

# Presentation Abstracts

## Alan Rowe, MPC Data

### **"Why consumer products need an OS (and how to pick a good 'un)"**

Consumer electronic devices are becoming more complex year by year. This puts increasing demand on the embedded software to drive them, and on the skills of the product development teams.

This presentation starts with a brief review of this trend over the past decade and argues that case that most new consumer electronic devices should take advantage of an embedded operating system. It concludes with a very brief review of the main embedded OS contenders for complex consumer devices, and some pointers on how to select the best one for some typical device categories.

## Steve Beck, Sony Semiconductor

### **"DVB Transmission Technologies & their impact on hardware/software architectures"**

The presentation will briefly explain the reasons why the new technologies were necessary and some of the key features the terrestrial and cable TV technologies. The presentation will finish with an overview of a typical TV/STB receiver implementation that uses these technologies (at a very high-level) to give an indication of the partitioning of the software.

## Rustam Roy, Manches

### **"The Basics of Open Source Licensing"**

Rustam will briefly consider the place of open source licensing arrangements within the context of intellectual property rights and will then outline at a high level some of the pitfalls and benefits of using open source software within commercially exploited products.

## Xavier Buisson, Synopsys

### **"Embedded Software Development using Virtual Prototypes"**

With the growing complexity and parallelism of today's software stacks and SoCs, debugging at the system level has become a key bottleneck within all major system design disciplines. During software development, testing and system verification, debugging is the most unpredictable and risky task. Today, debugging not only refers to functional bugs. Moreover, with multi-core SoCs and mobile/DTV applications, multi-core utilization, as well as power efficiency, have become important quality criteria. In this presentation we will introduce novel system level hardware and software debug solutions that are enabled through the controllability, visibility and determinism of Virtual Prototypes. We will describe how Virtual Prototypes complement existing debug environments with capabilities such as system level OS aware software analysis, system level assertions and user defined debug and test tools. Two real life use cases will be described. ST-Ericsson use of Virtual Prototype for WCDMA Layer 1 SW testing and NXP case study - embedded OS porting and debug using Virtual Platform for a Cortex A9-based Set-Top-Box SoCs.

**Shailendra Fuloria, University of Cambridge Computer Lab**

**"Who controls the off switch? - software and security challenges in smart meters"**

Recently presented at the IEEE International Conference on Smart Grid Communications, Oct 2010, NIST, Maryland, USA

We're about to acquire a significant new cyber-vulnerability. The world's energy utilities are starting to install hundreds of millions of 'smart meters' which contain a remote off switch. Its main purpose is to ensure that customers who default on their payments can be switched remotely to a prepay tariff; secondary purposes include supporting interruptible tariffs and implementing rolling power cuts at times of supply shortage. The off switch creates information security problems of a kind, and on a scale, that the energy companies have not had to face before. From the viewpoint of a cyber attacker -- whether a hostile government agency, a terrorist organisation or even a militant environmental group -- the ideal attack on a target country is to interrupt its citizens' electricity supply. This is the cyber equivalent of a nuclear strike; when electricity stops, then pretty soon everything else does too. Until now, the only plausible ways to do that involved attacks on critical generation, transmission and distribution assets, which are increasingly well defended. Smart meters change the game. The combination of commands that will cause meters to interrupt the supply, of applets and software upgrades that run in the meters, and of cryptographic keys that are used to authenticate these commands and software changes, create a new strategic vulnerability, which we discuss in this paper.

**Colin Walls, Mentor Embedded**

**"An Introduction to Android and its Deployment Beyond Mobile"**

Android is an open source platform built by Google that includes an operating system, middleware and applications for the development of devices employing cellular communications. This session takes a look at the design of Android, how it works and how it may be deployed to accelerate the development of a connected device. Along with guidelines to getting started with Android, the Android SDK, its available tools and resources will be reviewed and consideration given to applications for Android beyond conventional mobile handsets such as medical devices, consumer electronics and military/aerospace systems.

A brief review of how Android or Linux can co-exist with an RTOS in multi-core designs will also be conducted.

**Ian Willats, Pebble Bay Consulting**

**"Porting an open-source smart card stack to QNX Neutrino"**

This thirty-minute presentation describes how Pebble Bay recently ported the open-source PC/SC-lite smart card stack to the QNX Neutrino real-time operating system. It highlights the business background to the project, the approach we adopted, some of the problems we faced and how we solved them. The presentation concludes with some observations about the use of open source and commercially-licensed software in the same system.