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- **Gateways in IoT Solutions: Functions, Case Studies and Challenges**
  Kirsten Billhardt, Global Marketing Strategist for the Internet of Things, Dell Internet of Things Lab
- **Powering the IoT with MEMS Piezoelectric Vibrational Energy Harvesters**
  Kathy Vaeth, Ph.D., Vice President of Engineering, MicroGen Systems, Inc .

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- **IoT for Infrastructure Monitoring: Technologies and Applications for Smart Transport/Smart Buildings/ Smart Cities**
  Roger Grace, President, Roger Grace Associates
- **Industrial Internet as a Service**
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  Sudha Jamthe, Head of Mobile Business Growth and Product Optimizations, eBay

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MORNING AGENDA

7:00 am	**Registration Opens**
8:00 am – 8:20 am	**Welcome and Introduction**
SESSION I: IOT HARDWARE	
8:20 am – 8:40 am	**What Will You Make? Rapid Prototyping with Intel** *Carlos Montesinos, Research Scientist & Tech Lead, User Experience Research Lab, Intel Labs*
8:40 am – 9:00 am	**Gateways in IoT Solutions: Functions, Case Studies and Challenges** *Kirsten Billhardt, Global Marketing Strategist for the Internet of Things, Dell Internet of Things Lab*
9:00 am – 9:20 am	**Powering the IoT with MEMS Piezoelectric Vibrational Energy Harvesters** *Kathy Vaeth, Ph.D., Vice President of Engineering, MicroGen Systems, Inc .*
9:20 am – 9:45 am	**Break**
SESSION II: IOT SOFTWARE & CLOUD PLATFORMS	
9:45 am – 10:25 am	***Special Presentation:*** **How to Build your Own Internet of Things Product from the Ground Up: Raspberry IP** *Bruno Terkaly, Principal Software Engineer – Mobile/Cloud/Startup/Enterprise, Microsoft*
10:25 am – 10:45 am	**From the Chip to the Cloud: Connectivity from the Ground Up** *Hugo Fiennes, CEO and Co-founder, Electric Imp*
10:45 am – 11:05 am	**IoT and M2M Applications Cloud Platform** *Ken Forster, COO, PLAT.ONE*
11:05 am - 11:30 am	**Break**
SESSION III: IOT CONNECTIVITY, SECURITY AND STANDARDS	
11:30 am – 11:50 am	**8 Steps to Secure Your IoT Solution** *Paul Kitaj, CISSP-ISSEP, Principal Systems Engineer, SAIFE, Inc.*
11:50 am – 12:10 pm	**Standard for an Architectural Framework for the Internet of Things (IoT)** *Oleg Logvinov, Industrial & Power Conversion Div., Director, Special Assignments, STMicroelectronics*
12:10 pm – 12:30 pm	**M2M and IoT Connectivity Through Cellular Technology** *Syed Zaeem Hosain, CTO, Aeris Communications*
12:30 pm - 1:30 pm	**Lunch and Exhibits**

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AFTERNOON AGENDA

1:30 pm – 2:00 pm	**Keynote: Internet of Everything: the Next Phase of the Internet?** *Maciej Kranz, Vice President, Corporate Technology Group, Cisco Systems*
SESSION IV: DATA SCIENCE AND ANALYTICS FOR IOT	
2:00 pm – 2:20 pm	**The Digital Brain in Practice** *Kaushik Kunal Das, Head of Data Science (Americas), Pivotal*
2:20 pm – 2:40 pm	**Data Analytics for the Full IoT Lifecycle** *Caroline Fernandes, Director of Business Development, Keen IO*
2:40 pm - 3:10 pm	**Break**
SESSION V: IOT APPLICATIONS	
3:10 pm – 3:30 pm	**Smart Homes for Seniors** *Uday Kiran Chaka, Co-Founder, Good Sentry*
3:30 pm – 3:50 pm	**Smart Cities- Do They Start With Smart Parking?** *Mark Noworolski, Ph.D., CTO, Streetline*
3:50 pm – 4:10 pm	**IoT for Infrastructure Monitoring: Technologies and Applications for Smart Transport/ Smart Buildings/Smart Cities** *Roger Grace, President, Roger Grace Associates*
4:10 pm – 4:30 pm	**Industrial Internet as a Service** *Julian Keith Loren, Director, External Engagement and Solutions, Industrial Internet Applications, GE Software*
4:30 pm – 4:50 pm	**Retail Commerce Experience in internet of Things** *Sudha Jamthe, Head of Mobile Business Growth and Product Optimizations, eBay*
5:00 pm - 6:30 pm	**Reception**

