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Engineers shift left

GE, Emerson bolster upstream offerings. GE adds Paradigm's Skua/Gocad geomodeler to production intelligence. Emerson deploys One Virtual Source as front end to DeltaV control system.

Following its acquisition of Industrial Evolution last month (now consolidated into a new Industrial Knowledge unit) Yokogawa extends its software portfolio with the acquisition of KBC Advanced Technologies (see below).

GE is also shifting upstream, with a deal (a partnership, not an acquisition) with Paradigm Geophysical and the establishment of a new digital solutions business inside its Oil & Gas unit.

The GE/Paradigm deal promises a 'first-of-its-kind' reservoir-driven production optimization (RDPO) solution, integrating Paradigm's subsurface knowledge with GE's production intelligence. In a presentation at the GE Oil & Gas Florence event, Paradigm's Indy Chakrabarti opined that current operations 'focus on the performance of an individual well,' which may mean missing the big picture. The new RDPO solution lets operators view production data in its geological context. Issues such as early water breakthrough can be related to potential causes such as a nearby sand channel that may have been previously overlooked. The injection pattern can then be adjust to mitigate water inflow.

GE claims the potential for reduced operational costs of '10-25%' through fewer interventions and more efficient resource utilization. The 'turnkey solution,' combines GE's FieldVantage production monitoring technology, Paradigm's Skua/Gocad reservoir modeler and, at least in the demo, an application from StreamSim Technologies.

Another engineering to upstream teaming was announced this month as Emerson and OVS* unveiled a joint initiative to embed OVS' production data toolset into Emerson's 'Integrated Operations' (iOps) solution. The idea is to feed sensor data from Emerson's DeltaV control system into OVS's oilfield software (see OITJ Vol 20 N°6) to support applications including gas lift optimization, huff and puff steam generation and decline curve analysis.

Comment: *The marriage of engineering/process specialists with upstream software houses like OVS and Paradigm can be seen as a stretch goal or breakthrough. It is curious though that GE, in Paradigm, now has a geomodeler in its line-up, whereas Emerson, which already has one (in Roxar's RMS) does not seem to be leveraging it in its digital oilfield.*

Read our report from the GE Oil & Gas meet on page 6 and 7, our interview with Paradigm's Indy Chakrabarti on page 3 and this month's editorial on page 2.

* *One Virtual Source*.

KBC in takeover tussle

$255 million 'irrevocable' deal sees Yokogawa pip AspenTech to the post in short sharp bidding war for process/modeling software boutique.

Folks at hydrocarbon process software boutique KBC Advanced Technologies have had an exciting start to 2016. First, as we reported in our last issue, Aspen Technology comes forward with a $230 million cash bid for KBC via its wholly-owned ATI Global Optimisation unit. The bid was unanimously approved by both companies' boards of directors.

That was before Yokogawa, in move #2 in its Transformation 2017 business plan for 'quick, strategic investments' (see last month's lead) upped the ante with a $255 million bid, 69% premium on KBC's share price. AspenTech has stated that it is not planning to raise its offer.

Yokogawa believes that the combination of its engineering reach and KBC's software will provide customers with a 'one stop' solution to process optimization.

KBC's private equity owners who had made 'irrevocable' undertakings in respect of the AspenTech offer promptly revoked these and made further 'irrevocable' undertakings to sell to Yokogawa.

So far, no new bids have come along that would lead to more revoking of the irrevocable but you never know...

Docker - the next big thing?

Editor Neil McNaughton is (again) frustrated by marketing departments' efforts to focus on the problem rather than its solution. The next big thing in IT, Docker's container-as-a-service is sold as a route to interoperability. To get there, all you have to do is retool your shop with loosely-coupled 'microservices'-based applications. Loosely coupled? Where have we heard that before?

I expect that I have said this before but it is a frustrating fact that a lot of marketing material acts as an obstacle to an understanding of what is on offer. Imagine if you had been invited to learn about a wonderful new device that would save you thousands on car maintenance. You sign up for the webinar and listed to someone laboriously explaining a) what a car is, b) why you need one, c) how they are expensive to keep on the road, d) how important it is to 'optimize' the repair and maintenance supply chain and so on.

Sometimes the marketing folks' manage to filibuster along for so long that the whole time slot is filled with an explanation of what you already knew. Politicians play a similar game when speaking of a national problem - terrorism or unemployment. They then drone on about the risks without suggesting anything like a solution.

The reason they avoid coming out with an explanation of *how* they are going to solve the word's problems may be because these are difficult or intractable. But it is also because a solution inevitably comes with an agenda, tax more, tax less, cut benefits or broaden the safety net.

Once the agenda/cat is out of the bag, the politicos know that right away that they are a) going to piss off those who do not share their views and b) expose themselves to honed arguments as to why what they are proposing cannot possibly work. Best to spend one's allotted time with a recap of the problem set, to share folks' concern and leave the details to the imagination.

A similar approach is sometimes used by those who sell IT solutions. Reading through the Docker marketing literature one sees that the container approach is about '*transforming business through software*' and that today, with Docker, '*everything has changed,*' '*software is the critical IP that defines your company - even if the actual product you are selling may be a T-shirt or a car.*' Docker can moreover '*empower your enterprise to leverage big data analytics.*' Marvelous stuff!

As this month sees our second Docker story (from Safe Software on page 4, the first was from Software AG in 2015/9) I thought we should take a look behind the hype. According to Docker, which has just rebranded its offering as a 'container as a service,' the idea is to bundle a complete IT stack of application software, libraries and operating system into a single container that can be deployed 'anywhere.' Docker claims that this avoids the common problem of deploying software on a third party system and finding out that OS and library versions are different and that the system needs much tender loving care to make it work. So far so good.

The next question is, what happens if you deploy more than one container-shipped applications, each with its own dependencies. This does not really help with interoperability which still, unsurprisingly, depends on what the software in the containers is actually doing. Enter Docker's marketing hype viz… '*today's software is going bespoke as small pieces of loosely-coupled software provide microservices.*'

Now this is rather a different proposition and one that limits Dockers immediate usefulness. To achieve enterprise scale interoperability, all you have to do is recode all your apps to provide microservices. Quite a tall order!

Until you have done this, Docker's usefulness is probably more for developers like Safe Software who are using it in the typical service/ETL role of FME.

It may be a while before the world comes around to seeing the merits of microservices. Meanwhile, Docker could just as easily be used to build a soup-to-nuts proprietary closed software infrastructure. It depends on what you (or you vendors) are trying to achieve. Docker *per se*, despite its open source origins does not mean it naturally leads to interoperability – whether by microservices, API calls or anything you care to name.

Docker's grand claims remind me of an issue we used to have back in the days of dumb terminals and Unix. A dumb terminal is actually far from dumb and not all that standard. Unix provided a special place in the filesystem where you could keep 'termcap' files that you could edit and tune every terminal in your organization so that it performed more or less perfectly. Software could read the termcap files and interact appropriately with the user's GUI.

