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Seismic interpretation now '70% more efficient'

EAGE Digital keynote from BP outlines path to huge hike in geophysical efficiency thanks to AI. Key tools of the new trade bought not built.

Speaking at the 2024 EAGE Digital conference in Paris, Krystel St Clair gave a keynote on the 'peaks and troughs' of big company adoption of digital technology. St Clair cited Geoffrey Moore's '[Crossing the chasm](#)' oeuvre which captured the challenges that BP faced some five years ago with the advent of artificial intelligence and machine learning. These represented big opportunities and saw take-up by BP's early adopters. The question then arose as to how to get people on board with the new technologies.

BP's employees are generally comfortable with their existing tools but Clair spotted an opportunity in testing artificial intelligence by accelerating seismic interpretation with machine learning. There was a lot of good stuff in the market so BP set up a team to look, benchmark

and deploy 'nimble'. The work has had a global impact within BP and seismic interpretation is now '70% more efficient'. 'We can see more and do more'. AI is leveraged to produce, inter alia, probability cubes that predict faults, flow baffles and to produce a pre-drill probability volume. AI/ML is now routinely applied. 'Will this all put us out of a job?' (St Clair is a geophysicist). Apparently not, 'it is just there to help you!', you don't always need fancy inversions and algorithms to add value'.

St Clair acknowledged her team in BP but omitted to mention* which vendors had provided the AI smarts that BP has leveraged so successfully. We caught up with her after the her talk and popped the question. The key tools involved in BP's hugely successful seismic improvement program are Eliis' [Paleoscan](#) and Bluware's [InteractiveAI](#).

In a separate announcement, perhaps on the other side of the build vs. buy spectrum, Eliis announced that PalaeoScan is now 'revolutionizing' Chevron's seismic interpretation. Chevron's in-house developed 'robust' AI algorithms for subsurface characterization now provide 'seamless' AI-assisted workflows. These will apparently be available as a commercial solution for 'advanced seismic and geological interpretation'.

** Many conference speakers omit to say what software they use. We are sure that this is not all down to vanity on the part of major oil presenters. Conference organizers can discourage referring to commercial products in the mistaken belief that this is 'advertising'.*

Clouds hacked

Tietoevry reports another ransomware attack. Firewall Times enumerates multiple breaches at Google, Azure and Amazon.

The move to the cloud is sometimes presented as a means of assuring computer security. In fact, Sweden-headquartered Tietoevry (TE) reported a couple of years ago that ‘Cloud-based applications are already a priority for many businesses, as data loss is [not that likely](#) to happen’. But it can and has happened to TE, a provider of [digital sovereignty/cloud](#) services to the Nordics. In fact TE has been hacked by ransomware twice, first back in 2021 in a [hack](#) that affected some Norway-based customers and this year, with [another attack](#) on data centers in Sweden. TE managed stop the attack and limit its impact to one platform, but the attack impacted a number of customers across industries and was ‘visible in the Swedish society in many ways’.

TE previously had a significant foothold in the oil and gas vertical but it divested its oil and gas software business to Quorum in 2021. In 2022 TE signed a long-term partnership with Aker BP for the provision of digital services and to ‘deliver on Aker BP’s ambitions on digitalized operations’. TE has also provided a cloud advisory and technology service to Equinor covering its migration to an Oslo-located Microsoft Azure cloud.

But its not just TE’s cloud that is vulnerable to malicious hacking. The excellent **Firewall Times** reports multiple breaches of various [Google](#) cloud services, of Microsoft [Azure](#) and of [AWS](#). One noteworthy cloud hack was the 2013 hack of Google’s inter-data center comms by none other than the [NSA](#)!

Shorting AI

Oil IT Journal editor Neil McNaughton rewatches The Big Short and wonders if peak AI/GenAI will herald the next financial meltdown. He has a crack at writing a film script for the next Big Short. And yes, blockchain is in there too, in the form of ‘BlockShorts’: NFTs – of course!

I rewatched ‘[The Big Short](#)’ the other day, a great telling of the shenanigans that caused the 2008 financial meltdown and how a few canny operators made a killing by short-selling mortgage-based securities that had risen to unsustainable levels. The Big Short got me thinking, what’s next? What stocks have risen to possibly unsustainable heights that might be worth a contrarian bet. But first, a word of warning. What follows is idle editorial speculation that in no way constitutes financial advice.

As readers of Oil IT Journal know I am a skeptic in most IT-related ‘breakthroughs’. A reader recently described one of my rants as ‘a well-crafted assassination attempt rather than a level-headed analysis’. I accept the ‘well crafted’ bit! But IT can and does get things very wrong*, as witnessed by the ongoing dreadful UK [Post Office scandal](#). An interesting facet of the AI/GenAI hype is whether it will break the cycle of more-or-less failed IT projects. In the interest of editorial consistency I am bound to bet that it will not, that the wheels will come off the GenAI bandwagon as we approach and pass ‘peak AI’.

So where do we place our short bet? For companies like Google, Microsoft and Amazon, shorting AI will probably not get you very far. These companies all have many other irons in the fire and anyhow, for a software company in a downturn, it just has to let go a few thousand programmers and wait till things get back to ‘normal’. But what about a company that is up to its eyes in AI and has built up an empire of real-world, tangible hardware? You see where I am going (you are probably thinking ‘get on with it’). For yes, my hypothetical big short for the AI era is Nvidia.

Those of you who follow matters financial more closely than I do will probably be laughing their heads off at this. Shorting Nvidia is just too 2022, as a quick internet search** reveals. Pundit Jim Cramer called Nvidia a ‘[loser](#)’ in September 2022, advising his listeners to short the stock. The following year Nvidia shares rose 90% and it was the unfortunates who took Cramer’s advice that were the losers, to the tune of [some \\$5 billion](#). Today (26 April), according to [The Motley Fool](#), the Wall Street consensus on Nvidia stock is still ‘buy’. A chart from [BNP Paribas](#) of the price of an Nvidia short is particularly telling. An Nvidia short option cost around \$4 mid 2023 before dropping precipitously as the strength of Nvidia’s growth became apparent. Today the same option it costs practically nothing. But before you rush out and place a bet (for around one third of a US cent) on an Nvidia short, remember, you will be in hock for around \$200 if The Fool has it right!

So no, I will not be shorting Nvidia. But that does stop me from imagining what will happen if the AI bandwagon hits the buffers. So here goes for an outline script for The AI Big Short. Of course the script needs a bit of a revamp. Lets have some more spicy financial action – perhaps in the form of NFT-backed options *on the options* all registered on a blockchain naturellement! ‘BlockShorts’ perhaps, marketed with memes inspired by SpongeBob SquarePants. People buy these beyond-speculative ‘instruments’ in droves. The [GameStop](#) brigade pitches in but divides quickly into the ‘shorters’ and ‘short-the-shorts’ camps. Many are unsure which scenario they are buying into ...

Fast forward to the *denouement*. The downturn in the AI business arrives. But, just like in The Big Short, that does not mean that short sellers just say thank you and cash in. Finance does not give up easily and erects multiple obstacles in the path of the short sellers. Accountants maintain a glossy outlook even though things are slipping away. They are helped by the banks who renege on various components of the BlockShort shorted shorts. Governments in countries that are building AI gigafactories chip-in (ha ha!) with taxpayers’ money to keep stocks pumped-up. Passing ‘peak AI’ heightens global risk which is conveniently shifted to the taxpayer. Those short sellers who have manage to hang-on get screwed as a foreign bad actor hacks the blockchain and walks away with remaining BlockShorts even though they aren’t worth anything anymore. Credits roll and we cut to a Caribbean island (or maybe a beach in North Korea) and watch the BlockShort influencers party as the world wonders what happened.

