

Introduction to K-Address System : Modernizing Address Information K-주소의 이해

Nov. 20
24

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The Ministry of the Interior and Safety





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1. Paradigm shift

2. K-Address System

3. Operation

4. Excellence

5. Expected Outcomes

A night-time photograph of a city, likely Seoul, featuring a prominent white wall with arches and a large orange circle with the text 'Paradigm shift' overlaid on the right side. The city lights and mountains are visible in the background.

Paradigm shift

The Industrial Revolution and changes in expected roles for address system

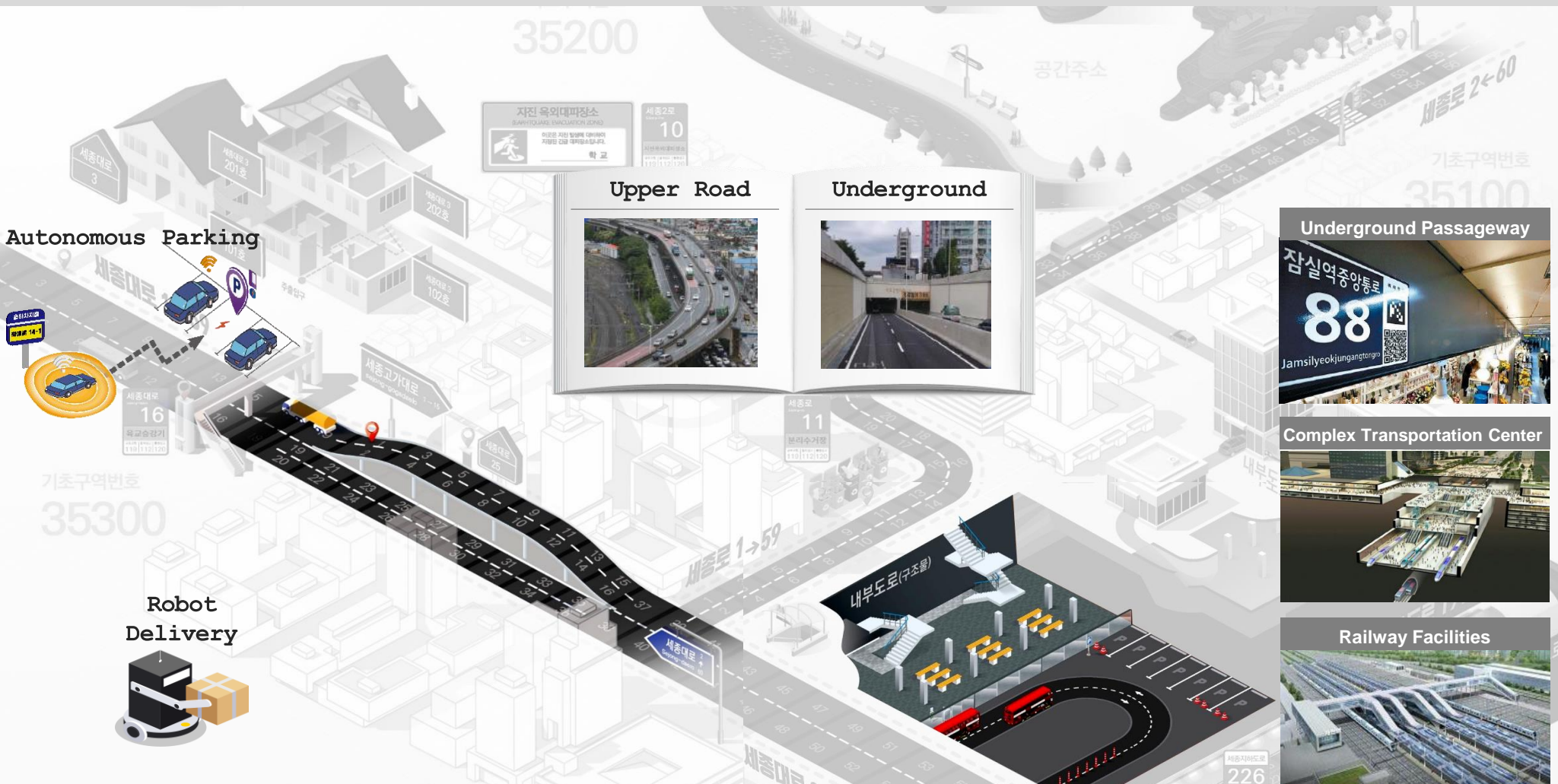


A place where life is based

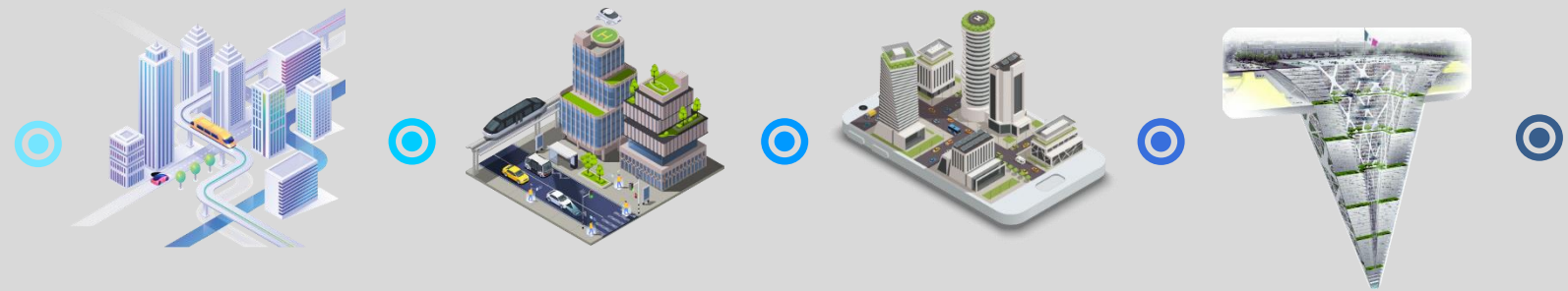


Location identifier for the spatial object in Digital Twin

Government Agenda 11 : Fostering a cutting-edge government's digital platform that seamlessly connects all data Support Robot Delivery, Autonomous Parking and Multi-dimensional Navigation



