Leveraging Global Execution Capabilities

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In today’s competitive global energy arena, oil and gas companies and their engineering and construction contractors face many challenges beyond simply finding and producing oil and gas. From the hurdles of working in multinational consortia to meeting the high expectations of governments, from managing the cultural differences of indigenous work forces to employing advancing technologies and, of course, from driving down costs to shortening project schedules, it takes experienced global teams to successfully manage these multiple factors that influence project development and execution. As we go deeper into new regions, oil and gas industry leaders must find pioneering ways, through commitment, innovation and teamwork, to manage the complexities and risks associated with globalization.

Central to a project’s success are the international contractor’s track record, its role in the project and its ability to effectively leverage global execution capabilities. To effectively execute projects, contractors must manage costs and schedules without compromising the sophisticated processes essential to developing quality world-class projects for their clients. Three fundamental forces significantly influence project execution when using a global resource base: people, processes and technology. These should be the selection criteria of contractors for oil and gas companies as they strive to compete effectively in today’s interdependent marketplace.

People
While globalization is receiving a fair amount of news coverage these days, it is hardly a new trend for oil and gas companies or their contractors. In the oil and gas industry, companies have been taking part in the rising global economy and establishing themselves in foreign markets for nearly a century. When globalization of the manufacturing industry began some 20 years ago, North American and European engineering and construction contractors were already dabbling with ways to leverage global capabilities to enhance project execution and drive down costs. This was driven in part by the requirements for domestic content and a need for in-country expertise, which led contractors into relationships with local firms. As time passed, it was evident that the huge differentials in labor cost and rapidly improving technical proficiencies made this labor market too important to ignore. By 2000, the efforts of developing global engineering and construction resources were delivering consistent results.

The collaborative global engineering and construction model is not limited to just a few contractors. A survey conducted in 2001 found that 16 major engineering and construction contractors had established engineering offices in 11 developing countries. Initially, contractors using this model found the development and integration of local content challenging because of the steep learning curve involved. They became aware of the stark differences in culture, language and work processes from
country to country and realized that, to make foreign project management successful, such differences required diverse management styles. For instance, some cultures are team-oriented in which individuals prefer not to stand out, while others embrace the recognition of individuals. Cultural sensitivity is very important.

Today's methods for managing global project execution bear little resemblance to the simple local partnerships and subcontracts that characterized early "workshare." In fact, the development over the past two decades of foreign engineering and construction centers has been a revolution for our industry. These overseas engineering and construction offices, which Fluor calls global execution centers (GECs), bring significant advantages to our clients' capital programs.

While originally envisioned to drive down costs, Fluor's ISO 9000-certified GECs now are an integral part of project execution teams. With global execution, project teams located in several different regions make up an engineering "assembly line" that follows a proven template and is in operation 24 hours a day, resulting in a positive impact on engineering and construction schedules. The involvement of GECs supports a contractor's ability to operate effectively in foreign cultures and with multinational clients. The flexibility of such centers enables project teams to draw upon a variety of resources with engineering and construction experience in various industries. They also help international contractors better manage swings in resource requirements. Finally, almost without saying, GECs bring the ultimate value to oil and gas companies by reducing project costs. In essence, the team environment created by lead offices and GECs working together amounts to more than the sum of its parts.

Four fundamental principles enable successful workshare results. First is the use of a "one-team" approach, which builds a single functional organization across geographic and cultural boundaries. This avoids the "us vs. them" and "over the fence" mentality that saps a project team's productivity. Alignment methods are used to create common ownership of the project. Team recognition replaces office recognition, and work processes support team integration.

Second, the one-team approach promotes "zippered" communications, with peer-to-peer discussions occurring at all levels of the organization as they do in a single-office task force. Electronic communications, including a Web-based project execution platform, provide audio, visual and data links for real-time discussions in a powerful virtual environment. Impromptu "face-to-face" discussions between an engineer and designer "standing" at the designer's work station, client meetings with team leads and formal model reviews are all part of a communications process that is essential to enhanced productivity.

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Third, our GECs are organized primarily to support our North American and European project execution centers. Their work for local clients is limited, which minimizes distractions from their principal objective. Unlike the often-unreliable local partnering that is still common because of low initial cost, development and ownership of GECs require substantial investment in terms of dollars and time. For this reason, Fluor's long-term commitment to the GECs is honored through the good and bad times of a business cycle. This ensures consistency in quality, process and mission.

