

# Standards that make innovation possible: International Addressing Standards

Presented by Serena Coetzee, University of Pretoria  
United Nations World Geospatial Information Congress,  
20 November 2018, Deqing, China



# Traditionally, addresses were used for delivery...



# Today, many other possibilities...

The image is a collage illustrating various applications of geographic information systems. It features several key elements:

- Amazon Account Page:** A screenshot of an Amazon account page showing "Your Account > Your Addresses" with a green checkmark and the text "Address saved". Below this is a dashed box containing a plus sign and the text "Add Address".
- OpenStreetMap Interface:** A screenshot of the OpenStreetMap website. The search bar contains "Where is this?". The map shows a street grid with callouts pointing to specific locations: "Vehicle", "Credit", "Water", "Electricity", and "Person".
- GPS Device:** An illustration of a GPS device with a map on its screen and the text "GPS" below it.
- Emergency Services:** Illustrations of an ambulance and a fire truck, representing emergency services that utilize geographic information.



“...addresses [are] a key element ... particularly with regard to governance, rule of law, poverty reduction, disease prevention and the provision of basic services such as electricity, sanitation and water.



Professor Anna Tibaijuka, Minister of Lands, Housing and Human Settlements Development in Tanzania, Special ambassador to the “Addressing the world – An address for everyone” initiative.

2015 UPU White Paper.

[http://news.upu.int/fileadmin/user\\_upload/PDF/Reports/whitePaperAddressingEn.pdf](http://news.upu.int/fileadmin/user_upload/PDF/Reports/whitePaperAddressingEn.pdf)



“...the lack of an address  
can also mean  
the lack of legal identity,  
equal opportunities for employment  
and social integration.”



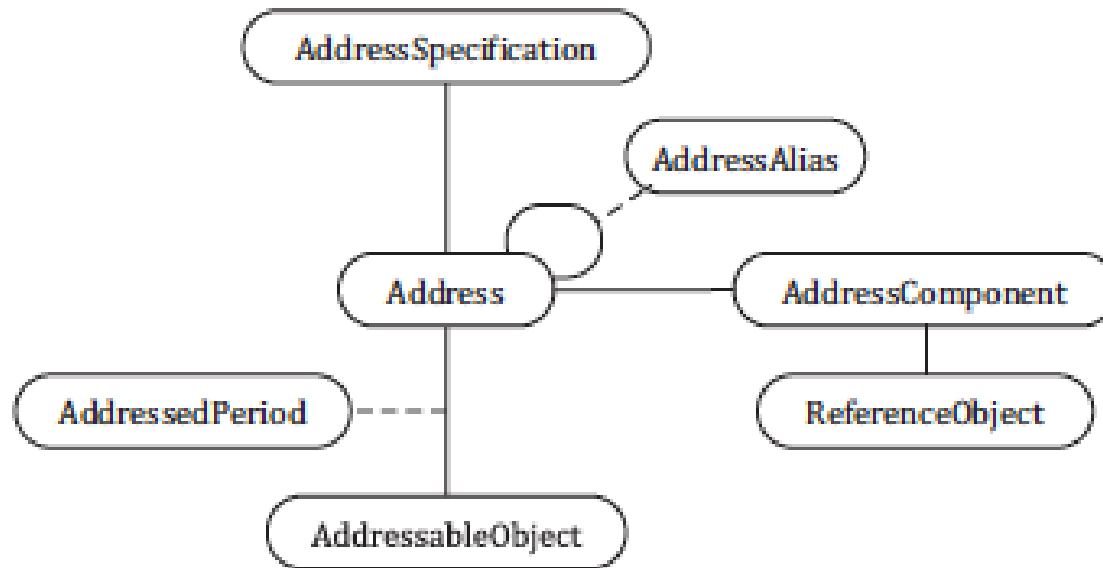
Professor Anna Tibaijuka, Minister of Lands, Housing and Human Settlements Development in Tanzania, Special ambassador to the “Addressing the world – An address for everyone” initiative.

