Oil Information Technology Journal

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ESRI EU PUG

Highlights

ESRI EU PUG
Roxar interview
Taxonomy update
Fracking in the cloud
Safety First
Back to School
SeisWare on Mars
Consortium corner
Cyber security

NEXT IN OIL IT JOURNAL, WELLSITE AUTOMATION

In this issue:

Data science SWAT team

Starting out on the road to data science 'Nervana.' Intel's AI Academy opens with help from Coursera and Kaggle. Chevron as Intel's data poster child. What makes a data scientist.

OK so you have your Hadoop infrastructure. Expectations are building in the C-suite for AI-derived insights from your big data. Way down the pecking order, a young grad is struggling with the 'R' manual and trying to come to terms with your business. You need help with the people side of the data/analytics/AI conundrum.

This came recently from an unusual source, chipmaker Intel, which has taken upon itself to educate the world on getting more from your data. Chief data scientist, Bob Rogers, recently offered advice on starting out on the path to advanced analytics and on cultivating the requisite skill sets. Rogers sees this as a primarily a 'people problem' as 'easy-to-use analytical platforms and solutions are now more accessible than ever before.'

Rogers advocates a data science 'Swat team,' which can apply its expertise where it's needed and then move on to the next project. The team can act as evangelists, teaching others key skills and articulating the value of their work. Data science evangelism is a 'critical success factor in many organizations.'

Intel's poster child for the approach is Chevron whose Swat team (a.k.a the Chevron center of excellence for advanced analytics) is headed-up by Margery Connor. Connor stated that 'most people see a lot of data in their daily jobs and this is the data we want them to work with.' Chevron pairs participants with analysts who use AI to come up with answers, a practical approach that sharpens employees' ability to frame business challenges and identify data-driven solutions. Today, Chevron has a companywide mandate that every project proposal above a certain dollar threshold undergoes analytics that include uncertainties in the data and economic assumptions.

Intel is also offering help for would-be AI/analysts with the 'Nervana' AI Academy, an online resource that showcases 'the most recent, open-sourced and optimized frameworks' along with tutorials. Nervana is supported by the Intel's engineers who developed the underlying technology and is backed by a community effort in partnership with Coursera. Intel also recently announced a partnership with Kaggle to develop and showcase data science skills in the context of Intel's 'AI for good' initiative.

What is Intel's interest in AI apart from doing good? A recent job posting provides a glimpse of what is going on at the chipmaker's New business initiatives group, which is looking for a senior data scientist with a background in digital signal processing, machine learning and AI. Target applications are 'wearables and Internet of Things applications' along with a SaaS platform for data science. Work includes pattern recognition algorithms for sensor data from accelerometers, gyroscopes, imaging and more.

Pason buys Verdazo

Analytics boutique formerly called Visage Information Solutions has been snapped up by drilling data specialist in cash and paper transaction.

Drilling data management specialist Pason is to acquire Verdazo Analytics (formerly Visage), a privately owned, Calgary-based discovery analytics software house. Founded in 2006, Verdazo's solution helps energy producers 'optimize production and operations and increase profitability.'

Verdazo's management team will continue to operate the day-to-day business as a wholly-owned Pason subsidiary and will enter into non-compete agreements. The cash and paper deal includes a 50% payment deferred over three years. Verdazo's solution will combine with Pason's drilling information ecosystem. Verdazo will also benefit from Pason's brand and US market footprint.

Verdazo president Bertrand Groulx said, 'Joining Pason gives us greater market reach and access to decades of drilling data and experience. So far we've provided analytics on financial, public and production data. Now we have access to Pason's world class drilling data expertise.'

Pason also announced that it has sold the operating assets of its 3PS sensor unit to McCoy Global, booking a 'non-cash impairment charge' on intangible assets in Q4 2016. More from Pason.

A bit of a ramble to kick-off the year

Neil McNaughton opens up his editorial 'auto-suggestions box' and finds some curious stuff. What programming language does China's new supercomputer use? Where is the semantic web today? What will the new US administration bring to the oil and gas industry? Evolving industry sentiment on global warming. Why is the Permian basin so successful?

Last month I wound-up asking 'Will IBM's Watson beat the traditional weather forecasters? If it does, will we even know?' Well actually we do now. At least according to a study from ForecastWatch which found that IBM's Weather Company provided 'the most accurate forecasts overall across diverse geographic regions and time periods covered.' It would be nice to see here a triumph of data-driven forecasting over forward modeling but things are not quite so clear cut (are they ever?). Alongside its own Weather Underground crowdsourced data, the company's forecasts include the results from the government-provided data and forecasts with which it is 'competing.' All of which is mashed up inside of IBM's proprietary Deep Thunder forecasting model. But while the big data vs. forward modeling question remains unanswered, Deep Thunder's capability to ingest end process 400 terabytes daily is impressive.

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A decade or so ago, maybe it was longer, folks who should have known better roamed the conferences railing against those old fools who used 'legacy code' in obviously outmoded languages, notably Fortran. The old farts were enjoined to get with it and program in C# or some other shiny thing. Such manifest nonsense (a.k.a. FUD) begat my minor research program and editorial 'Don't mention the 'F' word in marketing! This, in October 2002 (OK, a bit more than a decade ago), concluded that Fortran was still offering scientists and engineers quite a lot back then.

China's recently-announced 10 million core and around 100 petaflop Sunway TaihuLight is the world's most powerful computer in 2017. What compilers does it offer? A choice of C/C++ and, you guessed, Fortran. It would appear that venerable language, invented in 1950s, remains a tool of choice for scientists.

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Our relentless search for meaningful progress from the semantic web community goes on. I recently attended a SemWeb Pro conference where the World wide web consortium's data specialist Phil Archer bemoaned the fact that the semantic web and linked data have got a bad press. Archer cited Neo4J's effort in unpicking the Panama Papers as a success for graph databases and the semantic web 'although not for RDF.' Archer wondered why Neo4J was better than a Sparql endpoint observing that this was 'a good question for this community, maybe we are missing a trick.' On the other hand, Neo4J 'likes RDF and easily sucks it up into its proprietary system.' Archer concluded rather lamely, 'Don't let people tell you that the semantic web/linked open data is not a success. Success comes from the output. It *is* useful and does things that other technologies can't do.'

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EY, a provider of 'innovation in financial and operational excellence' forecasts that for the oil and gas business, innovation in financial and operational excellence will be a main driver of value and competitiveness in 2017. Well they would say that wouldn't they! EY's Deborah Byers opined that 'The industry's hopes have been buoyed thanks to the OPEC output agreement and the Trump Administration's positions on energy thus far.'

I know that I am on shaky ground here but I can't see what exactly was so bad about the previous administration's governance (or perhaps lack of) of the US oil and gas industry. US production of both oil and natural gas has risen spectacularly. I wonder just what the new administration can do better. This could be one of those 'be careful what you wish for' things. Maybe in a decade or so, industry will look back nostalgically at the 'Obama production peak' and the heady days of $100 plus!

