Address data exchange in South Africa

Presented at the
ISO Workshop on address standards
25 May 2008
National Survey and Cadastre, Rentemestervej 8, 2400 Copenhagen NV, Denmark

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Address data exchange in South Africa

Overview

1. South African addresses
2. SANS 1883 – South African address standard
   • Scope
   • Definition of an address
   • Address types
3. Address data exchange
4. How would an international address standard benefit South Africa?
South African addresses

No official address register

Many sources of address-related data

Surveyor General
  One integrated digital cadastre for the whole country

Registrar of Deeds
  Property ownership

Chief Directorate Surveys and Mapping
  Topographical maps

Municipalities
  Address allocation, property taxes

South African Post Office (SAPO)
  Postal delivery

South African Geographical Names Council
  Standardized geographical names; Redress, correct and transform geographical naming system

Utilities for service delivery such as electricity and telecomms
  Service delivery points
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South African addresses

Street Address:
14 Glenvista Street
Woodhill
Pretoria
(City of Tshwane)
Gauteng

PO Box Address:
PO Box 153
Woodhill
(Kromdraai)
0081

Postal Street Address:
14 Glenvista Street
Woodhill
(Kromdraai)
0081

Surveyor General ERF Description:
Town: PRETORIUS PARK EXT 8
Major Region: JR
Erf: 686
Portion: 0
SG Code:
T0JR02050000067600000

Deeds Office ERF Description:
Proclaimed Town: Pretorius Park Ext 8
Erf: 686,0
Deeds Office: Pretoria (T)

Building:
Glen Hills No 6
Glenvista Street
Woodhill
Pretoria
Gauteng

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South African addresses

Rapid urbanization

Informal settlements

Initially no individual cadastral properties
Initially no addressing system in place
Dynamic dwelling demarcation
  e.g. after fires
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South African addresses

Apartheid legacy

Transformation of naming system
  Controversial, e.g. Pretoria vs Tshwane

Historically black townships
  Wide variety of addressing systems
  Many areas with house numbers only, no street names
  Assigning street names is a long process

Tribal areas
  Communal lands
  Single cadastral land parcel per tribe
  No addressing system in place
South African addresses

47.9 million people (mid-2007 estimate by Statistics SA)

± 11 million households (Census 2001)

7.5 million properties

7 million land parcels

500,000 sectional title properties

7.5-11 million addresses in South Africa

3-5 million addresses in existing databases

Backlog: >= 50% (4 – 7 million addresses)
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South African addresses

“A world in one country”
SANS 1883-1, Geographic Information – Address Standard
Part 1: Data format of addresses

SANS 1883-2, Geographic Information – Address Standard
Part 2: Guidelines for addresses in databases, data transfer, exchange and interoperability

SANS 1883-3, Geographic Information – Address Standard
Part 3: Guidelines for address allocation and updates
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SANS 1883 - SA address standard

Address types
How data elements are combined to form address
Not narrowly prescriptive
- As assigned officially by municipalities
- As commonly in use
- In formal/urban areas, as well as informal/rural areas

4 groups of address types
- traditional formalized; composite; SAPO; descriptive

Terms & definitions related to addresses

How address data shall be exchanged
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Address
unambiguously specifies a point of service delivery

Point of service delivery
actual location where a service could be provided

Examples of services
Postal mail
Utilities: electricity, water, telecommunication, sewerage
Emergency services
Proof of residence for financial transactions
Elections
Household surveys
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Address types - traditional formalized:

Street Address
Dr Lategan Road, Groenkloof
1736 Pretorius Street, Arcadia, 0083

Intersection Address
Corner of Kings and Richmond Roads, Mowbray

Site Address
25436 Soshanguve CC
Portion 938 Mooikloof
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**Address types – composite:**

**Landmark Address**
Parliament, Cape Town
Voortrekker Monument, Pretoria

**Building Address**
Election House, 260 Walker Street, Sunnyside
2nd Floor, Celtis Plaza, Schoeman Street, Hatfield

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Address types - SA Post Office:

SA Post Office-Type Rural Village Address
012151 Ngingxolo, Mooiplaas, 5228
110101 Corana, Umtata, 5100

SA Post Office Box Address
PO Box 2947, Hatfield, 0028, ZA
Private Bag X2438, Glenstantia, 0010

