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Intelligent transport systems — Geographic Data Files (GDF) GDF5.1 —

Part 2: Map data used in automated driving systems, Cooperative ITS, and multi-modal transport

Systèmes de transport intelligents — Fichiers de données géographiques (GDF) GDF5.1 —

Partie 2: Partie 2 : Données cartographiques utilisées dans les systèmes de conduite automatisée, les ITS coopératifs et le transport multimodal

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Contents

Page

Foreword ... **xi**
Introduction ... **xii**
1 Scope ... **1**
2 Normative references ... **1**
3 Terms and definitions ... **1**
4 Abbreviated terms, symbols and notation elements ... **2**
4.1 Abbreviated terms ... 2
4.2 Symbols and notation elements ... 3
5 Overall conceptual data model ... **3**
5.1 Conceptual data models in GDF ... 3
5.2 General data model of GDF ... 4
5.2.1 Feature model ... 4
5.2.2 Belt concept ... 6
5.2.3 Graph topology ... 7
5.2.4 Levels in GDF ... 13
5.2.5 Height modelling and time modelling ... 15
5.3 The Attribute model ... 16
5.4 The Relationship model ... 18
5.5 Linear referencing ... 19
5.6 The Feature representation scheme ... 19
5.7 Time modelling ... 20
5.8 Data management: organization of Feature data into Layers and Sections ... 21
6 Feature Catalogue ... **24**
6.1 Generic specifications ... 24
6.1.1 Features and Feature Themes ... 24
6.1.2 Feature Class Codes ... 25
6.1.3 Simple and Complex Features ... 25
6.1.4 Feature hierarchy ... 25
6.1.5 Data model for the Feature Catalogue ... 25
6.1.6 Shareable Feature ... 26
6.2 Abstract Belt Feature ... 30
6.2.1 General ... 30
6.2.2 RoadBelt ... 33
6.2.3 RoadBeltElement ... 35
6.2.4 IntersectionBelt ... 36
6.2.5 RoundaboutBelt ... 38
6.2.6 LaneBeltElement ... 38
6.2.7 LaneBeltJoint ... 41
6.2.8 PotentialEvadingArea ... 42
6.2.9 BeltRepresentativeLine (BRL) ... 43
6.2.10 IntersectionConnectionPoint (ICP) ... 45
6.2.11 LaneConnectionPoint (LCP) ... 45
6.2.12 BeltOptionalPoint (BOP) ... 45
6.2.13 BeltPartitionLine ... 46
6.3 Road Furniture Feature ... 47
6.3.1 General overview ... 47
6.3.2 Road Structural Component (RSC) ... 47
6.3.3 Road Marking-2 ... 48
6.3.4 Safety Fixture ... 50
6.4 Public Transport Feature ... 51
6.4.1 General overview ... 51
6.4.2 Public Transport Feature ... 53

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6.4.3 Public Transport Point 54
6.4.4 Public Transport Point Sequence 54
6.4.5 Public Transport Point Sequence Part 55
6.4.6 Public Transport Point Set 55
6.4.7 Public Transport Point Set Part 56
6.4.8 Public Transport Representative Point 56
6.4.9 Public Transport Zone 56

