

Tucson Schools Considering RFID BusPass

The school district plans to test an RFID-based system that would let administrators and parents know when and where kids get on and off school buses.

By Mary Catherine O'Connor

June 1, 2006—In the Tucson Unified School District (TUSD), one of the nation's largest school systems, some students might be carrying RFID-enabled ID cards as soon as next fall. The TUSD is testing a system called BusPass. Designed by Tucson-based Gateway Communications, BusPass combines RFID and a global positioning system (GPS) to track when and where students board each school bus, and where and when they get off.

With 120 schools and 60,000 students, the district is interested in deploying the technology to bolster children's safety by better accounting for their locations outside of school premises. Parents could arrange to receive text phone messages or e-mail alerts telling them when their children's bus will arrive, or if their children fail to catch the bus.

Alex Rodriguez, the clerk of TUSD's governing board, says he has an interest in "embracing technology to enhance the safety of the students," though he acknowledges that some parents are uncomfortable with the idea of using RFID technology because of privacy concerns. For that reason, he says, any system the school deploys—be it BusPass or another, similar technology—would likely be deployed on a voluntary basis, with parents choosing whether their children would wear any RFID devices. They would also likely need to purchase the active tag that is part of the proposed BusPass system, as well as pay a monthly subscription fee.

Under the proposed BusPass system, only the student's ID number, assigned by the school system, would be encoded to the RFID tag assigned to each student. None of his or her personal information would be transmitted to readers; rather, it would all remain in a database. The district would like to start monitoring children from preschool through fifth grade, then possibly extend the system to older kids. Some parents, however, feel that children in higher grades do not require such close monitoring.

This summer, the district plans to perform a pilot test of the BusPass system. The district has already completed a proof-of-technology test of the BusPass system, which entailed installing GPS transceivers and RFID interrogators on six buses and attaching RFID tags to the key rings of their respective drivers. Thus, Gateway was able to show the tags being read on the buses and also the location of each bus at various times throughout the day.

Gateway has developed its own RFID tag and interrogator system, based on 433 MHz active tags and readers. Once each minute, the tag transmits a unique ID associated in a back-end system with the student to which it is assigned. The interrogator collects all the tag IDs it reads on the bus, then creates a manifest that is updated once per minute. The Gateway reader is connected, through a serial cable, to a DigiGate mobile tracking radio. The latter is part of the DigiGate wireless IP telemetry system Gateway also owns and operates.

The radios contain GPS receivers and are linked to a wireless metropolitan area network made up of cell

transmitter stations that Gateway operates, according to Jon Rowley, the company's president and co-owner. The radio on each bus transmits its location, the GPS data and the tag manifest over the 218 MHz band, to the cell transmitter stations around Tucson that make up the network. This data is then forwarded to BusPass software running at a central location. The software keeps a record of all tag transactions and GPS positions and notifies parents of arriving or truant students. It can be used in combination with interrogators installed on the school grounds, as an automated attendance-taking system for teachers. The information gathered in the software can also be used to locate buses in case of an emergency.

Initially, says Bill Ball, TUSD's transportation director, the district was looking for a means of just tracking the buses, so as to know where they were at all times and whether drivers were speeding. Officials were intrigued, however, by the ability to know, as well, which students were on each bus, especially if this could help them locate children quickly.

Still, Ball stresses, TUSD had not yet made any decisions about deploying RFID or any other tracking technology. "We want to be really careful and make sure we get input from parents and students" before deploying anything permanently, he says.

Whether tracking students' whereabouts makes them safer or just vulnerable to privacy is being fiercely debated among many schools, parents and privacy advocates. An elementary school in Sutter, Calif., started testing a passive RFID tracking system for automated attendance-taking early this year, for example, but the program was shut down after parental opposition and involvement from the American Civil Liberties Union (ACLU) and other privacy-rights groups drew national media attention to the small town.

Enterprise Charter School, in Buffalo, N.Y., deployed an automated attendance-taking system in 2003 in which students present an RFID ID card to a kiosk with an integrated reader. The high costs of replacement IDs, however, have rendered the system too expensive to maintain, according to Mark Walter, chief technical officer at the school.

"Kids are losing the cards," says Walter, or the students are ruining them. "They're being put through washing machines, kids are chewing on them." Consequently, the school is phasing out RFID and moving to a different attendance-taking system in which each student must find their photo on a computer screen and click on it as they enter a classroom.

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