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I'm not sure if it is the new administration that has opened the floodgates (not perhaps the best choice of words) regarding global warming but the latest issue of the excellent Ryder Scott newsletter has a banner headline, 'Global warming is not man made' above a summary of meteorologist and former KHOU-TV weatherman Neil Frank's view on the 'hoax.' I was curious to see what the SPE's position on GW was and searched for 'global warming' on OnePetro. The answer came back right away, 'Humans are not responsible for global warming.' To read George Chilingar's paper will cost you $25 on OnePetro. Alternatively, you can read our report from his presentation at the 2007 SPE ATCE in Anaheim along with the exciting Q&A and a curious intervention from someone claiming to be from the EPA!

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The oil and gas industry loves a good narrative. For shale, the narrative turns on the notion that horizontal drilling and fracking can unleash oil and gas from tight, almost impermeable, shales. The narrative has suffered somewhat in the last couple of years as it has become clear that this only works up to a point, and that fracking in some shale areas is uneconomic. But not so for the Texas Permian basin where 'Permania' has taken hold with more drilling, M&A and increasing production.

A recent report, 'Unravelling the US shale productivity gains' from Petronerds and the Oxford Institute for Energy Studies offers what might be an explanation for the Permian basin's success. Petronerds observes that '[Permian] growth has, in large part, been spurred by the application of unconventional drilling technologies in reservoirs that had *previously been treated as conventional formations*.' The italics are mine, as is the conclusion that success in the Permian is probably down the fact that it is not shale!

@neilmcn

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Oil IT interview, Emerson/Roxar

Oil IT Journal talked to Roxar Software Solutions MD Kjetil Fagervik about the new Roxar API. Roxar's Python API, which replaces Dot Rox and the RMS OpenAPI, lets users assemble cross-platform workflows and apps using NumPy and SciPy libraries. Roxar claims vendor-independence for the API which leverages Energistics' ResqML data exchange standard. The platform provides a basis for strategic 'big loop' application development. Matt Breeland provided the demos.

Why the new API?

The Roxar API is designed to meet the evolving requirements of industry. Today users may deploy components from Schlumberger's Ocean/Petrel, Landmark's DecisionSpace and Paradigm's Epos. Users want to connect these into custom workflows. The API encourages standards-based data management and creative thinking. We also needed the API ourselves to realize our internal goal of evolving our legacy software to a new architecture. The new API is built around, but separate from RMS.

What happened to Dot Rox and the RMS OpenAPI?

Our earlier Dot Rox and OpenAPI have evolved into the new Python API. Also our IPL scripting language is being upgraded, but it will not be retired as it includes as rich set of scripts developed by our clients.

What data standards are you leveraging?

We access third party data and applications and data in e.g. Excel. But our main standards push is for Energistics' Resqml where we are very involved. We also access Roxar shared earth model project data from outside of RMS. This real vendor independence was expensive to develop. The Python API can be used to develop apps for visualizing data in a web browser from multiple projects, to perform data management and perform data QC to corporate standards.

[We watched a short demo of smoothed log data using the API and NumPY and SciPy libraries. The functionality can be delivered as either a Python Job in the RMS IDE and/or as a stand-alone WebGL app for multi-endpoint visualization from the Roxar server.]

Does the multi-endpoint functionality use the Calgary Scientific technology you showed a couple of years back?

No. Now it is all home grown. The API supports desktops, tablets or smartphones. Some of this multi endpoint visualization is still work in progress. But there are other ways of doing this than Calgary Scientific. They were one of the first out there, but it takes a lot of work to embed their technology in legacy software.

Do you offer an Eclipse-based IDE?

It could be or any IDE you prefer. We provide an environment that takes full advantage of Python community bells and whistles. We support Python 3.4, the latest and greatest and the Jupyter Notebook. Which we also in our own development process internally.

[Another demo showed Petrel-to-RMS interoperability combining the Ocean and Roxar APIs to create new workflows, demonstrating data transfer from a Petrel plug-in that pushes data to RMS.]

How much of the Ocean API is accessible, can you manipulate Petrel from the API?

The plug-in is limited to functionality we have developed in the API. You could manipulate Petrel but this would be slow. We use the Ocean license and our API to move stuff between the two platforms.

A bit like Open Spirit?

Yes. Data movement is a lot easier today. But we are happy to leave the data management to specialists we just provide the tools.

Is this most for research or production?

A good question. Our current target is our existing clients with lots of scripts that have become a challenge to maintain. Interoperability is another short-term target. The API is also designed to support our 'big loop' solution. Here we are in dialog with the main software providers to leverage the API in smaller niche applications. The API will evolve and its footprint will broaden. Today, it is still hard to connect with legacy apps. We bring platform independence, web browser based access (tablet/phone) and support for Resqml, this is very important to us and to some clients.

Back in the day, Roxar's differentiator was its platform independence and support for Unix…

Yes. A few years ago Windows was very strong. But then came Android, iOS and the iPad. Today it is important to avoid OS platform lock-in. The cloud is mostly about Linux too so this remains crucial to us. Scripting via the API is an important differentiator.

Will you be sharing the code?

We are thinking along the lines of a community – like the Ocean store or maybe Github.

The Roxar API is a 'traditional' API. What is your position on the 'new' container-based microservies APIs?

The current API allows us to move in a new strategic direction that remains to be decided. Software has been transformed by mobile and we expect that our world will change too. The API is a first step on the road to SaaS-style business models and enhanced collaboration and will allow us to build the appropriate infrastructure. We don't even know if our clients will have in-house IT in the future. Maybe there will be a shift to Google/Amazon although not all the infrastructure is in place for this yet. The API has value in the traditional environment. But our focus on the cloud is real, as we showed in Amsterdam.

More on the API from Roxar.

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Taxonomy Boot Camp, London. NISO, understanding metadata

Taxonomies for publishing, project management, NLP. Primer provides state-of-the art snapshot.

Speaking at the recent Taxonomy Boot Camp in London, Michael Upshall (**Unisilo**) showed how two project management taxonomies were mashed-up to underpin Gower Publishing's internal project management community. The community offers enhanced term-based search across the Gower PM body of knowledge, comprising over 100 published books on the topic.

In what Upshall claims as a world-first, the two industry-leading PM taxonomies, the UK's PRINCE2 and the US PMBOK have been combined into a common terminology of some 250 terms. Tools of the trade include Drupal (website construction) and Apache Solr (automated tagging and search). The solution supports natural language query such as 'What is the role of the project sponsor?' and search by author, subject and across related content generated via the taxonomy.

Charlie Hull described how **Flax** built a free, open source taxonomy classifier in 10 days, leveraging a 'brace' of open source software including Apache Lucene/Solr, Python and JQuery. (Stanford's natural language processing (NLP) was tried but found wanting). Flax leverages search-based classification, seeking key terms in documents and using Solr's 'MoreLikeThis' feature to extend hits. The end result was liked by the client, but not by the IT 'powers that be' which were opposed to using open source software.

Brendan Clarke went one step further, applying machine learning to document tagging. Clarke is a Microsoft content management guru and co-founder of **TermSet**, a SharePoint metadata and taxonomy add-on. The cloud-based system uses NLP to create taxonomies from information inside documents. Human tagging is expensive. For Clarke, NLP is the future of text analytics.

