A man in a dark suit and tie is speaking at a podium, gesturing with his right hand. He is holding a microphone in his left hand. The background shows a large audience of people seated in rows, listening attentively. The setting appears to be a conference or forum.

**Schlumberger
Information
Solutions'
Global Forum
in Paris**

**- defining the next
stage of oil and gas
software**

**Managing real
time data**

**POSC -
relaunched as
Energistics**

Game Changing E&P Results



Know how.

Put all the pieces together. Achieve breakthrough team performance with Schlumberger Information Solutions.

Avocet* Integrated Asset Modeler software. "Resolved discrepancies in simulations and saved tens of millions USD on upfront facilities cost." SPE paper 90976.

Petrel* software. "Sidetracked lateral wells through the predicted high-quality reservoir and enhanced average production by 3,000 bbl/d in each well." Hardy Oil and Gas.

ECLIPSE* software through rapid response services. "Made critical field development decisions in a tight timeframe while achieving operational expenditure and activity goals." BG Group.

Petrel software. "Accurately visualized the geometry of a complex fault system and drilled the second most productive basement well in Vietnam's history." Hoan Vu JOC.

Experience a whole new level of effectiveness.

www.slb.com/sis_breakthrough



Schlumberger

Digital Energy Journal

213 Marsh Wall, London, E14 9FJ, UK
www.digitalenergyjournal.com
Tel +44 207 510 4935
Fax +44 207 510 2344

Editor

Karl Jeffery
karl@digitalenergyjournal.com

Technical editor

Keith Forward
keith@digitalenergyjournal.com

Production, design and circulation

Katerina Jeffery
katya@digitalenergyjournal.com

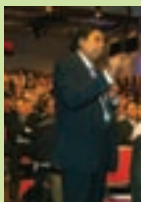
Advertising sales

David Jeffries
Only Media Ltd
1 Santley Street, London
SW4 7QA
Tel 44 207 733 1199
Fax 44 207 733 1615
djeffries@onlymedia.co.uk

Digital Energy Journal is published on print 8 times a year, supported by a free website and email news service. We cover information technology and communications in upstream oil and gas production, drilling / completions and exploration.

Each issue of *Digital Energy Journal* is mailed to 2000 oil and gas executives, as well as distributed at major trade shows such as ATCE, Petex, Digital Energy and Intelligent Energy.

Subscriptions: GBP 195 a year for 8 issues. To subscribe, please contact circulation manager Katerina Jeffery on katya@digitalenergyjournal.com, Digital Energy Journal, 213 Marsh Wall, London, E14 9FJ. Alternatively you can subscribe online at www.digitalenergyjournal.com



Front cover: M Thyagaraj, chief information officer of ONGC, poses a question to the CEO panel at Schlumberger Information Solutions' annual global forum in Paris in September. Photo courtesy of Schlumberger

Contents

Schlumberger Information Solutions Global Forum

Our report from Schlumberger Information Solutions' Global Forum in Paris September 11-14. Have we defined how future oil and gas IT systems will work?

2

Olivier Le Peuch

Schlumberger Information Solutions' president explains the company's vision for helping staff achieve 'step-change' in performance using software



3

CIO Panel

Schlumberger hosted a panel discussion with IT managers from Pioneer, Occidental, Romgaz, ExxonMobil and Chevron, to look at obstacles and accelerators of oil and gas IT take-up

4

Chevron, Statoil, Shell, TNK-BP, Total, Ecopetrol, BG

Speakers from Chevron, Statoil, Shell, TNK-BP, Total, Ecopetrol and BG talked about how their companies are getting value with different kinds of IT and where they are going with it



5-8

Schlumberger's plans

Schlumberger makes a tie-up with Intel, Cisco, BT; presents its ideas for how software can co-ordinate people's work, and how future information management might work

9

Software

Reorganising national oil companies

Many giant fields operated by national oil companies have significantly lower recovery factors than fields with advanced reservoir management elsewhere. Hamish Wilson from Paras Consulting gives some advice on setting about improving the situation



16

POSC - relaunched as Energistics

The Petrotechnical Open Standards Consortium has re-energised itself with a new name - Energistics. Also a new brand image, revitalised vision and mission. We met CEO Randy Clark at a recent seminar in Aberdeen



17

Communications and Monitoring

Real time data

US company OSISoft has got the closest anybody has to solving the emerging problem of how to manage endless streams of real time data. We talked to director of product marketing Gregg LeBlanc

21

Subsea fibre

A subsea fibre optics network is being installed in the Gulf of Mexico, and likely to be installed in offshore West Africa

22

Improving your computer network

Tim Everitt, of oil and gas networks company YR20, explains the main steps to making your network, faster, more reliable and more secure, and what oil and gas companies are doing

24

Automation

Building an intelligent well

Guy Vachon, Jaedong Lee and Patricia Vega, of Baker Hughes' Optimisation Solutions Group (Production Quest) explain how to set about making a well 'intelligent' and how it works.

28

SIS Global Forum 2006

Our report from the Schlumberger Information Solutions' Global Forum in Paris on Sept 11-14

Digital Energy Journal was invited to Schlumberger Information Solutions' (SIS) annual Global Forum in Paris on September 11-14, to hear the latest stories from both Schlumberger and its customers about how they are moving ahead with their efforts to achieve integrated operations.

There seems to be a convergence of opinion in the industry about what we want to achieve and how to achieve it.

To steal some examples from Schlumberger's Olivier Germain, integrated operations means that if a rig becomes free at a date ten days earlier than anticipated, everybody's activities can be rescheduled so that drilling can start ten days earlier.



Joel Nana Kontchou, VP Europe and Africa, SIS, was master of ceremonies at the SIS Global Forum (above)

Attentive delegates at Schlumberger Information Solutions' annual Global Forum* (below)

Integrated operations means that you can see likely locations and quantities of oil (technical information), and how much it will cost to get that oil out (business information) on the same screen.

Integrated operations means that you can see your whole company's operations at any scale you like, zooming in and out like on Google Earth. You can see how much your entire company produced last year, or see how much a specific well spent on its last workover.

Getting everything working together, Mr Germain said, is like solving a Rubic's cube. It's tricky, and takes a bit of trial and error, but ultimately it can be done.

Firstly you have to gather the data. This means sensors, data communications infrastructure (wireless / satellite / fibre), software to make it easy to input the data and employees that are happy to use it.

Secondly all of your data needs to be good, and in standardised electronic formats, including your historic data. All the kilometres of well logs have to go into a database.

Thirdly you need software applications which can take data out of the different databases, even if they are on computer systems, and present it in a way people want to use it, and take people from screen to screen from one task to the next one.

To do this you need an intimate understanding of how people normally work together, so the software supports work processes that people feel comfortable with, rather than tells them to do something they don't want to do.

Fourthly you need people who are happy to work with the system, and understand that it is trying to help them co-ordinate their activities and save them time, not give orders from a computer server halfway

around the world.

As you would expect Schlumberger Information Solutions is providing products, services and partnerships to help oil and gas companies with all these four stages.

For the first stage, it has formed a partnership with Intel and CISCO, to develop secure and reliable wireless communications systems on rigs, which make it much easier to install instruments which can gather data and feed it into the corporate data network, and enable personnel to access their own corporate intranets without being able to see anyone else's.

For the second stage, Schlumberger has a data management partnership with IT company Infosys, primarily to focus on integrating data with different software applications, including sorting out unstructured data.

For the third stage, Schlumberger already has a range of software tools and platforms which can help people collaborate, such as Petrel, which can bring geological model data from a range of different sources, and DecisionPoint, a platform oil companies can use to build online tools to co-ordinate people's activities and present them with the data they need.

For the fourth stage, Schlumberger has embarked on a marketing campaign with the tagline 'breakthrough team performance,' emphasising that if staff use these tools, their performance can reach a new level. We are promised further developments in future to make software which people embrace more readily.

So we have a clear path forward. Meanwhile, bear in mind the thoughts of Schlumberger Information Solutions' head of marketing Mike Benjamin, that the software developments of the past 20 years



have taken us backwards in many ways.

People today communicate a great deal by e-mail and instant messenger, and have less reason to get to know one another much less personally than they did in the past.

The continuous bombardment of messages means that people never give their full attention to anything.

People today are expected to absorb a lot of information, but it means that everybody becomes a generalist.

So the challenge is to find a way to bring back the natural team process which was present in 1985 before software came along, he said, but at the same time doing things faster and better.

Meanwhile - it might be too early to say, but there seems to be a common name emerging for all of this, with representatives of Chevron, Schlumberger and Statoil all using the term 'integrated operations' to describe the digital oil and gas field.

Olivier Le Peuch

Olivier Le Peuch, president of Schlumberger Information Systems, spoke about how oil and gas personnel can achieve a new level of performance (a 'step-change') by teamwork supported by best use of the latest technology.

The box, featured in Schlumberger's adverts, represents the industry's current predicament, he said, bound by a formidable (and familiar) set of challenges.

"To break out of the box, we need 'breakthrough team performance,'" he said. "Technology alone cannot cut it."

Mr Le Peuch described a few case studies where he believes Schlumberger has helped companies achieve breakthrough team performance.

Schlumberger worked together with seismic exploration company Western Geco, together with BT, and got a record data transmission speed by satellite from a seismic vessel.

In another project with BG, the company provided IT infrastructure outsource service in partnership with HP in Paris. It performed 1.5 years of computer processor work in 6 weeks. "We analysed all the data in 2 months," he said. "We call it 'ready to run'".

Schlumberger is building remote monitoring centres - so far it has 30 monitoring centres monitoring over 60 wells. One of the biggest is for Mexican oil and gas company PEMEX, where it is modelling 6 wells at once from one centre.

The remote monitoring centres receive data from the rigs by satellite communications and fibre, and have collaboration rooms.

Mr Le Peuch presented a case study of how Schlumberger helps BG remotely monitor a gas field offshore Tunisia. "We deliver line information to the decision maker," he said. "It reduces the time they spend on aggregating data. They got the BG CEO Innovation award."



Olivier Le Peuch, president, Schlumberger Information Solutions

"Reach a new level of performance using software" - Olivier Le Peuch, president of SIS

Mr Le Peuch said that optimising production is "gaining a lot of attention," including monitoring equipment and wells to ensure everything is operating at optimum capacity.

The challenge here is that an enormous amount of data is generated by the monitoring devices, and software is needed to manage it, so people don't have to manage it manually.

Schlumberger is also involved in Statoil's Improved Oil Recovery (IOR) project, which has a \$300m research budget. "Statoil wants 55 per cent recovery from subsea wells and 70 per cent recovery from platform completed fields," he said. "Achieving this goal is like mission impossible. But there is a commitment from Statoil to deploy new technology as it becomes available."

Mike Benjamin, Schlumberger

Mike Benjamin, vice president of marketing with Schlumberger Information Systems, emphasised how 'breakthrough team performance' can only be achieved with a better emphasis on the people who use the software.

The challenge is to make software which helps people work together as naturally as they did before computers arrived, but do things faster and better.

The paradox is that in the pre-computer era, people often worked more comfortably with each other than they do now. "In 1985, people knew each other and worked face to face. It was a lot more effective. Decisions were made quite quickly," he said.

By contrast, tools such as e-mail make it possible for people to work together without getting to know each other or even

meeting personally, and people can be much more nervous in person-to-person communication and less confident making decisions.

Collaboration tools developed so far have not been entirely satisfactory either, he said.

"There's been a mixed record of success with collaboration centres. Most companies say - they haven't worked out to the degree we thought they would," said Mr Benjamin.

Another less desirable result of software implementations to date is that it makes it easier for people to have a general awareness of many subjects, but this means there are fewer specialists. "You dilute your expertise when you spread it about too much," he said.

An undesirable by-product of software systems so far is that they have generated large amounts of unstructured data, and now many oil and gas companies face the challenge of cleaning it all up so it can be used.

A lot of the software so far has just automated the manual methods people were used to, without coming up with new and better ways of doing things, he said.

On the positive side, Mr Benjamin talked about how most oil and gas software can run on a PC today, so users do not need two computers on their desk, one for office applications and one for specialist oil and gas software. "Software usability and computing power has increased substantially," he said.

Oil and gas companies are not necessarily seeing the benefits of today's faster computers and what today's software can do. "SIS has started developing software that moves away from traditional methods - for example you can extract a fault plane in an instant," he said. "These powerful capabilities are not widely adopted. Petrel hasn't taken off to the extent that we think it should."

It is getting much easier to collaborate with people you are not in the same room with, and easier to integrate technical and business data, he said.

What people want, he said, is "simple, flexible and adaptable software that works," supported by "transparent data handling and industry standards."

Schlumberger's concept of 'people ready software' is closely aligned with that of its partner company Microsoft, and the company believes that making software more 'people ready' is essential to achieve the next generation of 'breakthrough team performance', he said.

CIO Panel

Schlumberger held a panel for oil company chief information officers, with representatives from Pioneer Natural Resources, Occidental Petroleum Corporation, Romgaz (state oil company of Romania), ExxonMobil and Chevron, to examine the obstacles and accelerators of oil and gas industry IT take-up.

First to speak was **Don Moore, CIO of Occidental**, who said that the current focus is on improving the efficiency of production, rather than the efficiency of exploration or drilling.

"We're focussed on meeting production goals, and helping company management achieve its business goals," he said.

Occidental is putting a lot of emphasis on remote surveillance tools. "We think that's key to the business, being able to manage the business anywhere, anytime," he said.

Occidental wants to provide information about its wells to authorised people over the internet.

Particular challenges are standardising on software, supporting collaboration and data management, he said.

"Collaboration is easy to talk about and very hard to deliver," said Don Moore.

"We struggle with collaboration. I think its going to be one of our biggest challenges."

"Data management is a huge challenge for us," he said.

When asked what he thinks is the biggest prize that can be achieved from IT over the next 3 years, Mr Moore said he didn't think there is just one.

"Its taking numerous amounts of data and turning it into information in ways we haven't seen," he said. "Information provides faster decisions."

"Sometimes there's a thin line between innovation and chaos," he said. "We want innovation in a controlled way."

Mr Moore said that he didn't think the IT department is the same organisation the company had a few years ago. "It's becoming so integrated with business processes," he said. "I hate to talk about IT as a separate issue."

The question of how IT adds value to an oil company is similar to the question of how drilling adds value to an oil company, he said. "The answer is, we are the company," he said.

Cindy Reece, manager of upstream technical support with **ExxonMobil**, talked Exxon's initiatives to prepare itself for the future. It has a program called EM2010, which Ms Reece leads, aiming to create the subsurface working environment for the year 2010.

"Exxon is very focussed on research and

development - we believe that's our lifeblood," she said. "You will see us continue to pursue our own proprietary technology."

"We want to improve efficiency and effectiveness of upstream personnel. We want efficient ways to move from exploration to development to production. We're focussed on standardising software, hardware and data models," she said.

"We use IT to help us integrate and automate," she said. "We can take best practises and corporate knowledge and embed these in the work processes."

"Accomplishing this on a company wide basis is quite a daunting task. It needs a partnership with the business - ensure we're capturing the appropriate corporate knowledge."

Our upstream presidents are quite clever at getting people to create a vision of where we want to go," she said.

When asked how Exxon defines the digital oilfield, Ms Reece said "I think everybody has a different idea of what the digital oilfield is. We look at where IT enablement adds value to our organisation."

"We've got to have a business case to show there is value, and how does the value creation fit in that business strategy."

Schlumberger put together a high-powered CEO panel to talk about the future of the oil and gas industry. From left to right: Tony Hayward, CEO and managing director, BP; Ali Al-Shammari, deputy managing director, Kuwait Oil Company; Ing. Carlos Arnaldo Morales Gil, VP exploration and production, PEMEX; Fahad Al-Moosa, VP drilling and workovers, Aramco; James T. Hackett, chairman, president and CEO, Anadarko; and Andrew Gould, chairman and CEO of Schlumberger. In the screen is session moderator Dan Domeracki, Schlumberger's VP marketing and technology



"Our company is very focussed on the bottom line, delivering and demonstrating value."

"Most of our professionals are doing too much work which is not at their level, work which could be automated with IT, so people can do more creative work," he said.

When asked how Exxon evaluates new technologies, she said that Exxon asks itself questions like, "Does it fit within our architecture? What are the implications of making that change?"

"Each of us needs to be focussed on demonstrating to management the value of IT," she said. "Our IT spend is going up significantly."

