

Australian/New Zealand Standard™

**Geographic information—Metadata**

**Part 1: Fundamentals**



## **AS/NZS ISO 19115.1:2015**

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 12 December 2014 and on behalf of the Council of Standards New Zealand on 20 January 2015.  
This Standard was published on 13 February 2015.

---

The following are represented on Committee IT-004:

ANZLIC—The Spatial Information Council  
Australian Antarctic Division  
Australian Bureau of Meteorology  
Australian Bureau of Statistics  
Australian Hydrographic Office  
CSIRO  
Curtin University of Technology  
Department of Communications (Australia)  
Department of Defence (Australia)  
Geoscience Australia (Australia)  
Land Information New Zealand  
New Zealand Geospatial Office  
Science New Zealand  
Spatial Industries Business Association

---

### **Keeping Standards up-to-date**

Standards are living documents which reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued. Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments which may have been published since the Standard was purchased.

Detailed information about joint Australian/New Zealand Standards can be found by visiting the Standards Web Shop at [www.saiglobal.com](http://www.saiglobal.com) or Standards New Zealand web site at [www.standards.govt.nz](http://www.standards.govt.nz) and looking up the relevant Standard in the on-line catalogue.

For more frequent listings or notification of revisions, amendments and withdrawals, Standards Australia and Standards New Zealand offer a number of update options. For information about these services, users should contact their respective national Standards organization.

We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Please address your comments to the Chief Executive of Standards Australia or the New Zealand Standards Executive at the address shown on the back cover.

---

# Australian/New Zealand Standard™

## Geographic information—Metadata

### Part 1: Fundamentals

First published as AS/NZS ISO 19115:2005.  
Jointly revised and designated as AS/NZS ISO 19115.1:2015.  
Reissued incorporating Amendment No. 1 (June 2018).

#### **COPYRIGHT**

© Standards Australia Limited

© The Crown in right of New Zealand, administered by the New Zealand Standards Executive

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher, unless otherwise permitted under the Copyright Act 1968 (Australia) or the Copyright Act 1994 (New Zealand).

Jointly published by SAI Global Limited under licence from Standards Australia Limited, GPO Box 476, Sydney, NSW 2001 and by Standards New Zealand, PO Box 1473, Wellington 6140.

## PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee IT-004, Geographical Information/Geomatics, to supersede AS/NZS ISO 19115:2005, *Geographic information—Metadata* and its Amendment 1.

A1 | Amendment 1 to this Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee IT-004.

*This Standard incorporates Amendment No. 1 (June 2018). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.*

The objective of this Standard is to define the schema required for describing geographic information and services by means of metadata. It provides information about the identification, the extent, the quality, the spatial and temporal aspects, the content, the spatial reference, the portrayal, distribution, and other properties of digital geographic data and services.

A1 | This Standard is identical with, and has been reproduced from, ISO 19115-1:2014, *Geographic information—Metadata*, Part 1: *Fundamentals*, and its Amendment 1 (2018).

As this Standard is reproduced from an International Standard, the following applies:

- (a) In the source text ‘this part of ISO 19115’ should read ‘this Australian/New Zealand Standard’.
- (b) A full point substitutes for a comma when referring to a decimal marker.

References to International Standards should be replaced by references to Australian or Australian/New Zealand Standards, as follows:

<i>Reference to International Standard</i>		<i>Australian/New Zealand Standard</i>	
ISO		AS/NZS	
3166	Codes for the representation of names of countries and their subdivisions (series)	2632	Codes for the representation of names of countries and their subdivisions (series)
8601	Data elements and interchange formats—Information interchange—Representation of dates and times	AS ISO 8601	Data elements and interchange formats—Information interchange—Representation of dates and times
ISO/TS		AS/NZS ISO	
19103	Geographic information—Conceptual schema language	19103	Geographic information—Conceptual schema language
ISO			
19106	Geographic information—Profiles	19106	Geographic information—Profiles
19107	Geographic information—Spatial schema	19107	Geographic information—Spatial schema
19108	Geographic information—Temporal schema	19108	Geographic information—Temporal schema
19109	Geographic information—Rules for application schema	19109	Geographic information—Rules for application schema
19110	Geographic information—Methodology for feature cataloguing	19110	Geographic information—Methodology for feature cataloguing
19111	Geographic information—Spatial referencing by coordinates	19111	Geographic information—Spatial referencing by coordinates

<i>Reference to International Standard</i>	<i>Australian/New Zealand Standard</i>
19111-2 Part 2: Extension for parametric values	19111.2 Part 2: Extension for parametric values
19112 Geographic information—Spatial referencing by geographic identifiers	19112 Geographic information—Spatial referencing by geographic identifiers
19119 Geographic information—Services	19119 Geographic information—Services
19157 Geographic information—Data quality	19157 Geographic information—Data quality

Only normative references that have been adopted as Australian or Australian/New Zealand Standards have been listed.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the annexes to which they apply. A ‘normative’ annex is an integral part of a Standard, whereas an ‘informative’ annex is only for information and guidance.

