Texas Instruments
Tech Day Vancouver 2009
Session Titles and Abstracts

Track & Course	Abstracts
Wireless RF	
RF Hardware System Design	This course presents how to deal with key challenges in RF hardware design: balun, decoupling, crystals, power, PCB layout, regulations and debug/test.
RF Software System Design	How to write low-power RF software? Low-power RF protocol design from scratch: Periodic transmitter, polling receiver and TDMA. Power optimization, protocol considerations, design, debug and test. Specific low-power features of LPRF chips are explored: Wake-on radio (WOR), fast startup from sleep and low-power modes.
Understanding and Choosing Antennas	This course presents a number of antenna designs for both sub-1GHz and 2.4-GHz operation. Pros and cons of each design is discussed, and the participants will learn how to implement the proposed antennas in their own design. This course is aimed at engineers responsible for RF design and layout.
Energy Harvesting *by Cymbet*	This session provides an overview of how to design autonomous wireless sensors using various energy harvesting transducers, energy conversion circuits, energy storage, sensors and the TI MSP430 and CC2500. Various configurations of autonomous self-power sensors based on energy harvesting will be detailed. Low-power EH RF system architectures will be discussed and design examples will be shown. An example of a Zero Power Wireless Sensor will be demonstrated using the eZ430-RF2500-SEH Demo Kit.
ZigBee® Development with CC2480	To simplify the addition of ZigBee to an application, TI has created a new concept called Z-Accel™. Z-Accel, as the name implies, is intended to accelerate the development of a ZigBee solution. Z-Accel consists of two parts: a ZigBee processor (CC2480) and an application MCU (any MSP430). This presentation will explain the concepts behind Z-Accel, describe the features of the CC2480 and ends with a hands-on experience using eZ430-RF2480.

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Power Management	
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.
Exploring the SPICE Simulator TINA-TI™	The SPICE-based simulation program, TINA-TI, is now available to the design community free from TI. This powerful application program can perform DC, AC, noise, transient and Fourier analysis. In addition to an intuitive schematic capture user interface, the program will perform a repeated analysis on a circuit as a component is stepped through a range of values. Comparison of results between TINA-TI and those obtained on the lab bench prove the simulation to be very accurate when employing good models. Join our panel of experts for an engaging discussion and hands-on demonstrations on how to fully leverage the power of this uniquely capable SPICE simulator from TI.
The Magic of Multiphase – A Comparison of a 2-Phase DC/DC Power Supply versus a Similar Single-Phase Controller Highlighting the Trade-Offs and Challenges of Each Design	Several multi-phase DC/DC controllers have recently been introduced by TI (and competitors) that promise more than a higher-output current capability. A multi-phase and single-phase design with the same output voltage and current are constructed and analyzed to compare and contrast the trade-offs of size, ripple, component choice, efficiency and size. Learn when to recommend a multi-phase over a single-phase solution and how to extract its value based on the designer's system requirements.
Battery Fundamentals *by Varta*	Definition of basic battery performance parameters; overview of performance tradeoffs for different chemical systems (for example – Li-Ion, NiMH, NiCd, PbSO4 and disposable ZnMnO2 alkaline cells); physical construction of different battery systems and how this affects application-performance criteria for selecting the type and configuration of batteries for a specific application; safety, transport and disposal issues associated with batteries; charging methods for different battery systems cycle-life impact of battery management implementations and storage conditions
Tackling EMI and RFI at the Board and System Level	Electromagnetic Interference (EMI) and Radio Frequency Interference (RFI) can affect any system in an undesirable manner as the proliferation of unintentional radiators and receptors continue to increase. EMI and RFI, an undesirable byproduct of electrical systems, produce a wide range of frequency spectra that can affect otherwise properly operating circuits. During this seminar hour, we will review the fundamental principles of radiated interference and coupled interference, along with the respective allowed limits for both of these interference sources. In this discussion, we will describe transmitters and receivers along with techniques to mitigate the effects of both culprits. The solutions we will cover will be effective power-line filtering, proper filtering for input signals of high-gain circuits, and details on key components. Finally, we will discuss the common rules of thumb for wire and PCB routing to minimize EMI and RFI effects. With this seminar you will see some basic methods that will help reduce sources and receptors of EMI and RFI events in and near your circuits

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DaVinci™ / OMAP™ Processors	
OMAP and DaVinci™ Overview	TI has several embedded processing solutions that are tailored for digital video applications. They consist of integrated processors, software, tools and support to aid in simplifying the design process and accelerate innovation. In this session, we will review TI's portfolio including the new OMAP35x application processors and the DaVinci processors including TMS320DM644x, TMS320DM643x, TMS320DM64x, TMS320DM355 and the recently announced TMS320DM6467 HD transcode engine. Among the many application spaces for this technology, we can outline machine vision, video security, video telephony, digital media streaming and IP set-to-boxes (STB).
Introduction to Code Composer Studio™ (CCS) v4.0	CCS v4.0 is a major new release of Code Composer Studio 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. This session will provide an overview and explain advantages to using CCS v4.0 for your development.
OMAP35x Hardware Architecture Overview	This session will provide a detailed hardware architecture tutorial on TI's OMAP35x devices. OMAP35x applications processors offer a variety of combinations of the Cortex-A8 core, multimedia-rich peripherals, OpenGL® ES 2.0 compatible graphics engine, video accelerators and TMS320C64x+ DSP core. Join this session to get a technical overview of these two architectures features and capabilities.
OMAP™ and DaVinci Software Architecture Overview	This session will introduce you to the TI Software Framework which supports the ARM, DSP, and ARM+DSP based processors available from Texas Instruments. Using application programming interfaces (API's) for I/O (drivers) and algorithms (VISA), you can easily access the potential of TI's DSP processors and hardware accelerators within your Linux/ARM programs. This session includes a Linux review and it's driver API, an introduction to TI's Codec Engine along with its VISA classes, an explanation of the purpose behind the xDAIS/xDM algorithm interfaces, a discussion of processor options available from TI supported by the framework, and an overview of how the Codec Engine supports RPC calls from the ARM to the DSP.
Exploring Windows Embedded CE 6.0 *by BSQUARE*	In this session, attendees will learn how to build an OS image using Platform Builder and Visual Studio 2005. The presentation will also cover some of the unique attributes of the OMAP 3 platform as it relates to the DSP and graphics accelerator, all running under Windows CE. Each attendee will receive an evaluation copy of Platform Builder with Visual Studio 2005.

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