

Flexible Chips Will Let Phones Do It All

Company claims its chips will lead to cheaper handsets, Wi-Fi cell phones, and more.

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A startup claims it has a programmable cellular phone chip that can handle the communications processing for a wide range of protocols, as well as multimedia and application processing, which could drive down handset prices or help add network capabilities to cameras and other devices.

Phones and other devices built with Sandbridge Technologies' chips would be able to become just about anything a manufacturer wanted them to be: Wi-Fi handsets, GPS (Global Positioning System) devices, multimedia broadcast receivers, and any type of cell phone, according to Guenter Weinberger, president and chief executive officer. Using a Sandbridge chip, vendors could build multimode handsets without adding a separate "baseband" or communications processing chip for each type of network, he says.

Each additional baseband chip that is added to a phone tacks about \$5 onto the cost of a phone's silicon, according to Will Strauss, an analyst at Forward Concepts, in Tempe, Arizona. That cost, in turn, can translate to about \$30 in the phone's final price, he says. All the major cell-phone chip makers are moving toward single-chip designs that incorporate many capabilities, and Sandbridge probably can't dislodge them from their tight relationships with big handset makers, Strauss says. Still, Sandbridge may be able to get a head start of a year or two, attract some small and possibly larger handset vendors, and put price pressure on the market, Strauss says.

The fabless semiconductor vendor in White Plains, New York, was founded in 2001 and set out to make a programmable baseband chip with the capacity to do many functions with low enough power consumption for a handset, Weinberger says. The first chip based on its SB3000 architecture, called the SB3010, is available now in sample quantities, the company is expected to announce Monday.

In addition to baseband processing, it also is powerful enough to handle applications and multimedia processing, he says. The 3010 is designed for 3G (third-generation) handsets, and Sandbridge is looking to add another chip next year for higher speed 3.5G networks such as HSDPA (High-Speed Downlink Packet Access), as well as WiMax. Weinberger would not quote chip prices but says they would be competitive.

C Language

Sandbridge plans to sell its chips to mobile phone makers and let them, along with mobile operators, define what functions go on the chip. Unlike most phone chips, which have to be programmed in assembly language, the SB3000 chips can be programmed in the C language-- a significant advantage, according to Strauss.

"People who code in C are a lot cheaper than people who code in assembly language," Strauss says.

The sky's the limit on functions, according to Sandbridge. For example, using just one chip, a vendor could create a combination Wi-Fi and cell phone, Weinberger says. These phones, which could carry calls over a cellular network when the user is on the road and then switch over to a Wi-Fi network when in range, are seen by some carriers as key to improving indoor coverage and offering customers new service plans. Another possibility is a single-chip phone that can work with both GSM (Global System for Mobile Communications) and CDMA (Code-Division Multiple Access) networks. With roaming agreements, that capability could make it much easier for CDMA operators to offer global service.

The recent proliferation of wireless technologies has proved the wisdom of the Sandbridge strategy hatched in 2001, Weinberger says.

"Everything that has happened in the cell phone market and with the wireless communications market over the last three years has worked perfectly well for us," Guenter says. However, analysts say it will be hard for a newcomer to break into the handset market because of competition from vendors such as Freescale Semiconductor, Texas Instruments, and Intel. For phone vendors with existing chip suppliers, shifting to a new architecture would be expensive, says Max Baron, an analyst at In-Stat, in Scottsdale, Arizona. But Sandbridge chips might find a place in products from new manufacturers, Baron says.

Where Sandbridge might make the biggest impact is in new types of devices, such as digital still or video cameras that can stay connected to the Internet over different kinds of networks depending on location, Baron says. If the company's chips have enough processing power, they could shift the device to the best available network for price, speed or power consumption, based on the user's priorities, he says. That capability might even come in handy in cars, Baron adds.