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Entwurf**Adressierung –****Teil 2: Zuteilung und Pflege von Objektadressen in der physischen Welt
(ISO/DIS 19160-2:2022);
Englische Fassung prEN ISO 19160-2:2022**

Addressing –

Part 2: Assigning and maintaining addresses for objects in the physical world
(ISO/DIS 19160-2:2022);
English version prEN ISO 19160-2:2022

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Nationales Vorwort

Dieses Dokument (prEN ISO 19160-2:2022) wurde vom Technischen Komitee ISO/TC 211 „Geographic information/Geomatics“ in Zusammenarbeit mit dem Technischen Komitee CEN/TC 287 „Geoinformation“ erarbeitet, dessen Sekretariat von BSI (Vereinigtes Königreich) gehalten wird.

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Dieses Dokument enthält unter Berücksichtigung des DIN-Präsidialbeschlusses 1/2004 nur die Englische Fassung von prEN ISO 19160-2:2022.

Für die in diesem Dokument zitierten Dokumente wird im Folgenden auf die entsprechenden deutschen Dokumente hingewiesen:

ISO 19105	siehe	DIN EN ISO 19105
ISO 19152:2012	siehe	DIN EN ISO 19152:2013-03
ISO 19160-4:2017	siehe	DIN EN ISO 19160-4:2018-03

Aktuelle Informationen zu diesem Dokument können über die Internetseiten von DIN (www.din.de) durch eine Suche nach der Dokumentennummer aufgerufen werden.

Nationaler Anhang NA (informativ)

Begriffe

Reihenfolge und Inhalt der folgenden Begriffe sind identisch mit denen im Abschnitt Begriffe der englischen Fassung.

Für die Anwendung dieses Dokuments gelten die Begriffe nach ISO 19160-1:2015 und die folgenden Begriffe.

ISO und IEC stellen terminologische Datenbanken für die Verwendung in der Normung unter den folgenden Adressen bereit:

- ISO Online Browsing Platform: verfügbar unter <https://www.iso.org/obp>
- IEC Electropedia: verfügbar unter <https://www.electropedia.org/>

3.1

Adresse

strukturierte Informationen, mit denen sich ein Objekt zum Zwecke von Identifizierung und Ort eindeutig festlegen lässt

BEISPIEL 1 Adresse, bei der das Objekt ein Geschäft ist: 611 Fifth Avenue, New York NY 10022.

BEISPIEL 2 Adresse, bei der das Objekt ein Gebäude ist: Lombardy House, 809 Lombardy Street, The Hills, 0039, Südafrika.

BEISPIEL 3 Adresse, bei der das Objekt ein Stück Land für ein Gebäude ist: San 4–5, Munjae-ro, Songpa-gu, Seoul, 13144, Südkorea.

BEISPIEL 4 Adresse, bei der das Objekt eine Gebäudegruppe, wie z. B. eine Schule oder ein großer Apartmentkomplex ist: 228-dong 404-ho, 26 Kyunghee-daero, Dongdaemun-gu, Seoul 130–701, Südkorea.

Anmerkung 1 zum Begriff: Das Objekt kann in der realen Welt identifiziert werden, d. h. elektronische und virtuelle Adressen sind ausgeschlossen.

Anmerkung 2 zum Begriff: „Identifizierung“ bezieht sich darauf, dass die strukturierte Information in der Adresse das Objekt eindeutig bestimmt, d. h. es hilft einem Menschen, das Objekt zu identifizieren. Mit anderen Worten: „Identifizierung“ bezieht sich hier nicht auf eindeutige Identifikatoren in einer Datenbank oder einem Datensatz.

Anmerkung 3 zum Begriff: Ein Objekt kann viele Adressen haben, aber zu jeder Zeit (oder Stufe im Lebenszyklus) bestimmt eine Adresse eindeutig ein einzelnes Objekt.

Anmerkung 4 zum Begriff: Zwei Adressen aus zwei verschiedene Adressklassen (3.4) (d. h. sie verfügen über unterschiedliche Komponentensätze) für das gleiche *adressierbare Objekt* (3.2) stellen zwei verschiedene Adressen dar.

Anmerkung 5 zum Begriff: Zwei Adressen desselben adressierbaren Objekts und derselben Adressklasse, jedoch in zwei verschiedenen Sprachen sind zwei verschiedene Adressen (siehe Anhang E für weitere Beispiele).

Anmerkung 6 zum Begriff: Neben dem adressierbaren Objekt gibt es womöglich eine Vielzahl von Menschen, Organisationen, Adressen oder anderen Objekten, die einer Adresse zugeordnet sind. Diese liegen außerhalb des Adressmodells.

[QUELLE: ISO 19160-1:2015, 4.1]

3.2

adressierbares Objekt

Objekt, dem eine *Adresse* (3.1) zugeteilt werden kann

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

3.3

Zuteilungsverfahren für Adressen

Methode, mit der Adressen in Übereinstimmung mit einem *Adressbezugssystem* (3.10) zugeteilt werden

3.4

Adressklasse

Beschreibung einer Gruppe von Adressen, die die gleichen *Adresskomponenten* (3.5), Methoden, Verfahren, Beziehungen und Bedeutung teilt

BEISPIEL 1 „25 Blue Avenue Hatfield 0028“ und „384 Green Street Motherville 2093“ gehören zur gleichen Adressklasse.

BEISPIEL 2 „PO Box 765 Goodwood 33948“ und „PO Box 567 Grayville 98373“ gehören zur gleichen Adressklasse.

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

3.5

Adresskomponente

einzelner Bestandteil einer *Adresse* (3.1)

Anmerkung 1 zum Begriff: Eine Adresskomponente kann sich auf ein anderes Objekt, wie z. B. ein raumbezogenes Objekt (z. B. eine Verwaltungsgrenze oder ein Stück Land) oder ein nicht raumbezogenes Objekt (z. B. eine Organisation oder Person) beziehen.

Anmerkung 2 zum Begriff: Eine Adresskomponente kann einen oder mehrere alternative Werte besitzen, z. B. Übersetzungen in verschiedene Sprachen oder Abkürzungen.

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

3.6

Managementsystem von Adressdaten

System zur Organisation und Überprüfung von Adressdaten

Anmerkung 1 zum Begriff: Angepasst für die Verwendung im Bereich *Adressierung* (3.7) aus ISO/IEC TR 10032:2003, 2.30.

[QUELLE: ISO/IEC TR 10032:2003, 2,30, modifiziert]

3.7

Adressierung

Tätigkeiten, die Adressen umfassen

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

3.8

Adressierungsinfrastruktur

grundlegende Einrichtungen, Dienste, Systeme und Anlagen, die einem Land, einer Stadt oder Region Adressen zur Verfügung stellen, die für eine funktionierende Gesellschaft notwendig sind

3.9

Adressierungspartei

Individuum, Personengruppe oder Organisation mit Interesse oder Verantwortung im *Governance-Rahmenwerk* (3.13) für die Zuteilung und Pflege von Adressen

BEISPIEL 1 Ein Bürger (Individuum) oder eine Organisation hat ein Interesse an der Aufnahme der Adresse ihres Wohnorts oder Geschäftssitzes in den Datenbestand der Gemeinde.

BEISPIEL 2 Eine Gemeinschaft (Personengruppe) hat ein Interesse an den Namen, die den Straßen in ihrem Vorort zugeteilt werden.

BEISPIEL 3 Eine Gemeinde (Organisation) hat die Verantwortung, Adressen innerhalb ihres Zuständigkeitsbereichs zuzuteilen oder zu pflegen.

BEISPIEL 4 Ein Dienstanbieter im privaten Sektor, der die Adressdaten für eine Gemeinde pflegt.

Anmerkung 1 zum Begriff: Angepasst für die Verwendung im Bereich *Adressierung* (3.7) aus ISO/PAS 19450:2015, 3.65.

[QUELLE: Angepasst aus ISO/PAS 19450:2015, 3.65, modifiziert]

3.10

Adressbezugssystem

definierter Satz von *Adresskomponenten* (3.5) und Regeln zur Kombination in Adressen

Anmerkung 1 zum Begriff: *Das Zuteilungsverfahren für Adressen* (3.3) erzeugt Adressen in Übereinstimmung mit den Regeln des Adressbezugssystems.

[QUELLE: ISO 19160-1:2015, 4.8, geändert – Anmerkung 1 zum Begriff wurde hinzugefügt]

3.11

Notfallmanagement

umfassende Maßnahmen zur Verhinderung von Notfällen und zur Bewältigung von auftretenden Notfällen

Anmerkung 1 zum Begriff: Im Allgemeinen verwendet das Notfallmanagement den Risikomanagement-Ansatz zur Notfallvorsorge, Reaktion und Wiederherstellung vor, während und nach potentiell destabilisierenden Ereignissen und/oder Störungen.

[QUELLE: ISO 22300:2018, 3.78]

3.12

gute Praxis

bewährtes Verfahren, das gute Ergebnisse liefert und daher als Modell empfohlen wird

Anmerkung 1 zum Begriff: Verfahren oder Techniken, die als gute Praktiken beschrieben werden, wurden üblicherweise im Laufe der Zeit im weitesten Sinne durch wiederholte Tests geprüft und validiert, bevor sie umfassender übernommen wurden.

Anmerkung 2 zum Begriff: Eine gute Praxis stammt typischerweise von Fachleuten aus einem bestimmten Gebiet, z. B. in der Zuteilung und Pflege von Adressen und Adressdaten, nachdem sie sich in der Praxis bewährt hat.

Anmerkung 3 zum Begriff: Eine gute Praxis wird lediglich als Modell empfohlen. Wenn sie jedoch befolgt wird, können Teile oder Punkte davon erforderlich werden. Daher stellen die in diesem Dokument festgelegten guten Praktiken bedingte Anforderungen dar, d. h. sie sind nur dann erforderlich, wenn die gute Praxis befolgt wird.

[QUELLE: ISO 14055-1:2017, 3.1.3, modifiziert – Anmerkungen 2 und 3 zum Begriff wurden hinzugefügt]

3.13

Governance-Rahmenwerk

Strategien, Richtlinien, Strukturen zur Entscheidungsfindung und Verantwortlichkeit für <Adressierung>, durch die die *Adressierungspartei* (3.9) Adressen auf nachhaltige Weise zuteilen und pflegen

BEISPIEL Bürger haben ein Interesse an Adressen und sind daher Adressierungsparteien, aber sie tragen keine Verantwortung im Governance-Rahmenwerk.

Anmerkung 1 zum Begriff: Nicht allen Adressierungsparteien werden Aufgaben und Verantwortlichkeiten im Governance-Rahmenwerk zugewiesen.

