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Mobile data capturing

Ticket validation in real time

Innovative technology from Casio and Systemtechnik for short- and long-distance public transport

Norderstedt/Berlin, 20 September 2016 – Fake season tickets are a major challenge for public transport authorities. These fraudulent tickets are beginning to look more and more like the real thing, and it is often impossible to tell the difference with the naked eye. At the same time, the number of season tickets reported as stolen but still in use continues to rise. As well as being a problem for ticket inspectors, it means honest passengers have to bear the brunt of the losses arising from non-paying passengers and fake season tickets. Some 10 billion passengers use public transport in Germany every year. Around 3% of them avoid paying fares, meaning these losses reach into the millions annually. Eventually, they are felt by everyone in the form of fare increases on the bus, suburban railway, underground and train.

The Japanese company Casio is unveiling a solution to this problem at InnoTrans, the trade fair for transport technology. The IT-9000 handheld terminal supports public transport companies by detecting fake season tickets — that is, tickets that are valid not just for one journey but for an extended period. The device is already in use at around 30 public transport companies. Together with other Casio systems—such as the IT-800, IT-G500 and IT-3100—it is even used by 150 public transport companies in Germany, including the Kölner Verkehrs-Betriebe (Cologne Public Transport Company — KVB), Berlin's S-Bahn (suburban railway) and all large private railways.

"For years, we have seen a steady increase in the use of fake travel tickets, both for season tickets and single tickets. When added to the costs of non-paying passengers, they lose the Hamburger Verkehrsverbund (Hamburg Transport Company — HVV) EUR 20 million every year", says HVV spokesperson Rainer Vohl. "Although experienced ticket inspectors are able to recognise fraudulent tickets, we need to search a database to find out if a

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season ticket has been reported as stolen but is still in use. So we perform a mobile search of our database".

"For example, our Casio IT-9000 mobile device can detect in real time whether the ticket being scanned is valid or not", explains Thomas Uppenkamp, Head of Mobile Industrial Solutions at Casio Europe GmbH.

This is crucial for plastic cards with an integrated chip. The chips contain authorisation to travel and are coded in accordance with VDV-KA — the open and secure German standard for electronic fare management systems used by the Verband Deutscher Verkehrsunternehmen (Association of German Transport Companies — VDV). These cards are read in a contact-free process by the near field communication reader of the IT-9000 (in accordance with ISO 14443). The tickets are first checked for validity by time and location, then matched against the blocked lists stored on the IT-9000. These blocked lists contain tickets that the owner has reported as lost or stolen, or invalid and illegible tickets that a passenger has repeatedly submitted for inspection.

The high-tech handheld terminals feature a brilliant and virtually unbreakable colour display while being extremely robust. This makes Casio the only manufacturer to offer a handheld terminal weighing less than 300 grams with a drop resistance of three metres and protection class IP67. The mobile devices are extremely ergonomic and can cope with tough conditions. Thanks to the Japanese developers, the extraordinary mechanical properties are perfectly harmonised with maximum functionality and practical design.

The IT-9000 and other Casio models can also be used to scan tickets with a 2D barcode. They can be encrypted in accordance with VDV-KA as well as read and evaluated with the IT-9000's imager. The validation algorithm acts in the same way as for plastic cards with an integrated chip. A typical example is the online tickets from Germany's rail company Deutsche Bahn, as they are bought online and printed by passengers.

As electronic tickets issued under the VDV-KA standard become more widespread, tickets are becoming increasingly secure. This is because issuing and validating the tickets requires Secure Access Modules (SAM) to exchange codes and check the authenticity of the tickets based on cryptographic algorithms. The SAMs are installed both in the devices producing the electronic tickets and in the validation devices like the Casio IT-9000.

The entire process of reading, checking and displaying results takes less than a second, thanks to the fast processor technology in the IT-9000. Non-paying passengers with no ticket can even take their penalty tickets home with them: An integrated printer enables the ticket inspector to produce a printed

Press release



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document for the penalty fare while the inspection is taking place. In addition, cash payments can be taken and saved for that incident. The ticket inspector is then able to verify the payment with the receipt from the Casio IT-9000 printer. The option of using a PIN pad is available so that payments by debit and credit card can also be accepted. The Casio IT-9000 can do this by connecting to the mobile Internet, provided a SIM card is inserted.

Honest passengers can look forward to seeing ticket inspectors holding these devices in future: They are protecting passengers in the long term from the next fare increase.