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ZERO END USERS

Equinor's OSDU initiative stutters.

Speaking at the 2023 **ECIM Data Management** conference in Haugesund, Norway, **Equinor's** Jan Harald Mortensen reported progress on OSDU* in Equinor. The talk was titled, 'How Equinor is putting OSDU to work' but Mortensen started with a 'spoiler alert' that 'we are not there yet!' Equinor has spend three years trying to implement OSDU as a key element of its data platform. Last year's objective was for OSDU to be a component of Equinor's 'Omnia' subsurface data platform. Earlier in 2023, the hope was for an 'operational OSDU' by the year end. What has been achieved is a vast data loading campaign with some 20 million well datasets. The current focus is on seismic SEG-Y and metadata. But, as of today, there are zero end users on board. Mortensen asked rhetorically 'should we stop?' 'No! we are enablers!'

So far OSDU has been an IT-driven project, but now the business domains are starting to wake up with actual use cases. 'Will we be there by year end 2023?' 'Maybe, interest is starting to grow. But resources are an issue. Currently all the work on the OSDU data platform is being done by Equinor, 'We are doing everything ... this does not scale'. Equinor needs to open the platform to data providers and let them push data into OSDU. There is also an issue with data stakeholders for business domains and Omnia**. A scalable process is needed and this does not come out of the box with OSDU.

Returning to the end users, the data consumers, Mortensen asked enigmatically, 'What is the actual intention of the OSDU platform?' To answer this, Equinor needs to talk, cooperate and contribute to the TOG/OSDU Forum. Internally, work can start small on '40 year old data problems', by making a small in-house built tool to ingest data in OSDU. There is value in learning the technology. Standardization is driving forwards with OSDU's API-driven communication, definitions and schemas. But Mortensen warns, even if we are now 100% OSDU standardized and schema validated, that does not mean we are interoperable! There is plenty of wriggle room in modeling from a data definition. Today, there is a lot of arm waving and folks saying that it will be a lot harder than anyone thought. Mortensen advocates leveraging work arounds, taking short cuts and 'reading the schema'. Driving interoperability is not easy. Why OSDU? Mortensen quoted [JF Kennedy's rationale](#) for the 1969 moon landing, 'we do things not because they are easy, but because they are hard!'

* *The Open Subsurface Data Universe.*

** *Mortensen described Omnia as Equinor's 'cloud journey', observing too that, 'there are many answers to the question 'what is Omnia?''!*

More from [ECIM](#) in our next issue.

OPC FOUNDATION FOR ENERGY ANNOUNCED

Data exchange standards for the energy transition. OPC UA for CCUS at Northern Lights.

Speaking at the 2023 OPC Day in the OPC UA for Energy Strategy session, Espen Krogh (**Prediktor**) and Chris Muench (**C-Labs**) introduced the [OPC Foundation Energy](#) (currently under construction!) initiative. OPC-FE is primarily concerned with the energy transition where multiple sources must combine to provide reliable, affordable and sustainable energy. Here, a challenge is the lack of standards. OPC FE is establishing numerous working groups to define data exchange and model standards for the broader energy sector. These are to support connectivity of energy-related systems, services and devices for energy production from diverse sources including solar, wind, hydro, nuclear and fossil. The ambitious initiative is to cover energy conversion, transport, storage and consumption.

One workgroup of interest to the oil and gas vertical is the Carbon Capture, Storage and Reporting workgroup, chaired by Microsoft's Erich Barnstedt with support from founding members: [TGS-Prediktor](#), Equinor and Beckhoff. Alongside OPC, the workgroup has representation from [CESMII](#), and [VDMA](#). The plan is to develop or repurpose several OPC UA information models for CO2 capture, storage, transport and injection. Metering of sequestered CO2 to evaluate permanently stored volumes is also under study. Current focus is the active Northern Lights CCS project with an initial standard for liquified CO2 storage. An overarching Energy Harmonization Workgroup is to assure common definitions and constructs are used across the various energy related working groups, leveraging earlier work on energy semantics including IEC 61850 and derived specifications.

OPC is predominantly a standard for manufacturing as witnessed by its flagship industrial supporters. It has in the past had an [oil and gas](#) presence with notably the [MDIS](#) Master Control System (MCS). Also there is seemingly ongoing OPC activity relating to possible convergence of The Open Group's Open Process Automation Forum and OPC UA Field eXchange (OPC UA FX).

OSDU – WHAT IS IT ACTUALLY FOR?

Oil IT Journal Neil McNaughton performs some traffic analysis on the OSDU website. With 200 plus member organizations on board, one might expect more from The Open Group/OSDU Forum's public-face. No newsletters since 2022, a moribund 'Innovation Marketplace', unrealized 'Energy Types'. And what to make of Equinor's 'no end users'?

In trying to track what is going on with OSDU*, we regularly visit the public facing home page at [The Open Group](#). Earlier in its existence, OSDU published fairly regular updates in the format of press releases, newsletters and blog posts. The newsletters seem to have stopped in 2022, also the year of the last press. The latest blog is an interview with Patrick Kelly, Chevron, in his role as the newly elected OSDU chair. TOG's interviews consist mainly of softball questions like, 'How important is collaboration to you?', 'What does the word community mean to you?' or 'What is a business philosophy or principle that you follow?', which do not really offer much insight into OSDU's activity. A missed opportunity for the newly elected chair?

There is an upcoming OSDU Forum [Member Meeting](#) to be held in Houston, on October 30, too late for this issue, so we thought we would do some [traffic analysis](#) on the OSDU website to see what's happening, and what's not.

The member count currently stands at a staggering [231 corporates](#). Membership costs between \$2,750 and \$22,000 with an additional 'sustainability fee' in the range of \$0 to \$40,000 payable to The Open Group. However you do the math, OSDU is not short of cash. Better still for the organization is the fact that much of the work is done for free by its membership. The Open Group just provides the Forum infrastructure and hosts the meetings and website.

Talking of which, it is not just the communications from OSDU that appear to have stalled. Some of the activity announced in recent years is not showing much sign of life. The public-facing OSDU '[Innovation Marketplace](#)' has only seen three solicitations of which one, Shell's request for 'data management tooling that is built and hosted on the OSDU cloud' is interesting in that it specifies a format agnostic 'ideal solution' solution that covers multiple data domains, combining specialist external data services into a single workflow'. Shell's ideal solution should also 'avoid managed service solutions or solutions that require us to use a 3rd party cloud environment'. Good luck with that! The three Shell solicitations are now closed.

Another facet of the OSDU Forum website is the bravely-announced scope creep that is evident from the 'Energy Types' tab on the home page. Here we see tantalizing developments in OSDU services for windfarms, for photovoltaic, for geothermal and CCUS. All four of which appear to be stuck with a

November 2021 report of an ‘MVP N°1’. BTW, the agenda for the upcoming Houston member meet mentions none of these energy transition OSDU services.

And so to this issue’s lead on Equinor’s talk at ECIM. Actually what struck me even more than the ‘no end users’ reveal was Mortensen’s entreaty-cum-cry-for-help ‘What is the actual intention of the OSDU platform?’ What can one say? Can 230 plus companies and thousands of OSDU hackers be barking up the wrong tree?

** The Open Subsurface Data Universe.*

OIL COUNTRY CONSTRUCTION STANDARDS – AN UPDATE

A short history of oil and gas engineering information management. IOGP Equipment Hub. CII Advanced Work Package. USPI NL AWP ‘Safari’. POSC/Caesar back with semantic vengeance! CFIHOS today.

[Last year](#) we reported on flagging support for **CFIHOS**, the IOGP’s Capital facilities information handover engineering data standard. A McDermott/Technip presentation at USPI-NL saw ‘no evidence of significant adoption across the client landscape’. In response, CFIHOS rep Peter Townsend stated that IOGP was working on training, awareness and measuring adoption. Judging by the subsequent activity surrounding CFIHOS, Townsend’s efforts appear to be bearing fruit. There are some 80 companies now involved in the initiative which had a well-attended, four day face-to-face meeting chez Eastman in Kingsport, Tennessee.

First, some background. CFIHOS, like other industry standards initiatives (business objects, OSDU), originated within Shell. Shell’s Engineering Information Specification (EIS) for plant design and engineering, based on the EPISTLE Handover Guide* developed in the 1990s, was approved as a Shell standard in 2004. EIS was handed over to USPI-NL in 2012 and became CFIHOS. Meanwhile, the EPISTLE work was taken up by the Norwegian POSC/CAESAR Association (PCA) where it became ISO 15926. In 2020 CFIHOS moved from USPI to IOGP under the auspices of IOGP Joint Industry Project (JIP) 36.

