CENTENNIAL

Core Oil
Delaware Basin Pure-Play

DUG Permian Conference

Utilizing Data to Drive
Capital Efficiency

July 13, 2021

Important Information

Forward-Looking Statements

The information in this presentation includes "forward-looking statements" within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. All statements, other than statements of historical fact included in this presentation, regarding our strategy, future operations, financial position, estimated revenues and losses, projected costs, prospects, plans and objectives of management are forward-looking statements. When used in this presentation, the words "could," "believe," "anticipate," "intend," "estimate," "expect," "project," "goal," "plan," "target" and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain such identifying words. These forward-looking statements are based on management's current expectations and assumptions about future events and are based on currently available information as to the outcome and timing of future events. We caution you that these forward-looking statements are subject to all of the risks and uncertainties, most of which are difficult to predict and many of which are beyond our control, incident to the development, production, gathering and sale of oil and natural gas. These risks include, but are not limited to, commodity price volatility, the COVID-19 pandemic and governmental responses thereto, inflation, lack of availability of drilling and production equipment and services, environmental and weather risks, drilling and other operating risks, regulatory changes, the uncertainty inherent in estimating oil and gas reserves and in projecting future rates of production, cash flow and access to capital, the timing of development expenditures and the other risks described in our filings with the Securities and Exchange Commission. Except as otherwise required by applicable law, we disclaim any duty to update any forward-looking statements, all of which are expressly qualified by the statements in this section, to reflect events or circumstances after the date of this presentation.

Overview

Objective:

- Demonstrate how Centennial is utilizing data science in a cost-effective manner to increase capital efficiency

Disclaimers:

- I am not a data scientist
- Our team appreciates and respects the use of data science to influence technical decisions within the Company
  - We do not remove the human element and let machines tell us what to do
- Our goal is to eliminate the “gut feel” approach to decision making that can cost time and money, as well as impact morale across the organization
- What we do not have:
  - Hundreds of internal applications
  - A multi-million-dollar IT budget
  - Hundreds of IT personnel

Centennial Resource Development Overview

Core Acreage and Strong Execution Track Record

Large, contiguous acreage position in the Delaware Basin

- High quality acreage in Northern & Southern Delaware
- ~81,700 net acres
- Minimal Federal exposure (~4%)
- ~97% operated and ~88% held by production

Proven operational execution

- Realized significant improvements to cost structure
- 2021 drilling program set to increase capital efficiency and carry operational improvements forward

High-quality asset with significant inventory depth

- Proven development from 10 distinct zones across the Northern and Southern Delaware
- 15+ years of economic inventory[1]

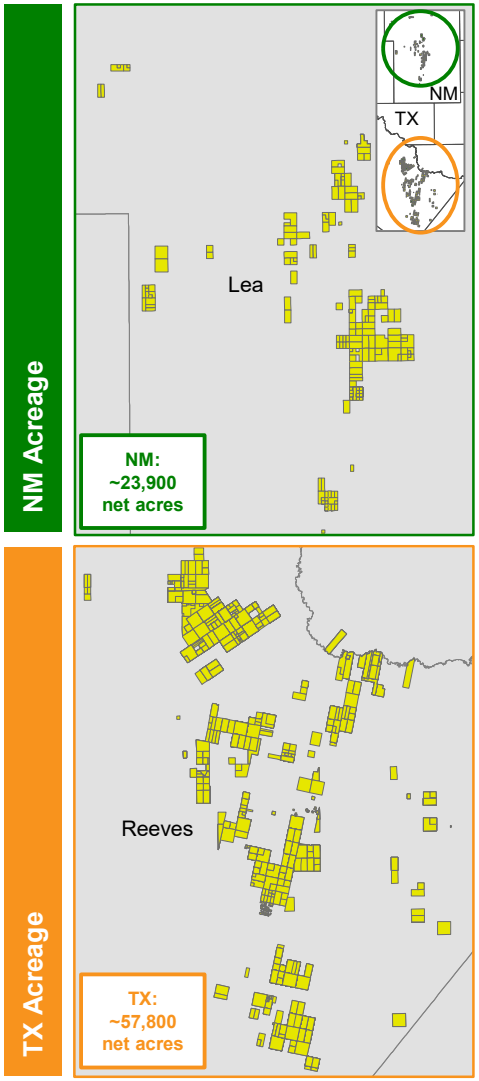
FCF profile to support organic deleveraging and strong liquidity profile

- Generated FCF for three consecutive quarters
- ~$415mm of pro forma liquidity as of 3/31/21[2]
- Expect significant reduction in leverage during 2021
- No senior note maturities until early 2026

Continued focus on ESG initiatives

- Recently published inaugural Corporate Sustainability Report
- Minimizing emissions through increased gas capture
- Improvements in sustainability through water recycling program, minimizing water trucking and utilization of dual-fuel operations

Asset Map



(1) Assuming a two-rig flat program and $45/Bbl oil pricing
(2) Pro forma for Senior Secured Second Lien note redemption that occurred on 4/14/21

2020 Lookback

- The impact by COVID-19 and ensuing decline in oil prices was a generational event that shook the industry
- Centennial responded quickly by reducing its rig count from five to zero in April 2020 and suspending near term D&C activity
- During this period, Centennial focused on the following items:
  - ✓ Protect the balance sheet and preserve liquidity
  - ✓ Cost control and margin improvements
  - ✓ Initiatives designed to enhance capital efficiency

Review of CDEV's Recent Cost Initiatives

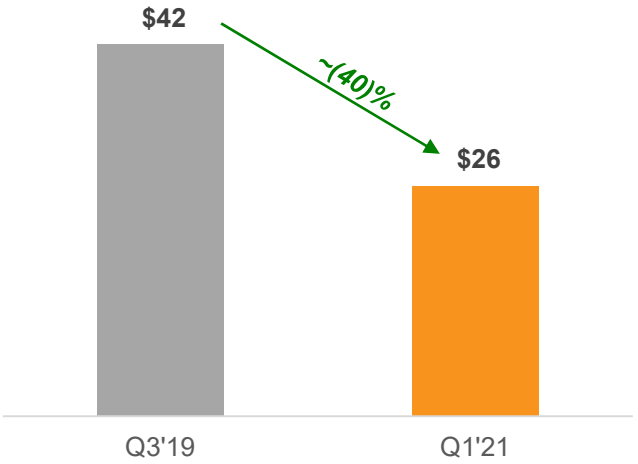
Lease Operating Expenses

- Completed electric substation and associated feeder lines in Reeves County during Q4'20
  - Facilitated transition of well-sites to electric power
  - Lowered equipment rental costs as a result of reduction in in-field generators leased
  - Access to line power increased reliability and reduced production downtime
- Ongoing transition from ESPs to more reliable gas lift
  - Lower failure rate, less workover expense and production downtime

