AS/NZS ISO 19155:2013
ISO 19155:2012

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Australian/New Zealand Standard™

Geographic information—Place Identifier (PI) architecture

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ANZLIC—The Spatial Information Council
Australasian Fire and Emergency Service Authorities Council
Australian Antarctic Division
Australian Hydrographic Office
Australian Map Circle
CSIRO Exploration and Mining
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Australian/New Zealand Standard™

Geographic information—Place Identifier (PI) architecture

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee IT-004, Geographical Information/Geomatics.

The objective of this Standard is to specify an architecture that defines a reference model with an encoding method for an identifier of a place.

This Standard is identical with, and has been reproduced from, ISO 19155:2012, *Geographic information—Place Identifier (PI) architecture*.

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

(a) Its number appears on the cover and title page while the International Standard number appears only on the cover.

(b) In the source text 'this International Standard' should read 'this Australian/New Zealand Standard'.

(c) 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:

Reference to International Standard		*Australian or Australian/New Zealand Standard*	
ISO/TS		AS/NZS ISO	
19103	Geographic information—Conceptual schema language	19103	Geographic information—Conceptual schema language
ISO			
19111	Geographic information—Spatial referencing by coordinates	19111	Geographic information—Spatial referencing by coordinates
19112	Geographic information—Spatial referencing by geographic identifiers	19112	Geographic information—Spatial referencing by geographic identifiers
19136	Geographic information—Geography Markup Language (GML)	19136	Geographic information—Geography Markup Language (GML)

The terms 'normative' and 'informative' have been used in this Standard to define the application of the annex 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

INTRODUCTION

The rapid development of information technology has blurred the boundaries between the real and virtual worlds in such a way that they cannot easily be disassociated from each other. Humans can reference places in both worlds and easily differentiate between them. However for computers to clearly differentiate these places, a set of matched linkages between them are required.

In the discipline of geography, space normally refers to the surface of the earth. However, in other disciplines, space can refer to different paradigms. In architecture, space may be the extent of a room or a building. In mathematics, space is defined as a set having structure. In the context of the World Wide Web space is defined by URLs/URIs that identify web pages.

Within this International Standard "space" is considered as a set having structure, in which a position or location identifies an element.

Currently, within the domain of ISO/TC 211, standards exist for precise positioning and locating using either coordinates or geographic identifiers. However, the concept of place is broader than both position and location. A "place" is referred to as a "position" when that place is identified using coordinates. Similarly, a "place" is referred to as a "location" when that place is identified using geographic identifiers. However, existing standards defined by ISO/TC 211 do not provide a mechanism for the representation of a virtual "place" such as a website, or a construct acting as a "common base" which can be used to refer to the other types of identifiers.

Within this International Standard, "place" is defined as an identifiable part of any space. This may include "places" existing not only in the real world but also those in the virtual world. Places are identified using either "position" by coordinates, "location" by geographic identifiers, or "virtual world identifiers" such as a URI.

In this International Standard, the identifier of a place is referred to as a Place Identifier (PI). A single "place" may be identified using several separate Place Identifiers. Clarification of these relationships is shown in Figure 1.