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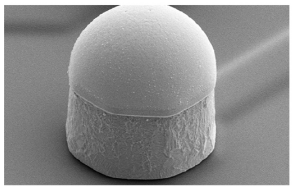
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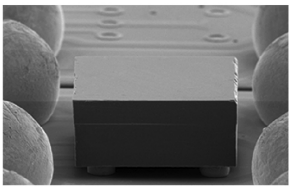
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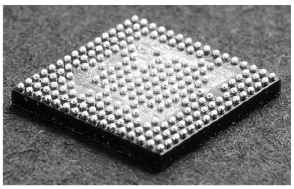
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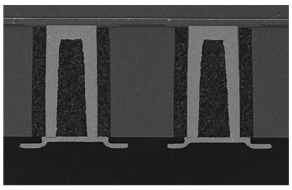
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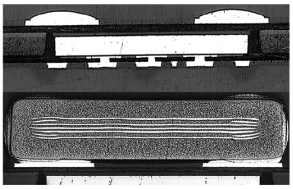
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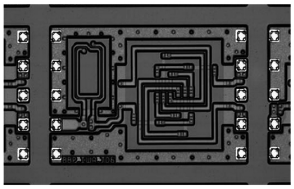
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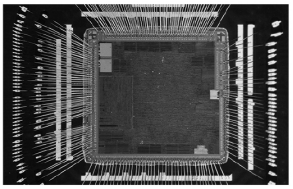
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BIOGRAPHIES

SYMPOSIUM CHAIR

Dr. Ramesh Ramadoss received his B.E. degree from Thiagarajar College of Engineering, Madurai, India in May 1998 and Ph.D. degree in Electrical Engineering from the University of Colorado at Boulder, USA in May 2003. From Jun. 2003 to Dec. 2007, he was employed as an Assistant Professor in the Department of Electrical and Computer Engineering at Auburn University, AL, USA. From Jan. 2008 to Mar. 2012, he was employed as a Manager in the MEMS R&D division at FormFactor Inc., Livermore, CA. From Apr. 2012 to May 2015, he was employed as a Senior Manager in the R&D division at Microprobe Inc. (Acquired by FormFactor Inc.), San Jose, CA. In June 2015, he will be joining as a Technical Director at Applied Nanostructures Inc., Mountain View, CA. Dr. Ramadoss is the author or coauthor of 4 book chapters and 55 papers. He has conducted R&D projects for DARPA, NASA, US Army, US Air Force (AOARD), Sandia National Labs, Motorola Labs, and Foster-Miller Inc. He is a Senior Member of IEEE. He is the founding chair of the IEEE SF Bay Area MEMS & Sensors Chapter. He is a member of the MEMS Technology Working Group of the International Technology Roadmap for Semiconductors (ITRS). He is a member of the MEPTEC MEMS Committee. He is a member of the IEEE IoT Conference Committee. He is the Program Chair of the First Annual IoT Technology Symposium.

SYMPOSIUM SESSION CHAIRS

Gene Burk is a MEMS Technology Consultant to Innovative Micro Technologies. He participated in the founding of Honeywell SSEC 1964. He developed the first MEMS technologies including micromachining and CVD processes, and engineered the first MEMS devices. He co-founded ICT and led the team that developed the first commercial MEMS disposable blood pressure sensor. As an executive he built first ICT(Foxboro/ICT), then IC Sensors and lastly Sentir (Merit Medical Sensors) to businesses with sales over $10 M each. He was Director of Sales and Marketing for Standard MEMS and MEMS Product Manager for DALSA Semiconductor and had responsibility for accounts in excess of $25M. He has deep technical knowledge of MEMS and Nanotechnology and their application to commercial products. He is an expert in Implementation of integrated manufacturing, planning, sales and business software systems, and managing all areas of small and medium businesses during rapid growth.

Dr. Cristiano Ghersi took his Ph.D. in Semantics and Ontologies at the University of Genoa in 2009. Before joining Abodata as the Head of Software Development, Cristiano has been a software consultant for major enterprises like Bombardier and Vodafone. He has always been a strong sustainer of Internet of Things and M2M in the cloud, while approaching exciting concepts like Fog Computing and studying real-world applications of software platforms to make the IoT dream real.

Roger Grace is President of Roger Grace Associations of Naples, Florida, a marketing consulting firm that he founded in 1982 specializing in the commercialization of MEMS and Sensors. His firm provides business development, custom market research, market strategy and integrated marketing communications services to high tech clients worldwide. He has published over 20 articles in industry publications, organized and chaired over 50 MEMS technical sessions and conferences and is frequently quoted in the technical and business press as a MEMS industry guru. He was a visiting lecturer in the School of Engineering at the University of California Berkeley from 1990 to 2003. He holds BSEE and MSEE (as a Raytheon Company Fellow) degrees from Northeastern University where he was awarded the "Engineering Alumni Engineer of the Year Award" in 2004.