Emergence of High-Density Metropolis

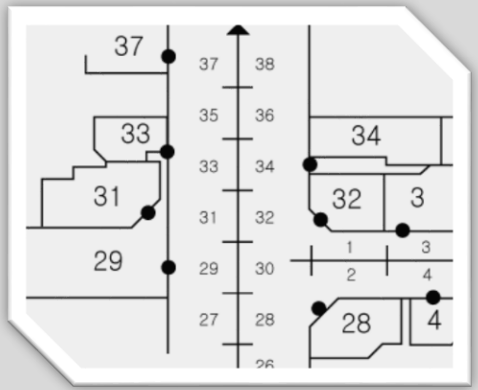


Smart City

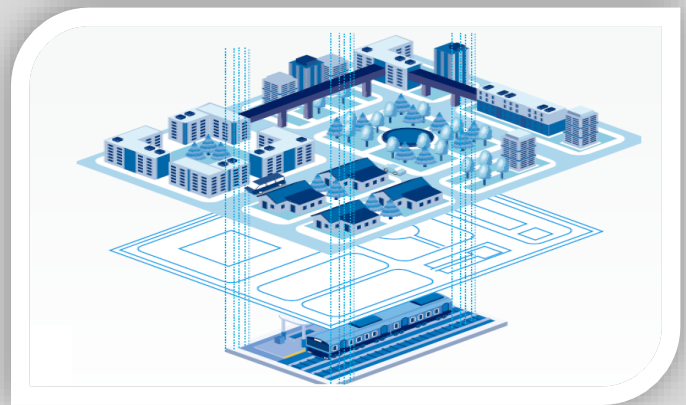
3D Complex Space

Compact city

Underground city

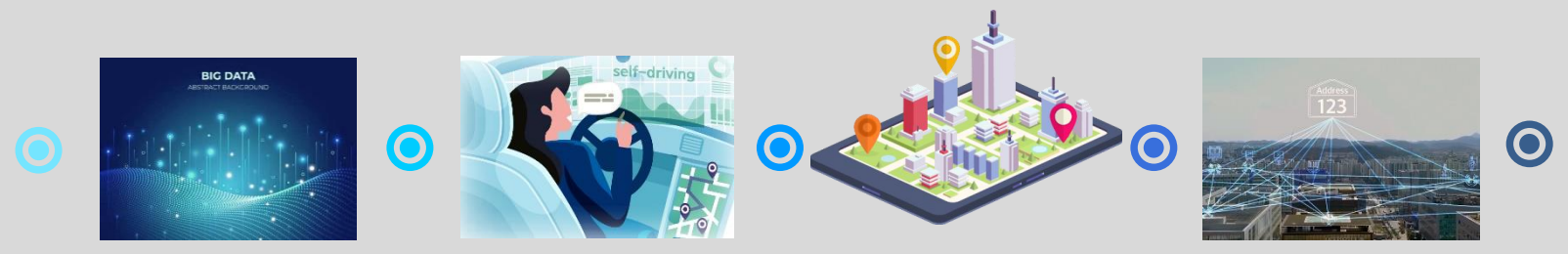


2D flat address (building-centric)



3D address (building + object + vacant lot)

Emergence of Metaverse and Robot Appearance



Big Data

Autonomous driving

Metaverse

Hyper-connection



Address for postal business
(Carrier centered delivery)



Address-based industry creation infrastructure
(Core Data for Smart City Framework)

A night-time photograph of a city, likely Seoul, featuring a large blue circular graphic overlay with the text "K-Address system". The background shows a cityscape with lights, a large building on the left, and a traditional Korean palace (Gyeongbokgung) on the right. The blue circle is composed of multiple overlapping brush strokes, creating a dynamic, swirling effect. The text "K-Address system" is centered within the circle in a white, sans-serif font.

K-Address system

Address overview



SoS system of street name

SoC system of corridor

SoG system of Grid

SoZ system of zone

AoB Address of building

AoT Address of thing

AoS Address of space

A2M Address based Mobility Information

A2P Address based Place Information

A2O Address based Data information

A2D Address based Barcode information

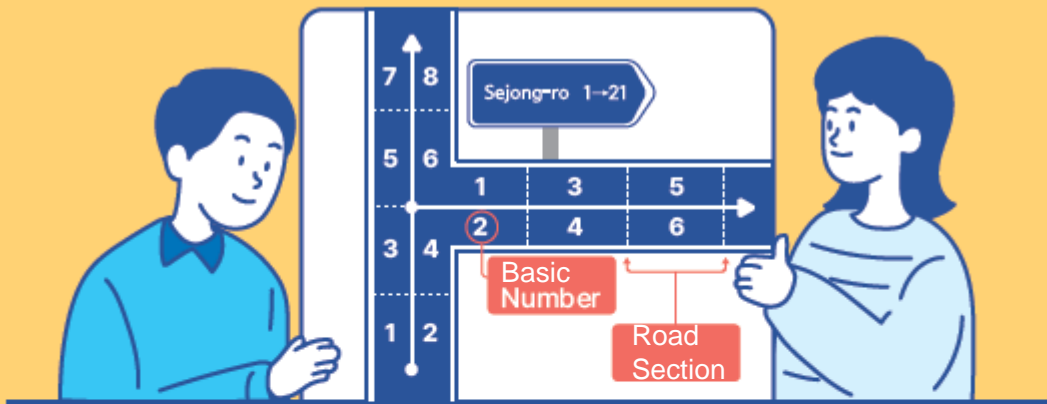
A2U Address based User information

Address Definition from ISO19160-1

Structured information that allows the unambiguous objects for purposes of identification and location

1. ARS

Address Reference System



Street section setting | west→east, south→north

Street Interval setting | 20m, 10m

Basic number assignment | Left odd number,
Right even number

Street Name Assignment

SoS

Street name

Target Ground, Overpass, Underpass. Etc.

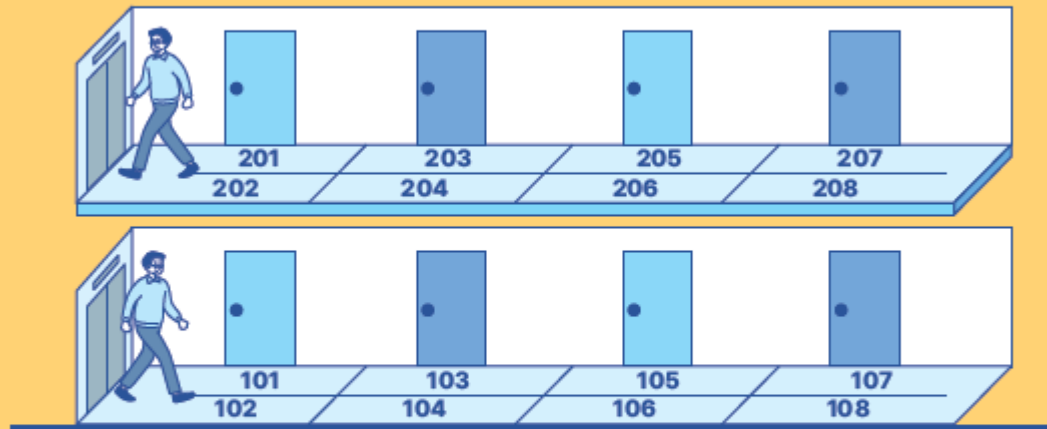
Street section W→E, S→N

Base section 20m, 10m

Application | Address of building, Address of thing (outside the building), Address of space

1. ARS

Address Reference System



Vertical passageway (elevators, stairs, etc.)

