

Chipping Away at Mag Stripes

Innovision says contactless smart cards made with its new microchip will be so cheap, transit operators can get rid of their mag-stripe tickets.

By Jonathan Collins

April 7, 2004—Since they were first deployed more than eight years ago in Hong Kong and Seoul, contactless smart cards have been used as tickets for public transport systems all around the world. The cards, however, have been used only for high-revenue multiple-trip commuter tickets, while low-value disposable one-trip tickets have remained the preserve of magnetic-stripe technology. Now Innovision Research & Technology (IRT), an RFID chip design company based in Wokingham, Berkshire, in England, says it has a disposable RFID chip design that can extend contactless tickets to one-time low-value ticket sales.

Although IRT recognizes that contactless cards using its new chip, dubbed Jewel, will not be as cheap as mag-stripe tickets, the Jewel chip will enable the creation of a contactless ticket priced low enough to replace mag-stripe tickets—especially when the cost of maintaining two ticketing technologies is considered.

Electronic contactless ticketing promises to let patrons pass through a turnstile without having to insert a ticket into a turnstile—or even remove it from a pocket or purse—things that patrons now must do when using a mag-stripe ticket. By switching entirely to contactless ticketing, transportation system operators can not only increase customer throughput but also decrease operating costs by removing the need for mechanical ticket readers and the costs associated with their malfunction, misuse and maintenance.

Magnetic-stripe tickets generally cost less than a cent each. IRT says a Jewel-enabled ticket should be priced at around 20 cents each. Despite the price disparity between the two technologies, IRT maintains that transportation operators could still save money by using disposable contactless tickets containing its Jewel chip.

“We have studied real operating data from transportation operators in the U.K. that shows that there are significant costs in maintaining magnetic-stripe systems alongside their newer contactless system deployments. Running two separate technologies means a significant overhead,” says Trevor Crotch-Harvey, senior vice president at IRT.

RFID chip costs have been a barrier to operators economically extending contactless transportation ticketing from high-value season tickets down to daily, weekly, occasional and complex-pattern journeys. According to the company, the Jewel chip will undercut the cost of existing contactless offerings by being the smallest and lowest-cost chip available.

“Jewel is 30% smaller than the equivalent chip from Philips, and chip pricing is determined by area of silicon. That will help make our design the least expensive,” says Crotch-Harvey.

The passive read/write Jewel chip is 0.59mm square, operates at 13.56 MHz and carries 96 bytes of memory. It also complies with ISO 14443—the RFID standard used by transportation operators around the world. The read range of the chip is up to 5cm. IRT says it is working with the manufacturers of contactless ticket readers

for the transportation industry to ensure that ticket readers currently deployed or available on the market can recognize the Jewel chip after only a software upgrade.

IRT says while it will be responsible for managing the manufacture of its Jewel chips and will partner with smart card and existing transportation ticket companies to deliver the final ticket product. The Jewel chips are set for sample production in June and will enter volume production in the fourth quarter this year.

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