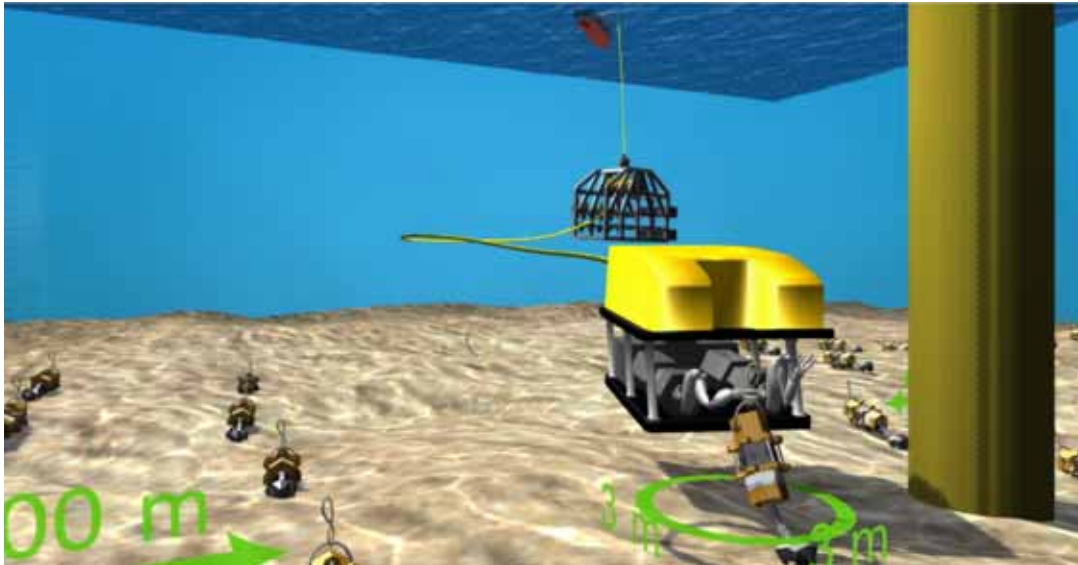


**European Association of Geoscientists and Engineers (EAGE) -  
Society of Petroleum Engineers (SPE)  
EAGE/EUROPEC – Vienna, June 2006**



*[2D3D Animation](#)'s rendering of [CGG](#)'s ROV-deployable seismic recording system.*

The EAGE and SPE/EUROPEC conference was well attended with 4,760 visitors and 265 exhibitors. Keynote speakers included the Austrian Minister for Economics and Labor, Martin Bartenstein and Mohamed Hamel of the Vienna-based Organization of Petroleum Exporting Countries, OPEC. This ensured that the debate was on the plane of energy geopolitics rather than geoscience or engineering – although talks from OMV and RAG redressed this to some extent. The geopolitical consensus seems to be that energy demand from a growing world economy is likely to outstrip conventional supply over the next couple of decades. For Austria, which has turned its back on nuclear, clean coal is seen as a major component of future energy production. In the context of ‘possible’ global warming, OPEC sees CO<sub>2</sub> sequestration as a viable option for large stationary sources that produce 50% of world CO<sub>2</sub>. OMV described the fierce competition for acreage, people and supplies that characterizes today’s booming oil and gas business. Helmut Langagnger described the current situation as ‘boom time for suppliers – or should that be revenge time?’ For RAG’s Eric Steenken, the conference theme of reworking old basins is particularly apposite in the present climate – but he noted that prolonging the lifetime of existing fields means working ageing facilities for much longer than originally planned – implying a great need for investment in infrastructure – especially pipelines. Our report includes an update on the UN Framework Classification for reserves, a Shell presentation on the continued success of controlled source electromagnetic prospecting and Total’s move to ubiquitous pre-stack depth migration of its seismic data. On the exhibition floor we heard of the current thinking from Schlumberger on Petrel data management, Saudi Aramco’s J2EE-based Drilling Knowledge Base and software updates from Petrosys, IronMountain, Roxar, ScandPower, MVE and Zeh/SeisInfo. On the hardware front, IBM was showing off its ‘Blue Gene’ supercomputer blades and an RFID ‘time and motion’ personnel tracking system. DMT has added structural analysis to its CoreScan II system. Finally we spoke to Paradigm CEO John Gibson about his involvement with OpenSpirit, the future of Epos and ‘openness’ in general.

### **Highlights**

[Total’s depth domain interpretation](#)

[UN Framework Classification](#)

[Shell CSEM review](#)

[Saudi Aramco’s Drilling Knowledge Base](#)

[Wheeler domain sequence stratigraphy](#)

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 TW0613\_1 Opening Keynote Addresses

 0613\_1.1 *Martin Bartenstein, Austrian Minister of Economics and Labor*

Energy is at the top of everyone's agenda. At meetings of OPEC last week, the EU Energy Ministers inaugurated an Energy Treaty for Europe. Worldwide, demand is set to rise 50% by 2030 and 2/3 of this will be from developing countries. Hydrocarbons will continue to dominate, 80% of the increase will come from fossil fuels. Renewables will 'decrease the increase,' but will not change the fundamentals of gas and oil demand and for coal, where demand is increasing most.

The International Energy Agency ([www.iea.org](http://www.iea.org)) sees the future through various scenarios. The IEA's 'business as usual scenario,' (BUS) has oil production declining, gas increasing, coal down and nuclear down. Note that Austria is to 'refrain' from nuclear, 'we have hydro anyhow'. The BUS has wind and solar as rising from 0.5 to 1.7% by 2030. But even if the rise in renewables is double the forecast, this will amount to 3.5%, not the 30% of the anticipated increase in demand. Downstream, refining capacity is lacking and requires investment at a 'most gigantic' level. The EU is talking about €1,000 billion. There is also under-investment in the Russian upstream gas sector and OPEC is gaining in market share and importance.

Global warming is an issue for all. An inter-governmental panel determined that temperature rise over the next Century is in the 1 to 5°C range. This is 'dramatic' and the intensity and frequency of natural disasters is on the rise. There is 'no realistic chance' that the US will implement the Kyoto agreement – described in some quarters as 'useless and nonsense'. The EU is to stick to Kyoto, but Putin said that unless Russia gets a better deal it will not adhere. Canada is 1/3 above limits. 'We don't want to have the EU going it alone.' Even if we wanted to, we can't save the climate by ourselves. Putting this into context, the US produces 20 tonnes of carbon per year per capita, the EU 10 and China and India 2. We need everyone on board. Kyoto needs globalization – and there is no alternative.'

Combining the importance of Hydrocarbons and the desirability of Kyoto, it follows that we need clean carbon technologies like 'flue free' carbon chemical non-burning 'combustion'<sup>1</sup>. Austria got a shock earlier this year when Russia reduced supply to the Ukraine and Austrian gas was down by 50%. Supply is a big issue and requires energy policy connected to foreign policy and connecting the interests of member states with supplier nations. 'Who should talk to OPEC if not the EU?' EU energy dependency will rise from 50 to 70%. Bartenstein believes that Europe should partner with Norway and Algeria and introduce a single EU energy market – even extending to Turkey and Russia. Bartenstein would also like to stop the Gazprom monopoly and open Russia to EU companies.