** Writing recently in the Financial Times, the UK Government’s former chief digital officer Mike Bracken, opined that [‘Big IT is a failed 90s model’](#) that has ruined too many lives.*

*** I say internet search because I have been using [Ecosia](#) just to see if one can exist without Google. One can!*

Bool Review: Artificial Intelligence in Earth Science

Sun, Cristea and Rivas’ new book proves to be an extraordinary compendium of data science techniques used in ‘earth science’ of the geographical and earth-observational flavor.

Our first discovery in reading Artificial Intelligence in Earth Science* (AIES) was that the title is somewhat misleading. Despite the ‘Earth Science’ tag, coverage is primarily earth observation. Perhaps a better title would have been AI in geography, as suggested by the affiliations of the three lead authors and AIES editors. No worries, the fields overlap and AIES covers much of the same ground that is relevant to more geologically-oriented AI researchers.

The first chapter, an essay from Sun and Cristea provides an upbeat introduction suggesting that earth science is key to understanding and mitigating the impacts of the world’s problems including earthquakes, world hunger and the energy transition. On the latter topic, the authors opine that the reliability of today’s climate model is ‘still in doubt’ and that AI may provide a ‘solution’ to these ultimate challenges for humanity. The authors point

out that AI is not new, neural networks were invented in 1944! But today's computing power means that training 'deep' neural nets with many more layers is possible. Incidentally, those whose knowledge of AI is sketchy will need some other references (Wikipedia) to unpick some of the AI jargon that permeates AIES, which is not an AI textbook. On the topic of actual understanding, the authors opine that building AI models relieves a researcher of the need to understand the science behind what is being studied. A position that some may be uncomfortable with.

In the context of earth science (as used by the authors) AI's application falls into two main areas. On the one hand, AI can be used to detect signal in large noisy data sets such as earthquake data. On the other hand, it is used in pattern recognition type applications, to automate the interpretation of Landsat imagery for example. The authors warn of the pitfalls of AI – under and overfitting models, 'AI is not a magic tool!' But they maintain that its long term expectations are 'quite exciting' and provide a somewhat far-fetched example, the possibility of developing airborne floating electricity generators that follow the track of hurricanes!

Setting the scene for the rest of the book, the editors emphasize the practical challenges of developing AI models, notably of amassing and curating an exploitable data set. Subsequent sections are divided up into preprocessing, modeling, post-processing and production. Each chapter concludes with a section of assignments and 'open questions' which 'could lead to future PhD-level research projects'.

The next 14 chapters cover various applications of AI, mostly in earth observation, some on hydrology and others in forecasting. Chapters focus on which tools (most all open source) are deployed in different applications – Scikit-learn, PyTorch and other Python tools are de rigeur. [Geoweaver](#) gets shout-out in the chapter on ozone forecasting. Sections are replete with code snippets and graphical output. One chapter focuses on physics-inspired, as opposed to purely data driven, modeling. This includes a useful overview of such techniques – [knowledge-guided ML](#), [neural ordinary differential equations](#), [physics inspired NNs](#) and hybrid models.

A chapter on forecasting the sun's 'weather' includes an informative background on terrestrial weather forecasting including the US Army Corp's use of analog weather forecasting during the D-Day landing. Since then, numerical weather forecasting with physics-based models has come to the fore, but the latest developments in data-driven forecasting represent a return to the analog approach.

The chapter on monitoring power plant emissions from space leverages data from the [EU Tropomi](#) instrument using the Google Earth [Python API](#), NASA's [Merra-2](#) and other meteorological data sets. Again the Geoweaver workflow engine pulls it all together.

A chapter on 'explainable AI' introduces the cutely-named [ELI](#) 'explain it like I'm five' and the much more serious-sounding [SHAP](#) (Shapley additive explanations). Other chapters cover provenance (again, leveraging Geoweaver) and ethics, using 'model cards' to record model metadata and mitigate bias. Here the authors take inspiration from the [IEEE 7007-2021](#) standard for 'ethically-driven robotics and automation systems'.

All in all, despite its slightly misleading (to us) title, AIES is an extraordinary compendium of AI techniques and tips which should be useful to researchers working in emissions/earth observation and in related, geological and geophysical fields. And just think of all those open, PhD-ready questions!

* [Artificial Intelligence in Earth Science](#): best practices and fundamental challenges – Ziheng Sun (Geography & Geoinformation Dept, George Mason University, Fairfax VA), Nicoleta Cristea (Civil Engineering Dept, University of Washington), Pablo Rivas (School of Engineering and Computer Science, Baylor University, Waco, TX). Elsevier 2023, ISBN: 978-0*323-91737-7.

Esri European Energy GIS conference 2003, London

BP's controlled (paper!) charts. Subsurface data visualization in the Caspian Sea. OMV on GIS in engineering turnarounds. LiveEO's satellite-based pipeline risk analysis. Esri's copious 'geoanalytical' offering. The PUG Knowledge Hub.

Josh Townsend presented on how **BP**'s printable maps generated from its OneMap global GIS repository. Printable scale maps a.k.a. controlled charts show current and verified infrastructure layouts of the BP's operated energy-producing assets. Controlled charts are trustworthy sources of safety-critical information in the form of fixed-scale maps as mandated by BP practices and conformant to local regulations. BP operates 9,000 km of pipelines and 50+ offshore platforms, in water depths of up to 2000 meters, across 70 countries. The modernization project began in 2021 with a task force of geospatial specialists forming the Global controlled charting modernization (GloCCMod) project that has delivered a 'multifaceted' solution built on BP's ArcGIS Enterprise/OneMap platform.

The solution leverages ArcGIS Pro with optimized [APRXs](#) sourced from original data in [SDE](#). The solution provides consistent symbology based on [PODS](#) and the IOGP [Seabed survey data model](#). GIS to CAD conversion is automated in [FME](#). The charts are leveraged, inter-alia, in BP's 'Response Information Centre' that provide 24/7/365 security and crisis intelligence for people and operations'. The new system replaces legacy software and 'complex, resource-intensive processes' which previously led to a number of incidents caused by inconsistent charting.

Another **BP** presentation by Orkhan Hajiyevev (from BP's Caspian Sea unit) covered subsurface data visualization in ArcGIS. This leverages a Python-enhanced FME data pipeline that extracts subsurface information from Petrel Studio and into OneMap for visualization. Python scripts are used to enhancing the FME pipeline, automating ArcGIS tasks using the [ArcPy](#) module. The result is a comprehensive overview of cultural information, well locations, horizons and fluid contacts. The technology also facilitates multi-endpoint viewing from web maps, dashboards and reports with data export to PowerBI and Spotfire. Future developments will address workflow enhancement, integration expansion and improved usability.

If Hajiyevev's presentation confirms the encroachment of GIS into the geoscience/subsurface domain, Julia Kabelik's (**OMV Downstream**) talk covered another encroachment of GIS into the engineering realm. Here GIS, in combination with 3D models, is used to plan and enact refinery turnaround operations (planned plant shutdowns to carry out equipment maintenance, inspection and repair). Kabelik's project kicked off in 2020 with a 2D GIS map of equipment and HSEE information. This has now evolved into a 3D GIS solution leveraging a real time SAP interface that allows for the visualization of work permits and tracking of turnaround progress. While Kabelik did not specify the 3D software used we note that SAP's [3D Visual Enterprise](#) provides hooks to CAD software.

Nick Ferguson presented work performed by [LiveEO](#) (Earth Observation) on strengthening pipeline safety with satellite-based risk analysis. LiveEO curates satellite data from a partner network, harmonizes and streams data into the cloud where its proprietary AI technology performs classifications, risk assessments and task creation for activity management.