Anmerkung 2 zum Begriff: Die in diesem Dokument enthaltenen Anforderungen für ein Governance-Rahmenwerk sind bedingte Anforderungen, d. h. sie sind nur dann erforderlich, wenn ein Governance-Rahmenwerk eingeführt wurde.

Anmerkung 3 zum Begriff: Für die Verwendung im Bereich *Adressierung* (3.7) aus ISO/IEC TR 38502:2017, 3.1 angepasst.

[QUELLE: ISO/IEC TR 38502:2017, 3.1, modifiziert]

3.14

Interoperabilität

Fähigkeit zur Kommunikation, Ausführung von Programmen oder Übertragung von Daten in verschiedenen funktionalen Einheiten auf eine Weise, die es notwendig macht, dass der Nutzer wenig oder kein Wissen über die einzigartigen Eigenschaften dieser Einheiten hat

[QUELLE: ISO 19101-2:2018, 3.17]

3.15

Profil

Satz eines oder mehrerer Basisstandards oder Teilsätze von Basisstandards und, sofern anwendbar, die Identifikation von ausgewählten Abschnitten, Klassen, Möglichkeiten und Parametern dieser Basisstandards, die zur Erfüllung einer bestimmten Funktion notwendig sind

BEISPIEL Die nationale südafrikanische Norm zum Austausch von Adressdaten, SANS 1883-2:2018, ist ein Profil von ISO 19160-1:2015, Addressing – Part 1: Conceptual model. Sie legt eine Auswahl von Abschnitten, Klassen und Möglichkeiten nach ISO 19160-1:2015 zum Austausch von Adressdaten in Südafrika fest.

Anmerkung 1 zum Begriff: Ein Profil stammt aus Basisstandards, sodass per Definition Konformität mit einem Profil gleichzeitig Konformität mit dem Basisstandard, aus dem es stammt, bedeutet.

[QUELLE: ISO 19106:2004, 4.5, modifiziert – ein BEISPIEL wurde hinzugefügt]

3.16

öffentliche Dienstleistung

Arbeit, Information, Ware oder Versorgungsleistung, die der Öffentlichkeit zur Schaffung eines Mehrwerts zur Verfügung gestellt wird

BEISPIEL Fließendes Wasser, Post, Abwasser, Abfallbeseitigung, Stromversorgung, Reaktion auf Notfälle.

Anmerkung 1 zum Begriff: Angepasst aus SANS 1883-1:2009 und Avis (2016).

3.17

Lieferung von Dienstleistungen

Interaktion zwischen Anbieter und Kunde, bei der der Anbieter eine Dienstleistung anbietet

BEISPIEL 1 Viele Regierungen sind Anbieter öffentlicher Leistungen, wie z. B. fließendes Wasser, Strom und Notfallmaßnahmen.

BEISPIEL 2 „Um das Konzept eines einzelnen Postgebiets in der Union zu unterstützen, müssen Mitgliedsstaaten sicherstellen, dass Nutzer/Kunden über ein umfassendes Recht an einer Postdienstleistung verfügen, die die dauerhafte Bereitstellung einer hochwertigen grundlegenden Postdienstleistung in ihrem Gebiet zu erforderlichen Preisen umfasst.“ (UPU 2018).

Anmerkung 1 zum Begriff: Die Lieferung von guten Dienstleistungen bringt für Kunden eine Wertsteigerung. Die Bereitstellung von genügend, erschwinglichen und hochwertigen Grundleistungen ist die Kernfunktion von Regierungen. Die Lieferung von Dienstleistungen, z. B. Wasser, sanitären Einrichtungen, Abfallmanagement und Wohnraum, hängt mit der Gesundheit und dem Wohlbefinden der Bürger zusammen.

Anmerkung 2 zum Begriff: Angepasst aus Avis (2016).

Nationaler Anhang NB
(informativ)

Literaturhinweise

DIN EN ISO 19105, *Geoinformation — Konformität und Prüfung*

DIN EN ISO 19152:2013-03, *Geoinformation — Land Administration Domain Model (LADM) (ISO 19152:2012); Englische Fassung EN ISO 19152:2012*

DIN EN ISO 19160-4:2018-03, *Adressierung — Teil 4: Bestandteile internationaler postalischer Anschriften und Template-Sprachen (ISO 19160-4:2017); Deutsche Fassung EN ISO 19160-4:2017*

- Entwurf -

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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 of 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 www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 211, *Geographic information/Geomatics*.

A list of all parts in the ISO 19160 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

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 standard 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 standard 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 standard can complement them.

This standard 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 standard 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 standard 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 standard 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 standard 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 standard is part of the multi-part ISO 19160 standard on addressing:

- ISO 19160-1:2015, Addressing – Part 1: Conceptual model, defines a conceptual model for address information (address model), together with the terms and definitions that describe the concepts in the model.
- ISO 19160-3:2020, Addressing – Part 3: Address data quality, establishes a set of data quality elements and measures for describing the quality of address data; 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.

- ISO 19160-4:2017, Addressing – Part 4: International postal address components and template language, defines key terms for postal addressing, postal address components and constraints on their use.
- ISO 19160-6, Addressing – Part 6: Digital interchange models, is currently under development. It specifies a set of data models suitable for machine encoding of address information.

The preparatory work for this standard recommended a project on good practices for address assignment schemes. This part of ISO 19160 implements this recommendation, albeit under a modified titled.

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, e.g., 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 standard

- 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 national government, a postal agency, private sector companies and national or regional organizations. This standard is of relevance and applicable to all these organizations who have an interest, role or responsibility in address assignment and maintenance, such as

- 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 standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 19105:2021, *Geographic information — Conformance and Testing*

ISO 19160-1:2015, *Addressing — Part 1: Conceptual model*

3 Terms and definitions

For the purposes of this document, all the terms and definitions given in ISO 19160-1:2015 and the following apply.

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 land parcel for a building: San 4–5, Munjae-ro, Songpa-gu, Seoul, 13144, South Korea.

EXAMPLE 4 Address where the object is a building group, such as a school or large apartment area: 228-dong 404-ho, 26 Kyunghee-daero, Dongdaemun-gu, Seoul 130–701, South Korea.

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 (refer to Annex E for more examples).

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]

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.

[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.

[SOURCE: ISO/IEC TR 10032:2003, 2.30, modified]

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* (3.13) 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.

[SOURCE: Adapted from ISO/PAS 19450:2015, 3.65, modified]

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 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, preparedness, response and recovery before, during and after potentially destabilizing events and/or disruptions.

[SOURCE: ISO 22300:2018, 3.78]

3.12 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]

3.13 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 may not 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.

[SOURCE: ISO/IEC TR 38502:2017, 3.1, modified]

3.14 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 19101-2:2018, 3.17]

3.15 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, Addressing – Part 1: Conceptual model. 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]

3.16

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 and Avis (2016).

3.17

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.” (UPU, 2018).

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).

4 Conformance

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

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/governanceFramework	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.

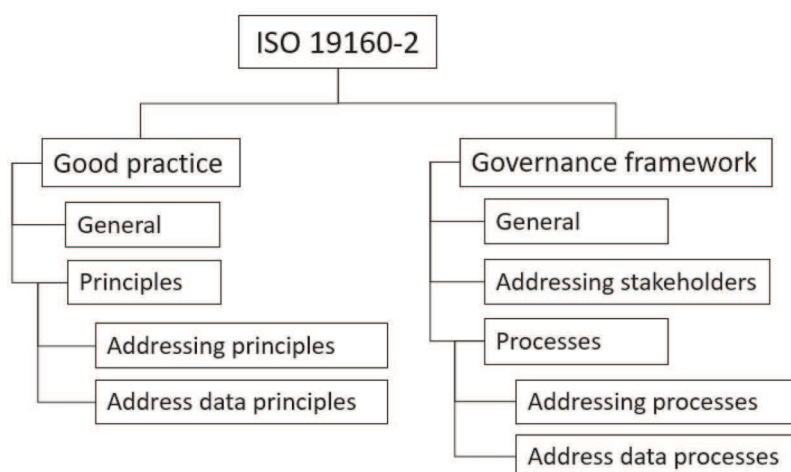


Figure 1 — Conformance classes and their subclasses

For easy reference, the requirements and recommendations specified in this document are listed here.

Requirements specified in this document:

Requirement 1.	/req/goodPractice/general/objectives	9
Requirement 2.	/req/goodPractice/general/context	10
Requirement 3.	/req/goodPractice/general/conceptualModel	10
Requirement 4.	/req/goodPractice/general/license	11
Requirement 5.	/req/goodPractice/general/communicationThroughPhysicalIdentifiers	12
Requirement 6.	/req/goodPractice/principles/addressing/sustainableAssignmentMethod	13
Requirement 7.	/req/goodPractice/principles/addressing/pilotingAssignmentMethod	13
Requirement 8.	/req/goodPractice/principles/addressing/deviceIndependence	13
Requirement 9.	/req/goodPractice/principles/addressing/noPersonalInformation	13
Requirement 10.	/req/goodPractice/principles/addressing/dimensionsCongruentWithObjectives	13
Requirement 11.	/req/goodPractice/principles/addressing/suitableComponents	16
Requirement 12.	/req/goodPractice/principles/addressData/representsAddressInPhysicalWorld	17
Requirement 13.	/req/goodPractice/principles/addressData/interoperability	17
Requirement 14.	/req/goodPractice/principles/addressData/dataMaintenance	17
Requirement 15.	/req/goodPractice/principles/addressData/digitalMaintenance	18
Requirement 16.	/req/governanceFramework/general/strategy	18
Requirement 17.	/req/governanceFramework/general/policies	19
Requirement 18.	/req/governanceFramework/general/goodPractice	19

Requirement 19.	/req/governanceFramework/addressingStakeholders/identification	19
Requirement 20.	/req/governanceFramework/addressingStakeholders/responsibilities	19
Requirement 21.	/req/governanceFramework/addressingStakeholders/mandates	20
Requirement 22.	/req/governanceFramework/addressingStakeholders/resourcing	20
Requirement 23.	/req/governanceFramework/addressingStakeholders/sustainability	20
Requirement 24.	/req/governanceFramework/processes/specification	20
Requirement 25.	/req/governanceFramework/processes/tasks	21
Requirement 26.	/req/governanceFramework/processes/addressing/initiationProcess	21
Requirement 27.	/req/governanceFramework/processes/addressing/proposeValuesProcess	22
Requirement 28.	/req/governanceFramework/processes/addressing/approvalProcess	22
Requirement 29.	/req/governanceFramework/processes/addressing/announcementProcess	22
Requirement 30.	/req/governanceFramework/processes/addressing/communicationPro- cess	22
Requirement 31.	/req/governanceFramework/processes/addressData/updateProcess	23
Requirement 32.	/req/governanceFramework/processes/addressData/distributionProcess	23
Recommendations specified in this document:		
Recommendation 1.	/rec/goodPractice/general/objectivesforPublicGood	10
Recommendation 2.	/rec/goodPractice/general/ISO19160-1Profile	10
Recommendation 3.	/rec/goodPractice/general/intellectualPropertyRights	11
Recommendation 4.	/rec/goodPractice/general/facilitateAssignment	11
Recommendation 5.	/rec/goodPractice/general/keepingAddressDataInSynch	12
Recommendation 6.	/rec/goodPractice/principles/addressing/unambiguity	12
Recommendation 7.	/rec/goodPractice/principles/addressing/equivalentDigitalRecord	17
Recommendation 8.	/rec/goodPractice/principles/addressing/updateAddressData	17
Recommendation 9.	/rec/goodPractice/principles/addressData/conformsToISO19160-1	18
Recommendation 10.	/rec/goodPractice/principles/addressData/conformsToISO19160-4	18
Recommendation 11.	/rec/goodPractice/principles/addressData/conformsToISO19160-3	18
Recommendation 12.	/rec/goodPractice/principles/addressData/sharing	18
Recommendation 13.	/rec/governanceFramework/general/policiesSupportObjectivesAnd- Context	19
Recommendation 14.	/rec/governanceFramework/processes/addressing/consultationPro- cess	22

5 Notation

5.1 Identifiers

URIs for identifiable provisions in this standard are specified as partial URIs relative to <https://standards.iso211.org/19160/-2/1>.

