The World According to The Woz:
Steve Wozniak at FOSE on Fostering Creativity and Innovation

Part 2 – Looking to the Future

On July 19, 2011, I had the pleasure of attending a keynote session at The Federal Office Systems Expo, better known as FOSE. Apple co-founder, entrepreneur and tech visionary Steve "The Woz" Wozniak, spoke on "Fostering Creativity and Innovation in Any Environment." The heavily-attended keynote was a combination of personal anecdotes from his own life, lessons learned throughout his storied career and projections as to the future of technology in the years to come. In a previous column, I recounted highlights of his keynote covering his background and business advice. This column features a number of predictions and future trends to watch, according to The Woz.

Having been at the forefront of innovation since the dawn of the PC era, it can be argued that no one can spot a technology trend like Steve Wozniak. After all, this is the man who created the Apple I and II computers; the man who, with his first post-Apple company, invented and brought to market the first programmable remote control; the man who is listed as sole inventor on four U.S. patents and co-inventor on numerous others. He is the recipient of the National Medal of Technology; the Heinz Award for Technology, the Economy and Employment; the Isaac Asimov Science Award; and multiple honorary Doctorate degrees, as well as being a member of the National Inventors Hall of Fame. Suffice to say, the man has a keen eye for technology and where it is heading!

In his keynote, Wozniak expressed great enthusiasm for the burgeoning cloud. In fact, he shared that, approximately 15 years ago, he and Steve Jobs shared a moment saying, "Oh my gosh, some day all these things we do that are close to us are going to be out there, done in the cloud." As early as the late 1990s, Jobs and Woz recognized the future importance of cloud computing and the ubiquity of knowledge and began planning and developing for it. This is apparent in the innovative work and growth of such cloud-supportive products as the iPhone and iPad – products that made their mark by giving users the ability to access all their information via Apps and the Internet, wherever they might be.

Wozniak predicted even more growth in cloud backups, cloud resource aggregation, virtual machines and resources and power saving or sharing resources over the next decade or two. With the rapid growth and implementation of cloud applications and resources, he predicts the growth of memory and storage to continue at its exponential rate. After all, look where we've gone in less than 40 years. In 1977, his Apple II computer hit the market for $1298.00 ($3850 in today's dollars) and came equipped with a whopping 4 kilobytes of RAM – and expansion slots to take it up to 48kB! Today, I can go out and buy 32 GB of memory on a keychain for under $50, and a 1TB drive for under $100!

Even with the rapid growth and price drops in memory that spur on cloud growth, there are some issues regarding the cloud that are still in question. Many people still express hesitation to use the cloud, worrying about putting their valuable data out there and out of their control. When people ask him, "Why would I do that?" Woz responds, "Well, do you keep your money in a bank?"

Another issue Wozniak brought up was, "Who exactly owns the cloud?" The debate on this topic is one that has been going on as long as the cloud has existed. Does the individual user or creator own the cloud and its information? Do the companies those individual users work for own it? What about the Big Names which make up the cloud – names like Facebook and Google – do they own the cloud? It is a topic that is debated in academic circles, trade associations, in business and technology magazines and in chat rooms and online forums, one with no clear answer as yet. In Wozniak's opinion, this debate comes down in part to the question of regulation versus freedom. Like many true geeks and unlike many business types, Woz comes down firmly on the side of freedom. In his keynote, he espoused the view that network neutrality and equal access to the Internet – regardless of location or economic stature – are vital for

the continued growth and flourishing of technology. He points out that lack of access to the Internet hinders both education and innovation and holds us back from achieving greater success. Wozniak pointed out that, due to where he lives, outside of a major metropolitan area, his only option until recently was dial-up access. Today, he has other options and is fortunately wealthy enough to afford them. But what, he pondered, are the options for people outside major cities without that advantage? To great applause from the keynote audience, he strongly urged the crowd of government employees to press for broadband for all.

Another key prediction Wozniak made regards the increasingly life-like behavior of our technology. He points out how simple systems can seem almost life-like at times and he sees this continuing as technology becomes more simple and logical. It doesn't make sense to change people to match the technology. Rather, the technology should (and does often) change to match the people who use it.

Intuitiveness is key! The user is more important than the technology so the technology must cater to the humans, he says. To illustrate this point, he drew a comparison between DOS and Mac computers. DOS computers relied on users who knew and used codes and commands, while Mac computers allowed users to not think and just click. To the amusement of the keynote crowd, Woz pointed out, "Mac won," and he is correct. Today, most PCs on the market utilize a point-and-click OS that developed to be intuitive and "user friendly" like the first Macs.

Wozniak believes that the move to life-like, intuitive systems will continue with voice recognition and predictive analytics and searching becoming more prevalent. He sees a day in the not-so-distant-future when a person will simply walk up to their technology, speak to it, and receive exactly what they are looking for. In some ways, we're already there, but newer technologies and ever more refined programs and Apps will move us forward tremendously in his view. He points out that we've already accidentally turned the Internet into a brain with the advent of search engines. Today, the Internet has as many nodes as there are neurons in the brain. Both are repositories of knowledge and thought, accessible via searches through those nodes/neurons. As he points out, for information, we used to find a smart person and ask them. Now, he says, there doesn't exist a question that cannot be answered by asking either Google or God!

Every day, our technology becomes more and more human. Wozniak illustrated this by showing his audience his iPhone: "[It] has a camera like a human eye and a microphone like a human ear, it can feel touch – almost all of the human senses, except smell, for now, are in this little device. It's not cognizant but all of the senses are there." With the ever-more-human abilities of our technology, Wozniak points out that the day is coming when a technological singularity will occur. Our computers are faster, smarter and more life-like every day. He predicts the day is coming when we make our computers our friends. For some people, that day already exists. After all, Woz says, we can no longer question, "Who is the Master? Man or technology?" In his view, we lost that battle over 100 years ago when the first machinery (technology!) drew people to the city, changed our society from agrarian to industrial, and changed the hours we kept and how we lived our lives.

Despite the sci-fi generated specter of "living" computers (OMG! SkyNET!) and the seemingly-grim conclusion that technology is our Master, the Steve Wozniak keynote retained a very upbeat and positive vibe. Overall, his view – indeed, the view of most people in attendance – is that great things are ahead. While they might seem scary, all change has that potential and things are rarely that bad. After all, who could've predicted when the first PCs arrived on the scene that just a generation later, our phones would fit in our pockets and have vastly more speed and memory than the computers that put man on the moon! It is an amazing time to be alive and the future of technology should prove to be even more so. Truer words could not be spoken than those used by Steve Wozniak to conclude his address: "Every time we say we're just at the start, we're right."

To view photos and video highlights from the 2011 FOSE show, including Steve Wozniak's entire keynote address, visit their site at http://fose.com/Events/FOSE-2011/Home.aspx. To attend in person, FOSE 2012 is scheduled for April 3-5, 2012, again at the Washington Convention Center in Washington, DC.

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