# ENVISION A NEW FUTURE

## **FUTURE TechDay**

DOUBLETREE BY HILTON, HENRIETTA, NY • SEPTEMBER 17, 2019

### **SCHEDULES & SEMINAR DESCRIPTIONS**

### JOIN US FOR THIS FREE EVENT

Future Electronics invites you to attend the most advanced handson interactive learning event in the region. Learn from Supplier Direct Engineers about new technologies in breakout sessions and engage with technologists during this trade show event.

### **EVENT OVERVIEW**

Future Electronics wants to help you bring your products to market faster by providing you easy access to a large group of supplier experts who can provide training on the latest technologies. These potential solutions can reduce your design time and improve your product's performance. Registration will begin at 8:00 am and the Fair will run until our grand prize raffle at 5:30 pm. We will be providing breakfast, lunch and snacks throughout the day,

- Lunchtime Keynote Speaker: The Technology behind Augmented Reality glasses
  – Paul Travers, President and CEO of Vuzix Corporation.
- 30 technology booths, staffed by supplier experts designed to boost your knowledge and allow you to make contact with industry experts.
- We will be raffling off a Ring Doorbell, a Sonos Speaker, a set of Airpods, a pair of Vuzix Blade glasses and more. You must be present at the time of the drawing.
- Meet and brainstorm with Future Electronics Advanced Engineering Specialists in the areas of Displays, Wireless Connectivity, Networking Solutions, Analog & Power and Interconnect.
- You will have availability to free or low cost evaluation boards for the products presented at the event.
- Select up to 4 technology classes from the course offerings below. A portion of these sessions will be hands-on lab based trainings

Time	Henrietta AB	Henrietta CD	Monroe North	Monroe South
8:30 to 10:00	<b>TE Connectivity</b> "There is not an interconnect or sensing solution that we cannot offer"	Panasonic Bluetooth Low Energy 5.0 and the Smart Home	NXP Deploying elQ <sup>™</sup> Machine Learning on NXP MCUs and Apps Processors	Infineon Transformation from Silicon to SiC and GaN
10:00 to 10:30	30 Minute Break			
10:30 to 12:00	Sierra Wireless CATM, NBIoT and 5G	<b>Murata</b> Murata loT - Murata's Wireless Module and Sensing Solutions	Renesas Renesas Big Ideas for Every Space	Maxim Discussion of Low Power and Battery Powered Designs, Power Modules, with an Emphasis on Design and Simulation Tools
12:00 to 12:45	Lunch will be served in the Bistro			
12:45 to 1:30	Keynote Speaker: Paul Travers, Vuzix Corporation - will take place in the Ontario Room			
1:30 to 3:00	Abracon Optimized Antenna Solutions for Emerging IoT Applications	Melexis 3D Hall Effect, FIR Thermal Sensing and LIDAR	Microchip 16 Bit PIC and 8 Bit AVR Sensor Nodes to the Cloud	Littelfuse Making Sense of Surge Protection (a.k.a. GDT, MOVs and TVSs Adv n Trade-Offs-Final)
3:00 to 3:30	30 Minute Break			
3:30 to 5:00	Microchip Microchip Cryptography Primer	STMicroelectronics Simplifying Wireless IoT Applications Using STMicroelectronics' MEM Sensors and New Sensor Tile Box Kit	<b>ON Semiconductor</b> Zero Power Wireless RFID Sensors, Industry's Lowest Power Bluetooth and Zigbee Solutions	<b>Vishay</b> Vishay Passive Components for Power Management
5:00 to 5:30	Closing Remarks/Raffle - will take place in the Ontario Room (must be present to win)			
5:30	Departure			

Future Electronics looks forward to seeing you at this premier event. If you have any questions please contact your Account Manager, AE or call me directly.

