

TMC
Compendium

Location Database
Exchange Format

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INTRODUCTION

This document describes the location database exchange format. This format will be used for the exchange of location data sets between the various functional areas, i.e. Traffic Information Centres, service providers, receiver database bearer manufacturers, etc.

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1 LOCATION DATA EXCHANGE

1.1 BACKGROUND

The framework of the Alert-C location database is described in the ‘¹Location Referencing Rules for Radio Data System - Traffic Message Channel (RDS-TMC)’. This framework is developed and standardised by CEN TC278 SWG 7.3.

To assure uniform interpretation of these Location Referencing Rules, a ²Recommended Location Data Model (RLDM) has been developed. The RLDM is a tool for the creation and management of Alert-C locations. For the development of the RLDM, a common method for creating relational databases, from conceptual model to physical model, has been used. With the RLDM there are also ³SQL-Scripts consisting of SQL-statements that can be used to implement the location database in most relational database management systems.

The countries that participate in the FORCE-ECORTIS project are developing their national location databases. Parts of these location databases will be used to create the European location database for the ALERT Service. Therefore, it becomes necessary to organise the location data exchange.

The location data exchange format will be used for the exchange of location data sets between Traffic Information Centres (TICs) and between TICs, service providers, receiver database bearer manufacturers and others. For the definition of the functional breakdown of the ALERT Service, please refer to the TMC Compendium, Section 2, Part 1, Technical Description.

1.2 EXCHANGE FORMAT RATIONALE

The exchange format is derived from the ⁴Conceptual Data Model (CDM) and the Location Referencing Rules. The ⁵Physical Data Model (PDM) is used as a reference. In Figure 1-1 an overview is given of the methodology used for defining the exchange format.

¹ Can be obtained from individual country's National Standardisation Body

² Available in the TMC Compendium, Section 2, Part 5, Location Coding

³ Available in the TMC Compendium, Section 2, Part 5, Location Coding

⁴ Available in the TMC Compendium, Section 2, Part 5, Location Coding

⁵ Available in the TMC Compendium, Section 2, Part 5, Location Coding

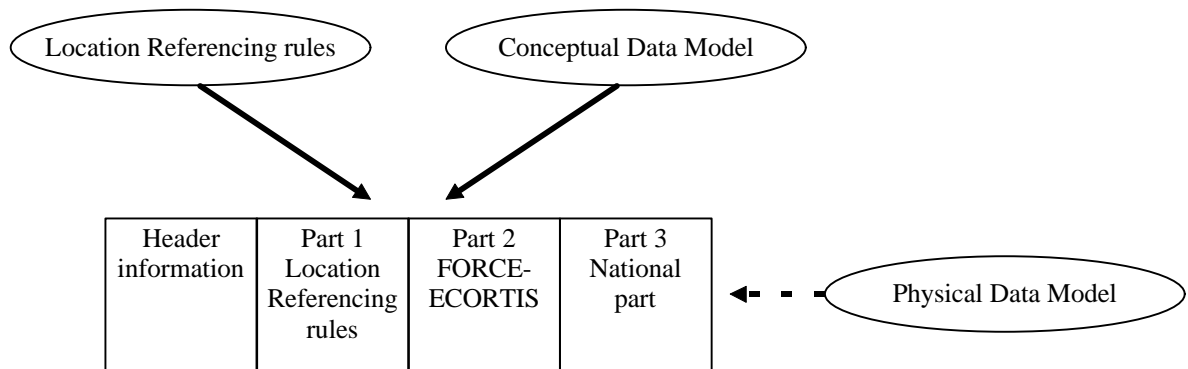


Figure 1-1 Methodology used for defining the exchange format

The exchange format will be used by different actors, who all have their own requirements. Therefore, the exchange format is divided in the three parts with header information and a quality check list:

