

The New CIO Agenda

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in a changing energy industry

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Today, energy industry IT executives need to lay plans for delivering technological innovations, more IT-enabled business processes and high-value information—and for playing an increasingly vital role in helping their companies to stay competitive.

Globalization, shifting demand and supply, and a variety of societal and environmentally oriented forces are combining to reshape the energy industry. In response, energy companies are forming new business agendas that are designed to take advantage of the opportunities that this evolution is bringing.

More than ever, information technology is closely intertwined with the industry's business agenda. As a result, CIOs need to create their own agendas for going forward. That is, they need to develop plans for shaping an IT function that can support the business' growing need for efficiency, responsiveness, innovation and flexibility—and, ultimately, help achieve high performance in a dynamic, global industry.

The question is, What should be on the CIO's agenda? To find answers, Accenture researched industry and technology trends through a

number of sources. We drew on Accenture's High Performance IT research, which included responses from more than 260 companies, including 20 energy companies, as well as on the broader Accenture High Performance Business research initiative. We collaborated with Accenture Technology Labs, which works with a range of client organizations in several industries to explore how new and emerging technologies can help companies achieve high performance. We complemented those efforts with additional interviews with Accenture executives who have extensive experience in the energy industry, as well as with comprehensive secondary research drawing on both internal Accenture insights and external public sources.

The results of this research provide CIOs with a forward-looking view of what they can do in the next three to five years to keep IT in step with an evolving industry. In essence,

Accenture found that CIOs need to set an agenda that emphasizes a mix of efficiency, innovation and business focus—and gives IT a vital role in energy companies' quest for higher levels of business performance.

Shaping the CIO agenda

To create an effective CIO agenda, IT executives need to understand their companies' evolving business agenda, and the factors behind that agenda (see Figure 1). In general, Accenture has found that leading energy companies are focusing on five major business objectives that are especially relevant to IT:

- Acquire new sources of energy by finding new reserves, considering alternative energy sources and forming joint ventures with national oil companies
- Pursue operational excellence and modernize assets by standardizing and simplifying business processes, optimizing the supply chain, and efficiently executing capital projects
- Develop the workforce of the future by refreshing recruitment and retention strategies and modernizing skills and competencies

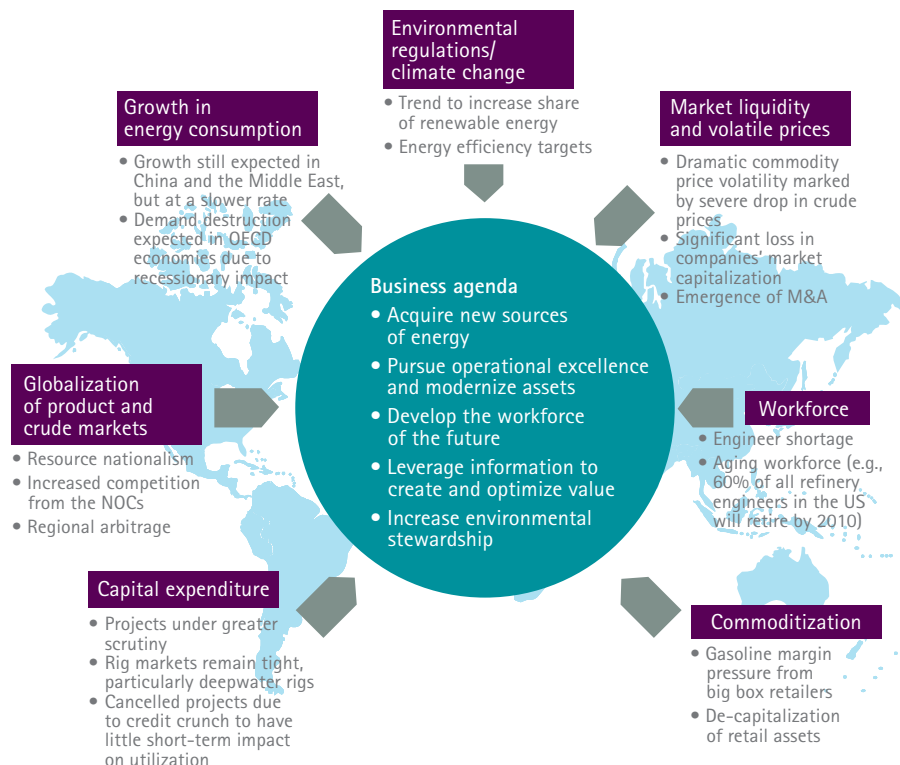
- Leverage information to create and optimize value by using integrated information systems in core businesses
- Increase environmental stewardship by conserving natural resources and promoting a safe and healthy workplace