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## WORKSHOP DESCRIPTIONS

#### ABRACON: Optimized Antenna Solutions for Emerging IoT Applications

The antenna in any radio is the key to RF performance. Antenna efficiency translates into optimal power consumption, improved sensitivity, extended range and reduced link bit errors. This presentation covers the most important technical considerations of antennas in system. Learn what antennas really do. Learn the most significant terminology and the impact that has on antenna selection and performance. Learn about impedance matching and its importance within any RF system. Antenna selection by protocol will help you decide between a chip antenna for LoRaWAN applications or a patch antenna for Wi-Fi. Finally, learn a step-by-step process on how to select the best antenna and integrate it into your system.

#### **INFINEON:** Transformation from Silicon to SiC and GaN

The next technology step towards an energy-efficient world lies in the use of new materials, such as wide bandgap semiconductors which allow for greater power efficiency, smaller size, and lighter weight. Infineon Technologies has a unique position of being the only company currently offering silicon (Si), silicon carbide (SiC), insulated-gate bipolar transistor (IGBT) and gallium nitride (GaN) devices. SiC and GaN offer significant advantages in efficiency, faster switching speeds, and density. Come listen to Infineon technologists review power topologies that provide customers the ability to competitively differentiate their products with added performance and value.

### LITTELFUSE: Making Sense of Surge Protection (a.k.a. GDT, MOVs and TVSs Adv n Trade-Offs-Final

This class will lead you through the different types of circuit protection, from ESD to high power semiconductor crowbar protection. Today's complex, sophisticated products, require greater protection against electrostatic discharge, power surge, short circuits, voltage spikes, arch flash, and other harmful occurrences. Our strategy is to provide solutions that are innovative and dependable. This class will review those products and how they can benefit you in your design.

#### **MAXIM:** Discussion of Low Power & Battery Powered Designs, Power Modules, with an emphasis on Design and Simulation Tools

#### Low Power & Battery Powered Designs (20 minutes)

- Nano Power: << 500nA quiescent current (0.5nA standby) power converters\*
- SIMO Power: Up to 3 voltage rails from a single inductor
- Battery Charging: Chargers from sub 50mA to over 3A charge currents
- Fuel Gauging: The most accurate and easiest to use battery metering products Simple Designs (10 minutes)
- Power modules: Remove the design and layout complexities by using simple modules with integrated Inductors, capacitors, FETs and discretes

**Design Tools** (60 minute live demonstration)

- Parametric Search Tool: How to cull down and choose the best solution for your needs using our on-line search engine
- EE-Sim Simulation and Analysis Tool: A single tool that goes from part selection through schematic and BOM creation to analysis and design variant comparison (think Spice on steroids)

#### **MELEXIS: 3D Hall Effect, FIR Thermal Sensing, and LIDAR**

The use of sensors in embedded applications is growing. In every market, sensors enable new and exciting ways to improve quality, sustainability, and automation. In this presentation, we will discuss 3D Hall Effect, FIR Thermal Sensing, and LIDAR Technologies and their roles across different markets. We will focus heavily on technical topics and application examples that are enabling the next generation of sensing applications.

### MICROCHIP: 16-Bit PIC and 8-Bit AVR MCUs to Connect Sensor Nodes to the Cloud

Create Secure Connected Applications in a Single Click with Microchip's AVR and PIC IoT Development Boards for Google Cloud. This class will discuss the growing demand for cloud connected edge node devices, look at the risks & security needs, and demonstrate a quick easy solution for cloud connecting your edge node product using Microchip Development Boards and Google Cloud. Includes instructor lead demo.

#### **MICROCHIP:** Microchip Cryptography Primer

The class will cover cryptography fundamentals which is intended for an audience unfamiliar with cryptography. It covers symmetric and asymmetric cryptography, how they are different, the benefits of each, and how they are used. The presentation examines the generation of authentication certificates and their use.

#### **MURATA: Wireless Module and Sensing Solutions**

Learn how to create practical battery powered sensor applications using products from Murata, including Wi-Fi and BT modules, best-in-class high resolution sensors and batteries. Customers will learn how to implement real-time monitoring and data collection of their systems in the field, making their companies more efficient and cost effective. Murata modules enable world-class solutions for the transportation, industrial, medical, and energy IoT market space. The portfolio includes: actuators, shock, combo acceleration and gyro, inclinometer, barometric pressure, 3D AMR, rotary position, PIR, ultrasonic, thermistors and ballistocardiography (BCG) sensors, offering numerous options in supporting connected device measurement and control.

