ASME DTOG 2024

Digital Horizons: Energizing Transformation in Oil, Gas, and Beyond

Program

CONFERENCE
November 11–13, 2024

Hyatt Regency Houston West
Houston, TX

https://event.asme.org/DTOG

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ASME
SETTING THE STANDARD

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ASME DTOG 2024

GENERAL CONFERENCE INFORMATION

Location: Texas I-IV Ballroom Foyer (Lobby Level)

REGISTRATION HOURS AND LOCATION

The hours are as follows:

Sunday		**Monday**	
November 10:	2:00 pm – 5:00 pm	November 11:	7:30 am – 5:00 pm
Tuesday		**Wednesday**	
November 12:	7:30 am – 5:00 pm	November 13:	7:30 am – 12:45 pm

CONFERENCE MEALS

Morning Refreshments

Daily - November 11 - 13: 7:30 pm - 8:15 am

Lunch		Beverage Breaks	
Monday		**Monday**	
November 11:	12:20 pm - 1:20 pm	November 11:	2:45 pm – 3:10 pm
Tuesday		**Tuesday**	
November 12:	11:30 am - 12:00 pm	November 12:	1:50 pm – 2:15 pm
Wednesday		**Wednesday**	
November 13:	11:45 am - 12:45 pm	November 13:	10:00 am – 10:30 am

CONFERENCE RECEPTION

Monday, November 11
4:30 pm – 5:30 pm
Location: Lakeview (Lobby Level)

All conference registrants are invited to join their colleagues for hors d'oeuvres and refreshments during the Monday evening event. Remember to wear your conference badge! Badges are required for all functions

GENERAL CONFERENCE INFORMATION

TECHNICAL SESSION ROOM EQUIPMENT

Each session room is equipped with a screen, LCD projector, and laptop. Speakers should arrive to their session room 10 minutes prior to the session start time. Bring a copy of your presentation on a USB/thumb-drive to be loaded onto the show computer.

BADGE REQUIRED FOR ADMISSION

All conference attendees must always have an official ASME DTOG 2024 badge to gain admission to technical sessions, plenaries, and other conference events. Without a badge, you will not be granted admission to conference activities.

PHOTOGRAPHS/VIDEO/AUDIO RECORDINGS

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DTOG will utilize the mobile "ASME Conferences" in place of a printed program to enhance the conference experience for attendees, speakers, exhibitors, and sponsors.

You will be able to:

- Connect with Attendees
- View Speaker Profiles and Abstracts
- Search and Save Session Information to your calendar
- Receive important announcements like schedule changes, important events, etc.

ASME DTOG 2024

SCHEDULE AT A GLANCE

	Time (Central)	Session	Room
Sun. Nov 10	2:00 PM - 5:00 PM	Badge Pick Up / Registration	Ballroom Foyer

Monday, November 11	7:30 AM - 5:00 PM	Badge Pick Up / Registration	Ballroom Foyer
	7:30 AM - 8:15 AM	Morning Refreshments	Ballroom Foyer
	8:15 AM - 8:30 AM	Welcome Day 1	Texas Ballroom I - IV
	8:30 AM - 9:10 AM	**Keynote: Steven Lynch**, Chief of Advanced Reactor Policy Branch, U.S. Nuclear Regulatory Commission *Transforming Nuclear Safety: Innovations in Advanced Reactor Regulation*	Texas Ballroom I - IV
	9:20 AM - 10:20 AM	**02-01:** Geothermal Energy Solutions	Paluxy
		01-07: Machine Learning in Oil & Gas, Automation & Standardization	Woodbine
	10:30 AM - 11:10 AM	**Plenary: Joseph B. Powell, PhD.** Professor, Chemical and Biomolecular Engineering, University of Houston	Texas Ballroom I - IV
	11:20 AM- 12:20 PM	**Panel: Impact of AI in Digital Transformation: Navigating the Future of Oil and Gas Industry**	Texas Ballroom I - IV
	12:20 PM - 1:30 PM	Lunch Served	Texas Ballroom I - IV
	1:45 PM- 2:45 PM	**02-02**: Transformative Digital Strategies in Asset Management and Environmental Monitoring	Paluxy
		01-06-03: Real-Time Digital Asset Monitoring and ML/AI Failure Prediction	Woodbine
	2:45 PM - 3:10 PM	Beverage Break	Ballroom Foyer
	3:10 PM- 3:45 PM	**Plenary: Nikki Martin**, President & CEO, EnerGeo Alliance *Energy Is Everywhere, But Not for everyone. Highlighting the Critical Role of Exploration in Making Energy Possible*	Texas Ballroom I - IV
	3:50 PM- 4:30 PM	*Coming Soon....*	Texas Ballroom I - IV
	4:30 PM - 5:30 PM	**Conference Reception**	Lakeview

Tuesday, November 12	7:30 AM - 5:00 PM	Badge Pick Up / Registration	Ballroom Foyer
	7:30 AM - 8:15 AM	Morning Refreshments	Ballroom Foyer
	8:15 AM - 8:30 AM	Welcome Day 2	Texas Ballroom I - IV
	8:30 AM - 9:10 AM	**Plenary: David Reid** Chief Technology Officer & Chief Marketing Officer, NOV / *Navigating Digital Disruption: From Pain to Gain*	Texas Ballroom I - IV
	9:20 AM - 10:20 AM	**01-03:** Data Quality (Preparing data for analytics) in Oil & Gas	Paluxy
		01-02: Data Governance, Cybersecurity and Emerging Trends in Oil & Gas	Permian
		01-06-02: Real-Time Digital Asset Monitoring and ML/AI Failure Prediction	Woodbine
	10:30 AM - 11:30 AM	**Panel: Harnessing Tomorrow: Pioneering Renewable Energy Innovations** / *Supported by SNAME*	Texas Ballroom I - IV
	11:30 AM - 12:00 PM	Lunch Served	Texas Ballroom I - IV
	12:00 PM - 12:40 PM	**A Conversation With:** **C. Fred Higgs III** , Vice Provost for Academic Affairs, Rice University **Céline Gerson**, President & Group Director Americas, Fugro	Texas Ballroom I - IV
	12:50 PM- 1:50 PM	**02-03:** Hydrogen and Wind Energy Solutions	Paluxy
		01-04: Digital Solutions for Gas Emissions	Permian
		01-06-01: Real-Time Digital Asset Monitoring and ML/AI Failure Prediction	Woodbine
	1:50 PM - 2:15 PM	Beverage Break	Ballroom Foyer
	2:15 PM- 2:55 PM	**Plenary: Ezinne Nnebocha**, Global Head, Production Systems Technology Integration – Mature Assets, SLB	Texas Ballroom I - IV
	3:00 PM- 3:40 PM	**Plenary: Patrick Bangert**, VP and Chief of AI, Occidental Petroleum / *Deriving lasting value from AI/ML in O&G*	Texas Ballroom I - IV
	3:50 PM - 5:10 PM	**01-01:** Advancements in Computer Vision and AI-Driven Digital Inspection in the Oil & Gas Industry	Paluxy
		01-05: Digital Solutions for Artificial Lift & Drilling Technologies	Permian
		01-08: Digital Transformation for Operational Efficiency	Woodbine

