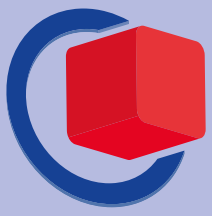
Nuremberg, Germany

March 14 – 16, 2017



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Prof. Dr. Matthias Sturm, Chairman of embedded world Conference steering board

embedded world Conference – Solutions for Engineers

What is it that makes the *embedded world Conference* so special? Take the constantly increasing range of topics all to do with the development of embedded systems, and you see how it is getting more and more difficult to grasp what's really going on and to recognize and understand those aspects that are crucial for your development tasks. This is where the Conference is a key contribution, structuring the variety of subject matter and focusing on major changes and movement.

No wonder that the *embedded world Conference* is *the* meeting point for the brightest and most committed minds of the embedded community. This is where they convene to work quite concretely on the best, the most efficient, the safest and most secure solutions to challenges of the present and near future. Ideas and approaches discussed here turn into trends, become standards, and then embrace an entire sector. Here engineers prepare the ground for engineers to jointly and successfully shape the future.

The motto of this year's conference is "Securely Connecting the *Embedded World*". It is precisely these aspects like networking sensors, actuators, machines, infrastructures and data sources, with one another and with the cloud, and in a truly secure way, that play a decisive role in creating the "Internet of Things". But structuring this IoT calls for knowledge in very many other specialist fields too. We see disciplines merge, hardware and software development are in a state of influx, management processes determine the success or failure of a development, systems engineering is a growing focus, penetrating and grasping the complex relationships of an overall application are now fundamental for successful development.

This is where the *embedded world Conference* helps to maintain an overview, by a clear structure and concentrating on essential topics. What these are, when you can obtain information, and in what detail – you will find that on the following pages of this booklet. Listed on page 4 + 5 are the six major topics of the conference, carefully selected by the steering board, and guiding you through the program in different colors.

Through these topics – Internet of Things, Safety and Security, Software and Systems Engineering, Hardware Engineering, Embedded OS, Management Focus – the program of the *embedded world Conference* is directed at the requirements of leading-edge embedded system development. Offering knowledge and solutions spanning applications, and precisely matched to the demands of times to come. But the conference does a lot more. It helps you to orient in the midst of countless technical innovations, lends a structure to new developments, aids objective judgment of the latest trends and technologies, and ultimately points to visions it is worth working for.

To round off these welcoming words I would like to thank all the hard-working helpers in the background, the numerous international members of the program committee, and my esteemed colleagues of the steering board who I think, with this program, have made a very valuable contribution to our community.

Ladies and gentlemen attending the conference, I wish you a lively atmosphere exchanging ideas and solutions, a great gain in knowledge for easier and better mastering of the immense challenges ahead of us. And nobody else can do it for us because WE ARE THE INTERNET OF THINGS.

Regards,

Prof. Dr. Matthias Sturm
Chairman of embedded world Conference steering board

STEERING BOARD

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und Informationstechnik

CONFERENCE PROGRAM

	INTERNET OF THINGS			SECURITY & SAFETY			SOFTWARE &	
DAY 1: morning	Session 01: Internet of Things I – Strategic Aspects		Session 03/I: Connectivity – Wireless Technologies	Session 04: Security I – TPM		Session 06/I: MILS Workshop	Session 07: Systems Engineering I – System Quality & Standards	Session 09: Software Engineering I – Software Design & Software Modeling
DAY 1: afternoon	Session 02: Internet of Things II – Software Frameworks for the IoT		Session 03/II: Connectivity – Wireless Technologies	Session 05: Security II – Hacking & Attacking		Session 06/II: MILS Workshop	Session 08: Systems Engineering II – System Design & System Modeling	Session 10: Software Engineering II – MISRA Standard
DAY 2: morning	Session 13: Internet of Things III – Profiles and Interfaces			Session 15/I: Functional Safety	Class 11: The ESCRYPT Class – A Multi-Layered Approach to Embedded Security		Class 10: Hands-on Workshop – Ultra Low Power	Session 16: Software Engineering III – Open Source Software
DAY 2: afternoon	Session 14: Internet of Things IV – Virtual and Physical Devices			Session 15/II: Functional Safety				Session 17: Software Engineering IV – Software Quality & Standards
DAY 3: morning	Session 22: Internet of Things V – Software Frameworks for IoT Devices		Session 25/I: Connectivity – Network Technologies & Connectivity for Automotive & Industry	Session 26: Security III – Security for Automotive	Session 28/I: Security V – Secure Communication	Class 12: Taming the Beast – a Tutorial on Developing Robust and Safe Applications for the AURIX Multicore		Session 30: Software Engineering V – Software Analysis
DAY 3: afternoon	Session 23: Internet of Things VI – Machine Learning & Sensor Fusion	Session 24: Internet of Things VII – Firmware Management	Session 25/II: Connectivity – Network Technologies & Connectivity for Automotive & Industry	Session 27: Security IV – Security for Industry	Session 28/II: Security VI – Secure Communication Session 29: Safety & Security in the IoT	Class 13: Securing Connected Automotive & Industry Applications with the S32K MCU Family		Session 31: Software Engineering VI – Software Testing

KEYNOTE-SPEAKERS

Rick Clemmer, NXP

Conference Keynote: **Protecting the Internet of Things: From Clear and Present Danger to Robust Security**

March 14th, 13:30

Richard L. "Rick" Clemmer is executive director, president and CEO for NXP and joined NXP in this role on January 1, 2009. Prior to that, from December 2007, Rick was a member of the supervisory board of NXP B.V. and a senior advisor of Kohlberg Kravis Roberts & Co. Prior to joining NXP, he drove the turnaround and re-emergence of Agere Systems. He also served as Chairman of u-Nav Microelectronics, a leading GPS technology provider, and as executive VP and CFO at Quantum. Prior to that, Rick worked for Texas Instruments as senior VP and semiconductor group CFO. Rick also serves on the board of NCR.