 0613\_1.2 *Gareth Williams, Veritas and EAGE President.*

The theme of the conference is 'opportunities in mature areas'. The situation has changed rapidly from one where companies had no money to spend on exploration to one where companies are finding a shortage of valid exploration targets. In Europe, 'mature' includes the North Sea, but also Vienna's Pannonia basins and many others. Ramping up the exploration effort is hard with the ageing workforce, the negative public perception of oil companies and the declining interest in science at universities. Some Eastern countries have an excess of graduates. Vienna could be seen as a 'hub' between east and west.

The EAGE is now a multi-disciplinary society although an imbalance between geoscience and engineering remains. The aim is to provide a means for specialists to talk to each other. Is it better to have one multi disciplinary society or three? Exhibitors would go for one society and one meeting per year! But a merger with a single discipline society (like the SPE) would be problematic. Next year the EAGE will continue with SPE and exhibit with Geol Soc and PESGB. Last year saw the inaugural IPTC four society conference in Doha. The EAGE has improved services to members; all back issues of journals are now online. The EAGE has staff in Moscow and Dubai offices and has purchased a new office in Holland.

 0613\_1.3 *World oil demand to rise 33% by 2025 – Mohamed Hamel, OPEC*

Oil prices have doubled in the last two years reaching historic highs — but in real terms they are down on the early 80s when oil was at the equivalent of \$80-90 at today's prices. Price movements have been exacerbated by futures market activity. OPEC's response has been a 3 mmbbl production hike since 2003 –

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<sup>1</sup> See for instance the Cambridge University Chemical Engineering Department's work on [non-burning energy production from coal](#).

from 27 to 30 mmbbl/day. World demand will rise to 113 mmbbl by 2025 (from 85 mmbbl in 2005) with the increase coming from developing countries, although the OECD will remain the biggest consumer. Resource base is sufficient – with ‘vast’ non-conventional reserves, although these imply a \$2 trillion investment! Any such investment could lead to excess supply and a downturn in price. Regarding concerns about ‘possible climate change,’ CO<sub>2</sub> capture is possible from large stationary sources – which produce 50% of world CO<sub>2</sub>. If this is captured and stored, it could make a significant contribution and would be a good business for oil companies.

#### 0613\_1.4 *Costs up and fierce competition for assets! – Helmut Langanger, OMV*

There is concern over peak oil. Total’s COE, Thierry Desmarest was speaking about a peak in 2020. This is not so far away. It is going to be hard to grow the oil and gas business from current levels, hard to get access to quality acreage and there will be tougher terms for new licenses. Currently the share of the cake can be 20% to IOCs and 80% to NOCs and governments – and terms are getting tougher. Langanger cited the UK North Sea and Libya where a production sharing agreement offered a 7 to 10% primary split with carry for the NOC through exploration and development. NOCs are taking a more and more important political role as witnessed in Russia and Iran. Langanger mused that, as \$30 bbl is possible again, ‘Will host governments revise down tax take? I wonder.’

Today we have steeply rising capex/opex. If you want tubulars, join the queue! Building a rig costs twice what it did only two years ago. There is fierce competition for assets – particularly from China and India. Meanwhile, oils are awash with cash – money is not a limiting factor. If you have good ideas you can raise \$100 million in a fortnight. E&P companies are mushrooming – even though this goes against the economic theory that there should be only a few players in the endgame. Startups compete for assets. It’s boom time for suppliers – or should that be revenge time (laughter)?

Giant oil fields may be a thing of past. ‘Smallish’ oilfields in the 30-50 mmbbl are back on the agenda. Ten years ago, a 100 mm bbl field was ‘*comme ci comme ca*’. There is a move to gas and heavy oil. Canada is to up tar sands production from 1 to 3-4 mmbbl/day in 15 to 20 years. This is the most exciting time in the upstream for 30/40 years. Whoever studies geosciences will be a hero. There is no alternative to oil and gas for the next 50 years – we have a bright future.

#### 0613\_1.5 *Applying high tech to mature assets – Eric Steenken, Rohoel Aufsuchungs AG (RAG)*

According to the IEA, energy use in the EU is to double by 2020 while supply is in decline. How will we close the gap? First by energy efficiency. Next, we can ‘take heart’ from the IEA director Claude Mandil who points out that there is no shortage of oil and gas in the ground, even if it is in increasingly challenging areas where time and major investment are needed. Finally, there is the theme of the conference – the reworking of old basins, a key component of a multi strategy approach.

If ‘mature’ is considered as over 20 years old, these hold around 95 billion barrels of oil equivalent (bnboe) reserves of which 72 bnboe have been produced, leaving 23 bnboe from mature fields. Technology advances are potentially rewarding. A 1% recovery hike gives an extra bnboe. But it is worth noting that this implies 20 years more production from 20 year old facilities (especially pipelines) which is ‘a formidable challenge’. It will require serious investment to get infrastructure back into shape. Added to this is the forthcoming ‘big crew change’ as 50% of the workforce leaves the industry in the next 10 years. Then things get ‘awfully quiet’. Engineers and earth scientists need to regain respect; the industry must attract more students and improve its own knowledge-transfer mechanisms.

RAG is a ‘super mature’ producer, focusing on efficiency and state of the art technology by looking for ‘sleepers’, fields which were abandoned when oil was at \$20, and on near field plays. RAG technology examples include a modular ‘plug and play’, redeployable, remote-controlled production system. ‘I-Mouth’ technology has been adapted from the German ICE high speed train used to monitor compressors, ‘I-nose’ leverages aerospace technology used for leak detection (<5ppm) and ‘I-Ear’ is a RAG/Siemens-developed microphone that monitors valve operation.

#### TW0613\_2 *Berkhout – Erasmus awardee*

According to Augustinus Berkhout, the Erasmus awardee, ‘energy has become so important to society as a whole, that if something happens to supply, we will be in big trouble’. \$100/bbl oil is ‘just a matter of time’ and this will transform oil and gas into a high value industry that ‘doesn’t buy-back its own shares’, one that introduces new concepts rather than ‘chewing over old stuff’. We need new tools that we don’t have today. For instance in seismics, our capability to do reservoir characterization would be greater if we spent more on

acquisition. Today's segmented budgets means that the acquisition budget is in the hands of the seismic people – not the reservoir management community.

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## TW0613\_3 Papers

### 0613\_3.1 UN Framework Classification (B009) – Per Blystadt NPD

In 1992, the UN Economic and Social Council (ECOSOC) recommended that all member states use the [UN Framework Classification](#) for solid fuels and minerals. In 2001, the UN Economic Commission for Europe (UNECE) [Committee on sustainable energy](#) recommended the extension of the Framework to oil and gas. In 2004 an ECOSOC resolution 233/2004 recommend world wide use. 'Global markets need global standards if you want the market to be efficient'. The [UNFC Petroleum](#) classification works with 3 axes – economics, feasibility and uncertainty. For example for the feasibility axis, F1 is 'currently in production', F2 'contingent' F3 'project evaluation incomplete' (such as for very new discoveries). The UNFC does not used 'proved', 'probable' and 'possible' – although mapping to such terminology is possible.

