BS EN ISO 19160-2:2023

BSI Standards Publication

Addressing

Part 2: Assigning and maintaining addresses for objects in the physical world

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National foreword

This British Standard is the UK implementation of EN ISO 19160-2:2023. It is identical to ISO 19160-2:2023.

The UK participation in its preparation was entrusted to Technical Committee IST/36, Geographic information.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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Addressing - Part 2: Assigning and maintaining addresses for objects in the physical world (ISO 19160-2:2023)

Adressage - Partie 2: Attribution et mise à jour des adresses pour les objets du monde physique (ISO 19160-2:2023)

Adressierung - Teil 2: Zuteilung und Pflege von Objektadressen in der physischen Welt (ISO 19160-2:2023)

This European Standard was approved by CEN on 27 October 2023.

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European foreword

This document (EN ISO 19160-2:2023) 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.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 2024, and conflicting national standards shall be withdrawn at the latest by May 2024.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

Any feedback and questions on this document should be directed to the users’ national standards body/national committee. A complete listing of these bodies can be found on the CEN website.

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The text of ISO 19160-2:2023 has been approved by CEN as EN ISO 19160-2:2023 without any modification.

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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).

A list of all parts in the ISO 19160 series can be found on the ISO website.

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Introduction

An address is structured information that allows the unambiguous determination of an object for purposes of identification and location (ISO 19160-1:2015). The objects exist in the physical world (i.e. virtual objects are excluded) and can be outdoor (e.g. a building) or indoor (e.g. an office inside a building).

Addresses provide one of the most common ways to locate and identify an object in the physical world. They are essential for the management of cities, for governance and public administration generally, for service delivery in the public and private sector, and they can give people status or (legal) identity in society. They also play an important role in detecting emerging hotspots and clusters of infected cases during an epidemic or pandemic. Yet, in many parts of the world, addresses do not exist or are poorly maintained, and even if they exist, corresponding address data is often lacking or incomplete. Many stakeholders are involved in address assignment and maintenance, including local governments, postal operators, geographic naming councils, people who live or work at an address, and users of addresses, such as banks, local and national governments, e-commerce, and service providers for utilities, deliveries and emergency response.

This document specifies how to plan, implement and maintain addresses and corresponding address data in order to gain maximum benefits for governance and society in the long run. The aim of this document is to facilitate the design, planning and implementation of address assignment and maintenance by specifying requirements and recommendations for objectives, principles, good practice and a governance framework for assigning and maintaining addresses based on international good practice. Where regional or national standards already exist, this document can complement them.

This document supports the first goal of the United Nations Global Geospatial Information Management (UN-GGIM) Integrated Geospatial Information Framework (IGIF) (http://ggim.un.org/), namely, enabling geospatial (address) information governance, policy and institutional arrangements that ensure effective geospatial (address) information management, accommodate individual organizational requirements and arrangements, and that are aligned to national and global policy frameworks.

This document supports the Universal Postal Union's initiative, "Addressing the World – An Address for Everyone", which promotes the establishment of national addressing infrastructures to the benefit of all. The document is also useful for those involved in slum upgrading, as addresses are often assigned when housing conditions in settlements are being improved.

In many Euro-centric countries, reference to a road network in the address is common, while addresses in countries such as Japan comprise a hierarchy of administrative areas without reference to a thoroughfare. In countries with vast tracts of land, an address can comprise only a place name or the name of an oasis in a desert. Therefore, this document does not intend to promote uniform addresses across the world. It specifies good governance and management practices for any kind of address so that challenges related to address assignment and maintenance can be resolved consistently and sustainably. The requirements and recommendations in this document are aimed at upholding a long-lasting addressing infrastructure that meets today's needs for addressing, but can also be used by future generations.

This document is part of the ISO 19160 series on addressing. The other parts in the ISO 19160 series include:

— ISO 19160-1, *Addressing – Part 1: Conceptual model*, which lays out a conceptual model for address information (address model), and provides terms and definitions that describe the concepts in the model. A profile of ISO 19160-1 is a model that specifies addresses and address data for a specific country, region or application.

