SLOVENSKI STANDARD
SIST ENV 12315-1:2003

01-oktober-2003

Prometne in potovalne informacije (TTI) - Sporoļ ila TTI prek posebne komunikacije kratkega dosega ï 1. del: Podatkovne specifikacije ï Navzdolnja povezava (od cestnega roba do vozila)

Traffic and Traveller Information (TTI) - TTI Messages via Dedicated Short-Range Communication - Part 1: Data Specification - Downlink (Roadside to Vehicle)

Ta slovenski standard je istoveten z: ENV 12315-1:1996

ICS:

35.240.60	Uporabniške rešitve IT v transportu in trgovini	IT applications in transport and trade

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EUROPEAN PRESTANDARD

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Descriptors: teleprocessing, road transport, traffic, traffic control, information interchange, radiocommunications, open systems interconnection, data transmission, messages, data, specifications

English version

Traffic and Traveller Information (TTI) - TTI Messages via Dedicated Short-Range Communication - Part 1: Data Specification - Downlink (Roadside to Vehicle)

This European Prestandard (ENV) was approved by CEN on 1996-07-24 as a prospective standard for provisional application. The period of validity of this ENV is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the ENV can be converted into an European Standard (EN).

CEN members are required to announce the existance of this ENV in the same way as for an EN and to make the ENV available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the ENV) until the final decision about the possible conversion of the ENV into an EN is reached.

CEN members are the national standards bodies of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart,36 B-1050 Brussels

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CONTENTS (INFORMATIVE)

FOREWORD (INFORMATIVE)

This Prestandard has been prepared by Working Group 4 (Sub-Working Group 4.2) of Technical Committee CEN/ TC 278 "Road transport and traffic telematics", the secretariat of which is held by NNI to cover the Work Item 4.2.2.

In the field of Traffic and Traveller Information, the innovative rate is high, with many research and development projects under way in many countries, and there is a need to establish prospective standards which allow competitive manufacturers to introduce products to the market in the knowledge that they can accommodate the future issues of the standard(s) without fundamental change to equipment.

It has been submitted as a first draft to TC278 for consideration and review by TC278 plenary meeting members, for initial comment, as CEN Stage 32. All comments have been reviewed and the document updated. It is hereby issued to CEN Central Secretariat for distribution in accordance with Internal Regulations (Part 2, Section 7) at CEN Stage 49, for formal voting.

No known national standards (identical or conflicting) exist on this subject.

This document constitutes: Part 1 of a two-part European Prestandard, being the data specification for one way (roadside to vehicle direction) of a two-way communications link. Part 2 of this Prestandard covers the reverse direction (vehicle to roadside).

According to the CEN/CENELEC Internal Regulations, the national standards organisations of the following countries are bound to announce this European Prestandard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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Introduction (INFORMATIVE)

Traffic and Traveller Information may be disseminated through a number of services or means of communication, covering static displays, interactive terminals and in-vehicle equipment.

For all such services, the data to be disseminated and the message structures involved in the various interfaces require clear definition and standard formats, in order to allow competitive products to operate with any received data.

This pre-Standard focuses on the data specification for an air-interface via dedicated short-range communication, whereby the information is produced at a central location (known as the in-station, central office or traffic information and control centre) and disseminated via a network of roadside beacons. It enables messages to be exchanged between different systems and service providers adopting a variety of applications' specifications. Other pre-Standards are being produced by the CEN TC278 Working Group 4, to cover TTI dissemination via other means or services.

It is anticipated that the uses of the data set(s) described in this document will be closely linked to the widespread use of in-vehicle equipment which utilises them – known as "beacon data" – in an efficient manner to guide drivers through the road network accurately and safely. The principle of operation is to follow detailed guidance, step by step, from one beacon to another. The in-vehicle equipment is expected to offer "fall-back" facilities to assist the driver whenever he or she is travelling in an area unequipped with beacons or if the beacon data is unavailable, for whatever reason.

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Title (NORMATIVE)

Traffic and Traveller Information (TTI)

TTI Messages via Dedicated Short-Range Communication

Part 1: Data Specification – Downlink (Roadside to Vehicle)

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1 Scope (NORMATIVE)

1.1 GENERAL

This pre-Standard provides a common message structure for Traffic and Traveller Information messages which are disseminated via dedicated beacon infrastructure (for short-range communications, only).

It, therefore, provides the framework to enable the providers of information services to utilise such a means of dissemination to supply information into a large number of equipped vehicles, together with the suppliers of such in-vehicles equipment to receive, process and/or display the messages to the traveller (driver or passenger).

The message is structured to fit into the protocol framework for DSRC links, as defined in the standards produced by CEN TC278 WG9. Such links may carry data other than Traffic and Traveller Information, as shown in Figure 1, and, in itself, TTI comprises several (potential or optional) data sets, including:

- route guidance data
- messages and warning
- car park information
- park and ride information
- "yellow pages" directories of other services.

This pre-Standard covers all discrete data sets which comprise TTI. However, since research and development of several data sets is incomplete, at this time, this issue of the pre-Standard details only the "route guidance data", which is covered by chapter 5 - 10.

It is anticipated that the other functional data sets will be included with the (pre-)standard, as future issues of the same-numbered document, once R & D activities have produced clear, firm results which may be applied to the standardization process.

