Oil & Gas Industry Challenges and the Big Data Opportunity

The challenges faced by the oil & gas industry have never been greater. To remain competitive, companies must design and deploy systems to support both the explosion of algorithmic complexity and the massive increase in the amount and resolution of seismic and other exploration data.

In this environment, data analytics represents a largely untapped field with the power to create real transformation both upstream and downstream without huge hardware or software investments.

For example, seismic processing workflows consist of multiple steps from acquisition to migration, and applying a deep learning 3D wavelet routine can generate critical information to use in the interpretive workflow, accelerating the decision-making process.

This routine could be as simple as an automated approach to seismic record editing, noise reduction and velocity predictions — or as complicated as the analysis and comparison of localized wavelets known to contain a positive response to oil and gas saturation.

On the reservoir characterization side, analysts could leverage well completion data analytics to discover temperature and pressure trends that align with fluctuations in daily production values, or to explain geologic boundaries that were previously undiscovered.

Other upstream analytics areas include production optimization, production forecasting, field asset failure prediction, unconventional resource recovery and integrated planning capabilities. On the downstream side, analytics can be applied to demand forecasting for refining, facility integrity and reliability, commodity trading, risk management and customer intelligence. And always there is the need for internal and external threat detection to reduce cybersecurity risks.

But with the promise comes the challenge: procuring the right tools and expertise to get the job done affordably and on a compressed timeline.

About the Urika-GX Platform for Seizing Big Data Advantages

Cray's Urika-GX system provides an agile analytics platform with an unprecedented combination of versatility and speed to tackle your most complex business challenges. It fuses the power of supercomputing with an open, enterprise-standard framework for breakthrough insight, blazing-fast results and business agility.

Differentiators

• Single, unified hardware-software solution that's ready in days
• Run Hadoop®, Spark™ and graph concurrently
• On-node memory to accelerate results
• Cray Aries™ interconnect for the fastest available in-memory analytics
• Cray Graph Engine integrated and tuned for complex pattern matching
• Open framework can integrate new technologies as they emerge
Cray® Urika®-GX Agile Analytics Platform for Oil & Gas
A Converged E&P Analytics Platform to Streamline Workflows and Uncover Critical Insights

The Solution: A Converged, High-Performance Oil & Gas Analytics Platform
The Cray Urika-GX agile analytics platform converges supercomputing with the most advanced big data capabilities in one powerful analytics solution. The Urika-GX system gives engineers and analysts the flexibility and agility they need to tackle the widest range of data and analytics projects at the speed this highly competitive marketplace demands — both today and as needs evolve.

Key Capabilities for Oil & Gas Companies
• Run multiple types of workloads (including both HPC and high-performance data analytics) on a single system.
• Gain breakthrough insights by combining big data workloads — from Hadoop and Spark for massive, variable data and iterative demands to complex graph analytics for hard-to-find production patterns.
• Get blazing fast results due to Cray's systems expertise: Aries interconnect, a high degree of parallelism, in-memory performance and optimized design.
• Ensure your analytics infrastructure is built on an open framework, with standard software and integrated design, that reduces complexity and resource requirements and can evolve as new analytics technologies emerge.

Benefits for Oil & Gas Companies
• Increased power and productivity: By moving analytics into the exploration workflow, engineers and analysts can uncover profound insights faster and deliver results more rapidly to the field decision-making teams who need them
• Analytical agility: With the Urika-GX platform, businesses can easily adapt to changing data sources, business questions and analytical approaches to gain the agility so crucial in this volatile industry, supporting business growth both now and in the future.
• Lower time to and cost of insight: The Urika-GX system accelerates workflow and minimize the complexities and resource needs of implementing, operating and evolving an end-to-end analytics pipeline — so energy companies can more quickly and affordably acquire the knowledge needed to steer their businesses in the right direction.

Getting Started
Find out how Cray's Urika-GX agile analytics platform can uncover a whole new world of insights — new connections, relationships and big opportunities — for oil & gas companies. The key to success is understanding your data-intensive and highly iterative workflows and how Cray technology can benefit your firm.

• Learn more about the Urika-GX platform
• Find out more about Cray's solutions for oil & gas
• Contact Cray