



# How to render addresses for purposes other than mail?

Presented by Bo-mi Lee,  
Spatial Information Research Institute,  
Seoul, South Korea at  
Project meeting: ISO 19160, Addressing  
24 November 2014, Shenzhen, China

# Contents

---

- Background
- Results to date
- Going forward...



---

Background...

# ISO 19160, Addressing

---

- Preparatory work recommended 5 projects:
  - ISO19160-1: Conceptual model
    - International Standard in 2015
  - ISO19160-2: Good practices for address assignment schemes
  - ISO19160-3: Quality management for address data
  - ISO19160-4: International postal address components and templates
    - Committee Draft (CD) in December 2014
  - ISO19160-5: Address rendering for purposes other than mail
    - NWIP for stage zero project in 2015?

# ISO 19160-1, Addressing – Part 1: Conceptual model

- Conceptual model for address information (UML)
- Terminology for concepts in the model
  - address, address component, address alias, parent address, child address...
- Common representation of address information, independent of actual addressing implementations
  - Profiles of ISO 19160-1 for different countries to be published at <http://standards.iso.org/iso/19160/-1/>
- Benefits
  - Enhances understanding of addresses by providing a common terminology to communicate about addresses
  - Facilitates development of tools for different addressing systems

# ISO 19160-4, Addressing – Part 4: International postal address components and template languages

---

- Endorsement of existing UPU and CEN standard
  - First published in 2001
  - Joint project with UPU and CEN to review
- Definitions of postal address components
- Specification of language for encoding of address rendition rules on postal mail
- Postal Address Template Definition Language (PATDL) as XML schema
- Templates of 40 countries published on the UPU website at  
<http://www.upu.int/en/activities/addressing/s42-standard/compliant-countries.html>

# ISO 19160-5, Addressing – Part 5: Address rendering for purposes other than mail

- Recommendation
  - To investigate how addresses are rendered for purposes other than mail, such as in
    - maps (cartographic portrayal) on the Web
    - on graphic displays of handheld devices, mobile phones etc.
  - For example, a conceptual model or specification for the rendering of addresses
- Proposed plan
  - Stage zero project to review this issue
  - Possibly a joint project with ISO/TC 204, *Intelligent transport systems*, and ISO/IEC JTC 1/SC 35, *User interfaces*
  - Consider including Postal Address Template Definition Language (PATDL) specified in ISO 19160-4 for address rendering on maps
- Potential benefits
  - Assist software developers with the display of addresses on digital output and in user interfaces



---

# Results to date...

# International address rendering: Korean Address Road Map Rendering

- Ministry of government administration and Home affairs published address information guidelines
  - Font size, symbol, etc. specified at different scales

**Layer**

**Level**

**Scale**

**Portrayal**

구 분	항 목		Data Type	단계(레벨/축척)								축척단위(전)				기상	위치	
				시군구 간선급								시도간선급						
	14	13	12	11	10	9	8	7	6	5	4	3	2	1				
	11	1/2	1/4	1/8	1/16	1/32	1/64	1/128	1/256	1/512	1/1024	1/2,000	1/4,000	1/8,000				
① 선택정보	기초 구역	객체	면	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>									190,191,193		
		속성	문자	11 pt	11 pt	11 pt	11 pt									184,184,184	-	07341
	지점 번호	객체	면	<input type="radio"/>	-	141,143,142												
		속성	문자	13 pt	101,99,100	-	사46											
	법정 등리	객체	면	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>										-	199,199,197	
		속성	문자	15pt	15pt	15pt										154,154,154	-	여의도동
	지번	속성	문자	10PT					169,167,173	-	(35)							
	행정동 경계	객체	면	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>									-	199,199,197	
		속성	문자	20 pt	20 pt	20 pt	20 pt									154,154,154	-	영등포동 1가

# International address rendering: Korean Address Road Map Rendering

---

– Classified into three parts in 14 levels

(Scale : 1:8,000,000 ~ 1:1,000)

- Level 1 ~ Level 3: Country boundary, national expressway, mountain
- Level 4 ~ Level 7: province, medium size road (under 40m)
- Level 8 ~ Level 14: city, building name/number, small size road (under 12m) etc

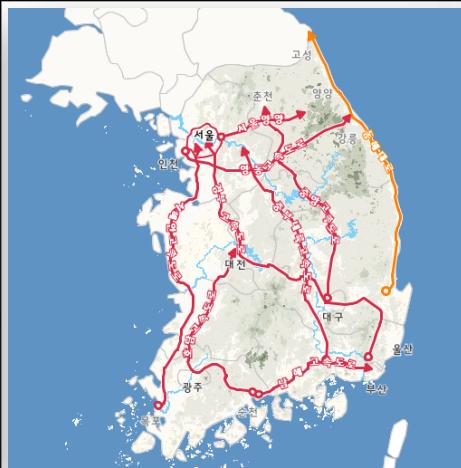
# International address rendering: Korean Address Road Map Rendering