#### NXP: Deploying elQ<sup>™</sup> Machine Learning on NXP MCUs and Apps Processors

Starting with a Machine Learning (ML) primer, this class will explore NXP's hardware and software approach to enabling ML in microcontroller and microprocessor based designs. elQ<sup>™</sup> ML Software is available now with inference engines and libraries leveraged from the tremendous advancements in open source machine learning technologies. Additionally, elQ<sup>™</sup> Software is accompanied by sample applications in object detection and voice recognition, to provide you with a starting point in their deployment at the edge.

#### ON SEMICONDUCTOR: Zero Power Wireless RFID Sensors, Industry's Lowest Power Bluetooth and Zigbee Solutions

ON Semiconductor Corporate Overview (5 Minutes)

#### **Connectivity Solutions:**

RSL10 Overview: Industry's Lowest Bluetooth Low Energy Solution (10 Minutes) RSL10-SENSE-GEVK Evaluation Board Demonstration Video

Sensors: Ambient light, geomagnetic, gas, pressure, temperature, humidity, microphone and 3 axis accelerometer and 3 axis gyroscope (10 Minutes)

NCS36510/Lakota Module Overview: 802.15.4 Wireless RF Transceiver -Industry's Lowest Receive Current (10 Minutes)

Product Demonstration (10 Minutes)

**Giveaways:** NCS365110GEVK and RSL10-SENSE-GEVK DEVELOPMENT KITS **RFID:** Battery-Free Wireless Sensors: Enabling remote sensing, remote data aggregation and analysis(10 Minutes)

Product Demonstration: (10 Minutes)

FPGA to ASIC CONVERSION: Industry Leader in Low Cost FPGA to ASIC Conversions 3X-4X Typical Power Reduction

Piece Price Reduction of 25%-75% of FPGA Solution On Shore Production with Long Life Production Support (15 Minutes)

Q & A and Door Prizes (10 Minutes)



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## **WORKSHOP DESCRIPTIONS**

#### **PANASONIC: Bluetooth Low Energy 5.0 and the Smart Home**

The evolution of Bluetooth technology over the past 20 years has been very significant and now can be found in almost all electronics. Bluetooth 5 has been the main topic for customers in the IoT world, but have you wondered what this new Bluetooth technology supports? Come join me and learn about Panasonic Toshiba-based PAN1762 module. Bluetooth Low Energy 5.0 with a smart doorbell and a smart appliance controller using the Nordic-based Panasonic's modules are the premier choice in the market! Attendees will receive an overview of the BLE roadmap, hands-on demos of the BLE modules, and a development kit to keep.

#### RENESAS: Renesas Big Ideas for Every Space

Renesas/Intersil/IDT Overview (10 minutes)

Renesas MCU/MPU Highlights and Applications (30 minutes) ISL81601 Buck Boost Demo (20 mins)

Ultra-Low Current Measurement Techniques and Discussion (20 mins)

 Designing a circuit to measure single digit nano amps for low quiescent current DC-DC products in lieu of expensive digital multimeters

- Low Power AC & DC testing of low quiescent current products
- · Observing device response from sleep mode (shutdown) to a full load
- Actual battery life test results using low quiescent current products.

#### SIERRA WIRELESS: Cellular IoT: LPWA and 5G

The session with Sierra Wireless will highlight advances in embedded cellular technologies which are rapidly expanding in application in everything from long-life battery operated sensors to smart cities and autonomous vehicles. Low Power Wide Area, LPWA, has arrived as a standards-based global solution with the introduction of LTE CAT-M1/NB IoT. We will discuss how new services solutions simplify the integration and implementation of cellular services into your application. Bundled solutions are now possible, simplifying the integration of hardware, connectivity and data orchestration into your back-end platform. The attendee will also learn exactly what 5G will bring to the market, the complexities of design, and what the real-world first solutions will look like.

