



SPE Workshop: Drilling Automation - Breaking Boundaries

15-16 March 2023 | Kuala Lumpur, Malaysia



**Sign up before 10 February 2023
for Early Bird Discount!**

Who Should Attend

Professionals involved in:

- Academia
- Artificial Intelligence
- Automation Technology
- Data Science
- Drilling and Completion
- Drilling Construction
- Engineering Analytics
- HSE and Risk Management
- Machine Learning
- Process Optimisation
- Rig Construction
- Real-Time Monitoring
- Remote Operations
- Service Providers
- Technological Advancement
- Wells Engineering and Services

Session Highlights

Future of Drilling Automation	Increasing Efficiency and Performance via Automation	Drilling Risk Protection and Reducing Human Error through Automation
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Rig Automation | End-to-End Automation Integration (3rd party integration)

AI-Powered Data-Driven Automation Solutions - What Do We Intend To Do With The Data, And How May Machine Learning Help?

Technical Programme Committee

CO-CHAIR

Khairul Amir Khazali-Rosli Head Wells Development PETRONAS Carigali Sdn. Bhd.	Thanawee Kreethaporn Vice President Well Engineering Department PTT Exploration and Production Public Company Limited
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COMMITTEE MEMBERS

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Nahum Ronquillo Product Line Manager – Control Systems & Automations NOV Rig Technologies	M Syazwan A Murad Drilling Manager (Wells Development, Peninsular) PETRONAS Carigali Sdn. Bhd.	Mak Oong Yan Head of Drilling Velesto Drilling Sdn. Bhd.

WORKSHOP ADVISOR

Ts. Shahril Ridzaudin Mohd Mokhtar
General Manager, Well System and Engineering Solution
PETRONAS Carigali Sdn. Bhd.
Member, SPE Asia Pacific Regional Technical Advisory Committee

In the ever-changing landscape of Digital, Data Analytics, and Automation (DDAA) that the world has now come to embrace, disruptive technologies have placed an ultimatum upon corporations; assimilate or be left behind. More than ever in history, the sheer pace, and impact of the change in the energy industry are at their peak with DDAA underpinning a lot of these changes, altering the course of the needs of the industry. Apropos to industry's quest towards sustainability and delivering business growth through reducing carbon footprint, DDAA is an imperative tool in driving the progressive stratagem; while persistently strive for a safe, efficient, and low-cost operation. As we continue to face conventional industry challenges such as the ongoing shale revolution, gradual increase of non-renewables energy, radical fluctuations in oil prices, and increasing efficiency of energy usage, it propels the industry to embark on this DDAA transformational journey to further optimise the existing processes. With the pertinence of HSSE being upheld by industry players, the need to reduce offshore facility incidents has become an utmost priority, with almost 80% of all incidents pointing towards human error as the primary root cause.

Although the emerging automation landscape serves as the best solution to these impediments, widespread adoption has still been arguably lackadaisical, with no clear indication of how the sector's future will fare. This workshop provides an exclusive platform for key executives, practitioners, decision-makers, and technology pioneers to initiate collaborations, congregate, and engage in positive discourse to map out the industry's future. With the highly informed and experienced speakers onboard, this workshop intends to not only open up new paradigms and shed fresh perspectives on this emerging sector, but to tackle and address the tough-hitting questions plaguing and impeding its adaptation and growth. The workshop's raison d'être serves to surface the pain points and ascertain the apposite focus areas necessary to pave the industry's way forward and embark on the new drilling reality.

GROUP REGISTRATION AVAILABLE
Contact us at apweb@spe.org to arrange your group.

go.spe.org/23WM15W

Workshop Objectives

This workshop aims to gather industry stakeholders, including regional and global experts, to discuss and share knowledge to gauge a thorough comprehension of automation from differing paradigms. The end state that we aspire to is to maximise value creation via enhancing best practices for a prudent, safe, and more efficient execution of the technology, driving towards sustainability agenda.

Key takeaways from the workshop include bespoke and expert-led technical topics, knowledge sharing and technical discussion sessions, sharing of emerging technologies/case studies, bridging the expert scarcity gap through peer-to-peer networking opportunities, and potential collaborative efforts.



Bespoke and industry-curated technical content



Knowledge sharing and discussions with subject matter experts



Networking opportunities with like-minded peers



ATTENTION NON MEMBERS:
Join our worldwide membership!

Non-member full workshop attendees can join SPE at no additional cost. Look for your exclusive offer by email after the event.