It is often not plausible to try to calculate the return on an IT investment, since many of the benefits are seen in the whole business, she said.

"We have to make sure we're using appropriate management techniques to make sure we deliver on cost and schedule," she said.

Tom Halbouty, VP and CIO with Pioneer Natural Resources, said that the company has spent many years 'democratising information' in its organisation.

It has a computer system which links together 30 different types of data, and can create different workflows around it. "Our model has not been one size fits all," he said.

"We have to focus on innovation that adds value to the organisation, not just innovation that's good," he said. "When innovations occur that help you see the subsurface better you must adopt those immediately. We spend a lot of time looking at new innovation."

"I think the most important thing you can do in an organisation is enable the right people to make the right choices," he said. "You can create systems with workflows. But there are foundation things you have to do to get to that point."

"[The value is] in the ability to tie information in the company together," he said. "If you build the right architecture and have good data, deliver to the individual things that help them make the right decisions, it's a competency that enables a company to be more competitive - they can beat competitors to a decision."

Mr Halbouty said that one definition of innovation could be 'creative activity which can be commercialized.' "Innovation is the ability to think up new ways of approaching the problems," he said.

"Innovation precedes standardisation. You have to allow innovation to occur in a controlled manner," he said.

"We really haven't seen the tip of the iceberg in how far these things are going to move," he said.

Anselmo Tati, IT director for upstream and downstream Latin America, **Chevron**, said that people are spending 1.5 to 3 workdays every month looking for information. "7000 hours of productivity is just lost."

"Let's not lose focus on the people that make it happen," he said. "Let's not lose focus on the human process."

Chevron's i-Field

Mike Hauser, product manager for Chevron's i-field project, explained how Chevron's 'i-field' (integrated operations) project has evolved over the past 6 years.

"2000 was the start of the root thinking," he said. "We only had sensors at the time".

"In 2001 we had 2 major projects - oil-field automation - mostly surface focussed.

We looked at real time production and resources optimisation, in a 50:50 joint venture with Schlumberger. We identified key workflows."

"In 2002 i-field was born. We got the proposal to put it all together. We didn't target exploration and drilling, they were pretty efficient and not a lot of room for optimisation. But with managing the asset, there were opportunities."

"In 2003 we pulled our team together, with 18 people. We surveyed the landscape.

We were in absorption mode, like a sponge. We wanted to see who was doing things as opposed to talking about it. We worked with asset teams to develop the opportunities. We started building relationships with our partners.

In 2004, Chevron finalised an 'inner circle' of partners it was going to work with, including Schlumberger, SAIC, Epsis, Accenture, Microsoft and the University of Southern California (USC), where Chevron has launched a master's program in smart oilfield technologies. "We freely pull competences from these companies," he said.

In 2005, Chevron launched three more i-field projects, in a range of different oil-fields, featuring tight gas, steam drive, deepwater, shallow water and waterflood.

"By 2006, every Chevron asset had made a decision that they wanted their own i-field strategy, which they were in full control of," says Mr Hauser

"We build relationships with the asset teams, that was one of the three criteria of success. We want to enable willing assets to reach the level of i-field activities required to accomplish their business plans."

Mr Hauser stressed the importance of putting together technology systems around the needs of specific assets. "All our i-field projects are asset based project, not technology based projects," he said.

The current focus is on putting together automated workflows, systems simulation and modelling. It is also building artificial intelligence systems, to be balanced with human decision making.

Chevron is also working out what kind of organisational capability it is going to

need to run integrated operations, and planning accordingly, he said.

Chevron sees its i-field activities in four levels, of instrumentation (level 1), real time information from the instruments (level 2), real time intervention using the information available (level 3), and transforming the way the company operates (level 4). A further level was added in 2006, the IT infrastructure (level 0).

Chevron has been working on data workflow systems for two and a half years, he said. Now it has workflow systems which can co-ordinate people's activities in "surveillance, monitoring optimisation, analysis, work process change," he said.

Mr Hauser stressed that integrating different activities does not happen by itself. "Integration is not a natural act - it takes deliberate effort," he said. "An i-field project is optimising the whole asset."

Jan Richard Sagli, Statoil

Jan Richard Sagli, project manager, subsea improved oil recovery production optimisation, Statoil Research Centre spoke about Statoil's 'Subsea Improved Oil Recovery Program' (SIOR), which aims to achieve 70 per cent recovery from rig operated fields and 55 per cent recovery from subsea fields. "This is something like an impossible mission," he said.

In connection with the program, Statoil has formed a 3 year partnership with Schlumberger Information Solutions, to develop new production optimisation technologies.

Statoil's project will look at optimising both over the life of the field, and optimising on a day by day basis (looking at optimising the drilling, production and process facilities).

The goals are to develop methodology, technology and IT solutions, developing a set of updated, integrated models of the subsurface and topside facilities, which can be used to optimise things.

"We believe the main results will be a powerful solution of production and process optimisation," Mr Sagli said

The project will look at research, development and deployment of value added technologies in both of these areas, along with the development of workflows to integrate short term and long term production work.

The project will include testing new technologies in the field, mainly in 'smart wells' with good instrumentation and communication infrastructure.

Statoil will also focus on putting together reproducible production workflows. There will be role based systems, where people access and input different data into the system, depending on what their role is.



Jan Richard Sagli, project manager, subsea improved oil recovery production optimisation, Statoil Research Centre

"We want a system which defines roles," he said.

There will be some research on optimisation technology, and testing out and making new ways to build mathematical models. "Perhaps we have to think differently when designing models, thinking more about lifecycle models," he said.

Statoil will standardise on using Microsoft for its office applications.

Statoil will put a lot of effort in process control, an area it has a lot of experience in, he said. "We have some experience with using that technology on Statoil fields. "We'll do it in Snorre B; it has a lot of instrumentation."

Statoil would like a software company to develop simplified reservoir models, which can provide a less detailed but faster model of the reservoir. "Eclipse models can run for hours and weeks - it's too slow," he said. "We would like faster models we can use to see the trends."

Jevon H Williams, Shell

Jevon H Williams, project manager smart fields, hydrocarbon development, Shell, talked about how Shell has developed workflow tools for managing smart fields projects, on Schlumberger's 'DecisionPoint' platform.

"Schlumberger has been our partner of choice since 2004," she said.

Shell started the project in 2004, looking for ways to improve collaboration between teams, in particular making it easier for useful data to be shared between different people, and reducing the amount of time people spent searching for data.

"We wanted to get geoscientists focussing on doing more technical work, not searching for data," Ms Williams said.

It wanted to develop a 'smart collaborative environment,' where teams can share information with each other, including 3D models. They can also track the level of uncertainty of data as it moves from application to application, track risk, and share knowledge regionally and globally.

Shell wanted to develop what it calls a 'blueprintable' solution, which can be used around the company. "By having a consistent easy way for teams to work, it will lead to consistent and repeatable modelling process," she said.

"It will help with team collaboration, no hassle data management. You can get data fast easy and clean when you need it."

The system created is role based, so people interact with it differently depending on their role. The system has 3 roles - project owner, contributor and reviewer.

Ms Williams demonstrated how the system could work, starting from a team leader ('project owner') working out that there will be a shortfall in production in 2009.

The first screen shows a list of wells which have been drilled but not yet produced, and who has done the work on them. You can search and filter them.

Once you have decided on which project you want to go for, you can put together a Gantt chart, showing how the project will be put together, and what will happen at which time.

Then you can access the well logs from the system, and input them into Petrel, using OpenSpirit to carry the data.

The computer remembers who did what at every stage, so there is an audit trail.

Shell wants to start small with these kinds of workflow projects, rather than try to roll it out to the whole company at once.

It is being gentle on trying to encourage people to use this kind of system and explaining the benefits, rather than forcing them to use it. "We're saying we have some solutions we think can help," she said. "They go back and show the teams how this can impact them."

One challenge is that geoscientists do not take kindly to being, as they see it, managed by a computer system. "People see geoscience as a creative environment and don't like project management," she said. "But we need to bring some vigour in because so much money is involved."

Al Sutter, TNK-BP

Al Sutter from TNK-BP talked about his company's implementation of Schlumberger's Petrel software for managing reservoir data and integrating the different models it had.

TNK-BP is a company formed from the merger of BP's Russia oil assets and the oil and gas assets of Alfa Access Renova Group, with upstream operations in West and East Siberia, and Volga-Urals region of Russia.

The company has data for 17,000 wells, and wanted geological models for all of its main fields by 2008. "We have very poor and inconsistent subsurface data," he said.

"We want standard agile and integrated applications that our staff are motivated to use. The geology reservoir model is our key piece of business," he said.

TNK-BP looked at several different software applications before choosing Petrel, with criteria including the operating platform, Russian and English capability, technical functionality, ease of use / workflow, pace of software development.

"We tried to involve as many staff as we could in the evaluation," he said. Over 100 TNK-BP employees have participated in the evaluation.

TNK-BP eventually purchased Petrel licenses for 91 seats. It will be moving all of its data models from Roxar, which it was using previously, into Petrel.

"Petrel met our requests more than other technology and has met expectations," he said. "We thought Petrel had the best cross-discipline functionality, and we believed we would get functionality improvements over time."

There were some suggestions for improvement. "Some of our fussier geophysicists think there's room for better functionality in the high end," he said. "The production / well data functionality is probably not as well integrated as we would like."

Mr Sutter said that many people use the software before going to the training, "much to the annoyance of Schlumberger."

"They say give me a license and I'll find out how it works - and they do. I can use it, it's not that difficult if I can use it," he said.

Herb Yuan, Shell



Herb Yuan, manager of International Exploration and Production IT and information management with Shell

Herb Yuan, manager of international Exploration and Production IT and information management with Shell talked about the challenges of standardising innovation, two things which would seem impossible to reconcile.

Mr Yuan is a board member of data management organisation OpenSpirit, and was previously chair of the board of POSC (Petrotechnical Open Software Corporation). He has been with Shell for 29 years.

Four years ago, he was given the task of standardising upstream IT applications in Shell. Mr Yuan said he had thought a great deal about how to reconcile the need to use innovative technologies, with the need to standardise IT, but decided he could do both at once. "There is a virtual circle between innovation and standardisation," he said.

Mr Yuan suggested that the industry is slowly moving from one geared around

reservoir models to one geared around data. "What we are facing more and more is increased transparency - that's a turn-around coming with the next generation of people that's going to work in this space," he said.

"Collaboration and integration is much more challenging," he said. "What we're looking at is problems bigger than one company can handle. Learning to collaborate is not in our (Shell's) genes." said Mr. Yuan

Dominique Bazin, Total

Dominique Bazin, geoscience data manager with Total, talked about Total's information management project in Nigeria, to put all of its paper geological and production information into an electronic system, to make it easier for people to find the data they want.

"People say, you spend 60 per cent of your time searching for and validating data and 40 per cent doing the study," she said.

Total had three databases; Finder, for numerical data; LogDB, for log databases; and eSearch for electronic documents.

Total wanted to build a tool on Schlumberger's DecisionPoint software which would enable users to work with the database in a useful fashion, for example using DecisionPoint's geographical interface to enable users to select on a map which wells they want to retrieve data for.

Total scanned 1,300,000 pages, 26,000 documents and data from 7,000 wells into the system. This works out at 2km of shelves of paper, filling 83 offices. There is also 20 terabytes of 2d seismic data.

A team of 26 people were working full time on the project for 3 years, including staff from Total, Total's Nigerian subsidiary EPNL, contractors and Schlumberger staff.

The eReach software is designed to enable users to retrieve the documents they want within 3 clicks.

The database is secure, with all users classified in 'user groups', with different rights to see and extract data.

"We decided to implement a new manner to work," she said, "using common software in an identical way."

Total is now working on improving the security of the system, finding ways to stop people from being able to download documents onto memory sticks.

In future, Total wants to be able to link this drilling information with production information. "We are ready to go beyond geoscience data," she said. "We will have production data management system in 2007."

Anselmo Tati, Chevron

Anselmo Tati, IT director for Latin America with Chevron, talked about security issues with the oil and gas industry, in particular when companies enter into partnerships

and joint ventures and want to share data.

"We have to have infrastructure in place to share data," he said, "when today we are partners, tomorrow we are competitors."

Previously, companies often gave trusted employees accounts to enter IT systems from another company. But this was often not managed well. "Maybe they leave the company, no-one knows what accounts he has," he said.

Efforts were made to create an infrastructure for 3rd party connections, but it was hard to make it work properly, he said.

Getting the data security right could mean taking up to 2 years to set up a company joint venture, because of the need to create a completely new IT organisation to manage it, which would be torn down when the work was complete.

Mr Tati sees the solution as 'federated identity,' where oil companies develop a common system of staff identities. Then it is easy to manage who gets access to which system at which time.

Chevron and Schlumberger are exploring this idea together, and a workshop on federated identity is being planned in Brazil. "We are trying to see if we have more people to participate," he said. "We want to talk about it at SPE."

Having a system like this means that users only need to have one password. Once the computer has identified who they are, it can allow them access to all the systems they have rights to.

"You have one single sign on. It's a very seamless approach we're thinking of. The user won't even notice it. I think it's a really fantastic idea," said Mr Tati

Many people have to log on to three or four different computer systems just to access their data, and all this hassle will be removed, he said.

The cost of setting up a federated identity scheme for the industry have been estimated at \$1m, with a multimillion dollar cost per year to maintain the different identities.

Roberto Diaz, EcoPetrol

Roberto Diaz, asset production manager with Colombia state-owned oil company Ecopetrol, spoke about his 'e-field' equipment monitoring system, in particular the Casabe Field 280km North of Bogota, with 240 injection wells, which was discovered in the 1940s by Shell. It has 1.3bn barrels in place and 290m barrels have been produced so far.

The field has many technical challenges, including sand control, collapsed casing and finding bypassed oil.

A lot of production has been lost due to

electricity shutdowns, and there are a high number of wells with rod or pump failure. The workover rigs have a poor efficiency.

"We have a mature field developed with conventional technology," he said. "We can apply new technologies to create value."

Ecopetrol wants to increase production with horizontal and multilateral drilling, and improving the injection system.

The company chose 50 wells, representing 60 per cent of field production, for an 'e-field pilot'.

Tools were implemented for monitoring under-performing wells, providing an alert that the well may need maintenance. It can quickly identify electrical problems with surface equipment. "We can extend the life of the sucker rod system and prevent extensive well failures," he said.

Ecopetrol fitted control systems to the downhole pumps, to automatically optimise them to achieve the desired production or injection rate.

There are tools to get wells started much faster after power shutdown due to electricity failure.

There is a system to optimise the settings of the production and injection valves.

"The success of the project is driving Ecopetrol to extend the initiative to other fields, he said.

Khalil Lemkecher, BG Group

Khalil Lemkecher, a petroleum reservoir engineer with BG Group in Tunisia, talked about his use of Schlumberger's Production Data Management System (PDMS).

BG's data management system covers BG's operations in UK, Tunisia, Egypt, India, Kazakhstan, Trinidad & Tobago and Canada.

The system takes data in real time from the production facilities,

BG is using the Schlumberger DECIDE! software to manage and monitor real time production data. It can use the data to analyse how well the production is going, including downtime analysis and monitoring production losses.

The biggest value the software has achieved is in reducing the number of trips which need to be made offshore, he said.

"We have improved a lot our production surveillance," he said. "We had better communication with the offshore crew. We've been able to spot the problems. If we used our old tools and take longer to know where the problems are."

The gas business has become much more complex from a data management perspective, due to fluctuations in demand, blending between different gas streams, and gas platforms starting to process oil, he said.

A Schlumberger representative, also involved in the presentation, explained that the production data management system is very complex. "We have to spend a lot of time discussing with the IT people to implement these solutions," he said. "Don't underestimate the IT aspect, servers, firewalls, interfacing, and networks."

It was hard persuading personnel working for the various assets of the benefit of the system, and people often said 'no thanks, we're busy,' he said.

Fridtjov Øwre, Norway's Institute for Energy Technology

Fridtjov Øwre, research director at Norway's Institute for Energy Technology (IFE), talked how Norway is using information technology tools to boost recovery.

Remote monitoring centres have been developed for the Ekofisk, Snow White, Statfjord and Ørmen Lange fields, which monitor subsea systems, pipelines and the gas liquefaction process. Norway is keen to expand its remote monitoring capability.

Mr Øwre said he is keen to find a manufacturer of enormous screens for the remote monitoring centres. "We want a screen 16m x 1.5m curved," he said.