Wednesday, November 13	7:30 AM - 12:45 PM	Badge Pick Up / Registration	Ballroom Foyer
	7:30 AM - 8:30 AM	Morning Refreshments	Ballroom Foyer
	8:30 AM - 11:45 AM	**Short Course:** Design of Experiments (DOE) and Machine Learning	Woodbine
		Industry Digitalization Standards Workshop	Texas Ballroom I-IV
	11:45 AM- 12:45 PM	Lunch Served	Ballroom Foyer
	12:45 - 3:30 PM	**Short Course:** Design of Experiments (DOE) and Machine Learning, continued	Woodbine
		Industry Digitalization Standards Workshop, continued	Texas Ballroom I-IV

ASME DTOG 2024

DTOG 2024 PLENARY & PANEL SESSIONS

PLENARY SESSION

Monday, November 11
8:30am - 9:10am
Title: Transforming Nuclear Safety: Innovations in Advanced Reactor Regulation

Steven Lynch
Chief of Advanced Reactor Policy Branch
U.S. Nuclear Regulatory Commission

Description: The U.S. Nuclear Regulatory Commission (NRC) is modernizing its regulatory framework to support the future of advanced nuclear reactor manufacturing, construction, and operation.

To be responsive to new technologies, rapid deployment models, and novel manufacturing strategies, the NRC is enhancing its regulations and licensing processes through stakeholder engagement, the development of new parts to its regulations, and preparation of guidance.

These effort aim to enhance predictability of the NRC's licensing reviews while allowing sufficient flexibility within a risk-informed and performance-based framework to foster nuclear innovation.

Biography: Steven Lynch is the Chief of the NRC's Advanced Reactor Policy Branch, which is responsible for developing regulatory frameworks, including guidance and rulemaking efforts, for advanced reactors. Recent efforts have included developing policy papers addressing key issues associated with establishing a technology-inclusive regulatory framework for commercial nuclear plants and micro-reactors. Previously, Mr. Lynch was a senior project manager in the Non-power Production and Utilization Facility Licensing Branch, which is primarily responsible for the licensing of non-power reactors and medical radioisotope facilities. For nearly a decade, Mr. Lynch coordinated the NRC's licensing of facilities intending to produce molybdenum-99. Mr. Lynch's responsibilities included leading the review of the SHINE Medical Technologies construction permit and operating license applications for a first-of-a-kind facility dedicated to medical isotope production.

Mr. Lynch holds a Bachelor of Science in Nuclear Engineering and Music from the Massachusetts Institute of Technology and a Masters of Engineering in Nuclear Engineering from Penn State University.

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PLENARY SESSION

Monday, November 11
10:30am - 11:10am
Title: Energy Transition & Addition: The Role of Digital in Meeting the Dual Challenge

Joseph B. Powell, PhD.
Aspire Shell Endowed Chair and Executive Director for Energy Transition
Professor, Department of Chemical and Biomolecular Engineering
University of Houston

Description: Humankind is faced with the dual challenge of increasing energy supply to provide equitable access for the developing world, while also mitigating fossil CO2 emissions which underpin 80% of current global energy supply.

Replacing and doubling the energy system over the next few decades is an unprecedented engineering and social undertaking.

There is no time for trial and error – systems analysis using digital tools for pathway selection and technology scale-up is imperative, as is carbon tracking and accounting for global products which can no longer be sold on the basis of price alone.

This seminar will examine some of the trade-offs and insights emerging for optimization of the energy transition.

Biography: Joe Powell (Joseph B. Powell, PhD) is Executive Director of the University of Houston Energy Transition Institute, a member of the U.S. National Academy of Engineering, Fellow and former Director of the American Institute of Chemical Engineers. He served as Shell's first Chief Scientist – Chemical Engineering from 2006 – 2020, culminating a 36-year industry career where he led R&D programs in new chemical processes, biofuels, enhanced oil recovery, and advised on global strategy for the energy transition to a net-zero carbon economy.

He is co-inventor on more than 125 patent applications (60 granted), has received AIChE / ACS / R&D Magazine awards for Innovation, Service, and Practice, and is co-author of Sustainable Development in the Process Industries: Cases and Impact (2010). He chaired the U.S. Department of Energy Hydrogen and Fuel Cell Technical Advisory Committee (HTAC), served two terms on the U. S. National Academy Board on Chemical Sciences and Technology and on the editorial board of Annual Review of Chemical and Biological Engineering, and serves as climate advisor for the U.S. Business Council for Sustainable Development.

He served as crosscutting team lead for Mission Innovation Carbon Capture Utilization and Storage (2017), and currently serves on the National Academy Carbon Utilization Infrastructure, Markets, Research, and Development Committee. Dr. Powell obtained a PhD from the U. Wisconsin-Madison (1984); and a BS from the U. Virginia (1978), both in chemical engineering.

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PANEL SESSION

Monday, November 11
11:20 AM - 12:20 PM
Title: Impact of AI in Digital Transformation: Navigating the Future of Oil and Gas Industry

Description: The Oil & Gas sector, historically reliant on physical and mechanical processes, is now at a pivotal juncture, facing both challenges and opportunities presented by digital technologies. This transformation is driven by the need to enhance operational efficiency, reduce environmental impact, and meet the evolving energy demands of a rapidly changing world.

This panel will explore the various facets of digital transformation in the Oil & Gas sector. It will address how emerging technologies like artificial intelligence, machine learning, blockchain, and the Internet of Things (IoT) are revolutionizing exploration, production, and distribution processes. The session will also cover topics like data-driven decision-making, predictive maintenance, remote monitoring, and the integration of alternative energy sources.

The primary purpose of this panel session is to provide industry leaders, stakeholders, and participants with deep insights into how digital transformation can drive growth, efficiency, and sustainability in the Oil & Gas industry. It aims to create a collaborative platform for sharing knowledge, best practices, and innovative strategies/roadmaps for embracing digital technologies.

"Navigating the Future: Digital Transformation in the Oil & Gas Industry" is not just a discussion about technology; it's a roadmap for the industry's evolution in the face of global energy changes.