6 Overview

An addressing infrastructure is a key infrastructure for any country, amongst others, 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 (UPU, 2012). This standard 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. Such a 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.

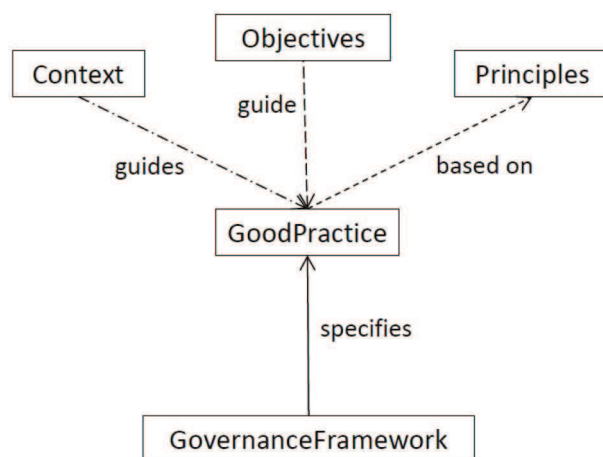


Figure 2 — Relationship between context, objectives, principles, good practice and the governance framework for address assignment and maintenance

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

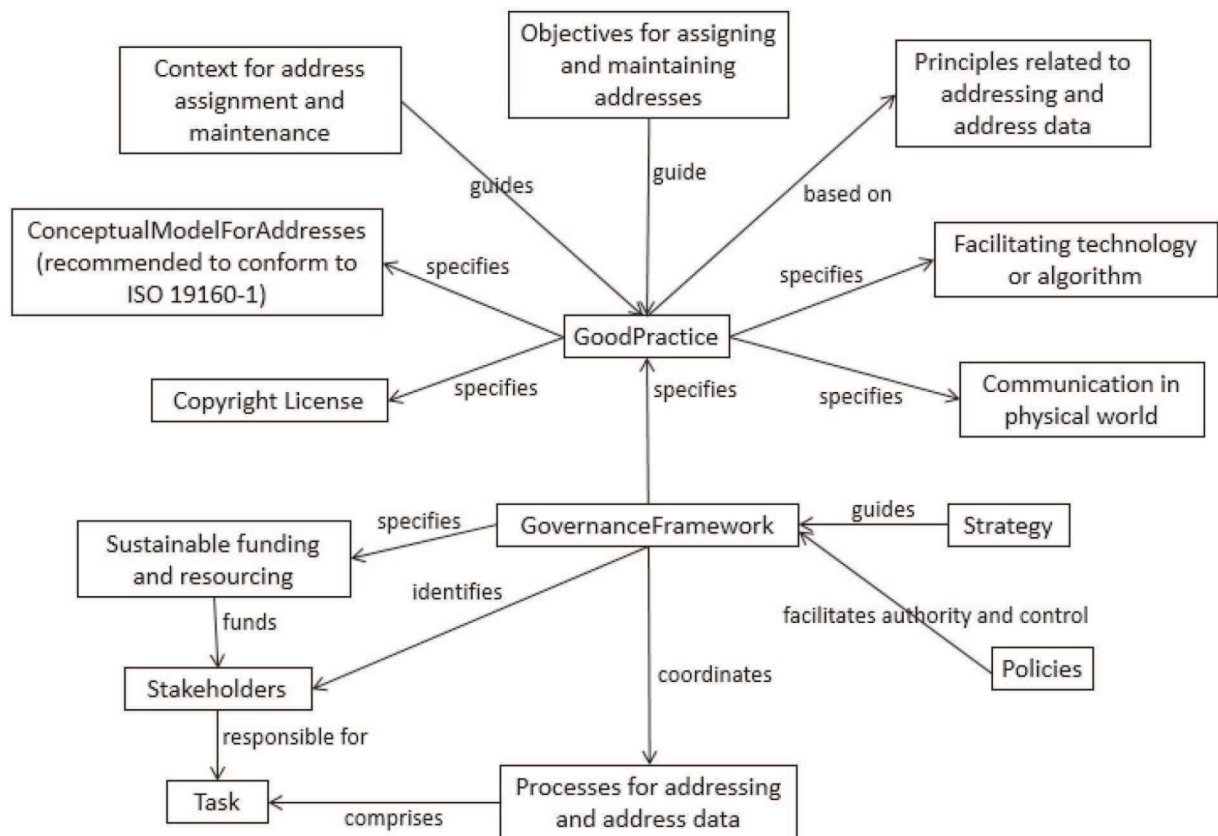


Figure 3 — Overview of address assignment and maintenance

This standard supports the first goal of the UN GGIM Integrated Information Framework (<https://ggim.un.org/IGIF/part1.cshtml>), 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 is one of a set of addressing standards. ISO 19160-1:2015, Addressing – Part 1: Conceptual model, defines a conceptual model for address information (address model), together with the terms and definitions that describe the concepts in the model. A profile of ISO 19160-1:2015 is a model that specifies addresses and address data for a specific country, region or application.

ISO 19160-3:2020, Addressing – Part 3: Address data quality, establishes a set of data quality elements and measures for describing the quality of address data. It 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 19160-3:2020 to assess and describe the quality of address data, information about its quality can be shared and the data can be improved accordingly (if necessary).

ISO 19160-4:2017, Addressing – Part 4: International postal address components and template language, defines key terms for postal addressing, postal address components and constraints on their use. It is also published as UPU S42 by the Universal Postal Union. ISO 19160-4:2017 is a profile of ISO 19160-1:2015, i.e., it is a conceptual model for addresses used for postal addressing.

7 Good practice for assigning and maintaining addresses

7.1 General

A good practice for assigning addresses to objects in the physical world specifies requirements and recommendations for an address assignment method that works well in a particular context and produces addresses and address data of good quality and is therefore recommended. The good practice in this standard is based on methods that have proven to work well in practice in a range of countries and municipalities.

An objective for assigning addresses to objects in the physical world specifies the purpose for which an address is assigned and therefore suggests how the address will be used. An objective guides the good practice for address assignment and maintenance, e.g. the objective provides guidance on how addresses should be assigned.

Requirement 1. /req/goodPractice/general/objectives

A good practice shall specify one or more objectives for which addresses are assigned and shall be guided by these objectives.

EXAMPLE 1 AS/NZS 4819:2011, Rural and urban addressing, is a standard for addressing in Australia and New Zealand, with the objective to "... specify requirements for assigning addresses that can be readily and unambiguously identified and located".

EXAMPLE 2 Address assignment for emergency response or for enabling service delivery. See Annex B for more examples.

EXAMPLE 3 Addressing with the objective of slum upgrading, e.g., by making it possible to provide proof of residence at an officially recognized address.

Recommendation 1. /rec/goodPractice/general/objectivesforPublicGood

An objective should specify that the assignment and maintenance of addresses is done with the purpose of benefitting governance and society and thereby achieving public good.

EXAMPLE 4 Address data that is accessible and usable by anyone, e.g., freely available as open data, can be used in many ways to benefit citizens and achieve public good. For example, addresses that are freely available as open data can be used by anyone for emergency response, deliveries or visiting friends.

EXAMPLE 5 The South African Post Office (SAPO) assigns addresses in rural and underserved areas of South Africa with the objective to provide formal physical addresses to households across the country. This will improve the livelihoods of South Africans ensuring that people in rural and underserved areas have postal services, telecommunication services, water, electricity and other services; can provide their addresses for security or emergency services; and that they can use their addresses for legislative requirements, such as the Financial Intelligence Centre Act, No 38 of 2001.

Requirement 2. /req/goodPractice/general/context

A good practice shall specify the context in which the address assignment and maintenance takes place and shall be guided by this context.

EXAMPLE 6 Addressing in the context of (remote) rural areas.

EXAMPLE 7 The South African Post Office Limited (SAPO) was given the mandate by its shareholder, the South African Government, to roll out physical addresses in rural/traditional areas throughout the country. This mandate, later on, through the National Integrated ICT Policy White Paper and the Postal Services Amendment Bill, gave SAPO legal custodianship of the National Address Database (NAD).

EXAMPLE 8 In Kenya, the legal framework for the establishment of a National Addressing System is provided for in the 4th schedule of the Constitution of Kenya & County Government Act, 2012 and CAP 411A of the Laws of Kenya. The 4th schedule of the Constitution outlines the mandate of County Governments including planning, housing, county roads, boundaries and land survey that include naming and numbering of property and ensuring harmony between national and county planning. CAP 411A mandates the Communication Authority to control, plan, administer and manage addressing and numbering of communications systems and services as further expounded under the Kenya Information and Communications (Numbering) Regulations of 2010.

Requirement 3. /req/goodPractice/general/conceptualModel

A good practice shall specify the conceptual model for the classes (types) of addresses assigned and maintained through the good practice. This includes a description of the address reference system, i.e., a set of address components and the rules for their combination into addresses.

EXAMPLE 9 SANS 1883-2:2018, Addresses – Addresses data exchange, is a profile of ISO 19160-1:2015 for South African addresses.

EXAMPLE 10 NZ profile. “Address: Conceptual Model for New Zealand”, a New Zealand Profile of ISO 19160-1:2015 Addressing – Part 1: Conceptual Model, was developed and is available as unpublished draft.