### 0613\_3.2 CSEM – 'a significant business impact for Shell'

The tradeoff between resolution and depth of penetration is very severe for Controlled Source Electro Magnetic exploration (CSEM). CSEM is closer to refraction seismic than reflection, it needs integration with other methods such as seismic and potential field surveys. Forward modeling from seismic is used to aid CSEM interpretation. Appropriate CSEM prospects need to be within the current limits of the technology. Water depth must be greater than 100m. Target depth is of the order of 2-3 km and the spatial extent of the reservoir must be 2-4 km. CSEM is best applied where seismic is ambiguous – e.g. low saturation gas vs. high saturation oil.

Shell has been conducting an intense acquisition and testing campaign since 2001, with 50 surveys in 6 basins. CSEM has had 'quite a significant business impact' and has been directly linked to discoveries. In the Malaysian thrust belt play, one prospect showed doubtful trap integrity. Despite a seismic DHI-supported anticline, the well encountered a good sand, with only residual hydrocarbons. A CSEM survey acquired by EMGS showed poor vertical resolution, but very good spatial resolution suggesting that the first well just missed the hydrocarbons. Shell then drilled a crestal well which encountered a 'significant hydrocarbon column'.

A second test in Nigeria used CSEM in conjunction with the good quality seismics to evaluate multi-level plays. Seismic amplitude maps showed various bright spots. Different interpretation scenarios included gas over oil, over brine, residual gas etc. Seismic amplitudes ruled out some hypotheses but not all possibilities. Modeling showed that the EM response should be high if oil was present. The CSEM data was ambiguous – so the scenario modeling game started. One scenario gave a good result with an intermediate level with residual gas and a deep layer with higher saturation gas. This was confirmed with a well. A third example from Brazil integrated seismic and CSEM. The EM response was flat indicating zero prospectivity. An AVO study confirmed that the data was on a wet sand trend. Basin modeling also predicted an under-filled trap. The prospect was downgraded. 'We think EM potential is great<sup>2</sup>.'

#### Q&A

*Has the Brazilian prospect been drilled?*

Not yet.

*Not sure if this is imaging or tomography. What frequency content is needed for true imaging by back scattering?*

Here we work with just 3 frequencies.

*If it's so good will it be used on land?*

It's already used on land – using time domain techniques. Deepwater is good because water is a good conductor. On land is a more challenging environment – signal to noise is a bigger issue.

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<sup>2</sup> Comment: CSEM is still viewed somewhat skeptically by parts of the geophysical community. These three case histories (out of 50 tests) are hardly blinding evidence of success. More generally, such anecdotal 'tests' of the technology are very subjective. It would be nice to try and develop the geophysical equivalent of 'double blind' trials as used by the pharmaceutical business to test the method objectively.

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 TW0613\_4 Exhibitors

 0613\_4.1 *Total now supports ubiquitous seismic depth imaging (Yves le Stunff)*

Depth imaging is no longer just for complex situations, although its widespread application is only just starting. Depth imaging will change our interpretation workflows. Reservoir characterization in depth is especially appropriate when working with a flat oil water contact. Depth interpretation is easier to link to the earth model. Total's new workflow moves depth conversion 'upstream' by building the model early. This makes for slower upfront depth cube building, but accelerated geo-modeling. Total uses both Kirchhoff and wave equation migration (WEM) for its pre-stack depth migration (PSDM). Residual move-out is corrected with an in-house tool, 'RMOC,' that compute a flatness index of gather. This is plotted as colored RMOC cubes/sections. A velocity model is built with in-house tool FIGARO. Velocities are exported to the Kirchhoff PSDM and on to the workstation for interpretation using Total's SISIMAGE interpretation workstation.

A West African case showed a submarine canyon in the overburden that left a huge imprint in attribute maps of the target. The validity of the velocity model was evaluated by its effect on target horizon maps using tomography and a '1D update' technique. Time, depth and anisotropic depth all give very different structural pictures (and reserves). Some processing may miss attribute 'sweet spots' and possible new drilling targets. If dips are steep, there may be a few hundred meters of shift in target position. The processing workflow includes 'angle cubes' for amplitude versus offset analysis (AVA). The whole processing and interpretation workflow took 10 months and provided greatly improved target positional accuracy. PSDM heralds a 'new era' in interpretation. Depth imaging is now also used in tectonically less complex areas. The downside is the cost and a longer wait for the seismic interpretation.

**Q&A**

*What velocity model technique was used for the initial model?*

We like to start simple with a layer-cake, Dix law before moving to tomography from time migration velocities.

*Do you do full 3D WEM?*

Yes.

*What percentage of your whole interpretation effort takes the PSDM route?*

Today all complex areas undergo depth-based imaging and interpretation and about 20% of our non-complex depth areas. In a few years we expect to be doing everything in depth.

*Is this your own software?*

Yes – all developed internally. The move to in-house software has helped us break down the silo boundary between processing and interpretation. But some contractors are working in this direction too.

 0613\_4.2 *Saudi Aramco shows off its J2EE-based Drilling Knowledge Base*

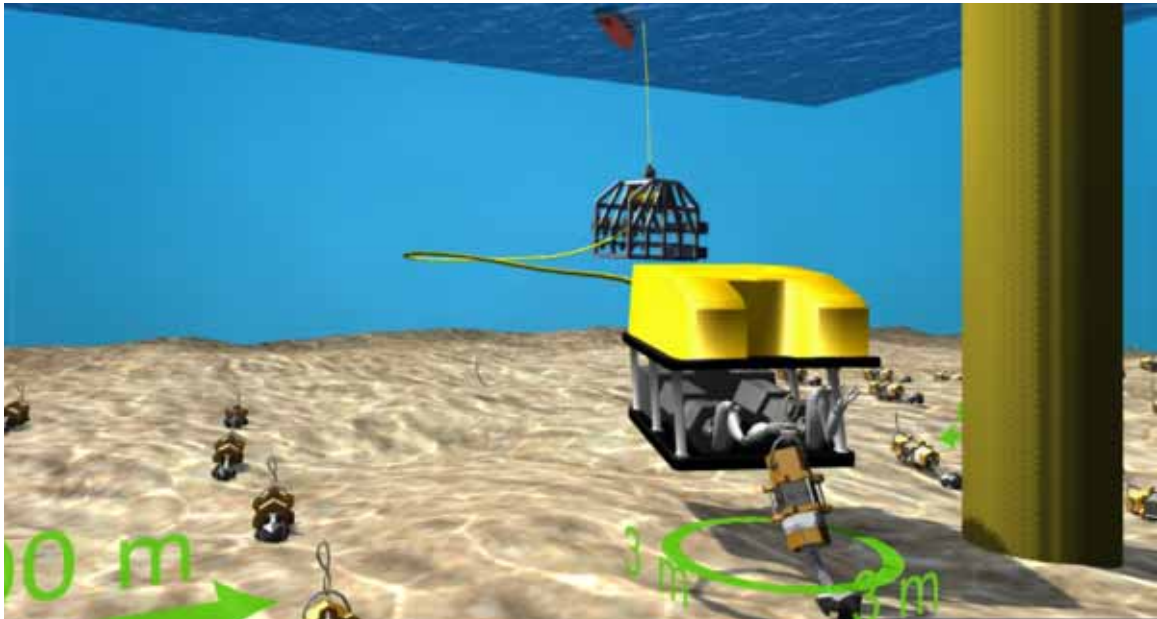
Saudi Aramco has developed a web-based system for managing drilling information. The Drilling Knowledge Base (DKB) produces template-based reports for well prognosis, daily drilling, drill time analysis, mud use and planned vs. actual analyses. The DKB is used by 10,000 engineers and staff. The system was developed with J2EE, a [Flex Charts](#) development is in progress. Multiple satellite communication links mean 'almost no outage'. Each rig is responsible for database population over the web. Saudi Aramco is moving towards automated data capture with real time data links including Insight, Interact. Another project is to use the [Adobe LiveCycle Forms Server](#) to provide service companies with data forms for them to populate the DKB offline.

