

Road Transport and Traffic Telematics — Traffic and Travel Data Dictionary —

Part 1: General Definitions, Entities, Attributes

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National foreword

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A list of organizations represented on this committee can be obtained on request to its secretary.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the ENV title page, pages 2 to 43 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Amendments issued since publication

Amd. No.	Date	Comments

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Road Transport and Traffic Telematics — Traffic and Travel Data Dictionary — Part 1: General Definitions, Entities, Attributes

This European Prestandard (ENV) was approved by CEN on 26 April 1998 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 a European Standard.

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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

Foreword (informative)

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

This paper has been prepared by the WG8 of the TC 278 as a proposal of prENV for the Traffic/Travel Data Dictionary.

The initial document used by the WG8 was the DATEX data dictionary produced within the framework of the EC’s ATT programme. In WG8, national representatives have brought in many additions and modifications.

This document is a first part only containing the highest level items. It does not include the list of phrases which is being finalised by WG4.1 of TC 278 as a prENV of the Alert C message list.

A second part of the dictionary is under preparation to include phrases and new informative annexes. It will provide definitions for the phrases listed by WG4.1.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this European Prestandard: Austria, Belgium, Czech Republic, 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)

In the European DRIVE I programme, the STRADA project produced a data dictionary for traffic operators based on a database query approach. This is now commonly referred to as the “Data Object” approach to describing traffic/travel situations. Independently, RDS-ALERT was responsible for compiling a list of messages for the dissemination of information to drivers via RDS-TMC. This approach to message compilation used the ALERT C protocol developed in RDS-ALERT and was based on situation data. The message list was eventually endorsed by the European Conference of Ministers of Transport (ECMT).

Although some of the initial STRADA work was coordinated with other projects, no single dictionary was produced and there was no direct coordination between STRADA and RDS-ALERT.

The work of RDS-ALERT was continued in the DRIVE 2 project ATT-ALERT. This project continued the development of the RDS-ALERT message list by adding functions and expanding it to cover dissemination via additional bearers. Elsewhere in DRIVE II, MELYSSA further developed the Data Object approach and INTERCHANGE developed common specifications for an international traffic information network.

It was clear that the DRIVE community had to develop a common vocabulary describing the traffic world if it was to exchange real-time traffic and travel information. In order to achieve language-independent information exchange, it was also clear that this common vocabulary had to include reference codes.

The development of a common vocabulary in the form of the Data Dictionary appeared relatively straightforward. However, it also became necessary to reconcile the Data Object and ALERT C approaches to enable systems to manage a traffic/travel database and to generate TMC messages.

A group of projects cooperating within the DATEX Task Force began work on establishing a consolidated Data Dictionary. This work had to take into account the endorsement of the ALERT C message list by ECMT. In developing the Dictionary, the approach taken was therefore to propose additions to the ALERT C message list rather than modifications wherever possible.

The results of this work are contained in the Traffic/Travel Data Dictionary. The Dictionary comprises two types of data as follows:

- traffic and travel-related measurement data such as vehicle speeds, flows, times and temperatures
- data used to fully describe what is happening on the highway or more correctly, to describe “traffic/travel situations” (a full definition of which is given in Table 1) such as accidents, roadworks and weather conditions.

The User Guide provided in Annex C explains how to use the Data Dictionary in practical terms. In section C.2.3 it gives examples of traffic measurement data messages, traffic situation description messages in both the data object and Alert C approaches. It also discusses the management of data using the Dictionary, and highlights some of the issues that need to be taken into consideration.

The User Guide also reflects some of the work ongoing within the DATEXNET Working Group of the DATEX Task Force. DATEXNET is aiming to establish common guidelines and recommendations to enable interoperability between pilot information networks developed by individual projects including those listed above.

1 Scope (normative)

This standard defines terms used for data and information in the fields of traffic and travel. The standard is applicable to traffic and transport engineering in general, and particularly data and information exchange.

