

Towards an international address standard

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Towards an international address standard

Overview

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2. Benefits of an international address standard
3. Existing address standards
4. Towards an international address standard

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Introduction to addresses

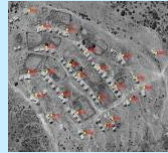
- **Address**

- Describes a location
 - Traditional: postal mail
 - Physical services: utilities, emergency response, etc.
 - Virtual services: buying on credit, opening bank accounts, etc.
- More than a set of directions for delivering post



- **Spatial reference systems**

- Coordinate reference system
 - e.g. Longitude, Latitude
 - also "dot" address?
- Linear reference system
 - e.g. distance along a linear feature from a known point
 - also landmark address?
- Geographic identifier reference system
 - e.g. gazetteer
 - also street address?
- Address reference system?



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Introduction to addresses

- **Addressing and SDI**

- Address data are reference data (INSPIRE)
 - Unambiguous location
 - Merge data from various sources
 - Provide a context for other information
- Address data sources at distributed local authorities
- Few published address standards (2005 European survey)

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CustomerID	Address Line 1	Address Line 2	Address Line 3	Postcode
392836	55 Villa Savannah	345 Sprokielaan	Faerie Glen	0043
392837	Hamilton Place 3	Kudu Avenue	Allen's Nek	1709
392838	Section 1 Albida	51 Naude Crescent	Albida	6870
392839	PO Box 2039	Alberante Ext Alberante		1449
392840	Ernesthof	Erneststraat 777	Pertoria Gardens	0082
392841	No 40B Uniekop	555 Adcockstraat		0084 Gezina
392842		166 Marais Street	Brooklyn	0181
392843	2544 Extension 12	Olievenhoutbosch		0175
392844	665/197 Uxolo Street	Mahube Ext 2	PO Rethabile	0122
392845	66795 PO Box	Highveld Park		0169
392846	483	Smith Street	Rustenburg	0250
392847	Postnet Suite 8327	Private Bag X1	Menlo Park	0081
392848	1387 Block L		Soshanguve	152

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Introduction to addresses

- **Nature of an address standard**
 - Systematic definition of address elements and syntaxes
 - Unique address ID for each address
 - Relates addresses to coordinates
 - Address metadata
 - Address data quality
 - Specification of encoding formats

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Benefits of international standardization

- **Economic growth (DIN study)**
- **Lower transaction costs for sharing geospatial data (2005 NASA study)**
- **Guide for other countries**
 - Descriptive
 - Reflects common beliefs and practices (maturity)
 - Prescriptive
 - Preferred addresses, deprecated addresses

Benefits of address standardization

- **Economic**
 - Geocoding, spatial analysis, etc.
 - Cost of ambiguous addresses (Denmark)
- **Social**
 - Uplift rural population in the modern society (South Africa)
 - Disaster management, urban planning
 - Access to banking and other services
- **Governance**
 - Elections, Census, surveys
 - Increased rates & taxes
 - UK local authority £250,000 p.a. (CEBR 2006)
 - Cost saving when optimizing service delivery
 - UK local authority saved £40,000 p.a. with improved routing



Existing address standards

	Started	First published	Address definition
AS/NZ	1999	2003	the conventional means of describing, labeling or identifying an address site; and an address site is an object, place or property
DK	2003	2006	a structured, textual description assigned as a common reference to a definite way of access to a building, a construction or developed or undeveloped plot of land
SA	2006	*	an unambiguous specification of a point of service delivery
UK	1995	1995	means of referencing an object for the purposes of unique identification and location
US	1996	*	an address specifies a location by reference to a thoroughfare, or a landmark; or it specifies a point of postal delivery
OASIS	2000	2007	a physical location or a mail delivery point
UPU	2002	2006	Set of information which, for a postal item, allows the unambiguous determination of an actual or potential delivery point, usually combined with the specification of an addressee and/or a mailee