Well that was OK so long as you had control of both the terminals and the software. Things went awry when we began buying software from third parties. Vendors would be loading up all their libraries and I would proudly point them to our termcap files in the expectation that they would leverage all the good work that had gone into them. Err… no that was not how it worked. Vendors came along with their own set of termcaps and their software ignored ours completely. Soon we had as many termcap directories as we had applications.

I expect that Docker users run a similar risk of ending up with a hodge-podge of different versions of OS and libraries scattered around a bunch of more or less isolated containers. The problem is that interoperability is really orthogonal to deployment.

The microservices spiel, the notion of software that provides 'loosely coupled' services is as old as… well the earliest reference in Oil IT Journal was in 1999 and lip service has been paid steadily to the loose coupling nirvana ever since.

You may be wondering what got me off on this rather long ramble. It actually started with the realization that GE's Predix leverages a containerized approach with a cloud-enabling solution from Pivotal. But more of that next month.

🐦 @neilmcn

Interview - Indy Chakrabarti, Paradigm

Paradigm senior VP product management and strategy talks to Oil IT Journal about the collaboration with GE Oil & Gas and on production optimization in the low price environment. Paradigm's Skua/ Gocad flagship and GE's FieldVantage combine with third party tools in 'vendor-agnostic' solution.

In your presentation at the 2016 GE Oil & Gas event in Florence you described the deal between Paradigm and GE as a move into production optimization. How is this to be realized?

The new joint reservoir-driven production optimization initiative between GE and Paradigm is going to investigate how production operations can be tailored for the current low cost environment. Today's production engineers work without good intelligence as to what is happening in the reservoir. Current analysis and optimization is carried out on a well by well basis. We want to extend this to field-wide optimization so that production optimization decisions are done in a true 3D, geological context.

OK but when we think of production optimization, we think of the use of a reservoir fluid flow simulator. Paradigm doesn't have one!

That's a fair comment but this is a combined service offering that includes hardware and software. We can and do use third party tools such as a fluid flow simulator. Our workflow is supplier-agnostic. But the fact is that we are dealing with a different problem from that which is

handled by the fluid flow simulator. Optimization with simulator is usually carried out at sporadic intervals by reservoir engineers. The simulator is not an operations tool. The present use case is more concerned with daily operations. These include decisions taken by the production engineer on matters like injection pressure, choke size and gel treatment sizing. Currently, operators may have occasional conversations with geologists and they may decide to try one thing or another. We want to make this conversation more fruitful with a formalized approach centered on the earth model.

So what is Paradigm's tool of choice for this kind of activity?

It is Skua. Skua provides a comprehensive geological model of the reservoir complete with producing horizons, faults and so on. This can allow engineers for instance to visualize the proximity of different horizons and spot where a water influx might be coming from, relating production variance to geology.

So you can overlay production data – bubble charts etc. in Skua?

Absolutely and in real time. Skua can display production data, logs and more.

We have always considered Skua as more of a geologists' plaything...

It was in the past but it has evolved to include much more reservoir engineering and production information. It is not Eclipse but it can now be seen as a post processor for the simulator and indeed it has been used like this for some time.

Who will be rolling the solution out?

We have built a team of people from Paradigm and GE to develop the solution. We are working with the Field Vantage folks and with GE's services unit which provides expert engineers with specialist domain experience of artificial lift and production engineering.

Some still see GE as a provider of big iron with point digital solutions attached...

That is not what I heard in Florence. All in GE, from Immelt down are very keen to weave the digital thread into the workflow.

Will the Paradigm-GE solution be Predix-based then?

Not initially, but that is where we are heading. We certainly see the benefits.

Read the Paradigm blog here.

Matlab reservoir toolbox user guide

We track Knut-Andreas Lie's progress on his user guide to Sintef's MRST, a 450 plus page introduction to petroleum geology and engineering for computer scientists and mathematicians.

Knut-Andreas Lie's Introduction to reservoir simulation using Matlab doubles as a user guide for Norway's Sintef R&D organization's Matlab reservoir simulation toolbox (MRST). The MRST UG is work in progress but, at 458 pages, is already a substantial *oeuvre*. In his introduction, Lie observes that many books already cover mathematical models for flow in porous media along with introductory numerical methods. But current literature fails to implement such models and numerical methods in a 'robust and efficient simulator.'

Lie claims a different approach, with a combination of a self-contained introduction to flow simulation along with a discussion, complete with MRST-based examples, on real world implementation. The MRST handbook is backed up with a companion module of example code and

short instructional videos originally developed as Standford's 'Jolts' just-in-time online learning tools.

Lie is something of an evangelist for scripting (in Matlab or Python) over object-oriented languages like C++ which often are 'alien and unintuitive' to engineers and involve many library version gotchas. Matlab's 'simple and intuitive' syntax assures compatibility across different platforms and provides built-in functions for numerical computations, data analysis, and visualization.

One complaint often made by would-be developers is a lack of access to real-world data sets. The MRST UG includes copious pointers to sample data sets from the SPE's comparative solution project, NTNU's Norne benchmark, the EU Saigup project and for those interested in CO2

sequestration, grids from the CO2 Storage Atlas of the Norwegian North Sea. For users of Sclumberger's Eclipse industry standard simulators, a module converts Eclipse input decks into MRST-compatible objects. We balked at a complete review of this huge book and instead asked Lie for help and some clarification.

The book does a good job of explaining geology to non-geologists, are you also trying to teach petroleum engineering to geologists, or do you assume a grounding in PE of the reader.

Not really. Personally I am more of a mathematician and computer scientist than geologist or petroleum engineer. The book should be seen as an attempt to teach people like me something about geology

(Continued from page 3)

and PE.

Are you using the MRST to teach PE? Is the MRST UG usable as a PE textbook?

Not yet, but as the book expands to also cover two-phase flow and three-phase, black-oil equations, it should prove useful. This is what I will be working on whenever I have time to spare over the next couple of months.

What is your target audience?

Students, researchers and anybody interested in learning more about simulation of flow and transport in the subsurface. However, I realize that the book has a strong flavor of PE.

What about someone in an oil company who just wants to avoid paying an Eclipse license? Would you expect a PE in a small company to be able to use the MRST in an operational context?

Absolutely. We don't support all of Eclipse's more exotic keywords. But keyword support is added whenever we or one of our clients/collaborators need it in their research. However, the most recent

versions of MRST support a lot of the central keywords you need in order to simulate a typical black-oil reservoir model. The software has been successfully validated against Eclipse on a number of field cases. Likewise, we are adding in support for EOR, geomechanics, thermal effects, geochemistry, etc.

Actually, we are already in contact with a number of users of the kind you are referring to. We also have a number of expert users in big oil/service companies who have full access to commercial/in-house simulators, but still find MRST to be more flexible and easy to use for special purposes, although they may not admit this publicly!

In summary, I think MRST is not far from being usable in an operational context. However, to really know what the toolbox is capable of, you may have to dig into the software yourself, or work with my team.

MRST is open source software but Matlab is not. Have you tried running the software against open source Matlab clones like SciLab?