** EU Process Industries Data Handover Guide available from [POSC-CAESAR](#).*

In our previous reporting we made two observations that are worth re-examining in the light of CFIHOS’ current rejuvenation. First, the early intent of CFIHOS was for a more straightforward approach to information exchange than ISO 15926 with its 14 ‘Parts’ and an ontological/Semantic Web approach. This was considered by some as too complex for the engineering community. CFIHOS was, originally at least, delivered as a suite of Excel spreadsheet templates and instructions for contractors and EPCs to fill-out with their data. Our second observation was that a data ‘standard’ is not the same as a database. The first, whether an Excel template or a data model, needs populating with data. The cost of achieving a full-populated engineering database was the subject of a joint PCA/Fiatech (Fully Integrated and Automated Technologies for Construction - now subsumed into the Construction Industry Institute) ‘joint operations reference data’ (Jord) project which assessed this at some \$1.5 billion dollars, spread over a 20 year period. We put the likelihood of this happening as ‘[small to vanishing](#)’.

In 2021, two **IOGP** JIPs ([33](#) Standardizing Procurement and [33](#) aka CFIHOS) teamed to deliver an ‘Equipment Hub’, intended to ‘bring these two initiatives together in a cloud-based repository for storing and exchanging vendor information associated with the standard equipment. The Equipment Hub leveraged technology from Sharecat Solutions (see next article) and promised to save the ‘millions of dollars annually [that] are wasted processing, packaging, and transferring associated data through the supply chain on single projects’. The [Equipment Hub](#) currently gives a 404, page not found. We pinged the IOGP for a status update to learn that ‘the minimum viable product phase of development has been successful and IOGP is info@oilit.com // www.oilit.com

reviewing proposals from external organizations on how best to sustainably manage the project going forwards'. The intent is to focus on JIP33 equipment, but 'may well have other products and components once commercial'. IOGP stated that the 'expectation' is that the Hub 'will be conformant to the CFIHOS RDL and possibly other RDL used across other industries and platforms'.

Meanwhile, on the other side of the pond, the US **Construction Industry Institute**, a unit of UT Austin, has not been idle and has come up with its [Advanced Work Package](#), a 'planned, executable process that encompasses the work on an EPC project, beginning with the initial planning and continuing through detailed design and construction execution'. AWP is said to include input from CFIHOS, Mimosa and ISO. The CII has a significant oil and gas footprint with membership from Chevron, Shell, ExxonMobil. CII presented its 'Carroll H. Dunn Award', one of the most prestigious (sic) awards of its kind, to Aramco's Mansour Saad Al-Shehri. The CII recently proposed two research, a 'Digital Thread and Virtual Construction Model Guideline for Digital Project Delivery' and 'Model-based Deliverables for Capital Projects'. Earlier this year, USPI organized an online educational 'Safari' on the CII AWP and its data model with presentations from Mikitaka Hayashi (JGC) and Eric Dechoz (Shell). A division of labors was proposed with a plant data element (CFIHOS) managed by IOGP, a 3D Model (FL3DMS) managed by USPI and a planning data standard ISO 19008, managed by ISO.

So where is CFIHOS today? CFIHOS' scope today is no longer just handover from construction to engineering but it is pitched as more of a lifetime data standard viz. 'The CFIHOS specification can be used for information handover when commissioning, operating, maintaining or decommissioning any process industry capital facility'. Membership included 81 organizations at the last count, including 14 IOGP owner operators. The latest joiners include Saudi Arabia's ambitious NEOM new-build town in the desert. CFIHOS recently released a [data model viewer](#), leveraging [E/R studio](#) and Sparx Systems [Enterprise Architect](#). From the latest Version 1.5 release notes it is clear that Excel/CSV files, along with their awkwardness, are still central to CFIHOS data exchange.

Which may be why there is a push from the POSC/Caesar organization and others to re-inject some semantics into the standard. There were high fives all round on LinkedIn when [PCA announced](#) that its [Industrial Data Ontology](#) (IDO) has been published. IDO is billed as a replacement for the semantic ISO 15926-Part 14 and as a 'top-level ontology' for PCA's [reference data library](#) (RDL). All of which might seem rather obscure if it was not for the fact that the IDO got an enthusiastic plug at the recent CFIHOS meet. TotalEnergies' Jean-Charles Leclerc explained, '[the IDO] reflects CFIHOS members' high level of interest for the semantic modeling shown at the JIP36 2023's face to face in Tennessee. We are currently developing a detailed value proposal for a semantic CFIHOS'.

Comment: Equipment, construction, handover and the like are, in general, managed in commercial software packages such as those from Aveva and Hexagon. Both companies and much of their user base 'support' and or claim 'compliance' with one or more of the standards described here. Which one will come out on top? There is a lot of interchange between the different standards bodies – CII, IOGP/CFIHOS, PCA and ISO. But the various industries – chemical, petroleum (upstream/downstream), construction at large – may have different cultures and be driven by other standards initiatives. Finally there is the difference between a data model and a database. In other words, is the standard an empty shell or a fully populated with quality data. Whereas owner operators may consider equipment data as 'commodity' to be freely shared in a 'hub', equipment manufacturers, who strive to differentiate their hardware and invest a lot in creating and maintaining the associated data, may think differently. A final stumbling block is the division of labor within the major oils who drive the standardization efforts. Data managers and IT folks may get excited about information exchange standards but their colleagues in engineering and procurement may be more pragmatical and more into 'buy' than 'build'.

HXGN LIVE GLOBAL 2023

Las Vegas flagship tradeshow hears from Petronas on engineering document management, Lamprell's digital twin for Aramco; Radix on engineering the SABIC/ExxonMobil GCGV new build; Petronas' bolted flange joint integrity system; engineering CERN's Large Hadron Collider; and Hexagon on the future of engineering information management.

At the Digital Industrial Facilities Summit, a session of HxGN (aka Hexagon) LIVE Global 2023 in Las Vegas earlier this year, **Petronas** presented its flagship engineering data management system, a web-based engineering document and data management system for projects and operations. P-EDMS provides access to engineering documents, P&ID and other drawings and 3D models. The system accesses data in SAP, GE APM, AspenTech, [Luciad](#) and PI System. Scope covers the complete asset lifecycle for Petronas' Gas, Upstream and Downstream businesses. P-EDMS was established in 2011 and is now operating at 28 sites with some 4 million engineering documents online and 90 projects executed. A digital backbone connects two P-EDMS flavors, 'Nested Engineering' for projects and 'Insights' for operations. Nested Engineering provides a project management methodology that 'nests' contractor's and owner's data environments to facilitate quality and compliance, with continuous consistency checks against the Cfihos standard. The cloud enables 'open collaboration' between owner, contractors and suppliers, allowing for a control of data quality during the project. P-EDMS InSights leverages a similar approach during operations as a one stop information center, tracking costs, schedule, equipment health, risk and more, again with Cfihos inside.

Vijay Mali presented work performed by [Lamprell Energy](#) on an information management digital twin for Saudi Aramco. Hexagon's [Xalt Solutions](#) business unit assisted on the project. The information management 'digital twin' has been built with [Odata](#) 'restful' APIs around an HxGN SDx* digital twin-cum-database shared between Aramco and Lamprell users. The system underpins Aramco EPCI Projects and Operations and leverages a class library with a 'Cfihos-compliant' data structure. Various Power BI dashboards display project progress along with performance, quality, cost and safety KPIs. The system is deployed on the Aramco [CRPO 67 Project](#). 'Digital data books' are produced for 'seamless' final document handover. The solution also encompasses workers health and safety monitoring using IoT devices including AI video cameras, smart watch/wearables and Bluetooth Low Energy (BLE) anchors for working at height (scaffold monitoring).

