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## Innovation and Development: The Two Sides of Engineering

Gary Breed  
Editorial Director



When was the last time you heard one of your engineering colleagues complain, “Wow ... my boss is really pushing me to come up with new ideas!” No, I didn’t think you’d recall such a conversation, unless you have a good memory for things that happened 20 years ago.

The role of engineering has two parts: original thinking (innovation) and attention to process (development). Both are required in varying degrees in all engineering work, but at least in the communications part of electronics, the emphasis today is clearly on time-to-market, cost-reduction and productivity—all part of the process. Of course, there are many small innovations along the way. These are the things that add spice to the success of “getting the product out the door.” But as important as these contributions are, the main task is the delivery of the goods.

Is there a problem with this trend? I think there is—if it continues too long on the same track. We don’t want to create a generation of engineers whose work is all “nose to the grindstone” without enough time for free-thinking creativity. We want them to explore areas outside of the next great handset with all the bells and whistles.

Maybe most of all, we want to be sure that the engineering profession remains an attractive career for talented young minds. When I was young (back in the Jurassic Period of vacuum tubes and germanium transistors), mere curiosity was enough to motivate me and my contemporaries. Now, the everyday use of advanced technology has taken away much of that curiosity. I think today’s kids are motivated by an in-depth chance to participate in technology. And they have grown up in a structured social environment and have—whether they know it or not—a pent-up need to break out and be unique.

I sometimes hear another side of this issue, that technology has advanced to the point where it is much harder to make fundamental discoveries and significant innovation. At times I’m tempted to agree, but I also remember the story from the late 19th Century when it was suggest-

ed that the U.S. Patent Office be closed because some people believed that almost everything had been invented.

I am confident that there are plenty of fundamental discoveries yet to be made. I don't know what to expect, but some popular candidates are biological electronics and "grown" circuits, self-constructing and self-repairing structures, new photonic technologies, as well as other areas that have been reported in both scientific journals and the popular press.

I also expect someone to come up with an entirely new networking structure. This will be out of necessity as our usage of wired and wireless connectivity increases to the breaking point of current network theory and practice. A recent news report noted that an initiative to re-think how the Internet

operates has just begun. There's no question that it's necessary and I'll bet no one really knows where this study will lead. And there are other areas where society's use of technology will drive innovation.

Let me go back to the beginning of this rambling discussion. It's OK that engineers are involved in the hard work of getting products designed and produced. It's an essential part of the profession, not to mention that we want really good men and women working on things that are so important on a worldwide scale!

But let's not forget to let those good minds wander off the subject once in a while. Some of the great inventions of the 1950s and 1960s were a direct result of policies that allowed talented engineers to explore new concepts on company time, or at least with access to com-

pany resources. If those bright engineers had been too busy getting that next product finished and onto the production line, things would be a lot different today!

### **Ham Radio Social Planned for IMS2006 in San Francisco**

A recent tradition will continue again this year: The annual Ham Radio Social will be held on Tuesday night of IMS'06 (June 13) from 8:30 to 10:00 p.m., following the "Maxwell" lecture by Jim Rautio. All MTT-S members who are hams and their guests are invited to attend. Attendees are encouraged to bring photos of their projects, DXpeditions and other activities for display.

Kudos to Allen Katz (K2UYH), whose efforts led to the first ham radio reception at the 2003 MTT-S Symposium in Philadelphia.