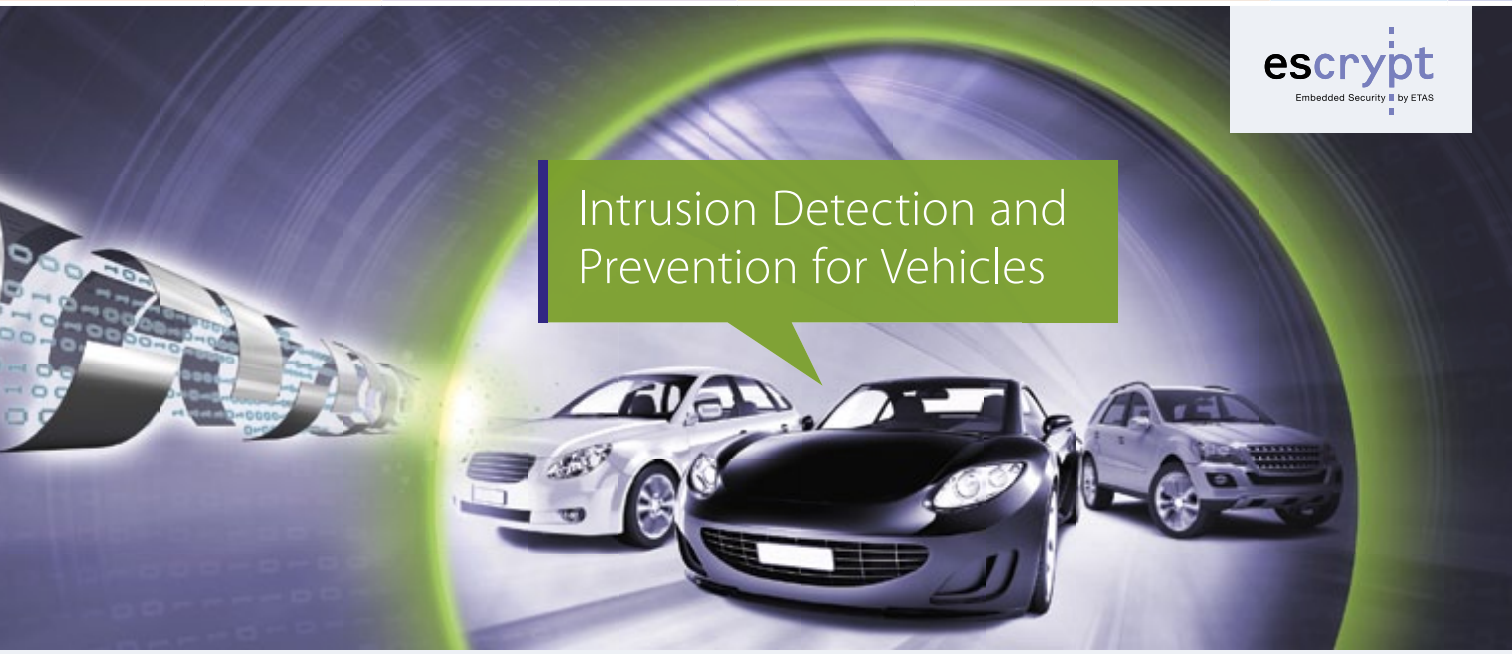
Riccardo Mariani, Intel

Keynote: **IOT: Functional Safety and Security for a World of Software Defined Autonomous Things**

March 15th, 09:30

Riccardo Mariani is an Intel Fellow and the chief functional safety technologist in the Internet of Things Group at Intel. He is responsible for defining strategies, roadmaps and technologies for Internet of Things applications that require functional safety and high performance. Mariani joined Intel in 2016 with the acquisition of Yogitech where he served as CTO and co-founder. A recognized expert in functional safety and integrated circuit reliability, Mariani regularly contributes to industry standards efforts, including leading the ISO 26262-11 part specific to semiconductors. Mariani has co-authored a book and authored or co-authored more than 70 papers. He holds multiple patents in the field of functional safety. Mariani has won the SGS-Thomson Award and the Enrico Denoth Award for his engineering achievements.

SYSTEMS ENGINEERING		HARDWARE ENGINEERING		EMBEDDED OS			MANAGEMENT FOCUS	
	Class 04: Model-Based Software Development Based on Eclipse	Session 11: ARM Cortex			Class 02: Introduction to Embedded Linux / Theory and Practice Crash Course	Class 3: The Mc Guire Classes I – Verifying a Safety-Critical Software Development Life-Cycle Using Data-Mining Techniques		
Class 01: The Bruce Douglass Classes I – Advanced Behavioral Modeling in UML and SysML		Session 12: Low Power						
Class 05: The Greg Davis Class – Reliable and Hack-Proof C++ Code	Class 07: AUTOSAR Workshop	Session 18: FPGA-SoCs			Class 08: Brillo & Weave Internals		Session 21/I: Management Focus	
Class 06: The Bruce Douglass Classes II – Agile Systems Engineering		Session 19: HiPEAC – High Performance Embedded Architectures		Session 20: Embedded Linux	Class 09: Embedded Android Workshop		Session 21/II: Management Focus	
		Session 33: System on a Chip	Session 35: Embedded Vision			Class 15: The Mc Guire Classes II – Introduction to Linux-RTOS		
Class 14: Simple C++ for Embedded Software		Session 34: Multicore SoC		Session 36: Embedded OS / RTOS				
Session 32: Design Patterns for Embedded Systems in C								



Holistic security solutions are the only way to reliably protect connected vehicles against cyber attacks. These have to take into account every possible risk scenario that might conceivably occur during the entire life cycle of the vehicle. Therefore, it is essential to obtain an overview at any time of the actual security conditions of vehicles in operation.

ESCRYPT's Intrusion Detection and Prevention Solution provides reliable attack detection, policy enforcement and real-time analytics of potential attacks.

Learn more about our new security solution. Visit us!