Rodrigo Collombara and Lucas Oliveira (both from [Radix Engineering](#) presented their work on the GCGV (Gulf Coast Growth Ventures) new build plastics manufacturing facility at Corpus Christi, TX. The GCGV is an ExxonMobil/[SABIC](#) joint venture. Radix has established a digital engineering ecosystem on top of [Smart Cloud](#) designed to support 'evergreen engineering' by standardizing multiple databases from different contractors. Before the project the system included a mixture of Hexagon and Aveva software of various vintages that was costly and hard to maintain, making handover 'chaotic'. A risk analysis of the software landscape anticipated a 'huge amount of losses from software mismatches'. Enter SPI (Smart Plant Instrumentation*), ExxonMobil's standard tool for capital projects and the opportunity of moving everything to the Smart Cloud. Radix, with help from ExxonMobil, has migrated the system to the HxGN Smart Cloud (Smart3D, Smart P&ID, Smart Instrumentation). Engineering design tools now run in the cloud and information is now accessible by all, ExxonMobil, EPCs and 3rd party contractors. The project has seen Radix developing a toolset and expertise for data clean-up and migration from the Aveva toolset to HxGN Smart3D. Radix sees 'a lot of mileage' in the expertise it has developed for the GCGV project.

Comment – so much for standards-enabling 'best of breed' software mix and match.

Safari Bin Saad reported progress on **Petronas'** bolted flange joint integrity (BFJI) program, as implemented across its upstream and downstream businesses. Hydrocarbon leakage from bolted flange joint is one of the pain points leading to loss of containment and unplanned downtime. The BFJI program is a component of Petronas' 'leak-free philosophy'. A central flange database is populated in an automated work

process for flange joint tagging and data extraction. Data is extracted from SmartPlant 3D and from AI-processed scans of drawings. Flange joints are ascribed a unique tag number, digitally linked to drawings, QA/QC records and P&ID and isometrics stored in P-EDMS (see above). The system captures static (reference) data on flanges (materials, bolts, gaskets and nominal torque values). Time variant dynamic data is also collected as joints are touched or retightened. Capturing up-to-date tightening and calibration information is key for inspection and reporting. A Petronas torque calculation program also ran.

David Widegren presented **CERN**'s digital engineering platform. Cern runs the Geneva, Switzerland-located Large Hadron Collider. This has some 100 million components arranged in an underground 17 mile long circular tunnel that accelerates particles to 99.999999% of the speed of light or, if you like, making some 11,000 revolutions/second. Cern is a 'heavy user' of HxGN [Enterprise Asset Management](#) notably in response to the 'explosive adoption' of maintenance checklists. Most of which are generated with the simplified 'EAM Light' user interface. [EAM Light](#) was developed at CERN but is made open source and is now available to all HxGN EAM users. Cern's ambition is to create an open community of organizations with similar needs and a 'willingness to share the common results allowing us all to advance and improve'. 'If you and your organization are interested in participating, please contact us!' One EAM deployment involved smart sensors installed on crane motors that communicate maintenance information and energy consumption to EAM via [ABB's IoT](#) cloud. Widegren conclude saying that 'HxGN EAM has proven to be highly configurable, scalable and open for integration with other systems and processes. EAM will become an even more important cornerstone in our IT landscape as we move forward towards creating digital twins of our installations.'

A **Hexagon** presentation looked into the future of information management and a new long-term vision of smart digital reality (SDR). SDx is becoming part of the SDR platform running on a new multi-tenant SaaS platform. The current Smart Cloud approach based on 'Estates' (sets of Windows Virtual Machines) is not efficient and sustainable in medium term. Hexagon is moving from Windows Servers to a Linux container-based architecture (Kubernetes). Monolithic applications are to be broken down into scalable microservices. All of which implies new internal processes and methodologies such as DevOps and Site Reliability Engineering (SRE). 'Operating a container-orchestrated SaaS multi-tenant environment is not simple'. AI is also on the horizon with, notably a 'Data Smartification' initiative using ChatGPT to extract metadata from P&ID and other docs. A prototype shows solid performance, especially for document and equipment type and engineering discipline. Extracting document names and revnumber is harder due to PDF formatting gotchas. The system currently follows CFIHOS but 'any standard can be used'.

View these and other HxGN presentations [here](#).

Glossary

- HxGN – "Hexagon" includes the legacy (flagship?) Intergraph product.
- [HxGN SDx](#), a modular, cloud-based, data-centric SaaS asset lifecycle information management solution.
- [Intergraph Smart Cloud](#) is Hexagon's SaaS environment for delivering Intergraph applications.
- Smart Plant Instrumentation (originally an Intergraph toolset) now rebranded as [Smart Instrumentation](#).

SLB INTERSECT SIMULATOR SPEED-UP

Nvidia Tensor Core GPU trials report speedup over 'CPU servers'

An Nvidia Tech Brief reports on speeding-up SLB's Intersect fluid-flow reservoir modeler using the latest A100 80 GB [Tensor Core GPU](#). The test compared runs of SLB's Intersect simulator on single-node servers powered by Tensor Core GPU processors against 'servers powered by CPU processors' (although no information was provided on the CPUs or how they were used). A 2.3 million cell black oil model showed a 4.5x speedup on a single simulation. This increased to 5.7x throughput when leveraging the Tensor's multi-instance GPU (MIG) function. A further speedup (to 7.5x) was achieved using the Tensor's Multi-Process Service (MPS) capability. MPS, is described as an 'alternative, binary-compatible implementation' of Nvidia's CUDA API that enables CUDA kernels to be processed concurrently on the same GPU.

More from [Nvidia Energy](#) and the [A100 datasheet](#).

SOFTWARE, HARDWARE SHORT TAKES

New releases, upgrades from Dataiku, East Daley Analytics, Engineering Director, Exprodat, Getech, Golden Software, Opto22, IOGP, Information Services Group, Ikon Science, Inductive Automation, Kahuna, LuciadLightspeed, NASA, Nanoprecise and Opto22.

The 12.2 release of [Dataiku](#)'s eponymous machine learning platform now supports integration with external models deployed on AWS SageMaker, Azure ML and Google Vertex.

[East Daley Analytics](#)' next generation Energy Data Studio leverages its proprietary US energy infrastructure asset database to help users identify, understand, and monitor operational risk. EDS covers natural gas, crude, NGLs and midstream company financials.

Engineering Director Inc. (EDI) with partner **AtmosphericIQ** have launched [SpecDoctor](#), an AI-based toolset for the management of corrosion-related challenges. SpecDoctor provides information about ISO 12944 and ISO 9223 compliance and a range of general corrosion subjects, including key topics such as underground pipeline corrosion, cathodic protection systems and stress corrosion cracking.

The 3.1 version of **Exprodat**'s [Unconventionals Analyst](#), an Esri ArcGIS Pro extension, interactively generates gun barrel plots across key wells and geological intervals, automating the creation of drill spacing units. A new tool calculates working interests across multiple wells at the same time.

The 2023 edition of [Getech Globe](#) combines proprietary computational modelling and machine learning with Getech's geoscientific expertise to facilitate resource exploration opportunities. The new release introduces numerous features aimed at enhancing mineral location efforts – such as a new dynamic plate model, enhanced paleogeographies and extended palaeosurface geology coverage. Updated 2D gravity and magnetic models assist in identifying the depth and location of ultramafic bodies, thought to be the source rocks naturally occurring 'white' hydrogen.

A new Surfer from [Golden Software](#) expands its 3D subsurface data visualization capabilities with a broader selection of easy-to-apply tools to grid, map, and view their well, drillhole, and borehole data sets. The latest Surfer builds on 4D gridding and visualization capabilities that support a fourth variable, such as contaminant or chemical concentration, along with traditional X, Y and Z values.

Opto22's [Groov RIO 3.5](#) firmware update includes a new CODESYS runtime engine. Users can now build and run a control program in CODESYS using one of the IEC 61131-3 compliant languages. RIO 3.5 also offers Sparkplug-compatible certification.

[Tripod Lite](#) from IOGP, the **International Oil and Gas Producers'** association, is a 'lightweight' investigation tool to quickly investigate safety incidents. The tool was developed by the [Tripod Foundation](#) and Energy Institute in 2021. Following testing in 2022, Tripod is now published free of charge.

[Information Services Group](#)'s Provider Lens study evaluates services and solutions providers to help oil and gas companies achieve digital innovation and operational efficiency. The new report, 'Oil and Gas Industry — Services and Solutions' is scheduled to be released in November and will evaluate services including enterprise asset management, next-gen information technology and operational technology services and capital projects management.