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Brent Lunceford received his B.S. Chemistry, M.S. Polymer Chemistry degrees in 1995 and completed the Executive MBA program at the University of Texas at Austin-McCombs School of Business in 2014 with focus on entrepreneurship, business innovation, and new venture creation. Mr. Lunceford started his professional career at the Microelectronics and Computer Technology Corporation (MCC) in Austin, Texas from 1995-2000 where he developed disruptive technologies, raised funding for next gen technologies, and developed RF and Optical MEMS, MEMS sensor systems, laser direct write imaging systems, secure-rapid prototyping & teardown services, and novel materials for microelectronics. He evolved CuNiAu-polyimide interconnect into RF MEMS and fabrication services resulting in the spin-out of Austin's first MEMS company, Teravicta Technologies. While at MCC, he initiated and managed consortia projects with institutions including IBM, HP, 3M, Hughes, NCR, Raytheon, Lockheed Martin, Motorola, Rockwell Collins, Kodak and R&D projects with Stanford University, the NSA, DARPA, NASA Langley, and the U.S. Army Research Labs. Much of the Internet of Things was conceptualized through the consortia MCC, its member companies, and DARPA into roadmaps that we are clearly following now. Mr. Lunceford then joined Silicon Light Machines (Sunnyvale, CA) from 2000-2007 to manage technology development and their integration into Cypress Semiconductor. Mr. Lunceford joined 3M Electronics and Energy Global Innovation Center in 2010 to lead development of next generation fiber optic systems for US and global markets and roll-to-roll MEMS for high density/large area array applications. He has authored 25+ publications and symposia presentations, has 5 patents issued and multiple patents pending. Mr. Lunceford is a member of the American Chemical Society, the American Chemical Society-Division of Polymer Chemistry, and is Executive Committee Workshop Chair of the IEEE San Francisco-Bay Area MEMS & Sensor Chapter. Mr. Lunceford recently launched MEMSTRONICS, a product development consulting firm.

Elizabeth Wood currently serves as Community Marketing Manager at Aeris Communications. Ms. Wood has contributed to the growth and development of several communities within the Internet of Things space, including IoT Silicon Valley meetup group and the Wireless Communications Alliance. Prior to Aeris, Ms. Wood served as Marketing Manager at the UC Davis Department of Campus Recreation, a community-driven organization offering recreational activities to the entire city of Davis. Ms. Wood holds a Bachelor of Arts degree in Psychology and Design from the University of California, Davis and is an MBA candidate at the University of California, Davis Graduate School of Management Working Professionals Program.

KEYNOTE SPEAKER

Maciej Kranz leads the group focused on identifying and capitalizing on the next wave of technology disruptions, shaping and amplifying Cisco technology strategy, and conducting technology due diligence for potential investments/acquisitions. He drives the Internet of Things innovation strategy including IoE Innovation Centers. Prior to this role, Kranz drove the vision, strategy and P&L for a new hyper-growth business unit focused on Internet of Things. As General Manager, Connected Industries Group, he built a 220-person team and $250M business from the ground up in 18 months and relentlessly evangelized the IoT opportunity across Cisco and the market.

PRESENTERS

Kirsten Billhardt is the global marketing strategist for the Internet of Things at Dell. Kirsten works across the four business units and all regions to develop and activate messaging, AR/PR, digital, social and events around IoT. Kirsten began her career at General Motors rotating through engineering, product planning, and corporate strategy roles. Kirsten has a B.S. in Industrial Engineering from Kettering University, an M.S. in Engineering from Purdue University and an MBA from Harvard University.

Uday Kiran Chaka co-founded Good Sentry (formerly Agility4Life) to apply latest medical technologies to senior care. Prior to this, he co-founded a social gaming company that signed up more than 200 businesses. Uday is an experienced management consultant who advises executives of Fortune-100 companies on product development, services, organizational design, marketing strategy, supply chain and IT functional aspects. He graduated with honors from the Duke MBA program at the Fuqua School of Business, and he holds a Bachelors in Technology degree from Indian Institute of Technology (IIT), Delhi, India.

Kaushik Kunal Das is the Head of Data Science (Americas) for Pivotal. His job is to formulate data science problems and solve them using the Pivotal Big Data Platform. He leads a team of highly accomplished data scientists working in the Internet of Things and other areas. Kaushik has an engineering background focused on solving mathematical problems requiring large datasets. He studied engineering at the Institute of Technology of the Banaras Hindu University and the University of California at Berkeley. He is interested in issues such as how much can a company understand customers and machines and customize its actions in a context-sensitive fashion? How can our living and working environments get smarter and how can we get there? Before his current position he worked for many years in analytics software (Rapt, Demandtec, M-Factor) and consulting (McKinsey).

Steven Edouard is a Developer Evangelist at Microsoft for San Francisco based startups. He works with top accelerators like Y Combinator and StartX to enable startups with Microsoft cloud technologies. Steven is a complete javascript junkie and you can find his blog at www.stevenedouard.com.

Caroline Fernandes has worked in IoT in San Francisco for 7 years, including hardware, web and mobile apps, and analytics. She is currently Director of Business Development with Keen IO. She is a graduate of MIT.

