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OSIsoft EAME UG

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In this issue:

Gazprom's digital twins

Khantos unit rolls-out Upstream Control Center for production and MRO in 'electronic asset development' program. Science and Technology Center deploys Norwegian eDrilling's software.

Moscow headquartered Gazprom has established the Khantos upstream control center (UCC) that uses 'digital twin' technology to optimize production. The UCC runs several 'hybrid' digital models, for submerged well pumps to the point of commercial oil delivery. Khantos models 'constantly learn and self-calibrate' as conditions change, for instance, when a new well cluster comes on stream or when a pumping station shuts down.

Well interventions, as determined by the digital twin, feed into another key system, 'ERA.Repair,' an automated process for maintenance, repair and operations (MRO). The system prioritizes and aligns operator intervention to current target KPIs. UCC functionality is soon to be extended with digital twins for formation-pressure maintenance systems, energy supply systems, and associated gas treatment and use.

Gazprom Neft CEO Alexander Dyukov said, 'IT is making significant changes. Our digital transformation is improving production and financial performance.' The UCC is the latest component in Gazprom's Electronic asset development (EAD) program, a digital oilfield that spans exploration, drilling, production and construction. The EAD kicked-off in 2012.

Another unit, the Gazprom Science and Technology Centre (GSTC) has launched a digital twin initiative, the Drilling support center (DSC). The DCS has signed with Stavanger, Norway based **eDrilling** for the provision of its drilling and well performance solutions. GSTC CEO Mars Khasanov said, 'Our objective is to increase production and to improve efficiency using new technologies and design engineering, leveraging digital twins of our wells, predictive analytics and automated diagnostics.'

The DSC performs round the clock monitoring, control and remote engineering support on Gazprom's more complex wells. In 2017, some 60% of Gazprom's wells were drilled under the supervision of DSC experts.

eDrilling COO Sven Inge Ødegaard added, 'Gazprom is shaping the digital agenda and transformation of the oil industry. There are huge savings as well as safety and efficiency gains to be made by moving to the intelligent use, and pairing, of real time digital and physical drilling data.'

eDrilling's software portfolio includes dynamic drilling models and diagnosis technology merged with 3D visualization. Different drilling models interact, and are used across the value chain from planning, training, operations monitoring and after action review.

eDrilling, a Teresoft/HitecVision company, uses core technology from Norway's Sintef R&D organization. More from Gazprom and eDrilling.

E-biz consolidation

Supply chain, logistics and point of sale boutiques Oildex, Solaris and PDI software expanded offerings, reflecting trend to factory-style operations.

In a bout of oil country supply chain and e-business consolidation, Oildex has acquired **Phoenix DAS**, a provider of integrated field operations management software for oilfield suppliers. The acquisition adds Phoenix' sales, e-ticketing, purchase orders and real time inventory management solutions to Oildex's e-field ticket initiative. Oildex offers an API to its 'always-on' supply chain for access by third party e-business providers, notably Amalto.

Well site logistics and inventory monitoring specialist Solaris acquired the assets of **Railtronix**, provider of real-time inventory management solutions for proppant mining, shipping and transloading. Houston-based Railtronix provides data for suppliers and oilfield service companies across the US. Railtronix founder Alfonso Olvera joins Solaris as SVP Technology.

In the downstream/retail space PDI Software has acquired WEX' **TelaPoint** unit, a provider of fuel supply chain management software. TelaPoint manages inventory, dispatch, and fuel pricing for carrier companies and 67,000 points of sale. Acquisitive PDI also recently bagged Intellifuel Systems, Pinnacle ERP assets, DataMax, LomoSoft and Firestream Worldwide.

Blockchain - another misunderstanding?

Neil McNaughton looks at the blockchain-based trading initiatives that are springing up to solve problems that you never thought you had. Blockchain's peer-to-peer technology promises 'democratization of trust. But why would oils, banks and traders want this? What exactly are the aims of the Commodity Trading Consortium, the Energy Web Foundation and other groupings?

Did you realize that oil trading in major companies BP, Shell and Statoil uses 'cumbersome paper contracts?' No neither did I. The 'revelation' came in a release from the newly formed **Commodity Trading Consortium**, more of which below. But first have a thought for all those traders scratching away with their quill pens before sealing their orders, affixing a stamp and calling in the postman.

What led to the creation of the CTC is the latest big thing, blockchain. A technology that uses encryption to secure information exchange. A good Wikipedia page explains the nuts-and-bolts. Blockchain enables secure, peer-to-peer exchange of digital information. The controversial currency Bitcoin is an example. Peer-to-peer means that there is no intermediary, no server operating in the background. In fact, it's just like email and the technology that underpins the world wide web. Peer-to-peer generally means 'free' in so far as the software is open source and the hardware is your own. For blockchain, 'secure' means that users and transactions cannot be spoofed or falsified. Blockchain has been described as the 'democratization of trust.'

The CTC, founded by BP, Shell and Statoil along, with an group of trading houses and banks, is an independently-managed blockchain-based platform for energy commodity trading. Judging by the CTC members, it seems unlikely that this will be a truly 'democratic' venture. The CTC as I said before, plans to 'move away from traditional and cumbersome paper contracts and operations documentation.'

This all sounds rather familiar. The wording is almost identical to OFS Portal's 'standards-based electronic transaction infrastructure' (2003) or even better, from BP, which, in 2002 when it was BP Amoco, had '*invested in several neutral energy exchanges which harness the power of the internet to bring a more transparent, low cost, multi-party market to a broader range of energy product buyers and sellers*' (2000). And that's not to mention the bubble of energy e-commerce activity that burst along with other dot-coms, again around 2000.

The CTC will be 'open to the commodity industry' i.e. closed and almost certainly not peer to peer. The CTC's *raison d'être* would seem to be 'because blockchain is there, let's do something with it!' Cumbersome paper contracts indeed, where do they get language like that anyhow! The CTC is expected to be operational by the end of 2018.

A more touchy-feely blockchain in energy application, and one that makes some sense, in that P2P-based trust is used is GE-backed French startup **Evolution Energie**, which provides 'certificates' that vouch for the greenness of traded energy. The solution was built with help from GE's Digital Foundry.

Another good blockchain resource is a blog post on the **CarnegieMellon-Software Engineering Institute** by one Eliezer Kanal. He argues that healthcare exposes multiple potential uses for blockchain to 'securely exchange patient information, X-rays and prescriptions.' Well that might be so. But secure exchange of medical data has been possible for decades, managed by a complex web of incumbents who for sure will be 'excited' about blockchain and who will do anything to promote the technology so long as it doesn't damage their business. I.e. they will join consortia, debate and proselytize the new technology and generally filibuster away while business as usual carries on.

A more immediate application of blockchain involves a simple jump on the bandwagon of currency issuance. A cute combination of Canadian **Petroteq** and the magnificently-titled '**First Bitcoin Capital Corp**' (FBCC) is to create a new supply chain management platform based on blockchain technology, 'specifically geared' for the oil and gas industry. FBCC claims to be 'the world's most prolific generator of cryptocurrencies.' Personally, I am keeping my cash under the bed. Petroteq backed up its own claims with the issuance of … a plethora of press releases!

A more romantic offering comes from Mansfield-Martin Exploration Mining which has partnered with Qu to back up the **Silverback** Ethereum-based crypto-currency offering with 'up to' 5 million one-ounce silver Doré bars. A possible analogous oily currency backed up by barrels of crude is not quite so seductive but no doubt someone will try.