- Header information, such as version, release date and Alert level location data set.
- Part 1 consists of tables and attributes which are defined in the Location Referencing Rules standard . For every table and attribute of the PDM (which is derived from the CDM) an indication is given where it is derived from. For example: the table OtherAreas is derived from the Location Referencing Rules.
- Part 2 consists of tables and attributes which are not part of the Location Referencing Rules standard but for which there is consensus among the FORCE-ECORTIS partners on there use. For example: the table Languages is derived from the CDM, it is not part of the Location Referencing Rules standard but there is consensus among the FORCE-ECORTIS partners its use. Therefore, all these parts are recommended by the FORCE-ECORTIS project.
- Part 3 consists of national tables and attributes, if needed, which are not derived from the Location Referencing Rules or the CDM. This part is completely optional.
- A quality check list gives a detailed overview, grouped by the parts mentioned above, of which checks have to be performed on the location data set before exchanging. For example: every point must have an area reference.

The physical exchange format consists of:

- 1 file, which contains the header information;
- 22 files, which is a 1 to 1 export of the PDM tables.

The following annexes are of importance to the exchange format:

- Annex A, division of the PDM tables and attributes by its origin (Location Referencing Rules, CDM or national). In other words, dividing the entities and items of the CDM over the three parts, as shown in Figure 1-1.
- Annex B, Implementation of ALERT Service level in Location Databases. Guidelines for making road network selections (e.g. TERN, TERN+).
- Annex C, quality check list for every part of the exchange format - as previously mentioned.

2 EXCHANGE FORMAT

2.1 SPECIFICATIONS OF THE EXCHANGE FORMAT

The character set, used for the export, must cover all relevant European character sets. The character set **ISO 8859 Latin 1** fits this requirement and is the mandatory character set for the exchange of location data.

An example is given of an export file of table countries in Table 2-1.

Table 2-2 defines all files that have to be exported, their file names and the order in which the export files have to be imported when using the implementation of the "Physical Data Model for Location Coding". The name of each export file is defined by the **code** name of the respective tables and the extension .DAT (see Table 2-2: **Export file name**). If the operating system does not support file names longer than eight characters, the name of the export file is the import order number combined with the extension .DAT (for example instead of "OTHERAREAS.DAT" the export file name is "14.DAT"). All columns of the tables in Table 2-2 have to be exported whether they are mandatory or optional, filled or left empty.

Each column of a table has to be exported separated by the field-delimiter semicolon (;). Strings can be optionally embedded in double quotes (example: ..;"This is a String";"This;also";..). Lines are separated by the sequence of the two white space characters **CR** (carriage return) and **LF** (line feed) - hex: 0D0A.

The first line (header-line) of each export file contains the column names. The column names are the column codes defined by the PDM (see the **code** column of the column list of the respective tables). They are separated by a field-delimiter (;) semicolon. The end-of-line sequence of the header-line is CR+LF.

The order of columns of each export file is described by the **sort** column of the column list of the respective tables.

For the tables ADMINISTRATIVEAREAS and SEGMENTS (see in Table 2-2) a *row sorting order* is necessary. The sorting order is described in the specific table/export file descriptions.

The order in which tables *are exported* in their export files is absolutely not important. However, the order in which the export files *are imported* in the specific tables (of the implementation of the PDM → the database-tables) must be followed strictly. Only in this way is it ensured that all dependencies and data integrity rules are checked by the

database (see **Import order** of Table 2-2).

CID;CCD;CNAME	27;9;Latvia	45;3;San Marino
17;1;Germany (1)	28;A;Lebanon	46;D;Serbia
1;9;Albania	29;D;Libya	47;5;Slovak Republic
10;2;Cyprus	3;3;Andorra	48;9;Slovenia
11;2;Czech Rep.	30;9;Liechtenstein	49;E;Spain
12;9;Denmark	31;C;Lithuania	5;F;Belarus
13;F;Egypt	32;7;Luxembourg	50;E;Sweden
14;2;Estonia	33;4;Macedonia	51;4;Switzerland
15;6;Finland	34;C;Malta	52;6;Syria
16;F;France	35;1;Moldova	53;7;Tunisia
18;A;Gibraltar	36;B;Monaco	54;3;Turkey
19;1;Greece	37;1;Montenegro	55;C;UK
2;2;Algeria	38;1;Morocco	56;6;Ukraine
20;B;Hungary	39;8;Netherlands	57;4;Vatican
21;A;Iceland	4;A;Austria	58;D;Germany (D)
22;B;Iraq	40;F;Norway	6;6;Belgium
23;2;Ireland	41;3;Poland	7;F;Bosnia Herz.
24;4;Israel	42;8;Portugal	8;8;Bulgaria
25;5;Italy	43;E;Romania	9;C;Croatia
26;5;Jordan	44;7;Russia	