Hugo Fiennes is CEO and Co-founder of Electric Imp, a innovative and powerful Internet of Things-based cloud service and hardware platform that makes it simple to connect devices to the Internet. Hugo began developing hardware and software for early ARM-based computers in the late 1980s and has been building useful and successful things ever since. After designing many MP3 players for Rio, Hugo led Apple's hardware team through the first four generations of the groundbreaking iPhone, and was then an early advisor to Nest Labs, architecting the hardware for their first thermostat product before starting Electric Imp in 2011. Hugo graduated first honors from University of Warwick in Coventry, England with a degree in Computer Systems Engineering.

Ken Forster is the COO of PLAT.ONE, the first Enterprise-Grade IoT and M2M platform. He has been building 'connected' products, services and businesses for over 25 years with senior leadership roles at ThingWorx, Syngenta, The Coca-Cola Company and Altria. He has co-founded three industrial automation startups, was an early leader in open architecture control systems, and is an active angel investor in early-stage Industrial Internet of Things companies. Ken currently resides in Zug, Switzerland.

Roger Grace is President of Roger Grace Associations of Naples, Florida, a marketing consulting firm that he founded in 1982 specializing in the commercialization of MEMS and Sensors. His firm provides business development, custom market research, market strategy and integrated marketing communications services to high tech clients worldwide. He has published over 20 articles in industry publications, organized and chaired over 50 MEMS technical sessions and conferences and is frequently quoted in the technical and business press as a MEMS industry guru. He was a visiting lecturer in the School of Engineering at the University of California Berkeley from 1990 to 2003. He holds BSEE and MSEE (as a Raytheon Company Fellow) degrees from Northeastern University where he was awarded the "Engineering Alumni Engineer of the Year Award" in 2004.

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Syed Zaeem Hosain is Chief Technical Officer of Aeris, and is responsible for the architecture and future direction of Aeris' networks, development programs and technology strategy. He joined Aeris in 1996 as Vice President, Engineering and member of the founding executive team of Aeris. Mr. Hosain has over 32 years' experience in the semiconductor, computer and telecommunications industries, including product development, architecture design and technical management. Prior to joining Aeris, he held senior engineering and management positions at Analog Devices, Cypress Semiconductor, CAD National and ESS Technology. Mr. Hosain is Chairman of the International Forum on ANSI-41 Standards Technology (IFAST) and represents Aeris at the CDMA Development Group (CDG). He holds a Bachelor of Science degree in Computer Science and Engineering from the Massachusetts Institute of Technology, Cambridge, MA.

Sudha Jamthe is a Mobile Product Executive with 20+ experience building Consumer Mobile and eCommerce Products for Business Growth. She is a thought leader for Technology innovation at the junction of social, mobile and digital media. Her passion for Payment and Commerce has helped her with repeat success in operationalizing technology innovations for growth and building and mentoring amazing global teams. She leads Mobile Business Growth and Product Optimization at eBay. She has built amazing social, mobile and digital technology products at PayPal, Intuit, AOL, Harcourt, Cabletron, Starwood Hotels and at her own startup Coola. She has been a venture mentor at MIT and Director at Bay Area Facebook, Twitter, Pinterest and Google+ Meetups and focuses on her passion to inspire girls to code. She has an MBA from Boston University and a BS (Computer Science) from Madras University. She blogs at www.coolastory.com and tweets @sujamthe.

Paul Kitaj, as SAIFE's Principle Systems Engineer, works with the engineering team, business and operations managers, and customers to shape new implementations of the SAIFE platform that meet the needs of all stakeholders. Paul's career began as an embedded software engineer with Motorola, transitioning to systems security engineer positions at Motorola, and later General Dynamics. As systems security engineer, Paul was responsible for systems security design, as well as certification and accreditation management, for multiple secure communication projects. This experience brings to SAIFE over two decades of experience developing secure, high-assurance communications solutions for federal, defense, and commercial enterprises. Paul has a BS in Electrical Engineering from the University of Colorado in Colorado Springs, and is both a Certified Information Systems Security Professional (CISSP) and an Information Systems Security Engineering Professional (ISSEP).

Oleg Logvinov is the Director of Special Assignments in STMicroelectronics' Industrial & Power Conversion Division. After graduating from the Technical University of Ukraine (KPI) with the equivalent of a Master's degree in electrical engineering, he worked as a senior researcher at the R&D Laboratory of the Ukraine Department of Energy at the KPI. During the last 25 years Mr. Logvinov has held various senior technical and executive management positions in the telecommunications and semiconductor industry. He currently serves on the IEEE Standards Association (IEEE-SA) Corporate Advisory Group and is the past member of the IEEE-SA Standards Board. In January of 2015 Mr. Logvinov was appointed as the chair of IEEE Internet Initiative. Mr. Logvinov also actively participates in several IEEE standards development working groups with the focus on the IoT and Communications Technologies. Mr. Logvinov is the chair of the IEEE P2413 "Standard for an Architectural Framework for the Internet of Things' Working Group. He helped found the HomePlug Powerline Alliance and is the past President and CTO of the Alliance. Mr. Logvinov has twenty one patents to his credit and has been an invited speaker on multiple occasions.

