




CONVERGENCE OF OT AND IT

May 16, 2019
EUCI Conference Center
Denver, CO

RELATED EVENTS:

INTRODUCTION TO DIGITAL OILFIELD 2.0
May 15, 2019 | Denver, CO

**APPLICATION OF ARTIFICIAL INTELLIGENCE AND
ADVANCED ANALYTICS TO THE OILFIELD**
May 17, 2019 | Denver, CO

   **TAG US #EUCIEvents**
FOLLOW US @EUCIEvents

 EUCI is authorized
by IACET to offer
0.7 CEUs for the
course

OVERVIEW

Operational Technology (OT) and Information Technology (IT) have both developed at an increasing rate over the past several decades, each creating new ways of operating. Production field operations bring these two disciplines together in often challenging ways. If you work in either, it is critical that you learn how they work together so you can take full advantage of the benefits and navigate challenges.

Operational Technology (aka: Instrumentation and Control) which includes: Process control and field automation (SCADA and DCS), smart equipment (OEM) and plant Automation and asset performance management (APM) has developed largely in a manufacturing/plant environment. Independently, corporate Information Technology has also developed in areas such as: data center, networks (WAN and LAN), desktop and enterprise application platforms (Finance, HR, Supply Chain, Marketing). The Digital Oilfield (DOF) has brought these two disciplines together in potentially valuable ways. The OT world is now operating on commercial technology platforms and making operational data available to the corporate networks (finance, engineering). However, the two cultures are still learning to work together to address common issues of cybersecurity, mobile data access and many others.

- How to bring OT and IT onto the same page; technology and culture
- Improving the human machine interface (HMI) for field operators and data access for optimization/reliability engineering
- The good news is that we are connected, the bad news is that we are connected. An update on the importance of cybersecurity
- Emerging architectures for field instrumentation and control (I&C); mobile computing, and edge computing

LEARNING OUTCOMES

- Review the history, practices and challenges of traditional operational technology, field instrumentation and control and the difference between onshore and offshore operations
- Discuss the history, practices and challenges of traditional information technology and the difference between enterprise systems and business unit and function-specific operations
- Identify the touch points between OT and IT in the Digital Oilfield 2.0
- Recognize the vulnerabilities when OT and IT systems are connected and opportunities for cyberattacks; the significance of Stuxnet
- Examine 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 convergence of technology, systems, practices and required skills from the two key disciplines of Operational Technology and Information Technology for professionals working at oil and gas operators, oilfield service companies and technology firms trying to develop new products into this market including:

- Project managers involved with digital transformation programs
- Operations and maintenance supervisors from oil and gas producers
- Instrumentation and control (I&C) specialists involved in field automation and remote decision support center operations
- Information technologists involved in support of oilfield operations (communications, data and applications)
- System architects charged with developing systems that link field and corporate information architectures
- Service company managers and product managers who are responsible for products and services that support oilfield operations
- Physical and cyber security specialists working on Digital Oilfield operations

AGENDA

THURSDAY, MAY 16, 2019

8:00 - 8:30 am**Registration and Continental Breakfast****8:30 - 10:00 am****How to Bring OT and IT onto the Same Page; Technology and Culture?**

The current state of OT: When most people think of Oilfield automation systems, they usually think of Supervisory Control and Data Acquisition (SCADA) systems and downhole sensors. Oil and gas companies regularly collect critical data from remote well sites and production locations to monitor facilities, such as wellheads, storage tanks, artificial lift units; or pipelines. Current systems essentially poll information one-way back to central servers where field performance data is displayed in a human machine interface (HMI) which trigger alarms or alerts that are used to dispatch personnel to visit the location to investigate.

The Convergence of OT and IT: The current state of OT versus IT: According to Luigi De Bernardini, CEO, Autoware, in a recent blog in Automation World: *"the convergence of information technology (IT) and operational technology (OT) is one of the key mantras in smart manufacturing (and the digital oilfield). This convergence has many different faces with several organizational and technical implications."* This section explores the elements of that convergence.

- Sensors and field instrumentation: Information Intensity
- OT moves to commercial platforms, SCADA and DCS and shared field communication networks
- Manage by Exception (how alarm management is changing)
- Unified governance over OT and IT

10:00 - 10:30 am**Networking Break****10:30 am-12:00 pm****Improving the Human Machine Interface (HMI) for Field Operators and Data Access for Optimization/Reliability Engineering**

There is still strong resistance to change at the organizational level between OT and IT. Most companies still have two strongly separated departments for operations and IT. They have different people, goals, policies and projects. One very important difference is different mission objectives. IT & OT have a vastly different definition of failure or impact. OT is generally more concerned about safety where IT focused on reliability and affordability.

Continuing to operate these functions separately not only slows the adoption of solutions based on technologies that fall outside of operations' comfort zone, but also exposes companies to safety and security risks that could significantly impact production operations. The initial Digital Oilfield engagement of OT and IT has surfaced a number of barriers but also points to significant potential when near-real time data can be used to update predictive models allowing operators to go beyond static alarms and "run-to-failure" maintenance practices. The HMI represent a key touch point between OT and IT. Data visualization has come a long way and is critical to find intuitive ways to display large amounts of data but highlight the key pieces of actable information.

