RFID Could Play a Key Role in Telemedicine

Many health-care analysts predict that telemedicine—delivering health care remotely—will become more important as populations age in Western countries and Japan. One challenge with telemedicine involves collecting patient data and transmitting it to doctors remotely. Two stories we ran last week suggest

that radio frequency identification could play a critical role in providing such information.

Researchers at Michigan State University have developed a system that employs RFID-enabled sensors to track the movements of different body parts in an effort to monitor activity levels. The system includes three RFID tags attached to a person's upper arm, wrist and ankle. The tags contain proximity sensors and accelerometers, allowing the system's software to calculate the amount of movement and angle of a person's limbs, enabling the solution to monitor activity levels (see Michigan Researchers Develop RFID-based Sensors to Measure Physical Activity).

In another article, we reported on a low-latency wireless sensor network currently being used to improve the security of personnel in a psychiatric ward at Kainuu Central Hospital, in Kajaani, Finland. The network, designed by researchers at Tampere University of Technology (TUT), features palm-size, battery-powered tags with a button that an employee can push if he or she requires assistance, causing the tag to transmit an alarm signal encoded with a unique serial number that identifies the individual to whom that tag was issued (see Psychiatric Ward Uses RFID-based Alarms to Bolster Personnel Security). Patients could use the system to alert doctors if they are in distress, and the tags could also include fall sensors to monitor patients remotely.

Telemedicine is not new, and systems are already in use to relay vital signs to doctors from a remote location. The

problem is that most of these solutions are expensive, and involve bulky sensors incorporated into vests worn by a person being monitored. RFID could potentially be both more cost-effective and less intrusive. Researchers at the Georgia Institute of Technology, for instance, have created a passive ultrahigh-frequency (UHF) tag that is so thin it can be sewn into a medical gown (see Georgia Tech Researchers Create an RFID-Sensor Medical Patch).

There will be increasing demand for these kinds of sensor systems in the future, but there is still a lot of work to be done. Some of that work will focus on combining RFID tags with sensors to deliver information remotely to doctors in a cost-effective manner. And some of it will focus on improving security. It's imperative that data captured wirelessly from sensors, and transmitted either via the Internet or by cellular network, be kept private. It's also important that these sensors allow people being monitored to move freely and live normally.

Thus far, RFID's role in the health-care industry has primarily been to improve asset tracking. Some solutions help doctors monitor patients in hospitals. But RFID for remote patient monitoring might be just what the doctor ordered.

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