Indoor passageway (hallway)

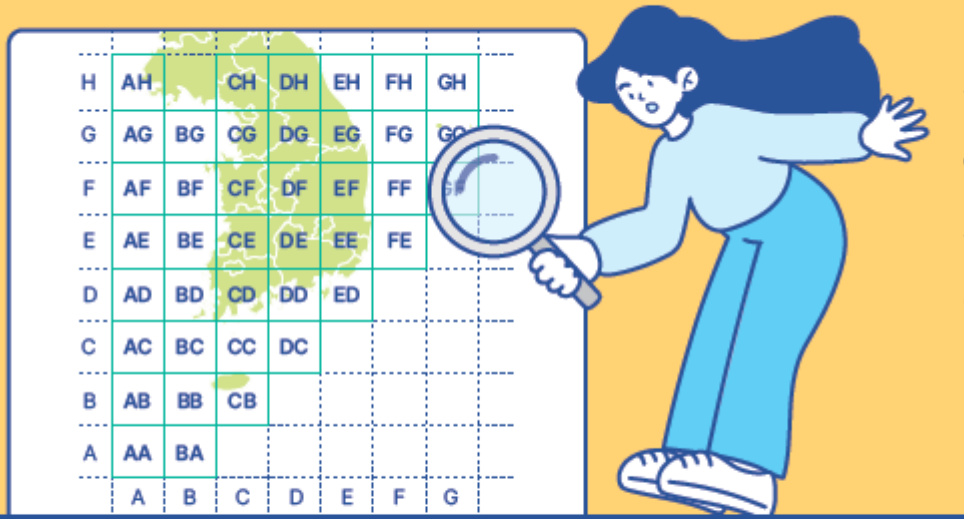
Setting the base interval of the indoor passageway and assigning a basic number

SoC
Corridor

Target A corridor in a building
Establishing Various passageway

Application | Address of building, Address of thing (Inside the building), Address of space

1. ARS Address Reference System



Setting the reference point | UTM-K Pseudo origin 700km south, 300km west

Setting up 100km Grid |

Giving to the '가나다라 [ganadara]' on the longitudinal and the latitudinal axes

SoG
Grid

Target National Land Grid

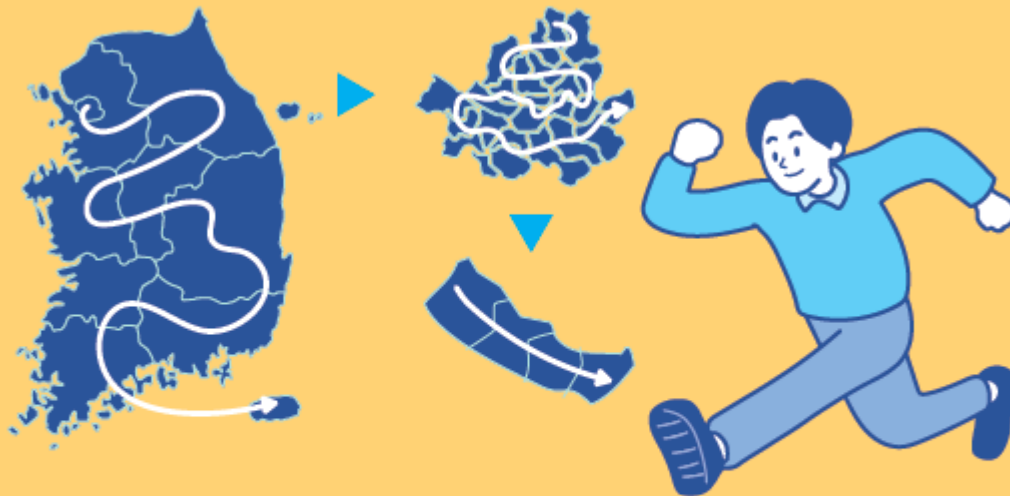
Reference point UTM-K 100km Grid on coordinate axes

Application | Emergency Response with National Grid Code



1. ARS

Address Reference System



Setting up Administrative Authority

| Sido, Sigungu, Eupmyundong, Tong, Ri

Setting National Base Code (or Zone)

| Various zoning units

SoZ
Zone

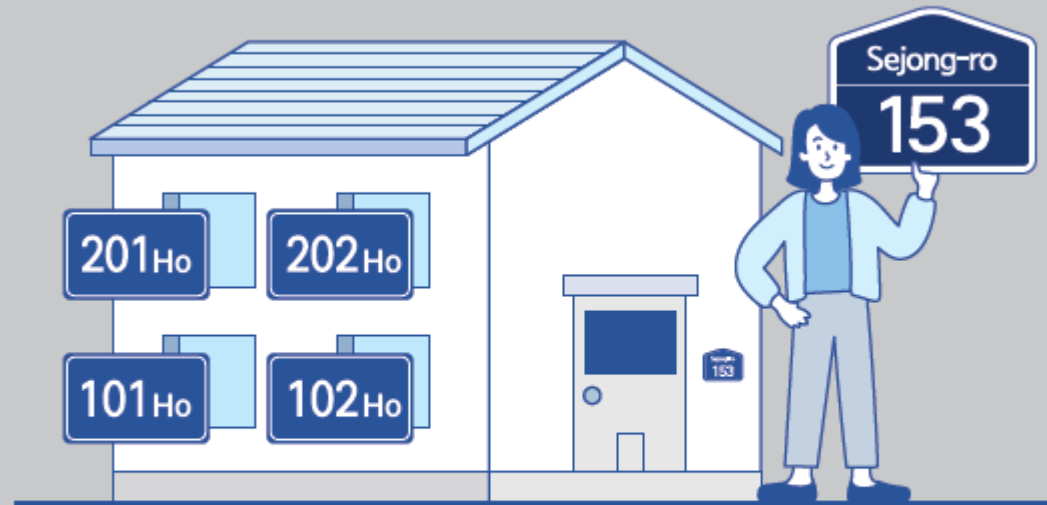
Target The entire country

Administrative districts National Base Code

Application | Address of building, Address of thing, Address of space, Postal Service

2. NAD National Address Data

Road Name Address
(Detailed Address)



AoB
Building

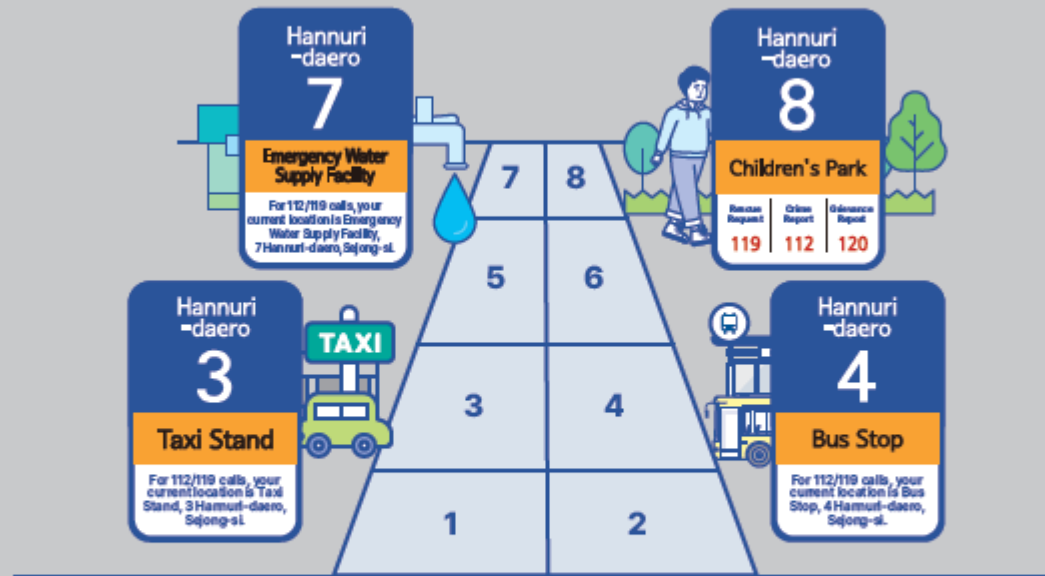
Target Building / Dong, Cheung, Ho

Placement House, Office / Room

Guide Building Number Sign / Detailed Address Sign

Example | 201ho, 153 Sejong-ro, Sejong-si

2. NAD National Address Data



AoT
Thing

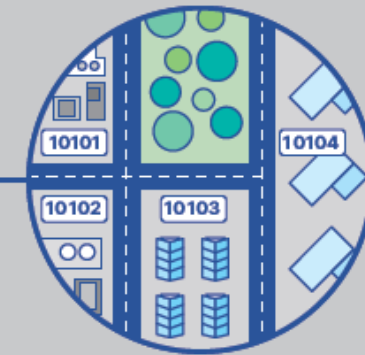
Target 15 things including Emergency facilities

