CEN

WORKSHOP

AGREEMENT

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Facilitating Smart Card Technology for Electronic Ticketing and Seamless Travel - Part 1: EU Policy and User Requirements

This CEN Workshop Agreement has been drafted and approved by a Workshop of representatives of interested parties, the constitution of which is indicated in the foreword of this Workshop Agreement.

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Foreword

The production of this CEN Workshop Agreement (CWA) was formally accepted at the kick-off meeting of the CEN/ISSS Workshop FASTEST on 2001-06-20. This CWA was agreed upon by the contributing partners in this Workshop, representing a wide mix of interests. The list of company individuals who have supported the document's contents may be obtained from the CEN/ISSS Secretariat. The CWA was approved following a final electronic review which successfully ended on 2003-08-19. The final text of this CWA was submitted to CEN for publication on 2003-09-19.

This CWA has been written in response to the need for practical guidance and support in the drafting of specifications for electronic ticketing (e-ticketing) systems based on the use of smart cards.

This CWA is an informative document, not intended to provide rigid, prescriptive material, but advice and suggestions.

Ticketing is a key area within the range of services offered by passenger transport enterprises [1]. Current technology provides the possibility for ticketing transactions to be made using electronic media in the form of microchips and/or electronic memory devices, which can be installed in plastic cards (smart cards) or in other portable devices (mobile telephones, PDA's etc.).

International standards exist that define the physical nature of the equipment necessary for an e-ticketing scheme (e.g. the smart cards or SIM cards, the card accepting devices etc.), the communication protocols between the microchips on the cards and the card accepting devices and other standards exist to define the data architecture that has to be on the card in order to permit reading and usage of card data by a card accepting device.

This CWA supports these standards and urges compliance with them as a basic requirement to ensure technical compatibility between system components.

Moreover, the CWA is also based on the knowledge of current work in progress within CEN to produce standards for a conceptual framework for interoperable fare management systems and to define payment related data elements and codes for surface transport applications.

The guidelines contained in this CWA are based on the following assumptions:

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[1] For the purposes of this CWA a passenger transport enterprise may be a passenger transport operating company or an organising authority (responsible for passenger transport policy and support) or a consortium involving both types of actor.

- that the decision-making bodies within passenger transport enterprises take the decision to introduce e-ticketing schemes for a variety of reasons according to their own business model
- that system components are available allowing technical compatibility between system components.

The consequence of the first assumption is that the CWA does not propose or elaborate a generic business case or business model for e-ticketing, though it does provide guidance on how enterprises can construct their own model, as well as highlighting the general business considerations that affect scheme design choices. Hence it is incumbent on the passenger transport enterprise using this CWA to elaborate its own business model in order to identify the right design choices recommended in the CWA.

It should also be noted that this CWA deals with essentially two types of system migration:

- migration from a paper-based or magnetic-stripe ticketing system to an e-ticketing system based on smart cards
- migration from an existing smart card based e-ticketing scheme run by a single operator (or a closed group of operators) to an open multi-operator smart card based e-ticketing scheme.

Because the emphasis of the CWA recommendations is on design guidelines for e-ticketing schemes that can interoperate with other schemes, a key principle is that, if the first type of migration is to a single-operator (or closed) scheme, it should be possible to extend this to an open multi-operator scheme at minimum cost.

The consequence of the assumption of the availability of system components is that the CWA does not provide any details on the technical compatibility of components, though it does provide some guidance on how technical choices may affect performance and functionality.

Although it is recognised that the e-ticketing schemes envisaged in this CWA could be based on other portable devices, the focus of the guidelines is on the use of smart cards. The reasons for this are both historical and practical. On the one hand, the CEN/ISSS Workshop FASTEST was proposed by the eEurope Smart Card Charter to address specifically the use of smart cards for passenger transport electronic ticketing and this CWA is the result of consensus within that Workshop. On the other hand, it is a fact that most of the current re-engineering plans in Europe for rail and surface passenger transport ticket schemes foresee the use of smart cards.

The guidelines contained in this CWA therefore deal mainly with the following aspects of smart card based e-ticketing scheme design:

- understanding customer requirements
- understanding EU policy requirements
- identifying scheme characteristics according to operator business requirements

- identifying scheme functionalities with particular emphasis on those necessary for interoperation between schemes
- understanding the main business, technical and security requirements for implementing multi-operator smart card ticketing schemes
- identifying the main processes involved in the operation of interoperable e-ticketing schemes
- understanding the main design and implementation steps.

This CWA consists of the following three parts:

1. CWA 14838:2003 – Part 1 - Facilitating Smart Card Technology for Electronic Ticketing and Seamless Travel: EU Policy and User Requirements
2. CWA 14838:2003 – Part 2 - Facilitating Smart Card Technology for Electronic Ticketing and Seamless Travel: Development of Smart Card Based Interoperable Ticketing Systems
3. CWA 14838:2003 – Part 3 - Facilitating Smart Card Technology for Electronic Ticketing and Seamless Travel: Catalogue of Technical and Business Process Requirements

The three parts of CWA 14838:2003 together constitute a stand-alone suite of documents. However, they should be read in sequence, because the CWA is structured to provide a logical progression from basic concepts, requirements and constraints (Part 1), through business case analysis, technical and security considerations (Part 2) to design considerations for defining processes (Part 3). Hence the assumption underlying the guidelines and recommendations of Part 2 is that the reader is already acquainted with Part 1, and likewise, the assumption underlying the guidelines of Part 3 is that the reader is already acquainted with Part 2.