7 Attribute Catalogue 56
7.1 Generic specifications 56
7.1.1 Attribute Types 56
7.1.2 Attribute Values 57
7.1.3 Attribute Type Name 57
7.1.4 Simple Attributes, Composite Attributes and Sub-Attributes 57
7.1.5 Names in combination with a Language Code 58
7.1.6 Default Attribute Values 58
7.1.7 Default Attribute units for measures 58
7.1.8 Attribute Type Codes 58
7.1.9 User Defined Attributes 58
7.1.10 Attribute mapping to Feature Themes and Relationships 59
7.1.11 The data model for Attributes 64
7.2 Attributes 70
7.2.1 Alignment Portion Type 70
7.2.2 Applied Direction 71
7.2.3 Applied Feature Type 71
7.2.4 Applied Side Line 71
7.2.5 Approximated Curve 71
7.2.6 Belt Overlapping 72
7.2.7 Belt Representative Line Segment Characteristic 72
7.2.8 Road Belt Element Segment Characteristic 72
7.2.9 Circular Curve Measure 73
7.2.10 Clothoid Curve Measure 73
7.2.11 Connection Type 73
7.2.12 Context Of Point 73
7.2.13 Context Of Point Set 74
7.2.14 Context Of Point Sequence 74
7.2.15 Cross-section 74
7.2.16 Design Reference 74
7.2.17 End Elevation Measure 75
7.2.18 Existence Position 75
7.2.19 Flexure Angle 75
7.2.20 Flexure Point 75
7.2.21 Gradient 76
7.2.22 Heading Angle 76
7.2.23 Height Block Characteristics 76
7.2.24 Height Block Information 77
7.2.25 Hierarchical Info 77
7.2.26 Identifier Number 77
7.2.27 Include Bicycle Lane 77
7.2.28 Intersection Category 78
7.2.29 Intersection Type 78
7.2.30 Lane Block ID 78
7.2.31 Lane Block Info 78
7.2.32 Lane Transfer Characteristic 79
7.2.33 Lane Transfer Characteristic Type 79
7.2.34 Lane Number 80
7.2.35 Lane Number Of Referencing 80
7.2.36 Lane Belt Element Segment Characteristic 80
7.2.37 Lane Width Change 81

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7.2.38 Line Code ... 81
7.2.39 Line Name ... 82
7.2.40 Line Segment Information ... 82
7.2.41 Linear Portion Measure ... 82
7.2.42 Marking Type ... 82
7.2.43 Maximum Tolerance ... 83
7.2.44 Minimum Tolerance ... 83
7.2.45 Number Of Lanes in Lane Section ... 83
7.2.46 Number Of Lane Section Block Info ... 83
7.2.47 Number Of Slope Measure ... 84
7.2.48 PEA Limitation ... 84
7.2.49 Public Transport Operator ... 84
7.2.50 Road Alignment ... 84
7.2.51 Road-facing Side ... 85
7.2.52 Road Marking Common Attribute ... 85
7.2.53 Road Marking Individual Attribute ... 85
7.2.54 Road Marking Individual Characteristics ... 86
7.2.55 Road Structural Component Common Attribute ... 86
7.2.56 Road Structural Component Individual Attribute ... 86
7.2.57 Road Structural Component Individual Characteristics ... 86
7.2.58 Safety Fixture Common Attribute ... 87
7.2.59 Safety Fixture Individual Attribute ... 87
7.2.60 Safety Fixture Individual Characteristics ... 87
7.2.61 Segment Direction ... 87
7.2.62 Slope Measure ... 88
7.2.63 Sub Feature Class Code (Road Furniture) ... 88
7.2.64 Start Elevation Measure ... 88
7.2.65 Traffic Restriction ... 88
7.2.66 Traffic Restriction Item ... 89
7.2.67 Traffic Restriction Type Code ... 89
7.2.68 Traffic Restriction Value ... 89
7.2.69 Transport Mode ... 89
7.2.70 Traverse Point Location ... 90
7.2.71 Transverse Slope ... 90
7.2.72 Type Of BeltRepresentativeLine ... 91
7.2.73 Type Of Public Transport Point ... 91
7.2.74 Type Of Public Transport Point Sequence ... 92
7.2.75 Type Of Public Transport Point Set ... 92
7.2.76 Without Road shoulder ... 93
7.2.77 Zone Description ... 93
7.2.78 Zone Name ... 93

