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ST Technology Tour

Program Guide

ST Technology Tour
Toronto, ON Canada Agenda

Time	Session 1 Roosevelt Room	Session 2 Mackenzie Room	Session 3 Churchill Room	Session 4 City Hall	Session 5 Provincial Ballroom South	Session 6 Provincial Ballroom North	Time
Registration 9:00 a.m. – 5 p.m.				Registration 9:00 a.m. – 5 p.m.			
9:00 – 2:30	Technology Demonstrations open			Technology Demonstrations open			9:00 – 2:30
9:40 – 10:00	Semiconductors Speaker: Alessandro Cremonesi, Group Vice and Applications, STMicroelectronics			Accelerate IoT Growth President, General Manager of ST System Research			9:40 – 10:00
10:00 - 10:25	**Keynote** Disruptive Innovation - How to Identify if an Speaker: Dr. Ghada Badawy, Computing Infrastructure			**Address** Idea Will Cause Disruption in the Industry Research Center (CIRC) at McMaster University			10:00 - 10:25
10:35 - 11:15	Wireless Charging in Consumer Applications	Introduction to STM32 Dual core configuration MCU series with ARM® Cortex®-M Cores	Ultra-low Power 6Gb/s Close Proximity Transceiver	Artificial Neural Network Mapping Made Simple with the STM32CubeMX.AI (10:45 - 11:00) STM32 CubeMX.AI Technology Demonstration (11:25 – 1:30)	How to Connect to AWS IoT Core using Amazon FreeRTOS for Embedded Devices – Hands-on Workshop Using STM32L4 Discovery Kit IoT Node *Presented by AWS* Hands-on Training (10:45 – 1:00)	Simplifying Motion MEMS and Environmental Sensors Design using the STM32CubeMX and the X-CUBE-MEMS1 Software Pack Hands-on Training (10:45 – 1:00)	10:35 - 11:15
11:25 – 12:05	USB Type-C PD	Enhancing the User Experience with TouchGFX Advanced Graphics on the STM32	Eval kits and Development platforms for MEMS Sensors: A Comprehensive Environment for Fast Go-to-Market				11:25 – 12:05
12:15 – 1:00	Type-C Connector, The New Universal Interface? *Presented by Wurth Electronics*	Security meets low power with STM32L5 Series of Ultra-low-power MCUs	LPWAN (LTE & LoRa) IoT Solutions				12:15 – 1:00
1:00 – 2:00	**Lunch Technology**			**Break Demonstrations Open**			1:00 – 2:00
2:00 – 2:40	ST Enables Robotic Revolution for Industrial and Consumer Products	Key Management in Embedded End-to-End Encryption through Digital Ledger Technology *Presented by NXM*	Cloud Connected IoT Sensor Nodes with STM32	Introduction to the STM32MP1 Microprocessor Series	How to Design a NFC Reader Application: a Step-by-Step Approach	Bluetooth Low Energy 5.0 and 802.15.4 Made Easy with the STM32WB Hands-on Training (2:00 – 5:15)	2:00 – 2:40
2:50 - 3:30	Using Advanced Sensors in Smart Industry Applications	ST IPAD™ Technology: A Key Enabler for IoT Miniaturization	mmWave for Fixed Wireless Access (FWA) and 5G *Presented by Peraso*	Overview of BlueNRG-MESH SDK for the ST Bluetooth Low Energy SOCs	Simplifying Integration of Sensors Data, Using the NFC Enabled Multi-Sensors Node, STEVAL-SMARTAG1 Hands-on Training (2:50 – 5:00)		2:50 - 3:30
3:40 – 4:20	Ultra-low Power, Zero Drift Operational Amplifiers for Industrial and Remote Analog Sensors	How to Get Your Product Manufactured and Ready for Market, Fast! *Presented by Vexos*	Augmented and Virtual Reality Symposium (3:40 – 5:15)	Simplify the Integration of Sensors and Bluetooth Low Energy (BLE) Connectivity using the BlueTile Eval Kit (3:40 – 5:15)			3:40 – 4:20
4:30 – 5:10	Ultrasound Pulsers for Non-Destructive Testing and Medical Imaging Applications	A Breakthrough Innovation in MEMS Sensors: Introducing LSMDSOX, iNEMO 6DoF Inertial Measurement Unit (IMU), with Machine Learning Core					4:30 – 5:10
4:30 – 6:30	Technology Exhibits & Demonstrations Open			Technology Exhibits & Demonstrations Open			4:30 – 6:30
5:15 – 6:30	**Evening Networking Reception**			**Evening Networking Reception**			5:15 – 6:30

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Technology Tour 2019

Toronto, Canada | May 29

Morning Presentation

Semiconductors Accelerate IoT Growth
Time: 9:40 – 10:00
Speaker: Alessandro Cremonesi, Group Vice President, General Manager of ST System Research and Applications, STMicroelectronics

Speaker Bio:
Alessandro Cremonesi manages the Company's Labs dedicated to System Application and Innovation worldwide with responsibilities that span from corporate advanced R&D to system-solutions support for ST customers. After a period of research activity in opto-electronics at the University of Pavia, Italy, Cremonesi joined STMicroelectronics in 1984. He has served in different managerial roles, responsible for both Strategic Marketing and R&D activities across multiple domains from telecommunications and cellular to audio/video digital-signal processing and multimedia applications. Most recently, Cremonesi has also been active in supporting the Company's extensive efforts and strategy in IoT and Artificial Intelligence. Cremonesi performs institutional and advisory roles with several industrial and academic bodies. He is a member of the expert group supporting the Italian Ministry of Economic Development for the definition of the National Strategy for Artificial Intelligence. He has authored several technical papers and patents and is a member of the Scientific Advisory Board at IMEC.