EXAMPLE 11 The address system of the Republic of Korea conforms to KS X ISO 19160-1:2020, which is based on ISO 19160-1:2015.

EXAMPLE 12 The conceptual model specifies whether addresses are thoroughfare-based or not.

EXAMPLE 13 In European countries, address databases should be conformant to the INSPIRE address technical specification.

Recommendation 2. /rec/goodPractice/general/ISO19160-1Profile

The conceptual model that describes classes (types) of addresses assigned and maintained through the good practice should conform to ISO 19160-1:2015.

NOTE 1 Amongst others, ISO 19160-1:2015 requires that a conformant address model clearly specifies how the position of an address is represented in the model. ISO 19160-1:2015 provides two ways for doing this: 1) an address has coordinates to specify its position; 2) the position of the address is inferred from the addressed object. [SOURCE: ISO 19160-1:2015, 6.1]

NOTE 2 Postal addresses are defined and described in ISO 19160-4:2017, a profile of ISO 19160-1:2015.

EXAMPLE 14 The draft NZ profile of ISO 19160-1:2015 describes its conformance to ISO 19160-1:2015. The NZ profile defines six address classes: Thoroughfare, Water, Service Delivery, Rural Post Delivery, Thoroughfare4819, and Water4819. New addresses (excluding NZ Post addresses for service delivery and rural post delivery) quality assured by the LINZ address team are assessed against the Thoroughfare4819 and Water4819 classes, and these classes align with the requirements in AS/NZS 4819:2011.

Recommendation 3. /rec/goodPractice/general/intellectualPropertyRights

A good practice should specify to whom the intellectual property rights of the address assignment method and the address data belong. At the least, government organizations should have free access to the address data for services to ensure the health, safety and welfare of the public.

Requirement 4. /req/goodPractice/general/license

A good practice shall specify the licences under which the address data is available and the terms and conditions for their use. Different licenses may apply for different users.

EXAMPLE 15 Address data may be available to public sector users under a different license than to users generally.

EXAMPLE 16 The New Zealand Street Address dataset is Crown Copyright, and available from the LINZ Data Service under a Creative Commons Attribution 4.0 International license.

EXAMPLE 17 In the Republic of Korea, citizens are allowed to freely use the address data for multiple purposes (e.g., commercial purpose).

EXAMPLE 18 In France, the national dataset is under Open License v2.0 (<https://adresse.data.gouv.fr/>).

Recommendation 4. /rec/goodPractice/general/facilitateAssignment

A good practice should specify a method for assigning values to address components that could be automated to speed up or facilitate address assignment and maintenance.

EXAMPLE 19 AS/NZS 4819:2011, Rural and urban addressing, contains a clause for addressing rural properties based on the measured distance along the road, from a defined datum point, the accessway of the property is, with odd numbers on the left side of the road and even numbers on the right.

EXAMPLE 20 The South African guidelines for address allocation and updates (SANS 1883-3:2009) recommend that addresses be assigned in regular intervals, omitting numbers between them, so that these numbers can be used in future in the case of subdivisions or densification.

EXAMPLE 21 In Costa Rica, five distinct street types are used: Plaza, Avenida, Calle, Diagonal, Transversal, and they are used depending on the direction of the respective thoroughfare.

EXAMPLE 22 According to the Enforcement Decree of the ACT on Road Name Address, in the Republic of Korea, the roads are classified as ground roads, three-dimensional roads (i.e., overpass, underpass), and inner roads. Ground roads are categorized as daero (the width of the road is over 40 meters), ro (the width of the road is between 12 and 40 meters, or ro (other roads excluding daero and ro). Dimensional road denotes overpass and underpass. Internal roads refer to the road implemented within the buildings.

EXAMPLE 23 In the Republic of Korea, the road segments are divided by regular interval (20 meters) from the starting point to the ending point. The number of each road side is assigned as follows: the odd numbers on the left hand side and the even numbers on the right hand side in ascending order, which helps to understand each position of the road.

EXAMPLE 24 In the Republic of Korea, the road name address is applied to objects such as facilities and places. The addresses for addressable objects (facilities or places) are assigned through inheritance of address components of the nearby road name address and additional assignment of the object type, e.g.:

- a) road name address: Seoul (*county name*) Gangnam-gu (*locality name*) Gangnam-daero (*thoroughfare name*) 708 (*address number*);
- b) object address (*Address of Things*):
 - 1) exterior object address: Seoul (*county name*) Gangnam-gu (*locality name*) Gangnam-daero (*thoroughfare name*) 708 (*address number*) the elevator attached to the pedestrian overpass (*object type*);
 - 2) interior object address: Seoul (*county name*) Songpa-gu (*locality name*) Olympic-ro (*thoroughfare name*) 326 (*address number*), A-room 202 (*object number*) Kiosk (*object type*).

EXAMPLE 25 The Saudi National Address covers the whole Kingdom, including deserts, mountains, valleys and even the areas that do not have specific names or identifications yet (to meet the present and future expectations). This is possible because it is developed based on the local UTM coordinate system. This method could be applied in any country with the standard tools and techniques of a geographic information system.

Requirement 5. /req/goodPractice/general/communicationThroughPhysicalIdentifiers

A good practice shall specify how addresses will be communicated through physical identifiers.

EXAMPLE 26 Addresses are communicated by street name signs on street corners and number signs on buildings.

EXAMPLE 27 AS/NZS 4819:2011, Rural and urban addressing, specifies that “it is desirable that the possible range and direction of numbers be included on the road name sign”.

EXAMPLE 28 In Soweto, South Africa, the address numbers are sometimes painted on the walls of houses.

EXAMPLE 29 The US regulation/guidelines for posting address numbers on private property specify that they should ensure that 1) all the numbers/letters are present; 2) they are large enough to be seen easily from the street; 3) landscape vegetation is not limiting their visibility.

EXAMPLE 30 Displaying signs for addresses of indoor features, such as rooms, windows or doors, so that first responders know how to access a given room in the case of an emergency, e.g., street name, number, postcode, city, the floor, identifier for the room on the floor and for the door/window in the room.

Recommendation 5. /rec/goodPractice/general/keepingAddressDataInSynch

A good practice should specify a method for keeping addresses in the physical world in synch with address data.

EXAMPLE 31 In the Republic of Korea, the address information map has been constructed through creating addressable objects of physical worlds as polygons and thoroughfare name and road sections as polylines. In addition, it is required to maintain the up-to-date and accurate data.

7.2 Principles

7.2.1 Addressing principles

A principle specifies a rule in the form of a value or proposition. This clause presents required and recommended principles for address assignment and maintenance if the good practice is followed.

Recommendation 6. /rec/goodPractice/principles/addressing/unambiguity

An address shall be assigned to an addressable object in the physical world so that it allows the unambiguous determination of the object for purposes of identification and location (ISO 19160-1:2015).

NOTE 1 The position of an address can be represented in two ways: 1) The position is specified by coordinates in the 'position' attribute. 2) The position is inferred from the addressed object. See 6.1 in ISO 19160-1:2015.

EXAMPLE 1 In the Republic of Korea, addressable objects include an apartment, a building, a group of buildings, a landmark, a land parcel, and a farm.

EXAMPLE 2 In the Republic of Korea, addresses are assigned into not only a building (or a group of buildings) but also a facility (e.g., elevators outside of the building, riverside parking lots, taxi station, and drone delivery points), which called Address of Things.

EXAMPLE 3 Saudi Post implemented a unique and systematic National Address for each location within the kingdom. 13-digit address consisting of a unique combination of 5 digits for the postal code, 4 digits for the building number and 4 digits for additional numbers. Zip Codes are created with a combination of 5 digits. Each digit assigned to represent: (1st) Region, (2nd) Sector, (3rd) Branch, (4th) Division and (5th) Quarter. Building Number & Additional Number are 4 digits created by calculating x-coordinates with an absolute value between 2000 and 5999 and y-coordinates with an absolute value between 6000 and 9999 for each location within the kingdom. If X-value is building number, The Y-value is additional number and vice versa. The National Address can accept additional input (information) when it is available such as area\District, street, & City. For example, an address with full information located in a city with areas/districts and streets names provided: "8228 King Abdulaziz - Al Amal Dist, RIYADH 12643 - 2121"; an address located on the highway and there is a street only "6561 King Fahd, AR RASS 58887 - 3025"; and an address in a desert with no district or street: 6150, AL HUWAYMIL 68762 - 3281.

Requirement 6. /req/goodPractice/principles/addressing/sustainableAssignmentMethod

Addressing shall be sustainable in the sense that additional addresses can be added without breaking the consistency of the address assignment method of existing addresses.

EXAMPLE 4 Leaving spaces between numbers when addresses are initially assigned makes it possible to assign additional addresses later when densification takes place. Alternatively, a number can be assigned based on the distance from an intersection of origin of the street.

Requirement 7. /req/goodPractice/principles/addressing/pilotingAssignmentMethod

The assignment method shall be piloted or tested before rolling it out on a larger scale.

Requirement 8. /req/goodPractice/principles/addressing/deviceIndependence

Unambiguous location of the object shall be possible without requiring the use of a digital device.

This requirement is necessitated, for example, in the case of an emergency when an object needs to be identified and located in the absence of connectivity (e.g., through signage when standing in front of it).

EXAMPLE 5 During the 2019-20 Australian wildfires there was widespread loss of connectivity due to direct fire damage to telecommunications infrastructure. This resulted in a prolonged loss of internet access to location information [e.g., address] which hampered firefighters who had to rely on radio (verbal) communication.

