

OIL & GAS DIGITAL TWIN CONFERENCE 2023

Opportunities to Boost Profitability and Strategies to Maximize Efficiencies in Oil and Gas Production

AGENDA 2023

Day 1

Thursday, 1 June 2023

US Eastern Time Zone (ET)

8:15 **Welcome Speech**

8:30 **High-Octane Cybersecurity**

- Cyber threat landscape in Oil & Gas Sector
- Common cybersecurity challenges in Operational Technology environments
- Pragmatic recommendations to balance operational and cybersecurity efficiencies

Ashish Thapar | NTT Ltd.



9:00 **Digital Twins for Real-Time Process Modeling and Optimization of Oil and Gas Operations: Enhancing Efficiency and Productivity**

- Using faster surrogate models to simulate oil and gas processes in real-time to improve efficiency and productivity
- Key success factors that enable real-time optimization, such as establishing digital infrastructure, picking the right modelling approach, etc.
- Evaluation of existing gaps in tools and capabilities in the industry to enable scalable real-time optimization

Iwan Jones & Thouheed Gaffoor | Basetwo AI
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9:30 **10 key learnings on building and operating digital solutions**

- In 2021, DNV launched a recommended practice on how to build robust digital twins (DNV-RP-A204).
- The overarching recommended practice is complemented by more detailed methodologies on data quality, data management, data-driven models and sensor systems.
- We have since the launch carried out a number of projects for leading oil, gas and energy system operators, tech. solutions and platform providers. In the presentation we will reflect on what we have observed and share 10 key learnings that will benefit both development and operations of digital solutions.

Kjell Eriksson | DNV



10:00 **Digital Twin for Carbon Management in Offshore Oil & Gas Platform**

- The presentation will showcase about how digital twin can play a significant role for reducing GHG (COx and NOx) gas emission from offshore oil and gas platforms
- It will also include the net zero digital twin framework, implementation strategy and cost assessment

Subrata Bhowmik | McDermott International, Ltd



10:30 **Networking Break**

11:00 **Digital twin hotspots – Key application areas where the digital twins are being adopted the most.**

- Why is it important to understand these digital twin market hotspots? – Understanding the nuances of different digital twins and activity hotspots helps vendors focus their efforts and end users pick the most value-generating initiatives.
- The 6 most common digital twin applications of digital twins today – They are applicable to all sectors in general and Oil & Gas is no exception. Based on an analysis of 100 case studies from different sectors, the top applications or market hotspots include-
- Suggestions for digital twin service providers and end users

Mohammad Hasan | IoT Analytics



11:30 **Accelerating Towards Net-Zero with Simulation-based Digital Twins**

- This talk will show how simulation based digital twins can be used to help industry move towards their net zero goals quickly. This will include few use cases showing implementation of technology in different scenarios and their resulted benefits.

Anchal Jatale | Ansys



12:00 **Brownfield Digital Twins and Asset Digitization**

- Asset Information Management
- 1d/2d Non-Intelligent Datasets Digitization
- 3D Capture Technologies – Laser Scanning and modeling
- Relevance of Real-time data
- ERP – CMMS Data as a foundation for enhanced asset reliability
- Operations Digital Twin Integration & Contextualization layer

Iniesta Alberto | Worley



12:30 **Extended reality in the oilfield: enabling our virtual twin journey**

- Our software innovation center has been monitoring new and emerging technologies in this space for the past 8 years
- The result of years of research, investigation into latest technologies and proving the use cases for our industry has resulted in fit for purpose designs with key collaborators allowing us to utilize gamification for training, collaboration, data visualization, Operations, virtual twin of worksites and increases in safety and efficiency
- This Presentation will be about lessons learnt and key points to consider when utilizing gamification and extended reality to deliver these solutions.

Crispin Chatar | SLB



13:00 **Networking Break**

13:30 **Human & Machine in IR 4.0**

- Digital transformation is a hot topic--but what exactly is it and what does it mean for organization? I will take in this paper about digital transformation from the main two key players which are human and Machine.

Ayed Ruwaili | Saudi Aramco



14:00 **Reduce Security & Compliance Complexity in Multi-Cloud Scenarios**

- Do More with Less
- Empower SecOps to focus on High-value tasks
- Don't bolt security on. Build it in.

David DeLorge | BPX Energy Inc.



14:30 **The Opportunities and Challenges in Revolutionizing product development & maintenance.**

- Revolutionizing product development & maintenance- the context
- The Opportunities and Challenges
- The strategy and structure- Nigeria Content Development and Monitoring Board, Technology Innovation and Incubation model

Abdulmalik Halilu | NCDMB



15:00 **High-frequency algorithms harness the power of digital signal processing for Condition Based Monitoring**

- Harnessing digitalization, predictive and explanatory AI, improve efficiency, accuracy, and cost-effectiveness of your maintenance processes, while reducing downtime and maximizing lifespan of both equipment and systems.

Keith Holdaway | SAS



15:30 **End of Day 1**

Day 2

Friday, 2 June 2023

US Eastern Time Zone (ET)

8:00

Digital Twin for FCC Unit in a refinery

- Codification and cognition based on digital twin of refinery unit
- AI + First principle based early diagnostics, quality prediction and predictive maintenance

Nikhil Chauhan | Algo8 Inc.



8:30

Upgrading Digital Twin from Anecdotal Value to Strategic Value – A case for focusing on Mega Use case

- In many cases, the value from Digital Twin is articulated around the unconnected use cases. Mainly driving productivity and efficiency gains but lacking insightful decision making.
- A learning from the Digital Twin journey in last 2 years shows that there is much higher value potential of Digital Twin when we focus on work flows and end to end processes to drive "Gap to Potential" via insightful decision making
- Digital Twin can be envisaged as a single entry point or system of engagement and a top visualization layer of all the applications underneath.

