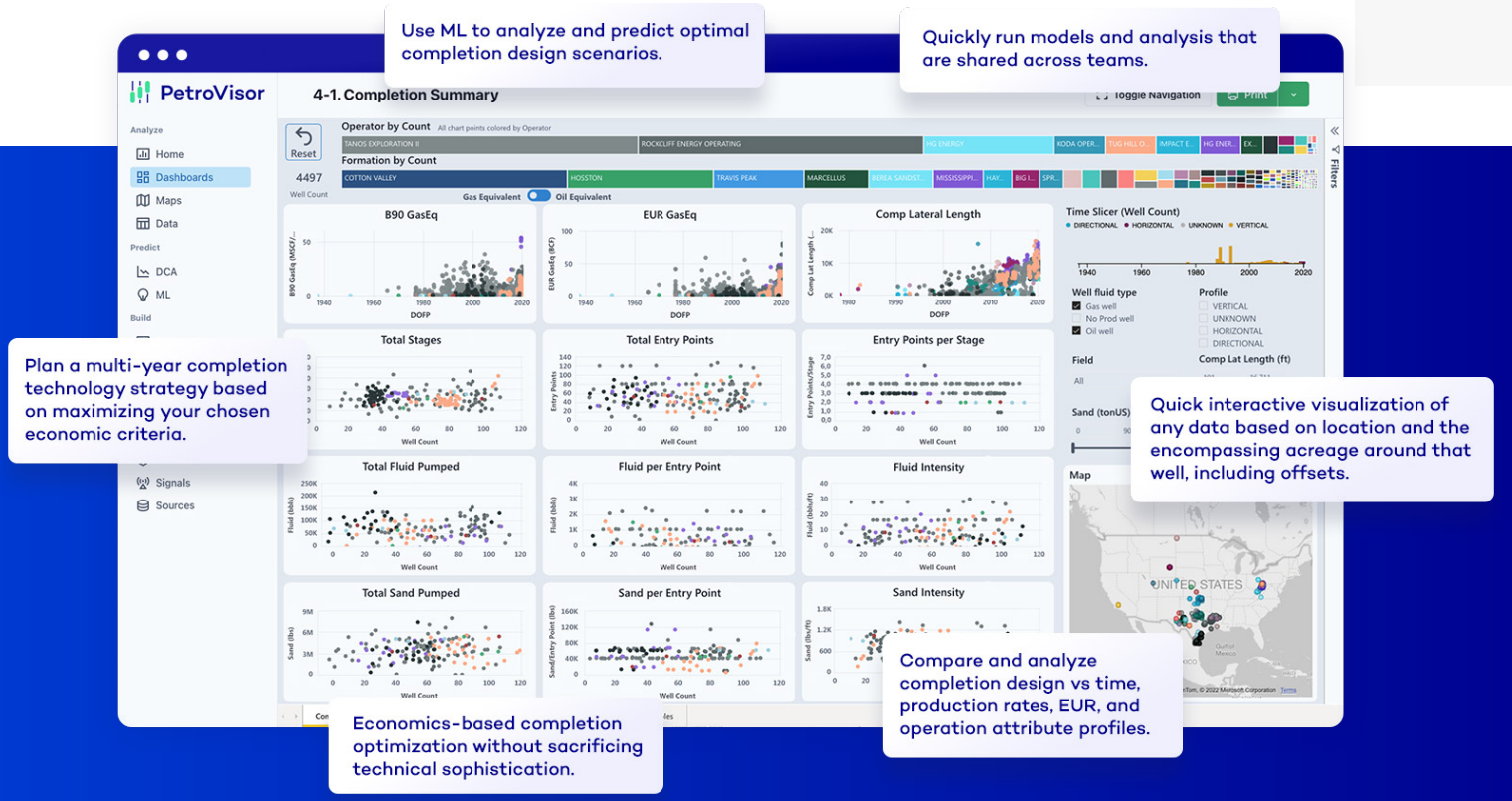
Using powerful multi-discipline data analytics, engineering, and economic techniques, users rapidly analyze thousands of potential completion designs without sacrificing technical or economic sophistication. The availability of the PetroVisor platform for all in an organization also encourages direct involvement and ownership by operations, engineering, geology, and management through cross-functional collaboration. This culminates in a work product that is complete, timely, and useful for decision-making. The results are provided for both a multi-year completion/development strategy and current year field recommendations. By the end of this process, the results are vetted, approved, and understood by all involved. Operational risk, technical uncertainties, management strategy, current commodity prices, and well costs are all features available as part of a completion optimization strategy and come included as part of the PetroVisor Completion Optimization App.

