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ST Technology Tour - Toronto
Wednesday, October 18 - Agenda

	Session 1	Session 2	Session 3	Hands-on Training
	Registration 9:30am – 5:30pm		**Expo Floor open 9:45 AM – 7:30 PM**	
10:30 - 11:10	Low Power microphone acquisition and processing for always-on applications	IoT (It's our Time) *Sponsor Session: Ontario Centres of Excellence*	BLDC motor drive and control (10:30 – noon)	ST SensorTile and IBM Watson Hands-On Workshop (10:30 – 12:30)
11:20 - noon	LoRa™ enabling low-power, wide-area networks (LPWANs) required for IoT applications	Future-Proof Security for the Smallest IoT Devices *Sponsor Session: SecureRF*		
12:10 - 12:50	Understanding Bluetooth Low Energy	Platform Level Security For IoT Devices	Motor Driver solutions for ultra-low voltage applications	
12:50 - 1:20	Lunch			Lunch
1:20 - 2:00				STM32 Nucleo Pack for IoT Hands-On Training: Simplifying Microsoft Azure IoT Suite Connectivity (1:20 – 4:20)
2:00 - 2:40	Introduction to ST's Time of Flight Technology: FlightSense	IoT End to End - Turn your IoT Sensor Data into Insights using Watson IoT *Sponsor Session: IBM*	Robust design with major power discrete technologies	
2:50 - 3:30	Open standards for managing sensor/ actuator devices in IoT	NFC of Things	AC/DC Power Conversion	
3:40 - 4:20	Pressure sensor tech enabling consumer, industrial & medical applications	NFC readers: easy implementation in challenging environments	USB Type-C & PD	
4:30 - 5:10	Optimizing Low Power in Embedded Designs Using STM32L4 Microcontrollers	Baluns & Protection	Wireless Charging	Solve connectivity challenges with SigFox (4:30 – 6:00)
5:20 - 6:00	THELMA Technology platforms at the heart of MEMS sensing technology	No Session (Room reset for Reception)	Wireless Battery Charging *Sponsor Session: Würth Elektronik*	
6:00 - 7:30	**6 -7:30 PM Cocktail Reception and Closing Keynote** **6:30 PM presentation "Accelerating your IoT Strategy"** **Scott Kennedy, Principal Consultant, Internet of Things, Professional Services, Rogers Communications**			

Session topic: Smart Sensors | Security | Connectivity/Big Data | Power | Motor Control

Technology Tour 2017

Toronto, Ontario | Wednesday, October 18

Session 1 Abstracts

Low Power Microphone Acquisition and Processing for Always-on Applications
Speaker: Luca Spelgatti, STMicroelectronics
Time: 10:30 11:10 am

This session will focus on the tradeoff between performance and low power consumption in embedded IoT platforms used for always on microphone acquisition. It will show different system architectures based on Cortex-M microcontrollers, with one microphone acquisition and processing depending on the power budget and overall system performance, targeting always on microphone acquisition as input for automatic speech recognition algorithms.

LoRa™ Enabling Low-power, Wide-area Networks (LPWANs) Required for Internet of Things Applications
Speaker: Alec Bath, STMicroelectronics
Time: 11:20 - noon

LoRa enables long-range communication with advantages over conventional cellular connections, including lower power and cost. Versatile features include multiple communication modes, indoor and outdoor location awareness, and native AES-128 security. This session will give an overview of LoRa technology, examine use cases where LoRa is a good fit and look at a low-cost development kit for prototyping IoT devices with LoRa™ Wireless Low-Power Wide Area Network (LPWAN) connectivity.

Understanding Bluetooth Low Energy®
Speaker: Hary Radakichenane, STMicroelectronics
Time: 12:10 – 12:50 pm

This class will talk about Bluetooth evolution over the years and focus on the key challenges a developer has to face when designing a Bluetooth Low-Energy (BLE) IoT node. The session will touch power consumption estimation of the node, how to enhance application throughput, how to transmit voice over BLE and how to create a robust over the air firmware upgrade.

Introduction to ST's Time of Flight Technology: FlightSense
Speaker: John Kvam, STMicroelectronics
Time: 2:00 – 2:40 pm

ST has developed and patented its own technology, called FlightSense™, using Time-of-Flight (ToF) principle in order to propose a new generation of high-accuracy proximity sensors. In this session you will learn how ST's Time-of-Flight sensor works, how to integrate it into your industrial design and understand key performance indicators.