Hall 4, booth 4-410

	Session 01: Internet of Things I – Strategic Aspects	Session 03/I: Connectivity – Wireless Technologies I	Session 04: Security I – TPM
09:30-10:00	**IoT – Status, Promises & Challenges** Prof. Dr.-Ing. Axel Sikora, Hahn-Schickard	**Comparison of LPWAN Like SIGFOX, LoRaWAN, Weightless P and NB-IoT/LTE-Cat-NB1** Harald Naumann, Tekmodul	**How We Can Fix Embedded Computing Through an Open Source, Silicon-Layer Approach** Cesare Garlati, prpl Foundation
10:00-10:30	**Paving the Road to IoT Interoperability** Robert Oshana, NXP Semiconductors Markus Levy, EEMBC	**Demystifing LTE Power Saving Features: PSM & eDRX** Joerg Koepp, Rohde & Schwarz	**Security and IOT – Hardware Solutions** Andreas Riedenauer, INELTEK Mitte
10:30-11:00	**New Challenges on IoT Systems for Industrie 4.0** Prof. Dr.-Ing. Jörg Wollert, Fachhochschule Aachen	**LPWAN as Enabler to Widespread Geolocation Solutions: A LoRa Device for Advanced Positioning Assets Tracking** Dr. Juan Nogueira, Flex	**A Practical Approach to Securing Embedded & IOT Platforms** Robert Coombs, ARM
11:00-11:30	Coffee Break		
11:30-12:00	**Software-Defined Architecture the Key to Industrial IoT** Dr. Gareth Noyes, Wind River	**Driving Wi-Fi, ZigBee and Thread Wireless Coexistence in the 2.4 GHz Band** Tom Pannell, Silicon Labs	**The New Generation of Secure Authentication ICs are Protected by PUF** Scott Jones, Maxim Integrated | Micros & Security BU
12:00-12:30	**Smart Cities as an Open Application Platform** Jim Carroll, Mobica	**Time-Synchronized Wireless Sensor Networks for Structural Health Monitoring** Damon Parsy, Beanair	**Aggregating Information for Security Incident Handling in Embedded Communication with a FPGA-SoC** Martin Aman, Technische Hochschule Deggendorf
12:30-13:30	Lunch Break		
13:30-14:30	KEYNOTE 13:30 **Keynote:** **Protecting the Internet of Things: From Clear and Present Danger to Robust Security** Rick Clemmer, NXP		
	Session 02: Internet of Things II – Software Frameworks for the IoT	**Session 03/II: Connectivity – Wireless Technologies II**	**Session 05: Security II – Hacking & Attacking**
14:30-15:00	**Connecting a Consumer Product Online – A Real-Life IoT Example You Can Apply** Sergey Lyubka, Cesanta	**Bluetooth 5 – Go Further, Go Faster** Martin Woolley, Bluetooth SIG	**Interactive Session: How a New Hardware-Based Approach Can Fix Critical Areas of Embedded Computing Security** Cesare Garlati, prpl Foundation
15:00-15:30	**DARPA Cyber Grand Challenge: What it Was? What We Learned? How Can it Help IoT Device Manufacturers?** David Hauck, GrammaTech	**Wireless Industrial Real-Time Networks with Li-Fi** Michael Faulwaßer, Fraunhofer IPMS	**Five Questions You Should Ask Your Embedded Developer About Security** Martin Sturm, Triforx
15:30-16:00	Coffee Break		
16:00-16:30	**Efficient Design of Distributed Robotics Control Systems** Dr. Edwin de Jong, RTI Real-Time Innovations	**The Value of Software for the Future of Near Field Communication (NFC)** Michael Neurohr, NXP Semiconductors	**Fundamental Concepts to Secure Embedded Devices in Today's Hostile Environment** Amrit Mundra, Texas Instruments
16:30-17:00	**OpenAMP within A Industrial IoT Framework** Tomas Evensen, Xilinx	**RFID Sensor Transponders – Transparent and Secure Integration into Industrial and Cloud Environments Using OPC-UA** Dr. Andreas Weder, Fraunhofer IPMS	**Hardware vs. Software Security – What Will Work Best for My IoT Device** Alan Grau, Icon Labs
17:00-17:30	**Software as a Service (SaaS) in Internet of Things (IoT) – IoT Cloud Service: Provisioning Embedded Software Services via RESTful Based Service Oriented Architecture (SOA)** Kamarul Zaman Abdul Rashid, Intel	**Accelerating Near-Field Communications: The 14443A Case** Tao Lee, IMEC-Taiwan	**Threats, Risks and Assumptions: The Rise of the Embedded Hacker** Dr. Carl Shaw, Cerberus Security Laboratories

Session 06/I: MILS Workshop I	Session 07: Systems Engineering I – System Quality & Standards	Session 09: Software Engineering I – Software-Design & Software-Modeling	Session 11: ARM Cortex
Security by Design – Introduction to MILS Dr. Sergey Tverdyshev, SYSGO	**Seamless Cross Domain Requirements Management** Bernd Röser, agosens	**Scalable, Platform-Independent SW-Architectures for ADAS and Automated Driving** Dr. Kai Richter, Luxoft	**ARM Cortex-M0 MCU Designed for Operation in Conditions of Extreme Temperature and Radiation** Ross Bannatyne, VORAGO Technologies
Hardening High Assurance Systems: MILS as Software Design for Avionics Kevin Müller, Airbus	**Automatic Requirements Reviews – Potentials, Limitations and Practical Tool Support** Henning Femmer, Qualicen	**Increasing Energy Efficiency Through Parallelization of Applications for Embedded Computing Devices in the IoT Domain** Oliver Oey, emmtrix Technologies	**Software Development in ARMv8-M Architecture** Joseph Yiu, ARM
Current Trends and Solutions in Securing Automotive Software Elisabeth Waitz, Elektrobit Automotive	**Using Virtual Prototypes to Improve the Traceability of Critical Embedded Systems** Jean-Michel Fernandez, Magillem	**Dynamic Memory Allocation & Fragmentation in C & C++** Colin Walls, Mentor Graphics	**Squeezing the Most Out of Battery Life using ARM Cortex-M Processors** Jacob Beningo, Beningo Embedded Group
Coffee Break			
Fog Computing as Enabler for the Industrial Internet of Things / Industrie 4.0 Wilfried Steiner, TTTech Computertechnik	**Real-Time Measurement Techniques Reloaded** Ulrich Dreher, iss innovative software services	**Self-Testing in Embedded Systems** Colin Walls, Mentor Graphics	**Advancing the Signal Processing Capabilities of Modern Day Microcontrollers through Hardware Acceleration** Evan Wakefield, Texas Instruments
High-End Security Features for Low-End Microcontrollers: Hardware-Security Acceleration on ARMv8-M Systems Milosch Meriac, ARM	**Scalable HiL Systems – from Development Workplace to Full-Size HiL** Dr. Kristian Trenkel, iSyst Intelligente Systeme	**EASy-Producer – An Open Toolset for Lightweight Product Line Engineering** Prof. Dr. Klaus Schmid, University of Hildesheim	**Efficient Next-generation Embedded ARM TrustZone with ARMv8-M Implementations** Tim Menasveta, ARM
Lunch Break			

Keynote:
Protecting the Internet of Things: From Clear and Present Danger to Robust Security
Rick Clemmer, NXP