PANELISTS

Ahsan Yousufzai
Global Head of
Business Development -
Energy Surface
NVIDIA

Prabu Parthasarathy
Global VP
Strategic Projects
Cognite

Baris Guyaguler
Reservoir Simulation
Development and Environment
Chapter Manager
Chevron

MODERATOR

Ali Raza
Chief Digital Officer
ChampionX

ASME DTOG 2024

PLENARY SESSION

Monday, November 11
3:10pm - 3:45pm
Title: Energy Is Everywhere, But Not for Everyone.
Highlighting the Critical Role of Exploration in Making Energy Possible.

Nikki Martin
President & CEO
EnerGeo Alliance

Description: Energy is everywhere, but not everyone has access to it. While it's reassuring to know that energy is quickly and widely available for most of us, 3.5 billion people still live without access to electricity for more than 56 days per year.

Exploration can play a crucial role in addressing this issue by connecting people to energy.

With a growing population and increasing energy demand, exploration will ensure a fair energy evolution by giving global access to affordable, reliable, and sustainable energy.

Biography: Nikki Martin is President & CEO of the EnerGeo Alliance, the global trade organization for the energy geoscience industry. Nikki joined EnerGeo (then IAGC) in 2013 and previously served as the Vice President of Government and Legal Affairs. An attorney and government affairs professional, Nikki has years of experience championing effective global advocacy and strategic cross-industry collaboration for the energy industry.

Before joining EnerGeo, Nikki was the Regulatory and Legal Affairs Manager at the Alaska Oil & Gas Association (AOGA) and worked in the U.S. Capitol and Alaska State Capitol for the U.S. Senate President Pro Tempore, the Alaska State Senate President and Alaska State House Majority Leader.

Nikki sits on the Board of Directors for MicroSeismic, Inc. and the Western Resources Legal Center and earned a Bachelor of Arts in Political Science from the University of South Carolina and a Juris Doctor from the Northwestern School of Law at Lewis & Clark College.

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PLENARY SESSION

Tuesday, November 12
8:30am - 9:10am
Title: Navigating Digital Disruption: From Pain to Gain

David Reid
Chief Technology Officer
&
Chief Marketing Officer
NOV

Description: In a world where change is constant and digital transformation is imperative, businesses often find themselves grappling with complexity, controversy, and compliance issues.

In this keynote speech, we embark on a journey through the career of David Reid, exploring the highs, lows, and breakthroughs he experienced in the digital landscape.

Through David's story, we confront the challenges of human resistance and inertia while uncovering the potential for innovation and value creation.

Ultimately, we discover that amidst the chaos of digital disruption, there lies an opportunity to transform pain into gain, with hope firmly in our own hands.

Biography: David's life and career has focused on the development of people, business, technology and culture. He has been a pioneer and champion of strategic growth in technology, business models, machine design, and industrial digitization.

He is a global public speaker on innovation, change, and leadership, as well as being an advocate in addressing modern slavery.

David currently serves on the University of Houston Energy Advisory Board, the National Ocean Industries Association, and Redeemed, a trauma informed recovery program for sex trafficking survivors. He has served on the IntelliServ JV with Schlumberger and NOV, the IADC and SPE boards in the past.

David has written many published technical papers and magazine articles, with patents in drilling systems and automation. He has founded industry groups in technology, diversity and inclusion, a startup village, and RedM, a pro-bono crowdsourcing organization.

A winning team member of the first Rockets and Rigs hackathon with a NASA patent-based start-up company, Permittivity, also serving as an advisor to their board.

ASME DTOG 2024

PANEL SESSION

Tuesday, November 12
10:30 AM - 11:30 AM
Title: Harnessing Tomorrow: Pioneering Renewable Energy Innovations

Description: Artificial intelligence (AI) has a lot to answer for – from silly questions to ChatGPT, over disinformation and hype, to modeling the physical world.

We will try to unravel what is real and what is not, at this time, from the point of view of an asset-heavy company.

The focus will be on the economics of AI where we consider cost, time and benefit of doing various kinds of AI to achieve value that will last for years.

We will find that there is a lot more than science and software even if they are at the heart of it.

PANELISTS

Juliana Garaizar
Founding Partner
Energy Tech Nexus

Larry Williams
Energy and Natural Resources
Industrial Transformation Unit
IBM Consulting

Philippe Herve
Energy Industry
Bluebeam

MODERATOR

Thalia Kruger
Director Business Development
Neko Energy US

ASME DTOG 2024

PLENARY SESSION

Tuesday, November 12
12:00pm - 12:40pm
Title: A Conversation Exploring the Link Between Industry and Accademia

Description: Join us for this interactive session while we explore the link between Academia and Industry as it relates to digital transformation, preparing future leaders for this challenge, and potentially the skillset needed by new graduating students.

C. Fred Higgs III
Vice Provost for Academic Affairs
Director, Rice Center for Engineering Leadership
John and Ann Doerr Professor of Mechanical Engineering
Rice University

Biography: C. Fred Higgs, III is the John & Ann Doerr Professor of Mechanical Engineering at Rice University, where he is also the Vice Provost for Academic Affairs. He is also a Joint Professor with the Bioengineering Department, and the Faculty Director of the Rice Center for Engineering Leadership (RCEL). He is a member of the ASME Tribology Executive Committee and an Associate Editor for the STLE Tribology Transactions journal. His Particle Flow & Tribology Laboratory (PFTL) conducts computer modeling and experiments. A Fellow of the American Society of Mechanical Engineers (ASME), he is the past recipient of an NSF CAREER 'Young Investigator' award, and the ASME Burt L. Newkirk award (given annually to a single tribology innovator under age 40). Professor Higgs has published over 100 archival papers and generated licensable intellectual properties in concert. He has been the research advisor to over 120 undergraduates, 30 Masters, 22 doctoral, and 7 postdoctoral research students.

Céline Gerson
President & Group Director Americas
Fugro

Biography: With over 25 years of experience in the energy, renewables, nuclear, minerals, infrastructure, and water markets, Céline has a proven record of successfully growing complex technical businesses across various industries. Céline is a member of the Executive Leadership Team of Fugro N.V. and also leads the strategic growth and full P&L management for Fugro Americas, now consisting of a team of 3000+ professionals in over ten countries. Before joining Fugro, Céline held numerous executive roles worldwide, from strategy to manufacturing to commercial and large global P&L business management for Fortune 500 companies. She is particularly passionate about energy diversification, sustainability, mentoring startup companies with cutting-edge technologies, and digital transformation. Céline has a Juris Doctor from the University of Houston and is a Harvard Business School Alumni.

PLENARY SESSION

Tuesday, November 12
2:15 PM- 2:55 PM
Title:

Ezinne Nnebocha
Global Head
Production Systems
Technology Integration –
Mature Assets
SLB

Biography: Ezinne Nnebocha is a dynamic leader with two decades of expertise in the global energy sector spanning Africa, Middle East and North America. As the Global Business Head for SLB Production System Technology Integration, Ezinne brings a wealth of experience in reservoir and production engineering spanning multiple domains including production optimization, intelligent wells, sand management, flow diagnosis, reservoir management and production enhancement in sandstone, carbonate and unconventional reservoirs.

