

ISO 19136:2007-09 (E)

Geographic information - Geography Markup Language (GML)

Contents		Page
Foreword		vi
Introduction		vii
1	Scope	1
2	Conformance	1
2.1	Conformance requirements	1
2.2	Conformance classes related to GML application schemas	2
2.3	Conformance classes related to GML profiles	2
2.4	Conformance classes related to GML documents	4
2.5	Conformance classes related to software implementations	4
3	Normative references	4
4	Terms and symbols	5
4.1	Terms and definitions	5
4.2	Symbols and abbreviated terms	12
5	Conventions	13
5.1	XML namespaces	13
5.2	Versioning	14
5.3	Deprecated parts of previous versions of GML	14
5.4	UML notation	14
5.5	XML Schema	16
6	Overview of the GML schema	16
6.1	GML schema	16
6.2	GML application schemas	16
and GML application schemas		17
6.4	Organization of this International Standard	18
6.5	Deprecated and experimental schema components	19
7	GML schema -- General rules and base schema components	20
7.1	GML model and syntax	20
7.2	gmlBase schema components	22
8	GML schema -- Xlinks and basic types	33
8.1	Xlinks -- Object associations and remote properties	33
8.2	Basic types	34
9	GML schema -- Features	43
9.1	General concepts	43
9.3	Features	43
9.4	Standard feature properties	44
9.5	Geometry properties	46
9.6	Topology properties	48
9.7	Temporal properties	48
9.8	Defining application-specific feature types	49
9.9	Feature collections	50
9.10	Spatial reference system used in a feature or feature collection	52

10	GML schema -- Geometric primitives	52
10.1	General concepts	52
10.2	Abstract geometric primitives	58
10.3	Geometric primitives (0-dimensional)	59
10.4	Geometric primitives (1-dimensional)	60
10.5	Geometric primitives (2-dimensional)	72
10.6	Geometric primitives (3-dimensional)	81
11	GML schema -- Geometric complex, geometric composites and geometric aggregates	83
11.1	Overview	83
11.2	Geometric complex and geometric composites	84
11.3	Geometric aggregates	86
12	GML schema -- Coordinate reference systems schemas	91
12.1	Overview	91
12.2	Reference systems	93
12.3	Coordinate reference systems	95
12.4	Coordinate systems	103
12.5	Datums	110
12.6	Coordinate operations	117
13	GML schema -- Topology	129
13.1	General concepts	129
13.2	Abstract topology	130
13.3	Topological primitives	130
13.4	Topological collections	135
13.5	Topology complex	137
14	GML schema -- Temporal information and dynamic features	139
14.1	General concepts	139
14.2	Temporal schema	140
14.3	Temporal topology schema	148
14.4	Temporal reference systems	151
14.5	Representing dynamic features	158
15	GML schema -- Definitions and dictionaries	162
15.1	Overview	162
15.2	Dictionary schema	162
16	GML schema -- Units, measures and values	165
16.1	Introduction	165
16.2	Units schema	165
16.3	Measures schema	171
16.4	Value objects schema	172
17	GML schema -- Directions	179
17.1	Direction schema	179
17.2	direction, DirectionPropertyType	179
17.3	DirectionVectorType	180
17.4	DirectionDescriptionType	180
18	GML schema -- Observations	181
18.1	Observations	181
18.2	Observation schema	182
19	GML schema -- Coverages	185
19.1	The coverage model and representations	185
19.2	Grids schema	188
19.3	Coverage schema	191
20	Profiles	205

20.1	Profiles of GML and application schemas	205
20.2	Definition of profile	205
20.3	Relation to application schema	205
20.4	Rules for elements and types in a profile	206
20.5	Rules for referencing GML profiles from application schemas	207
20.6	Recommendations for application schemas using GML profiles	207
20.7	Summary of rules for GML profiles	208
21	Rules for GML application schemas	208
21.1	Instances of GML objects	208
21.2	GML application schemas	209
21.3	Schemas defining Features and Feature Collections	212
21.4	Schemas defining spatial geometries	213
21.5	Schemas defining spatial topologies	214
21.6	Schemas defining time	215
21.7	Schemas defining coordinate reference systems	215
21.8	Schemas defining coverages	216
21.9	Schemas defining observations	218
21.10	Schemas defining dictionaries and definitions	219
21.11	Schemas defining values	220
21.12	GML profiles of the GML schema	220
Annex A (normative) Abstract test suites for GML application schemas, GML profiles and GML documents		223
Annex B (normative) Abstract test suite for software implementations		238
Annex C (informative) GML schema		242
Extensions		244
Annex E (normative) UML-to-GML application schema encoding rules		309
Annex F (normative) GML-to-UML application schema encoding rules		329
Annex G (informative) Guidelines for subsetting the GML schema		339
Annex H (informative) Default styling		352
Annex I (informative) Backwards compatibility with earlier versions of GML		363
Annex J (informative) Modularization and dependencies		380
Bibliography		382
Index		384