2015 UPU White Paper.

[http://news.upu.int/fileadmin/user\\_upload/PDF/Reports/whitePaperAdressingEn.pdf](http://news.upu.int/fileadmin/user_upload/PDF/Reports/whitePaperAdressingEn.pdf)

## Standardized terminology

- address
  - structured information that uniquely references an object for purposes of identification and location
- address component
  - constituent part of the address
- address class
  - addresses combined from the same list of address components according to the same address reference system
- addressable object
  - object that may be referenced by an address
- address alias
  - one of a set of addresses referencing the same addressable object
- ...



**Figure 2 — Schematic overview of the address model showing all elements**



ISO 19160-1:2015

# Profiles of ISO 19160-1



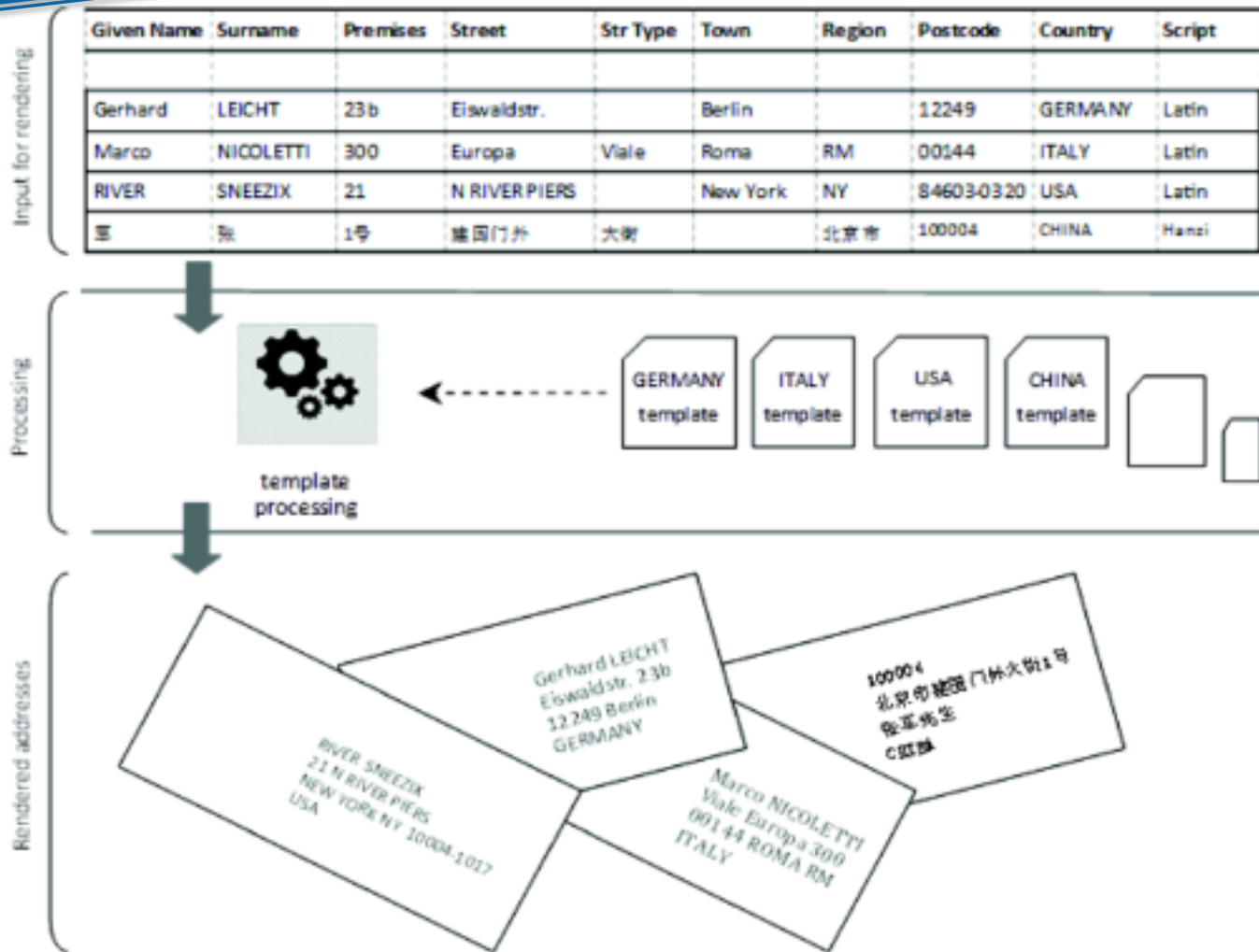
## ISO Standards Maintenance Portal

all > iso > 19160 > -1

<https://standards.iso.org/iso/19160/-1/>

Type	Name	Size
	<a href="#">BS7666 profile v1.0.pdf</a>	491 KB
	<a href="#">ISO19160-1_Profile_Diagrams_US_20150728.zip</a>	190 KB
	<a href="#">ISO19160-1_Profile_SouthAfrica_20141123.pdf</a>	418 KB
	<a href="#">NZ Profile 20151203.xml</a>	8 MB
	<a href="#">NZ Profile Specification 20151203.pdf</a>	1 MB
	<a href="#">readme.txt</a>	2 KB
	<a href="#">US_Profile_Info_20150824.pdf</a>	511 KB





**Figure 6 — Automation of postal address rendering with templates**

- Rules**

- Each cadastral land parcel shall be associated with at least one address.

**Quality requirements**

- Max 200 items can be missing.
- Max 200 items can be in excess.