Placement Thing location

Guide AoT Sign

Example | Bus Stop 4 Hannuri-daero, Sejong-si

2. NAD National Address Data



AoS Space

Basic Number Roadside Space

Target Roadside Site

Placement Roadside

Guide Basic Number Sign Facilities

National Grid Code Mountain etc

Target Space on the Mountain

Placement 50cm protrusion

Guide National Grid Code Sign

National Base Zone number Zone Unit

Target National Base Zone

Placement Zoning Base Unit

Example | Ansim-ro 453

Example | Ra Ma 2120 0425

Example | 12345

Application | Safety and Emergency Response

3. AID

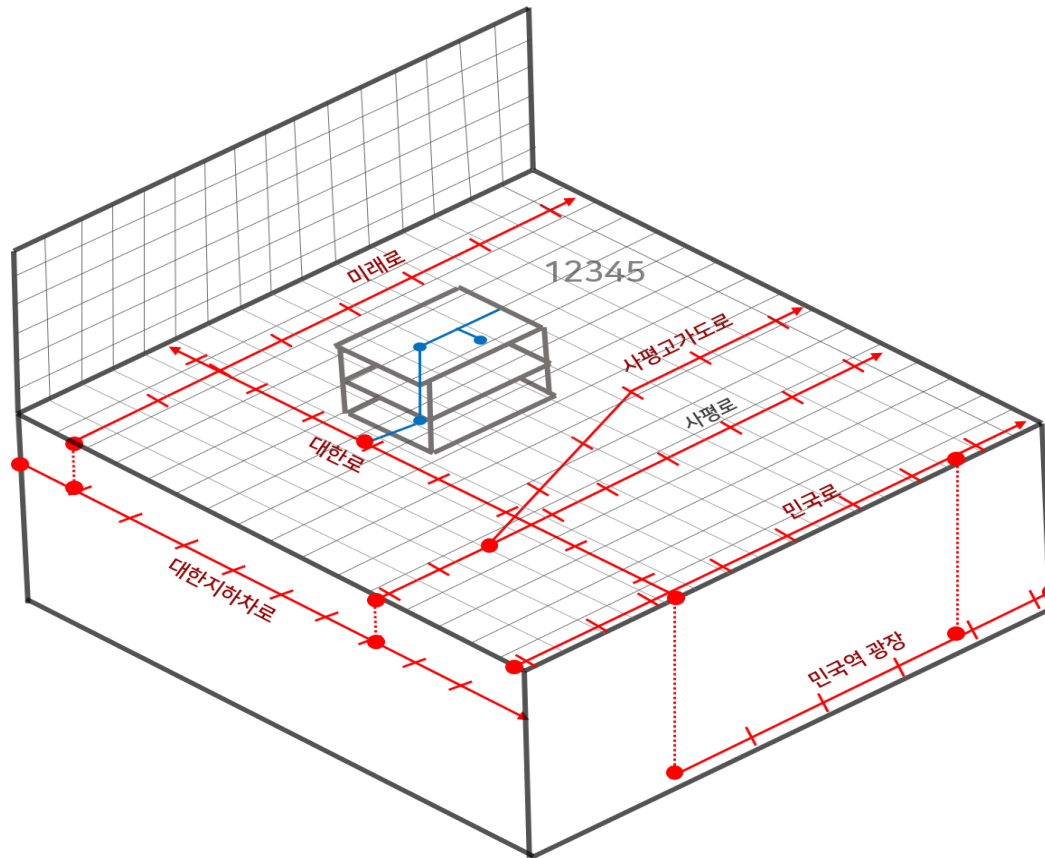
Address Intelligence Data

Address based Mobility Information	Address based Place Information	Address based Data information	Address based Barcode information	Address based User information
A2M (Mobility)	A2P (Place)	A2O (Open data)	A2D (De-identification)	A2U (User)
<p>Purpose</p> <p>Support mobility pathway</p> <p>Target</p> <p>Drone, Robot navigation Autonomous wheelchair, Autonomous Scooter, Social Mobility</p>	<p>Inter-connection with place information</p> <p>Parcel number, Place name, Building name, Block, Lot, Alias</p>	<p>Address-Based Knowledge Data Dissemination</p> <p>State & Local Authority Information</p>	<p>Data protection for address information</p> <p>Location identifier, GS1 code, Address Alias</p>	<p>User Address distribution</p> <p>Construction Site, Landfill Site</p>
<p>Application</p> <p>Door to Door delivery, Social Mobility</p>	<p>Certification of Quality, Verification of Validity</p>	<p>Location Intelligence Service, Internet of Things (IoT) Service</p>	<p>Matching Virtual Reality (VR), Personal Data Protection</p>	<p>Real-time update, Sharing Personal Address</p>



Address Information
Management

Establishment of Address information Framework



- ① Road Address Type
- ② Indoor path Type
- ③ Grid Type
- ④ District Type






Objects Oriented Address(Location Identifier)



