

Road transport and traffic telematics - Dedicated Short Range Communication (DSRC) - DSRC application layer

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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 12834:2004 sisaldab Euroopa standardi EN 12834:2003 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 28.01.2004 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 12834:2004 consists of the English text of the European standard EN 12834:2003.</p> <p>This document is endorsed on 28.01.2004 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p>Käsitlusala:</p> <p>This European Standard specifies the Application Layer Core which provides communication tools for applications based on DSRC. These tools consist of Kernels that can be used by application processes via service primitives. The application processes, including application data and application specific functions, are outside the scope of this European Standard.</p>	<p>Scope:</p> <p>This European Standard specifies the Application Layer Core which provides communication tools for applications based on DSRC. These tools consist of Kernels that can be used by application processes via service primitives. The application processes, including application data and application specific functions, are outside the scope of this European Standard.</p>
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ICS 35.100.70, 35.240.60

Võtmesõnad: application layer, data processing, data transmission, definitions, information interchange, open systems interconnection, road transport, telematics, teleprocessing, traffic, traffic and traveller informations

ICS 35.100.70; 35.240.60

English version

Road transport and traffic telematics - Dedicated Short Range Communication (DSRC) - DSRC application layer

Télématique de la circulation et du transport routier -
Communication à courte portée - Couche applicative

Straßenverkehrstelematik - Nahbereichskommunikation
Fahrzeug-Bake (DSRC) - Anwendungsschicht

This European Standard was approved by CEN on 4 December 2002.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Management Centre has the same status as the official versions.

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



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This document (EN 12834:2003) has been prepared by Technical Committee CEN TC 278 "Road Transport and Traffic Telematics", the secretariat of which is held by NEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 2004, and conflicting national standards shall be withdrawn at the latest by May 2004.

This document supersedes ENV 12834:1997.

The development of this European Standard was carried out under European Commission Mandate M/018.

This European Standard forms part of a series of European Standards defining the framework of a Dedicated Short-Range Communication (DSRC) link in the Road Transport and Traffic Telematics (RTTT) environment.

The communication requirements of many RTTT applications can be fulfilled by DSRC. The DSRC standards enable compliant communication systems to serve multiple RTTT applications in parallel.

The small service areas and severe real-time constraints require a specific protocol architecture leading to the reduced protocol stack shown in Figure A, built up by the Application Layer, the Data Link Layer, and the Physical Layer. Such an architecture is very common for real-time environments.

This European Standard gives the architecture and services offered by the DSRC Application Layer.

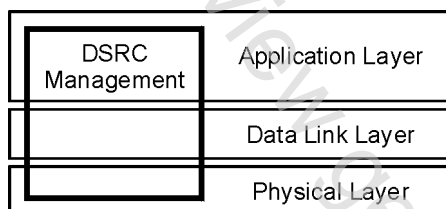


Figure A — DSRC protocol stack

The following set of European Standards for the DSRC link is issued by CEN:

- EN 12253 "DSRC Physical Layer using Microwave at 5,8 GHz";
- EN 12795 "DSRC Data Link Layer: MAC and LLC";
- **EN 12834 "DSRC Application Layer" (this European Standard);**
- prEN 13372 "DSRC Profiles for RTTT Applications".

Annexes A and B are normative. Annexes C and D are informative.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This European Standard specifies the Application Layer Core which provides communication tools for applications based on DSRC. These tools consist of Kernels that can be used by application processes via service primitives. The application processes, including application data and application specific functions, are outside the scope of this European Standard.

The standard is named “Application Layer” although

- it does not cover all functionality of OSI Layer 7 and
- it includes functionality from lower layers.

This European Standard uses services provided by DSRC Data Link Layer, [EN 12795], and covers functionality of intermediate layers of the OSI Basic Reference Model [EN ISO/IEC 7498-1].

Figure 1 illustrates the global data flow between the parts of the DSRC stack (Physical, Data Link and Application Layers) and the application.