- Max 200 items can have incorrect suburb names

Data quality element	Data quality measure	Data quality requirement	Data quality measured	Pass?
Commission	Number of excess items	200	50	Yes
Omission	Number of missing items	200	300	No

# ISO 19160-6

# Part 6: Digital interchange

in progress

## ISO 19160-1

Describe addresses

in a specific country, region (e.g. Europe) or application (e.g. postal)

<https://standards.iso.org/iso/19160/-1/>

## ISO 19160-6

***Exchange machine-readable***

descriptions of addresses

in a specific country, region (e.g. Europe) or application (e.g. postal)

**Edit your address**

Country/Region  
South Africa

Address class  
Street address

Address number

Street name

Place name

ID Number [Learn more](#)

Phone number

May be used to assist delivery

Save changes

# ISO 19160-2

## Part 2: Address assignment

to be done

For all the unaddressed (and over-addressed) areas of the world...






# Addressing standards realizing SDGs...




# Many different address datasets...




The South African Government, the 118913 understand

OBJECTID	118913
Munic	Aganang
Trad_Auth	Moletjie
Admin	0
M_Place	0
S_Place1	0
S_Place2	GaRapitsi
S_Place2a	0
S_Place3	Section1
EA_No	97010226
Unique_ID	0
Lat	-23:35:11.62963
Long_	29:06:03.6636
Z_Value	1141.891
Str_Num	0
Str_Name	0
Str_Suff	0
Visible1	10070
Visible2	0
Visible3	0
Visible4	0
Visible5	0
Source1	Stats SA/SAPO
Source2	0
Source3	0
Source4	0
Source5	0
Feature	Du
B_C_Name	0
F_Name1	0
Farm_No	0
F_Name2	0
Mag_Dist	0
UnitCount	1.0000000000
StrucCnt	1.0000000000
StrucDesc	Brick Structure
Sd_ID_r	0
Sd_ID_b	0
Legend	01