- ① Address of Building
- ② Address of Thing
- ③ Address of Space

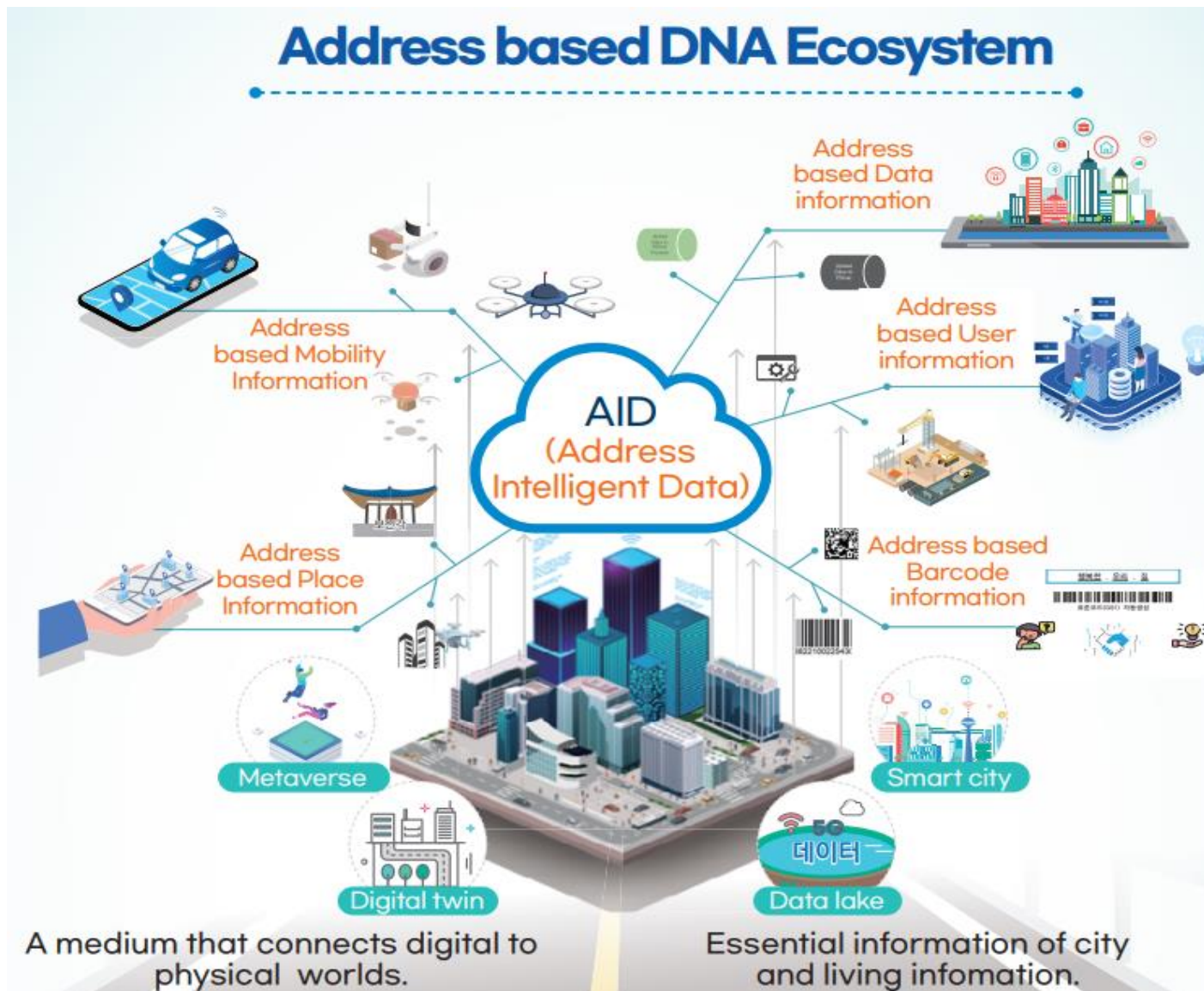
Address based DNA Ecosystem

Universal Design adopted

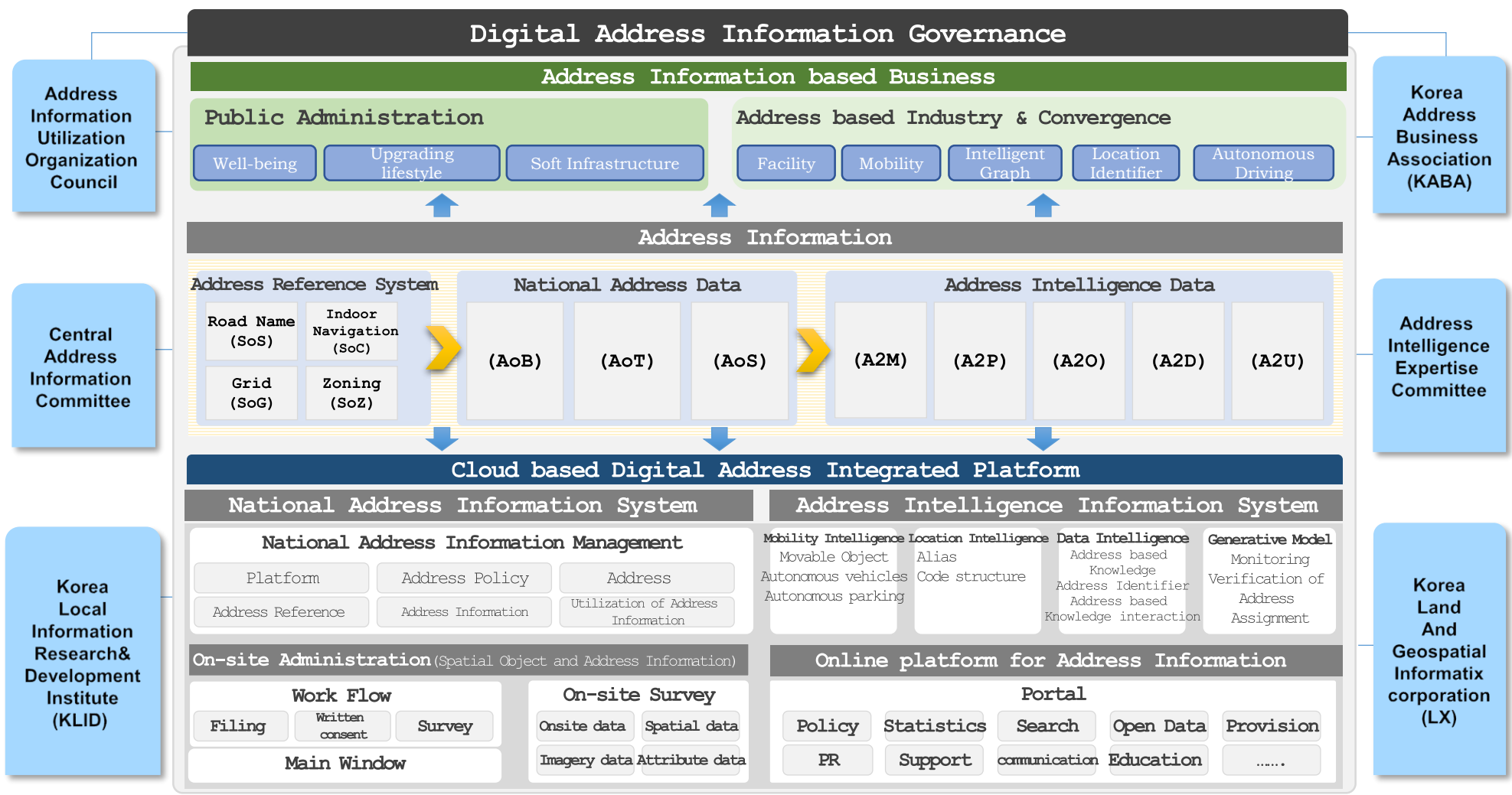
Road Name	AoB	AoT	AoS(Basic Number)	National Grid Code
				

Connecting the Virtual World to the Web





Platform-based Governance Operation





**K-Address
Excellence**

Address System wherever location is identified



Address of building / Address of Things / Address of Space (Roadside, Mountainous Area)

