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From the pages of Design News

Apple Sets the Stage for Consumer Electronics with iPhone, iPod

Randy Frank, Contributing Editor -- 10/8/2007

With its introduction of the iPhone as a follow-on success to the iPod, Apple has set the stage for changing the way users interact with electronics. According to Morry Marshall, a research consultant, Strategic Technologies for market research firm Semico Research, "Every maker of cell phones, MP3 players, portable media players or any other handheld electronic device is going to have to take the iPhone or its successors into account in planning any future product. The iPhone will act as a catalyst for new phone models and will help drive upgrades."

The trend-setting change from innovative attention to detail has impacted electronic design, as well. In fact, according to a recent report from the market intelligence firm iSuppli, "The huge success of the iPod and iPhone lines has made Apple Inc. one of the most influential companies in the high-tech world today, with its products widely admired by consumers and frequently imitated by competitors."

Key aspects of the iPhone include its intuitive touch screen display that reorients itself depending on how it is being held, software, sensors, wireless technology and several gigabytes of Flash memory. The iPhone is just one very interesting aspect of changing electronics design that challenges designers to "think out of the box." A world of opportunities awaits those companies that can find the right technology and approach.

This Changes Everything

With more than 2 billion mobile phone subscribers worldwide, the iPhone targets the high end of the market.

The other end of the cell phone spectrum wants $50 phones. According to market research firm ABI Research, by 2011, almost one out of every four handsets shipped globally will be an ultra-low-cost handset with several suppliers shipping sub-$50 models by 2008. Within the next five years, the company's research shows India will be the largest market growing from slightly more than 9 million handsets in 2006 to more than 116 million in 2011. Design challenges in these phones are quite different than the iPhone.

Between the $50 or less cell phone and the iPhone, expectations are increasing for a camera in the phone.

The mobile phone camera market is estimated to grow from 660 million units in 2006 to more than 1.1 billion units in 2011, according to Gartner Dataquest. Jim Walker, vice president of research, Semiconductor Mfg., Gartner Dataquest, says, "The challenge the industry faces is to integrate greater levels of functionality in smaller form factors at acceptable levels of cost." In many respects, this is true of most semiconductor technologies and applicable to many new components. Addressing the need in cell phones, Tessera's OptiML WLC wafer-level camera technology not only reduces the camera size in cell phones by up to 50 percent, it simplifies assembly and provides up to 30 percent cost savings for the optical component of the camera module.

While iPhones and iPods may get a ton of attention and cell phones in general generate phenomenal sales, other electronic products are also creating a stir in their own right. The connectivity provided by the iPhone is just one example of the networking mega trend. Networking impacts consumer, computing, telecommunications, industrial and other market segments.

Networking

In addition to Bluetooth, Wi-Fi and Wi-Max, wireless technology continues forging ahead with ZigBee and other industrial wireless implementations. The wireless mesh protocol uses the radio defined by IEEE, IEEE 802.15.4 and higher level work, security and application layers. ZigBee technology targets low data rate applications with long battery life requirements in energy, residential, commercial and industrial applications.

ZigBee certainly is not the only new wireless technology. Several proprietary schemes are continually being developed. A new wireless example that does not use ZigBee is Banner Engineering's SureCross DX80 wireless modules. A node can operate from 10 to 30V dc line power, solar panels or a FlexPower battery module in remote or difficult-to-access locations. Powered by a FlexPower battery module, a FlexPower Wireless Node and a connected sensor may not require charging for up to five years, depending upon the application and individual power requirements.

Uniquely developed industrial network technologies continue to expand, as well. In April 2007, PROFIBUS and PROFINET International (PI) announced that more than 20 million PROFIBUS nodes were deployed around the world. An example of one of the newest products is TURCK Inc.'s FDP20 PROFIBUS-DP I/O station. The units simplify the integration of I/O into PROFIBUS-DP networks in automotive, pharmaceutical, chemical and material handling industries.

Based on digital technology, other industrial networks including CAN, DeviceNET, ModBus and Industrial Ethernet continue to grow, as well.

It's All Digital Technology But ...

Even the most sophisticated digital circuits either connect to analog circuitry or have analog portions embedded to interface to the real world. It also takes more than integrated circuits (ICs) to provide a complete product. In addition to the digital technology and its associated software, analog ICs, sensors, numerous electromechanical components, a variety of power sources, a plethora of passive components and numerous connectors and cables are required to complete electronic systems. In this Trend Watch supplement, the latest trends in these areas are addressed, as well as the testing and measurements associated with new technologies and distribution's efforts to simplify design-in.

Is There Anyplace That Does Not Use Electronic Technology?

Drivers do not need more distraction but even a simple device to hold a license plate can be integrated with electronics to send messages. Instead of a bumper sticker, Roadmaster's Scrolling License Plate Frame can be changed to reflect the driver's mood or to provide topical event commentary or even an ad, reflecting the personalization and flexibility electronics increasingly provides to consumer, industrial, military/aerospace and essentially any application. The automotive application requires a ruggedness level to withstand external temperature and humidity range. This ruggedness trend appears in many of the sections in this Trend Watch supplement. The combination of an accepted mechanical structure with an electronic function may lead to the next gotta have product.

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