CITY OF TSHWANE  
IGNITING EXCELLENCE

OBJECTID	199713
PROPERTY_KEY	038701685
TYPE	Single Entrance
CLASS	Primary
PHYSICAL_ADDRESS_NO	987
PHYSICAL_STREET_NAME	CLIFTON AVENUE
PHYSICAL_PROPERTY_NAME	<Null>
LOCALITY_ADDRESS_NO	<Null>
LOCALITY_STREET_NAME	<Null>
STREET_SECTION_CODE	A01415A08808A06971
REMARK	<Null>
GEOCODE	LYTX03
DATE_CAPTURED	10/1/2007 2:46:46 PM
DATE_MODIFIED	12/13/2007 6:39:53 AM
GlobalID	{408B5F34-5751-4F1A-A72
ADDRESS_STATUS	ACTIVE
USER_NAME	<Null>
SHAPE.len	0.492344



Dr Ruth S Mompoti  
DISTRICT MUNICIPALITY

PropID	1
Streetname	GRIESSEL
StreetType	
StreetNo	40
Town	REIVILO
Erf	0001/0000/00000001/00000/000



# Single national address dataset



<b>id.localId</b>	038701685	2	0P0035
<b>id.namespace</b>	Tshwane Munic	StatsSA	RuthMompoti District
<b>class</b>	streetAddress	sapoTypeRuralVillageAddress	streetAddress
<b>position.geometry</b>	-28.2342, 26.2344	-29.1412 , 26.2205	-27.2344, 25.2342
<b>position.type</b>	streetFront	centroid	centroid
<b>addressComponent1.valueInformation.type</b>	completeAddressNumber	sapoTypeVillage HouseNumber	completeAddressNumber
<b>addressComponent1.valueInformation.value</b>	987	5698292837	40
<b>addressComponent2.valueInformation.type</b>	thoroughfareName	sapoTypeVillageName	thoroughfareName
<b>addressComponent2.valueInformation.value</b>	CLIFTON AVENUE	Ratsegae	GRIESELSTRAAT
<b>addressComponent3.valueInformation.type</b>	townName	postOfficeName	recordedName
<b>addressComponent3.valueInformation.value</b>	LYTTELTON MANOR X03	Rustenburg	Reivilo
<b>addressComponent4.valueInformation.type</b>		postcode	
<b>addressComponent4.valueInformation.value</b>		0350	



X Same text boxes for all countries

X No address verification

The image displays four identical 'Edit your address' forms side-by-side, each for a different country: South Africa, China, Brazil, and Qatar. A red rectangular box highlights the address-related fields across all four forms, showing that the input boxes and labels are identical regardless of the country selected. The highlighted fields are:

- Street address:** A single text box with placeholder text: "Street and number, P.O. box, c/o." Below it is a smaller text box for "Apartment, suite, unit, building, floor, etc."
- City:** A single text box.
- State / Province / Region:** A single text box with placeholder text: "Acronym, eg. SP, MG, RJ, SE".
- Zip Code:** A single text box with placeholder text: "8 numbers, no dashes, no P.O. boxes, e.g."

Other fields visible in the forms include:

- Country/Region:** A dropdown menu with the country name selected (South Africa, China, Brazil, or Qatar).
- Full name:** A single text box.
- ID Number:** A single text box with a "Learn more" link.
- Phone number:** A single text box with a note: "May be used to assist delivery".
- Save changes:** A yellow button at the bottom of each form.

# ISO 19160

- ✓ Select an address class from a dropdown
- ✓ Depending on the address class, different text boxes appear
- ✓ Address verification before order is confirmed