## CONTENTS

<b>1</b>	<b>Scope</b> .....	<b>1</b>
<b>2</b>	<b>Conformance</b> .....	<b>1</b>
	2.1 Conformance requirements.....	1
	2.2 Abstract test suite.....	2
<b>3</b>	<b>Normative references</b> .....	<b>2</b>
<b>4</b>	<b>Terms and definitions</b> .....	<b>2</b>
<b>5</b>	<b>Symbols and abbreviated terms</b> .....	<b>5</b>
	5.1 Abbreviated terms.....	5
	5.2 Abbreviated terms — Package.....	5
<b>6</b>	<b>Metadata requirements</b> .....	<b>5</b>
	6.1 Metadata for resources.....	5
	6.2 Metadata application information.....	6
	6.3 Metadata fundamentals package and dependencies.....	6
	6.4 Citation and responsible party, Metadata application information, Language-character set localisation information, and Extent information package relationships.....	7
	6.5 Resource metadata class diagrams by package.....	8
	6.6 Extent, Citation and Common information packages.....	23
	6.7 Multilingual support for free text fields.....	27
	6.8 Implementation examples.....	29
	6.9 Metadata implementation.....	29
	6.10 Discovery metadata.....	29
	6.11 Revisions.....	29
	<b>Annex A (normative) Abstract test suite</b> .....	<b>30</b>
	<b>Annex B (normative) Data dictionary for geographic metadata</b> .....	<b>33</b>
	<b>Annex C (normative) Metadata extensions and profiles</b> .....	<b>128</b>
	<b>Annex D (informative) Implementation examples</b> .....	<b>131</b>
	<b>Annex E (informative) Metadata implementation</b> .....	<b>146</b>
	<b>Annex F (normative) Discovery metadata for geographic resources</b> .....	<b>154</b>
	<b>Annex G (informative) Revisions</b> .....	<b>157</b>
	<b>Bibliography</b> .....	<b>167</b>

## INTRODUCTION

Recent advancement of computer software and hardware for managing and analysing data, particularly fusing with geographically referenced observations, has resulted in a vast increase in the use of digital information solutions worldwide. The resulting awareness of the importance of geography and how things relate spatially is impacting almost all aspects of society. Increasingly, individuals from a wide range of disciplines outside of geographic information science and information technology are producing, enhancing, and modifying digital geographic information. As the number, complexity, and diversity of geographic information resources grow, a method for providing an understanding of all aspects of these resources increases in importance.

A digital geographic dataset is a representation of some model of the world for use in computer analysis and graphic display of information. The underlying model is an abstraction, requiring approximation, simplification, and omission of some aspects, and is always just one of many possible “views”. To ensure that data are not misused, the assumptions and limitations affecting the creation of data must be fully documented. Typically, data are used by many people other than the producer. Metadata allows a producer to describe resources so that users can understand the assumptions and limitations and evaluate the resources’ applicability for their intended use. Proper documentation will provide those unfamiliar with the data with a better understanding, and enable them to use it properly. Good quality documentation will also provide data producers with a keener knowledge of their holdings and will allow them to better manage data production, storage, updating, and reuse.

A geographic dataset is typically thought of as structured, tabular data with a location associated with each row in a table or pixel in a grid. For the purposes of the evolving web-based information cloud, the concept of dataset can be usefully extended to include any packaged information product that is intended to be treated as a unit, defined by its scope, authorship, and intended purpose. In this broader view, any document containing geographically located observations or interpretations can be considered a geographic dataset, whether it is structured or unstructured.

The evolving distributed information system enabled by the Internet is fostering the development of service-oriented architectures in which web services are becoming important as sources of information or processing capability, and many of these services provide location-based information or functionality. Description of these services for discovery and utilization has become an important function of metadata.

A significant body of information with geographic reference is contained in resources that are not in digital form. These resources include maps and documents of various sorts, as well as specimens or other artefacts collected to characterize some aspect of the Earth — physical, biological, or cultural. The metadata schema presented in this part of ISO 19115 is also applicable to such resources.

The objective of this part of ISO 19115 is to provide a model for describing information or resources that can have geographic extents. This part of ISO 19115 is intended to be used by information system analysts, program planners, and developers of information systems, as well as others in order to define basic principles and requirements for standardized description of information resources. This part of ISO 19115 defines metadata elements, their properties, and the relationships between elements, and establishes a common set of metadata terminology, definitions, and extension procedures.

Although the primary purpose of this part of ISO 19115 is to describe digital information that has a geographic extent, it can be used to describe all types of resources including textual documents, initiatives, software, non-geographic information, product specifications and repositories, i.e. it can be used to describe information resources that do not have geographic extent. Some domains have their own metadata standards, such as the Dublin Core for libraries. If necessary such standards and this part of ISO 19115 could be profiled to create a Community Schema.

When implemented by a resource provider, this part of ISO 19115 will:

- 1) Enable information resource providers to effectively and completely characterize their resources.
- 2) Facilitate the organisation and management of metadata for information resources.