We have tried MRST with GNU Octave

and it works fine for most of the older parts of the software (incompressible flow). The exception is plotting, which is not that well supported in Octave. The newer parts of MRST (fully-implicit codes for black-oil and EOR models) relies on user-defined classes in Matlab, which is not yet supported in Octave. We have not yet tried SciLab. However, my impression is that SciLab does not support some of the nice functionality we use to write efficient Matlab, like accumarray, bsxfun, cellfun, etc. We have also started developing a MRST clone in Python, but this work is not yet in a state where it can be released publicly. Finally, MRST has got a C++ cousin, OPM, that aims to become an open-source reservoir simulator for operational use.

Download the MRST here and read a preliminary edition of the MRST UG here.

Headwave and GeoScale team on geoengineering workflows

Alliance addresses co-visualization and analysis of cross domain reservoir datasets.

Headwave and GeoScale have announced a strategic alliance to work on novel geoengineering workflows that will enable co-visualization of large seismic, microseismic, reservoir, geomechanical and engineering datasets. The collaboration, which combines Headwave's high-performance geocomputing platform with GeoScale's patented reservoir modeling and geomechanical software, targets both unconventional, fractured and conventional deep-water reservoirs.

Last year GeoScale president Elan Yogeswaren was awarded a patent for a method of calibrating a geomechanical reservoir simulator using multicomponent time-lapse seismic measurements. The technique involves comparison of baseline and subsequent repeat seismic surveys and extracting time delays using four dimensional 'Clifford algebra.'

The deal with Headwave adds high-end computing and visualization platform tuned to pre-stack seismic data analysis to

GeoScale's applications. For shale, new workflows will improve targeting of sweet spots and optimize completions. In deep water plays, the partners aim to improve drilling, completion and reservoir decisions by using geomechanical models of the subsurface to predict pressure, stress and rock properties. More from Headwave.

FME Server ported to Docker containers

Technology preview introduces 'containers as a service' paradigm to spatial data management.

Geospatial devkit and ETL* vendor Safe Software has joined the latest big thing in IT with the announcement of a technology preview of its flagship FME Server running in a set of Docker containers. Docker's technology, a.k.a. 'Containers as a Service' provides a managed and secure IT environment where developers can build and deploy their applications. Dockerized software comes as a complete package of code, runtime, system tools and libraries. Docker claims that the approach 'guarantees that it will always run the same, regardless of the environment.'

Safe Software's Docker deployment targets developers working on an FME Server* application. A collection of Docker containers make up the FME Server application. This allows for the application to be deployed on platforms that don't support the required libraries natively. FME Server can now be deployed on a variety of Linux distributions. Docker is also in the process of adding Windows Server support.

Safe Software believes that Docker is the future deployment model for FME Server

especially with Microsoft Windows Server 2016 and its native Windows containers. Docker's impact on Safe's FME Cloud is 'likely to be even bigger.'

* ETL stands for extract transform and load. FME, which stands for feature manipulation engine, provides a toolset for ETL and data integration from a wide variety of (especially GIS) data sources.

Software, hardware short takes

IBM, Ansys, Allegro, Esri, CGG GeoConsulting, Energy Solutions, Kappa Engineering, Lasser, MicroSeismic, Midland Valley, Nutech, P97 Networks, Paradigm, Pegasus Vertex, Quorum, Read.

IBM has announced 'Quarks,' open source connectivity to IBM's 'Streams' Internet of Things.

V 17.0 of **Ansys**' engineering simulator brings a 10x speedup and advances in full physics modeling and multi-domain 3-D meshes. The new release adds native support for the Modelica mechanical and fluid flow modeling language. Scalability to a reported 129,000 compute cores is reported.

Allegro has released 'Horizon,' a next generation commodity management solution for traders. Horizon promises trading position visibility, risk mitigation, financial controls and improved compliance reporting.

A new version of **Esri**'s ArcGIS full motion video adds new video file formats and allows users to display moving video frames on a georeferenced map. A rapid report generator supports information

Blue Marble Geo's Global Mapper 17.1 adds a perpendicular profiling tool for creating lateral cross-sectional views of terrain or point cloud, improved grids and geospatial PDF export.

The 2015 R2 release of **CGG GeoConsulting**'s Tellus global exploration database includes palinspastic world maps created with Robertson's Plate Wizard deformable tectonic model and Merlin+ source and reservoir facies predictor.

R 6.1 of **Energy Solutions** PipelineOptimizer adds batch plan import from PipelineScheduler, a new linear viscosity model and intuitive trend and profile graphing. The new release adds HTTPS

security and more pivot table options.

The latest release of **Kappa Engineering**'s Citrine adds a common browser for all modules. Kappa also announced the imminent release of Kappa Workstation with the 'Generation 5' update of Saphir NL, Topaze NL and Rubis.

Lasser has updated its LPD program with online database updates, new well symbology for Google Earth function and new calculation and reporting options.

MicroSeismic has announced PIndex, DIndex and Production Forecast, quantitative and predictive completions evaluation services for early well appraisal from microseismic monitoring of fracking.

Midland Valley has added new modules to Move2016. Fault analysis provides quantitative analysis of fault throw, juxtaposition and seal through geological time. Fault response modelling applies boundary element modelling to simulate fault displacement and geomechanical analysis of neighboring fracture systems.

Nutech's new data intelligence portal, NuQuest, was unveiled at the February NAPE Summit in Houston. NuQuest provides access to well data and reservoir characterization and engineering expertise for hundreds of thousands of wells in worldwide shale and conventional plays.

P97 Networks has released V 2.0 of its flagship PetroZone app on Windows 10. The mobile commerce app leverage's Microsoft Azure service bus to deliver a mobile payment and digital marketing capability to the fuel and convenience store industry.

Paradigm has extended its 'high

definition' workflows in the Paradigm 15.5 release with more automation, tighter product integration, and expanded third-party connectivity. The new release brings memory-efficient multi-survey flattening, multi-volume attribute extraction and blending and on-the-fly computation of QC attributes. Paradigm also announced an update to its Sysdrill well construction toolset with support for the NOAA high definition geomagnetic model for well surveying and the SPE ISCWSA Rev 4 error model. Sysdrill is now also localized to Russian and Chinese.

Pegasus Vertex has announced a new casing design tool, CDEx that uses an industry-accepted physics model to capture complex drilling conditions and assure accurate calculations of burst, collapse, tension, bending, buckling, compression and temperature effects. PVI also announced the imminent release of its CleanMax wellbore cleanup software.

Quorum has released 'MyQuorum,' a 'persona-based' front end to its suite of energy applications. MyQuorum combines dynamic workflows, business intelligence, reporting and data from Quorum and non-Quorum applications. Personae can be customized with Qmposer a cross-platform GUI design tool.

Read has launched a new downhole micro-leak detection solution combining GE Oil & Gas' NTO acoustic noise tool and Read's leak detection service line. The solution creates a detailed map of downhole acoustic energy which Read combines with flow and temperature measurements to achieve precise location of leak sites.

