Wireless Design & Development

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From the WDD Board Member's Point of View: What Caught Them by Surprise in 2008 and the Changes to Come in 2009

In many respects, 2008 was not your typical year in the wireless industry, nor any industry for that matter. In addition to the normal pressures of dealing with global competition and time to market, the pressure to do so within tight finanacial constraints and limited resources was overwhelming for all. Read on to find out what WD&D Editorial Advisory Board members had to say when they reflected back on the past 12 months. I would also like to personally thank Chris, David, Eric, Frank, Jerry and Justin for their time and effort to provide food for thought as we move into a new year and face its challenges.

Nancy Maas, Editor in Chief, Wireless Design & Development

In your specific area of the wireless industry, what surprised you this year from a technological or enterprise standpoint? In other words, what either happened or didn't happen that caught your attention?

What one prediction can you make for 2009, and what will it mean to the design engineer?

Chris Marshall, Richardson, Electronics

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2008 was a year where money has done much of the talking. In the first half, we saw a great deal of acquisitions activity in the components side of the business, with names like RFMD, Sirenza, Triquint, UMC, Filtronic, M/A-COM, WJ, Micronetics and others all in the headlines. The euro and other currencies continued to ascend to record levels against the dollar as we experienced more change in some weeks than we used to anticipate in a year. Now the dollar and the yen are up again, while the pound and Korean won have plunged. With the exception of China and, to a degree, India, markets for nearly every kind of wireless product are down, and I am getting daily notices of 10% layoffs from suppliers and customers.

What does this mean for design engineers? It's all about cost. Risk has become a dirty word to management, so getting projects done on time and on budget will be more important than ever. Customers are looking for value, which means innovations that reduce the cost of the product or lower the cost of using it will generate more excitement than new bells and whistles. Efficient designs with energy saving features will continue to increase in importance, while the femtocell market with its "customer provided backhaul" should grow in 2009. Long term, I think we will be looking less at what the U.S. consumer wants, and far more at what will appeal to Indian and Chinese markets. 2009 will be an interesting year!

David Donovan, BitWave

From a technology standpoint, one of the surprises in 2008 was the speed at which the handset transceiver business consolidated. A number of tier-one semiconductor companies exited the business, citing the high R&D expenditures required to maintain a technological edge in demanding handset and Smartphone platforms. This suggests a new approach is required to address the costs of developing multiple radios in these platforms. A programmable radio platform available at current wireless industry price points would enable a leap forward in price and performance for multi-mode, multi-band handsets.

David Donovan, BitWave

In 2009, I predict that the first commercialized fully-programmable radio will be deployed in handsets and femtocells. This approach will allow design engineers to configure the same silicon radio to operate over multiple wireless networks with only a software change. For example, if a service provider wanted to take advantage of spectrum re-farming in the 700 MHz band and provide cellular services, it would normally require from about 12 to 18 months to design a new radio chip, as well as a multiple seven-figure R&D budget and a large design team. Instead, a relatively small team of engineers would be able to program the radio to support the desired 700 MHz functionality in only a few months at <25% of the cost. This is a compelling value and will drive adoption of programmable platforms.

Eric Hakanson, Anritsu Corp.

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I've been amazed at how rapidly the cell phone-related wireless industry has progressed with LTE. Given that operators haven't made a huge return on their WCDMA spectrum investments (especially in Europe), it seems that WiMAX has been perceived as a potentially game-changing technology. In my view, the lead that WiMAX has in the market is probably now down to about one year, and this continues to shrink. On a related topic, I have read that Intel is now developing chipsets to support HSPA in laptops; I believe that this also tends to reduce the WiMAX lead somewhat.

Test equipment will remain important to developing and maintaining wireless networks, and that test equipment will continue to become more sophisticated. All users of test equipment need to remember that measurements aren't perfect — while instruments usually have higher RF performance than equipment used in the network (especially User Equipment), engineers and technicians always have to use good measurement technique. It may make sense to invest in operator training, especially for inexperienced technicians or new engineers.

Frank DiTore, Agilent EEsof

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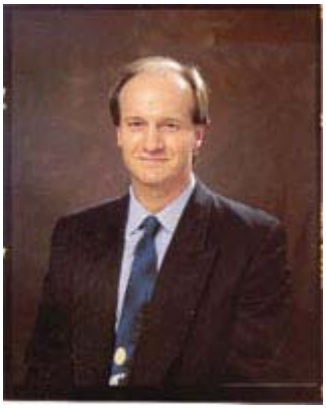
What surprised me in 2008 is the continued investments in new wireless technologies despite softening markets and weak economic climates. We have seen new consumer technologies become commercially viable, like broadband millimeter wave (60 GHz, short range multi-channel HD video links), broad deployment of mobile WiMAX and further investment in new SoC technologies for smaller, cheaper and less power-hungry wireless devices. In addition, continued investments in the non-commercial sector, specifically in software-defined radio technologies, has remained strong and will drive new demands for tools and HW platforms.

I believe 2009 will see the rapid advancement of new wireless and radio architectures that will drive new skill requirements for design engineers. While the need for experienced "RF" engineers will continue to be high, these engineers must adapt their skills to understand other disciplines, like embedded SW development, digital signal processing and baseband HW design. It is the intimate marriage of high-frequency technologies with traditional baseband DSP that will become the norm. Engineers can no longer live on a technological island with tools and design methodologies that are unique to a given field.

Jerry Kolbe, Murata Electronics

A couple of years ago, we started studying the complexity of the electronic component supply chain. What we noticed was that the effects of globalization resulted in a separation of product "seeding" (design-in) and



Jerry Kolbe, Murata Electronics

"harvest" (procurement and production) activities in terms of distance (geography), time and responsibility (many different types and names of companies involved). This notwithstanding, just how complex this has become for big and small wireless customers alike has been a bit surprising.

While the OEMs are still generally involved in the selection of critical components, more of the wireless design is being farmed out to OEMs and first-tier suppliers. Now, the business must be won at many points: design-in can occur at one location or several times at different locations, production another, procurement a third and the acquisition channel (channel may be distribution or direct) may be a forth point. Determining just who the "customer" is can be a difficult task. Understanding which "customer" in the supply chain has authority for component approval, terms of business, purchasing, forecasting, delivery control and quality requires good coordination among various resources throughout the world.

Wireless technologies originally designed for consumer applications will increasingly be adapted for use in non-consumer environments, such as automotive electronics and medical devices. The design engineer will need to make sure that the specifications, quality and reliability attributes of the consumer grade products meet the requirements of the new applications.

Justin Panzer, Rohde & Schwarz

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What did happen: The wireless industry announced many impressive technical accomplishments this year, and excitement continued to build about the potential for 4G services. In addition, wireless technology strengthened its expansion into both the private and public sectors.

What did not happen: Although the wireless industry was not unaffected by job cuts and project delays aimed at reducing costs, it nevertheless remained very strong in spite of worsening overall economic conditions. Innovation remained impressive throughout the year, with steady adoption of new products and technologies.

As we move into 2009, the manufacturers of wireless equipment will most likely continue to take a guarded approach to spending, while positioning themselves to remain competitive. This will require designers to demonstrate their ability to quickly create innovative, differentiating products and make efficient use of resources. The wireless industry has repeatedly demonstrated that it has some of the world's most capable R&D teams, and I'm certain they will rise to the unique challenges dictated by the market in the coming year.