Table 1 Example export file of table countries (countries.dat)

Import order	Logical name	Code	Export file name
13	AdministrativeAreas	ADMINISTRATIVEAREA	ADMINISTRATIVEAREA.DAT
4	Classes	CLASSES	CLASSES.DAT
1	Countries	COUNTRIES	COUNTRIES.DAT
12	ERNo_belongs_to_country	ERNO_BELONGS_TO_CO	ERNO_BELONGS_TO_CO.DAT
8	EuroRoadNo	EUROROADNO	EUROROADNO.DAT
22	Intersections	INTERSECTIONS	INTERSECTIONS.DAT
7	Languages	LANGUAGES	LANGUAGES.DAT
3	Locationcodes	LOCATIONCODES	LOCATIONCODES.DAT
2	LocationDataSets	LOCATIONDATASETS	LOCATIONDATASETS.DAT
9	Names	NAMES	NAMES.DAT
10	NameTranslations	NAMETRANSLATIONS	NAMETRANSLATIONS.DAT
14	OtherAreas	OTHERAREAS	OTHERAREAS.DAT
21	Poffsets	POFFSETS	POFFSETS.DAT
20	Points	POINTS	POINTS.DAT
15	Roads	ROADS	ROADS.DAT
19	Seg_has_ERNo	SEG_HAS_ERNO	SEG_HAS_ERNO.DAT
17	Segments	SEGMENTS	SEGMENTS.DAT
18	Soffsets	SOFFSETS	SOFFSETS.DAT
6	Subtypes	SUBTYPES	SUBTYPES.DAT
11	SubtypeTranslations	SUBTYPETRANSLATION	SUBTYPETRANSLATION.DAT

Import order	Logical name	Code	Export file name
5	Types	TYPES	TYPES.DAT
16	Road_network_level_types	ROAD_NETWORK_LEVEL_TYPES	ROAD_NETWORK_LEVEL_TYPES.DAT

Table 2 Overview of export files

2.2 HEADER INFORMATION (1 FILE)

The header information contains the identification of the location data set. For this file it is not important whether it is imported first, last or in between. The export file name for the header information is '**README.DAT**'. A separate file has been chosen for the header information to make it is possible to identify the Location Data Set without having to import all the tables. Nevertheless, it is strongly recommended to also include the header information in the column VersionDescription of table **LOCATIONDATASETS** with, as a minimum, the data shown in Table 2-3 (this table also defines the header information file):

Content	Type	Format	Example
ALERT Level of Location Data set	int(1)		1
Version number	float(3)		1.1
Release date	char(10)	dd/mm/yyyy	09/01/1998
Expire date	char(10)	dd/mm/yyyy	09/01/2000
Authority Code	char(15)		RWS_NL Belmont
<i>Future extensions</i>			

Table 3 Header information

At the moment it is not clear whether or not the 'expire' date is going to be used and/or how it is going to be used. Further investigation regarding the necessary header information must be carried out. Complete entry example for minimum entry **LocationDataSets.VersionDescription** is:

```
"1";"1.1";"09/01/1998";"09/01/2000";"RWS_NL_Belmont";"future extensions"
```

For further descriptions of the exported location data-set, **LocationDataSets.DComment** has to be used.

2.3 PDM TABLES (21 FILES)

2.3.1 Introduction

In this section, for every entity of the PDM, the exact file structure for the export format is described.

