



IDC MarketScape

IDC MarketScape: Worldwide Oil and Gas Professional Services 2016 Vendor Assessment

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IDC MARKETSCAPE FIGURE

FIGURE 1

IDC MarketScape Worldwide Oil and Gas Professional Services Vendor Assessment



Source: IDC, 2016

Please see the Appendix for detailed methodology, market definition, and scoring criteria.

IDC OPINION

The oil and gas (O&G) industry is going through a major transformation that will ultimately redefine the energy business across the globe. Top challenges in the market include low oil prices and the worldwide fear of hydrocarbon extraction causing global warming; reserve replenishment; high costs of exploration and production (E&P); health, safety, and environmental (HSE) considerations; and the challenges for improving efficiencies. To deal with these challenges, oil and gas companies' management must take action to control investments and costs in the short term while preparing themselves to respond to external environmental, political, and societal pressures. The challenges are daunting, and as one major oil and gas information technology (IT) buyer remarked, "We are looking to our preferred service partners for big ideas and innovation to help stop the bleeding." It is critical for oil and gas companies to restructure and transform their business to be more agile and eliminate costs while also investing in new technologies and approaches, if they see immediate payback. These issues are so critical that many oil and gas companies are expediting their digital transformation journey to be able to rapidly adapt to change and survive in the future. This IDC MarketScape is intended to provide oil and gas companies with insight into the current capabilities and future strategies of professional service firms and guidance on how to approach building a stable of trusted service providers. In detail:

- A few oil-rich nations are driving oil and gas companies to become more operationally effective, efficient, and resilient to survive, forcing them to rapidly adopt digital transformation strategies, platforms, and other technologies and software solutions to rapidly manage change.
- Professional services leaders in oil and gas have a commitment to the energy industry that is backed by the highest level of executives at their companies. This is demonstrated by their investments in R&D, oil and gas centers of excellence (COEs) in major oil and gas hubs, and the number of specific subject matter experts like geologists and petroleum engineers. Leaders are viewed as trusted advisors that work closely with clients to drive operational excellence and innovation in the oil and gas ecosystem and are relying more on domain and transformational consulting expertise to help make a difference.
- Oil and gas companies indicate that their top strategic IT initiatives for dealing with low oil prices include IT and application modernization and process improvements, automation where possible, and applying manufacturing techniques and digital transformation in the form of Big Data and analytics, cloud, and mobility.
- A number of professional services vendors continue to make substantial investments in their oil and gas practices to grow their resources, acquire and grow domain expertise, and focus in core areas to be the best. One large oil and gas IT professional made the observation that he believes that every company on this list could do the work required, and his company usually selects more than one vendor for large initiatives because each vendor has its own unique capabilities, and it is important to pick best-of-breed vendor(s) for each set of project requirements.
- The two giants in the industry emerged solidly in the leadership circle, but there are several large vendors that are seriously challenging their positions. These next two years are going to be critical for O&G companies to make the digital transformation, and they will work with the vendors with proven track records and innovative technologies.

IDC MARKETSCOPE VENDOR INCLUSION CRITERIA

IDC collected and analyzed data based on 30+ interviews of multiple major and large oil and gas companies, oilfield services, and manufacturers of oilfield equipment, as well as vendor briefings and other research information. While the market arena for professional services is very broad, and there are many suppliers that offer these services, IDC narrowed down the field of players that participate based on the following criteria:

- **Service capability.** Each service provider must have an established reputation working in the oil and gas industry, with revenue from at least two and preferably more of the following services that are geared specifically to oil and gas: business and management consulting, IT consulting, systems integration (SI), IT outsourcing, and business process outsourcing.
- **Solutions for oil and gas.** Firms must establish that they have a variety of "solutions" that are unique and specific in the oil and gas industry. Firms that have only one solution are not considered (refer to Table 4 for a list of solutions considered in this study).
- **Geographic presence.** Firms must have presence delivering services to O&G companies in more than one region (preferably multiple in Asia/Pacific, Western Europe, Central and Eastern Europe, North America, Latin America, and/or Middle East and Africa).

ESSENTIAL BUYER GUIDANCE

This IDC MarketScope is a starting point to guide oil and gas companies in their selection of service providers. For oil and gas companies, the selection will be primarily based on what these firms can do to improve performance, achieve IT-enabled business benefits, and reduce costs. For this industry, that means speeding time to first oil, mitigating drilling risk, optimizing production, adapting to new delivery channels, adhering to HSE and compliance, hedging risks, leveraging opportunities in the commodities market, preventing accidents, streamlining refining, serving the retail customer, and achieving operations excellence in the oilfield.

Oil and gas companies expect their vendors to become a more strategic partner and know their business, provide deep domain expertise as well as technical skills and work closely with the client's team, and assume more responsibility including more domain-specific projects. Oil and gas companies plan to keep some such individuals with deep oil and gas knowledge combined with IT skills during and after project completion in management positions for program and project management.

Oil and gas companies should pay particular attention to the following decision factors:

- The fact that oil and gas companies are looking to their preferred vendor "partners" to assume more responsibility and risk and even manage domain-specific activities is new for them and is a strong indicator that oil and gas companies are being more aggressive and innovative about how they make decisions and run their businesses based on information.
- Determine business objectives, strategies, and key metrics first and determine which attributes are most important in project-related initiatives and in ongoing services. Depending on the assignment, the level of importance will vary for the need for oil and gas domain expertise, technical skills and experience, knowledge of local regulations, value/cost, geographic coverage, bench for handling niche oil and gas applications, and petro-technical data.

- Attributes that are consistently important include drilling and production statistics, reserve replenishments, allocations, HSE compliance requirements, security and protection of information, and excellence in meeting service-level agreements and timelines.
- The complexity of technologies used in the O&G sector has increased and will continue to do so in the next few years with the further digitization of the industry and new techniques for the pursuit of unconventional resources. Innovation also includes 3rd Platform initiatives like Big Data and analytics, cloud, automation, and mobility. Look for demonstrated experience in digital transformation and 3rd Platform technologies.
- Expertise and approaches will vary for developing solutions involving data management oilfield initiatives like Internet of Things (IoT) and connectivity, real-time drilling and production, data lakes, GIS, master data management (MDM), OSI PI data, and other unstructured data types that can all provide valuable information, depending on the business objectives to be achieved and the analytics (including advanced, modeling, simulation, and cognitive) that is applied.
- Leading oil and gas companies are pushing their professional services firms to help them innovate. Set clear expectations on the type of innovation you expect. Evaluate vendor performance on how well the vendor is able to work with you or other service providers to deliver innovation. Innovation also includes new approaches like assembly line oil well production with just-in-time delivery of resources and supplies (manufacturing techniques).
- While most companies want to move quickly to innovation, many companies must first modernize their IT environment and refine processes between systems and departments in order to provide clean and usable data in an efficient and accurate manner to the right people, at the right time.
- Look for vendors with experience in your desired initiative that are able to deliver repeatable solutions to your company but still customize your unique requirements. A vendor that can demonstrate experience with only one customer may not be able to translate that to your company easily. Ask to understand what commitment the service provider has made to investing in templating the solutions.
- Benchmark vendors to understand how they have helped their customers reduce the cost of IT. Cloud-based services are one way to achieve cost reduction and reduce capital investment. In addition, vendors should be able to help automate processes or provide templates to speed implementation.

VENDOR SUMMARY PROFILES

This section briefly explains IDC's key observations resulting in a vendor's position in the IDC MarketScape. While every vendor is evaluated against each of the criteria outlined in the Appendix, the description here provides a summary of each vendor's strengths and challenges. Table 1 provides a snapshot of the vendors reviewed including main geographies, key customers, key solution and services for oil and gas, primary sources of oil and gas revenue, and what IDC Energy Insights believes to be particularly noteworthy. The vendors included in this IDC MarketScape are:

- Accenture
- KPMG
- IBM
- Infosys
- L&T Infotech (LTI)

- TCS
- Tech Mahindra
- Wipro
- Capgemini
- EY
- CGI
- Deloitte
- PwC

TABLE 1

Snapshot of Oil and Gas Professional Services Firms

Service Provider	Oil and Gas Geographies	Notable Oil and Gas Industry Business and IT Consulting Project-Based Solutions	Notable Oil and Gas Industry Outsourcing Services	Top Revenue Generators for Oil and Gas	Additional Notes
Accenture	North America, Western Europe, Asia/Pacific, Australia, Japan, Eastern Europe, Latin America, and the Middle East and Africa	Digital transformation using Accenture accelerators and platforms like Accenture Insights Platform and Connected Products as-a-service Platform embedded in vertical industry solutions and delivered as a service; other services include well delivery and production operations, hydrocarbon and commercial accounting, next-generation ERP, plant automation, asset data integration, connected worker, customer loyalty analytics, and marketing	<ul style="list-style-type: none"> ▪ Application Management; Infrastructure Outsourcing/IT as a service; Business Process Outsourcing for procurement, finance, and accounting; HR; learning; contractor management; cybersecurity as a service; and testing as a service ▪ Examples of specific industry services include Upstream Analytics as a Service, digital turnaround as a service, and enterprise as a service 	Digital transformation of operations, business and IT consulting, and outsourcing and as a service focus on cost reduction, production efficiencies, plant reliability, and workforce productivity	S/4HANA Core, Industry Cloud Solutions and Digital Roadmaps, Predictive Asset Management, Cybersecurity

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KPMG	North America, Europe, Asia/Pacific, Latin America, and the Middle East and Africa	Management Consulting, Risk and Fraud services, Internal audit, IT consulting, transformation leadership, Financial Statement Audit, financial mineral rights management, land management, oilfield worker enablement, compliance, Security, Trading & Risk management services, ETRM implementation services, M&A support services, Major Capital Projects execution consulting, and Big Data solutions (e.g., finance, business performance, next generation of oilfield technologies, asset optimization, supply chain and logistics optimization)	Business Process Outsourcing and IT outsourcing advisory and security	Business Consulting, IT Consulting (especially strong in upstream), and Business Process Outsourcing advisory	Finance and operations transformation, Asset Management, and Cybersecurity Consulting Services

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IBM	North America, Western Europe, Asia/Pacific, Eastern Europe, Latin America, and the Middle East and Africa	<ul style="list-style-type: none"> ▪ Transformation of clients' systems and processes driving change and efficiencies and insight with cloud and Cognitive, accelerating the digital economy, and IBM Cloud Data Centers to speed adoption of SAP applications and SaaS hybrid cloud solutions, Petro-technical Applications and data management, Real Time Plant Monitoring, Drilling Analytics, Production Optimization Predictive Asset Management, BPM, Mobile Oil & Gas Applications, digital security, Bio & Renewable solutions ▪ Applications portfolio rationalization, modernization, and Finance & Accounting ▪ Procurement and HR Services 	<ul style="list-style-type: none"> ▪ Integrated Refinery Information Systems — MES and ETRM Customization Services ▪ SAP HANA: design, build, deploy, and maintain ▪ Application Development and Support ▪ Platform Based Solutions ▪ BPO 	Cognitive is a strategic revenue generator around insight and analytics, driving effective decision making, IT consulting focused on reducing costs and improving efficiencies, IT outsourcing (ERP and business applications), System Integration, Application Development and Management, and Asset Management and Enterprise Services	Cognitive Computing across the Enterprise (in upstream, Capital Projects, and Field Operations), production and drilling analytics, robotic process automation in upstream and downstream, M2M/IoT Management Services, and Seismic Interpretation Adviser

