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Energy companies achieve operational excellence through digital transformation

Oil & Gas and Utilities companies modernize processes and content management to improve asset performance, reduce costs and leverage the power of analytics

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Executive summary

Leading Oil & Gas and Utilities companies are pursuing digital transformation to drive operational excellence. As margin compression and energy distribution alternatives challenge profitability, organizations are implementing digital solutions that modernize operations, drive down costs and improve business processes.

This white paper explores the use of digital technologies to drive excellence in areas such as asset performance, capital project management and supplier relations. It will demonstrate that the prerequisite for successful digital transformation is the implementation of a powerful Enterprise Content Management (ECM) solution.

Oil & Gas and Utilities companies are managing complex relationships and answering to governance requirements. They need a world-class content management solution that integrates with enterprise applications, includes purpose-built applications for asset management and capital projects, and supports analytics and mobile communications with staff and customers.

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Operational excellence is a necessity

Across exploration, refining, power generation and distribution, petrochemical and other energy sectors, leaders are focused on reducing costs, mitigating risks, maximizing return on assets and streamlining project management.

Companies in the Oil & Gas industry face pressured margins and unstable commodity prices. In Utilities, distributed energy resources (DERs) are disrupting generation and distribution and customers are exploring alternatives to utility dependence. Across all sectors, assets are aging and workforce retirements are stripping out valuable institutional knowledge.

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Organizations recognize the compelling need for a digitally driven focus on cost saving. Technology is evolving rapidly and businesses are incorporating the Internet of Things (IoT) and advanced analytics to improve decision-making at every level. Soon artificial intelligence (AI) will enable even greater insight and agility.

McKinsey reported in June 2017 that Oil & Gas producers can gain an edge by maintaining operational efficiency as commodity prices recover. According to the consultancy, "Of course, costs vary by and within basins, but a common theme has emerged over the past two years: Efficiency has created opportunities for producers that know how to maintain it."

IDC recently predicted that by 2019, digital transformation will help Oil & Gas companies cut costs and increase efficiencies by 10 to 50 percent and that 40 percent of all Oil & Gas companies will gain insights from analytics and AI solutions.

Cloud-based solutions play an essential role in analytics, but they also complicate content management. To derive essential insights and deliver them to employees, including mobile workers, organizations need to manage content effectively.

Digital transformation needs a solid base

Energy companies typically manage massive amounts of information in a wide variety of types, such as electronic well files, engineering documents, contracts and work orders. With every project and operational change, they manage and track content through complex revisions, reviews, audits and handoffs.

Companies document every asset and operating plant throughout their lifecycle, from design to build to the latest updates. Capital projects also generate enormous flows of content and the organization's ability to control costs is closely linked to its management of documents across its repositories, as well as multiple handoffs with third parties.

To be able to take advantage of advanced technology and work from mobile solutions, an organization needs to manage its information and eliminate silos. There are four stages of implementing Enterprise Information Management (EIM):

1. Getting content under control by implementing standard taxonomies to create a uniform repository that eliminates information silos and migrating content from completed projects and legacy systems.

2. Ensuring optimal access and control via search, access control, version control and content optimization for mobile delivery.

3. Managing change with a structured approach that includes built-in processes for reviews and approvals, creation of audit trails, support for transmittals and automatic distribution and notification of information changes.

4. Coordinating information from business applications by integrating with O&M and business systems to ensure compatibility with CAD and other authoring and collaboration tools and develop industry-specific content solutions.

By making content management a priority during digital transformation, organizations can control, automate and accelerate the exchange of information with secure, auditable document control capabilities. They can also streamline creation, distribution and tracking and enforce document templates, corporate standards and naming conventions.

For example, Newfield Exploration Corp. has reduced risk, improved decision-making and accelerated processes by establishing an electronic well file solution using OpenText™

Content Server. With multiple business units and teams creating well files in their own ways, technicians and engineers had spent many cycles chasing documentation in various structured and unstructured formats. Using Content Server, Newfield created a "master keeper" system that brought structure and relationships to content from Oracle® Financials, P2 ERP and diverse logs, reports and diagrams.

Transformation enhances asset performance

Energy companies invariably operate expensive, complex assets, such as oil rigs, power plants and pipelines. Profitability rises and falls with their uptime. To maximize uptime and prevent interruptions that drain profitability, companies need to support O&M with effective content management and integrated best-practice workflows.

For example, an Oil & Gas company could use OpenText's ECM solution together with OpenText Magellan™, an Artificial Intelligence-powered Analytics platform, to increase the speed and accuracy of core sample analysis during onshore test drilling. Engineers typically analyze each sample to determine its composition, including the liquid content, rock type and porosity and the results are graphed in Microsoft® PowerPoint® to facilitate review. The system could categorize and store the graph images as they are developed and feed them to an analytics engine using machine learning to improve its accuracy. As new samples are collected, the system could perform analysis faster and more accurately to reduce costly re-drilling and improve decision making.

With strong content management, organizations can also increase collaboration among interdisciplinary teams of engineering, procurement and construction (EPC) contractors, owner-operators and equipment suppliers on shutdown-turnaround and equipment

failure analysis. Integrated review and annotation tools are needed to streamline field markup and maintain an electronic record of an asset's as-built state. Content must be searchable by full-text, metadata or semantic search so that O&M can troubleshoot equipment without losing precious time.