IFE has developed its own system for displaying the data on the screens in the monitoring centres, using graphs, not just showing raw data. "I am confident it will help promote teamwork in the integrated environment," he said.

"31 percent of Norway's known resources are produced," he said. "36 percent of Norway is unexplored. But a third of the unexplored area is in the Barents Sea," said Mr. Øwre

Particular problems being experienced in the Barents Sea include icebergs which can drag 5m deep trenches on the sea bottom, damaging any equipment which is installed there. "You have to plan for this," he said.

SIS, Intel, CISCO and BT

Schlumberger Information Systems works in partnership with BT, Intel and CISCO, to develop data communications infrastructure, both onboard rigs and globally.

Schlumberger calls the wi-fi service on the rig the 'first mile'; with the 'second mile' being the connectivity between the rig and the shore (fibre, VSAT or microwave line of sight microwave) and the third mile being the international telecoms networks, such as BP's multiprotocol label switching (MPLS).

The partnership is that Intel makes the wireless chipsets, Cisco puts together the networks, Schlumberger does the site analysis and deployment and can put Schlumberger software on top, if required.

"The first mile is often the biggest challenge," explained Alastair Grove-White, head of strategic connectivity with Schlumberger. "Conditions are not ideal for running in cables."

Technologies being used in the 'first mile' include the personal area network

(wireless communications of around 15m, such as Bluetooth;) wi-fi, with a range of 500m outside (less inside) and WiMax, with a range of up to 50km.

The wi-fi being installed on oilrigs is 'enterprise grade,' very different to the wi-fi which many people have tried at home and experienced connectivity problems with, he said.

A typical first mile technology is the Intel 'mote', he said, a self contained wireless transmit / receive (transceiver) computer, which can be wired to a sensor, such as a vibration monitor, and configured into a wi-fi network, so the data can be processed, compressed, and transmitted into the network.

The motes work in a mesh, which means that each one can communicate with the next one. This means that there can be multiple routes for the data to take to the main server, and the network does not have any single point of failure. The data can reach the main server in a number of hops.

Schlumberger envisages that the technology could be used to enable rapid installation of sensor networks to monitor equipment onboard the rig.

Having wireless networks onboard rigs is much more flexible than the 'static environment' of cables - it is much easier to add new equipment whenever you want without the trouble of installing cable. It is also safer than cables.

The next level of wireless communications is WiMax, with data communications up to 50km. "We can do 50 km with the right antennas," said Mr Grove-White. "We can do 50 mbps. But not both at the same time (50 kbps and 50km). The further you go with WiMax, the lower the data rate will go."



Alastair Grove-White, head of strategic connectivity with Schlumberger

Schlumberger has standardised on CISCO architecture for networks in the first mile, he said, because it makes it easier to manage the quality of service. "Providing managed quality of service over wi-fi is not straightforward," he said. "We believe the CISCO solution is second to none."

The security challenges are quite enormous, with highly sensitive data being communicated wirelessly. It is important to make sure that the data does not end up in the wrong hands.

It is a challenge creating a network which employees from different companies, both working on the rig, can use, with-

out one being able to access the network of another. There can also be location based services, which enable a person's position on the rig to be tracked, for safety or security purposes.

BT's Terry Adams explained how his company is investing £200m a year in developing a global robust data communications network, carrying data in the multi-protocol label switching (MPLS) protocol.

"We can guarantee there will also be a service and route that can handle your business traffic," he said. By 'guarantee', BT means it promises at least 99.97 per cent availability, and normally 99.98 per cent.

BT is currently extending the networks into Nigeria and Cameroon, and looking to provide fibre optic communications into Sakhalin, and across Russia.

The computer networks in BT's MPLS network are run by Cisco as a primary platform and Juniper Networks as a secondary platform. BT has tools to measure how well the network is performing, and demonstrate this.

BT is keen on developing 'presence' technologies, which are an evolution of Microsoft Messenger, e-mail and telephone.

Instead of sending e-mails out into the blue yonder, or trying different land line numbers and paying expensive mobile phone roaming rates to speak to someone, you know if the person you want to talk to is in front of a computer and available for voice calls, videoconferencing or instant messaging, and if so you can speak to them straight away however you like.

"Presence is a word Microsoft is using hugely," says Mr Adams. "You can have a system which tells you if one of your partners is online, on the telephone, in a meeting, you'll know if they're in an office or on a rig. Presence is enabling integration of audio and visuals."

BT is offering services to streamline corporate networks, looking for ways to reduce costs, bring about common technologies and standard platforms, and use enterprise applications.

Olivier Germain, Schlumberger

Olivier Germain, product champion, drilling data management, Schlumberger Information Solutions, presented his idea of how a drilling operations management solution could combine surveillance and performance analysis, promising a solution which would help "manage and optimise the performance of your present and future operations in a collaborative and transparent way."

Mr Germain used the analogy of a Rubic's cube to explain that getting all the different departments working together takes a lot of trial and error, like doing a Rubic's cube, but ultimately it is possible to make it work.

"You want the production department to be aware of what the drilling department is doing," he said.

The ultimate solution, he suggested, would be something like Google Earth,

where users can look at what is going on from whatever height they like - they can get a distant ('30,000 feet') view of a large area, or see small areas in the same level of detail as if they were there.

Schlumberger has developed three workflow tools, covering business surveillance, asset and resources management.

The tools have been built on flow Schlumberger's Advanced Drilling Package on its DecisionPoint workflow framework, which enables users to pull data from several different databases, hosted on different computer systems, at once, to get the view of what is going on that they need.

It can be used, for example, to generate and monitor key performance indicators, such as for the number of accidents, money spent and time.

You can examine all of these things at different levels, e.g. for the whole company or for specific fields or wells.

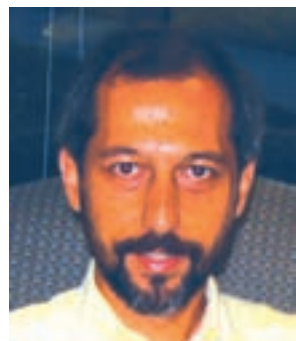
"As you drill down, your KPIs will change and get more precise," he said. "As you get closer to your well you get more details, e.g. exact schedules. You can find out how fast drilling is taking place and see the daily production reports.

Users can put together their own KPIs if they like, for example if they want data for a certain list of wells.

Users can put together their own alerts as well, for example if one week passes 20 per cent over budget, or if the temperature or pressures go 10 per cent outside normal levels.

Users can compare data from different wells around the world, or see how the best wells were drilled. You can draw graphs of the history of a well, showing the production rates over time.

All of the data can be incorporated into Petrel, so for example it is possible to show a geological models with the cost of drilling different wells on the same screen.



Olivier Germain, product champion, drilling data management, Schlumberger

"As you get closer to your well you get more details, e.g. exact schedules. You can find out how fast drilling is taking place and see the daily production reports."

Mr Germain envisages that the software could help co-ordinate people's activities. So for example, if a rig suddenly becomes available 10 days earlier, everybody's schedules are automatically changed so that the rig can immediately be set to work on another project.

The person lodging the paperwork with the government for the drilling can be notified that they have 5 days to complete the paperwork, not ten.

The challenge, one delegate said, is making data about the micro view (e.g. specific wells) work together with data about the macro view (e.g. company production plans). "We're not there yet," he said.

Dr Anthony Smith, Schlumberger

Dr Anthony Smith, marketing manager, information management, with Schlumberger Information Solutions, presented Schlumberger's information management strategy.

"Visions are ten a penny - you need tactics to achieve the vision," he said. "You can achieve it through openness and innovation, consulting, integration and delivery."

Schlumberger Information Systems has four solution delivery teams in its information management department, working on managed services; systems integration; consultancy; and technology / products.

Managed services include project management, managing structured / unstructured data, mapping / cartography and technology watching.

Mr Smith said that the information management requirements are much bigger for gas than oil, because there is the added complexity that the gas is much harder (or impossible) to store.

Mr Smith said that companies also need to take environmental data management more seriously.

Schlumberger is working on 'intelligent' solutions, including neural networks, simulation, optimisation and prediction. "The costs of this are huge, the benefits will be huge," he said.

"We should be able to change the way we look at it, so no-one says information management any more," he said.

Charles Johnson, Microsoft

Charles Johnson, worldwide managing director of manufacturing industry solutions with Microsoft, stressed that the software demands of the oil and gas industry are much more difficult than industries where everything is predictable and contained, such as a factory.

He said he thought that the oil and gas industry represented the 'real world' because of its unpredictability.

"We think it's not about technology it's about people," he said, echoing the words of Schlumberger's Mike Benjamin. "People drive business outcomes."

Because a day in the life of an oil and gas industry worker is unpredictable, it is very hard to create software tools to help people collaborate. You don't know what data they

are going to need, what task will need to be completed and what needs to be done next.

Microsoft is not just trying to persuade people to buy Microsoft software, but it is also helping companies try to get more value from what they already have, such as SAP systems.

"If you're going to enable people you have to make sure they have access to the data in a format they can use," he said.

Microsoft is taking security much more seriously than it has done in the past, he said.

"A few years ago Microsoft thought of security as someone else's problem. Now they think its Microsoft's responsibility to enable security," said Charles Johnson

Chevron and Schlumberger gave us some hardcore requirements but we have implemented them."

In the 2007 version of Microsoft Office, there will be more security tools. It will be possible to send someone a document but stimulate that they can't save it or print it, and they won't even be able to see it after a certain time.

Steve Langdon, HP

Steve Langdon, chief technologist of HP's consulting division, and also chief technology officer of HP's high performance computing division, talked about how servers are developing.

"Computers are the most flexible tool anybody has devised," he said. "Computers are critical enablers to do things we couldn't do any other way. They are fundamental to what I'm trying to do."

Some oil and gas companies are starting to see themselves as digital companies, he said.

Mr Langdon talked about how super-computers are gradually being replaced by clusters of industry standard building block computers.

So-called 'blade' computers are being introduced, designed to be used in combination with each other, which take up 50 per cent less floor space, use 40 per cent less power and have 75 per cent less cables.

The computers have fans which were originally developed for use on model aeroplanes. They are quiet and can be carefully controlled. ●

Numerical Rocks - new rock analysis methods

www.numericalrocks.com

Numerical Rocks, a company in Trondheim, Norway, is developing computer tools which can work out rock properties (eg permeability, capillary pressure, resistivity), using just a thin sample of rock, rather than having to take a whole core section and do endless measurements on it.

From the digital model, you can work out the properties of rock within hours, rather than weeks or months taking physical measurements. You also do not need to extract such a large sample of rock.

The technology works by building a computer model of the rock, from the thin sample.

The computer simulates the way the sandstone formed over millions of years, with periods of sedimentation and compaction, using high performance cluster computing and 3D visualisation techniques; ultimately it can generate a much

clearer picture of what the rock is like than you can get from doing physical manual measurements.

The technology has been approved by Statoil as an 'official tool', to use in everyday operations. Statoil will use it first of all to test results generated by the Numerical Rocks software against its laborious manual calculations, and then ultimately use its data in real decision making.

From the digital rock model, it is possible to make a drawing of the pore network, showing how fluid will flow through the rock, looking at the system from any angle. There are four modules to the software.

The Formation Resistivity Factor module can calculate the electrical conductivity of the rock in all three directions.

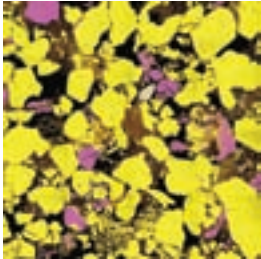
The Absolute Permeability module can measure the ability of the rock to transport fluids, when only one fluid is present.

The Nuclear Magnetic Resonance (NMR) model simulates NMR responses and can plot magnetisation decay over time.

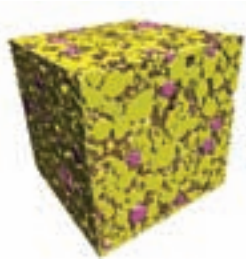
The Flow Simulation module can calculate the capillary pressure, relative permeabilities, resistivity index. It can simulate what the rock looks like in 3D, and show how the rock will look like after primary drainage, imbibition (using water drive, to fill the pores with water and push oil out) and after secondary drainage.

Numerical Rocks believes that the service can provide a greatly improved understanding of the pore structure and physics of the rocks. You can also add better rock data to the reservoir simulation models, to improve the decisions you make about what to do with the reservoir.

The company provides its version 1.0 software package; it also provides a 2 day course in using the technology, and how to calculate fluid flow parameters.



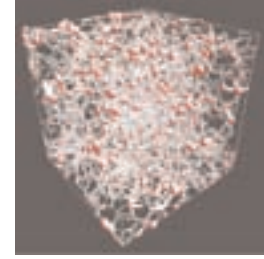
Numerical Rocks analyses a thin section of a rock...



...to model a cube of rock...



...and analyses the pore model and derives a pore network for simulating how oil, gas and water will flow through the rock. This is the actual physical space (left) and a model of the space (right)



For those that want to coordinate intensely critical and expensive collaborative processes.

Ulysses Task Assistant: Co-ordination systems for the most critical and highest turnover environments.

Grown up in the most traditionally dispersed business in the world we are ready to serve the next industry up in the energy hierarchy.



Contact details:

Ulysses Systems UK Ltd , 3rd Floor, Transworld House, 100 City Road, London, EC1Y 2BP, England

Phone: +44 (0)20 7324 5700 • **Fax:** +44 (0)20 7324 5701

Email: info@ulysses-systems.com • **Web:** www.ulysses-systems.com

Ikon incorporates electromagnetic modelling

www.ikonscience.com

UK oil and gas software company Ikon Science is partnering with Edinburgh-based MTEM (multi-transient electromagnetic) to integrate electromagnetic modelling and inversion into Ikon's rock physics based modeller RokDoc.

RokDoc provides geoscientists with an integrated environment to model geophysical rock properties providing rapid interpretation via different rock physics models.

The RokDoc Scenario module provides an integrated environment to rapidly test and validate seismic interpretations using 2D modelling scenarios, integrating both pre- and post-stack seismic, well logs, elastic

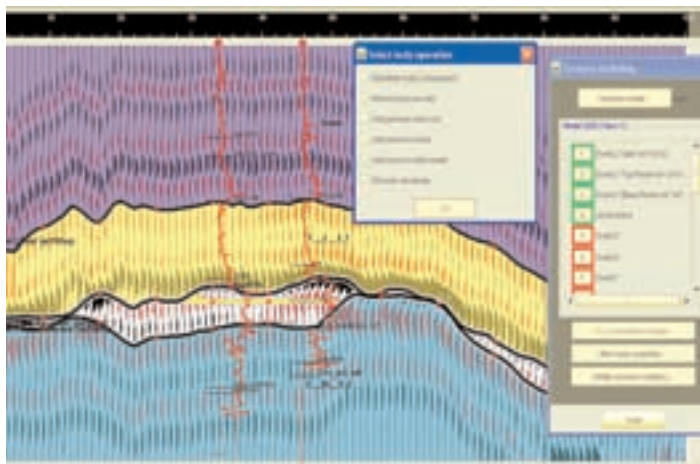
data and anisotropy effects.

Ensuring that seismic interpretation decisions are based on realistic rock properties (geology) reduces drilling risk.

MTEM is a geophysical method that can determine, before drilling, whether deep underground reservoirs contain hydrocarbons. It may also be used to find hidden oil in mature producing fields.

Leon Walker, CEO of MTEM said, "Integrating our data with Ikon's software will add value for our clients by enabling us to perform feasibility studies to determine how our technology can best be used to identify and exploit their reserves."

"It will also allow us and our clients to perform constrained inversions where we combine existing knowledge of the reservoir and the 3D resistivity information provided by an MTEM survey to determine hydrocarbon content."



2D geophysical analysis from the RokDoc software package

Paradigm Releases Sysdrill v2.5

www.paradigmgeo.com

Houston software company Paradigm has released Sysdrill version 2.5, a software solution for drilling engineers to plan well paths and optimise wellbore placement, by integrating engineering and wellplanning into different people's workflows.

In doing so, Sysdrill can merge the macro realm of geology and geophysics with the micro realm of petrophysics.

Enhanced features in the current release include:

- Support for geological surfaces; formations, faults, oil-water contacts
- Enhanced geosteering workflows with Paradigm Geolog
- WITSML Real-time survey updates during drilling
- Ability to share data with third-party applications including --WITSML and DEX trajectories
- Improved target selection
- Copy and paste well plans

Roxar appoints Even Gjesdal as CFO

www.roxar.com



Even Gjesdal, chief financial officer of Roxar

Reservoir modelling and multiphase flowmeter company Roxar has appointed Even Gjesdal as chief financial officer.