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Infosys	North America, Western Europe, Asia/Pacific, Middle East and Africa, Latin America, and Central and Eastern Europe	Mana to drive automation and innovation, Big Data and Analytics, E&P Data Management and Analytics, Pipeline Integrity Risk Management, Refinery Management, and Gas Management	Petro-technical application development and maintenance, Infrastructure Management, ETRM support service, and Indirect Procurement services	Big Data and Analytics, IT Outsourcing, System Integration, and Energy Trading and Risk Management	Analysis of unstructured E&P data (LAS files, seismic, GIS, etc.), Smart OFS solution, Infosys Trade Support Platform, Integrated Refinery Information System, and patented algorithm to calculate pipeline integrity risk score
L&T Infotech	North America, Western Europe, Asia/Pacific, Middle East & Africa, Latin America, and Central and Eastern Europe	Predictive Analytics for rotating equipment, Well Reliability Optimization with Petex, Advanced Leak Detection for pipelines, Field Mobility Solution for Gas Gathering, Integrated Operation Center for Plant Optimization, Cyber Security for oilfield, Common Data Layer with HANA and Hadoop for downstream retail, Global Export compliance and Trading for Process Industry, and Mobility and Wearables solution for asset maintenance and monitoring	Petro-Technical Application Management, Technical and Surface Data Management, Refinery and ETRM Applications, Facility Engineering, Asset Management, Engineering and Document Management, and Large Capital Project Management	Application Management, deployment and support of hardware, Domain solutions deployment, upgrade and global support, OT and Engineering design, and support and deployment work	Cybersecurity services for oilfield and manufacturing plants, field mobility solutions, and DCS/SCADA solutions for plant surveillance

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TCS	North America, Western Europe, Asia/Pacific, Middle East and Africa, Latin America, and Central and Eastern Europe	Engineering and Industrial Services, Petro-technical E&P data integration, Data monitoring and analytics of remote assets, robotics, downstream BPO, application development	Upstream and downstream applications management, ETRM systems, BPO, engineering design, plant automation, operations planning and scheduling, supply chain management	Engineering and industrial services, Application Management, Custom Application Development	Digital Oil Field with WITSML/PRODM L integrations, Sensor Data Analytics Platform, Automation and Prescriptive Analytics using Soft Sensors
Tech Mahindra	North America, Western Europe, Asia/Pacific, Middle East and Africa, Latin America, Central and Eastern Europe	Telecommunications, engineering design and maintenance, networks, and oilfield data management and analytics, Project Management Office Services, Cloud Migration Services, Asset performance Management, Learning and Development Solutions	Oilfield monitoring services, application management, ETRM implementation and support services, Asset Management Customization Services, Engineering Services, Telecommunications, Cyber Security Services	Application Management, Custom Application Development, Telecommunications	E&P Data Management Adapters, Lone Worker Safety, Refinery Offsite Emergency Management
Wipro	North America, Western Europe, Middle East, India, Africa, Asia/Pacific, Latin America, Australia, and Central Europe	Upstream data management, hydrocarbon accounting, upstream integrated operations, real-time information management, digital oilfield, enterprise asset management, integrated plant operations and analytics, LNG optimization, retail transformation and ePOS, offer to cash transformation, engineering life-cycle management	Application development and management for E&P, subsurface data management, upstream hydrocarbon accounting, ETRM integration support, downstream financial and accounting business process services, downstream applications managed services, and retail site systems support	Outsourcing E&P application management, custom application development, E&P integrated operations, subsurface data management, engineering services, retail site systems support, manufacturing applications management	SAP IS-Oil upstream and downstream prepackaged accelerators, PRA and JVA web-based add-on applications, SAP HANA implementation services, LNG commercial optimization platform, ePOS, customer value transformation, SharePoint management services

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EY	North America, Western Europe, Asia/Pacific, Eastern Europe, Latin America, and the Middle East and Africa	Management Consulting, Large Capital Project Management, E&P Data Management, Analytics, ETRM Systems Management, IT and OT Advisory Services, Capital Project Management, Capital Optimization and SCO	Financial Accounting Advisory Services, Tax & Legal Services, Enterprise Risk Services	Business Consulting, IT Consulting, IT Systems Integration, Control Systems, Purpose-led IT Transformation	Oil Field Simulation and Modelling, Upstream Data Analytics
CGI	Western Europe, North America, Eastern and Central Europe, Asia/Pacific, and Latin America	Energy Trading and Risk Management Services, Fuel Retail Payments and Loyalty	Well and Asset Integrity Services, Refinery Operations	Business Consulting, IT Consulting, Business Process Outsourcing	Predictive Asset Management, Advanced Analytics
PwC	North America, Europe, Asia/Pacific, and Latin America	Capital projects and infrastructure services, Commodity & Energy Trading Services, Finance Advisory Services	Management Consulting, Tax & Legal Services	Business Consulting, IT Consulting	Governance, risk and compliance, Performance Analysis, Transactions & M&A Support Services
Deloitte	North America, Europe, Asia/Pacific, and Latin America	Upstream technical advisory services, risk management services, M&A support services	Financial Advisory Services, Tax Services, financial systems consolidation	Business Consulting, IT Consulting	Risk Management Services with NASA partnership, Cybersecurity, Market Analysis and Forecasting
Capgemini	Western Europe, North America, Eastern and Central Europe, Asia/Pacific, and Latin America	ERP consulting services, large capital project management, E&P Data Management, Analytics, LNG financials	ERP implementation and optimization, energy trading and risk management, oilfield and/or operations efficiencies	ERP Implementation, business consulting, IT consulting/ systems integration, IT outsourcing/ Managed Services, LNG consulting	Smart Pipelines, Production optimization — upstream and downstream, Advanced Analytics

Source: IDC, 2016

Accenture

Accenture's Energy industry group serves 100+ oil and gas clients globally across all sectors of the industry including majors, national oil companies (NOCs), independent, new energy, and oilfield service companies. Accenture continues to grow organically and by acquisition as appropriate and is focused on digital transformation using the Accenture Insights Platform designed to develop and deploy new solutions, in several instances as a service. Accenture also continues to develop strategic relationships with best-of-breed software functionality to fill its functionality matrix gap for prioritized strategic initiatives. For example, Accenture has a strong long-term alliance with SAP for strategic areas like production and provides multiple services to support and optimize this domain. Accenture is positioned as a Leader in this IDC MarketScape for oil and gas professional services.

Accenture has done a series of acquisitions to further scale its oil and gas practice capability. Post the Hytracc Consulting deal that expanded Accenture's footprint in hydrocarbon and revenue accounting services, it acquired Structure to strengthen its capabilities in smart grid operations and energy trading and risk management services and Gapso, an advanced analytics services and solutions provider based in Brazil that specializes in solving complex supply chain and logistics challenges. Next came the acquisition of Schlumberger Business Consulting – to strength its strategy capabilities in upstream oil and gas – and Cimation to expand its consulting, digital, and cybersecurity services for industrial asset and operations management.

In upstream, Accenture has developed a host of solutions such as Well Delivery and Production Operations (which includes Connected Production Operations, Industrial Internet of Things [IIoT], Digital Analytics, Asset Integrity, and Operational Excellence), Accenture Capital Projects Solutions, Upstream Analytics as a Service, and Accenture Upstream Direct (Hydrocarbon and Commercial Management). In the transportation and trading side, Accenture has developed solutions in the areas of asset data integration, visualization and analytics (Intelligent Pipeline Solution), Commodity Trading Operations, Accenture's Fuels Retailing Solutions, Merger and Acquisition Transaction Solutions, and Fuels Retail Intelligence.

Strengths

Accenture is developing industry clouds in key prioritized areas. Its first phase of development includes oil and gas. Accenture continues to be ahead of the curve in developing solutions for the oil and gas industry that are well conceived and start from a business standpoint. Large oil and gas companies consider Accenture as a preferred vendor. The company's ability to bring together strategy, digital, information technology, and business process outsourcing is unique in the marketplace.

The advantages Accenture has compared with other IT and management consulting providers are its 40+ years in the oil and gas business and deep domain expertise combined with technical knowledge and skills to leverage and deploy high-impact solutions and engagements across the hydrocarbon value chain. Many of the interviewees reported that it is critical for even IT workers to have deep oil and gas knowledge to be most effective.

Accenture has an extensive Energy Hub network (30+) to foster collaboration, training, and development of solutions specific to the oil and gas industry. Industry specialization continues to be a key differentiator for Accenture, and the company develops training material relevant to the industry, taking care of changing business and technical models. In-house, Accenture has developed 50+ specific energy industry training modules, and 8,000+ energy vertical practitioners underwent training in FY15.

An executive of one large oil company reported that "after discussing my projects with Accenture and going through the interview process, it is interesting to me that what I like most of all about my vendors are the people. It is the people that work for these services companies and their culture that make the difference."

Challenges

With the crude oil pricing issues and the negative hit to new and ongoing E&P projects, Accenture is making strides to keep pace as oil and gas companies expect more out of their vendors and for lower costs. The company is also moving to stay out ahead by moving toward innovative digital and analytics as well as cloud solution-based services that are well received by clients that demand more.

One of Accenture's challenges is overcoming the perception of the company's pricing. The general consensus was that Accenture rated at the low end for pricing, according to one individual, but the same interviewee also agreed that even though it is pricey, Accenture performs a valuable service that the interviewee's company can't perform itself and solved its problem. This is a good message to consider when working with any of the companies in this study that have strong consulting and technical skills: one must consider the complexity of the problem to be solved and the value of having it done by people with experience.

In addition to keeping up with new and disruptive business and technologies advancements, Accenture is also faced with several other vendors entering the leadership space that are steadily building more domain expertise and pricing solutions at more competitive rates. Accenture has already tackled labor arbitrage by setting up offshore services to balance costs and performance and will need to excel at managing employees across the world to best collaborate and work together to meet the high expectations of its clients. One major oil company executive when interviewed made the comment, "I am looking to Accenture to help me execute big ideas and innovation."

Capgemini

Capgemini, one of the established providers of consulting, technology, and outsourcing services, offers project-based as well as managed services to the oil and gas industry. The company is well respected in the oil and gas industry as a thought leader, especially in Europe. Capgemini has done some notable industry leadership works – the company has automated API standard 53, which requires drilling contractors to report defects and failures to OEMs, for the IADC Subsea Drilling Consortium; has taken a lead in the adoption of upstream data integration standards with its use of WITSML, PRODML, and so forth; and, in the wake of post-Macondo regulatory expectations, enhanced the maintenance processes, testing, and reporting practices. Capgemini is positioned as a Leader in this IDC MarketScape for oil and gas professional services.

The company has a good strategic partnership with SAP and has brought a couple of industry-led solutions in the upstream segment. One of its preconfigured SAP-certified energy solutions is called READYUpstream, which is a preconfigured SAP oil and gas upstream solution built on industry best practices and available on a SAP HANA platform. READYUpstream covers all areas of upstream oil and gas accounting including production management, revenue accounting, division order, tax and regulatory reporting, financial accounting, joint venture accounting, authorization for expenditures, cost accounting and reporting, and asset management.

One of the attractive features of this offering is that the solution is priced as a fixed fee, which allows oil and gas companies to deploy an SAP implementation with a predictable implementation cost and

schedule. Capgemini also has an alliance with GE (with the recent acquisition of IGATE, this GE alliance has grown by a few miles), and one of the key solutions on drilling optimization is based on the GE Predix Platform.

For the midstream segment, Capgemini has an SAP-certified solution called EnergyPath targeted for oilfield services and midstream companies. EnergyPath is a templated, proven approach to shortening the implementation of SAP ERP. EnergyPath is built to speed implementation of SAP ERP and non-ERP SAP applications using templates designed for the oil and gas industry. Recently, Capgemini implemented EnergyPath at Houston-based Excelerate Energy, a leading liquefied natural gas (LNG) transportation and regasification provider. Another key offering is the Capgemini Digital industrial Asset Lifecycle Management (DiALM) solution, which is a multisector platform developed in collaboration with AVEVA. This solution aggregates asset data to establish a digital identity of industrial assets.

Strengths

Capgemini is noted for its ability to execute projects successfully and carry out services with a long-term relationship with its clients. Capgemini continues to invest in new solutions for oil and gas through its partnership with MIT and in conjunction with recognized oil and gas industry players. It takes the support for alliances with major product partners. For example, Capgemini has an alliance partnership with EMC (for Documentum) and IBM (for FileNet).

