INTRODUCTION TO DIGITAL OILFIELD 2.0

October 16, 2019
EUCI Office Building Conference Center
Denver, CO

EUCI is authorized by IACET to offer 0.8 CEUs for the course.

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October 17, 2019 | Denver, CO

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October 18, 2019 | Denver, CO

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OVERVIEW

The impact of digitization has profoundly affected the energy industry including oil and gas (digital oilfield) and utilities (smart grids). More data is available from field and process instrumentation and control systems for detailed analysis to improve decision making at all levels, from the field to the board room. The Digital Oilfield is a reality. Lower commodity prices have added the need to improve efficiency of operations, to the existing drivers of a safe and environmentally benign operations footprint, for effective recovery of reserves and an attractive return on investment for shareholders. This workshop will take a detailed look at the opportunities, challenges and specific requirements for the Digital Oilfield.

Introduction to Digital Oilfield 2.0

The Industrial Internet of Things (IIoT) represent the next stage of the Intelligent Oilfield which some call Digital Oilfield 2.0. The original Digital Oilfield, also known by other names including Smart Fields, Field of the Future and Integrated Operations, began around the year 2000 was IT-led and technology focused, and resulted in the expansion of automation, the use of digital devices, the addition of remote operation centers, standardization of selected workflows, and the practice of ‘manage by exception’ to operate fields. Most of Digital Oilfield activity was focused on offshore production, especially deep water, due to the value of the assets involved.

But over time it has spread onshore, to drilling, completions and beyond. Its success onshore was initially limited to larger conventional fields, as the cost of automation for both smaller green fields and legacy brownfields was considered prohibitive. Another shortcoming of Digital Oilfield was that while it generated much more data from sensors and automation, most of the data wasn’t being used to improve field operations.

- The business case for digital transformation
- An overview of the Digital Oilfield and what is changing with DOF 2.0
- What are the new workflow priorities focusing on production optimization and logistics
- The changing role of remote decision support centers due to edge computing

LEARNING OUTCOMES

- Examine what is meant by the Digital Oilfield 2.0 and the current areas of interest for the Oil and Gas industry
- Develop the business case for digital oilfield solutions
- Identify the levels of the Digital Oilfield IT stack
- Review and understand the roles and opportunities of new remote decision support centers
- Discuss the concept of situational awareness and identify the ‘blind’ spots in digital surveillance of legacy assets

WHO SHOULD ATTEND

This course will provide an introductory set of information about the Digital Oilfield specifically focusing on the evolution of workflow solutions since the first digital oilfield projects from the early 2000s. The impact of emerging digital technologies, the increasing digital intensity of field and engineering operations and changes in organization models (i.e. decision support centers) will be discussed.

- Asset managers and production engineers working on digital solutions.
- Project managers involved with digital transformation programs
- Operations and maintenance supervisors from oil and gas producers
- Information technologists involved in support of oilfield operations (communications, data and applications)
- Service company managers and product managers who are responsible for products and services that support oilfield operations
### AGENDA

