OIL & GAS OPERATIONAL EFFICIENCY

- Make Better Decisions Faster
- Reduce Costs

EMC EXECUTIVE BRIEFING
Data Storage Management Optimization
Petrotechnical & ERP Systems Infrastructure Optimization
Agile Analytics for Efficient Operations
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INTRODUCTION: SOLUTIONS FOR CHALLENGING ECONOMICS

Today’s environment of low oil prices is having a negative impact on expansion plays and profit margins. As a result, there is a trend of downward pressure on oil & gas revenues, and a need to reduce costs.

EMC believes that in the current economics of the industry, a strategy based on operational efficiency where we bring IT and the Business together introduces a level of robustness that is more sustainable than a purely cut-&-wait approach.

Following research into the global situation we face for 2015, IDC published guidance to Oil & Gas businesses, which can be summarized into 4 areas:

1. Put a priority on making IT an innovation partner to the business
2. Enable your architecture for the future
3. Demand that vendors help you deliver speed and agility
4. Seek out ways to reduce costs to free up resources for innovation

With over 25 years in the industry, EMC is well positioned to enable Oil & Gas companies to address these priorities to deliver significant incremental value. Our technology solutions help businesses increase revenue by **Making Better Decisions Faster** and **Reducing Cost through Efficient Operations** – both of which have consequences tied to the Hydrocarbon Value Chain.

EMC in Oil & Gas

See EMC Transformational Solution details in the table on page 6
EMC STRATEGY FOR OPERATIONAL EFFICIENCY

Providing clear business benefits with bottom line results is the key driver behind EMC’s focus and strategy, including faster time to oil, increased productivity of the geoscience community, and improved collaboration amongst stakeholders across the Hydrocarbon Value Chain. We work directly with Oil & Gas companies to deliver improved performance in the following areas:

SEISMIC DATA: Associated interpretations such as Attribute Analysis, Inversion, Pre-Stack and Post Stack are growing in scale and complexity. Multi component data will add to the volume and complexity, requiring more flexible data handling and management solutions.

REAL TIME DATA ANALYTICS: Dynamic reservoir management and overall production operations will benefit from real time data analysis, modeling, scenario planning, and de-bottlenecking throughout the life-cycle.

LIFE OF FIELD: Reservoir management and extension of the life of field requires continuous updating of data and models as new seismic, drilling, completion, and production technologies evolve, creating ever more data and reference points from which to make key development, exploitation and production enhancement decisions.

PRODUCTION OPTIMIZATION: Effective and efficient data capture and integration from real-time systems, operational databases and solutions, and engineering application-derived models enables Real-time Production Operations optimization. Optimization capabilities deliver measurable improvements and clear bottom-line results.

COLLABORATION: Sharing of information and models between partners, peers, clients, and investors can be made significantly simpler across real world limitations of data sharing and global communications infrastructure.

DATA ACCESS: Capture, storage and availability to all levels and types of data and resultant information should be automated, non-complex and rapid. The geoscientists and engineers need to focus on their core activities.

EMC has developed a dedicated global Oil & Gas Practice, supported by significant committed investment in a global industry program that is tailored to meet the specific innovation requirements of Exploration & Production business functions.

EMC solutions for Oil & Gas drive transformation in 3 broad categories, with each bringing incremental value to the other, delivering huge overall gains in Operational Efficiency:

- Data Storage Management Optimization,
- Petrotechnical & ERP Systems Infrastructure Optimization, and
- Agile Analytics for Efficient Exploration & Production Operations

Making Better Decisions Faster
Reducing Cost through Efficient Operations

Enriches decision-making process with data available across the hydrocarbon value chain

Protects & connects data to applications for robust operations and sustainable business continuity

Easy to manage and scale at a significantly low TCO
EMC OIL & GAS OPERATIONAL EFFICIENCY – Making Better Decisions Faster ● Reducing Costs

Data Storage Management Optimization across the Hydrocarbon Value Chain
EMC provides solutions that aggregate and consolidate data storage resources with technology that is easy to manage and scale at a very low total cost of ownership (TCO). For example a large Oil & Gas Independent saw a 68% reduction in petrotechnical IT administration, a 40% reduction in big data storage costs and an overall ROI of 80% when they addressed their petrotechnical data management needs with EMC technology.

The benefits of our data storage management approach are also manifested in clear end-user productivity.

Petrotechnical & ERP Systems Infrastructure Optimization
With EMC, you can optimize the IT infrastructure that protects and connects the data to applications using technology that supports a variety of workload types. This enables the rapid deployment of critical applications such as G&G and ERP systems – shrinking what used to take months down to being live in days. For example, our converged infrastructure platform is typically 4 times faster to deploy than the traditional component-based approach. This enables G&G application users to quickly get on with performing interpretation and modelling, with the appropriate performance configuration right out of the box – and crucially with 96% less downtime per year.

We also make it easy for you create a cloud-independent environment in which to move application workloads back and forth across the full spectrum of cloud environments – private, public and hybrid – which means that you can leverage the correct economic IT model that suits the characteristics of individual workload needs.