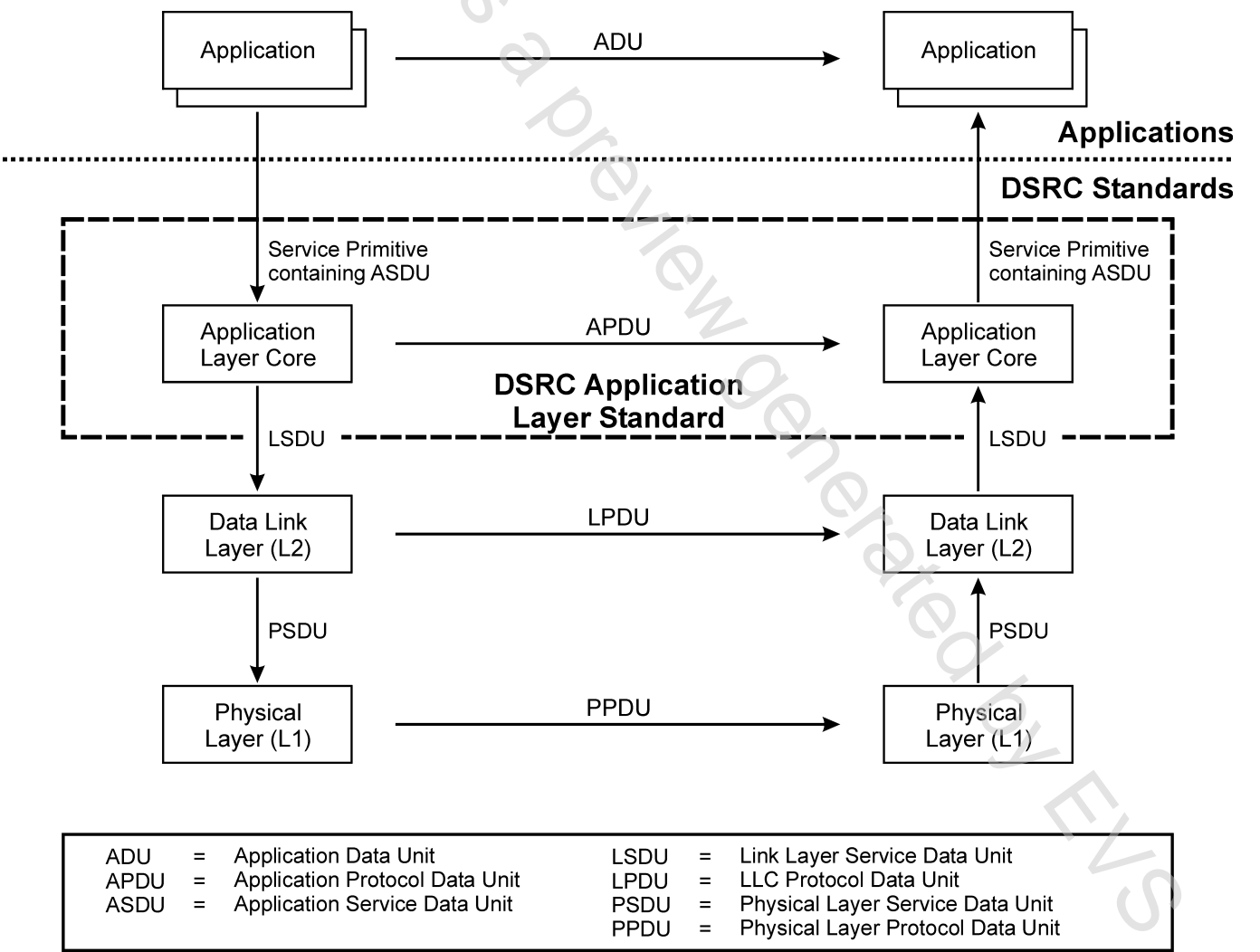


Figure 1 — Architecture and data flow of the DSRC stack

NOTE For definitions of the terms used in Figure 1 see [EN ISO/IEC 7498-1].

The following subjects are covered by this European Standard:

- application Layer structure and framework;
- services to enable data transfer and remote operations;
- application multiplexing procedure;
- fragmentation procedure;
- concatenation and Chaining procedures;
- common encoding rules to translate data from abstract syntax ASN.1, [ISO/IEC 8824-1], into transfer syntax, [ISO/IEC 8825-2], and vice versa;
- communication initialisation and release procedures;
- broadcast service support;
- DSRC management support including communication profile handling.

It is outside the scope of this European Standard to define a security policy. Some transport mechanisms for security related data are provided.

NOTE During the lifetime of ENV 12834:1997, no implementation of the Broadcast Pool functionality has become known. Broadcast Pool functionality is therefore considered untested and is kept in this European Standard for compatibility with the ENV only.

2 Normative references

This European 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 hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

ISO/IEC 8824-1:2000, *Information technology - Abstract Syntax Notation One (ASN.1): Specification of basic notation*.

ISO/IEC 8825-2:2000, *Information technology - ASN.1 encoding rules: Specification of Packed Encoding Rules (PER)*.

EN ISO/IEC 7498-1, *Information technology - Open Systems Interconnection - Basic Reference Model: The Basic Model (ISO/IEC 7498-1)*.

EN 12795, *Road Transport and Traffic Telematics (RTTT) - Dedicated Short Range Communication (DSRC) - DSRC Data Link Layer: Medium Access and Logical Link Control*.

prEN 13372, *Road Transport and Traffic Telematics (RTTT) - Dedicated Short-Range Communication (DSRC) - DSRC Profiles for RTTT Applications*.

ENV ISO 14906, *Road Transport and Traffic Telematics (RTTT) - Electronic Fee Collection (EFC) - Application interface definition for dedicated short range communications (ISO/TR 14906:1998)*.

ENV ISO 14816, *Road Traffic and Transport Telematics - Automatic vehicle and equipment identification - Numbering and data structures (ISO/TR 14816:2000)*.

3 Terms and definitions

For the purpose of this European Standard, the following terms and definitions apply.

3.1

application

user of the services offered by the DSRC communication stack

3.2

attribute

takes a value, which may have a structure, consisting of a set or sequence of data elements

NOTE The value of an attribute can be observed or modified by sending a request to GET (read) or SET (write) the value.

3.3

attribute identifier

unambiguously distinguishes an attribute from all other attributes within the same element

3.4

Beacon service table

data structure transmitted by the RSU indicating available services

3.5

broadcast pool

data structure broadcast from the RSU to the OBUs