Smart City Platform
(Digital Mayor's Office)

Response to disaster safety

Immediate identifiable in the mayor's office and outside

Review of key municipal projects
Reporting the perspective in each project

Identifying perspectives of various parties on the demand side

Review of the real-time city status Website

Immediately identifiable through field data

Review of public opinions
Inconveniences in reviewing them in alignment of key municipal projects

Disclosure of administrative data
Expanded disclosure of high-quality data

Reviewing them by aligning projects with public opinions

Expanded disclosure of high-quality data

서울특별시 I·SEOUL·U

Smart CIty Platform
(Digital Mayor's Office)

CONTENTS

Smart CIty Platform
(Digital Mayor's Office)

CHAPTER **I**

Status before introducing the Smart City Platform

1. Seoul Metropolitan Government's data policies
   and administrative service

2. 2016 Analogue-based Mayor's Office

01 Seoul Metropolitan Government's data policies and administrative service

SMART CITY

Utilizing laws on data prescribed on management of data being held, disclosure of data and free usage, and data service in Seoul as the basic sources

Public data portal, Seoul's Open Data Plaza, Information Communication Plaza and Big Data Campus, etc.

Seoul's Open Data Plaza(http://data.seoul.go.kr)

Seoul's Big Data Campus (http://bigdata.seoul.go.kr)

Public Data Portal (http://data.go.kr)
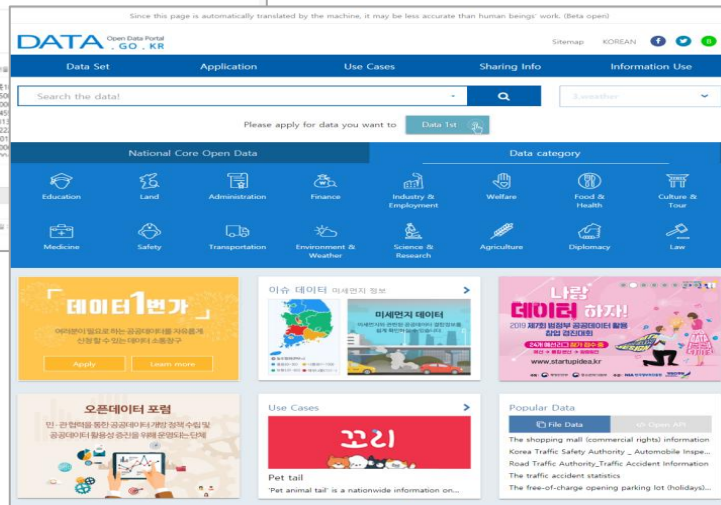
Seoul's Information Communication Plaza
(http://opengov.seoul.go.kr)

02 | 2016 Analogue-based Mayor's Office

SMART CITY

Despite many outstanding administrative systems in place e.g. disaster, transportation and air, ways to access them have been scattered. Thus, paper-based review has been maintained for current status check by the mayor, reporting of tasks and policy analysis.

Website of Seoul's administrative service (2016)

DATA MAP
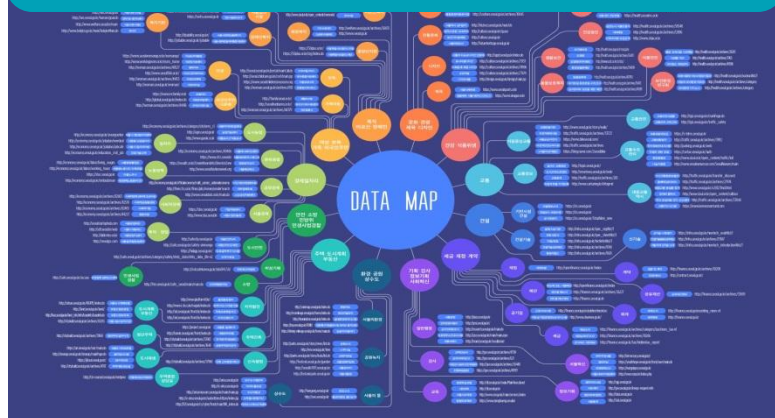
The UN E-government Survey, and Korea's ranking: 3rd in 2016

(단위: 순위, 점)

