INTERNATIONAL STANDARD

**ISO 19155-2**

First edition
2017-08

# Geographic information — Place Identifier (PI) architecture —

## Part 2: Place Identifier (PI) linking

*Information géographique — Architecture d'identifiants de lieu (IL) — Partie 2: Liaison d'identifiants de lieu (IL)*

Reference number
ISO 19155-2:2017(E)

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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).

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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 Technical Committee ISO/TC 211, *Geographic information/Geomatics*.

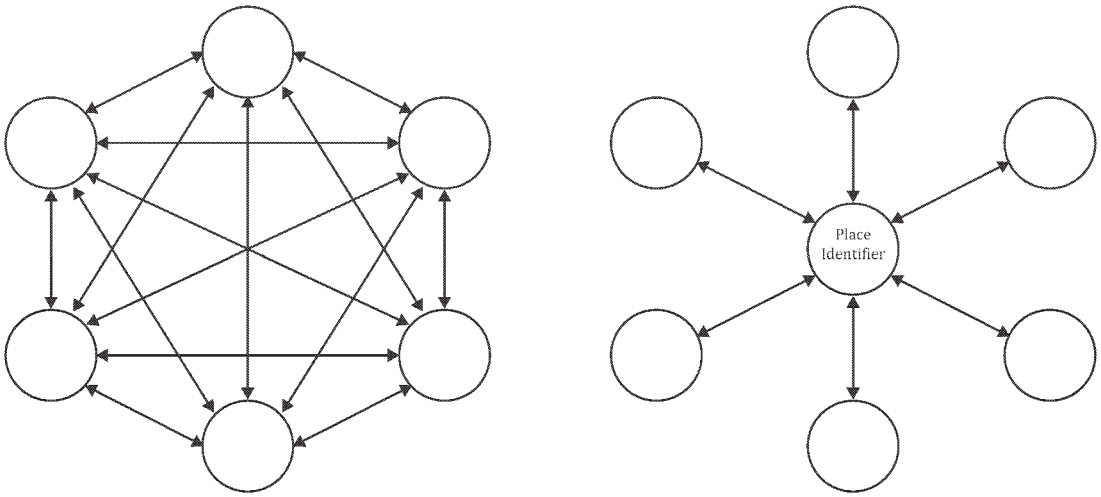
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# Introduction

The Place Identifier (PI) architecture (ISO 19155) defined the conceptual model of a place and specified normative encodings, for Place Identifiers, not specific to any type of geographic feature. In this document, three mechanisms are presented that define how Place Identifiers can be linked with features or objects in other encodings. Even though the identifiers of those features or objects may not specifically be a place, they may be referred to conceptually as "other identifiers."

Figure 1 depicts the abstractions of linking mechanisms among feature/object encoding rules.




**a) Without the use of a Place Identifier** **b) With the use of a Place Identifier**

**Key**

encoding rules

linkages

**Figure 1 — Linkages with other encoding rules**

The linking mechanisms presented in this document are based on accepted information technology for object identification and reference using gml:id, UUID, or URL. By using these linking mechanisms with the rules defined here, and according to the type of encoding rule being linked to, Place Identifiers can more uniformly be related to features and objects — other identifiers — in other encodings. This extends the functionality of those other identifiers, in different encodings, by linking with Place Identifiers encoded in GML.

Existing PI data can complement a range of other encodings through the use of the linking mechanisms defined in this document.

For example, a group of Place Identifiers representing stores in a shopping mall can be associated with the specific locations inside the shopping mall represented by a GML data set.

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# Geographic information — Place Identifier (PI) architecture —

# Part 2: Place Identifier (PI) linking

## 1 Scope

This document defines the following three mechanisms for linking Place Identifiers (PIs) (see ISO 19155) to features or objects existing in other encodings:

— Id attribute of a GML object (gml:id) as defined in ISO 19136;

— Universally Unique Identifier (UUID) as defined in IETF RFC 4122;

— Uniform Resource Locator (URL) as defined in IETF RFC 1738.

These PI linking mechanisms are enabled using xlink:href as defined in W3C XML Linking Language (XLink).

While the identifiers of these features or objects can sometimes identify a place, within the scope of this document, the identifiers of features or objects existing in other encoding domains are referred to conceptually as other identifiers.

This document further defines that when PIs are encoded, as specified in ISO 19155, using the Geography Markup Language (GML) (ISO 19136), they are linked using gml:id to other GML encoded features. The details of encoding GML instances using gml:id are specified in a normative annex.

Additional normative annexes define encodings for linking Place Identifiers to other identifiers using UUID and URL and present examples for their use.

This document is applicable to location-based services, linked open data, robotic assisted services and other application domains that require a relationship between PIs and objects in either the real or virtual world.

This document is not about creating a registry of Place Identifiers linked to specific features or objects, and support of linking mechanisms other than gml:id, UUID, and URL is out of the scope of this document.

## 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, *Geographic information — Conceptual schema language*

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

ISO 19155:2012, *Geographic information — Place Identifier (PI) architecture*

IETF, *Universally Unique IDentifier (UUID) URN Namespace*, RFC 4122, July 2005

IETF, *Uniform Resource Locators (URL)*, RFC 1738, December 1994

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*W3C XML Linking Language (XLink) Version 1.1 — Recommendation*, 06 May 2010

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 19155 and the following apply.

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

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

**3.1**
**Place Identifier (PI) link**
relationship established between PIs and other identifiers in different encoding domains

Note 1 to entry: While the identifiers of these features or objects can sometimes identify a place, within the scope of this document, the identifiers of features or objects existing in other encoding domains are referred to conceptually as “other identifiers”.

Note 2 to entry: These “other identifiers” can exist outside of the PI architecture.

**3.2**
**Place Identifier (PI) linking mechanism**
means used to define a *place identifier (PI) link* (3.1)

## 4 Abbreviated terms

### 4.1 Abbreviated terms

| | |
|---|---|
| BIM | Building Information Model |
| CSV | comma-separated values |
| IFC | Industry Foundation Class |
| GUID | Globally Unique IDentifier |
| OGC | Open Geospatial Consortium |
| PI | Place Identifier |
| RDF | Resource Description Framework |
| SVG | Scalable Vector Graphics |
| UML | Unified Modeling Language |
| URI | Uniform Resource Identifier |
| URL | Uniform Resource Locator |
| URN | Uniform Resource Name |
| UUID | Universally Unique IDentifier |
| XML | eXtensible Markup Language |


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