# Schlumberger Information Solutions Forum
## Miami, October 2003

*"It's the data, stupid"*

## Introduction

After a cancellation in Europe and postponement in the US, the Schlumberger Information Solutions (SIS) User Forum was held in a rain-swept Miami. The Forum came hot on the heels of Schlumberger's divestment of its Sema unit. A hasty re-organization has resulted in the arrival of Peter Goode as president of the new SIS and Ihab Toma as VP Global Sales and Consulting.

Generally, the 2003 Forum represents continuity in approach and consolidation in software. That is not to say that there was nothing new. Petrel seems to have found a good home in SIS and continues to make spectacular progress – with new seismic interpretation whiz-bang that puts most UNIX apps in the shade. The wraps are coming off Schlumberger's 'Project Ocean', a new integration platform, database and suite of applications, developed using Microsoft's .Net environment. A hard-to-categorize product, RPM, is the first Project Ocean application to emerge – applying what can best be described as 'artificial intelligence' to the process of well design.

Although Schlumberger's data management offering is anything but new, Finder has been around for 20 years after all, what is new is the top billing that data management gets both from SIS and from ExxonMobil's Steve Comstock in a revealing and outspoken keynote address. Comstock and Total's Philippe Baldy showed how large organizations can have very different approaches to data management. But both talks underscored its importance - and the huge effort required. As Comstock quipped "It's about the data, stupid."

A new dimension in SIS's asset management offering has come following the Iron Mountain SIS partnership. AssetDB and OpenRSO are to be rolled into a new product – 'e-Search', to be developed and maintained by Iron Mountain.

Also of note was the growth of third party exhibitors at the Schlumberger Forum. Veritas unit Hampson-Russell was showing its boutique seismic tools and AspenTech, had a booth showing the new HySys to PipeSim hook-up – underscoring the importance attached to simulation/optimization and facilities to subsurface integration.

### *Highlights*

ExxonMobil 'common' is better than 'best'

RPM artificial intelligence well planner

eSearch – 'the future of physical data management'

Shell's Living Business Plan

New seismics in Petrel

Finder's future

# Contents

## Keynotes

### SIS post Sema divestment - Peter Goode[1]

Goode, the president of the post-Sema divestment SIS. SIS is to revolutionize E&P core operations and processes by leveraging IT. Growth in demand for gas and oil are putting the demand side pressure on. Supply-side constraints include other industries competing for limited capital resources, regulatory, demographics, security and transparency. A tough environment – but IT will help. A McKinsey 'study' shows that IT impact on business processes will be the key. How? (1) People & process, (2) connectivity, (3) IT.
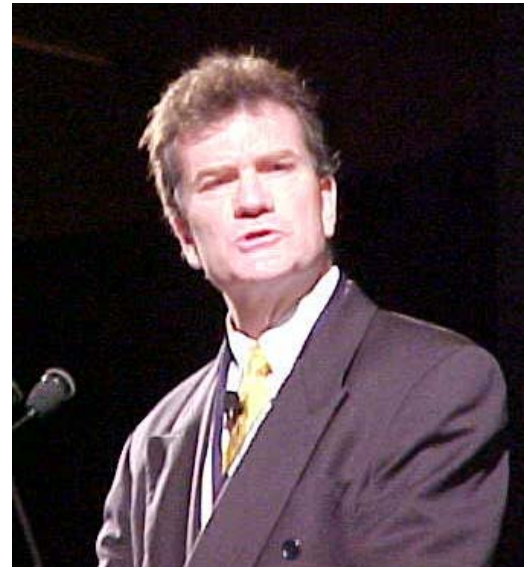


Figure 1 Peter Goode

### People, Process, Technology - Ihab Toma

Toma now heads up a new sales and consulting branch of SIS – or as he describes it 'People & Process' – a core group of consultants retained from the recently divested Sema unit (and augmented with an aggressive recruitment program). The consultants are ready to fulfill client's needs in workflow, capital planning, real-time operations – all core business to Schlumberger.

SIS has retained close links with the connectivity and infrastructure business segments and can 'deliver' world-wide. In the North Sea, OPNet, a gigabit 'ISO accredited, closed, secure network offering 99.995% uptime' supports over 100 clients including Halliburton and Baker. OPNet is now being deployed in Angola.



Figure 2 "IT stands for Ihab Toma!"

SIS' IT unit has estimated revenues of over $ 900 million for 2003. The restructuring and rebrand of SIS two years ago is now bearing fruit with new 'key workflows', all underpinned by InfoStream.

**Smart prospect** generation – 'illuminate' (through 'Formula One' visualization from VoxelVision) and generate leads. These are qualified with attribute analysis 'all at a fraction of the previous cost'.