국가	순위					지수 (2018)
	2018	2016	2014	2012	비고	
덴마크	1	9	16	4	8↑	0.915
호주	2	2	2	12	-	0.9053
대한민국	3	3	1	1	-	0.901
영국	4	1	8	3	3↓	0.8999
스웨덴	5	6	14	7	1↑	0.8882
핀란드	6	5	10	9	1↓	0.8815
싱가포르	7	4	3	10	3↓	0.8812
뉴질랜드	8	8	9	13	-	0.8806
프랑스	9	10	4	6	1↑	0.879
일본	10	11	6	18	1↑	0.8783
미국	11	12	7	5	1↑	0.8769
독일	12	15	21	17	3↑	0.8765
네덜란드	13	7	5	2	6↓	0.8757

But the reality is..

Hard-to-find information as it is scattered

Seoul Mayor' Office (2016)

Smart CIty Platform
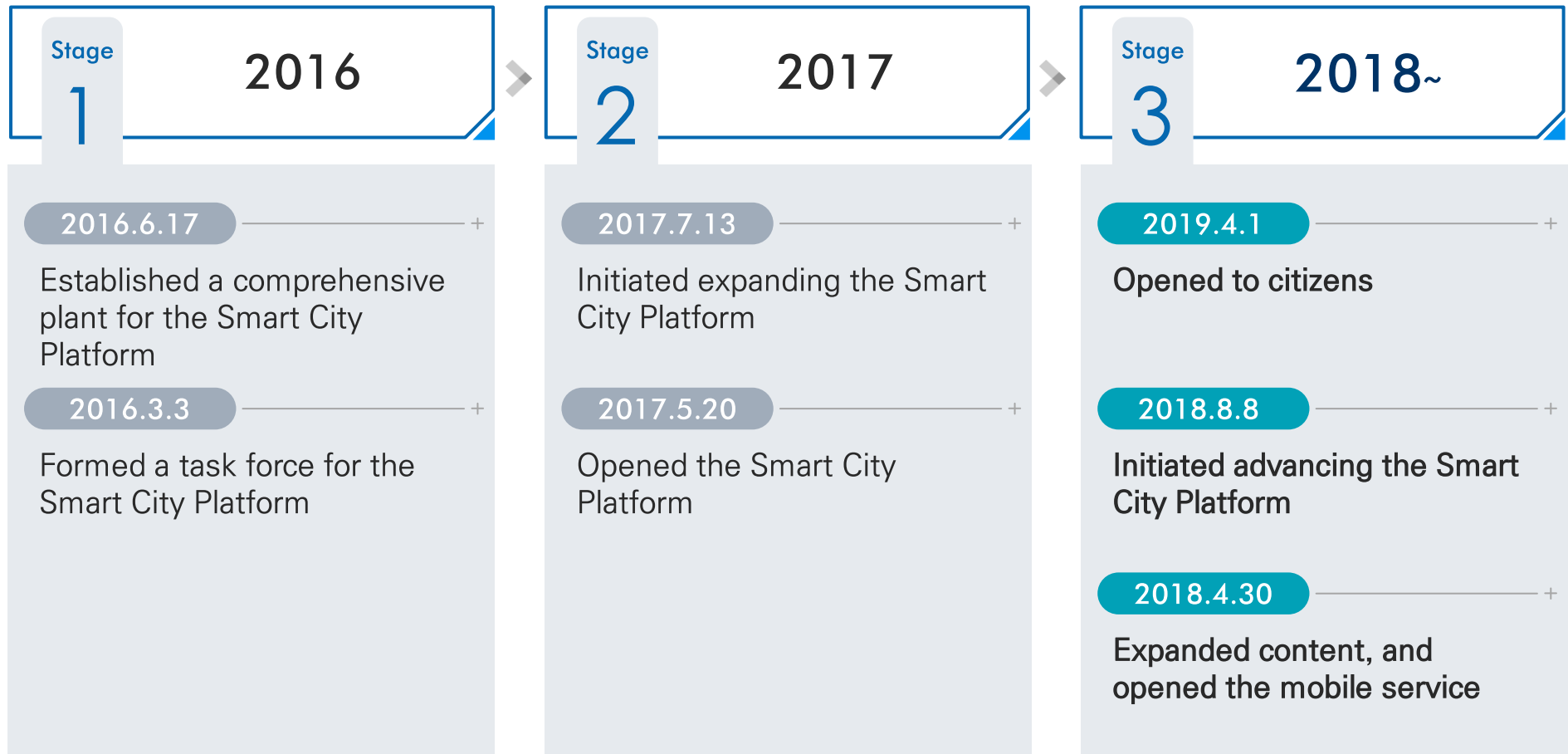(Digital Mayor's Office)

