

# New technology uses human body for broadband networking

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New technology uses human body for broadband networking

By Paul Rubens

Taipei Times

Sunday, March 20, 2005

By sending data over the surface of the skin, it may soon be possible to trade music files by dancing cheek to cheek, or to swap phone numbers by kissing.

Your body could soon be the backbone of a broadband personal data network linking your mobile phone or MP3 player to a cordless headset, your digital camera to a PC or printer, and all the gadgets you carry around to each other.

These personal area networks are already possible using radio-based technologies, such as Wi-Fi or Bluetooth, or just plain old cables to connect devices. But NTT, the Japanese communications company, has developed a technology called RedTacton, which it claims can send data over the surface of the skin at speeds of up to 2Mbps -- equivalent to a fast broadband data connection.

Using RedTacton-enabled devices, music from an MP3 player in your pocket would pass through your clothing and shoot over your body to headphones in your ears. Instead of fiddling around with a cable to connect your digital camera to your computer, you could transfer pictures just by touching the PC while the camera is around your neck. And since data can pass from one body to another, you could also exchange electronic business cards by shaking hands, trade music files by dancing cheek to cheek, or swap phone numbers just by kissing.

NTT is not the first company to use the human body as a

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conduit for data: IBM pioneered the field in 1996 with a system that could transfer small amounts of data at very low speeds, and last June, Microsoft was granted a patent for "a method and apparatus for transmitting power and data using the human body."

But RedTacton is arguably the first practical system because, unlike IBM's or Microsoft's, it doesn't need transmitters to be in direct contact with the skin — they can be built into gadgets, carried in pockets or bags, and will work within about 20cm of your body. RedTacton doesn't introduce an electric current into the body — instead, it makes use of the minute electric field that occurs naturally on the surface of every human body. A transmitter attached to a device, such as an MP3 player, uses this field to send data by modulating the field minutely in the same way that a radio carrier wave is modulated to carry information.

Receiving data is more complicated because the strength of the electric field involved is so low. RedTacton gets around this using a technique called electric field photonics: A laser is passed through an electro-optic crystal, which deflects light differently according to the strength of the field across it. These deflections are measured and converted back into electrical signals to retrieve the transmitted data.

An obvious question, however, is why anyone would bother networking through their body when proven radio-based personal area networking technologies, such as Bluetooth, already exist? Tom Zimmerman, the inventor of the original IBM system, says body-based networking is more secure than broadcast systems, such as Bluetooth, which have a range of about 10m.

"With Bluetooth, it is difficult to rein in the signal and restrict it to the device you are trying to connect to," says Zimmerman. "You usually want to communicate with one particular thing, but in a busy place there could be hundreds of Bluetooth devices within range."

As human beings are ineffective aerials, it is very hard to pick up stray electronic signals radiating from the body, he says. "This is good for security because even if you encrypt data it is still possible that it could be decoded, but if you can't pick it up it can't be cracked."

Zimmerman also believes that, unlike infrared or Bluetooth phones and PDAs, which enable people to "beam"

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electronic business cards across a room without ever formally meeting, body-based networking allows for more natural interchanges of information between humans.

"If you are very close or touching someone, you are either in a busy subway train, or you are being intimate with them, or you want to communicate," he says. "I think it is good to be close to someone when you are exchanging information."

RedTacton transceivers can be treated as standard network devices, so software running over Ethernet or other TCP/IP protocol-based networks will run unmodified.

Gordon Bell, a senior researcher at Microsoft's Bay Area Research Center in San Francisco, says that while Bluetooth or other radio technologies may be perfectly suitable to link gadgets for many personal area networking purposes, there are certain applications for which RedTacton technology would be ideal.

"I recently acquired my own in-body device -- a pacemaker -- but it takes a special radio frequency connector to interface to it. As more and more implants go into bodies, the need for a good Internet Protocol connection increases," he says.

In the near future, the most important application for body-based networking may well be for communications within, rather than on the surface of, or outside, the body.

An intriguing possibility is that the technology will be used as a sort of secondary nervous system to link large numbers of tiny implanted components placed beneath the skin to create powerful onboard -- or in-body -- computers.

<http://www.taipeitimes.com/News/biz/archives/2005/03/20/2003247076>

Posted on 3/21/2005 3:37:20 AM PST by ajolympian2004

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-To: ajolympian2004

"I recently acquired my own in-body device -- a pacemaker -- but it takes a special radio frequency connector to interface to it. As more and more implants go into bodies, the need for a good Internet Protocol connection increases," he says.

Just wait until a hacker unleashes a computer virus into your pacemaker.

Posted on 3/21/2005 3:44:49 AM PST by SpyGuy  
(Liberalism is slow societal suicide. And screw  
political correctness: Islam is the Religion of Death)

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End of forwarded messages

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The truth about Islam and Muslims  
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The terrorist mission of Jesus stated in the Christian bible:

"Think not that I am come to send peace on earth: I came not so send peace, but a sword.

"For I am come to set a man at variance against his father, and the daughter against her mother, and the daughter in law against her mother in law.

"And a man's foes shall be they of his own household.  
– Matthew 10:34–36.

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