 0613\_4.3 *HP PC runs 64 bit GeoProbe on Linux*

Dave Roberts, who used to be BP's GeoProbe guru and is now an independent at '3-DMR' was showing off the paces of HP's latest PC – a 9300 xw with 32GB memory and a 64 bit version of GeoProbe running on Red Hat Linux. The dataset was PGS' new Southern North Sea Mega Survey (SNSMS) merged from multiple 3D surveys. The memory bandwidth allows for display of 200km long 2D lines from the 3D

volume, fading (paging) between time and depth. The show was compromised by a rather weak display<sup>3</sup> although there was a neat use of 'sun' illumination to show the Rotliegende trends.

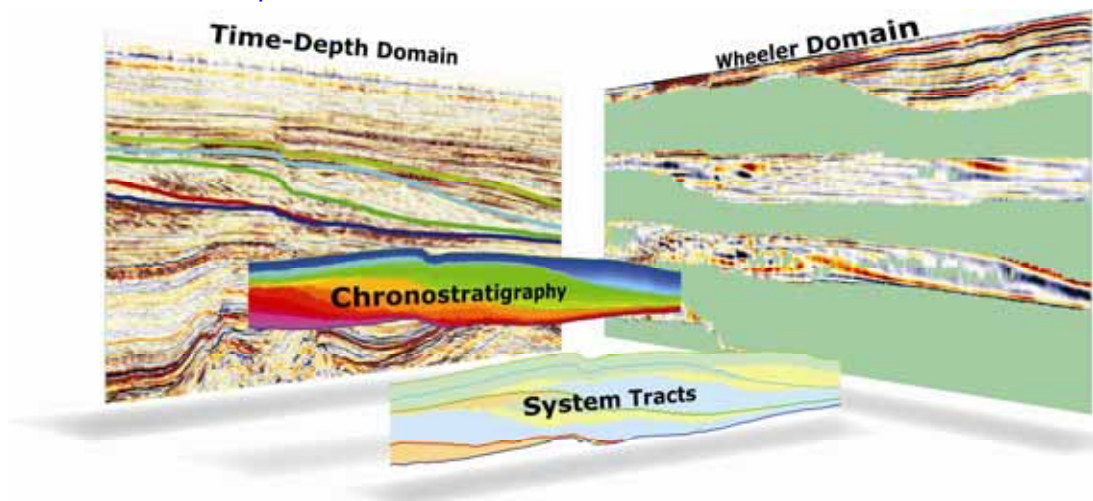
*0613\_4.4 2D3D Animations' interactive video of CGG's ROV-based seabed system*



*CGG's autonomous seabed nodes modeled in [2D/3D Animations'](#) Animatia.*

2D3D Animations produces interactive virtual reality displays that can be used for office reception areas, training and R&D concept development. The animation above shows CGG's new remotely operated vehicle (ROV) for deployment of seabed sensors for seismic recording. Sensors are manipulated by the ROV and within a 3 meter diameter target. 2D3D mixes techniques from video games and the traditional company video. Another view of the scene simulates what is seen from the boat with fishes, sea opacity and air bubbles. The sand plumps-up as the node hits the deck. Check out the sample animation of a Devonian sea at <http://www.animatia-online.com/video/DiveIntoTheOrigins.avi>. More from [Florent Mounier](#) and [www.2d3d-animations.com](http://www.2d3d-animations.com).

*0613\_4.5 De Groot-Bril's OpendTect Wheeler volume*



*dGB/OpendTect's new seismic stratigraphy module*

dGB's new Sequence Stratigraphic Interpretation System, OpendTect SSIS, offers chrono-stratigraphic horizon tracking, Wheeler transforms and system tract analysis of 3D seismic volumes. dGB claims these offer insights of sediment deposition, erosion and timing. OpendTect's neural networks plugin adds seismic

<sup>3</sup> Surprising as the system sports a high-end NVIDIA SLI Multiview driving 4 screens at a total 7680 x 1200 resolution.

facies clustering analysis of bodies and their spatial distribution, in relation to geologic timing and system tracts. OpendTect consists of an open source part: OpendTect Base and a set of commercial plugins for added functionality. The SSIS module was developed under a consortium including Shell, Statoil, BG-Group and TNO. More from [www.dGB-Group.com](http://www.dGB-Group.com) or [info@dGB-Group.com](mailto:info@dGB-Group.com).

#### *0613\_4.6 Schlumberger's Petrel Data Management (Russ Sagert)*

Schlumberger Information Solutions (SIS) now offers four approaches to integrate Petrel interpretations into the broader workflow and to assure data management.

*Level 1 – OpenSpirit ‘simple deployment’.*

OpenSpirit (OS) is to grow its footprint to embrace more of Petrel's data types. SIS has expressed a ‘strong commitment’ to OS as a ‘route to make project data from other applications visible to Petrel’.

*Level 2 – The Petrel Reference Project*

Currently, users can drag and drop data objects between Petrel projects – although this may create problems synchronizing data between users. The Petrel Reference Project (available in Release 2007.1) will manage such issues and give ‘push/pull’ data access. Other users get notification of changes – such as a re-picked fault path. This works ‘like the OS sync tool’. The Petrel reference project talks to data in GeoFrame, OpenWorks etc. through OS.

*Level 3 – ProSource-based*

More sophistication is available through the ProSource GUI and results manager. This allows snapshots of projects to be captured and managed in a Seabed database.

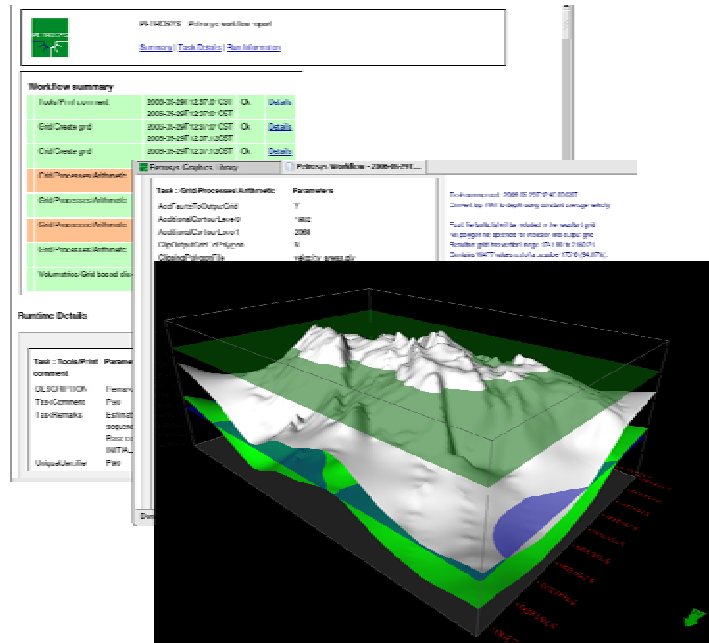
*Level 4 – Petrel on Seabed*

Looking forward to 2008, users can expect a ‘full footprint’ Seabed data store for Petrel project data along with repeatable workflows. Data management will support ‘lock and publish’ and access rights on a per object basis. SIS has turned the entire Seabed API footprint over to OS Corp. So OS will be greatly expanded re today's footprint. A data check in – check out process will have a ripple effect across the organization. We asked Sagert if the OS data model would really merge to and equate to seabed and if the Ocean Framework would likewise equate to the OpenSpirit API. Sagert answered that currently, the API gives in memory access to Petrel. Transactional data access will have to wait on Open Spirit 3.0. OS 3 will indeed equate to the Ocean/Seabed API<sup>4</sup>.

