

Case study

VRS / VRR Public transport associations

Electronic fare management system



CUSTOMER

Rhine-Sieg public transport association (VRS)

Ever since the VRS was established in 1987 a standard ticket with standard fare rates and a coordinated timetable for the use of the public transport association has been its policy. The transport companies in the VRS convey some 500 million passengers per year. Over 20 transport companies are members of the VRS, nine of them are customers of ATRON.

Rhine-Ruhr public transport association (VRR)

VRR, founded in 1980, is the largest public transport network in Europe. In many cases it has set standards with innovative ideas and concepts. The transport companies in the VRR convey around a billion passengers per year. Its members include 27 transport companies and railway companies, seven of them are costumers of ATRON.

PROJECT OVERVIEW

- Introduction of an electronic fare management system
- Simplification and cost reduction for handling season tickets
- Reduction of attempted forgeries as well as of the number of fare-dodgers

REQUIREMENTS

The objective of the transport companies and transport associations was to introduce electronic fare management. Paper tickets for subscribers (season ticket holders, employed persons, school pupils etc.) were to be replaced by a smart card system.

This conversion was intended to make it possible to bar tickets directly on the smart cards fast and smoothly, e.g. in case of non-payment. Another advantage for the transport companies is the protection against forgery.

Its introduction gives the customer the advantage that if the smart card gets lost, it will be replaced immediately. Moreover, at the end of the month the passenger does not become a fare-dodger by forgetting to buy a ticket for the next time period.

PREREQUISITES

The fare management systems of the transport companies involved have to be compatible with one another and the devices in the VRR / VRS have to be able to process the smart cards.

Independently of the transport company or the means of transport, season card holders should be able to travel all over the entire region covered by the VRR / VRS. In the VRR alone over one million season tickets have been converted into smart cards.

At the same time, it was necessary to continue to enable the creation and the management of paper tickets. Furthermore, a standard interface was required to the interconnected system for the purpose of data exchange.

ELECTRONIC TICKETING

With electronic ticketing (e-ticketing) tickets are distributed in the form of a data record on an electronically readable smart card.



E-ticketing or Electronic Fare Management (EFM) is divided into three interoperable levels for overcoming access obstacles:

- Cashless payment with an electronic purse
- The electronic ticket (smart card as a ticket)
- Automated fare calculation: the presence of the passenger is registered by means of active or passive registration and de-registration in the vehicle and hence calculating the correct fare.



ATRON

IMPLEMENTATION

ATRON supplied an integrated overall solution for the fare management. 16 of the total number of 50 transport companies were equipped with this solution. The electronic tickets were introduced in three stages for the different groups of contract customers (e.g. company tickets, school pupils' season tickets, monthly tickets).

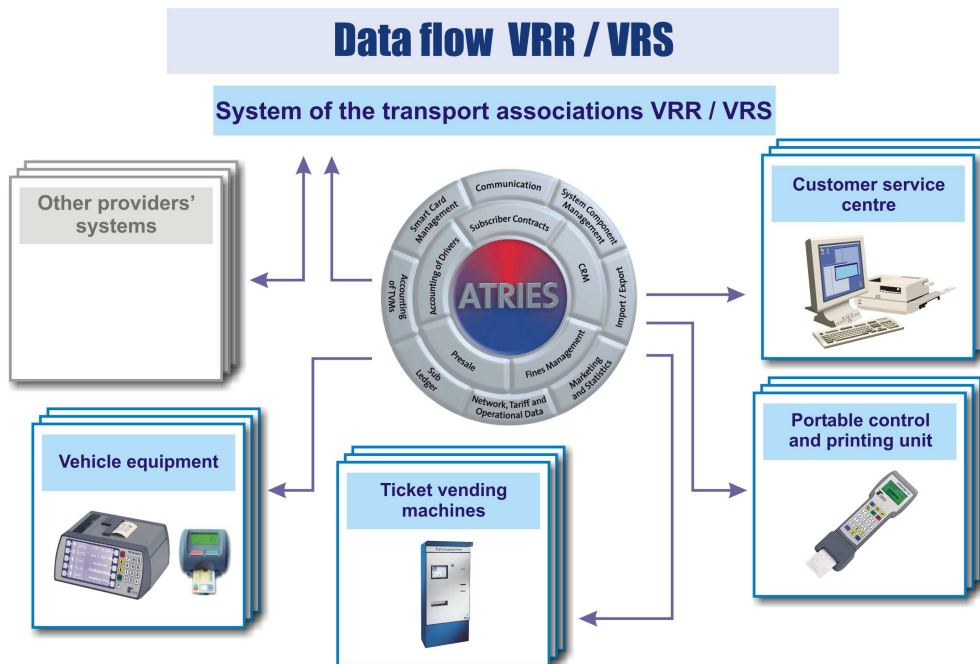
In the "subscriber check-in system" (monitored entry and checking of smart card), the ATRON smart card terminal AFT 120 is used. The monitoring procedure is accompanied by handhelds AMR 120 for the personnel.

The background system consists of the fare management software ATRIES which offers the following functions:

- Providing of customer and printing data for personalizing the smart cards
- Providing of customer data for correspondence to subscribers
- Processing of response data
- Control of the data exchange with the integrated network
- Providing of tariff data, checking specifications and hot data, e.g. blacklists

PROJECT SCOPE

- 2,500 on-board computers AFR compact with integrated ticket printer
- 2,500 smart card terminals AFT 120 accepting "GeldKarte" (German cash card) and electronic ticketing
- 500 AFR compact for advance sale
- Handhelds AMR 120
- 71 stationary ticket vending machines AFA 400; cashless payment as well as cash payment is possible
- Background system ATRIES for 16 companies incl. customer database and card management (season tickets, personalization, blacklist management)



FURTHER STEPS

The EFM background systems are to be adapted in a consecutive way to the VDV core application. The terminals and the smart cards already correspond to this standard.

This measure will make the EFM system compatible with the systems of other transport companies nationwide and will ensure that costumers receive a standardized, interoperable solution.

The software on the on-board computers and the central software ATRIES are prepared for this very objective.

CONCLUSION

By introducing the standardized electronic fare management there are many advantages for passengers and transport companies such as:

- Smart cards valid for several years
- No exchange of monthly tickets: less effort for customers as well as cost savings (administration, materials) for the public transport company
- Greater flexibility in case of changes (e.g. concerning scope of validity) because these are immediately stored on the smart card
- Reduction in number of fare-dodgers (blacklist)
- Protection against forgery

ATRON has been able to supply the entire system from a single source with coordinated components and to guarantee the interfaces to external systems. The modular structure of the on-board computer and the central software ATRIES enables trouble-free extension and adaptation to further developments and new standards. Furthermore, the public transport companies have a useful data base which allows direct evaluation of statistics.

VDV CORE APPLICATION

The association of German public transport companies (VDV) has developed a data and interface standard for all forms of electronic ticketing. A uniform basic is created for the design and implementation of electronic fare management systems for the public transport companies.

Above all, this includes the interfaces between the public transport companies and external interfaces. Ticket handling procedures from the passenger's point of view are to be standardized, thus enabling a long-term investment in EFM equipment. Die VDV core application covers all three levels of electronic fare management.