

8:00 AM - 8:30 AM

ENTELEC Corporate & Association Member Thank You Breakfast

Room: 351 E

ENTELEC Associate & Corporate Members are invited to a THANK YOU breakfast and Mimosa Toast!

9:00 AM – 10:00 AM

Keynote Address: Digital Transformation in a Cloud-First World for Oil and Gas - Presented by Bobby Lee, IoT Solutions Sales, Microsoft

Room: Exhibit Hall B3

This is truly an exciting, transformational time for Oil and Gas companies. Now more than ever, the industry is capitalizing on digital transformation to increase operational efficiency across OT and IT. Moreover, Internet of Things (IoT) is a key driver for this. But what does it mean to digitally transform? How does Oil and Gas take advantage of the cloud? What are your peers doing in this space?

Bobby Lee will discuss all this and more as he talks about digital transformation in a Cloud-first world for Oil and Gas. This industry is evolving—come be a part of that!

- How O&G companies are transforming themselves (sample cases)
- Challenges in delivering more and newer applications to people and machines
- Upstream and Midstream transformations perspective and value to the organization
- Mixing Edge and Cloud computing to best address current and upcoming requirements
- IT/OT blurriness increasing company efficiency and competitiveness
- Integrating new technology and what's in it for me (from well site to the boardroom)

Bobby Lee is Director, IoT Solution Sales whose role is to develop and grow the Internet of Things (IoT) business for Microsoft's South Central Region. He has spoken at several IoT conferences, talking about the transformational power of insight gained from IoT, how companies are evolving in this space, and how to stay steps ahead with innovation. He works directly with customers and partners to firm up and strategically execute on digital change with IoT at the forefront and AI realizing that value on the backend. He has been with Microsoft since 1998, working with Oil and Gas customers the majority of that time. He holds a degree in Applied Mathematics from UCLA.

11:30 AM - 12:30 PM

Analytics: Put All That SCADA Data to Work

Randy Krall, *Wellkeeper*

Room: 350 D

The largest upstream oil and gas companies have been funding internal and external projects in data analytics for several years. The goals are similar to those in other industries but there are important differences. We will outline the goals and objectives and describe how they might apply to your organization. We will further discuss the underlying

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technology and tools that are in current use. Lastly we will cover the specific steps you might take to develop similar results for your company.

Objectives of this session:

- Explain the history and recent results driving modern data analytics projects
- Describe the technology and tools that build and maintain data models
- Provide suggestions to get started and explore the potential in your company

Industry Sector: Data Analytics

Category: SCADA and Data Analytics

Intended Audience: Engineers, Programmers, Project Leaders

Three Key Use Cases for Private Industrial Mobile LTE Networks on CBRS or Private Spectrum

Louis Lambert, *Redline Communications*

Room: 350 E

As Oil & Gas companies start leveraging the CBRS band and other private LTE bands, private mobility and private Push-to-Talk become available. These new safety and efficiency tools are enabling and accelerating the digital transformation. This session covers the technical and business considerations, challenges, solutions and implementation aspects of deploying a private mobility network for people and machines. The session will also drill down on three key use cases and their integration of the Private LTE network; Push-To-Talk (standalone and P-25 integration), wearables, and voices services.

Objectives of this session:

- Review how CBRS in the USA enables O&G companies to deploy with simplicity, their own 3GPP LTE mobility network leveraging the rich ecosystem of standard, off-the-shelves devices.
- Review how these three use cases deliver the digital transformation objective of today's O&G CEO's.
- Review how these three use-cases are planned, deployed and operated with ease by O&G companies.

Industry Sector: Oil & Gas

Category: Networks/Communications Infrastructures, IoT

Intended Audience: Executive/Director, Manager

12:30 PM - 1:30 PM

Industrial IoT Workgroup Panel Discussion: Opportunities & Challenges of Private Cellular Networks in Oil & Gas Segments

Room: Exhibit Hall B3

Moderated by Dan Quant, *Multitech and Chair of ENTELEC RT IIoT SubCommittee*

Panelists include: Louis Lambert, *Redline*; Al Sinopili, *Chevron*; Stan Hughey, *Infrastructure Networks*, more to be added.