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[1] All speakers Schlumberger Information Solutions unless otherwise stated.

**The Living Model – '**Petrel will be our 80% solution for the whole asset team and the user environment of choice for running simulations'. OpenSpirit will be used to vehicle data between GeoFrame, FlowGrid, Eclipse and Petrel.

**Percentage of simulated reservoirs world-wide**
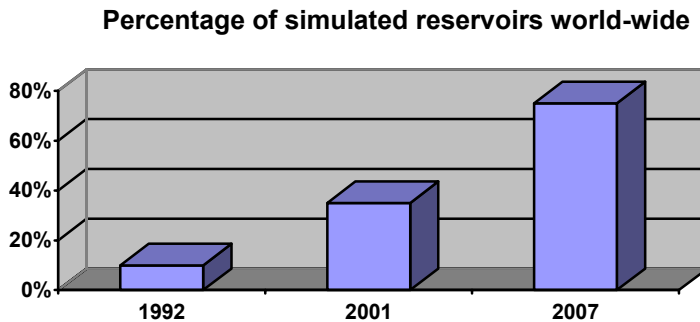


Toma forecasts a huge increase in the number of reservoirs benefiting from numerical simulation – thanks to the democratization of PC-based simulation. Occidental Petroleum's Qatar unit has recorded a 7-10 fold speed improvement and a 4-5 fold cost reduction by migrating its Eclipse numerical model to Linux.

**Dynamic drilling** Toma observed that only 10% of directional wells are monitored in real time. ChevronTexaco's No Drilling Surprises Gulf of Mexico initiative was developed with workflow consulting services and saved 45% drilling time.

**Dynamic operations** – Toma presented the new collaboration with AspenTech – whereby HySys is to be integrated with Schlumberger's PipeSim.Net. This will interface facilities to the single branch or networked well and surface flowline models. Smart well operations were used successfully by BP study on the Harding field where downhole metering 'reversed the decline curve'.

**Living Business Plan** – bridges technology and finance letting operators roll-up business units integrating portfolio management with ERP. LBP 'masters uncertainty' – by cascading and propagating earth model uncertainty throughout the business planning process.

**Info Stream –** SeisStream, WellStream etc. Note 'no two companies will have the same stream – we leverage clients' existing software and competencies'.

**Decision Point** – Portal front end and decision support offering 'control@a glance', 'data@work' (browse/manage data) and 'process@work' for application launching.

**Project Ocean** – A new integration framework for Eclipse, GeoFrame etc. a 'state-of-the-art' Microsoft .Net development.

## *ExxonMobil's common IT standards - Steve Comstock, VP ExxonMobil.*

Comstock kicked off his talk with an entreaty to SIS to 'fix GeoFrame 4'[2]. A sentiment which met with general approval – at least from clients. Comstock's (and ExxonMobil's) 'proposition' is that standard systems create more enterprise value than multiple systems customized for each asset. By sharing databases, centers of expertise, best practices, Exxon assures transferable learnings and enables 'maximum integration'. Getting 'common' is better than getting 'best'[3]. 'We want petrophysicists around the world to use one tool – not ten as before'.
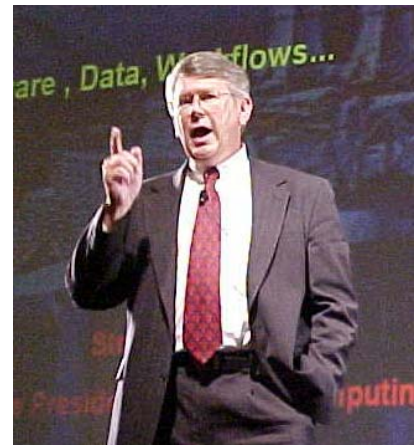
Figure 3 Comstock - 'getting common is better than getting best'

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▲
Increasing value and difficulty

(In terms of effort involved and standardization effort.)

