WHITE PAPER

Petroleum Decision Engine in the Cloud

Utilize Cloud Technology to Identify Opportunities, Quantify Activity and Productivity, and Securely Collaborate - Anywhere, Anytime

PetroDE

You needed the answer yesterday…

Valuable time is ticking away while gathering data from various services through difficult interfaces.. Days and sometimes weeks can be spent getting the maps, histograms, and stratigraphic charts needed to decide whether a new play is worth pursuing or a location is worth drilling.

Oil & Gas companies are being challenged by fluctuating product prices and an overload of complex information, making it difficult to effectively capture opportunity, delineate risk, and manage projects in the time needed. Identifying play hot-spots early can mean millions of dollars to the bottom line. As global competition for resources continues to drive the need to lower operating costs and increase finding and recovery rates, improvements in data management, asset valuation, and opportunity identification are a must. In a recent survey[1] 32% of business managers in the Oil & Gas industry said they must rely on IT for information needed to make critical decisions. And when asked what they needed to improve information optimization, 48% of the respondents said they most need direct access by business managers to critical information.

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The keys to reducing the time spent on managing data, evaluating assets, and identifying opportunities can be summarized as follows:

- One stop data store with intuitive search capabilities for locating all relevant data
- Charting and mapping tools to integrate data with current statistics
- Direct access by business managers to critical information
- Secure access capabilities to enable team members to collaborate and share knowledge anywhere, anytime

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[1] Oracle®, July 17, 2012, *From Overload to Impact: An Industry Scorecard on Big Data Business Challenges*

Missed opportunities

Knowing which formations are being played and where competitors are active is crucial for identifying important trends in the Oil & Gas industry. Competitor analysis requires state-of-the-art technology to track strategic developments and financial performance, plus the ability to access and display the information quickly. Many opportunities are missed because of the inability to analyze prospects fast enough. Key challenges facing competitor analysis in the Oil & Gas industry include:

- Difficulty tracking developments and displaying statistics
- Having quick access to data, as well as detailed assessments such as gas to oil ratios and financial performance
- Ability to quickly view rig locations together with their phase of operations
- Difficulty synergizing licensed and/or proprietary data with public data layers such as geology, weather, restricted areas, political boundaries, and market valuation

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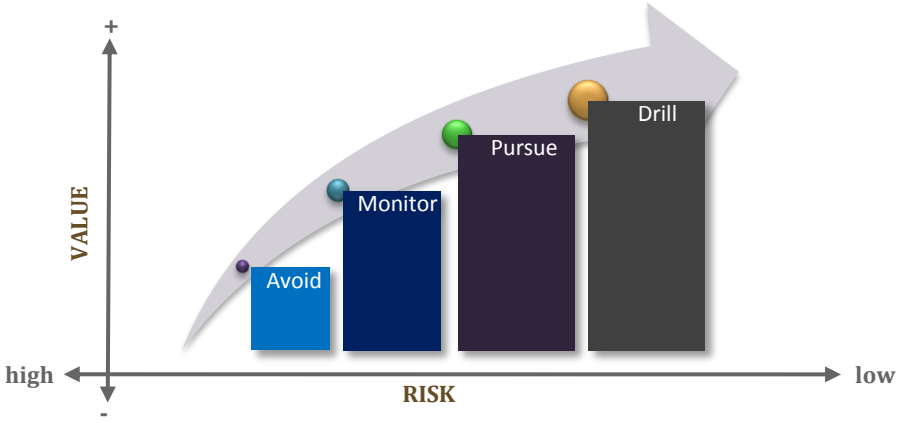
Difficulties assessing value and risk

Good business decisions are made after careful valuation and risk quantification. When deciding whether a new play is worth pursuing or a location is worth drilling, extensive data gathering and research is required, followed by expert interpretation. The ability to display asset attributes is necessary to see the big picture and set priorities. However, the number of information sources is staggering, with multiple data repositories both inside the company and outside, from third party resources – all containing terabytes of structured and unstructured information. It can take days to access and integrate the data needed.



Key challenges facing asset valuation and risk quantification are:

- Difficulty merging and managing data from live and archived legacy systems
- Securely storing and managing proprietary data assets
- Difficulty calculating real-time statistics
- Time spent adjusting models to adapt to industry changes
- Inability to see all variables simultaneously to aid in prioritization
- Presentation-ready displays for quantifying activity and productivity
- Difficulty accessing data quickly and easily from anywhere around the world

Making collaborative decisions with experts around the globe

The best decisions are based on data from many sources, which is in turn interpreted by experts using sophisticated tools and reviewed repeatedly by both technical and non-technical personnel. In the highly competitive Oil & Gas industry, interdisciplinary teams often have experts spread around the globe. Before any drilling decision can be made, analyzed data and statistics need to be shared and communicated with team members, sometimes requiring countless review meetings and huge travel budgets. The challenge is bringing together interdisciplinary team members to collaborate ideas and analytics on easily viewable maps and charts. Collaboration tools are needed so that ideas and supporting data can be simultaneously viewed and accessed regardless of location.

