Energistics/POSC European Member Meeting – Paris, May 2007

Energistics' (formerly POSC – the Petrotechnical Open Standards Consortium[1]) European Regional Meeting was held near Total's Paris-La-Defense head offices. Around 35 were in attendance with representation from Total, Chevron, ONGC, Repsol-YPF and several vendors. Energistics CEO Randy Clark made a strong case for standards adoption. Although the case has been made before, with limited impact on the upstream, there is a feeling that the 'ML's – WITSML and PRODML are different from previous initiatives. This has been demonstrated by several pilot projects and by a good turn out at the dedicated WITSML and PRODML Special Interest Groups.

Philippe Chalon's keynote offered both a 'back to the future' respective of POSC's early days and teething troubles as well as an insights into Total's own issues with its IT budget and software suppliers. Speakers from Chevron and Weatherford reported on successful PRODML pilots and some ideas as to how the standard's footprint is growing to embrace more complex workflows including production optimization. IBM's service architecture guru Ron Montgomery described how IBM is applying SOA technology to manufacturing – techniques that it hopes to deploy in the upstream. The idea is to federate standards with a semantic reference model. For Montgomery, the key standard is 'Augmented S88/S95.'

Highlights

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TW0709_1 Introduction – Randy Clark, Energistics

CEO Randy Clark stated that the rebrand was initiated because POSC's market identity had faded. Clark was brought in to ensure POSC maintains relevance. There has been a positive response to the name, logo and website. Energistics now has 73 member companies – the latest is Accenture Consulting. Focus is the upstream, exploration and production, with 'signature' brands WITSML and PRODML. Energistics' vision is to be a global standards resource center for the upstream. There is a belief that costs can be saved through standardization. Even a small amount of take-up equates to 'billions of dollars of value' in the North Sea alone.

Data volumes are up, data is stored in silos, quality is problematical and there is a lack of integration with business. Data complexity creates more issues with a lack of interface standardization. All in the context of a desire for 'Intelligent energy,' smart fields etc. There is a sense of urgency—it is not about the 'Field of the Future,' but about the Field of Today! The SPE has recognized the need for more standards which have to link to business strategy. This can make for a compelling value proposition and requires strong industry commitment. Time to market is critical and companies should get involved early in the development process. 'If we don't do it, Oracle, SAP and Microsoft will do it for us!' Standards need agile development, support and 'deep deployment'.

POSC's plan for 2007 and beyond is to build a 'value based business model' leveraging member resources and community knowledge. Tactics involve a business plan, secure funding, launching and product marketing. Energistics will 'drive deployment and manage the standards' lifecycle.' Technical to business integration and optimization are key. Energistics now only has five employees – there is no more a high cost central organization. The idea is to leverage member resources, community knowledge and to 'diversify' using companies like Accenture and IBM consulting. Energistics is also talking to Indian consultants and NOCs.

Energistics inaugurated the 'Standards Advisory Council' in November 2006. Clark asked the audience, 'Does the industry need such collaborative efforts?' Industry still struggles with data issues and Clark is convinced that it is

[1] *POSC and Energistics are used interchangeably in this report. Visit on www.energistics.org.*

necessary to work on non competitive data issues. Clark concluded, 'Priorities, initiatives and solutions are in your hands. Workflow 'friction' can be reduced by standardization as suggested by Energistics' motto – *upstream standards, bottom line results*. Priorities, initiatives and solutions are in your hands—it's your community.'

Q&A

What was the outcome of the regional meeting in India earlier this year?

Energistics member ONGC hosted the meeting which had around 130 attendees. There was a strongly perceived need for geophysical standards as revealed by an internal ONGC study. Energistics is working to prioritize this activity. A Geophysical Special Interest Group was created last year at the India meet with a further meet planned for 2007 (again, in India).

TW0709_2 Keynote address – Philippe Chalon, Total

Philippe Chalon (Total) has a long history of involvement with POSC—he was project manager of the Epicentre data model in the 1990s and Elf, Chalon's employer of the time (now Total) was a POSC founder. Chalon's talk was subtitled 'Back to the future – from data integration to data sharing.' In the 1990s, application software was relatively advanced, but there was little focus on data management and post study data cleanup was inadequate. Only 18% of an interpreter's time was spent on productive work. POSC was created to 'reduce costs and increase productivity.' The original plan was to develop a 'plug and play' software integration platform[1] (SIP) to enable off-the-shelf software and a 'buy not build' model. This model failed because the model's scope was too comprehensive. A '100% solution' was too much in the face of a changing world. The data model today needs to do horizontal wells, EOR, and production optimization. The SIP/Epicentre combination also failed because of technical issues.

