

## **TREN/A4/124-2/2009 Study on Public Transport Smartcards – Final Report**

### **Executive Summary**

The report summarises the results of a study undertaken on behalf of the European Commission by the EC Smartcards Study consortium including AECOM, the lead consultant, The Transport Operations Group (TORG) of Newcastle University, PJ Associates, AustriaTech and NEA.

It presents recommendations regarding possible actions at the EU level to encourage and support interoperability between current and future public transport schemes, through the use of Smartcards.

Recommended actions have been assessed, in terms of their possible costs to the EC and the possible benefits that might accrue to scheme owners, public transport operators, public transport users and the public in general, through the bringing forward of more schemes and in a more integrated way than might otherwise be the case.

In addition to consultations with selected scheme owners, worldwide, a Practitioners Panel including 40+ members, representative of key players in the Smart Ticketing value chain has been established to review and comment on the merit of the actions proposed.

### **State of the Art Review**

The review presented of the current situation has considered the development of smart card fare payment systems across Europe and the rest of the world and has looked specifically at the benefits these bring to regular travellers and also perceived and actual barriers to irregular travel, which smartcards can address.

A number of existing and soon to be deployed schemes have been reviewed. Each existing system's review has considered the benefits to accessibility that the system has brought and reasons why the system may or may not be more widely used.

Subsequent tasks have looked into the likely future trends in the development of smart cards and other smart ticketing technologies and their possible future application

The state of the art review has shown that the delivery of smart-ticketing schemes has been achieved through a variety of ways, including one central scheme provider, a network of stakeholders (operators, authorities, technical etc.), partnerships between PT operators and relevant Local Authority, and where an overarching private company took primarily responsibility.

The number of operators within a single scheme tends to be in the region of no more than 10, but it is possible for more established schemes to accommodate upwards of 40 individual operators. Funding for implementation of schemes has come from a variety of sources, from individual PT operators, local/regional government authorities, private shareholders, PFI arrangements and even from national and international development funds through pilot scheme research

The parties involved in the development, implementation and operation of integrated smart ticketing can be broadly categorised according to the following headings:

- Transport Authorities;
- Transport Operators;
- Standards Bodies;
- Equipment Suppliers;
- Service Suppliers; and
- Public transport users.

However, the exact nature of the stakeholders involved, the role they play and how they collaborate between each other varies significantly between schemes. This generalisation of the parties involved also belies the sophisticated nature of the value chain within the integrated smart ticketing arena

The main reasons for scheme owners and operators introducing smart-ticketing relate to improving the efficiency of existing systems (faster transactions, reducing the uncertainty of fares through automated

calculation etc.) particularly where existing paper-based ticketing was becoming untrustworthy and fraudulent use of such tickets was on the increase.

From the end users' perspective, there is a clear desire for a ticketing system that is simple to use and can cover all modes of public transport, whether that be smart cards or otherwise.

Smartcards are still the most common form of smart-media currently being used, with cards being used from a variety of suppliers. A diverse range of front-end and back-office systems are in use, each scheme having its own specific set-up. Smart-ticketing is perceived to be a lot more reliable, convenient, faster and easier to use than conventional ticketing, which delivers a better overall product allowing users to travel with more liberty.

Smart-ticking can undoubtedly remove some of the barriers to travel for the irregular and unfamiliar traveller. However, Smart Cards technology is necessary but not sufficient for the realisation of many of the potential benefits desired. Operational as well as technology change is required; data from cards need to be turned into intelligence to improve operational efficiencies etc.

### **Future View**

The review of trends has considered how the market is developing, the impact of new and emerging media on the market place and how Government actions within EU member states and elsewhere can help in influencing the payment systems landscape.

The review has also considered the value chain for businesses involved with a mind to considering what actions the EU should take if they want to positively influence development of the marketplace. Associated with this is a review of the standardisation activities in the field undertaken to date and their impact.

The study concluded that while some existing schemes have already installed some components that conform to international norms, and have adopted operating models that comply with best practice; these are generally insufficient to support interoperability between schemes or across national or international boundaries.

The extent to which schemes might offer a range of non transport applications in the future has been informed by a review and analysis of schemes responding to the initial state of the art review. A limiting factor for introducing a range of applications and for future interoperability will be the extent to which schemes have and will be developing according to established specifications and standards. This limitation has been recognised by the IFM Forum and a possible way forward has been proposed.

Beyond technical considerations affecting the future development and roll out of smart ticketing, there are two main fields in particular where legal issues in implementing smart card solutions in public transport often cause concern and which will potentially limit their future development.

Firstly, the implications for transport companies and smart card schemes in transport of the legal framework with regard to e-money. Here the problem is to what extent public transport smart card schemes will have to meet the requirements and restrictions applied to e-money institutions and/or credit institutions. The second main area relates to privacy and data protection problems, in particular with regard to reconciling these with the various uses that transport operators would like to make of the data.

Based on this analysis, end user surveys such as those reported upon and other secondary research undertaken on reported trends in the uptake of different media, it is considered that conventional smartcards will remain as the dominant media for the time being (the next 5 years at least).

Near Field Communication (NFC) media, including suitably enabled mobile phones will become more prevalent over subsequent years with recent forecasts of the market penetration of such devices (ABI Research, 2008) indicating that the number of NFC phones will grow to be around 20% of the total phones in operation over the next 5 years.

### **Recommended Actions**

The final stage of the study has been to draw together the results of the state of the art review and assessment of future trends to develop and assess the likely merit of recommendations for EU level actions, designed to encourage greater interoperability within Public Transport ticketing, using smartcards.

Based on the preceding assessment of options and in consideration of the results of the analysis undertaken to date, it is considered that the EC might reasonably implement a programme of measures, along the lines of those set out within the Do-minimum scenario, to encourage greater adoption of smart ticketing within public transport.

These actions are designed to provide strategic leadership in the development and roll out of smart ticketing. The nature of the actions that might be undertaken include:

- Conducting detailed assessments of schemes, identifying and facilitating the sharing of best practice;
- Setting out 'model' scheme designs, business cases and model agreements between partners;
- Engaging with key stakeholders, and supporting relevant research into new technologies, seeking / supporting technological convergence;
- Providing incentives to stimulate further public and private investment and delivery;
- Ensuring the right 'tools' are available (scheme architecture, standards and specifications) and encouraging their use.

The approach taken and the effectiveness of the funds directed towards these actions should however be reviewed, after a period of say 3 years to confirm the appropriateness of this approach.

Subject to the results of this later review, the EC might wish to reassess / reconsider the merits of the additional (Do-something) actions set out within the report. The nature of the additional actions that might be taken include

- Providing additional funding for schemes that conform with the Vision and Plan to speed up the development of integrated smart ticketing schemes, in particular schemes which include the delivery of relevant, enhanced user data / information
- Developing model Framework agreements for the supply of services and equipment
- Including smart ticketing requirements in all newly let franchises