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<sup>4</sup> Comment – Interested parties should be able to observe the convergence of the Seabed data model and OpenSpirit as both are now published on the web. Seabed is available on <http://www.slb.com/media/services/software/opensystems/seabed/index.html>, and OpenSpirit's data model is at <http://www.openspirit.com/metadoc/MetaDoc/index.html>. When these links point to the same database, convergence will have been achieved!

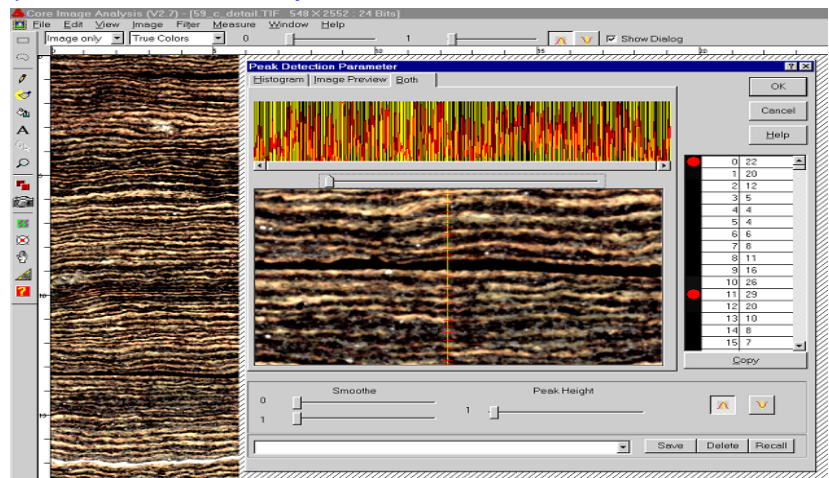
0613\_4.7 Petrosys' XML-based mapping workflows



XML files contain editable, re-usable workflows for Petrosys users.

Petrosys workflows leverage XML to capture typical software usage such as gridding. XML workflow reports provide an audit trail and can be edited through XSL scripts to produce HTML as shown above. In this example, a composite display shows the HTML reports with a 3D rendering of the model. XML allows jobs to be run in batch mode or for sharing of expertise between users.

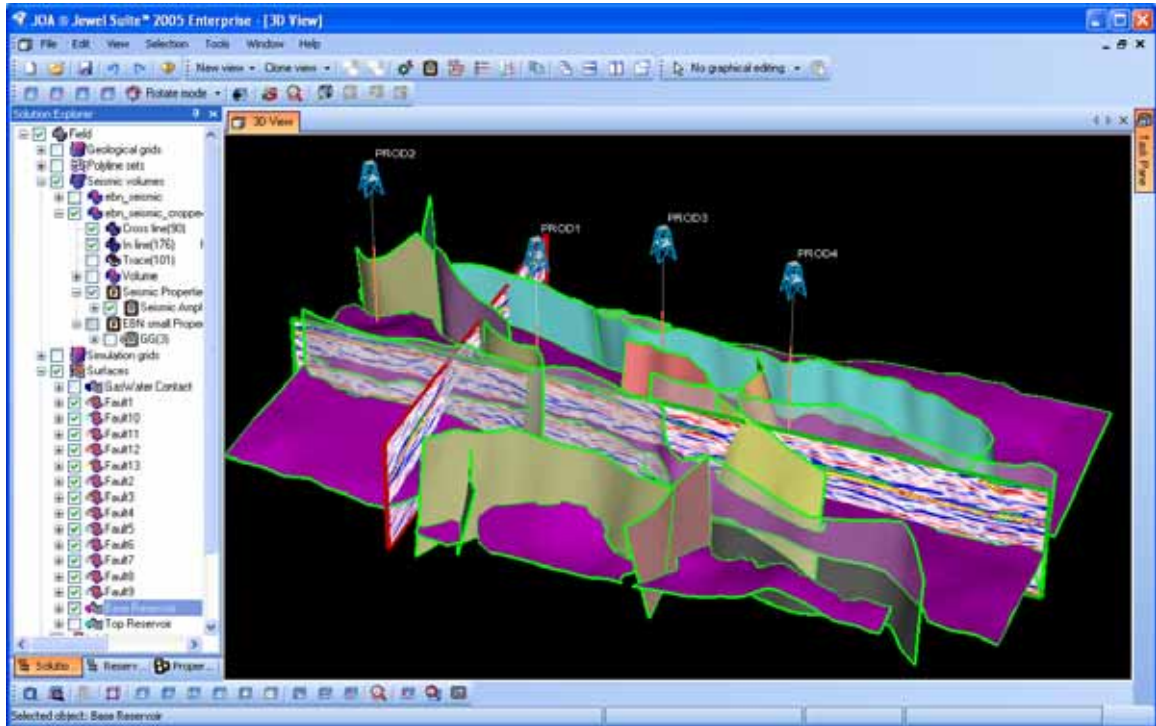
0613\_4.8 DMT Core Scan II now performs structural analysis



DMT's hardware/software bundle performs image analysis of cores.

DMT continues to expand its core scanning and analysis hardware/software bundle, CoreScan II. CoreBase manages and organizes scanned images – which can be scanned at resolutions as high as 1,000 dpi. DMT's Core Image Analysis package (CIA) quantifies and analyzes core petrographics. Another package, CoreLog-Integra offers structural analysis of bedding, joints and faults. Structures can be calibrated and oriented with respect to geophysical logs. CoreScan users include CNOC, Saudi Aramco, Schlumberger and Core Lab. DMT also markets a smaller scanning device for work on core plugs.