#### STMICROELECTRONICS: Simplifying Wireless IoT Applications Using STMicroelectronics MEM Sensors and New SensorTile.Box Kit

Looking to develop applications that use Motion and Environmental MEMS sensors? This session will give you a portfolio overview of ST's MEM Sensor offering as well as run through a demonstration of the new SensorTile.box (STEVAL-MKSB0X1V1), a ready-to-use kit for wireless IoT applications.

The SensorTile.box features ST's newest sensors including LSM6DSOX – IMU with finite state machine and machine learning core, LIS2DW12 – ultra low-power accelerometer, LIS3DHH ultra low-noise accelerometer, LIS2MDL – wide dynamic range magnetometer, LPS22HH – improved accuracy barometric pressure sensor, HTS221 – relative humidity and ambient temperature sensor, STTS751 – on-board temperature sensor to support temperature compensation, and MP23ABS1 – high performance analog microphone. The ultra-low-power Cortex-M4F STM32L4 provides all the processing capabilities that may be required by the application, while the Bluetooth low-energy module SPBTLE-1S provides the connectivity capabilities to interact with and stream to mobile devices.

The session will walk through the benefits of designing with ST's latest sensors and it will demonstrate how to use the SensorTile.box out of the box (entry level mode) with many ready-to-use applications to set up sensors, log sensor data, leverage embedded smart sensor functions (pedometer), and perform high-level processing (ex.: vibration monitoring). It will also show how to build a custom application (expert mode) using the GUI in the ST BLE Sensor app; and finally it will introduce the Function Pack FP-SNS-STB0X1 with many examples that can be used as a starting point to develop a custom firmware (pro mode).

Join us and learn how the SensorTile.Box wireless IoT kit can simplify your next application development.

#### **TE CONNECTIVITY:** There Is Not an Interconnect or Sensing Solution That We Cannot Offer...

At TE, we believe that today's impossible is tomorrow's awesome. We can help solve t omorrow's toughest challenges through advanced connectivity and sensor solutions. Here are several of our innovative products that we'll be discussing.

The Silver interconnect system provides a solution to data rate increase challenges. It is flexible, robust and provides optimum signal integrity while saving space and lowering design costs. This new connective technology simplifies design and helps lower overall costs by eliminating the need for re-times and more costly, lower-loss PCB materials by reaching speeds up to 56 Gps.

Our AMPSEAL 16 connectors offers rugged reliability, easy use and helps prevent moisture and dirt from contaminating connections. AMPSEAL 16 receptacles and pin housings offer a one-piece approach and come fully assembled.

The Jiffy Splice for DEUTSCH contacts can be used to quickly repair damaged electrical connections in the field.

The T9G relay series is a 30A Power PCB relay for HVAC, appliance and industrial control applications. The T9G relay is the smallest relay in its class while keeping the standard footprint, allowing manufacturers to add more components on PCBs without having to compromise on relay performance. By having both UL and VDE certifications, TE's P&B relay T9G series is a versatile relay that can be used globally.

#### **VISHAY: Vishay Passive Components for Power Management**

Three top Vishay product managers will be presenting new technology for power supply and power management design. We will present three 20 minute sessions with new product show and tell, product demonstrations and technology road maps geared towards anyone with interest in power management, AC-DC and DC-DC conversion, battery charging, battery management and efficiency improvements. Q&A after the presentation. Each presenter will be available throughout the day for individual discussions.

#### Vishay Team

**Doug Lillie:** Product manager standard magnetics. Vishay is a global leader in power inductors, transformers, RF, coils, etc. Doug will present latest product offering.

**Mark Walsh:** Product manager for leaded and specialty ceramic capacitors. EMI/RFI filtering, AC/DC safety caps, power and energy storage, bulk capacitors, etc. Several leading competitors have recently announced obsoleting related products where Vishay is investing heavily in new technology to improve designs and meet critical UL and agency requirements.

Walter Bonomo: Specialty passive component product manager. Super caps, power grid resistors, off board power products. Walter will give a quick overview of the many technology solutions Vishay is developing to meet power requirements.