Maximize Economic Potential

PetroVisor utilizes advanced MVR/ML (Multi-Variable Regression/Machine Learning) analysis and economics to rapidly optimize completion designs using extensive empirical completion datasets. In PetroVisor, optimizing completion designs equates to maximizing shareholder value by deploying capital focused on the best economic return and by utilizing drilling inventory to maximize output. The Completion Optimization App quickly evaluates thousands of different completion designs to maximize the economics measure of your choice. This is only possible within the PetroVisor Platform, where we use a holistic data analysis approach to include a user-defined set of lateral spacings, completion, and geologic parameters, and Parent/Child measures (lateral spacing, timing) that define a large matrix of completion designs for economic evaluation. Users can also utilize features to impose operational risk factors that drive up the expected cost for different completions being considered.

Mapping & Visualizing Data Layers

The built-in mapping and dashboards provide useful interactive visualizations to understand the dataset and determine which figures and wells to use to train the completion optimization models. Quickly determine where you have useful data, which data is available, and if there are additional data QC efforts required. Given the ease of data interaction, visualization, and automation within the App, you can easily train and use several different datasets, creating final visualizations to then determine which datasets are the most helpful. Both public and private data sources can be connected to provide several dataset options.



App Features

Data QA / QC

Use interactive maps, graphs, and tables to quickly understand the quality and quantity of available data to be used for predictive model training. You decide which datasets are relevant to your completion optimization.

Automated Predictive Model Training

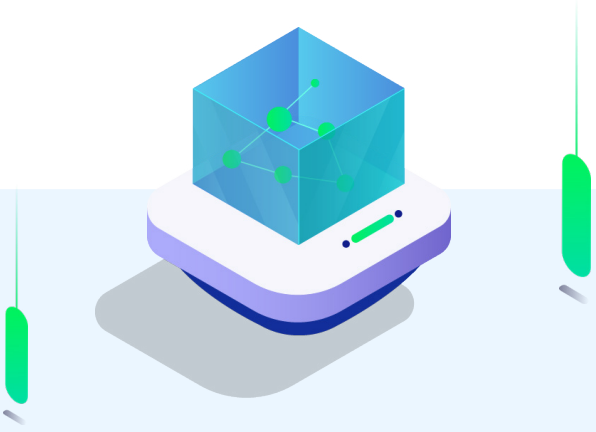
Select the appropriate completion, spacing, and geologic parameters for automatically training MVR/ML models to predict well performance. Extensive petroleum and data science domain expertise is embedded in the automated workflows to provide useful models without expert intervention. Expert users have complete access and flexibility to modify default training settings for custom configurations.

MVR/ML Trained Production Type Curve Builder

Use trained MVR/ML models to predict 40-year monthly production forecasts for a given completion design at a given location. Models can be trained to predict IP90 and EUR and then converted into 40-yr monthly production forecasts by modifying local zero-time average production curves from existing nearby and/or analogous wells.

Completion Design Matrix

You decide the ranges of completion and geologic parameters for evaluation of potential completion designs. Every combination of parameters is evaluated, often resulting in thousands or tens of thousands of potential completion designs to include spacing and geologic parameters.



Well Cost Model

The Well Cost Model predicts the drilling & completion cost for a well using both historical and forward-looking financials such as your commodity price deck. Thus, as the completion design changes, the well cost changes.

Single & Multi-Well Economics

You decide the suitable economic parameters for optimization. A standard oilfield 40-year monthly cash flow analysis is conducted on every permutation in the Completion Design Matrix. The production type curve from the Type Curve Builder is combined with the well cost, fixed, and variable operating costs, abandonments costs, gathering and transportation fees, NGL fractions, commodity price decks, etc. to perform the economic analysis. When available, utilize internal accounting system data for operating and well costs.

Visualizations For Decision Making

Interactive visualizations allow rapid understanding and communication of results for both technical and non-technical audiences. Isolate and convey multi-year optimization strategies and next-well expectations.

Find Out More

Learn more about how PetroVisor's Completion Optimization App analyzes and predicts optimal completion design scenarios by reading our Use Cases and Whitepapers.

About Datagration

Datagration provides the world's Oil and Gas companies with the tools they need to integrate and model data into meaningful insights and decisions daily. Our team of data scientists, engineers, and technologists work hand in hand with our customers to build a single source of truth used across the organization for data analysis, benchmarking, internal collaboration, financial analysis, and more.

To learn more about Datagration and the PetroVisor platform, go to **www.datagration.com**.