— ISO 19160-3, *Addressing – Part 3: Address data quality*, which establishes a set of data quality elements and measures for describing the quality of address data. ISO 19160-3 also describes procedures for reporting data quality and provides guidelines for the use of the established set of data quality elements and measures for describing the quality of address data. By using ISO 19160-3 to assess

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and describe the quality of address data, information about the quality can be shared and the data can be improved accordingly (if necessary).

— ISO 19160-4, *Addressing – Part 4: International postal address components and template language*, which defines key terms for postal addressing, postal address components and constraints on their use. ISO 19160-4 is also published as UPU S42 by the Universal Postal Union. ISO 19160-4 is a profile of ISO 19160-1, i.e. it is a conceptual model for addresses used for postal addressing.

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Addressing —

Part 2:
Assigning and maintaining addresses for objects in the physical world

1 Scope

This document focuses on assigning and maintaining addresses that allow the unambiguous determination of an object in the physical world for purposes of identification and location in the context of public administration and public service delivery. During assignment, an address is first associated with a particular object in the physical world. During maintenance, the address changes, for example, it is re-assigned to a different object, one or more of the address components are modified (e.g. a street name change), or the address is retired when it is no longer used. This document:

a) specifies a good practice for assigning and maintaining addresses and address data; and

b) specifies a governance framework for assigning and maintaining addresses and address data.

Very often local governments (e.g. municipalities) are assigned the mandate for the planning, implementation, evaluation and ongoing maintenance of addresses, and they are often supported by other organizations, such as the national government, a postal agency, private sector companies and national or regional organizations. This document is applicable to all organizations who have an interest, role or responsibility in address assignment and maintenance, for example in terms of:

— developing legislation, policies or regulations for addressing;

— facilitating and coordinating the naming of address components (the constituent parts of an address) and announcing and communicating these names;

— installing address component signs in the physical world;

— designing and implementing business processes related to address assignment and maintenance;

— designing, implementing and maintaining access to address data;

— developing software to facilitate the above; and

— using addresses.

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 19105, *Geographic information — Conformance and testing*

3 Terms and definitions

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

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

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

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

3.1
address
structured information that allows the unambiguous determination of an object for purposes of identification and location

EXAMPLE 1 Address where the object is a business: 611 Fifth Avenue, New York NY 10022.

EXAMPLE 2 Address where the object is a building: Lombardy House, 809 Lombardy Street, The Hills, 0039, South Africa.

EXAMPLE 3 Address where the object is a building: 411 Hannuri-daero, Sejong 30116, Republic of Korea.

EXAMPLE 4 Address where the object is a thing, e.g. an emergency water supply facility: 201-ho, 107 Samcheong-ro, Jongno-gu, Seoul 03049, Republic of Korea.

EXAMPLE 5 Address where the object is a natural object, e.g. a park: Ujung Kulon National Park, Ujunjaya, Banten, Republic of Indonesia.

Note 1 to entry: The object is identifiable in the real world, i.e. electronic and virtual addresses are excluded.

Note 2 to entry: "Identification" refers to the fact that the structured information in the address unambiguously determines the object, i.e. it helps the human to identify the object. In other words, "identification" here does not refer to unique identifiers in a database or dataset.

Note 3 to entry: There can be many addresses for an object, but at any moment (or lifecycle stage), an address unambiguously determines a single object.

Note 4 to entry: Two addresses from two different *address classes* (3.4) (i.e. they have different sets of components) for the same *addressable object* (3.2) are two different addresses.

Note 5 to entry: Two addresses for the same addressable object and from the same address class, but in two different languages are two different addresses.

Note 6 to entry: In addition to the addressable object, there may be a multitude of people, organizations, addressees or other objects associated with an address. These are external to the address model.

[SOURCE: ISO 19160-1:2015, 4.1, modified — Example 3 has been modified. Example 4 has been added. Notes 3, 4, 5 and 6 to entry have been shortened.]