0 Introduction

0.1 Origins of the FASTEST Workshop

The FASTEST Workshop was set up in June 2001 by members of the eEurope Smart Card Charter / Trailblazer 9 (Public Transport) as a mechanism for achieving two of the Trailblazer's objectives:

1. producing guidelines that support customers' ease of use of smart card based ICT services and develop a consistency of user experience with the smart card as an interoperable access token in European public transport and across other associated economic sectors such as parking, road user charging, leisure, sports and culture

2. producing tools that can assist public transport authorities and passenger transport operators in adopting the concept of interoperability between smart card based products and systems in support of seamless travel.

The Workshop's primary purpose was to produce documents that can serve as practical tools for the drafting of electronic ticketing specifications and European procurement. CWA 14838:2003 has been produced to fulfil this purpose.

The Workshop has also performed a survey of e-ticketing systems to provide a knowledge base for the internal use of the Workshop. A summary of the results of this survey are provided in Annex A of Part 1 of this CWA.

0.2 Why the need for this CWA?

On the one hand, it was considered that there was sufficient experience of customer and operator requirements to achieve wide consensus on the definition of user and functional requirements; on the other there is an urgent need for a common framework that can aid with the design of interoperable e-ticketing schemes.

Despite the national initiatives that are currently underway and despite the standardisation efforts, the sheer scale of the rollout foreseen for smart card based e-ticketing in the short-term makes the risk of market fragmentation very high indeed. While the FASTEST CWA cannot provide all the solutions for preventing this from happening, it aims at least to provide a common framework that may:

- help scheme operators to design their own e-ticketing schemes
- help scheme operators to design schemes that can interoperate with other schemes.

0.3 The contribution of CWA 14838:2003 within CEN

CWA 14838:2003 supports all the existing standards concerning the physical characteristics of smart cards, data architectures and communication protocols. It also anticipates emerging standards for specific data architectures

for transport applications and the conceptual framework for interoperable e-ticketing schemes. The CWA will therefore aid the implementation of these standards, and ensure that scheme operators and transport authorities have a common understanding of the issues in question.

A key objective of the Workshop is to lend support to the work of TC 224/WG11 (Machine-readable cards, related device interfaces and operations: surface transport applications) and TC 278/WG3 (Road transport and traffic telematics: public transport) where appropriate. The following diagram is an illustration of the current landscape of work done or in progress within CEN in the area of interoperable ticketing systems.

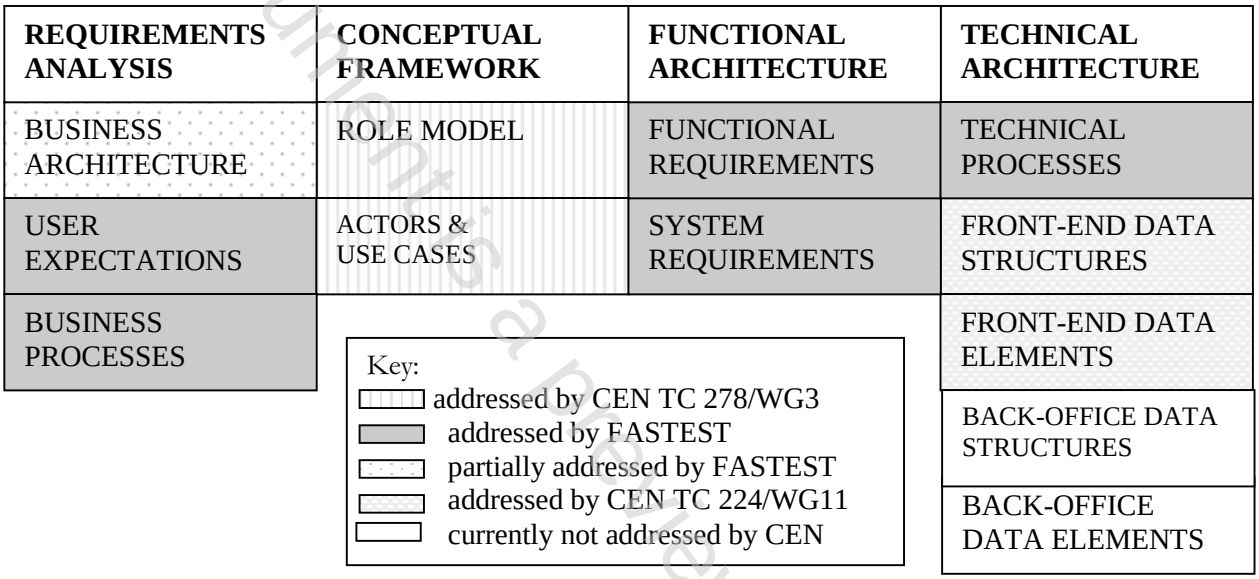

Figure 1
Overview of current work on Interoperable Public Transport Ticketing within CEN

In addition to the CEN Technical Committees identified above, other related work has taken place in parallel to Trailblazer 9. The following initiatives have been observed and are influential on the final output of the FASTEST Workshop:

- other CEN/ISSS Workshops
- initiatives towards standardisation
- IST projects
- national initiatives
- smart card based e-ticketing projects
- the other Smart Card Charter Trailblazers
- international initiatives.

The FASTEST Workshop has directly interfaced with Trailblazer 9 and established relationships with the other initiatives listed above. This should ensure that the Workshop's output is consistent with and supportive of the work of the CEN Technical Committees and applicable to e-ticketing initiatives throughout Europe. The Workshop has interfaced with the other Smart Card Charter Trailblazers through Trailblazer 9.

The following diagram is intended to clarify the position of the FASTEST Workshop within the more extended international landscape of smart card based e-ticketing activity.