IT can be critical to achieving these objectives because it can enable the efficiency and flexibility—and the critical competitive innovations—that the business agenda requires (see Figure 2). For example, in downstream operations, complex global supply chains are making trading and logistics increasingly difficult. But access to accurate, real-time information can be a source of competitive advantage, because it allows oil companies to make accurate market-price

forecasts for selling and buying crude. Similarly, such information can help drive improvements in refining and distribution, where it can be used to optimize asset utilization and output, and reduce capital asset maintenance costs through the use of predictive monitoring and control.

Meanwhile, in upstream operations, IT can help companies keep pace with change in the industry. For example, it can provide solutions that will improve the analysis of seismic and sensor data, which in turn helps improve the success rate of oil exploration in off-shore and remote locations. Accurate information and analytics can also help companies optimize extraction—especially in mature oil fields—and more effectively manage equipment maintenance.

Figure 1
A wide array of factors is reshaping the oil industry



Key: PE = Private equity. M&A = Mergers and acquisitions. NOCs = National oil companies. BRIC = Brazil, Russia, India and China.

Source: Accenture research

In general, companies will expect the IT function to play a large role in helping them take advantage of continuing advances in applied technology. Increasingly, then, companies will expect CIOs and IT executives to drive greater IT effectiveness and technology innovation.

This growing emphasis on IT as a key to success will force CIOs to rethink their role in supporting growth, to find new ways to extract value from IT investments, and to adopt and support new technologies to improve competitive differentiation. In many cases, IT needs to be more of a business partner that helps the organization find new ways to support the company's goals, and less of an order-taker focused solely on delivering projects.

In essence, that means having a CIO agenda that is aligned with the business agenda. The IT contributions to the business agenda (see Figure 2) can be summarized in five items that Accenture believes CIOs need to have on their management agenda:

- Enable the standardization of business processes
- Deploy new innovations and business technologies
- Deliver high-value information
- Leverage low-cost geographies
- Develop a disciplined approach to the process architecture

1. *World Energy Outlook 2007*, International Energy Agency.

Figure 2
Business agenda, strategic imperatives and IT contributions

Business agenda	Strategic imperatives	IT contributions
Acquire new sources of energy	<ul style="list-style-type: none"> Find new reserves Form JVs with foreign companies to enter new markets (oil-rich geographies) 	<ul style="list-style-type: none"> Deploy and integrate innovative technologies to help analyze seismic data Use SOA to efficiently support business and IT integration in M&A/JVs Efficiently manage and analyze exploration information linked to growth
Pursue operational excellence and modernize assets	<ul style="list-style-type: none"> Establish standardized, simplified and efficient business process Efficiently execute capital projects Optimize global supply chain Improve risk management 	<ul style="list-style-type: none"> Develop a structured approach to manage and continuously optimize key processes and activities Standardize ERP platforms and rationalize point solutions for operational efficiency Deploy BI solutions and reporting for efficient investment decisions Build IT support for end-to-end business analytics for improved operational and business decisions
Develop the workforce of the future	<ul style="list-style-type: none"> Refresh recruitment and retention strategy Modernize existing competency model 	<ul style="list-style-type: none"> Set up IT operations in strategic locations that provide easy access to young, skilled and low-cost labor Implement variable and scalable staffing to support cyclical business need Categorize skills using IT solutions Integrate talent management and HR processes using IT applications
Leverage information to create and optimize value	<ul style="list-style-type: none"> Reduce uncertainty and cycle time in oil production Leverage integrated information systems in core businesses 	<ul style="list-style-type: none"> Build IT-enabled innovative solutions to improve utilization and predictive monitoring of capital assets Enable seamless information flow across the HCVC Deploy BI solutions and reporting (such as role-based information) for efficient business decisions
Increase environmental stewardship	<ul style="list-style-type: none"> Promote a safe and healthy workplace Conserve natural resources 	<ul style="list-style-type: none"> Build IT capability to remotely monitor and deploy compliance and training applications Develop a structured approach to manage and continuously optimize key processes