3.2
addressable object
object that may be assigned an *address* (3.1)

[SOURCE: ISO 19160-1:2015, 4.2]

3.3
address assignment method
way in which addresses are assigned according to the rules of an *address reference system* (3.10)

3.4
address class
description of a set of addresses that share the same *address components* (3.5), operations, methods, relationships, and semantics

EXAMPLE 1 "25 Blue Avenue Hatfield 0028" and "384 Green Street Motherville 2093" are from the same address class.

EXAMPLE 2 "PO Box 765 Goodwood 33948" and "PO Box 567 Grayville 98373" are from the same address class.

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[SOURCE: ISO 19160-1:2015, 4.4]

3.5
address component
constituent part of the *address* (3.1)

Note 1 to entry: An address component may reference another object such as a spatial object (e.g. an administrative boundary or a land parcel) or a non-spatial object (e.g. an organization or a person).

Note 2 to entry: An address component may have one or more alternative values, e.g. alternatives in different languages or abbreviated alternatives.

[SOURCE: ISO 19160-1:2015, 4.5]

3.6
address data management system
system concerned with the organization and control of address data

Note 1 to entry: Adapted for use in the *addressing* (3.7) domain from ISO/IEC TR 10032:2003, 2.30.

3.7
addressing
activities involving addresses

[SOURCE: ISO 19160-1:2015, 4.6]

3.8
addressing infrastructure
fundamental facilities, services, systems and installations that provide a country, city or area with addresses required for the functioning of society

3.9
addressing stakeholder
individual, group of people or organization with an interest, or with a role or responsibility in the *governance framework* (3.15) for address assignment and maintenance

EXAMPLE 1 A citizen (individual) or an organization has an interest in the address for their place of residence or business to be included in a municipal dataset.

EXAMPLE 2 A community (group of people) has an interest in the names assigned to streets in their suburb.

EXAMPLE 3 A municipality (organization) has the responsibility to assign or maintain addresses within its area of jurisdiction.

EXAMPLE 4 A private sector service provider who maintains address data on behalf of a municipality.

Note 1 to entry: Adapted for use in the *addressing* (3.7) domain from ISO/PAS 19450:2015, 3.65.

3.10
address reference system
defined set of *address components* (3.5) and the rules for their combination into addresses

Note 1 to entry: The *address assignment method* (3.3) creates addresses according to the rules of the address reference system.

[SOURCE: ISO 19160-1:2015, 4.8, modified — Note 1 to entry has been added.]

3.11
child address
address (3.1) defined relative to a *parent address* (3.17)

[SOURCE: ISO 19160-1:2015, 4.9]

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3.12
child addressable object
addressable object (3.2) that is addressed relative to another addressable object

EXAMPLE 1 An apartment within an apartment building.

EXAMPLE 2 In Japan, a *jukyo bango* (residence number) within a *gaiku* (block).

EXAMPLE 3 A building within a complex of buildings. In Korea, a *dong* (wing or section of a building) within a group of buildings.

[SOURCE: ISO 19160-1:2015, 4.10]

3.13
emergency management
overall approach for preventing emergencies and managing those that occur

Note 1 to entry: In general, emergency management utilizes a risk management approach to prevention, preparedness, response and recovery before, during and after potentially destabilizing events and/or disruptions.

[SOURCE: ISO 22300:2021, 3.1.88]

3.14
good practice
method that has been proven to work well and produce good results, and is therefore recommended as a model

Note 1 to entry: Methods or techniques described as good practice have usually been tested over time and validated, in the broad sense, through repeated trials before being accepted as worthy of adoption more broadly.

Note 2 to entry: A good practice is typically derived from practitioners who work in a specified field, e.g. in the assignment and maintenance of addresses and address data, after it has been proven in practice.

Note 3 to entry: Even though a good practice is only recommended as a model, if it is followed, then some parts or aspects of it may be required. Therefore, the requirements specified for a good practice in this document are conditional requirements, i.e. they are required only if the good practice is followed.