Shale petrophysics and 'survivor bias'

Visage president warns of difficulty of correctly evaluating production from public data sources.

In an interesting blog post, Visage president and co-founder Bertrand Groulx expounds on the problem of 'survivor bias' in evaluating production numbers from public data sources. Survivor bias occurs as depleted wells are excluded from the monthly average production calculation. This means that the monthly reported production per-well is biased towards the 'survivors' i.e. those wells that are still producing.

Survivor bias shows up in what Visage terms the 'type-well curve,' that is used to

estimate average production for a basin. Groulx's blog demonstrates visually how, using data from IHS' Information Hub, survivor bias causes type well production to increases as time goes on. Groulx states that most software makes it hard to account for survivor bias. Visage uses a 'period of non-production' to characterize a depleted well.

Looking forward, the sustained low price environment is making it harder to identifying depleted wells as companies may shut-in wells waiting for prices to

recover. It now becomes necessary to allow for a variable window of non-production to get a valid type well.

Comment: Survivor bias likely contributes to the reported production gains from shale areas that may be attributed to improvements in technology. You need to read the small print!

GE Oil & Gas annual meeting, Florence

Oil IT Journal returns to GE's conference after a two year break to hear from a start-studded cast including Jeff Immelt himself, the Governor of Colorado and the head of the US BSEE. GE Florence is (almost) a CERA week for engineers. Highlight is GE's push for 'digital' and IT/OT convergence.

It has been a couple of years since we attended the GE Oil & Gas annual get together in Florence, Italy. This is a well organized event with contributions from a star studded cast including GE's own Jeff Immelt. In some ways GE's event is the engineer's equivalent of CERA Week. The theme of the event was GE's digital transformation and its plans push this out to clients. In his closing keynote, chief digital officer Bill Ruh summed up, '*GE is a digital business. Digital is fully integrated into everything we do.*' GE takes inspiration from what it describes as the 'consumer internet' i.e. Facebook, Google and other mega successes. While these companies have made great progress in the past few years, the industrial sector has missed out.

This might seem to overlook the huge installed base of industrial IT that is the ERP system. Ruh argues '*We have to recognize that what we have done in IT in the past is necessary but not sufficient. ERP is important, but we need to accommodate different platforms for industry and for the back office in 'bimodal' operations. We will continue with traditional ERP-style systems, but the true digitization of the business will be in mode 2.*'

Mode 2 is characterized by data that is easy to collect and ready for use. With the cloud, the cost of doing this is 'foundationally different' (i.e. less) than with traditional IT. Mode 2 means that we need to think about applications differently. But we already 'do' data and analytics, so what's new? A digitized business has hundreds or thousands of little analytic components that each attack a piece of the problem. The platform is the key. For GE, 'Predix is the business.' The combination of connected machines and analytics represents the 'yin and yang' of the industrial internet even though today, '*the imprint of machines is still way too visible compared with the potential scope of the digital enterprise.*'

Our two year break from the Florence event gave us the opportunity for a lookback to the closing days of the last boom. Back in 2014, big data and the interface between equipment and IT was a highlight, as was IT and operations technology convergence. Security was a

the big challenge and, according to Accenture, the digital oilfield experienced was 'mixed.' GE was positioning its Industrial Internet as a 'social network' for machines and the IEA boldly forecast that 'you will be gas and oil not oil and gas companies.'

Fast forward to 2016 and it is doubtful that gas has achieved quite such importance. **BG Group**'s Jon Harris told a joke about a colleague who had been 'let go.' '*So what are you doing now?*' '*I'm working for a not-for-profit.*' '*So you're staying in oil and gas then!*'

IEA director Keisuke Sadamori described the COP21 Paris agreement as a 'big driver for energy transition.' The IEA forecasts that in 2030, one third of the world's energy will come from low carbon sources and oil's use in power generation is set to half. Wind and solar photovoltaic costs continue to decline and nuclear is will be the second largest source of low carbon energy after hydro. While costs are looking good for renewables, things are not so good for oil and gas as the easy stuff has been depleted.

Shell projects and technology director Harry Brekelmans said that these are 'exciting times' for Shell. The industry needs to use the current sustained low price to reinvent itself in a Florentine-style 'renaissance.' How? First, by recognizing that the world needs oil and gas 'for decades to come.' Much of this future production will come from mega projects such as Shell's Mars development and Pearl GTL. Here improved execution has seen 75% of projects delivered with less than a 10% cost overrun. But we still need to do more. Construction productivity has declined as complex projects breed more pages of documentation and bigger teams. A multitude of construction industry standards defeats the purpose of standardization. The interfaces between owner operators, engineering contractors and other stakeholders are experiencing 'fragmentation. The automotive industry does better here. We need renewed focus on scope, execution, affordable technology and the supply chain. Scope should be no more and no less than what is required for acceptable performance. Shell has applied lessons learned from shale 'factory drilling' to its deepwater Gulf of Mexico

Stones development, cutting well costs by 30%. Elsewhere, studies found that workers only spent 30% of their time working! The rest was frittered away. This is being addressed with more studies of engineering workflows, better training and more use of IT. In which context, Brekelmans referred to Shell's Project Vantage, a suite of data (as opposed to document) centric apps with 'ever green' virtual documents generated from data in the cloud. Shell has extended its engineering data management into the fourth dimension (time). An extension to a 'fifth dimension' (of scheduling) is planned for real soon now. Better supply chain transparency will help Shell negotiate lower prices via enterprise framework agreements. The approach has already proved its worth in HSE where, despite a big increase in hours worked, fatal accidents are down. Brekelmans called for further collaboration, with GE and others to achieve the same capex successes.

Colorado Governor John Hickenlooper (we said it was a star-studded cast) elegantly referred to the '*battle between climate change and non-climate change*' saying that '*we accept it*' although it is '*not as important as clean air.*' Colorado has looked closely at regulations that impact the transportation and refining supply chain, finding some 17,000 of which 8,000 have now been reformed or eliminated. Regulations regarding the air quality around large natural gas fields has been thrashed out in meetings between operators and affected communities to reach a shared goal of reduced emissions. The boom years have been a period of market innovation. WPX Energy (Exxon) drilled 80 wells from 14 pads, piping frac fluid through temporary pipelines to minimize trucking. Natural gas is used on site instead of diesel. The election year in the US has created a 'caustic environment.' Hickenlooper advocates holding difficult conversations at the local level. Then the federal government will follow suit.

Jon Harris **BG Group** described the current world situation as 'Vuca,' volatile, uncertain, complex and ambiguous..' Until recently, cheap capital was chasing costly resources. In the ensuing downturn there have been many layoffs. But these are

more survival measures than solutions. When you roll COP21 into the picture it is clear that the industry needs a new business model. This will involve structural change, for instance with simplification and standardization. We are currently too complex and bespoke. For instance in the vast range of valve designs deployed (the subject of an IOGP standardization/clarification initiative). Harris did observe *en passant* that previous initiatives, in particular the earlier UK Crine initiative had 'lost its way.' There is also hope that big data and digital advances will help. But today we collect data. What is needed is an efficient way of realizing its value, through holistic monitoring of equipment or with autonomous systems. '*Today's business leaders have heard all this before. But are they driving the transformation?*' We need a digital revolution. Maybe the necessity of the downturn will be the mother of invention. There are positive signs with developments like IBM Watson, augmented reality, robotics and drones. We have automated braking in cars, why not drilling automation?