- A culture of electrical engineers versus programmers
- A different perspective on uptime and version control
- The limitations of HMI and historians
- Historians and Electronic Data Recorders (EDR)

12:00 - 1:00 pm**Group Luncheon**

AGENDA

THURSDAY, MAY 16, 2019 (CONTINUED)

1:00 - 2:30 pm

The Good News is that We are Connected, the Bad News is that We are Connected. An Update on the Importance of Cybersecurity

Cybersecurity of how to hack an oilfield: System security from traditional operational systems was based on their proprietary technology and isolated networks. The Digital Oilfield connects both the field to the office and throughout the supply chain bringing greater transparency to information but also creates vulnerabilities that could be leveraged by hackers. Access and application of field data in engineering applications offers great promise but also brings its own set of cybersecurity challenges. Process control systems and smart equipment are now targets of malware.

- Security through obscurity
- Situational awareness challenges
- The impact of Stuxnet and internal firewalls
- Pipeline systems: An example of the vulnerabilities of the digital oilfield

2:30 - 3:00 pm

Networking Break

3:00 - 4:30 pm

Emerging Architectures for Field Instrumentation and Control (I&C); Mobile Computing, and Edge Computing

The impact of instrumentation and automation on field operations: According to a McKinsey article on "Digitization of Oil and Gas Production", "More complex operations, increasing volume and complexity in hostile, remote locations (for example, arctic, offshore, and deepwater) require reliable remote and automated or semiautomated operations, and logistics optimized for efficiency." The promise of the digital oilfield is to significantly improve the productivity of physical assets and the humans that work in these environments. Automation and data-driven workflows are at the heart of this new world. New architectural concepts are required to make this happen.

The Cloud environment is where IT and OT are coming together. The cloud represents an opportunity to aggregate enormous amounts of data and then use a vastly scalable and ever-increasing set of analytical tools to provide analysis. This distributed compute capability provides computing power, storage and resiliency that was simply not imaginable even a decade ago. The cloud also allows us to connect workers wherever they are and share a view of what is going on in the field.

- The impact of emerging architecture patterns (Fog and Cloud computing)
- Smart equipment and the industrial Internet of Things (IIoT)
- Use of drones and AUV for inspection
- Safety: Removing people from harms' way /Monitoring by "windshield miles"

4:30 - 5:00 pm

Questions and Feedback

5:00 pm

End of Day

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 power point presentations

EVENT LOCATION

EUCI Conference Center

4601 DTC Blvd., B-100

Denver, CO 80237

NEARBY HOTELS

Preferred Hotel

Hyatt Place Denver Tech Center

8300 E. Crescent Parkway, Greenwood Village, CO 80111 (0.9 miles away)

Call Central Reservations at **888-492-8847** and ask for the EUCI rate of US \$149 plus applicable tax (**CODE: EUCI**)

or visit [Hyatt Place Denver Tech Center - EUCI](#)

Hyatt Regency Denver Tech Center

7800 E. Tufts Ave

Denver, CO 80237

Phone: 303-779-1234

0.3 miles away

Hilton Garden Inn Denver Tech Center

7675 E. Union Ave

Denver, CO 80237

Phone: 303-770-4200

0.6 miles away

Denver Marriott Tech Center

4900 S. Syracuse St

Denver, CO 80237

Phone: 303-779-1100

0.7 miles away

IACET CREDITS



EUCI has been accredited as an Authorized Provider by the International Association for Continuing Education and Training (IACET). In obtaining this accreditation, EUCI has demonstrated that it complies with the ANSI/IACET Standard which is recognized internationally as a standard of good practice. As a result of their Authorized Provider status, EUCI is authorized to offer IACET CEUs for its programs that qualify under the ANSI/IACET Standard.

EUCI is authorized by IACET to offer 0.7 CEUs for the course.

EVENT LOCATION

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

See nearby hotels on page 6

PLEASE SELECT

- BUNDLE PRICE FOR ALL 3 EVENTS INTRODUCTION TO DIGITAL OILFIELD 2.0, CONVERGENCE OF OT AND IT AND APPLICATION OF ARTIFICIAL INTELLIGENCE AND ADVANCED ANALYTICS TO THE OILFIELD COURSES**
MAY 15-17, 2019: US \$2695
EARLY BIRD on or before APRIL 26, 2019: US \$2495
- 2 COURSES INTRODUCTION TO DIGITAL OILFIELD 2.0 AND CONVERGENCE OF OT AND IT:** MAY 15-16, 2019: US \$1895
EARLY BIRD on or before APRIL 26, 2019: US \$1695
- 2 COURSES CONVERGENCE OF OT AND IT AND APPLICATION OF ARTIFICIAL INTELLIGENCE AND ADVANCED ANALYTICS TO THE OILFIELD COURSES:**
MAY 16-17, 2019: US \$1895
EARLY BIRD on or before APRIL 26, 2019: US \$1695
- CONVERGENCE OF OT AND IT COURSE ONLY**
MAY 16, 2019: US \$995
EARLY BIRD on or before APRIL 26, 2019: US \$895



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? _____

Address _____

City _____ State/Province _____ Zip/Postal Code _____ Country _____

Phone _____ Email _____

List any dietary or accessibility needs here _____

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.

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 April 12, 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 (201) 871-0474.