Moving to the present day Chalon described how information systems costs in Total have evolved over time. Management information systems made up half of the budget in 1980. Today the split is ¾ on ERP type activity and ¼ on technical computing. A ratio which worries Chalon – 'Is management IT too expensive or do we under spend in technical computing?' In 1980, Total spent about 75% of its IT budget on hardware and about 12% on software. In 2007, hardware is cheaper – down to 17%, but software has risen to 75%. 20 years ago the challenge was to integrate G&G – production was out of scope. Today, field monitoring etc. means geologists work much more closely with the production engineer. Twenty years ago – 'objects' were the big thing. Today Total's geotechnical computing leverages OpenSpirit, EAI, ETL and web services – moving towards the 'holy grail' of data sharing/accessibility from high resolution seismics to field monitoring. All the same, there remain issues with data availability.

Today, Total's focus has moved on from data integration to data sharing across multiple data sources. Multiple data sources are at the spokes of a) a data repository and b) and integration/orchestration servers. This requires semantic equivalence of objects, data quality, availability (an IT issue involving hardware/security etc.), staff training and global agreement with suppliers and governments. On this last point, Chalon complemented POSC on its suppliers and governmental involvement.

Returning to the past, in the 1980s, POSC misunderstood the problem which was not an oil company issue but rather a vendor problem. If vendors don't use common semantics, interoperability 'will not work.' Halliburton and Schlumberger must be on board of any new standards initiative. Although Chalon expressed skepticism regarding the 'multi-billion dollar' savings claims – he is sure that if we do not address these issues, 'we won't be doing business right.' For instance, Total pushes subsidiaries to maximize production, optimizing wells on a daily basis. But IT's contribution to this activity is an unknown, 'all we do know is that we can't do without IT.'

Q&A

Do you manage to separate out data management spend from your IT budget? Data management strategies are often constrained by the data management headcount.

This is a problem. Why are we spending too much on software and too little on data management? Much IT activity revolves around activity which we are obliged to do, but which does little for our business. For instance, changing operating systems every 2-5 years – we spend a lot to stand still. 70% of our costs are recurrent and a large part of the rest goes to revamp of existing systems. Vendor's business models are wrong (referring to Microsoft and SAP[2]). They sell licenses OK but maintenance is not enough for them to live. Total pays SAP several million dollars per year and pays integrators like Accenture/IBM tens of millions more. SAP should change its business model so that Total can pay much more for solutions that require less integration expenditure. Data management's problems stem from this – there is no money left after paying for software licenses!

[1] *The SIP was based on the Epicentre data model. For Chalon SIP and Epicentre are synonymous.*

[2] *See Oil IT Journal, July 2004 - http://www.oilit.com/2journal/4php/4_builddoc.php?year=2004&month=7.*

Going back to the SIP and POSC's early business objects initiative – what went wrong? How come POSC's intellectual property was rolled into and seemingly lost in OpenSpirit?

The SIP was built and still is in operation in Petrobank but POSC did not have a valid business model. IBM built the SIP and offered it for sale. Schlumberger and Halliburton said, 'just buy our software and we'll give you an SIP for free.' There was no answer to this. Epicentre was used a lot by everybody but it failed to achieve SIP status. Total was involved in OpenSpirit which works very well and is still in use.

Semantic equivalence does not seem to be coming from Schlumberger and Halliburton. For OFS Portal, this activity is more about relationship management. It is hard to promote standards without a stronger definitive relationship.

[Clark] – Actually the relationship with suppliers is progressing well with board level representation from Schlumberger and Landmark. We need to define non-competitive boundaries then find a common basis to move forward. We're not about restricting proprietary use of standards-derived work.

[Doniger] – When OpenSpirit was incorporated as a company owned by several of our members, POSC lacked follow-through. The situation was analogous to the development of the first fax machine[1]. What was the value of this? Technology needs follow-though to assure take-up.

[Chalon] – You shouldn't underestimate the problems of deployment in a company with 150,000 employees!

TW0709_3 Energistics activity report – Jerry Hubbard, Energistics

Hubbard introduced the Energy Standards Resource Center – a web resource for POSC projects including WITSML, PRODML, Data Management SIG, GUWI and Classification. Energistics is a global community with links to ISO 15926, POSC/Caesar, ECCMA, and OGP (UK), PIDX, PPDM, SPE, SEG and CIDX. Energistics is about standards information and custodianship. Hubbard asked members to complete the satisfaction survey (on the www.energistics.org home page) online. Hubbard sees a new desire for standards in the community. Energistics now has 4,000 strong 'community members' and 73 corporate members proper. POSC now advocates a 'viral' approach to development so that time and money is not spent on developing 'internal standards' that hamper interoperability. POSC is regionalizing with presence in Asia South (Vanu Bandaru, Satyam) and Western Europe (Tracy Dancy, Paras). To increase member participation Hubbard suggests appointing a POSC technical contact and making Energistics participation a key performance indicator for employees. Employees should put standards involvement on their CVs. Hubbard described the three stages of standards development as develop, pilot and deploy – 'I'm still plugging plug and play.'