Ikon Science has added 'breakthrough' resistivity-based pore pressure prediction capability to [RokDoc 2023.4](#). Traditional porosity models fall short when dealing with shale formations, the integration of resistivity data, temperature, salinity and clay fraction is said to deliver more accuracy in those geological settings for pre-drill and real-time monitoring. A redesigned 'Blocky AVO modeler' offers geoscientists new intuitive multi-well, scenario and uncertainty analysis capabilities. The new version of Ikon's [Curate](#) subsurface data management platform allows for bulk ingestion of large (10GB) datasets, 'saving time and simplifying workflows'.

Inductive Automation's latest Cloud Edition is now available in the Microsoft Azure Marketplace. The pay-as-you-go solution extends on-premises data and enterprise operations and works alongside the standard Ignition platform and Ignition Edge, 'creating a fully integrated and scalable system'. The new edition embeds MQTT functionality from Cirrus Link Solutions. More from [Inductive Automation](#).

A new release of [Kahuna Workforce Solutions](#)' operational skills management software is said to bring a new user experience for its flagship product in the form of an enhanced GUI and improved usability.

LuciadLightspeed Hexagon's Safety, Infrastructure & Geospatial division's advanced geospatial analytics toolset for desktop and onboard applications is said to provide a foundation for advanced geospatial analysis application development. A configurable API provides support for custom data sources and comes with 'Lucy', a 'ready-to-use application framework' with drag and drop connectivity to over 200 data formats. More in the new [Lightspeed brochure](#).

A new **NASA** [software catalog](#) lists free programs for earth science including atmospheric modeling, geospatial disaster response and a cloud-based toolkit for collaboration between earth science researchers. The catalog also contains a platform for interactive browsing of near-real-time satellite imagery to help with time-critical scenarios and disaster response. Use of some software may be limited US citizens.

Nanoprecise Sci Corp has announced the 'world's first' light energy harvesting predictive maintenance sensor. MachineDoctor LUX is a Zone 0-compliant device that draws power from ambient light sources, eliminating the need for battery replacement. An up to 10 year lifespan is claimed for the cellular-connected device. More from [Nanoprecise](#).

Opto22's NodeRed 3.0 is said to be a milestone release with notably a 'welcome tour' of the main additions. Check them out on the [NodeRed blog](#).

FOLKS, FACTS, ORGS ...

BP. Crusoe Energy Systems. Dataiku. Deep Sky. Equinor Renewables. Equitable Origin. Flowserve. IFS. IOGP. Intelligent Wellhead Systems. Knot Offshore. Open Geospatial Consortium. Infrastructure Networks. Pyxis Advisory Group. Radix Engineering. SAP. Swagelok. Team Trident. Velo3D.

Murray Auchincloss is now **BP's** interim CEO. Kate Thomson is interim CFO.

Patrick McGregor has joined **Crusoe Energy Systems** as Chief Product Officer. He hails from Coinbase. Crusoe's patented Digital Flare Mitigation (DFM) systems convert stranded natural gas to onsite power.

Krish Venkataraman is now President of **Dataiku**. He hails from fintech Socure.

CCUS boutique **Deep Sky** has hired Greg Maidment as Director of Subsurface. He was previously with Carbon Management Canada.

Samuel Byrne has joined **Equinor Renewables Americas** as VP Operations. He hails from Vestas Wind Systems.

Jason Switzer is the new CEO at **Equitable Origin**, a provider of natural gas certification. He was previously head of CarbonNEXT.

Flowserve has appointed Cheryl Johnson to its board. She is to replace retiree John Friedery. Johnson hails from Caterpillar.

IFS has appointed André Robberts as President Southern & Western Europe & LATAM. He was previously with Oracle.

Following the resignation of Iman Hill, Graham Henley (Shell) is interim CEO of the **IOGP**. Mohamed Firouz Asnan (Petronas) has been appointed Vice Chair of the IOGP board.

Tracy Gray is now Director of Strategy & Marketing at **Intelligent Wellhead Systems**. She was previously with Sodexo.

Derek Lowe is the new CEO at **Knot Offshore** following Gary Chapman's decision to step down. Lowe hails from Telford Offshore.

Simon Cox is now a Visiting Fellow at the **Open Geospatial Consortium**. His mandate is to help OGC take the new '[OGC Rainbow](#)' interoperability environment 'to the next level'. Cox was previously with CSIRO.

Remote communications and IoT solutions provider **Infrastructure Networks** (iNet) has hired Simon King as VP Sales, EMEA. He was previously with ViaSat Energy Services (formerly RigNet).

Stephen Bell has joined **Pyxis Advisory Group** as partner and Richard Loew as senior advisor.

Alexander Clausbruch is now North America CEO at **Radix Engineering**.

SAP has named Walter Sun as Global Head of Artificial Intelligence. He was previously VP of Copilot Applied Artificial Intelligence for business applications at Microsoft.

Michael DiCesare is now VP Information Technology at **Swagelok**.

Subsea recruiter **Team Trident** has named Dan Gaspard as VP Operations.

Adrian Keppler has joined the **Velo3D** Board of Directors. Keppler is also founder and CEO of consultant AM Scalation. Michelle Sidwall has joined Velo3D as EVP Global Sales and Business Development. She hails from Salesloft.

DONE DEALS

GeologicAI funded. Momena, Chevron back Aperio. BP invests in Dynamon. Collabera bags Digiterre. Origin backs ControlRooms.ai. Expro acquires PRT Offshore. HxGN CEO buys shares. IFS acquires Falconry. Parsons bags Sealing Tech. SAP to buy LeanIX. Starlims acquires Labstep. SynMax buys Gas Vista. TotalEnergies sells climate VC arm to Aster.

[GeologicAI](#) has received \$10M in additional funding from **Export Development Canada** to accelerate global expansion of its rock analytics platform, aka the ‘robot geologist’. Principally targeting the mining sector, the robot geologist is also used to scan oil and gas cores in the field.

[Amplified Industries](#) (formerly Acoustic Wells), an IoT solution provider has received \$10 million in funding from **Schooner Capital**. The digital oil field specialist claims over 4,000 devices deployed across six US states. The full-field automation and monitoring system detects mechanical issues and leaks, providing an emergency shut-off for pump failures. Amplified Industries span out of MIT in 2019.

Operational data quality specialist [Aperio](#) has closed \$9 million in Series A1 funding in a round led by Momena with co-investors including **Chevron Technology Ventures**.

BP has invested £4 million in e-fleet optimization software provider [Dynamon](#) and signed a commercial agreement with the developer of ‘Zero’ data analytics and simulation software for transport and logistics.

[Collabera Digital](#) has acquired **Digiterre**, a UK-based software and data engineering consultancy. Digiterre works with energy and commodities trading and capital market organizations.

[ControlRooms.ai](#) has raised \$10 million in a Series A round led by **Origin Ventures**.

[Expro](#) has acquired offshore services provider, **PRT Offshore** in a \$106 million cash and paper transaction.

Hexagon President and CEO Paolo Gug has bought 1 million Hexagon shares for 101 million SEK (approx. \$9 million).

IFS is to acquire [Falconry](#), a California-based industrial AI software house.

[Parsons Corp.](#) has acquired Maryland-based cyber and technology company Sealing Technologies in a transaction valued at ‘up to’ \$200 million.

SAP has entered into an agreement to acquire [LeanIX](#), a provider of SAP-centric enterprise architecture management (EAM) software.

[Starlims](#) has acquired **Labstep**, developer of an SaaS electronic laboratory notebook platform. Starlims enterprise informatics solutions are used in a variety of industries including oil and gas.

[SynMax](#) has acquired **Gas Vista**, a provider of energy and maritime trade flow analytics and visualization solutions, and developer of the LNG product, Leviaton.

A Pitchbook [news item](#) reports that **TotalEnergies** has ‘powered down’ its climate-focused corporate venture arm as participation in European deals dips. The venture launched in 2008 with plans to invest some \$400 million in carbon neutrality over five years. TE is selling its portfolio to Paris-based VC firm **Aster**. Pitchbook reports that other corporate VC arms are reducing their deal participation.

AI, CHATGPT IN OIL, GAS, ENERGY AND ELSEWHERE

Accenture – ChatGPT a defining tech trend for the next decade. SLB unlocks AI potential for energy. Data Kinetic launches applied AI solutions for oil and gas. IBM Institute for Business Value on the pivot away from STEM skills. Generative AI at Mitsui Chemicals. iGenius Crystal in Microsoft Teams. Dataiku and Databricks publish insights from senior AI professionals. NIST AI Risk Management extended to LLMs. EU Centre for Algorithmic Transparency.