Key: JV= Joint venture. SOA = Service Oriented Architecture. M&A = Mergers and acquisitions.
ERP = Enterprise resource planning systems. BI = Business intelligence. HCVC= Hydrocarbon value chain.

Source: Accenture

Agenda Item No. 1: Enable the standardization of business processes

Globalization demands new levels of agility and nimbleness, which depend largely on the simplification and standardization of business processes. Such processes can make it easier to modify or set up new operations and to quickly roll out new leading practices across the organization. However, traditional IT infrastructures in the industry are often fragmented and involve multiple types of systems—a degree of complexity that is complicated by the varied technologies involved in mergers and acquisitions, and the growing need to work closely with joint-venture partners.

Companies can simplify, consolidate and integrate technologies to support the standardized processes needed by the business. IT can use standard-

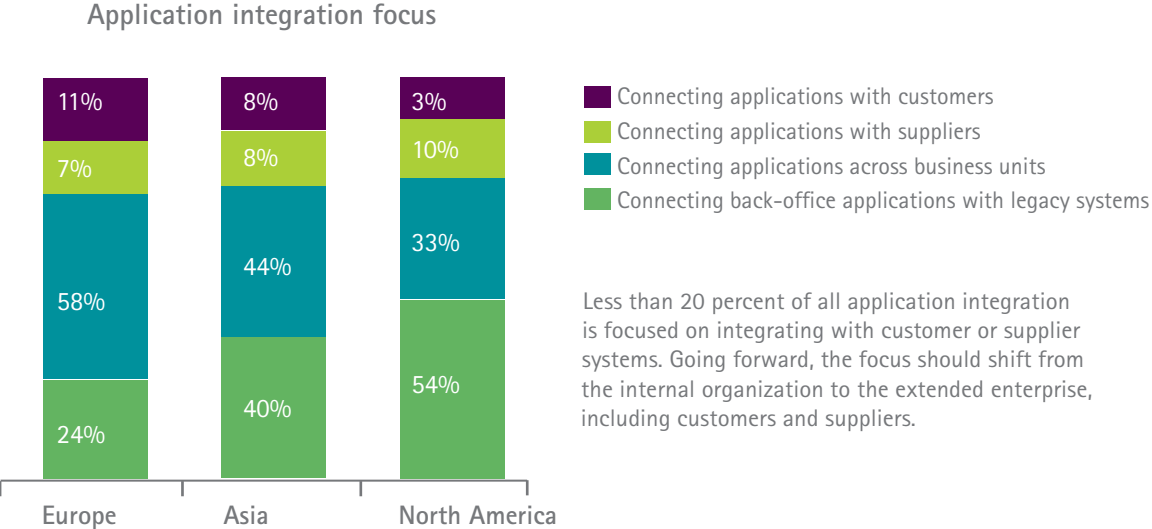
ized ERP (enterprise resource planning systems) platforms to integrate upstream, downstream and back-office processes, such as supply chain planning, crude supply management, the tracking of oil movement within refineries and the tracking of actual production data. Service Oriented Architectures (SOAs) can also support integration and flexibility by enabling companies to quickly assemble and reuse IT services in order to link systems and accommodate changes in the business.