Keynote Address

Disruptive Innovation - How to Identify if an Idea Will Cause Disruption in the Industry
Time: 10:00 – 10:25
Speaker: Dr. Ghada Badawy, Computing Infrastructure Research Center (CIRC) at McMaster University

In the fast pace of technology development in modern times, disruptive innovation is a critical concept businesses should pay attention to. Made popular by Christensen, a professor at the Harvard school of business, this concept helps technical industry form a strategy to stay relevant. In this this talk we will answer the following questions. What is disruptive innovation? What are some examples of disruptive innovations? Are all innovations disruptive? How should current businesses prepare for disruption in their markets?

Speaker Bio:
Dr. Ghada Badawy is a Principal Research Engineer at the Computing Infrastructure Research Center (CIRC) at McMaster University where she is leading multiple projects including but not limited to(1) Autonomous Monitoring and Predictive Maintenance for Data Centre Operations and DOCSIS, (2) Integrated Control of Data Centers, and (3) Canarie's Joint Security Project. Dr. Badawy brings a very unique experience as she has held leading roles in both industry and academia. Before joining CIRC she worked at BlackBerry as an Advanced networks connectivity researcher where she has led multiple video over Wi-Fi and peer to peer research projects and authored multiple patents. She has also worked as a Postdoctoral fellow at McMaster University and Ryerson University and as a senior software engineer at IBM. Ghada received her Ph.D. degree in Computer Engineering from McMaster University and her B.Sc. and M.Sc. degrees in Computer Engineering from Cairo University in Egypt. She has authored multiple publications in prestigious conferences and journals. Dr. Badawy has also been a speaker at multiple distinguished academic conferences and events such as Data Centre Dynamics (DCD), CAPRE'S third annual Canadian Data Centre summit and the Great Canadian Data Center Symposium (GCDCS). Her areas of research include machine learning, resource allocation, optimization, network as a large system, energy-related issues and cross-layer design in wireless networks, and wireless mesh, vehicular and sensor networks.

Session 1 Abstracts - Roosevelt Room

Wireless Charging in Consumer Applications
Time: 10:35 – 11:15
Speaker: Paolo Battezzato, STMicroelectronics

Inductive-based Qi wireless charging has become a standard feature in many mobile phones in the last few years, allowing users to cut “the last cord” and go completely wireless. It is now finding its way in personal electronics, wearables, industrial and medical applications. This segment will offer an overview of wireless charging basics and focus on the key aspects of the WPC (Wireless Power Consortium) Qi standard. It will cover the solutions ST offers for both Transmitter (STWBC series) and Receiver (STWLC3x series), illustrating how they can be used to implement complete wireless charging systems in the power range from 1 W up to 15 W, including the support of proprietary fast charging methods for mobile phones.

USB Type-C PD
Time: 11:25 – 12:05
Speaker: Paolo Battezzato, 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 Type-C PD is now enabling a new ecosystem. Different use cases will be explained, showing implementations and major products involved.

Type-C Connector, the New Universal Interface?
Time: 12:15 – 1:00
Speaker: Ben Arden – Business Development Manager, Wurth Electronics

During this presentation by Wurth Electronics, attendees will see a demonstration of the USB-C connector and cable construction, USB 3.0 data/power delivery capabilities and evaluating calibration testing.

ST Enables Robotic Revolution for Industrial and Consumer Products
Time: 2:00 – 2:40
Speaker: Marco DeFazio, STMicroelectronics

The fourth industrial revolution is bringing more innovation to all industrial segments, by enabling higher efficiency and productivity. In production lines and warehouses, complex and highly automated processes are becoming more affordable and reliable using new modern equipment, including robots and predictive technologies that optimize production at the lowest cost.

The adoption of new equipment includes 3D printing machines and drones. 3D printers are becoming mainstream by allowing fast, cost-effective prototyping and small-scale production. Drones are popular at both the consumer and professional levels and are quickly being adopted for new applications in fields from safety, inspection, agriculture, last-mile delivery and many more. These advances are enabled by affordable, scalable and flexible technologies.

Discover how ST solutions on motor drivers, power discretes, sensors and microcontrollers help customers solve difficult cost, time-to-market, and technical challenges when designing robotics and automation products.