[SOURCE: ISO 14055-1:2017, 3.1.3, modified — Notes 2 and 3 to entry have been added.]

3.15
governance framework
<addressing> strategies, policies, decision-making structures and accountabilities through which *addressing stakeholders* (3.9) assign and maintain addresses in a sustainable manner

EXAMPLE Citizens have an interest in addresses and are therefore addressing stakeholders, but they do not necessarily have any accountabilities in the governance framework.

Note 1 to entry: Not all addressing stakeholders are assigned tasks and responsibilities in the governance framework.

Note 2 to entry: The requirements specified for a governance framework in this document are conditional requirements, i.e. they are required only if a governance framework is implemented.

Note 3 to entry: Adapted for use in the *addressing* (3.7) domain from ISO/IEC TR 38502:2017, 3.1.

3.16
interoperability
capability to communicate, execute programs, or transfer data among various functional units in a manner that requires the user to have little or no knowledge of the unique characteristics of those units

[SOURCE: ISO/IEC 2382:2015, 2121317, modified — Notes 1 and 2 to entry have been removed.]

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3.17
parent address
address (3.1) of a *parent addressable object* (3.18)

Note 1 to entry: Addresses of the *child addressable objects* (3.12) fully inherit the *address components* (3.5) of a parent address.

[SOURCE: ISO 19160-1:2015, 4.13]

3.18
parent addressable object
addressable object (3.2) that fully encloses one or more other addressable objects

EXAMPLE 1 An apartment building with many apartments within.

EXAMPLE 2 In Japan, a *gaiku* (block) with many *jukyo bango* (residence number).

EXAMPLE 3 A complex of many buildings. In Korea, a group of buildings with many *dong* (wings or sections of a building).

[SOURCE: ISO 19160-1:2015, 4.14]

3.19
profile
set of one or more base standards or subsets of base standards, and, where applicable, the identification of chosen clauses, classes, options and parameters of those base standards, that are necessary for accomplishing a particular function

EXAMPLE The South African national standard for address data exchange, SANS 1883-2:2018, is a profile of ISO 19160-1:2015. It specifies a selection of clauses, classes and options from ISO 19160-1:2015 to be used for the exchange of address data in South Africa.

Note 1 to entry: A profile is derived from base standards so that by definition, conformance to a profile is conformance to the base standards from which it is derived.

[SOURCE: ISO 19106:2004, 4.5, modified — An EXAMPLE has been added.]

3.20
public service
work, information, a commodity or utility that is provided to the general public to add value

EXAMPLE Running water, post (mail), sewage, refuse collection, electricity, emergency response.

Note 1 to entry: Adapted from SANS 1883-1:2009[27] and Avis (2016).[10]

3.21
service delivery
interaction between a provider and a client where the provider offers a service

EXAMPLE 1 Many governments are providers of public services, such as running water, electricity and emergency response.

EXAMPLE 2 "In order to support the concept of the single postal territory of the Union, member countries shall ensure that all users/customers enjoy the right to a universal postal service involving the permanent provision of quality basic postal services at all points in their territory, at affordable prices."[34]

Note 1 to entry: Good service delivery provides clients with an increase in value. The provision of sufficient, affordable and quality basic services is considered a core function of governments. Service delivery, e.g. water, sanitation, waste management and housing, correlates closely with the health and well-being of citizens.

Note 2 to entry: Adapted from Avis (2016).[10]

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4 Conformance

This document defines conformance classes for the respective specification targets in Table 1, in accordance with ISO 19105:2022. An objective, good practice or governance framework for assigning and maintaining addresses claiming conformance with this document shall implement the relevant conformance class. Conformance with this document shall be assessed against the relevant conformance test cases specified in the abstract test suite in Annex A of this document.

The name and contact information of the maintenance agency for this document can be found at www.iso.org/maintenance_agencies.