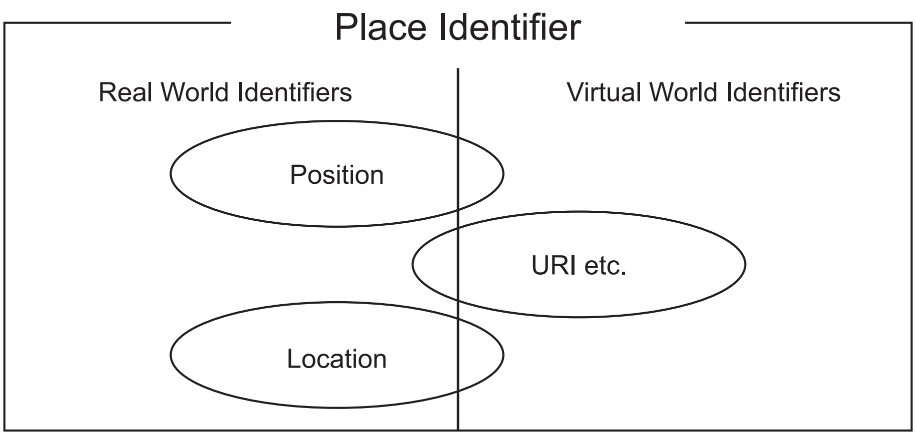

Figure 1 — Relationships among place, position, location and URI

Place descriptions are used for information retrieval. In reality, those identifiers often refer to the same place. Currently these relationships are difficult for machines to correctly distinguish, which impedes the discovery and retrieval of information. The conceptual architecture and reference model defined in this International Standard provides a mechanism for solving these problems.

When implemented, this architecture would enable the access and sharing of place descriptions using the Place Identifier as the standardized method.

Within the reference model, place descriptions are defined using a PI. A PI consists of a reference system (RS), a value, and the valid temporal period of that value.

The internal format and content of the value are determined by each community or domain. The content of the values are not subject to any kind of standardization or unification by this International Standard. The RS is also defined by each community, and should be unique across multiple communities. Subsequently, Place Identifiers are unique within each RS. However, the values of the Place Identifiers may be similar or even identical across multiple communities. This distributed concept ensures that each community would maintain their own Place Identifiers. Well formed Place Identifiers may be shared between communities.

Instead of specifying a framework for a globally unique type of identifier, the key idea of the architecture defined in this International Standard enables the original place descriptions to be easily maintained, without requiring difficult conversions and cross-community harmonization.

An encoding scheme based on Geography Markup Language (GML) (ISO 19136:2007) is normatively defined in this International Standard. In addition, a group of alternate encoding schemes are presented as informative annexes. Depending on the encoding method of choice, globally unique Place Identifiers may be created resulting from the requirements of the encoding method used.

Methods for the conversion of "located features" to Place Identifiers are not covered within the scope of this International Standard. While the direct relationship with the PI Architecture and other Spatial Data Infrastructures (SDIs) is not explained, an implementation of the PI Architecture can be considered part of an SDI. Various constructs, such as registries and databases, may be used to store Place Identifiers. The flexible structure of the Place Identifier will allow for data stored in common GI systems to be easily registered as Place Identifiers, however, the design and implementation of those procedures is out of scope of this International Standard.

AUSTRALIAN/NEW ZEALAND STANDARD

Geographic information—Place Identifier (PI) architecture

1 Scope

This International Standard specifies an architecture that defines a reference model with an encoding method for an identifier of a place. The concept of “place” within this International Standard includes “places” not only in the real world but also those in the virtual world. These “places” are identified using either coordinate identifiers, geographic identifiers, or virtual world identifiers such as URI. In this International Standard, an identifier of a place is referred to as a Place Identifier (PI).

The reference model defines a mechanism to match multiple Place Identifiers to the same place. In addition, a data structure and set of service interfaces are also defined in this reference model.

This International Standard is applicable to location based services, emergency management services and other application domains that require a common architecture, across specific domains, for the representation of place descriptions using coordinate, geographic, or virtual world identifiers.

This International Standard is not about producing any kind of specific place description, nor about defining a unique, standardized description of defined places, such as an address coding scheme.

2 Conformance

2.1 Conformance clause

This International Standard specifies four conformance classes. The following conformance clauses should be followed in order to meet the requirements of this International Standard.

2.2 Conformance tests for Semantics

To conform to this International Standard, instances of PI_PlaceIdentifier, PI_ReferenceSystem, PI_MatchingTable, and PI_MatchedPISet shall satisfy the requirements of A.1.

2.3 Conformance tests for Data

To conform to this International Standard, data stored in the PI matching table and the reference system shall satisfy the requirements of A.2.

2.4 Conformance tests for Services

To conform to this International Standard, interfaces between services and users that the PI matching service and the reference system service implement shall satisfy the requirements of A.3.

2.5 Conformance tests for PI encoding

To conform to this International Standard, encoded instances of PI_PlaceIdentifier shall satisfy the requirements of A.4.

3 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.