Session 1 Abstracts Continued – Roosevelt Room

Using Advanced Sensors in Smart Industry Applications
Time: 2:50 – 3:30
Speaker: Edoardo Gallizio, STMicroelectronics

"Smart Industry" is an (r)evolution that builds on many technology advances over the past decades but which will fundamentally change the way factories and workplaces function. "Smart" means doing things more efficiently, more flexibly and in a more environmentally friendly manner while creating a safer workplace. Quality sensor data play a critical role in successful smart industry: productivity, quality, reliability, and safety heavily depend on the accurate and reliable data provided by the sensors employed.

The ability to collect data through sensors by monitoring processes, products, and assets, to analyze these data, and to extract the right insights to make right decisions is at the core. These right decisions will help improve efficiency, reduce cost, and increase productivity.

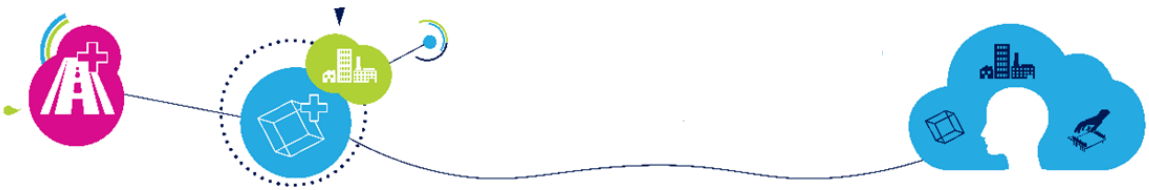
Ultra-low Power, Zero Drift Operational Amplifiers for Industrial and Remote Analog Sensors
Time: 3:40 – 4:20
Speaker: Greg Gosciniak, STMicroelectronics

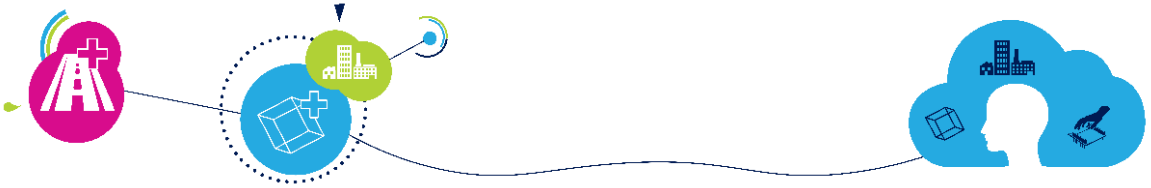
Sensors in today's world are extensively used to measure weight, read temperature, evaluate gas concentration, identify VOC, control speed and more. Even though we live in an increasingly digital world, many sensors today are bound to operate in the analog domain. And most of them provide an extremely small signal that needs to be amplified, before being converted into bits of digital information for processing and visualization. Precision operational amplifiers are the primary link between these analog sensors and the digital world.

In this presentation, the theoretical foundations of precision in operational amplifiers will be explored, the fundamentals of the four underlying parameters affecting precision will be presented, and the theoretical and practical explanation of a gas sensor operation with ST's TSZ121 zero drift operation amplifier will be presented.

Ultrasound Pulsers for Non-Destructive Testing and Medical Imaging Applications
Time: 4:30 – 5:10
Speaker: Piercarlo Scimonelli, STMicroelectronics

Ultrasound can be used to measure distance, identify direction, and evaluate size, speed and movement of objects. In this presentation, the theoretical foundations of ultrasound imaging will be explored, the fundamentals of the underlying physics will be presented, and the theoretical and practical explanation of the basics of Ultrasound Imaging on the medical and industrial field will be described together with an introduction to ST portfolio of application specific standard products.





Session 2 Abstracts – Sessions located in Mackenzie Room

Introduction to STM32 Dual core configuration MCU series with ARM® Cortex®-M Cores
Time: 10:35 – 11:15
Speaker: Ramkumar Yadavalli, STMicroelectronics

The session introduces STMicroelectronics most powerful STM32 MCU series delivering 2400+820 CoreMark & 1027+300 DMIPS in a Dual core configuration, with Embedded up to 2MBytes Flash and 1MBytes RAM. The product gives embedded developers ever more resources and powerful peripherals, more I/O, 35 communication peripherals, top notch analog peripherals such as multiple 16-bit ADC and embeds hardware enabled Secure Firmware Installation capabilities to authenticate and protect your software IP while performing initial programing in production or during field firmware upgrades as a solution to many IoT challenges. The new STM32 dual core variants embed a DCDC converter to reduce the power consumption in RUN mode. This feature also enables the extended temperature range support on some dedicated variants (optional) to address applications handling severe environments.

Enhancing the User Experience with TouchGFX Advanced Graphics on the STM32
Time: 11:25 – 12:05
Speaker: Mike Hartmann, STMicroelectronics

During this session, you will be introduced to STM32 devices with advanced graphics capabilities and the TouchGFX software framework. TouchGFX is optimized for STM32 and includes an easy-to-use GUI builder, TouchGFX Designer. This drag and drop tool seamlessly integrates into your TouchGFX development, moving you quickly from idea to product.