Solutions based on SAP ECC and SAP IS-Oil are also paying off. For predictive asset management, it is enhancing a solution using IBM Watson. For the cybersecurity and GRC aspect of the industry, the company has a dedicated team working on SAP GRC. Capgemini's dedicated Insights & Data team also support in data analytics projects across the hydrocarbon value chain. This team helps transform data into actionable insights in line with the vision of digital oilfields, smart refineries, and smart retail.

Capgemini is focused on taking a strategic approach to consultative problem solving and continues to grow oil and gas domain knowledge and focus on specific areas that leverage its core competencies. Capgemini has deep knowledge of cash flow and business processes and excels in applying technology and innovation to solutions that make a difference.

Challenges

In the past, Capgemini has been unable to focus and grow this vertical compared with some of its peers. One of the potential areas for improvement is for employee turnover, although it was rated on par for local employees onsite. For further growth, the company needs to accelerate its marketing and sales and the development of oil and gas-specific project-based and outsourced service offerings.

Capgemini is making progress, and it shows, but keeping the pace will prove to be challenging for Capgemini as the competition is very aggressive, and oil companies are negotiating hard for lower pricing and pricing is not a Capgemini area of strength; however, value is a strength, which can offset pricing issues, depending on the initiative.

The sales team needs to continue to tap into innovative analytics, cloud, mobility, and 3rd Platform opportunities in this vertical, which is growing and a strength of Capgemini. Capgemini's marketing needs to also focus on improving the below-par image of innovation of the company and mostly this is more of a perception than anything, and it would probably help to work on brand imaging to better understand how Capgemini develops best-of-breed solutions by leveraging the combination of

management consulting, domain expertise, COEs, and technical expertise to help digitally transform companies.

CGI

CGI has focused up its oil and gas practice on IT consulting and application management contracts. In addition to the Logica acquisition, CGI has decades of oil and gas expertise and operations in 40 countries. CGI is a key partner to a few oil and gas majors and provides global support for established upstream exploration and production applications for global oil and gas companies. CGI is positioned as a Major Player in this IDC MarketScape for oil and gas professional services.

CGI systems process more than 1.5 billion fuel card transactions and manage in excess of C\$100 billion in fuel card payments globally per annum. 95%+ of all U.K. oil and gas offshore personnel movements are tracked by Vantage POB, a widely used health, safety, and environmental workforce management solution developed by CGI.

CGI also offers software products and associated business process outsourcing services that are used in the oil and gas industry such as a new integrated Exploration2Revenue Suite (X2R), hydrocarbon accounting, SmartConnect, mobile workforce, and land management.

The company is experienced in energy trading and risk management (ETRM), with multiple implementations in the past 15 years. CGI also runs a wells center of excellence for real-time monitoring and well integrity. CGI has a portfolio of upstream services and solutions covering areas such as capital projects and field development, drilling and well management, reservoir and production management, and joint venture management.

Strengths

CGI's focus on IT outsourcing and business process outsourcing has provided the scale and the depth of services demanded by the oil and gas domain. It has robust solutions for joint venture and land and production management using mobile, digital, and cloud technologies. The Exploration2Revenue Business Suite provides an integrated set of solutions to support upstream operations, land management, production accounting, and financial accounting to provide greater insight, agility, and cost efficiency.

CGI has both petro-technical and operational technology (OT) capabilities. CGI's petro-technical services include data and applications management for subsurface and wells functions typically used in upstream. OT services support upstream, midstream, and downstream functions, providing data integration, process control services, and industrial control systems security.

SmartConnect is a special CGI application suite for monitoring rotating equipment where CGI has acted as an IP development partner for many years, developing and supporting the software, largely from Bangalore, India. The value of SmartConnect to one major oil company was equated to \$50,000 per day of increased revenue by means of SmartConnect optimizing the company's production by 1-3%.

A substantial fuel cards business that includes loyalty schemes provides a constant stream of revenue for the company. The company has worked hard to develop partnerships that fit with line-of-business offerings.

CGI has been a strategic partner for application development and support for one major oil company's subsurface and wells (SSW) IT organization for many years, because of CGI's deep domain knowledge, extensive expertise in managing technical and complex software, and global delivery capability. SSW IT is seen as a strong contributor to this company's competitive differentiation in the exploration and production space.

Challenges

CGI has yet to firmly establish the new identity of its extended capabilities in oil and gas since the acquisition of Logica. Its midstream and downstream focus needs to be tested in this slowdown market, and its solutions need to be aligned to the ecosystem provided by SAP, IBM, and so forth.

CGI appears to have strong data management and analytics skills, and marketing may be another challenge for it, as oil and gas companies research the market for strategic Big Data and analytics solutions. Its consulting practice is probably going to realize greater interest as oil prices rise and so is the need for consulting combined with technical skills.

Deloitte

Deloitte has a large, dedicated oil and gas practice with key services such as audit and enterprise risk services, tax services, consulting services, and financial advisory services. Deloitte's business model is an advisory-led model, not an outsourcing or managed services-led model, with an emphasis on business consulting. Deloitte is positioned as a Major Player in this IDC MarketScape for oil and gas professional services.

Additional services such as IT implementation and outsourcing (in the areas of application maintenance, cybersecurity, data analytics, performance monitoring, consolidation of reports, business intelligence, and business process outsourcing) act as a natural extension of existing advisory relationships.

Innovation is key to Deloitte's oil and gas practice, which is evident from its partnership with NASA. Deloitte's Center for Energy Solutions and NASA's Johnson Space Center have joined hands to bring advanced risk management capabilities to the U.S. energy industry. Through one of its subsidiaries, that is, Deloitte MarketPoint, it assists clients in making strategic decisions through economic models, market data, consulting services, and software applications, such as MarketBuilder, a premier energy solution, for the fundamental analysis of oil and gas markets.

Deloitte provides oil and gas companies with audits and reviews of financial statements and reporting on internal controls in accordance with applicable professional standards. In addition, as a fully integrated oil and gas team, the audit teams can access Deloitte's subject matter specialists in areas including valuation, environmental health and safety, derivative accounting, and reservoir engineering.

Deloitte's Enterprise Risk Services practice provides comprehensive, integrated solutions to the oil and gas industry. The company's risk advisory services include enterprise risk management, information security, internal audit assistance, finance transformation, regulatory consulting, and energy trading and risk management services. Deloitte's tax professionals include field-experienced industry practitioners, devoted to specific oil and gas subsectors, and a deep bench of technical specialists across tax disciplines and jurisdictions.

There is a dedicated team to assist oil and gas clients with originating and executing transactions and strategic investments for mergers and acquisitions, divestitures, and capital planning. More recent

acquisitions are Vigilant for cybersecurity, an important area for oil and gas, and Monitor for strategy, specifically the science of innovation. Deloitte has expertise in advising oil and gas companies in exploration, particularly in new ventures and business development.

Strengths

Deloitte's Financial Advisory Services practice advises oil and gas clients on managing business disputes, executing deals, and maintaining regulatory compliance. Specifically, Deloitte helps oil and gas clients address serious business concerns involving fraud, forensic investigations, litigation, and reorganization. It also advises businesses on valuation issues and other matters to help them in complying with today's regulatory environment.

Deloitte is set apart from other service firms in oil and gas in the way it brings together technical and financial expertise. An example is analytics-based advisory to help oil and gas companies assess conventional and unconventional reservoirs, including reservoir modeling, production and economic forecasting, M&A technical due diligence, and other engineering/geoscience analyses. In its advisory services, Deloitte deploys (proprietary) models to assess profitability by modeling the supply chains for energy at the asset level and benchmarking costs of assets.

Challenges

Deloitte has extensive oil and gas expertise that has already been built and tested. Much of Deloitte's work involves using business consulting services, which fits well with an advisory model. With the current shift in business and technology toward an opex model, on-demand/on-cloud services, and business decisions and insights centered around data coming from the fields and sensors, Deloitte's role in the new business and technical paradigm will be tested with competition maturity in these emerging fields.

Deloitte rated very high for strategy and capabilities and is challenged to digitally transform its oil and gas clients with its deep consulting expertise and combining that knowledge to not only solve solutions but be able to also technically deliver. Another key is combining Deloitte's consulting expertise with technical capabilities to be a leader in today's push for oil and gas companies to digitally transform themselves. Deloitte appears to be focusing on innovation, and it is well positioned, and time will tell if Deloitte can keep pace and rise to the level of some of its competitors.

EY

EY's Global Oil & Gas practice consists of a network of more than 10,000 professionals with extensive experience working in the oil and gas industry. This dedicated practice services a wide range of clients including independent E&P companies, oilfield services companies, independent refiners, major integrated corporations, and national oil companies. Its global oil and gas centers are strategically located in 15 areas close to oil and gas hubs. EY is positioned as a Major Player in this IDC MarketScape for oil and gas professional services.

EY has developed a global framework for key Processes in Oil and Gas Organizations (called POGO) in response to the changing dynamics of the oil and gas industry. POGO does much more than identify the end-to-end processes in the delivery chain. It also identifies common business risks within processes and provides integrated controls to mitigate or prevent them. Furthermore, POGO has been developed as a truly global model, rather than focusing on specific regional markets.

EY's enterprise risk management services for oil and gas clients is an established function, which includes forensic technology and discovery services (including cybercrime), antifraud services, business integrity, and corporate compliance services. There is a dedicated supply chain and operations professionals providing insights into supply chain improvements by addressing critical areas for oil and gas companies, such as procurement, logistics, engineering, field operations, manufacturing, and distribution.

IT consulting services include demand management, application and infrastructure optimization, consolidation and solution architecture, systems integration, IT program management, and IT security services. EY's contribution to oil and gas leadership is done through various initiatives. The *Global oil and gas reserves study* is a compilation and analysis of certain oil and gas reserve disclosure information as reported by publicly traded companies.

To assist clients with the International Financial Reporting Standards (IFRS) disclosure requirements in the oil and gas industry, EY produces model financial statements titled *Good Petroleum*, which are updated annually. Oil and Gas Eye is the first tracking index within the Alternative Investment Market (AIM) that monitors the health of the oil and gas subcomponent of the AIM on a quarterly basis.

Strengths

The key areas of expertise that EY has focused for oil and gas firms includes its established practices such as Assurance, Advisory, Tax, and Transactions and additional services such as IT consulting, supply chain management, and fraud management services. EY's Advisory services for companies operating across the value chain within the oil and gas industry are focused on performance improvement and risk management. EY is also known for knowing how to take out cost once it gets into an environment where it can monitor activities and cash flows.

EY is focused on innovative solutions working with major alliance partners such as GE Digital; co-innovating with the likes of SAP and Microsoft around analytics, IoT, and 3D printing; and addressing disruptive energy trends. EY continues to lead with digital transformation consulting and continues to develop its 3rd Platform practice.

EY was rated as well above average by interviewees and above par for the combination of consulting and technical skills as well. It rated well above average for local employees and employee turnover, demonstrating the perceived image and value of the company's people. One IT executive made the comment that EY people performed a purpose-led transformation of the executive's company's operations and began taking out costs right away by leveraging BPO and supply chain knowledge and expertise to apply lean methodologies and techniques to restructure operations information flows and efficiencies.

Challenges

EY's market penetration is still limited to a North American and Western European client base. Its oil and gas services need to extend more into Asia/Pacific, Eastern Europe, Latin America, and Middle East and Africa. Its upstream leadership also needs to be cascaded down to pipeline and refining/petrochemical firms. While EY is performing above par, it will need to invest in best-of-breed resources for business consulting with domain knowledge and leading-edge 3rd Platform skills to realize the innovative image EY needs to convey.

EY leverages what it calls a purpose-led IT transformation methodology to help its clients achieve digital transition. To address its plans for rapid growth in specific foreign countries, EY's Hub Strategy,

as well as the Center of Excellence model it has in EMEA, is designed to support all cross-country/region work (it is aimed at driving growth in Non-Western European regions), and the Oil hub includes Rio de Janeiro, which aims to serve the SASA region.