Requirement 9. /req/goodPractice/principles/addressing/noPersonalInformation

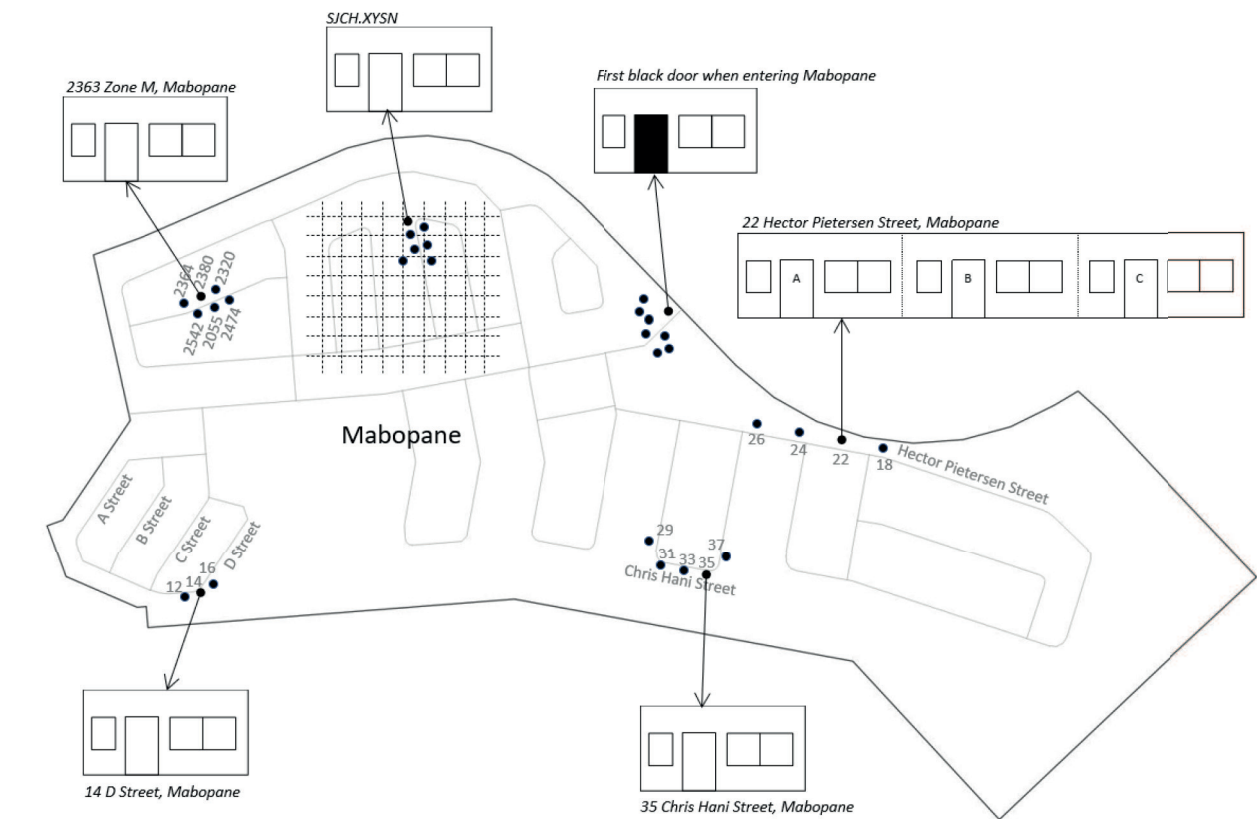
An address shall not include information about an individual or organization, owning the object to which it is assigned, or living and/or working at the object to which the address is assigned.

NOTE 2 Under special circumstances and subject to a jurisdiction’s legislation on protection of personal information, personal information may be associated with an address e.g., the addresses of people infected with a communicable disease are required to model the spread of a disease. Such personal information is seldomly published, however, there are exceptions specified in legislation, e.g., the state of California in the USA maintains and publishes a register of sexual predators and their addresses.

Requirement 10. /req/goodPractice/principles/addressing/dimensionsCongruentWithObjectives

Addresses shall be of an address class with dimensions congruent with the context in which they are assigned and maintained, and with the objectives for which they are assigned and maintained.

Depending on the circumstances and objectives, address classes (types) may differ significantly in terms of a number of dimensions, including rigidity of structure, precision of identification of the object, human friendliness, and computability. Figures 4 to 8 illustrate how different kinds of addresses (address classes) identify objects and where these kinds of addresses are located with reference to these dimensions.



Key
● building

Figure 4 — Examples of addresses from different address classes

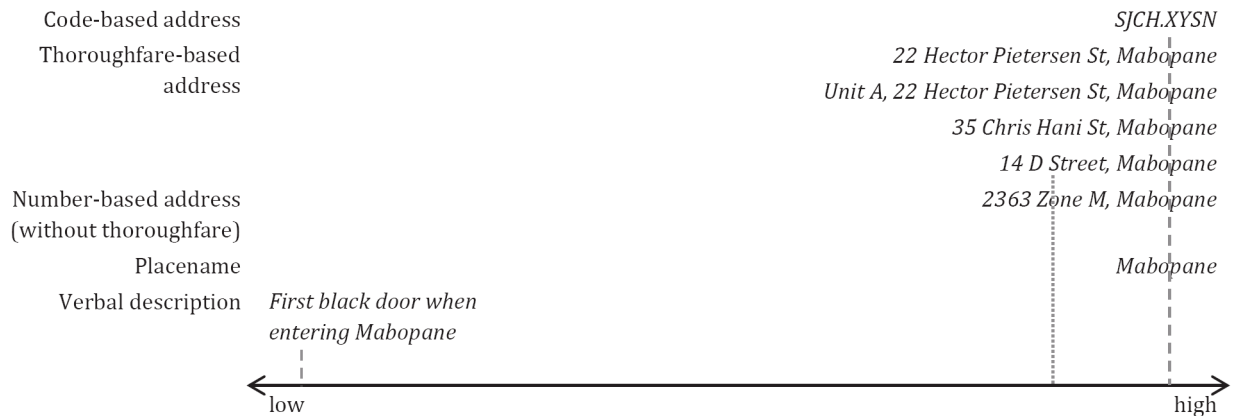
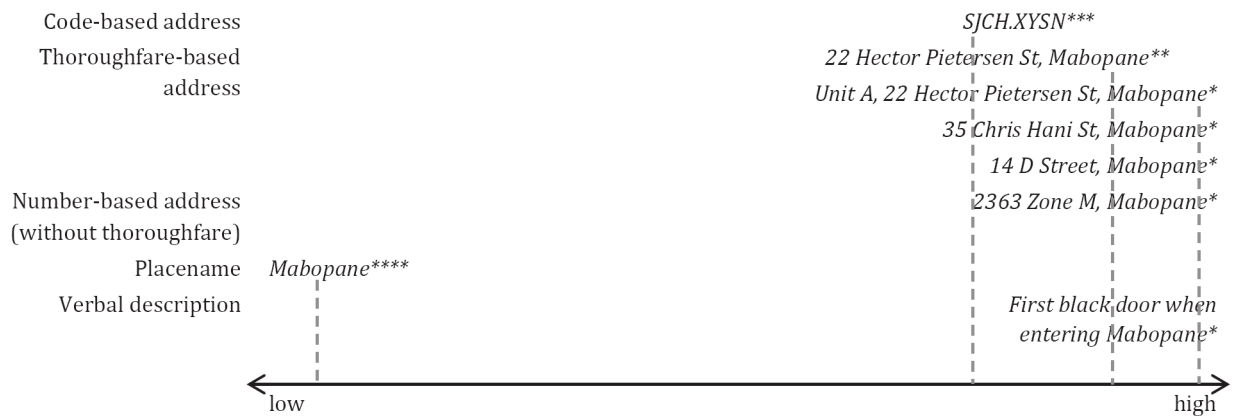


Figure 5 — Address classes on the 'Rigidity of structure' dimension



Key

- * Each of these addresses identify the respective object with the same precision.
- ** This address identifies three objects and is therefore less precise.
- *** The code-based address identifies all the buildings within a cell and is therefore less precise.
- **** The placename address identifies all buildings within Mabopane and is therefore has the least precision.

Figure 6 — Address classes on the 'Precision of identification of the object' dimension

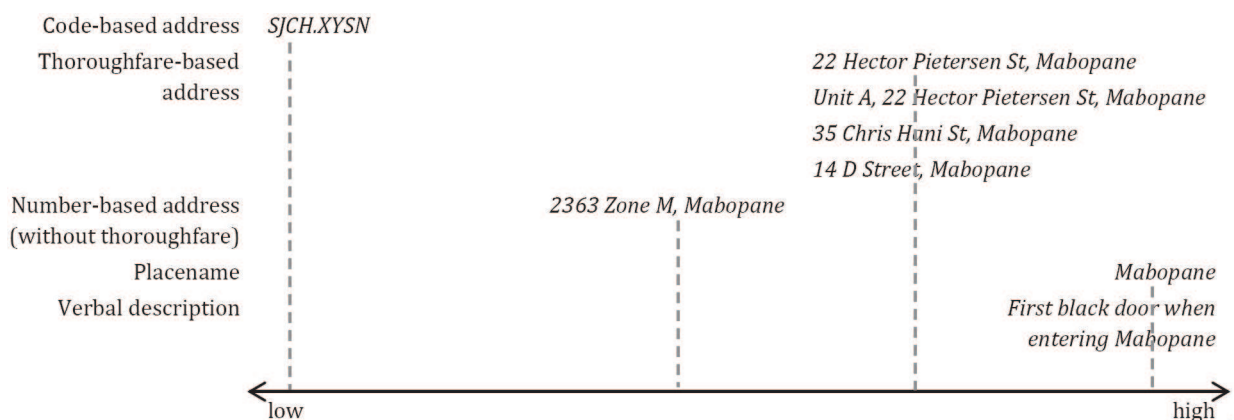


Figure 7 — Address classes on the 'Human friendliness' dimension, assuming there are signs for address components (e.g. street name, address number, etc.) in the physical world

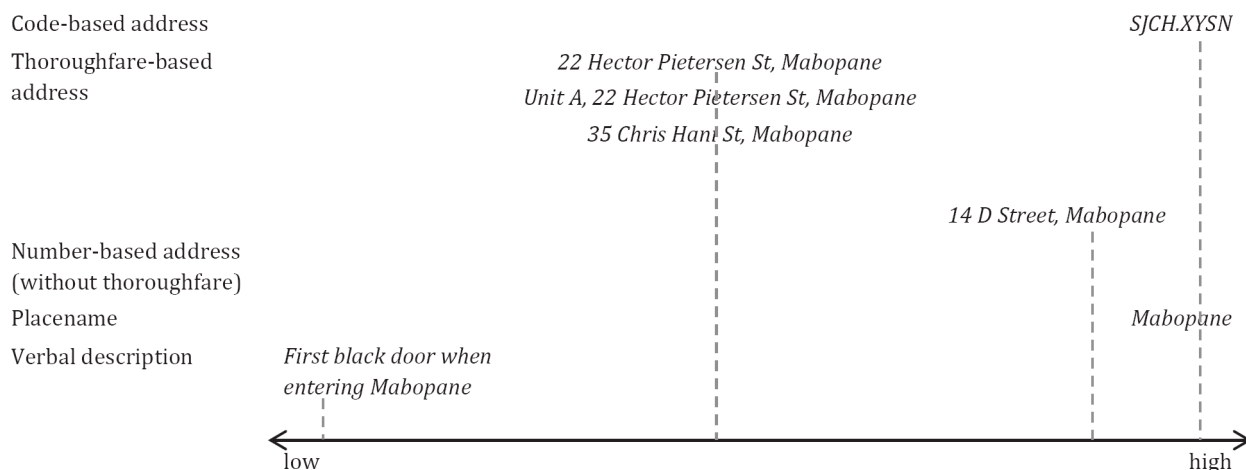


Figure 8 — Address classes on the ‘Computability’ dimension

EXAMPLE 6 If addresses are assigned with the objective to upgrade a slum, the focus should be on the transformational potential of integrating the slum into the urban fabric, therefore address classes with culturally neutral street names (e.g. ‘K Street’) are more appropriate than addresses requiring a lengthy street name approval process.

