DIN EN ISO 19111:2020-09 (E)

Geographic information - Referencing by coordinates (ISO 19111:2019); English version EN ISO 19111:2020

Contents

Page

Foreword ..... **v**

Introduction ..... **vii**

1 Scope **1**

2 Normative references **1**

3 Terms, definitions, symbols and abbreviated terms **2**
3.1 Terms and definitions 2
3.2 Symbols 11
3.3 Abbreviated terms 11

4 Conformance requirements **12**

5 Conventions **13**
5.1 Unified Modeling Language notation 13
5.2 Attribute status 13

6 Referencing by coordinates — Data model overview **14**

7 Coordinates package **15**
7.1 Relationship between coordinates and coordinate reference system 15
7.2 Coordinate reference system identification 16
7.3 Requirements for coordinate metadata 16
7.3.1 Requirements class: Static CRS coordinate metadata 16
7.3.2 Requirements class: Dynamic CRS coordinate metadata 17
7.4 UML schema for the Coordinates package 17
7.5 UML schema for change of coordinates 19

8 Common Classes package **21**
8.1 General attributes 21
8.1.1 Introduction 21
8.1.2 Name and alias 21
8.1.3 Identifier 21
8.1.4 Scope and Domain of Validity 21
8.2 UML schema for the Common Classes package 22

9 Coordinate Reference Systems package **25**
9.1 Coordinate reference system 25
9.1.1 General 25
9.1.2 Principal subtypes of coordinate reference system 25
9.2 Derived coordinate reference system 26
9.2.1 General 26
9.2.2 Projected coordinate reference system 26
9.3 Compound coordinate reference system 27
9.3.1 General 27
9.3.2 Spatial compound coordinate reference system 27
9.3.3 Spatio-temporal compound coordinate reference system 27
9.3.4 Spatio-parametric compound coordinate reference system 27
9.3.5 Spatio-parametric-temporal compound coordinate reference system 27
9.4 UML schema for the Coordinate Reference Systems package 27

10 Coordinate Systems package **36**
10.1 Coordinate system — General 36
10.2 Parametric coordinate system 37
10.3 Temporal coordinate system 37
10.4 Coordinate system axis 38
10.5 UML schema for the Coordinate Systems package 38

11 Datums (reference frames) package **49**
11.1 Types of datum and reference frame 49
11.2 Geodetic reference frame 49
11.2.1 Prime meridian 49
11.2.2 Ellipsoid 49
11.3 Dynamic reference frame 50
11.4 Datum ensemble 50
11.5 Temporal datum 50
11.6 UML schema for the Datums package 50

12 Coordinate Operations package **58**
12.1 General characteristics of coordinate operations 58
12.2 UML schema for the Coordinate Operations package 59

Annex A (normative) **Abstract test suite** **71**

Annex B (informative) **Spatial referencing by coordinates — Geodetic concepts** **76**

Annex C (informative) **Spatial referencing by coordinates — Context for modelling** **81**

Annex D (informative) **Temporal referencing by coordinates — Context for modelling** **95**

Annex E (informative) **Examples** **99**

Annex F (informative) **Recommended best practice for interfacing to ISO 19111** **137**

Annex G (informative) **Backward compatibility with ISO 19111:2007** **138**

Bibliography **143**