The 5th column of each table named 'optional' contains either 'yes' or 'no'. The Location Referencing Rules standard has additional levels, such as 'mandatory if exists'. For example, in Table 2-19 ROADS, the entries 'Roadname' and 'Roadnumber' are optional; this does not mean that they may both stay empty. In the Location Referencing Rules it is stated that a Road may have a 'Roadname' AND/OR a 'Roadnumber'.

In general there are relations between the entries within one table, which are completely described in the Location Referencing Rules and/or the RLDM.

2.3.2 Table / export file AdministrativeAreas

The sorting order of all rows in the export file ADMINISTRATIVEAREAS.DAT is:

Sort	Description	Type code	Subtype code
1 st	Continent	1	0
2 nd	Country Group	2	0
3 rd	Country	3	0
4 th	Order1Area	7	0
5 th	Order2Area	8	0
6 th	Order3Area	9	0
7 th	Order4Area	10	0
8 th	Order5Area	11	0

Table 4 Administrative Areas

Sort	Logical name	Code	Type	Optional
1	Country ID	CID	NUMERIC(3)	No
2	Type code	TCD	NUMERIC(3)	No
3	Location code	LCD	NUMERIC(5)	No
4	Type class	CLASS	CHAR(1)	No
5	Table code	TABCD	NUMERIC(2)	No
6	Subtype code	STCD	NUMERIC(3)	No
7	Name1	NID	NUMERIC	No

Sort	Logical name	Code	Type	Optional
8	Upward area reference	POL_LCD	NUMERIC(5)	Yes

Table 5 Column List AdministrativeAreas**2.3.3 Table / export file Classes**

Sort	Logical name	Code	Type	Optional
1	Type class	CLASS	CHAR(1)	No

Table 6 Column list Classes**2.3.4 Table / export file Countries**

Sort	Logical name	Code	Type	Optional
1	Country ID	CID	NUMERIC(3)	No
2	Country code	CCD	CHAR(1)	No
3	Name	CNAME	CHAR(50)	No

Table 7 Column List Countries**2.3.5 Table / export file ERNo_belongs_to_country**

Sort	Logical name	Code	Type	Optional
1	Country ID	CID	NUMERIC(3)	No
2	European roadnumber	ENO	CHAR(10)	No

Table 8 Column List ERNo_belongs_to_country**2.3.6 Table / export file EuroRoadNo**

Sort	Logical name	Code	Type	Optional
1	European roadnumber	ENO	CHAR(10)	No
2	Comment	ECOMMENT	CHAR(100)	Yes

Table 9 Column List EuroRoadNo**2.3.7 Table / export file Intersections**

Sort	Logical name	Code	Type	Optional
1	Country ID	CID	NUMERIC(3)	No
2	Table code	TABCD	NUMERIC(2)	No

Sort	Logical name	Code	Type	Optional
3	Location code	LCD	NUMERIC(5)	No
4	Intersection country ID	INT_CID	NUMERIC(3)	No
5	Intersection table code	INT_TABCD	NUMERIC(2)	No
6	Intersection location code	INT_LCD	NUMERIC(5)	No

Table 10 Column List Intersections**2.3.8 Table / export file Languages**

Sort	Logical name	Code	Type	Optional
1	Country ID	CID	NUMERIC(3)	No
2	Language ID	LID	NUMERIC(2)	No
3	Language	LANGUAGE	CHAR(25)	No

Table 11 Column List Languages**2.3.9 Table / export file Locationcodes**

Sort	Logical name	Code	Type	Optional
1	Country ID	CID	NUMERIC(3)	No
2	Table code	TABCD	NUMERIC(2)	No
3	Location code	LCD	NUMERIC(5)	No
4	Allocated	ALLOCATED	NUMERIC(1)	No

Table 12 Column Locationcodes**2.3.10 Table / export file LocationDataSets**

Sort	Logical name	Code	Type	Optional
1	Country ID	CID	NUMERIC(3)	No
2	Table code	TABCD	NUMERIC(2)	No
3	Comment	DCOMMENT	CHAR(100)	Yes
4	Version	VERSION	CHAR(7)	No
5	VersionDescription	VERSIONDESCRIPTION	CHAR(100)	Yes