CHAPTER **II**

Start point and process of innovation in operations through digitalization

1. Process of setting up the Smart City Platform

2. Forming a task force for the Smart City Platform

3. Concept of the Smart City Platform

4. Data for usage

5. Procedure of data alignment

6. System composition

7. Guideline on data visualization

8. Effects of improved administrative accountability and transparency in policies
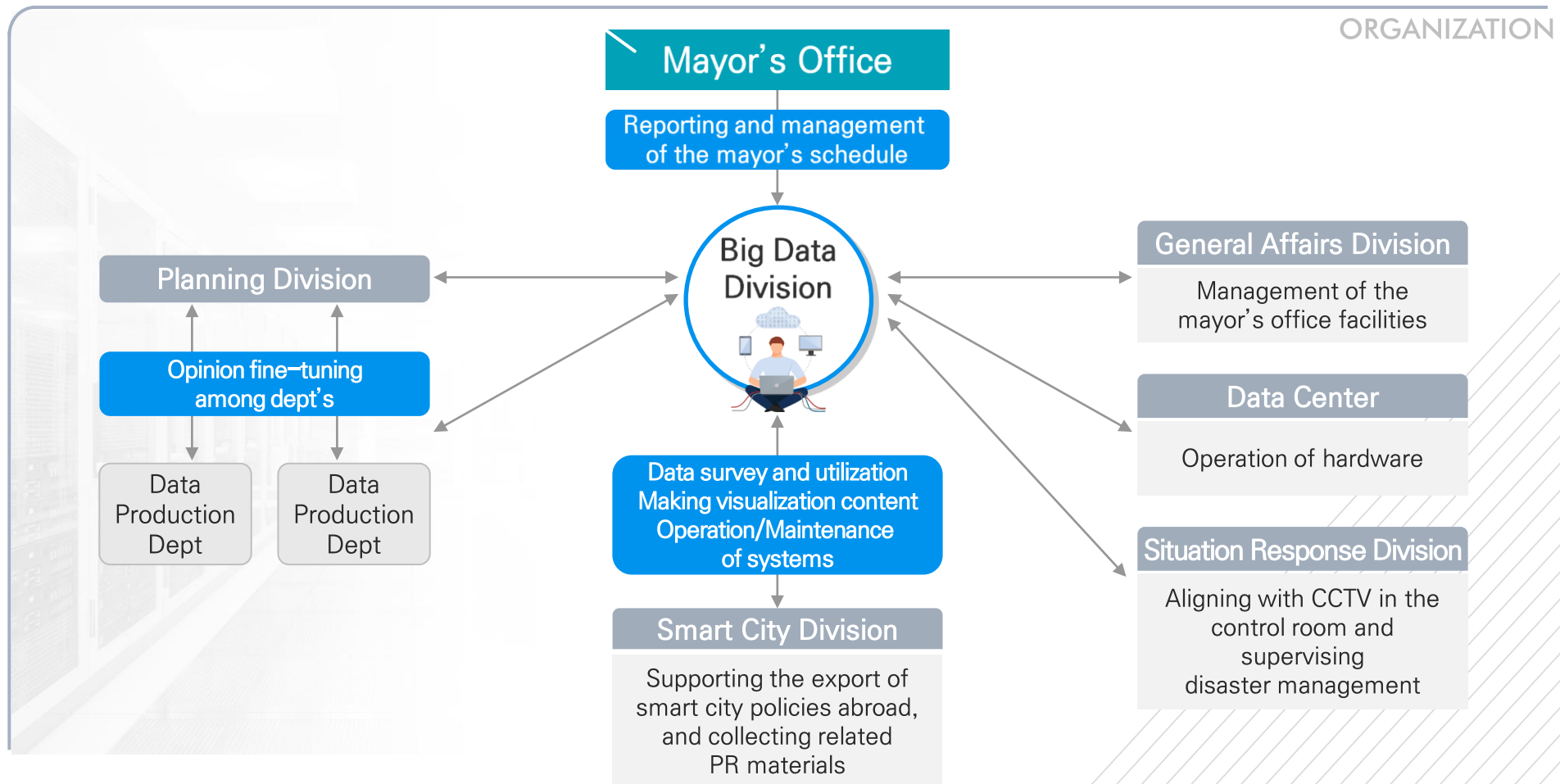
01 | Process of setting up the Smart City Platform