Security meets low power with STM32L5 Series of Ultra-low-power MCUs
Time: 12:15 – 1:00
Speaker: Colin Ramrattan, STMicroelectronics

The IoT market is evolving and adding dimensions and parameters for developers to consider in new projects including security. Security is a requirement as concerns of hacking and hijacks are a major concern extending all industries. The STM32L5 is the answer to your IoT security needs. With a CortexM33 ARM core, customized secure/non-secure silicon IP additions, secure boot and secure firmware upgrade capable and with features like on-the-fly decryption, the STM32L5 fits your security needs. Learn the basics of how the STM32L5 hits all of the key points of security and is PSA certified. In addition to security, the L5 brings all of the low power features of the STM32L4 family into this new microcontroller series.

Session 2 Abstracts Continued – Sessions located in Mackenzie Room

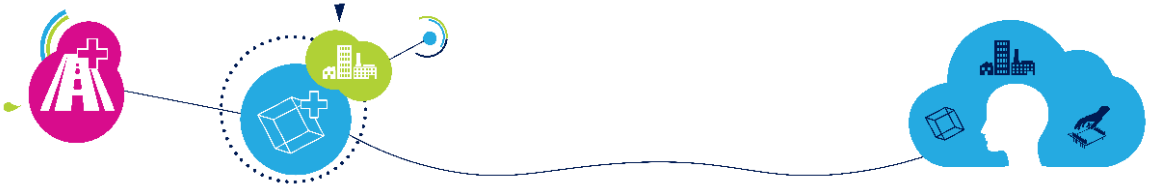
Key Management in Embedded End-to-End Encryption through Digital Ledger Technology
Time: 2:00 – 2:40
Speaker: Jay Fallah, CTO of NXM

Increased digitization in our daily life and the conveniences that it brings has also meant increased data breaches and government surveillance, through the same digital devices. Service providers, hardware manufacturers and data warehouses are relying on encryption to preserve privacy and provide security. Software providers such as WhatsApp ushered an era of End to End (E2E) encryption to preserve the confidentiality of data on the wire as well as from service providers by performing encryption/decryption at clients keeping the keys strictly within client devices. Device manufacturers, such as Samsung and Apple, have introduced their own system to ensure integrity and security for the client devices. In the sensor/actuator networks and the Internet of Things (IoT) realms there is no such equivalence resulting in several high-profile device breaches and IoT device hacks in recent years. Low price, sheer diversity and the kludgy nature of these edge devices has resulted in flawed system designs and security assumptions. The Centre for Autonomous Security and Data Integrity (CASDI) proposes an Embedded End to End Encryption (EE2EE) scheme for preserving security and privacy that could be implemented at the chip level. The path proposed would allow for encryption to harden security and privacy in the firmware, application level, data and communication for any chip to any cloud. We conclude with general design guidelines to securely build such systems.

Speaker Bio:
Jay Fallah is the CTO and Co-founder of NXM Labs and the Chief Research Officer (CRO) of the Center for Autonomous Security and Data Integrity (CASDI). Jay is a dedicated technologist focusing on Identity and Access Management (IAM) for the Internet of Things (IoT). His current focus is to enable scalability and management of IoT through automation and Digital Ledger Technology (DLT). He believes that Control and User Plane Separation (CUPS), embedded end to end encryption (EE2EE) and a decentralized-distributed event-centric Peer to Peer (P2P) methodology are essential for programmability and cybersecurity at the edge.

ST IPAD™ Technology: A Key Enables for IoT Miniaturization
Time: 2:50 – 3:30
Speaker: Michael Felato, STMicroelectronics

STMicroelectronics proprietary IPAD (Integrated Passive and Active Devices) technology is leading the way in reducing the footprint of peripheral electronics surrounding intelligent ICs. In addition to resistors, capacitors, and inductors, IPAD can also incorporate ESD diodes and TVS functions for high density protections, filters, and impedance matching circuits. In this discussion, attendees will learn how the broad ST portfolio can help reduce size and cost of their IoT devices.



Session 2 Abstracts Continued – Sessions located in Mackenzie Room

How to Get your Product Manufactured and Ready for Market, Fast!
Time: 3:40 – 4:20
Speaker: Cyril Fernandes and Brian Morrison, Vexos

Partnering with the right contract manufacturer is critical to the success of your product launch. Global award-winning EMS provider Vexos has expertise and experience in providing engineering services, rapid prototyping and full turn-key manufacturing services for global OEMs in the IOT market sector.

This presentation will walk you through the entire product lifecycle process, identifying critical success factors for your product from concept/NPI through to the mature production stage including:

- Key benefits to performing Design for Excellence services on your design and product?
- Working with your manufacturing partner in order to create products that are more cost effective, have increased manufacturability and quality, coupled with a higher reliability over the product life-cycle
- Key opportunities for cost reduction and feedback, driving a successful new product introduction launch
- Working shoulder-to-shoulder with the appropriate partners in order to better manage risk over the product life-cycle

A Breakthrough Innovation in MEMS Sensors: Introducing LSMDSOX, iNEMO 6DoF Inertial Measurement Unit (IMU), with Machine Learning Core
Time: 4:30 – 5:10
Speaker: Thiago Reis, STMicroelectronics

Machine Learning Core is a unique, revolutionary approach ST IMUs are offering; Decision trees are predictive model built from training data: can be configured and tuned based on data-log collected by developers and users, enabling to have classification algorithms running at sensor level, by reducing the MCU or AP power consumption; This innovative pattern classification approach of events will enable a new wave of consumer, Industrial or IoT applications by reducing the computation requirements and offering the capability of generating Meta-data at Intelligent nodes level directly at extremely low power consumption, with additional positive effects of reducing the amount of data to be transmitted to the cloud.