Table 13 Column List LocationDataSets

2.3.11 Table / export file Names

Sort	Logical name	Code	Type	Optional
1	Country ID	CID	NUMERIC(3)	No
2	Name ID	NID	NUMERIC	No
3	Name	NAME	CHAR(100)	No
4	Comment	NCOMMENT	CHAR(100)	Yes

Table 14 Column List Names**2.3.12 Table / export file NameTranslations**

Sort	Logical name	Code	Type	Optional
1	Country ID	CID	NUMERIC(3)	No
2	Language ID	LID	NUMERIC(2)	No
3	Name ID	NID	NUMERIC	No
4	Translation	NTRANSLATION	CHAR(100)	No

Table 15 Column List NameTranslations**2.3.13 Table / export file OtherAreas**

Sort	Logical name	Code	Type	Optional
1	Country ID	CID	NUMERIC(3)	No
2	Table code	TABCD	NUMERIC(2)	No
3	Location code	LCD	NUMERIC(5)	No
4	Type class	CLASS	CHAR(1)	No
5	Type code	TCD	NUMERIC(3)	No
6	Subtype code	STCD	NUMERIC(3)	No
7	Name1	NID	NUMERIC	No
8	Admin area reference	POL_LCD	NUMERIC(5)	No

Table 16 Column List OtherAreas**2.3.14 Table / export file POffsets**

Sort	Logical name	Code	Type	Optional
1	Country ID	CID	NUMERIC(3)	No
2	Table code	TABCD	NUMERIC(2)	No

Sort	Logical name	Code	Type	Optional
3	Location code	LCD	NUMERIC(5)	No
4	Negative offset	NEG_OFF_LCD	NUMERIC(5)	Yes
5	Positive offset	POS_OFF_LCD	NUMERIC(5)	Yes

Table 17 Column List Poffsets**2.3.15 Table / export file Points**

Sort	Logical name	Code	Type	Optional
1	Country ID	CID	NUMERIC(3)	No
2	Table code	TABCD	NUMERIC(2)	No
3	Location code	LCD	NUMERIC(5)	No
4	Type class	CLASS	CHAR(1)	No
5	Type code	TCD	NUMERIC(3)	No
6	Subtype code	STCD	NUMERIC(3)	No
7	JunctionNumber	JUNCTIONNUMBER	CHAR(10)	Yes
8	Roadname	RNID	NUMERIC	Yes
9	Name1	N1ID	NUMERIC	Yes
10	Name2	N2ID	NUMERIC	Yes
11	Admin area reference	POL_LCD	NUMERIC(5)	Yes
12	Other area reference	OTH_LCD	NUMERIC(5)	Yes
13	Segment reference	SEG_LCD	NUMERIC(5)	Yes
14	Road reference	ROA_LCD	NUMERIC(5)	Yes
15	InPos	INPOS	NUMERIC(1)	Yes
16	InNeg	INNEG	NUMERIC(1)	Yes
17	OutPos	OUTPOS	NUMERIC(1)	Yes
18	OutNeg	OUTNEG	NUMERIC(1)	Yes
19	PresentPos	PRESENTPOS	NUMERIC(1)	Yes
20	PresentNeg	PRESENTNEG	NUMERIC(1)	Yes
21	DiversionPos	DIVERSIONPOS	CHAR(10)	Yes
22	DiversionNeg	DIVERSIONNEG	CHAR(10)	Yes
23	Xcoord	XCOORD	NUMERIC(9)	No
24	Ycoord	YCOORD	NUMERIC(9)	No
25	InterruptsRoad	INTERRUPTSROAD	NUMERIC(1)	Yes