EXAMPLE 7 If addresses are assigned for property taxation purposes, addresses with higher precision of identification of an object are required; therefore, addresses in the form of verbal descriptions are not appropriate, but rather addresses with an address number that precisely identifies a specific building from the neighbouring buildings.

EXAMPLE 8 In the Republic of Korea, a grid-based address (called the Korean National Grid Reference System) is used for the places located 100 meters far from the road, or in which there are no buildings (or facilities) within 100 meters. This way is used to maintain infrastructure and emergency response.

EXAMPLE 9 For urban infrastructure management and emergency response, a rigorously structured address system is needed. In this sense, the positional precision and the easiness to be understood needs to be considered.

EXAMPLE 10 For delivery using drones, an address is assigned to a drone delivery point. The drone is operated on the geographic coordinate system, but the address needs to be easy for the people’s understanding.

EXAMPLE 11 South Africa makes use of different address types, as described in SANS1883-1:2009. Some address types are used in (urban) metropolitan areas are assigned by municipalities. The South African government, through the Postal Services Act No.124 of 1998, is mandated to ensure greater access to basic services through the achievement of universal postal service, by providing an acceptable level of effective and regular postal services to all areas including rural and underserved areas and small towns where post offices are not sustainable. The South African Post Office therefore also assigns addresses in rural and underserved areas, based on both location information (e.g., village name) and postal routing information (e.g., post office name).

EXAMPLE 12 Addresses assigned for postal delivery purposes should provide the mechanism through which mailers specify the intended recipient and the means by which the postal operator can fulfil its delivery commitment. Postal addresses combine information about the addressee (party who is the ultimate recipient of a delivery item or service), which includes private information, with the publicly known address identifying the delivery point. See ISO 19160-4:2017 for more detail.

EXAMPLE 13 A single address class (type) is not necessarily sufficient. For example, the NZ profile of ISO 19160-1:2015 specifies several address classes.

Requirement 11. /req/goodPractice/principles/addressing/suitableComponents

The address components of an address class shall be suitable to meet the objectives for which that class is designed.

EXAMPLE 14 The NZ profile defines “rural mail delivery address” address class. One of its components is called Mailtown. This component represents the name of a city or town from which the mail is delivered (loosely translates to the town where the post office is). It is not the name of the town in which the address is located. The Thoroughfare address class (the ‘standard’ street address) has component called “CityTown”, which represents the name of the city or town in which the address is located. Even though the values of both Mailtown and CityTown are drawn from the same domain list and look almost identical when used in an address, Citytown is not the appropriate component to have in a rural mail delivery address.

Recommendation 7. /rec/goodPractice/principles/addressing/equivalentDigitalRecord

Any address that is assigned to an object should have a digital equivalent address record in an authoritative address dataset.

EXAMPLE 15 In the Republic of Korea, the address information officially created and maintained through the Korean Address Information System is updated and maintained as digital records at a daily base.

EXAMPLE 16 In France, the government maintains an address database, the National Address Database (BAN) which can be downloaded or accessed through an API, see <https://api.gouv.fr/les-api/base-adresse-nationale>.

EXAMPLE 17 In the case of an apartment building with a parent address for the main building entrance and child addresses for the individual apartments, both the parent and child addresses should be included in the authoritative address dataset.

EXAMPLE 18 The authoritative address dataset may include addresses of different addresses classes (type).

Recommendation 8. /rec/goodPractice/principles/addressing/updateAddressData

The authoritative address dataset should be updated whenever an address is assigned or changed due to maintenance.

7.2.2 Address data principles

A principle specifies a rule in the form of a value or proposition. This clause presents required and recommended principles for address data if a good practice is followed.

Requirement 12. /req/goodPractice/principles/addressData/representsAddressInPhysicalWorld

Address data shall represent the addresses assigned to objects in the physical world.

Requirement 13. /req/goodPractice/principles/addressData/interoperability

Address data shall be interoperable between public administration systems, such as the cadastre, population register or urban information systems.

EXAMPLE 1 An address often serves as link or reference between information in different systems, e.g. citizens in the population register, inhabitants of a property, and a vehicle license can all be associated with the same address. Therefore, one should be able to exchange address data between the different systems.

Requirement 14. /req/goodPractice/principles/addressData/dataMaintenance

Address data shall be maintained through processes and systems that consider general purpose data management principles, as well as specific requirements due to the geospatial nature of address data.

NOTE 1 This combined approach is the foundation of sound and sustainable address data maintenance.

Requirement 15. /req/goodPractice/principles/addressData/digitalMaintenance

In the case of digital address data, the data shall be maintained in an address data management system with appropriate software solutions, such as spatial database management systems and/or geographic information systems.

EXAMPLE 2 In Saudi Arabia, the National Address was developed as web maps and mobile applications supported by a huge geodatabase. The National Address helps the logistic service providers, API services and e-commerce.

Recommendation 9. /rec/goodPractice/principles/addressData/conformsToISO19160-1

Address data should conform to ISO 19160-1:2015, or a profile thereof.

EXAMPLE 3 Address data shall be able to accommodate address aliases, i.e., a set of addresses unambiguously identifying the same addressable object in the physical world; and address data that represents the addresses assigned to objects in the physical world shall include lifecycle, provenance and locale information (metadata) conformant with ISO 19160-1:2015.

Recommendation 10. /rec/goodPractice/principles/addressData/conformsToISO19160-4

For postal addressing, address data should conform to ISO 19160-4:2017, or a profile thereof.

NOTE 2 Key terms for postal addressing, postal address components and constraints on their use are defined in ISO 19160-4:2017. ISO 19160-4:2017 is based on UPU S42, Part A, Version 7, and has been developed with the Universal Postal Union (UPU).

Recommendation 11. /rec/goodPractice/principles/addressData/conformsToISO19160-3

The quality of address data should be described conformant to ISO 19160-3:2020, or a profile thereof.

Recommendation 12. /rec/goodPractice/principles/addressData/sharing

In the case of digital address data, the data should be shared through address retrieval solutions that preserve and maintain data integrity, e.g., through spreadsheets or APIs.

EXAMPLE 4 In the Republic of Korea, the digital address data is open and shared through the following systems, such as the Public Data Portal (<https://www.data.go.kr>) and the Road Name Address System (<https://www.juso.go.kr>).

8 Governance framework for assigning and maintaining addresses

8.1 General

The governance framework for assigning and maintaining addresses specifies the addressing stakeholders involved in address assignment and maintenance. Responsibilities are assigned to each stakeholder, and policies specify how decision-making is done. A governance framework is guided by a strategy and has funding mechanisms that sustain its operation.

Requirement 16. /req/governanceFramework/general/strategy

A governance framework shall be guided by a strategy for assigning addresses to objects. The strategy shall be based on policies and guidelines.

Requirement 17. /req/governanceFramework/general/policies

A governance framework shall exercise authority and control over address assignment and maintenance through policies with well defined decision-making structures and procedures.

Recommendation 13. /rec/governanceFramework/general/policiesSupportObjectivesAndContext

The policies should support the objectives and context.

NOTE 1 Guidelines describe the execution of the policies.

Requirement 18. /req/governanceFramework/general/goodPractice

A governance framework shall specify the good practice according to which addresses shall be assigned and maintained (see clause 8).

8.2 Addressing stakeholders

Requirement 19. /req/governanceFramework/addressingStakeholders/identification

A governance framework shall identify the addressing stakeholders involved in the processes and decision-making related to assignment and maintenance of addresses.

EXAMPLE 1 Typical addressing stakeholders include municipalities, postal services, users in government departments and the general public. Not all of them are necessarily included in the governance framework.

EXAMPLE 2 In the Republic of Korea, in addition to the typical stakeholders, addresses are assigned and maintained through the public sectors.

EXAMPLE 3 A workshop in Kenya towards implementation of national addressing included stakeholders from the Communications Authority of Kenya, County Governments, Kenya Revenue Authority, Kenya Bureau of Standards, Ministry of Information, Communication and Technology, Courier Industry Association of Kenya (CIAK), Higher Loans Board (HELB), several banks, Council of Governors (COG), the Public Postal Licensee-Postal Corporation of Kenya, Independent Electoral and Boundaries Commission (IEBC), Kenya Urban Roads Board, Ministry Transport/Infrastructure, Survey of Kenya, and the National Land Commission (<https://ca.go.ke/industry/national-addressing-system/>).

Requirement 20. /req/governanceFramework/addressingStakeholders/responsibilities

A governance framework shall assign at least one responsibility to each stakeholder in the governance framework, and they shall be accountable for their responsibilities.

NOTE 1 To take up responsibilities, resourcing is required. See Requirement 21. /req/governanceFramework/addressingStakeholders/resourcing.

EXAMPLE 4 In South Africa, municipalities have the responsibility to assign addresses within their area of jurisdiction, while the South African Post Office is responsible for address assignment in rural and underserved areas in collaboration with other organs of state, such as traditional authorities.

EXAMPLE 5 The South African Geographical Names Council (SAGNC) has the mandate for standardizing and transforming geographical names. Provincial Geographical Names Committee advise local authorities (municipalities and traditional authorities) on naming, including place and street names that appear in addresses. The Provincial Committees submit naming recommendations to the SAGNC for approval.

EXAMPLE 6 In the Republic of Korea, addresses can be assigned by the authority of the municipalities and a citizen can apply for the address assignment process.

EXAMPLE 7 In the Republic of Korea, the Address Information Committee has the responsibility for decision making about the road name assignment. If a road is connected to more than two municipalities, the road segments and address numbers, called basic number are determined by the Committee.

EXAMPLE 8 In the Republic of Korea, a public sector is in charge of operating the national address information systems and distributing the address information. Other sectors work in verifying the locational accuracy in regard to GIS-based digital maps called the basic address information map, and surveying addressable facilities, the road name address and grid-based address.

EXAMPLE 9 In New Zealand, under sections 319A and 319B of the Local Government Act (1974), local councils are given the power to name roads and allocate property numbers. Section 319B also gives the Surveyor General the power to request a council allocate or change a property number.

EXAMPLE 10 In France, the physical address management is the responsibility of the city administration whereas the national address database is managed by the government with the help of the city services. Also, the physical process of assigning an address is governed by a set of regulations which assign duties to the local administration, such as uniquely identify addresses or ensure coherence within the address assignments.

