Coventor strengthens industry with advanced 3D modeling

The Associated Press

Coventor Strengthens Industry's Only Integrated MEMS+IC Co-Design Solution With Advanced 3D Modeling in Newest Version of MEMS+ Platform

Coventor®, Inc., the leading supplier of design automation software for developing micro-electromechanical systems (MEMS), today introduced the MEMS+® 3.0 design platform, the latest version of its unique MEMS+IC co-design platform aimed at accelerating development of complex 3D systems with state-of-the-art actuators, accelerometers and gyroscopes, microphones and other types of MEMS devices.

With the new release, the MEMS+ 3.0 platform delivers key advancements for simulating the dynamics of MEMS actuators and sensors, adds new components for modeling a wider range of MEMS designs, and provides speed and capacity improvement across the entire tool suite. These capabilities enable MEMS designers to explore device concepts and optimize designs much faster than using conventional field solvers, with most simulations running in seconds or minutes rather than hours or days. The MEMS+ platform also eliminates months of engineering effort required to handcraft the models for IC simulation with a common model for MEMS and ASIC co-design that bridges the gap between the accuracy required by MEMS designers and the simulation speed required by ASIC designers.

Integrated MEMS+IC co-design

Rapid adoption of MEMS in consumer electronics, especially smart phones and tablets, is demanding shorter product development cycles. MEMS-based products typically include one or more MEMS devices fabricated with a specialized process, an ASIC fabricated with a standard CMOS semiconductor process, and a package. For development of these devices, MEMS and ASIC designers use different, incompatible tool chains that result in multiple design respins with the ASIC design lagging the MEMS design by nine to eighteen months due to inefficient communication.

According to Coventor's CEO Mike Jamiolkowski, "Coventor's MEMS+ changes the

design paradigm. It's a unique platform that enables truly integrated MEMS and ASIC co-design and verification. MEMS+ 3.0 adds major new advancements for simulating complex coupling dynamics between MEMS, ASIC and packaging with a speed and capacity that's not available from other tools."

"The MEMS+ solution provides us with an excellent platform to design MEMS in the context of the IC and other systems we are developing. The integration with the other design tools in our environment enables a seamless exchange between the different design domains. We look forward to leveraging the enhancements in the new release that improve the overall performance of the tool, and add new modeling capabilities for micromechanical effects which are important to us," said Anssi Blomqvist, senior manager, Product Development at Murata Electronics Oy.

MEMS+ 3.0 platform builds on foundation of success

The MEMS+ 3.0 platform leverages more than a decade of industry success with Coventor's Architect3D® and CoventorWare® products for 3D design entry and simulation. Its tight integration with MATLAB and Simulink from The MathWorks and the Virtuoso custom IC design solution from Cadence Design Systems provides a robust environment for simulating with confidence the complex physics from MEMS devices together with IC circuits and control systems.

The new release offers an enlarged, comprehensive MEMS component library and new fluidic simulation capabilities that include gas damping for sensors and actuators and pressure loads for microphones. The addition of fluidics to the existing mechanical and electrostatic modeling capabilities platform enables fully coupled simulations that predict performance metrics like noise or actuation time previously done through costly build and test cycles. In addition, the ability to selectively linearize compute-intensive portions of MEMS models provides greater speed, which is critical during the initial phases of MEMS and IC co-simulation.

"As a long-time user of Coventor's Architect3D and Analyzer products, I am excited to see the latest release will include new brick and shell elements, Timoshenko beams, squeeze film damping, and packaging effects. These new features will enable more accurate and thorough exploration of the dynamic behavior of our MEMS devices prior to prototyping," commented Jonathan Hammond, principal engineer at RF Micro Devices, Inc. (RFMD).

Other advancements include improved Cadence design tool integration that provides true multi-physics simulation in the Virtuoso environment and MEMS+ model support for the multi-threaded spice APS simulator, complete multi-physics input/output and full scripting interface support in the MATLAB environment, and a new built-in simulator that handles basic MEMS analysis tasks.

Availability
Early release versions of the MEMS+ 3.0 software are available now. General release is scheduled for early in the first quarter of 2013.

About Coventor

Coventor, Inc. is the market leader in automated design solutions for micro-electromechanical systems (MEMS) and virtual fabrication of MEMS and semiconductor devices. Coventor serves a worldwide customer base of integrated device manufacturers, fabless design houses, independent foundries, and R&D organizations that develop MEMS-based products for automotive, aerospace, industrial, defense, and consumer electronics applications, including smart phones, tablets, and gaming systems. Coventor's software tools and expertise enable its customers to simulate and optimize MEMS device designs and fabrication processes before committing to time-consuming and costly build-and-test cycles. The company is headquartered in Cary, North Carolina and has offices in California's Silicon Valley, Cambridge, Massachusetts, and Paris, France. More information is available at http://www.coventor.com [1].

Links:
[1] http://www.coventor.com