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- Enhance your leadership skills
- Contribute to programmes and activities with your knowledge and experience
- Meet and network with members near you and around the globe
- Demonstrate thought leadership in your area of expertise and interest at both local and international levels

www.spe.org/volunteer



Contact us at volunteer@spe.org for more information

Technical Programme Preview

WEDNESDAY, 15 MARCH 2023

08:15 – 08:50 Arrival of Delegates and Registration

08:50 – 09:00 Safety Announcement

09:00 – 10:00 **Welcome Remarks and Keynote Address**

10:00 – 10:30 **Group Photo / Coffee and Tea Break**

10:30 – 12:30 **Panel Session: Future of Drilling Automation**

Session Moderator: Khairul Amir Khazali-Rosli, **PETRONAS Carigali Sdn. Bhd.**

The cynosure of this session centralises on the gradual metamorphosis of the industry towards an automated future, highlighting the need to progressively keep up with the demands of the Industry 4.0 revolution, of which automation forms a crucial pillar. In spite of the world's energy appetite continuing to proliferate at an astonishing pace, more emphasis is being placed on the efficiency of the modus operandi, prompting all sectors of the industry to develop and employ innovative solutions to address the technically inviolated and abstruse nature of modern-day drilling operations. Drilling automation has undoubtedly been tipped to revamp the status quo of the industry, creating the perfect amalgamation digitally to its rapidly developing drilling technologies counterpart, however, it is still at the tail end of its upstart currently, with its future of widespread adoption still obscure.

In view of its relative infancy, this session will explore the nature of this new landscape and promote discourse to surface and cognise the key factors and appurtenant focus areas necessary to propagate its successful implementation and pave the industry's way forward in embarking on the new-fangled drilling reality. The panel will introduce and address some of the following topics:

- Drilling systems automation: Business models making the automation case
- What barriers are impeding progress? What drivers accelerate uptake?
- Rig and service provider adaptability to automation initiatives
- What are the cooperative and competitive domains for drilling systems automation?

Participants will gain an understanding of the challenges impeding the rise of automation and direct insight from subject matter experts from operators, rig contractors, and service companies on their journeys in adopting automation within their organisations, to better help navigate their drilling automation journey.

12:30 – 13:30 **Networking Luncheon**

POSTER SOLICITATION & INFORMATION

All participants are encouraged to prepare a poster for the Workshop. Presentations on both research and field experience are welcomed. Posters, including unconfirmed/partial results, are to be presented at an assigned time and are open for discussion. Posters will be on display for the entire Workshop period.

When preparing your poster:

- Avoid commercialism. No mention of trademarks/product name
- Poster size should be approximately 0.8m x 1.2m (W x H) or size A0 in portrait layout
- Identify topic by title, affiliation, address, and phone number
- Include a brief abstract that summarises the technology to be addressed
- Make the display as self-explanatory as possible
- Place the information in sequence: beginning with the main idea or problem, method used, results, etc. (Draw a plan keeping the size and number of illustrations in mind)
- Keep illustrations simple by using charts, graphs, drawings, and pictures to create interest and visually explain a point
- Use contrasting colours
- Use large print for narrative materials. (We suggest a minimum of 24 points or 3" high letters for the title)

Note that the Workshop Programme Committee will review all poster abstracts/materials prior to display, and reserves the right to refuse permission to display any poster considered to be commercial in nature.

If you are interested to participate, please email your proposed topic with a short abstract (between 200-300 words) to Farah-Aalia Abdul Jalil at faalia@spe.org by Friday, 10 February 2023.

13:30 – 15:30

Session 2: Increasing Efficiency and Performance via Automation

Session Managers: Nurfitriah Mat Noh, **SLB**;
Rohaizat B Ghazali, **PETRONAS Carigali Sdn. Bhd.**

As the world calls for more sustainable and affordable energy, the drive for higher efficiency and performance level is more imperative than ever. While drilling technology continues to contribute to the improvement needed, automation is the next how-to. This session will discuss automation methodologies and key technologies that enable the step change in efficiency and performance that were not attainable before. Case studies will demonstrate the result and value delivered as well as implementation and adoption challenges.

Related topics include:

- From automation to autonomy
- Drilling activities sequencing
- Remote operations
- Surface and downhole automation technologies
- Partnership and collaboration

Participants will gain knowledge and insights into the next step of their drilling automation journey.

