

RFID Enables "Physical Browsing"

Heikki Seppä, a research director of Finland's VTT Information Technology, envisions a world where consumers scan RFID tags with readers in their cell phones.

May 6, 2003 - Most of the focus of RFID research has been on business applications. Heikki Seppä says that more work needs to be done on consumer applications. He wants to develop readers for cell phones so that consumers can scan tags anywhere. He calls this "physical browsing."

Seppä is a research director at the state-run VTT Technical Research Center of Finland. He runs the Information Technology division, which has been researching the use of RFID technologies.

"RFID is being driven by the needs of large companies," he says. "I'm afraid they are trying to build tags that are good for industry, but not for consumers. I would like to see the telecommunication industry work with RFID manufacturers, so we can combine both needs."

Seppä wants to see a world where consumers can go into stores with RFID readers that store information about themselves, such as neck, waist and shoe size. Your reader would scan clothes on a rack and identify those that would fit you. Or if you were looking to replace a bulb in your lamp, the reader would identify the appropriate item.

"We have to make RFID systems so that ordinary people can use them," he says. "When you make a pair of shoes, you use the tag for logistics and then the customer uses it for finding his shoes at home. It can be used again in some cases for recycling. If you can use the tag many times during its life, then the price becomes less important because you have more value added."

Seppä heads VTT's micro-sensing research. Since the late 1980s, he has been pursuing his vision of a world where tiny sensors are ubiquitous. One issue was how to power these sensors without batteries. That led him to begin researching ways of improving passive RFID tags. He worked on the Palomar project, which successfully increased the range of UHF tags under Europe's power restrictions (see Extending RFID's Reach in Europe).

Now, he is looking to extend his research by combining RFID tags and sensors. One day, he expects that you will not only be able to find clothes by using an RFID reader; you will also be able to find out the temperature of your wine, or detect a problem with your car by scanning RFID sensors embedded in the vehicle.

Today, a number of companies have developed readers that can plug into PDAs and other handheld computers, but Seppä thinks that the best solution might be to embed them inside a cell phone. Since the phones are small and most people carry them anyway, they could be the ideal form factor. However, special sets of microchips need to be developed before that can happen.

One major obstacle to overcome is the lack of well-established RFID standards. Consumers won't be able to carry around a reader for different kinds of tags. Another issue is the reluctance of cell phone makers to add another chipset to their devices. They already have different frequencies for the US and Europe, and many are planning to add Bluetooth chips, for short-range communications.

One option Seppä is looking at is combining Bluetooth and RFID. Bluetooth is a standard that uses 2.4 GHz for RF communication. "It may happen that we use one chip only and we design the antenna so it can operate at 869 MHz, 915 MHz or 2.5 GHz," he says. "If you put this tag on your product, the industry can use it for logistics purposes, and customers can use the same tag at home using 2.45 GHz."

Like others, Seppä sees RFID as the link between the physical world and digital information stored in computer databases. But unlike most, he sees enormous potential for consumer applications. "We are connecting objects and information, so customers won't have to worry about which product is the right one for their needs," he says. "That's why RFID will have a very big impact if that happens. It will be a revolution, but there's a long way to go."

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