Session 06/I: MILS Workshop II	Session 08: Systems Engineering II – System Design & System Modeling	Session 10: Software Engineering II – MISRA-Standard	Session 12: Low Power
Hardware Enforced Separation in Embedded Multicore SoCs Geoffrey Waters, NXP Semiconductors	**Model-Based Embedded Design and Control – Faster, Easier, Safer** John Milios, Sendyne	**Designing Reliable Code using MISRA C and C++** Greg Davis, Green Hills Software	**Bringing IoT into Harsh Environments: Security and Reliability with Optical Power and Data Transmission for Ultra-Low Power Sensor Nodes** Christoph Budelmann, Budelmann Elektronik
Ease Standard Compliance by Technical Means via MILS Sven Nordhoff, SYSGO	**Modeling Designs for the Internet of Things – Choosing the Right Models for Verification and Software Development** Frank Schirrmeister, Cadence Design Systems	**Writing Reliable Code with MISRA C** Colin Walls, Mentor Graphics	**Intelligent Power Management for Textile Energy Harvesters Supplying Wearable Sensors** Daniel Laqua, Technische Universität Ilmenau
Coffee Break			
Analysing Cryptographically-Masked Information Flows in MILS-AADL Specifications Prof. Dr. Thomas Noll, RWTH Aachen University	**Creating and Using Domain-Specific Languages and Models** Dr. Juha-Pekka Tolvanen, MetaCase	**Demystifying MISRA to Improve Code Security for Embedded Systems** Walter Capitani, Rogue Wave Software	**Running Your Embedded System at 0 MIPS – The Power of Autonomy** Øivind Loe, Silicon Labs
An Approach to SoD Validation for MILS Security Configurations Dr. Ekaterina Rudina, Kaspersky Lab	**Safely and Reliably Operate Embedded Systems on (Rail)Roads, at Seas in Air and Space** Dirk van den Heuvel, Topic Products	**Protect the Weak Link in Embedded Systems with New MISRA C Security Guidelines** Mark Richardson, LDRA	**Advanced Wireless & Smart Passive Sensor Technology Enables More Effective Use of Sense Data in IoT Implementations** Gary Straker, ON Semiconductor
MILS Complete Separation Platform Protection Profile (MILS CSP PP) Dr. Igor Furgel, Viola Saftig, T-Systems International	**Keep Designers in the Driver's Seat and Build Better User Interfaces** Thomas Fletcher, Crank Software	**The Future MISRA C Under the Spotlight** Silvano Sogus, PRQA	**Ultra Low Power Design – Practical Hints and Pitfalls** Andreas Riedenauer, INELTEK Mitte

09:30-10:00 — KEYNOTE 09:30

Keynote:
IOT: Functional Safety and Security for a World of Software Defined Autonomous Things
Riccardo Mariani, Intel

10:00-10:30 — Coffee Break

	Session 13: Internet of Things III – Profiles & Interfaces	Session 15/I: Functional Safety I	Session 16: Software Engineering III – Open Source Software
10:30-11:00	**Model-Driven Generation of Communication Interfaces for Smart Sensors** Dr. Christoph Rathfelder, Hahn-Schickard	**Agile for Safety Critical Systems: Design Practices** Dr. Bruce Douglass, IBM	**Open Source and Embedded Software Development: Collision Course or Hands-free Perfection?** Rod Cope, Rogue Wave Software
11:00-11:30	**Which IoT Protocol Should I Use for My System?** Christian Legare, Micrium		**Top Open Source Use Cases and Best Practices for Embedded Software** Rod Cope, Rogue Wave Software
11:30-12:00	**xHealth: An Architecture for Optimizing Wearable to Server Communication Using the MQTT Protocol** Prof. Dr. Klemens Waldhör, FOM Hochschule für Oekonomie & Management	**Can Uncertified Microprocessors be Used to Build Certified Systems?** Rob Bates, Mentor Graphics	**Open Software Architectures for Ultra-Long Systems Maintenance** Prof. Dr. Wolfgang Mauerer, Siemens/OTH Regensburg
12:00-12:30	**Web Services Layer for Embedded Devices** Muhammed Shafique, Mentor Graphics	**Functional Safety on Unsafe Hardware – Does That Work?** Andre Schmitz, Green Hills Software	**Open Source Software Compliance & Security for Embedded Systems** Jeff Luszcz, Palamida

12:30-13:30 — Lunch Break

	Session 14: Internet of Things IV – Virtual & Physical Devices	Session 15/II: Functional Safety II	Session 17: Software Engineering IV – Software Quality & Standards
13:30-14:00	**The Role of Virtualization in Safe and Secure Embedded Systems** Maxwell Hinson, Green Hills Software	**A Novel Software Architecture for Mixed Criticality Systems** Ralf Ramsauer, OTH Regensburg/Siemens	**Guidelines for Writing Efficient C/C++ Code** Greg Davis, Green Hills Software
14:00-14:30	**Industrial Virtualization on Embedded Systems** Frank Erdrich, emtrion	**What is SEU and How to Leverage SEU Immune Devices for Safety Critical Designs** Ted Marena, Microsemi	
14:30-15:00	**Embedded Virtualization in the Age of Heterogeneous Devices** Felix Baum, Mentor Graphics	**Automating Safety Engineering with Model-Based Techniques** Dr. Juha-Pekka Tolvanen, MetaCase	**Understand Software Quality's Three-Legged Stool: Static Analysis, Dynamic Analysis, and Unit Testing** Mark Richardson, LDRA
15:00-15:30	**Virtualization Impact on Embedded System Performance** Baurzhan Ismagulov, ilbers	**Heterogeneous Multicore for Safety: Why You Need Multiple Different Cores on Your SoC** Glenn Steiner, Xilinx	**Secure Programming – Right from the Beginning** Willi Flühmann, Noser Engineering

15:30-16:00 — Coffee Break

16:00-16:30	**Virtualization Methodolgy for Real Time Physical System Self Optimization** Dan Isaacs, Xilinx Greg Brown, National Instruments	**Fast Fault Injection to Evaluate Multicore Systems Soft Error Reliability** Larry Lapides, Imperas	**Software Archeology in Practice: Recovering Lost Behaviour from Legacy Code** Robert Howe, Verum Software Tools
16:30-17:00	**Embedded Flash Storage for Industrial Internet of Things** Dr. Chanson Lin, EmBestor Technology	**Dependency-Aware Fault Trees** Alexander Prohaska, Audi	**Real-Time Software Using Micro Python** Jacob Beningo, Beningo Embedded Group
17:00-17:30	**Evolving Use Case of Memory Solutions in IoT Edge Computing** Jeff Shiner, Micron Technology	**Safe and Robust Functional Safety System Basis Chip** David Lopez, Maxime Clairet, NXP Semiconductors	**Slash Development Time with the Right Embedded Platform** Kim Dinsmore, Renesas Electronics Europe

