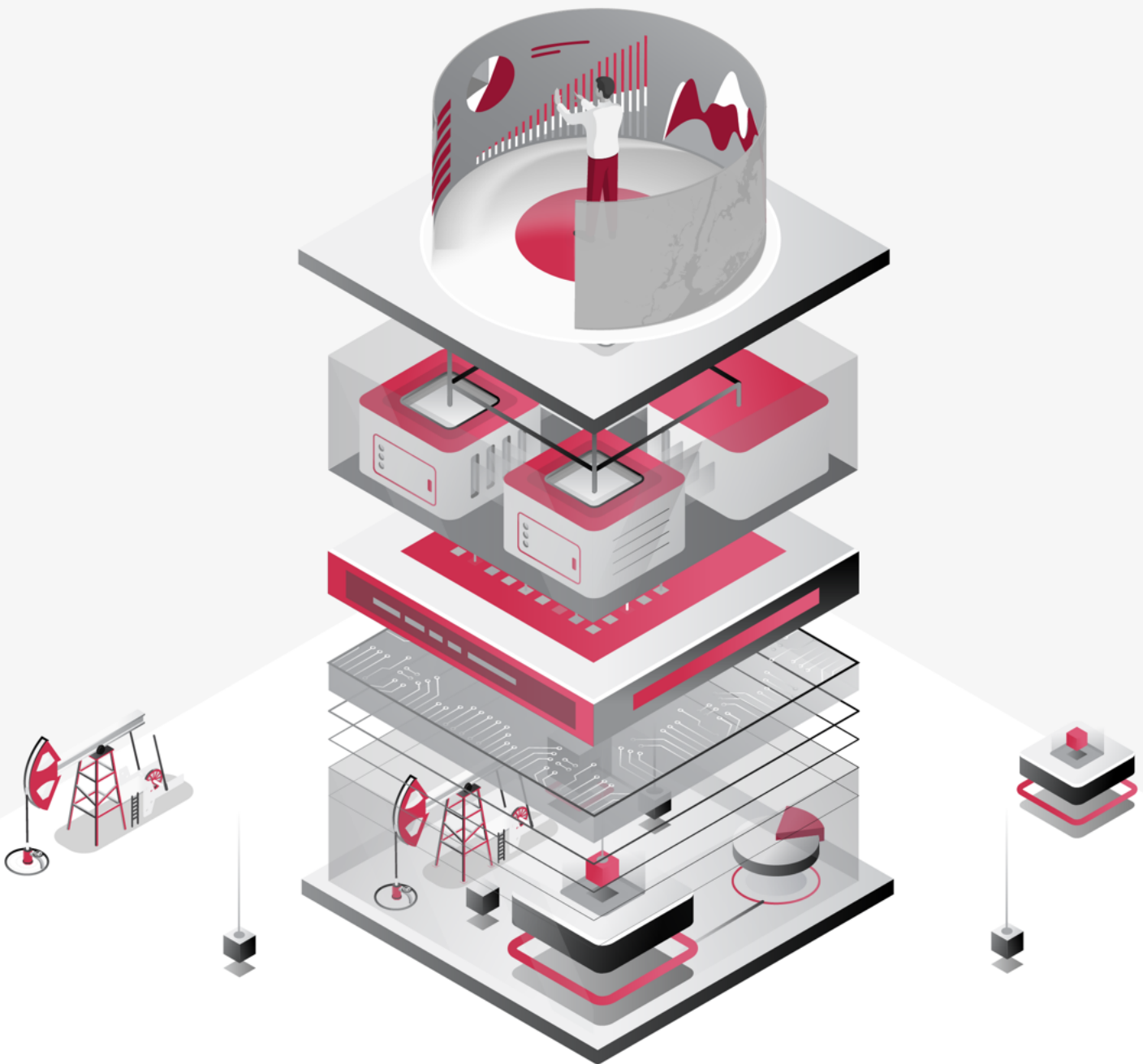# Unified Data Model Delivers Instant Value for E&P Companies

Review of the current data challenges

Data is a critical component of digital transformation for every business. However, when E&P companies strive to utilize their data, they face obstacles due to various data sources, types, formats, context and platforms. This multidimensional data problem is exacerbated when firms use hybrid and multi-cloud systems. For many E&Ps today, operational data has mostly remained segregated, siloed and buried out of reach to the enterprise, resulting in massive amounts of dark data.