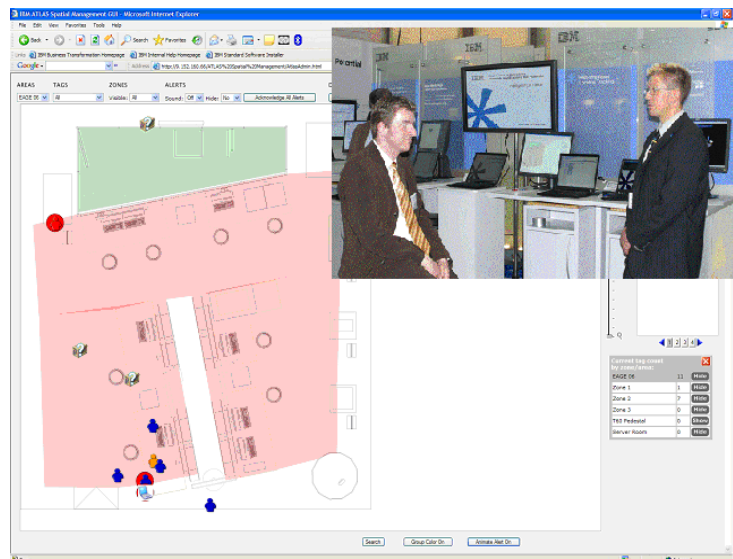
#### 0613\_4.9 JOA Jewel Suite adds automated structure builder



*Automatic structure building in JOA Jewel Suite.*

JOA Jewel Suite is a 'seismic to simulation' package originally developed for Shell. The latest release provides support for 25 million cell models (up from 10 million). Also new this year is the automated structural modeling (ASM) workflow that creates a 'water-tight' structural framework for reservoir simulation. ASM cleans up inconsistencies in a seismic interpretation such as horizon and fault overlaps or gaps. A 3D geological model is generated automatically using JOA's automated gridding technology. A 64 bit Windows version of JOA Jewell will be released later this year. A 'mid-market' release of the full static and dynamic modeling package (limited to models of under 1 million cells) is now available for \$30,000/year rental. More from [www.jewelsuite.com](http://www.jewelsuite.com) or mail to [info@joa.nl](mailto:info@joa.nl).

#### 0613\_4.10 IBM's RFID-based critical asset tracking

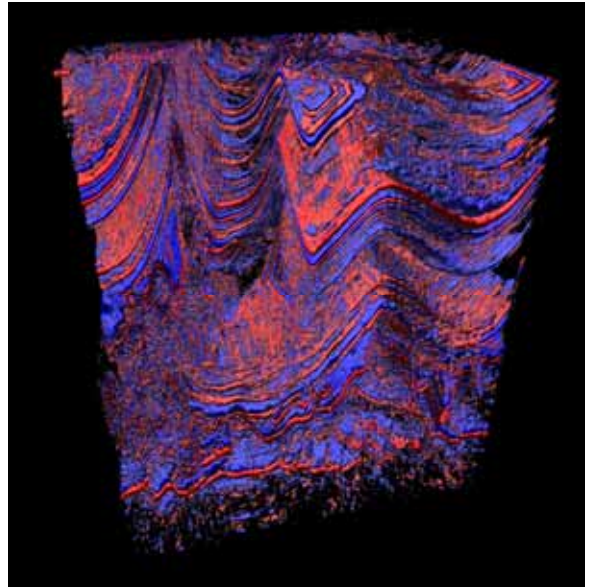


*Personnel movements tracked with RFID technology.*

IBM demonstrated a Radio Frequency Identification (RFID) system that tracked its personnel as they moved around the booth in real time. The RFID Solution for Critical Asset Tracking (CAT) provides time-stamped information on the location of people and movable objects, allowing for 'processes analysis and

optimization' – what used to be known as 'time and motion analysis'. RFID CAT is used in petrochemicals and was developed in response to increasingly stringent US safety regulations. If a gas leak occurs, workers in danger can be located quickly for evacuation. The technology should also be amenable to fulfilling offshore 'people on board' requirements.

*0613\_4.11 Fraunhofer Institute's 'Ocreemizer' multi-resolution visualization*



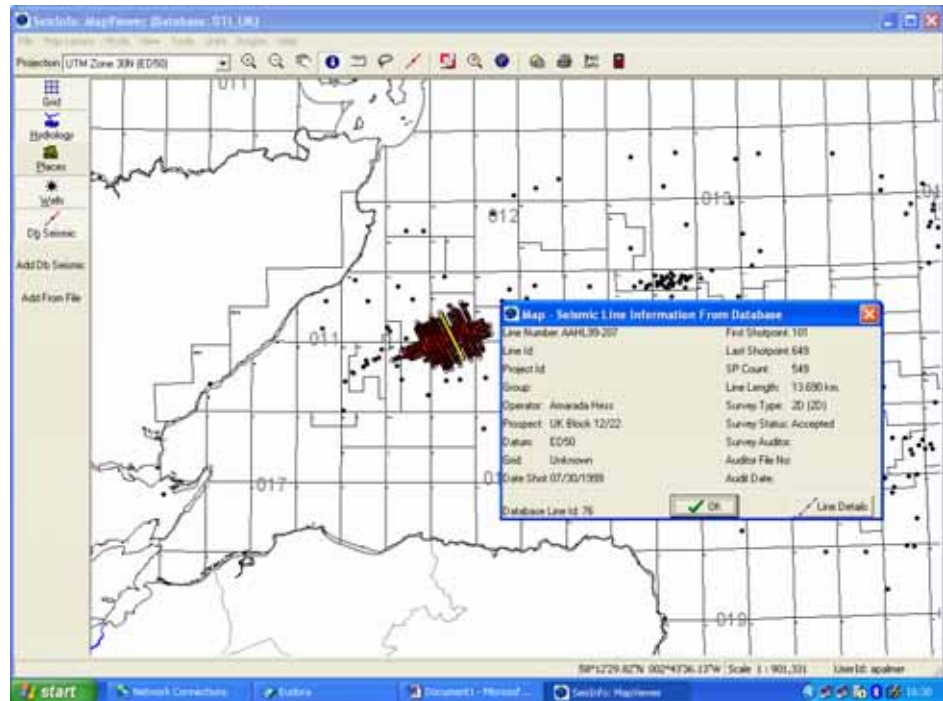
*Ocreemizer visualizer from VR-Geo*

The Fraunhofer Institute's [VR-Geo](#) Consortium performs R&D in virtual reality for the geosciences. VR-Geo flagship application, the 'Ocreemizer,' is a 3D multi-resolution visualization system for large seismic datasets. A 160GB test dataset can be viewed with minimal physical memory requirements with VR interaction from a PDA or a 12 degree of freedom 3D mouse from FakeSpace. The technology minimizes memory requirements by paging active parts of the data as they are viewed, leveraging 3D texture hardware and caching. The consortium is led by the Fraunhofer Institute Media lab and includes BP, Chevron, and Landmark. More from [john.plate@imk.fraunhofer.de](mailto:john.plate@imk.fraunhofer.de) and [www.imk.fraunhofer.de](http://www.imk.fraunhofer.de).

*0613\_4.12 Geovariances now offers stand alone Exploratory Data Analysis*

The ISATIS Exploratory Data Analysis (EDA) module is now available for stand alone use. ISATIS EDA allows for QC of any data type through multivariate analysis. More from [www.geovariances.com](http://www.geovariances.com) and [info@geovariances.com](mailto:info@geovariances.com).