The final principle is the implementation of consistent work processes, which will be addressed in detail in the next section of this article.

Overall, the engineering and construction contractors' push to build their global project execution capabilities through GECs has been one of the biggest advancements in our industry. Outcomes of this endeavor have been measured by different stakeholders in different ways. Buyers of engineering and construction services use such success metrics as safety, knowledge/experience, cost, cycle times and quality. Engineering and construction contractors also use these measures, along with profitability and backlog. Employees consider job stability and career opportunity in their assessment of GEC success.

When developed effectively, GECs provide detailed designs that meet world-class standards from a full-capability office. One client told us, "I am very impressed by the professionalism and quality of work we have received on our project from Manila. This is our first worksharing experience with them, and based on our positive experience, it will not be our last. Their efforts have been instrumental in helping us to reduce home office cost by 10 percent and achieve a total installed cost of 85 percent the industry average. The employees are highly motivated, technically skilled and focused on meeting project objectives."

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Processes
A contractor's equation for successfully competing globally involves more than the establishment of a GEC and the use of collaborative engineering and construction. Companies that fail to address cultural issues or implement consistent work processes have often experienced disappointing results.

It is critical to establish standards across business groups and offices so expertise worldwide can be used for the same project.

It is critical to establish standards across business groups and offices so expertise worldwide can be used for the same project. In a company that uses standardized work practices and platforms throughout its organization, work flows almost seamlessly from one office to another. Such work products as 3D models enable design responsibilities for integrated systems to move between the GEC and a company's lead project execution office, sometimes daily, in a continuous and transparent process of design, verification and discipline coordination.

Effective project execution should be performed under strict compliance with a company's operating systems and business practices. Companies should develop consistent, detailed execution plans; establish clear design review schedules; utilize state-of-the-art but proven tools for the electronic transfer of documents; leverage a knowledge database and adhere to exacting quality and safety standards. They also should align their efforts to ensure that responsibilities and authority are clearly defined. These measures will minimize risks associated with workshare project execution.

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Worksharing between lead offices and GECs must be tailored to the scope and work split of a particular project. Work splits are typically defined as "horizontal" (involving civil, electrical/control systems, mechanical, structural and piping disciplines) or "vertical" (involving conceptual design, specific units and all disciplines). Based on the project and type of work split, proficient contractors will organize the work and responsibilities in the most effective manner.

When working with contractors with superior global supply chain integration processes, oil and gas companies are able to benefit not only in terms of engineering processes but also in terms of time and money. The ability to influence the cost of a project is greatest at the beginning of that project, so bringing in key suppliers early is essential.

A sound strategic sourcing process reduces the total cost of capital goods acquisition, lowers effort hours and drives better supplier performance. The process itself includes rigorous worldwide research, standardization, aggregation, selection, negotiation and relationship management. It requires an ongoing commitment to working with the most productive, reliable and competitive suppliers worldwide, including those from developing countries. Maintaining up-to-date information and continuously evaluating all suppliers using a quantified rating system that incorporates specific engineering, manufacturing, inspection and delivery performance data relative to individual orders are vital.

Our efforts to develop a strategic sourcing advantage dates back to the late 1990s, when the company committed to making its procurement capabilities a competitive differentiator for our clients. Our strategic sourcing policy utilizes supplier alliances, an enterprise spend management warehouse and integrated technology that tracks equipment and materials from pre-purchase to delivery. Fluor's worldwide spend has averaged $4 billion annually during the previous 10 years, so the company's scale and experience in this area enhance our ability to effectively and economically procure large volumes on a worldwide basis. Approximately 25 percent of our 140 Supplier Relationship Agreement holders are headquartered outside North America, and more than 5 percent are located in developing countries.

A good example of how these strategic sourcing relationships have helped our clients is our work in Iraq. We have been actively supporting the U.S. government there since the military conflict ended, primarily focused on reconstructing the country's electrical infrastructure, as well as its public works and water sectors. To date, we have shipped more than 1,115 metric tons of air freight and over 13,500 cubic meters of ocean freight. However, the greatest effort came in just the first eight days. Knowing that the work was mission critical, we worked with our electrical equipment supplier partners to load an Antonov 124, the world's largest cargo plane, with equipment for shipment to Iraq. In less than 90 days, more than $150 million of electrical gear and related equipment was in Iraq, ready for installation. Normally, this highly specialized type of engineered electrical equipment requires lead times.
stretching into months. This extraordinary result could not have happened without the preexistence of our supplier relationship agreements.

