

'Virtual' Solutions Drive Collaboration

By Remy Malan

REDWOOD CITY, CA.—Lower oil and gas commodity prices, a cyclical downturn and the ongoing shortage of skilled technical workers are creating huge challenges for the petroleum industry. Companies have been forced to cut operating expenses and unprofitable programs. Furthermore, an aging workforce and thin levels of mid-level employees have caused many exploration and production companies to focus on automating processes to help compensate for their lack of skilled workers. However, many of these efficiency improvement opportunities already have been realized.

What else can companies do to help them through these challenging times? How can they cope with reducing costs while continuing to invest in new oil field production and ensuring that the expertise of their aging workforce is captured before retirement? One way is to deploy new collaboration technologies that increase efficiencies by enabling exploration, drilling and production technical staff to communicate more effectively, share applications and data in real time, and exchange highly accurate information across distributed teams as if everyone was in the same physical location.

There are many situations where the people on a rig, or those assigned to manage some other physical assets, may not have the expertise to make the decisions required. For example, if bad weather is approaching, there may be a need to get input from a meteorologist about the most likely scenarios. Or, when an unexpected situation occurs during drilling, there may be an urgent need to consult with a geologist or someone else that is not on the rig at the time. Likewise, if there is a problem with an oil pump overheating and there is no local expertise to

solve the problem, advice from an outside expert will be required. The worst scenario of all, if there is an emergency situation, worldwide subject matter experts will be needed to immediately review and confer to determine the best course of action.

In all of these situations, the costs and time required to fly in experts to assist or shut down expensive physical assets is too high, and continuing to operate equipment is too risky. Traditional collaboration options, such as phone, e-mail, Web conferencing and fax do not provide experts with all the data and information they need to rapidly and effectively solve most problems remotely. With the new generation of collaboration technologies, field workers can readily access the support and resources of subject matter experts in real time when they need it, and provide those experts with all the data they require

to make the most informed decisions.

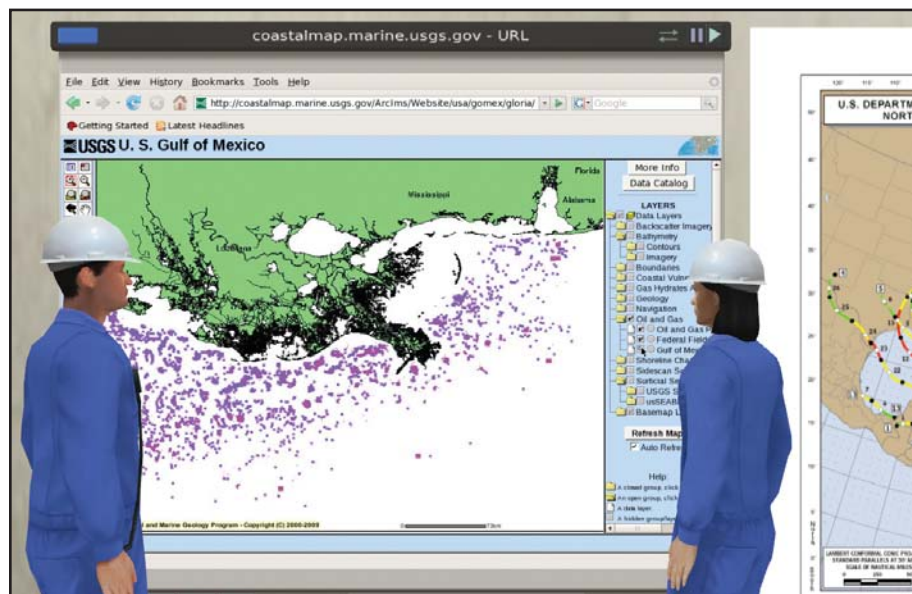
Compounding The Challenge

Compounding the business challenge, of course, is an aging workforce in oil and gas companies. According to a Booz Allen Hamilton study, about half of the professional staff members in the oil and gas industry are of an age that makes them likely to retire by 2016. Because of this, the shortage of skilled personnel likely will be most pronounced in technical disciplines, where business demands also tend to be the most intense. The expansion of many companies into new geographical settings makes the situation even worse.