Stephanie Jamison, Global Resources industry leader with **Accenture**, in a [LinkedIn Pulse](#) post described generative AI, such as ChatGPT, as one of the defining technology trends of the next decade. Models trained on ‘internet-scale’ data are ‘incredibly powerful and infinitely adaptable’ and can be repurposed for industry use cases, in days. Potential energy usage could include optimizing efficiency at a chemical plant, dynamically balancing a diverse energy asset portfolio, transforming customer service at scale in utilities, or accelerating the well advisory process for oil and gas. Accenture has worked with a west coast utility leveraging Microsoft Azure’s GPT models to build a ‘hyper-intelligent assistant capable of swiftly processing and analyzing text, empowering employees to speed up decision-making’. The company is also ‘helping one of the largest oil and gas companies in the world manage the mountains of data it has accumulated over the decades’, ‘introducing capabilities such as multi-modal data handling, cognitive search, and semantic modelling, as well as generative AI from Microsoft Azure OpenAI’. At the human level, an oil and gas team with little experience of the LNG or hydrogen value chains might use generative AI as an expert ‘co-pilot’, enabling the team to understand customer needs and core processes. In a siloed industry such as oil and gas, ‘where each part of the business has tended to operate in its own pocket’, generative AI ‘offers the promise of stitching the value chain together end to end — from underground to overground to corporate to field operations’.

SLB recently issued a position paper on ‘[Unlocking the potential of AI for the energy industry](#)’. In oil and gas, unlocking AI’s full potential requires ‘embracing open and secure data platforms, rapid experimentation, new technology adoption and a commitment to building up an AI-trained workforce’. To operationalize AI at scale, industry must shift toward modern open data architectures based on common standards that make it easy to discover, clean, enrich, access and consume data. Enter OSDU, The Open Group Open’ Subsurface Data Universe, now ‘available worldwide’ from ‘digital technology leaders’ such as Microsoft, Google, Amazon and IBM. SLB is also offering a ‘Domain Data Scientist’ training program that sets out to ‘transform thousands of domain experts into data scientists’. SLB opines that generative AI and large language models can enable semantic search and power smart assistants to extract insights from data. Foundational models in subsurface, drilling and production domains can accelerate the automation of well construction and production operations. ‘The role of AI in the energy industry cannot be overstated’. An AI-trained workforce can harness AI’s transformative capabilities to accelerate the energy transition, paving the way for a ‘more sustainable and prosperous world’.

Austin, TX-headquartered **Data Kinetic** has launched a suite of Applied AI Solutions for Oil and Gas and is proposing AI transformation workshops to US-based operators who would like to explore the potential of these new solutions. ‘AI Outcomes as a Service’ for oil and gas is a platform agnostic, subscription-based catalog of machine learning models designed to accelerate enterprise adoption of applied AI. Target use

cases include optimizing gas lift processes ‘at the edge’, predictive maintenance and exploration data analysis.

A [publication](#) from the **IBM Institute for Business Value** aggregates five years of survey data on business use of AI and LLMs. The report takes a deep dive into the thorny question of AI’s impact on jobs, making the bold claim that ‘AI won’t replace people—but people who use AI will replace people who don’t’. This means that ‘some business leaders are rushing to reorganize, elevating new skills while deprioritizing those that have become obsolete’. IBM cites a ‘study’ from the World Economic Forum that envisages the ‘disruption’ of 85 million jobs globally between 2020 and 2025 but heralds the creation of 97 million new job roles. Generative AI could push these figures even higher. The IBM IBV survey has been tracking workforce skill sets since 2016 and has observed that STEM* skills are plummeting in importance, dropping from the top spot in 2016 to 12th place in 2023. ‘As technology becomes more user-friendly, employees are also able to do more with less advanced technical skills. No-code software development platforms let people without a programming background create business critical prototypes and apps. Plus, as machines take over mundane tasks, people can spend more time on the problem-solving and collaborative work that require stronger people skills. This pivot away from STEM skills highlights the volatility of the talent landscape.’ Looking more closely at the IBV graphic we observe that the category of ‘basic computer and software application skills*’ has fallen even further, down from N°2 to N° 16’. IBM IBV research found that 83% of executives say generative AI will reinvent the way their organization works.

IBM IBV also reports on new applications for generative AI as deployed at Mitsui Chemicals. The company is working on new application discovery, leveraging a generative pre-trained transformer (GPT) in a foundation model that is now used across the Group. IBM is implementing a ‘third-party large language model’ to generate new applications from a large text corpus including ‘everything from patents to business news’. You may think that this sounds a bit like IBM Watson, and indeed, the source publication is titled ‘[Combined Generative AI with IBM Watson for New Application Discovery](#)’ (in Japanese).

** Science, technology, engineering and math.*

Microsoft has teamed with **iGenius** to embed its ‘[Crystal](#)’ generative AI platform within Microsoft Teams. Users can query data in natural language across various fields, including financial or operational data analysis. iGenius’ Crystal has been used in oil and gas [sales management](#) to generate recommendations tailored to projects in the oil and gas industry. Crystal has also been deployed by Italian utility [Enel](#) to leverage conversational technology to monitor plant capacity, and temperature and maintenance levels across its global thermal generation plants. More from [Microsoft](#).

A new report from **Dataiku*** and **Databricks** ‘Insights From 400 Senior AI Professionals on Generative AI’ finds that about 2/3 of respondents said that in the coming year, trialing LLMs in their business was likely with 45% already experimenting the technology. Unsurprisingly, executive support is a prerequisite for AI and AI ‘pioneers’ are those with a larger budget for the technology. The report plods through various AI use cases, contrasting behaviors of ‘pioneers’ and ‘the rest’, although the difference does not appear all that great. With regards to ChatGPT, 25% of the pioneers believe that it will have many valuable applications and companies should start developing those now. Some 40% of the pioneers believe that ChatGPT ‘could have valuable applications, but it’s not clear what they are’ as do 30% of ‘the rest’. Even more confusingly, 33% of all respondents are ‘unclear on what the valuable applications of ChatGPT are’. The study dips in and out of issues on data quality, on AI and LLMs which makes the overall trends rather hard to discern. However some ‘findings’ stand out: 55% of respondents are more worried than excited about the future of AI’. Here, Dataiku has created a ‘reliable, accountable, fair, and transparent’ framework to prepare enterprises for the arrival of a wave of policy proposals seeking to protect both workers and consumers from potential harms of AI. Download the RAFT Framework [here](#). Perhaps the most puzzling chapter of the 30 page report concerns the ‘actual ROI’ that AI generates. As we read it, the oil gas and industrial sector achieves an ‘ROI per dollar spent’ in the 1-2% range. Not exactly overwhelming!

** Dataiku is an SLB partner, adding its AI functionality to the already 'cognitive' [Delfi](#).*

The US **National Institute of Standards and Technology** (NIST) is launching a new public working group on artificial intelligence (AI) that will build on the success of the NIST AI Risk Management Framework to address this rapidly advancing technology. The idea is to extend the AI RMF to generative AI. Earlier this year the National Artificial Intelligence Advisory Committee delivered its first report to the president, identifying areas of focus for the committee for the next two years. [The full report](#), including all of its recommendations, is available on the AI.gov website. More from [NIST](#).

In her September 2023 State of the Union, **EU President** Ursula von der Leyen introduced the EU [Centre for Algorithmic Transparency](#). ECAT sets out to assure a safer, more predictable and trusted online environment for people and business. The unit will advise the Commission on governance of very large online platforms (VLOPs) and very large online search engines (VLOSEs).

GIT FOR PROCESS CONTROL

Copia Automation's software version control said to bridge IT and OT.

A blog from [Copia Automation](#) advocates the use of Git for industrial automation. Git-based version control is the de facto standard for software developers. Copia has extended the paradigm to industrial automation professionals who can use Git to develop and maintain programmable logic control programs.

Copia's Git-based [source control](#) deploys and hosts (on AWS) an implementation of the Linux/open source Git version* control program, adding its own process bells and whistles. Control engineers can track their code revisions, see the ladder logic or function block diagram code displayed outside the development tool, and visualize the differences between versions.

The distributed version control system allows multiple developers to work on a project simultaneously. Other coding aids include branching, merge tracking and code review. Git stores multiple versions of code so that an earlier version can be recovered in the event of data loss. PLC code can be viewed from the web browser, with granular access permissions set by an administrator. Code is stored on remote servers with additional security measures such as encryption and two-factor authentication. Cryptographic hashes track code versions to avoid malicious tampering.