Consider the numerous North American E&Ps attempting to redefine themselves as data-driven organizations—They strive to create an organization where data science capabilities are usable and readily available across various business divisions.

However, they quickly discover that their digital transformation journey is impeded by segregated data, inconsistent tools, and varying skill levels (not to mention SME attrition), all of which result in crucial gaps in data competencies.

The issues these companies face are not unique to their organization; instead, it's a result of data landscapes that have outgrown their data management infrastructures.

Adopting a Unified Data Model will ultimately lead to amplifying what your company already does well, leverages existing resources and tech stacks and accelerates the digital transformation we all seek to achieve in a more resilient future.

What is a Unified Data Model?

In the past, E&P companies sought to address data access issues by implementing point-to-point integration or data lakes. These options are ineffective when data is widely dispersed and compartmentalized. Point-to-point integrations incur exponential costs for each new end point that must be connected, resulting In a technique that fails at scale. Data lakes facilitate the integration of applications and sources, but also increase the expense and complexity of maintaining data quality and trust inside the lake itself. Data lakes can compound the "noise" inherent In your source data resulting in another layer that masks and perpetuates data quality issues.

A Unified Data Model aims to overcome the data challenges that arise from a mixed data landscape. Its primary function is to balance decentralization and unification by serving as a virtual connector between data sources & destinations.

A Unified Data Model enables dynamic and intelligent data orchestration across a distributed landscape using technologies such as automation and integration augmentation, resulting in a network of instantly available information in a single consolidated system.

Unlike typical data lakes, the model is independent of deployment platforms, data processes, geographic locations, or architectures, A Unified Data Model makes it easier to use data as a corporate asset and amplify the value in the data you already spend the time, money and resources to gather. It provides the platform needed where various types of data are easily and effectively merged, accessed, and regulated.

Business benefits of a
Unified Data Model

Data is more scattered, dynamic, diversified and challenging to manage than ever before. E&P companies must manage complicated multi-vendor data environments, segregated data sets, proprietary and static data models and lengthy data preparation cycles. All while adhering to a secure and compliant data governance strategy.

A Unified Data Model connects data endpoints, allowing for an entire range of data management functions such as integration, discovery, governance, curation, and orchestration. Upstream E&Ps benefit from a Unified Data Model in the following ways:

1 **Data consumption and collaboration done on a self-service basis**

Self-service features allow E&P companies' data users to locate quality data faster and spend more time studying data to deliver real insights that create business value. This equals less time searching and organizing data and more time focused on the results and goals of the organization.

2 **Automated data engineering processes to improve data integration**

Optimize and speed data distribution inside the organization by reducing wasteful, repetitive, and manual data integration procedures. Real-time continuous and autonomous analysis aids in the supply of high-quality data.

3 **True visibility from Engineering to Financial decisions**

True visibility Is only achieved when the enterprise has access to advanced and consolidated data analytics from the individual well level all the way to the corporate level.

Data consumption and collaboration done on a self-service basis

E&P companies acquire better insights and adapt to changing demands by integrating data from numerous sources and evaluating a larger percentage of the massive quantity of data created every day. A Unified Data Model rapidly transmits data to those who require it. Self-service helps the company to access relevant data more quickly and spend more time analyzing that data to deliver actionable insights.