▲
▲

Data

Applications
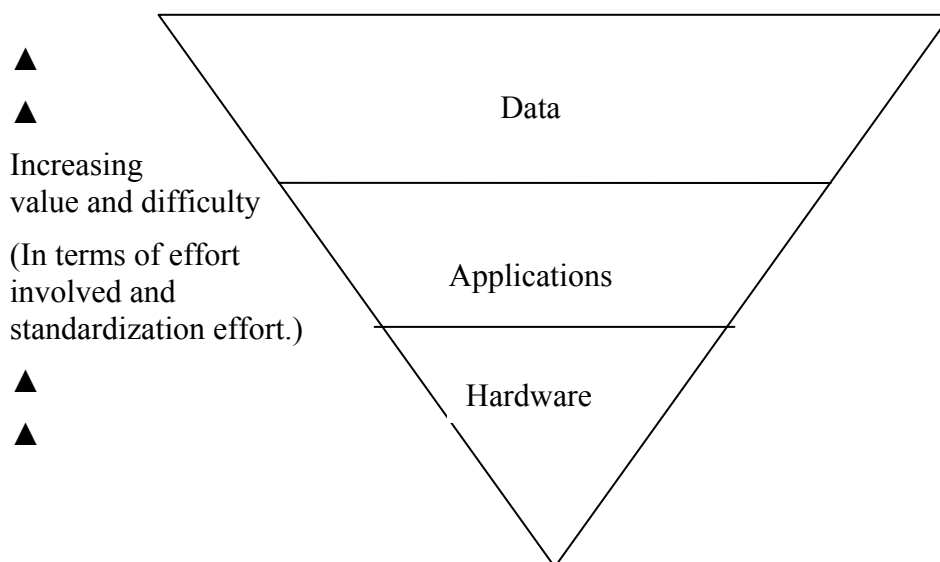
Hardware

Figure 4 "Data is our most important asset".

ExxonMobil's annual spend on technology solutions (hardware, software and data) was in the $ 300-400 million range. This went on proprietary software – in multiple versions. This has now been streamlined,

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[2] GeoFrame 4 has experienced considerable teething troubles amongst major clients. Software of the scope of GeoFrame only gets truly tested when it is rolled out across a major oil company's world-wide operations. SIS claims that these are fixed now.

[3] *Comstock was weighing his words presenting this 'proposition'. It is not hard to find examples of how locally-tuned systems will beat a 'standard' and standard systems and practices must inevitably impact take-up of new technologies. But on balance, for a company the size of Exxon, 'standard' makes for manageable.*

and $ 100 million has been saved. 50% of this saving has been in the cost of data management – not on the cost of the data. Today – geology and geophysics (G&G) staff 'do not do data management'.

No asset, project or subsidiary is an island – we're all in this together. Value increases as standards hardware, applications and most importantly, data and workflows extend beyond the asset, operating company and pervade the enterprise.

Underling ExxonMobil's focus on data and its management Comstock quipped 'It's about the data, stupid'. Data standards cited included POSC, WITSML, PPDM[4] and OpenSpirit. Comstock closed his address on a conciliatory note regarding SIS (which clearly plays a crucial role in ExxonMobil's standardization program) - "We'll attack GeoFrame problems together".

## The Pioneer'Net Portal - Tom Halbouty[5], Pioneer Natural Resources

Halbouty described Pioneer's PioneerNet Portal designed to facilitate workflows between worldwide workers and to offer efficiencies through improved information access. The systems hides IT infrastructure complexity from end users, offering an application launcher, scorecards and alerts, workflow, knowledge, information and data access news etc. The system is built on DecisionPoint and the Plumtree Portal[6]. Schlumberger was selected because Pioneer 'did not want to have to 'educate' a general solution provider in upstream domain knowledge. The portal was developed in three months and covered production and AFE reporting, application launching and score cards for 70 plus users. Understanding and adapting to the Portal provider's roadmap proved a challenge as did managing and encouraging the migration of users from email to publishing to the portal. Keeping content fresh and complying with records retention policy were also critical. DecisionPoint provided an inventory of Plumtree components and a single view of multiple repositories. Schlumberger's consulting model aligned is with Pioneer's 'SWAT Team' approach.



Figure 5 Tom  Halbouty

> *"Pioneer has built over 30 Enterprise Web applications for supporting teams and projects across the enterprise including Field Production, Gas Processing, Engineering, Finance Accounting, Legal, Human Resources (HR) and Purchasing. Field workers monitor daily and weekly production volumes, set alerts for underperformance, and review production vs. goal statistics through colored indicators on a speedometer-like performance application, maps and tabular reports. Managers view score cards and real-time field production on a regional, national and international level through customizable executive dashboards. Accountants compare expenditures to date vs. project budgets through graphical portlets and can drill down to see budget details behind the comparisons. Engineers collaborate on research and design projects, and can search for experts across all of the specialized systems used at Pioneer"[7].*

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[4] On a slide – not in the talk.

[5] Michael T. Halbouty's nephew.

[6] Pioneer evaluated Microsoft Sharepoint, Oracle, PeopleSoft and two Plumtree-based portal solutions. The evaluation was done 'by the developers – not with PowerPoints!' A trial data set from field operations, legal, document management and IT was used in the benchmark.