Her innovative mindset and strategic acumen have propelled her through various leadership roles, where she has adeptly directed diverse multidisciplinary teams to implement forward-thinking solutions. She is a highly sought-after speaker, authoring several technical papers. As a subject-matter expert, she continues to shape the industry discourse and drive innovation in field production challenges and optimization.

Ezinne has a Master's degree in Petroleum engineering from Heriot-Watt University, Edinburgh, Scotland, and a Global Executive MBA from INSEAD, Fontainebleau, France, Ezinne combines technical prowess with business acumen to drive impactful results.

ASME DTOG 2024

PLENARY SESSION

Tuesday, November 12
3:00 PM - 3:40 PM
Title: Deriving lasting value from AI/ML in Energy

Patrick Bangert
VP and Chief of AI
Occidental Petroleum

Description: Artificial intelligence (AI) has a lot to answer for – from silly questions to ChatGPT, over disinformation and hype, to modeling the physical world.

We will try to unravel what is real and what is not, at this time, from the point of view of an asset-heavy company.

The focus will be on the economics of AI where we consider cost, time and benefit of doing various kinds of AI to achieve value that will last for years.

We will find that there is a lot more than science and software even if they are at the heart of it.

Biography: Patrick is the Chief of Artificial Intelligence at Occidental Petroleum where he leads a global cross-functional team to improve many physical and human processes by leveraging advanced analytics and AI. His thought leadership on AI has won him several awards and makes him a popular speaker at conferences and events.

Previously, he was senior vice-president for data, analytics, and AI at Searce, which provides professional services for Google Cloud and AWS. He headed the profit center that is responsible for all projects with a data scientific character globally. Before Searce, Patrick was the vice-president for corporate strategy at Samsung SDS where he led the AI Division from 2020 to 2023 bringing AI tools and services into Samsung Cloud for computer vision, natural language processing, and machine learning with a particular focus on medical imaging.

Before joining Samsung, Patrick spent 15 years as CEO at algorithmica technologies, a machine learning software company serving the chemicals and oil and gas industries. Prior to that, he was assistant professor of applied mathematics at Jacobs University in Germany, as well as a researcher at Los Alamos National Laboratory and NASA's Jet Propulsion Laboratory. Patrick obtained his machine learning PhD in mathematics and his Masters in theoretical physics from University College London, and his business degree from INSEAD.

A German native, Patrick grew up in Malaysia and the Philippines, and later lived in the UK, Austria, Nepal and USA. He has done business in many countries and believes that AI must serve humanity beyond mere automation of routine tasks. An avid reader of books, Patrick lives in the San Francisco Bay Area with his wife and two children.

ASME DTOG 2024

DIGITAL & DIGITALIZATION STANDARDS WORKSHOP

Wednesday, November 13
8:30 AM - 3:30 PM

VISION

Integral to transforming our sector, is an:

- Understanding of our current applicable digital standards and digitalization processes today,
- Unified industry vision and roadmap to standardize digital system interfaces and digitalization processes, that can drive standardization, while keeping pace with technology advancements across our energy value chain.

Workshop Objectives:

1. **Create awareness of current efforts in:**
   - Industry digital standards,
   - Digitalization process standards and other
   - Standardization initiatives that can assist the energy sector.
   - Note: This includes, but not limited to the ASME STB-1-2020 Guideline on Big Data/Digital Transformation Workflows and Applications for the Oil and Gas Industry.

2. **Determine high level risks, gaps and value:**
   - For industry
   - Standards Development Organizations (SDO's)

3. **Determine high level unified commitment and actions:**
   - This can include, but not limited to developing a unified roadmap
   - Industry Ecosystem for driving progress:
     - Process for industry shared learnings
     - Measure of progress and standardization value for our industry
     - Note: This will include SDO's for O&G and renewable energy sector stakeholders.

Scope: Includes digital and digitalization process standards for:

- Reservoir, subsurface, wells and production, engineering, project planning and onsite operational processes as well as, equipment manufacturing,
- for the upstream oil & gas and renewable energy sectors.

Audience: Energy leaders, renewable energy leaders, engineering, manufacturers, operations, and digital practitioners looking to standardize implementation and deployment of digital technology and processes to improve the overall safety and efficiency of the sector. Industry groups, trade associations, standards development organization look to inform, give input and member guidance to current digital and digitalization efforts.

ASME DTOG 2024

DIGITAL & DIGITALIZATION STANDARDS WORKSHOP

Wednesday, November 13
8:30 AM - 3:30 PM

WORKSHOP AGENDA

I. Introduction & Safety Moment

II. Audience Instruction & Engagement on Purpose (questions & word map, etc.)

III. Fireside Chat: "Show me the Value?":
Ram Shenoy, CEO The RBR Group

- Value of unified digital standards and digitalization process standards and overall standardization

I. General review benefits and challenges:

- Upstream Industry Digital Standards: Established consensus building process and streamlining of requirements.
- Renewables Industry Digital Standards
- Role of Classification Societies
- Academic role in standardization

IV. Overview of related Industry Standards and Initiatives:

ASME – Fred Constaino & Brian Webster
ISO – Runar Ostebo
ISA – Dave Lafferty
SNAME – Thalia Kruger

Break

API – Adam Hensel
IOGP – Rob Kelly
INCOSE – Jason Baker
PPDM – Greg Foley
PDOS – Monique Roberts
USPI – Hugo Belder

V. Audience Engagement (questions & word map)

State of the Industry

a) Are you working on standards today (company, cross industry, industry SDO, or all)?
b) Where do you see the most value in digital standards and digitalization of standards?

Lunch

Panel Discussion:
ConocoPhillips, Chevron, Noble Drilling, ExxonMobil, other(s)

I. Recap Morning

a) Where are our gaps?
b) Where should we set our priorities?

VII. Risk & Opportunities: If we do not have industry standards?

a) Risk Matrix
b) Input to Risk Matrix

VIII. Round Table Discussion: (Slido Qs, word-map & Collaboration Tool) Identify Risks/Opportunities

a) Value of Standards?
b) Gaps (standards, processes, knowledge system, etc.)?
c) Ecosystem (knowledge share, collaboration, effective implementation, modernizing)?
d) Measurement of Success?
e) Where do we go from here?

IX. Actions Recap & Adjourn

ASME DTOG 2024

SHORT COURSE

Wednesday, November 13
3:30 AM - 3:30 PM

Learning Objectives:

This is an introductory course on Design of Experiments (DOE) and Machine Learning and its integration for undergraduate and graduate students in the major of mechanical engineering. In this course, students are expected to expand upon their fundamental knowledge of DOE, Statistics and its application, and machine learning concepts to develop an understanding of the principal concepts and methods of its application, and the integration of the two concepts.