Open Standards for Managing Sensor/ actuator Devices in IoT Application Scenarios
Speaker: Manuel Cantone, STMicroelectronics
Time: 2:50 – 3:30 pm

The availability of the IP suite on constrained devices, including IPv6 and 6LoWPAN, makes a new kind of interoperability for connected devices and Smart Objects possible. IPSO Alliance's Smart Object Guidelines provide a common design pattern, an object model, that can effectively use the OMA Lightweight M2M (LWM2M) and the IETF Constrained Application Protocol (CoAP) to provide high-level interoperability between devices such as wireless sensors/actuators and connected applications on other devices and services. The presentation will introduce these recently published open standards and outline how they can benefit IoT application domains.

Session 1 Abstracts

Pressure Sensor Technology Enabling Consumer, Industrial and Medical Applications
Speaker: Jay Esfandyari, STMicroelectronics
Time: 3:40 – 4:20 pm

MEMS processes used to develop the mechanical sensing element of ST pressure sensors offer an ultra-compact piezo-resistive monolithic sensor that can stand high burst pressure because of the intrinsic mechanical stopper, and it has good temperature behavior because of only one temperature expansion coefficient (only silicon). This presentation will discuss in detail the two processes - VENSEN and BASTILLE- developed by ST to manufacture highly integrated and fully calibrated pressure sensors.

Optimizing Low Power in Embedded Designs Using STM32L4 Microcontrollers
Speaker: Guillaume Legrain, STMicroelectronics
Time: 4:30 – 5:10 pm

This session presents an overview of our STM32L4 Series ultra-low power microcontrollers and how they can help solve your low power needs without sacrificing performance for your next embedded design. We will review common low power terminology and how it applies to your application as well as key benchmarks used to measure power versus performance. We will demonstrate how to achieve 42uA/MHz with the SM32L4 using the SMPS configuration.

THELMA Technology Platforms at the Heart of MEMS Sensing Technology
Speaker: Jay Esfandyari, STMicroelectronics
Time: 5:20 – 6:00 pm

The MEMS process developed by ST is called THELMA (THin Epitaxial Layers for Microgyroscopes and Accelerometers). Over the past decade, THELMA has been used to develop and manufacture more than 11 billion sensors that have been deployed in consumer, automotive, medical, and industrial applications. This presentation will dive deep into the THELMA process and discuss in technical details some of the latest devices based on that process.

Session 2 Abstracts

IoT (It's our Time)
Speaker: Mark Majewski, Ontario Centres of Excellence
(OCE) Time: 10:30 – 11:10 am

What are the market and technology changes and ecosystem development that will create an explosion for IoT devices in 2020. Included will be the funding and programs available from OCE to help develop these technologies.

Future-Proof Security for the Smallest IoT Devices
Speaker: Louis Parks, SecureRF
Time: 11:20 - noon

Cost, performance, and efficiency are driving a record number of 8-bit and 16-bit devices into the IoT creating a significant security challenge. Symmetric methods can address basic data needs but they do not scale for global solutions, and asymmetric methods only become practical on larger 32-bit processors. With more and more small processors entering foundational platforms like the smart grid, medical devices, and automobiles, many with market lives of ten years or more, the issue of quantum-resistance security becomes an additional critical consideration. We will review the security options and typical implementation needs for ST Gateways and Endpoint devices including sensors, actuators, and embedded processors. This talk will include examples of ultra-low-resource protocols, and provide current benchmarks for ARM, RISC-V, and other processor environments against existing commercial solutions.