[7] From http://www.plumtree.com/customers/industries/energy_utilities/pioneer.asp.

## Shell's portfolio management - Sven Kramer Shell International E&P

Shell's attention focused on portfolio management when the 1998 drilling program 'overspent and under-produced' leading to embarrassment all round. A leadership, procurement and portfolio management program was initiated to implement 'cost leadership' by comparing asset performance. After review, some assets failed to qualify for further investment – and Shell's 600 plus asset portfolio was screened to see which would benefit from further investment. Plots of business value against business 'strategic value' allowed for non-financial considerations to be incorporated into the analysis – such as the intangible benefit of stopping flaring of Nigerian gas. A plot of cumulated project value against cumulative expenditure – the 'unconstrained creaming curve' – was used to rank opportunities. The analysis showed too that Shell needed to try to get out of commitment wells which can be great 'destroyers of value'. This was achieved by 'talking to partners and governments'. All Shell units now use the same global standards for data and evaluation.
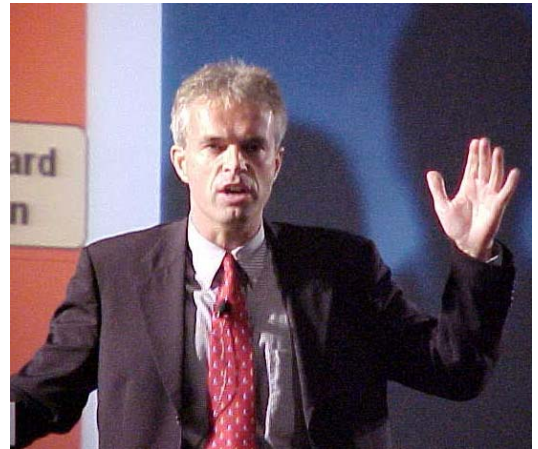
Figure 6 Sven Kramer

Data is input in standard form to a capital allocation database. Analysis is performed with CapIT – a Shell-tailored edition of Merak. Reporting uses Business Objects. The system is migrating towards the Schlumberger Living Businesss Plan (LBP) and a central global database. LBP 'nirvana' should be achieved by 2005.

## Total's asset data management – Philippe Baldy, Total

Total merged first with Fina, then Elf. Physical documentation was indexed in four document management systems. Logs in LogDB, but with many redundancies. Finder for well log reference data. Topographic/navigation data was spread over five different systems. Elf used nearline and shelf storage for seismic data, TotalFina just shelf.

Physical data (including 300,000 core boxes) – move and assemble data to two locations. DocEP was used for reports, DocExplo for cores, seismics, log prints and maps. Total now has about one terabyte of log data in LogDB – believed to be the largest LogDB database in the world. A Finder-based navigation/topography fusion project is underway. Total is moving asset data into DocExplo and DocEP - an 11 man year (14 month real time) project – with 50% of the effort on data matching. Moving topographic data to Finder was another substantial project (13 man year/30 month and 50% on data matching). Merging two LogDB projects (20,000 wells) took only one man year – wireline industry mnemonics are well established and easily understood.

Lessons learned

- Merging data from common rules/data model is easier (LogDB).
- Data transfer – unload/load is a small part of the effort.
- Data matching effort is large and it is hard to eliminate redundancies completely.
- Cultural/historical footprint is omnipresent in legacy data.
- QC is no guarantee of error-free!
- Data use justifies clean-up.

- Subsidiaries 'know their own data and keep it in good shape'. This work should not be re-done at HQ.

Total's vision is to let subsidiaries have responsibility and management of data. HQ does 'orphan' data, key data and standards-setting. Geoscience information management (IM) is a profession – you need dedicated data managers. Data management is now a part of G&G performance metrics. Enabling technology includes good communications, the Portal and distributed data management – allowing for clean-up, homogenization and merge of data sets. Other learnings - update dictionaries, rules and best practices so that IM manages and shares common principles. Only then can you can optimize tools and federate data. Baldy offers 'four seasons' of integration; - people, data, cultures and finally tools.

## Why Decision Point? - Bill Baski

A portal is a place to find things and a place to do things. SIS' DecisionPoint tailors this to an 'E&P workflow-based solution' operating on multiple, integrated domain databases. Benefits of DecisionPoint include in-context reporting, vendor aggregation, 90 day results (guaranteed), a tool kit, virtual marketplace and content. Baski sees four competitors to Schlumberger;

- Big 4 systems integrators (Accenture etc.) – but they lack domain expertise.

- Internal – except that 'you don't have the head count – and you don't have the best practices'.

- "Bill and Ted's Excellent Java Shoppe" – but they are not in POSC nor OpenSpirit – and will likely have problems with personnel turnover. Not recommended for mission-critical development.