This course is divided into two (2) parts that provides a background in Design of Experiments with Machine Learning analysis.

- Design of Experiments (DOE)
- Machine Learning (ML)

The emphasis for each subsection is geared directly to engineering applications and data processing. This course is tied to an assigned analysis project which enforces the application of the fundamentals. Practicing engineers and graduate students will find it an indispensable source for interdisciplinary learning of DOE with Machine Learning.

List of Discussion/Lecture Topics

- Introductions
- Fundamental concepts of Design of Experiments
- Fundamental concepts of Machine Learning/A.I.
- Data Exploration, Aggregation, and Visualization
- Basic Statistical Concepts (Statistics, T and F Distributions/ Testing, Single and Two Sample Inference)
- Supervised and Unsupervised Machine Learning/A.I.
- ANOVA
- Simple Linear Regression and Multiple Regression
- Single-Factor Experiments (Designing Engineering Experiments
- Design of Experiments with Several Factors (Full Factorial and Fractional Factorial Experiments, Surface Response Experiments
- Examples of Integration of DOE and Machine Learning/A.I. Concepts

COURSE INSTRUCTORS

Ed Marotta
General Conference Chair
ChampionX

Matt Francheck
Member
University of Houston

Rafik Borji
Technip FMC

TRACKS, TOPICS, AND TECHNICAL PROGRAM

TRACK 1: DIGITAL CHALLENGES IN OIL & GAS INDUSTRY

- Digital Solutions for Onshore – Unconventional Production Optimization
- Real-Time Digital Asset Monitoring and ML/AI Failure Prediction
- Hybrid Modeling in Machine Learning/ Artificial Intelligence for Offshore and Unconventional Wells
- Data Quality (Preparing data for analytics) in Oil & Gas
- Data Governance in Oil & Gas
- Machine Learning Applications for IOTs/ Edge Devices
- Machine Learning/ Artificial Intelligence Standards/Standardization in Oil & Gas
- Machine Learning and Automation in Oil & Gas
- Digital Transformations for Chemical Treatment of Production Wells
- Digital Solutions/ Transformation for Unconventional and Offshore Drilling
- Digital Solutions for Artificial Lift Technologies (Rod, Plunger, PAGL, GAPL, ESPs)
- Digital Solutions for Gas Emissions (Drones, Airplanes, Surface Detectors)
- Generative A.I. (How ChatGPT works) in Oil & Gas
- Computer Vision ML/AI in Oil & Gas
- Case Studies in ML/AI for O&G
- Entrepreneurial Company Showcase – Case Studies
- Cybersecurity in Oil & Gas
- General Topics

TRACK 2: DIGITAL CHALLENGES IN RENEWABLE ENERGY / STORAGE

- Digital Solutions for Offshore Wind Generation
- Real-Time Digital Asset Monitoring and ML/AI Failure Prediction
- Digital Solutions for Energy Storage (Batteries, etc...)
- Digital Solutions for Hydrogen Generation, Hybrid Systems, and Storage
- Government Regulations/Compliance for Digital Solutions in Renewable Energy
- Machine Learning/ Artificial Intelligence Standards/Standardization in Renewables
- US Digital Projects in Renewables
- Case Studies in ML/AI for Renewables
- Data Governance in Renewables
- ML/ AI with Optimization
- Adaptive Models for Data Analytics
- Data Analytics for System-of-Systems (multi-physics systems such as mechanical/fluid system)
- Neural Networks-What it is and how it works and how is it trained
- Classifiers and regularization
- Information Content in Data (Does your data have enough information to make analytics worthwhile)
- Entrepreneurial Company Showcase – Case Studies
- Cybersecurity in Renewables
- General Topics

TECHNICAL SESSIONS

MONDAY, 11/11/2024

9:20 AM to 10:20 AM - Woodbine

Chair: Hamdi Mnasri - Accenture
Chair: Brian Webster - Shell Technology Center Houston
Presentations:

Predicting Recovery Factors in Oil and Gas Reserves Through Advanced Analytics, {149378}
Inty Cerezo - Ryder Scott

Prediction of Fluid and Transport Properties for Flow in Porous Media Using Hybrid Approaches for Subsurface Applications, {148837}
Birol Dindoruk - University of Houston

9:20 AM to 10:20 AM - Paluxy I-II

Chair: Ed Marotta - ChampionX
Chair: Thalia Kruger - Neko Energy US
Presentations:

Integrated Modeling and Optimization for Geothermal Designs, {148791}
Tobias Hoeink - Baker Hughes
William Pettitt - Baker Hughes
Dario Mulazzani - Baker Hughes
Robert Klenner - Baker Hughes
Svein Hovland - Baker Hughes

Machine Learning for a Single Wellbore Geothermal Energy Extraction and Reservoir Engineering, {149434}
Edem Mensah - Louisiana State University
Mayank Tyagi - Louisiana State University

Oilfield Technology and Asset Re-Purposing Feasibility for Geothermal Energy Production, {150415}
Meisong Yan - SPE
Camilo Mejia - SPE
Rebecca Nye - SPE
Alejandro Schiuma - SPE
Taras Popadynets - NGO Geothermal Ukraine
Yuliia Demchuk - Geothermal Ukraine
Svyatoslav Luras - S.Subbotin Institute of Geophysics NAS of Ukraine

TECHNICAL SESSIONS

MONDAY, 11/11/2024

1:45 PM to 2:45 PM - Woodbine

Chair: Sagar Gaur - ChampionX
Chair: Matt Franchek - University of Houston
Presentations:

Executable Digital Twins: Reduced Order First Principle Models Embedded in Operational Hardware for Physics Informed Asset Management, {149052}
Leoluca Scurria - Siemens Digital Industry Software
Shivdeep Gaagat - Siemens Digital Industry Software

Edge Based Kiosk Sets New Standards for Blowout Preventer Testing and Performance, {149050}
Mark Siegmund - Aquila Engineering
Luciano Pinheiro - Aquila Engineering
Jose Meraz - Aquila Engineering
Amine Meziou - Aquila Engineering

Predictive Maintenance: Adaptive Physics-Based Digital Twins, {150250}
Matthew Franchek - University of Houston
Ed Marotta - ChampionX

1:45 PM to 2:45 PM - Paluxy I-II

Chair: Phaneendra Kondapi - CSM
Chair: Jim Kaculi - Chevron
Presentations:

Leveraging Ai in Engineered Systems: Overcoming Challenges and Realizing Value, {149259}
Chengli He - MathWorks

Game-Changing Tactics for Industrial Engineering and Operations, {149356}
Iiro Olavi Esko - Siemens Industry, Inc.