Esri's David Jacob gave an overview of big data and 'geoanalytics', combining analysis, data science and AI across multiple spatial and non-spatial data types. Esri claims connectivity with relational and graph databases, data lakes, and cloud data warehouses. These feed into customizable analytics using a somewhat confusing array of deployment patterns (Various GeoAnalytics options, ArcGIS Velocity and a Big Data Toolkit). The ArcGIS GeoAnalytics engine extends Apache Spark with spatial data types and data sources allowing for row-level and table-level tools for spatial operations. Some 150 spatial functions and tools are available enabling

(for example) spatio-temporal joins, buffering, hot spot calculation, clipping and other operations. Amazon, Google and Azure clouds and DataBricks are supported, as is a Spark-local mode. For more visit the [GeoAnalytics](#) engine, the [documentation](#) and the [Community Site](#).

Esri also recently announced the ‘[PUG Knowledge Hub](#)’ which contains proceedings from Esri Energy GIS events and related materials. Materials are tagged by source, workflow, tech trend, product, company, industry and date to facilitate search across geospatial workflows spanning oil and gas, pipeline and renewables. The EU ERGIS 2023 proceedings can be read [here](#).

OSDU breathes deeply, slows down

Software release cadence reduced to allow struggling users to catch up.

OSDU, formerly the Open subsurface data universe, is to reduce the frequency of its software updates (milestones). As of February 2024, the milestone release cadence has been reduced from every 6 weeks to every 16 weeks. This is to ‘strengthen existing platform capabilities and to support the launch of a community-available OSDU data platform’. The four-month release cycle is said to strike a balance between new features and stability. OSDU is now to focus on quality and robustness (rather than rapidly adding new features), to ‘resolve existing technical debt’ and to ‘complete existing features and address known issues’. The slowdown is to accommodate member companies that were ‘struggling to keep pace’ and unable to roll-out the previous version before the next release.

The OSDU Forum is keen to strengthen the data platform capabilities and receive user feedback and will adjust the release schedule as necessary. New working group members are welcome, as is user feedback and suggestions for improvements. These can be submitted via the OSDU [Community Idea Portal](#) on Aha! [login credentials required]. The next milestone, M23 is scheduled for release in May 2024. More in the [release notes](#).

OSDU vs OEDA.

The Open Group vs Palantir! A Spotify for the energy industry.

A recent event hosted by the UK **Net Zero Technology Centre** heard from specialists working on two different oil and gas digital architectures. In the left hand corner we have the NZTC’s own OEDA (offshore energy digital architecture). In the right hand corner, OSDU, the open subsurface data universe. Leading the OEDA team we have Stephen Roebuck (**Industrial Data Hub**) who wants to bringing aviation technology to the energy vertical. For OSDU, Tim Hunter-Rowe from **BP**. Also in the ring were Blair O’Connor (**NZTC**) and Silas O’Dea (**Baringa**). The meeting discussed the challenges and opportunities to emerge from both projects, and the future of data sharing across the sector. Here follows a shortened and edited version of the debate as we captured it from the video.

Hunter-Rowe – BP has been deploying data platforms for a decade or more and working on OSDU since 2018. Under the auspices of The Open Group OSDU scope has expanded beyond the subsurface. OSDU aims for standard data but also, a ready-to-use standard data platform. Data management is not an area where oil companies need to compete so why use third party technology? Why have proprietary data standards? The Open Group allows for cooperation without running foul of anti trust legislation. BP’s use cases include streaming seismics into interpretation software, well data into petrophysical applications. The future will see similar functionality for production and renewables data.

Roebuck followed with a presentation of OEDA, an 18 month Scottish project supported by some 14 organizations. OEDA’s inspiration came from the aviation industry’s SkyWize

<https://aircraft.airbus.com/en/services/enhance/skywise> led by Airbus. SkyWize, running on the [Palantir Foundry](#) platform, combines in-flight, engineering and operational data to address aircraft operational challenges. OEDA likewise is leveraging Palantir Foundry, building on the recommendations of the UK offshore energy task force. Palantir embeds a data catalog for search, adding functionality for capturing and sharing data lineage. ‘It is a bit like a Spotify for the energy industry’.

O’Connor wondered about the overlap between OSDU and OEDA. What are the similarities, the differences?

O’Dea – There is common ground. No one company could do either of these projects alone, standardizing core data and getting peers working together. The differences stem from the projects’ geneses, OSDU is designed to help a company internally. OEDA is more about sharing data between companies.

O’Connor – How is OEDA valuable over OSDU and vice versa?

Hunter-Rowe – I like Silas’ distinction. OSDU is just a data platform for internal use. It is not a Spotify, there is no user interface. OSDU manages data as a system of record in its purest form. In a future world where OSDU and OEDA both exist there will be obvious opportunities for alignment. A common data platform would mean that delivering OEDA would be much easier.

O’Connor – OK so if we envisage OEDA running atop a common OSDU platform, what are the use cases and possibilities for OSDU/OEDA collaboration à la SkyWize?

O’Dea – Some use cases were explored as part of the OEDA project. There should be real value in supply chain optimization, knowing where to find materials and services. This also fits the energy transition, enabling data sharing efficiencies offshore across emissions, electrification and hydrogen.

Hunter-Rowe – CCS too. Regarding emissions data there is also the Open Footprint Forum’s work on emissions monitoring with a common data platform.

Roebuck – Actually use cases are not the most important facet at this stage. If it works there will be hundreds of use cases. OEDA is due to finish by year end 2024 and there will be hundred of pages of documentation to share with public.

O’Connor – And where does AI fit in with all of the above?

O’Dea – Yes there is a phenomenal interest in generative AI to add value and this underpins the value of these collaborations which can feed such data hungry technology.

O’Connor – Right but it is a Pandora’s box? In the real world, people complain about GenAI’s plagiarism. How will the data owners get value from this?

O’Dea – There is huge value to be gained from pooling our efforts. This does rely on many participants sharing equipment data to get a critical mass and enable advanced AI.

Hunter-Rowe – BP has huge ambitions for AI and GenAI and has teams working in different areas looking at opportunities. Regarding the value of data used to train AI models, this is the same question that the open source software poses. Not all members of open source initiatives are equal contributors. In the 300 member organization that is OSDU, BP may define a new data schema, but all will benefit.

Visit the [NZTC](#) and listen to the debate [here](#).

Comment: Perhaps the most significant difference between OSDU and OEDA is the underlying technology. OSDU is a ‘collaborative’ effort with many stakeholders. OEDA has outsourced all the hard stuff to Palantir, the original ‘[stone soup](#)’ company.

Software, hardware short takes ...

Accept Development's XBRL Validator. Alice Technologies has released Alice Core. The new 4.6 edition of . Pegasus Vertex's CEMLab/CEMPro+. Cogent DataHub. Teledyne OLCT 100 XPIR. NV5 Geospatial's Envi DL. FDT Group certifies Flowserve's Logix valve positioners. New IsatisNeo from Geovariances. New Grapher from Golden Software. Kitware CMB and OpenFOAM. Beta release of NVIDIA AI Workbench. One Stop Systems' Gen 5 4U Pro: AI at the edge. CNES new Orfeo Toolbox. PaleoScan 2023.1.2. BakerHughes' Panametrics T5MAX. New RockWorks Toolbox. Seeq AI Assistant. TrapTester 7.3. Velo 3D Developer. Oracle's 50th.

Accept Development's XBRL Validator has passed the tests needed to be 'XBRL Certified'. The validator handles CSV, JSON and XML flavors of XBRL, the financial digital reporting standard. More from [XBRL](#).

Alice Technologies has released [Alice Core](#), said to be a game-changer for construction scheduling. Alice Core uses 'optioneering' to find the most efficient construction paths, based a P6 or Oracle Primavera Cloud schedule.