Julian Keith Loren is Director, External Engagement and Solutions at GE Software. Julian has been building design and innovation teams and taking on large-scale, multi-faceted design challenges for over 20 years. Currently, he leads a worldwide collaboration to design and develop Operations Optimization products for GE's Industrial Internet. Julian is the Co-Founder of the Innovation Management Institute where he designs and facilitates Gameferences - unforgettable face-to-face games that drive deep exploration and breakaway design. Julian also lectures and runs collaborative design games at Stanford University and the University of California, Berkeley and speaks and writes about audacious innovation.

Carlos Montesinos is a Researcher and Technology Leader focusing on rapid prototyping tools for connected product development. Carlos currently works in a multi-disciplinary team combining: design, user-experience, and technology. His goal is to enable entrepreneurs to develop the next-big-thing with embedded platforms. Carlos received his B.S. in Electrical Engineering from Univesidad San Francisco de Quito, Ecuador. He earned his M.S. in Electrical and Computer Engineering from the University of Illinois at Urbana-Champaign.

Mark Noworolski, Ph.D., is the Chief Technology Officer of Streetline, Inc. Mark recognized the transformative power of low power networking and web technologies over 2 years before the "birth" of the Internet of Things, co-founding Streetline to address the need for smart, connected cities. With over 15 years of experience, he is a veteran of web, low power sensing, and mesh networking technologies. He is the chief architect of Streetline's patented sensing platform and is also responsible for Streetline's long-term technology direction and IP portfolio. Mark also runs Streetline's Inference Platform Team, which applies machine learning and web technology to provide market leading parking information to Streetline's customers and partners. Mark has received numerous awards for design and innovation, holds 10 patents, and is the author of many technical publications. Mark holds a PhD in electrical engineering and computer science from the University of California at Berkeley and a Bachelor's of Science and Engineering from the University of Toronto.

Bruno Terkaly is a Principal Software Engineer at Microsoft with the objective of enabling development of industry leading applications and services across devices. He's responsible for driving the top cloud and mobile opportunities across the United States and beyond from a technology enablement perspective. He helps partners bring their applications to market by providing architectural guidance and deep technical engagement during the ISV's evaluation, development and deployment. He also works closely with the cloud and mobile engineering groups, providing feedback and influencing the roadmap.

Kathleen Vaeth, Ph.D. earned her B.S. degree in Chemical Engineering from Cornell University in 1994, where she was a Kodak Fellow, and her M.S. and Ph.D. degrees in Chemical Engineering from the Massachusetts Institute of Technology, where she was a Hertz Fellow. She is currently the Vice President of Engineering at MicroGen Systems Inc, developing MEMS piezoelectric vibrational energy harvesters. Prior to joining MicroGen Systems, Dr. Vaeth spent 12 years at Eastman Kodak as the as a Senior Research Scientist in the Kodak Research Labs, where she worked in the areas of MEMS microfluidics, organic electronics and displays, controlled release chemistry in thin films, barrier coatings for flexible substrates, vapor deposited polymers, and piezoelectric materials and actuators, and as the Director of Future Technologies for the Functional Printing Business Unit. Her research interests spans the design, fabrication and characterization of devices, relating their performance to the materials used in their construction. Dr. Vaeth has 20 publications and 20 issued US patents.

SESSION I

IoT Hardware

Session Chair
Brent Lunceford
Advanced Product Development
3M Energy and Electronics Innovation Center

IoT hardware collects data from or sends data to the physical world. MEMS, sensors, actuators and microcontrollers form the building blocks of the IoT architecture. Introduction of affordable microcontroller platforms such as Arduino and Raspberry Pi inspired a new wave of maker movement. In recent years, there has been an explosive growth in the IoT hardware field. This presentation will focus on the state-of-the-art hardware platforms and their potential for IoT applications.

What Will You Make? Rapid Prototyping with Intel

Carlos Montesinos
Research Scientist & Tech Lead, User Experience Research Lab
Intel Labs

Lots of innovative products and services share similar beginnings: ideate, prototype, and test. At Intel we are currently researching and creating rapid prototyping platforms, to enable inventors and entrepreneurs, to quickly test their business hypothesis at the begging of the product development cycle. Please join us to learn more about how Galileo, Edison, and other Intel platforms are enabling this practice in the IoT space.

Gateways in IoT Solutions: Functions, Case Studies and Challenges

Kirsten Billhardt
Global Marketing Strategist for the Internet of Things
Dell Internet of Things Lab

Gateways are used as aggregation platforms for edge sensors and to transport a normalized data stream for data analytics and control. In this presentation, Dell will share how our customers have taken different approaches to gateways in IoT solutions using both standard hardware solutions and custom efforts. We'll share relative advantages and drawbacks of various approaches including impact on network bandwidth, latency and cost. We will present our perspective on the evolving role of edge analytics and gateways in many IoT solutions moving forward.

Powering the IoT with MEMS Piezoelectric Vibrational Energy Harvesters

Kathy Vaeth, Ph.D.
Vice President of Engineering
MicroGen Systems, Inc.