The **Energy Web Foundation**'s 'Tobalaba' blockchain test network sounds like a true peer-to-peer offering. Tobalaba now provides energy sector startups and developers with a platform to develop decentralized apps. Code is available on the EWF GitHub and the solution will be showcased at the blockchain 'Event Horizon 2018' summit. Authorities already on the network include Centrica, Engie, Shell and Statoil. The EWF was dreamed up between Grid Singularity and the Rocky Mountain Institute along with implementation partners Parity Technologies, Brainbot AG and Slock.it.

Who else? At the recent Open Applications Group Plenary in Redwood, California, David Haimes announced **Oracle**'s own blockchain cloud service, built on a Hyperledger 'permissioned' blockchain protocol. From our reading of Haimes' presentation it's hard to see what this adds to Oracle's existing ERP and e-business offering apart from a multitude of toys for developers. These include a REST API-driven integration, a SaaS toolkit and sample code. Oracle is hosting design jams with industry vertical subject matter experts, pitches for execs and hackathons. A grandiose 'blockchain advisory customer council' is being set up.

The European Commission, always a sucker for trendy new technology,' has launched a '**European Blockchain Observatory and Forum**' to 'help the EU to stay at the forefront, build expertise and show leadership in the field.' The EU at the forefront of blockchain? Really?

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So why all the interest in technology that is fixing yesterday's 'cumbersome paper' problems? It sounds to me like we have another of these 'big misunderstandings' like I described earlier about exaggerated expectations for Hadoop in oil and gas. The misunderstanding in regard to blockchain is that its killer *technology* is P2P, i.e. it does not really need a 'consortium.' Its killer *application*, Bitcoin, is mainly used to circumvent authority. Bitcoin is said to be really good for the bad guys.

In a curious incident recently, a former BP economist was charged with five counts of wire fraud for 'allegedly trying to extort money from the company by attempting to exchange sensitive corporate documents for bitcoins!' As I write this, I am thinking what would happen if I sold a few bitcoins and a few million euros suddenly appeared in my bank account? I would expect a quick visit from the taxman and maybe the police. The bad guys must know something I don't.

Oh, and there is one other thing, blockchain, used at scale, is very energy hungry. Possibly very, very energy hungry. It has been reported as consuming as much electricity as a small country. Also, because bitcoin miners tend to be located in China where compute cycles are cheap thanks to dirty, coal-powered electricity, this causes a lot of pollution. Kanal reports that 'this otherwise-purposeless electricity expense is a significant hindrance so far to adoption.' Not a good thing either for a 'green energy' exchange or for energy-conscious companies like the CTC founders.

I asked the CTC about this problem and they explained, '*Although we have not yet decided on a technology, at the moment we are expecting to use a permissioned ledger and as such the energy intensive mining does not apply*.'

As far as I know, the energy cost of a transaction has never been a problem in the past. The commercial e-commerce exchanges don't appear to make much of an issue of how much energy they use. A Bitcoin transaction is reported to be '4,000 to 5,000 times more energy intensive than a VISA swipe.'

Not only is bitcoin's cash value now generally considered to be as foolish as was the boom in value of a Dutch tulip in the 17th Century, the technology that underpins it may turn out to be just as improbable.

@neilmcn

Review - IEA study on 'Digitalization and energy'

A '10 to 20%' decrease in oil and gas production costs is forecast from 'advanced processing' of seismic data, the use of sensors and enhanced reservoir modelling. AI/ML and big data are to play a role as is blockchain. Standards are OK if done right. CCS could benefit from fracking!

Scanning the 188 page report, 'Digitalization & Energy' (D&E) from the Paris-headquartered International Energy Agency (IEA*) made us think of a classroom of students confronted with an awkward topic. In 2016, IEA director Fatih Birol tasked his employees with the preparation of this investigation-cum-forecast of 'how digitalization is transforming energy systems.' The result is a compilation of observations and imaginings, most of which any causal reader of the FT or WSJ will have heard before.

The authors ask rhetorically, if digitalization heralds a new era. For oil and gas the answer is both no ('*oil and gas companies have long used digital technologies to model exploration and production assets*') and yes ('*use of digital technologies could decrease production costs between 10% and 20% ... and boost global reserves by around 5%*'). What exactly are these digital technologies? They are 'advanced processing of seismic data,' the use of sensors, and enhanced reservoir modelling. Wow!

Elsewhere the report highlights the usual stuff, analytics, big data, machine learning, and the internet of things. Examples of these '4th industrial revolution' technologies include the inevitable blockchain (with 34 references) that 'could facilitate peer-to-peer electricity trading.'

D&E is dismissive of the energy costs of using blockchain citing 'one report' that puts current bitcoin energy use at 'less than 1/40th of 1% of the world's electricity.' Concern *is* expressed for the increasing use of electricity in data centers and networks, currently a combined 2% of worldwide consumption.

A section on interoperability and standardization speaks of the need for an 'alignment of physical, semantic and organizational elements.' Here, a balancing act is needed between 'overly narrow one-size-fits-all standards' and 'standards that might prove burdensome or conflicting.' D&E concludes lamely that standardization '*should build on synergies between the various players rather than lead to fragmentation of the market and duplication of efforts*.'

With 140 references, the transport sector is clearly considered a key target for digital energy. But here, the preference is for trendy apps for ride hailing, car sharing and truck 'platooning.' Digitally-enabled platooning, (trucks driving along highways nose-to-tail to save energy) is presented in an unquestioning gee-whizz manner. We are not sure that passing a 500 meter long truck convoy in the rain will be all that popular with other road users who might think that the freight would be better traveling by rail.

The IEA's essayists excel themselves in a section on digitizing the carbon capture and storage 'value chain.' Here, 'digitalization will be increasingly important in the future when CO2 emissions from smaller and more dilute sources will need to be captured and stored.' 'As in the oil and gas industry, the nascent CO2 storage industry will be dealing with large volumes of time-series information/data captured from instruments that monitor and control plant processes.' CO2 storage will benefit from key technology innovations that are revolutionizing the oil and gas industry. What would these be? '3D seismic, smart drilling and … multi-stage hydraulic fracturing!' Wow again, CCS *and* fracking? Tell that one to the inhabitants of Schleswig-Holstein**!

** An OECD unit.*

*** Citizens of this German Lander have rejected CCS following injection-related earthquakes.*

Open standards-based assembly of spatial data

OGC announces discrete global grid system for raster and vector data. No more CRS-worries!

The Open Geospatial Consortium has released its Discrete global grid system (DGGS), designed to enable the rapid assembly of spatial data 'without the difficulties of working with projected coordinate reference systems.' DGGSs represent the Earth as hierarchy of equal area tessellations, each with global coverage and with progressively finer spatial resolution. Spatial observations can be assigned to a cell that corresponds to both the position and size of the phenomenon being observed. DGGS also provides algorithms for data analysis of very large numbers of cells and is claimed to adapt well to parallel processing.

Stuart Minchin of Geoscience Australia said, 'DGGS provides a capability to integrate global geospatial, social, and economic information. Communities with data from different geographies can integrate information into a single consistent framework.' DGGS enable the harmonization of raster, vector and point cloud data, overcoming the 'raster-vector divide' of traditional GIS and the pitfalls of multiple projections. Perry Peterson co-chair of the DGGS standards group added 'Assembling the array of available spatial data so that it makes sense is currently a challenge that requires an expert. DGGS offers a solution.'