1.2 EMBEDDANCE IN OSI 7-LAYER MODEL

This document describes the elements (structure and format) for input to the algorithms encompassing RGI and other applications (see below) in an In Vehicle Unit (IVU).
Figure 1 shows the inclusion of this standard with the separate communications means - supplementing the delieveries of other WGs, where the protocols and communications 'data frame' structures are defined.

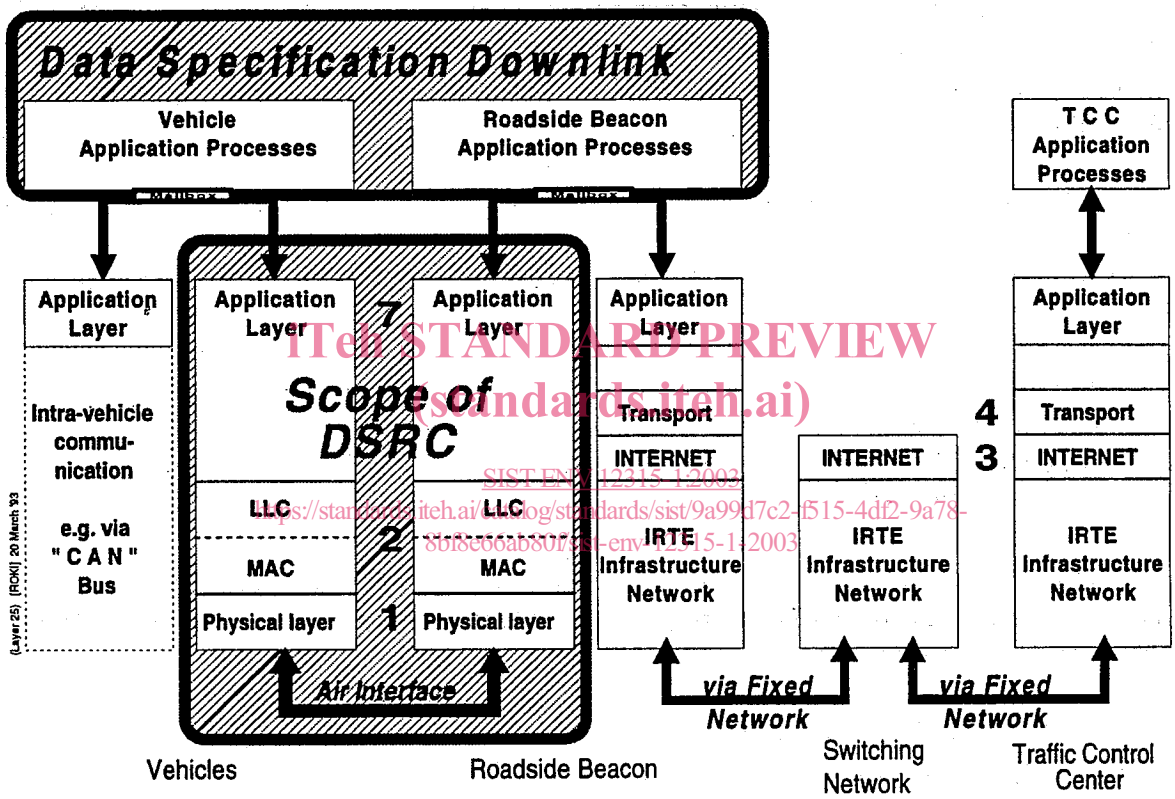

Figure 1 Dedicated Short Range Communication according to OSI 7-Layer model

1.3 APPLICATIONS

An infrastructure based vehicle information system consists of a Central Office (C.O.) with a complete set of global information and many roadside substations (beacons), which distribute local information to vehicles. This local information is prepared individually for each beacon by the C.O.. Principally, only the information a vehicle needs after passing one beacon and before arriving at the next one has to be transmitted by a beacon.

Many vehicles may pass one beacon at the same time. It has to be guaranteed, regardless of their number, that all vehicles can receive the necessary information.
Therefore, it is not possible to transmit all the information by dialogue between beacons and vehicles. Instead of this, the total information for each possible destination is transmitted as broadcast data. The vehicle knows its own destination and extracts the appropriate Route Guiding Information out of the complete data set.

1.3.1 ROUTE GUIDANCE DATA

This data contains all necessary information for route guidance from the position of the actual beacon to any destination.

If the routing calculation were to be done in the vehicle, details of the whole road network and complete information about time-of-day-dependent traveltimes and current variations (caused by accidents, roadworks or other factors) would need to be available to the vehicle on-board unit. To allow, and co-operate with, on-board units which do not need to carry such a large database and storage facility, to ease the difficulty of transferring "current variations" to all vehicles and to eliminate the need of on-board units to carry out time consuming route calculations, the routes are pre-calculated in the CO and then distributed to the relevant beacons.

Consequently, each beacon contains only those parts of the routes which are necessary to travel from that beacon to the next or next but one beacon. This encompasses the different routes to cope with Road Restrictions and driver-selected Route Types. In this way, current variations are taken into account at the earliest opportunity and fed into the vehicle equipment from the next beacon.

The description of this part of the road network is called **"Route Guidance Information"** (RGI). The RGI consists of the following parts:

1.3.1.1 GENERAL GUIDANCE DATA

- Position data, to re-synchronise (accurately - to within 10 metres) the in-vehicle tracking of its position.
- Positions of neighbouring beacons (From the beginning of a journey vehicles will be directed to the next appropriate beacon to get more detailed information to continue its trip).
- General parameters (different beacons may have different overall default values for some of their information).