Effective content management can also reduce costs and increase productivity in change management. With a structured approach to change management, organizations can reduce errors and accelerate workflows and collaboration across the organization and with external parties. As assets are updated and new components installed, changes in operating conditions must be documented under full revision control in accordance with ISO standards and the new asset documentation must be linked to the functional location and equipment.

Asset repairs and updates create inter-organizational content management challenges. As work orders flow in and out of systems such as SAP® and Maximo® and new equipment is installed, essential content and documentation must be managed and stored effectively to enable version management, access control and audit trails.

It is important for organizations to control information systematically and put it at the fingertips of operational personnel, so they can find the right version of what they need and look at it on their device of choice in the format needed. Organizations also need to ensure the information they need is stored, updated and easy to find, in order to avoid reliance on employee knowledge of assets, which can prove costly when those employees leave the company or retire.

By prioritizing content management in every corner of operations, an organization can retain knowledge, increasing reliability and maximizing production from assets. This helps ensure information governance and process management controls, which underpin all maintenance activities.

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Digital mastery improves project and contract management

Another area where strong content management promotes excellence is capital projects. When building rigs, plants and facilities, companies must manage specialized and unstructured documentation, including contracts, images, engineering drawings, technical specifications and inspection reports.

Beginning in design and through build and handover to asset operations, they need a secure, integrated environment, where contracts, transmittals, engineering submissions and scope changes can be exchanged and managed.

Project teams and contractors typically perform large-scale exchanges of file collections every month with stringent requirements to retain schedules, track milestones, reference previous versions and automate processes. Their work may be performed under complex regulations regarding health, safety and environment (HSE), local permitting, licensing and project management.

It is essential for all participants to work from a single version of the truth to prevent re-work and errors. Delays in document exchange can increase costs, so the systems must help reduce time for handover and commissioning. The content management platform should also facilitate integration with ERP and EAM systems, as well as native CAD and GIS-based applications. This will help ensure a full audit trail for all project records to enable appropriate process management controls.

One essential focus area is supplier communications. Businesses need to establish an advanced data exchange system that helps project teams, EPC contractors and suppliers communicate and collaborate easily throughout the design and construction process.

Optimized content management also strengthens interdisciplinary review of contracts and projects. By managing all the documents around a project effectively, organizations manage risk, renewals and scope changes throughout the life of the contract, while enforcing quality and consistency of contract language and processes. A complete contract management solution also automates contract creation and renewals and simplifies tracking and management of clauses, terms, conditions, commitments and milestones. Project managers and engineers can easily update the status of deliverables and scope changes, review the change history and audit trail and determine who was involved.

Analytics and AI make the future predictable

High-powered analysis of large, diverse data sets is essential to achieve true operational excellence. McKinsey reports that offshore oil and gas platforms typically run at a mere 77 percent of maximum production potential and that rigorous use of analytics could deliver substantial improvements. In 2017, the consultancy wrote, "Applied properly, advanced analytics can yield returns as high as 30 to 50 times investment within a few months of implementation."

McKinsey also reports that utilities are using advanced analytics to enhance service quality, reduce costs and preserve and deepen customer relationships. Machine-based learning is also helping utilities analyze customer attributes and behaviors and apply predictive criteria to define customer groups.

Energy companies that modernize their content management capabilities are prepared to leverage analytics and eventually, AI for deeper vision into their operations. Digital transformation can integrate asset management and centralize content management to enable advanced analytics and a business process engine that drives operational performance and delivers better business insights across the asset portfolio.

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For example, analysis of asset performance can reduce plant downtime by predicting likely failures of processing equipment before they occur. An ECM system can stream data directly from the equipment, maintenance records, operating specifications and operator training records to an analytics engine. The engine can analyze structured data from the machine and an ERP system, together with unstructured data from documents, to understand the preconditions of a failure. Once the pattern of failure is established, the system can monitor operating temperature patterns, fluid conditions and maintenance history to detect a failure risk and operators can perform required maintenance during planned downtime.

Predictive analytics can also improve management of electric distribution grids. A utility company that has mastered content management can leverage smart meters and IoT to perform detailed analysis of usage and voltage across the distribution grid and spot patterns within feeders. With that insight, companies can proactively manage generation and DERs and develop policies and incentives for DER deployment.

OpenText raises the bar on operational excellence

Energy companies can create a robust foundation for operational excellence with the OpenText EIM platform, which uses a multi-layered architecture to enable end-to-end digitization of business processes. As organizations increase the use of mobile computing to deliver insights at critical points, EIM provides ideal support by making all types of content available for search and analysis.

The OpenText EIM product family serves an estimated 85 percent of major energy companies. OpenText helps companies manage content with integration to the content server for major enterprise applications, such as ArcGIS®, AutoCAD®, AVEVA™, SAP® and Maximo®.

EIM includes Magellan analytics and extended ECM integrated with purpose-built solutions for exploration, capital projects, asset operations and handover. Support for mobile and cloud is built in and external collaboration is strengthened through OpenText™ LEAP Supplier Exchange. Comprehensive search provides fast access to key documents and the system supports powerful reporting and analytics, as well as leading-edge user and customer experiences.

The technology for digital transformation is available and mature and it starts with your content. With EIM, organizations have a backbone for managing and analyzing all their information across all plants worldwide to optimize business processes and bring control to the overwhelming amount of information that powers the organization.

About OpenText

OpenText, The Information Company™, enables organizations to gain insight through market leading information management solutions, on-premises or in the cloud. For more information about OpenText (NASDAQ: OTEX, TSX: OTEX) visit: opentext.com.

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