15:30 – 15:45

Coffee and Tea Break

15:45 – 17:45

Session 3: Drilling Risk Protection and Reducing Human Error Through Automation

Session Managers: Mohd Ridzuan Abd Mokhti, **PETRONAS Carigali Sdn. Bhd.**; Mohd Ilhan Akbar, **Halliburton**

Drilling automation has become the theme of our current and future drilling environment. Different operators have diverse risk appetites when come to embarking on this emerging journey, be it due to cost-conscious, system reliability, or the value proposition of adopting the automation technology. Nowadays, drilling campaigns are encountering more complex challenges for well delivery from depleted tight margin pore pressure versus fracture gradient, generation gaps of field population due to multiple cycles of a downturn during short time span and tighter well economics for a project to sanction. All these factors possess safety risks in drilling operations while at the same time putting pressure to deliver well cost reduction in a drilling campaign. When we depend excessively in human intervention, the intervention might not be on time which escalates danger to the safety and well-being of the drilling operations. With machines today becoming more reliable and power computing becoming accessible and economical, technology has evolved from machine learning to artificial intelligence and to a certain extent, cognitive computing. However, in our industry, technological adoption is lagging behind and we are highly dependent on human intervention, which in many circumstances contributed to human errors that led to major accidents.

This session will highlight and discuss the capabilities and latest technologies on the importance of understanding how changes in technology shape human cognition and how to identify critical operations where human errors could lead to accidents or potential accidents. With the implementation of automation, users will be able to reduce the risks and be more consistent and efficient in drilling operations.

Discussion topics will include:

- The concept and explanation of automation in Drilling Risk Protection and Human Error minimisation through automation
- How does big data able to assist in modelling and analysing drilling hazards
- How current technologies can deliver consistent, optimal and quality in the current drilling conditions
- How are technological solution able to address hole instability risk during operation

17:45 – 18:45

Poster Session

18:45 onwards

Networking Dinner

SPONSORSHIP SUPPORT INFORMATION

Sponsorship support of the event helps offset the cost of producing workshops and allows SPE to keep the attendance price within reach of operation-level individuals, those who benefit most from these technical workshops.

Supporters benefit both directly and indirectly by having their names associated with a specific workshop. While SPE prohibits any type of commercialism within the workshop room itself, the Society recognises that supporting companies offer valuable information to attendees outside the technical sessions.

SPONSORSHIP CATEGORIES

Sponsorship categories are offered on a first-come basis. Please contact SPE to enquire and verify the availability of categories. Existing supporters have the opportunity to renew the same level of support for annual workshops.

SPONSORSHIP BENEFITS

In addition to onsite recognition, SPE will recognise sponsors on the SPE website and in all printed materials for the workshop. Based on the category selected, supporting companies also receive logo visibility on promotional workshop items.

FOR MORE INFORMATION

For a detailed list of available sponsorship opportunities, including benefits and pricing, contact **Mohanraj Selvarajoo** at mselvarajoo@spe.org.

GENERAL INFORMATION**DOCUMENTATION**

- Proceedings will not be published; therefore, formal papers and handouts are not expected from speakers.
- Work-in-progress, new ideas, and interesting projects are sought.
- Note-taking by attendees is encouraged. However, to ensure free and open discussions, no formal records will be kept.

WORKSHOP DELIVERABLES

- The committee will prepare a full report containing highlights of the Workshop and the report will be circulated to all attendees.
- Powerpoint presentations will be posted online and provided to attendees after the Workshop. Provision of the materials by Discussion Leaders will signify their permission for SPE to do so.

COMMERCIALISM

In keeping with the Workshop objectives and the SPE mission, excessive commercialism in posters or presentations is not permitted. Company logos must be limited to the title slide and used only to indicate the affiliation of the presenter.

ATTENDANCE CERTIFICATE

All attendees will receive a Workshop attendance certificate. This certificate will be provided in exchange for a complete Attendee Survey Form.

CONTINUING EDUCATION UNITS

This Workshop qualifies for SPE Continuing Education Units (CEU) at the rate of 0.1 CEU per hour of the Workshop.

TRAVEL/VISA

Attendees are advised to book their airline tickets early. All travellers must be in possession of passports valid for at least six (6) months with proof of onward passage. Contact your local travel agent for information on visa requirements.

DRESS CODE

Business casual clothing is recommended. The Workshop atmosphere is informal.