SMART CITY

Starting with requests from the mayor raised in February 2016, a task force was formed in March 2016 along with a comprehensive plan in June of the same year in order to innovate task review and reporting schemes; the beta service was opened in May, 2017, and the service advancement was carried on up to 2018.

Stage 1 — 2016

2016.6.17 +

Established a comprehensive plant for the Smart City Platform

2016.3.3 +

Formed a task force for the Smart City Platform

Stage 2 — 2017

2017.7.13 +

Initiated expanding the Smart City Platform

2017.5.20 +

Opened the Smart City Platform

Stage 3 — 2018~

2019.4.1 +

Opened to citizens

2018.8.8 +

Initiated advancing the Smart City Platform

2018.4.30 +

Expanded content, and opened the mobile service

02 | Forming a task force for the Smart City Platform

Forming a task force in March 2016 was supervised by the Big Data Division, while the Planning Division was in charge of index selection and fine-tuning of opinions, and the General Affairs Division was to oversee the roles to improve the physical environment of the mayor's office.

ORGANIZATION

Mayor's Office

Reporting and management of the mayor's schedule

Big Data Division

Planning Division

Opinion fine-tuning among dept's

Data Production Dept

Data Production Dept

Data survey and utilization
Making visualization content
Operation/Maintenance
of systems

Smart City Division

Supporting the export of smart city policies abroad, and collecting related PR materials

General Affairs Division

Management of the mayor's office facilities

Data Center

Operation of hardware

Situation Response Division

Aligning with CCTV in the control room and supervising disaster management

03 Concept of the Smart City Platform

1 To view all information on Seoul at a glimpse in real time and command tasks to a relevant department immediately without having to visit the site by utilizing latest technologies

2 To visualize information of the key interest of the mayor, and form an user-friendly UI/UX

3 To make an environment easily accessible by the mayor, and disclose the same information to citizens

Principles for Setup

Integrating and visualizing public affairs of Seoul City

Integrating public affairs data and implementing a dash board

Aligning with videos of CCTV in control rooms

Aligning CCTV, data and sensor data among control rooms

Aligning with digital public opinions of citizens

Aligning with digital public opinions and data in response stations

Flexible composition catered to diverse perspectives

Changing indicators by task and department into widgets, providing them in diverse perspectives (mayor, public officials and citizens)

Easing constrains in physical access

Convenient usage when needed thanks to a multi-device environment e.g. PC and mobile