Sukaina Bharwani showed how **PoolParty**'s Semantic Suite has been used to create the Climate Tagger, a multi-language thesaurus of concepts and terms relating to energy efficiency, renewables and climate change. Climate Tagger data is available from a portal or as machine-readable linked open data. The PoolParty API exposes NLP functionality, push requests and statistics on activity, trending concepts and recommendations. Under the hood is Drupal, WordPress and the Ckan open source data portal.

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A recent 'Primer Publication' from the US **National information standards organization**, 'Understanding Metadata' (UM) by Jenn Riley describes how metadata has become a household word following the NSA leak. Google's knowledge graph contains 3.5 billion metadata elements on 500 million people, places and things. UM presents the intricacies of the semantic web/linked data/RDF approach with reference to machine-to-machine content negotiation. The various options for deployment, schema.org, OWL, SKOS, Dublin Core and FoaF, are treated with a succinct historical background and useful code examples. UM concludes with an interesting editorial on the future of metadata which Riley sees as a continuing shift towards the graph-based, sparse data collections as opposed to the rigid structure of the database. The 50 page primer is a free download from NISO.

CoViz real-time data monitors surface deformation

Dynamic Graphics' flagship used to monitor heavy oil operations in San Joaquin Valley.

A new AAPG paper shows how Dynamic Graphics' CoViz was used to visualize and investigate a large, heterogeneous data set collected to monitor surface deformation in the San Joaquin Valley, California. Here, oil field operations have significant financial, operational, and safety implications. Heavy oil production, water and steam injection from and into shallow reservoirs can create significant surface deformation.

SkyGeo's satellite-based interferometric synthetic aperture radar (InSar) has proved a powerful tool for monitoring such deformation throughout time. But the true value of InSAR data is revealed when integrated with time-based production and injection data along with cultural data, geologic models, well trajectories, microseismic and tilt meter data.

The authors insist on the importance of the 'temporal component' and present a case history spanning some twenty years of production and surface deformation. CoViz enabled long-term subsidence patterns to be related to fluid production and local pockets of uplift to over-injection. CoViz was originally created for BP as a vendor-independent browser for seismic, well and reservoir simulation data (OITJ 2006/12). More from Dynamic Graphics.

Devon Canada's e-well file

Holistic well data repository puts PPDM's 'what is a well?' standard through its paces.

Speaking at the Calgary geoscience data managers' society late last year, Floy Baird presented Devon Canada's well data management initiative, an attempt to deploy an electronic well file (eWF), a 'repository for all electronic well content that compose a well file for the entire well lifecycle, attached to the corporate well identity record.' Today, Devon has a 'maturing' environment from which well identity, data services, integrations and eWF content are accessible. Foundation of the system is the well hub, a single, trusted source of well identity data. A unique Devon UWI, reconciles key descriptors across source systems to maintain integrity and allow for integration reporting/ analytics. The PPDM 'What Is a Well?' analysis helped create components and relationships. The system also captures and maintains an audit trail of changes, including system of record IDs. The PPDM logic has been tested across some 15 cases from a simple vertical well through sidetracks, multi-leg wells and Devon's 'uptrack' SAGD wells.

Content can be harvested into a Dropbox, emailed or dragged onto a well tree. Almost a million artifacts have been captured and classified automatically. A Sharepoint/Spotfire interface provides end users with access to the eWF data. Read Baird's presentation here.

Software, hardware short takes …

Phusion Onsite, Blue Marble talks to Petrel, Cegal/Blueback velocity modeling, CNPC announces iPreSeis, CMR Prototech images flow in pipes, Advosol's EasyUA, Thin Anywhere - free at last, Safe Software's FME 2017, LMKR's GVERSE eStore (and GeoGraphix), Lynx upgrades vectorizing software, Beicip OpenFlow Petrel link, Petrosys 17.8, Rock Flow Dynamics new tNavigator, Schlumberger's Ocean Framework community helps unemployed geoscientists.

Engineering data specialist **Phusion IM** has released Phusion Onsite, offering mobile access to its engineering data management solution. The solution runs on Apple and Android devices or on ATEX-certified endpoints. RFID and QR scanners are supported and the system can capture in-field imagery of defects.

Blue Marble Geographics' Geographic Calculator 2016 SP2 includes a new tool for reading and writing coordinate system definitions to a Petrel CTL database.

Blueback Rocks Velocity, a new Petrel plugin from **Cegal**, is claimed to simplify and speed velocity model building workflows.

China National Petroleum Corporation has announced 'iPreSeis,' an application that 'uses seismological waves to image and quantitatively predict oil and other reserves.' The new software 'promises to break the monopoly of international companies in the sector.'

CMR Prototech has delivered a new gamma-ray tomograph to the **Saskatchewan Research Council**. The device can fluid flow inside pipes of 4" diameter.

Advosol has released its EasyUA client SDK, a suite of .NET classes for communications with an OPC-UA server.

Thin Anywhere has renegotiated its agreement with **Schlumberger** and can now independently market its remote 3D visualization technology.

Safe Software has announced FME 2017.0 with 'better performance, ease-of-use, and more formats and transformers.'

LMKR has opened the Gverse e-Store, and online store for geoscience applications. Along with the Gverse apps, the GeoGraphix suite will be available online real soon now.

Lynx has announced release 2.9 of its Leassv seismic vectorizing solution. Leassv produces SEG-Y format trace files from scanned images of seismic sections. Bundled software from Snowbound provides support for some 60 raster file formats.

Beicip has released a Petrel plugin for the 2016 edition of OpenFlow Suite providing bi-directional exchange grids, wells, horizons and faults. A CougarFlow link drives Petrel workflows inside a 'big loop' from the geological model to the fluid flow simulator.

The 17.8 release of **Petrosys** Pro leverages web map services for improved map display. OpenWorks connectivity has been enhanced and support has been added for IHS/SMT Kingdom fault sticks.

The 4.2.6 release of **Rock Flow Dynamics**' tNavigator fluid flow simulator includes a new PVT designer module with options for component selection, experiments, lab data and automated matching of selected parameters. Read the release note here and a newly published use case here.

Schlumberger has announced the Ocean Framework collaborative partner program offering unemployed geoscientists Ocean Framework licenses to 'bring your innovative technology to market through the Ocean Store.'

Consortium corner

ITF, Marathon, Repsol launch FracGas II. M-ORSP imaging consortium's 'game changing' depth imaging. Geovariances, Mines ParisTech team on UncerTZ. DNV, EPRC work on CO2 pipelines. ENI renews with MIT Energy Initiative. AASPI consortium licenses technology to Geophysical Insights.

The UK **Industry Technology Facilitator** (ITF), with help from Marathon Oil, Nexen and Repsol, has launched a JIP to improve the planning, design and implementation of hydraulic fracturing to 'maximize the efficiency and profitability of unconventional resources globally.' The **FracGas II** JIP will extend **Rockfield**'s 'Elfen' tight gas reservoir software, enhancing its finite element based modelling and microseismic methodology.

The Houston University **M-OSRP** seismic imaging consortium has produced a summary of its goals and deliverables along with its plans for 2017. M-OSRP notably is developing 'game changing,' direct inverse scattering series depth imaging without a velocity model.