Brian Salerno, director of the US offshore regulator the **Bureau of safety and environmental enforcement** (Bsee) described safety as a strategic imperative that transcends individual companies. He offered an analogy with the fact that infectious diseases are on the rise and that our collective defenses are diminished through widespread misuse of antibiotics. Fortunately the World health organization (WHO) is in a position to take a global stance. Oil and gas has its own 'penicillin,' the blow out preventer. But its effectiveness was shaken by Macondo where the technology was mishandled and public trust was blown. This and other failures have contributed to the perception of an 'industry that is prone to failure.' Salerno asks what can be done on an industry-wide basis and suggests that although technology is good, 'lessons learned are seldom shared beyond company boundaries.' Unfortunately there is no WHO for oil and gas. But there is the Bsee which recently alerted GE to reports of failing bolts in a lower marine riser package. This resulted in a worldwide recall and a revised manufacturing process. While there was some downside in sensational media reports, the action strengthened GE's credibility worldwide. Salerno also

provided a heads-up to the International regulators safety forum and the SafeOCS voluntary confidential near-miss reporting system. He concluded that '*inaction holds the whole industry hostage to the weakest players*.'

GE Chairman Jeff Immelt took the stage to encourage the troops and to put the current downturn in oil and gas into context. Oil and gas, like other GE lines of business is cyclical. GE knows cycles having seen the post 9/11 'destruction' of the aviation business with engine shipments down 25%. Power generation had its own dark days in 2004-6 with turbine shipments down 60%. So for oil and gas it will be 2014 till when? Immelt believes that this stage in the cycle is a good time to invest in productivity improvements and especially in 'digitalization,' a major initiative for GE itself and, for Immelt, '*perhaps the most important initiative of my entire career*.' GE is moving to a better, simpler product architecture. This involves the continued development of the 'physical world' i.e. GE's compressors and other equipment with a parallel development in the world of digitization. Here, 'consumers have got a good deal' as did the internet companies. But in industry, productivity growth has declined, from around 4% in the first decade of this century to a meagre 1.5% today. GE plans to reverse the productivity decline by leveraging the large amount of data that streams in from its equipment. Enter Predix, the digital 'thread' that links smart machines with analytical apps. GE expects to have 20,000 developers working on Predix this year. Immelt invited Shell, Total to follow BP and leverage Predix to 'generate a billion dollars' worth of productivity this year by avoiding well and facility downtime.' Elsewhere, GE's onshore oil and gas solution is 'digitizing the rocks' offering rock physics-based sweet spot mapping to enhance reservoir performance, all available in the GE Store. Other applications include 'smart iron' pumps, 'brilliant' drilling systems and advanced instrumentation solutions. On a more practical level, Immelt offered some advice on leading through a cycle by 'focusing on what you can control.' Use less charts, focus on data not presentations. Use less consultants, do less studies, believe in self-help. Finally, (and rather paradoxically) Immelt invited us to '*Wipe out of your minds Industrial Internet,*

> '*Wipe out of your minds Industrial Internet, Industrie 4.0. These are just fancy words!*'
>
> Jeff Immelt
> Chairman and CEO, GE

Industrie 4.0 these are just fancy words.' Immelt's enthusiastic oratory kind of stole the thunder from the ensuing digital round table session. We heard CTO Bill Ruh drive home the point that GE is doing this digital transformation first for its own use but that by 2020 expects the Predix segment to grow into a $15 billion business. Ashley Haynes-Gaspar reported on early adoption of the industrial internet by Columbia Pipeline, Atwood BOP, Dongi Senoro and BP. The partnership with Paradigm (this month's lead) on reservoir modeling across subsurface and surface equipment also got a plug. In the Q&A someone asked if data quality might be the fly in the big data ointment. Ruh observed that there is today a proliferation of databases and spreadsheets which need to be 'collapsed.' At the same time it is necessary to deal with dirty, badly-entered data but there is no easy answer, this is a major problem for IT. Ruh suggested that machine learning techniques may help removing bad data analytically. We asked whether Predix was in the Microsoft camp or, like most of todays 'consumer' innovators, more of an open source user. Ruh responded that GE also uses Microsoft Azure technology and that Office 365 in the cloud 'integrates well with Predix.' 'I believe that Microsoft is making a shift to a rapprochement with open source and Azure development.'

In the panel session on new centers of gravity in the oil and gas space, Roberto Casula (**ENI**) opined it is too early to say if shale could become a swing producer. **Novatek**'s Mark Gyetvay was less sanguine, many companies got into projects with the expectation of a long term high price. Today this translates into impairments and write-offs and there is more to come with the next round of reserves based determinations. 'We started to see financial stress at $40 and will see destruction at $20 as cash flow does not cover op costs.' Gyetvay continued that we are all influenced by the analysts but, 'go back and check, they are never right.' A lot of current thinking is based on false information. Geopolitical and environmental risk should come before price risk. Jeff Reilly (**Amec**) added that the industry was slow to take up new technology like 3D engineering software – but 'we are there now.'

More from Florence and especially on Predix next month.

Folks, facts, orgs ...

AspenTech, Atos/Unify, BP, Chevron, Entero, Expro, Fugro, Oil States International, EMC, IOGP, PTC, Aker Solutions, Berkana Resources, Borets, Burns & McDonnell, CGI, Emerson, Energy Navigator, Enertia Software, EnLink, Total, Ensco, GE, Hart Energy, IBM, Siemens, MDU Resources, MPG Pipeline Contractors, National Fuel, Navtor, Energistics, Oildex, OFS Portal.

Bill Griffin is VP field operations at **AspenTech**. He hails from Autodesk.

Jon Pritchard has been promoted as CEO of Atos' **Unify** communications buisness.

Lamar McKay is now deputy group CEO at **BP**. Bernard Looney takes his place as upstream CEO.

Following Melody Meyer's retirement, Stephen Green is president of **Chevron** Asia Pacific E&P.

Steve Robb has joined **Entero** as Executive VP, sales and marketing. He was recently with Cimation/Accenture.

Mike Jardon is CEO of **Expro** succeeding Charles Woodburn who is leaving to join **BAE Systems**.

Brice Bouffard has been nominated for appointment as member of **Fugro**'s board.

Mark Papa is to replace Stephen Wells as chairman of the board at **Oil States International**.

Denis Cashman is **EMC**'s CFO succeeding Zane Rowe who will become VMware's CFO.

IOGP has appointed Ed Walsingham as operations coordination Manager, Nick Tennent as graphic designer and Natalia Staina as committee manager for wells safety, subsea and security.

Phil Fernandez has joined **PTC**'s board of directors.