In addition, EY has made some strategic investments (individuals and team lifts), which have bolstered its capabilities outside of North America and Western Europe. Specifically, Eastern Europe (Russia, Romania, Poland, Kazakhstan, and Azerbaijan), Africa (Nigeria, Angola, Mozambique, and South Africa), and Brazil are stronger areas for EY.

The biggest challenge will be to maintain implementation capabilities to align with aggressive strategies if EY is to keep pace with the others. EY is well positioned for the well-deserved business it is currently generating, but competitors are looking to advance their outsourcing to include domain-specific functionalities, and they continue to grow their capabilities and skills in Big Data and analytics, cloud, and mobility, and EY will need to focus on innovative solutions that exercise their core competencies and be prepared to grow inorganically as well to keep up with competition. EY must continue to build a strong 3rd Platform practice to deliver expectations.

IBM

IBM has been serving the oil and gas industry for over 50 years, including more than 500 oil and gas companies worldwide, with 100+ of these clients engaged on an annuity cycle. Cognitive computing, predictive modelling, and personalized insights are the key areas the company has introduced to oil and gas clients over the past couple of years. IBM Watson – both its own set of APIs and its new IoT platform – and Bluemix cloud solutions act as PaaS offerings with 50+ services. IBM is positioned as a Leader in this IDC MarketScope for oil and gas professional services.

IBM has 40+ oil and gas clients under its IT outsourcing contracts, which include consulting, ERP, application development, maintenance, and support. The company has the largest oil and gas ERP practice with highly experienced resources in design, build, and manage services (with partners such as SAP, Oracle, and JDE). IBM also supports custom and package applications covering complex business areas across upstream, midstream, downstream, trading retail, and bio/renewables.

IBM has a well-developed and wide-ranging set of services for upstream including Capital Projects, petrotech, production, Hydrocarbon Accounting, and EHS and for downstream refining, which includes MES and PI, applications and quality management, fuel retail, ETRM, and other domains for the oil and gas clients.

The key solutions from this practice are Real-time Plant information integration on MII framework, Procurement (SAP, Ariba), Asset Management (SAP, Oracle, Maximo), GIS (Esri, Intergraph), EHS (SAP and IHS) and LIMS, Content Management (FileNet and Documentum), Business Analytics (Cognos, ILOG, BW, and MDM), Energy Trading and Risk (Commodity XL, Allegro), and M&A. Solutions that have been in the portfolio for at least a decade, such as Asset Management, have been further developed to take advantage of 3rd Platform technologies – Big Data and analytics, cloud, mobility, and social business.

The new engineered solution from IBM, PMQ, combines predictive analytics, decision management, visualization, and reporting with Enterprise Asset Management (EAM). With real-time adaptive analytics (RTAA) provided by the IBM big data platform, oil and gas companies are able to stream data (both structured and unstructured) against physics-based models in the field, in real time. By

continually refining and updating models while monitoring processes, organizations can optimize drilling and production operations and improve productivity.

The RTAA solution pattern can be used for a wide variety of subject areas including drilling optimization, production optimization, advanced condition monitoring, and microseismic interpretation for unconventional resources. One of the key focus areas for IBM is to move from traditional application-based SLAs to deliver outcome-driven services. This has helped bring transparency, business intimacy, and commercial predictability in strategic relationships. IBM is helping its clients by taking their cost out and keeping them fit in a low oil price scenario.

IBM has invested in R&D, HPC, mobile, and Watson (cognitive), keeping a focus on this industry. Investment in R&D has been \$6 billion annually, including investments of \$3 billion in Internet of Things, \$2 billion in cloud computing, and \$1 billion in cognitive. In R&D, the main focus is on addressing business and technical challenges of the natural resources industry by developing systems of insights that combine data and physics-based analytics and mathematical optimization with cognitive computing techniques built on top of flexible, resilient, and integrated platforms based on cloud and high-performance resources.

IBM has established a strong, globally present Center of Competency in the oil and gas domain. Many key clients are leveraging IBM's strength across the segments for seismic interpretation, drilling analytics, bio/renewable solutions, and digital transformation. IBM also contributes to growth of industry standards through various industry bodies in a consistent manner.

Strengths

IBM offers proven solutions in the realm of analytics, cognitive, and IoT, complemented by IBM research and partner services to attain new levels of production reliability, manufacturing efficiency, safety and compliance, and business performance. IBM's solutions span the breadth of oil and gas clients' critical business needs from enhancing exploration and production to improving refining and manufacturing efficiency, all on highly secure platforms.

In cognitive computing, IBM is helping large oil and gas clients make critical business decisions in several areas such as optimization of oil production and acquisitions of oilfields and prospect valuations and discovering the best ways to improve HSSE response and effectiveness. The company has invested \$2 billion in cloud through the acquisition of SoftLayer. IBM has also created a portfolio of software-defined storage products that deliver analytics and improved economics.

Most of the large oil and gas companies have worked with IBM long enough to recognize the value that IBM brings. IBM has done a good job of articulating its strategies for digital transformation and is one of the few vendors rated well above average for innovation. IBM's technical skills rated above par along with well-above par ratings for "innovation," indicating to clients that IBM has a good technical vision.

IBM continues to strategically align people and delivery and is well positioned to face the challenges of international complexities as well. Delivery is rated well above par, which is especially important to clients, and it is interesting that sales also rated high and this is always a good combination when delivery can meet sales expectations. IBM has got an excellent ecosystem of partners across the spectrum, which ranges from the real-time system providers (shop floor) to the strategy consulting domain (board room).

Challenges

IBM is sometimes perceived to be a high-cost provider, but recent interviewees indicated that IBM is providing above-par pricing and is consistent with the value expected and delivered. It is a challenge that IBM has faced and will continue to face for the next several years to come. Understand that IBM is working through new and innovative strategies to reduce costs – automation, cloud, and offshoring – and this growth and expansion will continue to be a challenge for IBM to stay ahead of its competition. IBM is strategic about its initiatives that have market-impact outcomes like cognitive computing for example. IBM will be challenged to continuously find high-impact problems to solve, but it is also the way of the future.

With the softening of crude oil prices, major players are looking for quick and progressive technical implementations, and IBM, and other top-of-game vendors, know that the real game is to gain leadership in setting the standard for the various 3rd Platform initiatives. There are several high-performance companies challenging IBM and Accenture for leadership, and IBM will need a well-thought-out strategy and architecture for the oil and gas sector of the future and plans for transforming the business to rapidly adapt to change.

One interviewee reported that the interviewee's company's biggest challenge with IBM is that IBM takes too much time to get things perfect, but once IBM does move, it can accomplish anything. Other interviewees indicated that IBM performed above par consistently, and its lowest rating was still on par for geographical coverage, indicating (according to clients) that there is room for improvement in covering large geographical areas, especially with domain and consulting expertise combined with technical skills in such high demand, and will be in most demand in geographically dispersed countries and rapidly expanding economies.

Finally, the most important fact is that IBM is executing well, and its strategy looks excellent, but continuous performance and growth of the business globally will be one of IBM's biggest challenges. IDC Energy Insights believes that Watson and Cognitive will make a big difference for IBM in the next couple of years, and Accenture will have to respond aggressively and strategically to keep up with IBM and the rest of the pack.

Infosys

Infosys has grown from strength in IT outsourcing and systems integration services for oil and gas companies over the past decade. Recently, with the acquisition of Noah Consulting in the information management consulting space as well as its investments in the artificial intelligence (AI) space (the recently announced knowledge-based artificial intelligence platform, Infosys Mana), the company has significantly moved up the value chain in the oil and gas IT consulting space. Infosys is positioned as a Leader in this IDC MarketScape for oil and gas professional services.

Over the past two years, Infosys has been aggressively building market share driven by automation, as-a-service economy, AI, and machine intelligence – all of which are at the core of its oil and gas practice's growth strategy. Infosys' traditional IT and business process outsourcing services have been a success, especially with upstream oil and gas companies, oilfield services (OFS) companies, and engineering, procurement, and construction (EPC) companies. Infosys is largely seen by the analyst community as an organization that is reinventing itself to be the next-generation technology services company and this is true of Infosys' oil and gas offerings as well.

With crude oil prices falling below threshold levels, Infosys witnessed an initial slowdown in revenue growth from the energy vertical. However, the vertical has maintained a positive growth rate over the past two years. As oil and gas companies shift focus to the efficiency and effectiveness of their operations, Infosys sees room for deals in next-generation data and analytics solutions as a response to requirements for operational performance improvements.

In this context, Infosys, along with Noah, has launched some innovative solutions. This includes an acquisition and divestiture data room optimization solution that allows data and analysis across multiple parameters on the cloud to arrive at asset valuation. Furthermore, Infosys is launching the oil and gas analytics platform of the future, built on open source technologies with specific oil and gas industry business scenarios and connectors based on industry requirements and standards.

Infosys has invested in multiple Centers of Excellence in E&P, pipeline management, refining and marketing, energy trading and risk management, geographic information systems, hydrocarbon accounting, and alternative energy to drive superior business performance. It has also tied up with the top oil and gas domain institutes in India for niche domain resourcing requirements. Infosys recently announced *Infosys Mana*, which IDC Energy Insights believes is a good strategic move in the right direction for bringing automation and innovation together on a platform for change. This announcement was just released at the time of writing this document, and it is good to see Infosys have an organized platform solution approach for oil and gas companies.

Infosys' partnership with prominent technology vendors like Microsoft, SAP, and Oracle is aligned with its own oil and gas vertical strategy. For example, Infosys has a complete prebuilt solution for oilfield services (Smart OFS) on SAP and additional asset management solutions on top of SAP HANA. Infosys has also built solutions on top of Oracle's asset management suite and built an oil and gas analytics platform based on open source technologies with standard industry connectors. There are early adopters that are already leveraging this platform. Finally, Infosys' commitment to oil and gas is shown through continued participation in the data standards group Energistics, PPDM, Pipeline Open Data Standards (PODS), and the Society of Petroleum Engineers (SPE).

Strengths

Infosys has worked with its clients to develop solutions especially in the upstream segment, and this has strengthened its oil and gas credentials in the space. It has commercialized the OpenSpirit Adapter Factory and developed an OpenSpirit Adapter for Seabed. Infosys has also developed a BizTalk-based PRODML POC for well temperature data. It has deepened its knowledge of upstream through work with oilfield services companies to develop software products for production optimization and real-time well data acquisition and management.

Infosys' upstream IT consulting staff have implementation experience in ProSource, Finder, InnerLogix, Recall, Seabed, and OpenWorks. In the pipelines segment, Infosys has built applications and data models that comply with Pipeline Open Data Standards. One of Infosys' patented algorithms calculates the pipeline integrity risk score by aggregating business, commercial, operational, and structural risks. In hydrocarbon accounting, Infosys has good implementation experience in using off-the-shelf HCA products such as Energy Components, P2 Energy Solutions, EnergySys, Avocet, and SAP PRA. In the ETRM space, Infosys has implementation experience in tools such as OpenLink Endur, SunGard, Asset Control, Ventyx, Triple Point, and Allegro.

IDC Energy Insights believes that the Infosys acquisition of Noah Consulting will help further strengthen Infosys' domain and consulting experience. Infosys and Noah have started working

synergistically across multiple oil and gas clients and have launched innovative solutions in the market. Infosys and Noah appear to be leveraging skills and knowledge from each other to optimize service requirements.

Challenges

Infosys, as a sourcing partner, needs to strengthen its midstream and downstream segments. While it has executed some interesting engagements in midstream and downstream segments including order to cash and trading and ERP rollout, its capability from the upstream, EPC, and OFS segments is yet to cascade down to other segments.

What remains to be seen is how relevant and applicable Infosys' focus on analytics and AI work will be to the oil and gas industry. Also, from a market spread perspective, its revenue from the Middle East and Africa in this vertical has room for growth, especially when compared with its revenue from North America and Western Europe.

The biggest challenge for Infosys will be to keep up the pace with the other aggressive vendors that want dominance in this space. Like the rest of them, Infosys will continue to target areas for growth that align with its strategies for consulting, outsourcing, and digital transformation to keep a competitive edge.