Geovariances reports progress on its seismic time to depth conversion software that embeds the findings of the **UncerTZ** research program, a joint venture between Geovariances and **Mines ParisTech**.

DNV GL and Australia's **EPCRC** have been awarded some NOK 40 million by the Norwegian CLimit Program and Australian's Department of Industry, Innovation and Science for research into pipeline transportation of large quantities of CO2 from carbon capture and storage (CCS) facilities. A test program will run through to 2019 to develop and validate computer models for CO2 pipeline design and update the DNV-RP-J202 standard for CO2 pipeline operations.

In a $20 million deal, **ENI** has renewed, for four more years, its membership of the **MIT Energy Initiative**, an R&D initiative to 'advance key technologies for addressing climate change, in the areas of solar, energy storage, and carbon capture, utilization, and storage.'

The Attribute Assisted Seismic Processing & Interpretation (**AASPI**) consortium at the University of Oklahoma has licensed its technology to Houston-based **Geophysical Insights**. AASPI's seismic analysis software will be embedded in GI's 'Paradise' big data seismic platform. The deal was announced by AASPI head Kurt Marfurt and GI president and CEO Tom Smith.

on the spot report

ESRI Petroleum User Group, London

EU PUG hears of shift in GIS from specialist to end user. Pokévision mega-GIS flies briefly. Survey 123 for Cairn's 'Daily Photograph.' Pipeline GIS from PODS (and Esri). Esri Insights for big geo-data. BP's OneMap. UK OGA new portal. Shell's MyMap. Repsol's GeoSite. SNAM's Gas-to-go. Drones for pipeline survey. Oceaneering on ROV-based mapping. Getech on GIS object naming. BIM and GIS.

2016 was not a record year for the Esri EU Petroleum User Group's London conference but attendance, at around 200, held up well in the current circumstances. Danny Spillman's keynote underlined the shift in mapping focus from the GIS specialist to the end user, likely viewing a map on a tablet or phone. Today's organizations are 'connected' through GIS which provides a web-based 'system of engagement and of record.' For more on the fundamentals of GIS, Spillman recommended Roger Tomlinson's Thinking about GIS, particularly Chapter 6 on GIS information product description. Here 'keep it simple' is the key. ArcGIS Online offers ready-to-use maps and imagery, thanks to a new partnership with Digital Globe. ArcMap no longer fires up with a blank map but can be configured for self-service, smart mapping that aligns with corporate standards.

Spillman offered a couple of interesting use cases. The traditional 'two dudes in a garage' who created Pokévision used ArcGIS Online to create a real time Pokémon GO tracker. Pokévision went from zero to 20 million viewers in three days and 'cost us some money to scale.' Nintendo shut it down as it did not appreciate its data being scraped! A more relevant example is new drag and drop functionality that turned an Excel spreadsheet of production data into a bubble map. Maps can be driven filtered and tweaked from an open Excel spreadsheet. Data can be matched on field names, re-symbolized and saved as a new map or exported as an interactive PowerPoint slide. Geophysical specialist PGS uses Story Maps to show successive years of North Sea exploration.

Lorien Innes ran through some of Esri's educational efforts including the Life-long learning program, the PUGOnline resource that now houses the PUG List of 'to do' items, the ESRI Young Professionals network and the new(ish) GeoNet community. Esri has also announced the PUG Fellows program for retirees-cum-mentors who can have access to free copies of ArcGIS for personal use.

Catherine Hams described how uses the Survey 123 app as a component of **Cairn Energy**'s 'Daily Photograph,' an HSE app for field survey. Fieldworkers can capture data and imagery which go straight to the CairnMaps ArcGIS Online portal. The application provides engineers, drillers and accountants with an understanding of what is happening on the ground and what is feasible. Paradoxically, users love it because it is form-centered and they 'don't have to make a map.' Information is shared with joint venture partners through LinkedIn! The app is now being extended to inventory management. Otka's single sign-on authentication and mobile device management is also being added to this 'simple solution that people are gravitating towards.'

Jeff Shaner provided an update on ArcGIS for Pipelines which can leverage either Esri's own Utility and Pipeline data model or PODS' Spatial/APR. New functionality in ArcGIS 10.5 allows for capture of pipeline data into the geodatabase including inline inspection data. GIS is presented as a system of record for all pipeline data. Again, Excel 'beloved of engineers' can be used to filter on high value anomalies and switch back to a shareable map for field inspection.

ArcGIS Insights, Esri's own 'big data' toolset is also announced for 10.5. This includes GIS Tools for Hadoop, an 'open source' toolkit for big spatial data analytics. Insights also adds a temporal component for slicing and dicing data with spatial and time tags, allowing for retrieval of ancient data on vessel and vehicle movement from the data lake. Insights offers configurable, SharePoint-esque workflows for interaction and data exploration. These can be saved as shareable workbook for further tweaking.

Tim Hunter-Rowe introduce **BP**'s 'sustainable' corporate mapping solution aligned with BP's operating management system. OneMap operates across 22 sites around the world with various restrictions on data use, different levels of GIS maturity and both Windows and Solaris operating systems. In 2013 BP decided to go for 'one big GIS,' defined centrally and deployed regionally. The oil price drop and downturn threatened the project. But further analysis found more geospatial requirements from seismics through tankers to pipelines. A compelling business case was made to management showing how much time was spent on real geoscience and how much on format conversion (up to 80%!), the key selling point. OneMap was designed to dovetail with Chili, BP's major petrotechnical reboot, adding on GIS as data management enabler. More effort went into convincing IT of the need for GIS and what it meant in terms of many servers and database management systems. The system was rolled-out in Aberdeen late in 2014, allowing stakeholders to manage their own data. User feedback provided more learnings and tweaks. Keeping up with a fast changing IT environment led to an iterative 'agile' approach. Various third party providers supported the project. Voyager's data discovery tool was used to audit BP's legacy geographic systems and determine what to migrate. Safe's FME was used for transactions and data import. Geo Jobe helped with batch movement of portal content and Vestra monitored system operations. Roll-out has met with some resistance. Digital natives understand web maps but older GIS users like maps with hundreds of layers! Hunter-Rowe offered an *a propos* quote from Peter Drucker in this context in that 'culture eats strategy for breakfast!' Notwithstanding this, OneMap is moving from a 'project' into a 'water and feed' phase. Sure, the downturn has affected budgets, but on the other hand, there are new opportunities in big data, the IoT and mobile. Hunter-Rowe wound up citing a Forrester Wave August 2016 report that sees GIS as 'informing the organization and scaling to large data sets with easy-to-use interfaces and methods for delivering insights.'

John Seabourn (**UK OGA**) teamed with Graeme Blakey (**DataCo**) to present the OGA's new web services-based Rest endpoint for government datasets for licenses, blocks, fields and production data. So far most of the 15 million requests/year have come from Greenpeace and other activists! The portal is to evolve to become a front end to the putative UK National Data Repository, bringing together UKOGL, BGS and CDA. OGA recently published its IM strategy. A GIS

strategy document is in preparation. More from the OGA.

