



# Texas Instruments

## Tech Day Vancouver 2010

### Session Titles and Abstracts

#### Track and Course

#### Abstracts

#### Track 1 – ARM

Considerations for Choosing the Right TI ARM-Based Microprocessor

TI has introduced many new processors based on the Cortex-A8 and ARM9 architectures. This session compares ARM-based MPU options and guides you through the decision-making process. Learn the technical components that are included as part of these cores. In addition, learn about the scalability of the different architectures.

Introduction to Stellaris ARM Cortex-M3 MCUs

TI's Stellaris™ MCUs pair the ARM Cortex-M3 core along with advanced communication capabilities, including 10/100 Ethernet MAC+PHY, CAN, USB On-The-Go, USB host/device, SSI/SPI, UARTs and I<sup>2</sup>C. TI also provides an extensive range of more than 20 superb reference design, evaluation and development kits starting at \$49. Stellaris MCUs are targeted at highly connected applications including monitoring, building controls, network appliances and switches, factory automation, electronic point-of-sale machines, test and measurement equipment, medical instrumentation, and gaming equipment. This presentation provides an overview of Stellaris MCUs, software tools and kits, StellarisWare software, and applications. The session will close with a freeform Q&A session to handle your questions on the more than 140 microcontrollers in TI's Stellaris family of MCUs.

ARM Hands-On Workshop (Three-Part Session)

This is a combined lecture and hands-on lab session. The discussion starts with an overview of TI's devices and software development kits (SDK). The heart of the presentation examines TI's Linux options, from an overview of Linux itself to where you can get versions of Linux for TI platforms (including Arago, TI's Open Embedded Linux distro) and finally examining how you build within the Linux environment. The session's discussion ends with a brief, practical examination into using Linux on embedded platforms. After booting the system with an SD/MMC card, the lab gets you working with the Linux graphical user environment, just as if you were working on a desktop computer. If you have time after exploring the GUI environment, there are further, optional exercises to explore Linux's networking applications, boot environment and mounting various file systems.

#### Track 2 – Power

Powering Intel Atom

This presentation will begin with a high-level view of TI solutions available for the Intel Atom. The discussion will then move toward the latest Intel platform roadmaps, TI's mobile power roadmap, IMVP6.5 requirements, powering IMVP6.5 with DCAP/DCAP+™ controllers, a review of CPU core solutions, system controller solutions, memory and I/O solutions, and graphic solutions available for TI power.

New Battery Technology and Portable Power Management Development

This topic provides an overview of power-management development trends for battery-powered devices: high capacity, high cell voltage, high discharge rates and safety improvements. It will present system design challenges for achieving new functionalities and improving system performance. Innovative solutions are provided for solving these challenges, including battery chargers, multicell battery management, host-side gas gauging, fast USB charging and cell-balancing techniques.

Reducing EMI Noise from Switch-Mode Power Supplies

Some designers experience high-frequency noise problems due to the introduction of switching power supplies in their systems. This presentation will explain how and where high-frequency noise is generated in switch-mode power supplies. The presentation will explain and show design methods to reduce or eliminate noise during the design and layout phases of the project. Topics such as part selection, board layout, clock synchronization, power-supply ripple rejection and post filtering will be covered.

Power-Supply Layout Considerations

This topic will address methods for keeping circuit parasitic components from degrading the operation of your designs. Techniques to minimize the impact of parasitic inductance and capacitance of filter components and PWB traces will be discussed, together with a description of the impact that PWB trace resistance can have on power-supply regulation and current capacity. A general overview of thermal design is also included, as well as sample temperature-rise calculations in a natural and forced-air environment. Finally, some practical examples of power stage and control IC layouts are reviewed.

Designing Your Power Supplies to Be "Green"

With green being a major focus in the electronics industry today, this topic will first present some of the national and international initiatives that are driving requirements for new, more efficient or green power-supply designs. The presentation will then take a look at some of TI's offerings to help your customers achieve these requirements. It will cover their features, benefits and implementations.