To cope with the new economic realities facing the industry, many companies have reduced travel or instituted temporary travel moratoriums, as well as other spending cuts. The cuts have further

FIGURE 1

Collaborating on Regional-Scale Operation





strained ongoing operations and training as skilled workers no longer are regularly traveling to remote areas to mentor less experienced employees, troubleshoot operations, and repair or prevent problems. In addition, new projects, staffed by distributed teams, have been impacted by travel restrictions and some may have even been prevented from launching.

To cope with the short-term business situation, companies must find a way to fight back by better leveraging physical assets, skilled workers and consultants. New collaboration technologies can help companies weather this challenging business climate by enabling them to more effectively manage and administer daily operations, train and inform workers in the field, and reduce the impact of damages when accidents occur.

If oil and gas companies cannot economically discover hydrocarbons and produce it to the surface, they have a big problem. New collaboration technologies, already in use in the upstream industry, can help make exploration, production, management and maintenance more cost effective, and allow companies to continue to fund projects that otherwise might not make sense today.

With these technologies companies can easily create virtual workspaces that replicate real-world field operations or act as impromptu meeting or war rooms. The workspaces enable highly skilled employees or consultants to help workers in remote locations more effectively manage and administer exploration, drilling and production processes; perform maintenance; and diagnose and troubleshoot

problems. For example, geologists located on another continent, or in another state, can remotely manipulate models and leverage live data streams to provide skilled guidance to drillers (Figure 1).

Virtual-world technologies provide a complete application collaboration solution that enables companies to bring together information and live data and video feeds from internal and field operations, and create accurate 3-D virtual representations of rigs and other drilling and production equipment. Exploration and drilling teams in the field can meet with remote experts to confer live, monitor and discuss options and make more accurate and timely decisions. By providing new and better ways to perform analysis and troubleshooting, companies can reduce or eliminate downtime for expensive physical assets and achieve significant cost savings.

Training Benefits

Virtual collaboration environments also provide huge employee training benefits and help with critical knowledge transfer issues as workers reach retirement age. The technologies can be used to leverage skilled workers and provide remote training in ongoing operations and safety and disaster recovery procedures. For example, experts could conduct a “walk through” training of complex processes on an oil rig, alongside new hires, to familiarize them with hazardous environments before they are sent into the actual physical setting. Not only can employees be trained more cost effectively with virtual technologies, but training sessions can be recorded and referred to in the future for

reference or if a skilled worker is not available to provide one-on-one sessions.

Virtual training environments—in which actual facilities are replicated and employees can interact with live data feeds and coworkers as if they were in real setting—can provide a more valuable and safe training experience than in person, on location training. This is especially true when training in handling complex equipment, hazardous materials and high-risk situations that may only occur occasionally. Often, hands-on physical training for these special circumstances is not possible because equipment would have to be compromised or taken off line to create a specific training scenario.

Traditional computer-based training, where employees interact with a single computer screen with canned data and materials, is also of limited help, because it does not accurately simulate real-world situations and usually relies on existing scripted materials. In a virtual environment, simulations can be reenacted as many times as necessary to ensure that all workers are prepared for even the most extreme situations—the very situations that often cause the most harm or are the most costly. And experts can be on hand in real time or during office hours to provide answers to specific questions.

No matter how many precautions and safeguards that exploration, drilling and production companies implement, accidents and emergencies inevitably do occur. When they do, stopping or repairing them as quickly as possible can mitigate human, financial and environmental losses. Virtual collaboration technologies may provide operating companies with the most value in these types of scenarios.