The new 4.6 edition of Pegasus Vertex's [CEMLab](#) includes enhanced search functionalities for access to slurry formulations and test statuses, and faster data read/write speeds. New test functionalities include water analysis and more. PVI has also announced [Cempro+ 5.9](#) with new post-cementing circulation analysis for hydraulic and temperature calculations and 'seamless' integration of managed pressure cementing activities.

[Cogent DataHub](#) captures plant data into the Microsoft Azure cloud where it can be leveraged by the 'hundreds' of third party tools available in the Azure marketplace. Connectivity options include native Azure IoT, OPC UA and MQTT/Sparkplug. Cogent is a wholly-owned subsidiary of Skynet.

[Teledyne Gas and Flame Detection](#) has introduced a new infrared sensor for its OLCT 100 XPIR (explosion-proof IR) methane detector. The device is said to ensure the protection of workers, assets and the environment from the potentially damaging and harmful effects of methane.

NV5 Geospatial has rolled out [Envi DL 3.0](#), commercial off-the-shelf technology for working with remote sensing data. The new release introduces an optimized workflow for extracting features of interest from imagery, leveraging a 'patent-pending' process that combines two types of models. Attention, the software is subject to US export control laws and may not be exported to a prohibited destination or end-user.

FDT Group has certified **Flowserve's** [Logix 3820 Series](#) of digital valve positioners that leverage the latest FDT 3.0 standard.

The latest version of **Geovariances' Isatis.neo** geostatistical package with a new estimation manager to estimate and test multiple domains or variables. A new parameter fitting tool improves estimations by locally adjusting variograms and neighborhood parameters.

Golden Software has added grouped box plot functionality to [Grapher](#), its scientific graphing package. The new tool makes sensor data easier to import and plot. Golden has also updated its Surfer mapping and 3D visualization package to improve subsurface data exploration.

A blog post from [Kitware](#) describes how its open source computational model builder supports pre and post processing and visualization of various simulations. The workflow combines CMB with OpenFOAM (an open source computational fluid dynamics package) to perform virtual wind tunnel simulations. Kitware has also worked with Sandia National Laboratories to use CMB to simulate wave tanks, again in OpenFOAM.

Nvidia has announced the Beta release of its [AI Workbench](#) that allows local workstation-developed GenAI models to be scaled-up and deployed in the cloud.

One Stop Systems is now shipping its [Gen 5 4U Pro](#) accelerator system, tuned for ‘AI workflows at the edge’. The new hardware delivers twice the interconnect bandwidth performance over Gen 4 and supports multiple Nvidia H100 Tensor Core GPUs.

France’s **National Centre for Space Studies** (CNES) has released version 9.0 of its [Orfeo Toolbox](#), an open-source project for state-of-the-art remote sensing. OTB algorithms are accessible from QGIS, Python, the command line or C++. A ready to use Docker container is also available. The new release drops the Orfeo GUI, now replaced with a QGIS front-end.

The latest release of **Eliis’** [PaleoScan](#) (2023.1.2) includes new connectors for OpenWorks and the OSDU data platform.

BakerHughes’ new [Panametricx T5MAX](#) transducer addresses difficult applications, including H₂, CO₂ and extreme high and low flows of hydrogen, CO₂, flare gas and more.

The latest edition of the **RockWorks** [Toolbox](#) (a snip at \$275 a year) includes over 300 programs for geological data analysis and visualization.

Seeq now propose generative AI capabilities with the [Seeq AI Assistant](#). This helps users learn the Seeq platform, build advanced analytics, machine learning, and AI skills and accelerate insights.

Version 7.3 of **Badley’s** [TrapTester](#) flagship fault modeling software offers present-day fault stress analytics, new Strata-Cube displays and support for Bluware VDS 3D seismic volumes.

[Velo 3D](#) has announced ‘Developer’, a new tool for interoperability with other (competitor’s) 3D-printing system. The new capability is said to ‘open the black box of Velo3D systems.

Oracle is celebrating the 50th anniversary of the relational database with a [blog post](#) authored by John Foley*. The birth of the RDBMS dates back to an IBM prototype based on a seminal paper by Edgar Codd. Oracle laid a claim to the first commercial RDBMS with in 1979 with Oracle Version 2. Today Oracle runs exabyte-scale commercial databases and continues to innovate with most recently native support for vector data and vector search, as well as generative AI capabilities.

* *Foley is editor of the [Cloud Database Report](#) and a vice president with Method Communications.*

Oil IT Journal editor Neil McNaughton adds. ‘Soon after the birth of Oracle’s DB offering, the salesmen walked into the very small oil company where I was working. We had just acquired a Unix minicomputer and I was getting into hacking shell scripts. I engaged the Oracle folk with a discussion of the underlying operating

system to learn that... there wasn't one! Although Oracle 'ran' on a Unix box, it did so by taking over the machine and doing its own thing from the ground up. A very early example of 'bare bones' computing perhaps.

Chit-chat from the AI/Digital Transformation front line

Linux Foundation: New 'Open Platform for Enterprise AI'. SEI-CERT: 'LLMs to fix code? Not so fast!' Esri: 'Is digital transformation still a thing?'

The **Linux Foundation**'s AI & Data unit has just announced a new 'sandbox project', the Open platform for enterprise AI ([OPEA](#)). OPEA is to enable the development of flexible, scalable GenAI systems that 'harness the best open source innovation from across the ecosystem'. The OPEA platform includes a framework of composable building blocks for generative AI systems including LLMs, data stores, and blueprints for a retrieval-augmented generative AI stack. The initiative is said to combat the current fragmentation of tools and techniques by collaborating on standardize components. Intel appears to be the prime mover behind OPEA which is also backed inter alia by Cloudera, Hugging Face, Red Hat, SAS and VMware/Broadcom (The GAFAMs and Nvidia are conspicuously absent). More from the [Linux Foundation](#).

The Carnegie Mellon **Software Engineering Institute** has issues a warning to putative users of ChatGPT to analyze computer code. A team of CERT Secure Coding researchers used ChatGPT to examine the noncompliant software code examples in the SEI CERT C Coding Standard. In one test, CERT fed ChatGPT with samples of noncompliant code, it missed obvious errors. Elsewhere ChatGPT focused on a trivial issue but missed the big coding goof. Overall, ChatGPT identified the problem in only 46% of the test cases. In 52% of the tests, ChatGPT failed to spot a coding error at all. The researchers conclude that LLM-based code analysis 'should not be disregarded entirely'. But that strategies such as 'prompt engineering' are needed to mitigate such challenges. Updates included in ChaptGPT 4 and CoPilot already show improvement when applied to the vulnerabilities studied previously. Read the full post [here](#).

Esri blogger Matthew Lewin asks rhetorically, '[Is Digital Transformation Still a Thing?](#)'. Seemingly, while talk of digital transformation may have faded, this is down to 'confusion' about the term itself. DT initiatives are often treated as a 'single tech-driven initiative, an IT undertaking primarily focused on replacing or upgrading an organization's core technology stack'. For Lewin, this is mistaken, DT 'is about business transformation through digital means'. DT is 'an ongoing, continuous evolution in how an organization leverages digital technology to run its business'. 'As long as technology keeps advancing the minute you finish one transformation effort, you're presented with a new world of digitally-driven opportunities.' Lewin reports that success with digital transformation has been modest, transformation successes have unfortunately been few and far between. He cited a [McKinsey/Finalta study](#) of DT in banking that found only 31% realized a significant return on their investment. Lewin argues inter alia that 'two critical technologies, generative AI and geospatial technology' are poised to achieve the success that has so far eluded many DT initiatives. 'Let's not bury digital transformation prematurely'. Lewin backs this up with a quote from Amazon's Jeff Bezos who is reported as saying '[It's always day one for digital transformation](#)'. While a company like Amazon has the resources to fund Grounchog Day digital transformations, others may be more interested in getting to payday fast!