**WEDNESDAY, OCTOBER 16, 2019**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>8:00 - 8:30 am</td>
<td>Registration and Continental Breakfast</td>
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<tr>
<td>8:30 - 9:00 am</td>
<td>Introduction and Expectations</td>
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<tr>
<td>9:00 - 10:00 am</td>
<td>The Business Case for Digital Transformation</td>
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<td>Any conversation on emerging technology trends should be grounded in the three basic perspectives: technology, process and people. We also should not forget the data perspective as well. But in the end, it will be the business case that will decide whether companies chose to invest in and deploy digital oilfield solutions. A lot has already been written on the potential impact of IoT technologies on oil and gas field operations. Rather than repeating that information, this session will focus on the ways that digital oilfield can bring value to the bottom line by reducing costs, improving productivity, increasing production and adding reserves from the macro level. The objective is to turn the potential of all the data that is being collected into sustainable solutions improving field and equipment performance, holistic asset lifecycle value and better results on the bottom line. Specific workflow solutions will be covered in the afternoon session.</td>
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<tr>
<td></td>
<td>• Why should you invest in digital?</td>
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<td>• The Technology Hype Curve, knowing when to invest and when to wait</td>
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<td>• Lessons learned from the first decade, 5 Myths and 5 Realities</td>
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<td>• The importance of Change Management</td>
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<td>10:00 - 10:30 am</td>
<td>Networking Break</td>
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<tr>
<td>10:30 am - 12:00 pm</td>
<td>An Overview of the Digital Oilfield and What is Changing with DOF 2.0</td>
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<td>The concept of the Digital Oilfield started about 20 years ago when increased field instrumentation, process control and advanced software and data analysis techniques were brought to the operations and engineering practices in the oil field. The first generation of the Digital Oilfield solutions created value to complex drilling in offshore basins and enabled the application of optimization workflows to production challenges. The second generation of the digital oilfield is going farther with smart equipment, automation and more statistical analysis and machine learning models. The objective now is not just to know what is going on, but to predict future performance and strive for optimization.</td>
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<td>• A brief History of the Digital Oilfield</td>
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<td>• The 5 Stages of oilfield development</td>
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<td>• The Digital Oilfield IT Stack</td>
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<td>• What is different this time around with DOF 2.0</td>
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<td>12:00 - 1:00 pm</td>
<td>Group Luncheon</td>
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<td>1:00 - 2:30 pm</td>
<td>What are the New Workflow Priorities Focusing on Production Optimization and Logistics</td>
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<td>The impact of digital technology and advanced analytics (use case examples): According to McKinsey, “The rapid progress of technology such as big data and analytics, sensors, and control systems offers oil and gas companies the chance to automate high-cost, dangerous, or error-prone tasks.” Most oil and gas operators get it and have announced some kind of Digital Oilfield or Digital Transformation project either at corporate, functional or asset level. While the application of digital technology can be traced back decades (in seismic data recording and processing, reservoir simulation workflows and use of fiber optics for temperature sensing in steam flood of heavy oilfields), new applications are emerging in many different disciplines.</td>
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<td>• Reactive, Scheduled, Predictive and Prescriptive Maintenance of critical equipment</td>
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<td>• Real-time drilling, Virtual flow meters, real-time reservoir management and many more</td>
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<td>• The importance of the question; ‘Who Owns the Data?’</td>
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<td>• Digital Platforms and the impact of the Cloud</td>
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AGENDA

WEDNESDAY, OCTOBER 16, 2019 (CONTINUED)

2:30 - 3:00 pm  Networking Break

3:00-5:00 pm  The Changing Role of Remote Decision Support Centers Due to Edge Computing
Remote Decision Support Centers: A decision support system (DSS) is an information system that supports organizational decision-making activities. A DSS serves the management, operations and planning levels of an organization and help people plan for or react to changes in field performance. One of the characteristics of the first Digital Oilfield was the development of remote decision support centers helping to link the field and enterprise with the same view of performance data. But IIoT concepts are starting to change the role of remote decision support centers. Edge computing and smart equipment are allowing data to be processed and analyzed in the field. Mobile computing allows operators and domain experts to work from wherever they are. This leaves fewer people in the DSS room but requires even more collaboration, just less physical more virtual conversations.

- The Value of a second pair of eyes
- Offshore/Onshore drilling and production
- Virtual support environments
- A new business model: Monitoring-as-a-service

4:30 - 5:00 pm  Questions and Feedback

5:00 pm  Course Concludes
COURSE INSTRUCTOR

Jim Crompton

Jim retired from Chevron in 2013 after almost 37 years with the oil major. After moving to Colorado, Jim established Reflections Data Consulting LLC to continue his work in the area of data management and analytics for the Oil & Gas industry.

Jim was a Distinguished Lecturer for the Society of Petroleum Engineers in 2010-2011, speaking on the topic of "Putting the Focus on Data." He is a frequent speaker at conferences on Digital/Intelligent Energy. His interests lie in the full spectrum of the information value chain from data capture, data management, data visualization, data access, modeling and analytics, simulations and serious gaming. Jim graduated from the Colorado School of Mines (BS in Geophysical Engineering in 1974 and MS in Geophysics in 1976) before joining Chevron in Denver, Colorado. He later earned an MBA degree (1996) from Our Lady of the Lake University (San Antonio, Texas).

In 1999, Crompton was elected to the position of chair of the general committee of PIDX (Petroleum Industry Data Exchange), the API electronic commerce subcommittee. Jim was able to influence the direction of the standards setting activities towards emerging technologies, such as XML, and new electronic business models in the energy industry.