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<b>Track 3 – Low-Power Wireless</b>	
Fundamentals of Antenna Design by LSR	Antenna design is one of the most intimidating and important parts of any RF design. It is critical to understand the key factors involved when choosing an antenna topology, as well as what tools are needed for design, simulation and characterization. Designs must account for the effects of the enclosure material, the available space, the required radiation patterns, and EMC compliance rules and regulations. This presentation discusses the fundamentals of antenna design for short-range devices, as well as the trade-offs between size, cost and performance. An antenna that is properly designed and optimized will enhance the overall performance of any radio.
CC430: MCUs for Space-Constrained, Ultra-Low-Power Wireless Applications	The CC430 platform is a highly integrated, monolithic SoC based on the industry-leading MSP430™ MCU architecture and TI's ultra-low-power RF solutions. By making RF design easy, small, performance-rich and power-efficient, the CC430 platform helps advance applications including RF networking, energy harvesting, industrial monitoring and tamper detection, personal wireless networks, automatic metering infrastructure, and heat cost allocators.
Leveraging TI's New WiFi and Bluetooth® Offering for the OMAP35x Evaluation Module (EVM)	This year, TI added WiFi and Bluetooth® connectivity features to the OMAP35x EVM, making TI's connectivity solutions available to new markets. Come learn about TI's WL1271 combination WiFi and Bluetooth device. In this session, we will discuss the solution features, support structure and roadmap for additional connectivity support, as well as how to get started and successfully engage with customers. The WL1271-based module is shipping today with the OMAP35x EVM. It is a compact solution that opens the door for customers to innovate a wide range of applications requiring WiFi and/or Bluetooth connectivity. A live demonstration of the WiFi and Bluetooth sample applications included in the platform software will be shown during the session.
Designing RF Systems with Low-Power Consumption Targets	Learn how to configure your RF system for low power consumption. This session will cover low-power RF protocol design from scratch, including periodic transmission, polling receiver and TDMA, power optimization, protocol consideration, design, debugging, and test. Specific low-power features of LPRF chips will be explored: wake-on radio, fast startup from sleep and low-power modes.
Improving the Range of Your Low-Power RF Designs	How far can it go? This course will go through the standard calculations for estimating the range of an RF system. The course will also discuss a variety of enhancements and trade-offs that can be made to a design to improve the range and throughput of an RF system. The course will review link budgets, LNA and PA solutions, and will touch on modulation schemes, forward error correction, path loss and network topologies.
<b>Track 4 – OMAP/DaVinci</b>	
TI's Community Linux Strategy and Partners for DaVinci™, OMAP™ and Sitara™ Processors	Initially, TI offered only a single commercial Linux offering – MontaVista Linux – to customers requiring Linux on TI devices. Beginning with the OMAP3530, TI is now releasing community Linux kernels for its devices, along with the associated SDKs and DVSDKs. These community Linux kernels give customers full access to "free Linux" and have enabled multiple commercial Linux companies to support TI devices. This presentation will begin by describing the community Linux distributions TI is releasing, when they will be available, how to obtain them and the support model. It will conclude by reviewing TI's commercial Linux product and consulting partners and the additional value they offer beyond pure community Linux.
Deep-Dive into Key Analog and Embedded Processing Products for Video Security and Surveillance Systems	In video security, the shift from analog to digital video surveillance systems presents a major opportunity for both analog and embedded processing devices. We will discuss key analog power management (especially Power over Ethernet), video decoders and other pertinent analog products, as well as embedded processing devices (DM355/DM365), to show where we are successful and why. A demonstration of the DM365-based IP NetCam and DVR reference designs will be shown, touching on how TI's VLIB is enabling sophisticated techniques such as video analytics, face detection and stabilization.
Introduction to Code Composer Studio™ IDE v4 Hands-On Workshop	Code Composer Studio v4.0 is a major new release of that is based on the Eclipse open-source software framework. Eclipse is becoming very popular in the embedded development community and is now becoming a standard in development environments. Join this hands-on session to get started today.

Code Composer Studio, D-CAP+, DaVinci, MSP430, OMAP, Sitara and Stellaris are trademarks of Texas Instruments. All other trademarks are the property of their respective owners.