Out with 15926 – in with the new IDO

PCA hears from U Western Australia prof on new ontology-based industrial reference ontology. ISO 15926 fundamental assumptions revisited.

Speaking at a POSC/Caesar Association (PCA) community meet earlier this year, Melinda Hodkiewicz (**U Western Australia**), Pål Rylandsholm (**DNV**) and Lars Berthinussen (**PCA**) reported from the industrial data interoperability front-line. The industry is still trying to shift from a document paradigm to a 'true information

model based' environment for the plant lifecycle. En passant, the work of the IOGP's spreadsheet-based JIP 33 approach was politely dissed for allowing manual data entry gaps and potential omission of units and data labels.

Enter the IDO, a shared industrial ontology, said to be a key enabler for change*. The IDO is used to build vocabularies and manage asset models from reference data libraries (RDLs) using the web ontology language [OWL DL](#). The IDO represents a 20 year journey that began with Norway's [Integrated Operations in the High North](#) JIP. Last year, this involved an evaluation of PCA's earlier data standard (ISO 15926) which concluded that IDO 'was not compatible with the fundamental assumptions of ISO 15926'. This led to the withdrawal of ISO 15926 Part 14 which is now to be replaced by a new proposal to the ISO TC 184/SC4 committee. This is expected to be ratified later this year as [ISO 23726-3](#).

The IDO is already in use today notably in the Aibel [material master data](#) ontology and in the shared valve design [specifications](#) for Equinor's Johan Sverdup drilling platform. The work has support from AkerBP, Equinor, TotalEnergies and others including, curiously, Cfihos.

* *Citing David Cameron's (U Oslo) paper 'The Digital Design Basis. Demonstrating a framework to reduce costs and improve quality in early phase design.'* *Digital Chemical Engineering* 2 (2022): 100015.

AVEVA World 2023 San Francisco - Oil, gas, and energy track

Petrabytes floats OSDU-PI System link for real time. Dianomics FogLAMP IoT. DAS data processing at the FLEdge.

Speaking in the oil, gas and energy track, Sashi Gunturu ([Petrabytes](#)) sought to bring together three hitherto independent upstream data platforms. There have been several upstream data standards over the past thirty years or so, from PPDM, through POSC/Energistics and on. While these 'solved the data definition problem' they have 'not evolved beyond this stage'. Such standards were not implementable and companies 'left them behind'. The situation changed in recent years with OSDU, the Open Subsurface Data Universe floated by Shell and backed by ExxonMobil, Chevron and others. The idea is for application developers to build atop this data platform and achieve 'de facto interoperability'. Where does Aveva come into the picture? Gunturu presented the [Aveva Data Hub](#) as potentially extending OSDU to real time operations data. ADH is a rebrand of the OSIsoft/PI cloud services with [some modifications](#). ADH exposes APIs for data exchange that enable 'seamless integration with OSDU', adding operational insights for use cases such as the predictive maintenance of drilling and production assets.

Gunturu then turned to the 'edge' of the network, proposing the use of Dianomic's [FogLAMP](#) open source IoT platform. FogLAMP has now been taken under the Linux Foundation's wing and rebranded as [FLEdge](#). FLEdge brings in real time data and adds machine learning-based 'edge intelligence'. FLEdge's APIs allow for connectivity to an OSDU instance. The FogLAMP/Fledge technology is embedded into Petrabytes' PetraHub, a DataBricks'-based business intelligence platform, a.k.a. an 'energy delta lake' that connects to environments including OSDU. The full workflow includes a nod to the Shell-backed LF Energy project RTDIP (see below) and a constellation of software tools including FogLAMP, DataBricks, LakeHouse all piped into ADH. Note that in the full workflow overview slide we seem to have lost OSDU!

Perhaps more prosaically, Petrabytes [GeoSmart](#) geomechanical software performs real time drilling risk mitigation using data stored in ADH. This currently involves real time calculations (WOB, Torque ...) performed in the cloud. For some applications, notably those involving fiber optic distributed temperature sensing, calculating in the cloud won't cut it. Terabyte-per-day data recording mandates edge processing for

noise reduction and feature extraction. Use cases such as frac monitoring and pipeline surveillance with distributed acoustic sensing require data reduction at the edge, underscoring the value of FogLAMP/Fledge.

Last year [Oil IT Journal](#) covered Shell's RTDIP project from a slightly different angle than Gunturu. We asked Bryce Bartmann how Shell's massive and incumbent OSIsoft/PI System platform fitted in with the RTDIP. It turns out that RTDIP was originally built on top of PI. This showed that the idea worked and became the justification for 'building an open source stack that would better suit Shell's strategy and support data science'. Probably not the best thing to reveal at an Aveva event!

More from the 2023 Aveva World [here](#). The [2024 Aveva World](#) is to be held in Paris, France next October.

Folks, facts, orgs ...

Movers & shakers hail from Software Underground, aeSolutions, AspenTech, Audubon, BP, Codesys, Cognite, Eliis, Enterprise Ethereum Alliance, Halliburton Labs, LongPath Tech, NIST IT Lab, OPC Foundation, PRCI, PTAC, Pickering Energy Partners, Resources for the Future, S&B, Viking; EU. Deaths: Treitel, Chaney.

Norway's **Geo365** geology-focused publication, organizer of the Dig X subsurface conference, awarded Equinor's [Matt Hall](#) the 2024 Digital Trailblazer award for work on open-source subsurface code development. Hall co-founded the Software Underground in 2014 and has since organized multiple 'geo-flavored' hackathons in Europe and the US. Since 2015, all of Equinor's in-house developed software is open source with over 600 projects now online.

Chris Neff heads-up [aeSolutions](#)' new Houston location. The company provides consulting, engineering, and systems integration in industrial process safety and automation.

AspenTech has appointed Christopher Stagno to SVP and interim CFO while it searches for a permanent CFO. The move follows Chantelle Breithaupt's resignation.

Engineer **Audubon** has appointed Melissa McLean to MarCom director. She hails from Worley.

BP has appointed Kate Thomson as CFO and its board. She has been interim chief financial officer since September 2023.

Stefanie Philippe is now head of MarCom at **Codesys Group**. She is a 15 veteran of the company

Cognite co-founder Geir Engdahl has been appointed chief product officer. He was previously CTO and leader of engineering.

Eliis has promoted Franço Lafferrière to COO.

Karen Scarbrough (Microsoft) is the new executive director of the **Enterprise Ethereum Alliance**. Scarbrough was previously with BP.

Pulakesh Mukherjee (Imperative Ventures) has joined the **Halliburton Labs** advisory board.

Emissions monitoring specialist [LongPath Technologies](#) has made the following appointments: Burney Latiolais (EVP International Operations), Chelsea Cassel (SVP Growth Strategy) and Michael Chavez (VP Growth).

Kevin Stine Named has been named director of National Institute of Standards and Technology's **Information Technology Laboratory**.

NOV has appointed Patricia Martinez to its board of directors. She hails from Enerflex .

Alexander Allmendinger is now secretary of the **OPC Foundation** following Mike Bryant's retirement after 22 years of service

Tom Marlow has been promoted to director of research at the **Pipeline Research Council Intl**. Ashly Hilton is the new membership specialist.

Soheil Asgarpour is to retire from his role as President and CEO of the **Petroleum Technology Alliance Canada** following a 17 year tenure. The PTAC board has initiated the process of finding a replacement.

Pickering Energy Partners has announced a collaborative partnership with 'energy veteran', Rick Mauro, aimed at supporting clients in their carbon sequestration and methane mitigation efforts. Mauro was previously with Halliburton.

William Pizer is the new president and CEO at **Resources for the Future**.

S&B has promoted Jeffrey Sipes to CEO.

Viking Life-Saving Equipment has named Henrik Helsinghof as CEO, following the death of former CEO Henrik Uhd Christensen.

