

Australian/New Zealand Standard™

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

**Part 2: Coverage
implementation schema**



AS/NZS ISO 19123.2:2019

This Joint Australian/New Zealand Standard™ was prepared by Joint Technical Committee IT-004, Geographical Information/Geomatics. It was approved on behalf of the Council of Standards Australia on 27 March 2019 and by the New Zealand Standards Approval Board on 3 April 2019.

This Standard was published on 2 May 2019.

The following are represented on Committee IT-004:

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- Australian Bureau of Statistics
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This Standard was issued in draft form for comment as DR AS/NZS ISO 19123.2:2019.

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ISBN 978 1 76072 443 6

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Part 2: Coverage implementation schema

First published as AS/NZS ISO 19123:2006.
Jointly revised and redesignated as AS/NZS ISO 19123.2:2019.

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Preface

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee IT-004, Geographical Information/Geomatics, to supersede AS/NZS ISO 19123:2006, *Geographic information—Schema for coverage geometry and functions*.

The objective of this Standard is to specify a concrete, implementable, conformance-testable coverage structure based on the abstract schema for coverages defined in the AS/NZS ISO 19123 schema for coverage geometry. This Standard defines a structure that is suitable for encoding in many encoding formats.

This Standard is identical with, and has been reproduced from, ISO 19123-2:2018, *Geographic information — Schema for coverage geometry and functions — Part 2: Coverage implementation* schema.

As this document has been reproduced from an International Standard, a full point substitutes for a comma when referring to a decimal marker.

Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably. Refer to the online catalogue for information on specific Standards.

The terms “normative” and “informative” are used in Standards to define the application of the appendices or annexes to which they apply. A “normative” appendix or annex is an integral part of a Standard, whereas an “informative” appendix or annex is only for information and guidance.

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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 documents 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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by ISO/TC 211, *Geographic information/geomatics*.

A list of all the 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.

Introduction

Coverages represent digital geospatial information representing space/time-varying phenomena. Common examples include 1-D time series, 2-D imagery, 3-D x/y/t image time series and x/y/z geophysical voxel models, as well as 4-D x/y/z/t climate and ocean data.

This Coverage Implementation Schema (CIS) specifies a concrete, interoperable, conformance-testable coverage information schema. It is based on the abstract concepts of ISO 19123:2005 (which is equivalent to OGC Abstract Topic 6). ISO 19123:2005 specifies an abstract model which is not per se interoperable, i.e. many different and incompatible implementations of the abstract model are possible. CIS, on the other hand, is interoperable in the sense that coverages can be conformance tested, regardless of their data format encoding, down to the level of single “pixels” or “voxels”.

Coverages can be encoded in any suitable format (such as GML, JSON^[4], GeoTIFF^[7], NetCDF^[9] or GMLJP2) and can be partitioned, e.g. for a time-interleaved representation. Coverages are independent from service definitions and, therefore, can be accessed through a variety of web based service types, such as the OGC Web Coverage Service (WCS) Standard. This document is a data model whereas WCS is a service model. Both are tentatively separate, thereby allowing different services to process and deliver coverages, such as WFS, WCS, WCPS, WPS, etc. WCS and WCPS are outstanding only in that they offer the most powerful coverage functionality.

Coverages are independent from service definitions and, therefore, can be accessed through a variety of standardized services types, such as the Web Coverage Service (WCS) Standard^[6], which is used in the examples in this document. The coverage structure can serve a wide range of coverage application domains, thereby contributing to harmonization and interoperability between and across these domains.

This document implements part of the coverage types described in ISO 19123:2005. Any extension of the coverage types addressed will be left for a future version of this document. ISO 19123:2005 is under review and will be replaced with ISO 19123-1 once the revision is published. ISO 19123-1 will be an extension of ISO 19123:2005 containing additional coverage concepts, so any references to ISO 19123:2005 in this document can be taken as references to the revised standard. The references in this document are to ISO 19123:2005 because this document is a joint standard with OGC, and the equivalent OGC standard “09-146r2 Version 1.0.1 OGC Coverage Implementation Schema (CIS 1.0)” is an existing published standard that makes references to ISO 19123:2005.

This document is a derived work based on the OGC document “Coverage Implementation Schema” OGC 09-146r2. The two documents are NOT word for word identical because each follows the document template required by each organization. However, both documents are functionally equivalent. In particular [Clauses 1 to 5](#) in both the ISO standard (this document) and the OGC standard (OGC 09-146r2) contain the Scope, Normative references, Terms and definitions (and Notation) and Conformance described in the manner required by each organization. Where there are minor differences, such as the definition of “coverage” and “grid”, this document makes use of the terms defined in ISO standards and identifies the differences in a note.

Any extension in OGC beyond CIS 1.0 (e.g. the development of CIS 1.1) is an extension beyond this document. ISO and OGC plan to work together to ensure future synchronization of these standards.

This document is a derived work based on OGC standard 09-146r2 Version 1.0.1 OGC Coverage Implementation Schema (CIS 1.0) also known as “OGC® GML Application Schema — Coverages” published 2012-05-11 and copyrighted by the OGC ©2012 and used with permission. OGC standard 09-146r2 Version 1.0.1 is a corrigendum to existing OGC standard 09-146r1 Version 1.0.0 published 2010-10-27.

NOTES

Australian/New Zealand Standard

Geographic information — Schema for coverage geometry and functions

Part 2: Coverage implementation schema

1 Scope

This document specifies a concrete¹⁾ implementable, conformance-testable coverage structure based on the abstract schema for coverages defined in the ISO 19123 schema for coverage geometry. This document defines a structure that is suitable for encoding in many encoding formats.

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 19103:2015, *Geographic information — Conceptual schema language*

ISO 19123:2005, *Geographic information — Schema for coverage geometry and functions*

ISO 19136:2007, *Geographic information — Geography Markup Language (GML)*

OGC 07-011, *Abstract Specification Topic 6: The Coverage Type and its Subtypes*, version 7.0 (identical to ISO 19123:2005)

OGC 07-036, *Geography Markup Language (GML) Encoding Standard*, version 3.2.1

OGC 08-094, *OGC® SWE Common Data Model Encoding Standard*, version 2.0

3 Terms, definitions, and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1.1

abstract test suite

abstract test module specifying all the requirements to be satisfied for conformance

[SOURCE: ISO 19105:2000, 3.4]

3.1.2

coverage

feature that acts as a function to return values from its range for any direct position within its spatial, temporal or spatiotemporal domain

Note 1 to entry: OGC CIS 1.0 has the definition for coverage: “feature that acts as a function to return values from its range for any direct position within its spatiotemporal domain.”^[13].

1) “concrete” is used here as a contrast to “abstract” in the sense described in the Introduction.