

Transit Moves Ahead With RFID

A growing number of U.S. mass transit operators are giving a green light to contactless fare collection, say transit agency officials and integrators.

By Mary Catherine O'Connor

Oct 27, 2004—At the [Smart Card Alliance](#) 2004 annual fall conference in San Francisco, held last week, a number of sessions indicated strong growth and continuing interest in applications for contactless payment devices for fare collection in mass transit systems across the country. Transit agencies are finding the use of contactless smart cards for automated fare collection increasingly attractive because the technology harnesses user data, which helps in communications and marketing efforts, and lowers payment-system maintenance and operation costs.

During the conference, Ann Flemer, deputy director of operations for the Metropolitan Transportation Commission, the transportation planning, coordinating and financing agency for the nine-county San Francisco Bay area, gave an overview of her organization's [TransLink program](#), which is developing a single contactless payment system for the more than 20 transit agencies, including Bay Area Rapid Transit (BART), San Francisco Municipal Railway (Muni) and Golden Gate Ferries, with 1.5 million daily users combined. The commission and six of the transit agencies completed the first phase of a pilot program in 2002 and now have 4,000 smart cards in use on a limited number of routes within those six area transit agencies, including BART. Users add value to the cards at station kiosks and select retailers and through an auto-load program involving credit card or bank accounts.

TransLink is currently designing the second and final phases of the card implementation. It will be distributing more cards beginning in the middle of 2005, and the staged rollout plan is to install smart card readers throughout the BART and Muni systems by fall of 2005. A full rollout, which will include more than 20 transit agencies and a projected half million cardholders, is expected by 2007. Public reaction to the program has been positive. In rider surveys, a single fare card for all of the transit agencies is consistently the number one requested service.

The reusable TransLink cards are manufactured by [ASK](#), maker of smart cards and labels, and are embedded with a passive microprocessor with 8 KB of memory. The cards, which comply with the ISO 14443B standard, operate at 13.56 MHz and are powered by reader devices (which are ISO 14443A and 14443B compliant) in fare gates and on trains and busses. Transit systems integrator [ERG Group](#) provides the readers and software architecture for the TransLink program. Headquartered in Balcatta, Australia, EGR Group is involved in smart card fare-collection systems across the globe. It is working to link seven transit agencies in and around Seattle into a single-card fare-collection system similar to the TransLink program. EGR Group is also teaming with Northrop Grumman Information Technology to establish and operate a program with 17 regional rail and bus transit agencies across the northern Virginia, Maryland and the Washington, D.C., area.

Escondido, Calif.-based systems integrator [Three Point Consulting](#) worked with [The Port Authority of New York and New Jersey](#) to develop the Regional Interoperability Standard (RIS), a set of technology requirements, based on ISO standards, and software architecture guidelines for the implementation of a

multiagency, regional automatic fare-collection system. The port authority, through an agreement with the American Public Transportation Association (APTA), developed the RIS in an effort to establish a nationwide standard for the structure and operation of automated fare-collection technology systems that use smart cards.

Headquartered in Washington, D.C., the APTA is a nonprofit comprised of public transportation systems; planning, design, construction and finance firms; and state associations and departments of transportation. The organization supports the RIS because it believes that standardization will provide implementation efficiencies to transit agencies across the U.S. and that interoperable smart card fare-collection programs will facilitate collaboration between regional transit agencies.

At last week's Smart Card Alliance conference, Walt Bonneau, principal for Three Point Consulting, and his team gave a proof-of-concept demonstration. Using a RIS-based software interface, the demonstration showed the interoperability of 13.56 MHz smart cards with four different off-the-shelf readers (with read-write capabilities) all based on the ISO 14443A and 14443B standards. In the demonstration, all combinations of cards and readers interoperated smoothly, with the cards being read accurately well below 250 milliseconds, which is considered the maximum transaction time allowed through a fare gate in order to keep mass transit systems running smoothly.

The Port Authority of New York and New Jersey, which manages and maintains the bridges, tunnels, bus terminals, airports, and seaports in the bistate area, is in the process of implementing an automatic fare-collection system that it hopes will eventually link its transportation agencies with a single smart card payment system.

Xavier Bon, executive vice president of ASK, spoke on a panel called "Transit Industry in Transition" at the Smart Card Alliance conference and described the current use of paper (as opposed to plastic) contactless tickets for transit systems in Europe, where millions of contactless fare cards are used in Germany, France, Portugal and Italy. ASK manufactures the tags by printing conductive ink antennas in a high-volume roll-to-roll press and inlaying chips using a robotic arm. Bon says these paper tickets are available for as little as 15 cents each. But for paper tickets that have a limited lifespan and would be used mostly for low-value or single-ride purchases, that price is too high, say mass transit fare planners.

Paper tickets without an RFID inlay cost transit operators as little as half a cent, according to Russell Driver, project director of the Bay Area TransLink program. He says that finding an affordable option for use in low-value contactless fares is a challenge. Hong Kong's transit system is using a novel medium for its low-fare tickets: reusable plastic tokens embedded with RFID tags. Riders purchase the tokens and then return them to the system when paying for entry.

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