The normative terminology is provided in Table 1 to Table 3. Table 1 provides general definitions; it is normative. Table 2 lists the entities and their instances; it is normative. Table 3 lists the attributes with their definitions, values and units. The columns of Table 3 have various status:

- the full name and definition are normative;
- the coded name is normative to identify the items and to cross-reference translations. It shall be used for Edifact-based data exchange. When another exchange format is preferred, it need not be used.
- the attribute values are normative
- the attribute units and unit codes are informative, as recommendation.

These tables refer to implicit data model(s), which are not finalised nor agreed upon. Therefore this classification is given for information only, because it helps understanding the dictionary.

Annex A provides two comprehensive lists of items sorted by full name and by coded name, to facilitate an item research in the dictionary. Being a subset of the normative Table 1 to Table 3, this annex is provided for information only.

Annex B gives normative information on vehicles classes and classification. These vehicles classes and classifications need not be used in electronic tolling and automatic fee collection systems, during the time that a European classification standard for such systems is being determined.

To help understanding and using the dictionary a User Guide is provided in Annex C. Its content, including the simplified data model for the data object approach, is informative.

This document is comprehensive, but it is recognised that extra requirements for dictionary entries will exist. In this case, new codes can be used. However, in order to keep the standard up-to-date, and to avoid inappropriate usage, it is requested that all additional codes are reported to the CEN TC278 secretariat and not used before registration. All such additions will then be included in the formal maintenance of the standard.

Table 1 — Glossary of general definitions (normative)

Coded name	Full name	Definition
ATT	Attribute; data item	Elementary information that may characterize entities or messages. Examples: a message number may be used as an attribute of a message; a vehicle class may be used as an attribute of an entity “vehicle”. A synonym commonly used is data item
RED	Data record	A representation of a message exchanged or stored in a database.
ENT	Entity	Any type of “thing” in the real world (abstract or concrete) about which information is maintained. An entity is characterized by attributes
EVE	Event	A disturbance to the normal traffic/travel equilibrium state (eg., an incident, road closure, accident, etc).
SEL	Situation element	A traffic/travel circumstance related to one data object and one location.
STT	Status	A characterisation of the traffic/travel situation whether normal or abnormal (eg, flows, travel times, speeds, weather, level of service).
TEQ	Traffic equipment	Any equipment used to measure traffic or influence it, or to be used by end users: eg variable message signs, traffic signals, emergency call boxes, measurement outstation, etc.
TOP	Traffic operator	An organisation responsible for the operation of a stretch or network of roads.
TME	Traffic/travel message	Traffic/travel information being exchanged between two systems, characterising the traffic/travel situation, or giving other relevant (eg. supporting) information.
TTS	Traffic/travel situation	A set of traffic/travel circumstances with a common cause (or causes) which apply to a common set of locations. Traffic/travel situations comprise event and status reports. A situation can be composed of situation elements.
VER	Version	A snapshot of the situation at a point in time. It is characterised by a set of attributes which collectively give details of the traffic/travel situation.

Table 2 — List of the entities and their instances (normative)

Coded name	Full name	Definition
Entities		
DOB	Data object	A logically related set of traffic/travel situations (eg. “level of service” within the object set “traffic conditions”).
OBS	Object set	A logically related set of data objects (e.g. “traffic conditions”)
UPC	Update class	A group of mutually exclusive phrases, used in Alert C applications for transmitter and receiver management
Instances of the entity Object Set		
AMB	Ambient conditions	This object set describes potential interactions between travellers and the environment, including possible effects of the environment on travel, and the effects of travel on the environment. Examples include precipitation, weather data, and pollution.
RCO	Road conditions	This object set includes information related to the road availability and ease of use: obstruction and skid hazards, roadworks, etc
TRD	Traffic data	This object set comprises data objects which describe the fundamental characteristics of traffic, measured in quantitative terms. Examples include traffic flow, speed, occupancy, etc.
TRR	Traffic management	This object set includes all forms of traffic management intervention by operators and authorities. Examples range from action plans and operator intervention through to snow clearing equipment and traffic orders.
TTC	Traffic/travel conditions	This object set consists of data objects and description categories which describe situations arising from the traffic stream itself, described in primarily qualitative terms. Examples include level of service, accidents, delays, etc.
Instances of the entity Data Object		
ACC	Accident	Situations in which one or more vehicles lose control and do not recover. They include collisions between vehicle(s) or other road user(s), between vehicle(s) and obstacle(s), or they result from a vehicle running off the road.
APL	Action plans	Action plans are pre-planned regulations or schemes which are prepared and implemented by the authorities or by a traffic operator. Action plans are triggered either on a periodic basis (eg. yearly, weekly) or according to operational criteria.
ACT	Activities	Deliberate human actions external to the traffic stream or roadway which could disrupt traffic.
AVS	Average speed	Is the average of individual vehicle speeds. The different ways of computing this average are defined in the attribute COM, computation method. The average speed may be a single value or a n-dimensional matrix; a one dimensional matrix is often used for speeds per vehicle class.