Standardized and simplified business processes will enable asset and capacity optimization, global supply chain optimization, and logistics cost reduction. In addition, supply chain management costs—which are typically a large

part of oil and gas project costs—can be reduced by standardizing and integrating areas of commonality across multiple supply chain initiatives globally.

Accenture's research into high-performance IT also shows that in the energy industry, less than 20 percent of application-integration efforts are focused on connecting the company with suppliers and customers (see Figure 3). Most of the effort goes toward internal integration. For many energy companies, then, there is an opportunity to gain efficiency and reduce costs by turning their attention to the integration of external partners.

Figure 3
Where application integration efforts are focused



Less than 20 percent of all application integration is focused on integrating with customer or supplier systems. Going forward, the focus should shift from the internal organization to the extended enterprise, including customers and suppliers.

Source: Accenture High Performance IT Survey (based on a survey of 20 energy companies globally—four in North America, seven in Asia and nine in Europe); Accenture research—team analysis

Agenda Item No. 2: Deploy new innovations and business technologies

Although IT adoption attitudes vary by geography, Accenture research indicates that worldwide, the primary business rationale for pursuing technology innovation is the higher productivity resulting from improved business processes. In North America, however, IT is also seen as playing an important role in enabling growth. Perhaps as a result of this, North American energy companies are more aggressive in adopting new technology than companies in any other area of the world (see Figure 4).

When new technologies emerge, questions about their effectiveness and value naturally come up. Will SOAs drive value for both business and IT? Can IT improve competitive differentiation by adopting new information management approaches such as Digital Oil Field, which integrates new technologies and operational processes to optimize production, or Closed Loop Business

Intelligence, which brings operational and transactional systems together? Answering such questions requires a blend of economic analysis and business judgment, and depends on the specific company involved. In general, however, as capacity and margins become tighter in oil production, IT will be pressed to make greater use of new and emerging technologies.

In the near term, much of that pressure will focus on the use of predictive analytics. With the growing cost of offshore exploration and rapidly diminishing reserves, IT will need to support the more accurate analysis of seismic data to predict the success of drilling, and the use of analytics to create oil production performance forecasts and mitigate risk of production loss.

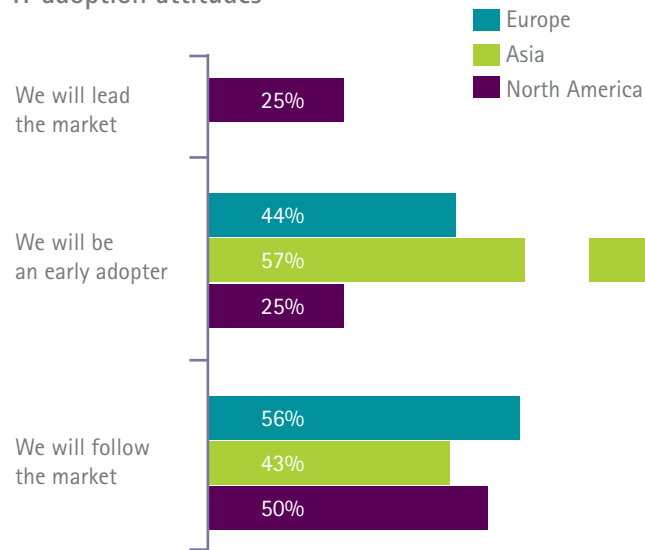
A number of energy companies have delivered high performance in their core businesses using an

end-to-end analytics framework that links operational, business process and point solutions. Accenture has been working with a large oil and gas company to build predictive models using integrated information from the oil fields to provide oil production performance forecasts. The predictive models provide end-to-end visibility to performance risks across the fleet, all the way down to the asset and component level. The company identified approximately \$70 million in potential savings that can be pursued by proactively monitoring key production loss types, and creating the ability to provide five days of advance notice to fleet operations.