SA Post Office Street Address
477 Chopin Street, Glenstantia, 0181

SAPO Poste Restante Address
Poste Restante, Hazyview, 3928
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Address types - descriptive:

Farm Address

Tabakskuur, Grootgelukplaas, Kimberley Road, Bloemfontein

Informal Address

Opposite the butcher shop, Tsamaya Street, Mamelodi
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EBNF for the street address type

StreetAddress = StreetIdentifier, Locality

StreetIdentifier =
[CompleteAddressNumber | StreetNumberRange], CompleteStreetName

CompleteStreetName = StreetName
| [[StreetNameModifier], StreetNameDirectional], StreetName, StreetNameType
| [StreetNameModifier], StreetName, StreetNameType, [StreetNameDirectional]
  etc.

Locality = PlaceName, [Town], [Municipality], [Province],
[SAPOPostcode], [Country] | [CountryCode]

PlaceName = RegisteredName | UsedName
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XML encoding for a street address
1736 Pretorius Street, Arcadia, 0083

```xml
<StreetAddress>
  <StreetIdentifier>
    <CompleteAddressNumber>1736</CompleteAddressNumber>
    <StreetName>Pretorius</StreetName>
    <StreetType>Street</StreetType>
  </StreetIdentifier>
  <Locality>
    <RegisteredName>Arcadia</RegisteredName>
    <SAPOPostcode>0083</SAPOPostcode>
  </Locality>
</StreetAddress>
```
Informal address

Opposite the spaza shop at the entrance of the squatter camp, Olievenhoutbosch

**EBNF**

InformalAddress = InformalReference,
[LandmarkIdentifier],
[StreetIdentifier | IntersectionIdentifier],
Locality

**XML**

```xml
<InformalAddress>
  <InformalReference>Opposite the spaza shop at the entrance of the squatter camp</InformalReference>
  <Locality>
    <RegisteredName>Olievenhoutbosch</RegisteredName>
  </Locality>
</InformalAddress>
```
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Exchanging an address dataset:

```xml
<Address data exchange>

<StreetAddress>
  <StreetIdentifier>
    <CompleteAddressNumber>1736</CompleteAddressNumber>
    <StreetName>Pretorius</StreetName>
    <StreetType>Street</StreetType>
  </StreetIdentifier>
  <Locality>
    <RegisteredName>Arcadia</RegisteredName>
    <SAPOPostcode>0083</SAPOPostcode>
  </Locality>
</StreetAddress>

<IntersectionAddress> ... </IntersectionAddress>

<FarmAddress> ... </FarmAddress>

</Address data exchange>
```

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Address data exchange

Metadata

Address ID
The unique identification number assigned to an address by the address data provider.

Address Data Provider (resource provider)
Organization that creates and maintains the address dataset.

Address Source (originator)
Reference to the original source from where the data provider obtained the data, and where the address was created.

Point of Observation
Relative position to the physical structures and/or other electronic data according to which the address point location was captured.

Address Life Cycle Stage (Future, Active, Retired)
Address Official Status
Compliant with SANS 1878 – Geographic information - Metadata
ISO 19115-Geographic Information Metadata)
Address data exchange in South Africa

City of Joburg: sample data, as is

Legend
- Land_Parcel (CoJ)
- Street_Centre_Lines (CoJ)
- Street_Addresses (CoJ)

Units:
- Kilometers

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City of Joburg: sample data, SANS 1883 exchangeable
How would an international address standard benefit South Africa?

- **Establish a common vocabulary**
  - Eliminates ambiguities and misunderstandings
- **Promote development of addressing tools**
  - Vendors
  - Open source community
- **Alleviate addressing backlog**
  - Economic enablement of people (credit etc.)
  - Integrate non-addressed people into modern society
- **Improve address maintenance**
  - Infrastructure planning and maintenance
  - Governance: voting, etc.
  - Household surveys
Acknowledgements

GSDI for the GSDI Small Grants award that enabled elected delegates to travel to the address standard workshops in March and May 2008 in South Africa

Serena Coetzee’s work on this paper, as well as presentation at the workshop, is partially supported by a THRIP project funded by the South African Department of Trade and Industry (dti) and AfriGIS
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Thank you

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