DGGS promises open standards-based geospatial data fusion on demand. The specification provides a platform for interoperability across different implementations, 'promoting reusability, knowledge exchange and choice in the design of individual implementations.'

Norway's Geonorge portal aligns to EU Inspire directive

EPIM tasks Kartverket,the Norwegian Mapping Authority with oil and gas reporting pilot.

Speaking at the ECIM data management conference in Haugesund, Norway earlier this year Njål Tengs Abrahamsen of Kartverket, the Norwegian Mapping Authority (NMA) presented Geonorge, Norway's national geoportal. Norway's Epim trade body has mandated NMA to implement a range of oil and gas data documentation and reporting functions with 'possible' implementation in 2018.

Kartverket's mapping initially followed the European Space Agency's Spatial Observation Services and Infrastructure (SOSI). The SOSI feature catalogue is now in the process of a 'gradual alignment' with Norway' Geodata act, based on the more recent EU Inspire directive. According to Abrahamsen, Norway now mandates Inspire's model-based data production. At the output end, Atom feeds and web feature services are deployed to ensure 'predictable and machine readable' data. A REST API is also available for developers.

Geonorge's coverage is impressive and includes raster and vector data for land use, wildlife, hydro power, cadastral data, Lidar, offshore bathymetry and other earth resource information.

BP calibrates Exa's DigitalRock

Multi-year trials of computer tomographic permeability validates alternative to laboratory analysis.

Exa Corp.'s DigitalRock (DR) software was highlighted in a BP presentation at the 2017 SPE/ADIPEC conference in Dubai. BP's Gary Jerauld presented multi-year trials of DR's approach to computing relative permeability from micro-CT images of rock using Lattice Boltzmann flow simulation. The approach reduces the time and cost of measuring relative permeability by and uses smaller rock volumes than traditional laboratory techniques. The authors believe that this could mead to the replacement of costly coring operations with side-wall cores.

DR constructs a pore space grids from segmented micro-CT images. A fluid-flow simulator is then applied to calculate permeability. The multi-year calibration compared the results with traditional lab measurements on full-size cores using steady-state and dynamic protocols. The paper concludes that the simulations faithfully reproduce the lab measurements across a wide range of experiments including core flooding, 3D sand packs and trapped gas.

Just prior to ADIPEC, Exa Corp was acquired by France's Dassault Systèmes in a $400 million all-cash deal. Exa had $72 million revenue in 2016 and clients for its Lattice Boltzmann modeler include BMW, Tesla, Toyota, NASA, Embraer and BP.

Schlumberger upgrades Houston reservoir rock and fluids lab

New offerings for microfluidics, digital rock and fluid services and 'cognitive' Delfi.

Schlumberger's expanded reservoir rock and fluid analysis laboratory in Houston provides physical and digital rock and fluid analysis. Technologies deployed at the Houston Reservoir Laboratory include Maze microfluidic SARA* analysis, Malcom fluid characterization software and CoreFlow digital rock and fluid analytics services.

All of the above is now said to be integrated with insights from field and lab measurements into Schlumberger's recently announced Delfi 'cognitive' E&P environment. Hinda Gharbi, president, Reservoir Characterization Group said, 'Digital technology is fundamentally changing the way the E&P industry works. Expansion of the Houston Reservoir Laboratory accelerates customers' access to our proprietary technologies, digital models and petrotechnical domain expertise to overcome technical challenges across the life of the field.' The lab also houses the Schlumberger Production Technologies Center for chemicals R&D.

** saturates, aromatics, resins, and asphaltenes.*

Software, hardware short takes …

Quantico Energy Solutions, Interica, Nature SciGraph, Esri, Getac, geoLOGIC Systems, Imago, Justcroft International, LMKR/GeoGraphix, dGB, MeadCo, Seisware, Tendeka, KEPWare.

Quantico Energy Solutions has released QOpt, a AI-based drilling optimization solution. QOpt computes real-time unconfined compressive strength 'with the same accuracy as open-hole logging tools. QOpt recommends optimal drilling parameters and provides real-time formation tops. Quantico is backed by Shell and Statoil.

The latest release of **Interica** Pars supports Azure storage destinations. Users can direct Pars archives to Azure-enabled storage devices using the Azure Blob protocol/interface. Also new is automated rule-based archiving and an updated connector for Blueback's Project Tracker via a partnership with Cegal.

Elsevier has announced a new release of Springer Nature SciGraph and Data Explorer. SciGraph is a linked open data platform aggregating data sources from Nature and other partners from the 'scholarly domain.' Datasets are being distributed as RDF data along with an ontology and SKOS taxonomies.

Esri has announced GIS Tutorial 1 for ArcGIS Pro, covering map making along with creating, managing and analyzing spatial data. The book by Wilpen Gorr and Kristen Kurland is available in print and as an e-book, both at $99.99.

Getac's new EX80 secure, ruggedized Window 10 tablet is certified for use in Zone 0 ATEX, IECEx et UL913 environments presenting a potential risk of explosion.

The 8.6 release of **GeoLogic Systems**' GeoScout front end includes a redesigned ownership analysis tool, a new land listing report and well ticket improvements.

Australian **Imago** has come up with a neat way of capturing geologic information from drilling cuttings. The system uses a smartphone or rail-mounted GoPro to capture high resolution images of the chip tray for subsequent stitching and cataloguing with Imago's software.

Justcroft International has announced JustImage 5.2.03 with new search functionality, more supported devices and AES 128 bit encryption for PDF generation.

The 2017.1 release of **LMKR**'s GeoGraphix includes Gverse, a new integrated 3D geomodeling platform.

dGB has released OpendTect v6.2 with enhanced CRS management, RGB blending, Shapefile support, and neural network-based property prediction.

MeadCo's ScriptX provides 'consistent and efficient' printing from Internet Explorer. ScriptX targets oil and gas authoring of daily reports, equipment lists, identification badges and barcoded labels.

Seisware has extracted the coordinate conversion routine from its geophysical interpretation package and has repackaged it as free software. The package converts full files, not just single points.

Tendeka reports the successful launch of PulseEight, 'revolutionary' wireless intelligent completion technology for the digital oilfield and Cascade3, new sand control technology that improves recovery and the lifetime of water injection wells.

Kepware's KepServerEX Version 6.4 integrate 'smart factory' initiatives with traditional industrial automation systems. Updates include a new MQTT client driver, improved server performance, and store and forward capability for ThingWorx.

SICPA partners with Arundo Analytics

Authentication and track & trace specialist teams with big data analytical startup to help governments monitor oil and gas operations and assure regulatory compliance.

Switzerland-based Sicpa, a provider of authentication and track & trace solutions to governments, has teamed with Oslo-headquartered Arundo Analytics. Arundo, set up in 2015 by a group of former McKinsey executives, is a specialist in the application of advanced analytics to industrial operations. The partnership sets out to help governments monitor oil and gas operations to assure compliance with regulations.

Sicpa's experience to date is as a provider of solutions across multiple value chains such as banknotes, value documents, excise tax-eligible goods and fuel marking. Arundo's software will add scalable data science applications for static and streaming oil and gas data. The 'data-driven and IoT-enabled' compliance system will assure the trustworthy management of the hydrocarbon supply chain integrity, reducing the risk of fraud (theft, diversion, adulteration) in both crude oil and refined product applications.

