



# SLOVENSKI STANDARD

## SIST ENV 12314-1:2003

01-oktober-2003

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Road Transport and Traffic Telematics - Automatic vehicle and equipment identification -  
Part 1: Reference Architectures and Terminology

Telematik für den Transport und Straßenverkehr - Automatische Identifizierung von  
Fahrzeugen und Geräten - Teil 1: Referenz Architektur und Begriffe

Télématique du Transport Routier et de la Circulation - Identification Automatique des  
Véhicules et Equipements - Partie 1: Architecture de Référence et Terminologie

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Ta slovenski standard je istoveten z: **ENV 12314-1:1996**

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### ICS:

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

ENV 12314-1

PRÉNORME EUROPÉENNE

EUROPÄISCHE VORNORM

August 1996

ICS 35.240.60

Descriptors: teleprocessing, road transport, traffic, traffic control, information interchange, designation, road vehicles

English version

**Road Transport and Traffic Telematics -  
Automatic vehicle and equipment identification -  
Part 1: Reference Architectures and Terminology**

Télématique du Transport Routier et de la  
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**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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## FOREWORD

This European Prestandard has been prepared by Working Group 12 of Technical Committee CEN/ TC 278 "Road transport and traffic telematics", the secretariat of which is held by NNI.

This is the first part of a series of Prestandards defining AVI/AEI in the RTTT environment. The following parts shall also be issued from CEN TC278/WG12 to form a family of Standards for the Sector.

ENV 12314-1	Reference Architectures and Terminology
prENV 12314-2	Numbering and Data Structures
prENV 12314-3	System Specification
prENV 12314-4	Interface Specification

This Prestandard prescribes the overall parameters within which these subsidiary Prestandards are constructed. The Architecture description defined in this document is presented in a form consistent with the recommendations of CEN TC278 / WG13, and is supported by that Working Group.

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.

## INTRODUCTION

The interaction between vehicles, the driver, and the road infrastructure is of major importance. Various technologies are already used to assist this interaction.

There is a significant and growing requirement to enable moving vehicles to interact with the infrastructure. This technical field is generally known by several abbreviations such as "RTI - Road Traffic Informatics", "TICS - Transport Information and Control Systems" and in CEN as "RTTT - Road Transport and Traffic Telematics". A principal means of interaction in this environment is AVI/AEI.

The data component in an RTTT environment provides the basis for unambiguous identification of the OBE, and may also share a medium for a bi-directional interactive exchange of data between the host and OBE and to other equipment (such as smart cards or other on board equipment).

Within the RTTT sector, applications may range from simple vehicle and equipment identification to complex Pan European systems. Typical direct applications are road charging, parking, vehicle management, information, and control systems.

The Reference Architecture Model and the Data Construct Schemes described in this family of Pre-Standards provide a platform for a wide range of media so that the currency of the Pre-Standard shall remain good both for existing and future technologies. The Pre-Standard recognises that there are existing AVI/AEI applications and provides a means of supporting such data constructs within the Pre-Standard.

In many cases it is necessary or desirable to use one air carrier frequency and protocol, but this is not always possible nor even desirable in all situations.

However there is a benefit in using a standard common core data structure that is capable of upwards integration and expandable from the simplest low cost AVI/AEI system to the more complex functions. Such a structure must be flexible and enabling rather than prescriptive, thus enabling different degrees of interoperability within and between their host systems.

The use of Abstract Syntax Notation One (ASN.1) from ISO 8824/8825 as a data identifier structure is now widely accepted. Its usage shall provide maximum interoperability and conformance to existing standards, and shall meet the specifically defined requirements for a generic Standard model for RTTT in that it:

- Shall enable and use existing Standard codings
- Shall be adaptable and expandable
- Should not include unnecessary information for a specific application
- Should have a minimum of overhead in storage and transmission

Concerning **Annex A** it is anticipated that most of the content of this Annex will eventually be incorporated into Architecture Standards developed by WG13 of CEN TC278, leaving only the AVI/AEI specific architecture, and the linkage to the main architecture Standard in the Normative part of this Standard. At the time of developing this Standard, general RTTT sector Standards for Architecture are not yet available. This Annex is therefore included as an interim measure.

## TITLE

- ROAD TRAFFIC AND TRANSPORT TELEMATICS**
- AUTOMATIC VEHICLE AND EQUIPMENT IDENTIFICATION**
- REFERENCE ARCHITECTURES AND TERMINOLOGY**

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## 1. SCOPE

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1.1 This Pre-Standard is to establish a common framework to achieve unambiguous identification in RTTT: AVI/AEI applications.

1.2 This scheme and Reference Architecture Model is designed to be an 'enabling' structure to allow interoperability between different commercial systems, and not prescriptive in determining any one system. It is not frequency nor air interface protocol specific, provides maximum interoperability, has a high population capability, and provides the possibility of upwards migration to more capable systems.

1.3 This Pre-Standard provides a reference structure which enables an unambiguous identification and also identifies the data construct as an RTTT message. This is particularly important within an EDI environment. The construct also identifies which RTTT data structure is contained in the message.

A wide variety of applications can be supported by the structure determined in this Pre-Standard, such as simple AVI/AEI, complex unambiguous RTTT messages (in either user identified or anonymous formats), or new and as yet undefined, message structures.