Sort	Logical name	Code	Type	Optional
26	Urban	URBAN	NUMERIC(1)	No

Table 18 Column List Points**2.3.16 Table / export file Roads**

Sort	Logical name	Code	Type	Optional
1	Country ID	CID	NUMERIC(3)	No
2	Table code	TABCD	NUMERIC(2)	No
3	Location code	LCD	NUMERIC(5)	No
4	Type class	CLASS	CHAR(1)	No
5	Type code	TCD	NUMERIC(3)	No
6	Subtype code	STCD	NUMERIC(3)	No
7	Roadnumber	ROADNUMBER	CHAR(10)	Yes
8	Roadname	RNID	NUMERIC	Yes
9	Name1	N1ID	NUMERIC	Yes
10	Name2	N2ID	NUMERIC	Yes
11	Admin area reference	POL_LCD	NUMERIC(5)	Yes
12	Road network level	PES_LEV	NUMERIC(1)	No

Table 19 Column List Roads**2.3.17 Table / export file Seg_has_ERNo**

Sort	Logical name	Code	Type	Optional
1	Country ID	CID	NUMERIC(3)	No
2	Table code	TABCD	NUMERIC(2)	No
3	Location code	LCD	NUMERIC(5)	No
4	European roadnumber	ENO	CHAR(10)	No

Table 20 Column List Seg_has_ERNo

2.3.18 Table / export file Segments

The sorting order of all rows in the export file SEGMENTS.DAT is:

Sort	Description	Type code	Subtype code
1 st	Order 1 Segment	3	x
2 nd	Order 2 Segment	4	x

Table 21 Segments

Sort	Logical name	Code	Type	Optional
1	Country ID	CID	NUMERIC(3)	No
2	Table code	TABCD	NUMERIC(2)	No
3	Location code	LCD	NUMERIC(5)	No
4	Type class	CLASS	CHAR(1)	No
5	Type code	TCD	NUMERIC(3)	No
6	Subtype code	STCD	NUMERIC(3)	No
7	Roadname	RNID	NUMERIC	Yes
8	Name1	N1ID	NUMERIC	No
9	Name2	N2ID	NUMERIC	No
10	Road reference	ROA_LCD	NUMERIC(5)	Yes
11	Order1 segment reference	SEG_LCD	NUMERIC(5)	Yes

Table 22 Column List Segments

2.3.19 Table / export file SOffsets

Sort	Logical name	Code	Type	Optional
1	Country ID	CID	NUMERIC(3)	No
2	Table code	TABCD	NUMERIC(2)	No
3	Location code	LCD	NUMERIC(5)	No
4	Negative offset	NEG_OFF_LCD	NUMERIC(5)	Yes
5	Positive offset	POS_OFF_LCD	NUMERIC(5)	Yes

Table 23 Column List SOffsets

2.3.20 Table / export file Subtypes

Sort	Logical name	Code	Type	Optional
1	Type class	CLASS	CHAR(1)	No
2	Type code	TCD	NUMERIC(3)	No
3	Subtype code	STCD	NUMERIC(3)	No
4	Subtype description	SDESC	CHAR(50)	Yes
5	National subtype code	SNATCODE	CHAR(5)	Yes
6	National subtype description	SNATDESC	CHAR(50)	Yes

Table 24 Column List Subtypes**2.3.21 Table / export file SubtypeTranslations**

Sort	Logical name	Code	Type	Optional
1	Country ID	CID	NUMERIC(3)	No
2	Language ID	LID	NUMERIC(2)	No
3	Type class	CLASS	CHAR(1)	No
4	Type code	TCD	NUMERIC(3)	No
5	Subtype code	STCD	NUMERIC(3)	No
6	Translation	STRANSULATION	CHAR(100)	No

Table 25 Column List SubtypeTranslations**2.3.22 Table / export file Types**

Sort	Logical name	Code	Type	Optional
1	Type class	CLASS	CHAR(1)	No
2	Type code	TCD	NUMERIC(3)	No
3	Type description	TDESC	CHAR(50)	Yes
4	National type code	TNATCD	CHAR(5)	Yes
5	National type description	TNATDESC	CHAR(50)	Yes

Table 26 Column List Types

2.3.23 Table / export file Road Network Level Types

Sort	Logical name	Code	Type	Optional
1	Road network level	PES_LEV	NUMERIC(1)	No
2	Road network level description	PES_LEV_DESC	CHAR(5)	Yes
3	National road network level description	TDESC	CHAR(50)	Yes