Predicting Hexavalent Chromium Concentrations in Groundwater at the Hanford Site Using Graph Convolutional Network Models, {149883}
Aradhana Sharma - University of Houston Victoria
Aobo Jin - University of Houston Victoria
Hardik Gohel - University of Houston Victoria
Daniel Kaplan - Savannah River National Laboratory
Hilary Emerson - Pacific Northwest National Laboratory

TECHNICAL SESSIONS

TUESDAY, 11/12/2024

9:20 AM to 10:20 AM - Permian

Chair: Ed Marotta - ChampionX
Chair: Mete Mutlu - Shell
Presentations:

Enhancing Cybersecurity in O&g With Ai/ml: Proactive Defense, Iec 62443, Pipeline Security Directive, and Real-World Applications, {149066}
Felipe Costa - Moxa

Developing Pipeline Integrity Management Solutions That Optimize Compliance, {149057}
Marcilio Torres - ROSEN USA
Will Sharman - ROSEN UK

The Power of Data: Emerging Trends and Insights for 2025 and Beyond, {149400}
Andrew Hayden - Precisely Software Inc.
Antonio Cotroneo - Precisely Software

9:20 AM to 10:20 AM - Paluxy I-II

Chair: Nelia Mazula - Siemens
Chair: Greg Kusinski - Chevron
Presentations:

Preparing for Data Driven Decision Making to Enable Operational Excellence, {151057}
Uyiosa Abusomwan - Rice University
Joshua Gray - Rice University

Fueling Insight: The Essential Role of Data Literacy in Oil and Gas, {150353}
Edgar Avalos Gauna - Rice University
Claudia Zettner - Rice University

An Integrated Approach to Digital Transformation in Refineries: A Case Study, {149264}
Siva Kondapi - Jaajitech Digital
Phaneendra Kondapi - Jaajitech Digital

TECHNICAL SESSIONS

TUESDAY, 11/12/2024

9:20 AM to 10:20 AM - Woodbine

Chair: Sagar Gaur - ChampionX
Chair: Rafik Borji - Technip FMC
Presentations:

Leveraging Work-Based Analytics for Predictive Motor Maintenance, {149051}
Omar Khaled - University of Houston
Matthew Franchek - University of Houston
Yingjie Tang - University of Houston

Next Gen Technology for Digital Transformation in Oil & Gas, {149617}
Floyd Baker - Antea Americas
Joel Chapman - Antea Tech

Rbi on the Fly: Dynamic Risk-Based Inspection in the Industrial Internet of Things (Iiot) Era, {149956}
Joel Chapman - Antea USA LLC
Angela Saldivar - Antea USA

12:50 PM to 1:50 PM - Permian

Chair: Thalia Kruger - Neko Energy US
Chair: Thomas Halsey - Rice University
Presentations:

Physics Informed Machine Learning for Emission Measurement, {148619}
Henry Jin - EmMea Inc.
Willow Liu - EmMea Inc.

Solving Your Emissions Conundrum Using Smallsat Intelligence With Tailored Analytics, {149302}
R. Peter Weaver - Orbital Advisors

Data-Driven and AI-Enhanced Hybrid Models for Monitoring Methane Emissions via Event Detection using SOOFIE® Sensors, {151109}
Sagar Gaur - ChampionX
Tze Chin - ChampionX
Johanna Eidmann - ChampionX
Khalid Soofi - ChampionX
Egidio Marotta - ChampionX

TECHNICAL SESSIONS

TUESDAY, 11/12/2024

12:50 PM to 1:50 PM - Woodbine

Chair: Hamdi Mnasri - Accenture
Chair: Iiro Esko - Siemens
Presentations:

Comprehensive Real Time Geomechanical Workflow Using Jewelsuite™ Geomechanics, {148606}
Alexander Igubnov - Baker Hughes

Enhancing Predictive Maintenance With Pca: Estimating Remaining Useful Life of Machinery Components, {148988}
Matthew A. Franchek - University of Houston
Chayma Guemri - University of Houston

The Use of Machine Learning Algorithms for Compressor Leak Monitoring and Detection, {149329}
Madhumitha Ramachandran - ChampionX
Ed Marotta - ChampionX
Tze Horng Chin - ChampionX

12:50 PM to 1:50 PM - Paluxy I-II

Chair: Phaneendra Kondapi - CSM
Chair: Michael Edwards - Partners in Performance
Presentations:

Digital Engineering in the Hydrogen Value Chain, {149056}
Alistair Gill - Element Digital Engineering

Preparing Assets for Hydrogen Integration – Aspects to Consider and the Tools and Methods for Assessment, {148975}
Richard Merrett - Siemens DI SW
Shivdeep Gaagat - Siemens Digital Industries Software

Time-Domain Structural and Flow Simulation for Floating Offshore Wind Turbines Under Turbulent Wind and Wave Conditions, {149008}
Johyun Kyoung - Front Energies, LLC
Jang Kim - Front Energies, LLC
Hyungtae Lee - Front Energies, LLC
Jonghun Lee - Front Energies, LLC
Youjin Yim - Front Energies, LLC

TECHNICAL SESSIONS

TUESDAY, 11/12/2024

3:50 PM to 5:10 PM - Paluxy I-II

Chair: Jim Kaculi - Chevron
Chair: Hamdi Mnasri - Accenture
Presentations:

Computer Vision for Corrosion Integrity Management Programs, {149059}
Benjamin Alpert - GTI Energy
Anusha Vemuri - GTI Energy
Joe Carlstrom - GTI Energy

Hazard Identification Pilot Using Visual Artificial Intelligence & Machine Learning in Permian Basin Construction, {147916}
Kyle Richter - Occidental
Tadeo Huerta - Detect Technologies

Ai-Driven Digital Automation in Non-Destructive Testing and Inspection: Foundations, Applications, and Future Directions, {149363}
Christian Els - sentin GmbH
Dominik Nestler - sentin GmbH

Digitalizing the Inspection Process, {148841}
Javier Garrigós - TECNICAS REUNIDAS

TECHNICAL SESSIONS

TUESDAY, 11/12/2024

3:50 PM to 5:10 PM - Permian

Chair: Sagar Gaur - ChampionX
Chair: Ed Marotta - ChampionX
Presentations:

Extending Run Time & Reducing Failures of Sucker Rod Systems Through Effective Application of Digital Engineering, {149061}
Alistair Gill - Element Digital Engineering
Rob Coyle - GTP Lift Systems

Hybrid Data-Driven Physics-Based Approach for Real-Time On-Bottom Arrival Detection of Plungers in Gas Production Wells, {149830}
Malek Rekik - ChampionX
Ed Marotta - ChampionX
Matthew Franchek - University of Houston