Mr Gjesdal was acting CFO of Roxar since January 2006 and before that group controller. Before that he was CFO of

Norwegian oil and gas service company Björge ASA. He has a BA in Economics from the Norwegian School of Management and has also worked in auditing and consultancy at PriceWaterhouseCoopers.

Roxar updates Tempest with Parallel Processing

www.roxar.com

Reservoir modelling software company Roxar has updated its Tempest software suite for reservoir simulation to version 6.3.

The main new feature is the capability for parallel processing, utilising the Message Passing Interface (MPI) standard.

This will allow for simulations to be run quicker and more accurate on multiple cluster machines, as well as making them usable on standard desktop computers.

A single task can now be broken down into multiple parts which are processed independently on different computers. The task is then reassembled to form the result.

Users are able to upgrade easily from previous versions of

Tempest at no additional cost.

Tempest consists of four integrated software modules covering the different stages of reservoir simulation. These are:

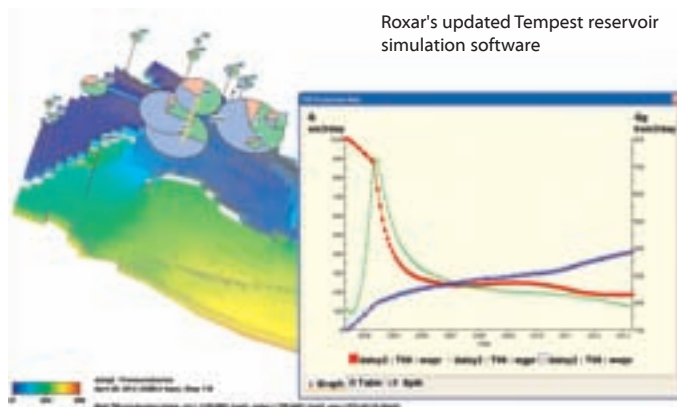
Tempest-MORE: a full-field simulator capable of running black oil or compositional simulation modes

Tempest-View: a graphical interactive program that provides simulation pre and post processing. Tempest-View provides data set creation, editing, job submission and monitoring, run control, results plotting and 3D visualization.

Tempest-PVTx: a program for fluid characterization that matches equation-of-state descriptions of fluid properties to laboratory data

Tempest-Venture: a tool for economic evaluation and risk analysis for estimation on field cash flow and net present value

Roxar's updated Tempest reservoir simulation software



Tony Edwards heads up BG's iValue team its iValue (digital oilfield) programme.

www.bg-group.com

Tony Edwards, previously Advanced Collaborative Environment programme manager with BP, has moved to BP Group, to head up its iValue (digital oilfield) programme.

Dr Edwards is currently managing a team that is building BG's digital oilfield strategy and implementation program that aims to 'optimise gas production from the reservoir to the customer' and will cover downstream, mid-stream as well as upstream sectors of the business.

"I am pleased to have been offered this is new and challenging role with BG and am looking forward to building the digital oilfield capability within BG," Dr Edwards says.

BP's \$21 DIY PC support

www.bp.com

Employees using BP's 'do it yourself' PC initiative, where they have an annual grant to buy computer equipment and pay for support, rather than use BP's in-house IT department, have spent an average of just \$15 each on support over the 21 months the scheme has been running, according to Jim Ginsburgh, VP of enterprise architecture at BP, quoted in the IT news service Silicon.com.

This represents a considerable saving to BP on IT support costs, and points to what many see as a trend for the phasing out of in-house company IT

departments as people learn how to manage their computers themselves.

Instead of using a company computer, set up by a company IT department and with company IT support, employees can choose to receive an annual allowance (thought to be of \$1000) to spend however they like on computers, equipment and support. They are also given a license to Windows and Microsoft Office.

If they need support, they go to the computer supplier, or use online help tools, rather than go to BP's in-house IT department.

They can buy computers wherever they like, although if they use BP's preferred suppliers they will probably get whatever discount BP has

negotiated.

In order to take part, employees have to show a level of IT proficiency, and sign a 'diligent use' agreement. They have to agree to download the latest patches, use a firewall and antivirus, and not go to inappropriate websites.

Employees with computers which connect directly into BP's systems (ie not over the internet) cannot join the scheme.

However employees which use BP's own software on their computers can; in this case, they can go to BP for support for those specific software.

BP also hopes that employees which buy their own computers in this way will take more care of them.

PetrisWINDS DrillNET released

www.petris.com

Houston software company Petris has released PetrisWINDS DrillNET, a drilling and completion engineering software framework.

It combines Petris' Maurer drilling programs into one integrated package that makes it easy for data to be captured, reused and shared among users.

This should increase both operational safety and efficiency.

Features include context-sensitive help and a 'traffic

light' approach to check that all data is complete for a calculation.

Output reports can be generated from the results, and the data exported to Microsoft Office products.

DrillNET is available in multiple languages and can be configured for each user to allow the use of one language for the program operation and another one for report generation.

"Companies have told us that they need a solution that lets them collaborate and reuse drilling programs while making it possible to bring new personnel up to speed faster and with better performance. DrillNET is a direct response to these requests," says Jim Pritchett,

Petris President and CEO.

DrillNET has three framework versions which can be tailored to a company's specific needs, based upon the number of users and collaborative features desired.

More than 20 individual modules are available, covering the range of most drilling and well construction activity.

Companies can select as many or as few modules as needed.

As with all Maurer software products, DrillNET allows a user to focus on the specific drilling program of interest, and does not require that data for the entire well be present to run the calculations, making it suited for program on existing wells.

Codify announces non executive director

www.codify.ltd.uk

Allan Merritt, non executive director Codify



Allan Merritt is joining Aberdeen software solutions company Codify as a non executive director.

Codify provides a range of companies, including clients in the oil and gas industry, with custom software solutions.

Mr Merritt founded and was the managing director of IT specialist company Pragma until October 2005.

He began his career in the oil and gas industry with a role as an entry level programmer in Hudson's Bay Oil and Gas, Canada.

OpenSpirit appoints Beijing representative

www.openspirit.com

Data integrations company OpenSpirit has appointed Beijing-based Co-sail Software as its regional representative, to help OpenSpirit meet a rising demand for its services in China.

"During the past few years, China has seen significant foreign investment and many of the super majors are showing an increased interest in devel-

oping partnerships with the national oil companies," says Dan Piette, president and CEO of OpenSpirit.

"This global interaction, coupled with China's own interest in acquiring foreign oil and gas properties, makes the need for integrated data management a priority."

Landmark system - visualise an entire basin

www.lgc.com

Landmark has launched a visualisation system which can be used to visualise and interpret subsurface data for an entire region, or oil basin, in one go.

It is designed to help upstream oil and gas companies manage large regional data sets affordably, so they can make fast decisions on a basin scale.

This should enable users to spot large scale data trends, which cannot be seen so easily when you can only visualise a small area at once.

The tool was launched at the Society of Exploration Geophysicists (SEG) trade show in New Orleans. On the company's stand, the company demonstrated how it is possible to visualise and interpret 45,000 km² of 3D seismic data, from 100 different 3D surveys.

It uses Landmark's GeoProbe software, which Landmark claims is the industry's "most

powerful visualisation and interpretation solution." It uses the Verari Systems E&P 7500 visualisation server, which has up to eight powerful processors, 128 Gb of memory and a NVIDIA Quadro Graphics card. This is the only server which is approved for being used on all Landmark software. The company says it costs 'under \$100,000'.

Landmark tapeless archiving system

www.lgc.com

Landmark, part of Halliburton's digital and consulting services division, has launched a tapeless data cataloguing and archiving system.

The solution combines Landmark's Corporate Data Archiver reporting tool with the EMC Centera data storage system.

The data can be retrieved instantly because it stored electronically, rather than on tapes. The archived data is always available.

"Archived data retrievals that once took hours to days, and, in some cases, weeks, now take just seconds without assistance from the IT depart-

ments," says Landmark.

"Rather than spending their time searching for the right data and ensuring its authenticity, end-users stay focused on actually using the data."

The Corporate Data Archiver software creates an automatic catalogue / summary / outline of the data; it is possible to review the summary without having to retrieve all of the data, which massively speeds up search and retrieval time.

Project data is captured at specific milestones in the process, so there is always a project history and audit trail available for regulatory and policy compliance.

The electronic data storage is much easier to manage than tape archival, the company says. There is no gradual data loss, potential damage, loss of media and warehousing costs.

Landmark's tapeless archiving system



Schlumberger and Infosys alliance

www.schlumberger.com

Schlumberger has announced an alliance with IT outsourcing company Infosys.

The two companies say they will work together on a range of different solutions, but the alliance will be primarily focussed on integrating E&P petrochemical data and applications, including unstructured data, with financial and human resources back end systems.

Infosys' policy is to take data management work to 'where it can be done best, makes the most economic sense, and with the least amount of risk'. While this often involves doing work in India and China, the company is very proud that it was recently applauded by Wired magazine for bringing jobs to the US.

"Our alliance will provide end-to-end services integrating petrotechnical data with other relevant business systems," says Infosys.

Schlumberger believes that using sophisticated information management tools, together with strong system integration services, is the right way for oil and gas companies to increase productivity.

The two companies have been working for a number of years.

Pinnacle and Transform's 3D completion monitoring

www.pinntech.com

Pinnacle Technologies, together with Transform Software and Services, have jointly developed what they claim to be the first ever 3D visualisation software for well completion monitoring.

The partnership brings together Pinnacle's ability to monitor fractures, with Transform's software.

The software, called PTXplorer, can be used to monitor and analyse hydraulic fracturing effectiveness, taking data from microseismic and tiltmeter measurements.

Everything can be visualised in two or three dimensions, so you can see how the fracturing went, and track the fracture fronts.

The software can be useful to identify sources of fluid loss, or other unexpected events occurring during the well completion.

The software is supplied together with a customised database and visualisation layout, with results from the Pinnacle fracture diagnostics, together with satellite images, surface information, information about well bores, well logs and horizons.

The data is all put together by Pinnacle technical specialists.

Pinnacle claims to be the leader in applying microseis-

mic and tiltmeter mapping technology for hydraulic fracture monitoring.

"As we expand the application of our technology into reservoir monitoring, we are focused upon the integration of microseismic, tiltmeter, GPS and InSAR (Interferometric Synthetic Aperture Radar) information with a range of geophysical, geological and engineering data," says Pinnacle.

Pinnacle and Transform plan to expand the technology to support monitoring of many different reservoir types, from heavy oil to tight gas.

Digital Oilfield '42th fastest growing' in North America

www.digitaloilfield.com

Digital Oilfield has been ranked the 42nd fastest growing technology, media, telecoms and life sciences company in North America, for its 6,782 per cent growth it achieved over the five years from 2001 to 2005.

The ranking was made in Deloitte's annual Fast 500 survey, a list of the fastest growing companies in technology, media, telecoms and life sciences.

Digital Oilfield makes online software which can be used to optimise business processes, including integrating financial and operational processes, and optimising core business processes.

The technology can simplify complex workflows, within and across departments, between field and office. There are solutions for electronic invoicing, contract management, spend analysis, well lifecycle management, business process management and rig scheduling.

The company has over 15,000 users in 5,000 different companies.

"We have exceptional people who are committed to the technology and help us deliver on the promise of market longevity," says Rod Munro, CEO of Digital Oilfield.

The company also ranked 9th on the Deloitte Technology Fast 50, the 50th fastest growing technology firms in Canada.

Merrick Systems new version of ProCount

www.merricksystems.com

Houston oil and gas software company Merrick Systems has launched a new version of its ProCount hydrocarbon production accounting software, which oil companies use to manage production from different sources in an oil field.

The tool is designed to enable all oil company personnel, from field staff to back office, to have access to data about how much has been produced.

The new version, called ProCount 2007, gives users more freedom in how they use the data. They can display the data in whatever units they like, although the data is all stored in the same unit, ensuring that there are no compounding

errors as data is converted from one unit to another.

Users can put together their own screens, and add whatever fields and labels they like.

The software has a drawing module, which can be used to gather complete systems to show oil and gas allocations from different wells. Configurations can be confirmed with remote field personnel.

Users can add different components, such as wells, meters, tanks and equipment, to a drawing.

All the data is reconciled every day and every month, so there are no end of the month surprises.

Information is made available to all users as soon as it is entered, so everybody has access to the same latest information.

There are sophisticated security features, making it possible to restrict certain users from accessing certain areas of the database if required.

ProCount 2007 is currently being beta tested by a number of exploration and production customers.

Other new features include better interfacing with Merrick's DynaCap data capture system for plants, offshore platforms, and facilities. There is also better interfacing with SAP software and Cygnet's SCADA system.

ProCount runs in Microsoft SQL server 2000 and 2005 database.

Landmark and WellDynamics tie-up

www.lgc.com

Landmark of Houston has started working together with WellDynamics, so it can tie Landmark's reservoir visualisation tools with WellDynamics' reservoir monitoring and control tools.

WellDynamics produces the 'SmartWell' monitoring and control tools which are installed on over 215 wells and its permanent monitoring system in over 450 wells, and 50 oil companies as customers.

By linking together Landmark's visualisation tools with WellDynamics' well monitoring tools, it will be possible to develop models which can be used to monitor, forecast and optimise well behaviour and production, across individ-

ual wells and oil producing networks, the two partners believe.

It should make it easier to involve many different staff members, in implementing an optimisation strategy, resolving conflicting objectives, and integrating actual flow control information with the reservoir information.

"WellDynamics gives our users unprecedented control of what happens below the surface. Our joint solutions with Landmark will give them information they need to use our tools and systems to control their wells and to meet their goals, regardless of whether they are focused on net present value, ultimate recovery or short term production," says WellDynamics.



Landmark's visualisation tools will link directly with WellDynamics' reservoir monitoring and control tools, to enable real time optimisation. Photo courtesy Landmark Graphics Corp

First meeting of SPE IT Technical Section

http://itts.spe.org

The Society of Petroleum Engineers (SPE)'s IT technical section held its first meeting at SPE's Annual Technical Conference and Exhibition (ATCE) in San Antonio, Texas, on September 25th.

The section decided to set up the following subcommittees.

i) SYSTEMS INTEGRATION - Providing best practices for integration of information tech-

nology between the sub-surface and field operations

ii) PROFESSIONAL DEVELOPMENT - Promoting establishment of a new discipline combining information technology and oilfield technologies including curricula and training

iii) INFORMATION SECURITY - Develop information security best practices to effectively manage risk in the integrated work place

iv) INDUSTRY FORUMS - Provide a forum to combine petro-technical information initiatives in the industry to create critical mass.

The section steering committee is Mehrzad Mahdavi, vice president, Enterprise Security Services, Schlumberger (chairman); Steve Comstock, VP Upstream Technical Computing, ExxonMobil; Patrick Hereng, chief information officer, Total; Gary Masada, chief information officer of Chevron's Information Technology Company; Don Moore, vice president and CIO,

Occidental Petroleum; and Washington Salles, IT manager, Petrobras.

A board member of the IT technical section will be assigned to each of the subcommittees to help and provide guidance.

The subcommittees held conference calls during the two weeks after the meeting to discuss work efforts, which will lead to a plan for future activities of the section to be developed by the steering committee at a meeting in early December.

China Oil and Gas Summit 2007



Energizing the Energy Future

"The world economy is developing, and so is China; The world oil and gas industry is advancing, so is China"

22 - 23 March 2007, Shangri-La Hotel, Beijing, China



Your chance to meet the leaders of the China oil & gas industry in just 2 days

Key Benefits

- **Gain** insights into China's changing energy landscape, recognize risks and opportunities, and identify key uncertainties.
- **Analyze** the implications of government policies, including market liberalization, on energy developments in China.
- **Understand** the supply, demand, and price fundamentals for oil and gas products.
- **Discover** new resources and technology for E&P and opportunities for international cooperation.
- **Get** the latest developments of pipeline construction and LNG terminal projects in China.
- **Understand** the likely interfaces and interactions of China with broader Asia Pacific markets.
- **Examine** the changing face of Asian refining business.
- **Work out** winning market / product strategies in China.
- **Listen** to the mastermind panel of the industry's leading CEOs.
- **Identify** the critical success factors and the most profitable business approaches for companies seeking to do business in or with China.
- **Meet** with a distinguished collection of government officials, representatives of the world's larger oil & gas companies, industry specialists, practitioners and participants from the global oil and gas fraternity.