Table 27 Column list Road Network Level Types

ANNEX A: DIVISION OF TABLES AND ATTRIBUTES

The following gives an overview of every table and attribute of the PDM, showing from which source it is derived. There are three different sources:

- Location referencing standard: the table or attribute is derived from the standard, indicated with 'Standard'.
- Conceptual Data Model: the table or attribute is derived from the Conceptual Data Model, there is consensus on the use of these tables/attributes within the FORCE-ECORTIS projects, indicated with 'F/E'.
- National: the tables or attribute is nationally defined, indicated with 'N'.

Tables PDM	Derived from
Classes	Standard
Countries	Standard
ERNo_belongs_to_country	F/E
EuroRoadNo	F/E
Intersections	Standard
Languages	F/E
Locationcodes	F/E
LocationDataSets	Standard
Names	F/E
NameTranslations	F/E
OtherAreas	Standard

Tables PDM	Derived from
Poffsets	Standard
Points	Standard
AdministrativeAreas ⁶	Standard
Roads	Standard
Seg_has_ERNo	F/E
Segments	Standard
Soffsets	Standard
Subtypes	Standard
SubtypeTranslation	F/E
Types	Standard
Road network level types	F/E

Annex A Table 1: Division of Tables

⁶ In the Physical and Conceptual data model in stead of 'AdministrativeArea' the term 'PolitalArea' is being used. This correction still has to be made in the Data Models.

Attributes PDM	Origin
Country ID	F/E
Type Code	Standard
Location Code	Standard
Type class	Standard
Table Code	Standard
Subtype Code	Standard
Upward area reference	Standard
Country code	Standard
European roadnumber	F/E
Intersection country ID	F/E
Intersection table code	Standard
Intersection location code	Standard
Language ID	F/E
Language	F/E
Allocated	F/E
Version	F/E
VersionDescription	F/E
Translation	F/E
Admin area reference	Standard
Negative offset	Standard
Positive offset	Standard
JunctionNumber	Standard
Roadname	Standard

Attributes PDM	Origin
Other area reference	Standard
Segment reference	Standard
Road reference	Standard
InPos	Standard
InNeg	Standard
OutPos	Standard
OutNeg	Standard
PresentPos	Standard
PresentNeg	Standard
DiversionPos	F/E
DiversionNeg	F/E
Xcoord	F/E
Ycoord	F/E
InterruptsRoad	F/E
Urban	Standard
Roadnumber	Standard
National subtype code	National
National subtype description	National
Type description	Standard
Road network level	Standard
Road network level description	Standard
National road network level description	Standard

Annex A Table 2: Division of attributes

ANNEX B: IMPLEMENTATION OF ALERT SERVICE LEVEL IN A LOCATION DATABASE

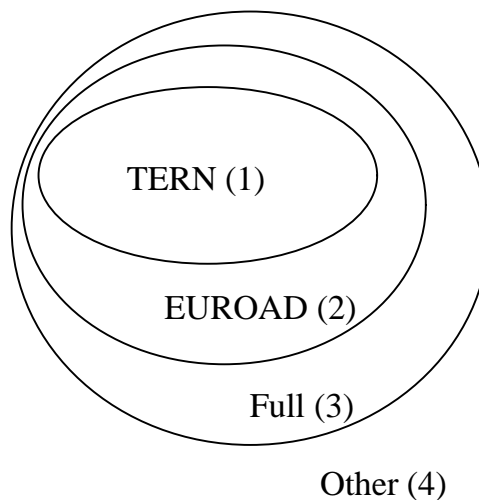
GENERAL PRINCIPLE

Within Force-ECORTIS, the decision has been taken to define levels in the Alert-C location database to make it possible to derive subsets of the entire location database.

Levels in the location database will be:

- 1) Locations that belong to the TERN (politically defined / mandatory).
- 2) Locations that belong to the European Road Network.
- 3) Locations that belong to the full national location database.
- 4) Other locations.

