

DIN EN ISO 19132:2009-01 (E)

Geographic information_ - Location-based services_ - Reference model
(ISO_19132:2007); English version EN_ISO_19132:2008

Contents

	Page
Foreword.....	6
Introduction	7
1 Scope	9
2 Conformance.....	10
3 Normative references	10
4 Terms and definitions.....	10
5 Symbols and abbreviated terms	19
5.1 Acronyms	19
5.2 UML Notation.....	21
5.3 Taxonomy of data and services — Mapping to RDF	21
6 ODP Viewpoints used.....	23
6.1 Enterprise specification	23
6.2 Information specification	23
6.3 Computational specification.....	23
7 Participation Model.....	23
7.1 Model overview – Package: ISO 19132 (this International Standard).....	23
7.2 Package – LBS Participants	25
7.2.1 Scenarios and semantics.....	25
7.2.2 Type – LBS_Participant.....	27
7.2.3 Type – LBS_User	28
7.2.4 Type – LBS_ApplicationProvider	31
7.2.5 Type – LBS_DataProvider	32
7.2.6 Type – LBS_FeatureDataProvider.....	32
7.2.7 Type – LBS_ContentProvider	32
7.2.8 Type – LBS_SpatialContentProvider	32
7.2.9 Type – LBS_ServiceProvider.....	32
7.2.10 Type – LBS_ServiceBroker.....	33
7.2.11 Type – LBS_MobileDevice	33
7.2.12 Type – LBS_DataBroker – Class semantics	34
8 Service model.....	34
8.1 Package – LBS_Services	34
8.1.1 Package structure.....	34
8.1.2 Service taxonomy	35
8.2 Package – Basic Services	35
8.2.1 Package structure.....	35
8.2.2 Type – LBS_Tracking	36
8.2.3 Type – LBS_Routing.....	37
8.2.4 Type – LBS_Navigation.....	38
8.3 Package – Geomatics services	39
8.3.1 Package structure.....	39
8.3.2 Type – LBS_Location Transformation.....	40
8.3.3 Type – LBS_AddressParsing.....	42
8.3.4 Type – LBS_Geoparsing	42
8.3.5 Type – LBS_Gazetteer.....	43
8.3.6 Type – LBS_MapService	44
8.4 Package – Information Services.....	45
8.4.1 Package structure.....	45
8.4.2 Type – LBS_DataService.....	45

	Page
8.4.3	Type – LBS_NetworkDataService – semantics 47
8.4.4	Type – LBS_EventSubscription..... 48
8.4.5	Type – LBS_MovingObjectManagement..... 49
8.5	Package – System management..... 49
8.5.1	Managing users and groups 49
8.5.2	Type – LBS_UserProfileService..... 49
8.5.3	Type – LBS_LocationTriggerControl 50
8.6	Package – Digital rights management 50
8.6.1	Digital rights management 50
8.6.2	Type – LBS_Resource 51
8.6.3	Type – LBS_License 51
8.6.4	Type – LBS_Right 51
8.6.5	Type – LBS_RightsCondition..... 52
9	Message Data Model..... 52
9.1	Semantics 52
9.2	Package – Message Data Types 52
9.2.1	Package structure 52
9.2.2	Type – LanguageSpecificCharacterString..... 53
9.2.3	Type – LBS_AccessInfo 54
9.2.4	Type – LBS_Accuracy – Class semantics 55
9.2.5	Type – LBS_Address 55
9.2.6	Type – LBS_CostFunction 55
9.2.7	Type – LBS_Data..... 56
9.2.8	Type – LBS_DataSource..... 56
9.2.9	Type – LBS_DisplayParameters 57
9.2.10	Type – LBS_EventInfo 58
9.2.11	Type – LBS_Instruction 58
9.2.12	Type – LBS_Location..... 59
9.2.13	Type – LBS_Maneuver..... 59
9.2.14	Type – LBS_MapFormat 60
9.2.15	Type – LBS_Notification..... 60
9.2.16	Type – LBS_Position 61
9.2.17	Type – LBS_Preference 61
9.2.18	Type – LBS_Route 62
9.2.19	Type – LBS_RouteConstraint 63
9.2.20	Type – LBS_RouteCriteria..... 63
9.2.21	Type – LBS_SecurityCertificate..... 64
9.2.22	Type – LBS_SymbolSet 65
9.2.23	Type – LBS_TrackingLocation..... 65
9.2.24	Type – LBS_Trigger 66
9.2.25	Type – LBS_UserID 66
9.2.26	Union – LBS_FeatureData 67
9.2.27	Union – LBS_GeometryChoice 67
9.2.28	Union – LBS_NamedLocation..... 68
9.2.29	Union – LBS_TrackTrigger..... 69
Annex A (normative) Abstract test suite 70	
Annex B (informative) Architecture 74	
Annex C (informative) Scenarios 77	
Annex D (informative) Standards development in LBS 83	
Annex E (informative) Crosswalk between common terminology in ISO/TC 211 and ISO/TC 204 85	
Annex F (informative) Use cases for location-based services 95	
Bibliography 99	

