



# North American Shale Operator

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## Client Profile



## Introduction

To maximize production, reduce risk and enhance operational safety, optimal understanding of the subsurface is an absolute necessity. The onshore shale plays of North America are no exception to this. Even though reservoir engineering has traditionally been prioritized over geological understanding in these areas, geo-mechanical and rock property modelling as part of integration subsurface characterization has been proven to give operators a competitive edge.

This is the story of how one client in North America has repeatedly partnered with Ikon Science over the past 10 years, showing trust and value in our combined software and services offerings as it has grown to become one of the most respected operators in North American unconventional plays.

# Elevate your Subsurface IQ



## Customer Profile and Goals

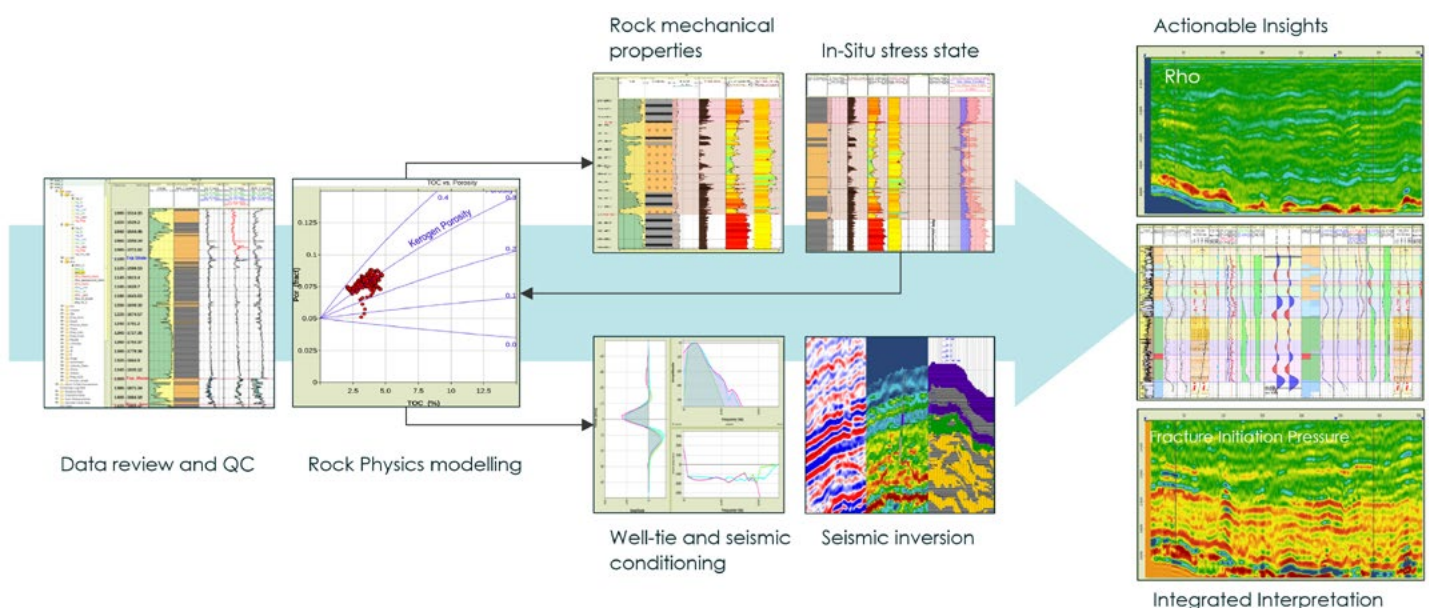
A North American shale-focused operator has shown consistent growth in the past two decades, through organic and strategic acquisition growth. By holding a strong competitive positioning in its operational assets, this company has managed to maintain consistent growth through multiple local and global commodity price drops.

A key component of the companies success has been in maximizing return from its operated assets through efficient placement and management of wells and completion strategies. This operator knows the value of understanding rock fabric when it comes to efficient and safe drilling operations and has found a strong mutual partner in the form of Ikon Science.

In the past 10 years this operator has engaged with Ikon Science on multiple engagements across Geomechanics, Rock Physics and Data Management to build a highly informed and technologically advanced geoscience department that is capable of influence the business decision making process with quick and valuable insights.

Some of the examples of this engagement include:

- Engaging with our Geomechanics and Rock Physics services team for fully integrated interpretation of the subsurface
- Utilizing our award-winning Ji-Fi technology to provide high-resolution insights of the subsurface
- Running our powerful RokDoc software in-house for additional log conditioning and offset modelling applications
- Deploying the Curate Knowledge Management platform to increase data quality and empower users through unrivalled access to corporate subsurface knowledge



## Summary of Ikon Science Technologies Used



Comprehensive knowledge management platform for promoting confidence and awareness of subsurface information. Web-browser tool provides enterprise access to those who need it.

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Automated loading workflow, triggered by drop-box file operations. Allows application of configurable, data-type specific business and data qc rules as part of loading to Curate DB.

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Seamless interface incorporating everything from data quality control to modeling and prediction, integrating multidisciplinary workflows for Quantitative Interpretation, Pore Pressure, and Geomechanics.

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Ji-Fi is a unique Ikon Science technology for simultaneously estimating facies and impedances directly from seismic data. Captures both geological and data uncertainties to be captured.

## Spotlight on Curate

Data Quality and Accessibility are absolute requirements for any company that sees itself adopting a 'data driven' mentality. But in the subsurface space, often decades of data are locked away in isolated silos where access by business users in a timely fashion is simply impossible.