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	AS/NZ	DK	SA	UK	US	ISO 19112	ISO 19133	OASIS	UPU
Geo-referencing with coordinates	Y	Y	Y	Y	Y	Y ³	Y	Y	N
Postal addresses	N	Y	Y	Y	Y	N	Y	Y	Y
Non-postal addresses	Y	Y	Y	Y	Y	N	Y	Y	N
Data model	N ¹	Y	Y	Y	Y ⁴	Y	Y	Y	Y
Data model format	n/a	UML	EBNF ERD UML	UML	XSD	UML	UML	XSD	Custom
Encoding formats	n/a	XML	CSV XML	CSV XML	XML	Y ³	Y ³	XML	XML
Metadata	Y	N	Y	Y	Y	Y ³	Y ³	N	N
Data quality	N	N	N	Y ²	Y	Y ³	Y ³	N ⁵	N

¹ The standard does not include a data model but the Intergovernmental Committee on Surveying & Mapping (ICSM) have developed a Harmonized Data Model that includes a Street Address and is available at https://www.seegrid.csiro.au/subversion/xml/ANZLIC_ICSM/HarmonisedDataModel/trunk/Documentation/index.htm

² These are provided through conventions and guidelines produced by local government organizations

³ These are provided through other standards in the ISO 19100 series of standards, e.g. ISO 19115:2003 Geographic information - Metadata, ISO 19118:2005 Geographic Information - Encoding.

⁴ There is no database model. The XML model provides for transfer of data, but is not a relational data model as required for address data.

⁵ A single data quality attribute is provided. Users have the choice to define any data quality value to the data quality attribute.

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Existing address standards

- **Most of the standards**
 - Include *geo-referencing* by coordinates
 - Describe *all* kinds of addresses (not just postal)
 - Provide *data models*
 - Use *UML* to describe their data models
 - Use *XML* as encoding format
- **Some of the standards**
 - Include *metadata* and *data quality*

Address semantics

"615 20th Street" in the US:

1. 307th house on the right side on the 20th street in a series of parallel numbered streets beginning with 1st Street
2. House with front door that is 615 ft (198 m) from beginning of 20th Street which runs along the southern edge of section 20 in the Public Land Survey System (PLSS)
3. House whose driveway is 15 address increments along 20th Street, which starts at the 600th address increment from the county courthouse, in a small town using the county address grid
Address increment is 1 - 30 feet or more (need more information)
4. ?



International standard development

1. **De facto**
 - Standardization of general model?
 - Barrier of entry for other market players?
2. **Industry consortia**
 - e.g. Open Geospatial Consortium (OGC), Organization for the Advancement of Structured Information Standards (OASIS)
 - Fast, Standards available for free on the Internet
 - Dominated by major funders?
3. **Inter-governmental agencies**
 - e.g. United Nations
 - Slow, No involvement from industry and civil society
4. **Open standards generating bodies**
 - e.g. International Organization for standardization (ISO), International Electrotechnical Commission (IEC)
 - Broad participation: governments, academia, industry, civil society
 - Sometimes slow due to rigorous reviewing process
 - Standards have to be bought

Potential Scope

- **Goals**
 - Respect each country's own unique socio-cultural addressing system
 - Do NOT prescribe a universal addressing system
 - Interoperability between multitude of addressing systems!
 - Describe a data model that enables
 - address data exchange
 - address data integration
 - Provide common terms and definitions to enhance understanding of addresses

Potential Scope

- **What goes in, what not**
 - Abstract standard
 - Framework for describing addressing systems around the world
 - Vocabulary and ontology
 - Terms and definitions for address, address elements
 - Geo-referencing by coordinates
 - *All* kinds of addresses (not just postal)
 - Overarching data model

Conclusion

- **Address reference data are part of an SDI**
- **Benefits of address standardization can be realized**
- **International address standard**
 - Best route for development
 - ISO (broadest participation) + another organization that distributes standards free of charge
 - Scope
 - Vocabulary and ontology
 - Geo-referencing by coordinates
 - *All* kinds of addresses
 - An overarching data model (address data exchange & integration)

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Thank you

Questions?