- Confusion – as a 'competitor'. Clients still ask 'What is a portal anyhow?'

## Portal Pioneer Natural Resources –

Carole Tessier announced the E&P Portal Consortium – led by Pioneer, Occidental and 8 other companies. Next meet is in Dallas. Pioneer's portal-components.

|  | September 2003 | Year end 2003 | 2004 |
|---|---|---|---|
| **Applications** | Citrix<br><br>Search and Inventory |  | Web-enabled |
| **Scorecards/Alerts** | DecisionPoint gadgets<br><br>Brio |  | Gadgets |
| **Workflow** |  | BizFlow |  |
| **Knowledge Management** | Plumtree |  | DMS |
| **Collaboration** |  | Personal Video |  |

Production reporting takes data from Landmark's TOW CS and FieldView. Pioneer took gadgets and consulting from Schlumberger and rolled these into its branded portal. Key Performance Indicators (KPI) gauges display data from Landmark's Aries. Differential production (forecast vs. actual) can be highlighted in a 'cut down' version of Schlumberger's OilField Manager (OFM). An alert can be emailed to field workers on status change. AFE tracking has brought 'tears of joy' to worker's eyes! Offers scan of original paper AFE along with digital representation. Twice daily roll-up of invoice data (vs. monthly previously). The IT page shows a web cam of the computer room – but this could be a feed from a drilling rig or production facility. Pioneer also uses one of the first components of Schlumberger's Project Ocean – the Results DB – to track acquisition and divestment opportunities. Also ran – Apache web

server, Tomcat, BizFlow and lots of other tools. The system was designed to be 'platform and vendor independent'.