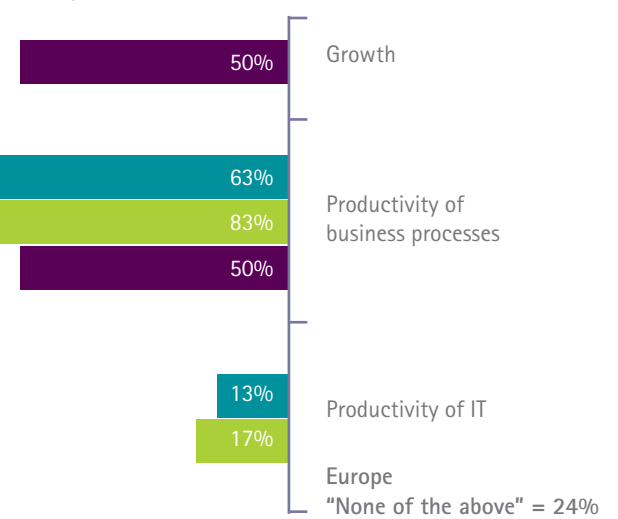
Figure 4
IT adoption attitudes for energy companies

IT adoption attitudes



When attitudes in IT adoption are compared across major global energy markets, companies in North America are more aggressive in pushing new IT adoption than those in the other geographies.

Primary objective guiding IT expenditure allocation



The business rationale and, consequently, investments for technology innovation are generally focused on transforming business processes and improving productivity; North American energy companies, however, are also using IT innovation to fuel growth.

Source: Accenture High Performance IT Survey (based on a survey of 20 energy companies globally—four in North America, seven in Asia and nine in Europe); Accenture research—team analysis

Agenda Item No. 3: Deliver high-value information

Most CIOs readily acknowledge that current data quality and usage are far below what their organizations need. Accenture High Performance IT research shows that energy CIOs' targets for real-time analytics, comprehensive data policies and data standards significantly exceed what they currently have in place (see Figure 5).

This disparity will become a critical issue as oil companies increase their focus on supply chain efficiencies, from the point of extraction all the way to trading and refining. In addition, those supply chains are getting longer, as shrinking oil supplies force exploration into remote geographies and offshore, deepwater and ultra-deepwater locations, which involve new types of technology, costs and risks. In that environment, companies will need accurate information about market demand, price volatility and transportation costs to determine the optimal routing and selling of crude to maximize profit.