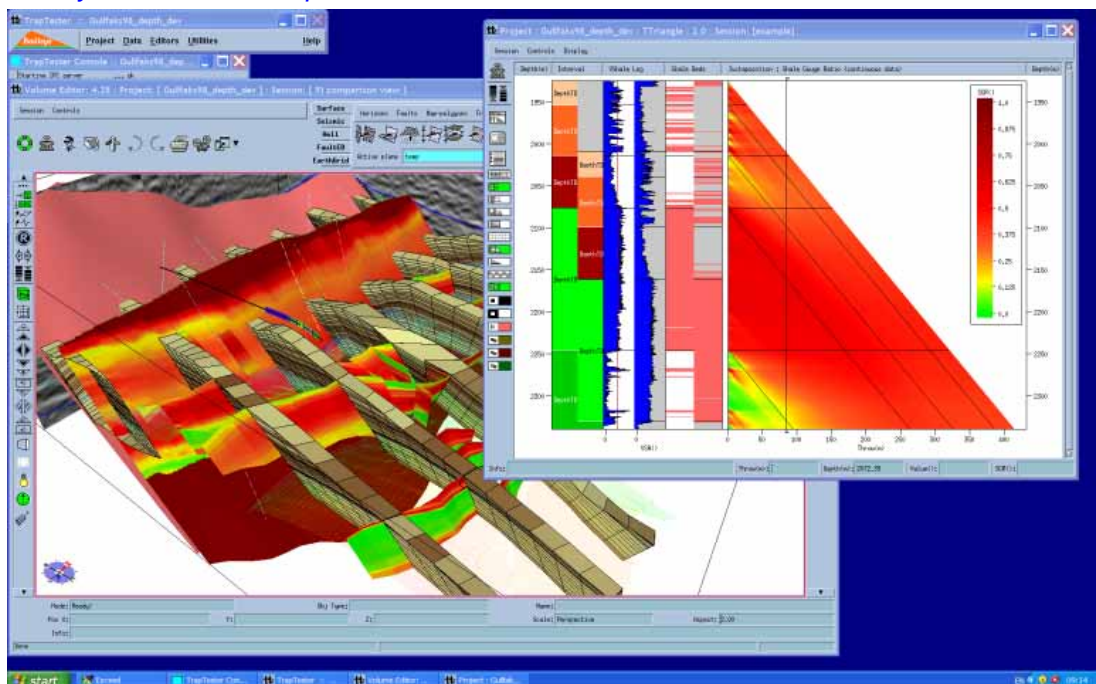
0613\_4.13 ZEH/SeisInfo's seismic data management



SeisInfo's GIS interface

SeisInfo offers tabular and GIS interface to seismic navigation data with pointers to trace data, managing different geodetic datums and processing vintages.

0613\_4.14 Badley Geoscience's TrapTester now on PC



TrapTester 5.3 – now on a PC.

Badley Geoscience has released a PC version of TrapTester 5.3. PC Traptester integrates with Midland Valley's 2dMove and the FlexDecomp basin modeling toolkit from Nick Kuznir at the University of Liverpool.

#### 0613\_4.15 IBM's rack mount Blue Gene eServers



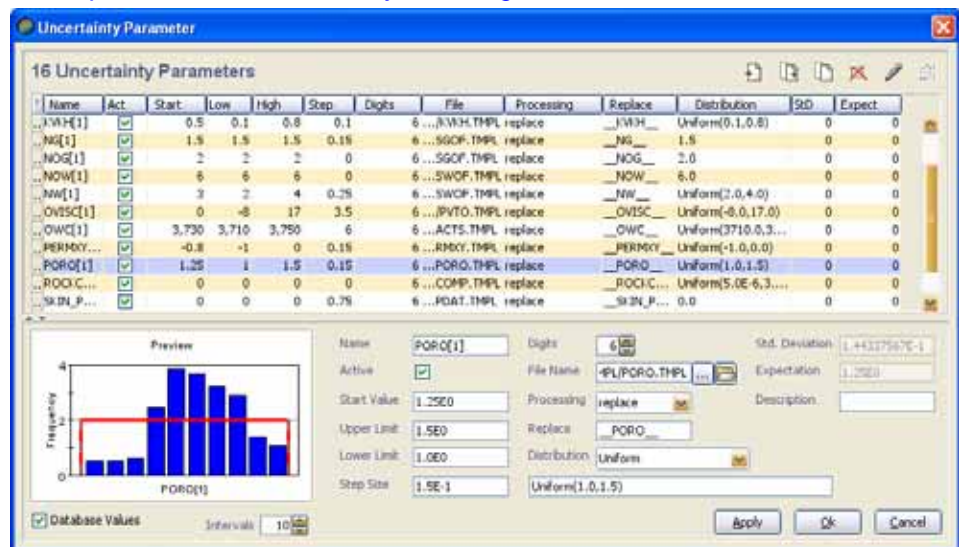
PowerPC-based 'Blue Gene'

IBM's 'Blue Gene' technology is now available in rack mount. Each rack contains a 32 CPU dual core PowerPC-based motherboard – with around 2,000 CPU's in a rack and up to 1TB memory. The University of Texas [IPARS](#) reservoir simulator code runs on the Blue Gene and IBM is also working with Tsunami Development Corp. of Houston which has just obtained a US patent for its FPGA-based seismic processing concept.

#### 0613\_4.16 IBM announces Playstation-III chipset based Cell BE supercomputer

IBM's Cell Broadband Engine (BE) leverages the same chipset as used in the new Sony Playstation III for scientific calculation. A demonstrator of the Cell BE was used to perform fast Fourier transforms (see the [IBM white paper](#)). IBM claim 400 GigaFlop performance for a single 3.2 GHz Cell BE.

#### 0613\_4.17 ScandPower's Mepo 3 adds assisted history matching workflows



Mepo's new uncertainty parameter editor

Scandpower's Mepo is to have a new GUI layer this year with Java-based cross platform support (Unix, Windows and Linux). A workflow-focused assisted matching process helps optimization of experimental design-based analysis. Supported simulators include Eclipse, CMG, 3DSL, MORE, Cheers and MoRes. Compute-intensive jobs can be farmed out across either a queuing system (multiple network nodes) or with 'MEPOnet', for a distributed launch of multiple runs.

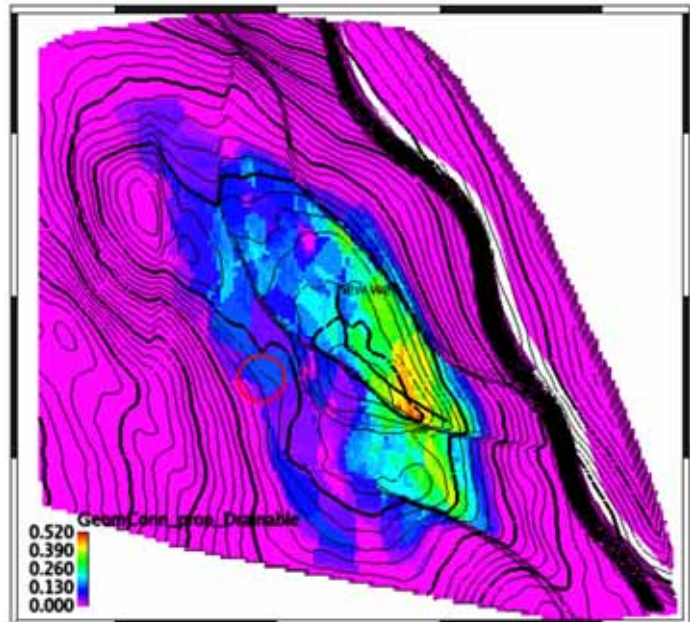
0613\_4.18 IronMountain's eSearch streamlines data input, adds retention and SOX support



*eSearch 3.x GUI*

The latest release of IronMountain's eSearch streamlines data loading with 'fast data ingestion' and bulk loading and linking of attachments. Other enhancements target streamlined ordering and an enhanced data model.