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Session 3 Abstracts – Located in the Churchill Room

Ultra Low Power 6Gb/s Close Proximity Transceiver
Time: 10:35 – 11:15
Speaker: Boris Karajica, STMicroelectronics

During this session, you will be introduced to the latest addition to ST's connectivity product portfolio: ST60-60GHz: Ultra Low Power –High Data Rate Transceiver. This device is ideally positioned for industrial, consumer and medical applications in need of replacing connectors, cables and other types of wired interfaces. In application segments where accessibility and size are limiting factor as well as low power requirement, this device offers alternative to existing high bandwidth communication links such as: Ethernet, DP and USB.

The attendees will be given an overview of the ST60 features as well as live demo of the product including implementation cases covering data rates from 1Mb/s-6Gb/s.

Eval kits and Development platforms for MEMS Sensors: A Comprehensive Environment for Fast Go-to-Market
Time: 11:25 – 12:05
Speaker: Mauro Scandiuzzo and Thiago Reis, STMicroelectronics

With the fast expansion of the adoption of MEMS & Sensors into new markets and applications such as wearables, industrial, smart home and building automation, and smart speakers, ST has prepared a full set of development platforms capable of enabling complex system-level designs by bridging multiple key application building blocks (hardware and software) within its Open Development Environment.
This session will introduce and detail platforms with unique features that will allow testing, prototyping and developing a final product around ST Sensors.
This session will explore:

- IoT Discovery Kit: STM32L4 Discovery kit IoT node, low-power wireless, BLE, NFC, Sub-GHz, Wi-Fi
- Sensor Tile Development Kit
- BlueNRG-Tile: Bluetooth LE enabled sensor node development kit
- STM32 Nucleo Expansion boards
- Professional MEMS tool: ST MEMS adapter motherboard

LPWAN (LTE & LoRa) IoT Solutions from ST
Time: 12:15 – 1:00
Speaker: Marc Hervieu, STMicroelectronics

This session will show ST's LPWAN IoT Ecosystem for low power, low bit-rate cloud connectivity that is suitable for battery-powered devices. We will explore how ST based starter kits for Verizon®, AT&T® and machineQ™ (a Comcast® company) simplify IoT embedded development and speed time-to-market. The LPWAN technologies covered will be LTE Cat-M / NB-IoT (4G and 5G technologies) and LoRa® with use cases including sensor-to-cloud connectivity and GNSS tracking.

Session 3 Abstracts Continued – Located in the Churchill Room

Cloud Connected IoT Sensor Nodes with STM32
Time: 2:00 – 2:40
Speaker: Manuel Cantone, STMicroelectronics

In this session, we will present the various solutions for an STM32 based IoT Node capable of connecting directly or via gateway to AWS IoT Core, Microsoft Azure IoT Hub, Google Cloud IoT and IBM Watson IoT. These SW packages can jump-start any end-to-end IoT development, saving time in the integration of the different basic functions needed for a sensor-to-cloud application. The IoT nodes are capable of transmitting sensor data and receiving commands to and from Cloud services.

mmWave for Fixed Wireless Access (FWA) and 5G
Time: 2:50 – 3:30
Speaker: Ron Glibbery, Sr. VP at Peraso

Peraso is a leader in the fixed wireless market, utilizing the ST 130mm BiCMOS mmwave process technology to achieve best in class RF performance at competitive price points. The FWA market demands a combination of high data rates, long range and cost competitiveness. Peraso takes advantage of key attributes of the ST technology, including highly efficient Tx power amplifiers and low noise LNAs, thus contributing to highly competitive link margins. Further, given Peraso's expertise in phased array technology, the ST 130nm process allows the addition of CMOS transistors necessary to support a significant digital component of its mmwave radio products.

Speaker Bio:
Mr. Glibbery has over 20 years of experience in the semiconductor industry in both the technical and commercial aspects of the business. Mr. Glibbery was the Director of the Digital Video Business Unit at LSI Logic Corporation of Canada, a publicly listed Canadian company. Mr. Glibbery founded Cogency Semiconductor in 2000 to focus on residential power line networking. Cogency merged with Intellon corporation in 2004, where Mr. Glibbery became President. Intellon was acquired by Atheros Corporation, and was subsequently acquired by Qualcomm, where power line networking continues as an operating group. Mr. Glibbery founded Peraso in September, 2008, and closed a $10M Series A financing for the company in October 2009. The company has raised over $45M to date, and has become a leading vendor of WiGig compliant ICs, shipping to a variety of applications, including consumer electronics, small cell backhaul and broadband access.