Industrial IoT has been connecting assets over a myriad of wired, wireless and mesh networks for a long time, in part due to the concerns that a single network was not flexible enough to serve the many application specific requirements across heavy industries as Oil & Gas, Utilities or Transportation. Resulting in multiple networks in play, each optimized for a specific application requirement such as SCADA or voice. Private

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Cellular Networks dedicated to a single owner of a Building, Campus or Oil Field are fast being globally deployed by asset heavy Industries, Enterprises and Neutral Hosts to assure improved resiliency and exclusive access, independent of wide area network fluctuations, with coverage designed to meet very specific application needs.

Dedicated 4G-LTE cellular radio equipment with a specified path to 5G is available from a wide and established ecosystem of vendors enabling full mobility, broadband data performance along with Low-Power-Long Range communication, predictable latency and quality of service designed to service a multitude of applications including traditional point-to-point & multipoint voice, SCADA mission critical communications, video surveillance and emerging IoT use cases.

This Panel will introduce options to capitalize and scale Private 4G-LTE Cellular Networks using Licensed, Shared and Unlicensed spectrum. Join us for a Q&A with experts who can provide real world experience deploying, managing and connecting assets over networks for Oil & Gas Upstream and Mid-Stream and Downstream assets.

2:00 PM - 3:00 PM

Choosing the Right Wireless Technology for the Next Generation Digital Oil Field - Silver Scribe 2nd Place Winner

Bruce Collins, *Cambium Networks*

Room: 350 D

No single wireless technology can address all requirements in the digital oil field covering applications such as automation, remote access, security and backhaul. This discussion presents several real-world examples of field deployments combining licensed, unlicensed, broadband, narrowband, LPWA and Wi-Fi technologies into a single managed wireless fabric. Decision criteria and best practices for when to use each technology will be presented. Additional factors for consideration including spectral efficiency, high-availability, security, scalability and management will be discussed.

Objectives of this session:

- Case studies of oil/gas operators deploying a hybrid of wireless technologies
- Tradeoffs and decision criteria for selecting a wireless technology
- Options for introducing private LTE or LPWA/LoRa technology into digital oil fields

Industry Sector: Oil & Gas, Pipeline, Electric Utility, Waste Water, Railroad, Mining

Category: SCADA and Data Analytics, Networks/Communications Infrastructures, FCC & Regulatory, Emerging Technologies, IoT

Intended Audience: Executive/Director, Manager, Field Tech, Entry Level

Private Radio Field Area Networks and LTE – Competition or Complementary?

John Yaldwyn, *4RF USA, Inc* & Owen Borlase, *4RF Limited*

Room: 350 E

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If the technical press could be believed LTE should be ruling the SCADA world and private networks using conventional radio technology would be outmoded.

Well, that hasn't happened yet. Why not and why is the rate of adoption slow?

This presentation will look at the strengths and weaknesses of candidate field area network technologies including private radio, LTE, and 3GPP NB-IoT. Critical factors like availability, coverage, resilience, latency, and data rates will be evaluated. Which technology is best suited to the various field applications and what should a sensible FAN strategy be?

Objectives of this session:

- Learn the current status of public/private LTE and radio based network technologies and how they work in terms of key technical criteria.
- See how the competing options deliver against field area application needs.
- Gain an appreciation of the surrounding deployment issues with FAN systems and how the various technology options compare in terms of use cases and ease of use.