In acknowledgement of his contributions in applications of information technology to business problems, Jim was named a Chevron Fellow in 2002. In 2013, Jim co-authored a book, titled ‘The Future Belongs to the Digital Engineer’ with Dr. Dutch Holland, focusing on the issues of the impact of emerging digital technology on oil and gas operations. He is currently working on his second book with Steve Cooper of EnergyIQ, ‘The Digital Journey of the Oil and Gas Industry’.

In 2017, Jim was named as the PNEC Cornerstone award winner. Jim is on the board of the SPE Digital Energy Technology Section (DETS), and is working on a subcommittee developing a digital academy curriculum for SPE. Starting January, 2018, Jim is an adjunct teaching faculty member in the Petroleum Engineering Department at the Colorado School of Mines teaching a course in ‘Petroleum Data Analytics’.
REQUIREMENTS FOR SUCCESSFUL COMPLETION

Participants must sign in/out each day and be in attendance for the entirety of the course to be eligible for continuing education credit.

INSTRUCTIONAL METHODS

The course will use case studies and PowerPoint presentations.

EVENT LOCATION

EUCI Conference Center
4601 DTC Blvd., B-100
Denver, CO 80237

NEARBY HOTELS

<table>
<thead>
<tr>
<th>Hotel Name</th>
<th>Address</th>
<th>Phone</th>
<th>Distance from Event Location</th>
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</thead>
<tbody>
<tr>
<td>Hyatt Regency Denver Tech Center</td>
<td>7800 E. Tufts Ave, Denver, CO 80237</td>
<td>303-779-1234</td>
<td>0.3 miles away</td>
</tr>
<tr>
<td>Hilton Garden Inn Denver Tech Center</td>
<td>7675 E. Union Ave, Denver, CO 80237</td>
<td>303-770-4200</td>
<td>0.6 miles away</td>
</tr>
<tr>
<td>Denver Marriott Tech Center</td>
<td>4900 S. Syracuse St, Denver, CO 80237</td>
<td>303-779-1100</td>
<td>0.7 miles away</td>
</tr>
<tr>
<td>Hyatt Place Denver Tech Center</td>
<td>8300 E. Crescent Parkway, Greenwood Village, CO 80111</td>
<td>888-492-8847</td>
<td>0.9 miles away</td>
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IACET CREDITS

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EUCI is authorized by IACET to offer 0.8 CEUs for the course.
Please select:

- **Bundle price for all 3 courses**: Introduction to Digital Oilfield 2.0, Convergence of OT and IT and Application of Artificial Intelligence and Advanced Analytics to the Oilfield Courses
  - October 16-18, 2019: US $2695
  - Early Bird on or before September 27, 2019: US $2495

- **2 courses**: Introduction to Digital Oilfield 2.0 and Convergence of OT and IT
  - October 16-17, 2019: US $1895
  - Early Bird on or before September 27, 2019: US $1695

- **2 courses**: Introduction to Digital Oilfield 2.0 and Application of Artificial Intelligence and Advanced Analytics to the Oilfield Courses
  - October 16 & 18, 2019: US $1895
  - Early Bird on or before September 27, 2019: US $1695

- **Introduction to Digital Oilfield 2.0 course only**
  - October 16, 2019: US $995
  - Early Bird on or before September 27, 2019: US $895

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How did you hear about this event? (direct e-mail, colleague, speaker(s), etc.)

Print Name  Job Title

Company

What name do you prefer on your name badge?

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Phone  Email

List any dietary or accessibility needs here

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Credit Card Information

Name on Card  Billing Address

Account Number  Billing City  Billing State

Exp. Date  Security Code (last 3 digits on the back of Visa and MC or 4 digits on front of AmEx)  Billing Zip Code/Postal Code

Or enclosed is a check for $ to cover registrations.

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Substitutions & Cancellations

Your registration may be transferred to a member of your organization up to 24 hours in advance of the event. Cancellations must be received on or before September 13, 2019 in order to be refunded and will be subject to a US $195.00 processing fee per registrant. No refunds will be made after this date. Cancellations received after this date will create a credit of the tuition (less processing fee) good toward any other EUCI event. This credit will be good for six months from the cancellation date. In the event of non-attendance, all registration fees will be forfeited. In case of course cancellation, EUCI’s liability is limited to refund of the event registration fee only. For more information regarding administrative policies, such as complaints and refunds, please contact our offices at 303-770-8800. EUCI reserves the right to alter this program without prior notice.