Session 2 Abstracts

Platform Level Security for IoT Devices
Speaker: Bob Waskiewicz, STMicroelectronics
Time: 12:10 – 12:50

An essential requirement for any IoT device is its trustworthiness. In this session, using an example of a secure IoT platform, we'll explore implementation-techniques for protecting code, over-the-air updates, provisioning and tamper detection, being used in concert to establish a well-fortified platform

IoT End to End - Turn your IoT Sensor Data into Insights using Watson IoT
Speaker: John Walicki, IBM
Time: 2:00 – 2:40 pm

Real IoT production deployments running at scale are collecting sensor data from hundreds / thousands / millions of devices. The goal is to take business critical actions on the real time data and find insights from stored datasets. This session will take you on a fast paced developer journey that follows the IoT sensor data from generation, to edge gateway, to edge analytics, to encryption, to the IBM Bluemix cloud, to Watson IoT Real Time rules/actions, to visualization, to Node-RED processing, to cloud storage, to Data Science Experience, to Apache Spark analysis in Jupyter notebooks, to PixieDust visualization and finally machine learning algorithms.

NFC of Things
Speaker: John Tran, STMicroelectronics
Time: 2:50 – 3:30

Secure, ease of set up and use are key to enabling a rapid proliferation of successful IoT devices. This session will describe various ways NFC (readers and tags) can be used to secure & manage IoT devices (Cloud provisioning, Wi-Fi setup, BT pairing, lifecycle management, payment, etc.).

NFC Readers: Easy Implementation in Challenging Environments
Speaker: Daniel Merino, STMicroelectronics
Time: 3:40 – 4:20

This session will cover the ST NFC/RFID High performance readers distinguishing features to easing design process and ensure robust operation in challenging environments. Features such as Automatic Antenna Tuning, Multi Antenna support, High output power (1.4W), Dynamic Power, Gain & Squelch, Capacitive / Inductive wake up will be discussed.

Baluns & Protection
Speaker: Jeff Halbig, STMicroelectronics
Time: 4:30 – 5:10

In this session, we will present ST's ESD protection and common mode filter product portfolio for High Speed applications like USB Type C. We will also present our protection solution against transients on USB charging applications. We will then provide an overview of ST's RF Integrated passives.

Session 3 Abstracts

Advanced BLDC motor controller
Speaker: Giovanni Tomasello, STMicroelectronics
Time: 10:30 am - noon

The STSPIN32 provides an opportunity to design a high performance and sophisticated three-phase motor drive in a very compact and economical package. The combination of a 32 bit ARM-core processor with advanced peripherals (such as an advanced 16 bit motor control timer) with a high current, 6 channel MOSFET gate driver and two onboard regulated power supplies provides the designer with a turn-key system. In this presentation, we will cover the available evaluation hardware and ST provided motor control software library which is available to give the designed a quick start.

Motor Driver Solutions for Ultra-low Voltage Applications
Speaker: Giovanni Tomasello, STMicroelectronics
Time: 12:10 – 12:50 pm

Integrated motor drivers for driving solenoid, relay or motors (both 3-phase BLDC and Brush DC) with up to 1 Amp current and 10V of drive voltage will be the main topic of discussion in this session. This presentation will include in-depth discussion on ST's new motor driver series of STSPIN230, STSPIN240 & STSPIN250 ICs.

Robust Design with Major Power Discrete Technologies
Speaker: Giovanni Tomasello, STMicroelectronics
Time: 2:00 – 2:40 pm

This presentation will treat the major failures modes for power discrete technologies based on Si or SiC (MOSFETs, IGBTs, SCR's, Diodes) with the target of providing design guidelines for a robust application design.

AC-DC Power Conversion
Speaker: Ivan Ivanov, STMicroelectronics
Time: 2:50 – 3:30 pm

This presentation will cover applications of offline power supply, running from American or European main voltage for a power level of up to 15 watts. Discussion will include application tricks to optimize EMI, efficiency, layout, standby power consumption and external component counts. ST's online design tool, the eDesign suite will be used to show various design iterations for 0-15 watts of AC-DC switch mode power supply.

USB Type-C & PD
Speaker: Greg Gosciniak, STMicroelectronics

USB standard has evolved from a data interface capable of supplying limited power to a primary provider of power with a data interface. The new USB PD is now enabling a new ecosystem. Different use cases will be explained, showing implementations and major products involved.

Wireless Battery Charging
Speaker: Paolo Battezzato, STMicroelectronics

Wireless Battery Charging transmitters are expected to become ubiquitous, allowing consumers to leave their cables at home and charge their portable/ wearable devices anywhere by means of electromagnetic induction used to transfer power from a WBC transmitter (TX) to a receiver (RX) in the device. This presentation will cover both the transmitter (STWBC family) and the receiver (STWLCxx family of Dual-Mode receivers) solutions.