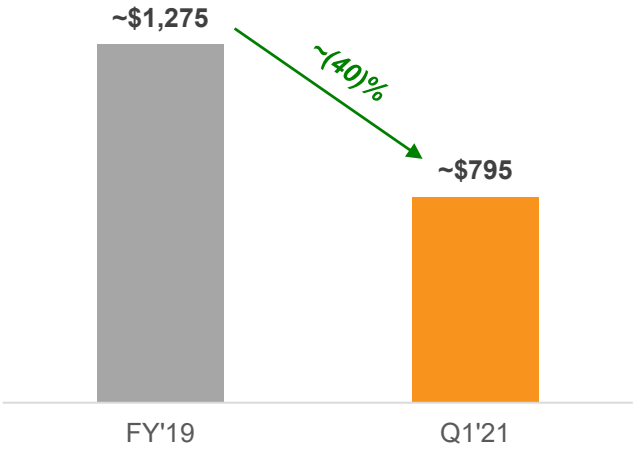
Drilling & Completion Costs

- Increased operational efficiencies, resulting in significant reduction in cycle times
  - 11% decrease in spud to rig release days YoY[1], while increasing lateral length 17%
- D&C design / process refinement
  - Casing design improvements
  - Reduced down-days

LOE Expense ($mm)



DC&F Cost / Lateral Foot (1.5 & 2 Section)[2]



(1) Represents Q1'21 versus Q1'20
(2) Represents total completed well costs - including drilling, completion, facilities and flowback costs

The Next Challenge: Improving Capital Efficiency

Questions:

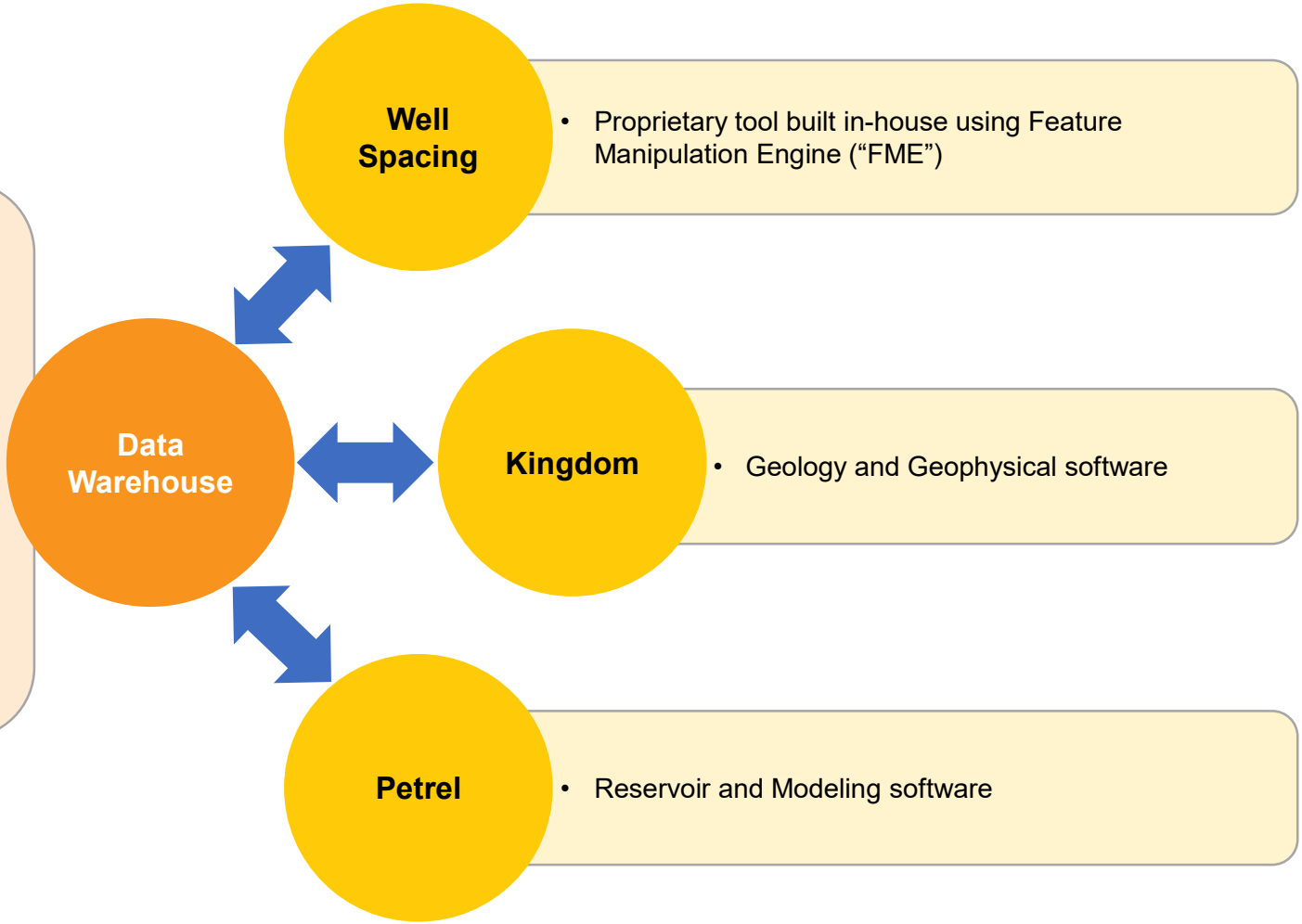
1) Can we improve our average well result, despite increased parent / child dynamics inherent within the industry?
2) Given the variable geology in New Mexico, can we accelerate our learning curve regarding spacing / geologic testing?
3) Can we stay up-to-date on industry completion designs to ensure CDEV is always on the cutting edge?
4) Can we explore ways to spend less capital while receiving the same (or better) well result, excluding OFS cost savings?

Answer:

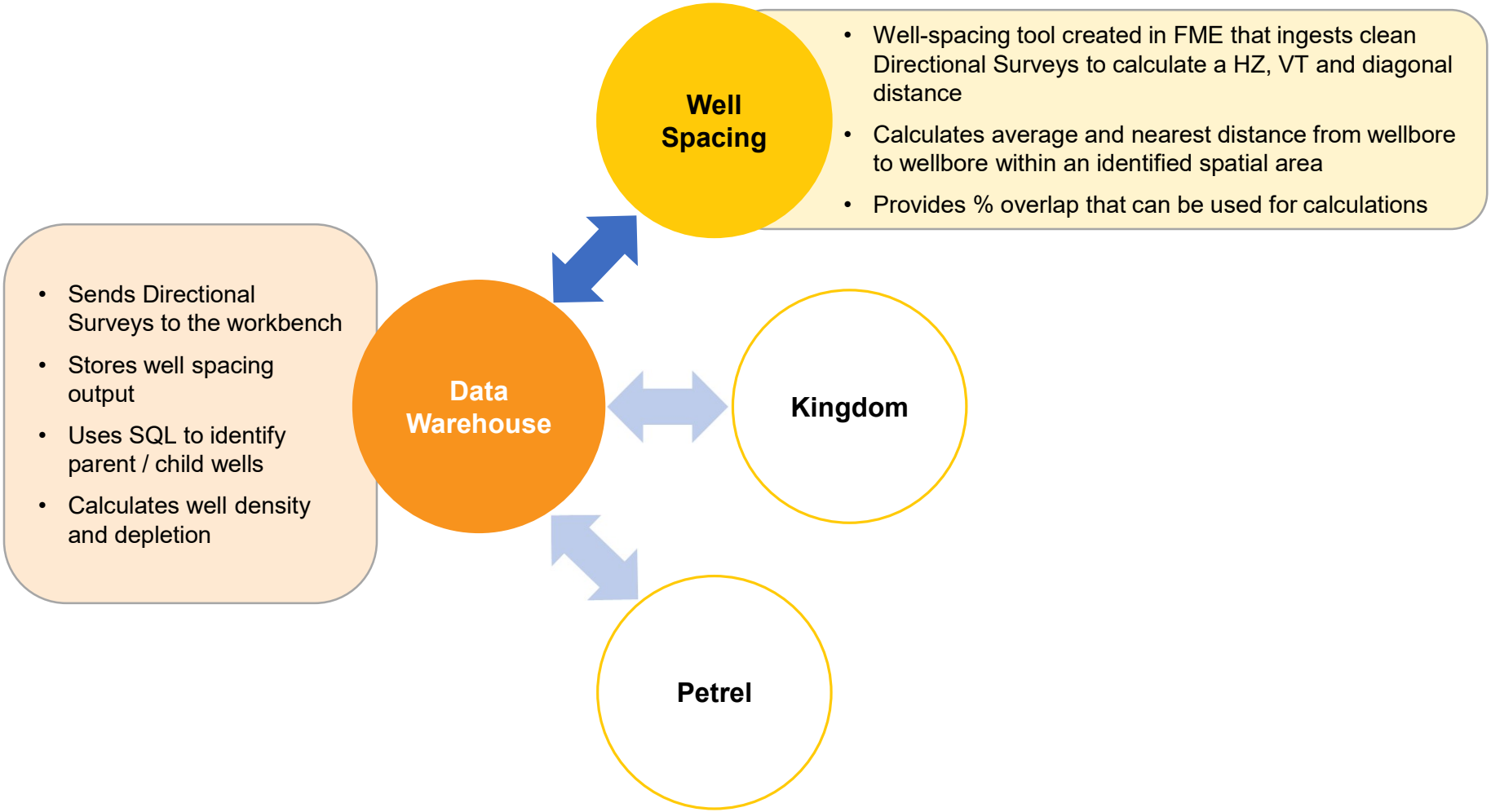
- Yes. Centennial built a predictive tool that enables the Company to make quick, data-driven decisions in order to improve well results and modeling efforts.
  - Achieved with ~$20,000 and a half dozen highly technical employees

Data Sources of CDEV's Machine Learning Technology

- Central Data Repository for both proprietary and vendor data
  - Completions Data
  - Production Data
  - Directional Surveys
  - Location Data
  - Drilling Data
- Allows us to join all disparate systems in one location



Data Sources – Well Spacing



Data Sources – Well Spacing, *continued*

- Proprietary well spacing tool provides 3-D spatial image and distance calculations for nearby wellbores
- Classifies wells as parent / child, in addition to computing offset depletion and well density
- Ability to analyze all wells across the Delaware Basin

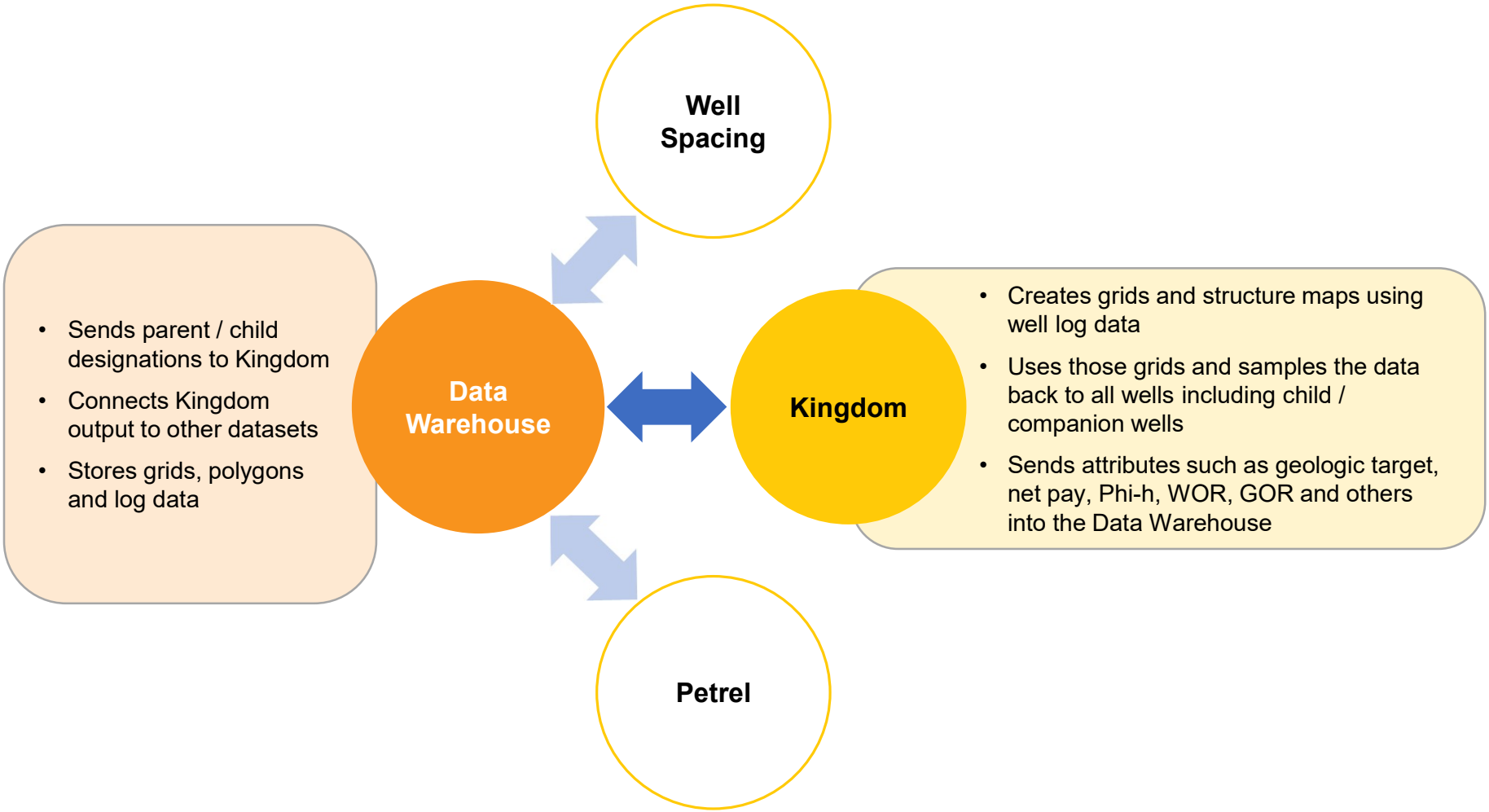
Example Well Spacing Output

3-D Spatial Imagery

Distance Calculations

Well Name	Offset Well	Overlap	HZ Distance	VT Distance	Diagonal Distance
Well A	Well B	18%	890’	-42’	895’
Well B	Well A	26%	890’	+42’	895’
Well B	Well C	95%	898’	-40’	899’
Well C	Well B	100%	898’	+40’	899’

