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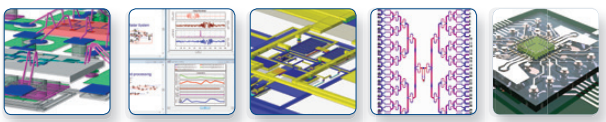
AWR DESIGN FORUM



Pardubice, December 2

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TIME	TOPIC
09:00 – 09:30	Welcome, Registration, and Coffee
09:30 – 10:15	New Innovations and Technologies in NI AWR Design Environment™
10:15 – 11:00	Microwave Cavity Filter Design Using NI AWR Software
11:00 – 11:15	Coffee Break
11:15 – 12:00	Streamlining Radio Communication Link Design from Spec to Production
12:00 – 12:45	3D EM Simulators for PCB Design Verification
12:45 – 13:45	Lunch
13:45 – 14:30	**Rohde & Schwarz:** Use of Oscilloscopes During the Design of Circuits
14:30 – 15:15	**ELDIS Pardubice:** Simulation of Phased Array Antennas
15:15 – 15:30	Coffee Break
15:30 – 16:15	Design and Simulation of Radar System in Visual System Simulator™
16:15 – 17:00	National Instruments: TBA
17:00 – 17:15	Q&A, Conclusion, and Lucky Draw

Venue

The University Of Pardubice
Faculty of Electrical Engineering and Informatics
Náměstí Čs. Legií 565
530 02, Pardubice

Event Registration

http://bit.ly/1aOwfZe

Event Partner

ROHDE&SCHWARZ

Media Partner

Microwave Journal
Frequency Matters.

Presentation Abstracts

New Innovations and Technologies in NI AWR Design Environment

Tabish Khan, Regional Sales Manager - AWR Group, NI

This presentation begins with a brief introduction to the NI AWR Design Environment™ and an overview of the powerful, innovative technologies contained within the latest release of AWR's RF/microwave design software. NI AWR Design Environment is an advanced suite of tools developed especially for designers of MMICs, RF PCBs, RFICs, microwave modules, communication systems, radar systems, antennas, and more. The capabilities offered include full 3D EM simulation, 3D PCells, circuit envelope simulation, co-simulation with LabVIEW, FPGA hardware-in-the-loop simulation, antenna synthesis, RF frequency planning, and direct links to PCB design tools.

Microwave Cavity Filter Design Using NI AWR Software

Graeme Ritchie, MMIC & RFIC Specialist - AWR Group, NI

Analyst™, full 3D FEM-based EM solver, has successfully been used in many applications where the problem geometry is defined by a combination of extruded 2D geometries (board, chip, module) and predefined parameterized cells (bond wires, SMA-connectors, air coils, etc.). Analyst capabilities go beyond this, however, and in this presentation we demonstrate how Analyst and Microwave Office cooperate in microwave cavity filter design. In particular, the design target is an iris-coupled waveguide resonator bandpass filter, and characterization of the iris shunt susceptance is very conveniently carried out using a parameterized Analyst document. This data together with the dispersive propagation constant enables straightforward mapping of the design equations into physical filter dimensions. Finally, a full filter model is constructed, with all dimensions parameterized, enabling fine-tuning of the filter before prototyping.

Streamlining Radio Communication Link Design From Spec to Production

Tabish Khan, Regional Sales Manager - AWR Group, NI

Conceptually the design process of a radio communication link is understood by all. The 1st step is to define the RF architecture. The 2nd step is to define what components will meet the basic constraints of the design where the link may consist of in-house designed devices and/or commercial off-the-shelf components. The 3rd step will inevitably lead to building a virtual prototype of the link and simulation thereof. Suffice to say, the initial steps are subdivided; yet in short, the steps involve design capture, analysis and verification. Using a set of disjointed simulation tools, back of the envelope calculations, and gut feeling makes the designing of a modern day communication systems a daunting task. This presentation will illustrate a self-contained simulation tool used to systematically go from A to Z in the design process of a radio communication link. Topics such as spur and budget analysis will be discussed. A method of creating a custom library of components will be shown. Next, the RF link will be constrained to use only the components from this custom library. Optimization of the RF link to key measurements will be shown. Once key specifications have been met a modulated signal will be passed through the link to ensure a defined conformance measurement is satisfied. The design tool of seamlessly integrated functions, in effect, is used to capture, analyze and verify the link prior to manufacturing.

3D EM Simulators for PCB Design Verification

Graeme Ritchie, MMIC & RFIC Specialist - AWR Group, NI

It is not uncommon that the RF functions on a board occupy only a small footprint on the final overall PCB design. While this RF area may be small, the importance of getting the design right is paramount. Unfortunately it is also quite typical that the RF layout is designed in isolation and later placed into the final design. When this happens, the RF performance often suffers. Therefore it is very desirable and beneficial to perform a verification simulation using the actual layout from the full production PCB tool before prototyping. This presentation demonstrates how this can be done with NI AWR software.

Presentation Abstracts

Use of Oscilloscopes During the Design of Circuits

Tomas Bydzovsky, Sales Manager - Rohde & Schwarz

This presentation will cover the use of Oscilloscopes for general measurement tasks in time domain, jitter analysis, decoding of serial and parallel busses, FFT for Emi debugging as well as capturing of IQ data from RF signals.

Simulation of Phased Array Antennas

Vadim Závodný, RF Engineer - ELDIS Pardubice

Phased antenna arrays often require the implementation of an antenna feeding network. Usually the antenna feeding network is a system of microwave dividers at coaxial, microstrip, or symmetric stripline technology. The first part of the presentation is focused on the antenna factor design. In the second part we discuss implementing the antenna feeding network as a model that is composed of ideal circuits and then the macro that calculates the antenna array factor is implemented and applied to an ideal feeding network. The last step shows the macro that automatically formats the output graphs.

Design and Simulation of Radar System in Visual System Simulator

Tabish Khan, Regional Sales Manager - AWR Group, NI

The design and simulation of radar systems has always been a challenging task. While a radar system with many components can be modeled and simulated in current EDA tools, a radar system inclusive of a phased array antenna requires custom tools that are not easily integrated into the overall communications system design. This presentation overviews key features of Visual System Simulator™ (VSS) that have been developed specifically to enable designers to model radar systems inclusive of the phased array antenna. VSS phased array simulation accounts for gain and phase offsets of each element, angles of incidence of the transmitted or incoming signal (theta and phi), and element location and operation frequency. The model enables users to configure the array using custom or standard element arrangements and tapers. Most importantly, it allows the user to specify non-linear characteristics of its elements, such as P1dB, IP3, NF, etc., and use them in evaluating system performance and measurements. The phased array elements may be characterized using theoretical equations, data from lab measurements or via external tools. VSS may be used to model the RF architecture of individual phased array elements and provide a characterization of the whole phased array.