Keynote:

IOT: Functional Safety and Security for a World of Software Defined Autonomous Things

Riccardo Mariani, Intel

Coffee Break

Session 18: FPGA-SoCs

Managing Power for Performance with a Heterogeneous Processing System on a Chip
Glenn Steiner, Xilinx

Dynamic FPGA Reconfiguration for Fast Mode Changes and Safe Run-Time System Upgrades
Kees Goossens, Topic Products

P2L – An Instruction Level Profiling Tool for the LEON3 Softcore Processor
Carlos Roberto P. Almeida Jr, University of Sao Paulo

Acceleration of Industrial Image Processing with High-Resolution Line Scanners Using FPGAs
Andreas Gareis, Opdi-Tex

Want more?
See page 12/13 for additional classes!

Session 21/I: Management Focus I

Reshaping the Embedded System Business
Oliver Winzenried, Wibu Systems

Should we Make or Buy – True Story of the System On Modules
Amir Sherman, Arrow

Embedded System Development for Industrial Automation 4.0
Dr. Heiko Dörr, Model Engineering Solutions

Safety and Security – an Integrated Approach
Gudrun Neumann, SGS-TÜV Saar

Lunch Break

Session 19: HiPEAC – High Performance Embedded Architectures

High Performance Embedded Short Time Fourier Transform Architecture for Real-Time Speech Enhancement Using Differential Microphone Arrays
Dr. Alessandro Palla, University of Pisa

OpenCL Streaming Platform on FPGA
Armin Weiss, Zurich Univerity of Applied Sciences (ZHAW)

High-Performance Parallelisation of Real-Time Applications
Prof. Dr. Luis Pinho,
Instituto Superior de Engenharia do Porto

ARM-Based Embedded System for SpaceFibre Link Analyzer
Alessandro Leoni, University of Pisa

Using C++ Compile-Time Code Generation Facilities for Increased Efficiency on Embedded Architectures
Andreas Schäfer,
Friedrich Alexander University Erlangen-Nürnberg

Heterogeneous Computing Architecture Performance and Optimization for ADAS and Mobile Imaging Applications
Rafal Malewski, NXP Semiconductors
Markus Levy, EEMBC

Using SoC Networks for Scalable Embedded HPC
Prof. Dr. Fritz Mayer-Lindenberg, TUHH

powered by HiPEAC

Session 20: Embedded Linux

Quick and Easy Device Drivers for Embedded Linux Using UIO
Chris Simmonds, 2net

System Design of a Modern Embedded Linux for In-Car Applications
Murali Padmanabha, Technische Universität Chemnitz

Ubuntu Core, Snaps and the Snappy Ecosystem
Jamie Bennett, Canonical

uEFI grub2 on Top of U-Boot
Alexander Graf, SUSE

Coffee Break

MIPS Remote Processor Driver for Managing Linux and Real-Time Processing
Matthew Redfearn, Imagination Technologies

Rapid and Efficient Methodology to Convert Android into Linux-based IoT OS: A Case Study on Intel SoFIA
Boon Leong Ong, Intel

Reliably Committing Data to the Media Through the Linux Kernel
Thom Denholm, Datalight

Session 21/II: Management Focus II

Can We KNOW a System is Secure?
Rob Bates, Mentor Graphics

Defect Analytics in Embedded System Design: Does the 80/20 Rule Still Apply?
Tao Lee, IMEC-Taiwan

Licensing the Field
Michael Gaudlitz, GEMALTO

Threats and Risks Assessment: What any IoT Project Ought to Have but the Fewest Do
Dr. Jürgen Acker, conplement

Mission Impossible? Development of Embedded Software without Gaps
Juergen Moors, CollabNet

Industry 4.0 Needs Agile Development
Joachim Pfeffer, peppair

Software Project Quality Metrics as a Management Tool
Dr. Heiko Dörr, Model Engineering Solutions

	Session 22: Internet of Things V – Software Frameworks for IoT Devices		Session 25/I: Connectivity – Network Technologies & Connectivity for Automotive & Industry I	Session 26: Security III – Security for Automotive
09:30-10:00	**Intel Atom Based Scalable Embedded Linux Platform Solution for IoT Markets** Nagarajan Muralidharan, Intel		**Theory of Operations for TSN-Based Industrial Systems and Applications** Todd Walter, Nation Instruments	**Embedded Security for Automotive – A Comprehensive Introduction** Marcus Janke, Dr. Peter Laackmann, Infineon Technologies
10:00-10:30	**The IoT Gateway as Your Trustworthy and Powerful Data Broker** Robert Mueller-Albrecht, Intel		**Demystifying IEEE 1588 for Industrial Designs** Ted Marena, Microsemi	**Securing Connected Cars – A Systematic Approach to Secure Vehicle Communication Systems** Michael Eisenbarth, comlet Verteilte Systeme
10:30-11:00	**Building a Reference Design for a Secure IoT Gateway** Ricardo Anguiano, Mentor Graphics		**Secure CANopen (FD) Bootloading** Christian Keydel, Embedded Systems Academy	**A Modular, Reconfigurable and Updateable Embedded Cyber Security Hardware Solution for Automotive** Dr. Francesc Fons, Lear Corporation
11:00-11:30	Coffee Break			
11:30-12:00	**Rethinking TCO (Total Cost of Ownership) In a World Driven by the Internet of Things** Andy Harding, Renesas Electronics Europe		**Accelerate IIoT-Ready Applications with Smart Industrial Computing** Mark Liu, Moxa Europe	**Autonomous Driving: End-to-End Security Architecture** Andrei Kholodnyi, Wind River
12:00-12:30	**In-Motion and At-Rest IoT Sensor Data Analytics on the Edge** Alexander Körner, IBM Deutschland		**Fieldbus for the Internet of Things – An Evolutionary Approach** Matthias Klatt, Fraunhofer IIS	**Software Security for the Connected Car** Mark Richardson, LDRA
12:30-13:30				
	Session 23: Internet of Things VI – Machine Learning & Sensor Fusion		Session 25/II: Connectivity – Network Technologies & Connectivity for Automotive & Industry II	Session 27: Security IV – Security for Industry
13:30-14:00	**Rapid Prototyping of Machine Learning Based Solutions for Embedded Systems** Prof. Antonio Rizzo, Dr. Francesco Montefoschi, University of Siena		**Industrial IoT Platform for Edge devices** Muhammed Shafique, Mentor Graphics	**The Anatomy of a Secure Thing of the Internet** Dr. Lars Lydersen, Silicon Labs
14:00-14:30	**Designing Industry 4.0 Silicon Carbide High Power Inverters with ZYNQ-7000 and Zynq UltraScale+ MPSoC with Machine Learning Diagnostic Capability** Prof. Dr. Giulio Corradi, Xilinx		**How to bridge IT and OT in IoT?** Tze Chiew, Advantech	**Security in Legacy Industrial Communication Systems** Andreas Walz, Hochschule Offenburg
14:30-15:00	**Development of Sensor Fusion Algorithms for Autonomous Driving Vehicles and Devices** Marco Roggero, The MathWorks	Session 24: Internet of Things VII – Firmware Management	**The Architecture of a Secure IoT Gateway: A Technical Deep Dive** David Dufour, Webroot	**Utilizing the TrustZone Security Hardware in Cortex-M23/M33 Microcontroller** Reinhard Keil, ARM
15:00-15:30	Coffee Break	**Software Update for IoT: The Current State of Play** Chris Simmonds, 2net	Coffee Break	
15:30-16:00	**Smarter Home: Self-Adapting & Easy to Set Up** Florian Barth, comlet Verteilte Systeme	**Avoiding the Brick – Seamless Updates in Embedded Devices** Thom Denholm, Datalight	**CiA 447, the CANopen Standard for After-Market Automotive Applications** Olaf Pfeiffer, Embedded Systems Academy	**Secure Communication for Industrial Systems Protected with TPM 2.0** Florian Schreiner, Infineon Technologies
16:00-16:30	**Machine Learning on Deeply Embedded and Resource-Constrained End-Nodes for the Internet of Things** Thomas Lorenser, ARM	**Efficient Security Algorithm Implementation in Low Resource Embedded Devices** Konstantinos Zafeiropoulos, Dia Semi	**Securing the Connected Car** Greg Di Stefano, Mender.io	**From End Nodes Through Gateways to the Cloud: Securing the Industrial Internet of Things** Felix Baum, Mentor Graphics