The European Union has opened a new improved [Funding & Tenders Portal](#). Interested parties can register, find partners and apply for R&D grants.

Deaths

Renowned geophysicist **Sven Treitel** has died. Read Sergey Fomel's obituary on [LinkedIn](#).

The Incident Command System for Industrial Control Systems ([ICS4ICS](#)) reports the death of founding member Mike Chaney.

Done deals

AOS acquires Ocean Specialists. DNV rejigs cybersec units. Databricks bags Einblick. Drill-Quip, Innovex Downhole merge. Energy Freelance rolls-out EnergyHire. Expro acquires Coretrax. Montrose bags Two Dot. Geoteric Holding AS buys Foster Findlay Associates. Petrofac reviews strategic and financial options. SLB buys into Aker Carbon Capture. Velo3D reports loss. Vysus sells ModuSpec business.

Advanced Ocean Systems has acquired **Ocean Specialists**, a submarine cable systems and seabed infrastructure specialist. The new acquisition joins other AOS units SeaRobotics, Ocean Specialists and Okeanus Science & Technology.

DNV has merged its cyber security business with two recently acquired companies – Nixu and Applied Risk. DNV Cyber now comprises some 500 cyber security experts working on IT and industrial control systems across multiple industries.

Databricks has acquired Cambridge, MA headquartered **Einblick**, developer of an AI-based front end for data exploration.

Drill-Quip has merged with **Innovex Downhole Solutions** in a paper transaction that sees Drill-Quip stockholders owning approximately 52% and Innovex stockholders approximately 48% of the combined company. The combined company will be called Innovex International.

Energy Freelance has announced [EnergyHire](#), an 'AI-enhanced' energy industry hiring platform.

Expro has acquired **Coretrax**, a provider of drilling tools and wellbore cleanup, well integrity and production optimization solutions from an investment group led by Buckthorn Partners. The deal is worth approx. \$210 million comprising 'at least' \$75 million of cash 'up to' 6.75 million new Expro shares.

Montrose Environmental Group has acquired **Two Dot Consulting**, an environmental consultancy specializing in regulatory services to the oil and gas, and renewables sectors in the Rocky Mountain and adjacent regions.

Geoteric Holding AS, a newly formed Norwegian company backed by Redback, Herfo Finans and Møkster Investering has acquired **Foster Findlay Associates**, developer of the Geoteric seismic interpretation solution. Previous FFA investor Energy Ventures III LP is to exit the company as part of a planned realization of its assets.

Petrofac's review of strategic and financial options continues. Discussions are progressing with bondholders and lending banks, and other capital providers. The sale of non-core assets progresses. The company has an \$8 billion backlog and continues to maintain liquidity above its financial covenant.

SLB is to pay NOK 4.12 billion to purchase 80% of **Aker Carbon Capture Holding** along with performance-based payments of 'up to' NOK 1.36 billion over the next three years.

3D industrial printing specialist **Velo3D** reported a \$117.4 GAP loss for 2023. The company is engaged in a strategic review of options and is in discussions with multiple parties to 'maximize stockholder value'. More from [Velo3D](#).

Aberdeen-headquartered **Vysus** has sold its ModuSpec rig intake and inspection business to global rig inspection company, **MR Group**. The disposal, the fifth in under four years, will allow Vysus to focus on its international consultancy business.

GenAI for maintenance

Siemens Senseye offers generative AI for maintenance engineering. Oil IT Journal asks 'who's in charge, computer or engineer?'

Siemens has announced new generative artificial intelligence functionality in its [Senseye Predictive Maintenance](#) solution that 'makes predictive maintenance more conversational and intuitive. The new functionality is said to help counteract a skill shortage in the maintenance sector. Currently, machine and maintenance data are analyzed by machine learning algorithms and presents to users as 'static, self-contained cases'. The new conversational user interface adds flexibility and collaboration, enabling a conversation between the user, the AI engine and maintenance experts.

In the context of this announcement, Oil IT Journal invited the folks at Siemens to check out Neil McNaughton's 2023 editorial '[AI in maintenance – are you sure?](#)' that questioned what might happen if responsibility for maintenance decisions was devolved to the computer. A Siemens spokesperson kindly got back with the following ...

'Thanks for your inquiry. Senseye, Our AI-powered predictive maintenance solution directs the attention and expertise of maintenance workers to where it's needed most. The final decision always rests with the maintenance experts. These human-machine interactions enable faster and easier maintenance decisions, helping our customers to reduce unplanned downtime, enhance productivity and optimize resources.'

Regulatory round-up

USA: IRA cash for emissions control. PHMSA funds pipeline safety. Climate disclosure rule postponed. Canada: XOM reporting exemption. RRC challenges EPA. UK: NSTA - decommission compliance 'patchy', North Sea Area Plans, Digital Consents, new Digital Energy Platform. Norway: NPD/ Petroleum Safety Authority names/scope changes.

USA

Under the curiously named Inflation Reduction Act , the US Administration is making \$350 million of grants to States to cut methane emissions from the oil and gas sector and for environmental restoration of well sites. More [here](#).

The US Department of Transport has announced \$18 million in funding opportunities to support nationwide pipeline safety activities. Multiple notices of funding opportunities (NOFOs) will help train first responders, educate the public on local safety initiatives and encourage the development of new

pipeline technologies. More from the DOT's Pipeline and Hazardous Materials Safety Administration ([PHMSA](#)) unit.

[XBRL.org](#) reports on a 'fireside chat' with SEC Chair Gary Gensler who indicated that the pending US climate disclosure rule would likely be delayed, 'possibly into 2024'. Launched in March 2022, the proposed rule faced ongoing delays, primarily due to contentious issues regarding Scope 3 emissions and [Regulation S-X](#). Watch Gensler's chat on [Youtube](#).

The Texas Railroad Commission is challenging the Environmental Protection Agency in the lawcourts over a recent Methane Rule. This threatens to 'stifle the Texas economy'. RRC Chairman Christi Craddick described the Government's action as 'egregious overreach'. More from the [RRC](#).

Canada

ExxonMobil has obtained an exemption from the securities commissions for the provinces of Alberta and Ontario with respect to its Canadian oil and gas reporting obligations. The exemption relieves XOM from Canada's disclosure requirements for oil and gas activities, rule NI 51-101. ExxonMobil's future disclosure relating to its oil and gas activities will instead comply with the US regulations.

UK

The UK **North Sea Transition Authority** (NSTA) has written to licensees reminding them of their obligation to decommission wells in a timely manner. Currently, compliance with guidance is 'patchy' and the NSTA is concerned at the number of deferrals being sought for decommissioning. While exceptional circumstances may arise to justify a deferment, the NSTA 'does not normally expect to receive such requests'. More in the [letter](#) and on the [decommissioning portal](#).

NSTA is also promoting the development of Area Plans, cross license collaborative frameworks to integrate exploration, development, production and decommissioning to optimize infrastructure use and extend asset life. More [here](#). NSTA has also announced 'Digital Consents' for production and flaring and venting volume monitoring. The new functionality is a component of the NSTA's new [Digital Energy Platform](#) which saw some 135 terabytes of uploaded in the first half of 2023. Finally, NSTA is seeking comment on new draft 'data principles' to 'support the energy transition and benefit every user of the North Sea'. More on the consultation [here](#).

Norway

The **Norwegian Petroleum Directorate** has changed its name to the **Norwegian Offshore Directorate**. The change will affect external services, APIs and downloadable files in its open data collection. Old URLs and services will work until April 2024 from the on URLs containing 'npd' will be swapped 'sodir'. More on the changes [here](#). Norway's Petroleum Safety Authority is also changing name, to the Norwegian Ocean Industry Authority. The name changes reflect the authorities' expanded scope that now encompasses oil, gas and 'new industries' like CCS, offshore wind and seabed minerals.