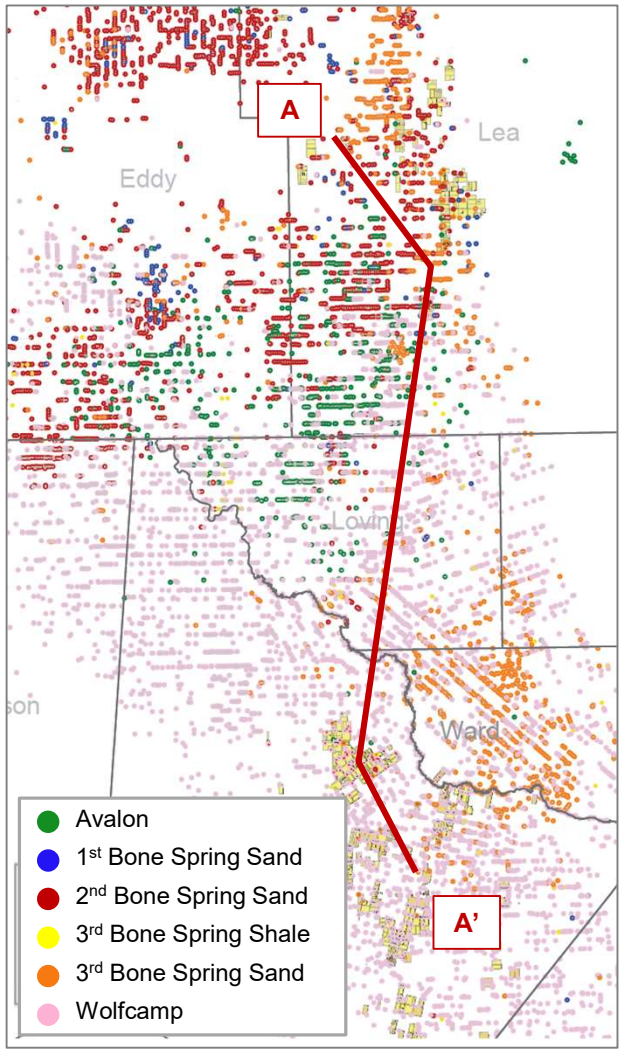
Data Sources – Geology and Geophysical



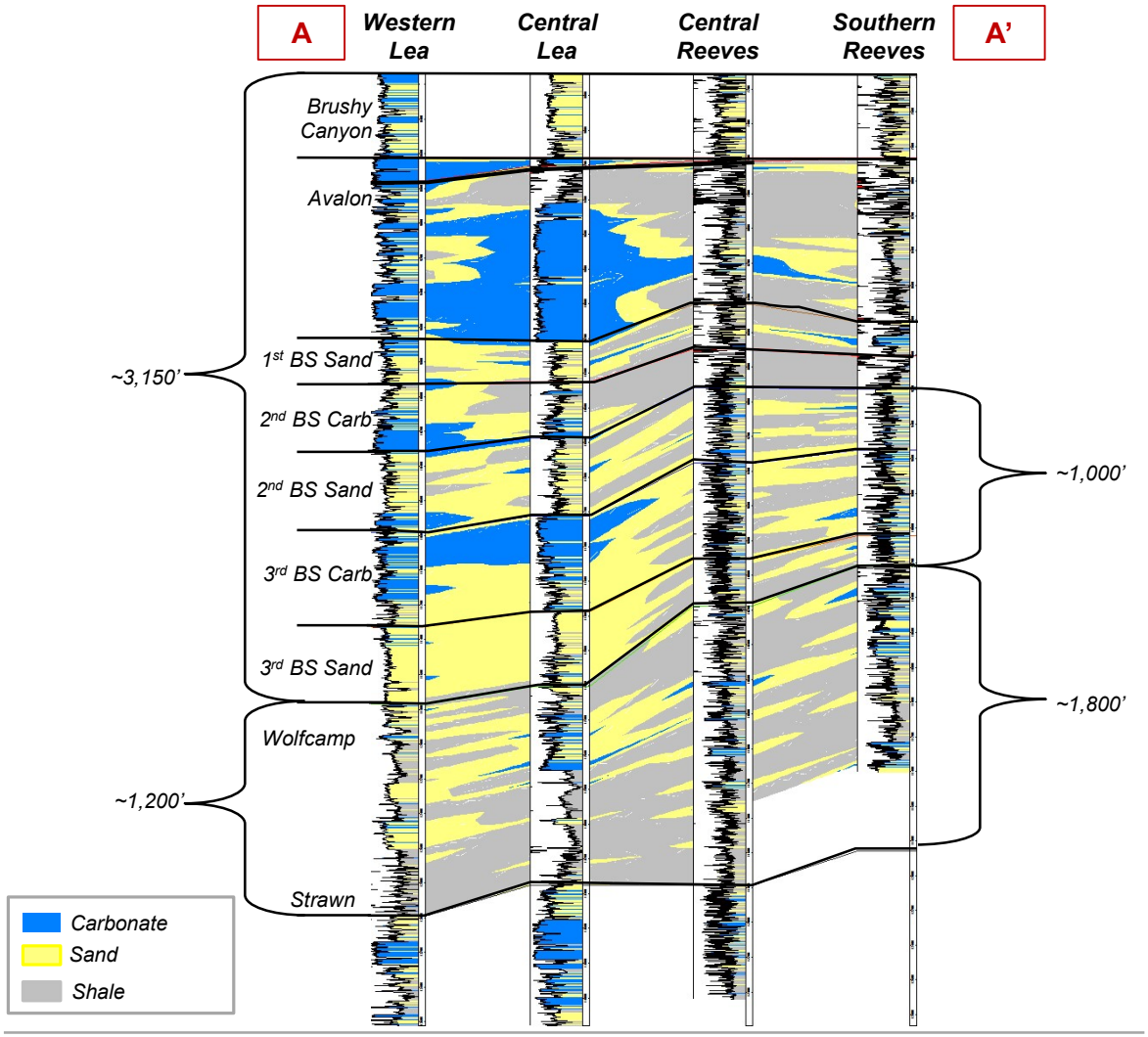
New Mexico / Texas Geologic Comparison

Significant Geologic Differences Between Assets

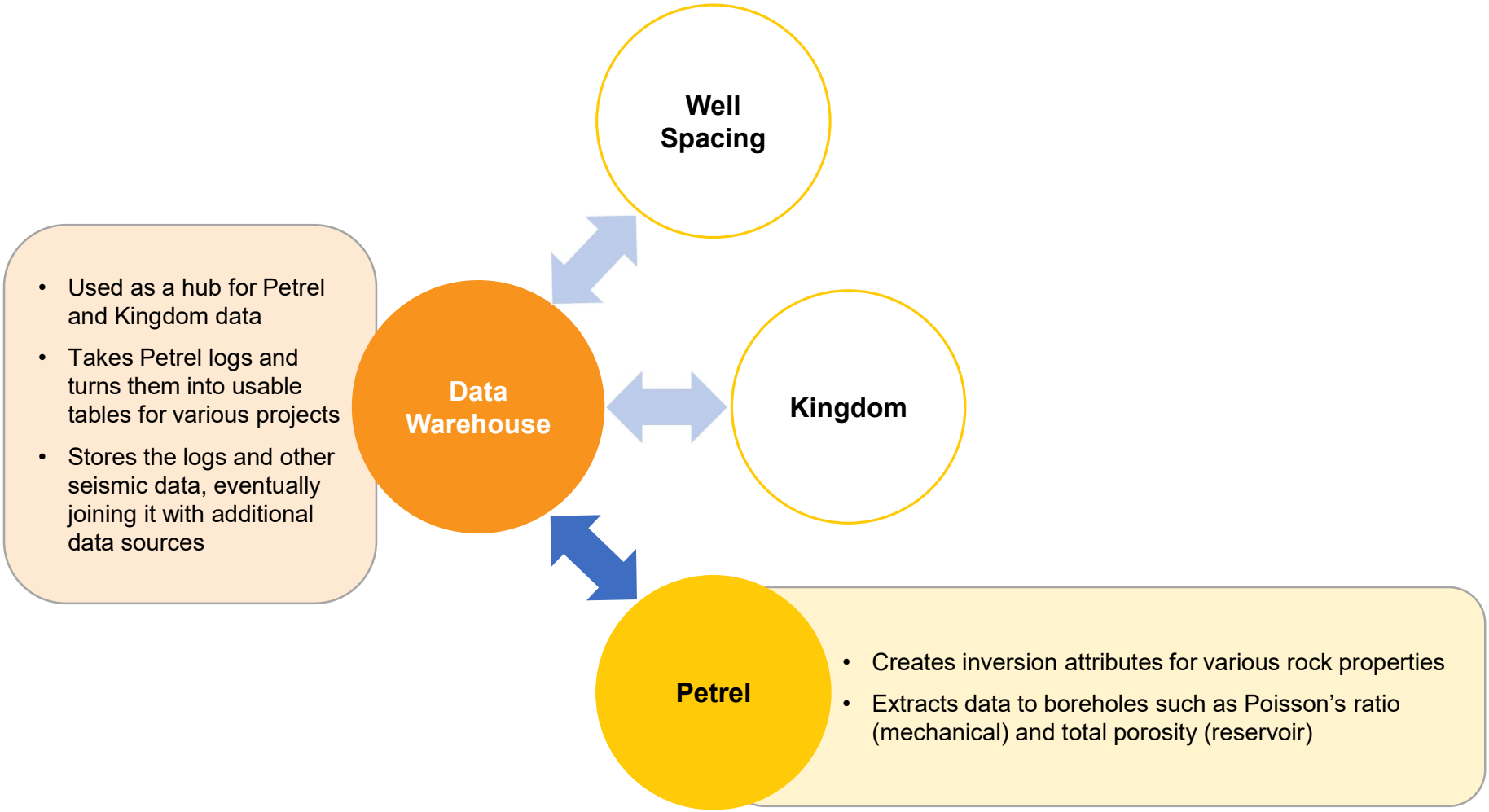
Historical Industry Wells by Formation



Geologic Target Distribution Across the Centennial Position



Data Sources – Reservoir and Modeling

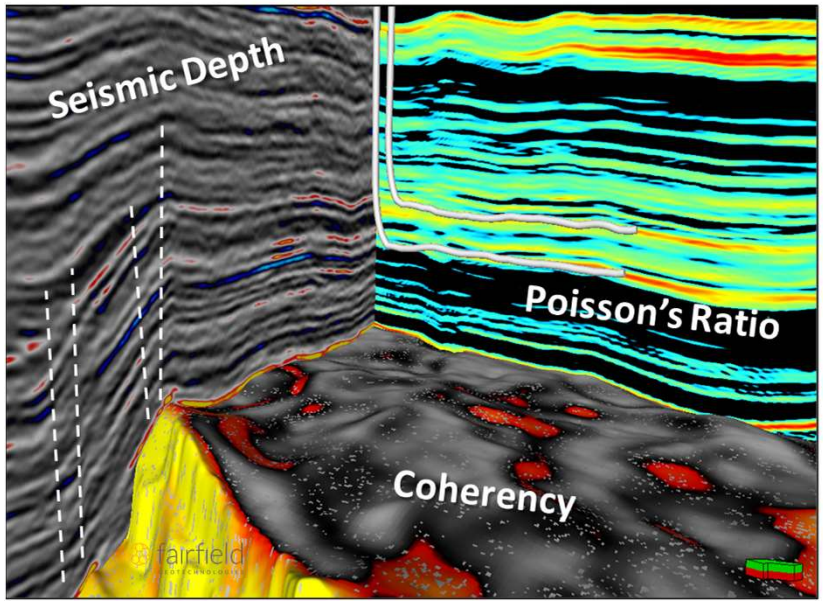