The latest (December 2017) release of Arundo's toolset enhances deployment of the company's 'Edge Agent' that enables industrial analytics in rugged, remote or disconnected environments. Updates to the Arundo Fabric, a cloud-based hub for data models, allow users to view master lists of tags and sensors streaming data in real-time and access real-time status of deployed models

Ellie Dobson, Arundo VP Data Science said, '*Arundo automates the work and technical infrastructure required to turn desktop data science models into enterprise-scale machine learning applications, enabling users to focus on data science, rather than on software engineering, model front-end development, or other IT issues*.' Arundo's flagship client in oil and gas is Statoil.

Founded in 1927, Sicpa was originally a provider of security inks for banknotes. Its identification, traceability and authentication solutions have since expanded into product authentication, traceability, proof of origin and tax reconciliation.

Back in 2016 Arundo CEO and founder Tor Jakob Ramsoy told SMi E&P Data Management conference attendees of a 'perfect storm' about to hit oil and gas, driven by the internet of things, the cloud and by data science with 'deep learning exploding across the whole industry.' In a prescient remark in view of the Sipca deal, Ramsoy advocated 'data transparency across value chain.'

on the spot report

OSIsoft EAME 2017 user conference London

Pat Kennedy, 'There will be a trillion IoT sensors, we love that!' OneWeb LEO satellite IIoT/M2M. OSIsoft/Dianomic collaborate at the IoT edge. OSIsoft message format key to the cloud. Statoil on Ivar Aasen's IT. ARM's cloud connectivity. Setpoint, 'Are you serious about vibration monitoring?' IT Vizion's PI for Sinclair Oil. Element Analytics puts PI in the data lake. TransCanada's in-house AI on PI. PROTEAN, Petronas' DIY rotating equipment monitor. Connected Services for SBM's FPSO fleet.

OSIsoft plays a crucial role in oil and gas and other process industries. Its PI System acts as a buffer from disparate process control systems and provides operators with a 'single source' of current and historical data. Some 1400 attended (60% from oil and gas) the recent 2017 EAME users conference in London and heard from founder and CEO Pat Kennedy on how digital transformation is impacting diverse industries. 'Whatever you think of the Internet of things (IoT), it's way low, there will be a trillion sensors… and we love that!' OSIsoft is working on its systems' scalability and configurability to adapt to the new 'big data' normal.

OSIsoft itself is changing. Earlier venture capitalist investors have been bought out by Mitsui (in 2016) and Softbank earlier this year. Kennedy sees synergies with Mitsui's energy division and with Softbank portfolio companies including the Vision Fund and ARM. He also highlighted the promise of the OneWeb joint venture that is to launch a constellation of low earth orbiting satellites starting in 2018 that will constitute a 'global IoT/M2M system.' Kennedy is moving OSIsoft in the direction of the 'community system.' 'While we need to be more attuned to IP and data ownership these need not be barriers to openness.'

Matt Ziegler and co-presenter Daniele Farris explained how PI fits with the data lake paradigm. The data lake notionally is a single data system 'that does everything.' In practice, this goal remains elusive. Raw data needs to be marked-up with context ahead of ingestion by people who understand the process. PI and the PI Integrator act as a bridge into the immutable data repository/data lake. The data lake represents a major shift, 'from Oracle to open source stuff.' But then, 'the risk is transferred to your IT.' PI can mitigate this risk. PI is 'climbing the value ladder,' from monitoring to optimization. Currently this means integration with Tableau, Spotfire and SAP Hana. The future will see multi variate analytics with R, Python and MS Azure.

SVP Martin Otterson announced a new IoT 'edge' strategy based around the OSIsoft message format (OMF) and a collaboration with **Dianomic**. A new Windows/Linux Open Edge module adds a read/write to PI capability to field devices and a PI mini historian. Christian Leroux introduced 'Pervasive data collection' (PDC) for Industrie 4.0. Sensors and equipment that were previously too hard or expensive to connect can now be brought into the PI ecosystem. Leroux expects that as control system vendors move to the cloud, we may well be moving towards multiple, competing proprietary clouds. PDC makes a direct connection without going through a vendor's control system. At the heart of this system-independent connectivity is OMF, the OSIsoft message format. The solution is also applicable to stand-alone kit such as vibration sensors which can be plugged into PI with an 'OMF app.' PDC is grandly presented as the 'OSIsoft IoT architecture for the community.' Along with OMF connectors, PDC includes an 'Edge data store' (Windows/Linux), an Open edge module (Linux/RTOS) and OMF Apps (any OS). OSIsoft is refactoring PI Connectors with OMF. PDC is free, 'just buy your hardware.'

Ed Knutsen (**Siemens**) and Morten Illeby (**AkerBP**) presented on the Norwegian Ivar Aasen platform's IT that underpins both an ongoing de-manning program and a shift from calendar-based maintenance to onshore maintenance planning, a.k.a 'predictive' maintenance, with PI/AF* analytics for condition and performance monitoring. A fiber data link replicates the platform control room to another, onshore in Trondheim. This is currently used in a monitoring/advisory capacity but in the future, with further de-manning, the plan is to run the field from onshore. The joint Siemens/OSIsoft PI-AF solution is productized as MindSphere for Offshore.

David Coe reprised the Microsoft/OSIsoft **Red Carpet Incubation Program** (RCIP) announced last year, vaunting the merits of Azure's 'intelligent cloud,' where now '30% of workloads are Linux-based.' 'There almost certainly an Azure presence where you are, an Africa region cloud will be running real soon now.' RCIP leverages the ISO 14224 oil and gas maintenance standard. Azure is based on NIST security and 'more standards than anyone else in the industry.' RCIP now includes artificial intelligence, natural language processing, semantics and cognitive. Coe cited Repsol and DCP Midstream as RCIP users.

Toby Grimshaw described how **ARM** (a Softbank unit) is 'seizing the trillion-device opportunity' of the IoT with its Mbed IoT platform. ARM's chips currently power '95% of smartphones' and ARM claims that over 300,000 developers use the Mbed IoT operating system. Mbed provides 'chip to cloud' security and ARM is to extend OSIsoft Cloud services connectivity to devices from multiple vendors.

Randy Chitwood (Brüel & Kjaer/**Setpoint**) asked 'are you serious about vibration monitoring. Setpoint captures high frequency vibration data directly into PI while preserving critical waveform data. There is a perception that 'PI can't handle high frequency data.' But the reality is that 'if you have good edge processing, you can.' Setpoint's specialist hardware collects data from multiple sensors on a machine and runs analytics on a separate stream from safety and operations data. High-speed data is transmitted in standard PI tags and lossless compression concepts from the video streaming domain are leverages to optimize bandwidth use. PI AF connects back into the Setpoint hardware and builds a tag hierarchy. Bidirectional connectivity can see into PI enterprise data to tune analytics.

Bruce Taylor, with help from **IT Vizion**, has successfully built a master asset model of **Sinclair Oil**'s refinery in PI AF. Over the last few years, Sinclair has acquired a lot of technology in its digital transformation, Maximo, PI suite, Meridian, LIMS and more. Each was deployed independently within a functional unit. The problem is that 'in refining, everything is tied to everything else.' PI AF was not really being used despite its potential role in solving this classic challenge. There is much talk about building an asset model. In fact, building is easy. What's hard is keeping the model fresh, particularly when it underpins analytics. A counter example

of this is using an Excel spreadsheet used as management tool, 'over time, nobody knows or understands what's inside.' The US OSHA regulator mandates up to date plant information, especially P&IDs. These were the foundation of the asset model. Sinclair leveraged IT Vizion's technology in its own-brand P&ID management system, 'Smart P&ID iDINO*.' Systems plug-into the iDINO register. CAD integrates to PI AF with ISO 15926 class templates. Additions and modifications are broadcast to SAP and Maximo. Sinclair now plans to deploy advanced analytics and 'leapfrog predictive and go straight to prescriptive.' The PI AF data structure is 'ready for anything!'