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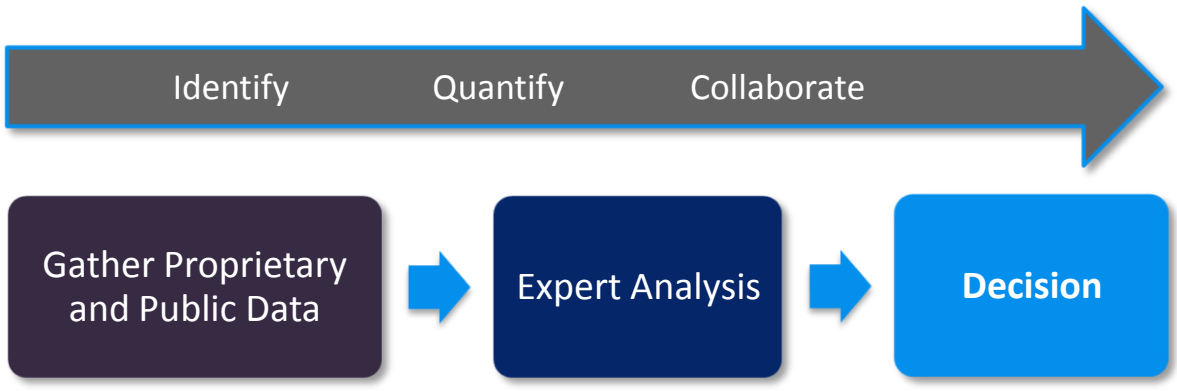

The beauty of cloud software

…is being utilized in **the world's first petroleum decision engine**. A powerful data aggregation platform for making real-time geospatial decisions has been developed by Vesmir Inc. The tool, called **PETRODE**, provides the big picture using the Google Earth API with easy access to valuation and activity information for oil & gas assets. It has intuitive search capabilities plus the ability to calculate real-time statistics and display them in presentation ready maps and charts. Proprietary data and saved displays are securely stored in the cloud, making it easily accessible for all team members anywhere, anytime.

This *War Room in the Cloud* is the go-to tool for opportunity identification, asset valuation, risk quantification, and secure collaboration.

Intuitive search capabilities in record time

Time is of the essence when drilling decisions are being made. It can take days to access and integrate proprietary data in the Oil & Gas industry. With secure cloud-based technology, data collection of both proprietary and public data can be fine-tuned to suit the needs of any business on a highly encrypted platform that is accessible to both technical and non-technical team members anywhere, anytime.

PetroDE has intuitive search capabilities that span across multiple licensed databases including IHS and DIDesktop. Company specific data and public data layers may be integrated into the PetroDE platform so that team members can visually organize and display information at the click of a button. Queries on current data are run in a fraction of the time it takes to query and download from other commercial databases. Searches, data layers, analytics and the current map view can be saved like bookmarks for later use on a highly encrypted server in the cloud. This means information gathered for a specific prospect can be securely stored and later viewed at the push of a button by a team member down the hall or on the other side of the globe.

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Competitor analysis on the fly

Knowledge of where formations are being played and which operators are active is paramount to identifying resource opportunities**.** Competitor analysis requires powerful real-time statistical methodologies that can point to play hot spots. With secure cloud-based technology, statistics can be accessed and shared at the push of a button.

