The Great Drilling Automation Debate

Drilling automation is no longer a blue-sky concept alive only on a company’s technology plan. However, despite an ever increasing list of implementation initiatives, widespread adoption has been slow. With only the best crews on the job today, the argument that these folks can beat the machine has become more prevalent. Is this another example of short sightedness in our industry or are we on the cusp of widespread adoption of automation as activity ramps up and some crews are gone forever? Why has automation been unable to beat the best crews?

In a break with tradition, this workshop will provide opportunities to hear both sides of these and other discussions, some in true debate style. Through sessions geared at addressing tough discussions led by informed and experienced speakers, the workshop will likely provide new perspectives on the way forward as we enter the next phase of challenges posed by the new drilling reality.

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The Great Drilling Automation Debate

TECHNICAL AGENDA
WEDNESDAY, 19 APRIL
All technical sessions are located in the Greenway Ballroom.

0700-0800 | Registration Check-In
Greenway Ballroom Foyer
Continental Breakfast
Century Ballroom

0800-0830 | Keynote Address: Will Automation Be a Competitive Differentiator?
Jonathan Crane, VP Wells Technology Deployment & Tech. Services, Shell

0830-1000 | Session 1: The DSATS Trajectory – Onward, Upward, or Course Correction Required?
Session Chairs: Moray Laing, SAS
Michael Behounek, Apache
John Macpherson, Baker Hughes
In this first session, the past, present, and future chairpersons of Drilling Systems Automation Technical Section (DSATS) will set the stage for the great debate by presenting the work done by DSATS over the past 10 years in support of automating of the drilling process. The session will act as an open forum to workshop attendees to both critique and propose future efforts for DSATS in the coming years. If you feel that DSATS could do more on certain issues, this is your chance to make your point and help craft future efforts.

- Presentation 1: The DSATS Charter
  Moray Laing, SAS

- Presentation 2: Rig Automation, Machines and Control Systems
  Michael Behounek, Apache Corporation

- Presentation 3: Connectivity, Silos and Data
  John Macpherson, Baker Hughes

1000-1030 | Coffee Break
Century Ballroom

Session Chairs: Arthur Hale, Aramco Services
Tony Beebe, Northern Offshore
Although the industry has been on a downturn, new technology associated with sensors, automation, equipment design and data-driven real-time solutions are potentially revolutionizing the way we approach drilling operations today and tomorrow.

- Presentation 2: “Closed Loop Downhole Automation”
  Combined with “Surface Process Control”, the Full Automation Package in Action
  Tony Pink, VP Dynamic Drilling Solutions, NOV

There is a significant cost not only to the development of this technology but to the testing and execution of these new and potentially standardizing approaches to drilling. A debate exists as to whether such improvements are necessary are really adding to the bottom line of rig operations. In this session a panel will debate the advantages, the necessity and the economics of this new technology. The intent is for a robust debate around the pros and cons of these new operational strategies. Audience participation and a lively discussion is anticipated.

- Presentation 1: Case Study, SCADAdrill – Shell’s Drilling Automation Project
  David Blacklaw, Global Wells Automation, Shell

- Presentation 2: The Path Forward, Get ‘er Greg Ward, President/CEO, RigMinder

- Presentation 3: Performance Drilling – Objectives and Challenges to Automation
  Graham Mensa-Wilmot, Drilling Engineer Advisor, Chevron

1200-1330 | Lunch
Century Ballroom

Keynote: Maximizing the Value Proposition of Rigs through Innovation
Subodh Saxena, Vice President, Western Hemisphere, Nabors, Inc.

1330-1500 | Session 3: Drilling Systems Automation: Business Models Making the Automation Case
Session Chairs: Arthur Hale, Aramco Services
Tony Beebe, Northern Offshore
As stated in Session 2, sensors, automation, equipment design and data-driven solutions are revolutionizing the way we approach drilling operations today and tomorrow. This session will explore cases where an automation solution has integrated services and improved productivity, where systems automation has driven construction efficiency, and where automated rigs differentiate drilling contractors from the crowd. The audience will hear from operators and service companies that have extracted real value out from these approaches.

- Presentation 1: Who Am I? : Am I a Blocker to Change or an Ambassador?
  Evelyn MacLean-Quick, VP/Head of Global Supply Chain, Hess

- Presentation 2: "Closed Loop Downhole Automation"
  Combined with "Surface Process Control", the Full Automation Package in Action
  Tony Pink, VP Dynamic Drilling Solutions, NOV
The Great Drilling Automation Debate
19–20 April 2017
DoubleTree by Hilton Hotel Houston - Greenway Plaza | Houston, Texas, USA

Presentation 3: The Zipper Drilling System – Circulatory Hoist Enables High Efficiency, Automated Drilling Operations
Allan Richardson, Chief Technology Officer and Peter Root, R&D Manager, Warrior Manufacturing

1500-1530 | Coffee Break
Century Ballroom

1530-1700 | Session 4: What Barriers are Impeding Progress? What Drivers Accelerate Uptake?
Session Chairs: Blaine Dow, Schlumberger
J.G. Samuel, ConocoPhillips
A small group of industry experts have been active in drilling automation for a while. A degree of success can be claimed, particularly leading up to the beginning of the oil price collapse in 2014. Looking at historic oil price cycles, this latest lull has similarities to the 1980’s, a technology renaissance period. Then, efficiency-focussed methods rose to the forefront to keep the drilling business alive. Is drilling automation leading a new renaissance? Three experts representing academia, operators, drilling contractors and service providers discuss removing barriers and delivering breakthroughs to make this happen.