Agile Analytics for Efficient Exploration & Production Operations
EMC enables the execution of agile analytics to provide timely insight to help improve efficiencies in areas such as drilling operations, and to dramatically reduce non-productive time (NPT) through advanced predictive maintenance, field logistics optimization and overall asset operation efficiency. We enable you to move towards a single version of the truth by building an Exploration and Production Data Lake from which insight can be derived to optimize operational and strategic planning – to make better decisions faster.

A key example of applying big data and analytics to derive operational efficiencies is Production Optimization. An Exploration and Production Data Lake boosts your ability to create a comprehensive view of a reservoir in order to better understand its recovery potential, enabling:

- The Building of Predictive and Prescriptive Models that:
  - Improve production and reserves forecasting to drive better Inventory Update Reporting (IUR)
  - Optimize completions and engineering designs for more efficient production operations
- The Deployment of Predictive Analytics to:
  - Optimize drilling/treatment for production ‘sweet spots’ – including best placement, steering and timing
  - Enrich drilling and completion models with operational factors to reduce non-productive time (NPT) and to increase efficiencies across reservoir and asset lifecycle

The potential benefits of Agile Analytics for both conventional and unconventional fields are staggering. In a recent case spanning 15,000 wells, analytics using EMC solutions has shown an increase in oil production projections of 5-8% and decreases in completion costs of more than 5%.

In a recent scenario, EMC was able to transform an 80 hour multi-terabyte seismic loading, indexing and visualization project into a 7.2 hour exercise – over 10 times faster than the typically accepted architecture configuration at the time.
CONCLUSION: A COLLABORATIVE APPROACH

In order to effectively leverage data for improved Operational Efficiency, Oil & Gas companies need to incorporate Data Storage Management, IT infrastructure and Analytics Capabilities alongside the Geoscience and Engineering application layer. EMC has formed strategic partnerships with Halliburton Landmark and Schlumberger to bring a total solution for Exploration & Production, as well as with key ERP players such as SAP and Oracle.

This digitally integrated ecosystem will create an environment where multiple parties collaborate using the best data intelligence available across the Hydrocarbon Value Chain.

Over the last five years, EMC has built a dedicated world-class Oil & Gas Practice backed up by a $100M investment in an Oil & Gas Research Center.

The dedicated Practice is ready to work with companies across the entire Hydrocarbon Value Chain to drive continuous operations improvement and advancement in technology innovation.

EMC Transformational Solution Areas | Description
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Efficient Delivery of Application-Ready Seismic Data to Interpretation & Modelling Applications | EMC offers a uniquely agile platform that accelerates the delivery of quality-checked seismic data to geoscientists in an approach that is automated with full auditability, creating the critical missing link between the seismic master data sources and project environments.
Managing the Lifecycle of Petrel Projects | The Progression Plug-in enables Petrel users to create instant snapshots of their working projects to create a highly optimized, chronologically organized library of project snapshots that can be easily restored by the Petrel user, at any time.
Geoscience Appliance for DecisionSpace® Enterprise Platform | A preconfigured Upstream system that accelerates and simplifies the deployment of Landmark geoscience applications to improve productivity and provide a high level of performance and reliability – a geoscience-in-a-box solution.
Drilling Performance Optimization | We provide turnkey analytics for optimising drilling performance. The turnkey – (appliance) nature of the solution means you can deploy the system and start deriving value from data in hours rather than days.
Exploration & Production Data Lake | The E & P Data Lake provides a revolutionary unified approach to data management, reporting and integration, right across the business, regardless of volume, velocity or variety of the data.
Remote Site Data Protection | The EMC Remote Site Data Protection solution brings the power of IT Data Resilience and Security to locations where IT personnel are scarce or non-existent. Data from these locations can be replicated to a central site to secure valuable information.
Secure Exploration & Production Field Data Collaboration | Syncplicity for Energy streamlines the process by which information in the form of files and documents can be shared quickly, securely, and reliably to ensure current information can be made available immediately, regardless of device or location.
Keeping Capital Projects on Track | The EMC Capital Projects solution is part of our Engineering, Plant & Facilities Management Suite and enables project teams to manage, find, secure and share the most up-to-date project content during engineering and construction projects.
Streamlined Asset Operations | The EMC Asset Operations solution enables all asset information related to plant operations to be centrally stored to ensure control and accessibility by owner-operators, plant operations and maintenance personnel.
Extending Collaboration and Simplify Transmittal Flow | EMC Supplier Exchange is a cloud solution that streamlines the distribution, review and approval of transmittals and contract deliverables within your global network of suppliers, vendors and partners.
Optimizing IT Infrastructure – Information Archiving | The EMC InfoArchive solution reduces the cost of preserving, maintaining & controlling long term access to valuable corporate information in a single platform for all data content.
Security Analytics for Oil & Gas | RSA Security Analytics for Oil & Gas goes beyond IT perimeter protection like firewalls and antivirus, to provide a holistic security capability for personnel access rights and industrial control systems by leveraging a rich set of data in real-time to monitor, detect and respond to breaches or attacks.

**CONTACT US**

To learn more about how EMC products, services, and solutions can help solve your business and IT challenges, contact your local representative or authorized reseller, visit [www.emc.com](http://www.emc.com), or explore and compare products in the [EMC Store](http://www.emc.com).

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