EXAMPLE 11 In France, the main obligations of the local authorities regarding addresses are 1) Follow a numbering pattern for all cities; 2) Inform of all numbered addresses for all cities of more than 2000 inhabitants within 1 months in case of creation or modification; 3) The use of street signs for public circulation; 4) The use of a unique identifier according to the national dataset. Also the INSPIRE framework in Europe adds duties regarding the dissemination of address datasets.

Requirement 21. /req/governanceFramework/addressingStakeholders/mandates

Assignment of responsibilities to stakeholders shall consider legal and other mandates.

Responsibilities are assigned to each stakeholder in the governance framework based on the extent of the mandate of the respective stakeholders.

Requirement 22. /req/governanceFramework/addressingStakeholders/resourcing

Stakeholders shall take responsibility for how they are funded, resourced and organized to fulfil their responsibilities in the governance framework.

NOTE 2 Resourcing includes making sure that stakeholders (people and organizations) have the capacity, skills and expertise, e.g. through on the job training, to fulfil what is expected from them in the governance framework.

NOTE 3 Resourcing includes job descriptions and annual budgeting for salaries and operational expenses, amongst others, hardware, software or data maintenance.

EXAMPLE 12 In the Republic of Korea, the government and municipalities spend their budgets for the assignment and maintenance of addresses.

Requirement 23. /req/governanceFramework/addressingStakeholders/sustainability

Funding and resourcing of stakeholders in a governance framework shall be sustainable, i.e., ongoing and able to be maintained in the long run.

NOTE 4 The governance framework is not a once-off temporary endeavour with a specified end date; it is a long-term arrangement without a specific end date and therefore funded as an operational expense.

8.3 Processes

Requirement 24. /req/governanceFramework/processes/specification

A governance framework shall specify and coordinate the processes for assigning and maintaining addresses, as specified in 8.3.1, and if address data is maintained, it shall specify and coordinate the required processes related to address data, specified in 8.3.2. Each process comprises a series of tasks towards achieving a specified goal.

Requirement 25. /req/governanceFramework/processes/tasks

A governance framework shall assign at least one stakeholder to each task in a process.

The processes represent sequential phases in address maintenance. Figure 9 shows the sequence of processes with the relevant requirement or recommendation describing the process included in brackets. The respective requirement or recommendation number is included in brackets. Recommended processes are indicated in italics.

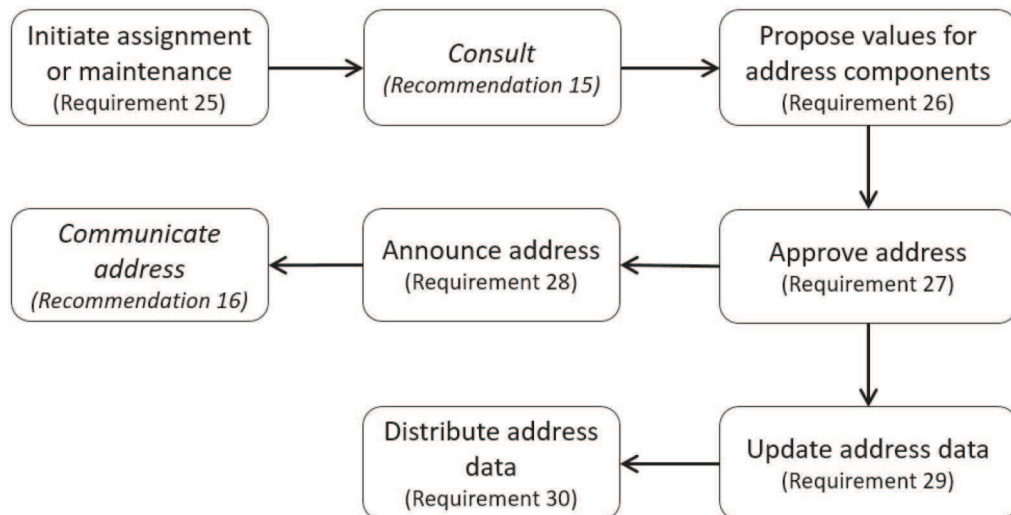


Figure 9 — The sequence of processes to be followed for address assignment and maintenance in a governance framework

8.3.1 Addressing processes

Requirement 26. /req/governanceFramework/processes/addressing/initiationProcess

A governance framework shall specify and coordinate a process for initiating the assignment or maintenance of an address.

NOTE The process to initiate assignment of a large number of addresses, e.g. if a national infrastructure does not exist in a country or specific area (such in rural areas) is different.

EXAMPLE 1 This process kicks off for example when a developer applies permission for a new development, when permission is obtained to construct an apartment block, or an owner applies for the sub-division of a property.

EXAMPLE 2 An address is assigned when a specific address is associated with a specific addressable object, e.g. '2837 Mankwe Street, Mabopane' is associated with a specific house in Mabopane.

EXAMPLE 3 An address is re-assigned when its addressable object changes, e.g. when the house at '2837 Mankwe Street, Mabopane' is demolished and replaced with an apartment block.

EXAMPLE 4 An address is modified when the value of one of its components changes, e.g. a street name change from Mankwe Street to Tau Street.

EXAMPLE 5 An address is modified when one of its lifecycle attributes is changed, e.g. when the lifecycleStage changes from proposed to current.

EXAMPLE 6 An address is retired when it is not used anymore.

Recommendation 14. /rec/governanceFramework/processes/addressing/consultationProcess

A governance framework should specify and coordinate a process for consultation when new address component values are assigned or changed due to maintenance.

EXAMPLE 7 In the Republic of Korea, when a road name is assigned or changed, the municipalities make decisions by the reviews from the address information committee on the basis of residents' opinions in advance.

Requirement 27. /req/governanceFramework/processes/addressing/proposeValuesProcess

A governance framework shall specify and coordinate a process for proposing new values or changes to address components values.

EXAMPLE 8 A municipality proposes a name for a new street according to their policy which is aligned with national legislation. When the name is approved by the municipal council or by a national council, it is assigned to the street.

EXAMPLE 9 A municipality proposes address numbers to be used along a specific street, and they are approved by the municipal council.

Requirement 28. /req/governanceFramework/processes/addressing/approvalProcess

A governance framework shall specify and coordinate a process for approving or rejecting the proposed new address assignment or changes to an address due to maintenance.

EXAMPLE 10 A municipality follows a process to approve or reject an address.

Requirement 29. /req/governanceFramework/processes/addressing/announcementProcess

A governance framework shall specify and coordinate a process for the announcement of a newly assigned address or changes to an address due to maintenance.

EXAMPLE 11 The decision can be announced on a website or in a government gazette (e.g. in South Africa).

EXAMPLE 12 In the Republic of Korea, when a road name is assigned or changed, it is required to provide the related information with the address users through mail, visit or any other platforms. Also, it is needed to notify the related public sectors to maintain the consistency of the information. The updated address data is published on the each local government's webpage.

EXAMPLE 13 The announcement of new and updated addresses in New Zealand is achieved by a well-understood weekly update cycle where the address database clearly labels any changes from the previous update.

EXAMPLE 14 In Australia, the open data version of the Geocoded National Address File is updated quarterly with some information regarding new or updated address data.

Requirement 30. /req/governanceFramework/processes/addressing/communicationProcess

A governance framework shall specify a process for communicating addresses in the physical world, following approval of assignment or maintenance of an address.

EXAMPLE 15 Following approval of an address change, the municipality puts up or replaces the relevant street name signs, and the owner puts up or replaces the number sign on a building.

EXAMPLE 16 The organization managing the specific facilities implement the Address of Things sign (within 100 meters of the road) or the Korean National Grid Reference System sign (more than 100 meters from the road) in the Republic of Korea.

8.3.2 Address data processes

Requirement 31. /req/governanceFramework/processes/addressData/updateProcess

A governance framework shall specify and coordinate a process for updating the authoritative dataset after approval of assignment or maintenance of an address.

EXAMPLE 1 In the Republic of Korea, when assigning a road name address (road name and address number), municipalities acquire address information such as roads, buildings, administrative districts, entrances, connectivity, and building groups through cadastral surveys. And they update the digital records on the Korean Address Information Systems and the GIS-based basic address map.

EXAMPLE 2 In the Republic of Korea, when assigning addresses to facilities, called Address of Things, the public sectors perform the surveying for the locational accuracy. When implementing a facility in the area where the Korean National Grid Reference System (grid-based address) is required to be marked, the public sectors perform surveying for the positional accuracy. The digital record is updated on the Korean Address Information Systems.

Requirement 32. /req/governanceFramework/processes/addressData/distributionProcess

A governance framework shall specify and coordinate a process for making address data available after an update to the authoritative dataset.

Annex A (normative)

Abstract test suite

A.1 Summary of conformance classes, requirements and recommendations

This annex specifies an abstract test suite comprising two conformance test classes. The respective conformance test class shall be passed by an objective, good practice or governance framework claiming conformance with this standard. Figure A.1 provides an overview of the conformance classes, subclasses and their corresponding requirements and recommendations.