Data Sources – Reservoir and Modeling, *continued*

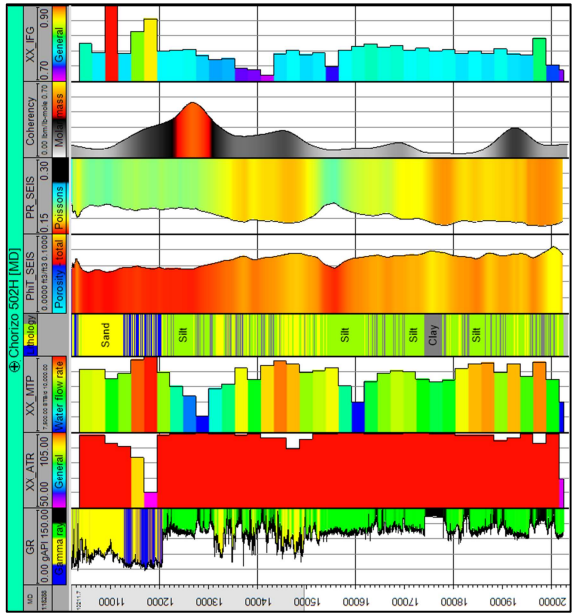
- Petrel provides the ability to view data in 3D
- Can ultimately extract seismic data along the wellbore and track it against completions data from the field
- Allows us to identify areas prior to stimulation in which a modified or skipped stage is possible to avoid unnecessary spending on non-productive intervals

Reservoir and Modeling Examples

Seismic Attributes[1]