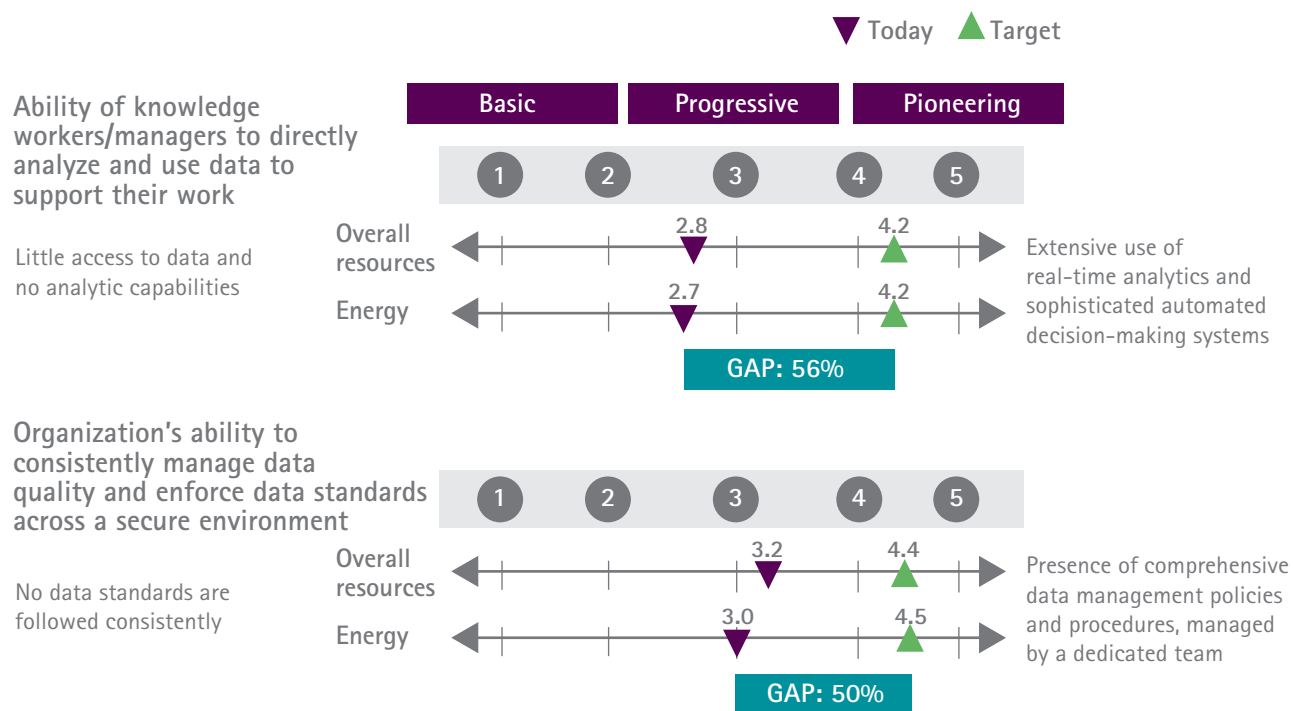
Therefore, the next generation of business analytics will need to provide much more granular information to aid market intelligence, oil exploration and other supply chain activities. Effective analyses will depend on the seamless flow of transaction information across the hydrocarbon value chain. Thus, companies will need to bring disparate systems together to achieve more effective demand forecasting, pricing, product flow and marketing. Better information can clearly pay off: For example, Accenture worked with a division of a large energy company to build an improved information-management capability using business intelligence, portal and content-management solutions. The result was enhanced responsiveness to market changes and improved price and margin decisions. Overall, the company realized annual benefits of \$20 million to \$60 million, in addition to an initial one-time savings of more than \$10 million.

Information management is also critical for managing financial and business risk. For example, significant management risks stem from having excessive manual intervention in the process of transmitting financial information. With such manual processes, companies often struggle to provide timely, accurate financial reporting. IT can help the business automate those processes to reduce errors and delays.

In large energy companies with diverse and global operations, IT can also support strong workforce performance. IT systems make it possible to provide role-based, personalized information that is relevant to specific segments of the workforce. That targeted information, along with content management, can help improve workforce productivity by providing people with seamless, fast access to the information they need to work effectively.



Figure 5
The information management gap



Source: Accenture High Performance IT Survey (based on a survey of 20 energy companies globally—four in North America, seven in Asia and nine in Europe); Accenture research—team analysis

Agenda Item No. 4: Leverage low-cost geographies

With increasing globalization in the industry, IT needs to pay closer attention to setting up operations in strategic locations that offer lower labor costs. Such operations can take many forms, from outsourcing arrangements with vendors to captive offshore development centers. Such operations not only help keep costs down, they can also provide a measure of flexibility. Depending on the scope, companies have reduced service costs by 20 to 40 percent while maintaining or improving service quality. Given the industry's cyclical nature, the placement of operations should support variable and scalable staffing. To date, most energy companies have not made effective use of low-cost geographies to support the scaling up or down of operations to meet fluctuating work-

loads. The use of low-cost geographies can also dovetail with the need to meet requirements to use local workers, which many frontier-market countries have in place.

Along with setting up operations in strategic locations, executives need to manage the IT global talent pool to ensure that it can generate positive returns on investments. The first step in effective workforce deployment is to categorize skills based on specialization, availability and market rates, which provides a holistic view that can be used to match the right talent with the right work. The second, and equally important, step is to build effective global talent management processes that are integrated with overall HR processes. A number of large companies are implementing

integrated suites of applications to help automate the core strategic talent management processes, and help ensure that talent management supports the company's specific business needs.