REGISTRATION FEE

- Registration fee ONLY includes all workshop sessions, coffee breaks and luncheons for the registrant. Accommodation is NOT included.
- SPE will provide details of recommended hotels upon receipt of your registration.
- Taxes: Registration Fees are made free and clear of, and without any deduction or withholding for and on account of, any taxes, duties or other deductions. Any such deduction or withholding, if required by the laws of any country are the sole responsibility of the Participant.

REGISTRATION POLICY

- Registration fee MUST be paid in advance for attending the Workshop.
- Full fixed fee is charged regardless of the length of time the registrant attends the Workshop, and cannot be prorated or reduced for anyone.

THURSDAY, 16 MARCH 2023

09:00 – 11:00

Session 4: Rig Automation

Session Manager: Saiful Haq, **PETRONAS Carigali Sdn. Bhd.**;
Mak Oong Yan, **Velesto Drilling Sdn. Bhd.**

Technological advancement in the oil and gas industry continues to evolve along with digitalisation and automation. The rig builder and rig equipment manufacturers are keeping up the pace with new technologies to continue to develop better products as the world craves for more autonomy.

This session will focus on rig automation, and enhancing, and improving control over rig equipment. Safe operations have always been a top priority for every campaign – increased automation will help keep people from harm's way by reducing human intervention and driving for a safer operation. With more automation introduced, the industry will strive for more consistent operations and predictable outcomes which will improve performance and increase efficiency.

This session will cover rig equipment automation, and how automation improve operations performance.

11:00 – 11:15

Coffee and Tea Break

11:15 – 13:15

Session 5: End-to-End Automation Integration (3rd party integration)

Session Managers: Nahum Ronquillo, **NOV Rig Technologies**;
Anders K. Nesheim, **Sekal**

As the adoption of automation in drilling rigs continues to increase, the expectations for automated capabilities are also growing. To achieve higher levels of automation, efficient integration among multiple vendors is necessary. For example, a single automation project may require: a drilling automation platform and automated pipe handling equipment provided by one vendor; sensors for red zone management provided by a second vendor; automated functionality for ROP optimisation, downhole mitigations, and directional drilling provided by a third vendor; automated functionality for friction tests, reaming, and surge and swab tripping protection provided by a fourth vendor; and a fifth vendor for cloud and data services including performance analytics. With several vendors, the driller needs to be sure which vendor configuration is in control, avoiding different settings in different systems.

Discussion topics will include:

- Roles and responsibilities in the end-to-end third-party integration in automation projects
- Case studies of automation projects that involved the integration of multiple third parties
- Simulator integration testing: Examples, advantages, disadvantages, and opportunities
- Examples/Lessons learnt from other industries that have successfully standardised complex multi-party integrations
- Technical requirements to achieve efficient integration, which may include industry-standard protocols, open architecture, and cybersecurity

13:15 – 14:15

Networking Luncheon

14:15 – 16:15

Session 6: AI-Powered Data-Driven Automation Solutions - What Do We Intend To Do With The Data, and How May Machine Learning Help?

Session Managers: Khaw Aik Loong, **Baker Hughes**; Tengku Ezharuddin Tengku Bidin, **Faazmiar Technology Sdn. Bhd.**

The term “Big Data,” which may also be referred to as “Big Data Analytics” or “Business Analytics,” is typically linked with the oil and gas industry. It does not matter how big the operator is; the amount of data that is collected throughout their operation is staggering. The large amount of data obtained all throughout “a project life cycle” is comprised of a variety of data formats, ranging from unstructured data (data that is not organised and contains a lot of text) to multi-structured data (data that includes various data formats that are the result of interaction between people and machines).

On the other side, “Data-Driven” is defined as data that is properly integrated and of high quality, as well as algorithmic automation, which may include artificial intelligence (AI). In the oil and gas industry, having data of a high quality is necessary. Even so, we can't rule out the possibility of “bad” data sets having an effect, and that is not even mentioning the amount of data processing that has to be done in order to provide a high-value interpretation of the analysis. Dealing with the different kinds of data is a laborious process.

When it comes to drilling, we have access to a wide variety of data sources, some examples of which include downhole formation evaluation data, drilling dynamics, drilling control systems, and various frequencies data recording settings. It would be to the operations' great advantage to make use of past data sets and overlay them with data on drilling done in real-time.

According to research, machine learning can be used to address a variety of pain points. However, a common foundation agreed upon by many is necessary to achieve a successful journey in embarking on the “Autonomous Drilling.” This foundation includes strengthening security against cyber threats, introducing a centralised operation centre that monitors and optimises operations, and introducing initiatives to optimise drilling operations.