KPMG

KPMG member firms (KPMG) work across the entire oil and gas value chain and have built expertise from strategy and M&A to financial advisory, operations and cost reduction, shared services, financial advisory, HR, technology selection and implementation, and taxation and assurance. KPMG audits nearly twice as many leading national oil and gas companies as any other accounting firm. KPMG is positioned as a Leader in this IDC MarketScape for oil and gas professional services.

KPMG invests significant time and resources to provide strategic services that are truly tailored to the specific needs of the industry and has developed an oil and gas IT practice with unique capabilities to help clients address the huge challenges they face today. One oil and gas IT executive expressed that "KPMG has helped me bring order and transparency to a chaotic project."

KPMG has significant experience advising clients about M&A transactions in the oil and gas sector. As required by clients, the KPMG team operates as a single dedicated unit, providing a full range of services covering areas such as financial and tax due diligence and completion accounts. The long-term partnerships KPMG enjoys with many Fortune 500 oil and gas firms has helped it accumulate extensive experience and deep insight into this area, such as working closely with leading-edge software providers like Quorum to help companies manage their portfolio of properties, leases, mineral rights, and projects. In KPMG's advisory and other IT-related works, KPMG uses both local knowledge and international experience and collaborates closely with the global KPMG network.

KPMG focuses on assisting clients with data management, governance, integration, and enterprise data mapping services. There is an IT specialist team assisting clients with data exploration and modeling, algorithm execution, and the development and testing of tools in the E&P side. KPMG's advanced data processing services include extraction of data from unstructured sources, automating analytical operations, and leveraging natural language processing. Its HR Analytics solutions help clients generate insights about their talent through advanced algorithms.

The company continues to grow and invest in the portfolio of next-generation oilfield solutions. Its emphasis is on Big Data solutions based on digital oilfield metering and the next generation of oilfield technologies. It has also established expertise in the support services of the hydrocarbon value chain in areas such as integration and entity structures, hydrocarbon accounting/mass balance, and supply chain inventory optimization opportunities.

One midstream pipeline company IT buyer gave KPMG the highest rating possible for its professional staff, noting "KPMG is in front of our steering committee, helping to lead our digital transformation of our global operations across several countries, with various systems, to understand the flow of financial data and reporting and use this information to successfully drive efficiencies and reduce costs." IDC Energy Insights believes that this is a great example of how a consultancy and its client can collaborate to solve global problems.

Strengths

In addition to high-value strategy, process, and people services, KPMG is winning deals in IT consulting and systems integration, providing true end-to-end capabilities. KPMG excels in helping oil and gas companies in key areas such as risk and regulation, portfolio, innovation, and performance. In portfolio, the focus is on acquisitions and divestitures, joint ventures, and partnerships, and in innovation, the focus includes digital oilfield, advanced drilling, and exploration.

The KPMG Global Energy Institute (GEI) interacts with its nearly 20,000 registered members through frequent audio and video webcasts, publications and white papers, events, and a quarterly newsletter. The GEI organizes a yearly Global Energy Conference (GEC). KPMG offers a full complement of services to meet broad and complex commodity and energy trading and risk management needs including risk capital allocation, hedging strategies, trading compliance, controls, governance, analytics, data management, and regulatory issues.

The team has expertise to examine various aspects of processes and technology and make recommendations for helping clients optimize efficiency. The oil and gas team has worked with clients to develop integrated management systems, operating model transformation, standardization of well pads and improving supply and logistics planning, ERP implementations, and optimization of land management to financial reporting.

Challenges

KPMG should continue to scale its IT implementation and consulting business in oil and gas in addition to its leadership role in audit and advisory services. KPMG appears to be doing just that as oil and gas companies lean more and more to selecting vendors with strong consulting leadership to participate in strategic projects.

KPMG, like other large global players, is challenged to meet the pricing demands in smaller, developing markets. KPMG is well positioned for most kinds of work, though, and excels especially in areas that leverage its legacy in financial advisory. Analytics is a key initiative in KPMG's portfolio, and the challenge will be to continue to develop solutions that are best of breed and based on 3rd Platform technologies.

Besides the obvious need of keeping ahead of competition and technology curves, KPMG is faced with an image around pricing, and some companies have already responded to the same issue by increasing onshore/offshore presence and at the same time promoting the value achieved. KPMG needs to stay focused on keeping its clients pleased, and this year was stellar, but with low energy

prices, competition will get tougher, and KPMG will be challenged, along with everyone else, to keep the momentum going.

L&T Infotech

L&T Infotech is a \$1 billion niche IT and engineering services firm, bringing best-of-breed solutions to the energy and process industry in an era of hyperconvergence and IoT. L&T Infotech is part of the Larsen & Toubro Group of companies, a \$16 billion conglomerate, with several decades of rich experience across the entire hydrocarbon value chain. L&T Infotech is positioned as a Major Player in this IDC MarketScape for oil and gas professional services.

Given its strong engineering ethic and parentage, L&T Infotech has a deep understanding of the various facets of the industrial Internet of Things and successfully caters industry solutions to serve the complex and growing technology needs of oil and gas organizations, whose major focus is utilizing O&G solutions involving IT and operations technology, predictive analytics, field-force automation using mobility and wearable solutions, and cybersecurity for plant and equipment, as well as IT for major capital projects to improve their top line as well as bottom line.

The company is launching a Production Excellence offering to help clients improve flowline throughput, facilitate uptime, and maximize recoverable oil in the current cost climate. In advanced analytics, L&T Infotech offers Galileo Machines (machine learning and analytics) as a solution that has predictive data models to help in breakdown analysis, major component failures, anomalies within fleet, failures occurring together, and predicting component life based on population. For Terminal Management, L&T Infotech has partnered with Microsoft and designed an integrated oil terminal automation and management solution on Microsoft Dynamics.

In addition to ERP support and application management work under its belt, the company has got expertise in the ETRM space. L&T Infotech is currently developing enhancements in several solution areas such as PRIME Plant, an early warning system based on condition monitoring, knowledge management, and decision engine to help predict potential failures of critical equipment; Fuel Compliance Management System (FCMS) – renewable fuel accounting system for refineries to track for environmental compliance, reporting, and trading of RINs and carbon credits; and Unified Oil & Gas Solution (UOGS) – integrated downstream supply chain operations management solution, covering forecasting and planning through delivery, pricing, and billing.

Strengths

L&T Infotech delivers niche domain solutions across the entire oil and gas spectrum. In case of upstream, the areas include Subsurface Data & Workflow Management; Digital Oilfield; Well & Reservoir Modeling using OpenWells, Petrel, OpenWorks, EPOS, Information Risk Management; and Platform & Application Support Services for PetroTech Applications for Production Optimization. In midstream and downstream, L&T Infotech specializes in Pipeline Monitoring & Advanced Leakage Detection, SCADA Implementation/Monitoring, Terminal Automation & Management Solutions, and Energy Trading & Risk Management. Other services include Integrated Refinery Operations (IRO) & Terminal Automation, Asset Surveillance through Integrated Operation Centers (IOC), Enterprise Asset Management, Asset Reliability, Regulatory Compliance Management, and Augmented Reality & GIS Based Solutions.

Strategic Partnerships: One of the core strengths has also been in expansion of services through strategic industry partnerships with Petex, Schlumberger, GE-Predix, Hitachi, OSI-PI, Schneider,

eVision, salesforce.com, and Riversand. Alongside, LTI has enterprise partnerships with SAP, Oracle, and Microsoft and a strong association with API, PPDM, and Energistics.

The company has a Production Optimization Competency Centre wherein resources are trained on well modelling and reservoir modelling software like Petex. The team has also developed a smart enterprise asset management system (SEAMS), which provides Enterprise Asset Management integration with GIS, mobile solutions, and mobile devices like Vuzix glass and Google Glass. The pedigree that L&T Infotech has, in particular in instrumentation, engineering, and construction, will become even more useful in the future in informing IT for automation and capital project management.

Parent company L&T generates significant revenue from the energy sector as an engineering, procurement, and construction vendor performing feed engineering, plan design, ocean engineering, facilities engineering, reservoir engineering, and capital projects. L&T Infotech benefits from the migration of some L&T personnel in oil and gas to the IT service side of the business, and IDC Energy Insights believes this combination of combined engineering and IT services will be especially rewarding. L&T is well positioned, especially in areas like IoT, platforms, integration, analytics, asset management, and other innovative initiatives especially for problems that can be solved with new approaches to similar problems L&T has solved for large manufacturers and other commercial clients.

Challenges

The challenge L&T Infotech is facing is to communicate the value of the frameworks and solutions, using its clients as references to gain further petro-technical work. This challenge is not unique to L&T Infotech; in fact, our research has shown that this is a challenge faced by other IT services firms that operate in the oil and gas segment. Another aspect is to have a local presence in Indonesia and Angola, where the resource localization component is critical for clients' business needs and government requirements. Clients would like L&T Infotech to have more organization change management capabilities to support the systems integrator role.

The big challenge for L&T Infotech is keeping up with the aggressive pace of the other competitors. L&T Infotech is in a unique position with strong relationships in engineering to bring complementary expertise from other industries to help solve oil and gas problems. L&T is challenged to leverage all of its organization's capabilities and this is not easy, but potentially very rewarding as it is an edge over the competitors. In addition, L&T Infotech is also challenged to keep up with disruptive technologies and approaches in the industry and its strategies for digital transformation.

TCS

TCS is a preferred partner for several major and large oil and gas companies and services vendors as well. One key TCS strength is providing custom application development and maintenance support for both upstream and downstream. For TCS, the energy segment has been a relatively smaller contributor compared with other IT majors, but TCS does continue to invest heavily in R&D and in other resources and has shared plans for growth including strategic alliances and acquisitions for consulting resources with deeper domain expertise. TCS is positioned as a Leader in this IDC MarketScape for oil and gas professional services.

TCS has the pedigree of the Tata group with synergy across major industrial businesses including engineering products and services, materials, energy, chemicals, and defense and aerospace. TCS continues to be a member with energy industry groups and is actively pursuing industry bodies for thought leadership, branding, and visibility. The oil and gas practice is a strategic focus at TCS, and

the company is investing heavily in R&D and recruitment. In addition to collaborative thought leadership with MIT and existing collaboration with the wider TCS Co-Innovation Network, TCS has got its own Energy Domain Academy open to customers.

It also has a vibrant partner ecosystem supporting oil and gas IT services. TCS' strategy is to align with the partner's solutions space. TCS works with industry specialist products and vendors like Petex, Petrel, Kongsberg, WellView, Well Master, WITS, Avocet, and Energy Components in upstream; Maximo and Meridium for asset management; AspenTech, Intergraph SmartPlant, OSI-PI, and various LIMS in downstream; and Primavera for project management.

For example, TCS has a focus on petro-technical data integration (PTDI) and enterprise asset management. The company has developed capabilities such as an integration service layer to OpenSpirit-compliant applications and databases and interoperability components using XML standards in this industry such as WITSML and PRODML. TCS has also developed a global template for the implementation of standardized processes across downstream refinery operations.

Strengths

TCS has demonstrated its capability in the upstream and downstream segment as it brings its engineering, oil and gas, and IT and digital competencies together. It owns innovation and design labs, which support in the engineering, materials, and capital project management R&D works and help bring innovation to customers. In addition to the independent oil and gas companies, TCS has also worked with oilfield services firms to support in the custom development and testing of software products to improve drilling and completions. Its high-performance computing division is also building simulation and modelling applications. In addition, TCS has delivered analytics of oilfield production operations, leading to improvements in performance for its customers.

At a major oil and gas company, TCS supports application maintenance for well engineering, capital project management, asset maintenance, production operations integration, energy trading, and data management services. For an E&P major, TCS is supporting application maintenance and support for the entire set of E&P applications. TCS has also demonstrated services for product life-cycle management (PLM), technical data management, and data analytics.