James Bowler presented **Shell**'s MyMap application. This is used to 'keep an eye on the neighbors,' or in other words, as Shell's GIS enterprise environment for managing new UK exploration opportunities. MyMap, an ArcGIS for Portal development is a component of Shell's enterprise application environment. Other pieces are Shell's own Geosigns interpretation suite, Petrel, SharePoint, FME, Blue Marble and Spotfire. MyMap lets Shell keep tabs on the hundreds of marketing flyers and online opportunities it receives every year. These are captured to Excel/ SharePoint, passed through FME and into a geodatabase for ingestion by MyMap. A 30 column Excel table and labyrinthine FME workspace processes opportunities, block names and geometries from SDE adding geoprocessing to figure distance to Shell infrastructure. The results are displayed on a nifty map that includes Shell's 'hot' wells. Bowler reported that 'folks were surprised to see the map results.' MyMap shows the merit of situational awareness and conversely, the fact that often stakeholders are not aware of what is really on offer. The tool now maintains an 'evergreen' new business opportunity landscape around key production hubs.

Repsol's Dana Remenova teamed with Paula Peroni (**DigitalGlobe**) to show how Repsol integrates image services in its GIS workflows. Repsol's goal was to provide instant access to E&P imagery and derived products from its Madrid-based 'GeoSite.' Satellite, DEM, bathymetry and other layers are combined to create Repsol's flagship content, a custom base map for its worldwide assets. The system is used for seismic survey planning, HSE/ environmental monitoring and base mapping. GeoSite embeds commercial data from providers including IHS, Neftex, Bing Maps, TCarta and oil seeps imagery. The system also feeds image data to Petrel.

Salvatore Amaduzzi showed a field service management application that **OverIT** developed for **Italgas/SNAM**. The 'Gas to Go' iPad app combines work orders from SAP and Maximo in a GIS interface. The scheduling engine can handle 120k work orders/day, pushing a daily plan out to the handhelds. An augmented reality function lets users co-visualize tag information as they operate. The system is built on standard Esri architecture. Street-level imagery is overlain with underground information of pipes and cables. OverIT is also working on a proof of concept for an offshore platform, adding shape recognition to id objects, all connected with plant scada systems. The augmented reality is delivered with Epson Moverio smart glasses. These are 'OK' but the Microsoft HoloLens is 'really incredible' (except they cost $3000!). Google glasses are 'deprecated.'

Jeff Allen presented a proof of concept that set out to capture map grade ortho imagery from a drone. There was some resistance to using the drone over a conventional survey. There were HSE concerns regarding distractions to welders and landowners, so a remote area in large nature preserve was selected for the test. SenseFly's eBee fixed wing drone carrying a Sony CyberShot snapped images to id welds and markers on the pipe wrapper. Pizza pie locators were added for GPS control. Esri Drone2Map software was used for post processing. Spatial accuracy was deemed fit for purpose. With a couple survey control points accuracy was down to ½ pipeline diameter. The technique should be useful for future integrity management to explain the 'story' of the line and for right of way restauration. It took only 15 minutes to fly the survey but several hours to get the drone out of the tree it got stuck in!

Pete Veenstra (**TRC Solutions**) provided an update on the Pipeline open data standards (PODS) organization's Next Generation Lite data model. PODS traditionally is a US organization but is working on alignments with Iploca. PODS is expanding its remit to include best practices for pipeline data management and plans to become a 'fully-fledged standards organization.' PODS Next gen is a complete rework of the data model which had become unsustainable. The model has been modularized and simplified with fewer tables. Next gen will be well documented and 'less daunting for implementers.' NG embeds published standards from OGC GML and ISO standards for linear referencing. The NG Lite edition, a free giveaway, is intended as a working preview of the core NG model. This is 'much simpler than anything implemented before by Pods or Esri.' Lite is delivered as a conceptual model in Visio with a logical model in Spark Systems' Enterprise Architect. ShapeChange auto-generates code for the physical model. Deployment patterns are available for a generic Rdbms, Esri geodatabase, hybrid, PostGIS APR and relational with XYZ in tables. NG is scheduled for completion by end 2018.

Oceaneering demoed its technology for video streaming and storage as featured during the Macondo aftermath. Oceaneering adds machine vision, people tracking for video, drone and ROV streams. Data is captured to the Oceaneering Media Vault. Speech to text and OCR are also available to extract metadata from video. Oceaneering provides an API for machine learning applications. These include detection of facial emotions, loitering activity and abandoned baggage in airports. A plug-in widget for Esri maps allows for search for particular video assets and zoom-in to a frame. All this runs in the cloud as Oceaneering Azure Media Management. Video streams can be blended with a 3D model into a 'VR-based 3D asset performance management dashboard.'

Neil Wrobel (**Getech**) presented a geo-'logical' approach to data naming. Getech has a large GIS archive of shape files, layer files and geodatabases. Naming these assets has evolved over the years, settling on a convention for abbreviated, human-readable tags of 30 characters. Most recently the arrival of Exprodat's 20,000 earth system modeling datasets (now available from the Esri Globe) broke the naming system. Getech decided to move away from human readable names to a lookup table that supports time-slider access to its maps. Wrobel also reported a move from Oracle to the PostGreSQL database.

Claire Ellul (**UC London**) presented on the interface between building information management (BIM) and GIS. In other words, combining CAD with GIS. The UK Government's construction strategy requires 3D BIM by 2016 with all information electronic. Integration is currently done with Safe Software's FME but there are gotchas like unit conversions and CRS issues. Concepts differ between the two environments. Where GIS sees a 'room' BIM sees a floor, walls and ceiling. Planning of refineries and other large assets currently need both approaches. But these will have to be integrated to achieve the goals that government has set out. Elluls's talk resonated with those interested in standards and in engineering data management, as seen from both sides of the debate. In a personal communication we elucidated that at the present in the UK there are no significant standards for BIM. Autodesk Revit is the de facto standard.

Read the ESRI EU PUG presentations here.

Folks, facts, orgs ...

Alpine 4, Aker, IOGP, Ansys, Asset Guardian, Expro, Fiatech, GE, GRI, HARC, Hexagon, Intsok, Norwep, IPL, Civica, ISO, IT Vizion, Landmark, PPDM, PNEC, Maptek, Michael Baker, MicroSeismic, Noah, PIDX, Precision Drilling, Ryder Scott, Software AG, Steelhead, TechnipFMC, more ...

Mike Steele is president of **Alpine 4**'s new Horizon well testing subsidiary.

Aker Solutions is now an **IOGP** member.

Rick Mahoney has been appointed **Ansys**' VP worldwide sales.

Tina Campbell is marketing coordinator at **Asset Guardian Solutions**.

Bill Inglis is senior project manager at **Expro**. He was formerly with Hess.

The **Fiatech** director position has been 'eliminated.' Ray Topping has been reassigned as director of the Construction Industry Institute. Bill O'Brien has been appointed transition manager to assure the continuity of Fiatech operations.

Visal Leng is president and CEO, Asia Pacific with **GE Oil & Gas**. Jennifer Waldo is VP HR at GE Digital.

GRI has named Tim Mohin CEO. He succeeds Eric Hespenheide.

HARC has appointed Lisa Gonzalez as president and CEO following Jim Lester's retirement. Lester stays as board member. Mustapha Beydoun is VP and COO.