Table 1 — Conformance classes

Conformance class	Specification target	Unique Resource Identifier (URI)	Abstract test suite
GoodPractice	Good practice for assigning and maintaining addresses	/19160/-2/1/conf/goodPractice	A.2
GovernanceFramework	Governance framework for assigning and maintaining addresses	/19160/-2/1/conf/governanceFrame-work	A.3

Some of the conformance classes are structured into subclasses, as indicated in Figure 1. A conformance class is dependent on its subclasses, i.e. the subclasses are also used to test conformance to the parent conformance class. Annex A includes a comprehensive diagram that also lists requirements and recommendations under each of the conformance classes.

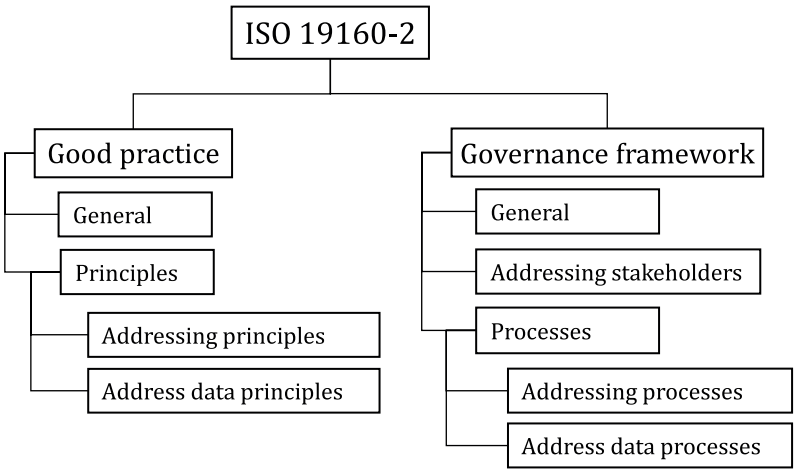

Figure 1 — Conformance classes and their subclasses

For easy reference, the requirements and recommendations specified in this document are listed in Tables 2 and 3.

Table 2 — Requirements specified in this document

No	Identifier	Clause
1	/req/goodPractice/general/objectives	7.1
2	/req/goodPractice/general/context	7.1
3	/req/goodPractice/general/conceptualModel	7.1
4	/req/goodPractice/general/licence	7.1
5	/req/goodPractice/general/communicationThroughPhysicalIdentifiers	7.1
6	/req/goodPractice/principles/addressing/sustainableAssignmentMethod	7.2.1

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Table 2 *(continued)*

No	Identifier	Clause
7	/req/goodPractice/principles/addressing/pilotingAssignmentMethod	7.2.1
8	/req/goodPractice/principles/addressing/deviceIndependence	7.2.1
9	/req/goodPractice/principles/addressing/noPersonalInformation	7.2.1
10	/req/goodPractice/principles/addressing/dimensionsCongruentWithObjectives	7.2.1
11	/req/goodPractice/principles/addressing/suitableComponents	7.2.1
12	/req/goodPractice/principles/addressData/representsAddressInPhysicalWorld	7.2.2
13	/req/goodPractice/principles/addressData/interoperability	7.2.2
14	/req/goodPractice/principles/addressData/dataMaintenance	7.2.2
15	/req/goodPractice/principles/addressData/digitalMaintenance	7.2.2
16	/req/governanceFramework/general/strategy	8.1
17	/req/governanceFramework/general/policies	8.1
18	/req/governanceFramework/general/goodPractice	8.1
19	/req/governanceFramework/addressingStakeholders/identification	8.2
20	/req/governanceFramework/addressingStakeholders/responsibilities	8.2
21	/req/governanceFramework/addressingStakeholders/mandates	8.2
22	/req/governanceFramework/addressingStakeholders/resourcing	8.2
23	/req/governanceFramework/addressingStakeholders/sustainability	8.2
24	/req/governanceFramework/processes/specification	8.3
25	/req/governanceFramework/processes/tasks	8.3
26	/req/governanceFramework/processes/addressing/initiationProcess	8.3.1
27	/req/governanceFramework/processes/addressing/proposeValuesProcess	8.3.1
28	/req/governanceFramework/processes/addressing/approvalProcess	8.3.1
29	/req/governanceFramework/processes/addressing/announcementProcess	8.3.1
30	/req/governanceFramework/processes/addressing/communicationProcess	8.3.1
31	/req/governanceFramework/processes/addressData/updateProcess	8.3.2
32	/req/governanceFramework/processes/addressData/distributionProcess	8.3.2