## Nicholas Lillios – ProSource – for professional data managers.
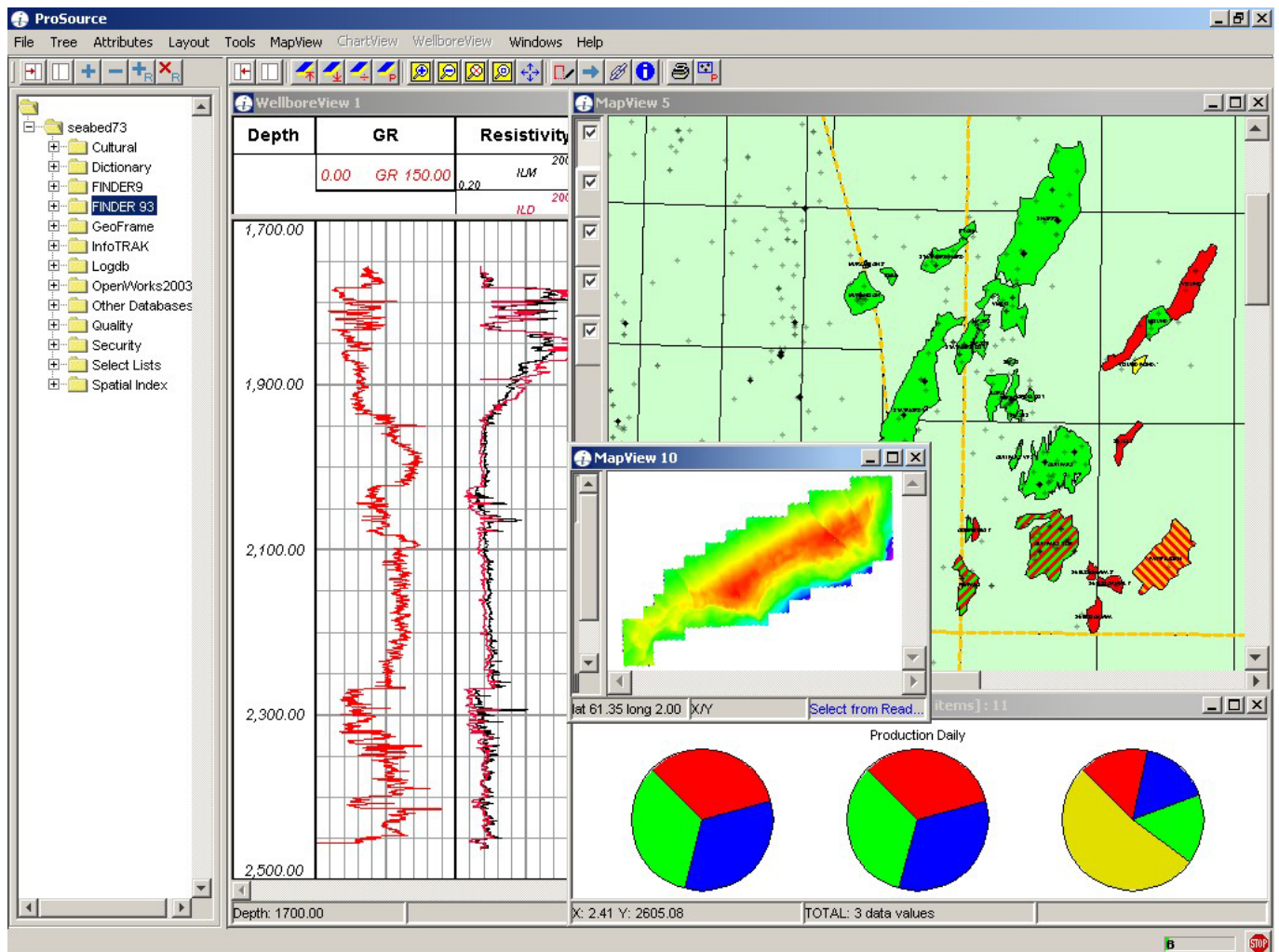


Figure 7 ProSource - Multi-Vendor data management for professionals[8].

ProSource – is a single interface to corporate data management. Today, ProSource[9] has interfaces to Finder, GeoFrame, OpenWorks, SeisDB, LogDB, GWIS, InfoTrack, SeisManager and AssetDB. ProSource maps and aggregates information and provides QC, charting options, plotting, data loading and transfer. Written in Java (Java WebStart), ProSource is platform independent. Any Oracle, Access, Excel data source can be added – along with APIs to third party software. ProSource allows for browsing, edit, delete and insertion of data into data sources (i.e. you can change data in say a GeoFrame project from ProSource). Search and Replace allows for bulk edits of company names etc. A demo showed a rather laborious edit of a checkshot survey bust. ProSource supports mapping from diverse data sets through 'Virtual Shapes[10]'. Sessions are stored in cache – and can resume after network outage. You can also 'unplug' a session and work offline, committing edits on re-connection.

**Q&A –**

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[8] Image courtesy Schlumberger Information Solutions.

[9] ProSource was developed in Schlumberger's Stavanger Data Management unit.

[10] A reference to ESRI Shape files.

*? Can you log/track edits?*

A No, you edit original datasets – tracking has to be managed elsewhere.

## RPM AI Well Planner



Figure 8 RPI - The well planner's 'full monty'[11].

As the Schlumberger flyer asks, "What if you could automatically generate a completely engineered well plan, comprehensive risk assessment and probabilistic time and cost estimate in about 20 seconds?" The new RPM package claims to achieve this and was probably the most intriguing presentation of the show for two reasons. One, RPM applies what is best described as artificial intelligence to the well planning process, and two because RMP is the first showcase for Schlumberger's Project Ocean – a major revamp to its software portfolio based on Microsoft's .NET framework. The RPM well planner began life as a MoBPTech proof-of-concept which set out to perform well planning in under 10 minutes (not quite 20 seconds as advertised!). RPM computes well trajectories from a 3D mechanical earth model or log data. Inputs are pore pressure, fracture gradient and rock strength. The program computes multiple casing design scenarios, cement programs, borehole assemblies, bits etc. etc. Monte Carlo analysis allows for optimization of drilling program. Time, costs and variance are analyzed and output as tornado plots of sensitivities. Large scale summary plots can be made, and flagged with design issues and problems that need to be fixed. RMP is the first commercial Project Ocean development and today is a stand-alone product. Next year it will run off the Ocean database. RPM is described as a major project. In its first

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[11] Image courtesy Schlumberger Information Solutions.

2003 release the focus is on 'high-level' well planning. R2004 will add multiple batch computation for multi-well drilling campaign optimization – and Petrel integration will be available. The new batch mode will feature 'breakthrough algorithms for multi-variable optimization'.

## eSearch – the future of physical data management

Steve Darnell (Iron Mountain) and Trey Broussard (SIS) described the SIS/Iron Mountain partnership which is to combine SIS' AssetDB and Iron Mountain (ex-Hays) eSearch (ex RSO). eSearch, the physical asset management package, will be developed by Iron Mountain (IM). SIS will be an exclusive reseller to the upstream. Both companies will offer customer support. The plan is to combine eSearch V1.0 with AssetDB V3.1 into eSearch V2.0. eSearch will provide physical and electronic document management with full text search. eSearch uses Java, and a Schlumberger-developed E&P data structure. The tool offers profile-based security with Oracle row-level locking, multiple internal and external storage locations and a published API. A 'Google-like' search can be performed across all locations[12].