8 Relationship Catalogue ... 93
8.1 Generic specifications ... 93
8.1.1 Feature and their Relationships ... 93
8.1.2 Relationship Types ... 108
8.1.3 Relationship Type Codes ... 108
8.1.4 Arity of a Relationship ... 109
8.1.5 Roles and partners of a Relationship ... 109
8.1.6 Homogeneous Relationships and their constraints ... 109
8.2 Relationship Types ... 110
8.2.1 Belt Representative Line Associated With Intersection Connection Point ... 110
8.2.2 Belt Representative Line Associated With Lane Connection Point ... 111
8.2.3 Belt Representative Line Characteristic ... 111
8.2.4 Road Belt Element Associated With Intersection Belt ... 112
8.2.5 Road Belt Element Ownership Of Belt Representative Line ... 112
8.2.6 Road Belt Element Segment Characteristic ... 113
8.2.7 Intersection Belt Ownership Of Belt Representative Line ... 114
8.2.8 Lane Belt Element Associated With Lane Belt Joint ... 114

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8.2.9 Lane Belt Element Ownership Of Belt Representative Line 115
8.2.10 Lane Belt Element Segment Characteristic 115
8.2.11 Lane Belt Joint Associated With Intersection Belt 116
8.2.12 Lane Section 116
8.2.13 Multi Public Transport Point Assignment 117
8.2.14 PEA Ownership Of Belt Representative Line 118
8.2.15 Public Transport Point In Correspondence With Road Element 118
8.2.16 Road Belt Associated With Intersection Belt 119
8.2.17 Road Belt Ownership Of Belt Representative Line 119
8.2.18 Road Furniture Along Road Belt Element 120
8.2.19 Road Furniture Along Belt Representative Line 121
8.2.20 Road Furniture Along Intersection Belt 121
8.2.21 Road Furniture Along Lane Belt Element 122
8.2.22 Road Marking Along Road Belt Element 123
8.2.23 Road Marking Along Belt Representative Line 124
8.2.24 Road Marking Along Intersection Belt 125
8.2.25 Road Marking Along Lane Belt Element 125
8.2.26 Segmented Edge Of PEA Belt 126
8.2.27 Shareable Coverage Area Linked To Shareable Point 127
8.2.28 Shareable Coverage Area Linked To Shareable Point Sequence 127
8.2.29 Shareable Coverage Area Linked To Shareable Point Set 128
8.2.30 Shareable Representative Point Linked To Shareable Point Sequence 128
8.2.31 Shareable Representative Point Linked To Shareable Point Set 129
8.2.32 Structure Along Road Belt Element 129
8.2.33 Structure Along Belt Representative Line 130

9 Feature representation rules 131
9.1 General 131
9.2 Generic specifications 131
9.2.1 Overview 131
9.2.2 Feature Categories 131
9.2.3 Types of topology 132
9.2.4 Levels of representation 132
9.2.5 Layers on level 0 134
9.2.6 Rules for level 0 representation 134
9.3 Abstract Belt Feature 134
9.3.1 Introduction 134
9.3.2 Level 2 representation 134
9.3.3 Level 1 representation 134
9.3.4 Level 0 representation 137
9.4 Road Furniture 137
9.4.1 Level 2 representation 137
9.4.2 Level 1 representation 137
9.4.3 Level 0 representation 137
9.5 Shareable Feature 137
9.5.1 Level 2 representation 137
9.5.2 Level 1 representation 138
9.5.3 Level 0 representation 138
9.6 Public Transport Feature 138
9.6.1 Level 2 representation 138
9.6.2 Level 1 representation 138
9.6.3 Level 0 representation 138

10 Metadata Catalogue 138

11 Logical Data Structures 138
11.1 Introduction 138
11.1.1 Data description language: ESN 138
11.1.2 Sets, elements and ranges 138
11.1.3 Summary of the syntax notation 138