Element Analytics is 'unlocking' operational data by capturing PI and other data into an HDFS-based data lake a.k.a. an operational 'digital twin.' Andrew Soignier opined that oil and gas and other asset intensive industries are challenged by 'data readiness.' 'Even with PI, data may lack context.' EA leverages a standard, normalized object data model with quality labels, data relationships and financial impacts. Cleansed data from the lake can be reused in PI AF for cross-asset studies. EA speeds modelling, tagging and data prep across PI, Excel and SAP to 'figure out where key stuff is located.' EA is a Microsoft Azure cloud solution provider/ partner. Other technologies deployed include PI AF XML, GE JSON and Energistics.

We were intrigued by exhibitor **Dianomic** which, according to a release timed with the conference, is helping OSIsoft with its 'edge and open source' strategy. The collaboration is to bring the 'treasure trove of open source development tools to the PI System community.' Dianomic is building Linux-based micro-service modules to connect and manage smart sensors using the OSIsoft message format. Prototype software was up and running on a Rasberry PI-based edge device. OSIsoft has part-funded Dianomic in response to third party DIY/open source developments that bypass PI.

Keary Rogers and Brendon Bell reported on the use of statistical QC (SQC) at **TransCanada**. Data from its 50k km pipeline network including 800 compressor units streams into its in-house developed analytics system. Early fault detection makes for a cheaper fix and minimizes disruption. Some 1600 data streams are monitored for anomalies (3 out of 4 sensors out of tolerance). TransCanada's 'enterprise analytics' system uses physics-based models where they exist, otherwise it's SQC. Here, simple models catch basic anomalies as trends go out of normal. PI AF templates and the Excel PI-builder plug-in are used to build SQC models. PI SQL Commander queries legacy data and SAP and TransCanada's compressor book for performance models. The system saved around $10 million in 2017 with 129 anomalies detected. In the Q&A, Rogers addressed the problem of false positives. Although there are thousands of measurements on a compressor, EA only deals with a subset selected with input from compressor experts to minimize the likelihood of a false positive. Seven years of EA operations have been a learning process. 'We don't want to bother maintenance teams with trivial interventions.'

Gavin Halls (with Khairil Azwan Khabri) presented **Petronas**' rotating equipment analytics (Protean), a PI system-based predictive maintenance program to that identifies incipient failures and opportunities for improvement. Petronas figured that a vendor solution would be expensive and elected to build its own. The current version of Protean leverages an extensive PI suite with data consolidated to a PI System Explorer dashboard. Data points are classified to ISO 14224. Halls asked, 'why pay the OEM for remote monitoring and diagnostic services? They should be paying us to use our data!'

Anthony Teodorczuk (**SBM**), with help from Veolia reported on the use of OSIsoft Connected Services to meet water injection targets across SBM's 14-strong fleet of FPSOs. Under SMB's 'lease and operate' FPSO model, water targets are mandatory. The low oil price means more stringent targets to remove solids and sulfates and a constant attention to optimization. SMB were inspired by a Flowserve presentation at the 2015 Prague UC where a hybrid onshore/offshore support model was presented. The solution has greatly enhanced maintenance of nanofilter membranes. Alexander Dixon from systems integrator Servelec Controls added, '*Out of the box PI can work but it might not meet all expectations without custom code. We connected SMB's infrastructure using the cloud connect service. This is on premises at SBM and Veolia is configured as a subscriber. We found cloud connect better than PI-to-PI – as it improves security. Analytics on PI that have saved membranes from damage leverage complex rules that could not be captured in event frames*.' There remain some issues, PI Vision is not multi tenancy so sharing views with clients is hard. SBM is now extending the OSI/Connect concept to other vendors (equipment, consumables) so that all see the same information.

Peter van den Heuvel traced **Shell**'s journey to advanced analytics. Shell started using PI in 1998 and today has 15,000 PI users, 7.5 million tags and 100,000 calculations per minute. 2016 saw the start of advanced analytics with PI data and in 2018, PI Vision is to be the tool of the future, bringing all Shell's downstream sites together in a PI 'super collective' containing 25 million equipment items in one PI AF structure. Atop of this Shell deploys a constellation of software including Matlab and Alteryx' for orchestration.

Dan Jeavons took over to announce that Shell's artificially intelligent solutions have brought 'quite spectacular business benefits in some cases.' Jeavons' team makes data and 'smart' analytical applications available in end user workflows. Tools of the trade include Matlab, R, Python and Spark. Shell believes that engineers can learn machine learning and is supporting this with demos to senior managers. Best practices are shared in monthly meetings and a data science workbench is available 'for a small fee' across the business. 'Get with it because many silicon valley companies are ahead of us!'

The Holy Grail is predictive asset maintenance but here, 'nobody including us is there' even though there are 'exciting initial results.' Shell has been testing a predictive algorithm on PI data from its Shearwater asset. Here highly instrumented equipment is being studied to see which of 200 tags give the best indication of failure. Results are 'very positive, with huge implications.' Although, 'even if it doesn't work, we are learning a lot about how to combine first principles and data-driven analyses.' Early trials on Canadian carbon capture and storage include work on massive sparse matrices of laser sensor scans.

The London EAME also saw the launch of a 'PI + GIS User Group' a cross industry forum for users of PI and ESRI tools.

* *PI Asset Framework*.

** *A reference to Sinclair's Dino brand.*

Folks, facts, orgs ...

ABB, American Gas Association, Aquilon, Asset Guardian, Attunity, BJ Services, CGG, Department of Energy, ExxonMobil, FloWorks, IFPen, Katalyst, NetApp, Distribution NOW, OMG, PPDM, Pipeline Research Council, Precision Drilling, Quorum, Surtek, Tendeka, Weir, CDA, BP, Göttingen University, ABB, Colorado School of Mines, Acurve, Energy IQ.

Jessica Mitchell is now head of investor relations at **ABB**. She succeeds Alanna Abrahamson, who is now CFO of the industrial automation division. Mitchell hails from BP.

Kimberly Harris, Puget Sound Energy's President and CEO has been elected chair of the **American Gas Association**'s board of directors for 2018.

Aquilon Energy Services has hired Jillian Sheehan as CFO. She was previously with Textura Corp. (now an Oracle company).

Blaire McLeod is now technical consultant at **Asset Guardian**.

Mark Logan has joined **Attunity** as COO. He hails from WealthEngine.

Kelly Youngblood is now Executive VP and CFO at **BJ Services**. He was previously with Diamond Offshore.

Steven Winberg is now the new assistant secretary of the US **Department of Energy**'s Office of Fossil Energy.

Bryan Milton is now president of **ExxonMobil**'s new combined refining and marketing division, ExxonMobil Fuels & Lubricants.

Scott Jackson is now president and CEO of **FloWorks**. Frank Riddick stays on as a member of the board.

Benoît Noetinger is now editor-in-chief at **IFP Energies Nouvelles**' Oil & Gas Science and Technology Magazine.

Sue Carr is to lead **Katalyst**'s newly launched Subsurface Data Consulting Services in Calgary. She hails from Galaxy DAIMS.

Deborah Kerr, former EVP and chief product and technology officer at Sabre, and Scott Schenkel, CFO at eBay are now members of **NetApp**'s board.