Semantic map-friendly addressing system



Road Name

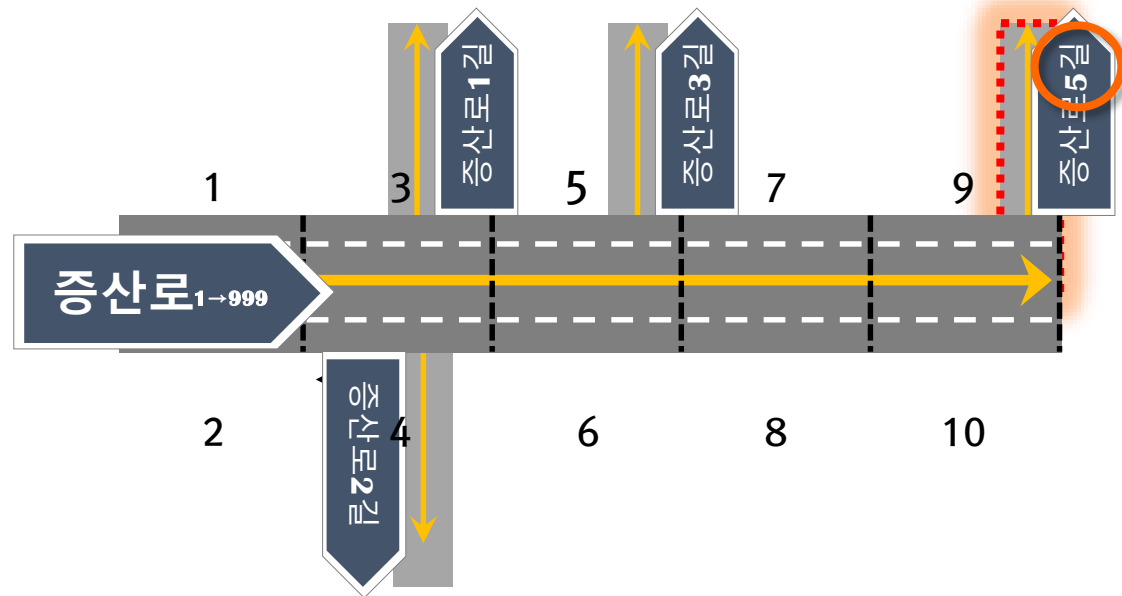
Building Number

Sequential Numbering Scheme



The third road that branches off(1길,3길,5길)

A narrow road with less than two lanes that branches off to the left.

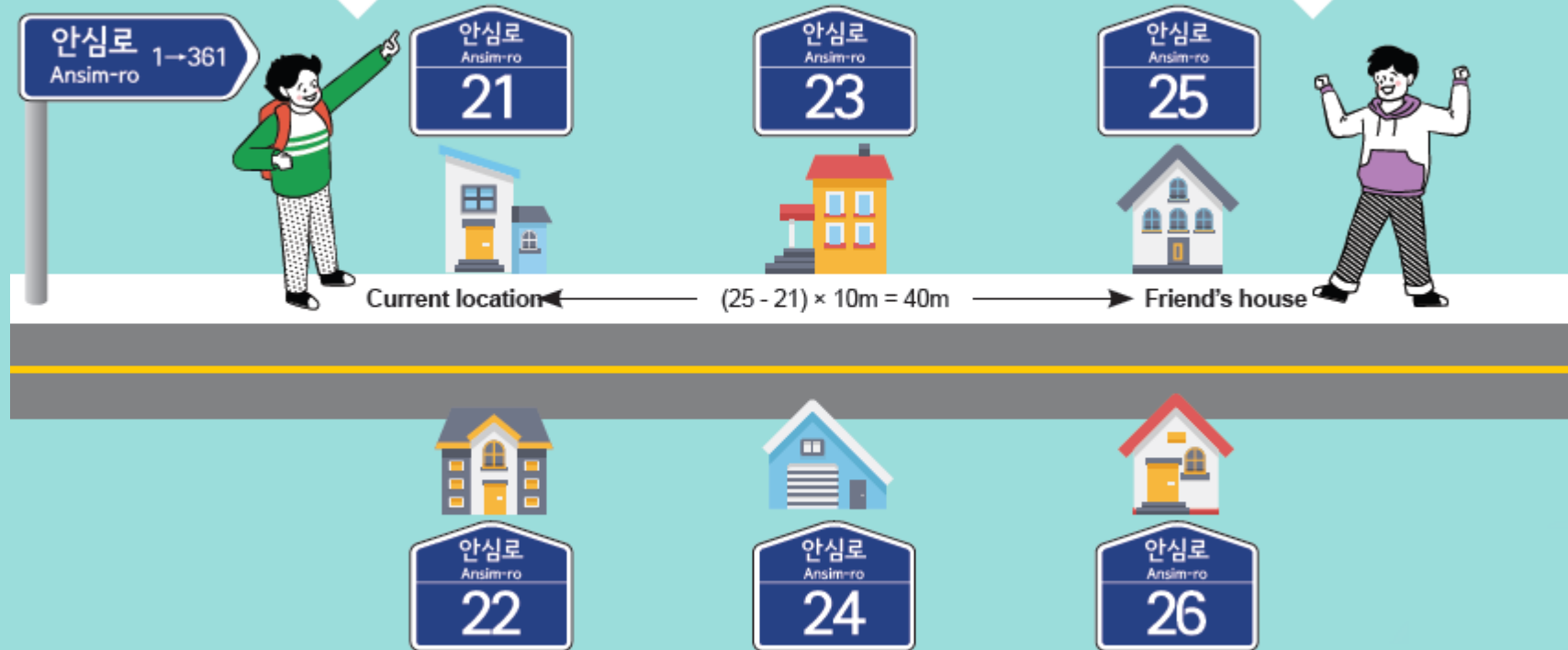


K-Address Excellence

Address System that is easy to predict a location

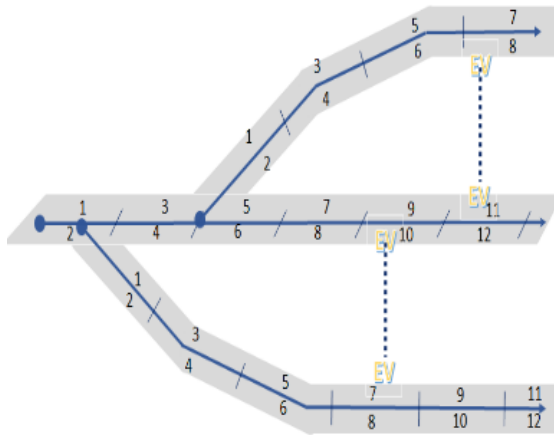
If you subtract 21 of your current location from your friend's house address 25 and multiply by 10, you get 40m!!