Geography Segment



China 30%
Asia Pacific 15%
America 15%
Mid-East 10%
EU 10%
Africa 5%
Russia 5%
East Europe 5%
North Asia 5%

Industry Segment



Upstream 21%
Vertical Oil & Gas 21%
Energy Traders 12%
Integrated Energy 10%
Smaller Independents 9%
Midstream 9%
Downstream 9%
Legal & Tax advisors 3%
Financial Institutions 3%
Others 3%

Key speakers

Xiaoping Zhao
Director General, Energy Bureau
NDRC, PRC

Deming Chen
Vice Chairman
NDRC, PRC

Thomas M. King
President
Guangdong Dapeng LNG
Company Ltd.

Dongjin Wang
General Manager
CNODC

Lan Howat
Senior Vice President Strategy
Strategy and Risk Assessment Division
Total

James L. Gallogly
Executive Vice President
Refining, Marketing & Transportation
ConocoPhillips

Official Media Partners



Online Media Partners



If you want to register or get more information about this summit, please feel free to contact IBC Company Ltd. (Shanghai Office) at **+86 21-6440 1600** or visit **www.ibgintl.com/events/cogs2007/** for details. We are looking forward to hearing from you soon

Reorganising national oil companies

Many national oil companies are organised in departments which work independently of each other, and would benefit from a more integrated organisation, says Hamish Wilson, principal of Paras Consulting

Many giant fields operated by national oil companies have significantly lower recovery factors than equivalent fields with advanced reservoir management elsewhere.

Current processes used by national oil companies around the world are no longer adequate for improving performance. Discipline and workflow integration is critical to the improvement process.

Many national oil companies have very functional organisational structures in which departments work independently of one another, with processes and procedures sequential and localised.

The overall business picture is difficult to see, and agreement on critical business factors hard to gain, in a fractured and disjointed business environment.

While it may be that world class technical work is being done, the company as a whole is not focusing on the ultimate business value of the work, and any advances are being slowed by concentrating on specific issues.

Such advances in working practice will have a substantial impact on current recovery rates. Better and more efficient management of data and knowledge are the foundation for closing this performance gap and the implementation of such practices must be seen as a priority.

Changes in working practices are made even more necessary by recent advances in technology, for example the improvements in reservoir characterisation, made possible by the move from 3D to 4D seismic imaging.

The increase in knowledge at this level impacts on the whole business structure, and there needs to be processes in place that can fully integrate such improvements in technology, for maximum business value impact.

The priority therefore, is for a strongly business driven, integrated organisational structure and work process.

Improving performance

In order to improve performance we have to be able to measure it. It is important therefore at the business level to be able to ask questions about the current position, and the effects that new processes and procedures can have on their original business plan.

Questions like the following need to be addressed:

- How are you getting on against your plan?
- Can you demonstrate that you are investing capital in the best options?
- If your capital was increased or decreased

by "X", what would the impact be?

- What are you going to do to improve your prediction accuracy?

- How are you going to improve the capital efficiency of your operation?

Questions such as these are easy to ask, but not so simple to answer.

Business performance in oil companies can be articulated in the following metrics, each of which can be expressed in value per barrel - a financial measure per technical measure.

Production Rate; Reserves replacement and resource addition; Operating Costs; Finding Costs; Income; Lifting Costs; Capital Efficiency.

Currently, these metrics are difficult to generate in enough detail to have an effect on operational decision making.

In order to adequately inform the business, there is a granularity of detail that can only be found in precise data, that for many national oil companies, is currently neither accurate nor readily available.

Independent business systems and processes are at the core of these problems - many budgeting and accounting systems are Excel based, leading to an inability to relate to the true business picture.

Reservoir performance informs the business about overall capacity, which in turn drives the overall field strategy. Together with supporting technical disciplines, this in turn creates an integrated field development plan.

Consistent data

Systems for financial and business analysis, forecasting and interpretation are not compatible, in part because there are no conventions for entering data at the most basic level - for example well names.

Consistency of data input is vital across all systems.

A particular example is the challenge to link production data with reserves and cost data, and this must begin at the most fundamental level... well names.

There is a misconception that the introduction of information management is about spending money on IT, something that is seen as a low priority in many companies, not just national oil companies.

The truth is that it is about how money is spent - smarter working practices and wise application of technology results in improved performance and consequently improved business value.

It is not necessarily the case that a complete overhaul of the technology already in place is needed. We should drive the design of the underlying systems and streamline current data management procedures to explicitly support new business processes.



Hamish Wilson, principal, Paras Consulting

The investment required may well be in the implementation of new working practices, improving the clarity and accessibility of existing data, and the procedures that in their turn enable a smooth business process, rather than in expensive new technology.

The process of change and the investment of time and energy to enable that change should not be underestimated. It is vital that changes to working practices are acknowledged at every level - from the user accepting and understanding the benefits of data consistency, to a fundamental need for buy-in at executive level.

External guidance may be necessary to ensure a smooth transition, and some consultants now include change management as a vital element of their project management offerings.

Making the change

What can be done to make the difference?

Ultimately, the only way forward for national oil companies is a holistic approach.

The combination of multi-disciplinary teams, integrated applications and supporting data management will lead to improved productivity and increased recovery factors.

The implementation of new working practices, while acknowledging the need for intelligent management of the changes involved, will inevitably result in maximised productivity from existing and future fields.

About Paras Consulting

Paras Consulting is a global management consultancy providing performance improvement solutions to the upstream oil and gas industry. In an era of increasing pressure on sustainable production and recovery factors, Paras Consulting assists clients to develop effective and cost-efficient production capacity enhancement strategies, designed to deliver measurable business value across the entire E&P value chain. Paras consultants have a variety of senior-level experience including E&P strategy formulation, production enhancement, exploration performance, subsurface process improvement and information / data management.

POSC relaunches

The Petrotechnical Open Standards Consortium has re-energised itself with a new name - Energistics. Also a new brand image, revitalised vision and mission. We met CEO Randy Clark at a recent seminar in Aberdeen

Petrotechnical Open Standards Consortium (POSC), guardian of the electronic standard for well information 'WITSML', is putting itself through something of a relaunch, under the leadership of its new CEO Randy Clark.

As Energistics, it promises to take a more outward approach, rather than focussing on internal Energistics issues, fighting to prove the value of its electronic data communications standards.

It will become more focussed on its community, developing propositions which can really add value, prove their worth in field trials, and achieve acceptance in the industry.

Recently it has changed its name to reflect these changes (the new name had not been released as this article was being prepared for publication).

"We have a new brand image, a new name, a revitalised vision and mission," said Mr Clark.

"Everything we do going forward is going to be market driven, value oriented. We are looking to the community to determine our priorities, to find the largest value proposition as we go forward."

"There has been a shift of focus of our work effort towards membership and way from Energistics as such," he continued.

"I believe the membership needs to own the standards development offering and be the key driver of that.

"We are a service company, we take stewardship of a project and facilitate the project management and provide some subject matter expertise and a connective tissue between the community and other standards bodies."

"Essentially we will have a base operation, build and maintain membership and support new self-funded initiatives, participating in a general way. Where there are interested parties we can form a community around it."

"We can do a bit of push and a bit of pull, find new opportunities and frame that at a higher level, but take it to the membership. Any specially funded project will have a clear business case, and a clear and unambiguous result of standards development."

Energistics readily admits that uptake of the standard has been slower than it could have been - it attributes this to a lack of understanding of WITSML amongst industry bosses, an initial lack of real world trials and a need for a top industry project manager to push for acceptance. This is all being resolved.



Randy Clark,
CEO of
Energistics

What is WITSML

WITSML stands for Well Information Transfer Standard xML (WITSML). It is an electronic data communications standard, for communicating well data between equipment and software made by different companies.

BP and Statoil, later with Shell, established the initiative, giving responsibility to an external organisation, Energistics, for developing it from 2003 onwards. Now Norwegian oil company Hydro is also insisting that it will only use WITSML compliant applications.

Statoil uses WITSML on 300 its wells, including all wells in the Norwegian sector and a growing number of wells internationally in Iran, Venezuela, and Angola.

WITSML can be used to define in a standard way things like wellbore, drilling trajectory, logging while drilling (LWD) data and mud logs.

The standard enables applications to 'plug and play' together, making it much easier for operators to put together a suite of intelligent data algorithms and tools that represent the best in class for each activity.

It should save a lot of work converting data between different file types.

For example, a speaker from SDC Geologix described a typical scenario where an engineer was manually retrieving header information from a LAS (Log ASCII Standard) wireline log file, importing it into Excel and finally saving it as a text file before importing into GEO, Geologix's well log data management application. This is the sort of person-intensive activity that WITSML is designed to eliminate.

One of the main advantages is that far more data entry is automated, reducing errors and increasing the speed at which data can be analysed. Also, the creation of a single data source which can be accessed by every application - one source of the truth - removes problems of data synchronisation and translation between different databases in differing formats.

WITSML is an important technology for well data collection and analysis, which can help improve decision making and reduce non-productive time.

It can save money by reducing the amount of manual data entry which needs to be done and reducing software development costs.

There can be health and safety improvements through earlier identification of

problems and allowing more staff to work remotely from the rigsite.

WITSML is six years old, and being used by Statoil and aggressively promoted within BP, the originators of the WITSML initiative, among other oil companies.

BP and Statoil, and later Shell, led the initiative up to the end of 2002. From early 2003, Energistics has had responsibility for managing its support and future evolution.

The WITSML special interest group (SIG) meets twice a year in person, and more often electronically, to discuss future enhancements and to review documented use cases so that the standard can be modified in the light of real data and operational experience.

Problems

Developing a standard is not without problems. Despite the schemas ensuring a consistent set of data objects, there have been issues both with co-ordinating transitions to new versions of WITSML itself and of various minor 'dialects' which are slight differences in semantics or usage introduced by different implementations.

Small differences such as these can mean more work for operators to achieve consistency.

Another issue that arose is the need for a WITSML certification program that would ensure that a vendor's application met a minimum standard for compliance.

Energistics is in the process of launching a certification program for WITSML based products.

Some operators mentioned variable quality in WITSML implementations and that suppliers were slow to move to comply with a new version of the standard.

Barriers to adoption

Although the business case for WITSML has largely been made, there are still significant barriers to its full adoption by some of the majors, including a lack of understanding of the standard.

Some suppliers still take the view that WITSML is just another proprietary interface and may disappear in a few years; therefore implementing it can be seen as a burden to satisfy the requirement of a few operators, rather than an opportunity to consolidate existing data formats.

"It's a significant problem," said Mr Clark. "It's one thing to develop the standards, another to move to implementation and adoption, we have to drive deployment within an organisation and assist the promotion effort through training, case studies and harvesting of pilot data."

"The challenge in oil and gas is that there are a large number of autonomous units that are very hard to break into," said Mr Clark

"A lot of the deployment effort is more about promotion and marketing - getting a targeted message to different levels of an organisation from sea level right through to upper management - this is the way we will be successful."

"Each of us has to create ways in which each individual knows how what we do

influences their performance and their ability to do their job. If an engineer can't see how utilising standards in business processes and technology will benefit him we haven't been successful."

Energistics is also looking at other industries and emerging technologies such as RFID to see what may benefit its membership.

Again, the development of any new standard depends on business drivers within the community, with the role of Energistics to try to get a group of the right people together to facilitate the process.

"Our aim is to provide an energy standards resource centre, a platform for accessing information about standards in related segments in other industries - who did what when, how is it relevant and how is it done there," said CEO Randy Clark.

"We will implement specific applications and build on that over the next years."

To promote its activities on a wider scale, Energistics is establishing 8 regional-based focus groups to champion development and adoption of standards.

At least one meeting a year will be held within each region and the organisation is looking for local industry leaders to take a principal role in shaping each region's activities.



BP

One of the founder members and main contributors to the WITSML program, BP is currently represented on the WITSML steering committee by Julian Pickering, domain lead drilling and completions.

Dr Pickering is promoting the technology within his organisation's many business units.

He talked about the need for BP to "set its house in order" to be ready to move ahead with adopting new digital drilling and completions technology to address increasing technical challenges and the growing pressures on internal and external industry expertise.

BP's efforts will evolve over one to two years, with the aim being to build the infrastructure and tools needed to implement the 'smart field' concept, including visualisation, automation and simulation of the entire well delivery system.

BP is re-defining its digital technology delivery to support drilling and completions and is looking to standardise tools and processes on a global basis.

A focus for this activity is a department at BP called D&C Digital (D&C stands for drilling and completions), which will work on research and development technology and applications support.

"D&C Digital is more than just a marketing tool," said Dr Pickering, "it is a mark of quality that justifiably sets expectations for our customers.

"Everyone delivering digital services to the BP drilling and completions community will

be seen as an extended member of the D&C Digital team," he said.

A new drilling and completions portal website will act as a channel for vendors to provide information about their products which could encourage BP buyers to take a more detailed look.

It will be a single access point for all information on drilling and completions global operations, with the latest information on projects and digital operations.

"A clear unambiguous WITSML standard is a must have for the drilling and completions digital programme," said Dr Pickering. "The standard must be stable for a defined period and third party tools and smart processes must be plug and play."

"D&C Digital needs WITSML now to fulfil its delivery targets," he continued.

"The D&C Digital team has a significant task ahead to convince the BP D&C community of the value of WITSML; WITSML is part of the D&C Digital strategy but it extends far beyond this."

An important driver is to reduce non productive time and optimise well delivery by anticipating, detecting and preventing problems associated with the subsurface environment, logistics, equipment failures and weather.

Real-time model updates can be used during actual drilling to make the best possible predictions of future problems.

Another problem facing the whole industry is the 'big crew change'; BP expects to lose a large number of its top level experts in the next five years.

During this short window the company has to aggregate its experience through building knowledge into new workflows and intelligent systems that can aid operational decision making, he said. "We will have to operate leaner, smarter and with more collaboration."

BP intends to deliver expertise wherever it is needed through remote collaboration, using a team of shore based engineers to provide support to multiple locations with a decreased head count at the rigsite.

Reducing crew levels in high risk environments is also an important factor in improving environmental performance through de-manned and ultimately unmanned operation.

Dr Pickering believes that future drillers may never visit the rig, but will instead use an immersive visualization environment to control every aspect of the operation.

Statoil / Hydro

Lars Olav Grøvik of Hydro and Peter Eilsø Nielsen, senior advisor subsurface work processes, spoke of some of the problems of implementing WITSML as well as the advantages Statoil has gained from its Integrated Operations approach, of which WITSML is an important enabling technology.

Hydro now exclusively uses WITSML compliant applications and requires service providers to implement the necessary interfaces.

However, problems still occurred because of faulty or missing data and too often required manual intervention, said Mr Grøvik.

Mr Nielsen stated a Norwegian Petroleum Directorate (NPD) and Norwegian Oil Industry Association (OLF) study that calculated the value of Integrated Operations on the Norwegian shelf to be 40 billion USD.

Statoil's anticipated Integrated Operations potential is more than 50 per cent of that, and an external review of the Integrated Operations efforts on one of its major fields calculated the value created to be close to 1 billion USD, with a further potential of 0.7 +/- 0.4 billion USD.

Statoil has been using WITSML in operations for nearly 3 years, and is increasing its use with 51 wells so far this year.

It has transferred information from over 300 wells with the use of WITSML, incorporating all wells operated by Statoil in the Norwegian sector and a growing number of wells internationally in Iran, Venezuela, and Angola for example. Generally Hydro operates 10 to 15 parallel drilling operations with WITSML.

One of the main challenges is implementing real-time or 'right-time' data sharing.

Hydro is currently using 'right-time' data with a window of around 5 minutes, with the aim of reducing this to less than two minutes in the near future.

One of the main problems is eliminating the many manual operations needed to set up and maintain real-time streaming data, while many applications simply do not properly support it.

Hydro has continuing problems with its service providers; some of the products in the data stream are not built to support multiple well streams (up to 20 simultaneous wells); others are slow to support new data objects or move to the latest version of WITSML.

"Continuous stable delivery from service companies is one of the main priorities for future WITSML integrated applications," said Mr Grøvik.

PRODMML

The next new initiative is PRODMML, an electronic communications standard for software applications which are used to manage production data in the office and optimise the well.

It can be used for all software applications in the 'smart field' category, including modelling, simulation, optimisation of reservoirs / wells.