Industry Sector: Oil & Gas, Pipeline, Electric Utility

Category: Networks/Communications Infrastructures, IoT

Intended Audience: Executive/Director, Manager

2:00 PM - 4:00 PM

A Brief Introduction to Behavioral Analytics & Machine Learning Technology - Potential Applications for Critical Infrastructure Environments Training by UTSi International

Daniel Nagala, *UTSi International Corporation*

Room: 352 D

This course is intended to provide a high-level definition and introduction to the basics of behavioral analytics (BA), machine learning (ML), deep learning (DL) and artificial intelligence (AI), what they are in practical sense, as well as the differences between them. It will include an overview and some examples of the technologies employed in these areas, along with the complexities, risks and benefits thereof. This course is suitable for all levels of operations management, operations and engineering personnel.

Machine learning and big data analytics affect most of our lives in one way or another every day. This technology has become pervasive in online marketing, healthcare, cyber security and manufacturing, to name just a few, but we have yet to see it make any significant entry into critical infrastructure operating environments, although there are many potential benefits to be realized in this area.

This course is intended to provide a high-level definition and introduction to the basics of behavioral analytics (BA), machine learning (ML), deep learning (DL) and artificial intelligence (AI), what they are in practical sense, as well as the differences between them. It will include an overview of the technologies employed in these areas, along with the complexities, risks and benefits thereof.

Discussion of relevant technologies for BA, ML, DL and AI, along with examples and a few use cases.

This introductory training session will emphasize the application of data analytics and the underlying technologies applicable to real-time control system environments in the pipeline and utility industries, and present a few practical examples and industrial use cases. These examples will address both data and video applications, and ongoing R&D in these areas.

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This is an introductory high-level course. It is applicable to all levels of management, operations and engineering personnel. No advanced understanding of linear algebra, matrix arithmetic or computer programming are required for this, although some of the examples and technology overviews will employ rudimentary matrix manipulation concepts.

Objectives of this Training:

- Gain and understanding of what machine learning and data analytics are, and how they can be applied to real-time time series data.
- Learn the differences between machine learning techniques, and how they are used.
- Learn about ongoing machine learning and data analytics R&D, and potential benefits for critical infrastructure operating environments.

Category: New Technology

Intended Audience: Operations, Safety and Engineering Management Personnel

MDS Orbit Training by GE MDS

Thomas Schwartz, *GE MDS*

Room: 352 E

This training will focus on new capabilities available in the Orbit platform including considerations for your network and example configurations. A walkthrough of the new simplified webUI will be provided to show benefits of quicker, easier configuration. Features to help you maximize the efficiency and manageability of your network will be discussed such as Automatic Web Proxy, Serial Pass-through, and Virtual Radio Channels (VRC). Examples of configurations will be shown involving multiple wireless technologies with failover which can help improve overall network reliability.

The goal of this training is to educate students on new and current capabilities available in communication systems. This training will focus on new capabilities available in the Orbit platform. Hands on configuration will be provided. A walkthrough of the new simplified webUI will be provided to show benefits of quicker, easier configuration for quicker deployment - a capability requested to tailor the interface for different user experience types. Features to help students maximize the efficiency and manageability of their network will be explained with configuration including Automatic Web Proxy, Serial Pass-through, and Virtual Radio Channels (VRC). Network configurations with multiple wireless technologies with failover will provide examples of configuration which can help improve network reliability. Providing time for questions to ensure students have an opportunity to have other questions answered.

Objectives of this training:

- Training for Orbit platform users to educate on latest released capabilities including new simplified web interface.
- Configuration walk through and training on capabilities which have been recognized by users to provide tangible benefits in the form of network reliability, flexibility, and ease of management.
- Allowing for student questions on other topics or details which may not have been specifically addressed in the agenda.

Category: Industrial Communications

Intended Audience: The intended audience for this presentation is anyone involved in wireless communications, from the technician level up to the administrator level, who are either users of the MDS Orbit product or would like to become more familiar with the product.

From Data to Insight : Journey to IoT Using Microsoft Azure - Training by Microsoft

Keith Hill, *Microsoft*

Room: 352 F

Join us as we walk you through a journey, to enable key insights into operational challenges using IoT technologies. Along the way, we will discover how Microsoft Azure can help you unlock new capabilities to gather, manage and process telemetry data, and offer advanced AI driven processing to provide connected, intelligent, predictive, and highly compelling capabilities to your solution. This session will help you understand how the Microsoft cloud is reinventing the modern workplace through highly disruptive industry scenarios to unleash innovation across every area of your enterprise value chain.

