



Embedded World - <http://www.embedded-world.eu/home.html>

February 26-28, 2013
Exhibition Centre
Nuremberg, Germany

Come visit our booth at the upcoming Embedded World Exhibition and Conference!

Mentor Embedded Sessions:

Power Management in Embedded Systems – Colin Walls – Tuesday, February 26 15:15-15:45

The importance of power management in today's embedded designs has been steadily growing as an increasing number of battery powered devices are developed. Often power optimizations are left to the very end of the project cycle, almost as an afterthought. In this presentation we will discuss design considerations that should be made when starting a new power sensitive embedded design, which include choosing the hardware with desired capabilities, defining a hardware architecture that will allow software to dynamically control power consumption, defining appropriate power usage profiles, making the appropriate choice of an operating system and drivers, choosing measurable power goals and providing these goals to the software development team to track throughout the development process.

How to Measure RTOS Performance – Colin Walls – Tuesday, February 26 16:15- 16:45

In the world of smart phones and tablet PCs memory might be cheap, but in the more constrained universe of deeply embedded devices, it is still a precious resource. This is one of the many reasons why most 16- and 32-bit embedded designs rely on the services of a scalable real-time operating system (RTOS). An RTOS allows product designers to focus on the added value of their solution while delegating efficient resource (memory, peripheral, etc.) management. In addition to footprint advantages, an RTOS operates with a degree of determinism that is an essential requirement for a variety of embedded applications. This paper takes a look at "typical" reported performance metrics for an RTOS in the embedded industry.

USB 3.0 - An Introduction for Embedded Software Developers – Colin Walls – Wednesday, February 27 11:30 – 12:00

USB is widely deployed in embedded devices of all kinds, resulting in simple interconnectivity and interoperability. This simplicity comes at a cost: the internal functions of USB are quite complex. This is of no consequence to the user of a USB-enabled device, but the embedded software developer does need some understanding of USB internals. Even if a commercial USB stack is employed, an appreciation of how it works enables it to be used optimally. In this

USB will be reprised in detail. Then, the changes and enhancements that come along with USB 3.0 will be reviewed.

Simultaneously Leveraging Linux and Android in a GENIVI compliant IVI System – Andrew Patterson – Thursday, February 28 – 9:00 – 10:00

It is widely accepted that Linux is the operating system of choice when building a complex, in-vehicle infotainment (IVI) system. The ability to support and quickly integrate device drivers for features such as CAN, MOST, graphics accelerators, networking interfaces, and Bluetooth can result in key differentiators for any GENIVI compliant IVI-based system. But what if Android was introduced as a second operating system? This session multiple implementations integrating both Android and Linux on multicore SoCs sharing audio and video resources across both domains while maintaining GENIVI compliance. Implementations with and without hypervisor technology will also be presented.

Meeting SEP 2.0 Compliance: Developing Power Aware Embedded Systems for the Modern Age – Andrew Caples – Thursday, February 28 11:30 – 12:00

The Smart Energy Profile (SEP) 2.0 is quickly becoming the go-to standard for developing innovative products and services in the energy power management sector. Information flow between meters, smart appliances, and energy management systems must occur in an open, standardized, and interoperable fashion. SEP 2.0 establishes the standard for communication interoperability as well as security for networked appliances and meters.

In this session attendees will learn how to meet the challenges of SEP 2.0 compliance with a small footprint RTOS, such as Nucleus RTOS from Mentor Graphics, to address the connectivity and security requirements for the smart energy profile. This session takes a detailed look at the design considerations to consider how an RTOS can reduce development time and cost for SEP 2.0 compliant products.

Profiling Multicore Systems to Maximize Core Utilization – Colin Walls – Thursday, February 28 13:30 – 14:30

Underutilization of cores in a multicore system can be considered a bug. As your system incorporates more cores, you need to make sure that all the cores are being utilized fully. Unexpected inter-actions between processes, the operating system, and resources can prevent cores from delivering peak performance. In this session explore how to profile what each core is doing, which processes are running on each core, and understand where core utilization falls below optimum values.

Andrew Patterson – Thursday, February 28 15:30 – 16:00

Embedded software designers working on In-Vehicle Infotainment (IVI) have had to learn about a lot of new technology in the last 3 years, ranging from the Linux operating systems, support for a wide range of IVI applications, middleware and application services, integration of complex semiconductor SoC platforms, and multi-modal human interface requirements to list a few. The rate of innovation required by vehicle buyers shows no sign of slowing down, as markets now demand on-line access for the car driver and passengers. The truth is, most cars do not connect to the internet today, but there is no doubt that they will need to fairly soon to take advantage of cloud and telematics services becoming available. This session looks at the connectivity options available to embedded designers at OEMs and their Tier 1 suppliers, both from a hardware and software perspective. The work of organizations such as the Car Connectivity Consortium will be explored, as well as specific point solutions provided by mobile operators and leading phone brands.

Developing the Next Generation Embedded HMIs – Phil Burr - Thursday, February 28 16:00 – 16:30

With more and more people using smartphones it is no surprise that more and more people are demanding better HMIs in other products: whether it is in their set top box, refrigerator, or car, users have come to expect graphically rich dynamic HMIs. This is all very well, but what is a humble developer to do when confronted with the constraints of their embedded device. This presentation examines the options for embedded developers needing to implement these latest HMIs and looks at tools and techniques which can help developers meet or exceed their customer's HMI expectations.