These applications normally use large amounts of data streamed from the fields, and software applications made by different vendors.

BP, Chevron, ExxonMobil, Shell and Statoil led the efforts to develop PRODMML, starting in August 2005.

Initial involvement in the project was limited to five operators and eight suppliers and Energistics, with a fast turnaround of twelve months from start to the release of version 1.0.

The initial development created data standards for gas lift optimisation, production optimisation (from free flowing wells with real time data streams and reservoir models); and field-wide optimisation using real time data, models and forecasts.

Four pilot tests, based on the above use cases, were conducted using field data provided by the operators and applications and test code implementations provided by the software companies.

The results of these have shaped the development effort, which is coordinated by another special interest group, now open to membership for any interested parties.

Feedback from the public review during September was very positive and supportive, Energistics says.

Some feedback, however, suggested that the objectives of PRODML could be achieved with less burden on software developers and greater integrity between services.

The emphasis this time was focused on deliverable commercial applications that would achieve business benefits in tightly defined scenarios.

This led to a short term modification task to specialist interface definitions according to the type of data being transferred, eg well test, production volume. Publication of the revised version 1.0- of PRODML is scheduled to take place in November 2006.

The success of the first year PRODML effort is also evident in the intention of all

participating companies to the active contributions to the Energistics Special Interest Group (SIG), which will now be renamed the production PRODML SIG.

Many companies, old and new to PRODML, are already actively planning 2007 objectives to include new features and functions to support more optimisation use cases. ●

Energistics' snazzy redesign



Communications and Monitoring

Knowledge Reservoir analyses data in 'Right Time'

www.knowledge-reservoir.com

Houston oil and gas consultancy Knowledge Reservoir has launched a production data analysis service, to help collect and analyse data from sensors, gauges and meters in the oilfield.

The service, called 'RightTime Analysis Services,' includes data surveillance, making an analysis when data falls outside an expected range, and post analysis.

Knowledge Reservoir uses the terminology 'Right Time' to indicate that it will provide the



Knowledge Reservoir's 'right time' analysis centre

information in the timeframe needed by the client.

This makes an interesting differentiation with the 'Real Time' claims that many other companies are making, perhaps unrealistically promising to provide instantaneous analysis.

Client Kevin Renfro, senior engineering advisor at

Anadarko Petroleum, said, "we regularly collect and analyze oilfield performance data from a variety of sensors and meters, both downhole and topside. It's great to know that Knowledge Reservoir is using their expertise to provide this value-added service to an already short-handed industry."

Randy Neck VP marketing at Caprock



www.caprock.com

Oil and gas satcom company CapRock Communications has appointed Randy Neck as vice president of marketing.

Randy Neck, who has over 25 years of industry experience. He was previously director of product marketing and management at CapRock.

Prior to joining CapRock, Randy Neck held multiple technical and strategic business positions within the telecommunications and energy industries.

He also served as director of communications with Duke Energy.

Apax buys Telenor Satellite Services

www.apax.fr

Apax Partners France has acquired Telenor Satellite Services for USD 400m cash (Eur 318m).

This follows an agreement for Apax Partners France to acquire France Telecom Mobile Satellite Communications (FTMSC) on July 7, 2006.

Telenor and France Telecom are the second and third largest distributors of Inmarsat in the world.

TSS has a large amount of non-Inmarsat business, including Sealink, one of the world's largest oil and gas VSAT servic-

es, and also Iridium and Thuraya.

No formal announcement has been made for Telenor Satellite Services and France Telecom Mobile Satellite Communications to merge, but it seems fairly likely that this is part of the plan.

Telenor Satellite Services has around 550 employees, 232 in Norway, 168 in the US, and others in Europe, the Middle East, Asia and South America. 2005 revenues were \$376.9m, with an EBITDA of \$61.0m. The agreement was concluded on

October 25th.

Telenor sold TSS because it was defined as 'non core business' since 2002, the announcement stated.

Rumours had been circulating for some time about TSS being up for sale, and this was emphasised by two senior staff departures to rival VSAT company Caprock. This includes Tore Hilde (previously CEO of Telenor Satellite Services) and Britt Carina Horncastle (previously chief financial officer of Telenor Satellite Services and chief executive officer of Telenor Satellite Services US).

Stena's IP infrastructure on 5 rigs

www.mitel.com

Stena Drilling has started deployment of an IP communications infrastructure by Mitel.

So far it has installed the system at its Aberdeen headquarters, and onboard one of the rigs.

It plans to roll out the system to cover five rigs and offices in Asia, Australia and Africa.

The solution has been designed and implemented by Aberdeen VSAT company Nesso.

On one of its rigs, Stena has installed a Mitel 3300 IP communications platform, with handsets, for wireless communication. It will roll out the wireless phones on all five of its submersible rigs over the next six months, as well as its mobile rig Drill Max.

Mitel says that the system will prove particularly important for health and safety briefings and information on pur-

chasing.

Stena says it commissioned the Mitel system because it wanted to bring its telecoms management in-house, rather than used a managed solution.

"We struggled for months with our old PBX system, which lacked the level of flexibility we required," says Sharon McLaughlin, IT manager of Stena Drilling.

"Our drilling rigs frequently move and we need a system that allows us to adapt our telephony systems quickly and easily.

"Previously we were constrained by our traditional system and often found ourselves waiting days for an engineer to re-programme headsets and telephone ports, which was neither cost-effective or time efficient."

"We had also become frustrated that our old system didn't support the video confer-



Stena will be fitting an IP communications infrastructure onboard its rigs

encing equipment we had invested in."

"We now have the flexibility to make moves, adds and changes ourselves and can integrate new applications quickly and easily."

Stena Drilling expects the system to make it easier for senior managers to work from home, getting the same communications as they get in the

office.

"Many companies make do with telecoms that no longer fulfil their needs due to the mistaken perception that moving to IP will be an upheaval," says Mitel.

"Stena Drilling has taken control of its communications and is now benefiting from increased functionality, flexibility and cost-savings.

Petrocom acquired by Miami VCs

www.petrocom.com

Gulf of Mexico cellular and satellite communications company Petrocom has been acquired by an affiliate of HIG Capital, a private investment company in Miami.

HIG plans to merge Petrocom with Sola Communications, a company it bought earlier this year, which provides customised telecoms services to the oil and gas industry. It believes that the two companies will complement each other very well.

Petrocom says it will use HIG's money to expand the area where it provides service

in the Gulf, as well as provide new products and serve new markets around the world.

Simmons and Company served as financial advisor to PetroCom in this transaction.

HIG has also invested in a number of other companies in the Gulf, including Rotorcraft Leasing, Redfish Rentals and Total Safety.

Bluewater renews Nesselnsat comms contract

www.nesscogroup.com

Bluewater Services - renewing satcom contract with Nesselnsat

FPSO operator Bluewater Services has renewed its contract with Nesselnsat to provide VSAT satellite communications services for its vessels.

The contract is with £200,000 a year, and covers Bluewater's onshore and offshore locations in the UK, Netherlands, South Africa and China.

The contract has been expanded this year;

Nesselnsat will also provide communications for Bluewater's FPSOs Haewene Brim and Uisge Gorm, in the North Sea.

The satellite data is brought into Nesselnsat's teleport near Aberdeen, Scotland, and has more than one different routes to Bluewater's offices, to optimise resilience.

The network is monitored by Nesselnsat 24 hours a day.

"We needed a supplier with the depth and breadth of experience to deliver and support our mission critical voice and data application.

Nesselnsat has demonstrated this in the past, and we had no hesitation in renewing this contract and working with them on the ongoing upgrade and expansion of our offshore network" said Colin Inglis, IT and telecommunications coordinator at Bluewater.

RigNet buys Oil Camp

www.rignet.net

Oil and gas satcoms company RigNet has acquired Norwegian company OilCamp AS, which operates the SOIL Network (Secure Oil Information Link), a secure, high capacity communications network in Norway and the UK.

OilCamp supplies communications solutions to a number of drilling rigs currently operating on the Norwegian continental shelf.

The SOIL Network is a members-only network that enables collaborative partners to access intranets and communicate with each other quickly, reliably and securely. Companies do not have to extend their extranet to each partner or supplier individually; they are potentially connected to all other members.

In addition to the SOIL Network, OilCamp's product portfolio includes SOIL Interconnect, secure fibre optic connection between Stavanger and Aberdeen; SOIL Meeting, a videoconferencing solution; SOIL Offshore, a high-bandwidth communications solution for drilling rigs and offshore platforms; and SOIL Hosting.



Managing live data

US company OSIsoft has got closer than anyone to working out how to manage constant streams of real time data. We asked director of product marketing Gregg LeBlanc how it is done

The challenge of managing live ('real time') data is one which is perplexing many people.

It is one thing to have data about what is happening now (eg a temperature or a pressure), quite another to manage a continuous data stream.

One company which may have got the closest anybody has got to a solution is San Leandro, California based OSIsoft, which is providing services to manage real time data from rigs and remote installations.

The fundamental of OSIsoft's approach is that you divide the challenge of managing real time data into two separate components - the IT infrastructure to communicate and archive the data, and the software tools to access and work with it.

By keeping the elements separate, it is possible to easily reconfigure the system if you decide you need to view the data in different ways in the future.

Oil and gas companies using the tool include Shell, BP, PetroCanada, Chevron, and ConocoPhillips.

Shell and BP use the system to manage live data from their platforms in the Gulf of Mexico, whilst PetroCanada uses it to get a single view of its Canadian gas well operations (1423 data points updated every minute).

"You have to think about having a common infrastructure - and be able to get at the information in a consistent way," says Gregg LeBlanc, director of product marketing with OSIsoft.

Although it sounds like a consultancy IT project, OSIsoft stresses that what it is actually selling is a software product. "We're very much an off the shelf product company," he says.

OSIsoft also provides expertise in creating IT infrastructure which talks to the different control systems, and here there can be challenges. "There are certain control systems that are harder to talk to than others," he says.

One problem in the past has been that many oil and gas companies built data management systems which were too rigid, and did not allow any reconfiguring, and ended up with a system which did not work, and so stopped managing real time data, he says.

"The industry got really burned near the year 2000, they started implementing these really rigid systems," says Mr LeBlanc. "When they turned the big switch on - they weren't sure if they got it. It was rigid and they didn't want to go and touch it again."

In 2007, OSIsoft is planning to release a "Data Directory" to help users more easily access data from all over their operations. The company is also building a Microsoft Office extension to the new Excel Services, which will allow users to view spreadsheets with live data from within their browsers.

Front end

OSIsoft has software tools which provide users with the ability to define how they use the data, what data they want to see, how they want to handle it and work together with their partners.

This software can be reconfigured endlessly, as users discover different ways they want to use it.

"You don't have to pre-define the problem," he says. "You don't have to tear apart an application when you've built it. A dynamic infrastructure allows you to do what you have to do at that moment," he says.

"What we find about our users - they can open up a wealth of decisions and ideas very easily. We call it having a very low cost of curiosity."

Having the data already well indexed, in a data store, makes it much easier to navigate. "You used to have to know the layout of the control systems to manage real time data," he says.

"If people want to know something they can find it easily. If you want to know the current production rate off a unit - you should be able to ask that in a fairly natural way," he says.

OSIsoft's software tools participate easily with familiar engineering workflows. "We let users and corporations create their standard best practices, and we supply the tools to help them complete their tasks in a timely way. If a customer has an automated workflow package, they can use our tools to help them automate tasks."

"We want the user really defining the workflow requirements - to help us develop the right software for them," he says.

"The workflow is an important aspect," he says. "We don't formally define workflow - but we participate in people's workflow. We have a lot of chemical engineers on staff - but we are familiar with a lot of workflows," he says.

"With some of these systems - we're verging on millions of data values coming on - second by second," he says. "How do you pick, how do you manage a system like that? You can get lost in that sea of data."

Selling it

There is certainly a renewed interest in tools to manage real time data.



Oil and gas companies are getting used to streams of data coming from the rig - but do they know how to manage it? Photo - courtesy Stratos

"Whether or not they've had everything instrumented - they've always wanted to know more about what's going on there," he said. "You've got a lot of companies poking their head down into the production areas and asking lots of questions."

"Many of our companies are getting questions from the business they can't necessarily answer very easily, or it's a lot of work to get them to find out," he says.

"The production people aren't being offered a seat at the table with the business people."

One of the tricky problems is getting people used to the idea of having whatever data they want readily available - when everyone is used to accessing the data through different software applications.

"Different people need a different view of the world," he says. "We give people a playground they can do their work in."

"People always think in terms of applications," says Mr LeBlanc. "This is a tool that allows people to build up their own view of the world that they need."

"It's a disruptive technology, it's hard to sell them upfront," he says.

Applications

Most customers are very good at finding ways to gain value out of the data.

"One customer said, when a compressor breaks on the rig, we order the parts - it can take weeks for us to get out there," he said.

"We talked about getting the telemetry off the site and taking it to a central area. Then we could figure out when it will break based on the decline curve. That was kind of interesting."

Many companies are investing in faster

Communications and Monitoring

data communications links from the platforms, so they can get more raw data.

"Unless people have their thinking caps on - they may not see all the opportunity for collecting the information," he says.

"Many customers are talking about well operations as more of a science than an art these days," he says. "They're looking to other operating arms in order to gain valuable insights into how to make their operations more streamlined and efficient."

"As a result of communicating about common practices like condition-based maintenance or better energy management, they're improving the production life of their wells, keeping production costs down and operating more efficiently."

There are two different ways the data can be managed: using applications installed on the user's computer or over the web with no software installed on the computer at all.

An oil company view

A chief information officer at a large oil and gas company, talked at a recent OSISoft user conference about the data challenges, with reservoir simulation models generating 10 TB and upwards of data, large offshore fields having up to 2,000 input / output points, generating 10 gb a day of data. In the upstream, decision quality is very

important, and to do that you need good information systems, he said. You have to integrate the IT strategy with the business strategy.

By having integrated data and views of data, you get around the traditional 'functionality silos' of earth scientist, production engineer etc, he said.

The company has got great value from standardizing its PCs, productivity software, network, servers, security and technical computing, he said.

The initial focus had been on standardizing tools for specific functions; the business is now demanding data sharing across functions, leading to a need for many more data transfer points.

You need to carefully define data ownership, roles and responsibilities, and prioritise the most critical data.

"An integrated view of major work processes cannot be obtained from function specific applications," he said.

"People shouldn't need to learn every application that they need to get data from."

"Real time data is one of the components of an integrated view."

"Some key data types are not needed at all organisational levels, so they can be readily rolled up so they can be accessed via drilldown if necessary.

The company is piloting a service orientated architecture approach to connect data producers with information consumers.

By turning systems and applications into 'services' you can get a faster integration across different systems.

The business intelligence is made up of a data warehouse of data that might be needed for analysis, and various data feeds.

"The company is piloting this approach in several locations with some initial success, but we still have a long way to go," he said.

The company has learned to focus IT efforts on areas that can make a bottomline impact, he said, and to continually talk to business users to make sure that everything is right.

The company has learned to get its infrastructure sorted out, so you don't have to worry about network reliability and performance.

The company has learned to standardise as many large applications as possible and implement consistent data.

"Smart small and build on the successes," he said. ●

Oil and gas fibre optics

A subsea fibre optics network is being installed in the Gulf of Mexico, and likely to be installed in offshore West Africa, according to industry experts. We reviewed the developments so far

Using transoceanic fibre optic communications is absurdly cheap today. We have all spent many hours sending e-mails and getting websites across oceans and barely paid a penny for it.

Over 500,000 km of fibre optic cables have been laid so far in the world.

So as the oil and gas industry demands faster and more reliable communications, it seems sensible to assume we will be seeing a lot more fibre.

Fibre optic cables can carry a multiple of terabits per second, enough to keep the oil and gas industry happy for a few years at least.

And as the data requirements grow exponentially, with perhaps companies wanting to send continuously updated seismic data (5D?) and do continuous videoconferencing for all staff members in the future, wave technologies make it possible for the fibre cables to carry a lot more data than it was originally designed for.

But there are still plenty of oil rigs which do not have any fixed fibre connection, in areas of offshore activity such as the Gulf of

Mexico, the Persian Gulf, off Africa and in Sakhalin.

"The odds are that fibre optic networks are bound to happen in the Gulf of Mexico and off Africa," says Marc Fullenbaum, product marketing group manager with Alcatel Submarine Networks.