The increasing availability of small, lightweight, and affordable low-power microcontrollers, RF transmitters, and MEMS sensors has opened up the possibilities of smart, integrated wireless sensor networks for monitoring and control of industrial equipment, buildings, medical devices, and transportation vehicles. Energy harvesting technology is key to enabling increased intelligence and proliferation of these sensor networks, which are currently limited by available battery power. In this presentation, the design, fabrication, modeling, and characterization of MEMS-based piezoelectric vibrational energy harvesters with power output suitable for supporting wireless sensors used in the internet of things is discussed. Finite element modeling of the harvester resonant frequency and peak AC power output shows good agreement with experimental data over a range of frequencies, and mechanical analysis of the harvester movement provides guidance in design for robustness. Demonstrations of powering real world objects with energy harvested from mechanical vibration and shock impulses will be presented.

SESSION II

Software & Cloud Platforms

Session Chair
Elle Wood
Community Marketing Manager
Aeris Communications Inc.

IoT software enables transmission and storage of data from the hardware to the cloud. Unique features of IoT cloud platforms include real-time data management, accessibility, scalability, and programmability. This presentation will focus on the state-of-the-art software, cloud and connectivity platforms that can be integrated with new IoT applications..

Special Presentation: How to Build your Own Internet of Things Product from the Ground Up: Raspberry IP

Bruno Terkaly
Principal Software Engineer – Mobile/Cloud/Startup/Enterprise
Microsoft

In this presentation you will start with a pile of hardware and build a working, cloud-enabled device from the ground up. Essential skills will be presented: (1) Building the device from raw hardware, (2) Writing software for the Raspberry PI and the Cloud, (3) Mono and C# on the device, and (4) Node.js in the cloud. We will also present "SmartDoor," where we really roll up our sleeves, both from a hardware and software point of view and learn what it takes to truly embrace this new computing paradigm. To start, we will purchase and put together the raw hardware. But software rules the world, and that's where a bulk of the presentation will focus. The code will need to be able to take a picture and upload it to the cloud. From there, a push notification will need to be sent to the appropriate mobile device(s), indicating that someone has pressed the doorbell, and that the photo is available. What other capabilities with respect to CPU, memory, and storage? What expansion boards are available and what purpose do they serve? What type of programming tools are available? What programming languages are supported in the device itself? What role does the cloud play with respect to security? Which networking connectivity solutions that should be considered for device-to-cloud communication? How does the cloud help alleviate bandwidth challenges and minimize power consumption on the device? What are the four patterns for device to cloud service message communication?

From the Chip to the Cloud: Connectivity from the Ground Up

Hugo Fiennes
CEO and Co-founder
Electric Imp

While prototyping a connected device is relatively easy these days, the challenges faced when deploying them commercially are quite different. This presentation will identify what those issues are and provide insight into the ways in which a connectivity platform can help overcome them.

IoT and M2M Applications Cloud Platform

Filippo Murroni
CEO
Plat-One Inc.

IoT means strong connections among zillions of heterogeneous actors. On the Software side of the equation, this means that a platform must be used in order to ease the interconnection of the devices, apps and humans. What are the main requirements of such a platform? How to reach an enterprise level, and provide scalability, security and reliability, among the other features, in a straightforward way? Let's talk about this, and then spend some time in presenting an effective example of a platform that meets such requirements, PLAT.ONE.

SESSION III

IoT Connectivity, Security & Standards

Session Chair
Cristiano Ghersi
Head of Technology
Plat-One Inc.

IoT software enables transmission and storage of data from the hardware to the cloud. Unique features of IoT cloud platforms include real-time data management, accessibility, scalability, and programmability. This presentation will focus on the state-of-the-art software, cloud and connectivity platforms that can be integrated with new IoT applications.

8 Steps to Secure Your IoT Solution

Paul Kitaj
CISSP-ISSEP, Principal Systems Engineer
SAIFE, Inc.

The expanding universe of network addressable devices brings new threats and challenges to securing both new and legacy devices in a scalable and easy-to-use fashion. As we become increasingly reliant on technology in every aspect of our lives, how do we protect privacy and public safety from compromise amidst the enormous number of devices that share and make decisions based on sensitive information? How do we gain the confidence of our customers in our devices such that they feel comfortable trusting them? Why aren't existing security technologies sufficient for the IoT? What legal consequences need to be considered? We will look at a practical definition of security, and walk through the steps that make your solution secure, protecting your organization, your brand identity, and your consumer.

