The Bluetooth paradox: to become ubiquitous it must disappear

There comes a time in the development of a technology when it no longer matters to consumers how something works, but if it works. In the case of wireless devices, consumers do not really care how they are sending data, but only where they are sending it.

For instance, how many consumers care or understand which technology or modulation technique their mobile phones are using? Probably very few. From a technology standpoint, all they really care about is, that wherever they travel, if they have a signal, can make a call, and can be heard. Bluetooth is approaching this stage of development. The high-tech gadget-loving first adopters will soon give way to mainstream consumers, and the way Bluetooth enabled products are marketed should change as well. The bottom line is: in order to be fully engaged in consumer applications, Bluetooth needs to disappear.

For it to "disappear" as a technology and emerge as a function, Bluetooth equipped devices need to work without the user playing an active role. After a one-time configuration and pairing, personal devices can be configured to communicate between themselves when an event occurs, and information can be automatically shared between the devices.

For instance, if someone is listening through a wireless headset to an MP3 player and receives a phone call, the MP3 audio will be suppressed and the call can come through the headset. In this case, the event was the phone call. The three devices communicated with each other, and the user simply spoke to the caller.

How hard should the configuration be? Well, currently it is analogous to programming a "universal remote" for audio/visual equipment. To ultimately be successful, module vendors and OEMs will need to invest in technical support programs, including the development of easy to follow instructions, quick access to software downloads, interoperability guides,

and even live technical support in order to minimize the trouble for consumers trying to align their devices. To streamline this process, Bluetooth silicon manufacturers and OEMs partnering with a module manufacturer should ensure that it has a good technical support system already in place.

Bluetooth is not a line-of-site technology, and OEMs can capitalize on this in the marketplace as a major strength. In fact, vendors of Bluetooth enabled products can position them as a leap away from previous-generation wireless data transfer technologies, such as Infrared (IR), which requires a direct line of site

to point-and-shoot. For this new generation of wireless Bluetooth products, consumers should understand that they merely need to be in the vicinity of other wireless data devices in order for the advanced functionality to work.

For example, personal digital assistants (PDAs) can be configured to ask for electronic business cards from other PDAs in their vicinity at a trade show. PDA security levels can be set to automatically send out business card information or ask the PDA owner for approval first. In a shopping centre, a server can push coupons to PDAs in the area for discounts at nearby stores.

As it gets easier for the consumer to use Bluetooth enabled devices, it is also getting easier for designers to include Bluetooth capability in new and existing products. Manufacturers such as SMART Modular Technologies, Inc. are combining the required silicon, RAM, FLASH, and intelligence for Bluetooth functionality in plug-and-play PC card and mini-modules for new designs as well as products such as the USB adapter for legacy equipment.

Bluetooth USB couldn't be simpler.

Engineers at SMART have built and continue to expand a library of technical support materials and interoperability guides to assist OEMs and consumers in programming Bluetooth enabled devices to work together. These interoperability guides take users screen by screen, choice by choice, and walk them through the session of configuring devices.

As we move forward and the technology becomes embedded in products outside of traditional communications products, Bluetooth programmers are also starting to develop application-specific software.

SMART Modular Technologies is already in the planning stages of application-specific modules with software for specific devices built in. For instance, in the future, instead of general purpose software linking a PDA to a refrigerator, there will be a module with software in it that is specific to the application. So, when a person walks near his or her refrigerator with a PDA, it will automatically send all of the information

RS232 now wireless too.

that it has available, such as you are running out of milk or the freezer needs service.

Application specific modules such as these will help to make Bluetooth even more transparent - all the while it is becoming ubiquitous.

Wireless is the most important platform driving innovation in consumer electronics - TI

Wireless has become the most important platform in consumer electronics and will be a primary focal point for innovation in coming years, or so said Rich Templeton, chief operating officer for Texas Instruments in a keynote address at the 3GSM World Congress.

"Wireless technology provides a low-cost, low-power platform to make it practical to expand the value of a cell phone beyond voice," Templeton said. "We're not far from the day when smartphones are projected to outsell laptop and desktop computers combined. Last year, camera phones became the best selling cameras outpacing digital still cameras, which themselves surpassed film cameras for the first time."

Templeton predicted that cell phones soon would become the prevailing devices worldwide for accessing the Internet, listening to music, capturing and watching video, and for organizing personal information. However, Templeton stressed that application-specific devices such as digital still cameras, digital audio players and many others still have a bright future in their own right. "Some people will exclusively rely on smartphones that deliver everything, but most people will use both multi-function cell phones and dedicated devices as their preferences and situations dictate."

To substantiate Templeton's forecasts away from the keynote platform, and using real applications and advanced cell phones that are commercially available from TI customers, TI demonstrated streaming video, fingerprint authentication and 3D gaming enabled by the first-generation of OMAP processors. The company also showed how advanced cell phones can transmit images directly to a television via Bluetooth networking, allowing information from the phones to appear on large-screen displays. A new handset was shown that integrates multiple TI technologies including an OMAP processor and GPRS, Bluetooth and 802.11 connections. The handset enables simultaneous web browsing while conducting a GPRS voice call using a Bluetooth headset. Templeton said the

deployment of second-generation processors, known as OMAP 2 and announced earlier in the week, will enable even higher-quality consumer applications on the wireless platform. For example, OMAP 2 processors increase video performance by 4X and 3D graphics capability by 40X compared to prior versions.

Templeton said these "demonstrations are evidence of the velocity in GSM and wireless overall. It took about 10 years to really develop digital voice and sleek form factors. Camera phones have become very popular in just two years, and we'll see the same thing happen with other features such as videophones and digital TV in just one year."

Templeton also announced that TI has successfully made the world's first GSM cellular phone call using digital RF technology. With TI's new digital RF processor successfully making calls, the company's next step is to absorb this function into the company's integrated digital baseband for wireless communications.