TCS has supported more than 350 applications in the downstream segment of a global oil and gas major. Areas like asset management and engineering data management for refinery and petrochemicals sites are major strengths. For a large global drilling services provider, TCS proposed and delivered a unique "digital twin" of the provider's rig operating system, allowing riggers to train virtually and engineers to test changes before deploying them on actual rigs.

Challenges

Some of the success TCS is having with the E&P and refining segments is helping TCS build deep domain expertise in valuable areas. The challenge is keeping this talent engaged with the right clients, so that TCS can continue building its global team expertise in high-impact areas like understanding production allocations processes, developing real-time application development for drilling, and using this kind of knowledge and background to successfully compete in the oilfield IoT analytics solutions space being pursued by many of the largest services companies in the world. TCS has graduated to a Leader position in this IDC MarketScape and will continue to build on its strengths to further consolidate and enhance its position in this competitive environment.

The footprint for TCS in Middle East and Africa has shown significant growth. This area is growing rapidly and technology innovation is at the core for change. By structuring innovation into the customer engagement model, TCS can bring new ways of doing things to each of its clients in the fields of advanced analytics and digital oilfields. More and more oil and gas companies are looking to their vendors to work together to deliver innovation, and it is important that service providers take an active role in making this happen.

The biggest challenge for TCS is to quickly transform the organization from being a good, long-term provider of technical services into providing a consultative trusted advisory role for its clients, helping design solutions based on the client's strategy. To continue being a leader in today's oil and gas IT industry, companies are demanding management consulting kinds of leadership services from their most preferred partners, and TCS will need to continuously keep up investment in consulting and innovation and also learn to push back a little more with clients, especially if there are areas that could be improved that would help customers realize significant cost savings.

Tech Mahindra

Tech Mahindra has a proven track record of delivering large IT projects and integrated services to leading E&P as well as oilfield services companies. The company has introduced a number of industry-specific digital solutions. It is key to point out that Tech Mahindra started out a little differently than other vendors in that telecommunications was the core business when it entered the market. IDC Energy Insights believes this is a big differentiator given the need for integrated communications and collaboration in the energy industry, especially for remote and offshore sites. Tech Mahindra is positioned as a Major Player in this IDC MarketScape for oil and gas professional services.

Tech Mahindra continues to focus on investments in value-adding and differentiated domain solutions. Its latest offerings include Predictive Maintenance, Authorization of Expenditure, Production Surveillance, and Wrap & Extend solutions for unlocking the value of ERP investments. One of its solutions, Drilling Data Analytics in Real-time (DART), has been certified by Energistics for meeting the requirement for WITSML certification.

Tech Mahindra also has a cloud-based Pipeline Integrity Management (PIM) solution using the PODS data model, hosted on Microsoft Azure. Tech Mahindra utilizes its own as well as third-party platform technologies to develop solutions for the oil and gas industry. Tech Mahindra has also invested in developing adapters to convert data from WITS, LAS, LIS, DLIS, and similar formats.

The company is putting up an enhanced focus on Europe, MEA, and APAC, along with North America. It is also cross-leveraging its communications expertise to deliver integrated verticalized M2M/IoT solutions to the oil and gas industry. Its advanced analytics practice has built an IP for carrying out Self Service Predictive Analytics. Its oil and gas vertical team also has expertise in statistical/machine learning algorithms/techniques, optimization, and simulation engines.

Tech Mahindra has also developed a solution for production reporting and analysis, Collaborative Production Enhancement (COPE). One of its key solution frameworks integrates the key information on water management from shale gas/oil sites distributed geographically and makes it available to the decision makers in KPI-based dashboards. In the logistics and supply chain side, it has a dedicated fleet management practice having expertise with Oracle Transportation Management (OTM) and expertise in contract logistics/3PL, trucking/LTL, CEP, brokerage, and intermodal.

Strengths

Tech Mahindra, after integrating Satyam's oil and gas practice, has been a recognized IT vendor primarily in the upstream segment. It has active contribution in terms of POCs and thought leaderships in industry bodies such as PPDM, PIDX, PODS, and Energistics. Tech Mahindra's strengths lie in foundational capabilities that it has applied in the oil and gas setting such as data quality management, architecting GIS applications, implementation of ERP systems, and infrastructure management (hybrid cloud, datacenters, hosting). Again, Tech Mahindra has years of solid and proven communications and collaboration knowledge and skills that are ideal for today's emphasis on rapid, accurate, and meaningful execution.

Tech Mahindra has extensive experience in E&P data quality management (DQM) and a well-established Center of Excellence for high-end DQM capability management. Tech Mahindra focuses on R&D initiatives to provide industry-leading solutions for E&P organizations' data quality problems. The team has developed several delivery accelerators – DQM-reusable components like templates, tools, and catalogues that can help provide quick turnaround to E&P organizations' data quality needs.

In recent times, Tech Mahindra is investing in cognitive and AI-based POCs and has partnered with leading technology vendors. In addition, there exists a dedicated team to support third-party ETRM applications. For pipeline firms, the team has expertise in application implementation and integration with control systems, migration to Pipeline Open Data Standards, modernizing legacy and proprietary applications, and geospatial mapping.

Challenges

Tech Mahindra has a relatively small footprint in oil and gas compared with other IT vendors. It needs to tap into long-term contracts at least with a couple of supermajors, which can provide the required scale in this domain. The POCs, which have been developed in-house, also need anchor clients, which can add to the creditability of Tech Mahindra's R&D teams. It should be leveraging its telecommunications and manufacturing verticals to get closer to the deals in the oil and gas segment.

IDC Energy Insights believes that Tech Mahindra has made very good IP investments; collected enriched industry experience and resource knowledge and skills in upstream, especially in data management; and established itself as a major player in good standing. Tech Mahindra has excellent resources and capabilities to grow its business rapidly in this space if it focuses on leveraging its technical skills and on what it does well and invests in growing its consulting practice to be viewed as more innovative and a good consultant, and it will also be able to articulate the value of what a client is getting and why it is worth the price paid and how it strategically impacts the client's business.

PwC

PwC has been serving the oil and gas industry for over 100+ years and established its key service offerings in the areas of legal, EPC contracts management, regulatory and other approvals, tax advisory and indirect tax, financial compliance management, financial reporting services for International Financial Reporting Standards, designing HR processes, managing deals/M&As, HSE compliance, process compliance, and so forth. PwC's M&A services such as financial, commercial and operational due diligence, accessing the capital markets and valuation, negotiating and structuring the deals, carve outs, disinvestments, and exit strategies are an established service offering in the oil and gas industry. PwC is positioned as a Major Player in this IDC MarketScape for oil and gas professional services.

PwC has 15+ regional oil and gas centers of excellence and a large staff to manage the oil and gas clients. The company has a global network of over 200+ CTRM specialists who operate from offices in the United States (Houston and Atlanta), the United Kingdom, the Netherlands, France, Germany, Switzerland, Singapore, and Australia. For the audit support services in this industry, all auditors in PwC firms around the world use a single global audit methodology that is fully compliant with international auditing standards and applicable national standards.

PwC has a dedicated global team on capital projects management services. This team of industry specialists assists clients in the reviews and improvement of capital project performance. PwC works with clients to understand how strategy informs the operating model that is tied to business processes and technology within the context of the technology portfolio.

PwC, like a management consulting firm, focuses primarily on project-based services. The approach is to start with strategic business consulting, develop an operating model, and then enable that model through technology. It typically sells projects in phases. This strategy has proved to be successful for PwC so far. Clients usually opt for all phases.

The increase in oil and gas experts has come in part organically through experienced hires, recruitment efforts at universities, and acquisitions, such as the acquisition of Booz & Company (now Strategy&). There are oil and gas centers of excellence in all the right places for oil and gas – Houston, Calgary (Alberta, Canada), the United Kingdom, Norway, the Middle East, Russia, Australia, and Brazil, with one being developed in China.

Strengths

PwC is well positioned for the key stakeholders in the oil and gas firms. Its strength lies in defining a global strategy and designing the implementation road map to align with the strategy. With its extensive expertise in management consulting services in the areas of finance, HR, supply chain, capital projects, taxation, GRC, and so forth, its client engagements are more oriented toward the industry as well as, at the same time, being customized for that client.

Most of the PwC solutions are based on an expert understanding of the regulatory and economic environment associated with the solution, best practice business processes, and forward-looking IT. PwC understands the context of local property laws, jurisdictions, mineral laws, state and federal regulations, and lease accounting standards and knows how to integrate applications and data services that inform oil and gas companies of their options. For downstream, ETRM/CTRM, reliability-centered maintenance, and process safety are some of the key areas where PwC brings substantial experience.

Challenges

PwC services are still viewed as more strategic and consultative. The implementation of its recommendations results in IT and business process outsourcing deals where PwC can play a role with IT/ITES partners. PwC will be challenged by its competitors to bring consulting and oil and gas domain expertise, all combined with technical capabilities, to digitally transform its oil and gas clients.

One of the big challenges for PwC is to build a best-in-class digital transformation team of experts to help companies transform their IT department to the 3rd Platform and develop IT that differentiates themselves from the competition. The next two years will be challenging for PwC to keep pace in consulting and technology as it competes against world-class professional services firms.

Wipro

Wipro's oil and gas revenue is evenly placed with all three segments of the value chain – upstream, midstream, and downstream. Wipro has successfully integrated 1,300 staff from SAIC's oil and gas practice and combined the capabilities into one division with a robust portfolio of industry domain solutions. Wipro's approach is to lead with business consulting and then pull through the appropriate domain technology solutions. Wipro is positioned as a Leader in this IDC MarketScape for oil and gas professional services.

Wipro's upstream team has demonstrated expertise in the areas of petro-technical data management, hydrocarbon accounting, and digital-led upstream integrated operations. Wipro's downstream practice has demonstrated proficiency in plant automation and operations, LNG commercial optimization, and hydrocarbon supply chain management.

Unlike many other IT majors, Wipro is well established in the Middle East and African market. The company has local domain experts in conjunction with its oil and gas clients in the Middle East, Canada, Australia, and other growth markets. The development of local resources is a part of Wipro's long-term growth strategy, and interviewees ranked Wipro as a solidly run, innovative organization with a good balance of technical skills combined with domain expertise.

Wipro provides capital project life-cycle management services that include consulting and risk management expertise. Wipro has an innovative service delivery approach that utilizes onsite domain consultants with offshore technical engineers that manage a cost-effective, automated, platform-based solution. The capital project offering was noted as innovative, efficient, and scalable by two different clients.

Wipro has strategic relationships with two of the leading oilfield services software providers. Their relationships include software and platform development, joint go-to-market activities, and joint industry solution offerings. These partnerships help validate Wipro's commitment to grow its deep domain knowledge and provide a unique "sell with" channel into the oil and gas markets.

As a strategic partner for two of the world's oil supermajors, Wipro's ETRM team is focused on applications development and support with legacy systems. The current staff has extensive exposure to OpenLink, Allegro, Ventyx, and PVM across 35+ programs. There is a dedicated team for application support for key trading applications on SAP and Endur.

Wipro offers solutions for plant automation and integrated operations and has executed two greenfield projects in the Middle East. Wipro currently provides end-to-end managed services support for refineries and the associated hydrocarbon value chain for three supermajors and NOC JVs in the Middle East. These portfolios include plant and business applications, optimization platforms, retail site systems, corporate applications, and infrastructure.

Wipro's base of its downstream application management portfolio is strengthened by its consulting expertise in refining operations, optimization, supply chain management, and LNG. With a strong partner ecosystem, Wipro is investing to build innovative solutions in Industry 4.0, predictive analytics, process control security, and maintenance reliability.

Wipro is also well positioned in the retail marketing solutions in operations, inventory management, and the analytics area, and one of its customer loyalty/fleet card management solutions is used by one

global oil major. Wipro leverages established partnerships for innovation and product development. It has developed industry-relevant solutions built around HANA, mobility, and Oracle.