Daniel Molinaro has been promoted to executive VP at midstream company **Distribution NOW**. David Cherechinsky takes his place as CFO.

Harsh Sharma (Accenture), Sumeet Malhotra (Tata) and Chris Frost (Fujitsu) have started a three year term as member representatives at the **Object Management Group**.

Allan Huber (Shell), Jeremy Eade (BP), Lesley Evans (Chesapeake Energy), Robert Best (Infosys), Trevor Hicks (Stonebridge Consulting) and Ali Sangster (DrillingInfo) are now members of **PPDM**'s board of directors.

Jeff Whitworth (Shell) is now chair of the **Pipeline Research Council**. He replaces Phillip DePriest who now serves as past chair. Walter Kresic (Enbridge Pipelines) is vice chair.

Precision Drilling has named Mike Culbert of Progress Energy (a wholly-owned Petronas subsidiary) to its board.

Quorum has appointed Kip Amedeo as VP sales and business development, Sean FitzGerald VP engineering, Charles Jeffery as VP WellEz and Dan Wallin VP products.

Malcolm Pitts is president and Kon Wyatt VP of **Surtek**. Former CEO Harry Surkalo remains as technical advisor.

Brad Baker is now CEO at **Tendeka**. He hails from Baker Hughes.

Jianzhong Lu has joined **Weir China** as President. He was previously with Brunswick.

Back to school

The **University of Aberdeen** and the UK's **Common Data Access** consortium have launched a Masters program in Petroleum Data Management. Colin North is program director. The course starts in September 2018.

BP International has established the 'Explore,' research in cooperation with **Göttingen university**'s ongoing GeoMorph investigation into microscale oil reservoir physics.

Håvard Devold's excellent **ABB** oil and gas production handbook, first published in 2006, is now available online.

Jim Crompton is to teach a new graduate course in Petroleum Data Analytics in the Petroleum Engineering Department of the **Colorado School of Mines**.

Situations vacant

Acurve (Calgary) is looking for developers with experience in mobile, web, BI, UI and general software.

Energy IQ is looking for a full time IT/ project manager for the energy industry.

Jean-Georges Malcor is stepping down from the CEO role at troubled **CGG**. The company has begun a search for his successor.

CFIHOS is looking for a successor to the current program manager Paul van Exel.

Done deals

Drillinginfo, Pattern Recognition Technologies, Oil-Law Records, Norbit, Aptomar, Oracle, Aconex, Weatherford, Schlumberger, WorleyParsons, Amec Foster Wheeler.

Drillinginfo has acquired Dallas-based **Pattern Recognition Technologies**, an energy forecasting specialist. Drillinginfo also recently bought Oklahoma City-based **Oil-Law Records**.

Norbit has acquired offshore safety, integrity and spill detection and monitoring specialist **Aptomar**. Aptomar will be renamed Norbit Aptomar and will operate as part of Norbit´s subsea business.

Oracle has entered into an agreement with **Aconex**, a provider of cloud-based engineering data management solutions, in a $1.2 billion deal. Aconex will integrate the Oracle construction and engineering cloud.

Weatherford has sold its hydraulic fracturing business to **Schlumberger** for $430 million cash.

WorleyParsons has bought AFW UK, the majority of **Amec Foster Wheeler**'s former UK upstream oil and gas operations, divested to comply with anti-trust concerns relating to Wood Group's acquisition of Amec Foster Wheeler.

on the spot report

Capital facilities information handover standard meet

USPI-NL meet hears Shell report on progress of embryonic engineering data exchange standard. ExxonMobil's 'digital vision' for engineering to embed CFIHOS. Total's 'Quantum' digital plant working towards convergence. Chevron cools on mega projects. IOGP sees CFIHOS as 'quick win.'

Speaking at the 2017 Management Board Meeting of the USPI-NL standards body* in Amersfoort, Netherlands, **Shell**'s Anders Thostrup provided a recap of activity on the flagship Cfihos** initiative. Membership has grown from 19 to 47 companies and is now breaking even financially. Recent and imminent deliverables include a tag classification document that aligns earlier company-specific information, equipment classes and document metadata and EPC implementation guides. These include EPIM STI equipment documents and data and Mimosa datasheet definitions. Alignment with DEXPI for smart P&ID data is also under consideration.

Thostrup believes that Cfihos now has critical mass amongst owner operators and most EPCs. Also of note is an agreement with the UK-based IOGP whose JIP 33 is also addressing equipment specifications. Involvement with the ISO 8000 quality management was politely declined by the membership. A renewed focus on ISO 15926 for engineering data management (although deemed 'less practical' than Cifhos) met with a better reception.

Robert Talbot outlined **ExxonMobil**'s digital vision for engineering and its 'journey' to Cfihos. This is seen as germane to both handover and to Exxon's future digital vision. Talbot was called-in to fix information handover. This was 'not done very well' despite the fact the Exxon manages some of the largest capital projects in world. Much information is handed-over as 'photos,' voluminous document-centric information packs. It can be a struggle to provide these in a timely, consistent way. There remain challenges on terminology, document numbering and versioning. Although engineering work is done by third parties, 'we are responsible for standards.' Exxon's digital transformation means that henceforth, new calls will include references to Cfihos along with a move away from documents towards data-centric IM. There will be no hard copy transfer of information, even documents will be PDFs. Exxon is working on a toolset to support this and has standardized on Aconex DMS. Talbot commented that 'Cfihos is a language that is readily understood.' For further use, a guidance document along the lines of a 'Cfihos for Dummies.' Talbot also opined that it was too soon to consider submitting to ISO, 'let's not be premature.' Today the cooperation with EPIM, MIMOSA and IOPGP is good as is the fact that 'we are starting with an achievable scope.' For the future, Exxon's digital vision is of AI tools for drilling and concept design leveraging a catalog of pre-qualified equipment.

Philippe Derrien leads **Total**'s 'Quantum' digital plant program which launched in 2016 to digitally transform Total's E&P. Quantum leverages product lifecycle management and building information management concepts to provide a comprehensive capability for asset data management, information search and visualization. Quantum is also Total's take on the digital twin concept. It is 'obvious that Cfihos should be able to reduce costs and bring efficiencies.' Total and its contractors make up an 'extended enterprise' that is implementing new ways of working through seamless, controlled data exchange. The digital twin provides the common equipment descriptions. Although Total and its contractors are also moving from document to data centricity, the issue of legacy plant (some refineries are 70 years old) means that documents will be with us for a while. Total is working on progressive publication of engineering data via a portal, to accelerate and improve handover. 'Cfihos and ISO 15926 are cornerstones for us and we are working hard to converge our reference data with Cfihos and ISO 15926, minimizing Total-specific RDL components in contracts. Total is to actively contribute to the Cfihos effort.

Bob Watson traced **Chevron**'s involvement with Cfihos which began in 2015 during the oil price collapse. Since then, things have changed. Chevron is no longer involved in 'giga projects' as its focus turns to shale. Demands on engineering will change too. Lower for longer is impacting information management and there are disruptions to finance systems, engineering… everything! Picking standards is 'very important' although Chevron 'can't do too many standards.'

Watson went on to present the **IOGP**'s ISSC (information standards sub-committee). In the old days, operators had experts who talked to multiple standards bodies. Now the experts have gone and companies can't afford to interact point to point. The answer is to channel interaction with standards bodies through IOGP. The relationship between JIP 33 WG10 (design of equipment) and Cfihos is seen as a 'quick win' for this approach. Other IOGP projects include an engineering class library (BP Shell Chevron with Cfihos) and a 3D model catalog (with Total).