Gerhard Sallinger is senior VP of Strategic Alliances at **Hexagon**.

Intsok is now **Norwegian energy partners**.

John Walter is president of **ISO** for 2018-2019 and already serves as president-elect.

Cheryl Dugger is enterprise accounts manager, North Americas with **IT Vizion**; Ciprian Tolescu for Central and Eastern Europe. Robert Zomborszki is OSIsoft PI consultant for Central Europe.

Landmark's Shashank Panchangam joins the PPDM board. Duane Moonsammy joins the PNEC board.

Simon Ratcliffe is **Maptek** CTO.

Michael Baker has named Penny Mercadante as executive VP and chief HR officer. Darcie Zeliesko is VP talent management.

Carl Neuhaus returns to **MicroSeismic** as VP of Engineering after two years at DrillingInfo. Bill Barker is VP analysis, Eric Bourdages VP operations.

Fred Kunzinger is to retire from **Noah Consulting**.

Darren Ebanks is now member of **PIDX** International's Executive Committee.

Niels Espeland has retired from **Precision Drilling.** He stays on as consultant.

David Sealock is **PTAC** VP of R&D.

Ryder Scott has promoted Tim Smith to senior VP and group coordinator in Houston. Vitaliy Charkovskyy and Anton Siyatskiy have been named senior petroleum engineers in Calgary.

Software AG has named Stefan Sigg as chief R&D officer. He hails from SAP.

Paul Sullivan is VP Projects at **Steelhead LNG**. He hails from Worley Parsons. Gerry Peereboom is now VP Integration.

Tore Halvorsen has resigned as a director of **TechnipFMC**.

Wayne Christian is the new **Texas Railroad Commissioner**.

Christoph Bausch is executive VP and CFO at **Weatherford**. Federico Justus has been promoted to president regional operations.

The **Geological Society** has named 2017 the Year of Risk and will be 'exploring the concept' of geoscience risk through conferences, public events and other activities.

Done deals

Aker Solutions, Alpine 4, Horizon Well Testing, CMR, Xsens, Dril-Quip, OilPatch Technologies, geoLOGIC Systems, Ideal Completions, Civica, Iron Mountain, Endless, Koch Industries, Infor, OpenText, Perficient, Pure Technologies, Schlumberger, Peak Well Systems, Read Well Services.

Aker Solutions has acquired 70% percent of Brazilian **C.S.E. Mecânica e Instrumentação** with an option on the remaining 30%. The acquisition gives Aker access to Brazil's oil and gas field servicing market.

Alpine 4 Technologies has acquired **Horizon Well Testing** for $5.5 million.

Christian Michelsen Research (CMR) spin-off **Xsens** AS has raised NOK 25 million in venture capital funding from **ProVenture** and **Investinor**.

Dril-Quip has acquired The Technologies Alliance a.k.a. **OilPatch Technologies** for approximately $20 million cash.

GeoLogic Systems of Calgary has purchased **Canadian Discovery**'s well completions and frac database and related products, including its Direct Data Access add-on module and the Drilling Database. CDL retains access to the database and continues to develop related information products, data offerings and services.

Ideal Completions Group has acquired **Cathedral Energy Services'** flowback and production testing assets in Canada and the US for $17.8 million. The acquisition was funded by management and ENR Partners LP.

IPL has been acquired by **Civica** and rebranded as Civica Digital.

Iron Mountain has entered the Middle East market with the purchase of a controlling Interest in Dubai-based **Endless Document Storage**.

Koch Equity Development, the investment arm of **Koch Industries**, is to invest over $2 billion in **Infor**. Koch's cash will help Infor 'continue to disrupt the enterprise applications industry.' Infor's offering uses Amazon Web Services to replace clients' in-house data center infrastructure.

OpenText has bought Documentum from **Dell/EMC** in a $1.62 billion cash and paper deal.

Perficient has acquired **RAS & Associates**, a Denver-based provider of management consultancy to, *inter alia*, the oil and gas vertical.

Pure Technologies has acquired the business and related assets of **E-MAC Corrosion** in a $4.60 million cash and paper deal.

Schlumberger has acquired **Peak Well Systems**.

Read Well Services is to sell its shareholding in Read Cased Hole to Norwegian private equity unit **Norvestor**. Simmons & Co. advised on the deal.

Back to school

AAPG, Paradigm team on continuing education. SEG and IHRDC deploy competency management system. Technical Toolboxes' new API training. Oilennium's DS-1 online drill string failure simulator.

The **American Association of Petroleum Geologists** (AAPG) and **Paradigm** are to jointly develop a continuing education program for AAPG members. The program will leverage Paradigm's investment in knowledge transfer through programs such as its virtual lectures, online university and instructor-led training. The first component of the program was a session on big data, new knowledge and analytics held during the recent AAPG workshop on deepwater and shelf reservoirs. More from Paradigm.

Not to be outdone, the **Society of Exploration Geophysicists** has announced a free competency management system for members worldwide, in collaboration with **IHRDC**. The system helps geophysics professionals assess their current skills, identify new learning opportunities and manage their careers. The system is powered by IHRDC's CMS Online software and is available at no cost to SEG's 24,000 members via the SEG.org website.

Technical Toolboxes has announced the availability of its online preparation courses for API 653, 570, and 510 certification exams. These offer API inspectors exam preparations and tools for creating an industry-approved report for their clients. Oher TT courses are available for API 510, API 570 and API 653 certification exams and further courses are under development.

Petrofac unit **Oilennium** has developed DS-1 Online, a training tool to educate personnel on the risk of drill string failure. The system was developed by Oilennium for T H Hill Associates, a Bureau Veritas company that created and maintains the DS-1 standards and offers classroom based training worldwide. Users who enroll the course can also access to live-streamed discussions with qualified engineering instructors.

Safety first

LR Senergy on 'unhelpful' core safety beliefs. APEGA fines CNRL for tank roof collapse.

A recent blog post by Garry Moon, occupational psychologist and principal consultant at **LR Senergy** describes how to help change unhelpful core beliefs that affect workplace safety. At a recent workshop, participants completed a 'safety climate' assessment to evaluate 'chronic unease or complacency' in their company. Nearly half did not feel a serious event could happen at their offshore workplace. Moreover, despite being the most aware group, senior personnel were also the most complacent. How could this be?

Paradoxically, the dissemination of information concerning trivial incidents (slips, trips and cuts) and weekly simulations of loss-of-containment scenarios led to a degree of risk desensitization, lessening the belief that something could go wrong, that a procedure could have an error in it, that safety systems could fail, or that people might make a mistake.

Such complacency needs to be addressed by propagating 'what keeps us most safe, a continual wariness of the hazards, a sense of chronic unease.' And an awareness that the goal of safety improvement is subject to confirmation bias. Even the most knowledgeable and well-meaning individuals, if too close to the initiative, will be blind to a loss of unease, seeing it instead as confidence and progress.

~

Apega, the Association of professional engineers and geoscientists of Alberta has announced its discipline decision for a 2007 tank-roof collapse at the Horizon oil sands project tank, a facility operated by Canada Natural Resources Ltd. (CNRL). The roof-support structure failed during construction resulting in loss of life and injuries to workers. CNRL voluntarily admitted to unprofessional conduct in its engagement and supervision of contractors performing engineering work and has agreed to sanctions. In addition to a $10,000 fine, the maximum allowed under APEGA's current legislation, CNRL will work with APEGA and fund development of a new practice standard on outsourcing engineering and geoscience work.