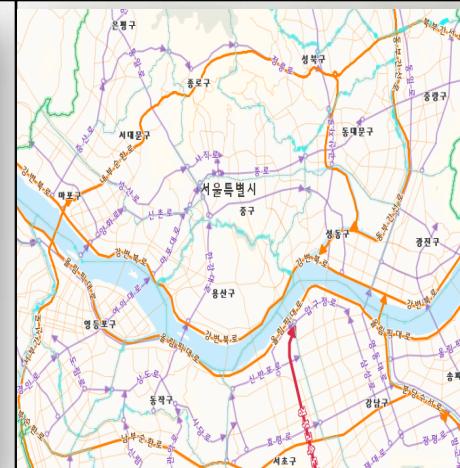
# International address rendering: Korean Address Road Map Rendering



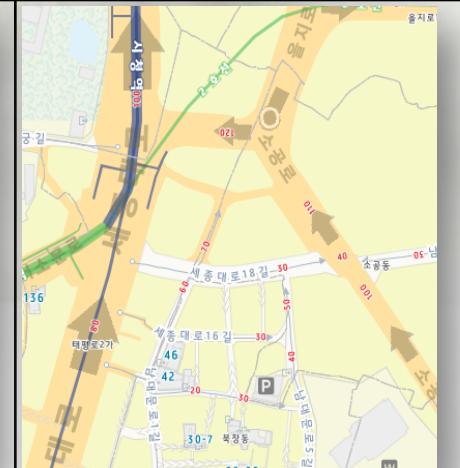
1:8,000,000 (level 1)



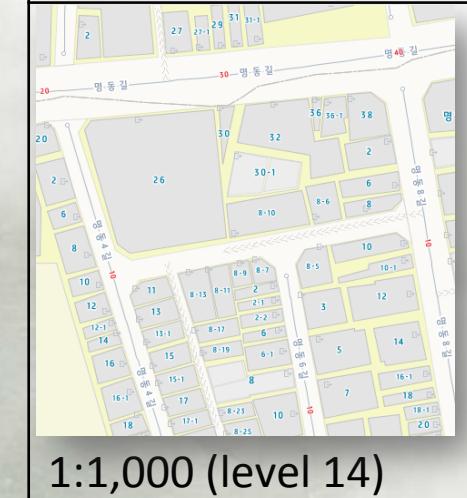
1:400,000 (level 2)



1:64,000 (level 8)



1:2,000 (level 13)



1:1,000 (level 14)



Improving  
road name  
address Map



# International address rendering: Korean Address Road Map Rendering

- On navigation devices
  - 14 levels, comply with address information guidelines



100km (level 1)



12.8km (level 4)



800m (level 8)



400m (level 11)



100m (level 11)



10m (level 14)

# International address rendering: South African National Map Series

South African National Map Series	Vector data included
1:10,000 Orthophoto Map Series	Contours, spot-heights, place names, route numbers.
1:50,000 Topographical Map Series	Natural and man-made features: spot-heights, 20m contours, place names, boundaries, magnetic data, etc.
1:250,000 Topo-cadastral/ Land Cover Maps Series	Topographical detail: names, numbers and boundaries of original farms; boundaries of magisterial districts and provinces; international boundaries; 100m contours (50m on sheets prior to 2000); hypsometric tints.
1:500,000 Topographical/ Administrative Map Series	Similar to the 1:250 000 series, but without farms and more generalized.
1:500,000 Aeronautical Edition Map Series	Essentially same as 1:500,000 topo-admin maps, but modified for aeronautical purposes: heights in feet, latest aeronautical information (as per ICAO), without magisterial district.
1:1,000,000 International Civil Aviation Organisation World Aeronautical Charts	Only most important topographical detail, navigational aids, air routes, etc.
1:2,000,000 Wall map	A convenient map showing the whole of South Africa on a single sheet
Provincial maps	Cities, towns, smaller urban centres, district/regional councils, rural councils (rural local government) and magisterial districts, main road and rail networks, main rivers and dams, protected areas and airports.

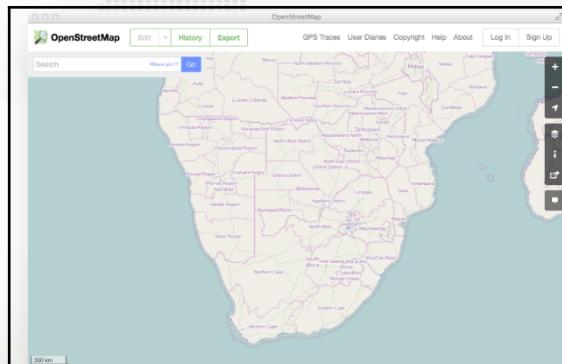
# International address rendering: South African National Map Series