My address is 'Ansim-ro 25'

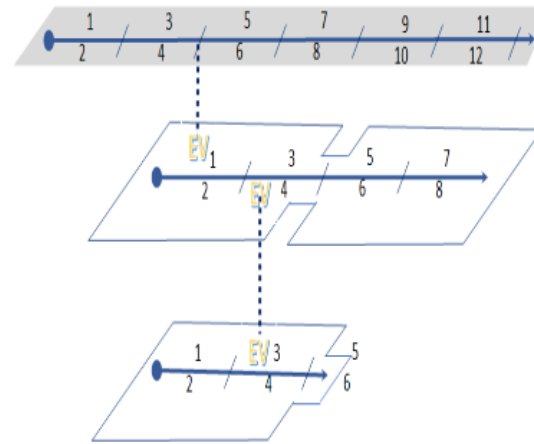


- ▶ **Odd numbers** are assigned to the buildings on the left side of a road, **even numbers** to the buildings on the right side
- ▶ **The direction in which the number increases is the direction of the road**

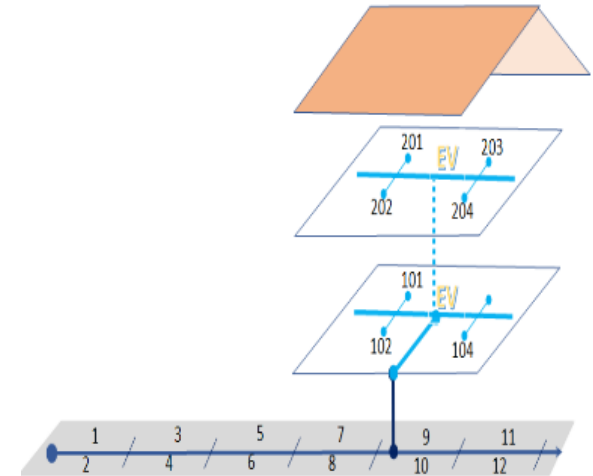
Reflection of grade-separated address with high-density