Strengths

Wipro is on the preferred vendor list of most major oil and gas companies and is especially known for outsourcing IT and domain-specific managed services. Wipro is expanding its digital transformation business in IoT in refining and upstream integrated operations. According to one client, Wipro developed a real-time tool called Insight, which the client effectively used across all of its E&P spectrum for data collection to be used for analytics purposes.

Wipro helped one major oil and gas company transform its IT environments into collaboration centers around the world. Another client uses Wipro to help it with a standard blueprint of its entire upstream environment. Another major oil and gas company reported that Wipro helped it manage its entire downstream applications portfolio as a managed service.

Wipro is highly regarded in the industry for its domain expertise, especially in upstream data management, integrated operations, and downstream plant operations. It has a bias toward meeting identified "business outcomes" and "critical business events" with its client initiatives and not just adhering to contracted service-level agreements. One client reported recurring annual cost savings of \$75 million as a result of a Wipro-led integrated operations and remote collaboration initiative.

Challenges

The recent downturn in the oil and gas market has put tremendous cost pressures on all domain consulting and technology service providers. Wipro has been forced by its oil and gas clients to drive support costs down while maintaining service quality. While many oil and gas companies are reducing the number of services producers and consolidating their IT spend, Wipro seems to be picking up market share through vendor consolidation, particularly among the international oil companies. Wipro will be required to innovate, automate, and rethink its service delivery models if it wants to maintain its profitability and market share.

Oil and gas companies continue to evaluate the viability of moving domain workflows to external service providers. If Wipro can utilize its domain technology, digital solutions, and innovative service delivery and commercial models, it will be well positioned to help its clients in the "lower for longer" commodity price environment.

As Wipro drives its domain technology innovation forward, it will need to continue to invest in its business consulting and digital advisory services capabilities to maintain the optimal balance between front-end client advisory services and back-end technology and service delivery excellence. Wipro appears well positioned to bring all necessary services and capabilities to compete for work and has some stiff competition to beat as vendors will battle it out to be the leader in the space for oil and gas companies.

APPENDIX

Reading an IDC MarketScape Graph

For the purposes of this analysis, IDC divided potential key measures for success into two primary categories: capabilities and strategies.

Positioning on the y-axis reflects the vendor's current capabilities and menu of services and how well aligned the vendor is to customer needs. The capabilities category focuses on the capabilities of the company and product today, here and now. Under this category, IDC analysts will look at how well a vendor is building/delivering capabilities that enable it to execute its chosen strategy in the market.

Positioning on the x-axis, or strategies axis, indicates how well the vendor's future strategy aligns with what customers will require in three to five years. The strategies category focuses on high-level decisions and underlying assumptions about offerings, customer segments, and business and go-to-market plans for the next three to five years.

The size of the individual vendor markers in the IDC MarketScape represents the market share of each individual vendor within the specific market segment being assessed.

What Makes a Leader

Leaders in professional services in oil and gas have a commitment to the oil and gas industry that is backed at the executive level of their companies. This is demonstrated through investment in research and development, oil and gas centers of excellence in major oil and gas hubs, and oil and gas subject matter experts. Leaders are viewed as trusted advisors that work with their clients and other service providers in the oil and gas ecosystem to drive innovation.

Providers have a set of well-developed solutions that are specific to oil and gas, a stable of experts in oil and gas industry disciplines and with extensive experience working in oil and gas business-related IT, a strong set of disciplines to enable the global workforce at the firm to access a common set of best practices, and demonstrated capabilities in incorporating 3rd Platform technologies into their services.

Finally, just having the resources and strategy are not enough to be a leader. IDC Energy Insights conducts briefings and interviews for deeper insight and ratings by a company's clients in the industry and uses these scores to determine how well a company performs.

IDC MarketScape Methodology

IDC MarketScape criteria selection, weightings, and vendor scores represent well-researched IDC judgment about the market and specific vendors. IDC analysts tailor the range of standard characteristics by which vendors are measured through structured discussions, surveys, and interviews with market leaders, participants, and end users.

Market weightings are based on user interviews, buyer surveys, and the input of a review board of IDC experts in each market. IDC analysts base individual vendor scores, and ultimately vendor positions on the IDC MarketScape, on detailed surveys and interviews with the vendors, publicly available information, and end-user experiences in an effort to provide an accurate and consistent assessment of each vendor's characteristics, behavior, and capability.

Note: All dollar values in this document are in U.S. dollars unless otherwise indicated.

Market Definition

For this IDC MarketScape, IDC Energy Insights is reviewing professional services firms that are providing the following services to the upstream, midstream, downstream, and trading segments of the O&G industry:

- **Business consulting.** Business consulting involves advisory and implementation services related to management issues. It often includes defining an organization's strategy and goals and designing and implementing the structures and business processes that help the organization reach its goals. Business consulting includes three main areas: strategy consulting, operational improvement consulting, and change and organization consulting.
- **IT consulting.** IT consulting services include advisory services around information technology. Examples of IT consulting include evaluating an IS organization's help desk operation or determining the best technology to meet a company's order fulfillment process. IT consulting can also include product-specific consulting.
- **Transformational consulting.** Transformational consulting refers to understanding the business objectives and strategies of the company and requires special knowledge and skills for evolving the IT environment to the 3rd Platform, meaning the talent required to understand the business needs and the technology and approaches to optimize the development of the 3rd Platform.
- **Domain expertise combined with technical capabilities.** Most companies have indicated they will select vendors that have good combined consulting and technical skills in the future. Many projects require a combination of oil and gas knowledge and technical skills to implement an initiative. For example, subsurface data management requires a certain level of knowledge about geosciences as well as the technical skills to cleanse and manage data within a repository. Managing production is another example where both domain expertise and technical skills are required to perform meaningful allocations and reports.
- **Systems integration (SI).** SI services include the planning, design, implementation, and project management of a solution that addresses a customer's specific technical or business needs. SI involves systems and custom application development, as well as implementation and integration of enterprise packaged software. A SI contract is a large-scale project contract. Contracts for systems integration can range from a few hundred thousand dollars to tens of millions of dollars depending on the extent of the project.
- **IT outsourcing.** IT outsourcing services involve a long-term, contractual arrangement in which a service provider takes ownership of and responsibility for managing all or part of a client's IS infrastructure and operations. These are broad engagements that typically include responsibility for the systems, network, and application components of the IS infrastructure.
- **Business process outsourcing and managed services.** Business process outsourcing services involve a long-term, contractual arrangement in which a service provider takes over the entire process, including running this process on its own hardware and software as well as delivering services. Typically, BPO contracts support outsourced finance and accounting, procurement, and customer service. Companies are even managing services for domain-specific environments, and IDC Energy Insights expects this trend to continue as companies are focused on outsourcing noncore areas of the business to reduce costs and move to the 3rd Platform.

Situation Overview

While the lower price of oil has slowed IT spending somewhat, the market is also experiencing new opportunities to take oil and gas companies to a higher level of innovation and help them transform

their business into a fine-tuned, manufacturing-like producer of hydrocarbons. This transformation will not happen overnight, and every company will have different strategies to accomplish its objectives.

The general consensus is that companies are making the best use of their current IT environment, refining processes and modernizing, outsourcing, and rapidly evolving IT to the 3rd Platform to become operationally efficient and build a platform(s) for the future. Key areas of impact in oil and gas for service vendors to consider include:

- Focus on big ideas and innovation consulting for operational excellence and cost reductions
- Focus on modernization, automation, security, optimization, and the 3rd Platform – Big Data and analytics, cloud, mobility, and also social business over time
- Companies are looking to restructure and modernize but expect benefits as a result
- Merging of business and IT and operations – IoT analytics to reduce risk and optimize uptime
- Advanced analytics for modeling, simulation, and cognitive analytics
- Companies expect more out of their vendors like taking more ownership, assuming more risk, and providing consulting with domain and technical expertise combined
- Outsourcing and managed services are strategic moves for cost reductions and efficiencies
- Companies will keep some O&G experts and positions as project and program managers

Most companies have multiple initiatives under way, as many are modernizing their IT departments and refining processes to flow smoother and more efficiently, and at the same time developing the 3rd Platform of Big Data, analytics, and cloud. According to one interviewee: "We know we need to deploy innovative technologies, but the challenge is keeping the business running while we transform the business. We are looking at the best solutions for our business and having confidence in our partners is the most difficult task to determine. We look for past experience and the number and quality of their people with domain and technical expertise combined, and it is up to each company to understand their needs and select partners that work best for them for each project. No one services company has it all."

Service vendors are picking their initiatives that complement their core competencies, and some are investing heavily to strengthen or grow new capabilities such as we see with IBM and Cognitive and GE with Predix connectors that will stimulate alliance activities; Accenture has its Insights Platform and Infosys has Mana and Noah Consulting for data management, automation, innovation, and more. This study captures information about each vendor and on its capabilities and future strategies.

Strategies and Capabilities Criteria

This section includes an introduction of market-specific weightings definitions and includes weightings tables (see Tables 2-3). Table 4 presents an overview of solutions in the oil and gas industry.

TABLE 2

Key Strategies Measures for Success: Oil and Gas Professional Services Firms

Strategies Criteria	Subcriteria Definitions	Subcriteria Weights
Offering Strategies		
Functionality or offering road map	Future plans for solutions offerings are well aligned with current and future oil and gas customer needs in upstream, midstream, trading downstream, or retail; and best practices and offerings: include five or more well-developed and proven, high-impact, well-developed, and unique solutions that include the development of marketing strategy and solution concepts and can demonstrate expertise in the solution area	4.00
Delivery model	Vendor has well-developed plans to support oil and gas companies, with services utilizing more efficient tools and methodologies; methodologies and tools are increasingly leveraged from a single, universally accessible source to ensure worldwide consistency; there is a clear strategy from making optimal use of a mix of expert and entry-level resources to lower costs; and vendor must also show excellence with 3rd Platform abilities and have at least three centers of excellence	2.00
Cost management strategy	Vendor provides ways to help clients justify expenditures, including ROI models, and provides clear paths by which the client can lower costs; best practices and cost reduction strategies: are already in place including automation and cost-based offerings of solutions; and high-impact ROI is well understood and has been realized over the past 24 months	2.00
Portfolio strategy	Vendor has well-articulated plans to develop capabilities in partnership with others to support greater digitization of the oilfield, pipeline, and refinery, with the ability to incorporate communications with devices and control systems; companies must be able to present evidence of effective partnerships on past projects or provide press releases or other announcements of partnerships to support smart oil and gas; and best practices: are those plans that are identified and documented to develop 10 or more high-impact solutions in the portfolio for prioritization	2.00
Offering strategy total		10.00
Go-to-market strategy		
Pricing model	The supplier's pricing model strategy is forward thinking, including services priced on the basis of business value; best practices: in place to gain share or business outcomes model or offer subscription services for cloud-managed services to gain share or business outcomes model or offer subscription services for cloud-managed services across more than 5% of contracts	2.00
Sales/distribution strategy	The sales and distribution strategy provides a road map for deepening and strengthening resources in regions where oil and gas resources are extracted, processed, and delivered; best practices: have strong sales resources in regions where oil and gas resources are extracted and processed or national oil companies reside	3.00

TABLE 2

Key Strategies Measures for Success: Oil and Gas Professional Services Firms

Strategies Criteria	Subcriteria Definitions	Subcriteria Weights
Marketing strategy	There is a robust game plan/strategy for all relevant facets of marketing (e.g., brand development, promotion, demand generation) that matches where revenue is predicted to flow over the next five years; best practice: have well-established industry advisory councils and COEs that provide the client the opportunity to have input into the solution road map; the vendor conducts annual events, produces thought leadership material, and works with recognized international bodies; marketing targets areas where growth expected could be regional; could be new types of companies, such as NOCs; or could be new lines of business; and vendor addresses new and expected social business marketing channels	2.00
Customer service strategy	Consistent and innovative service delivery relies on collaborative efforts throughout an organization; and best practice: firms must have strong domain and technical skills, culture of collaboration — consistent and relevant — and demonstrate an evolving client engagement strategy; and executive-level relationships to solidify engagement on key corporate initiatives	3.00
Go-to-market strategy total		10.00
Business strategy		
Growth strategy	Service provider has strategic plans for both organic and inorganic growth for four or more of the following: geographic, functional/offering, industry expansion, enterprise size or other that aligns well with the overall oil and gas business trends in the next two to three years	2.00
Innovation/R&D pace and productivity	Service provider has demonstrated a commitment to increase funding of innovation centers or labs in partnership with major oil and gas companies; there are plans for cross-pollinization between oil and gas innovation centers, product development, and marketing; best practices: firm is among the top investors and practitioners in 3rd Platform and other innovative solutions; and best practices rated excellent for innovation	3.00
Financial/funding model	There is an articulated continuing commitment to the oil and gas industry in plans for future growth of the firm as a whole; best practices: continued commitment of top-level leadership; and oil and gas makes up 25% or more of company revenue	2.00