- 3) Enable appropriate use of information resources through accurate understanding of their characteristics.
- 4) Facilitate resource discovery, access, retrieval and reuse.
- 5) Enable users to determine whether an information resource will be of use to them.

This part of ISO 19115 defines general-purpose metadata. More detailed models for some aspects of resource description, including quality, data-structure or imagery, are defined in other ISO geographic information standards. The metadata model described herein enables implementation of domain-specific user extensions based on a common pattern to facilitate implementation of software using those extensions.

This part of ISO 19115 is a revision of ISO 19115:2003 and ISO 19115:2003/Cor 1:2006. This revision was driven by advances in Information Technology and a shift toward the use of the Internet for access, use and management of metadata as well as revisions to reference documents and individual user provided suggestions based on eight years of experience in its use.

This part of ISO 19115 is fully independent from the previous version with a new name and date. Its UML packages, classes, and elements have different identifiers from the previous version. The UML from ISO 19115:2003/Cor 1:2006 will remain available in the ISO/TC 211 Harmonized Model Management Group repository. Backward compatibility is to be provided using a transformation service. Past metadata instances can continue to reference/use the previous version.

The purpose of metadata is to describe resources. This description may remain with the data and does not change. It can be used both to interpret the data and to search for (discover) the data. Large amounts of older data exists compliant with ISO 19115:2003, and newer data exists (which is still being produced) to national or regional profiles of ISO 19115:2003. This data will remain as it is currently defined. New data production to new product specifications will build upon the revision of ISO 19115 making use of the expanded descriptive capabilities. With the introduction of this revision of ISO 19115, a mixed data environment exists. Systems that support data discovery in compliance with the revision of ISO 19115 need to also be able to also recognize and interpret metadata in the ISO 19115:2003 form so that all data in a mixed environment can be discovered. Systems that support data interpretation in compliance with the revision of ISO 19115 need to also be able to also recognize and interpret metadata in the ISO 19115:2003 form so that all data is interpreted. The use of separate identifiers for the revised elements and the manner in which the metadata standard has been revised facilitates this.

To aid in ensuring backward compatibility and ease the transformation of metadata instances to this revised version of ISO 19115:

- No new mandatory elements were created;
- If the definition of a metadata element required changing it was deleted and replaced by a new metadata element; metadata element names were not reused for other concepts;
- Definitions of some metadata elements were broadened;
- Metadata elements were reused when their datatype changed but name and definition remained the same;
- Remaining attributes were kept in the same order as in the replaced standard;
- A list of deleted elements, new elements, and a mapping between old elements and their replacement is provided in [Annex G](#);
- Restructuring of the UML was kept to a minimum.

Summary of major changes:

- The concept of “Core metadata” was removed;
- Metadata for services was added, derived from ISO 19119:2005 and ISO 19119:2005/Amd 1:2008;

- Data quality was moved to ISO 19157;
- [Annex F](#) was added to describe metadata for the discovery of service and non-service resources;
- Many codelists were extended;
- The use of “Short name” and “Domain code” was dropped for metadata elements and codes respectively.

A full description of changes is provided in [Annex G](#).

NOTES

## AUSTRALIAN/NEW ZEALAND STANDARD

**Geographic information—Metadata****Part 1:  
Fundamentals****1 Scope**

This part of ISO 19115 defines the schema required for describing geographic information and services by means of metadata. It provides information about the identification, the extent, the quality, the spatial and temporal aspects, the content, the spatial reference, the portrayal, distribution, and other properties of digital geographic data and services.

This part of ISO 19115 is applicable to:

- the cataloguing of all types of resources, clearinghouse activities, and the full description of datasets and services;
- geographic services, geographic datasets, dataset series, and individual geographic features and feature properties.

This part of ISO 19115 defines:

- mandatory and conditional metadata sections, metadata entities, and metadata elements;
- the minimum set of metadata required to serve most metadata applications (data discovery, determining data fitness for use, data access, data transfer, and use of digital data and services);
- optional metadata elements to allow for a more extensive standard description of resources, if required;
- a method for extending metadata to fit specialized needs.

Though this part of ISO 19115 is applicable to digital data and services, its principles can be extended to many other types of resources such as maps, charts, and textual documents as well as non-geographic data. Certain conditional metadata elements might not apply to these other forms of data.

**2 Conformance****2.1 Conformance requirements**

Any metadata claiming conformance with this part of ISO 19115 shall pass the requirements described in the abstract test suite presented in [Annex A](#).

Metadata shall be provided as specified in [Clause 6](#) and [Annex B](#).

If a discrepancy exists between the UML models provided in [Clause 6](#) and [Annex B](#), the UML models shall be considered authoritative.

User-defined metadata shall be defined and provided as specified in [Annex C](#).

Any profile conforming to this part of ISO 19115 shall conform to the rules in [C.6](#).

This part of ISO 19115 defines metadata used to describe data. Datasets defined in accordance with this part of ISO 19115 may coexist with other datasets that conform to earlier versions of this International Standard. Domain specific or regional profiles of this part of ISO 19115 are responsible for establishing