Table 2 — List of the entities and their instances (normative)

Coded name	Full name	Definition
PAR	Car parks	The availability of spaces and of park and ride services.
CTT	Concentration	Is the total number of vehicles present on a specified section of road at a particular time, divided by the length of the section. It may be a single value or a n-dimensional matrix.
DEC	Delays/Cancel lations	Disruptions to traffic or public transport services resulting in hold-ups, lateness or unavailability of service.
EXH	Exhaust pollution	Air pollution due to exhaust fumes.
FER	Ferries/Trains	The availability of ferry and train services and information relating to departures.
FLO	Flow	Is the number of vehicles, axles, axle-pairs or pcu (passenger car units) which pass a fixed point in a specified measurement period. It may be a single value or a n-dimensional matrix; a one dimensional matrix is often used for flows per vehicle class.
FOS	Fog/smoke/dust	Environmental or weather conditions (other than precipitation) which prevent drivers from seeing clearly.
INC	Incident	Abnormal traffic situation adversely affecting the normal traffic flow.
IVD	Individual vehicle data	The attributes of a single vehicle including its intrinsic features and its specific traffic parameters.
LOS	Level of service	A qualitative measure describing traffic flowing conditions and their perception by motorists and passengers.
MHZ	Moving hazards	Chance occurrences due to abnormal loads or dangerous vehicles which could disrupt or endanger traffic.
OHZ	Obstruction Hazards	Motionless chance occurrences involving earlier causes (eg. earlier accidents) or causes external to the traffic stream (eg. physical obstacles other than vehicles), which could disrupt or endanger traffic.
OCC	Occupancy	The proportion of time that a vehicle presence sensor is activated within a measurement period. It may be a single value or a n-dimensional matrix.
OPA	Operator Actions	The actions that a traffic operator can decide or implement to prevent or help correct dangerous or poor driving conditions.
ODM	Origin- destination matrix	Flows of vehicles or passengers according to their origin and destination
PRE	Precipitation	Precipitation is rainfall, snowfall, sleet or hail and includes both qualitative and quantitative measurements per unit time.
ROU	Rerouting	An action which involves diverting traffic, whether mandatory or advisory.
RMT	Road maintenance; road works	Highway maintenance activities which may potentially affect traffic operations.
SHZ	Skid hazards	Situations in which the normal risks of skidding are increased, other than those resulting from snow on the road.
SNO	Snow on the road (s)	Presence of snow on the road, which may cause skid or obstruction hazards, or both.
SNE	Snow/Ice Equipment	The requirements for special equipment to improve vehicle adhesion on snow or ice.
EQU	Traffic Equipment Status	The situation of the traffic equipment: operating status, position or information displayed.

Table 2 — List of the entities and their instances (normative)

Coded name	Full name	Definition
RES	Traffic Restrictions	Restrictions on road usage, whether by legal order or by operational decisions. It includes road and lane closures, weight and dimensional limits, banned turns, contraflows and alternate traffic operations.
SIG	Traffic Signal Plans	Signal plan settings.
TTM	Travel time	The time taken to travel between 2 specified points, by a specified route, including any time taken by involuntary stops and delays. It may be a single value or a n-dimensional matrix.
WDA	Weather data	Meteorological data: eg. temperatures, pressure and humidity.
WIN	Wind	Wind conditions on the roads.