That data quality and accessibility is a challenge in the subsurface space is a surprise to no-one who has worked the area, but efforts to improve this in operators are often derailed by spiraling costs, complexity and lack of available resources.

At this operator, these challenges existed - with no dedicated data management team, a sizeable growth of assets and limited budget availability. But to become data-driven it was understood change was needed.

Curate met the requirements with a simple to implement, highly automated technology stack that meant real actionable change could be delivered in weeks, not years.

Starting with well headers, tops, deviation surveys, logs and core data, a full suite of digital wellbore data was managed through the Ikon Science Data Autoloaders. These tool automatically parse, identify, standardize and calculate a quality score as part of an end-to-end loading workflow. This provides consistent levels of confidence in the data, without a need to employ additional loading resources.



*Curate provides browser-based enterprise access to the client's rock and fluid data. Geoscience focused displays allow data preview and verification natively in the application*

## Application Details

Curate provided the user community with map-based visualization of the data, ensuring immediate access to the corporate level of data. Configurable filters allowed simple searching for data based on type, source, asset, date and other common search terms.

A key workflow implemented was data quality awareness. New developments to the tool based on the customers requests allow users to filter data by calculated quality level, and adjust these levels should have they the pre-requisite system permissions.

The tiered user pricing structure allowed the company to manage licensing costs during the build phase, and incrementally add additional seats as the business requirement grows.

## Scoping and Implementation

Ikon Science's Data Solutions team performed a lot of the heavy lifting for the initial scoping and solution design. Taking the customers business and technical requirements, the commercial autoloading and integration tools were configured ensuring a bespoke loading workflow, but without the need for customized code.

Future phases of implementation will focus on incorporating additional data types including regional seismic surveys – including the potential replacement of a costly legacy seismic specific application.

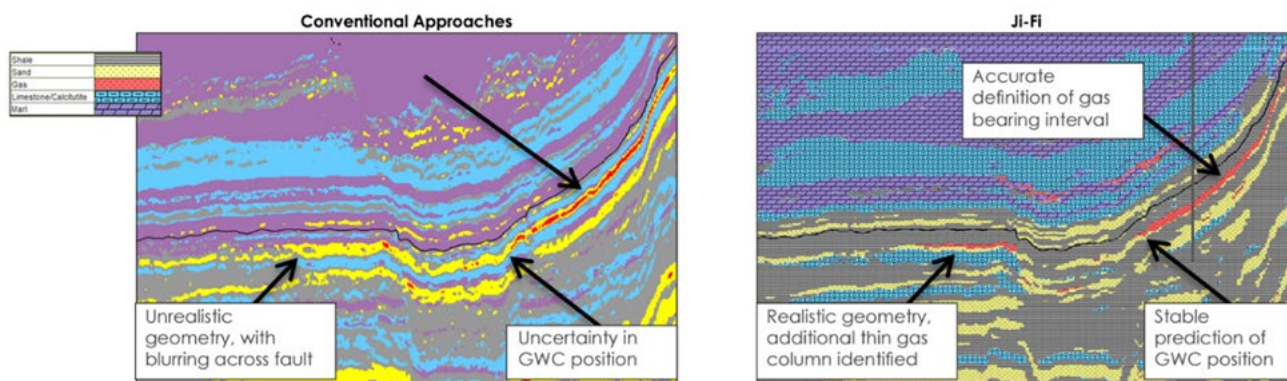


## Spotlight on Ji-Fi

Shale reservoirs are often treated as homogeneous masses, with consistent rock properties and qualities persisting both horizontally and vertically. The truth is much different though, with all shale hydrocarbon provinces having so-called ‘sweet-spots’ and variation in rock types requiring dynamic drilling and completion strategies.

The onshore operator in this profile identified that the shale play which was responsible for the majority of their production had subtle variations in production potential that were linked directly to rock quality. The challenge was identifying these prior to the drilling of wells. Effective understanding of the subsurface would allow more efficient placing of wells and completion stages, as well as avoidance of potential drilling hazards.

Ikon Science’s Ji-Fi tool is a revolutionary seismic inversion which through incorporation of rock physics increases the accuracy of the produced model. Ji-Fi ensures consistency in the rock properties by utilizing rock facies classes with the algorithm, and provides predictions across the seismic volume. This allows high resolution pictures of the subsurface to be built, ensuring that key decisions such as location of infill wells, positioning of completion stages and management of drilling and completion fluids leads to commercial success.



*Integration of rock facies classes in the inversion algorithm enables a high resolution of the subsurface to be built while obtaining a strong handle on uncertainty.*

## Spotlight on our Integrated Services

Ikon Science's Integrated Services team pulls from some of the very best global experts to provide petrophysics, rock physics, geomechanics, pore pressure, and real-time consultancy. In addition, our dedicated Data Solutions team have assisted a global client base with the scope, design and implementation of world class data management solutions.

This highlighted operator has utilized Ikon Science's integrated service teams to uncover a range of insights about the subsurface. Through integration of 1D Geomechanics modelling with our award-winning Ji-Fi technology, this customer has been able to produce detailed integrated models of the subsurface that highlight optimum locations as well as provide inputs for well spacing and completion strategy design.

These detailed well-based models are key deliverables, and by also being a subscriber to our class-leading RokDoc tool, the customer can take these same models and apply them to offset areas of interest – maximizing the ROI from these studies. In addition, the outputs from these studies can be used to populate geomodelling packages with the underlying facie, reservoir and geomechanical properties. and rock-properties.