Romesh Mahajan | Shell



9:00

Using online simulation to create a real-time digital twin for pipeline and network operations

- A simulation model using advanced state estimation techniques can provide a highly accurate digital twin that that can be used as a powerful decision support tool for pipeline operations.
- Managing linepack, tracking gas quality, maintaining security of supply and intra-day contingency planning are just some of the challenges facing controllers in today's dynamic markets. Using a digital twin can provide the right information at the right time to enable operational decisions to be made with confidence.

John Anderton | Atmos International
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9:30

Using digital twin to drive Project Efficiency and decision-making

- Fluor and digital twin – data centric execution driven execution
- Improved Project Efficiency – case study
- Making right decisions – case study

Peter Paul | Fluor Corporation
Session Sponsor



10:00

Gains with the use of digital twin in operational and maintenance processes

- Production shutdown planning using digital twin Environ® Petrobras
- Optimization of planning and execution of technical recommendations for inspection of the Asset of Roncador using Digital twin
- Exchanger replacement planning using virtual reality

Silvio Teixeira | Petrobras



10:30

Networking Break

11:00

Accessing Data Through Interactive Digital Twins

- A three-dimensional digital twin can be used as an interface to rapidly access information aggregated from multiple sources. This could be data pulled from multiple Product Lifecycle Management (PLM) tools, parametric readings and suggestions from Condition Based Maintenance apps, and more.
- The digital twin can support iterative modernization of IT systems. As industry adopts new technologies, the digital twin can be the interface to push/pull data to/from legacy and future applications. For example, maintaining business processes while migrating from a homegrown app to a commercially available PLM.
- The digital twin can be re-used across lifecycle activities. During design it can be used to communicate the physical and functional behaviors of the real-life platform. It can be reused to create interactive training capabilities as well as support maintenance activities later in the lifecycle.

Matthew Zimmermann | Beast Code



11:30

Future of data driven Digital Twins

- Data driven digital twins vs. Immersive visual digital twins
- Where could we be in a data driven and end-to-end connect digital twin in an industrial context?
- Things to consider when looking towards the future of your data driven digital twins

Tim Bartlett | Equinor US



12:00

Construction of a Digital Tool for Increasing Oil Recovery in New and Existing Assets

- Wettability is the major control on oil recovery.
- Wettability is a function of the oil and brine chemical composition in petroleum reservoirs.
- Sufficient data on the relationship between wettability and oil and brine chemical composition allows development of a deterministic system of equations.
- This deterministic system can be used to develop software that adds significant value to existing data.

Geoffrey Thyne | Engineered Salinity
Session Sponsor



12:30

Hydrocarbon Flow Digital Twin: What is Beyond Calibrating Wells and Network Models ?

- "Digital Twin" is a term that gained popularity in the past decade and is currently used by different businesses and organizations around the world to describe a virtual representation of a physical asset by relying on real-time data and/or algorithms to be converted into a form of visualization to replicate the shape, process or behavior of the physical system. Using this definition, we can specifically describe the Hydrocarbon Flow Digital Twin (HFDT) as a virtual representation of the oil and gas production asset utilizing field measurements, real-time data and simulation models to provide a comprehensive real-time simulation of the hydrocarbon flow behavior in wells and pipeline networks.
- Several HFDT solutions are available and used today by different O&G companies; with different levels of granularity, visualization tools, complexity and purpose. However, almost all HFDTs share a common basic foundation: hydraulic simulation models with continuous update and calibration.
- In this presentation, you will learn the different HFDT types and levels of implementation, starting from an Excel sheet, until the most sophisticated production surveillance dashboard produced by the major O&G NOCs, operators and services companies. What are the basic foundations, insights, challenges and the latest advancements and where is the trend going in the coming decade.

Ahmad Shammari | SLB



13:00

Emerging Cognitive Computing: Machine learning at the edge for the oil and gas industry

- Traditionally, data is moved from extremely abundant devices & centralised into the cloud for AI. This is expensive, causes privacy risks, increases latency, depends too much on constant device connection.
- OctaiPipe, is a ML Ops platform designed to implement Federated learning on IoT devices. Its innovative approach to training machine learning models at the edge reduces the need to centralise data.
- This massively reduces the cost of data transfer, increases Cyber security, compliance and it lowers legal risks including the GDPR & Cyber Resilience Act.

Ivan Scattergood | OctaiPipe



13:30

Networking Break

14:00

Status of the Enterprise Augmented Reality (AR) Ecosystem and What Can We do to Improve it!

- Status of the global enterprise AR market and key use cases
- The latest AREA research and initiatives
- Harnessing the benefits of enterprise AR, overcoming the business and technical barriers and how to accelerate adoption

Mark Sage | AR for Enterprise Alliance



14:30

Using Data Integration to build digital twins without compromising data privacy

- Federated learning allows organizations to combine data from different sources, improving the accuracy of models. This is especially important for digital twin models, which can be used to predict the performance of real-world assets.
- Organizations can keep control over their own data while still being able to collaborate on machine learning projects, which will help reduce the risk of data breaches and other security issues.
- Cost-effective: Businesses can reduce the costs associated with data storage and processing by combining information from different sources to create more accurate models.

Alexander Alten | Databloom AI



15:00

Importance of Digital Transformation in the Energy Transition

- How can we leverage AI to improve inspection and testing of assets across the O&G value chain... and energy sector as a whole?
- How can we leverage AI/Analytics to improve productivity across different functions?
- How can we leverage AI/Analytics/Digital Twins to ramp up capacity for green energy and reduce waste?
- Case study: Digital Twin of a Lithium Ion battery production line... challenges and opportunities. why is it important for the energy industry?

Carlos Vitale | Baker Hughes



15:30

End of Day 2