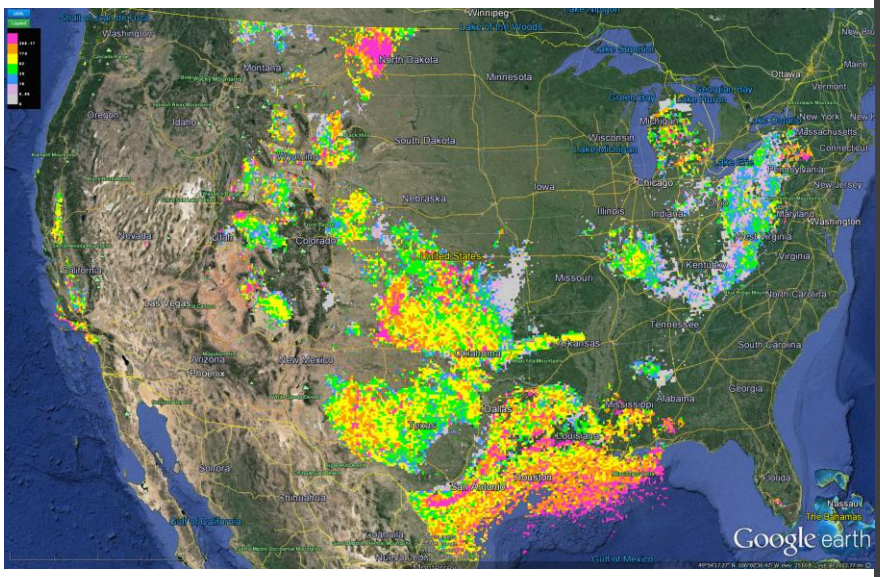

Figure 1. boevd21 Heat Map

PETRODE generates heat maps to quickly illustrate statistics such as gas to oil ratios, well counts, and productivity values. To further aid in identifying opportunities, PetroDE synergizes licensed and/or proprietary data with public data layers such as geology, weather, restricted areas, and market valuation. The tools needed for quick competitor analysis are available on the fly, thus avoiding missed opportunities because the data couldn't be evaluated fast enough.

Chart Statistics	Add Map Data from Public Sources	Add Company Proprietary Data

• Resource Play Statistics:
  • IP Performance
  • Productivity
  • Cost histograms
  • GOR based on IP
  • Financial projections
• Drilling Activity including:
  • Depth histograms
  • IP well count
	• Oil and Gas Assessment
	• World Energy Provinces
	• World Oil Refineries
	• World Stress Map
	• Geologic formations
	• Public Lands
	• Critical Habitat
	• Weather
	• Market
		• Highly encrypted and private to your team
		• Share and Discuss across the Globe

Valuation and risk at the click of a button

When deciding whether a new play is worth pursuing or a location is worth drilling, extensive analytics are required to make an accurate assessment. Secure cloud-based technology allows team members to quickly access required data for an area of interest, assess value and risk, and collaborate with experts around the world.

PetroDE calculates real-time statistics and displays them on value histograms at the click of a button. Asset valuation is made easy with statistical analysis, charts, presentation-ready map displays, and downloadable data. Statistically derived decline curves are displayed on value histograms for any area of interest selected, allowing team members to analyze a specific geographic area of their choosing. Constraints that need to be considered, such as public lands, geology, and weather, can be overlaid on proprietary data layers, increasing a team's understanding of field circumstances. With PetroDE, all variables for a particular asset and the available solutions can be viewed simultaneously, thus providing the big picture and further aiding the decision process. All private data is highly encrypted and securely saved in the cloud for later use by team members anywhere, anytime.

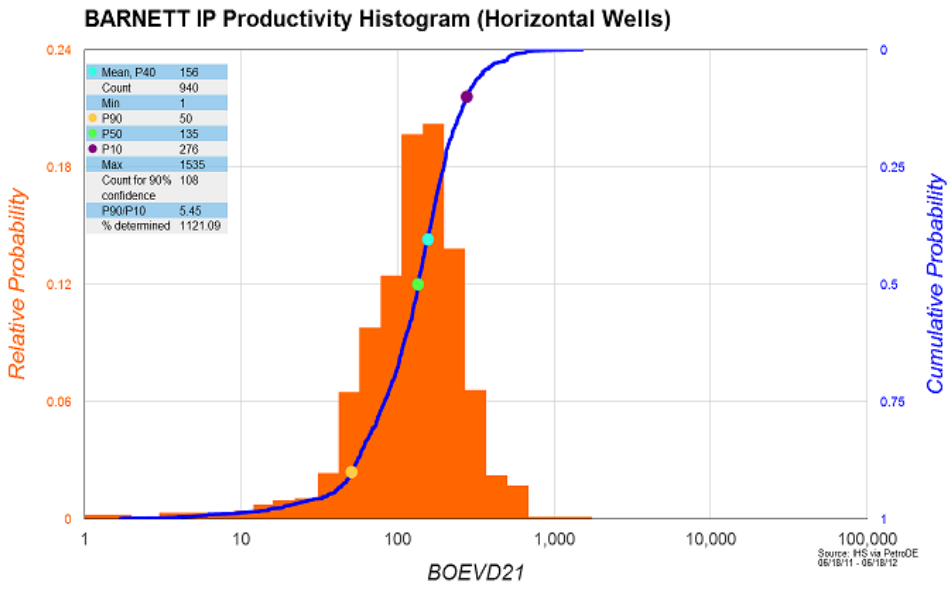

Figure 2. Barnett Peak Month Productivity Histogram

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Secure collaboration regardless of location

When making decisions in the Oil & Gas industry, communication between interdisciplinary experts is essential. Typically, it is not possible for all members of a team to be in one geographical location. With secure cloud-based technology, decisions can be made more quickly and with drastically reduced travel budgets.

