

Wearable ables

TEXT BY SABINE SEYMOUR

It all started with machines and computers attached to the body. Ergonomics were not taken into consideration and the cyborg-like myth as a stigma for wearables had been created.

INTELLIGENT WEARABLES—THE FUTURE IS NOW?

TODAY, THERE ARE A VARIETY of different types of “wearables,” though the term is often used to describe a garment with

some sort of embedded technology. Important, however, is the contextual relationship: Is the wearable computational or non-computational, functional or expressive or an in-between? And is the wearable intelligent?

Intelligent refers to “smart,” a word used to describe the integration of new technology into existing products. There is smart architecture, smart textiles and smart phones—all of which are intelligent devices or environments of one sort or another. In the case of garments, whether technology is contained in the fabric or is an embedded item is still a matter of research and scientific development.

Wireless technology is the starting point. The actual degree of body integration of technology starts with handheld devices with no real integration into what we wear—wireless technology in a cell phone, such as Bluetooth, WIFI or GPS, or a PDA come to mind. The next step towards integration is to make technology wearable or embedded into what we wear.

Often this might be realized in an item of clothing, such as in the Burton Analog Clone MD Jacket, the first consumer good of its kind. Today, the Apple iPod is integrated into the Burton Amp

Jacket, and includes technical features that enables the wearer to operate the iPod located in the inside pocket of the jacket. The jacket does not utilize wireless technology but rather has conductive materials, sensors and a smart component integrated into the jacket.

The next to debut is the Hub Jacket by a company called O’Neill that will be released for the 2004 winter season. It includes an MP3 player with a UBS port and a Bluetooth module for a mobile phone.

ACCESSORIES INSTEAD OF A SINGLE APPLICATION. The DuPont Corporation is focusing on smart textiles that melt technology and fibers, dubbed “textronics.” **Stacey Burr**, head of textronics, sees the development of new techniques that integrate technology into traditional fibers as a next leap in the development of intelligent wearables. According to Burr, not a single application but accessories around devices that consumers can’t be without, is the way to go.

Applications, devices, and garments for sports are in-between health care and fashion. Wearables for sports are geared towards the high-end consumer market and include such examples as the Nike Triax Elite HRM/SDM, a monitoring tool for runners that includes a watch, a running show snap-on and a heart rate monitor band.

In Europe especially, with its public health care environment,

SEVEN MILE BOOTS has an interactive pair of boots equipped with the ability to select channels from the net using wireless technology—thus creating an interesting wearable combining the real world with the virtual world. The boots are created by Laura Beloff, Erich Berger, and Martin Pichlmair.





tation. Also, the miniaturization of different components needed for wearable computing, including antennas, processors and batteries, as well as the actual speed of processors and wireless networks are other important factors for current potentials. Very important is also the need for new innovation to drive the industry.

AN INTERACTIVE PAIR OF BOOTS. Artists, students, and independent researchers also benefit from the cost reduction of some of the components. This allowed for interesting projects to be presented at the ISEA 2004 conference held this past August in Tallinn and Helsinki. One such project is the Finnish-Austrian collaboration by **Laura Beloff**, **Erich Berger**, and **Martin Pichlmair** called Seven Mile Boots that introduced an inter-

active pair of boots equipped with the ability to select channels from the net using wireless technology—thus creating an interesting wearable combining the real world with the virtual world.

Art projects and concepts are indications that wearables are viable solutions when there is a great need

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for new innovations to drive the industry. Even if the innovations are minimal but the media hype is great, as in Intel's Wireless Technology Surfboard presented this summer at the Goldcoast Oceanfest, the context of use creates new applications. Pollack states that it's interesting for an operator like One to present wearables in their Smart Space in Vienna to transport a younger, more modern and experimental image.

Creativity leads to an advantage. But not one company is able to do it all. Interesting commercial collaborations already exist like those between Nike and Phillipps, O'Neil and Infineon, and SonyEricsson. When dealing with wearables, a fashion designer who has no background in physical computing needs to work with an engineer, a concept creator needs to work with a programmer and so on. This creates a perfect framework when engineers and designers are dealing with the integration of technology.

The combination of existing specializations such as the strong design and technology background in Finland is an extension to the novel combinations Burr had mentioned and leads to a competitive advantage. Innovations that lead to such a competitive advantage are often driven by creativity, which needs to be encouraged and fostered. ■

the reduction of cost will become an important driver for the development of new applications. Such applications include the monitoring and rehabilitation of patients outside of expensive hospital care.

Besides monitoring, the change of environmental conditions—is another potential application. Consumers are very familiar with the concept of warming in car seats and heating blankets. A wearable example is the Met5 Jacket by clothing company North Face that contains battery-operated Polartec® Heat™ Technology panels that can produce up to 114° F of heat.

MASS PRODUCTION IS YEARS AWAY. But how long does it take until wearables can be mass-produced? According to Burr, textronics works primarily for applications that can get to the market within one year. **Florian Pollack**, Head of Strategy of Communication for One, an Austrian telecommunications carrier, uses the term “machine-machine applications” for applications that are seamless and automatic. These are applications where the user is not actively involved in the transfer of information. Such concepts are, however, two to three years away from actual implementation.

According to Pollack, the reasons for the delay of implementation of such applications into wireless communication are twofold: the push from the industry is not great and the system is not secure enough to send critical data. There is still the perception that there is not the necessary reliability regarding wireless coverage and electricity.

Why now? The reasons for the current interest in wearables are many. The advance in wireless technology and the possibilities of “always on”—also referred to as ubiquitous computing—are important. Furthermore, the development of RFID tags and other chips that allow for tracking is a great factor for actual implemen-