Session 28 I: Security V – Secure Communication I

Follow the Money – A Path to Monetizing IoT Services with Secure Controllers and Processors
Donnie Garcia, NXP Semiconductors

Quantum Resistant Cryptography for Embedded Systems and IoT
Dr. Francesco Regazzoni, ALaRI – Università della Svizzera Italiana

Securing Sensor Networks to Enable Cloud Based Services
Dr. Josef Haid, Infineon Technologies

Session 30: Software Engineering V – Software Analysis

Benchmarking Static Code Analyzers
Dr. Daniel Kästner, AbsInt

How Good is Your Software Security Posture?
Frank van den Beuken, PRQA

Address IoT Security at the Source: The Emerging Role of Modern Static Analysis
Yan Huang, Synopsys

Session 33: System on a Chip

Advanced Use Cases for Linked DMA
Josh Norem, Silicon Labs

Exploring the Hidden Costs of Using a 99-Cent Wireless SoC
Tom Nordman, Silicon Labs

SoC Debug and Trace: Improving Availability and Accessibility
Antonio Russo, ARM

Session 35: Embedded Vision

The Internet of Things That See: Opportunities, Techniques and Challenges
Jeff Bier, Embedded Vision Alliance

Open Architecture for Industrial Machine Vision
Soon Ee Ong, Siaw Chen Lee, Intel

Deep Learning for Face Identification and Gaze Estimation on Embedded Systems
Prof. Dr. Tobias Scheffer, Asaphus Vision

Coffee Break

Security Tradeoffs and Commissioning Methods for IoT Wireless Protocols
Dr. Lars Lydersen, Silicon Labs

Secure Transmission of Data in Wireless Sensor Networks
Nadine Sinner, accessec

Binary Static Analysis for Safety and Security
Dr. Paul Anderson, GrammaTech

Security by Static Analysis for Smaller Embedded Systems
Frank Büchner, Hitex

Choosing the Right SOM for Wireless M2M Connectivity
Mike Rohrmoser, Digi International

USB3.1, Type-C, DisplayPort and HDCP – Not Alphabet Soup but Four Hot Things in the Hardware: How to Ramp-up and Integrate Quickly for Time to Market
Blessy Alexander, Synopsys

Neural Networks for Image Classification Using the Xilinx Zynq SOPC
Prof. Dr. Frank Kesel, Hochschule Pforzheim

Combining OpenCV and High Level Synthesis to Reduce Embedded Vision Development Time
Adam Taylor, Adiuvo Engineering & Training

Lunch Break

Session 28 II: Security – Secure Communication II

Energy Analysis of Hardware-Accelerated Cryptography in DTLS for the Internet of Things
Jan Kühn, University Freiburg

Securing the Next Generation Network Infrastructures with Dynamic Agents
David Dufour, Webroot

Session 31: Software Engineering VI – Software Testing

What Embedded Software Engineering Can Learn from Enterprise IT Testing Techniques
Miroslaw Zielinski, Parasoft

Software Variants Testing Made Easy
Michael Wittner, Razorcat Development

Ready-to-Deploy Certification Testing and Traceability
Michael Wittner, Razorcat Development

Session 32: Design Patterns for Embedded Systems in C

Design Patterns for Embedded Systems in C
Dr. Bruce Douglass, IBM

Session 34: Multicore SoC

Optimizing ARM Cortex-A and Cortex-M Based Heterogeneous Multiprocessor Systems for Rich Embedded Applications
Kinjal Dave, ARM

Optimum Use of Resources in Heterogeneous System Architectures
Matthias Frei, ZHAW

Symmetric Multiprocessig or Virtualization – Maximizing the Value and Power of a Soft-Control Architecture
Jeff Hibbard, IntervalZero

Session 36 Embedded OS / RTOS

The Seven Deadly Sins When Selecting an Embedded OS
Malte Mundt, BlackBerry QNX

System on Chip Certifiable OS Solution
Robert Pickles, SYSGO

Top 5 Key Considerations for Your RTOS-based Design
Jean Labrosse, Micrium

Coffee Break

Session 29: Safety and Security in the IoT

Safety and Security in the IoT
Dr. Bruce Douglass, IBM

Get Branch Coverage for Production Code
Jens Braunes, PLS Programmierbare Logik & Systeme