Publicly opening to citizens the information as seen by the mayor

- Pursuing governance with the Smart City Platform in place
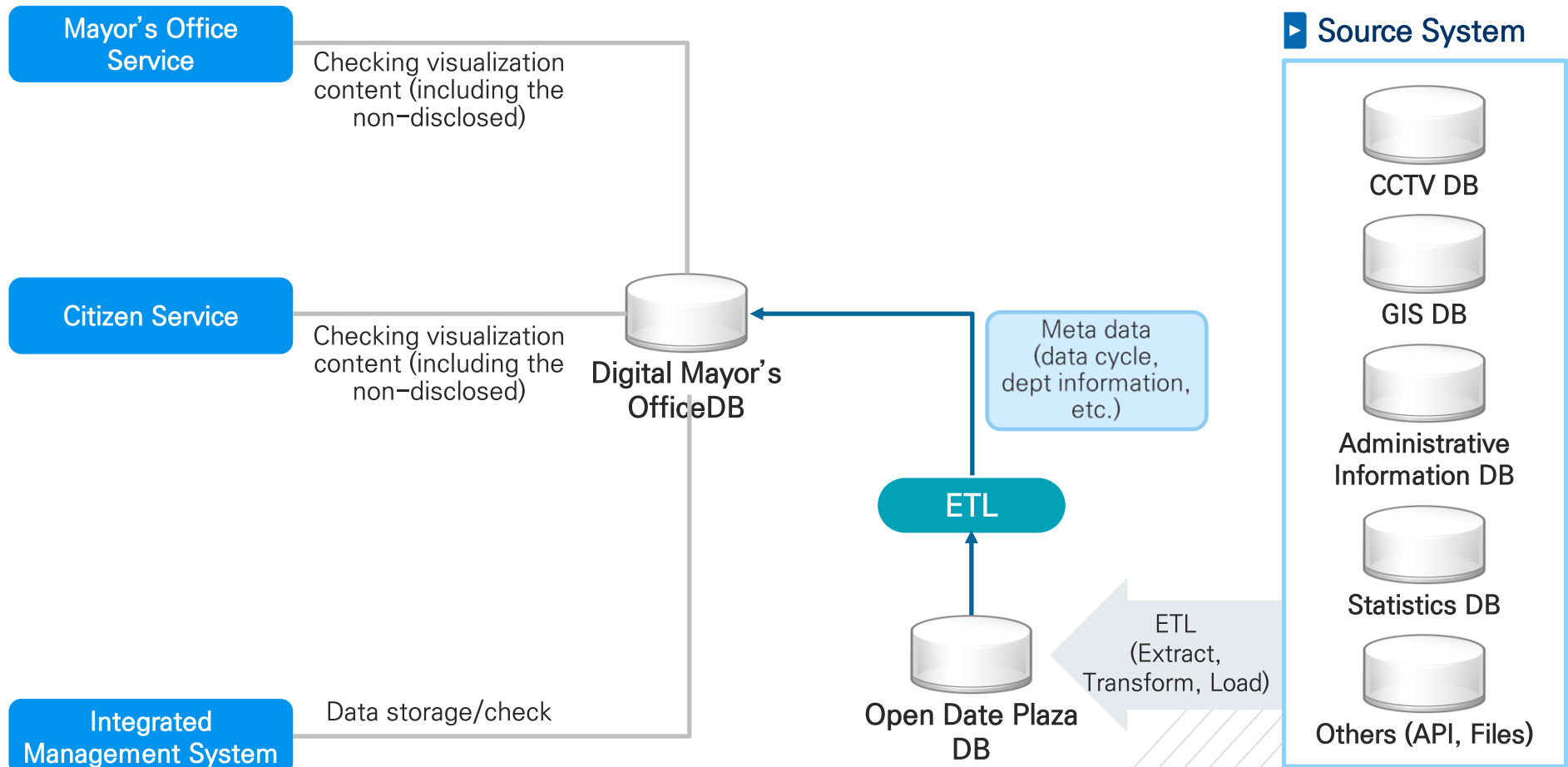- Expanding the opening of public data (administrative data)

04 | Data for usage

SMART CiTY

Main data usage

Submain(real-time city status)

Disaster safety	Disaster/Fire/Rescue/Emergency
	CCTV video information
	Seismic monitoring
	Flood-prone areas
	Related facility information(police station, fire station, etc.)
Transportation	Traffic flow
	Information on bus/subway arrival
	Bike rental station
	Parking lot information
	Rental information on car sharing
	EV charging station
	Frequent accident areas
	Olbaemi bus(Night bus)
Environment	Information on real-time water quality
	Real-time air conditions (fine dust, super-fine dust, nitrogen oxide, ozone)
	Climate conditions (weather, rainfall, temperature, wind volume)
	Air quality video
	Satellite imaging
	Weather observation center, air quality measuring station
General administration	Financial status
	Tax inflow & outflow and amount of tax reductions
	Living population (expats and domestic nationals)
	Daytime/Nighttime commute, schooling population
Industry & Economy	Information on prices
	Information on traditional markets/hypermarkets
Culture	Dulle-gil trails and parks
	Usage status of Dulle-gil trails

Submain(usage of urban data)

Night bus	Analysis of Olbaemi bus(Night bus) routes
Market analysis	Market analysis service for 'shops in my village'
119 resources	Analysis of optimal arrangement of 119 resources
Ddareungi (bike-sharing) rental stations	Location analysis of new Ddareungi rental stations
Taxi-hailing service for the disabled	Optimal analysis of garage for taxi-haling service for the disabled