Log Extractions with Completions Data



IFG

Coherency

Poisson's Ratio

Porosity

Rock Type Model

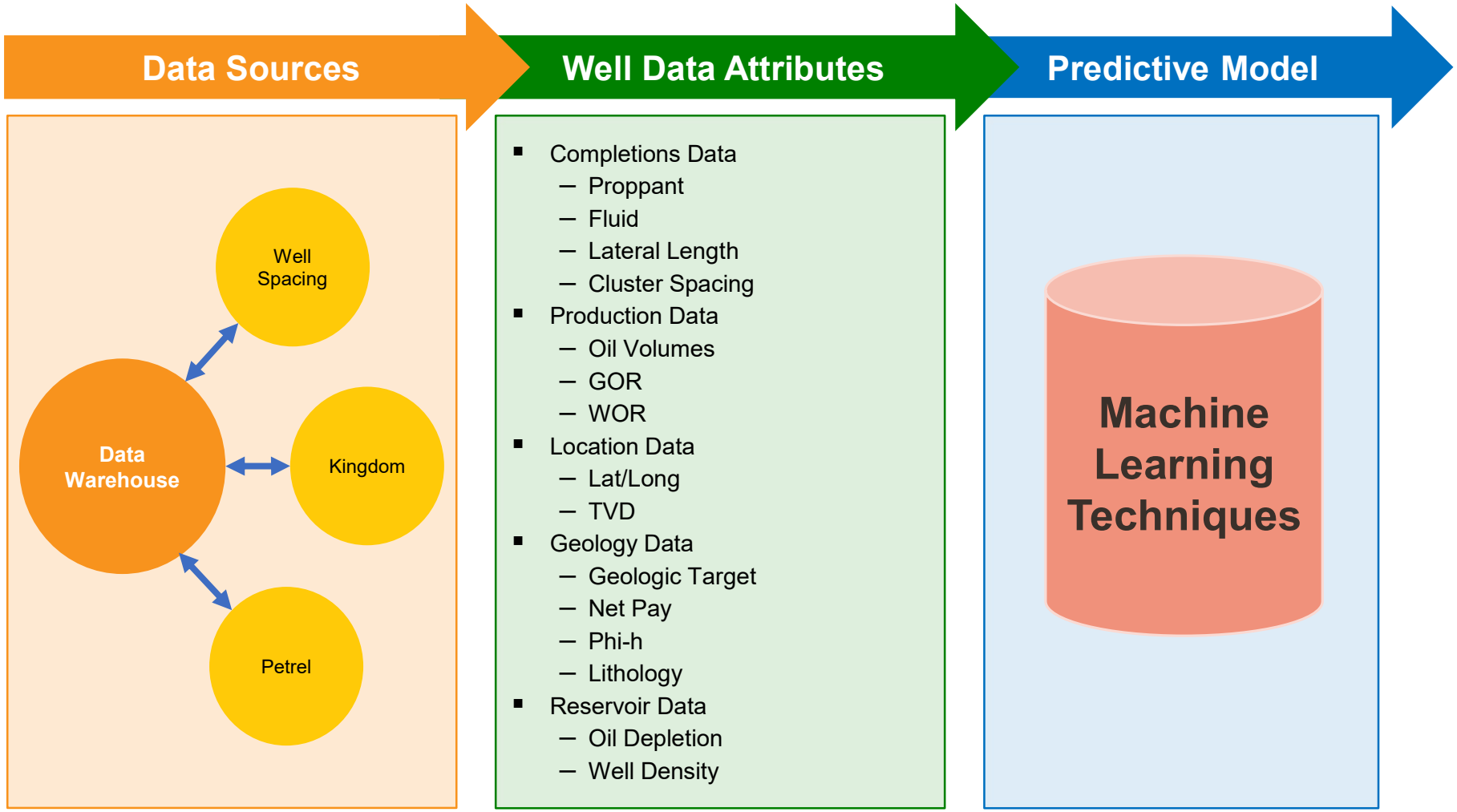
Max Treat Pressure

Average Rate

Gamma Ray

(1) Original seismic data licensed through Fairfield Geotechnologies

Data Science Workflow



How Do We Use This Data?

1. Predict production results across the basin given internal geologic and reservoir designations
2. Study industry completion trends as a function of well spacing, depletion and vintage
3. Modify completion techniques in order to drive capital efficiency

1 Case Study

Back Testing: Predicting 6-Month Cumulative Oil Production

- Utilized predictive model to back test 6-month oil cumes for all previously drilled horizontal wells in Lea County
  - Removed outliers based upon certain parameters such as landing zone, lateral length, total vertical depth, proppant concentration, etc.
  - Final data set consisted of 1,710 horizontal wells

Predictive Model

Methods

- **Multivariate Regression (MVR)**
  - Predicts the outcome (Y) based on the values (coefficients) of multiple predicter variables (X)
- **Random Forest**
  - Supervised learning regression algorithm that uses predictions from multiple machine learning algorithms to make a more accurate prediction than a single model would

Accuracy Test

- **R^2 (Coefficient of Determination)**
  - Measures quality of fit of the regression model
  - Percentage of the variance between the dependent and independent variables
- **RMSE (Root Mean Squared Error)**
  - Average difference between predicted and actual values

***Result:* Model predicted 188.2 MBo vs. actual of 186.5 MBo for the 1,710 well data set (accuracy within <1%)**

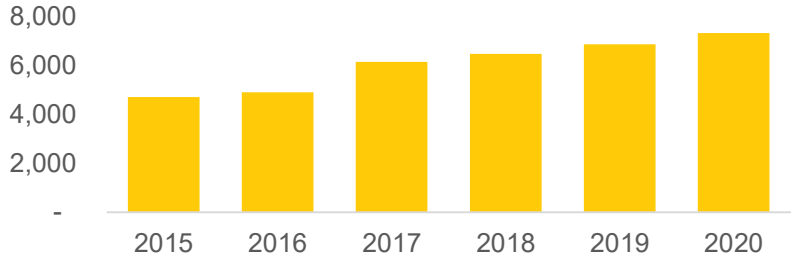
***Key:* Ability to accurately predict 6-month cumulative production is indicative to forecasting EUR of well (both internal and third-party wells)**

2 Case Study

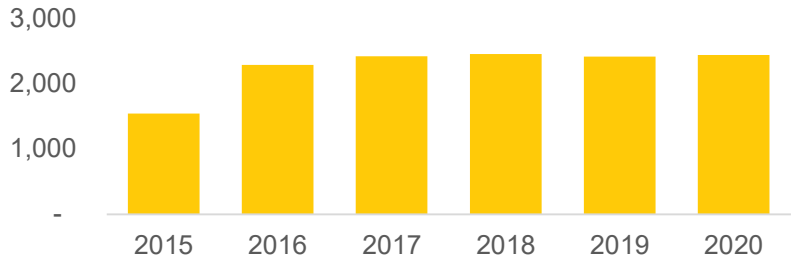
Using Basin Trends as an Information Tool

Industry Results – Three Largest E&Ps in Southern Lea County, NM

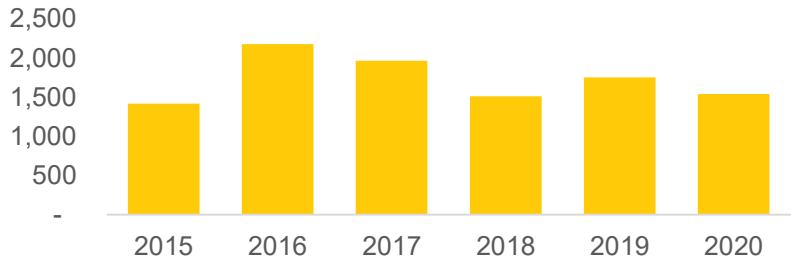
Lateral Length (Ft.)