"Fibre in the Gulf of Mexico is under discussion," he says. "I would say that the next interesting area is the West Coast of Africa."

You don't need a direct fixed connection from the rig to the fibre to benefit; a rig can communicate via Microwave or WiMax to a nearby rig which does have a fibre connection.

You can use a Microwave (line of sight) or WiMax link, carrying 80 mbps distances up to 80km, or 25 mbps of distances up to 15km, respectively.

Costs

The obstacle is the installation costs, and some kind of mechanism for the costs to be shared by several different companies which use the network.

To give you an idea of the costs, BP has announced plans to spend \$100m laying a 700km loop of fibre across its deepwater

Gulf fields, entering the ocean in Freeport or Corpus Christi, Texas, and Pascagoula, Mississippi, in water depths of 3,000 to 8,000 feet.

It will cover fields in the Viosca Knoll, Green Canyon, Atwater and Mississippi Canyon blocks, in a 700km loop.

The intention is to start laying the cable in December 2006 and 'light it up' in summer 2007.

The fibre network had been planned for several years, with Houston company Gulf Fiber Corporation looking to gather financing and then sell the bandwidth to different oil and gas companies.

Now, it seems that BP is planning to pay the entire \$100m costs, and commission Ocean Fiber LLP to build it.

BP is planning to own the network and lease part of the bandwidth to other oil and gulf operators, and says it is already in discussions with some of them.

BP says that the fibre optic connections will provide each rig with the equivalent of 50,000 satellite dishes.

The network will be hurricane proof, but will enable the rigs to be operated when they have been evacuated after a hurricane.

Houston company Ocean Fiber will operate a 24 hour diagnostic monitoring centre in Harahan, Louisiana, and its sister company Petrocom will provide satellite communication services as a back-up.

Ocean Fiber hopes that the system could also be used for communications for the planned LNG offloading facilities offshore the Gulf Coast, or more of the 4,000 platforms in the Gulf Coast. It could provide the communications links for the planned security communications, such as radar, undersea acoustic monitoring and cameras.

Norway

Meanwhile the Norwegian Oil Industry Association (OLF) is so concerned that the networks are running sub-optimally with different operators on each one, that it has proposed setting up some kind of central network infrastructure for all of the oil and gas fields.

OLF believes that a fibre optic network, connecting as many rigs as possible, is essential in ensuring that production can be optimized, and this means making maximum use of the available communications infrastructure, and never being beholden to one private company.

The central operator would effectively buy the use of the infrastructure from the cable owners and then sell it as required.

There are currently three networks in the North Sea, put in by a mixture of oil and gas companies (Statoil and BP), and private companies (North Sea Communications, and Data Marine Services, owned by Schlumberger).

"It is important to establish such an integrated common infrastructure well ahead of the implementation of integrated operations in bigger scale," says OLF.

Currently there is a star-shaped fibre network in the Haltenbanken area on the North Coast of Norway, operated from a rig in Heidrun and connecting to shore. Currently it only serves Statoil rigs and bypasses BP (Skarv) and Shell (Draugen) rigs in the area.

For the North Sea, the TampNet fibre structure (owned by Statoil), a linear network which connects to Kollsnes and Karstø on the Norwegian Coast, also linking to BP fibre cables connecting with Aberdeen, and North Sea Communications (NorSeaCom) networks, linking with Lowestoft.

TampNet was established in January 2002, aiming to be an offshore telecom provider, serving central and northern North Sea, initially with five platforms connected directly to the system and 23 connected by radio links.

North Sea Communications owns or leases a ring of fibre optic, going from the North Sea rigs to Aberdeen and Lowestoft in the UK, undersea to France, via land to Copenhagen, undersea to Finland, via land to Stavanger in Norway, then to the North Sea rigs.

This ring structure means there is no single point of failure.

Central North Sea Fibre Telecommuni-

cations Company connects the Ula rig to Aberdeen. It is owned by BP and operated by Data Marine Services, part of Schlumberger.

A free market

Perhaps what we will eventually see is some kind of free market telecom system, where data packets can be transferred using a variety of different methods, such as fibre, satellite, microwave and wi-fi, depending on the amount of data, the urgency, the methods available, and the data urgency.

If one link is ever broken, or its price is put up, the market system can work out the next best way to send it.

With the increasing number of smaller oil and gas companies, having an offshore telecoms network which is independent of any single company will be attractive; but a third company will probably not find it easy to install the system speculatively will not be easy.

Fibre rings and lines

To date, most of the fibre installations in the oil and gas industry have been linear, with lengths of fibre going from one rig to the next, with data boosters ('repeaters') on each rig.

Alcatel, one of the largest providers of subsea cables, believes that a better approach is to have a ring of cable entirely underwater, with feeder risers going to all of the rigs.

This means that if the cable is ever broken anywhere, data can flow the other way around the ring, until a maintenance vessel can fix the break or replace that section of the cable.

The cable is not vulnerable to problems which might happen on any one rig, e.g. due to weather or explosion, because the whole of the ring is underwater.

Another layout possibility is the hub network, as seen in the Haltenbanken area North of Norway, where cables are run from a central point (probably a rig) to other rigs and to shore.

If there is a breakage in the cable, then communications from one rig to the star is

broken, but not all communications are lost.

Repeaters

Repeaters, which lie on the ocean floor and boost the signal, are normally used every 50 to 100km in transoceanic cables; but this technology has not yet been used so much in the oil and gas industry.

If repeaters are not used, the data signal needs to come up to a rig every 50 to 100km for boosting, so the communications is vulnerable to a problem on a rig.

"Repeaters are absolutely reliable," says Mr Fullenbaum. "We have deployed over 4,300 repeaters and none of them have failed so far. The mean time between failure for a repeater is 10,000 years."

Alcatel is very proud of the fact that none of its submarine cables or repeaters in the area were damaged during the Asian Tsunami.

Protection from ships

There have been a few problems about cables being broken by fishing and ship anchors.

Normal practice is to use armoured cable at depths of up to 1500m, putting a steel armouring around the cable. The cable is also buried 1m underneath the seabed. At depths greater than 1500m, the cable is just laid on the ocean floor.

Other projects

There are plans discussed to build fibre optic communications connecting rigs in Sakhalin to the shore, for Sakhalin Energy Investment Company, a joint venture between Shell, Mitsui and Diamond Gas Mitsubishi Corporation.

BP has also commissioned a 26km umbilical cable connecting two subsea wells, running 1700km deep, with a 24 kilovolt cable, also carrying high and low volt electrical power, fibre optic connections and lube oil connections, in its King Complex in the Gulf of Mexico, caring the tieback to the Marlin Tension Leg Platform, 135km South East of New Orleans. The whole cable's design and manufacture will cost around \$16m. ●

Laying subsea cables - something the oil and gas industry will be doing a lot more of



Boosting your networks

Tim Everitt, of oil and gas networks company YR20, explains the main steps to making your network, faster, more reliable and more secure, and what oil and gas companies are doing

Just a few weeks ago the Society of Petroleum Engineers (SPE) held the inaugural meeting of its new Information Technology Technical Section (ITTS, itts.spe.org). It's not long ago that most petroleum engineers would have been celebrating a nuclear strike on their IT department, so what's going on?

We all know about the high-profile work of the Petroleum Open Systems Corporation (POSC, www.posc.org), American Petroleum Institute (API, www.api.org) and others to define data models and other IT standards but until recently there was a flaw.

None of this good IT work is any use if the underlying networks are not reliable and secure.

Reliable networks

Oil companies are quietly spending serious amounts of money - well, serious in terms of networks even if small in the capital-intensive oil company world - to bring their oilfield networks up to the "five nines" (99.999% availability) standards necessary for safety-critical systems.

There's nothing specific to the oil and gas industry about this; across the world all industries are committing their critical business data and processes to databases, com-

Our networks data are getting more complex - but are they getting more secure? Photo courtesy Stratros



puters, networks and software robots.

In response to these requirements a new set of network technologies is rolling off the production lines of the standards bodies and equipment manufacturers.

So, what are the oil companies trying to do and how are they doing it?

Oil companies are driven by the need to increase return on investment to attract and retain capital.

They seek to recover more of the hydrocarbons in reservoirs; they seek to drill wells more accurately; they seek to run production wells more reliably; they seek to reduce costs and they seek to do it all with fewer people at oilfield sites to reduce risk.

To do all this they are using more instrumentation, more CCTV and more software robots.

More process information

Since Y2K (threats of computer systems being wiped out as the year turned from 1999 to 2000) forced the upgrade of most SCADA systems, there has been continuous growth in the amount of process information flowing from oilfield to office to be used by engineers supporting subsurface and topsides reliability and optimization.

This is now considered, by the oil companies, to be both technically and commercially proven.

Eternally driven, the oil companies now want to move on to the next prize - the flow of process control information from office to oilfield with fully distributed control of manned oilfield sites.

A drilling rig with the mud engineers sitting in an operations centre in Houston or an FPSO with the night-shift control-room crew in an operations centre in Aberdeen. These are the next steps.

Telecoms and equipment

The biggest dollar spend to achieve this vision is telecommuni-

cations capacity.

Fibre-optic cables and associated high-capacity radio systems have been provisioned in many oilfield locations and are being planned for many more.

Older satellite systems are being replaced with new technology to provide more capacity and to make the new capacity more flexible for oilfield sites where fiber-optic and radio are not available.

Fewer dollars - but arguably more influential dollars - are being spent in the wide scale replacement of telecommunications and network equipment.

The quiet folksy beard-and-sandals types at the Internet Engineering Task Force (IETF, www.ietf.org) have not been idle since developing the TCP/IP system 25 years ago for the US Military and then changing the world with the public Internet 15 years ago.

They are well aware of how their technology is being used and have been busy developing new standards to deliver the reliability and security required by the oil company vision.

Virtual technology

One of the key technology concepts here is "Virtual" - it's a set of technologies to make a crowded place seem empty, and therefore safe.

It's been around a long time to make computers safe. Those of you as old as the author may remember IBM mainframe computers; the computer operating system was called MVS (Multiple Virtual Systems).

Others amongst you may remember DEC VAX (Virtual Address eXtension) computers running the VMS (Virtual Management System) operating system.

On these computer systems every user seems to be alone in the computer and users cannot interfere with each other.

The concept of a "Virtual" architecture has been extended from the computers to the networks.

On Local Area Networks (LANs), such as Ethernet, the computers can now be connected to a Virtual Local Area Network (VLAN). On Wide Area Networks (WANs) there are Virtual Private Networks (VPNs) using technologies such as Multi-Protocol Label Switching (MPLS).

Just as "Virtual" technologies kept seri-

ous computers secure, so "Virtual" technologies keep serious networks secure. The process control systems are separate from the process information systems which are separate from the voice systems which are separate from the CCTV systems which are... you get the idea.

These technologies allow a single set of network hardware to deliver multiple separate networks, and keep them secure.

Segregating traffic

At this point the business needs to get involved. As well as segregating the network traffic into separate virtual networks for security, the traffic is segregated into different Classes of Service (CoS).

Each Class of Service can then be guaranteed access to the right amount of network capacity via Quality of Service (QoS). It is essential that the whole VLAN, VPN, CoS and QoS configuration reflects the business priorities of the asset's management.

Security dollars

Fewer again dollars - but some would argue the most important dollars - are being spent on the security gateways that connect these virtual networks together.

These barbed-wire and turnstile border

crossing points called firewalls guard the way from a less secure network (such as the one to which your desktop PC is connected) into a more secure network (such as where the process information is kept).

They police your identity and what you're doing.

Identity management used to be a sleepy backwater of usernames and passwords. Nowadays it's called Strong Authentication (SA) and usually involves something you know (e.g. a password or PIN) and something you have (e.g. an electronic token with an ever-changing sequence of apparently random numbers).

Audit trails are kept so that all activities can be tracked back to a specific person.

As the network traffic payloads become more important and represent core exploration and production business processes, the IT staff are having to raise their game.

The sponsors and customers of these new networks are a step-change up from the past and are demanding new deliverables; engineering feasibility studies, network capacity plans, network impact assessments, formal commissioning plans, known to work solutions, QoS policies, root cause analysis of failures, Service Level Agreements (SLAs) and maintenance man-

agement.

These new deliverables are requiring new methods, skills and tools. Most oil companies outsource these activities on a continuous or as-required service basis to companies such as YR20 (www.yr20.com, the author's employer) in order to gain access to best-in-class methods, skills and tools.

And so back to the SPE and what's going on. They are no fools, they know what's going on and they understand very clearly that IT departments, and their suppliers, must be upgraded to be fit for the services required to deliver the oil company vision and return on investment.

The pieces are coming together. It is working. It has to work!

About YR20

YR20 consulting engineers all have at least 20 years experience of delivering, maintaining and repairing reliability and performance in critical oilfield data networks.

www.yr20.com

Distributed at

IQPC Oil and Gas Exchange

November 13 - 14, London

PETEX November 21 - 23 London



Sign up to our free e-mail newsletter at

www.digitalenergyjournal.com

receive the latest news
and feature articles

in your inbox every Thursday

Eni pilots 2nd Roxar oil in water monitor

www.roxar.com

Italian oil and gas company Eni SpA has started its second pilot of Roxar's oil in water monitor.

It will use the monitor at its Cavone black oil sea field, to monitor oil droplets and solids in the onshore production facility, to get more detailed information about oil droplet size distributions in the production process.

This is part of a number of new technologies being implemented at Cavone, to optimise production and reduce environmental impact.

Eni is also implementing oil water separators which can reduce the concentration of oil in water to under 10 parts per

million from over 1,000 ppm.

The first pilot project for Roxar's oil in water monitor was on Statoil's North Sea Sleipner A platform, where it has been running since May 2006, to measure overboard water discharge to ensure it meets environmental requirements.

The oil in water monitor was developed jointly with TNO Science and Industry, and is based on ultrasonic pulse echo technology. This provides greater accuracy and reliability compared to conventional oil in water monitors, which use optical technology, Roxar says.

The monitor sends acoustic waves into the fluid, and receives individual acoustic echoes from both solids and oil droplets. These are then analysed to give accurate information about the size distribution of the droplets and Individual acoustic echoes from oil droplets are analyzed and

Roxar's oil in water monitor



discriminated to give accurate information on size distribution (ranging from the extremely low 2-3 micrometers) and concentration.

There is no need to recalibrate the tool if the chemical composition changes, because direct measurements are performed with the dispersed oil droplets.

There is an auto diagnostics facility, which can overcome

problems like equipment degradation, scaling, temperature and chemical changes.

The monitor can be inserted and extracted without interference in the production process. It can be installed in hazardous conditions.

Roxar envisages that the tool could be used to monitor water which is being re-injected into the well, or discharged overboard.

Sercel acquires Vibtech

www.sercel.com

Sercel, a subsidiary of seismic company Compagnie Generale de Geophysique (GGY), has acquired the outstanding shares in Vibration Technology Limited "Vibtech", which develops wireless seismic recording equipment.

Vibtech recently released the Unite system that records and transmits thousands of channels of data, enabling quality control while recording. The system uses new transmission technologies which reduce some radio frequency communication limitations.

Sercel expects to be able to use its seismic recording expertise to expand the capabilities of Vibtech products, and



also to integrate wireless technology with its latest generation products.

Vibtech will remain as a separate legal entity and pursue the sale of the Unite system under its name, but will progressively combine its strengths, particularly its 25 employees with those of Sercel in all areas including R&D, marketing and manufacturing.

ONGC extends WesternGeco offshore India contract

www.westerngeco.com/q-technology

The Indian Oil and Natural Gas Corporation (ONGC) has extended its contract for two years with WesternGeco for Q-Marine* vessels currently in place.

Q* is a suite of seismic technologies for enhanced reservoir location, description and management.

As a result, additional multiple high-resolution exploration

and development seismic programs will be undertaken throughout both the 2006-2007 and 2007-2008 acquisition seasons.

Under the existing contract, ONGC used two Q-Marine vessels throughout the 2005-2006 acquisition season in offshore India. New surveys, covering targeted areas along the eastern and western coasts of India, commit two WesternGeco Q-Marine vessels to ONGC for a further two seasons.

Wärtsilä power for largest mobile drilling unit

www.wartsila.com

Power system manufacturer Wärtsilä has won a contract to deliver a total power system for the largest mobile oil drilling unit ever built, the MPF 1000 offshore drilling vessel, to be completed and delivered from Spanish yard Dragados Offshore in the fourth quarter of 2008.

