

# ISO 19178-1:2025-05 (E)

## Geographic information - Training data markup language for artificial intelligence - Part 1: Conceptual model

---

<b>Contents</b>		<b>Page</b>
Foreword .....		v
Introduction .....		vi
1	Scope .....	1
2	Normative references .....	1
3	Terms, definitions and abbreviated terms .....	1
3.1	Terms and definitions .....	1
3.2	Abbreviated terms .....	3
4	Conventions .....	4
4.1	General .....	4
4.2	Identifiers .....	4
4.3	UML notation .....	4
5	Conformance .....	6
6	Overview .....	6
6.1	General .....	6
6.2	AI tasks for EO .....	6
6.3	Modularization .....	7
6.4	General modelling principles .....	8
6.4.1	Element modelling .....	8
6.4.2	Class hierarchy and inheritance of properties and relations .....	8
6.4.3	Definition of the semantics for all classes, properties and relations .....	9
6.4.4	Data integrity, authenticity and non-repudiation .....	9
6.5	Extending TrainingDML-AI .....	9
7	TrainingDML-AI UML model .....	9
7.1	General .....	9
7.2	ISO dependencies .....	9
7.3	Overview of the UML model .....	10
7.4	AI_TrainingDataset .....	12
7.4.1	General .....	12
7.4.2	Provisions .....	13
7.4.3	Class definitions .....	14
7.5	AI_TrainingData .....	15
7.5.1	General .....	15
7.5.2	Provisions .....	16
7.5.3	Class definitions .....	16
7.6	AI_Task .....	17
7.6.1	General .....	17
7.6.2	Provisions .....	18
7.6.3	Class definitions .....	18
7.7	AI_Label .....	18
7.7.1	General .....	18
7.7.2	Provisions .....	19
7.7.3	Class definitions .....	20
7.8	AI_Labeling .....	20

7.8.1	General .....	20
7.8.2	Provisions .....	21
7.8.3	Class definitions .....	22
7.9	AI_TDChangeset .....	22
7.9.1	General .....	22
7.9.2	Provisions .....	23
7.9.3	Class definitions .....	24
7.10	AI_DataQuality .....	24
7.10.1	General .....	24
7.10.2	Provisions .....	25
7.10.3	Class definitions .....	26
8	TrainingDML-AI Data Dictionary .....	26
8.1	General .....	26
8.2	ISO Classes .....	26
8.2.1	Feature (from ISO 19101-1) .....	26
8.2.2	MD_Band (from ISO 19115-1) .....	26
8.2.3	MD_Scope (from ISO 19115-1) .....	26
8.2.4	MD_ReferenceSystem (from ISO 19115-1) .....	26
8.2.5	LI_Lineage (from ISO 19115-1) .....	27
8.2.6	EX_Extent (from ISO 19115-1) .....	27
8.2.7	CI_Citation (from ISO 19115-1) .....	27
8.2.8	MD_Resolution (from ISO 19115-1) .....	27
8.2.9	DataQuality (from ISO 19157-1) .....	27
8.2.10	QualityElement (from ISO 19157-1) .....	28
8.3	AI_TrainingDataset .....	28
8.3.1	Metadata .....	28
8.3.2	Classes .....	28
8.4	AI_TrainingData .....	30
8.4.1	Metadata .....	30
8.4.2	Classes .....	30
8.5	AI_Task .....	31
8.5.1	Metadata .....	31
8.5.2	Classes .....	32
8.6	AI_Label .....	32
8.6.1	Metadata .....	32
8.6.2	Classes .....	32
8.7	AI_Labeling .....	34
8.7.1	Metadata .....	34
8.7.2	Classes .....	34
8.8	AI_TDChangeset .....	35
8.8.1	Metadata .....	35
8.8.2	Classes .....	35
8.9	AI_DataQuality .....	36
8.9.1	Metadata .....	36
8.9.2	Classes .....	36
Annex A (normative) Abstract test suite .....		37
Annex B (informative) Examples .....		44
Bibliography .....		47