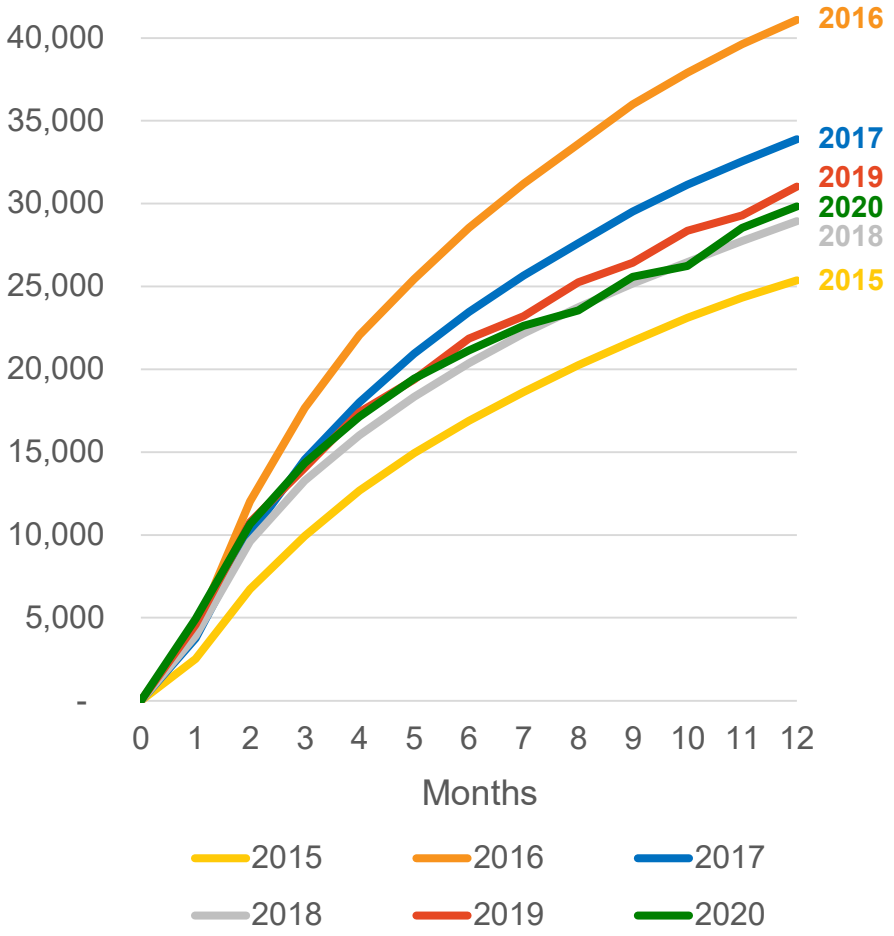
Proppant (Lbs / Ft.)



Fluid (Gal / Ft.)



Cumulative Oil Production per 1,000' of Lateral

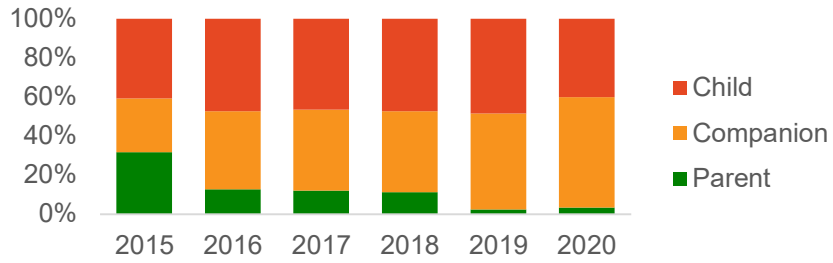


2 Case Study

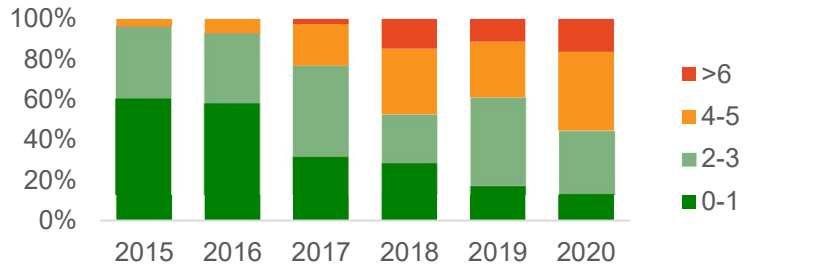
Using Basin Trends as an Information Tool, continued

Industry Results – Three Largest E&Ps in Southern Lea County, NM

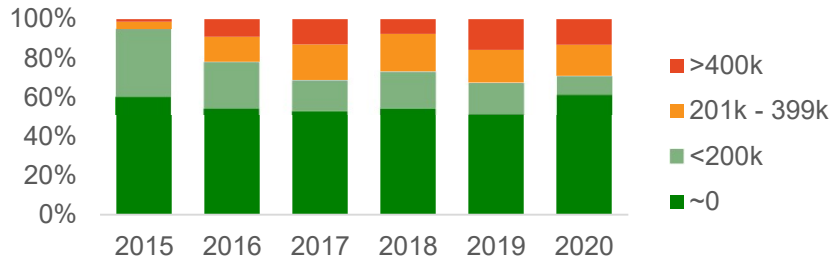
% Parent / Child



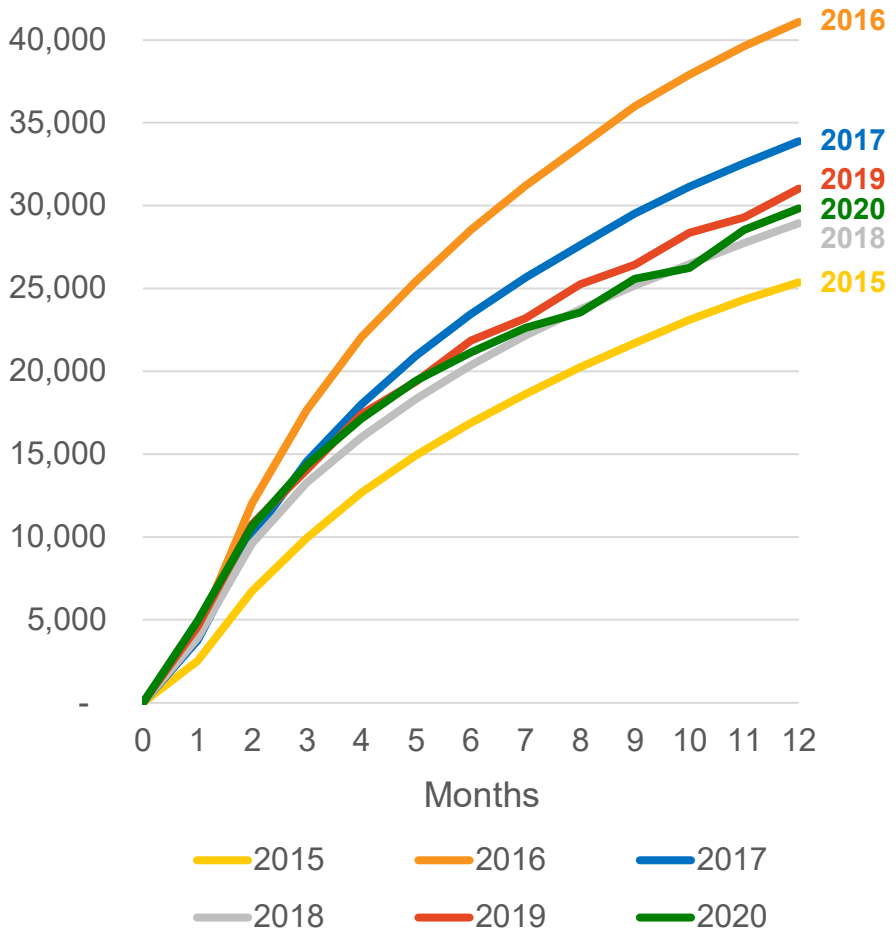
No. of Offset Wells



Offset Oil Depletion (Bbls)