Session 3 Abstracts Continued – Located in the Churchill Room

Augmented and Virtual Reality Symposium
Time: 3:40 – 5:15

Significant investments, technological advances and marketing excitement surround augmented reality. AR has the potential and promise to provide compelling and powerful user experiences across markets including consumer, enterprise, industrial and automotive. Though AR is still in its nascent stages, many leading technology companies, and a myriad of start-up companies, have either publically introduced, or have announced that they are working on, various implementations and aspects of AR. Most industry leaders, analysts and futurists agree that it is a matter of when, and not if, we will witness the ubiquity of AR in our everyday lives and find it indispensable, much like the smartphone is today.

In this symposium, thought leaders from across the industry will discuss the state of the market and where it is headed, review the technologies, challenges and opportunities, including key requirements necessary to deliver compelling user experiences, and share lessons learned from developing products and solutions.

Speakers will participate from North, Peraso Technologies Inc. and STMicroelectronics.

STMicroelectronics – Laser Beam Scanners for AR/MR near-eye-displays

Speaker: Marco Angelici, STMicroelectronics

North – Overview of Smart Glasses Market

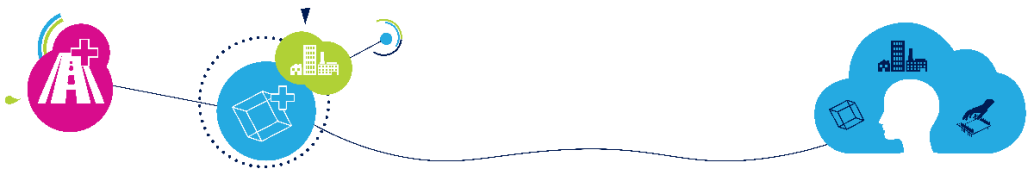
Speaker: Walter Hermsen, VP of Product Experience at North Inc.

Learn about North's unique take on the smart glasses market, our product ethos, product choices and outlook

Peraso – Wireless Solution for Augmented and Virtual Reality

Speaker: Ron Glibbery, Sr. VP at Peraso

60 GHz technology is ideal for the emerging wireless AR/VR market. Significant attributes include high data rates (multi-gigabit performance), low latency (under 5ms) and interference free operation. Peraso utilizes the ST 130nm BiCMOS technology to implement its AR/VR phased array technology, which requires extremely high link margin performance, and a substantial digital component required to achieve low latency beam steering capability.



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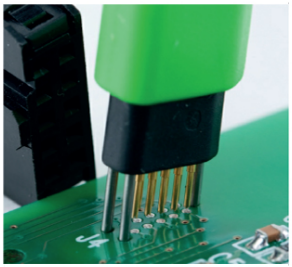
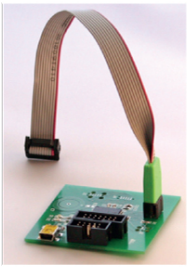
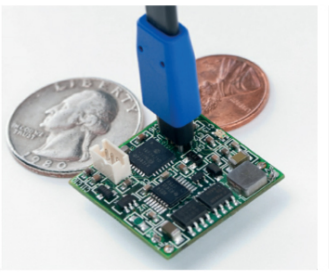

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TC2030-CTX Plug-of-Nails™ Cable for ARM Cortex

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Cortex SWD micro-header vs. TC2030-NL



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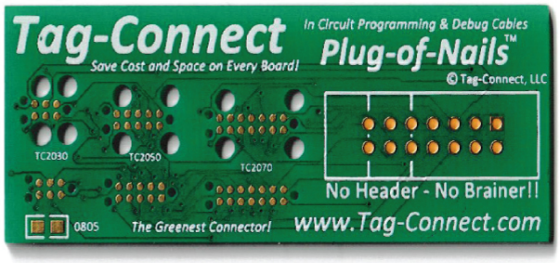

Session 4 Abstracts – Sessions located in City Hall

Artificial Neural Network Mapping Made Simple with the STM32Cube.AI
Time: 10:35 – 11:00
Speaker: Markus Mayr, STMicroelectronics

This session will focus on the new STM32Cube.AI software tool and its ecosystem. The STM32Cube.AI toolbox generates optimized code to run neural networks on STM32 microcontrollers. It brings AI to microcontroller-powered intelligent devices at the edge, on the nodes, and to deeply embedded devices across IoT, smart building, industrial, and medical applications. With STM32Cube.AI, developers can now convert pre-trained neural networks into C-code that calls functions in optimized libraries that can run on STM32 MCUs.

The comprehensive toolbox consisting of the STM32Cube.AI mapping tool, application software examples running on small-form-factor, battery-powered SensorTile hardware, together with the partner program and dedicated community support offers a fast and easy pathway to neural-network implementation on STM32 devices.

STM32 CubeMX.AI Technology Demonstration
Time 11:00 – 1:00
Speaker: Markus Mayr and Guillaume Legrain, STMicroelectronics

The session will provide an overview and a detailed technology demonstration including all the different steps to use the STM32Cube.AI to bring neural networks to the STM32 Microcontrollers.
The STM32Cube.AI toolbox generates optimized code to run neural networks on STM32 microcontrollers. It is bringing AI to microcontroller-powered intelligent devices at the edge, on the nodes, and to deeply embedded devices across IoT, smart building, industrial, and medical applications. With STM32Cube.AI, developers can now convert pre-trained neural networks into C-code that calls functions in optimized libraries that can run on STM32 MCUs.