Standards stuff ...

ESRS and GRI sign MoU for sustainability reporting. Modelica CRML simulation language released as an open standard. API opens webstore for standards and technical docs. CFIHOS V2.0 released. ECJ rules on public access to standards. IOGP updates positioning data exchange standard. ISO publishes 'artificial intelligence management system'. ESI updates OpenFOAM open source CFD package. XBRL sustainability reporting updated.

The **European Sustainability Reporting Standards** body (ESRS) and the **Global Reporting Initiative** (GRI) have signed a memorandum of understanding to commit the organizations to continue working together and deliver technical support for reporting companies. A GRI-ESRS Interoperability Index has been released under the auspices of EFRAG, an EU sustainability quango. The MoU means that entities reporting under ESRS will be deemed reporting 'with reference' to the GRI standards. GRI reporters will be able to leverage their reporting in an ESRS 'Sustainability statement'. More from [EFRAG](#).

A presentation at the 2023 **Modelica Conference** introduced the '[Common Requirement Modeling Language](#)', a new language for the formal expression of requirements for modeling and simulation. CRML will be released as an open standard integrated with OpenModelica and interoperable with the open systems engineering standard SysMLv2. CRML allows for multidisciplinary spatiotemporal constraints that can be verified against system design by co-simulating requirement and behavioral models.

The **American Petroleum Institute** has opened an online [subscription portal](#), the 'definitive source' of API Standards and Technical Documents.

The IOGP's capital facilities information handover standard, **CFIHOS** has just released Version 2.0. Units of measure have been aligned with Version 1.0 of the Energistics unit of measure dictionary. An optional addition to the reference data library adds attributes and documents for GHG emissions tracking. CFIHOS discipline document types are now aligned with the IOGP's JIP33 work. Another update covers spare parts data exchanged between owner operators, EPCs and OEMs.

An interesting if somewhat impenetrable ruling by the **European Court of Justice** (ECJ) on '[Case C-588/21 P](#)' concerns public access to EU standards. The case was brought by California-headquartered [Public Resource](#) and [Right to Know](#), established in Dublin, Ireland. A judgement by the European Commission had refused public access to standards from the EU Committee for Standardization (CEN). While the ECJ allowed that standards are subject to copyright protection, it found that 'there was an overriding public interest' in the disclosure of these and has annulled the Commission's decision to refuse access. More from [CEN/CENELEC](#).

The **IOGP** has updated its technical specification for positioning data exchange. The latest release accounts for technical advances in seismic acquisition and positioning and aligns the format with the modern geodesy, compliant with the EPSG Dataset. Version 2.0 of the P2/11 format for the exchange of raw navigation observations and measurements is now available from the IOGP [Publications Library](#). IOGP has also released an updated IOGP Report from the Geomatics Committee. IOGP [Report 483-1](#) on the P1/11 geophysical position data exchange format.

The **International Standards Organization** has boldly published a standard for an 'artificial intelligence management system', a.k.a. [ISO 81230](#). The new standard is designed for entities providing or utilizing AI-based products or services, ensuring responsible development and use of AI systems. ISO 81230 is a snip at CHF 194.

[ESI](#) has announced the December 2023 release of [OpenFOAM](#), a free, open source computational fluid dynamics (CFD) software package from OpenCFD, a wholly-owned subsidiary of ESI Group.

The **XSB** has approved additions to the XBRL Unit Registry to support sustainability reporting requirements. The new 'intensity' units enable the reporting of measures such as 'green house gas emissions per unit of revenue'. The three new units cover emissions, energy and volume per unit of currency, and are accompanied by corresponding new datatypes in the XBRL Data Types registry. More from [XBRL](#).

Sales, partnerships, deployments ...

Databricks Asset Bundles for TotalEnergies. Shell deploys ABL Effio. ABL gets LLOG contract. ADS Services teams with Geolog Intl.. AGR signs with Equinor. Acoustic Data gets Iraq contract. Berkana teams with Pipecom. Chevron teams with the Fab Foundation. Cognite signs MoU with ANYbotics. AkerBPA deploys Turbulent Flux VFM. DeepOcean inspects Equinor pipelines. Helix gets framework deal from Talos. Kahuna teams with PXO. TotalEnergies rolls out Copilot. Optime Subsea to provide Equinor ROCs. Northern Endurance Partnership, Shell select TechnipFMC

Multiple LinkedIn posts and an article on [Medium](#) reveal how popular Databricks is at **TotalEnergie's** Digital Factory. TE uses Databricks Asset Bundles to speed continuous integration/deployment of data and AI assets on the [Databricks Intelligence Platform](#).

Shell has deployed **ABL's** master data build and optimization toolkit [Effio](#) to support large-scale newbuild projects including LNG Canada, Crux and Jackdaw. A reported 50% time saving has been achieved from the computerized maintenance management system. Effio is said to eliminate many 'Excel-heavy' activities across data preparation, field population, quality checks and transmittal package management. More in the [release](#). ABL has also been awarded a contract by LLOG Exploration to provide marine warranty survey across the Gulf of Mexico Salamanca development.

Drilling pressure management solution provider [ADS Services](#) has teamed with [Geolog International](#) to bring artificial intelligence into formation evaluation, automated well control and drilling performance. ADS' Power Chokes technology will be used alongside Geolog's hardware and software to capturing and analyze drilling data. The combined offering is called 'Drilling ESP' (evaluation, safety, and performance).

[AGR](#) has signed a contract extension with **Equinor** for the provision of blowout and well control studies on the Norwegian continental shelf. The two-year agreement covers contingency planning, well control emergency response, casing magnetization services and transient flow analyses. AGR is a unit of Oslo-listed energy and marine consultancy group ABL Group ASA.

[Acoustic Data](#) has been awarded a 'multi-million-dollar' contract in Iraq for its SonicGauge wireless monitoring systems. The contract was awarded by a 'major oilfield service company'.

[Berkana Resources](#) is teaming with [Pipecom](#) on the provision of operational technology services and solutions.

Chevron has announced the creation of 'cutting-edge' fab labs at Fort Valley State and Florida A&M Universities. The facilities have been established in collaboration with the [Fab Foundation](#) and feature state-of-the-art equipment such as 3D printers, laser cutters and electronics workstations.

Cognite has signed a memorandum of understanding with **ANYbotics** to explore robotics solutions for the energy and manufacturing industries. ANYbotics is a manufacturer of four-legged robots for industrial inspection. Cognite's Data Fusion platform is said to fuel AI robotics innovation across oil & gas, power & utilities, chemicals and metals. More in the [release](#).

A virtual flowmeter developed by **Turbulent Flux** has been deployed for well monitoring by [AkerBP](#) on the Norwegian Valhall oil field. The solution is said to reduced costly well-interventions and increase productivity by mitigating chalk influx. Cognite Data Fusion is used to power the solution and visualize the live data.

[DeepOcean](#) is to provide pipeline inspection services to Equinor in the North Sea. Scope of work includes pipeline inspections, seabed mapping and 'ad-hoc' pipeline survey and light construction work. The contract was awarded under a frame agreement with Equinor for the provision of offshore survey services.

Talos Energy has awarded **Helix Energy Solutions** a five-year joint framework agreement by which Helix has 'the first right of refusal' regarding specific annual work scopes for Talos's decommissioning requirements in the Gulf of Mexico. Scope includes normal course abandonment of offshore wells, pipelines and platforms, primarily on the shelf. More from [Helix](#).

[Kahuna Workforce Solutions](#), a provider of skills and competency management software, has formed a strategic partnership with Norwegian operating services provider [PXO AS](#) to accelerate workforce competency in Norway's energy sector.