TABLE 2

Key Strategies Measures for Success: Oil and Gas Professional Services Firms

Strategies Criteria	Subcriteria Definitions	Subcriteria Weights
Employee strategy	Firms demonstrate a clear commitment to invest in career customization programs to retain some advanced talent, providing for a diverse range of career tracks; emerging market expansion requires increased focus on local capabilities and working with COEs; best practice: firm must be rated high for technical and consulting (domain expertise); key talents and skills include management consulting, domain consulting, and technical skills; programs in place that support the overall development of SMEs and oil and gas IT experts; include relationships with local universities and local expertise in industry; vendor has demonstrated ability to grow local expertise to leadership positions; strategy to grow through training for domain expertise as well as technical skills advancement (internal) and/or acquisition; and demonstrated ability to integrate staff (from acquisitions) into organization	3.00
Business strategy total		10.00

Source: IDC Energy Insights, 2016

TABLE 3

Key Capabilities Measures for Success: Oil and Gas Professional Services Firms

Capabilities Criteria	Subcriteria Definitions	Subcriteria Weights
Offering capabilities		
Functionality/offering delivered	Solutions offerings are well aligned with current and future oil and gas customer needs in upstream, midstream, trading downstream, or retail; best practice: must include 3rd Platform functionality for Big Data and analytics, cloud, and mobility; companies should be able to demonstrate commitment to delivery of three or more proven, well-developed solutions, which demonstrate significant advances over other service firms and proof of outsourcing/managed services capabilities; and solutions include problem identification, development of a solution concept, and customer testimonials of successful implementation with ROI	3.00
Delivery model appropriateness and execution	The appropriate delivery model must include an effective engagement with the client team and meet client-developed project timelines or service-level agreements; global presence and the ability to deploy local resources and/or work with local partners is preferred; best practice: best in class in weighted attributes — engagement, sales, local resources, and offshore optimization as appropriate; and rated excellent for delivery	2.00

TABLE 3

Key Capabilities Measures for Success: Oil and Gas Professional Services Firms

Capabilities Criteria	Subcriteria Definitions	Subcriteria Weights
Cost competitiveness	Cost competitiveness can best be measured by the ability to deliver an appropriate and sustainable return on investment; best practice: vendors that win RFPs and are selected because of price and capabilities — value and costs are optimal compared with most other service providers	1.00
Portfolio benefits delivered	Vendor can demonstrate effective partnerships with ISVs, technology vendors, oilfield service companies, engineering, procurement, and construction vendors, or other service firms to deliver a comprehensive project or managed service; best practice: evidence of success in delivering services based on solutions portfolio impact and alliances — rated as excellent for portfolio capabilities	2.00
Other offering capabilities	Vendor is aware of or participating in oil and gas industry-standard bodies and applying these wherever possible in solutions and/or services; best practice: shows leadership in development of standards for the industry by participating in standards setting and adherence to compliance and security requirements; and has built solutions with PPDM, WITSML, and PRODML	2.00
Offering capabilities total		10.00
Go-to-market capabilities		
Pricing model options and alignment	The pricing model is currently aligned with customers' preferences; best practice: service provider proposes multiple pricing models including managed services, and pricing based on outcomes, as well as other options; and vendor has done a few projects with oil and gas companies to develop and gain share or business outcomes model or offers subscription services for cloud-managed services	2.00
Sales/distribution structure, capabilities	The service provider is structured to best meet business customers' needs and is well suited to streamlining or enhancing a business customer's experience during the sales process; best practice: sufficient sales support "in region" for global oil and gas companies; exceptional distribution of sales teams in multiple regions where most oil and gas companies have a presence; and in region, oil and gas COEs to aid sales efforts, and sales team is rated as excellent by client	3.00
Marketing	The company's marketing organization is aligned with the priority oil and gas customer segments and executing well; issues are evaluated and weighted based on regional priorities; there are dedicated oil and gas subject matter experts in business development and marketing; and best practice: excellent rating for marketing	1.00

TABLE 3

Key Capabilities Measures for Success: Oil and Gas Professional Services Firms

Capabilities Criteria	Subcriteria Definitions	Subcriteria Weights
Customer service	Customers indicate a high satisfaction level with the quality of service received; the company's service organization is aligned to execute well against oil and gas industry priorities; service providers offer sufficient channels for communication, and issues are resolved quickly; and best practice: vendors rated highly in customer satisfaction and rated excellent for delivery	4.00
Go-to-market capabilities total		10.00
Business capabilities		
Growth strategy execution	Companies should be able to report year-over-year growth for the past two years in the oil and gas practice; in addition, essential to a service provider's growth in the oil and gas industry is the ability of the service provider to develop "referenceable clients," especially in the oil and gas industry; and best practice: because of the low oil prices and because oil companies are applying pressure for vendors to lower costs, expectations for revenue to determine growth are not as important as keeping clients and not laying off practitioners and continuing to work with new clients and keeping a steady stream of revenue close to the past two years	3.00
Innovation/R&D pace and productivity	Vendor has well-funded and located COEs and other kinds of test labs in most regions where oil and gas is present; best practice: may be separated by line of business or function, most are all oil and gas specific; vendor works together with other COEs; vendor has labs and 3rd Platform testing capabilities and also developed oil and gas industry groups to provide guidance on where to dedicate funds for innovation; and best practice metrics are rated as excellent in innovation	2.00
Financial/funding management	A professional service firm may be financially sound, but that does not mean that there will be resources available to serve the oil and gas industry; best practice: firm has named vertical practice in oil and gas and high percentage in dedicated head count with expertise and provides both management consulting and IT consulting/services	1.00
Employee management	The company is attracting, motivating, and retaining talent with oil and gas expertise and experience to create market value; best practice: firm is exceptional at managing vendor staff turnover during a project's lifetime, lowest 5% of employee turnover	4.00
Business capabilities total		10.00

Source: IDC Energy Insights, 2016

TABLE 4

Overview of Solutions in the Oil and Gas Industry, 2016

Solution	Description
Large capital project management	Systemize processes for optimizing the portfolio of projects, managing the project from design to hand-off to operations. It includes setup of processes for collaboration and information sharing in such areas as document management and standard operating procedures.
Operational risk	Mitigate risk to health, safety, and environment, which may include predictive asset management, monitoring and alerting, mobility, and risk assessment. This may include compliance reporting for health, safety, and environment.
Energy trading and risk management	Mitigate credit and financial risk through enabling ETRM systems, optimization, and simulation routines while ensuring compliance with regulations.
Supply chain optimization	Streamline processes and tools to cut inefficiencies and ensure optimal operations and distribution of products and services across all activities and systems.
Smart pipelines	Develop architecture and business processes for the deployment of sensor-enabled smart pipelines to manage flow and ensure pipeline integrity. Data feeds into operations centers.
Oilfield efficiencies	Apply "manufacturization" techniques, streamline processes, develop innovative strategies, and deploy cloud, mobile, automation where possible, and IoT and analytics enablement in the field to achieve efficiencies.
IT and application modernization	Update, replace, customize, and improve the current software applications to realize maximum usage to build a solid IT environment to provide the right information to the right people at the right time.
Data management	Develop architecture(s) and platform(s) for integrating and managing structured and unstructured data for providing immediate accurate data for analytics.
Analytics	These solutions leverage data for implementing simple BI queries, KPIs, dashboards, and other tools for basically comparing historical data to find trends and patterns.
Advanced analytics	Advanced analytics consists of predictive and prescriptive analytics, modeling, simulation and optimization engines and AI, machine learning, and cognitive computing.
Real-time (IoT) solutions	Solutions and platforms focus on equipment (device)-level instruments for monitoring and managing real-time analytics for predicting equipment failures and optimizing asset uptime and safety. They also include analysis of unstructured data like LAS files for predicting drilling and production behavior.
Production optimization (upstream)	Increase margin from wells in operation and/or extend decline curve by modernizing the IT environment for production including integration with production, accounting, field data capture, economics, land, and allocations.
Product optimization (downstream)	Increase value from refineries, including optimizing inputs and outputs based on market demand for products and also maintaining optimal uptime.
Predictive asset management	Reduce the risk of asset failure by monitoring assets (pumps, pipelines, compressors, blow-out preventers, etc.) and optimizing maintenance approach (repair, replacement, redundancy).

TABLE 4**Overview of Solutions in the Oil and Gas Industry, 2016**

Solution	Description
Security	Manage the cybersecurity of critical infrastructure, process control systems, and financial information from attack or theft.
Logistics	Manage delivery risk to get product to destination without additional fees or contract violations. Include solutions to manage multiple transport (rail, truck tanker, LNG or oil marine tanker, pipeline) and manage contracts associated with delivery.
Forecourt customer experience (retail)	Improve customer loyalty via omni-channel engagement (loyalty at the pump, digital signs, mobile apps, customer experience-optimized POS).
Other	Include high-impact areas not mentioned but recognized as important to an oil and gas company in terms of at least one of the following criteria: reduce costs, increase efficiencies, mitigate risk, adhere to compliance, and drive revenue and profits.

Source: IDC Energy Insights, 2016

LEARN MORE**Related Research**

- *Business Strategy: Oil and Gas – Big Ideas and Key Innovative Technologies* (IDC Energy Insights #US41090716, April 2016)
- *Pivot Table: Worldwide Oil and Gas Industry IT Spending Guide, 2014-2019, Version 2* (IDC Energy Insights #US41054416, March 2016)
- *IDC Energy Insights Report Highlights Major IT Drivers and Initiatives for Oil & Gas CIOs* (IDC Energy Insights #prUS41012116, February 2016)
- *IDC FutureScape: Worldwide Oil and Gas 2016 Predictions* (IDC #259787, November 2015)
- *Perspective: Oil Field Optimization – IoT and Device Connectivity Strategies* (IDC Energy Insights #EI256449, June 2015)
- *Business Strategy: Oilfield Optimization – Upstream IT Data Management Platform* (IDC Energy Insights #EI256898, June 2015)

Synopsis

This IDC study represents a vendor assessment of providers offering professional services to the oil and gas industry through the IDC MarketScope model. The assessment reviews both quantitative and qualitative characteristics that define current market demands and expected buyer needs for professional services. The evaluation is based on a comprehensive and rigorous framework that assesses how each vendor stacks up to one another, and the framework highlights the key factors that are expected to be the most significant for achieving success over the short term and the long term. The emphasis is IT related over tax or straight strategy advisory. As the fastest-growing and largest area of investment, upstream is emphasized; midstream, refining, energy trading, and retail are also considered.

"Leading oil and gas companies will be looking to their service providers to help consult and implement high-impact, innovative approaches and solutions to digitally transform IT and improve their agility, adaptability to change, and performance in the coming years," according to Chris Niven, research director, IDC Energy Insights Oil and Gas. "The challenge is selecting the right vendor(s) for the right project(s) as each has its own unique strengths and capabilities, and most of them continue to invest and grow their knowledge and skills in oil and gas, and in many cases, they understand their client's business better than the clients. I highly recommend oil and gas companies take the time to learn more about what these companies have to offer. Some feedback indicates that vendors are really helping companies save big bucks from outsourcing and digitally transforming their businesses."

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