The relation between the levels is:



All individual locations in the location database will get a marker that shows to what level the location involved belongs. The markers can be used to derive the desired subset of the complete database:

Subset	Explanation
TERN	Locations marked 1
European Road Network	Locations marked 1 plus locations marked 2
Full national database	Locations marked 1 plus locations marked 2 plus locations marked 3
Entire database	All locations

HOW TO SELECT LOCATIONS PER LEVEL?

In the WA200 meeting on 22-10-1998, the decision was taken to select on road level:

Selection per road:

Rules:

- Entire roads are marked to belong to a specific level (TERN, EUROAD, full, other).
- First order segments get the same level as the road to which they belong.
- Second order segments get the same level as the first order segment to which they belong
- Points locations get the same level as the road or segment to which they belong.
- Per subset (from smallest to entire location database), all area locations are marked to identify them as either linear and/or point locations

Additional area locations (from lowest level to highest level) are marked to remove any inconsistencies in the area references.

ANNEX C: QUALITY CHECK LIST

Introduction

The quality check list gives an overview, grouped by the different parts of the exchange format (standard, FORCE-ECORTIS and national), of which quality rules should be included in the location data set. Every organisation which makes use of the exchange format should check the quality rules of the quality check list. When exporting a location data set to the exchange format and also when importing the data from the exchange format, the quality rules should be checked.

Quality check list, main constraints resulting from the Location Referencing Standard

For a complete overview of all the constraints resulting from the Location Referencing Rules standard, consult the Location Referencing Rules standard.

- All locations have an unique location code, in the range from 1 to 63.487.
- All locations have one location type and (if exists) one location subtype.
- The location types 'Road', 'Ring road' or 'n-th order segments' must have either a 'road name' or 'road/junction number' as value.
- All locations (except 'Continent' and 'segments of any order') have an upward area reference (if it exists) that is existing actually in the list.
- All point locations have an upward linear reference to the lowest level linear that is existing actually in the list.
- All 'nth- order segments' have an upward linear reference either to a higher order segment or to a road/ring-road
- All segment locations have a negative (resp. positive) offset to the preceding (resp. subsequent) segment which belongs to the same road/ring-road.
- All point locations have a negative (resp. positive) offset to the preceding (resp. subsequent) point which belongs to the same road/ring-road.
- When several point locations belong to the same junction, they shall be linked together anti-clockwise in a circular way by means of the 'intersection code'.
- A second order segment must be completely included in a first order segment.
- The value of the point attributes 'urban', 'In+', 'Out+', 'In-', 'Out-', 'Present+' and 'Present-' must be either '0' or '1'.
- All location tables belong to the Country Code in the range 1-16 mentioned in EN50067 of CENELEC. Within any particular country code, each location table

has one, unique, number in the range 1-63.

- Names of locations shall normally be given in the language of the locality.
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Quality check list, main constraints resulting from the FORCE-ECORTIS projects

For a complete overview of all the constraints resulting from the FORCE-ECORTIS projects, consult the Recommended Location Data Model which also contains the constraints from the Location Referencing Rules standard. The main constraints resulting from the FORCE-ECORTIS projects are:

- XY co-ordinates are of WGS84 Ellipsoid format and the two co-ordinates must be both either NULL or NOT NULL.
- For a point location the 'upward area reference' must refer either to the lowest order administrative area or not administrative area ("other area").
- The upward area reference of an administrative area shall refer directly to the higher order administrative area.
- Point extra attributes must be coded completely or are completely NULL.
- For roads 'first name' and 'second name' must be either both filled in or both left void.
- For urban streets 'road name' must be filled in.
- For each segment location at least one of both items 'negative offset' or 'positive offset' shall be NOT NULL.
- For each point location at least one of both items 'negative offset' or 'positive offset' shall be NOT NULL
-

Quality check list for the national part of the exchange format

A data supplier is allowed to add extra quality rules to the preceding ones. But all the national rules must comply with those of the pre-standard and with those of contained in the FORCE-ECORTIS data-model. The national rules can only be supplemental or more restricting rules.