Brian Imray, (**ShareCat** and chair of the **O&G UK** cost sustainability select committee) opined that oil and gas is 'not so good' at supply chain efficiency. 'Other industries collaborate well, oil and gas works in silos.' Thus there are taxonomy problems and other issues. There is no government body to oversee this (in the UK). There is poor reuse of information and excessive duplication of effort. 'We are proceeding at a snail's pace here!' The RDL is 'not good enough, a lot of companies don't have an RDL.' Cfihos came along just in time for the proposed UK Hub. This will be made up of operators and will be run by ShareCat. So far Aker Solutions, BP, Shell are on board. The exact relationship between the UK hub and Cfihos was clarified in the Q&A when Imray stated that the plan was to use Cfios, 'but not globally from day 1.' More from USPI-NL.

** An EU association of process industry companies working with international standards and best practices for product and plant life cycle information.*

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Sales, partnerships, deployments ...

AspenTech, AT&T, Autodesk, Esri, BP, HPE, Intel, Emerson, eVision, Dar Al Riyadh, Honeywell, Coreworx, IT Vizion, OSIsoft, KBR, Omnetric Group, Red Hat, Oniqua, GlassPoint Solar, Petrofac, Petrolink, ABB, Quorum, Sercel, Fotech Solutions, Aker Solutions, TechnipFMC, OneSubsea, Tendeka.

JXTG Nippon Oil and Energy has chosen **AspenTech**'s AspenOne petroleum supply chain software as its preferred optimization solution for economic and operational planning. Dangote Group is to standardize on Aspen's PIMS-AO software to optimize its design and operate asset lifecycle. In a 'global strategic enterprise agreement,' BP has renewed its license to AspenOne engineering, and manufacturing and supply chain solutions. PinnacleART is now an official implementation service provider of AspenOne.

Shell has extended its strategic alliance with **AT&T** by five years for the provision of global managed communications and network integration services.

Autodesk and **Esri** are teaming to 'build a bridge' between building information management and mapping. The link will allow users to synthesize information from both BIM and GIS and 'enable a more connected infrastructure.'

BP's Houston center for high-performance computing that opened in 2013, is claimed to be 'the most powerful supercomputer in the world for commercial research.' The machine sports 1.14 petabytes of memory and 30 petabytes of storage. The **HPE** Apollo-based supercomputer deploys **Intel**'s Knights Landing processors.

In a new three-year collaboration, **Emerson** and **Statoil** are to further develop the Roxar RMS reservoir characterization and modeling software.

eVision has partnered with **Dar Al Riyadh** and opened a new office in Saudi Arabia. The new location will provide customization, implementation and support for eVision's OneVision control of work, EHS and process safety management solutions.

Kuwait Integrated Petroleum Industries Company is to deploy a range of process technologies from **Honeywell UOP** for the expansion of its refining and petrochemical complex at Al-Zour, south of Kuwait City.

Husky Energy is to use **Coreworx** Interface Management for its West White Rose Project offshore eastern Canada.

INA Group has chosen **IT Vizion** to upgrade its OSIsoft PI System at the Rijeka Oil Refinery, Croatia. IT Vizion will deliver software services onsite and remotely from Timisoara, Romania.

Statoil has awarded **KBR** a concept and FEED contract to develop an onshore CO2 storage terminal for its Norwegian Northern Lights Project. The terminal is a component of Gassnova's carbon capture and storage demonstrator in partnership with Shell and Total. The work will be performed by KBR's Granherne subsidiary.

Omnetric Group and **Red Hat** have partnered on an open source IT/OT integration solution for utilities.

Oniqua has been chosen by an unnamed oil and gas supermajor to implement the Oniqua IQ Inventory platform across its global upstream operations.

PDO and **GlassPoint Solar** are building a large solar energy plant to deliver steam to the Amal West heavy oil field. Upon completion, Miraah will be among the world's largest solar plants delivering 1,021 MW of peak thermal energy and generating 6,000 tonnes of steam per day.

BP has awarded **Petrofac** an $800 million contract to develop a processing facility for its Omani Khazzan phase two project.

Saudi Aramco, through Tanajib, has granted **Petrolink** a one-year contract extension for real-time data transmission and visualization services through the AramcoLink solution.

Woodside is to install **ABB**'s PowerStore battery energy storage system on its Goodwyn A platform, the first offshore application of the technology in the world.

Navitas has chosen **Quorum**'s software for its natural gas gathering and processing systems, adding Quorum midstream capabilities, including measurement of natural gas and liquids processing. White Rock Oil & Gas has implemented the latest release of myQuorum 'Land on demand.'

Sercel and **Fotech Solutions** are to jointly develop borehole seismic and distributed acoustic sensing (DAS) monitoring technology.

Statoil has granted an 8 billion NOK subsea maintenance framework agreement, to **Aker Solutions**, **TechnipFMC** and **OneSubsea**.

Tendeka has been awarded a three multi-million-dollar contracts in the Middle East. Its inflow control technologies will be deployed by Kuwait Oil Company, Abu Dhabi Company for Onshore Oil Operations (ADCO) and Petroleum Development Oman (PDO).

Standards stuff...

PPDM 'What is a completion' seeking sponsors. PODS pipeline data model V6.1 out. Construction Industry Institute, FIATECH to merge.

PPDM's Regulatory data standards committee is seeking sponsors to help finalize deliverables from its 'What is a completion' work group that kicked off in September 2016.

PODS, The Petroleum open data standards body has released their 'long-awaited' PODS 6.1 data model. Members can download the new model here.

The **Construction Industry Institute** and **Fiatech**, both located at the Cockrell school of engineering at UTx, Austin, are to join forces in a much anticipated (i.e. long overdue) move.

Copy, comments & feeback to info@oilit.com

C3 IoT for Origin Energy's integrated gas business

Skunk works project matures into 'unified, federated, multi-terabyte' cloud solution.

C3 IOT's Amazon web services (AWS) internet of things, as selected by France's Engie in 2016 for its digital transformation, has been deployed by Australia's Origin Energy's upstream division across some 2,000 coal seam gas wells. The initiative began as a well-publicized 'skunk works' project to leverage the cloud before onboarding Tom Siebel*'s C3IOT.

The solution involves an AI/machine learning application that target the healthy running of over 600 progressive cavity pumps. C3's well output forecasting application has also been deployed to predict well potential before drilling, optimize well placement and maximize production.

Historical production data was ingested into a 'unified, federated, multi-terabyte' cloud image, augmented with current production data, logs, geoscience interpretations and engineering/equipment information.

The system is claimed to convert all of the above into predictive models that enable 'rapid development and deployment of insights to the field.'

Origin's Maia Schweizer won the IoT category at the 2017 Constellation Research SuperNova awards, pipping Engie's Dylan Gunatilake at the post. More from C3 IoT.

** Former CEO of Sybase and founder of the Siebel Energy Institite.*

Remotely interesting ...

Statoil runs Valemon shoreside. DNV remote witness for NDT. Olympus shares remote video.

Statoil has inaugurated its land-based control room for the Valemon field in Sandsli, Bergen. Valemon is Statoil's first platform that was designed and built for remote control. Valemon's smaller, standardized building blocks can be assembled differently from field to field, to optimize operations. The solution targets small and medium-sized fields where remote control is appropriate. Valemon came on stream in 2015, 30 years after its discovery.