Petrobras pulls-plug on CoFlow

CMG, Shell persevere with next generation simulator.

Petrobras has elected not to continue funding development of CMG's CoFlow, a collaborative effort between Shell, Petrobras and CMG to jointly develop a next generation reservoir and production system simulator. The project has been underway since 2006 and is expected to continue until ultimate delivery of the software.

Petrobras' financial participation in the joint development project ended in December 2016 and the remaining partners' participation will be sized accordingly.

CMG puts its share of costs associated with the project at $6.5 million CAD for fiscal 2017 and plans to continue funding its share of the project costs through the R12 release. More from CMG.

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Sales, deployments, partnerships …

Honeywell, Aereon, Dover Energy Automation, SocalGas, Omnisens, Narrative Science, Deloitte, SAP, ENI, Aspen, GE, Transocean, ONGC, Schlumberger, Intertek, Statoil, PetroDE, Salalah LPG, Petrofac, Petrosys, Shell, SNC-Lavalin, Fayez Engineering, Saudi Aramco, UK Export Finance, GE Oil & Gas, Visuray, Altus Intervention, Welltec, Saudi Aramco, Wood Group, Yokogawa, BPA, Tech Mahindra, Al Fozan Group.

Honeywell and **Aereon** are partnering to leverage Honeywell's 'Inspire' internet of things ecosystem. **Dover Energy Automation** is also involved.

SocalGas has deployed **Omnisens**' 'Lynx' optical fiber system to detect impacts and leaks along its pipeline system.

Narrative Science has joined the **Deloitte** Catalyst start-up network. Deloitte is to implement Quill, Narrative's AI-powered natural language generation platform. In a separate deal with **SAP**, Narrative is to integrate its technology with Business-Objects Lumira.

ENI has deployed **Aspen** DMC3 adaptive process control technology at its Sannazzaro Refinery.

GE has signed a ten year, $180 million deal with with **Transocean** to provide condition-based monitoring and maintenance services for pressure control equipment on its rigs.

ONGC has implemented **Schlumberger**'s Intersect reservoir simulator on its offshore Mumbai Heera brownfield, speeding simulation runtimes 20 fold.

Intertek has extended its multi-year frame agreement for technical inspection services with Statoil.

PetroDE and **Basin Intel** are to offer decision support to clients by tracking the time and location of lease activity and locating distressed assets.

Salalah LPG SFZCO, a wholly-owned subsidiary of Oman Oil Facilities Development Company, has awarded **Petrofac** with an approx. $600million EPC contract at its Salalah LPG project.

Petrosys has secured 'long anticipated' contracts with some large Latin American clients. The company has also delivered a major project to Shell in Houston.

SNC-Lavalin Fayez Engineering has secured a five-year extension to its existing engineering services contract with Saudi Aramco.

UK Export Finance is providing $400 million to support **GE Oil & Gas**' contract with Ghana's Offshore Cape Three Points Project.

Visuray has completed its second downhole X-ray diagnostic operation offshore Norway in collaboration with **Altus Intervention** AS and **Welltec**. The test, performed on a Statoil asset, marks the conclusion of a two well VR90 trial campaign.

Saudi Aramco has awarded **Wood Group** a five year, 'multi-million' dollar contract extension for onshore engineering and project management services.

Yokogawa is to provide a management and control system for a multi-product fuel pipeline system to BPA, replacing the existing pipeline management and scada systems.

Tech Mahindra has teamed with **Al Fozan Group** to launch Tech Mahindra Arabia.

Standards stuff

OPC Foundation rolls-out MDIS subsea comms. New publications from PPDM. PIDX updates planned movement and prequalification standards. W3 and OGC team on spatio-temporal data standard. EU associations (NAMUR, EI, WIB, Exera) join forces on Industrie 4.0 open architecture.

The **OPC Foundation** has published its MCS-DCS interface standard, **MDIS**, an OPC-UA-based communications interface for the subsea oil and gas industry. MDIS is managed by OTM Consulting.

PPDM has announced new publications relating to its current PPDM 3.9 upstream data model. The two booklets cover 'Key subject area relationships' and 'Well implementation by lifecycle phase.' More from PPDM. PPDM has also published learnings from its 3.8-to-Witsml mapping excercise undertaken as a flagship Standards leadership council joint PPDM/ Energistics initiative.

The **IOGP** Geomatics committee has released V9.0 of the EU Petroleum Survey Group's (**EPSG**) database of coordinate reference systems and data.

PIDX, the petroleum industry data exchange standards body has approved a new release of its Planned movement standard. PIDX has also approved a new Supplier registration and prequalification data standard.

The **Spatial Data on the Web** working group, a collaboration between **W3C** and the **Open Geospatial Consortium** has published four 'QB4ST' documents covering spatio-temporal data and mapping. The standards are designed to make it easier to share and manipulate data such as earth observations with linkable slices through time and space. Also ran are the RDF Data Cube and the Discrete Global Grid System. The latter shows how Sparql can combine spatial data with a triple store for observational metadata. The approach is claimed to demonstrate the 'power of linked data on the web.'

Several EU associations of users of automation technology in process industries have agreed to collaborate on the establishment of common positions on present and future EU and international standardization in the field of interopera-bility via open control and communication systems. The associations, **NAMUR**, **EI**, **WIB** and **Exera** (collectively known as '**NEWE**') represent over 250 leading companies, from owner operators to software solution providers in plant and process automation. Component 'Industry 4.0' standards include the NAMUR Open Architecture and WIB member ExxonMobil's 'open process automation control architecture.' More from WIB-NL.

Cyber security round-up

Attivo, Cordis, ISO, DNV-GL, NIST, EU Infosec, Technip EPC, London Met on cyber scams.

Attivo Networks has joined the **HP/Aruba ClearPass** exchange partner program adding its ThreatMatrix deception platform to the platform.

The **EU Cordis** research program has published a results pack titled, 'Securing cyberspace,' setting the scene for the Q1 2017 H2020 cybersecurity calls.

ISO blogger Elizabeth Gasiorowski-Denis advocates measuring information security effectiveness against a new ISO/IEC international standard, ISO/IEC 27004:2016. The protocol helps organizations determine whether their investment in information security is fit for purpose.

DNV GL published a recommended practice, 'Cyber security resilience management' covering operational areas with the greatest exposure to cyber risk and securely connecting offshore assets.

NIST has published a 'groundbreaking' new security guidelines, a.k.a. Special Publication 800-160, Systems Security Engineering. NIST Fellow Ron Ross said 'This is the most important publication that I have been associated with in my two decades of service with NIST.'

In a similar vein, the **EU Agency for network and information security** has published a National cyber security good practices guide, a 60 page free guide to cyber security strategy.

Technip warned suppliers to its EPC-Business procurement portal of a somewhat credible phishing email that falsely claimed to originate from Technip. For further instructions visit the Portal.