Optimizing Operational Efficiency: A Digital Twin Solution for Realtime Dynamic Watch Circles on Dp Rigs, {149174}
Kenneth Bhalla - Stress Engineering Services, Inc.,
Jorge Capeto - Stress Engineering Services, Inc.,
Sezgin Kucukcoban - Stress Engineering Services, Inc.,

Integrated Data and Digitalization Framework for Safe and Sustainable Offshore Energy Systems, {149433}
Mayank Tyagi - Louisiana State University
Ali Mosleh - University of California, Los Angeles
Faisal Khan - Texas A&M University

3:50 PM to 5:10 PM - Woodbine

Chair: Matt Franchek - University of Houston
Chair: Brian Webster - Shell Technology Center Houston
Presentations:

Enhancing Oil and Gas Maintenance Operations With Retrieval-Augmented Generation, {149844}
Amal Chebbi - University of Houston - ChampionX
Egidio Marotta - ChampionX
Matthew Franchek - University of Houston

Expanding Horizons: The Role of Xr in Accelerating Digital Transformation Across the Energy Sector, {148701}
Mads Troelsgaard - SynergyXR

Molecules to Margins: Uncovering New Levels of Operational and Resource Efficiency With Physics Informed Interconnected Data and Workflows, {149005}
Ravi Aglave - Siemens Digital Industry Software
Shivdeep Gaagat - Siemens Digital Industry Software
Iiro Esko - Siemens Digital Industry Process Automation
John Nixon - Siemens Digital Industry Software