### Q&A

*? – What is it like migrating from AssetDB to eSearch?*

A – This is a relatively turnkey operation from a standard AssetDB implementation. But new data cleanup tools in eSearch may be used to QC data on migration.

## InfoTrack – Capture and Manage Interpretation Results

InfoTrack provides results storage for capturing project milestones and final interpretations – managing interpretation quality and 'context'. Results are stored in a 'vendor-neutral, version-neutral' format. Other components of the new SIS data architecture are the ProSource front-end (see above) and the Integration Framework – a.k.a. the 'Federator' or data warehousing tool. The InfoTrack data transfer module (DTM) applies business rules to drive consistent data transfer with automated post processing and logging. A demo involving a DexaNet connection to Stavanger and Houston involved a lot of waiting around for the network and then a lot more time spent staring at text boxes and more waiting! Data management is not yet truly sexy! The demo saved a 3D grid with horizons and faults from OpenWorks into InfoTrack. Data was then reloaded into GeoFrame. By year end 2003, InfoTrack data types will include 3D geological models and logs.

## Seismic Interpretation and Visualization in Petrel

Petrel continues to impress with spectacular new functionality in seismic visualization and 2D/3D interpretation. Fancy grid editing, contouring and scale maps and montage show that Petrel has made it into mainstream seismic interpretation. Also new tools for attribute extraction, geobody extraction and connectivity analysis. A veritable tour de force. The demo ran blindingly fast on an HP PC with 1GB RAM and an ATI FireGL graphics card – in other words apart from the graphics card, a pretty standard PC these days.

### Q&A

*? If Petrel is SIS' 80% solution to seismic interpretation – what is in the 20%?[13]*

A – Not ready today to overtake IESX/Charisma – most used in re-interpretation.

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[12] A slide explained that eSearch provides 'a combination of electronic and *psychical* data management' – that's what we call cutting-edge!

[13] We asked this question because Petrel is looking so good that it is hard to see much future for the Unix interpretation systems.

## ESRI/SIS Relationship – Steve Skillitani

InfoStream has an 'open' architecture – so that horizontal applications like ESRI's mapping technology can be plugged in. Skillitani recalled Finder's 1990's mapping technology with SmartMap tailored to the E&P depth domain. Today, ESRI has 'solved' depth domain issues and offers multi-repository 'openness'. Schlumberger's mapping line up is now sketched out thus:

| Finder | Store spatial data | |
|---|---|---|
| DecisionPoint | Web-based GIS | ESRI ArcIMS embedded |
| SmartView | Professional GIS | Interface to Finder based on ArcView 8. Presentation mapping and feature editing. |
| ProSource | Professional data management and user interface | ESRI MapObjects multi-repository Spatial Index – links to GeoFrame and OpenWorks spatial data. Data is 'spatialized' – i.e. copied to Spatial Index. Visually aggregate GeoFrame projects. |
| InfoStream | Opens up Finder with Spatial Access Module (ESRI binary SDE), SmartMap (SDE today) and ShapeFile I/O. | |

### Q&A

*? Integrate with RSO (eSearch)?*

A eSearch will integrate the framework next year.

*? What is ESRI's position on an oil industry data model?*

A There are many standard data models for pipelines. ESRI 'will never create a data model for oil and gas' although ESRI could work with oils and Schlumberger to achieve this. Schlumberger is working with POSC and PPDM on this[14].

## Finder and beyond, Dwight Smith

Clients have been asking lots of questions as to what is happening with Finder re ProSource and SmartView. First 'folks should understand that Finder is not going away and is to remain a key element in Schlumberger's data strategy'.

Finder is …

- A data management system
- A logical and physical data model
- A set of constrained referential information
- Tools
- Applications for viewing and manipulating data

ProSource and DecisionPoint will ultimately replace Finder's data management tools. They will manage Finder and other data sources through the Integration layer. SIS will continue to refine the Finder data model and move it towards industry standards. Integration with interpretation systems will be improved.

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[14] A rather skimpy answer to a complex issue dealt with at some length in various articles in Oil IT Journal.

The Oracle Forms data access front ends will be phased out in favour of ProSource. SmartMap will be turned off in 2/3 years time but there will be other SDE-based tools. SIS is working towards a single logical model with separate physical implementations for Finder and GeoFrame.

## Visualization Strategy

Data volumes continue to rise. An average 3D marine survey covers 1,000 sq. km. A 'Q' survey may have a terabyte of data – and produce 100GB of cubes for analysis. PC graphics power doubles every 6 months thanks to pressure from the gaming community. But there remain some niche applications where the Unix workstation retains a competitive advantage. Clusters can be used to good effect for rendering – with just the pixels sent to the screen for visualization.