Reducing Test Efforts for Highly Configurable Systems
Hartmut Lackner, Model Engineering Solutions

Enhancing Task Assignment in Many-Core Systems by a Situation Aware Scheduler
Tobias Meier, University of Applied Sciences Ingolstadt

A Monitoring Based Safety Architecture for Multicore Microcontrollers
Thomas Barth, University of Applied Sciences Darmstadt

Transform 64-Bit-Windows into an RTOS
Jeff Hibbard, IntervalZero

Zephyr RTOS – Built with Security in Mind
Anas Nashif, Intel

TUESDAY, MARCH 14, 2017

09:30-14:30		**Class 02: Introduction to Embedded Linux / Theory and Practice Crash Course** Robert Berger, Reliable Embedded Systems	**Class 03: The Mc Guire Classes I – Verifying a Safety-Critical Software Development Life-Cycle Using Data-Mining Techniques** Prof. Nicholas Mc Guire, OSADL
14:30-17:30	**Class 01: The Bruce Douglass Classes – Advanced Behavioral Modeling in UML and SysML** Dr. Bruce Douglass, IBM		

WEDNESDAY, MARCH 15, 2017

09:45-10:30			
10:30-11:30	**Class 05: The Greg Davis Class – Reliable and Hack-Proof C++ Code** **Writing Reliable C/C++ Code** Greg Davis, Green Hills Software	**Class 07: AUTOSAR Workshop** **AutoSAR beyond Automotive – Learning from the Past, Preparing the Future** Prof. Dr. Peter Fromm, University of Applied Sciences Darmstadt	**Class 08: Brillo and Weave Internals** Karim Yaghmour, Opersys
11:30-12:30	**Hack-Proofing Your C/C++ Code** Greg Davis, Green Hills Software		
13:30-17:30	**Class 06: The Bruce Douglass Classes – Agile Systems Engineering** Dr. Bruce Douglass, IBM		**Class 09: Embedded Android Workshop** Karim Yaghmour, Opersys

THURSDAY, MARCH 16, 2017

09:30-12:30	**Class 12: Taming the Beast – a Tutorial on Developing Robust and Safe Applications for the AURIX Multicore** Prof. Dr. Peter Fromm, University of Applied Sciences Darmstadt		**Class 15: The Mc Guire Classes II – Introduction to Linux-RTOS (PREEMPT_RT)** Prof. Nicholas Mc Guire, Andreas Platschek, OSADL
13:30-16:30	**Class 13: Securing Connected Automotive & Industry Applications with the S32K MCU Family** Juergen Frank, NXP Semiconductors	**Class 14: Simple C++ for Embedded Software** Prof. Peter Sommerlad, FHO HSR Rapperswil	

Class 04: Model-Based Software Development Based on Eclipse

09:30-09:50 **Tangible Advantages of Eclipse – Technical, Qualitative and Commercial**
Ralph Müller, Eclipse Foundation

09:50-10:10 **Globally Optimized Tool-Chains for Model-Based Development Need Platforms Like Eclipse**
Arndt-Michael Meyer, ETAS

10:10-10:30 **Integrating Eclipse-Based Tools into Existing Heterogeneous Tool-Chains**
Andreas Graf, Itemis

10:30-10:50 **Safer by Design - Using Eclipse to Engineer a Better Language for Embedded Software**
Darren Buttle, ETAS

11:05-11:25 **Designing Tools as a Collection of Functions implemented as Plug-Ins**
Lars Geyer-Blaumeiser, Robert Bosch

11:25-11:45 **Tools for the Automatic Optimization of Embedded Real-Time Multi-Core And Many-Core Systems**
Michael Deubzer, Timing Architects

11:45-12:05 **Strategies for the Integration of Static Analysis in Model-Based Development Using the MXAM-Tool**
Dr. Heiko Dörr, MES

12:05-12:25 **Seamlessly from Idea to Serial ECU-Code**
Alexander Mayer, ETAS

Class 10: Hands-on Workshop – Ultra Low Power

Herman Roebbers, Altran

Class 11: The ESCRYPT Class: A Multi-Layered Approach to Embedded Security

09:45-10:00 **Welcome**
Martin Ridder, ESCRYPT – Embedded Security

10:00-10:30 **Securing the Connected Car**
Timo van Roermund, NXP Semiconductors

10:30-11:00 **Security-hardened RISC-V Microprocessors**
Richard Newell, Microsemi

11:30-12:00 **SEPP: A PUF-Based Processor Architecture for Secure Code Execution**
Stephan Kleber, Ulm University

12:00-12:30 **Hardware Trojans in Embedded Systems**
Christof Paar, Ruhr University Bochum

13:30-14:00 **Security in the AUTOSAR Architecture**
Núria Mata, ETAS

14:00-14:30 **Automated Security Analysis of TLS and IPsec Implementations**
Michael Scheibel, TÜV Informationstechnik

14:30-15:00 **Trust and Trustworthiness in the Internet of Things – from the Embedded Device to the Cloud**
Dirk Stegemann, Robert Bosch

15:00-15:30 **Cyber Security in Industry 4.0**
Michael Jochem, ZVEI

16:00-16:30 **Automotive IDS, Do You Know if Your Deployed System is Still Secure?**
Johan Simonsson, ESCRYPT

16:30-17:00 **Automotive IDS Analytics – Immunizing the Herd**
David MacFarlane, ESCRYPT

17:00-17:30 **PSIRTs on the Way to Active Product Security**
Thorsten Kuhles, ETAS

Classes:

In the sessions of the conference program you hear developers and decision-makers present a variety of ideas for solutions and their experience in Embedded Systems development in concise half-hour talks. Plus a summary view of selected technologies and current trends.