TotalEnergies has deployed [Copilot for Microsoft 365](#), Microsoft's generative artificial intelligence assistant, for its employees. Last year TE deployed Bing Chat Enterprise, a secure AI chat solution based on internal data. TE's teams can also leverage Microsoft Power Platform, a 'low code-no code' application development service. Employees will be able to design solutions connected to other TotalEnergies applications and databases, to address simple or complex day-to-day problems more quickly and efficiently.

[Optime Subsea](#) has been contracted by Equinor to deliver two remotely operated control systems on the Irpa development. The ROCs eliminate the need for umbilicals and the topside hydraulic control unit. Optime Subsea's ROC technology was also used on a remotely controlled well completion at Shell Nigeria's Bonga field.

[TechnipFMC](#) has been selected by the Northern Endurance Partnership to deliver an 'all-electric' iEPCI (integrated project) for carbon capture projects in the UK's East Coast Cluster. The NEP is a joint venture between BP, Equinor, and TotalEnergies.

TechnipFMC's iEPCI offering was also selected by Shell for its Gulf of Mexico [Sparta Project](#).

Safety first ...

RelyOn Nutec safety for ExxonMobil. Codesys virtual safety controllers. CSB finds well control practices inadequate. Equinor reports Behavior Lab success. IOGP on KPIs for process safety. 'Incredible' improvement in land transport fatalities. ISN – 'oil and gas has highest fatality rate'. RealWear Navigator Z1 safety wearable.

CAVU International and **PT Samson Tiara** are to supply ExxonMobil Cepu with specialized coaching, workshops and support, tailored to enhance safety leadership practices. The partnership leverages ExxonMobil's 'specialized safety system methodology'. PT Samson Tiara operates an on- and offshore safety and survival training facility in Cilegon, Indonesia. Both organizations use technology from [RelyOn Nutec](#).

Codesys' Virtual Safe Control SL now supports SIL3-certified safety controls without certified hardware. The solution builds on Codesys' hardware-based SIL3 solution. By using virtual controllers, the hardware can now be abstracted. A dual-channel capability is achieved by 'diversified encoding' with two logical software channels. The add-on solution for safety applications has been approved by TÜV SÜD. More [from Codesys](#).

The US **Chemical Safety and Hazard Investigation Board** has released its final report on the fatal January 2020 blowout at the Chesapeake-operated Wendland 1-H well in Burleson County, Texas which killed one workers and injured three others in a flash fire. The CSB found that the lack of effective well control practices, including well barriers, contributed to the incident, along with the absence of regulations governing onshore oil and gas operations. The CSB considers that there is insufficient industry guidance on well control for wells in an under-pressured reservoir. Ineffective ignition source management also contributed to the fire. More from the [CSB](#).

Equinor reports an overall positive safety trend for 2023 with serious incidents at a record low. The success is in part down to Equinor's life-saving rules as used when working with suppliers. In 2023, special efforts were made to prevent major accidents through extra focus on management training and an e-learning course for all employees. Equinor also cited its joint venture with BehaviorLab in the '[Always Safe Annual Wheel](#)' safety initiative.

The **IOGP** has published [Report 456 v2](#) - recommended practice on key process safety performance indicators. The upstream oil industry, in response to major incidents, has developed improved process safety key performance indicators to learn from events with less serious outcomes and to manage system performance. IOGP has also just released its [Safety data reporting user guide](#) – Scope and definitions. The data is gleaned from IOGP data dating back to 1985 said to be the largest database of safety incident statistics in the industry.

The **IOGP's** Steve Norton reports that since 2000 the number of annual land transport fatalities reported to IOGP has reduced by 90%, 'an incredible improvement'. IOGP first introduced the Land Transport Safety Practice in 2005 gathering collective learnings from land transport experts across the industry and providing practical guidance that has had a large impact in reducing serious incidents and fatalities. IOGP recently released Revision 5 of its [Safety Practice](#) and [Report 365](#) - Land transportation safety practice.

Dallas-based [ISN](#), a provider of contractor and supplier information management services has released its latest Serious Injuries and Fatalities (SIFs) white paper which incorporates data from 2022. ISN has analyzed 127,000 recordable incidents from 2017-2022 with nearly 24,000 SIFs cases,

including more than 20,000 hospitalizations, 3,154 amputations and 871 fatalities. The study covers a five year period to 2022 across transportation, oil and gas, manufacturing, mining and utilities. Sprains, strains and tears are reported as a major incident category 'amid an aging workforce'. This is unlikely to decrease as, according to the Bureau of Labor Statistics, the employment of workers aged 75 years and older is expected to grow by 96.5% over the next decade! Contact with object or equipment was the most common cause of fatalities in 2022. Mid-size corporations experience the highest rates of fatalities. The upstream-onshore oil and gas sector had the highest industry fatality rate at 9.5 per 100,000 workers with technicians, laborers and floormen most at risk.

i.safe Mobile and **RealWear** have unveiled the [RealWear Navigator Z1](#), an intrinsically safe, head-mounted wearable that is 'is redefining smart glasses for ATEX/IECEX industry use'. The Navigator Z1 is designed for troubleshooting equipment via remote expert guidance, virtual training and for e-workers using field services management or inspection data management systems. The platform is said to lay the foundation for RealWear's broader AI Core vision for frontline workers.

New NVIDIA solver speeds oil and petrochemical process modeling

Nvidia CUDSS brings GPU-acceleration to Honeywell's sparse matrix solver.

Honeywell reports successful use of Nvidia's [Cudss](#), a GPU-accelerated direct sparse solver library for solving linear systems with very sparse matrices. DSS are used in real-time applications such as autonomous driving and process simulation. Cudss uses Nvidia's Cuda GPU programming language to parallelize matrix factorizations and has been integrated into the Honeywell UniSim Design equation-oriented platform, 'UniSim EO'. UniSim EO models of upstream and midstream oil and gas, refining and petrochemical processes were developed with Cudss and the results compared with Honeywell's legacy sparse linear solver DotAxb. The test was run on a Microsoft Azure instance powered by an Nvidia A100 Tensor Core GPU. Cudss showed performance improvements of '2x to 78x' over the Honeywell solver, hitherto considered a best in class.

Honeywell is now working to complete the productization of Nvidia Cudss inside UniSim Design. This includes tuning the solver for process simulation assessing improvements across different Nvidia GPUs and new and emerging hardware. More from [Nvidia](#).

Jobs and the US Energy Transition

Where will the jobs axe fall? MIT maps US 'employment carbon footprint'.

A study by researchers* at MIT looks into the effect of the energy transition on workers in the fossil fuel industries from a location-based perspective. Along with locations that see intensive drilling and mining operations, the study also measures the effect on other industries that are likely to change. Jobs with a high carbon footprint involve oil and gas drilling and coal mining. But other high carbon jobs at risk in the energy transition are found in areas where there is heavy industry, a point that may be overlooked by policymakers. Concretely, oil and gas producing areas like west Texas, the Powder River Basin of Montana and Wyoming are clearly concerned. But industrial areas in the Great Plains and Midwest could see employment 'evolve' too.

Joe Biden's Inflation Reduction Act seeks to protect places affected by the transition away from fossil fuels with tax credits for economic projects located in 'energy community' areas. MIT's researchers have measured the employment carbon footprint (ECF) of each county in the US to show that the 124

US counties above the 90th percentile in ECF terms do not qualify for IRA assistance. Another 79 counties are eligible, even though they fall in the bottom 20% in ECF terms.

Lead researcher Christopher Knittel said, 'The impact on jobs of the energy transition is not just going to be where oil and natural gas are drilled, it's going to be all the way up and down the value chain of things we make in the US.' MIT is now working on what the best policy measures might be to help US localities adapt to a move away from fossil fuels. More from [MIT](#).

* The paper, 'Assessing the distribution of employment vulnerability to the energy transition using employment carbon footprints', is published in the [Proceedings](#) of the National Academy of Sciences.

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