Q&A

What is Energistics doing to identify which business problems need addressing?

There is an ongoing conversation with a large independent – that has already formed a lose consortium of companies interested in geodetics[2].

TW0709_4 Special Interest Groups update (SIG) – Alan Doniger, Energistics

Current SIGs are WITSML (aka Drilling SIG), PRODML (Production SIG), GUWI (part of Data Management SIG). Less active SIGS address geology, regulatory and geoshare. Each SIG has its web home page. Elsewhere on the web are 'subject areas' – with pointers to SIGs and standards. Non-current standards remain on the POSC website indexed and documented. If people want, they can be hosted and could turn into a new initiative.

WITSML - www.witsml.org is an open information transfer standard for the oil field. Now in its 7th year, WITSML has an active user group of 40 companies and there has been strong early adoption from some vendors although 'we're not yet there as regards deep deployment.' A compliance program has been initiated. A WITSML SIG is to meet in Paris next week with 15 vendors and 100 attendees signed-up. The Norwegian regulatory Daily Drilling Reporting standards is to become a WITSML extension. The WITSML logo PowerPoint map overfloweth. BP is big adopter and Statoil has drilled 300+ with WITSML – a big component of Statoil's Integrated Operations Program.

The global well unique identifier (GUWI) initiative has taken a long time. Discussions with various stakeholders have proved somewhat arduous. Last year IHS came on board and is to leverage Petroconsultants' GUI which will be put into the public domain. This represents 70-80% of wells drilled outside of North America. Energistics is to

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[1] *The fax machine analogy is interesting. The new technology became a huge success without seemingly requiring any promotion or follow-through. This was because it was a dramatic improvement over what was previously available (Telex), very cheap and compatible with existing infrastructure. ITU Standards obviously played an important role, but it was the fax's alignment with business needs that won it 'killer app' status. More from http://en.wikipedia.org/wiki/Fax.*

[2] *Large independent? Geodetics? Sounds like Devon!*

sign a contract with IHS for maintenance. There is a need to align companies, POSC, IHS and regulators. An analysis from Shell demonstrated the benefits of a GUWI to the SIEP Corporate Data Store. ConocoPhillips expects to benefit from pre-spud registration. The GWUI is already available for IHS customers and will be public 'real soon now.' The remaining challenge is what do with the 25% of wells not covered by the Petroconsultants' dataset.

Other SIGS, in various stages of commencement, include 1) Product equipment and services SIG (with ECCMA – Jerry Hubbard's idea), 2) the Geology SIG – (reported alignment of Common Data Access) 3) E-Regulatory – supported by Norway DDR, US ePermit and the groundwater protection council – this is to roll out in Colorado later this year and 4) Geophysics – interest from India. Other issues pending include a federated identity trust – for Web/SOA-based team building from geographically dispersed individuals.

TW0709_5 Kern River PRODML pilot – Rick Morneau, Chevron

Originally focused on production optimization, PRODML has also proved useful to vendors as they acquire more software and companies and are faced with their own integration issues. Chevron likes to distinguish types of problem it can solve on its own, and problems amenable to a 'community solution.' These, like PRODML, typically concern daily decision making—somewhere between real time/SCADA and longer term reservoir modeling. In 2006, Chevron tested PRODML in a pilot in its Kern River field (1,000 producers) in the San Joaquin valley CA. The produced water pilot was not done on the real field but used a copy of the SCADA reservoir management real time data. In Kern River, 'if you can't get rid of water, wells have to be shut in.' The pilot leveraged Chevron's data integration layer to combine LOWIS (well status forecast), Landmark's DSS (decline curve analysis), InvenSys InFusion and Energy Components from Tieto Enator. Chevron is 'excited' because previously it was 'impossible to get four vendors to talk to each other.' Even Invensys used it to make WonderWare talk to InFusion. The very successful pilot has fed into Chevron's internal training program and its Jupiter Team – a flagship in-house web services development. Chevron Europe is connecting operational data through PRODML to Energy Components. USC Ci-Soft, Microsoft, Conchango and Schlumberger were also involved. ProdML will be integrated into Chevron's global 'Jupiter' standards in 2008. PRODML is helping with integration between Minerva-type applications and OSIsoft developments across business units. There is also high potential for joint venture data exchange. Chevron would like to see better links between the PRODML and WITSML. There are 'indications' that vendors are using PRODML. Morneau is optimistic that we can change the software landscape in upstream operations.

