Boost Production with Analytics

Learn How to Increase Productivity with Drillinginfo
OVERVIEW

The main objective of every E&P organization is to maximize production. With the downturn in commodity prices, there is greater scrutiny on accuracy and every dollar spent must be carefully managed. In fact, relying on solid data is more important than ever before as prices fluctuate and laws regarding exports and imports change.¹

The asset manager at one company saw that the competition in the area reported stronger returns, and he wanted to determine how they accomplished this so he could improve his approach. He had to work quickly while managing costs, so he could not devote months to research or hire expensive outside analysts.

Using DI Analytics, DI Engineering, and DI Transform tools, the customer overcame the challenge by creating a new production plan that improved well productivity by more than 20 percent.


CHALLENGE
How do I analyze acreage to increase production?

SOLUTION
Using Drillinginfo products, the geology team assessed potential by reviewing an intuitive heat map to distinguish core vs. non-core holdings, rank the relative quality of each one, and identify where the greatest potential value existed.

PRODUCTS USED
DI Analytics, DI Transform, DI Engineering
STEP 1: SET THE RIGHT BENCHMARKS

The team wanted to see how others were faring in comparable acreage. Different operators can break the bank or make huge profits on the same land; so competitive benchmarking is crucial. It helps identify who is reaping the greatest rewards—and whose methods are not worth a second glance.

Products Used:

- DI Analytics

With Drillinginfo:

DI Analytics aggregates and analyzes data from thousands of wells and dozens of operators to quantify the range of results generated across acreage of various grades. The team used the Drillinginfo normalized operator differential to easily identify both outstanding and marginal performers. Furthermore, analysts used creaming curves to benchmark productivity using a variety of key metrics, including peak rates, short-term cums, and EURs.

Without Drillinginfo:

Production data is widely available, but few operators have enough geologic data to attempt acreage comparisons on any significant scale. Even for the largest operators, conducting competitive benchmarking is typically a time-consuming, error-prone manual process that may involve hiring costly outside consultants and sacrificing profitability.

STEP 2: ACCESS DETAILED COMPLETIONS AND PRODUCTION DATA FROM DRILLINGINFO

The asset manager identified two competitors outperforming the company in similar acreage, but needed to understand what was different about how they were completing their wells. He turned to Drillinginfo to provide accurate and detailed completions and production information for his play and target formation. He found detailed completions...
CASE STUDY: BOOST PRODUCTION WITH ANALYTICS

information for all operators with DI Engineering, then started exploring the completions data in DI Transform using histograms and crossplots.

Products Used:
- DI Engineering
- DI Transform

With Drillinginfo:
Drillinginfo captures well, wellbore, geological, engineering and production data, and scrubs it multiple times to eliminate redundancies and anomalies. The asset manager’s team imported this clean, aliased data into DI Transform in order to perform advanced analysis.
The data was comprehensive enough to identify optimal, average, and ineffective practices for nearly every aspect of production, including well placement, lateral length, azimuth and more.

**Without Drillinginfo:**

Before any analysis could begin, team members would have to devote many days to manipulating data. For example, within a given dataset, the same operator might be identified in a dozen different ways due to alternate spellings, abbreviations, and acronyms.

Aliasing a single reservoir might take several days, and the risk of error rises with every hour of manual work. Shortcutting this process by skimping on statistical analysis is even less effective, as surface-level competitive comparisons can be misleading.

**STEP 3: DETERMINE OPTIMAL COMPLETION METHODS USING DI TRANSFORM’S MULTIVARIATE ANALYTICS**

After importing detailed engineering information into DI Transform, the asset manager used DI Transform’s data extraction tools to extract geologic parameters onto each well from detailed maps his geologists had produced. He then performed a multivariate regression analysis to predict production using key completion and geologic parameters. By examining the non-linear relationships, the asset manager was able to identify the completion method that maximized oil production. By comparing this with the company’s original completion plan, he realized that the main reason wells were underperforming was that their stages were too long. Furthermore, the nonlinear relationship between total proppant and production suggested that they could use less proppant to achieve the same production.

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results. The model highlighted the best place to invest money.

Based on the DI Transform model, the asset manager and his team planned their next well to use stage lengths of 250 feet instead of 500 feet and decided to double the number of stages from 20 to 40. In addition, their plan called for a reduction of proppant from 450 to 375 lbs per feet, saving $150,000 per well. Although the team projected that doubling the number of stages and shortening their length would cost an additional $1.05 million, they projected additional revenue of $1.8 million at an oil price of $60 per barrel. In fact, the return on investment of the new plan was positive for any oil price greater than $35.

**Products Used:**

- **DI Transform** features used: Data extraction tools and multivariate analytics

**With Drillinginfo:**

Because there are so many factors that determine whether a well performs at a high level (i.e. rock quality, well design, completion method) it is usually impossible to identify meaningful

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2 Assumes proppant cost of $0.20 per foot.
3 Assumes $56,250 per stage completion cost with 375 lbs proppant per foot and $60,000 per stage cost with 450 lbs proppant per foot.
4 Assumes no discounting.
relationships using crossplots or other bivariate analyses. DI Transform’s multivariate approach identifies a fundamental relationship between each input variable and production by filtering out noise caused by the other model components.

The engineers used DI Transform multivariate analytics to quickly pinpoint the optimization points for each completion element across their own and their competitors’ practices. Using those optimization points as a foundation, they developed a better engineering plan.

Without Drillinginfo:

Engineers would have to spend several days importing their own project data into multivariate analytics software, but without completion data aggregated across multiple operators, defining optimization points is impossible. Even when they compile data for more than one operator, manipulating models to assess the impact of a given variable is not always possible.

STEP 4: PINPOINT THE SWEET SPOTS

Now that the team had a fully optimized completion plan, they applied their production prediction model spatially, using geologic maps as input variables holding completion parameters constant. They created a sweet spot map predicting how much production they could expect if they drilled the optimal well in any given location. This helped them optimize well placement within their existing acreage. It also highlighted prime acreage for acquisition based on geology.

Products Used:

- **DI Transform** features used: Multivariate analytics and the Horizon Properties Calculator

With Drillinginfo:

With completion parameters normalized through DI Transform’s sophisticated modeling tools, the asset manager brought his geology team back to the table to create a refined,
more accurate geological map.

The team could now identify an area with tremendous potential that they had not considered before. The asset manager took this recommendation forward, and the company hit the sweet spot with their next well. This helped the company deliver an immediate, significant boost to the bottom line. Companies that use insightful analytics thrive in an environment where the demand for exports could increase.\(^5\)

**Without Drillinginfo:**

No other analytical software lets users integrate engineering, geologic, and seismic data in a single view. Traditional models built manually using 2D maps, spreadsheets, and input from on-site technical teams simply cannot deliver the kinds of insights that help Drillinginfo users pinpoint the sweet spot.

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CONCLUSION

Drillinginfo provides you with powerful products that help you perform business intelligence, analyze public and proprietary data, and build predictive models. Drillinginfo geoscientists, engineers, and data scientists devoted many years to creating the best acreage grading methodology on the market.

Learn how Drillinginfo solutions help you stay ahead of the competition, locate open acreage, and use resources efficiently. Speak with one of our experts today.

By monitoring the market, Drillinginfo continuously delivers innovative oil & gas solutions that enable our customers to sustain a competitive advantage in any environment.

Drillinginfo customers constantly perform above the rest because they are able to be more efficient and more proactive than the competition.

Learn how our solutions can help you optimize well placement for maximum production and ROI from new and existing wells. Speak with one of our dedicated DI Transform specialists today.

Learn more at www.drillinginfo.com