Submain(citizens' opinions)

Response station (Dasan 120)	Current status of registration of different types of petitions per day (mobile, website, aligned systems, Dasan Call Foundation and registration in offline windows), and of petition handling in each bureau/division
Website of Seoul City	Current usage of the website, and real-time usage analysis for the website of Seoul City
Democracy Seoul	Free suggestions made by citizens in each sector
온라인 Trend of public	Real-time social media analysis (affirmation rate/objection rate) and storing keywords in petitions in the cloud

Submain(city project)

R&D cluster for new growth	Yangjae R&D Innovation District
	Forming Gaepo Digital Innovation Park
	Forming the International Exchange Composite District in southeastern district
	Forming Hongreung Bio Anchor
	Forming Changdong and Sanggye New Economic Centers
	'Remake' Project
	Innovation Project for Sangam DMC Suseak Advancement
	Establishing Magok Public Industrial Support Facilities
	G Valley Phase 2 Project
Cultural & ecological space for revitalization	Developing land for KEPCO
	Constructing arterial roads to be underground and turning the above ground into parks (East, West, Jemulpo and Gukhoedaero)
	Seoul Innovation Park
	Platform Changdong 61
	Mapo Oil Tank Culture Park
	Hongik Univ. Complex Subway Station
	Forming Namsan Animation Town
	Specializing in historical and cultural resources around Sejongdaero
	New Gwanghwamun Plaza Project
	Seoul-ro 7017 Project
	4 core projects in cooperative plans for Han River
	Forming a specialized space in Nodeulseom Island
	Danginri Culture Park
	Seoul Arena Multi-cultural Facility
Urban regeneration	Garibong Urban Regeneration
	5 pilot projects for urban regeneration
	Changsin/Seungin urban regeneration
	Regeneration of Namsan Yejang Jarak
	Haebangzone urban regeneration
	Regeneration of walled villages

Submain(current status of civic affairs)

Indices for civic affairs	Future Seoul - 19 indices e.g. employment rate, rate of foreign tourists, document publicizing rate, utilization of public data and track records on jobs
	Safe Seoul - 16 indices e.g. car accident fatalities, Ddareungi rental stations, passenger-first paths, using cars for sharing and mini power stations
	Welfare Seoul - 12 indices e.g. facilities for 50+, public elderly nursing facilities, public/national childcare centers, school bathrooms for decoration and fostering of dreams, and the taxi-hailing service for the disabled
	Balanced Seoul - Housing supply for one-person youth households, public rental housing supply, Seoul-ro 7017 visitors, small-size housing supply and short-term loans for biannual/monthly deposits
	Democracy Seoul - Budget for citizen engagement, visitors to the Citizen Hall, Safe Parcel Service for Women, female participation in committees, and participants in policy discussions
Civic affairs content	Outreach Seoul - Outreach residential community centers, dispute settlement for space rental in shopping arcades, the mental health promotion center and the taxi-hailing service for the disabled
	Fun Seoul - Night market, Seoul's future heritage, Platform Changdong 61, Hangang Summer Festival
	Seoul for Walking - Ddareungi - public biking service, green trails, maple leaf trails, passenger-only streets, Dulle-gil trail parks
	Seoul with Jobs -outreach job service, and job cafe
	Good looking Seoul- 20 places including the forest path of Gyeongchun Line, Upcycling Plaza and Donuimun Museum
International cooperation	Sisterhood/Friendly city
	Policy export
	International conferences
	Joining international organizations

## Commonalities: Profiles in Seoul City, documents for approval, video/voice calls

05 | Procedure of data alignment

SMART CITY

Data is aligned in various ways e.g. DB, API, Manage Site(Direct data entry) in source systems in accordance with ways that are managed in relevant departments (DB, CDV and Document).

Mayor's Office Service

Checking visualization content (including the non-disclosed)

Citizen Service

Checking visualization content (including the non-disclosed)

Digital Mayor's OfficeDB

Meta data (data cycle, dept information, etc.)

