



BY RICK NELSON, EDITOR-IN-CHIEF

Design mingles with test across domains

The lines between electrical-engineering disciplines are continually blurring, with traditional test products taking on design chores and vice versa. The lines between electronics engineers and experts in other domains may be blurring, as well. This issue's cover story highlights both of these trends; it recounts the efforts of design and test companies and their customers to bring medical and aerospace systems to market. Increasingly, domain experts in fields such as medical electronics, aerospace engineering, and mechatronics can participate in tasks once the province of C coders or hardware engineers.

Lord William Kelvin. Solomon also referred to US computer scientist Admiral Grace Murray Hopper, who said, "One accurate measurement is worth a thousand expert opinions." Solomon didn't draw a direct link between design and test, but she did link science and measurement, saying "Science is inextricably linked to new measurement tools," with measurement advances driving advances in fundamental knowledge. These advances in turn drive technology improvements and enable additional measurement advances in a virtuous circle.

Solomon also discussed new measurement modalities in which electrical, physical, chemical, and biological measurements, once the domain of their respective and exclusive sets of instrumentation, are converging, especially at the nanoscale. "Biology is all about complexity and has been functioning at the nanoscale for billions of

"Measurement is integral to our technology-surrounded lives."—Darlene JS Solomon

A similar blurring of lines within the electrical-engineering field itself was evident at the IEEE MTT-S (Institute of Electrical and Electronics Engineers Microwave Theory and Techniques Society) IMS (International Microwave Symposium), which took place last month in Boston. There, EDA companies including AWR highlighted links to instrument makers such as Rohde & Schwarz (see "EDA companies tout RF design, links to test," *EDN*, this issue, pg 35). National Instruments, which has been promoting its LabView product as a design tool, demonstrated a LabView-generated program controlling WiMax test on a PXI (peripheral-component-interconnect-extensions-for-instrumentation) system.

Nevertheless, focus remains important. Although Agilent Technologies demonstrated both design and test

products at the IMS, Darlene JS Solomon, chief technology officer and vice president of Agilent Labs, indicated the company's true center of attention in a presentation during the show titled "A singular focus on measurement." Solomon noted that Agilent has been serving the RF/microwave industry for more than 60 years, having introduced a signal generator in 1943. Agilent's offerings have expanded drastically over the years, she said. The company has tested more than half of the world's cell phones and addresses such far-flung application areas as food and water safety, medicine, crime prevention, and disease research.

"To measure is to know," she said, attributing the quotation to Scottish physicist James Clerk Maxwell, although others have attributed it to British mathematician and physicist

years," she said. "Now, we can begin to measure and understand that complexity." That complexity has implications for both biology and electronics.

"Convergence implies multimodal measurement," Solomon added, explaining that Agilent's new scanning microwave microscope permits surface-topography measurements and supports the investigation of electrical properties at the surface and even below the surface, thereby enabling evaluation of semiconductor materials without destructive analysis.

"Measurement is integral to our technology-surrounded lives," she said. That proposition is one that we all can agree on, whatever our domains of expertise. **EDN**

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