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Introduction to the STM32MP1 Microprocessor Series
Time: 2:00 – 2:40
Speaker: Mike Hartmann, STMicroelectronics

Leveraging the unparalleled success of the STM32, ST recently announced the newest addition to the family, the STM32MP1. This general purpose multicore microprocessor series will facilitate development of high-performance solutions for Industrial, Consumer, Medical and Smart Home applications. This session will introduce attendees to the STM32MP1, its features and capabilities, the available tools, and the ecosystem around it.

Session 4 Abstracts Continued – Sessions located in City Hall

Overview of BlueNRG-Mesh SDK for the ST Bluetooth low energy SOCs
Time: 2:50 – 3:30
Speaker: Hary Radakichenane, STMicroelectronics

This session will explore Bluetooth low energy mesh technology and talk about BlueNRG-Mesh, a certified and qualified ST software development kit implementation of the Bluetooth SIG specs. This solution targets applications such as lighting, smart home and building automation, smart industry, wireless sensor networks.

During the class, attendees will learn about the Bluetooth Low Energy mesh architecture and its main functionalities such as the “models” for lighting and sensors, the “low power nodes” and “friend nodes” capabilities for low power applications, the “elements” to enhance the end application functionalities, the “Mesh Addressing concept” and the “mesh Publish and Subscribe messaging model” to exchange information over the mesh network.

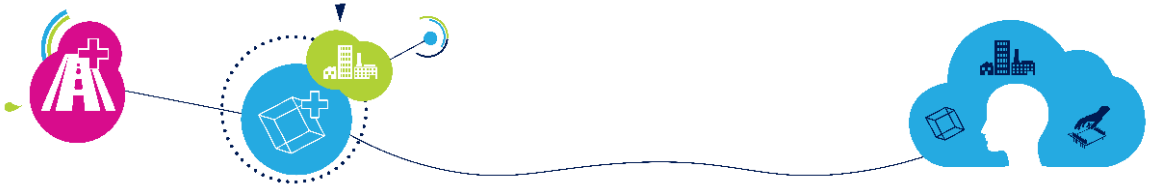
Security and provisioning of new devices within Bluetooth low energy mesh will be also explored.
Finally, the class will receive an overview of the BlueNRG-Mesh SDK for the ST Bluetooth low energy SOCs and the companion mobile App for both Android and iOS.

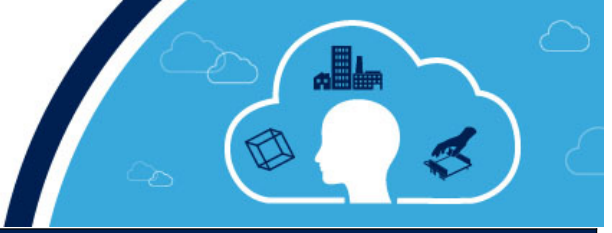
Simplify the Integration of Sensors and Bluetooth Low Energy (BLE) Connectivity using the BlueTile Eval Kit
Time: 3:40 – 5:15
Speaker: Raffaele Riva, STMicroelectronics

During this session, you will be introduced to BlueNRG-Tile: a Bluetooth low energy (BLE) enabled sensor node development kit. Details on the hardware platform and its companion software development kit for the BlueNRG-Tile will be presented, including application examples as sensor data streaming over BLE, HID peripheral, Beacon.

Attendees will learn how to design an efficient BLE protocol, starting from the ST Blue protocol, for interacting with a mobile client, the ST BLE Sensor mobile App for both Android and iOS.

Finally, the capabilities of the ARM Cortex-M0 System-On-Chip along with the advanced set of MEMS sensors will be exploited, introducing real-time embedded sensor data fusion and streaming of voice over the BLE link.





Session 5 Abstracts – Session Located in Provincial Ballroom South

How to Connect to AWS IoT Core using Amazon FreeRTOS for Embedded Devices – Hands-on Workshop Using STM32L4 Discovery Kit IoT Node (Hands-on Training)
Time: 10:45 – 1:00
Speaker: Anton Shmagin (AWS) with STMicroelectronics Team

This hands-on workshop will use an STM32L4 Discovery Kit IoT Node to demonstrate how to use Amazon FreeRTOS to securely connect a constrained, low-power embedded device to AWS cloud services like AWS IoT Core and enable you to start exploring your own innovative ideas! The kit features an array of sensors and Wi-Fi to showcase cloud connectivity features.

This a working session. Participants will need their own laptop running Windows 7 or later, or macOS. Note that administrator rights are needed for software and driver installation. ST will provide the required eval board and the companion software. SPACE IS LIMITED FOR THIS SESSION – FIRST COME, FIRST SEATED.

How to Design a NFC Reader Application: a Step-by-Step Approach
Time: 2:00 – 2:40
Presenter: Daniel Merino, STMicroelectronics

This presentation will focus on the key challenges of designing an NFC reader application. Product selection, antenna tuning, layout optimization, read range, noise reduction, power consumption optimization, testing and certification are among the most important aspects in this application design space. Participants will learn how to develop an NFC reader application leveraging ST high performance reader ICs and evaluation tools.