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CLASSES
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		Tuesday, March 14, 2017		Wednesday, March 15, 2017		Thursday, March 16, 2017	
		am	pm	am	pm	am	pm
Class 01	The Bruce Douglass Classes – Advanced Behavioral Modeling in UML and SysML	☐	☐				
Class 02	Introduction to Embedded Linux / Theory and Practice Crash Course	☐	☐				
Class 03	The Mc Guire Classes I – Safety-Critical Software Development Using Data-Mining Techniques	☐	☐				
Class 04	Model-Based Software Development Based on Eclipse	☐					
Class 05	The Greg Davis Class – Reliable and Hack-Proof C++ Code			☐			
Class 06	The Bruce Douglass Classes – Agile Systems Engineering				☐		
Class 07	AUTOSAR Workshop			☐			
Class 08	Brillo & Weave Internals			☐			
Class 09	Embedded Android Workshop				☐		
Class 10	Hands-on Workshop – Ultra Low Power			☐	☐		
Class 11	The ESCRYPT Class: A Multi-Layered Approach to Embedded Security			☐	☐		
Class 12	Robust and Safe Applications for the AURIX Multicore					☐	
Class 13	Securing Connected Automotive & Industry Applications with the S32K MCU Family						☐
Class 14	Simple C++ for Embedded Software						☐
Class 15	The Mc Guire Classes II – Introduction to Linux-RTOS (PREEMPT_RT)					☐	

Class Fees	Early Rate until Feb. 1, 2017	Late Rate from Feb. 2, 2017
Half Day Class	EUR 360,–	EUR 400,–
Full Day Class	EUR 530,–	EUR 600,–

Conference Fees	Early Rate until Feb. 1, 2017	Late Rate from Feb. 2, 2017
1 Conference Block	EUR 295,–	EUR 335,–
2 Conference Blocks	EUR 405,–	EUR 460,–
3 Conference Blocks	EUR 515,–	EUR 585,–
4 Conference Blocks	EUR 605,–	EUR 685,–
5 Conference Blocks	EUR 680,–	EUR 775,–
Full Conference (Classes excluded)	EUR 735,–	EUR 835,–

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		Tuesday, March 14, 2017		Wednesday, March 15, 2017		Thursday, March 16, 2017	
		Block 1 am	Block 2 pm	Block 3 am	Block 4 pm	Block 5 am	Block 6 pm
Session 01	Internet of Things I – Strategic Aspects	☐					
Session 02	Internet of Things II – Software Frameworks for the IoT		☐				
Session 03	Connectivity – Wireless Technologies	☐	☐				
Session 04	Security I – TPM	☐					
Session 05	Security II – Hacking & Attacking		☐				
Session 06	MILS Workshop	☐	☐				
Session 07	Systems Engineering I – System Quality & Standards	☐					
Session 08	Systems Engineering II – System Design & System Modeling		☐				
Session 09	Software Engineering I – Software-Design & Software-Modeling	☐					
Session 10	Software Engineering II – MISRA-Standard		☐				
Session 11	ARM Cortex	☐					
Session 12	Low Power		☐				
Session 13	Internet of Things III – Profiles & Interfaces			☐			
Session 14	Internet of Things IV – Virtual & Physical Devices				☐		
Session 15	Functional Safety			☐	☐		
Session 16	Software Engineering III – Open Source Software			☐			
Session 17	Software Engineering IV – Software Quality & Standards				☐		
Session 18	FPGA-SoCs			☐			
Session 19	HiPEAC – High Performance Embedded Architectures				☐		
Session 20	Embedded Linux				☐		
Session 21	Management Focus			☐	☐		
Session 22	Internet of Things V – Software Frameworks for IoT Devices					☐	
Session 23	Internet of Things VI – Machine Learning & Sensor Fusion						☐
Session 24	Internet of Things VII – Firmware Management						☐
Session 25	Connectivity – Network Technologies & Connectivity for Automotive & Industry					☐	☐
Session 26	Security III – Security for Automotive					☐	
Session 27	Security IV – Security for Industry						☐
Session 28	Security V – Secure Communication					☐	☐
Session 29	Safety and Security in the IoT						☐
Session 30	Software Engineering V – Software Analysis					☐	
Session 31	Software Engineering VI – Software Testing						☐
Session 32	Design Patterns for Embedded Systems in C						☐
Session 33	System on a Chip					☐	
Session 34	Multicore SoC						☐
Session 35	Embedded Vision					☐	
Session 36	Embedded OS / RTOS						☐

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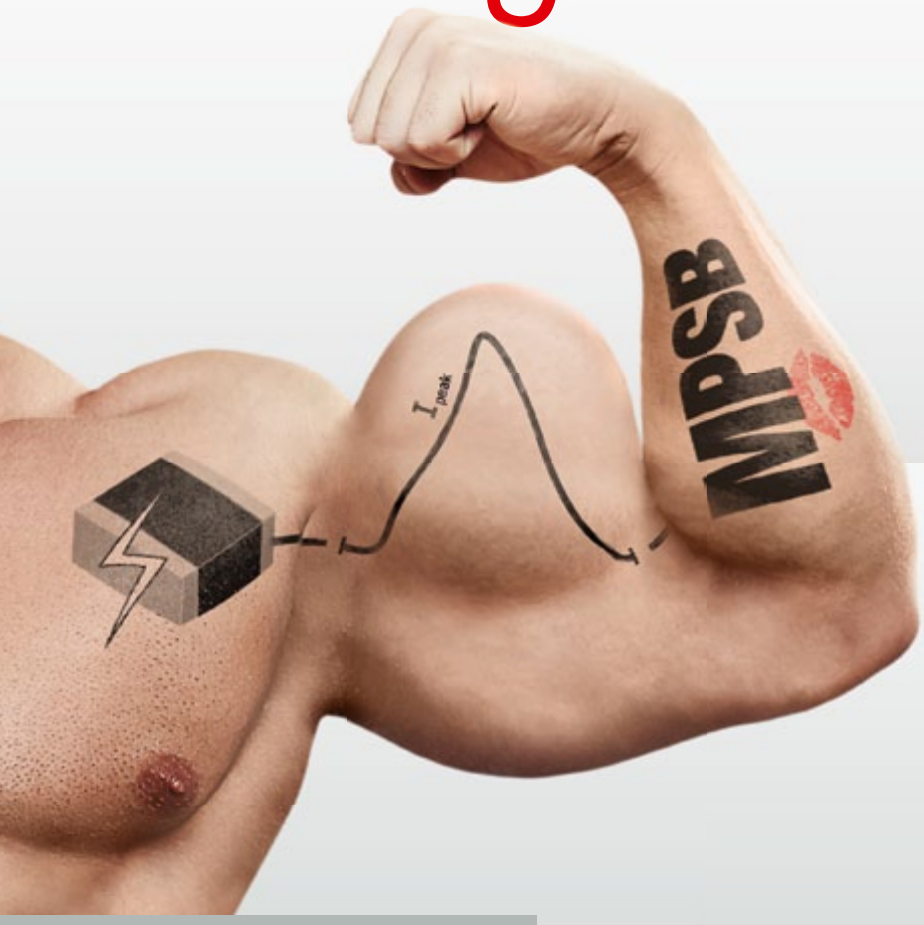

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