Deploying real-time, distributed “war rooms,” where actionable intelligence can be discussed, reviewed and evaluated, and an immediate response taken, can mean the difference between a minor accident and a major disaster. War rooms combine worldwide experts, live data and video feeds, scenario planning software, 3-D models and whatever else is required to make timely, informed decisions and assist onsite staff with managing a challenging problem in the field (Figure 2). When every second counts, leveraging technology to improve communications and information delivery can be invaluable.

Selecting A Solution

Once a company has determined it wants to deploy a virtual collaboration solution, the best way to start is with a quick trial for a small group, which helps

FIGURE 2
Collaborating on Hurricane Preparation and Response





to ensure that the technology will meet company objectives. After the trial is complete, an initial pilot project should begin. Both the trial and the pilot should be hosted by the technology vendor and be offered to the company as a software service model. When a company decides to deploy more broadly, it can determine whether to continue deploying as a service, move the deployment behind the corporate firewall, or offer both options to employees, depending on their usage.

It is important that all employee demographic groups—from the digital natives to the almost retired—are able to use the selected technology easily. The software must be able to fit into current company workflows without significant process changes. Plus, it needs to be able to bring any data and tools that are used regularly into the virtual world easily, including live data and video feeds if necessary.

In addition, the solution should make it as easy for people to communicate with one another as if they were in the same physical location. The methods of communication should include talking, texting, showing, sharing, using Webcams to show emotions, and gesturing and sketching (which are both normal methods of in-person communication).

Finally, the economics of the technology need to be considered, from both the return on investment and the total cost of ownership perspectives. The return on investment can be estimated based on decreases in travel expenses, improved productivity related to reduced travel time, and savings from reducing the amount of time physical assets are taken offline. Total cost of ownership calculations should include the cost of the software license and maintenance, any custom development required to tailor the solution

to a company's needs or to integrate existing data or 3-D assets, and the costs to set up and train employees on using the technology.

Basic Guidelines

Some basic guidelines to consider when selecting virtual collaboration solutions include selecting technologies that can be rapidly deployed and do not require a lot of custom development, integrating complete unified communication capabilities into the solution (voice, video, chat and e-mail); the collaborative capabilities of the applications (the ability to drag and drop documents from a desktop into the virtual space for others to use, share applications and documents securely from personal desktops, run enterprise applications in-world, develop custom applications, etc.). Operators should select software that runs as a service, behind the firewall, or in combination, and be able to reuse existing 3-D assets in-world without rebuilding.

In addition, there should be a variety of avatar choices available, ranging from the most simplistic to the most realistic, depending on usage. It is also important to be able to stream live video feeds, and the selected platform should be highly secure and able to support encrypted communications and ensure that corporate data are protected. Finally, a virtual collaboration solution should integrate with existing enterprise workflows and data, as well as with applications such as Microsoft Outlook® for calendaring and Internet Explorer® for browsing, and provide a short learning curve and minimal training requirements.

Today's challenging business climate demands that companies work more efficiently to stay afloat and thrive. Traditional

methods of collaboration, either in-person or remote, are too costly, too inefficient, or both. Exploration and production companies need to figure out new ways to cut operating costs while ensuring that performance is not impacted, and that employees are properly trained and capable of handling all situations.

New-application collaboration solutions can assist by enabling onsite and remote staff to communicate more effectively, share applications and data in real time, and exchange highly accurate information across distributed teams. The result from companies that already have deployed such technologies is a reduction in the downtime of their expensive physical assets, better training capabilities and knowledge transfer for employees, and significant cost savings. It is easy for any company to get started with a test and pilot to determine if these new solutions fit the needs of the organization. □

REMY MALAN is vice president, enterprise, at Qwaq Inc. based in Redwood City, Ca. He has more than 20 years of experience working in the technology industry, including extensive experience bringing emerging technologies into cost-effective and practical use in real-world deployments. During the course of his career, Malan has been involved with the roll-out and adoption of advanced collaboration tools, and next-generation networking, data base and operating systems. Malan holds a B.S. and an M.S. from the Massachusetts Institute of Technology.