WPC and WE Coil Specific Solutions
Speaker: Farid Jamialahmadi, Field Applications Engineer Canada, Würth Elektronik

Wurth Elektronik, as the leader manufacturer in passive components, is intensely committed in the field of wireless energy

Hands-on Training

ST SensorTile and IBM Watson Hands-On Workshop

Learn how to jump-start your next IoT design with IBM Watson and the SensorTile: a development platform with Bluetooth® Low Energy and 10 degrees of freedom

Presenter: STMicroelectronics team with John Walicki from IBM

This hands-on workshop will show you how to simplify the integration of sensors, low energy Bluetooth Low Energy connectivity, a low-power microcontroller and sensor fusion libraries into your next IoT design using the SensorTile development kit. You'll then learn to connect the SensorTile to IBM Bluemix and Watson IoT Platform to create a new application in minutes using Node-RED.

The hands-on training is a working session – please bring your laptop either a Windows® Laptop (Windows 7, Windows 8, or Windows 10) or MacBook running Windows (Parallels, VM Fusion, etc). Note: Administrator rights is needed for software and driver installation. ST will provide the required STM32 development boards and software. SPACE IS LIMITED FOR THIS SESSION – FIRST COME, FIRST SEATED. Must be present and stay for training to receive free kit.

STM32 Nucleo Pack for IoT Hands-On Training:

Simplifying Microsoft Azure IoT Suite Connectivity for Embedded Devices

Presenter: STMicroelectronics Team

The hands-on workshop will use a STM32 Nucleo pack for IoT node to demonstrate how simple it is to connect to Microsoft Azure IoT Suite and enable you to start exploring your own innovative ideas! The STM32 Nucleo pack features an array of sensors, NFC and Wi-Fi to showcase our cloud connectivity features.

The hands-on training is a working session – please bring your laptop either a Windows® Laptop (Windows 7, Windows 8, or Windows 10) or MacBook running Windows (Parallels, VM Fusion, etc). Note: Administrator rights is needed for software and driver installation. ST will provide the required STM32L4 Nucleo pack and software. SPACE IS LIMITED FOR THIS SESSION – FIRST COME, FIRST SEATED. Must be present and stay for training to receive free kit. Please include the hyperlink

Solve connectivity challenges with Sigfox

Presenter: STMicroelectronics Team

This hands-on session will share unique ways industries from agriculture to smart cities are tapping into the power of the IoT, and how the low cost, low energy, complementary technology of the Sigfox global IoT network enables the masses to become connected. Participants will then get a chance to use the Sigfox network with an ST Development Kit.

The hands-on training is a working session – please bring your laptop either a Windows® Laptop (Windows 7, Windows 8, or Windows 10) or MacBook running Windows (Parallels, VM Fusion, etc). Note: Administrator rights is needed for software and driver installation. ST will provide the required STM32 development boards and software. SPACE IS LIMITED FOR THIS SESSION – FIRST COME, FIRST SEATED. Must be present and stay for training to receive free kit.

Evening presentation

Accelerating your IoT Strategy
Speaker: Scott Kennedy, Principal Consultant, Internet of Things, Professional Services, Rogers Communications

A clear business strategy must drive technology discussions and not the other way around - we must not be swayed by disruption, but embrace it. Join Scott Kennedy to hear how IoT is recognized as a transformative and disruptive technology. And throughout the process, above all, we can not lose track of the Customer Experience, always asking “what are the basic customer needs that we are trying to solve?”

Kennedy will address how companies - such as ST - are providing the “guts” of the Internet of Things, driving real business use cases such as IoT in Automotive, Manufacturing, Hospitality, Service Industry, Smart Cities, and will include closing commentary on how attendees should consider when pitching an IoT strategy to their customers

***Bio**: Scott Kennedy is the Principal Consultant for Internet of Things, within Rogers Communications’, Professional Services Division. Scott’s mandate is to help business leaders understand, develop and successfully execute their IoT adoption strategy. With 20+ years in the telecommunications industry, Scott has a passion to help customers confidently take their next step in innovation. In his personal life, Scott recently completed his 10th marathon and understands that every journey (business or personal) begins with one step.*