Copia's DeviceLink automatically backs up control devices, detect and notify users of changes. Copia is said to bridge the gap between IT and OT, facilitating convergence. IT folk are usually familiar with Git workflows. Implementing Git gives IT visibility into the world of OT. Conversely OT benefits from IT's expertise to set up streamlined processes.

More from [Copia](#) and the online [Pro Git](#) resource.

**As we understand it, this Git is the Linux/open source GIT code base as opposed to Microsoft's hosted GitHub.*

GUROBI VS. MEMCOMPUTING

MemComputing investigates shipment of goods and fuels to offshore oil rigs with NP-Hard analytics and 'SOLGS'. But what's this about the 'cryptocalypse'?

A [case study](#) from **MemComputing** investigates scheduling shipments of goods and fuels to oil rigs. The 20 plus page study reports on joint effort between one of the world's largest oil and gas companies and MemComputing that developed an optimizer for a complex scheduling problem. The involved balancing the delivery of goods and fuel from an onshore dock location to various offshore facilities within a 30-day period.

Using integer linear programming and client data, a mathematical model was tested on a 'best-in-class' commercial solver, [Gurobi](#) running in the free [NEOS](#) optimization server from the University of Wisconsin. The problem was found to be 'intractable' for Gurobi.

The same model running on the MEMCPU platform delivered 'highly optimized solutions in under an hour'. The MEMCPU calculations showed a potential 16% increase in the delivery of goods, a 42% reduction in the number of required ships, and a 48% reduction in the number of overall transits. All in all a \$1.5 million in monthly cost savings. The case study breaks down the scheduling problem into various NP-Hard subsets including the famed traveling salesperson problem and develops a novel mathematical model involving space-time graphs and cost-objective functions.

MemComputing's self-organizing logic gates (SOLGs) have been widely publicized in research publications and the media. See for instance the 2020 Research Gate paper on an [Efficient solution of Boolean satisfiability problems](#). Most recently the technology has been claimed to herald the 'cryptocalypse' (the death of current encryption), effectively 'overtaking quantum computers'. For more on MemComputing, read the recent U. Houston article on [Revolutionizing Computing Architecture with MemComputing](#).

PIDX DIGITAL TRANSFORMATION SERIES: FOCUS ON BLOCKCHAIN

Topl CTO on blockchain for data escrow. DocStudio's blockchain hash for document immutability. OASIS on XML and other serializations

CTO Hans Walter provided an update on his 2023 [PIDX Spring talk](#) on [Topl](#)'s 'modular, permissionless proof-of-stake blockchain'. Blockchains promise data transparency and immutability and, if required, privacy. An oil and gas use case involved a drilling platform requesting a shipment of lifeboats. Potential suppliers must be able to bid in confidence. Once awarded, the details of the contract should be private to the two parties. It is impractical to store all the transaction data on-chain, only the digital signature of the data is needed to 'prove' its contents. Enter blockchain data escrow, with data on the chain 'locked' until a specified condition is met. Zero knowledge proofs also ran, 'mathematical properties that allow proving information without revealing it explicitly, even to the other party'. Data quality remains an issue, field tickets may have missing or incorrect data. Validation against a data standard goes some way to assuring quality. Behrens concluded that 'blockchains can serve as an important communication layer for oil and gas transactions'.

Zack Dikhtyar (CEO) and Alisa Konchenko (VP Business Development) presented **DocStudio**'s capability as a distributed ledger that provides 'document immutability and notarization'. But note, it is not feasible to place a complete document on the blockchain. Instead, the blockchain 'OP_RETURN*' allows the posting of short text messages. These are relatively cheap to send but their size is too small for document exchange. They can be used however to post a document's fingerprint, or hash value, a compact, fixed length representation of a large amount of data. Any subsequent changes in the document or data will result in a different hash value**. So the process can be seen as the digital equivalent of notarization. Publishing the

hash value does not make the original document public so notarization can be achieved while keeping their content confidential. Hash values on the blockchain establishes document authenticity and integrity without revealing the document's contents, providing a secure and flexible digital notarization solution. Once posted, a permanent '[prooflink](#)' is generated, providing a verifiable record. There are some gotchas, a record can only hold a maximum of 40 bytes. Posting comes with a cost in the \$10 to \$50 range. There is a waiting period of approximately 10 minutes before a transaction gets published and confirmed. DocStudio offers a work around using a second-level ledger that aggregates hashes from a document collection, posting every n-th document to the chain. This 'super-hash' can be published to prevent deletion or alteration. A blockchain bot generates a 'DocStudio Blockchain Certificate' when the super hash is published. Users also need to decide which of the many blockchain services to use. Presumably their long term existence is a requirement for proof of 'immutability'.

** [OP_RETURN](#) is an 'invalid transaction output' that has been used for various non-financial transactions including curiously '[OP_RETURN Callouts of Russian Military Bitcoin Addresses Point to Blockchains' Growing Role in Geopolitical Conflict](#)'.*

*** [Wolfram Alpha](#) tells us that a 40 byte hash offers around 10^{12} possibilities so the chances of a clash are pretty minimal.*

Jamie Clark presented **OASIS** work on 'XML and other serializations' and how they can 'shoe-horn' business realities into code. OASIS co-hosted the original ebXML project with the UN/ECE which was 'the start of most modern e-commerce' (PIDX was there too!) Today the OASIS [Universal Business Language](#) (UBL) aka ISO/IEC 19845) is used in the Peppol e-business exchange standard. Before discussing blockchain, Clark addressed the comparison of XML with the more recent JSON. XML is the dominant notation for documents and business transactions across diverse systems. JSON is used more for computational instructions and is 'tighter'. Either can be used in many cases, but they have different 'sweet spots'. OASIS UBL has both XML and JSON representations. Turning to blockchains in e-business, Clark opined that 'it's early days'. There are currently multiple possible notations, complex tool issues and the risk of single-vendor lock-in. On the plus side there are successes. Some like the Enterprise Ethereum Alliance and Hyperledger are taking a standards-like, multi-vendor approach and avoid lock-in. Clark confessed to bias, as Ethereum [works with OASIS](#). There is also progress on distributed ledger standardization at ISO TC 307 with a vocabulary standard ([ISO 22739](#)) and work on cross-chain interoperability ([ISO/AWI TS 23516](#)). In conclusion, 'the data structure is more important than the serialization in code', 'open source is not the same thing as open standards' and 'every 'free' tool is not necessarily multi-vendor'.

More from [PIDX](#).

STANDARDS STUFF ...

IOGP Reports: Well integrity standards, Offshore survey and positioning systems, Key safety indicators. NIST updates Guide to operational technology security. OGC adopts AI markup language TrainingDML-AI. OGC releases environmental data retrieval API. PIDX publishes BOL implementation guidelines and IDX spec. SEG releases SEG-Y 2.1. The Open Group publishes new Trusted technology provider standard. World Geothermal Congress releases geothermal industry standards.

IOGP The International Oil and Gas Producers' Association has released [IOGP Report 485](#) covering standards and guidelines for well integrity and control, a reference list of standards and other documents from IOGP and other organizations. The publication sets out to help operators in the face of the 'de-branding' of joint API/ISO publications which in some cases has 'resulted in a delay to the update of related standards, such as an ISO standard based on an API Specification'. Caveat users.

IOGP has also released [Report 624-02-01](#), on the calibration and verification of offshore surface survey and positioning systems. The reports covers the Online survey and positioning system, Global navigation satellite systems (GNSS), Attitude and heading reference systems (AHRS) and Inertial navigation systems (INS). It is intended to be included in contract documentation throughout the offshore energy industry, including relevant renewables activities.

[IOGP Report 456 v2](#) is a Recommended Practice on Key Safety Performance Indicators .

NIST has revised its [Guide to Operational Technology](#) as Publication SP 800-82, Revision 3. The Guide covers OT security while addressing their ‘unique performance, reliability, and safety requirements’. Rev 3 provides an overview of OT and typical system topologies, identifies typical threats to organizational mission and business functions supported by OT, describes typical vulnerabilities in OT and provides recommended security safeguards and countermeasures to manage the associated risks. The new edition also addresses scope expansion from ICS to OT.