Cumulative Oil Production per 1,000' of Lateral

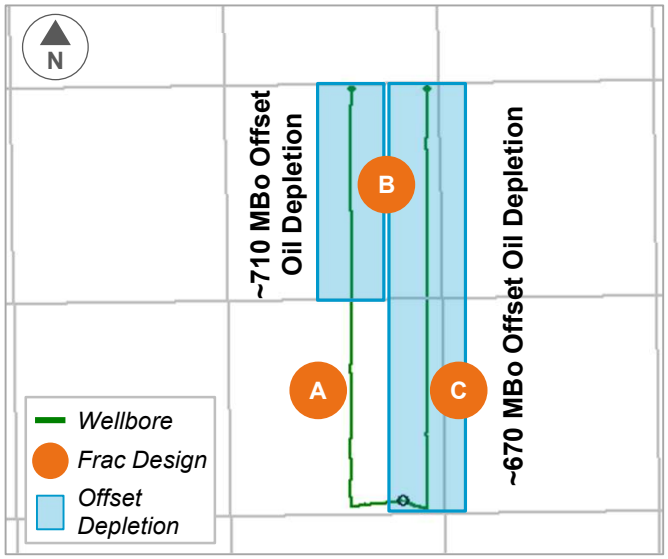


3a Case Study

Navigating Offsetting Depletion

- Predictive model utilized to estimate impact of offset depletion on future well performance
- Slide example:
  - Model recognized and calculated offset depletion, in addition to predicting future type curve
  - Allowed technical team to modify completion design in certain portions of each lateral in effort for fluid to stay near-wellbore
  - Overall, pumped an average of ~15% less fluid in each well compared to standard design
  - Result: Both wells performing at predictive type curve while saving ~$300k in completion costs as a result of less fluid pumped

CDEV 2-Well Pad (Lea County, NM)



Completion Design

	A Heel Design (West Well)	B Toe Design (Both Wells)	C Heel Design (East Well)
Lbs/Ft.	~2,600	~2,600	~2,600
Gals/Ft.	~2,300	~1,800 ↓	~2,100 ↓
Total Savings		-$290k	

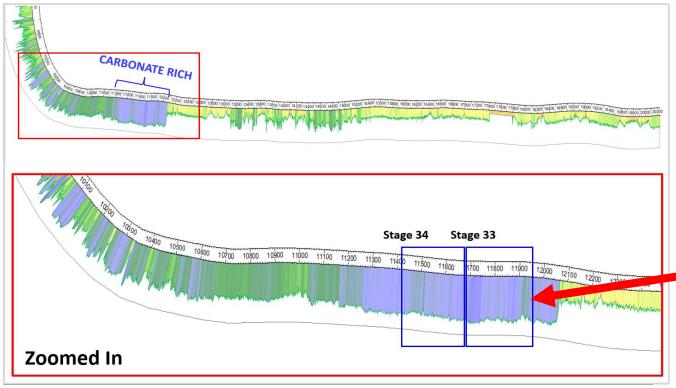
3b Case Study

Trouble-Shooting Carbonate Rich Stages in Cross-Attribute Platforms

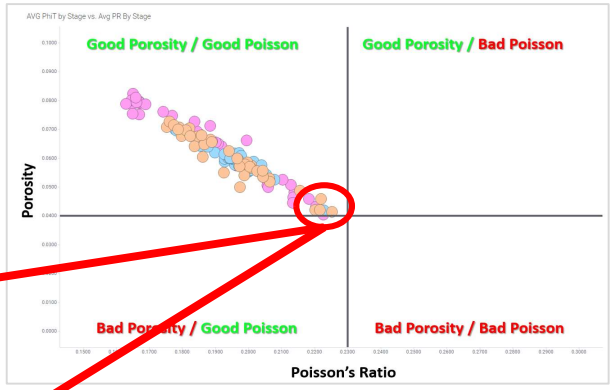
- Proprietary 3D Porosity Attribute Model:
  - Confirms geosteering interpretation of lateral heterogeneity
  - Real-time evaluation of reservoir quality (porosity) and reservoir mechanics (Poisson) across lateral
  - Provides ability to modify frac design
- Slide example:
  - Identified tight carbonate zone near heel of well
  - Live monitoring of frac metrics led to modification to reduce cost
  - Purposely skipped / modified stage designs in carbonate rich zones
  - Result: Achieved type curve well with below AFE costs as a result of altered frac stages

CDEV Bone Spring Well (Lea County, NM)

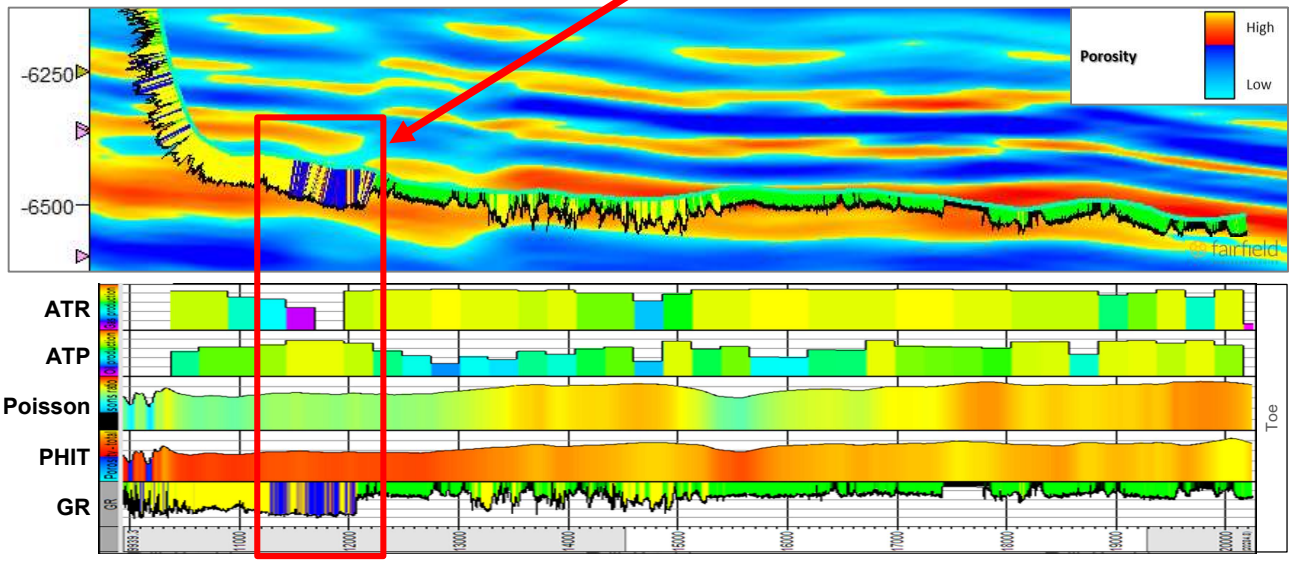
Geosteering X-Section



Rock Property Optimization X-Plot



Porosity Target Attribute[1] & Treatment Window



(1) Original seismic data licensed through Fairfield Geotechnologies

Closing

Conclusions

- For Centennial, having this data science tool in house is a matter of pride for our organization
- Drives us to make data-driven decisions and incorporates information we feel is vital to the organization
- Allows us to study trends and ensures we are staying up-to-date with a rapidly evolving industry

What's Next?

- Continue to refine current project
  - Test additional attributes to the model
  - Trial other machine learning techniques
  - Attempt the model in Texas, where data is less granular
- Upcoming machine learning analytic projects
  - Route optimization
  - Workover schedule optimization
  - Drilling analytics
  - Frac gradient predictions