Presentation 1: Deployment Platform
Kevin Kennett, VP Marketing, Schlumberger

Presentation 2: Human Factors
John Thorogood, Drilling Engineering Advisor, Drilling Global Consultant LLP

Presentation 3: R&D Space
Eric Van Oort, Professor, University of Texas

THURSDAY, 20 APRIL 2017
0700-0800 | Continental Breakfast
Century Ballroom

0800-0930 | Session 5: What are the Cooperative and Competitive Domains for Drilling Systems Automation?
Session Chairs: Andreas Sadlier, Halliburton
John de Wardt, DE WARDT AND CO.
The growth of industrial automation has shown us that interoperability is critical to the growth of Drilling Systems Automation (DSA). The drilling industry thrives on competition and development of proprietary innovative solutions. Where is the right balance between collaboration and competition? Data, information and control connectivity is a core to interoperability. This session will develop from big data lessons, through DSA infrastructure experiences to a discussion on standards, commercial and proprietary solutions.

Presentation 1: Lessons on Collaboration and Competition in Big Data and Automation from Outside Drilling
Satyam Priyadarshy, Chief Data Scientist, Halliburton

Presentation 2: Experiences with Establishing DSA Infrastructure on a Drilling Rig – Why We Need Standards
Hans-Uwe Brackel, Systems Architect, Baker Hughes

Presentation 3: Standards in Action, a Drilling Rig Example – The Good, the Bad, the Ugly
Martin Cavanaugh, Cavanaugh Consulting Ltd.

0930-1000 | Coffee Break
Century Ballroom

1000-1130 | Session 6: Data-driven Automation – Are the Risks Real, Perceived or Just Misunderstood?
Session Chairs: Mark Anderson, Shell
Bill Chmela, Motive Drilling Technologies
Data-driven control solutions are all the craze these days, with “cognitive expert advisor” and “machine learning” hitting the top of 2016 Gartner’s “Hype Cycle for Emerging Technologies” report. What is their place in drilling automation? This session will explore the pros and cons of both data-driven models and physics-driven models from both inside and outside of the drilling industry. Also this session will touch on how a “black box” solution can keep the humans on the rig appraised of it decisions and how the “black box” solution can work with humans to make better decision than either a human or a “black box” system could make independently.

Presentation 1: Model-driven Drilling Process Automation: Design Considerations and Results from Drilling 17 Sections in the North Sea
Eric Cayeux, Chief Scientist at IRIS

Presentation 2: Physics-constrained Machine Learning Approach to Reduce Kick Detection False Alarm Rates by 100x
Mark Hibbard, President, CoVar Applied Technologies

Presentation 3: From the Enterprise to the Edge: An Examination of the Pros and Cons of Different Types of Data-driven Solutions
Keith Holdaway, Advisory Industry Consultant, SAS

1130-1300 | Lunch
Century Ballroom

Presentations from the Drillbotics Student Competition by University of Texas at Austin and Missouri University of Science and Technology Students
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**1300-1430 | Session 7: How Much Data Do We Need, at What Quality, and How Much Are We Willing to Pay?**

**Session Chairs:** Jim McKay, BP  
Aaron Logan, Evolution Engineering

The industry’s focus on drilling automation has created separate camps, almost right wing/left wing divisions. They are divided by either a heavy focus on data quality and rates or the other group more concerned by the trend of data to support automation. The next three to five years shouldn’t be blue sky solutions, but rather pragmatic areas of automation. Near term solutions will likely be focused on optimization or improved safety of operations. There has to be a middle ground on an advancement that brings our industry forward – the question begs to be asked, what is the optimum cost per bit of data and/or or data quality from telemetry to surface and/or from surface sensors. What is the tipping point of that cost? The valuation proposition has to be strengthened to justify many of the new technologies.

- **Presentation 1:** Key Considerations for Successful Drilling Floor Automation  
  Bill O’Grady, Chief Technical Officer, Athens Group

- **Presentation 2:** Downhole Data and Drilling Automation? A Discussion on Availability, Latency, Accuracy and Quality  
  Robert Wylie, President and CEO, xnDrilling

- **Presentation 3:** Fundamental Data Quality Issues and Processes – Working Together to Address  
  Zoom Nguyen, Planning Engineer, ConocoPhillips

**1500-1630 | Session 8: The Forward Path**

**Session Chairs:** Moray Laing, SAS  
Riaz Israel, BP  
Robin Macmillan, NOV

This interactive session will be on a collation of key workshop messages and generation of concrete take-away actions to guide the industry in drilling systems automation and well construction.

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SPE recognizes the legitimate serving of alcoholic beverages in the process of conducting business and social activities. We also recognize that the use and consumption of alcohol carries with it the requirement for all attendees to consume those beverages responsibly.

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In remaining consistent with workshop objectives and SPE guidelines, commercialism in presentations will not be permitted. Company logos should be used only to indicate the affiliation of the presenter(s).

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**Workshop Format**
Workshops maximize the exchange of ideas among attendees and presenters through brief technical presentations followed by extended Q&A periods. Focused topics attract an informed audience eager to discuss issues critical to advancing both technology and best practices.

Many of the presentations are in the form of case studies, highlighting engineering achievements and lessons learned. In order to stimulate frank discussion, no proceedings are published and members of the press are not invited to attend.