In a separate announcement, **Librestream** and **Olympus** have teamed on another 'remoting' activity, allowing non-destructive testing experts to assist field workers with remote visual inspection. Olympus uses Librestream's Onsight platform to share live visuals with remote experts for rapid decision making. The solution combines the Olympus Scientific Cloud with Librestream's Onsight Connect collaboration software and the Onsight 400R collaboration hub edge device.

DNV GL is also working remotely with the introduction of 'remote witnessing' for independent verification surveys. The solution was developed in response to the EU Offshore Safety Directive that has increased demand for independent verification. Remote witnessing is performed by an onsite technician with a smartphone backed up with software and support from an onshore surveyor.

AspenTech acquires Internet of Things specialist

RtTech Cipher connects to multiple legacy protocols and devices 'at the edge.'

AspenTech has acquired the 'Cipher' Industrial Internet of Things (IIoT) software and edge connectivity assets of RtTech Software of New Brunswick, Canada. Cipher is a cloud-native application with multitenant capabilities running on Microsoft's Azure IoT platform. Cipher includes a portal to aggregated data sources for advanced analytics and asset optimization and 'edge' functionality to cleanse and analyze sensor data. Cipher supports a wide range of communication protocols (MQTT, OPC UA, Modbus…) for connecting almost any asset or device. The software is said to deliver on promise of the IoT 'without having to rip out and replace existing infrastructure or business systems.' Cipher will extend AspenTech's AspenOne modeling and machine learning software.

RtTech founder Keith Flynn, along with other members of the Cipher team will join AspenTech. Meanwhile RtTech has promoted Jeff Milton to President as the company continues to develop, support, and service its global customer base using its core suite of industrial apps for asset optimization and energy management.

We're not sure whether RtTech's Rob Brannan's comment that the IoT is 'just another elevator pitch!' (OSIsoft Berlin 2016) reflects a company position or in any way influenced the disposal!

Terminal management communications. SAP HANA SDM.

Implico OpenTAS for legacy field devices. Secondary distribution management for SAP S/4HANA.

Hamburg, Germany based software and consulting boutique Implico has announced a 'complete solution' for communicating oil loading data in real time. The new 'TCP-X-Unit' adds advanced data communication to legacy field devices using Implico's OpenTAS terminal management system. The solution runs on a Matrix-504 Linux microcomputer. The pocket-sized device converts legacy RS-232 signals into TCP/IP for ingestion to OpenTAS over an Ethernet link. The Matrix-504 was chosen for its multiple communication ports onboard web server that is amenable for Internet of Things-style applications.

Implico's developers have been hard at work on a new SAP S/4HANA downstream solution for 'secondary distribution management,' (SDM) a component of SAP's oil and gas industry solutions. SDM supports the entire order-to-cash process for downstream companies. Implico is the solution architect and developer of the whole SAP S/4HANA retail fuel network operations solution set.

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Deloitte brings Foroil's optimization to upstream

Patented technology developed for defense and nuclear to increase brownfield performance.

Deloitte is to bring to market 'digital oil recovery' (DOR) technology developed by French modeling and optimization specialist Foroil. DOR was originally developed for the nuclear and defense industries and now the subject of three US patents*. The 'exclusive' collaboration targets increasing production and reserves from conventional oilfields with more than seven years of operating history. Deloitte brings its consulting and implementation services to the table.

Foroil founder and chairman Hugues de Saint Germain, a former director of Elf Aquitaine Production, said, 'Past data tells a story about the dynamic behavior of a reservoir. But the industry needs a Rosetta Stone to translate the story into actionable plans.' Deloitte's Scott Sanderson added, 'This could have as much impact on the industry as 3D seismic!'

DOR processes 15 million development plans overnight to identify the optimal development plan. Modest '20%' production and reserve increases have been 'routinely generated with little to no capital expenditures.' 'More aggressive' capital programs have generated 'growth of over 50%.' More from Foroil.

* *US 8,412,501, US 8,532,968 and US 9,031,821.*

Tibco's Connected Intelligence for Nabors

Driller to leverage Spotfire and Streambase as foundation of real time drilling analytics.

Tibco Software has announced a partnership with driller Nabors Industries to leverage the Tibco connected intelligence portfolio as the foundation of Nabors' real-time drilling analytics. The solution will incorporate Tibco's algorithmic modelling into streaming analytics and will (curiously) 'utilize Tibco's extensive customer base in upstream oil and gas.'

Tibco's Mark Palmer said, 'The Industrial IoT is transforming industry. Smart drilling is a disruptive way of delivering value to the energy market. Real-time drilling analytics will leverage machine learning models and enable make IoT-fueled decisions on streaming data, as conditions change.'

Tibco applications including Spotfire and StreamBase will be deployed alongside Nabor's industry expertise and IP to optimize drilling operations. Tibco also provides connectivity to industry data sources including WITSML, WITS, and OSI Pi.

Nabors CIO Sri Valleru added, 'We are changing the way wells are drilled. Monitoring and measuring everything we do offers greater transparency in performance. By capturing data that has never been available before we can continuously raise the bar of our operations.'

Price intelligence news: Oilprice.com, ClipperData, Eqlim, OPIS

Oilprice.com disrupts. ClipperData and Eqlim combine. OPIS' persona-based price reports.

OilPrice.com is offering 'confidential' oil price information 'for free' in an attempt to 'disrupt traditional model for oil price data and analysis.' OilPrice.com is taking on the 'entrenched players that charge hefty subscription fees.' Founder James Stafford, said, 'Accurate prices for different crude oil blends are notoriously opaque. People spend tens of thousands of dollars per year for the privilege. It's infuriating!'

Crude and petroleum cargo tracking boutique **ClipperData** has teamed **Eqlim**, a specialist real-time, open source intelligence and event detection, on 'Impact Alerts' (IA). IA 'goes beyond reporting with concise, quantitatively-based interpretation.' Events such as wars, refinery incidents and oil spills are captured along with data on affected capacities and flows. Eqlim CEO, Hassan Alassaad said, 'We fill a gap in the market by connecting open-source signals with physical distribution infrastructure and trade flows.'

IHS Markit's **Oil Price Information Service** (OPIS), the price reporting agency for oil, natural gas and biofuels industries revamped its website adding new persona-based functions and a rejuvenated blog covering the downstream.

Total's 'complete shift' from traditional energy activities

CIO tells FT Digital Energy conference of investment in AI and machine learning.

As told by Jillian Ambrose in the UK Daily Telegraph, the recent Financial Times Digital Energy conference heard Total CIO Frederic Gimenez expound on the French major's 'complete shift' from its traditional energy activities to 'investigating artificial intelligence and machine learning.' Total is in talks with Google and Microsoft to develop bespoke artificial intelligence technology for the energy sector.

Gimenez told the conference 'We have a strong knowledge of exploration and seismic analysis. But they [Microsoft and Google] are the best in artificial intelligence. This has obliged our people to work with completely different partners and to merge our knowledge to find a new way to make oil and gas discoveries. Total is still exploring the digital market before moving into any formal partnerships with a Silicon Valley company.'

The conference website includes some frothy post conference quotes, 'Data is the new currency' (Susana Quintana-Plaza, E.ON), or maybe 'Data is the new oil' (Rolf Riemenschneider European Commission) and, from Shell's Alisa Choong, 'Let's harness the passion and will of all to realize the value from digitalization.' For a more prosaic take on Total's AI/ML read or reread our report from the 2017 EAGE workshop on data science.