Table 3 — List of the attributes

Coded name	Full name	Definition	Coded values	Attribute units/unit code
ACU	Accuracy	The extent to which data may be subject to error. It can be indicated by the relative value, or an absolute value		‰: PER
API	Action plan Identifier	The code or identifier of an action plan.		
ATX	Additional text	A free text facility for adding text to the normal phrase description. The text is intended for end users.	Free text in natural language.	
SPA	Advisory speed limits	The temporary maximum speed advised as a consequence of the traffic/travel situation.		km/h: KMH
ATE	Air temperature	The air temperature measured in the shade between 1,5 and 2 metres above ground level.		°C: CEL
ATS	Arrival time	The time of the arrival of an individual vehicle on a detection zone.		Local or universal time
APR	Atmospheric pressure at sea level	The force per unit area exerted by the atmosphere, measured at ground level and converted to an equivalent sea level pressure.		hPa: HPA
AVV	Average speed numerical value	A specific numerical value of the average speed.		km/h: KMH, m/s: MTS
WDS	Average wind speed	The wind speed averaged over at least 10 minutes, measured at 10 (meteo standard) or at 2 meters height.		km/h: KMH m/s: MTS

Table 3 — List of the attributes

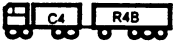
Coded name	Full name	Definition	Coded values	Attribute units/unit code
AXC	Axle class	The type which the axles of an individual vehicle belong to. NOTE This a one-dimensional matrix. Eg. E2E2E1E3 corresponds to the following axle structure:  . Annex B provides for the classification method in which this example is coded KZ29.	1 single axle 2 dual axle 3 triple axle	
AFV	Axle flow numerical value	A specific numerical value of the axle flow.		axles in the measurement period: AXL; axles/hour: AXH (d); axles/day: AXD
AXN	Axle number	The total number of axles of an individual vehicle.		
AXW	Axle weights	The weights of the axles of an individual vehicle from front to back of this vehicle. NOTE this is a one-dimensional matrix		t: TNE
BRO	Broadcast	Indication as to whether the data may be resent by the recipient.	Y yes N no	
CAN	Cancel	Indication that the referred message is to be cancelled (yes), due to an incorrect content.	Yes No	
CYR	Capacity remaining	The ratio of the current capacity to the normal road capacity, as a percentage. The capacity is the maximum number of vehicles which can pass a specified point on the road, in unit time.		%; PER
CMC	Carbon monoxide concentration	The concentration of CO in the air, ie. the volume of CO contained in unit volume of air, usually measured in parts per million.		PPM
PHC	Cause	A phrase describing the origin of the situation element.	the list of phrases will be provided in part 2 of this dictionary	
DLC	Coded delay time	The additional travel time due to adverse travel conditions of any kind, when compared to “normal conditions”.	The following codes: 3 hours < 1 < 6 h; 1 h < 2 < 3 h; 30 min < 3 < 1 h; 4: < 30 minutes; 5: negligible	

Table 3 — List of the attributes

Coded name	Full name	Definition	Coded values	Attribute units/unit code
DUR	Coded duration	The expected period over which the information contained in an element is thought likely to continue. This will equate to the difference between the start and stop times if they are both defined.	The following codes: D0 or L0: unspecified; 1/4 hour < D1 < 1/2 h; 1/2 h < D2 < 1 h; 1 h < D3 < 2 h; 2 h < D4 < 3 h; 3 h < D5 < 4 h; D6 > 4 hours; L1: throughout the morning/afternoon/night; L2: for the rest of the day; L3: until tomorrow evening; L4: for the rest of the week; L5: until the end of next week; L6: until the end of the month; L7: for a long period	
SUR	Comment (text)	Free text facility which can be offered to the operator for uncoded observations, not intended for eventual end users.	Free text in natural language.	
DRC	Compass point direction	The direction of traffic flow concerned by a situation or traffic data given in compass point form.	The following codes for a 4, 8 or 16 position compass card: N: north NNE: north north east NE: north east ENE: east north east E: east ESE: east south east SE: south east SSE: south south east S: south SSW: south south west SW: south west WSW: west south west W: west WNW: west north west NW: north west NNW: north north west	