**Technology**

The third and final area that fundamentally influences the success of project execution when leveraging a contractor's global execution capabilities is the use and interconnectivity of sophisticated communications technology. Investments in systems, communications, hardware, infrastructure, technical training and work-process integration are required to proficiently execute world-class engineering and construction services between lead project execution offices and GECs.

Technology has made it possible to redefine where and how work is done. Back in the early 1990s, Fluor determined that its ability to workshare engineering and construction services globally was a business imperative. Using the Intergraph Plant Design System (PDS™), or 3D graphical model, offered a competitive advantage, so steps were taken to drive the installation and ramp-up of PDS throughout the company. Information from a PDS model is transferred directly into a material management system, reducing errors and streamlining the work processes involving procurement professionals. At that time, we focused on developing significant technical and procedural worksharing processes, hiring and training people, putting a robust IT infrastructure in place, procuring workstations and enabling a continual learning process. The consistent approach to PDS execution also enabled Fluor to leverage the significant knowledge resources it has.

Additional technological advances make integration easier all the time. At first, design reviews were done in real time on conference calls with both sides using a matching set of drawings. Now, Web-enabled meetings allow designs and 3D models to be shared in a dynamic sense and enable GECs to actively participate.

**Knowledge management forms the foundation of the company’s project execution work processes and supports the integration of GECs.**

Another area in which we knew we had to excel was in the capturing and sharing of our employees’ considerable knowledge – or knowledge management – across our network of nearly 50 offices globally. Knowledge management forms the foundation of the company’s project execution work processes and supports the integration of GECs. Through our knowledge management system, known as Knowledge Online™, world-class expertise from any location can be leveraged to solve a project problem without the delay to indoctrinate the expert in the project execution procedure being used.
Through knowledge management, contractors, in effect, can multiply many times over the services and capabilities they bring to clients’ projects. The project team members bring their own expertise to the table, but through knowledge management, they can tap into the knowledge of every expert in the entire company worldwide. At Fluor, we have 36 knowledge communities for a spectrum of disciplines, and more than 12,000 of our employees in more than 90 office and project locations use our knowledge management system on a regular basis.

Our Knowledge Online system has provided many successful outcomes for our clients. For example, a project engineer in our South Africa office needed help with load statistics for the foundation of a particular type of compressor. The information was needed urgently, so this engineer turned to Knowledge Online to post a question in the system’s “Ask an Expert/Discussion Forum.” By the next morning, technical experts in our company’s Southern California, Calgary and Vancouver offices replied with the information needed. When the system was first launched, the employee said he had doubts whether it would work. Today, he said he has doubts whether he could work without it.

Globally Networked

Engineering and construction work can be shared to leverage expertise from around the globe. To do this, contractors need the right mix of people, processes and technology. GECs accelerate schedules and reduce costs; standardized processes and procedures allow work to move seamlessly between offices; strategic sourcing programs improve the capital goods acquisition process; advanced communications technology and a solid knowledge management system facilitate global project execution excellence. The growing importance of decentralized project execution teams, the rapid evolution of technology and increased work-force proficiency in developing countries will continue to influence our industries and our viability.

Working with well-networked, global engineering and construction contractors has redefined how oil and gas projects are executed. It is important to note, however, that being a true global contractor must be an integral part of a company’s vision and mission, and it is not easily replicated. The ability and willingness of employees to work together as one team on a project across the globe is an embedded cultural behavior. While the contractor invests in a global platform and its employees to achieve this level of connectivity, oil and gas companies are the ones that ultimately reap the benefits attributed to working as one global team.

Jeff Faulk is group president of Oil, Gas & Power for Fluor Corporation, where he is responsible for the company’s worldwide involvement in the upstream, downstream, pipeline, offshore, gas processing, oil and gas production, integrated petrochemical and petroleum refining and power industries.

Since joining Fluor in 1973, Mr. Faulk has held various management and operations positions in the company’s procurement function, telecommunications business line and oil, gas and power business group. Most recently, Mr. Faulk served as president and chief executive officer of Duke/Fluor Daniel, the Duke Energy and Fluor Corporation joint venture focused on the global fossil-fuel energy industry.

Mr. Faulk earned a bachelor’s degree in business administration from California State University, San Bernardino. He also has completed the Executive Development Program at Harvard Graduate School of Business and the Advanced Management Program at the International Institute for Management Development in Switzerland.