Standard for an Architectural Framework for the Internet of Things (IoT)

Oleg Logvinov
Industrial and Power Conversion Division, Director, Special Assignments
STMicroelectronics

This presentation will focus on the IEEE P2413 "Standard for an Architectural Framework for the Internet of Things (IoT)" project. The IoT is predicted to become one of the most significant drivers of growth in various technology markets. Most current standardization activities are confined to very specific verticals and represent islands of disjointed and often redundant development. The architectural framework defined in this standard will promote cross-domain interaction, aid system interoperability and functional compatibility, and further fuel the growth of the IoT market. The adoption of a unified approach to the development of IoT systems will reduce industry fragmentation and create a critical mass of multi-stakeholder activities around the world. This standard defines an architectural framework for the Internet of Things (IoT), including descriptions of various IoT domains, definitions of IoT domain abstractions, and identification of commonalities between different IoT domains. The architectural framework for IoT provides a reference model that defines relationships among various IoT verticals (e.g., transportation, healthcare, etc.) and common architecture elements. It also provides a blueprint for data abstraction and the quality "quadruple"; trust that includes protection, security, privacy, and safety." Furthermore, this standard provides a reference architecture that builds upon the reference model. The reference architecture covers the definition of basic architectural building blocks and their ability to be integrated into multi-tiered systems. The reference architecture also addresses how to document and, if strived for, mitigate architecture divergence. This standard leverages existing applicable standards and identifies planned or ongoing projects with a similar or overlapping scope.

M2M and IoT Connectivity Through Cellular Technology

Syed Zaeem Hosain
CTO
Aeris Communications

This presentation will focus on the requirements that drive the choice of cellular transport for data connectivity – both for data and for control of remote devices. However, cellular data transport is only one piece of the entire M2M chain, so this presentation will also describe the content analytics processes on the received data.

In addition, there are specific issues that must be addressed for large-scale deployment of cellular applications – such as rapid provisioning and automated activation, as well as end-of-life management. This presentation will describe these unique differences between standard cellular handset services and M2M cellular devices.

Finally, this presentation will provide an overview of the growth of cellular for M2M and IoT applications worldwide, and why the market for these applications, and cellular, is growing so rapidly in the near future.

KEYNOTE

Internet of Everything: The Next Phase of the Internet?

Maciej Kranz
Vice President, Corporate Technology Group
Cisco Systems

The Internet has opened up exciting new opportunities for businesses, regardless of industry, bringing new levels of connectivity that can be harnessed to improve efficiency, streamline operations or boost sales. Surprisingly, less than 1% of things in the physical world are connected today, yet this is about to change. Technology continues to accelerate and drive the convergence of the physical and digital worlds, a process termed the Internet of Things (IoT). IoT, combined with the Internet of Everything (IoE) - connecting the previously unconnected and bringing together people, process, data, and things to make networked connections more relevant and valuable than ever before - is poised to revolutionize the global economy as powerfully as the first Internet revolution did. It is anticipated that IoE will drive incremental $19 Trillion of value for the global economy over the next ten years.

In this presentation, Maciej Kranz will outline the major trends driving the adoption of the Internet of Things in the manufacturing, energy/utility, transportation and other markets, including sensing, remote management and monitoring, big data and analytics, mobility and automation. He will share several use cases that are driving IT/OT convergence and address top-of-mind architectural and security concerns. You will gain actionable insight into what your organization needs to know in order for IT and OT teams to partner successfully to help achieve positive business outcomes.

SESSION IV

Data Science & Analytics for IoT

Session Chair
Roger Grace
President
Roger Grace Associates

IoT is expected to stream large amounts of data to the cloud for storage. Data analytics enables processing of large amounts of stored data and obtains useful information for decision making. Such intelligence provides competitive advantages and results in business benefits, such as more effective marketing and increased revenue. This presentation will focus on machine learning algorithms, tools, and platforms suitable for IoT applications.

The Digital Brain in Practice

Kaushik Kunal Das
Head of Data Science (Americas)
Pivotal

How do you make a smart city really smart? How do you make a connected car actually useful? Data Science plays a critical role in making the IoT smart by building a digital brain. In this talk the speaker will present a conceptual framework for a smart system in the context of IoT and describe with examples how real-life applications fit into this framework.

Data Analytics for the Full IoT Lifecycle

Caroline Fernandes
Director of Business Development
Keen IO

IoT data is best collected and analyzed from prototyping and manufacturing through usage and RMA. The speaker will share her experiences and tools for collecting data throughout the entire IoT lifecycle.

SESSION V

IoT Applications

Session Chair
Gene Burk
MEMS Technology Consultant
Innovative Micro Technology
and
Ramesh Ramadoss, Ph.D.
Executive Editor
IoT Online

This presentation will focus on the current and future applications of IoT in the areas of home and building automation, smart cities, industrial monitoring, medical and healthcare, environmental monitoring, agriculture etc. Emerging applications are anticipated to create exciting new market opportunities.

Smart Homes for Seniors

Uday Kiran Chaka
Co-Founder
Good Sentry

The timing is finally right to build "smart home" products for seniors. Seniors who live alone at home worry about a medical emergency with no ability to summon care. Technology has advanced to the point where we can make powerful devices that can monitor seniors at home unobtrusively and provide the needed care at the right moment, while remain hidden otherwise. In addition, movements and other habitual behaviors can now be tracked over long periods of time, analyzed using big data technologies to identify meaningful patterns and deviations. Compared with disease databases at a mass scale these new technologies allow us to recognize potential health conditions early and alert the seniors, their families, caregivers and physicians to provide preventative care.