The **Open Geospatial Consortium** (OGC) has adopted [TrainingDML-AI](#), a data markup language for artificial intelligence. TrainingDML-AI Standard Part 1 defines a conceptual model for standardizing any data used to train, validate and test machine learning models that involve location or time.

OGC has also released an API for environmental data retrieval V1.1 as an official standard. [API-EDR](#) provides a web interface to access a subset of a large dataset. The new standard is part of the OGC API family that sets out to ‘make the world’s location information FAIR: Findable, Accessible, Interoperable, and Reusable’.

PIDX has published implementation guidelines to its Bill of Lading standard for the downstream market. PIDX BOL is a technology-agnostic format that is used worldwide to replace dozens of legacy formats that use outdated or missing information. More from [PIDX](#).

PIDX has also released its Industrial Data Exchange (IDX) specification, an API-driven platform for the exchange of PIDX downstream product codes as used in the PIDX Bill of Lading (BOL) protocol. PIDX member DocStudio has contributed its API-based platform to support the IDX service.

The **Society of Exploration Geophysicists** has released SEG-Y 2.1, an update of its seismic data exchange standard. The latest version includes a new survey type field, corrections and clarifications in format description text and a new stanza for an XML-formatted trace header layout, contributed by Troika. The SEG Technical Standards Committee strongly encourages producers and users of SEG-Y data sets to move to the revised standard in an expeditious fashion.

The Open Group Open Trusted Technology Forum (OTTF) has published Version 1.2 of the [Open Trusted Technology Provider Standard](#) (O-TTPS). The OTTF was founded in 2010 to provide guidelines for manufacturing, sourcing, and integrating trusted, secure technologies. Version 1.2 contains minor clarifications, refinements, and improvements to the existing requirements and the addition of several new requirements. This ensures that the standard incorporates current best practices for providers of COTS ICT to mitigate the risk of maliciously tainted and counterfeit products. The Open Group is now working to update the O-TTPS certification program to align with the latest version.

The 7th **World Geothermal Congress** (WGC2023), hosted by **China Petrochemical Corp.** (Sinopec Group), has ‘released’ the world’s first [geothermal industry standards](#). The standard leverages China’s geothermal practices as a reference to ‘formulate a sustainable utilization and development model of the whole life-cycle of geothermal energy and provides a comprehensive reference of technical standards for the global geothermal industry’. Apart from the release we could find no location for the actual standard. We did find the US [NREL standard](#) for geothermal. So China’s may not be a world first.

SALES, PARTNERSHIPS, DEPLOYMENTS

Strata implements Optos22 at Apex Energy. Falconry AI partners with IBA AG. US BLM selects Aecom for Slicom JV. BP, Motive Offshore contract Add Energy. BP signs MoU with Subsea Integration Alliance. Tiered offerings for Versal multi-client data ecosystem. EOT signs with AWS. FPT Software signs MoU with Toho Gas/TOGIS. Daptem Engineering deploys Fluenta technology at Nigeria's Dangote refinery. Iron-IQ teams with Vital Energy, AWS on 'field of the future'. Odfjell Technology implements Kahuna Skills Management. Azule Energy (BP/ENI) signs with Palantir Technologies. Petrobras contracts with Radix. SLB signs with INEOS. Cairn contracts SLB/Cognite alliance. SLB, AWS and Shell to 'accelerate adoption' of the OSDU data platform. SafetyChain and SiteSync joined Inductive Automation's partner program. Schoeller-Bleckmann Oilfield Technology acquires Velo3D Sapphire printer. Sedicoso deploys Atvise scada for Pemex. Seeq partners with Databricks. Shearwater GeoServices leverages NVIDIA GPUs. Snowflake joins IA partner program. Southern Cross teams with Satelitytics. VAST Data and CoreWeave release AI cloud infrastructure. Galp Energia selects Vontier's Invenco.

Strata Innovative Solutions, a systems integrator and developer of the PadPro wellsite automation solution has replaced an end-of-life deployment at Pennsylvania-based producer Apex Energy with a new system incorporating Opto22 technology. The new StrataVu solution embeds Opto's Groov hardware and Epic controller. Read the detailed [case study](#).

[Falconry AI](#) has teamed with IBA AG on a technology partnership to leverage Falconry's time series AI in conjunction with IBA hardware in an 'AI co-pilot'. The partnership eases the transition to data-driven automation, combining high resolution data from multiple sources including legacy systems.

A joint venture led by consultant [Aecom](#) has been selected by the US Department of Interior to remediate orphaned oil and gas wells. The Slicom joint venture with managing partner Street Legal Industries has been awarded an 'indefinite delivery, indefinite quantity' contract by the **Bureau of Land Management** to support the government's Federal Orphaned Well Program. The program includes planning, environmental assessments, permitting, testing, and compliance, investigations of abandoned oil and gas wells, digital and geographic information system services and inspection services.

BP has awarded a long-term master services agreement for the provision of well services and emergency well control to [Add Energy](#). The contract includes well control engineering modelling services.

Add Energy has also been awarded a contract by **Motive Offshore** to automate and digitize its pool of rental equipment. The deal involves the use of Add Energy's [AssetVoice](#) software that blends automated work flows with scannable tags to link a physical asset with its digital imprint. Motive is implementing the automated asset tracking solution along with RFID technology.

BP has signed a memorandum of understanding with the **Subsea Integration Alliance**, a 'nonincorporated strategic global alliance' between Subsea7 and OneSubsea (itself, curiously, a teaming of SLB, Aker Solutions and ... Subsea 7) to develop a framework for subsea project performance. The agreement combines BP's experience to frame, build and execute projects with the Alliance's capability to deliver integrated subsea production systems and subsea umbilical, riser and flowline systems.

CGG, PGS and TGS have announced new tiered offerings for [Versal](#), the multi-client data ecosystem. With the free version, users can view data coverage, download coverage shapefiles and import their map layers and shapefiles. Upgrading to Versal Pro unlocks additional benefits, including viewing entitlements, accessing vendor contracts, and downloading acquisition and processing documents. Versal Premium clients

gain access to enhanced data management capabilities such as seismic visualization and downloading entitled traces.

EOT (previously Embassy of Things) has signed a strategic collaboration agreement with AWS to provide software for ‘AI-optimized’ industrial assets in oil and gas, mining and energy. The deal sees EOT’s TwinFusion portfolio ported to the Amazon cloud, connecting SCADA systems and historians to AI-ready cloud historians and an ‘enterprise-wide digital twin graph asset model’. Poster child client Hilcorp uses EOT software across its upstream assets, with a scalable analytics platform build on the AWS [Well-Architected Framework](#). More from [EOT](#).

[FPT Software](#) has signed a memorandum of understanding with Japan’s **Toho Gas** and **TOGIS**, its Information System unit, to set up an offshore development center in Da Nang, Vietnam. The ODC will provide support with a team of 50 dedicated IT engineers.

Working with its Nigerian representative, **Daptem Engineering**, [Fluenta](#) has deployed its ultrasonic sensing technology for the measurement of flare gas at Nigeria’s [Dangote facility](#) Africa’s largest oil refinery. Some 18 ultrasonic flare gas meters have been installed on large diameter pipelines around the plant. The plant is said to operate at a ‘never-seen-before’ scale and with the world’s largest flare pipe.

[Iron-IQ](#) has completed its oil field of the future initiative with Vital Energy, leveraging the AWS platform. Iron-IQ’s architecture ‘eliminates the engineering complexities of on-premise systems’. Vital operations have been streamlined, and its ML/AI initiatives have been accelerated, ‘leading to substantial cost reductions and impressive time savings’. Since migrating their assets to Iron-IQ’s Patch-IQ platform, Vital’s analytical solutions team has leveraged real-time data pipeline flows to eliminate false loads and provide dynamic routing to its hauliers.

Odffjell Technology has implemented [Kahuna Skills Management](#) to assure workforce competency in its daily operations.

Angolan **Azule Energy** (a 50/50 JV between BP and ENI) has signed a multi-year partnership with **Palantir Technologies** to deploy Palantir Foundation across its upstream production assets. Foundry will be used by Azule’s petroleum, process and flow assurance engineers. Foundry is also to assist in the development of Azule Energy’s upstream ontology, connecting data from wells, pipelines and compressors. More from [Palantir](#).

Petrobras has awarded [Radix Engineering and Software](#) a contract to develop projects for its FPSOs. The agreement will last 31 months, with services estimated at \$11.5 million. The contract includes developing multidisciplinary engineering projects using digital automation tools for the state-owned company’s new assets.