Q&A

How do you fund these projects – was Kern River cherry picked?

Kern River is a 100 year old asset with 1,000 wells – it was not cherry picked. Jupiter is a corporate initiative and will be the framework for all of Chevron's future software development. There is the expectation that assets will use PRODML in their implementation projects – including SEER in Europe and Minerva in the US.

It is interesting to speculate on the ROI of a project like this over the possibility of wells being shut in with no production.

That's true but I cringe at some of the 'billion dollar' numbers.

Did the pilot change the standard itself?

In development we started with WITSML – which started when XML was brand new. Many companies went to a SOA and found PRODML was not consistent with their architectures. Chevron and BP met with Energistics and hired IBM for an independent audit. This changed the way of doing PRODML. Chevron's own code is fit for purpose, not fit for sale. We have just finished a meeting to highlight these issues and to plan the way forward. But an SOA isolates applications from changes in the infrastructure.

TW0709_6 PRODML gas lift optimization – Laurence Ormerod, Weatherford

Ormerod described a one year PRODML project with a handover to Energistics to study the well and gathering domain – excluding the process domain but including modeling and allocation. The starting point was a WITSML production reporting scheme. The 'use case' was gas lift optimization (GLO) with three workflows 1) simple GLO, 2) use of models for surveillance and 3) optimization over time. The simple GOL case took SCADA data into the simulator and output SCADA set points. The problem was decomposed into flow units (well, compressor, ...) composited to an 'abstract flow network.' The abstract flow network is not panacea, 'sometimes you have to say 'a valve is closed.'' Data flows are animated in PowerPoint and a spreadsheet used for data interactions. A Shell pilot showed plug and play functionality between WellFlow (Petroleum Experts) and Prosper (Weatherford).

In 2007 the flow network concept is being further developed and its footprint extended to more lift systems, ESP, and smart wells. Integration with production reporting is ongoing. Ormerod reported issues with Historian data, time series data; logs, etc. Distributed temperature sensor data can be DTS imported (using WITSML) into the

BizTalk ProdML 'orchestrator.' Chevron's water disposal problem will now be more completely addressed to account for spare water injection, disposal capacity. Each branch of the workflow has its own complex PRODML workflow. This is 'pretty impressive for a public standard (if it flies).' But we need better documentation and training, and a closer relationship to other standards like WITSML.

Q&A

Is PRODML used between boxes or at the portal level – feeding data to users?

Today it is between boxes – but ultimately I think it will feed data to users.

TW0709_7 An upstream SOA framework and federated name space – Ron Montgomery, IBM

Ron Montgomery briefly outlined the Norwegian Integrated Information Project as leveraging XML schemas, the ISO 15926 reference data library and a whole smorgasbord of standards—WITS, ProdML, ISO 15926, ISA, Mimosa, IEEE 61970/68 etc. IBM's offering in this space is the Chemicals and Petroleum industries model-based, service-oriented architecture for manufacturing. The Reference Semantic Model for the chemicals and process industry fix the missing links between ISA95 and ISA88 and extended to ISO the 15926 equipment lifecycle standard and MIMOSA (maintenance). By mapping to a reference semantic model it is possible to visualize all enterprise data without 'large, bulky data models.' The approach is also more consistent with semantic web technologies like OWL. A 'piecemeal' naming convention allows ad-hoc attachment of documents, linking asset maintenance management systems through the Mimosa standard.

Montgomery cautions, 'IBM is always raving about SOA, but without semantic relevance to your industry it is just another point to point solution.' SOA solves taxonomy with enterprise namespace management and industry specificity. To deploy SOA you need agile, model-aware adaptors that update from a system of reference (SOR). Portlets and SVG visualization also ran. One pitfall is to work with a single vendor solution because 'nobody has a decent answer in house.' IBM is 'agnostic' when it comes to portal and database selection which are 'religious decisions.' Proprietary APIs have to be shunned. IBM creates customer's business rules in the ISA 95/98 framework – 'the model resides in the enterprise service bus.' OPC is XML today; tomorrow it will be the binary Universal Architecture (UA). IBM spent $350,000 with standards bodies to link ISA 95 and 98—creating an explicit model, 'BatchML'. The Rational Software Architect modeling tool has been generalized so that it can be adapted to any complexity – targeting assets, equipment, documents etc. UNCEFACT (company codes), Mimosa (SI-based units) and OPC quality and timestamp standards also ran. WITSML and PROML are on the periphery of this activity. According to Montgomery, the key standard is 'Augmented S88/S95.'

Q&A

If UA is binary not XML, isn't that a 'bad thing'?

No it is just for speed – it will be transparent

TW0709_8 The Data Room – Technology Watch subscription information

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