

Putting the pieces together

We've made great strides in the individual technologies of the digital oil field. Now we must solve the puzzle of integrating the pieces into a comprehensive solution.

By **DONNA MARCOTTE**, **Drilling & IT Editor**

Common sense tells us, to solve large complex problems, break them down into smaller manageable issues and tackle them individually. This is typically sound advice. But when it comes to the digital oil field, it's not enough to have each of the small solutions. Those small solutions must all work together in concert — preferably seamlessly — to achieve the overall benefits we are looking for.

As an industry, we have made great progress in these individual solutions, and we are moving closer to achieving the comprehensive, integrated solution required.

How to achieve integration

What exactly are we talking about integrating? The underlying, enabling infrastructure technology is there, that is, the hardware and software for computing, networking and communications. The focus now should be on integrating the canvases on which the geologists, geophysicists and engineers do their work to find reserves and determine how to produce them, in other words, integrating the various domain workflows into a complete seismic to sales line workflow.

Achieving the type of integration required for a successful digital oil field is going to take a concerted effort on several fronts. We need to:

- Integrate the pieces that we have, that is, help applications “talk to each other.”
- Build more comprehensive pieces, so we have fewer pieces to integrate, thereby alleviating some of the complexity.
- Develop standardized workflows,

that is, help the people in the process “talk to each other.”

These things must be done in parallel, almost simultaneously, because the success of one of these key areas will contribute to the success of others. Essentially, we must be working the problem both “top-down” and “bottom-up” to achieve optimal results.

One point of view

In April 2005, I attended a Schlumberger Information Solutions (SIS) technical user symposium, which is held several times a year around the world. This event, held in Las Vegas, Nev., had a focus on operational excellence and was attended by more than 160 users, mostly from North America. I heard for myself, both through conference presentations and in an interview with SIS President Olivier Le Peuch how SIS is moving towards comprehensive digital oilfield solutions.

In response to my first question, Le Peuch, who has 18 years with Schlumberger and has worked his way up through its ranks, said, “As an industry we are not where we should be in terms of realizing the full benefit of the digital oil field, but we are not miles away either.” He was also quick to point out, “Ours is a complex industry, so we should recognize we have made great progress.”

He sees production as the greatest area of potential for reaping benefits of the digital oil field in two main areas. First is process efficiency such as optimizing equipment, downhole sensors and data collection. Second is the large-scale integrated asset model, where field data are fed back into the initial model to update it, increase its accuracy and ultimately its effectiveness.

Integrating products, people

SIS is moving towards integration in several ways.

Le Peuch's keynote address featured Petrel, SIS's software suite, which includes geological, geophysical and reservoir engineering capabilities and is designed

to be a single product for use by the entire asset team. While Petrel was developed as a single product, it is an example of integrating pieces of the asset management puzzle, which have typically resided in separate applications, into one comprehensive package.

In an effort to integrate the large pieces into a comprehensive solution, Le Peuch pointed to the alliance with AspenTech to link ECLIPSE, SIS's reservoir simulation software; PIPESIM, SIS's production system analysis software; and HYSYS, AspenTech's process simulation software, to provide operators with a continuous view of their assets, from reservoir through processing facility. One conference session featured the first live demo of the linking of these processes.

Regarding people, processes and workflow, Le Peuch sees two pivotal roles for SIS. One is to plan, develop and run pilot projects so that key industry players can implement workflow changes on a limited scale, in a controlled environment, before an industry-wide rollout. The second is to “challenge the data” — how it is defined, collected, transmitted, stored, viewed and mined.

Moving forward

One conference attendee, a technology and software person with many years in the upstream oil and gas business, commented to me, “Yes, SIS has many great product offerings, but they *buy* a lot of it,” implying that was negative. On the other hand, a comment was made during the digital oilfield panel discussion at this year's Offshore Technology Conference (OTC): if we are ever going to achieve the full benefit of digital oilfield technology, we need to reconsider the commonly held industry position that the only good technology is the technology we develop ourselves, in-house.

Build it, buy it, or borrow it. Do whatever you wish. Owning all the pieces won't do you any good unless you know how to assemble them into an integrated solution. **E&P**