Country/Region

South Africa

Address class

Street address



Address number

Street name

Place name

ID Number

Phone number

May be used to assist delivery

Save changes

Country/Region

South Africa

Address class

Site address



Address number

Place name

ID Number

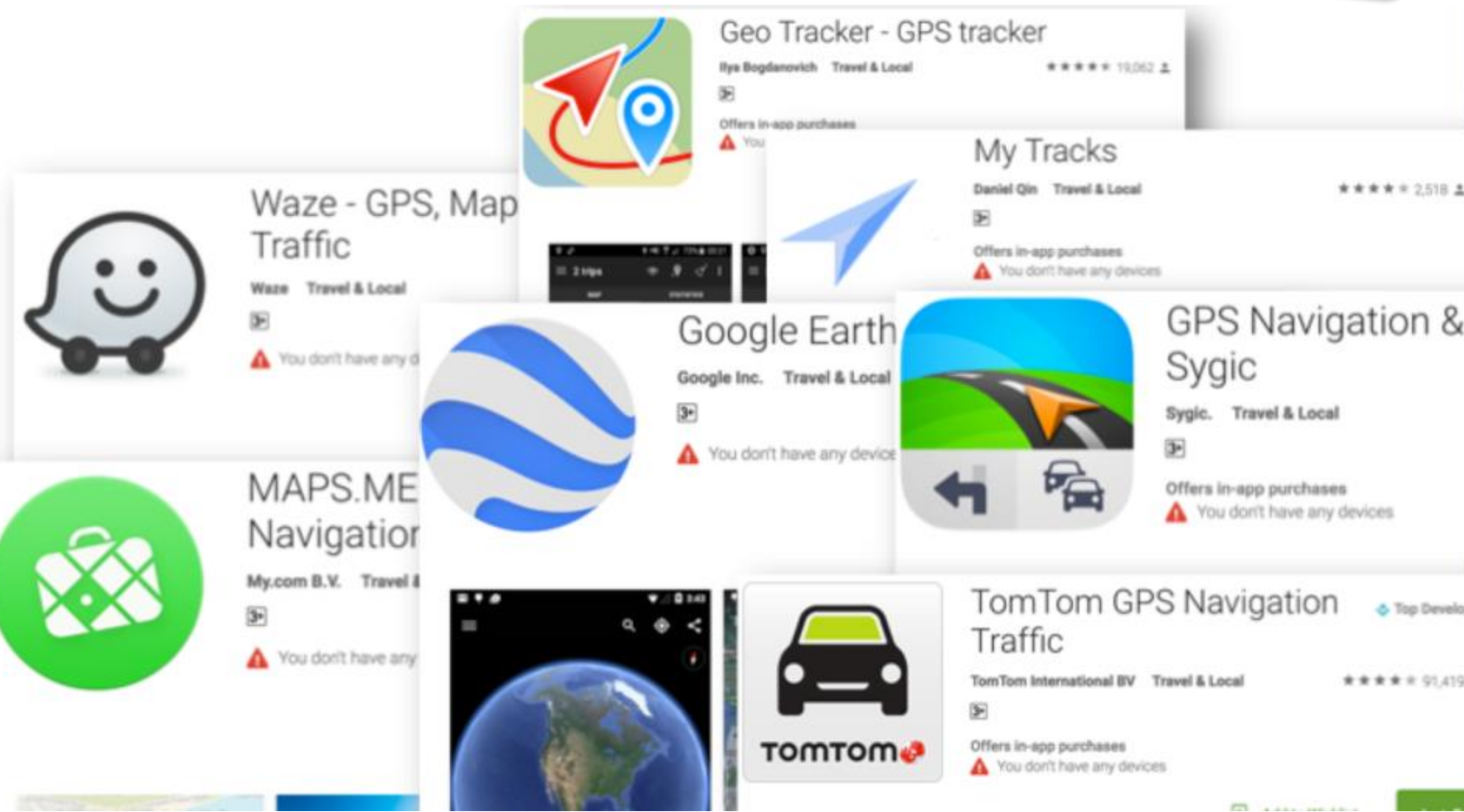
Phone number

May be used to assist delivery

Save changes

# Standards facilitate innovation

**ISO 19160**



# An infrastructure is...



the *fundamental facilities and systems* serving a country, city, or area

[www.dictionary.com](http://www.dictionary.com)



the *basic facilities, services and installations* needed for the functioning of a community or society

[www.wiktionary.org](http://www.wiktionary.org)



the *basic, underlying framework or features* of a system or organization

[www.dictionary.com](http://www.dictionary.com)





# An address infrastructure is...

ISO 19160

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



Based on [www.dictionary.com](http://www.dictionary.com), [www.wiktionary.org](http://www.wiktionary.org)





Thank you