[SLB](#) has signed a ‘Performance Centre model of collaboration’ agreement with **INEOS Energy**. The deal covers ‘digital AI solutions to maximize operational and cost efficiencies, minimize risk and secure quality recoverable reserves’. Technologies include the Delfi digital platform and ‘domain-centric AI’, deployed across subsurface, wells, transport and monitoring.

Vedanta Group unit **Cairn Oil and Gas** has awarded a contract to an alliance of **SLB** and **Cognite** to digitalize work processes at scale, provide insights from AI, and optimize surface production operations. The solution will deliver an intelligent system for production operations, leveraging a range of workflow solutions developed by SLB and Cognite.

SLB, AWS and Shell Global Solutions are teaming to ‘accelerate adoption’ of the OSDU data platform by delivering digital end-to-end workflows to Shell, using SLB subsurface solutions on AWS cloud infrastructure. The ‘high performance and cost efficient’ subsurface digital solutions are to be used by Shell and made available to the industry. The deal is also said to accelerates the availability of SLB’s industry leading software including Petrel and Techlog on AWS.

SafetyChain and **SiteSync** have joined **Inductive Automation**’s alliance partner program, expanding the Ignition ecosystem. SafetyChain’s cloud-based digital plant management platform provides tools for production, safety and quality, maintenance and supplier compliance. SiteSync leverages the latest connectivity technology, including LoRaWAN, LTE, to bring stranded assets and manual measurements into a central source of truth for data visualization, alarming, and advanced analysis. More from [Inductive Automation](#).

Schoeller-Bleckmann Oilfield Technology has acquired a [Velo3D](#) Sapphire XC 3D printer. The device can print large parts up to 600 mm in diameter by 550 mm in height in Inconel 718 alloy.

Mexican process specialist [Sedicosa](#) has deployed an [Atvise](#) SCADA system at a Pemex ethylene plant. The web/client-server architecture provides JavaScript libraries and interoperability with the plant’s ABB devices.

Seeq has partnered with **Databricks** on native integration between their platforms to ‘simplify access to high quality asset and process data, unify IT and OT data processing and accelerate AI/ML adoption across the industrial manufacturing, pharmaceuticals, chemicals and energy sectors’.

Shearwater GeoServices reports a 10x speed-up for its Shearwater Reveal seismic processing software with **NVIDIA** GPUs. The improved performance also leverages NVIDIA Bitcomp , part of the [nvCOMP](#) library that provides fast, lossy data compression and decompression for reverse time migration. Headquartered in Bergen, Norway, Shearwater is owned by Rasmussengruppen AS, SLB and GC Rieber Shipping ASA.

[Snowflake](#) has joined the **Inductive Automation** alliance partner program. Industrial data, published using MQTT Sparkplug, is now visible to Ignition SCADA users from the Snowflake Manufacturing Data Cloud. More from [Inductive Automation](#).

Southern Cross has partnered with [Satelytics](#) to provide satellite-based artificial intelligence and geospatial analytics for the gas, electric, and water utility sectors in North America. The initiative includes natural gas leak surveying, assessment, and grading.

VAST Data, an AI platform company and **CoreWeave**, a cloud provider, have partnered to deliver a scalable and performant cloud infrastructure for AI and accelerated compute workloads. VAST Data is said to be ‘designed for the AI era’, leveraging a global, NVIDIA-powered computing cloud for deploying, managing and securing hundreds of petabytes of data for generative AI, high performance computing and visual effects workloads. More from [VAST](#).

Galp Energia has selected Vontier’s [Invenco](#) to enable its C-store digital transformation. Invenco’s Passport X convenience retail management software connects c-store networks and fuel stations to ‘boost revenue and meet customers’ ever-evolving demands’.

SHARECAT – EQUIPMENT INFORMATION IN THE IBM CLOUD**Red Hat Open Shift technology stack offers multi-cloud/multi tenancy options.**

Sharecat Solutions (previously Tektonisk), a Norway-headquartered provider of engineering information management solutions has teamed with **IBM** on a cross-industry information exchange platform, running in the IBM Cloud, a ‘secure and optimized environment’. The platform exposes a ‘critical mass’ of timely, reliable, accurate and accessible equipment and plant information in standard formats. Sharecat oil and gas users include BP, ConocoPhillips, Equinor, Nexen and Shell. The system is claimed to reduce documentation and speed information management of spare parts and inventory. Sharecat has also been involved in equipment management ‘hubs’ in Norway and the UK.

The current announcement concerns a migration to the IBM Cloud and a Red Hat/OpenShift container-based technology stack. The managed OpenShift on IBM Cloud supports ‘seamless’ deployment across various cloud providers and environments, ensuring flexibility and adaptability to specific needs such as data residency. The API-driven platform also supports on-demand production of equipment and parts and 3D printing.

The platform is said to align with ‘Industry 4.0’, notably through interaction with key members of the Industrial Digital Twin Association. Sharecat has also been used in standards initiatives including IOGP JIP33/JIP36 (Cfihos), Norway’s Collabor8/EQHub and the [Digital Data Chain](#) consortium. More from [IBM](#).

SHELL, ACCENTURE, AMEX, EWF TEAM ON AVELIA**Sustainable aviation fuel meets blockchain. Now processing ‘lie’ transactions!**

A blog post from [Accenture](#), ‘Shell, AMEX, Energy Web Foundation and Accenture create new green fuel platform’ outlines the technology behind ‘sustainable’ aviation fuel (SAF). SAF promises to be usable in today’s airplanes without any modifications, reducing lifecycle emissions by ‘up to 80%’. When SAF is available, the ‘Avelia’ software platform will provide corporate travelers with a way to authenticate, record and report the emissions reduction benefits of SAF. Accenture modestly describes the Avelia platform as ‘where technology meets human ingenuity’.

Avelia was launched in June 2022 and is ‘now processing lie (sic) transactions’. The system is described as ‘one of the world’s first blockchain-powered digital SAF book-and-claim solutions for business travel’. Accenture, Shell and the Energy Web Foundation cooperated on developing the platform with Accenture implementing the blockchain component. Blockchain is said to provide ‘transparent tracking of the different environmental attributes that SAF delivers’. The platform is also claimed to ‘demonstrated the credibility of the book-and-claim model and the use of blockchain to ensure secured allocation of SAF’s environmental advantages to companies and airlines’*.

Shell is said to be making significant investments in the production and supply of SAF and has an ambition that SAF will account for 10% of its total aviation fuel sales by 2030.

** The original version of the article offered a link to a ‘Full Report’ on Avelia that gave a 404. We pinged the Accenture team and were told ... ‘Many apologies, there is actually no full report related to this platform unfortunately.’*

Comment – the Avelia team are clearly not au fait with our editor Neil McNaughton’s views on blockchain as a certification mechanism as expressed in his seminal ‘[Blockchain is bullshit](#)’ editorial. Briefly, while blockchain can unambiguously assign a unique token to a non fungible object in the real world, this is a futile activity for anything fungible ... like ‘SAF’!

DIGITAL SIGNALS FROM THE IOT**Microsoft survey reports on buy vs. build choices at bulk terminal operator.**

The 2023 edition of Microsoft's [Digital Operations Signals](#) from the Industrial Internet of Things returns to the age-old debate on buy vs. build. The 80 plus page publication includes the results from a survey of 300 decision makers in companies that have successfully implemented IIoT projects. While the companies are predominantly in manufacturing there is some oil company involvement, notably an unnamed US-based company that operates liquid bulk terminals for the oil and gas and chemicals sector. In 2018, the company embarked on an IoT project and deployed new hardware and software for terminal workflows including product receipts, gate access monitoring and remote control.

After ten months of building the business case and six months of weighing the 'buy vs. build' options, the company ultimately decided to buy a solution in the marketplace. The company instead focused on workflows and alarms and notifications. The project manager estimated that the 'buy' approach allowed the company to break even approximately three to four times faster than an in-house developed solution.

Microsoft concludes that 'buy solutions seem to be a reliable choice for users, with 70% of them reporting that their project met their expectations'. Also, payback time is much shorter, 12 months compared to 20 for other approaches. Finally, buy can be cheap, 'only 3% of respondents reported budget constraints when using the buy approach.

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The Data Room SAS,
7 Rue des Verrières,
92310 Sèvres France.

Tel +33146239596

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