AUTHOR INDEX

Author First Name	Author Last Name	Paper #	Submission Name	Session	Scheduled
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Edgar	Avalos Gauna	150353	Fueling Insight: The Essential Role of Data Literacy in Oil and Gas	01-03: Data Quality (Preparing data for analytics) in Oil & Gas	Tuesday, November 12, 2024
Floyd	Baker	149617	Next Gen Technology for Digital Transformation in Oil & Gas	01-06-02: Real-Time Digital Asset Monitoring and ML/AI Failure Prediction	Tuesday, November 12, 2024
Kenneth	Bhalla	149174	Optimizing Operational Efficiency: A Digital Twin Solution for Realtime Dynamic Watch Circles on Dp Rigs	01-05: Digital Solutions for Artificial Lift & Drilling Technologies	Tuesday, November 12, 2024
Inty	Cerezo	149378	Predicting Recovery Factors in Oil and Gas Reserves Through Advanced Analytics	01-07: Machine Learning in Oil & Gas, Automation & Standardization	Monday, November 11, 2024
Joel	Chapman	149956	Rbi on the Fly: Dynamic Risk-Based Inspection in the Industrial Internet of Things (Iiot) Era	01-06-02: Real-Time Digital Asset Monitoring and ML/AI Failure Prediction	Tuesday, November 12, 2024
Amal	chebbi	149844	Enhancing Oil and Gas Maintenance Operations With Retrieval-Augmented Generation	01-08: Digital Transformation for Operational Efficiency	Tuesday, November 12, 2024
Tze Horng	Chin	149329	The Use of Machine Learning Algorithms for Compressor Leak Monitoring and Detection	01-06-01: Real-Time Digital Asset Monitoring and ML/AI Failure Prediction	Tuesday, November 12, 2024
Birol	Dindoruk	148837	Prediction of Fluid and Transport Properties for Flow in Porous Media Using Hybrid Approaches for Subsurface Applications	01-07: Machine Learning in Oil & Gas, Automation & Standardization	Monday, November 11, 2024
Christian	Els	149363	Ai-Driven Digital Automation in Non-Destructive Testing and Inspection: Foundations, Applications, and Future Directions	01-01: Advancements in Computer Vision and AI-Driven Digital Inspection in the Oil & Gas Industry	Tuesday, November 12, 2024
Iiro	Esko	149356	Game-Changing Tactics for Industrial Engineering and Operations	02-02: : Transformative Digital Strategies in Asset Management and Environmental Monitoring	Monday, November 11, 2024
Shivdeep	Gaagat	149052	Executable Digital Twins: Reduced Order First Principle Models Embedded in Operational Hardware for Physics Informed Asset Management	01-06-03: Real-Time Digital Asset Monitoring and ML/AI Failure Prediction	Monday, November 11, 2024
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Shivdeep	Gaagat	148975	Preparing Assets for Hydrogen Integration – Aspects to Consider and the Tools and Methods for Assessment	02-03: Hydrogen and Wind Energy Solutions	Tuesday, November 12, 2024
Javier	Garrigós	148841	Digitalizing the Inspection Process	01-01: Advancements in Computer Vision and AI-Driven Digital Inspection in the Oil & Gas Industry	Tuesday, November 12, 2024
Sagar	Gaur	151109	Data-Driven and AI-Enhanced Hybrid Models for Monitoring Methane Emissions via Event Detection using SOOFIE® Sensors	01-04: Digital Solutions for Gas Emissions	Tuesday, November 12, 2024
Alistair	Gill	149061	Extending Run Time & Reducing Failures of Sucker Rod Systems Through Effective Application of Digital Engineering	01-05: Digital Solutions for Artificial Lift & Drilling Technologies	Tuesday, November 12, 2024
Alistair	Gill	149056	Digital Engineering in the Hydrogen Value Chain	02-03: Hydrogen and Wind Energy Solutions	Tuesday, November 12, 2024
Andy	Grantham	148701	Expanding Horizons: The Role of Xr in Accelerating Digital Transformation Across the Energy Sector	01-08: Digital Transformation for Operational Efficiency	Tuesday, November 12, 2024
Joshua	Gray	151057	Preparing for Data Driven Decision Making to Enable Operational Excellence	01-03: Data Quality (Preparing data for analytics) in Oil & Gas	Tuesday, November 12, 2024
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Tobias	Hoeink	148791	Integrated Modeling and Optimization for Geothermal Designs	02-01: Geothermal Energy Solutions	Monday, November 11, 2024
Alexander	Igubnov	148606	Comprehensive Real Time Geomechanical Workflow Using Jewelsuite™ Geomechanics	01-06-01: Real-Time Digital Asset Monitoring and ML/AI Failure Prediction	Tuesday, November 12, 2024
OMAR	KHALED	149051	Leveraging Work-Based Analytics for Predictive Motor Maintenance	01-06-02: Real-Time Digital Asset Monitoring and ML/AI Failure Prediction	Tuesday, November 12, 2024
Phaneendra	Kondapi	149264	An Integrated Approach to Digital Transformation in Refineries: A Case Study	01-03: Data Quality (Preparing data for analytics) in Oil & Gas	Tuesday, November 12, 2024
JONGHUN	LEE	149008	Time-Domain Structural and Flow Simulation for Floating Offshore Wind Turbines Under Turbulent Wind and Wave Conditions	02-03: Hydrogen and Wind Energy Solutions	Tuesday, November 12, 2024
Willow	Liu	148619	Physics Informed Machine Learning for Emission Measurement	01-04: Digital Solutions for Gas Emissions	Tuesday, November 12, 2024
Ross	Mahler	149066	Enhancing Cybersecurity in O&g With Ai/ml: Proactive Defense, Iec 62443, Pipeline Security Directive, and Real-World Applications	01-02: Data Governance, Cybersecurity and Emerging Trends in Oil & Gas	Tuesday, November 12, 2024
Ed	Marotta	150250	Predictive Maintenance: Adaptive Physics-Based Digital Twins	01-06-03: Real-Time Digital Asset Monitoring and ML/AI Failure Prediction	Monday, November 11, 2024
Malek	Rekik	149830	Hybrid Data-Driven Physics-Based Approach for Real-Time On-Bottom Arrival Detection of Plungers in Gas Production Wells	01-05: Digital Solutions for Artificial Lift & Drilling Technologies	Tuesday, November 12, 2024
Kyle	Richter	147916	Hazard Identification Pilot Using Visual Artificial Intelligence & Machine Learning in Permian Basin Construction	01-01: Advancements in Computer Vision and AI-Driven Digital Inspection in the Oil & Gas Industry	Tuesday, November 12, 2024
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Mark	Siegmund	149050	Edge Based Kiosk Sets New Standards for Blowout Preventer Testing and Performance	01-06-03: Real-Time Digital Asset Monitoring and ML/AI Failure Prediction	Monday, November 11, 2024
Marcilio	Torres	149057	Developing Pipeline Integrity Management Solutions That Optimize Compliance	01-02: Data Governance, Cybersecurity and Emerging Trends in Oil & Gas	Tuesday, November 12, 2024
Mayank	Tyagi	149433	Integrated Data and Digitalization Framework for Safe and Sustainable Offshore Energy Systems	01-05: Digital Solutions for Artificial Lift & Drilling Technologies	Tuesday, November 12, 2024
Mayank	Tyagi	149434	Machine Learning for a Single Wellbore Geothermal Energy Extraction and Reservoir Engineering	02-01: Geothermal Energy Solutions	Monday, November 11, 2024
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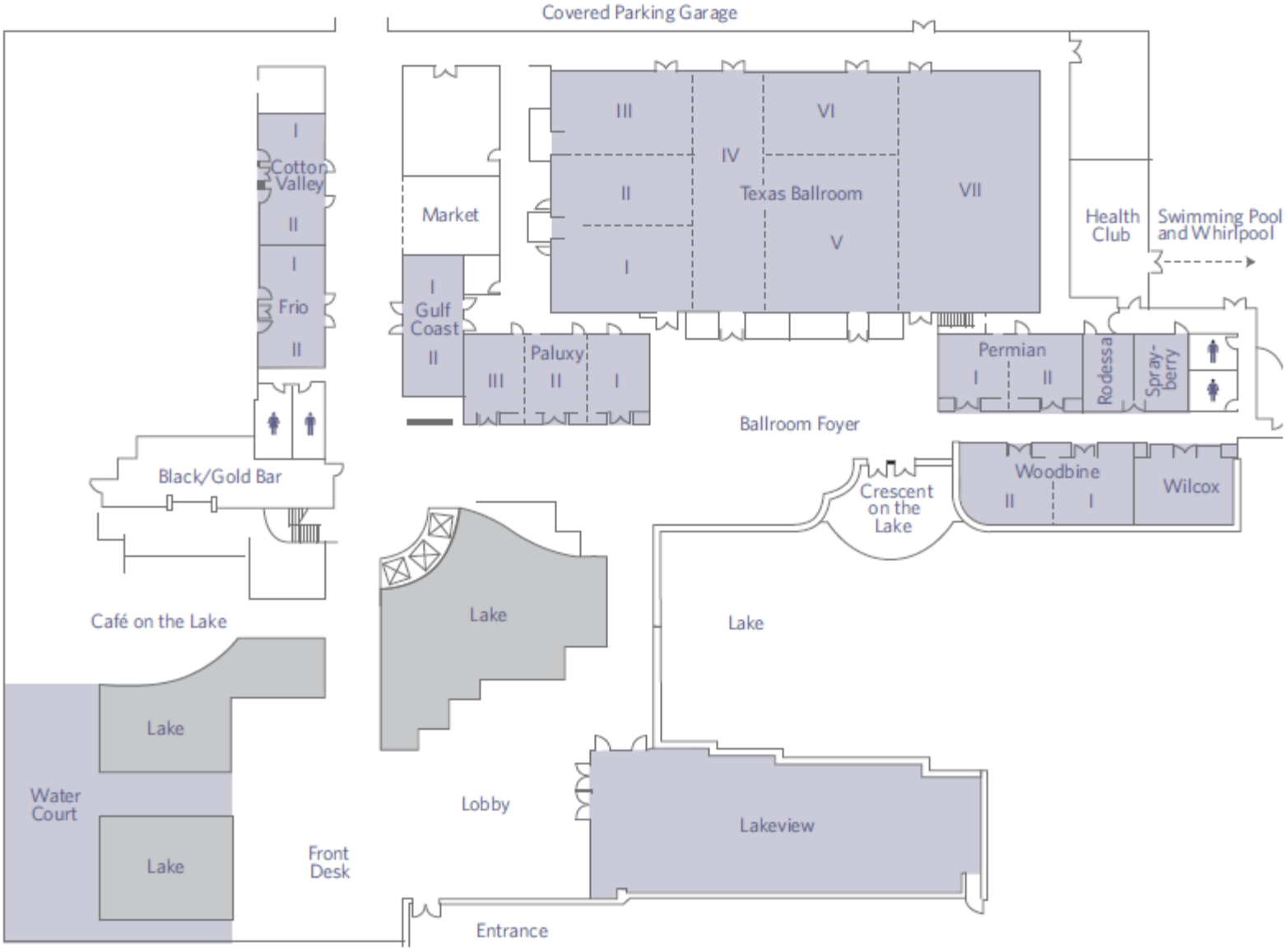
Alexandra	Williams	149400	The Power of Data: Emerging Trends and Insights for 2025 and Beyond	01-02: Data Governance, Cybersecurity and Emerging Trends in Oil & Gas	Tuesday, November 12, 2024
Meisong	Yan	150415	Oilfield Technology and Asset Re-Purposing Feasibility for Geothermal Energy Production	02-01: Geothermal Energy Solutions	Monday, November 11, 2024

HOTEL FLOOR PLAN

Hyatt Regency Houston West | 13210 Katy Fwy, Houston, TX 77079



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