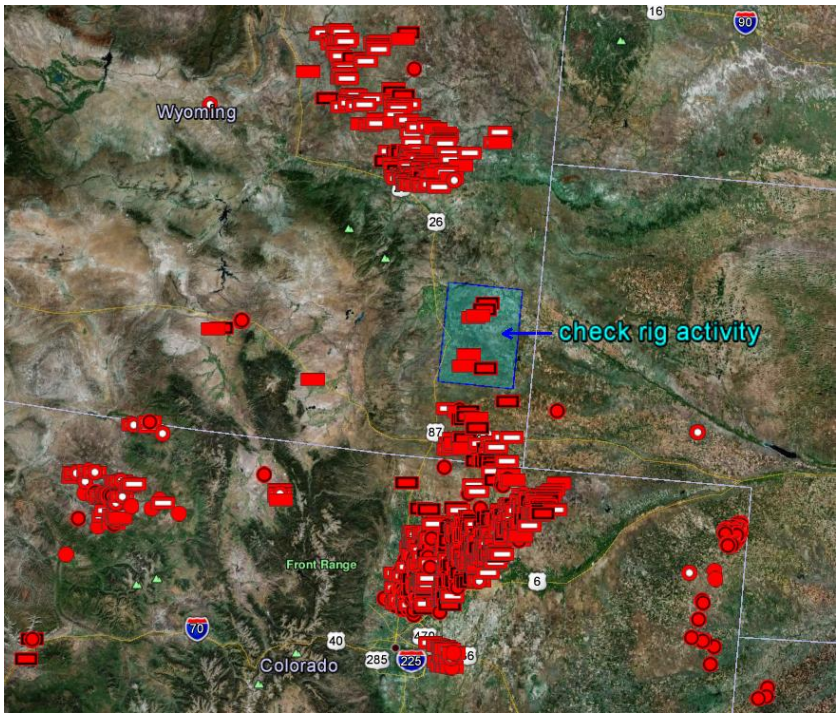

Figure 3. Annotation for AOI in the Niobrara Formation

The connection tool within PetroDE uses the latest encryption technology available to allow secure collaboration sessions to view proprietary data layers in the cloud. This means that team members from around the world can collaborate on the same map in real time regardless of location. Imagine experts on three continents collaborating over the same map in real time and being able to click on analytics, saved proprietary data layers, charts, etc. to validate a prospect. To further aid in collaboration, PetroDE offers an annotation tool that enables polygons, arrows, or text to be drawn directly on any map or chart view. For example, add an arrow to a map to point to a specific well, or add text to a chart to highlight an interesting statistic. Map views including annotations can be saved for later use in presentations or online meetings. The powerful combination of the connection and annotation tools makes it easy to make informed decisions more quickly and with lower cost.

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Summary

PETRODE is the first petroleum decision engine system with intuitive search capabilities plus charting and mapping tools that quickly integrate data, statistics and interpretation; all on a highly encrypted communication platform that securely stores data, statistical layers, and asset displays to be easily accessible by interdisciplinary team members anywhere, anytime. It uses the Google Earth™ mapping platform and the latest cloud-based technologies to enable users to:

- quickly **IDENTIFY** play hot-spots and generate statistical analyses,
- easily **QUANTIFY** oil & gas activity and productivity,
- securely **COLLABORATE** around the globe using shared maps & charts**.**

PETRODE is a true team system that can slice weeks off of the time spent evaluating resource plays and identifying opportunities. It is the only data system available with the following features:

- easy-to-use application-style interface
- quick and intuitive search queries
- breakneck mapping speed
- analytical tools that quickly integrate data, statistics, and interpretation
- encrypted collaboration sessions

About us

Vesmir Inc. is a software development company that produces and markets cloud-based mapping and asset management solutions. We believe the effectiveness of information depends on its analytical quality, accessibility, and clarity of presentation.

Our team has an extensive background in geoscience, software development, and economics. Together our goal is to give you a tremendous edge in the quest for resources by making your most important information available to your entire team anywhere, anytime.

Alan Lindsey is the founder and CEO. He is a geoscientist with more than 28 years of experience in the petroleum industry. Most recently, he has developed resource plays on three continents using key metrics & scoring methods for identifying core shale play acreage. He has applied the method to the Eagle Ford, Marcellus, Utica, and Barnett shale systems, greatly simplifying acreage evaluation. Prior to focusing on resource plays, Alan explored for conventional resources for Shell Exploration & Production from California to the Deepwater Gulf of Mexico. Alan received a B.S. in Geophysical Engineering from the Colorado School of Mines.

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