Table 3 — List of the attributes

Coded name	Full name	Definition	Coded values	Attribute units/unit code
COM	Computation method	Method of computation which has been used to compute data	1 arithmetic average of measures in a time period 2 harmonic average of measures in a time period 3 moving average of measures 4 arithmetic average of measures based on a fixed number of measurements	
CTV	Concentration numerical value	A specific numerical value of the concentration.		vehicles/km: VPK
CFI	Confidentiality	The extent to which the information may be circulated, according to the recipient type.	1 Internal use 2 Restricted to Authorities 3 Restricted to Authorities and traffic operators 4 Restricted to Authorities, traffic operators and publishers 5 No restriction	
CNT	Confirmation time	The date/time at which the situation was last verified, eg. by a direct observation.		Local or universal time
DGR	Data group	A series of traffic data items corresponding to a sequence in time: eg. 24 hourly flow for a given day, or 12 average speeds in a given hour. This an attribute aims at grouping data for transmission effectiveness	to be defined	
DLT	Delay time value	The additional travel time due to adverse travel conditions of any kind, when compared to “normal conditions”.	Days: 0–99 Hours: 0–24 Minutes: 0–60	d h m: DHM; h m: HOM (d)
DPH	Depth	The depth of flooding or of snow on the road.		mm: MMT cm: CMT
DAR	Detection array	The area of detection made up of one or more associated sensors. There may be several detection arrays for the same traffic lane.	The arrays are numbered as odd or even according to the direction of traffic	
DIR	Direction bearing	The direction of traffic flow concerned by a situation or traffic data given as a bearing.	Bearing in degrees	

Table 3 — List of the attributes

Coded name	Full name	Definition	Coded values	Attribute units/unit code
GAP	Distance gap	The distance between the front of this vehicle and the rear of the preceeding one.		m: MTR
DIH	Distance headway	The distance between the front (respectively back) of this vehicle and the front (respectively back) of the preceeding vehicle.		m: MTR
DAD	Diversion advice	A binary attribute (Y/N) indicating whether travellers are recommended to find and follow an alternative route around a traffic/travel situation.	Y yes N no	
DUV	Duration value	The expected period over which the information contained in an element is thought likely to continue. This will equate to the difference between the start and stop times if they are both defined.		y m d h: YXH; h m: HOM (d)
ERF	Element reference	This is a unique alphanumeric reference for the situation element described by the message (e.g. 1), when used in combination with the message sender, and situation reference. Other messages may refer to the same traffic/travel situation element.	Text	
VNM	Element version number	Each element of a situation may have a series of versions which indicate a change in information associated with the element. The element version number uniquely identifies the version of a particular element within a traffic/travel situation.		
VET	Element version time	The date/time of this version of the element. The first value of this attribute is the start time. This item gives the known, forecast or estimated time of the situation reported and not the time of the report.		Local or universal (d) time
END	End	A binary attribute specifying whether the situation is finished (yes) or not (no).	Yes No	
EXT	Exit time	The time when an individual vehicle leaves a detection zone.		Local or universal time
EXP	Expiry time	The date/time at which a data record shall be deleted from a database.		Local or universal time
FOR	Forecast	Forecast is a binary item, the value of which may be yes or no. "Yes" means that the situation or situation version is a forecast, while "no" means that this is an actual situation. Any version may be forecast, from the beginning to the end of an event.	Yes No	
GVW	Gross vehicle weight	The maximum permitted weight of an individual vehicle and its load, including any trailers.		t: TNE