Table 3 — Recommendations specified in this document

No	Identifier	Clause
1	/rec/goodPractice/general/objectivesforPublicGood	7.1
2	/rec/goodPractice/general/ISO19160-1Profile	7.1
3	/rec/goodPractice/general/intellectualPropertyRights	7.1
4	/rec/goodPractice/general/facilitateAssignment	7.1
5	/rec/goodPractice/general/keepingAddressDataInSynch	7.1
6	/rec/goodPractice/principles/addressing/unambiguity	7.2.1
7	/rec/goodPractice/principles/addressing/equivalentDigitalRecord	7.2.1
8	/rec/goodPractice/principles/addressing/updateAddressData	7.2.1
9	/rec/goodPractice/principles/addressData/conformsToISO19160-1	7.2.2
10	/rec/goodPractice/principles/addressData/conformsToISO19160-4	7.2.2
11	/rec/goodPractice/principles/addressData/conformsToISO19160-3	7.2.2
12	/rec/goodPractice/principles/addressData/sharing	7.2.2
13	/rec/governanceFramework/general/policiesSupportObjectivesAndContext	8.1
14	/rec/governanceFramework/processes/addressing/consultationProcess	8.3.1

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5 Notation — identifiers

URIs for identifiable provisions in this document are specified as partial URIs relative to https://standards.isotc211.org/19160/-2/1, as specified in ISO 19105.

6 Overview

An addressing infrastructure is a key infrastructure for any country, notably because establishing legal identity often depends on having an address, and because urban development, economic growth and the provision of basic services are inextricably linked to the existence of a sound addressing infrastructure.[33] This document specifies how addresses should be assigned and maintained to strengthen a country's addressing infrastructure.

Figure 2 illustrates the relationships between different aspects related to assigning and maintaining addresses. A good practice for assigning and maintaining addresses to objects has a specific purpose reflected in a set of objectives (i.e. why are the addresses assigned?). The good practice is guided by these objectives (e.g. for service delivery or tax collection) together with the context (e.g. slum upgrading or smart cities) in which address assignment and maintenance takes place. This good practice is based on a set of addressing principles, i.e. rules according to which addresses are assigned and maintained, and a set of principles for address data, i.e. rules according to which address data are maintained in an address data management system. A governance framework for assigning and maintaining addresses specifies how the good practice is implemented by some of the addressing stakeholders in order to sustainably maintain addresses that conform to ISO 19160-1:2015 and achieve maximum benefits for governance and society.

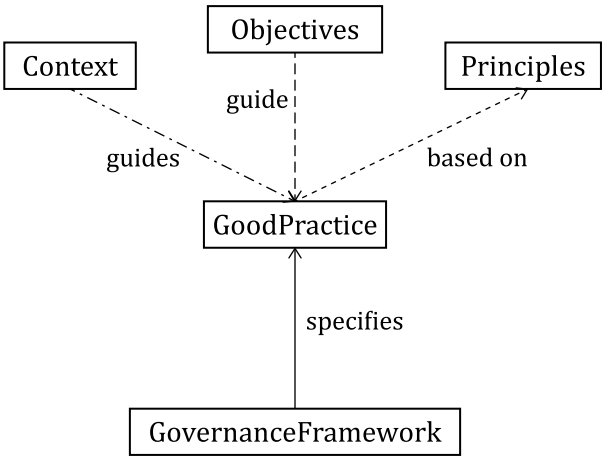

Figure 2 — Relationship between context, objectives, principles, good practice and the governance framework for address assignment and maintenance

Figure 3 provides a more detailed overview of all the aspects of address assignment and maintenance described this document.

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