Those desirous of avoiding such misfortune could do a lot worse than read the **London Metropolitan Police**'s Little Book of Cyber Scams. In fact, everyone in your organization should read it!

Schneider rolls-out SimSci Central. 50 years of simulation.

Web and cloud technologies bring 'modern' user experience to process industries.

Schneider Electric has unveiled SimSci SimCentral for process industries. The platform is designed to help the oil and gas/refining and other verticals engineer their processes across the entire lifecycle. SimCentral is used at the design stage, for process improvement and to 'simplify modeling complexity.' SimCentral leverages web and cloud technologies to deliver a 'modern user experience.'

Loïc Coyot, with WorleyParsons, an early adopter of the tool, reports that 'SimCentral removes complexity from engineering process modeling and lets us deliver more value and respond faster to our client's needs. A unified lifecycle simulator means that a model can be taken through all stages of the plant lifecycle, including design, training and operations.'

SimSci is celebrating its 50th anniversary this year. The first distillation simulation program was released in January 1967. Watch the 50th anniversary video here.

Frack IT in the cloud

Schlumberger researchers migrate fracture density tool to open source Mere platform.

Researchers from Schlumberger's technology centers in Leeds, UK and Montpellier, France are proposing to move numerically-intensive discrete fracture network computation to the cloud. A new application, 'iFracIT,' developed at Schlumberger's Rock Deformation Research unit, is used to evaluate the fracture density distribution across a reservoir and provide QC and audit of what the researchers describe as weaknesses in current approaches to 3-D fracture network characterization.

The proposed move to the cloud will leverage Schlumberger's internally-developed 'Mere' microservices-based cloud platform and services for visualization and data management.

Mere is based on open sources libraries such as the Javascript cross platform graphics framework Qooxdoo and Three.js for 3D visualization, with added support for scientific visualization.

The researchers envisage that micro-services and cloud computing will transform delivery of applications such as iFracIT. But first, 'proprietary' C# code requires conversion to JavaScript or encapsulation using a technology such as Qt's WebChannel. Initially, a slimmed-down version of the tool will be migrated as a proof of concept.

OFS Portal new catalog management

Vendor e-business community rolls-out OpusCapita service to members.

OFS Portal is to upgrade its catalog management service. The CMS allows members of the oil and gas vendor community to create and manage their own catalogs of products and services. These are then available in a standard format to OFS Portal's 270 member operators.

OFS Portal will deploy OpusCapita's Catalog Management services to standardize and enhance members' catalog -related business processes. Catalog Management is one of many service offerings available to members.

The upgrade is designed to ensure that the website has the capacity to handle the next wave of oil and gas e-commerce deployments. Current OFS Portal members include Baker Hughes, GE Oil & Gas, Halliburton, Schlumberger Oilfield Services, Select Energy Services, and Weatherford International. More from OFS Portal.

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Patent potpourri

ION, WesternGeco, Transocean, Noble, Wavefront, ITS, Certified, Yokogawa, TDE, Sipco, NXT.

ION Geophysical has been ordered to pay $22 million royalty damages and interest prior to a final judgment in respect of its ongoing, seven year lawsuit with WesternGeco. ION reports that it has 'right sized' its business and built some $80 million liquidity to both fund this payment and support operations.

Transocean has initiated a patent infringement suit against **Noble** in respect of the latter's dual-activity drillship, the Bob Douglas. The vessel's design is claimed to infringe Transocean's US patent N° 6,047,781 for a 'multi-activity offshore exploration and development drilling method and apparatus.'

Wavefront has filed a patent infringement lawsuit against **Impact Technology Systems** and others alleging infringement of its US patent No. 6,405,797, a.k.a. 'Enhancement of flow rates through porous media.'

Certified Measurement has filed a suit against **Yokogawa** for alleged infringement of patents covering sensor-based measurement and cryptographic certification of its Fast/Tools scada system.

A US court has ruled as invalid **TDE Petroleum Data Solutions**' patent for oil well management technology, supporting a lower court's ruling that that Supreme Court's 'Alice' standard for abstract inventions rendered the drill-sensor analysis as unpatentable.

Sipco LLC has claimed infringement by **Emerson** and **BP** of, *inter alia*, its US patent N° 7,697,492 a.k.a. Systems and methods for monitoring and controlling remote devices.

NXT Energy Solutions has been granted a patent for its stress field detection technology.

Altizon Datonis IoT for Wold Energy

New arrival in oil country internet of things/big data collection space.

Kodiak Instruments (a.k.a. Spectra Symbol) and Altizon have deployed a bespoke 'Industrial Internet of Things' solution to Wyoming-based Wold Energy Partners. The solution embeds Kodiak's sensors into Altizon's Datonis IoT platform and offers Kodiak's oil and gas clients 'safety, efficiency and visibility across the enterprise.'

Wold's users now get real-time metrics of temperature, levels and pump parameters across its Uintah basin assets.

Spectra Symbol's super-thin membrane sensor technology is used in medical instrumentation, aerospace, military, automotive and industrial control systems and is claimed to have revolutionized how OEMs can use full-travel sensing.

Altizon's Datonis IoT platform includes connectivity kits, a device management layer and scalable, real-time, big-data analytics and monitoring services. Use cases include condition monitoring, predictive analytics and machine learning.

Seismic interpretation on Mars

Researchers use SeisWare's technology to study past Martian climate.

It's not every day that seismic interpretation software gets to be used in outer space. But a recent publication from Nathaniel Putzig and Fritz Foss shows how SeisWare's eponymous seismic interpretation package.

The researchers have used SeisWare to visualize shallow radar data from the Mars Reconnaissance Orbiter which has been observing the Martian poles and other regions since 2006. The data has been consolidated into 3-D volumes that show polar ice coverage for the north and south poles of the planet.

The data is providing researchers with a better understanding of how the ice and climate have changed. Scientists found possible impact craters, ice layers that may highlight periods of climate change, and large volumes of frozen carbon dioxide in the south pole's ice cap. More from SeisWare and from an article in Seeker.

Any other business?

Notes from the blogosphere - GeoGeek, Ryder Scott, Ipcos, Carnegie Mellon.

Safe Software's Tiana Warner has authored the 'GeoGeek's guide to **Planet**'s satellite imagery.' Planet is 'revolutionizing' earth observation with real-time data from low altitude 'smallsats.' Smallsats are 'easier, faster, and cheaper to make and launch than traditional satellites' and can capture almost continuous images of the earth. Warner looks into new use cases including real time monitoring of ships, wells and pipelines. Planet recently acquired Google's Terra Bella/SkySat business.

Ryder Scott reports that the SPE's proposal to allow the booking of 'uneconomic proved reserves' under its 2017 PRMS if the project's 2P case was economic has been dropped following 'resistance' from sister societies involved in drafting the guidelines and the fact that the SEC requires all reserves to be economic.

Ipcos is 'getting real' with the Internet of Things for the Digital Oilfield and has just ordered a Siemens IoT gateway and is developing well data analytics tools on Linux.

A new publication from **Carnegie Mellon** traces the 'Technical History of the software engineering institute.' The free, 300 plus page publication traces the Institute's achievements since 1984 (yes really!) to the present day and offers a glimpse into the future of software engineering.