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Geographic information - Schema for coverage geometry and functions - Part 3: Processing fundamentals (ISO 19123-3:2023)

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

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Geographic information - Schema for coverage geometry and functions - Part 3: Processing fundamentals (ISO 19123-3:2023)

Information géographique - Schéma de la géométrie et des fonctions de couverture - Partie 3: Principes de base du traitement (ISO 19123-3:2023)

Geoinformation - Coverage Geometrie- und Funktionsschema - Teil 3: Grundlagen der Verarbeitung (ISO 19123-3:2023)

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EN ISO 19123-3:2023 (E)

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European foreword

This document (EN ISO 19123-3:2023) 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.

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**Geographic information — Schema for
coverage geometry and functions —**

**Part 3:
Processing fundamentals**

*Information géographique — Schéma de la géométrie et des fonctions
de couverture —*

Partie 3: Principes de base du traitement



Reference number
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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).

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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), in collaboration with the Open Geospatial Consortium (OGC), and in collaboration with the IEEE GRSS Earth Science Informatics Technical Committee.

A list of all parts in the ISO 19123 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.

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Introduction

This document defines, at a high level, implementation-independent operations on coverages, i.e. digital representations of space-time varying geographic phenomena, as defined in ISO 19123-1. Specifically, regular and irregular grid coverages are addressed. The operations can be applied through an expression language allowing composition of unlimited complexity and combining an unlimited number of coverages for data fusion.

The language is functionally defined and free of any side effects. Its conceptual foundation relies on only two constructs: A “coverage constructor” builds a coverage, either from scratch or by deriving it from one or more other coverages. A “coverage condenser” derives summary information from a coverage by performing an aggregation such as count, sum, minimum, maximum and average.

The coverage processing language is independent from any request and response encoding, as no concrete request/response protocol is assumed. Hence, this document does not define a concrete service, but acts as the foundation for defining service standards functionality. One such standardization target is the OGC Web Coverage Service (WCS).^[3]

Throughout this document, the following formatting conventions apply.

- Bold-Face in the text, such as **processCoveragesExpr**, represents syntax elements, normatively defined in Annex B.
- Text in italics, such as *succ()*, represents mathematical functions and variables.
- Courier font, such as `return` and `encode()`, is used for code in the sense of the coverage processing language.

Geographic information — Schema for coverage geometry and functions —

Part 3: Processing fundamentals

1 Scope

This document defines a coverage processing language for server-side extraction, filtering, processing, analytics, and fusion of multi-dimensional geospatial coverages representing, for example, spatio-temporal sensor, image, simulation, or statistics datacubes. Services implementing this language provide access to original or derived sets of coverage information, in forms that are useful for client-side consumption.

This document relies on the ISO 19123-1 abstract coverage model. In this edition, regular and irregular multi-dimensional grids are supported for axes that can carry spatial, temporal or any other semantics. Future editions will additionally support further axis types as well as further coverage types from ISO 19123-1, specifically, point clouds and meshes.

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 19111, *Geographic information — Referencing by coordinates*

ISO 19123-1, *Geographic information — Schema for coverage geometry and functions — Part 1: Fundamentals*

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