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11.1.4 Useful consequences of the syntax notation 139
11.1.5 Diagrammatic overview of the overall structure 139
11.2 Logical GDF Album 140
11.3 Datasets 141
11.4 Layers 141
11.5 Sections 141
11.5.1 Overview 141
11.5.2 SECTION 141
11.5.3 Section Metadata 141
11.5.4 Section Data 141
11.6 Time Domain Syntax 157
11.7 Update Information 157
11.7.1 Overview 157
11.7.2 UPDATE INFORMATION 157
11.7.3 GEO TOPO UPDATE INFORMATION 157
11.7.4 OBJECT UPDATE INFORMATION 157
11.7.5 Basic Data Types used by Update Information 157
11.8 Common Data Types 158
11.8.1 Overview 158
11.8.2 Pre-defined code lists and value lists 158
11.8.3 Geodeticals 158
11.8.4 Units & measures 158
11.8.5 Coordinates 158
11.8.6 Geopraphics 158
11.8.7 Identifier types 158
11.8.8 Basic types 164

12 Media Record Specifications 164
12.1 General specifications 164
12.1.1 Introduction 164
12.1.2 Partitioning 164
12.1.3 Logical Record 164
12.1.4 Media Record 164
12.1.5 Continuation Record 164
12.1.6 Null Record 164
12.1.7 Fields of variable and fixed length 164
12.1.8 Repeating Fields 164
12.1.9 Repeating Field Groups 165
12.1.10 Nesting Of Repeating Fields 165
12.1.11 Packing 165
12.1.12 Data Types 165
12.1.13 Character sets 165
12.1.14 Justification 165
12.1.15 Order of Records 165
12.1.16 Order of subrecords 165
12.1.17 Links between data records 166
12.2 Field specifications 173
12.2.1 Field Name 173
12.2.2 Record Control Fields 173
12.2.3 Common fields 177
12.2.4 Fields in Global Records 180
12.2.5 Fields in Data Records 180
12.2.6 Fields in Update Information Records 182
12.2.7 Fields Catalogue 183
12.3 Additional Constraints for Topological Features 197
12.3.1 Order of multiple Coordinate tuples in Coordinate Records 197
12.3.2 Order of Edges in Line Features, Belt Features, Area Features and Faces 198
12.3.3 Order of Features in Relationship Records 198
12.3.4 Order of Features in Relationship Records 198

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12.4 Additional Constraints for Non-Explicit Topological Features: Order of Coordinate triplets in Feature Records 198
12.5 Mandatory Records 198
12.6 Record Format Specifications: Global Records 198
12.6.1 Album Header Record [ALHDREC] 198
12.6.2 Dataset Header Record [DSHDREC] 198
12.6.3 Field Definition Record [FIELDEFREC] 198
12.6.4 Record Definition Record [RECDEFREC] 198
12.6.5 Feature Definition Record [FEATDEFREC] 199
12.6.6 Attribute Definition Record [ATDEFREC] 199
12.6.7 Attribute Value Definition Record [ATTVALREC] 199
12.6.8 Default Attribute Record [DATTVALREC] 199
12.6.9 Relationship Definition Record [RELDEFREC] 199
12.6.10 Geopolitical Structure Definition Record [GPLSTRDREC] 199
12.6.11 Geopolitical Structure Component Definition Record [GPLCOMDREC] 199
12.6.12 Spatial Domain Record [SPADOREC] 199
12.6.13 Directory Record [DIREC] 199
12.6.14 Abbreviation Record [ABBRREC] 199
12.6.15 Network Specification Record [NWSPECSREC] 199
12.6.16 Source Record [SRCEREC] 199
12.6.17 Geodetical Parameter Records 201
12.6.18 Layer Header Record [LAYHREC] 201
12.6.19 Section Header Record [SECHREC] 201
12.6.20 Comment Record [COMMENTREC] 201
12.6.21 Volume Termination Record [VOLTERMREC] 201
12.7 Record Format Specifications: Data Records 201
12.7.1 2D Coordinate Record [XYREC] 201
12.7.2 3D Coordinate Record [XYZREC] 202
12.7.3 Node Record [NODEREC] 202
12.7.4 Edge Record [EDGEREC] 202
12.7.5 Face Record [FACEREC] 202
12.7.6 Point Feature Record (Explicit Point Topology sub-record) [POFEREC.01] 202
12.7.7 Point Feature Record (Non-explicit Point Topology sub-record) [POFEREC.03] 202
12.7.8 Line Feature Record (Explicit Line Topology sub-record) [LIFEREC.01] 202
12.7.9 Line Feature Record (Non-Explicit Line Topology sub-record) [LIFEREC.03] 202
12.7.10 Belt Feature Record (Full Rendering Belt Topology sub-record) [BEFEREC.01] 202
12.7.11 Belt Feature (Connectivity Rendering Belt Topology sub-record) [BEFEREC.02] 203
12.7.12 Belt Feature (Non-explicit Belt Topology sub-record) [BEFEREC.03] 205