We can improve quality of life for seniors, give peace of mind to family members, while decreasing overall health care costs for the society.

Smart Cities - Do They Start With Smart Parking?

Mark Noworolski, Ph.D.
CTO
Streetline

In this interactive presentation, Streetline CTO Mark Noworolski will demystify the ideas of 'smart parking' and 'real time data' and highlight case studies of cities and universities who have started down the road to smarter parking. Furthermore, Mark will explain how smart parking systems can act as the foundational layer for future smart city projects and IoT initiatives. You will learn what real time really means, the technology required to capture this granular occupancy data, what customers can do with the data, as well as have the opportunity to ask any questions you may have of this long-time IoT expert.

IoT for Infrastructure Monitoring: Technologies and Applications for Smart Transport/ Smart Buildings/Smart Cities

Roger Grace
President
Roger Grace Associates

Smart System Integration (SSI) principles currently have widespread applications in the societal infrastructure sector addressing critical needs of safety, quality of environment and energy conservation applications. This is easy to understand since SSI approaches provide a small and cost-effective approach to monitoring and controlling the many environments surrounding us vis-à-vis the utilization of broad selection of sensors in their front end. In addition to these front end sensors, Smart Systems also include a diverse array of other functions including signal conditioning circuits (e.g. ASICs with embedded microcontrollers), energy sources, and communication back ends….either wired or wireless and all assembled and packaged. This integrated and assembled sensor-based system constitutes an important element of the Internet of Things (IoT) concept.

This presentation will address several of the systems currently in use and/or under development at commercial organizations and research facilities in the US, Europe and Asia to be able to monitor and control these infrastructure IoT applications. Applications include bridge monitoring, smart roads (traffic control and parking), smart energy delivery and smart buildings. We will present functional analysis of the systems, address specific elements of the systems (with a focus on sensors) and provide results to establish the feasibility and efficacy of such approaches.

Industrial Internet as a Service

Julian Keith Loren
Director, External Engagement and Solutions, Industrial Internet Applications
GE Software

According to the projections from top industry analysts, 90% of the IoT and Industrial Internet related data will stored in Cloud within next 5 years. This presentation will focus how to make Industrial Internet Applications operational for the business end-users. Learn about the challenges posed by machine and sensor data and how to marry it with enterprise data. The presentation will showcase how to provide Industrial Internet as an end-user consumable service using Big Data Analytics, Industrial Cloud and Data Lake.

Retail Commerce Experience in Internet of Things

Sudha Jamthe
Head of Mobile Business Growth and Product Optimizations
eBay

Internet of Things is here to make the dream of Connected Customers a reality for retailers. Retailers strive to create the ideal commerce experience for consumers based on their explicit and implicit needs learned from their preferences, locations, social and mobile data from a myriad of mobile devices. IoT explodes connectivity to a whole new dimension offering opportunities and challenges for retail industry.

- Connectivity with IoT is pervasive providing real time data about the consumers at all times – when they are mobile, jogging or asleep.
- Contextual Connectivity with devices connected to home, to their cars, to their own bodies – makes personalization easy for the commerce experience.
- Connected Self with sensors sharing new types of information opens new possibilities to learn – about the customers in ways not possible in the past.

This presentation will focus on the opportunities and challenges in creating a Retail Commerce experience with IoT and what are some of the best practices evolving in building products for growth and delighting customers.

About IoT Online

IoT Online is the Bay Area's one-stop technical resource on IoT by bringing perspectives on the recent developments and providing insights on future trends from the Silicon Valley. This exciting new website features cutting edge technical articles on sensors, hardware, software, data analytics, cloud platforms, advanced connectivity, security, standards and real-world applications. IoT Online keeps readers up-to-date on the latest industry news and upcoming events in the Bay Area. The website also streams videos from Silicon Valley conferences and meetup groups keeping subscribers abreast of the recent advances in IoT. The Editorial Team consists of top-notch makers, developers, influences and visionaries in the IoT field. Guest contributors include industry professionals and leaders from IEEE, Cisco, PARC, Intel, GE and other influential companies shaping the future of the IoT across the globe. For more visit iotmagonline.com.

About MEPTEC

MEPTEC is a trade association of semiconductor companies and professionals involved in the manufacturing, packaging, assembling and testing of integrated circuits. Since its inception over 30 years ago, MEPTEC has provided a forum for the semiconductor industry to learn and exchange ideas through our monthly luncheons, conferences, and our quarterly publication, the MEPTEC Report. With the support of an Advisory Board consisting of individuals from all segments of the industry, MEPTEC has, over the years, kept current not just with semiconductor industry developments, but has expanded its scope to cover relevant industry segments such as MEMS and medical electronics. For more information about MEPTEC events and membership please visit www.meptec.org.