This session, centred on “Drilling Automation,” will explore and share ways in which we could further accelerate the adoption of drilling automation by utilising data-driven solutions.

Among the topics that will be addressed are:

- Why is cyber security so crucial?
- You cannot achieve optimal performance with suboptimal equipment. How could automating maintenance help to increase operational efficiency?
- Data are the new currency: How do you handle Big Data?
- National repository: How would organisational reorganisation benefit the operators?
- What is the status of the implementation of data-driven solutions?
- For what purpose are we using the data?
- What has been done thus far to promote data-driven drilling optimisation solutions?
- What can the future hold?

16:15 – 16:30

Coffee Break

16:30 – 17:00

Workshop Summary and Closing Remarks

REGISTRATION FORM

SPE WORKSHOP:
Drilling Automations – Breaking Boundaries
 15 – 16 March 2023 | Kuala Lumpur, Malaysia



By registering for this event, participants consent to allow SPE to store and process the information submitted below and to provide participants with information about this event in accordance to [SPE Privacy Policy](#); accept the Registration Terms & Conditions and Workshop Guidelines; and agree to be bound by participants. Participants can unsubscribe at any time by sending your request to spekl@spe.org.

Participants have chosen to participate in this event understand that SPE will implement, and participants agree to abide by all, preventative measures to minimise the spread of COVID-19. Notwithstanding SPE's measures and participants' compliance, participants acknowledge that SPE cannot guarantee that participants will not contract COVID-19. In exchange for allowing participants' participation in this event, participants agree to release SPE, its employees, directors, officers and agents, from any claim or damages arising from or relating to COVID-19 resulting from the participation in this event.

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First Name (Forename)			Last Name (Surname)		
Job Title					
Company Name					
Mailing Address					
City			State/Province		
Postal Code			Country		
Office Phone		Office Fax		Company URL	
Direct Line			Mobile Phone		
Email Address					
Do you wish to be considered a Discussion Leader (10-15 minutes presentation)? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, please indicate the subject/topic on which you would like to present:					
Please state your Technical Discipline (Select one ONLY): <input type="checkbox"/> Completions <input type="checkbox"/> Data Science and Engineering Analytics <input type="checkbox"/> Drilling <input type="checkbox"/> Health, Safety, Environment, and Sustainability <input type="checkbox"/> Management <input type="checkbox"/> Production and Operations <input type="checkbox"/> Projects, Facilities and Construction <input type="checkbox"/> Reservoir					
Please state your expectation for the workshop, so that we can tailor a portion for the workshop to answer attendees' concerns.					
Send me the latest news, events, and product information as it becomes available. <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, your information will be used in accordance with SPE Privacy Policy.					

REGISTRATION CATEGORY						
Description		Fee Per Person			Tick (✓)	Amount (USD)
		Super Early Bird by 20 January 2023	Early Bird by 10 February 2023	Standard after 10 February 2023		
Workshop	Member	USD 1,200	USD 1,300	USD 1,400		
	Non-Member	USD 1,400	USD 1,500	USD 1,600		
Group Registration - Register 5 save 25%, Register 10 save 30% (Refer to Group Registration Form or contact spekl@spe.org for more information)						
TOTAL AMOUNT (USD)						

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2.	Taxes Fees are made free and clear of, and without any deduction or withholding for and on account of, any taxes, duties or other deductions. Any such deduction or withholding, if required by the laws of any country are the sole responsibility of the participant.
3.	Cancellation Policy a. A processing fee of USD 150.00 will be charged for cancellation received before 10 February 2023. b. No refund for cancellation received after 10 February 2023. c. Participants who failed to attend will not be eligible for a refund. d. Cancellation must be notified in writing to SPE. Email your cancellation request to spekl@spe.org .
4.	Health and Safety a. Participants agree to adhere to policy and procedures regarding COVID-19 to ensure the health and safety of all participants. These policies may include, but are not limited to, wearing a mask while on property, maintaining social distancing, and refraining from physical contact with other participants on-site. All rules and guidelines will be according to the local government's regulations in which the event takes place and the event venue facility. b. Participants who do not comply with the rules and guidelines will not be permitted to enter or remain in the event venue.
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6.	Disclaimer a. SPE reserves the right to change the speaker(s), date(s) and/or to cancel the event should circumstance beyond its control arises. b. SPE will not be liable to participants for any damages, costs, losses or expenses of any kind incurred or suffered by participants as a result of or in relation to SPE modifying, postponing or cancelling the event or any part of the event.

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