13 XML schema specifications 207
13.1 Introduction 207
13.1.1 Schema design principles 208
13.2 Data content 208
13.3 GDF Part2 XML schema 208
13.4 Schema GDF_Main_Part2.xsd 208
13.4.1 Header 208
13.4.2 GDF Main Part2 208
13.4.3 Full Topology Belt Feature part2 210
13.4.4 Connectivity Topology Belt Feature part2 211
13.4.5 Non-explicit Topology Belt Feature part2 212
13.4.6 Explicit Point Feature part2 213
13.4.7 Non-explicit Point Feature part2 214
13.4.8 Explicit Line Feature part2 214
13.4.9 Non-explicit Line Feature part2 215
13.4.10 Full Topology Area Feature part2 216
13.4.11 Connectivity Topology Area Feature part2 216

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13.4.12 Non-explicit Topology Area Feature part2 216
13.4.13 Explicit Topology Complex Feature part2 217
13.4.14 Non-explicit Topology Complex Feature part2 218
13.4.15 Attribute part2 219
13.4.16 Relationship part2 219
13.5 Schema GDF_data_dict_Part2.xsd 220
13.5.1 Header 220
13.5.2 Attribute Type code part2 220
13.5.3 Belt element pointer 220
13.5.4 Belt element type 220
13.5.5 Belt Feature ID 220
13.5.6 Defined Attribute Type code D part2 221
13.5.7 Defined Attribute Type code D Name part2 221
13.5.8 Defined Attribute Type code D Value part2 222
13.5.9 Defined Attribute Type code Data Type Code part2 223
13.5.10 Defined Attribute Type code Definition part2 224
13.5.11 Defined Attribute Type code Definition Reference part2 225
13.5.12 Defined Attribute Code List Part2 226
13.5.13 Defined Feature Category Name part2 234
13.5.14 Defined Feature Category Value part2 234
13.5.15 Defined Feature Code part2 234
13.5.16 Defined Feature Code Name part2 234
13.5.17 Defined Feature Code Value part2 235
13.5.18 Feature Category part2 235
13.5.19 Feature Code part2 235
13.5.20 Record Type part2 236
13.5.21 Record Type Name part2 236
13.5.22 Record Type Value part2 236
13.5.23 Record Type part2 (simple) 236
13.5.24 Record Subtype part2 (simple) 236
13.5.25 Relationship Code part2 236
13.5.26 Relationship Code D part2 236
13.5.27 Relationship Code Name part2 237
13.5.28 Relationship Code Value part2 237
13.5.29 Relationship Code Roles Definition part2 238
13.5.30 Relationship Code Roles Definition part2 Declination 238
13.5.31 Relationship Feature part2 239
13.5.32 Relationship Role Code Lists part2 239
13.6 Schema GDF_userDefined_Part2.xsd 254
13.6.1 Header 254
13.6.2 Attribute Descriptor part2 254
13.6.3 Attribute Content part2 255
13.6.4 User-defined Attribute Type code part2 255
13.6.5 User-defined Attribute Type code Name part2 255
13.6.6 User-defined Attribute Type code Value part2 255
13.6.7 User-defined Feature Codes part2 255
13.6.8 User-defined Feature Code Name part2 255
13.6.9 User-defined Feature Code Value part2 255
13.6.10 User-defined Relationship Code part2 255
13.6.11 User-defined Relationship Code Name part2 256
13.6.12 User-defined Relationship Code Value part2 256