The MPF 1000 has been described as the largest and the most versatile offshore drilling unit ever built. It can combine floating production, storage and offloading with drilling.

It is designed for simultaneous drilling and production in deep waters and harsh environments including ultra deep water.

The vessel is 290 meters long and has storage capability of one million barrels of oil.

The contract, worth over EU 50 million, involves detail design, products, systems and commissioning of the power plant, propulsion, electrical and automation systems.

Delivery of the major components will be during the first quarter of 2008.

Wärtsilä will deliver eight 16-cylinder Wärtsilä 32 diesel engines with a combined power output of 58,880 kW, generators, medium voltage switchgear, low voltage distribution boards, frequency converters, safety and automation systems (including emergency shut down, fire and gas, power management, vessel automation), a dynamic positioning system, thruster control and information management systems.

The largest mobile oil drilling unit - to be delivered in Q4 2008 - will have a Wärtsilä power system



Kongsberg's K-bridge consoles on Quatargas II project vessels



Kongsberg K-Bridge in Quatargas II Newbuilds

www.kongsberg.com
Marine electronics provider Kongsberg Maritime has delivered its first K-Bridge consoles to four project vessels in Korea for Quatargas II.
 These K-Bridge consoles are

part of Kongsberg's USD 3.2m contract to supply bridge, cargo, integrated automation systems and integrated navigation systems to all four vessels.

The four vessels are in production at Samsung and Hyundai for the OSG/Quatargas II expansion project.

The QatarGas II project vessels are the first to utilise Kongsberg Maritime's "K-

Bridge" system, which is part of a new integrated shipwide network called K-Line.

The K-Bridge navigation system consists of a complete range of consoles, including K-rudder angle system and steering control systems. Other equipment within the integrated navigation system includes Speed log, Echo Sounder, GMDSS and chart system, in addition to standalone X-band Radar.

Based on common system technology, K-Line provides safe and sophisticated solutions for Navigation (K-Bridge), Automation (K-Chief), Dynamic Positioning & Joystick (K-Pos), Prop and Thruster Control (K-Thrust), Tank Gauging (K-Gauge) and Safety (K-Safe).

Each system can be installed as a standalone sub-system or as a greater ship-wide network based vessel management system.

Petrofac commissions new Kittiwake control system

www.invensys.com
Petrofac Facilities Management has given Invensys a contract to upgrade

the control system on the Kittiwake production platform in the North Sea, from an Emerson Fisher Provox system to a new Foxboro I/A series system.

The project will be completed during 2007.

The new system will help improve reliability of operations and improve access and

transferability of management and control information, Invensys says. The system will also take up less space.

Invensys says that it has completed 450 control system migrations to date, and it normally means that production needs to be shut down for one day.

First AlphaPrime seabed processing unit



AlphaPrime module loaded at Malmo

www.alpha-thames.co.uk

UK company Alpha Thames has built a prototype all electric seabed separation and processing module, and shipped it to Malaysia to be used to demonstrate the concept.

Alpha Thames is promoting the idea of installing separation, pumps and processing equipment on the seabed, rather than on a rig, including

all of the control systems.

All of the equipment can be monitored and controlled remotely.

By doing things on the seabed rather than on the rig, savings can be achieved in capital and operating expenditure, and reservoir flow problems are easier to solve, the company says.

Subsea systems like this should be particularly valuable on small and marginal oil fields, which do not produce enough to justify the cost of a normal rig, the company says.

The module was transported from Malmö, Sweden, to Lumut, Malaysia, as deck cargo on a vessel.

The System Modules are installed on a plug and play basis which means that they can be easily recovered for modification or upgrading at any time in the life of the field.

Siemens systems for Odfjell rig

www.siemens.com/oil_gas
Siemens Industrial Solutions and Services Group (I&S) has received an order from Daewoo Shipbuilding of South Korea, to supply electrical equipment for a semi-submersible offshore drilling rig, to be used in deepwater drilling in harsh environments.

The rig is being built for Odfjell Invest Ltd. The order is worth Eur 15m. The rig will be delivered in October 2008.

The rig is the first to ever be built with 'dual active heave compensating drawworks'.

This means that the drawworks (equipment to reel in and out the drilling line) has a computer system which can adjust the drawworks to compensate for the movement of the rig on the water, so that the drill bit stays in the same position as the ship moves.

The vessel's heave motion is

Total first all electric subsea Christmas tree

www.c-a-m.com

Total E&P Nederland has bought what is thought to be the first all-electric subsea production system, from Texas company CameronDC, to be installed on two wells in the North Sea.

The installation includes all-electric subsea Christmas trees, and an all-electric control system. It will be installed on two wells in a development called K5F, in the K5 block of the Dutch sector of the North Sea. There are plans to expand to four wells in future.

Deployment is planned for mid-2007 with production to start in late 2007.

The commitment was made as part of a Technology Cooperation Agreement, signed between Total and Cameron, in January 2004.

Before signing it, Total conducted extensive technical and economic reviews of the all-electric system, to see how it compared with electro-hydraulic technologies, including looking at the system availability, functionality and environmental performance.

measured continuously by sensors.

The rig has two derricks, to facilitate a number of simultaneous operations, and both of them have active heave compensating drawworks (hence the 'dual').

Passive heave compensating systems use compressed air to dampen the effect of vessel heave on the movement of the drilling block.

The rig has Sinamics frequency converters to control the drilling drives, including the drawworks.

Siemens will also supply generators, transformers, medium- and low-voltage switchgear and an uninterruptible power supply (UPS). It will carry out the engineering work and do a power system study.

The project will be managed by Siemens Norway, with components manufactured in Norway, Germany, the Czech Republic, Switzerland and Indonesia.

Building intelligent wells

Guy Vachon, Jaedong Lee and Patricia Vega, of Baker Hughes' Optimisation Solutions Group (Production Quest) have put together the following guide to how to set about making a well 'intelligent' and how it works.

Well monitoring, automation and optimization technologies (together known as 'Intelligent Well Systems')

assist in the reduction of operating expenditures and extending the life of operators' wells by:

- Reducing or eliminating interventions, troubleshooting and repair time
- Improving detection of subnormal operating conditions
- Improving problem root cause determination
- Reducing or eliminating failure
- Optimising field activities prioritisation
- Optimising resources utilisation (crews and equipment)
- Reducing or eliminating equipment down time
- Reducing or eliminating deferred production
- Reduce well count required to drain reserves
- Accelerating production by accessing more zones simultaneously
- Improving management of sand production
- Improving management of early water breakthrough, leading to reduced cost of surface facilities for water management
- Accessing otherwise uneconomical zones
- Resolving uncertainties and managing risks.

A major oil and gas operator has stated that reduced well intervention costs account for only five percent of the relative business impact of an intelligent well system (with monitoring and control in the well) while sixty percent of the benefits derive from increases in revenue from the reservoir.

Baker Hughes recently acquired Nova Technology Corporation, QuantX and Luna Energy to form the Wellbore Monitoring group within ProductionQuest, to deliver permanent monitoring products and services for oil and gas production.

The Optimization Solutions Group of ProductionQuest brings relevant abilities from the Baker Hughes divisions, and offers an integrated system that will remotely monitor and compare the actual system performance with the expected for early detection of anomalies and enable proactive adjustments of well operating parameters.

Control loops

The way automation and computer tools are used to optimise production can perhaps best be explained by dividing the systems into two separate control loops: the fast loop and the slow loop.

The fast loop is focused on maximising the performance of an individual well.

It begins when the well is put in production.

The production is monitored and compared with the expected performance of the well. If it is found deficient, steps are taken to restore the well's production to the expected level.

Fast loop processes typically include downhole monitoring of well performance parameters, adjustment of flow control elements within and around the well, and modification to flow paths on a limited frequency basis such as treatments for flow assurance issues.

New technologies have arisen that permit observing problems as they develop and mitigate them through actuation of wellbore devices instead of through intervention.

As a result, it is possible to close the fast loop in hours or even minutes.

The slow loop, by contrast, is centred on the reservoir, starting with the initial characterisation and modelling.

Even with the best exploration technology, the initial model of the reservoir is built on many assumptions - it is a gross approximation of the actual reservoir at best.

The development plan is designed around this initial characterisation and does its best to accommodate the uncertainty in the model.

As the development campaign begins and new understanding and knowledge accumulates, the new learning is accommodated in modifications to the reservoir model.

This process continues until the end of the life of the reservoir. It takes very long time to incorporate learning into the reservoir model, to reflect it in a modified development plan and to mobilize resources to drill and complete new wells.

Each iteration around this slow loop takes months or years.

Submersible pumps

Electronic submersible pumps (ESPs) can be used to accelerate and maximize production as compared to other artificial lift solutions.

With an ESP, you can operate the well at lower drawdown pressures, thereby increasing total asset recovery by increasing the potential for recoverable reserves and extending the life of the field.

Also, ESP systems can be installed deeper and can handle higher fluid volumes than any other artificial lift method.

They can be used in combination with wellbore monitoring and chemical treatments.

Electrical submersible pump systems operate more efficiently, are more reliable

and more durable, minimising down time, intervention frequency, intervention cost and deferred production.

They also provide the minimum lifting cost per barrel of fluid produced.

You can react to changing well conditions and operate the ESP in the most efficient way at each particular point in time during the productive life of the well.

The pump is equipped with a variable speed controller, which allows the operator to control the flow rate from a well at an optimum level depending on the current flow conditions.

With these measured parameters, operators can maintain the reservoir pressure, delaying solution gas liberation, water-breakthrough, and downhole sand production, which in combination, will increase the overall recovery rate.

An example of a closed loop system, with fast optimisation, would consist of downhole monitoring of pressure, temperature, and flow rate, together with a downhole submersible pump and valves to control the flow.

Data connectivity

In order for an intelligent well system to work seamlessly, all the monitoring parameters from each component should communicate with each other.

Sensors including pressure, flow, water-cut, report a few bytes every few seconds.

The majority of sensors and actuators involved in optimising production in a well are well served by industrial automation standards so connectivity is not an issue. The far greater issue is the algorithms to accomplish the optimisation.

Both vendors and operators have subscribed to SCADA interfaces developed by the process automation sector. There are multiple such interfaces, like ModBus, HART, ProfiBus, Foundation Fieldbus. A vendor would make their hardware available through these interfaces.

Using these standard interfaces, a central control system can interface with many different types of devices.

The Baker Oil Tools Equalizer screen, which makes it possible to control water production, adjusting the rate of production from each interval in a horizontal well.



Sand control

Sand control is a complicated endeavour. The appropriate solution depends on both the reservoir circumstance and the production plan.

Problems arise when a well is produced at a rate greater than the sand control mechanism will sustain.

The well may produce temporarily at a higher rate but the increased flow rate will have enough energy to dislodge sand particles from the matrix.

The rock will weaken as it erodes, leading to further increases in sand production.

If a sand control mechanism such as a screen is used, it can be designed to sustain and prevent some level of sand production.

But if the screen is overwhelmed, by production of fines, it will erode quickly and fail.

The conventional practice is to design the sand control mechanism such that it will sustain the punishment of the expected production regime. This may lead to an over-design of the sand control solution in some instances and under design and failure in others.

Sand control can be combined with intelligent production technologies such as intelligent completions and well monitoring.

Doing so would make it possible to monitor the conditions under which the reservoir is produced and control them to make sure the design specification of the sand control mechanism are not exceeded.

Monitoring the pressure at the sand face would make sure the drawdown is not excessive.

Monitoring the flow verifies that the rates of production will not damage the formation.

Using chokes, be it in the well if there are multiple producing zones or at the surface, makes it possible to control the drawdown and the rate of production.

Managing water breakthrough

A very similar situation to that of sand production arises when managing water breakthrough.

When water is the drive mechanism for the reservoir, one must expect it to be produced along with the oil.

Water, however, causes all kinds of problems. It can lead to the formation of scale in the matrix as well as in the production tubing.

When water is combined with gas in low-temperature environments such as deepwater wells or cold weather reservoirs, it can lead to the formation of hydrates.

Water, being more mobile than oil, can cause oil to be trapped and be bypassed.

Technologies such as Baker Oil Tools' Equalizer screen make it possible to control water production. This is an inflow technology intended for long horizontal wells.

In these wells, most production comes from the heel. This leads to early water breakthrough at the heel. High permeability intervals can have a similar effect elsewhere.

Open-hole packers, such as Baker Oil Tools' MPAs system, can isolate various producing intervals and the Equalizer screen can adjust the rate of production from each interval.

If properly designed, this completion design will prevent early water breakthrough in any of the segments of completion.

Control water production rate

Water production can be mitigated by controlling the rate of production of a well to where it does not produce excessive water.

Control can be implemented either with chokes or by controlling the artificial lift mechanism as with an electric submersible pump with a variable frequency drive.

In one oil well, which had problems with water coning, Baker Oil Tools used a simple open / close valve, with an ESP in the well.

A gauge in the well would detect water breakthrough by measuring the difference in hydrostatic pressure from fluids coming from the problem zone.

At that point, production from the problem zone would be stopped for a couple of weeks and the cone allowed to relax while an other zone was produced. The valve would later be reopened to continue production.

Under normal circumstances, the problem zone would have had to be shut down without this arrangement, but instead, it yielded an additional 100,000 barrels of oil for the cost of a gauge and a valve.

Chemical automation

The Chemical Automation Group of ProductionQuest is building on the capabilities of the SentryNet system developed by Baker Petrolite.

The SentryNet system brings the benefits of wireless remote sensing and satellite or cellular data communications technologies to oilfield chemical management.

Now operators can monitor fluid tank levels, and inject chemical treatments automatically, and share the information with team members via any internet-enabled devices.

Chemical automation systems are used to treat corrosion and product contaminants such as scale, paraffin, hydrates, asphaltenes and hydrogen sulphide.

The treatment of the produced fluids for flow assurance requires injecting the right amount of the right chemical to avoid corrosion, formation of scale, deposition of asphaltenes.

If the volume and chemical composition of produced fluid changes it is also necessary to adjust the treatment of this chemical.

The chemistry of the formation of flow impediments is affected by the pressure and temperature of the produced fluids as well.

Adjustments in the completion and the artificial lift system also will affect the pressures and temperatures of the produced fluids.

The monitoring tools can measure these changes but the flow assurance system must accommodate them.

A chemical automation operation in Colorado. The ProductionQuest Well Monitoring Group has technologies to monitor the production stream and administer chemical treatments accordingly, including mechanisms to prevent or remediate flow impairments caused by water and its effects, avoid corrosion, avoid formation of scale and deposition of asphaltenes.



About the authors

Dr Guy P. Vachon is director of Optimisation Solutions for the ProductionQuest business unit of Baker Hughes.

Jaedong Lee is the senior applications advisor for ProductionQuest, with expertise covering reservoir engineering, formation testing and project management.

Patricia Vega is the portfolio development manager for ProductionQuest, with expertise in field engineering, electrical logging, reservoir characterization, drilling and production operations, operations management, project management, product management and portfolio development.



Upstream Solutions

The growing worldwide demand for hydrocarbons is forcing E&P companies to recover even more from their assets. Paras Consulting enables these companies to develop effective and cost-efficient capacity enhancement strategies, and deliver sustainable production and recovery across the entire E&P value chain.

Paras consultants are experts across a variety of fields, including:

- E&P Strategy Formulation
- Production Enhancement
- Exploration Performance
- Subsurface Process Improvement
- Information and Data Management
- Resourcing projects in process improvement and IM project management

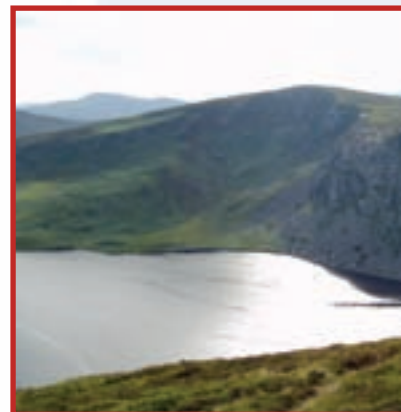


A Team that Delivers

Unique in its outlook, style and working practices, the Paras consultancy team prides itself on the ability to deliver outstanding results for its clients.

For more information on how Paras Consulting can assist with your strategies, visit www.paras-consulting.com

Professionalism, respect and highly competitive remuneration packages are just some of the reasons why Paras Consulting is an employer of choice in the E&P industry.



Contact us directly to find out more about the Paras team and current opportunities at opportunities@paras-consulting.com