1.4 The principles of data element structure determined in ISO 8824 and ISO 8825 Encoding Rules have been adopted to provide an interoperable architecture within a Standard framework. The use of Abstract Syntax Notation One (ASN.1) from ISO 8824/8825 as a data identifier is widely used. In CEN it is recommended by TC278 WG13 (Architectures) and is used by TC224 for transport data elements.

1.5 A key feature of the structure is to provide interoperability of data constructs. This AVI/AEI scheme may also be used as part of a data construct for purposes such as automatic fee collection and enables interoperability with existing standards.

1.6 This Pre-Standard does not include the air interface nor any implementation aspect, solely the Reference Architectures. Subsequent Standards shall define data structures for general AVI/AEI and for specific sectors of application.

**1.7** The Numbering and Data Structure shall be capable of operation both by read/write devices, and by read only devices where there is no requirement (nor possibility) to write to the OBE

## **2 NORMATIVE REFERENCES**

This European Pre-Standard incorporates by dated or undated reference provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed below. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Pre-Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

**Ref.: ISO 8824 : 1993** Information processing systems - Open Systems Interconnection - Specification of Abstract Syntax Notation One (ASN.1)

**Ref.: ISO 8825 : 1993** Information processing systems - Open Systems Interconnection - Specification of Basic Encoding Rules for Abstract Syntax Notation One (ASN.1)

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### 3 DEFINITIONS

**Address**

A data element designating the originating source or destination of data being transmitted.

**Air Interface**

The conductor-free medium between an OBE and the reader/interrogator through which the linking of the OBE to the reader /interrogator is achieved by means of electro-magnetic signals.

**Application Identifier**

In the context of this Reference Architecture Model and its Numbering and Data Structures, the first octet of a data element construct being passed across the reference points Alpha or Beta. This octet shall identify that the message is a specific RTTT message.

**ASN.1**

Abstract Syntax Notation (Number) One, as defined in ISO 8824 & ISO 8825.

**AEI (Automatic Equipment Identification)**

The process of identifying equipment or entities that uses the surface transportation infrastructures by means of OBE's combined with the unambiguous data structure defined in these Standards.

**AIS (Automatic Identification System)**

A system for achieving accurate and unambiguous identification of a data bearing OBE, tag, transponder or a natural/prescribed feature, the data or feature being interrogated by means of a system appropriate source.

**AVI (Automatic Vehicle Identification)**

The process of identifying vehicles using OBE combined with the unambiguous data structure defined in these Standards.

**Carrier Signal**

An electromagnetic signal that can be modulated to carry lower frequency encoded information across an air interface.

**CSI (Coding Scheme Identifier)**

A prescribed list of reference identifiers which relate to prescribed coding schemes determined in this and subordinate Pre-Standards and/or issued by the authorised numbering scheme administrator.

**Constructed Identifier**

An identification which requires a construct of primitive identifiers, as defined in ASN.1 (ISO 8824/8825).

**Data Element Structure**

A framework comprising a number of data elements in a prescribed form.

**EDI (Electronic Data Interchange)**

The passing of a data message, or series of messages, between computers and/or between different software systems. Within this context an EDI message is normally compatible with the form specified in ISO 9897 (CEDEX).

**EDT Electronic Data Transfer.**

The passing of data sets comprising an entire message from one computer to another or from one software system to another.

**EN**

European Standard. (French : Norm Europeene, German : Europäische Norm)



**Incorrect Read**

The failure to read correctly all or part of a data set.

**Inductive signals**

Electromagnetic signals - usually below 30 Mhz - characterised by the use of the magnetic component of the signals to couple an OBE to a reader by electromagnetic induction.

**Interrogator**

A device that performs the functions of a Reader (see Reader), but in addition has the ability to send new data to the OBE via an air interface.

**ISO**

International Standardisation Organisation.

**Manufacturer**

The manufacturer of equipment for use within the applications defined in this Pre-Standard.

**OBE (On Board Equipment)**

A device on board or attached to the vehicle/equipment to perform the functionality of AVI/AEI.

**Operator**

The commercial operator of an AVI/AEI/RTTT system that uses OBEs for the purposes defined in this Pre-Standard.

**Primitive Identifier**

Identification as a stand alone identity that does not require any qualifiers such as expiration date etc. All construct identifiers shall be built from primitive identifiers.

**RFID (Radio Frequency Identification)**

A common term describing an automatic identification system comprising one or more reader/interrogators and one or more OBEs in which communication and data transfer is achieved by means of electro-magnetic signals varying from low frequency (inductive) to microwave frequencies.

**Reader**

A device that transmits a signal as a means of initiating a response in a compatible OBE. It subsequently receives the modulated electro-magnetic response and decodes the data.

**Read Only**

A data mode corresponding to an OBE whose data content is encoded prior to use and cannot be changed by the reader/interrogator.

**Read/Write**

A data mode corresponding to an OBE in which data content can be changed by means of a compatible interrogator via the air interface.

**Read/Write Cycle**

A complete sequence of interaction by the reader/interrogator where the OBE is unambiguously identified and new data, comprising either whole or part of the full data set, is written onto the OBE by means of the air interface.

**Reference point**

A connection between two function blocks, where protocols shall define the information flow across the reference point. (Note: Only in case of functions being separated in different physical implementations shall there also be an interface point.)