0613\_4.19 Roxar – uncertainty management module for Irap RMS



*Roxar's UMM maps sand connectivity.*

Roxar is to release an uncertainty management module for Irap RMS later this year. UMM quantifies the effects of uncertainties on volumes and cumulative production. Post-processing features include tornado charts and probability cubes to help identify drilling locations. Roxar also announced IRAP RMS on native (no emulation) Windows 64 bit – breaking 2GM memory limit and speeding processing. Roxar's 64 bit Windows benchmarks are available on <http://www.roxar.com/article.php?articleID=3066> and show a twofold speedup from 32 bit to 64 bit Windows XP. These figures are comparable with 64 bit Linux, although Linux is still faster in many cases (algorithm dependant but averages about 15%) according to

Roxar. More comparisons result from a study performed with Microsoft on <https://members.microsoft.com/customerevidence/search/EvidenceDetails.aspx?EvidenceID=14401&LanguageID=1&PFT=Microsoft%20Windows%20XP&TaxID=20275>. Performance has also been enhanced with the removal of Exceed and NutCracker emulators and the introduction of Qt for cross platform deployment. Roxar also claims speed benefit over its 'main PC based competitor' of 15 – 75 times.

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## TW0613\_5 Interview with John Gibson - Paradigm CEO

*What was the substance of your talk at the SIS 'Open' Symposium earlier this year?*

That Paradigm is committed to openness leadership in sciences, work process and their auditability.

*What do you understand by openness?*

Despite investment in POSC/PPDM, the industry still doesn't have a standard. It is nevertheless important that leaders in technology commit around a platform and this is where Paradigm is taking a leadership role. Even though we have made a tremendous commitment to Epos, we have been prepared to compromise and go for OpenSpirit. We are impressed with SIS' commitment to openness and OS and their willingness to have me on the OS board of directors. Schlumberger is to help Paradigm adapt to the OS platform.

*But interoperability means many things to SIS – OS, Ocean/Seabed and of course Petrel.*

We are interested in linking to Petrel for customers doing high end simulation of basins and fields.

*Both Epos and OS are CORBA busses. This should make a convergence or rationalization relatively easy?*

We are working through which pieces are important for our customers and trying to figure out what to do here. There are differences in approach however. OS is data-centric and focuses on data exchange while Epos is workflow-centric. We will continue to work on Epos. Epos V3 will be out in September. We are committed to support a best of breed environment and don't want to restrict Epos.

*Is Epos core business to Paradigm?*

Yes. Epos has more hooks to data than OS. But we appreciate and expect OS to be a moderator of the pace of change re Halliburton and SIS, letting them work side by side – at least for the near term.

*But you are still staying clear of the data management business.*

No, our focus is data flow.

*What about prestack data? How can you offer prestack interpretation capability without doing data management?*

The industry is complex. Operators have to consider the climate picture offshore, track icebergs and whales! Data management is bigger than one vendor. Maybe bigger than a single oil company. I suggest G&G companies should partner with companies like IBM who are into more generic data management services.

*But what about supporting prestack workflows?*

We do perform a considerable amount of seis and well data management.

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## TW0613\_6 Papers of note

### 0613\_6.1 Value of seismic information (B010) – Priebe et al., Shell

Describes uncertainty modeling in Petrel of Schoonebeek, Europe's largest onshore oilfield. The field was discovered in 1943, shut-in in 1996 and is now a candidate for redevelopment. A sensitivity analysis of field recovery in terms of well positional accuracy was performed. The Value of Information (VOI) exercise was used to justify a new high resolution 3D survey.

### 0613\_6.2 Value of information with multiple targets – Gibson et al., Texas A&M

Uses Bayesian statistical techniques to quantify the monetary value of seismic information in the case of multiple drilling targets. Previous single target VOI analyses 'underestimate the value of seismics' when it is used to optimize the drilling program.

### 0613\_6.3 DINO – Dutch GIS Portal to E&P Data (P191) – Ganzeveld et al., TNO

A 'POSC-compliant' Oracle database serves data to public web portal, [www.dinoloket.nl](http://www.dinoloket.nl) (in Dutch). DINO includes log, seismic and 3D viewers.

[0613\\_6.4 Scalable Vector Graphics \(SVG\) for web-based seismic display \(P192\) – Diviaco, OGS<sup>5</sup>.](#)

The ‘SNAP’ portal is used to support collaborative R&D at the Italian Oceanographic Institute OGS. The paper describes use of XML, SVG to display seismic wiggle trace data in a browser.

[0613\\_6.5 Archiving VSP Data \(P193\) – Eleanor Jack, Landmark](#)

Describes a feasibility study on VSP archiving conducted for the UK’s Common Data Access (CDA) archive. Problems encountered included wrong information recorded in log headers, poor TIF encapsulation of seismic data and inconsistent, ad-hoc recording of VSP data, even from major contractors (sample rate missing etc.). Archiving VSP data requires serious manual QC.

[0613\\_6.6 Parallel computers in seismic processing – E. Kurin, GeoTechSystem Ltd.](#)

Discusses merits of different memory architectures and I/O requirements for various seismic processing activities. Distinction made between ‘single channel’ activities like filtering and AGC and ‘total access’ procedures (PSDM) mandating SMP or NUMA architectures. Benchmarks show job speed as function of available memory and the number of concurrent jobs.

[0613\\_6.7 Surface deformation over producing field \(E026\) – Bourne et al., Shell](#)

Describes microseismic, GPS and SAR surveys over a subsiding (compacting) gas field in Oman. Microseismic data locates faults and quantifies displacement. GPS used to track horizontal (extension) millimetric movement. Synthetic aperture radar interferometry from satellite data measures subsidence directly. Study used to assess risk of damage to wells as centimetric displacements are attained.

[0613\\_6.8 Monitoring reservoir fluids with downhole seismic instrumentation – Dasgupta, Saudi Aramco](#)

Many large reservoirs in the Middle East are not amenable to surface time lapse seismic monitoring. This paper describes a feasibility study of a combination of repeat VSP studies and microseismic monitoring to conclude that permanent seismic sensors may be a component of the ‘smart wells’ of the instrumented oilfields of the future.

[0613\\_6.9 High resolution, real time borehole telemetry \(B033\) – Akimov et al. Baker Hughes](#)

Describes Baker Hughes’ technology for real time transmission of ‘high resolution’ azimuthal resistivity images while drilling. Comparison of images obtained with real time mud pulse telemetry (a few bits per second) and ‘memory images’ obtained during tripping shows that the real time imagery, while inferior to the memory images, contains useful information. Full bandwidth real time transmission is still waiting on the deployment of electrically connected drill pipe.

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[TW0613\\_7 Technology Watch subscription information](#)

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<sup>5</sup> OGS - Istituto Nazionale di Oceanografia e di Geofisica Sperimentale – [www.ogs.trieste.it](http://www.ogs.trieste.it).