In this session, work with Microsoft to build a hands on understanding of a modern IoT solution using advanced cloud capabilities. We will uncover the tools provided by Microsoft Azure to enable data driven insights gathered from IoT devices. The session will introduce you to the most prominent cloud based services deployed in a modern IoT solution. We will focus on the following topics.

Getting started with Microsoft Azure

- Managing, and connecting devices to the cloud with Azure IoT Hub
- Deploying services to the edge with IoT Hub
- Providing stream based processing using Azure Stream Analytics
- Reacting to events using Azure App Services and Functions.
- Adding intelligent, predictive capabilities using Azure Machine Learning
- Using advanced visualization tools to gain insight from the data

All are welcomed to attend, and learn about building IoT solutions on Microsoft Azure. However to get the most value from the session, the attendee will need a Microsoft Azure account. If you are not currently a user of Microsoft Azure, we will help you get started with a free account.

Objectives of this training:

- Gain a greater understanding of how Microsoft Azure can be used to ingest large scale telemetry data from existing and new devices field devices.
- Participate in an interactive demo to learn how we use Azure IoT Hub, IoT Edge, and downstream Azure services to build out an IoT Solution.
- Gain an understanding of how Microsoft Azure can simplify data flow into other services, allowing for faster development of applications and achieving greater insights that can be turned into actions.

Category: Information Technology; Cloud Computing

Intended Audience: IT/OT Staff; IT/OT Managers; Anyone looking to learn more about Microsoft Azure IoT and AI

3:00 PM - 4:00 PM

Best Practices for Industrial Control System Security - Silver Scribe 3rd Place Winner

Steve Sponseller, *PTC/Keypware* & Emmett Moore, CEO, *Red Trident Inc*

Room: 350 D

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Industrial Control Systems (ICS) networks are likely the most critical networks to secure from malicious actors – especially ones in the Energy industry. Most ICS networks connect and control processes that are safety-critical. Failure or loss of control can impact a single worker, an entire site, or even an entire region. Recent cybersecurity attacks have demonstrated that traditional methods of securing these networks are no longer sufficient. In this session, we will introduce best practices for auditing your existing network operations, how to design a network with best-in-class security, and how to harden and deploy middleware applications (such as KEPServerEX) to improve ICS network security. Objectives of this training:

- Understand the threats and implications from a cyber security attack
- Understand the considerations of an ICS cyber security program
- Unsecure device communication protocols are very prevalent. Understand how best to protect your system and network when using these protocols

Industry Sector: Oil & Gas, Pipeline, Electric Utility, Waste Water, Railroad, Mining

Category: Cyber Security/Physical Security

Intended Audience: Executive/Director, Manager

Microwave Transport in the LTE/5G Era

Ronil Prasad, *Aviat Networks*

Room: 350 E

This informative session will discuss the evolution of microwave technology to support traditional energy industry requirements as well as new applications and technologies such as LTE, automation, and 5G. The presentation will review the evolution of network applications and their requirements and delve into methods for optimal migration, operational simplicity, and network longevity as well as best practices to plan for long-term network expansions. We will discuss the newest technologies and network design trends and how best to prepare for next-generation networks. This session is ideal for engineers who are interested in effectively designing long-term, modern networks and for anyone in a management role that has to consider CAPEX and OPEX planning for network deployments.

Objectives of this session:

- A review of some practical migration strategies based on case studies.
- Understanding the cost model for networks and how to avoid costly decisions that can result in unforeseen OPEX.
- Learn the latest in network design trends and what is in store for the future.

Industry Sector: Oil & Gas

Category: Networks/Communications Infrastructures, Emerging Technologies

Intended Audience: Manager, Engineers