Aker Solutions is relocating is Tromsø staff to Stavanger and streamlining its MMO business with immediate staff reductions.

Graham Speake is chief information security officer at **Berkana Resources**. He was previously with NexDefense.

David Langley has been named North American HSE manager at **Borets**.

Denys Stavnychyi is now **Burns & McDonnell**'s pipeline project manager.

Stan Sims is chief security officer at **CGI**. He hails from the US Department of Defense.

Emerson's Christian Skaug is now co-chairman of the API Ch 3.1B standard practice for oil tank level measurement and chairman of the API Ch 7.2 temperature determination committee.

Janet Tremblay has been seconded to head-up **Energy Navigator**'s new Asia-Pacific office in Brisbane, Australia.

Vince Dawkins has been elected president and CEO of **Enertia Software**.

EnLink has promoted Cynthia Jaggi as Senior VP engineering and operations and Michael LeBlanc as Senior VP liquids operations.

Total has named Philippe Baptiste as senior VP, scientific development. He was previously head of research at the CNRS.

Michael McGuinty is senior VP general counsel and secretary at **Ensco**. He hails from Abu Dhabi National Energy Company.

Chris Drumgoole is VP and CTO of **GE IT**. Matthias Heilmann joins **GE Oil & Gas** from ABB as VP and chief digital officer.

Hart Energy has promoted Mark Chiles to VP digital operations and CTO.

IBM has launched its global headquarters for Watson/internet of things in Munich, Germany.

Siemens' building technologies unit is teaming with IBM's IoT group to advance its 'Navigator' platform for energy management and sustainability.

Peggy Link has been promoted to CIO at **MDU Resources**.

Neal Jinkerson and Jeramie Pinter have joined **MPG Pipeline Contractors** as project managers.

Navtor has engaged Lawrence Yeow as area sales manager in Singapore.

Stewart Robinson is to retire from **Energistics**.

Oildex has joined the **OFS Portal** community as an approved business network and eInvoicing solution provider.

Done deals

Keane Group, Trican Well Service, Siemens, CD-adapco, SAP, Roambi, Rockdale Resources, Askarii, Intergraph/Hexagon, SigmaSpace, Eiker IT, Eurotech, Atos, Unify.

Keane Group is to acquire the US assets of Canadian **Trican Well Service** in a $247 million cash and paper transaction. The deal triples Keane's frac capacity and brings access to proprietary technology and new engineering capabilities.

Siemens has acquired computational fluid dynamics simulation boutique **CD-adapco** in a $970 million stock purchase. The acquisition is a facet of Siemens' 'Vision 2020' strategy for growth in its digital business and expansion of its industrial software portfolio.

SAP is 'accelerating' its shift to cloud computing with the acquisition of

Roambi's suite of 'mobile-centric' analytics and data visualization solutions and related key assets. SAP also unveiled a new predictive analytics offering which will be available real soon now. SAP predictive analytics leverages data in databases, SAP systems and big data sources such as Hadoop/Spark.

Rockdale Resources has signed a share exchange agreement with **Askarii Resources** whereby it will acquire Askarii in a transaction valued at $50,000. Askarii was founded in 2008 in the wake of Hurricane Ike and has been 'dormant' for the last few years.

Intergraph parent company **Hexagon** has acquired 3D mapping specialist **SigmaSpace** with its 'single photon' Lidar high speed 3D data collection technology. The unit is tipped as a 'prime candidate' for the US Geological Survey's 3D elevation program, which is to create a comprehensive 3D map of the US.

Eiker IT is merging with **Eurotech** computer services Norway AS.

Atos has acquired communications specialist **Unify** from Gores Group and Siemens for €366 million cash plus assumption of debt and pension liabilities. The overall deal value is €590 million.

Cyber security round-up

New ISO cyber standard. NSF cybersec center of excellence. Atos' Hoox. Tripwire warns oil and gas.

The International standards organization **ISO** has updated its ISO/IEC 27000 documentation covering a standard terminology for IT security. The document provides a comprehensive view of information security management systems covered by the related ISMS (information security management systems a.k.a. ISO 27001) family of standards.

The US National Science Foundation (**NSF**) has awarded a $5 million grant to establish a Center for Trustworthy Scientific Cyberinfrastructure (CTSC) a.k.a. the NSF Cybersecurity Center for Excellence. CTSC will coordinate efforts on improving cybersecurity and provide education and training in security expertise to the nation's scientific community.

Those of you who regard BYOD* as a form of cyber security madness might be interested in a partnership between **Atos** and **Orange**'s cyber defense unit that is to deliver secure mobile endpoint. The solution will combine Atos/Bull's Hoox secure smartphone. Hoox is claimed to deliver a complete stack of secured operating system and software. Hoox encrypts voice and SMS data and all storage. 'Anti-intrusion' mini firewalls in its communication ports offer further protection. The deal with Orange covers Hoox distribution in the EAME region.

A study by **Tripwire** found that cyber attackers are 'successfully targeting' the oil and gas industry and that 82% of oil and gas IT professionals report a 'significant increase' in successful attacks. The study was conducted by **Dimensional Research f**or Tripwire with responses from 150 IT professionals in the energy, utilities, and oil and gas industries. 69% said they were 'not confident' that they had detected all the attacks.

* Bring your own device.

Machine learning-driven production allocation

NavPort's patented technology fixes 'disappointing and unreliable' production allocation models.

'Data intelligence' service provider NavPort has been testing its machine learning derived technology on the thorny problem of production allocation. Production allocation involves the estimation of individual well's production from what is in general a partial set of flow information from tests, meters, tank levels and other secondary sources.

NavPort reports that many Texas wells suffer from a lack of data and these make most production allocation models 'disappointingly inaccurate and unreliable.' Moving from lease-level production reporting to single well production is error prone. Enter NavPort's patented technology that combines machine learning and completion-related variables such as completion date, frac design and proppant selection.

Trials on a client-supplied set of well data compared the actual production with the 'completion-based' model. Three months of production data from three wells showed 'only a 5-8% variance' from the actual production.

Guidance on joint venture decision making

Draft SPE report introduces decision makers' 'bill of rights.'

The Society of Petroleum Engineers (SPE) has released a draft of a future technical report on decision quality in multi-company upstream projects. The report was drafted by a committee of subject matter experts with input from a session at last year's Annual Technology Conference and Exhibition. The SPE reports that 80% of recent large upstream projects 'underperform' and 30% had either significant cost overruns or schedule slippage. 64% experienced 'enduring production attainment problems.'

The guidelines were inspired by the Society of decision professionals, in particular the Decision maker's bill of rights. This argues that while decision makers have the 'right' to a framework that structures their decisions, there should also be room for 'creative alternatives.' Even if these detailed instructions are not all fully implemented, there are some interesting ideas on structuring the process.

The SEC, the oil price, reserves subpoenas and layoffs

Porter Hedges presentation looks at the downside of the downturn.

