

Frankfurt Widens Its NFC-Enabled Transit Network

The German city's transit authority is installing RFID tags at 700 bus, tram and train stops so passengers can use mobile phones to buy and store tickets, and to check schedules.

By Rhea Wessel

Nov. 16, 2007—Rhein-Main Verkehrsverbund (RMV), the mass-transit authority in Frankfurt, Germany, and the surrounding region, is expanding its use of Near Field Communication (NFC) technology so passengers can use mobile phones to purchase and store tickets, and to check schedules. By year's end, the authority plans to install NFC tags at 700 bus, tram and train stops, as well as at the city's airport, providing Frankfurt the widest NFC-enabled transit network in the country.

NFC technology allows a standard method for mobile electronic devices to communicate wirelessly. An NFC-compliant tag stores a unique ID and other data, then transmits that information in an encrypted format at 13.56 MHz. An NFC-enabled phone can act as an interrogator that reads tags based on the ISO 18092, ISO 14443 (A or B) and Sony FeliCa air-interface protocols, culling the data from the tags. It can also share encrypted payment data and other information with computer terminals.

The RMV system centers on ConTags (short for Contact Tags), which contain passive tags made by NXP Semiconductors, in tandem with Nokia 6131 phones. Users can touch their Nokia 6131 phones to the ConTags, which are being installed at bus shelters or on ticket machines at bus and train stations. Once the phone reads a ConTag, a software program previously downloaded to the user's phone over the Internet opens on the handset's display screen. Within three clicks, the traveler can download an electronic ticket onto the phone, then pay the bill using a credit or debit card at a later date.

The decision to expand the NFC application was made after 92 percent of the 300 people participating in an earlier test of the technology rated the application positively. During the test, which ran from mid-July until early November, some 60 stations and stops were outfitted with ConTags.

"We were very satisfied with the results of the test," says Peter Preuss, head of strategy and new business development for RMV. "They exceeded our expectations. There were no cases of vandalism, and the feedback was better than what we thought it would be."

The system will not only allow people to buy their tickets electronically, but also provide travelers with up-to-date scheduling information. During a recent strike of train personnel throughout Germany, for instance, many trains stopped running. But those travelers participating in the recent trial were able to determine when the next trains or buses were scheduled to depart by touching their phones to the ConTags.

Since most transit networks in Germany operate on an honor system, enforced by random checks of travelers' tickets, RMV will not need to install any NFC-enabled turnstiles or gates. Instead, commuters using the

electronic tickets will be able to display them on their handsets to teams of "controllers" conducting surprise checks. Eventually, RMV may choose to equip the controllers with handheld readers to check both paper and electronic tickets.

The initial test of NFC ticketing was developed and implemented in cooperation with Nokia and T-Systems. The cost of the implementation is estimated at €150,000 (\$220,000).

Since 2006, RMV has offered mobile-phone ticketing via a wireless application based on the Wireless Application Protocol (WAP). Some 6,500 customers use this system, but the authority often receives complaints because it requires users to manually enter information about departure stations and destinations when purchasing a ticket. "With ConTag, the whole system will get a lot easier for users," Preuss says.

Also in 2006, RMV launched a system enabling customers to employ NFC-enabled mobile phones to pay for travel on nearly 200 busses operating in the city of Hanau, just outside Frankfurt (see Bus Riders in Hanau Use RFID to Go).

RELATED_ARTICLES RMV eventually plans to expand the application to its entire network, which covers rails and roads in the Rhine-Main area. According to Preuss, RMV hopes to move more quickly with its NFC implementation, but the authority is first waiting for NFC-enabled phones to become more widely available on the market.

Separately, Germany's national rail network, managed by Deutsche Bahn, is working on a similar mobile-phone ticketing system, known as Touch and Travel.

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