Annex A (normative) **Semantic codes for GDF5.1 Part 2** **257**

Annex B (normative) **Syntax for Time Domains of GDF5.1 Part 2** **263**

Annex C (normative) **Sectioning GDF Datasets** **287**

Annex D (normative) **Definition and description of the subtypes of Road Furniture** **290**

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Annex E (normative) **Definition and description of the subtypes of Public Transport Point Features** **307**

Annex F (normative) **XML schema specification file for GDF5.1 Part1 and Part2** **317**

Annex G (informative) **Examples of XML representation of GDF5.1 Part 2 (this document) in Japan** **544**

Annex H (informative) **UML notation** **580**

Annex I (informative) **Examples of BeltProperty concepts** **586**

Bibliography **589**

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 204, *Intelligent transport systems.*

This first edition cancels and replaces ISO 14825:2011, which has been technically revised.

The main changes compared to the previous edition are as follows:

— this document is newly dedicated to automated driving systems, Cooperative ITS and multi-modal transport.

A list of all parts in the ISO 20524 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

GDF5.0 (ISO 14825) defines the map database exchange format for ITS. Its primary application is in car navigation systems and it assumes the provision of the map database by a single provider. However, ITS applications have been expanding to Cooperative ITS and automated driving systems through the recent progress of technology. In addition, there is demand for capabilities such as the accommodation of map databases from multiple providers and cooperation with externally connecting databases, such as Transmodel (EN 12896-1 and EN 12896-2).

Given this environment, ISO 14296 was published in February 2016 as an extension of map database specifications for applications of Cooperative ITS. However, GDF5.0 (ISO 14825) does not define some elements used in this document and automated driving systems require additional elements based on their unique application requirements. Furthermore, because GDF5.0 (ISO 14825) does not define a method to connect with external databases, the formulation of GDF5.1 (the ISO 20524 series) has become indispensable.

On revising GDF, the changes of conventional GDF are applied in GDF5.1 Part 1 (ISO 20524-1). The addition of a concept, a data model and specifications to satisfy new requirements applies to GDF5.1 Part 2 (this document). The new GDF document (the ISO 20524 series) is accordingly composed of two separate volumes: Part 1(ISO 20524-1) and Part 2 (this document).

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Intelligent transport systems — Geographic Data Files (GDF) GDF5.1 —

Part 2: Map data used in automated driving systems, Cooperative ITS, and multi-modal transport

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1 Scope

This document specifies the conceptual and logical data model in addition to the physical encoding formats for geographic databases for Intelligent Transport Systems (ITS) applications and services. This document includes a specification of potential contents of such databases (data dictionaries for Features, Attributes and Relationships), a specification of how these contents are to be represented, and how relevant information about the database itself can be specified (metadata). This document further defines map data used in automated driving systems, Cooperative-ITS, and Multi-modal transport.

The focus of this document is firstly on emerging ITS applications and services, such as Cooperative-ITS and automated driving systems, and it emphasizes road, lane and relevant information on road and lane. However, ITS applications and services also require other information in addition to road and road-related information, which are provided as external databases to connect with GDF and to complement each other. Highly defined public transport databases, for instance, are indispensable in multi-modal transport applications and services in particular. Thus, this document focuses secondly on an expansion of the specification to connect with externally existing databases. It is particularly designed to connect a Transmodel (EN 12896-1 and EN 12896-2) conformant public transport database.

Typical ITS applications and services targeted by this document are in-vehicle or portable navigation systems, traffic management centres, or services linked with road management systems, including public transport systems.

The conceptual data model specified here has a broader focus than ITS applications and services. It is application independent, allowing for future harmonization of this model with other geographic database standards.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 20524-1:2020, *Intelligent Transport Systems — Geographic Data Files (GDF) GDF5.1 — Part 1: Application independent map data shared between multiple sources*

ISO 639-2, *Codes for the representation of names of languages — Part 2: Alpha-3 code*

NOTE Codes are available at http://www.loc.gov/standards/iso639-2/.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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