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Intelligent transport systems – Urban ITS – Use of regional traffic standards in a mixed vendor environment

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National foreword

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Intelligente Transportsysteme - Urbane Verkehrssysteme - Verwendung regionaler herstellerspezifischer Normen und Spezifikationen

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European foreword

This document (CEN/TS 17402:2020) has been prepared by Technical Committee CEN/TC 278 "Intelligent transport systems", the secretariat of which is held by NEN.

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Introduction

The standard deliverables "Mixed Vendor Environment Guide" CEN/TR 17401, "Mixed vendor environments methodologies & translators" CEN/TS 17400, and this document provide a suite of standards designed to achieve successful implementation of "Urban-Intelligent Transport Systems" (U-ITS) in a mixed vendor environment.

This suite of standards supports the family of existent standards, referencing both common communications protocols and data definitions, that, in combinations, enable Urban-ITS (and ITS in general) to function and be managed, and will reference application standards, and their interdependencies and relationships.

Urban authorities use an increasing array of ITS implementations to deliver their services. Historically, urban ITS implementations have tended to be single solutions provided to a clear requirements specification by a single supplier. Increasingly, as ITS opportunities become more complex and varied, they involve the integration of multiple products from different vendors, procured at different times and integrated by the urban authority.

The need for a mixture of systems provided by different manufacturers in so-called "Mixed Vendor Environments" (MVEs) is a growing paradigm, which results primarily from the demand for the introduction of competition in the context of public tenders, and the increasing networking of existing stand-alone solutions to address complex traffic management systems.

The mix of systems of different manufacturers is also, in part, a result from technological changes. Established companies are suddenly in competition with new companies that exploit technological changes and offer exclusively, or at a reasonable price, new or improved functionality for sub-systems.

However, ITS design is often proprietary and, as a consequence, integration and interoperability can be difficult, time-consuming, and expensive, limiting the ability of urban authorities to deploy innovative solutions to transport problems. In some member states of the European Union, national/regional solutions to this problem have been created, and there are also some solutions in specific domains, which have been very beneficial. However, these are not uniform across the EU, compromising the efficiency of the single market.

This document focuses specifically on the area of traffic management systems in an MVE, identifies appropriate standards to use to enable an MVE, and addresses aspects associated with the accommodation of regional traffic standards in such mixed vendor environments, with particular emphasis on the centre/field systems context. This document also provides information regarding MVE provisions in the public transport domain.

This document should be read together with CEN/TR 17401, which provides a 'Guide' giving a high level introduction into the "Concept of Operations" (CONOPS) for MVEs; provides a high-level architectural context explanation of an MVE and its operational requirements, and describes the problems and effects that are associated with vendor lock-in. It also provides a systematic approach for many aspects of U-ITS implementations, and indeed almost all ITS MVE implementations; and provides a methodical guideline with a procedural model, in order to provide assistance to implementers and managers involved with the structure of an MVE and/or with the removal of vendor lock-in.

This document should also be considered together with CEN/TS 17400, which provides the methodologies and translators to avoid vendor lock-in, introducing suitable methodologies for system architecture design, making appropriate use of standards, and specifications to be used when translator systems are adopted.

Over many decades, regional traffic interface standards have evolved and been implemented around Europe. Implemented, they cannot be replaced in the near term. This document is designed to show how they can operate, co-exist and evolve in an MVE over time.

This document also describes the major existing regional traffic standards established in Europe, such as OCIT, UTMC, DVM/IVERA, and the data exchange provisions provided in the DATEX II series of standards, and how these regional traffic standards and DATEX II are used in MVE or to avoid vendor lock-in. This document recognizes that there are other implemented local traffic management standards and is designed to enable them to also seek to achieve an MVE accommodation path.

The organization of the deliverable is based on functionality, and will provide framework overviews, and minimum system requirements for ITS service provision in the context of regional traffic standards MVEs.

1 Scope

This document provides a background to the relevance of standards concerning mixed vendor environments in the context of urban-ITS. It describes key mixed vendor environments interfaces.

It identifies existing open specifications for

— sensor systems;

— traffic control;

— traffic information;

— public transport information;

— distributed C-ITS;

— central systems.

It provides common specifications of

— sensor systems;

— traffic control;

— traffic information;

— public transport information;

— distributed C-ITS;

— central systems.

It describes openly plied proprietary standards and extant communications protocols that can be used in mixed vendor environments in the context of U-ITS.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 12896 (all parts), *Public transport - Reference data model*

EN 12966, *Road vertical signs - Variable message traffic signs*

EN 13149 (all parts), *Public transport - Road vehicle scheduling and control systems*

EN 15509, *Electronic fee collection - Interoperability application profile for DSRC*

CEN/TS 15531 (all parts), *Public transport - Service interface for real-time information relating to public transport operations*

CEN/TS 16157 (all parts), *Intelligent transport systems - DATEX II data exchange specifications for traffic management and information*