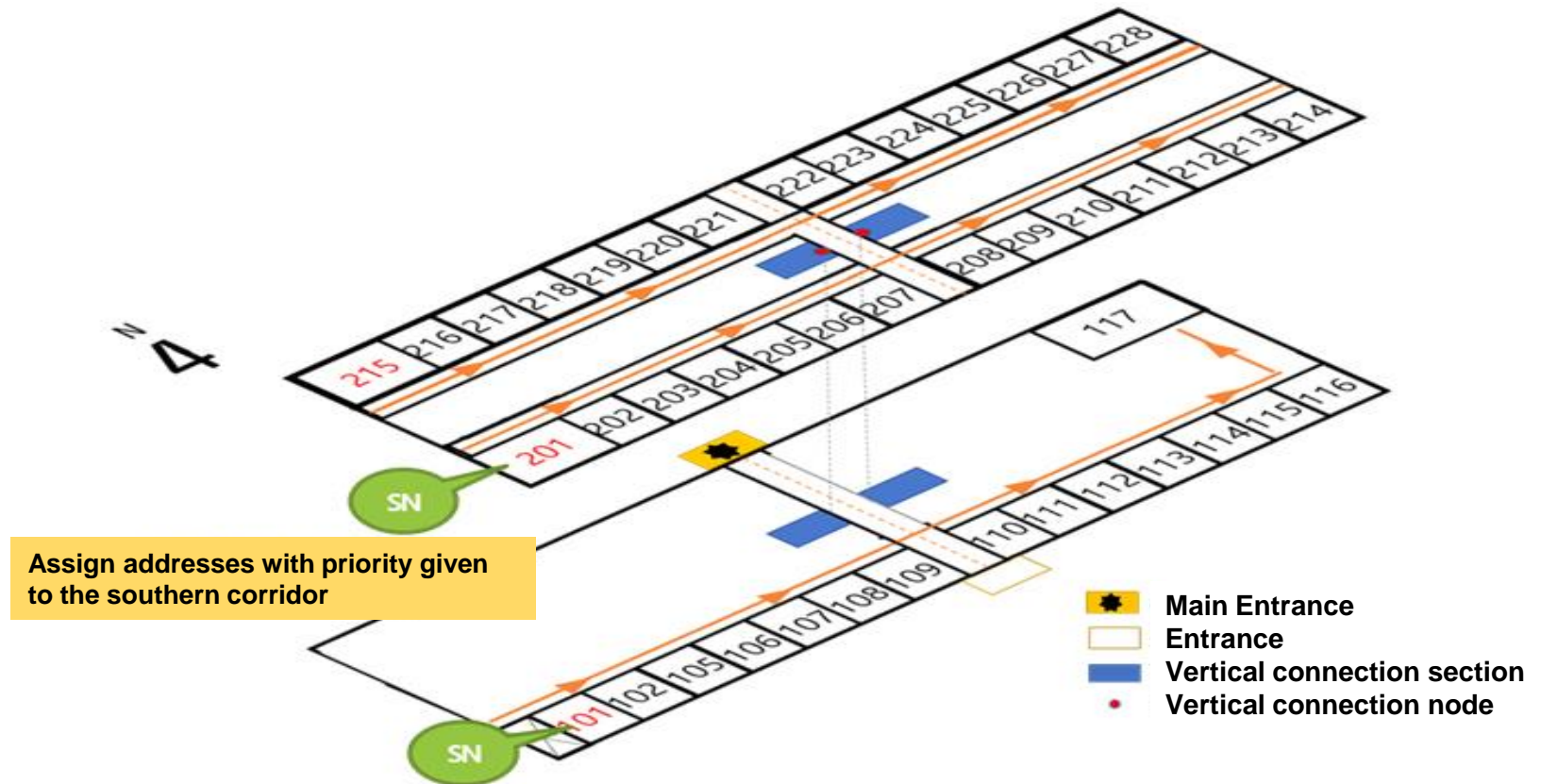
Overpass & Underpass
Indoor passageway



Internal Road

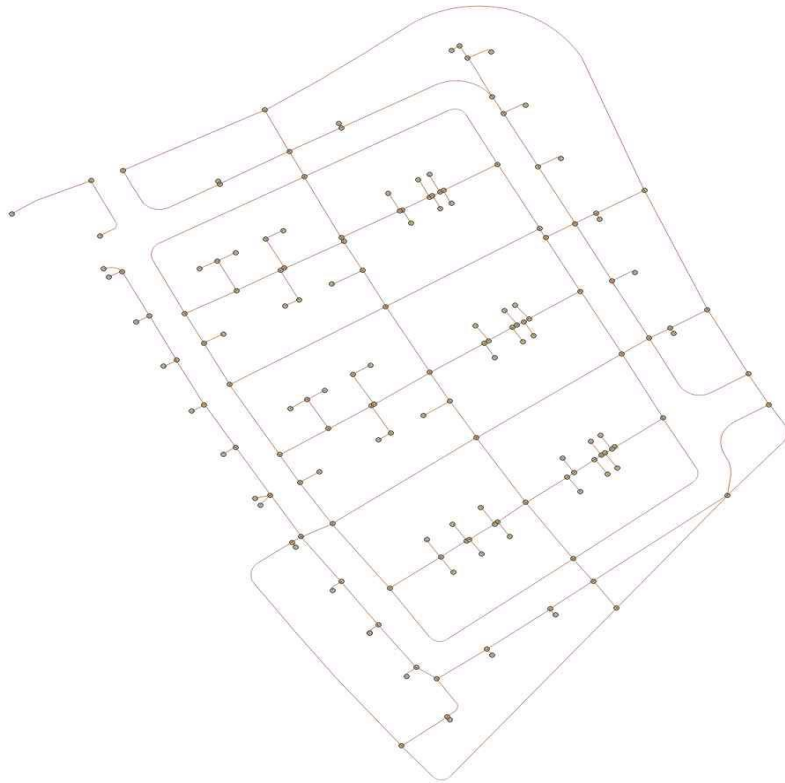


Address designation for individual stores or tenants

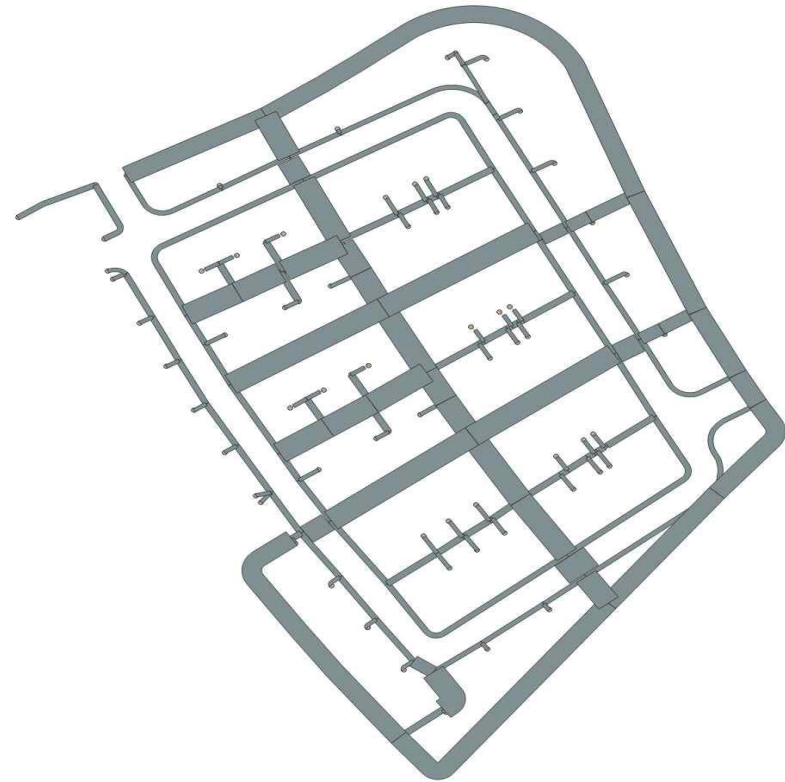


Building Numbers + Room Numbers

Advanced technology-oriented Address system



Road link

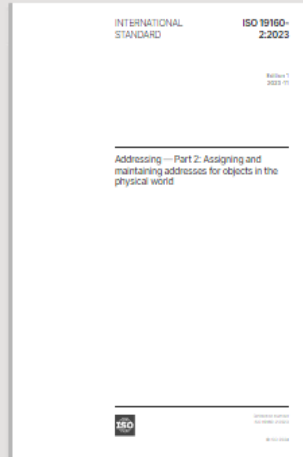


Navigation Route



**Expected
outcomes**





← TC ← ISO/TC 211

ISO 19160-2:2023

Addressing

Part 2: Assigning and maintaining addresses for objects in the physical world

Published (Edition 1, 2023)

Recommendation 4. /conf/goodPractice/general/facilitateAssignment

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.

In the Republic of Korea, road types are classified into three categories: 1) ground roads, 2) grade-separated roads, and 3) internal roads. Ground roads are further divided into ‘highways’, ‘daero’ (i.e., roads wider than 40 meters), ‘ro’ (i.e., roads that are between 12 and 40 meters wide), and ‘gil’ (i.e., all other roads). A gil is a narrow road that diverges from either a daero or ro, and it is typically identified by a number. This facilitates the creation of mental maps. Grade-separated roads include overpasses and underpasses, and internal roads refer to public footpaths in buildings, such as corridors in subway stations.

In the Republic of Korea, addresses are assigned from west to east and from south to north for each road section. A road section is divided into 20-meter intervals, and odd numbers are allocated to the left side and even numbers to the right side of the road. The numbers that are allocated every 20 meters are called basic numbers. The distance between locations can be estimated by multiplying the basic number by 10 meter.

Reflected in ISO 19160-2

Best Practice for “Good Practice for assigning and maintaining addresses” & “Governance framework for assigning and maintaining”

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

Check that addresses assigned according to the good practice make it possible to unambiguously determine an object for purposes of identification and location. In the Republic of Korea, addressable objects are explicitly designated for each type of address (i.e., address of buildings, address of things, and address of spaces).

In the Republic of Korea, addresses are assigned not only to buildings (or building groups) but also to things, such as overpass elevators, riverside parking lots, taxi stands, and drone delivery points. The addresses assigned to these are called the address of things.

⋮

In the Korean case,
‘13 Requirement’, ‘8 Recommendation’

Registered in ISO 19160-2

Address-based industry

Activation of Address Information Services

Assignment & Certification



Address cleansing & change



Info facilities management



Information Services



Convergence service



Facilitation of Advanced Service Industry

1 Drone Delivery



2 Internet of things



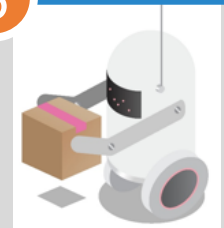
3 Autonomous car parking



4 Indoor Navigation



5 Robot delivery



Video Clip of K-Address

Address-driven Innovation

Innovative Service



(Last Mile Service)

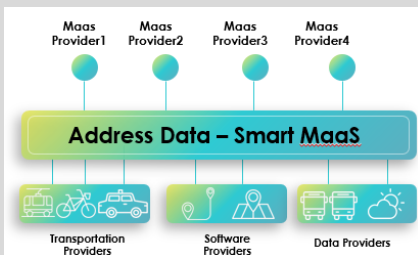


(MaaS Service)

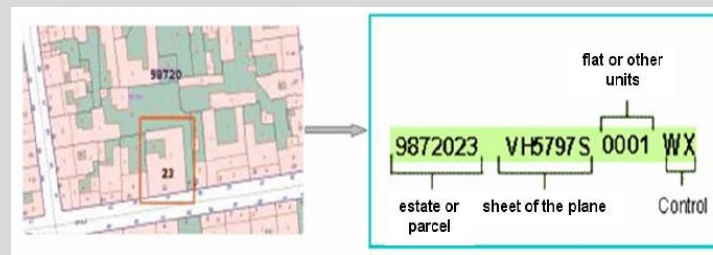


(Location Intelligence Service)

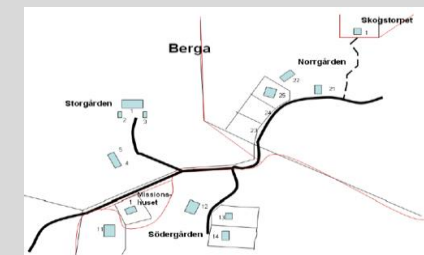
Address-based urban data convergence



(Hyper-technology on Address data)



(Geocoding technology development on Address data)



(Optimized navigation technology development)

Expected outcome

Securing Safety on address information

Every nodes corresponding to grade separated Address System



Emergency



In emergency, Road Name Address plays a key role to report exact accident locations to police and fire station in terms of urban areas and residential properties.

Basic Number, Address of Thing and National Grid Code cover those issues the other area.

Address-driven new world



Securing **Safety**



Upgrading
Convenience



Highlighting potential
Asset through Address System



Thank you