

<b>STN</b>	<b>Geografické informácie Značkovací jazyk pre tréningové dáta pre umelú inteligenciu Časť 1: Konceptuálny model (ISO 19178-1: 2025)</b>	<b>STN EN ISO 19178-1  01 9376</b>
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Geographic information  
Training data markup language for artificial intelligence  
Part 1: Conceptual model

Information géographique  
Langage de balisage des données d'entraînement pour l'intelligence artificielle  
Partie 1: Modèle conceptuel

Táto slovenská technická norma obsahuje anglickú verziu európskej normy EN ISO 19178-1: 2025 a má postavenie oficiálnej verzie.

This standard includes the English version of the European Standard EN ISO 19178-1: 2025 and has the status of the official version.

**141500**

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Úrad pre normalizáciu, metrológiu a skúšobníctvo Slovenskej republiky, 2025  
Slovenská technická norma a technická normalizačná informácia je chránená zákonom č. 60/2018 Z. z. o technickej normalizácii v znení neskorších predpisov.

## Anotácia

Tento dokument v súvislosti s tréningovými dátami pre strojové učenie umelej inteligencie (AI/ML) na pozorovanie Zeme (EO) definuje konceptuálny model, ktorý:

- zavádza model UML s cieľom maximalizovať interoperabilitu a použiteľnosť tréningových dát pri zobrazovaní EO;
- špecifikuje rôzne úlohy a značky AI/ML v EO z hľadiska učenia sa s učiteľom, vrátane úloh na úrovni scény, objektu a pixelu;
- opisuje trvalý identifikátor, verziu, licenciu, veľkosť tréningových dát, meranie alebo zobrazovanie použité na anotáciu;
- špecifikuje opis kvality (napr. chyby tréningových dát, reprezentatívnosť tréningových dát, miery kvality) a pôvodu (napr. pracovníkov, ktorí vykonávajú značkovanie, značkovací postup).

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## Normatívne referenčné dokumenty

Na nasledujúce dokumenty sa odkazuje v texte takým spôsobom, že časť ich obsahu alebo celý obsah predstavuje požiadavky tohto dokumentu. Pri datovaných odkazoch sa používa len citované vydanie. Pri nedatovaných odkazoch sa používa najnovšie vydanie citovaného dokumentu (vrátane akýchkoľvek zmien).

POZNÁMKA 1. – Ak bola medzinárodná publikácia zmenená spoločnými modifikáciami, čo je indikované označením (mod), použije sa príslušná EN/HD.

POZNÁMKA 2. – Aktuálne informácie o platných a zrušených STN a TNI možno získať na webovom sídle [www.unms.sk](http://www.unms.sk).

ISO 19101-1 prijatá ako STN EN ISO 19101-1 Geografické informácie. Referenčný model. Časť 1: Zásady (ISO 19101-1) (01 9325)

ISO 19103 prijatá ako STN EN ISO 19103 Geografické informácie. Jazyk na tvorbu konceptuálnych schém (ISO 19103) (01 9343)

ISO 19115-1 prijatá ako STN EN ISO 19115-1 Geografické informácie. Metadáta. Časť 1: Princípy (ISO 19115-1) (01 9332)

ISO 19156 prijatá ako STN EN ISO 19156 Geografické informácie. Pozorovania, merania a vzorkovania (ISO 19156) (01 9359)

ISO 19157-1 prijatá ako STN EN ISO 19157-1 Geografické informácie. Kvalita dát. Časť 1: Všeobecné požiadavky (ISO 19157-1) (01 9323)

## Vypracovanie

**Spracovateľ:** Úrad pre normalizáciu, metrológiu a skúšobníctvo SR, Bratislava

Ing. Jana Faixová Chalachanová, PhD., Stavebná Fakulta STU

**Technická komisia:** TK 89 Geodézia a kartografia

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## Geographic information - Training data markup language for artificial intelligence - Part 1: Conceptual model (ISO 19178-1:2025)

Information géographique - Langage de balisage des  
données d'entraînement pour l'intelligence artificielle -  
Partie 1: Modèle conceptuel (ISO 19178-1:2025)

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This document (EN ISO 19178-1:2025) has been prepared by Technical Committee ISO/TC 211 "Geographic information/Geomatics" in collaboration with Technical Committee CEN/TC 287 "Geographic Information" the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by December 2025, and conflicting national standards shall be withdrawn at the latest by December 2025.

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## Endorsement notice

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**ISO 19178-1:2025(en)****Foreword**

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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 document 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](http://www.iso.org/directives)).

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This document was prepared by Technical Committee ISO/TC 211, *Geographic information/Geomatics*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 287, *Geographic Information*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement) and in collaboration with the Open Geospatial Consortium (OGC).

A list of all parts in the ISO 19178 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](http://www.iso.org/members.html).

**ISO 19178-1:2025(en)****Introduction**

This document aims to develop the UML model and encodings for geospatial machine learning training data. Training data play a fundamental role in Earth Observation (EO) Artificial Intelligence Machine Learning (AI/ML), especially Deep Learning (DL). Training data are used to train, validate and test AI/ML models. This document defines a UML model and encodings consistent with the OGC Standards baseline to exchange and retrieve training data in the Web environment.

This document provides detailed metadata for formalizing the information model of training data. This includes, but is not limited to the following aspects:

- how the training data are prepared, such as provenance or quality;
- how to specify different metadata used for different ML tasks, such as scene/object/pixel levels;
- how to differentiate the high-level training data information model and extended information models specific to various ML applications;
- how to introduce external classification schemes and flexible means for representing labelling.

# Geographic information — Training data markup language for artificial intelligence —

## Part 1: Conceptual model

### 1 Scope

Within the context of training data for Earth Observation (EO) Artificial Intelligence Machine Learning (AI/ML), this document specifies a conceptual model that:

- establishes a UML model with a target of maximizing the interoperability and usability of EO imagery training data;
- specifies different AI/ML tasks and labels in EO in terms of supervised learning, including scene level, object level and pixel level tasks;
- describes the permanent identifier, version, licence, training data size, measurement or imagery used for annotation;
- specifies a description of quality (e.g. training data errors, training data representativeness, quality measures) and provenance (e.g. agents who perform the labelling, labelling procedure).

### 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 19101-1, *Geographic information — Reference model — Part 1: Fundamentals*

ISO 19103, *Geographic information — Conceptual schema language*

ISO 19115-1, *Geographic information — Metadata — Part 1: Fundamentals*

ISO 19156, *Geographic information — Observations, measurements and samples*

ISO 19157-1, *Geographic information — Data quality — Part 1: General requirements*

**koniec náhľadu – text ďalej pokračuje v platenej verzii STN**