URIs in this annex are relative to <https://standards.iso211.org/19160/-2/1>

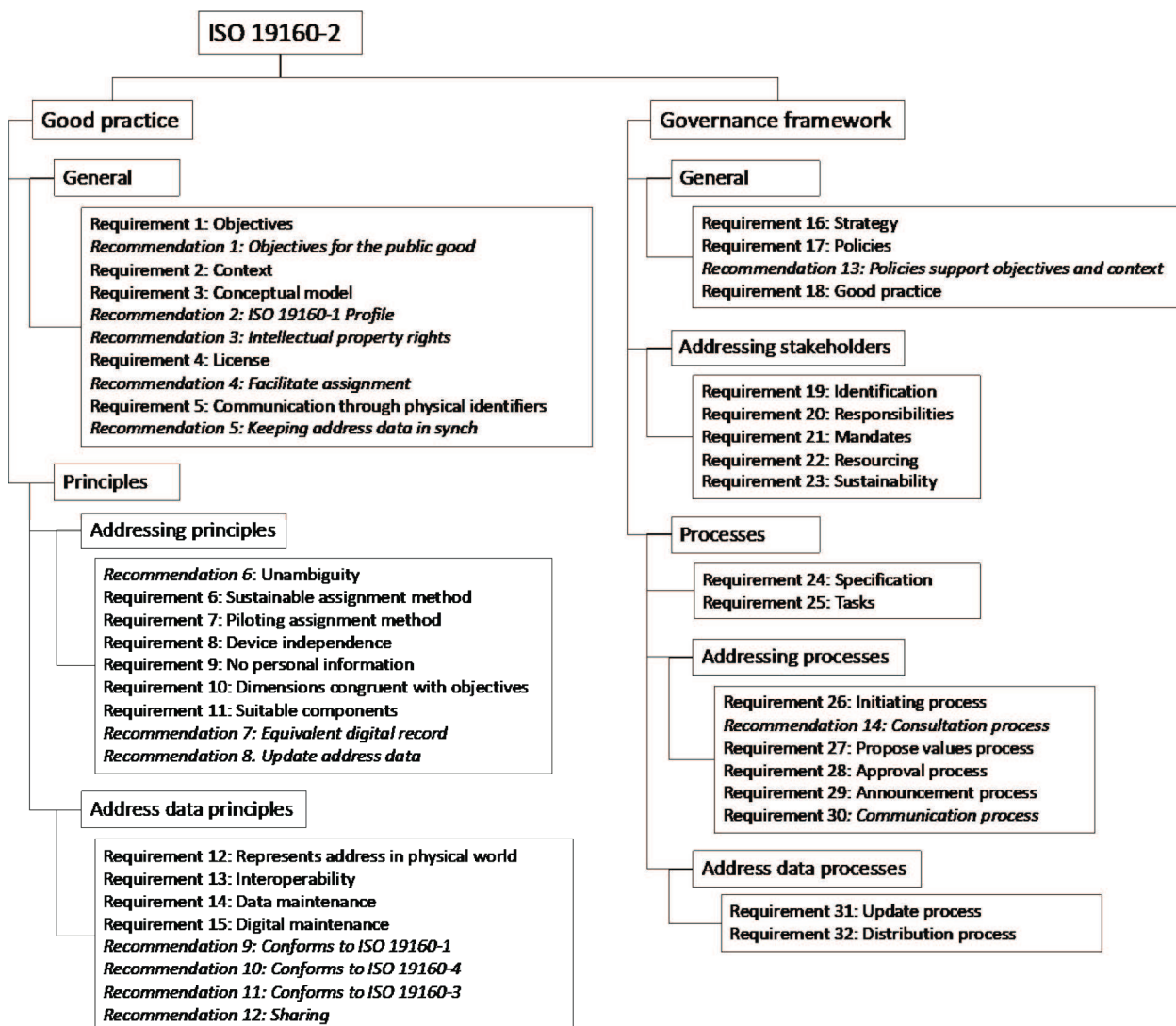


Figure A.1 — Conformance classes, requirements and recommendations

Even though ISO 19105:2000 requires only requirements to be included in a conformance test report, in this standard, we also included the recommendations, as we wanted to illustrate if and how recommendations can be implemented.

A.2 Conformance test class: Good practice for assigning and maintaining addresses

A.2.1 Conformance test subclass: General

Test case identifier: Requirement 1. /conf/goodPractice/general/objectives

Test method: Check that the good practice specifies a set of objectives.
Test passes if constraint evaluates to be 'true'.

Reference: /req/goodPractice/general/objectives

Test case identifier: Recommendation 1. /conf/goodPractice/general/objectivesForPublicGood

Test method: Check that each objective specifies that the assignment and maintenance of addresses is done with the purpose of benefitting governance and society thereby achieving public good.
Test passes if constraint evaluates to be 'true'.

Reference: /rec/goodPractice/general/objectivesForPublicGood

Test case identifier: Requirement 2. /conf/goodPractice/general/context

Test method: Check that a context is specified to guide the good practice.
Test passes if constraint evaluates to be 'true'.

Reference: /req/goodPractice/general/context

Test case identifier: Requirement 3. /conf/goodPractice/general/conceptualModel

Test method: Check that the good practice specifies a conceptual model that describes the classes (types) of addresses assigned and maintained by the good practice, and that addresses assigned and maintained by the good practice conform to this conceptual model.
Test passes if constraint evaluates to be 'true'.

Reference: /req/goodPractice/general/conceptualModel

Test case identifier: Recommendation 2. /conf/goodPractice/general/ISO19160-1Profile

Test method: Check that the conceptual model conforms to ISO 19160-1.
Test passes if constraint evaluates to be 'true'.

Reference: /rec/goodPractice/general/ISO19160-1Profile

Test case identifier: Recommendation 3. /conf/goodPractice/general/intellectualPropertyRights

Test method: Check that the good practice specifies to whom the intellectual property right of the address data belongs, and under which terms and conditions the data can be used.

Check that government organizations have free access to the address data for essential services, such as emergency response and disaster management.

Test passes if constraint evaluates to be 'true'.

Reference: /rec/goodPractice/general/intellectualPropertyRights

Test case identifier: Requirement 4. /conf/goodPractice/general/license

Test method: Check that the good practice specifies the copyright licence(s) under which the address data can be made available.

Test passes if constraint evaluates to be 'true'.

Reference: /req/goodPractice/general/license

Test case identifier: Recommendation 4. /conf/goodPractice/general/facilitateAssignment

Test method: Check that the good practice specifies a method for assigning values to address components that could be automated to speed up or facilitate address assignment and maintenance.

Test passes if constraint evaluates to be 'true'.

Reference: /rec/goodPractice/general/facilitateAssignment

Test case identifier: Requirement 5. /conf/goodPractice/general/communicationThroughPhysicalIdentifiers

Test method: Check that the good practice specifies how addresses are communicated through physical identifiers.

Test passes if constraint evaluates to be 'true'.

Reference: /rec/goodPractice/general/communicationThroughPhysicalIdentifiers

Test case identifier: Recommendation 5. /conf/goodPractice/general/keepingAddressDataInSynch

Test method: Check that the good practice specifies a method for keeping addresses in the physical world in synch with address data.

Test passes if constraint evaluates to be 'true'.

Reference: /rec/goodPractice/general/keepingAddressDataInSynch

A.2.2 Conformance test subclass: Addressing principles

Test case identifier: Recommendation 6. /conf/goodPractice/principles/addressing/unambiguity

Test method: Check that addresses assigned according to the good practice make it possibly to unambiguously determine an object for purposes of identification and location.

Test passes if constraint evaluates to be 'true'.

Reference: /rec/goodPractice/principles/addressing/unambiguity

Test case identifier: Requirement 6. /conf/goodPractice/principles/addressing/sustainableAssignmentMethod

Test method: Check that when addresses are assigned, additional addresses can be assigned without breaking the consistency of the address assignment method of existing addresses.

Test passes if constraint evaluates to be 'true'.

Reference: /rec/goodPractice/principles/addressing/unambiguity

Test case identifier: Requirement 7. /conf/goodPractice/principles/addressing/pilotingAssignmentMethod

Test method: Check that the assignment method was piloted or tested before rolling it out on a larger scale.

Test passes if constraint evaluates to be 'true'.

Reference: /rec/goodPractice/principles/addressing/unambiguity

Test case identifier: Requirement 8. /conf/goodPractice/principles/addressing/deviceIndependence

Test method: Check that addresses assigned according to the good practice makes it possible to unambiguously determine an object without requiring the use of a digital device.

Test passes if constraint evaluates to be 'true'.

Reference: /req/goodPractice/principles/addressing/ deviceIndependence

Test case identifier: Requirement 9. /conf/goodPractice/principles/addressing/noPersonalInformation

Test method: Check that addresses assigned according to the good practice do not include information about an individual or organization associated with the object.

Test passes if constraint evaluates to be 'true'.

Reference: /req/goodPractice/principles/addressing/noPersonalInformation

Test case identifier: Requirement 10. /conf/goodPractice/principles/addressing/dimensions-CongruentWithObjectives

Test method: Check that the dimensions of addresses assigned according to the good practice are congruent with the context in which they are assigned and maintained, and with the objectives for which they are assigned and maintained.

Test passes if constraint evaluates to be 'true'.

Reference: /req/goodPractice/principles/addressing/dimensionsCongruentWithObjectives

Test case identifier: Requirement 11. /conf/goodPractice/principles/addressing/suitableComponents

Test method: Check that the address components of an address class are suitable for meeting the objectives for which the class was designed.

Test passes if constraint evaluates to be 'true'.

Reference: /req/goodPractice/principles/addressing/suitableComponents

Test case identifier: Recommendation 7. /conf/goodPractice/principles/addressing/equivalent-DigitalRecord

Test method: Check that the authoritative address dataset contains a digital equivalent address record for each address assigned to an object in the physical world.

Test passes if constraint evaluates to be 'true'.

Reference: /rec/goodPractice/principles/addressing/equivalentDigitalRecord

Test case identifier: Recommendation 8. /conf/goodPractice/principles/addressing/updateAddressData

Test method: Check that the address data is updated whenever an address is assigned or changed due to maintenance.

Test passes if constraint evaluates to be 'true'.

Reference: /rec/goodPractice/principles/addressing/updateAddressData

A.2.3 Conformance test subclass: Address data principles

Test case identifier: Requirement 12. /conf/goodPractice/principles/addressData/representsAddressInPhysicalWorld

Test method: Check that each address data record maintained according to the good practice represents an address assigned to an object in the physical world.

Test passes if constraint evaluates to be 'true'.

Reference: /req/goodPractice/principles/addressData/representsAddressInPhysicalWorld

Test case identifier: Requirement 13. /conf/goodPractice/principles/addressData/interoperability

Test method: Check that each address data record maintained according to the good practice is interoperable with relevant public administration systems.
Test passes if constraint evaluates to be 'true'.

Reference: /req/goodPractice/principles/addressData/ interoperability

Test case identifier: Requirement 14. /conf/goodPractice/principles/addressData/dataMaintenance

Test method: Check that address data is maintained according to general purpose data management principles, considering specific requirements due to the geospatial nature of address data.
Test passes if constraint evaluates to be 'true'.

Reference: /req/goodPractice/principles/addressData/dataMaintenance

Test case identifier: Requirement 15. /conf/goodPractice/principles/addressData/digitalMaintenance

Test method: Check that digital address data is maintained in an address data management system with appropriate software solutions, such as spatial database management systems and/or geographic information systems.
Test passes if constraint evaluates to be 'true'.

Reference: /req/goodPractice/principles/addressData/digitalMaintenance

Test case identifier: Recommendation 9. /conf/goodPractice/principles/addressData/conformsToISO19160-1

Test method: Check that the address data conforms to ISO 19160-1:2015, or a profile thereof.
Test passes if constraint evaluates to be 'true'.

Reference: /rec/goodPractice/principles/addressData/conformsToISO19160-1

Test case identifier: Recommendation 10. /conf/goodPractice/principles/addressData/conformsToISO19160-4

Test method: Check that the address data conforms to ISO 19160-4:2017 or a profile thereof if the addresses are assigned for postal purposes.
Test passes if constraint evaluates to be 'true'.

Reference: /rec/goodPractice/principles/addressData/conformsToISO19160-4

Test case identifier: Recommendation 11. /conf/goodPractice/principles/addressData/conformsToISO19160-3