A report in the latest Ryder Scott Reservoir Solutions newsletter, based on a presentation by James Cowen and Jeffrey Elkin (Porter Hedges LLP) looks into 'Legal issues in the low price environ-ment.' These include closer scrutiny by the SEC as the falling oil price forces proved undeveloped reserves into other reserves categories. Low prices have led to an increase in civil lawsuits and executives 'may have to deal with subpoenas.'

Employment disputes increase during a downturn. Because Texas is an 'at-will' employment state, employees can be fired at any time with or without cause. Those with a non-compete contract may see their post-employment activities limited and Texas courts will generally enforce a non-compete when backed by an exchange of 'valid consideration.' Read the Porter Hedges presentation on the Ryder Scott website.

Sales, deployments, partnerships …

Absoft, Aker Solutions, Asset Guardian, Aveva, Bertin Technologies, BST Global, CGI, Datum360, GE Oil & Gas, DNV GL, Veritas, IPCOS, OSIsoft, Kongsberg, LMKR, FracGeo, Nutech, WellDatabase, Petrotechnics, SAP, Cornerstone Technical Group, Progea, Siemens.

Absoft's Advantage oil & gas SAP add-on duct has been certified for SAP's S/4 Hana 'Business all in one.'

Aker Solutions and Total have signed an initial four-year technical collaboration on research and innovation to develop new cost-effective subsea field technology. Statoil has awarded Aker the front end engineering design on the Trestakk field tie-in to the Åsgard A. Aker is also working on a concept study for a new processing platform for the Statoil-operated Johan Sverdrup field. Aker's MMO business in Norway has secured two contracts for work at the Ekofisk and Eldfisk fields offshore Norway operated by ConocoPhillips.

Asset Guardian Solutions reports the award of another contract with an unnamed oil and gas supermajor in Perth, Western Australia.

Fabricom Offshore is to use **Aveva** laser and 3D design software in the brownfield modification of Engie/GDF Suez's Cygnus Platform. Statoil has selected Aveva as its strategic 3D design software platform.

Petrofac and Saudi Aramco have selected **Bertin Technologies** to supply, install and commission a pioneering gas leak tracking system, Second Sight, at the Saudi Aramco owned Jazan refinery.

Engineer Witteveen+Bos is to implement

BST Global's ERP solution, BST10.

CGI has signed a five-year contract with Preem to maintain a mission-critical ERP system and also to deliver its 'WM' card management system.

Datum360 has partnered with **EBS** to provide its engineering information management solution in the Middle East.

GE Oil & Gas is to provide its 'Engage' blowout preventer services to Diamond Offshore. GE has also signed a maintenance agreement with SBM for its fleet of FPSOs operating offshore Africa and Brazil. Finally, following a successful pilot, GE has signed a letter of Intent with Rasgas to deploy GE's LNG-specific performance management solution across its assets.

DNV GL and **Veritas Petroleum Services** have launched a new Fuel Analytics solution.

IPCOS has signed a partnership agreement with **OSIsoft** to integrate its solutions into OSIsoft's PI System.

Wintershall has awarded **Kongsberg** a three year contract to provide its hosted SiteCom real-time data aggregation and visualization solution for well construction.

LMKR and **FracGeo** have signed a long term strategic partnership to deliver

fracture geomechanics applications addressing completion efficiency and well spacing optimization through integration with LMKR's GVERSE and GeoGraphix product suites.

Nutech and WellDatabase have partnered to launch NuQuest, a big data 'insight generation' tool.

Petrotechnics' Proscient version 3.0 has achieved certified integration with SAP ERP V6.0.

Cornerstone Technical Group is the new distributor of **Progea**'s SCADA/HMI Software Solutions in the Southeast United States.

Siemens' new VPE1400 software for Ruggedcom RX1400 router enables users to run their own Linux operating system and applications on the RX1400 at the network 'edge.'

Comments & feeback to info@oilit.com

Standards stuff

EPSG's new developer guide. PIDX field ticket best practice. Energistics' NDR standards on hold. W3C teams with OGC on web spatial data. Duke Energy's 'coalition of the willing.'

The **European petroleum survey group** has issued a new (V3.1) developers guide a.k.a. IOGP Report 373-7-3. The guide shows how to access geodetic parameter data from the EPSG registry service. EPSG has also issued guidance note 7.1 annex C describing proposed changes to its conventions.

The **PIDX** business process workgroup is developing best practice documentation for the field ticket process. The project sets out transform manual, paper-based legacy processes and ease transfer of large volumes of transactional data between suppliers and operators.

Stewart Robinson of the **Energistics**/ National Data Repositories organization

regrets the cancellation of the 2016 NDR meet which was to be his last before retirement. Unfortunately, two proposed standards are now on hold until next year's gathering, a new well header data standards and a 'body of knowledge' for NDRs. More on the history and development of the NDR movement and on the proposed standards in Robinson's letter.

The **World wide web consortium** (W3C) and the **Open geospatial consortium** (OGC) have issued a public working draft of a best practices specification for the publication of spatial data on the web. The document shows how geospatial technology can combine with semantic/ linked data techniques and will build on

'an agreed spatial ontology conformant to the ISO 19107 abstract model.' The W3C has also announced that the W3C Validator Suite for HTML, CSS and internationalization is now available as open source code on GitHub. You are encouraged to 'fork it.'

While this is currently more of a smart grid/utilities development, an interesting 'internet of things' test was recently reported by **Duke Energy**. The '**Coalition of the willing**' trial of the Open field message bus (OpenFMB) interoperability framework demonstrated vendor independent 'plug and play' integration in a electricity microgrid environment.

Reducing refinery downtime

Redbook outlines IBM use of Watson/Internet of Things, InfoSphere and Congos BI.

A new Redbook, Reducing refinery downtime with IBM smarter asset management for oil and gas (SAM-OG) by Jenny Li and Paul Peters provides a succinct (18 page) overview of how IBM is leveraging what has become known as the 'internet of things' and how its consultants go about assessing asset data integration issues and propose specific products and configurations from IBM's burgeoning application line-up.

At the base of the stack, SAM-OG uses IBM's internet of things foundation (now also referred to as the IBM Watson IoT Platform) to connect real-time data from field-based sensors to IBM's flagship enterprise systems, Maximo for asset management and Scheduler for turnaround. Time series sensor data can be staged in a data historian such as OSIsoft's PI System or streamed into the system using a publish/subscribe model. Data is augmented with maintenance logs, production reports and more to enable predictive analytic and optimization models.

IBM InfoSphere Streams can be deployed to support real-time analytics of process data streams including from producing fields. IBM Cognos can also be used to provide reporting and business intelligence. Inventory analytics can also leverage IBM SPSS, running in the cloud, to profile inventory, predict out-of-stock conditions, and reduce overstocking. The solution can be deployed in the cloud or on premises.

ExxonMobil Torrance refinery disaster report

Chemical Safety Board investigation uncovers multiple safety management deficiencies.

An ongoing investigation by the US Chemical Safety Board (CSB) of the February 18, 2015, explosion at the ExxonMobil Refinery in Torrance, California uncovered multiple process safety management 'deficiencies' that led to the accident and a serious near miss. The explosion occurred in the refinery's electrostatic precipitator (ESP), used to control air pollution, injuring two workers and dispersing large quantities of catalyst dust up to a mile away from the facility.