Agenda Item No. 5: Develop a disciplined approach to the process architecture

Accenture believes that energy companies should employ a structured, disciplined approach to managing and continuously optimizing business activities and processes through standardized methods, policies, metrics, management processes and tools. Business architecture requirements should drive the application, information and technology architectures.

CIOs usually appreciate the importance of aligning the business process-management discipline with the enterprise architecture. Generally, this alignment relies on having skilled individuals in the roles of business architect, process advisor and process deployment lead. By centralizing these competencies, and making someone broadly accountable for the process architecture discipline,

the IT organization will be able to create a consistent plan and method for building new applications and focusing on activities that have an immediate and direct business payoff.

Ultimately, the business process architecture should be owned by someone from the business side. However, many companies do not define the ownership of the process architecture, which leads to costly inefficiencies. In the absence of a clearly defined owner, the CIO can act as the temporary owner to keep the implementation aligned with the business needs. But that role should eventually be handed off to the business. Overall, a more disciplined approach to the process architecture will not only reduce IT costs, it will also improve the ability of IT to respond to business needs.

From concept to reality

Accenture believes that CIOs can take one of two approaches to implementing their agendas. The choice of approaches will depend on the current maturity of the IT organization in terms of IT effectiveness, business alignment and technology enablement, and on the IT maturity level that the company wants to target.

Companies that have a large gap between their current IT capabilities and their future needs can take a *transformational* approach. The transformational approach will require active participation from the business and approved funding. Based on Accenture's research and experience, the four criteria for successful transformation are:

- **Focused:** Target efforts at key capabilities and enablers of change.
- **Ambitious:** Establish stretch goals that are achievable and measurable.
- **Sustainable:** Weave ongoing change and improvement into the fabric of the organization.
- **Time-boxed:** Have a limited duration for the effort, with clear milestones for the achievement of benefits.

On the other hand, companies with more mature IT organizations may only need to shore up existing capabilities. To do so, they can adopt a *step-improvement* approach. This approach can be more opportunistic, targeting rapid results and quick wins, and it can be scaled up or down based on the availability of discretionary budget. The step-improvement approach, which should also have measurable goals and defined milestones, can be led by the CIO as a technology initiative.

The key, ultimately, is to start with the right agenda. As the energy industry evolves, CIOs have an

opportunity to create a long-term vision that will keep IT synchronized with changing business needs, and give IT a greater role in driving business success. By understanding their companies' business strategies and focusing on the five fundamental CIO agenda items that support those strategies, executives can help their companies use technology to drive competitive differentiation and high performance.

Contact us

To learn more about how Accenture can help your energy company on its journey to high performance, visit us at www.accenture.com or call us at +1 312 737 7909, or toll-free in the United States and Canada at +1 888 688 7909.

About the High Performance IT Survey

The Accenture High Performance IT Survey is a global, online survey of CIO/CTO/VP levels or equivalent. The key research objective is to help CIOs, CTOs and VPs understand the drivers for performance in managing and executing information technology. The research spans primarily *Fortune* 500 companies, but it also includes *Fortune* 1000 and other organizations in certain geographies. BPRI Group is the research vendor that manages data collection. Field research began in January 2005, and the second updated version of the survey is ongoing, with 261 respondents to date. To participate in the Accenture High Performance IT Survey, visit www.accenture.com/CIOsurveyregistration.

About Accenture

Accenture is a global management consulting, technology services and outsourcing company. Combining unparalleled experience, comprehensive capabilities across all industries and business functions, and extensive research on the world's most successful companies, Accenture collaborates with clients to help them become high-performance businesses and governments. With more than 186,000 people serving clients in over 120 countries, the company generated net revenues of US\$23.39 billion for the fiscal year ended Aug. 31, 2008. Its home page is www.accenture.com.

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