Benefits of a Unified Data Model for self-service data consumption:

- Business users have a single source to discover, analyze, create, and consume data throughout the business.
- Unified data governance assists users in understanding data context and what the data really means, where it comes from and how it is connected to other assets & sources.
- Connected and configurable data scales easily and is available through open APIs.
- Self-service access to trustworthy and controlled workspaces for each line-of-business to enhance cooperation with other users and internal business groups.

Nearly

40% of data teams

admit they don't fully understand how data is being used in their organizations.

Automated data engineering processes to improve data integration

Because of advanced data engineering, data access or delivery operations can be automated, eliminating the need for time-consuming and error-prone coding. Integration augmentation makes use of metadata data to improve data delivery and access.

The advantages of a Unified Data Model for data engineering and integration include:

- Automatically optimizing data integration that speeds up data delivery.
- Automated methods for recording changes in real-time facilitates the transmission of high-quality data to business operations.
- Advanced analytics including Machine learning has the potential to automate and expand unique data searches, categorization, and curation procedures, resulting in a shorter time-to-value.

77%

of respondents in a recent survey from McKinsey believe data preparation and migration take longer than it should, delaying critical business decisions.

75%

of respondents in the same survey believe that poor or incomplete data migration costs their organization opportunity and revenue.

True visibility from Engineering to Financial decisions

With quick access to production data paired with advanced forecasting & accounting methodologies, users can predict individual well declines, estimate remaining recoverable reserves and study reservoir and field-wide depletion plans.

When production estimates are integrated with models, engineers can correctly compare flow projections and calibrate forecasts with real flow insights.

Executives get daily production insights and discover more opportunities at a rapid pace, as well as model and forecast a well or asset's forecasted output. Data outputs of the Unified Data Model include configurable graphs and charts, as well as multilayer visualizations, which provides critical insights during the predictive data process.

Benefits of a Unified Data Model that covers engineering to economics:

- Standardize and automate IRR, NPV and other return on investment analytics - get the engineers out of the process of financial calculations by providing these to them automatically and get them focused on the data that matters in their day-to-day activities.
- Better OPEX and CapEx planning through improved and automated field development plans.
- Complete backward looking ROI analyses - what was the expected outcome, cost, etc. and how does that compare to actual results.

Use Case

PetroVisor™ was able to connect, characterize and cleanse data comprising of:

- 40 years of production history
- 50,000 well tests
- Real-time wellhead data
- Reservoir properties
- 20 years' work-over/intervention history
- 20,000 well historical events
- Physics-based models
- RST & PLT logs
- Well integrity data & historical well intervention & work-over job success
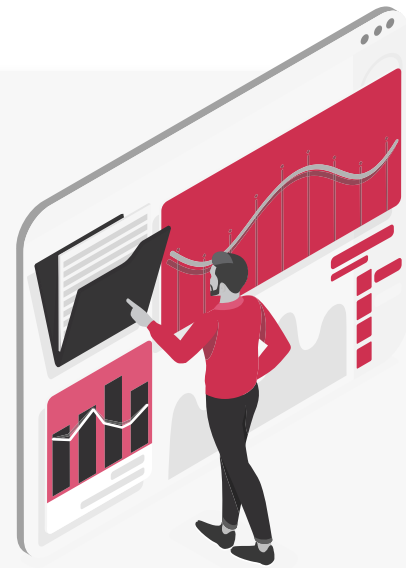
Results

- PetroVisor significantly reduced the time and effort by 90% for well reviews.

- PetroVisor further maximizes the utilization of production optimization models by 30%.

- The project is expected to yield up to $12.5 million of value over the next 5 years for the asset.

Value creation from the PetroVisor Unified Data Model

A Unified Data Model is the game-changing next step for your E&P firm.

You can hyper-automate data discovery, data governance, and data consumption across a hybrid and multicloud data landscape with the PetroVisor Unified Data Model. Use a Unified Data Model to improve time-to-value for business users, data engineering and operations productivity, and governance and compliance integrity.