The CSB found that large pieces of debris from the explosion were thrown into other units of the refinery directly surrounding the ESP. One narrowly missed a tank containing tens of thousands of pounds of modified hydrofluoric acid, HF. Had the debris ruptured the tank a 'potentially catastrophic' release of HF would have occurred.

The CSB's investigation is ongoing but has already identified 'multiple process safety management deficiencies' that contributed to the accident. ExxonMobil failed to conduct a management of change review and performed inadequate process hazard analyses. These should have identified the hazard of a 'combustible mixture igniting in the electrostatic precipitator' and led to effective mitigation. The CSB concluded that such failures were similar to those that contributed to the 2012 fire at the Chevron Refinery in Richmond, California. This incident led to the CSB adding process safety management reform to its list of 'most wanted' safety improvements.

Infor M3 powers supply chain modernization

Cloud-based ERP system central to Preem's 'SVAR' IT revamp program.

Sweden's largest fuel company, Preem has deployed Infor M3 to help 'fuel' its transition to renewables and standardize its information and process model. New York-based Infor's M3 cloud-based enterprise resource management (ERP) system is a configurable, multi-site, multi-lingual solution written in Java for platform independence.

M3 is the central component of Preem's 'SVAR' IT modernization and change management program which involves the replacement of some 30 core software solutions and the addition of new tools to improve inventory management and business partner relations. SVAR further aims to harmonize Preem's financials and the interface between its refinery and marketing profit centers. Preem plans to deploy the entire Infor suite including supply chain, financial budgeting, planning and consolidation, and customer relationship management. Preem will also deploy Infor ION middleware to expose M3 as a 'single information source for reporting and analysis.'

Redeye's engineering data management solution

CEO argues that the downturn is the time for business transformation.

Redeye CEO, co-founder and blogger-in-chief Wayne Gerard believes that low oil prices are, or should be, driving productivity and businesses transformation. Brisbane, Australia-based Redeye's engineering document management solution can help oil companies slash operating and maintenance costs by shifting data management to the cloud.

Today's GIS, CAD and project software was not designed for data management which makes sharing engineering data difficult. They encourage local copies of data, duplication and uncertainty as to which version is current. Gerard claims that such issues are 'often the root cause of safety incidents, project and maintenance mistakes which cost companies a lot.'

RedEye's engineering drawing and data management solution for owner operators is a 'quick win' for operators with most achieving payback period within 3-6 months and making 'real bottom line savings in year one.'

ISSN 1632—9120

Datum360 survey of engineers

Engineering software boutique finds 'too many formats', 'inconsistent, incomplete information.'

UK-based engineering data software boutique Datum360 recently quizzed webinar participants as to the most significant issues in engineering information handling. Respondents reported that there are too many data formats and that information is inconsistent or incomplete. Project modifications mean that data requires 'consolidation' after handover. Missing or inaccurate data is a primary cause of production downtime and safety related issues. Some reported that their organizations had a 'limited or basic specification' for information handover or, in some cases none at all!

Enter Datum360's cloud-based CLS360 class library and PIM360 plant information platform. The class library relates manufacturers equipment codes and tag numbers with detailed specification of attributes and documentation. The library is 'aligned with' standards such as ISO 15926 and ISO 14224 but Datum 260 appears to prefer pragmatism over standards fetishism. Datum 360's client list includes Chevron, ConocoPhillips and Total. Recent deployments are reported from BP's Azerbaijan. BP's Farah Mizrajanova said, 'We now have one central approach to collecting data which has significantly increased operational efficiency and saved us time and money. Our team was operational in under two weeks.'

ExxonMobil, Hunting team on autonomous downhole tools

Deal with Titan unit to develop high-end perforating and pipe cutting devices.

ExxonMobil's upstream research unit has signed a joint development agreement with Hunting's Titan division to develop 'autonomous tools,' i.e. robots, for well construction and workover. Delivery of the first commercial tools is expected to take 'a few years' with an initial focus on perforating and pipe cutting devices. Hunting's Titan division specializes in wireline and tubing conveyed perforating gun systems, hardware and accessories, shaped charges and logging tools.

Development of the tools will combine Hunting's tool development and manufacturing capabilities and ExxonMobil's autonomous tools technology and expertise in on-board navigation.

The system will eliminate the need for communications with the surface. When the device reaches target depth, the automatic system will perform designated actions. The system is expected to reduce the time required to perform multiple operations during drilling, completion, workover and abandonment.

BP signs global SimSci Spiral deal with Schneider Electric

Refinery supply chain management suite for hydrocarbon knowledge management.

BP has signed a global licensing agreement with Schneider Electric Software for its SimSci Spiral suite that will be used to support planning, supply and distribution optimization its global refineries. Spiral Suite is an enterprise supply chain management solution for the hydrocarbon processing industry that is claimed to eliminate the inefficiencies of existing point solutions. Spiral's in-tool analytics offer cloud-based, distributed calculation and analysis of multiple scenarios.

Schneider executive VP Ravi Gopinath said, 'This agreement builds on our long-term collaboration with BP on enterprise crude knowledge management (sic). Spiral supports all supply chain work processes including knowledge management, planning, scheduling and envelope optimization activities. The solution uses accurate, up-to-date data to explore new opportunities, shrinking the gap between planned and actual results.' Spiral Suite exposes a configurable drag and drop graphical flowsheet that integrates all activities in a unified GUI and single source of data. Data management and version control is provided through both desktop and web interfaces.

MIT, CNRS claim breakthrough in kerogen modeling

The frackers have got it all wrong. Use CO2 not water to 'touch the real treasure.'

The Massachusetts Institute of technology (MIT) reports the results of a joint R&D program with France's CNRS into the molecular structure of kerogen. This has, until now, been 'poorly understood.' In what is modestly described as a 'game-changing revelation,' researchers from the 'multi scale materials science for energy and environment' program have discovered that Darcy's law for fluid flow in a porous media is 'not accurate' for hydrocarbon flow in kerogen.

Program director Roland Pellenq said, 'Flow in shale nanopores is not correctly described by the macroscale physics of liquids and the standard formula. Shale pores are smaller and less interconnected than expected. Individual molecules of oil or gas no longer behave as fluids and get trapped in place. Understanding the nanoscale structure of pore spaces in kerogen is a true new idea, a game changer.' Pellenq says that the fracking process needs a rethink in the light of the new findings. Today's frack jobs are 'not even touching the real treasure, which is in the walls, in the pores of the wall.'

The new research suggests replacing today's water-based fracks with CO_2. This would force 'out at least the lighter molecules such as methane, though perhaps not the heavier molecules of petroleum.' Jean-Noël Rouzaud of France's CNRS said, 'This work should allow for more effective and environment-friendlier techniques of recovery of hydrocarbons.' Today, fracking and indeed conventional exploration has been banned in France. The research was published in Nature Materials Journal.