Figures

	Page
Figure 1 — Relation between LBS and GIS.....	7
Figure 2 — Simplified navigation service represented as an RDF graph	22
Figure 3 — Example of composition of services.....	22
Figure 4 — Overview of UML package structure.....	24
Figure 5 — Package dependencies to other ISO standards.....	25
Figure 6 — Roles of the Enterprise view	26
Figure 7 — Enterprise view communication channels as associations	27
Figure 8 — License associations for LBS_Participant	27
Figure 9 — LBS_User associations	28
Figure 10 — LBS_ApplicationProvider associations	32
Figure 11 — Service provider associations	33
Figure 12 — Service broker associations	33
Figure 13 — Mobile device associations.....	34
Figure 14 — Subpackages of LBS_Services.....	35
Figure 15 — Basic services	36
Figure 16 — Context Diagram: LBS_Tracking	37
Figure 17 — Context Diagram: LBS_Routing	38
Figure 18 — Context Diagram: LBS_Navigation	39
Figure 19 — Geomatics services	40
Figure 20 — Context Diagram: LBS_LocationTransformation	41
Figure 21 — Context Diagram: LBS_AddressParsing	42
Figure 22 — Context Diagram: LBS_Geoparsing.....	42
Figure 23 — Context Diagram: LBS_Gazetteer	43
Figure 24 — Context Diagram: LBS_MapService.....	45
Figure 25 — Information services	46
Figure 26 — Context Diagram: LBS_DataService	46
Figure 27 — Context Diagram: LBS_NetworkDataService	47
Figure 28 — Context Diagram: LBS_EventSubscription	48
Figure 29 — Context Diagram: LBS_MovingObjectManagement.....	49
Figure 30 — Context Diagram: LBS_UserProfileService.....	49
Figure 31 — Context Diagram: LBS_LocationTriggerControl.....	50
Figure 32 — Digital rights management types	51
Figure 33 — Message data types	53
Figure 34 — Context diagram: LanguageSpecificCharacterString	54
Figure 35 — Context diagram: LBS_AccessInfo	54
Figure 36 — Context Diagram: LBS_Accuracy.....	55
Figure 37 — Context Diagram: LBS_Address.....	55
Figure 38 — Context Diagram: LBS_CostFunction.....	55

	Page
Figure 39 — Context Diagram: LBS_Data	56
Figure 40 — Context Diagram: LBS_DataSource	56
Figure 41 — Context Diagram: LBS_DisplayParameters	57
Figure 42 — Context Diagram: LBS_EventInfo	57
Figure 43 — Context Diagram: LBS_Instruction	59
Figure 44 — Context Diagram: LBS_Location	59
Figure 45 — Context Diagram: LBS_Maneuver	60
Figure 46 — Context Diagram: LBS_MapFormat	60
Figure 47 — Context Diagram: LBS_Notification	61
Figure 48 — Context Diagram: LBS_Position	61
Figure 49 — Context Diagram: LBS_Preference	62
Figure 50 — Context Diagram: LBS_Route	62
Figure 51 — Context Diagram: LBS_RouteConstraint	63
Figure 52 — Context Diagram: LBS_RouteCriteria	64
Figure 53 — Context Diagram: LBS_SecurityCertificate	65
Figure 54 — Context Diagram: LBS_SymbolSet	65
Figure 55 — Context Diagram: LBS_TrackingLocation	66
Figure 56 — Context Diagram: LBS_Trigger	66
Figure 57 — Context Diagram: LBS_UserID	67
Figure 58 — Context Diagram: LBS_FeatureData	67
Figure 59 — Context Diagram: LBS_GeometryChoice	68
Figure 60 — Context Diagram: LBS_NamedLocation	69
Figure 61 — Context Diagram: LBS_TrackTrigger	69
Figure B.1 — Conceptual architecture equating mobile and non-mobile services	74
Figure B.2 — LBS interface schema and tentative standardization items	75

Tables

Table B.1 — Elementary components of LBS	75
Table D.1 — Standards Development Organizations in LBS	83
Table E.1 — Data model terminology	87
Table E.2 — Mathematical terminology	88
Table E.3 — Geodetic terminology	89
Table E.4 — Geometric terminology	91
Table E.5 — World model (feature) terminology	92
Table E.6 — Functional definitions	93