SIS' visual positioning focuses on best in class subsurface visualization. 3D 'stand-alone' visualization remains a hard sell – easier to inject (bundle) visualization technology with a product – as per Petrel. Move towards scalable collaborative visualization for multiple users and very large data sets – with use of haptic interfaces on the PC. SIS' visualization tactics have been to acquire VoxelVision, to partner with Hue AS (innovative rendering and smooth interaction), OpenInventor and HP/SGI for hardware. Virtual Reality (Inside Reality) offers full immersion and remote collaboration. Project Ocean promises a framework for 'fully scalable solutions' on a new Microsoft .NET platform.

## DrillDB Jim Brannigan

DrillDB promises 'better than ever drilling data management'. DrillDB is a repository and web interface interfaced with Finder. Front end tools like WellTrack and WellView and DIMS (Landmark). DrillDB consolidates daily drilling reports and offers data drill-down to 'grasp context' what's going on'. Multiwell analysis by rubberbanding on map to creat well 'portfolio'. DrillDB uses Finder's WebMap tool or Decision Point and share its schema with Finder.

## Common technical Environment – boon or bane? - Jack Carter, ExxonMobil

Upstream Technical Computing – really is different! Carter elaborated on ExxonMobil's common technical computing environment (CTCE), evaluating whether this is a 'boon' or a 'bane'. On the boon side, the CTCE lets you work anywhere, facilitating common roles; hardware support etc. On the bane side – it exposes costs, gets folks into 'my stuff's better' conflicts, folks don't like controls and it offers less flexibility. So 'we allow exceptions – but make it hard to get them'. If you go for an exception – 'you're on your own'. The CTCE slows the pace of change, backs away from the 'cutting edge'.

ExxonMobil has around 100TB online Unix data. Network performance is critical. Technical computing is driven by functionality and performance – secondarily by unit cost and economies of scale. Upstream Technical Computing (UTC - Comstock's organization) was set up to manage the standard environment – to deliver and support systems, data and technological applications.

UTC's mandate after the Exxon Mobil merger was to keep the business running through the widespread reorganization. 5,000 out of 6,000 users in new jobs. Lots of data and application overlap. Manage geoscientist on Unix and engineers on PCs. Carter intends to 'get common, then get best'. This is done by 'move, stabilize, standardize and optimize'. At the merger the decision was made to pick either Exxon or Mobil – not new stuff. There have been 'some complaints'. The process has slowed down release cycles. 9 teams converted hundreds of sites in 2 years. Schlumberger played a big part in this. Mobil was a Landmark shop – there was a lot of data to move to IESX. The result was a 'high degree of business satisfaction.' Cut the number of technical applications from 600 down to 300. Now 3 choices for Unix workstation and 3 choices for a PC. User support up 20%. A scorecard for value, cost etc.

Critical factors were the Presidential mandate, strong communications – set and manage expectations – listen to customers but 'no is an acceptable answer'.

**Q&A**

*? Ratio of support to users?*

A Around 1:30 for G&G and maybe 1:100 for engineers

*? Proprietary vs vendor software?*

A 70% vendor 30% proprietary. Primary simulator EM POWER.

*? Do over different?*

A didn't have standard engineering system in place – first one broke after roll-out. But did manage to 'get rid of CAD/CAM' application which was replaced with HYSYS[15].

*? How is environment enforced?*

A Remove software, remove hardware and replace with locked-down system with no floppy, no CD-ROM and only new software available! Measure usage to see if getting value out of software deployed.

## GeoFrame 4.0.4 – what's new, Paul Pickavance

Data management enhancements are top of the list in the latest release of GeoFrame 4. An 'Open' API for GeoViz is now available for connection to third party applications (notably image processing from Foster Findlay Associates). Litho ToolKit is a collection of tools for lithology estimation using analytical and statistical methods. Estimation techniques include quick look, clustering, neural networks and 'MD histograms'. GeoFrame synthetics have been revamped in collaboration with a major client. A batch option allows for simultaneous computation of multiple synthetics in a single run – with QC in GeoViz.

## ProSource Seismic Data Management

SeisDB is in transition to retirement during which time SIS will 'fully support' the product and work with clients on the migration. The replacement product is the new ProSource Seismic Manager to be year end 2003. Recently, Western-Geco's Expeditor has also been offered to new seismic management customers. But ultimately both Expeditor and SeisDB will transition to the ProSource Seismic Manager. The ProSource release will also replace the (ex-Panther) SDMS product along with storage and management of post stacked SEG-Y.

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[15] This forced a move away from proprietary 'closed' design systems.