Simplifying Integration of Sensors Data, Using the NFC Enabled Multi-Sensors Node, STEVAL-SMARTAG1 (Hands-on Training)
Time: 2:50 – 5:00
Speaker: John Tran, STMicroelectronics

Learn how to simplify the integration of environmental and inertial sensors, NFC Dynamic Tag connectivity, and a low-power microcontroller into your next IoT design using the new STEVAL-SMARTAG1 development kit.
The STEVAL-SMARTAG1 is a sensor node that can sense temperature, humidity, pressure, motion and transmit the data when triggered by an NFC reader. It can be scaled down based on final application requirements. The platform can accelerate the design of applications such as supply chain/cold chain monitoring for perishable and valuable goods, asset tracking, healthcare, smart apparel and smart packaging, and smart agriculture, among others.
During this session, you will use the STEVAL-SMARTAG1 development kit and the GUI for the ST25R3911B (NFC High Performance Reader/Writer) to configure sensors without a debugger, and without writing code in order to achieve a Fast Prototyping, reduce time-to-market in a small plug-and-play system solution. The workshop will walk you through using the development kit and platform with available HW, SW, GUI and algorithms.
All participants will receive the free STEVALSMARTAG1 and ST25R3911B-Discovery development kits and related SW. You must stay for the training session to receive a board.
This is a working session. All participants must have a PC running Windows 8 or later with administrative privileges. SPACE IS LIMITED FOR THIS SESSION – FIRST COME, FIRST SEATED.

Session 6 Abstracts – Session Located in Provincial Ballroom North

Simplifying Motion MEMS and Environmental Sensors Design using the STM32CubeMX and the X-CUBE-MEMS1 software pack (Hands-On Workshop)
Time: 10:45 – 1:00
Speaker: STMicroelectronics team

Looking to add motion and environmental sensors to your next product? This workshop will show you how to use an X-Nucleo IKS01A3 Sensor Board with an STM32L4 Nucleo Board and the X-CUBE-MEMS1 software pack for STM32CubeMX to get started on a new sensor project. The X-Nucleo IKS01A3 Sensor Board features ST newest sensors including LSM6DSO - IMU, LIS2DW12 - Accelerometer, LPS22HH - Pressure Sensor for lower power and improved accuracy and STTS751 – Digital Temperature sensor for on-board temperature calibration in the final application. The Workshop will show how the STM32CubeMX can be used to set up the sensors, log sensor data, optimize sensor configurations and leverage embedded smart sensor functions. Join us and learn how the ST32CubeMX ecosystem can simplify your next sensor design.

This a working session. Participants will need their own laptop running Windows 7 or later, or a MacBook running Windows (Parallels, VM Fusion, etc.). Participants should have a basic understanding of the “C” programming language or equivalent. Note: Administrator rights are needed for software and driver installation. ST will provide the development kit and all software.

SPACE IS LIMITED FOR THIS SESSION – FIRST COME, FIRST SEATED. Must be present and stay for training to receive the free kit.

Bluetooth Low Energy 5.0 and 802.15.4 Made Easy with the STM32WB (Hands-on Training)
Time: 2:00 – 5:15
Speaker: Colin Ramrattan, STMicroelectronics team

Looking to add 802.15.4 wireless connectivity, reduce your BOM cost, add functionality and advanced features into your product? The STM32WB dual-core multi-protocol wireless microcontroller is the right fit for you. Learn the basics of Bluetooth and how the STM32WB conforms to Bluetooth Low Energy 5.0. Experience how the STM32WB development tools, ecosystem and examples can take you from a NUCLEO board to a working design in this workshop. Designers new to STM32 microcontrollers are welcome to join and learn how the STM32Cube ecosystem can simplify your next embedded design.

This hands-on training is a working session and requires either a Windows® Laptop (Windows 7, Windows 8, or Windows 10) or a MacBook running Windows (Parallels, VM Fusion, etc.). Participants should have a basic understanding of the “C” programming language or equivalent. Note: Administrator rights are needed for software and driver installation. ST will provide the required P-NUCLEO-WB55 development kit and all software.

SPACE IS LIMITED FOR THIS SESSION – FIRST COME, FIRST SEATED. Must be present and stay for training to receive the free kit.

Due to Global Trade Compliance Regulations, recipients of the P-NUCLEO-WB55 development pack must be employed by a company with a valid physical address in the country of the workshop attended. PO box is not acceptable. All attendees must verify their eligibility by showing both a business card that includes personal name, company name and company address, and a Government-Issued photo ID. If an attendee cannot provide verification, they can participate in the workshop, but will need to return the kit to ST at the end of the workshop.

Complementary Event Wi-Fi Info

Network: **STMicro**

Password: **STM19TTT** (all uppercase)

Thank you for joining us today!

A few days after the event, watch your email inbox for a link to all available presentations.

In the meantime, we welcome you to take a brief survey on this event at:

https://www.surveymonkey.com/r/tttoronto19

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