---

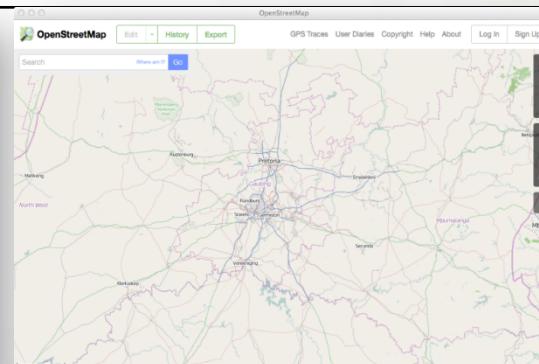
- South African National Map Series published by National Geospatial Information (NGI)
  - 1:50,000 Topographical Map Series
  - 1:10,000 Orthophoto Map Series
    - covers only about 30% of the country, including metropolitan and peri-urban areas
    - Not all the 1:10 000 maps are available digitally
  - None of the maps show address data finer than suburb name
    - Most suburb names are shown at 1:50,000, only selected names at 1:250,000 and 1:500,000
  - All national and provincial route numbers are shown at 1:50,000, only selected ones at smaller scales.

# International address rendering: OpenStreetMap

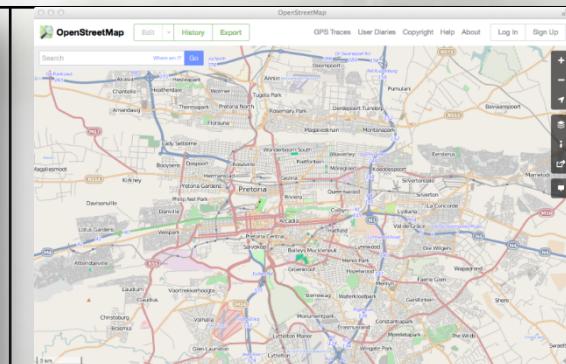
- Standardized address maps **do not exist**



1:17,000,000 (level 1)



1:2,000,000 (level 2)



1:120,000 (level 3)



1:12,000 (level 4)



1:8,000 (level 5)



1:4,000 (level 6)

# Conclusion from experiments

---

- Rendering of addresses on two-dimensional maps depends on
  - Purpose
  - User, use, etc.
  - Scale
  - Context
    - Other address components are portrayed
    - Density of addresses/addressable objects
  - Content
    - Address components
  - Physical characteristics of display device
    - Resolution, pixel density, colours, contrast, etc.
  - etc.

# Conclusion from experiments

---

- Rendering addresses is not much different from rendering other geographic information on two-dimensional maps...
  - Most of this is covered in ISO 19117:2012, *Geographic information – Portrayal* and OGC's Styled Layer Descriptor (SLD)?
    - Will XML-based SLD work for handheld devices?
  - What about other visualization modes?
    - 3D, virtual reality, augmented reality, ...

# Going forward...

---

- Use cases of address rendering in augmented reality
  - Tourists
    - Display addresses and/or address components in different languages
  - Address changes
    - Display old and new addresses (e.g. land parcel based and road name address)
  - Tax collection
    - Find addresses for delivery of bills when addresses are not displayed or displayed incorrectly
  - Informal settlements
    - Display addresses where there are no funds to put up signs and addresses change all the time (dynamic)
  - Refugee camps
    - Display addresses when there is no time to put up signs and addresses change all the time (dynamic)
  - Relief operations
    - Display addresses when signs and buildings have been destroyed in a disaster

# Going forward...

---

- Rendering addresses in augmented reality depends on additional variables
  - Visual properties of background
  - Visual properties of the trackable object
  - Size of the trackable object
  - Distance from the trackable object
  - Anything else?

# Going forward...

---

- NWIP for stage zero project
  - ISO 19160-5, Address rendering for purposes other than mail items
    1. Can we use existing standards (ISO 19117 and OGC SLD) to render addresses on two-dimensional maps on all kinds of devices?
    2. Can we use the postal address template definition language (PATDL) defined in ISO 19160-4 to render addresses in 3D, augmented reality or virtual reality?

# Going forward...

---

1. Can we use existing standards (ISO 19117 and OGC SLD) to render addresses on two-dimensional maps on all kinds of devices?
  - Test this by
    - Developing a portrayal catalogue for standard Korean road address map
    - Implementing OGC SLD for standard Korean road address map
    - Test catalogue and SLD on different devices with different visualization modes (3D, virtual reality, augmented reality)

# Going forward...

---

2. Can we use the postal address template definition language (PATDL) defined in ISO 19160-4 to render addresses in 3D, virtual reality and augmented reality?
  - Test this by
    - Evaluate augmented reality implementation
      - Displays/renders Korean addresses in 3D, virtual reality and augmented reality according to Korean postal address template
      - Displays/renders South African addresses in 3D, virtual reality and augmented reality according to South African postal address template

# Going forward...

---

- Possible outcomes
  - 1. Can we use existing standards (ISO 19117 and OGC SLD) to render addresses on two-dimensional maps?
    - Yes, no additional standard required
    - Partially, existing standards need to be amended/revised
    - No, need to develop a new standard
  - 2. Can we use the Postal Address Template Definition Language (PATDL) defined in ISO 19160-4 to render addresses in augmented reality?
    - Yes, no additional standard required
    - Partially, adapt ISO 19160-4 as required
    - No, need to develop a new standard



---

Thank you for your attention