Society of Petroleum Engineers
Annual Conference and Technical Exhibition
Dallas, October 2005.

President Giovanni Paccaoli speaks from the SPE stage

The SPE ACTE is an extremely large event with around 8,000 attendees and over 500 papers presented. We have commented before on the broad church that is the SPE, but the organization's coverage appears to be getting even broader. This is being driven by the concept of the 'digital oilfield,' the idea that when everything is metered digitally, large scale optimization can take place across the asset. If there were no 'installed base' in the oilfield, one might imagine meters equipped with an IP address and accessible from any remote location. But of course there is a huge installed base of process control technologies and, even more important, people and cultures in oilfields. To build the digital oilfield, the petroleum engineering community has to work around, or with, the process control business. The process control community is well aware of these issues and has a growing presence at the SPE. The digital oilfield lies at the intersection of process control SCADA/OPC-based technologies and the upstream. Both communities are working on XML-based extensions for their protocols with a view to a web services-based infrastructure (see lead in Oil IT Journal Vol. 10 N°10). Another difference between the two communities' approach is that the upstream is more modeling and simulation oriented, whereas the process control, perhaps more aware of the complexity of the task at hand, advocates automation over simulation.

A significant new development in the digital oilfield space was presented by Shell's Rod Cramer at the SPE's Real Time Optimization Technical Interest Group. PRODML – a new XML-based protocol (developed along the lines of WITSML) targets the simulation/optimization arena – as seen by the upstream– with significant input from some process control community members – notably Invensys. The strategy behind PRODML is to model from the reservoir up to the data historian (in fact, specifically, to OSIsoft's PI historian) in what seems like a pragmatic division of labor between the two communities.

BP, one of the companies behind PRODML, has already gained considerable experience in this space. Rusty Foreman's paper described how BP has 'wrapped' a multitude of production applications in XML – allowing them to be tied in to its Real Time Architecture Project (RTAP) – a 'bus' to which information consumers and applications can subscribe via web services.

Chevron is a digital oilfield 'activist' – Jim Crompton acknowledged that the popularity of the digital oilfield concept makes it hard to know exactly what is being discussed. But Chevron shared a few real-world examples of digital oil – in easing the path from static design to 'reactive' debottlenecking exercises as fields mature. The main problem today is not so much the amount of information coming in from an instrumented field, but the 'kinks' in the information pipe and the difficulty of evaluating new technology.

One recognized 'kink' in the digital oilfield is the ubiquitous Microsoft Excel – a powerful tool that offers engineers a multitude of ways to create data islands, to hide information from one another and to 'futz' away creating their own macros. While many advocate replacing proliferating spreadsheets with 'managed' data analysis and databases, a real solution to this problem remains elusive.

A session was devoted to the question of take-up of new technology in the upstream – a recurrent theme for the SPE. The perception is that the oil and gas industry is slow to adopt new technologies. The deliberations of the SPE dignitaries on this matter include some rather fanciful suggestions – like a 'ministry of truth' to establish the validity of new technologies, or an insurance company to underwrite downside risks! There was a suggestion that there might be a role for the SPE in certifying new technologies or otherwise assisting take-up.

On the exhibition floor we spotted new reservoir modeling tools from Roxar focusing on characterizing fractured reservoirs. CMG has come out with a new parallel dynamic gridding algorithm – the grids change size and as simulation time passes to speed up computations. Last year's newcomer – JOA's Jewel Suite – now embeds a fluid flow simulator from Coats Engineering. Landmark's Nexus simulator – a replacement for VIP – was released commercially and includes surface pipeline network modeling. Finally, the digital oilfield has a special meaning for Merrick Systems whose RFID tags have been adapted for use in oilfield tubulars and bottom hole assembly components. Other themes that are clearly gaining in importance center on unconventional reserves – with new tools from Rapid for coal bed methane evaluation and Schlumberger for shale gas prospecting.

Highlights

Accelerating technology take-up
BP's Real Time Architecture
PRODML
Chevron's digital oilfields
Shell's RT Drilling ops
Exxon's WellWork and EM[2010] vision
New Zealand databank
New simulator from Landmark
SPE for managers session
Shale gas

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The Data Room
7 rue des Verrieres
92310 Sevres
France

Tel   +1 281 968 0752

+44 (0) 20 7193 1489

+33 (0) 1 4623 9596

Fax   +33 (0) 1 4623 0652

info@oilit.com.

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