ETL

Integrated Management System

Data storage/check

Open Date Plaza DB

ETL (Extract, Transform, Load)

▶ Source System

CCTV DB

GIS DB

Administrative Information DB

Statistics DB

Others (API, Files)

06 | System composition #1 (Data Center)

System composition to collect internal data including security data where all types of data needed in the internal network and the closed network are collected, and disclosable data is selected to be sent to outside networks
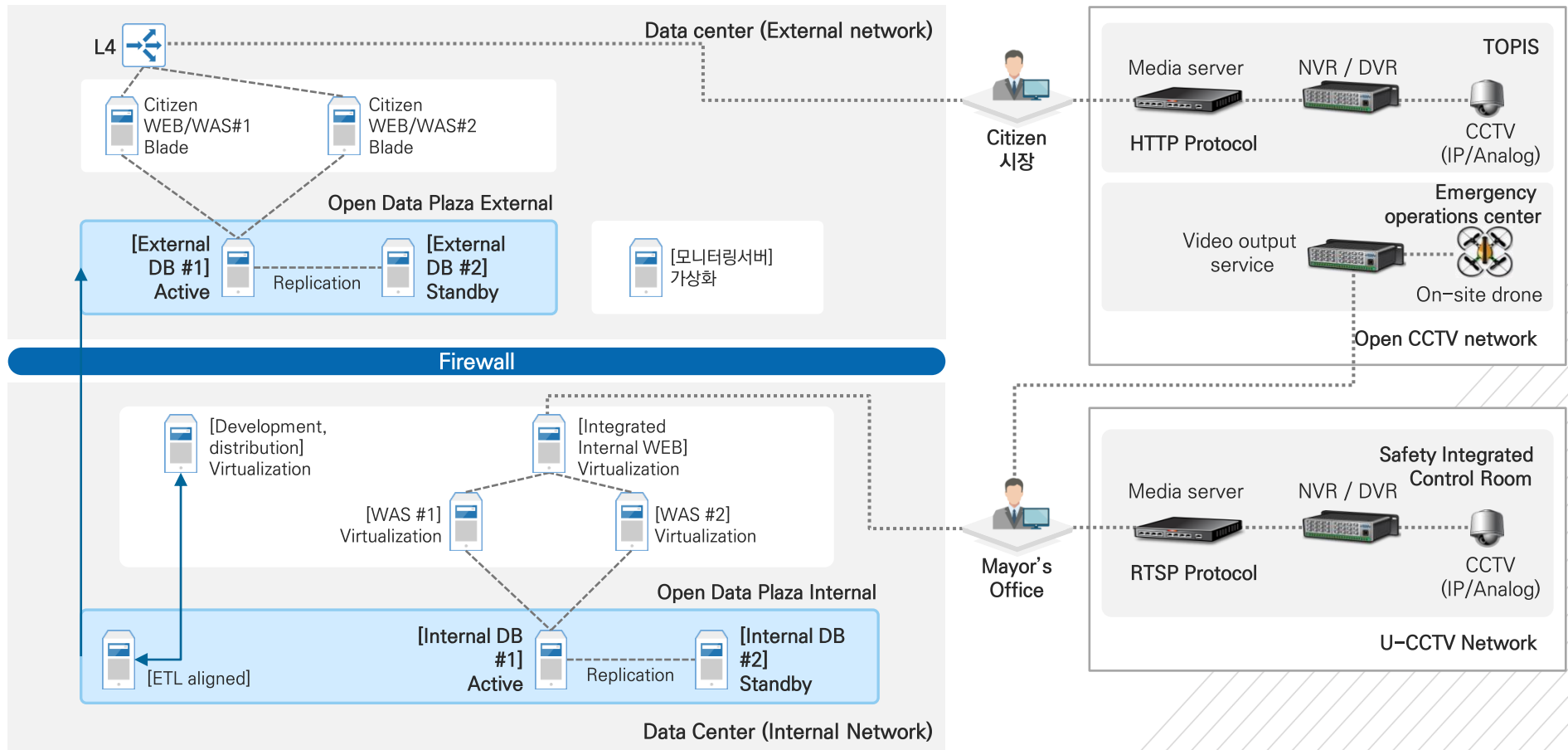
07 | System composition #2 (Mayor's Office)

Transforming into a fast and convenient digital business process by integrating data produced in departments and administrative information system, and optimizing accessibility through innovation in the open Smart City Platform
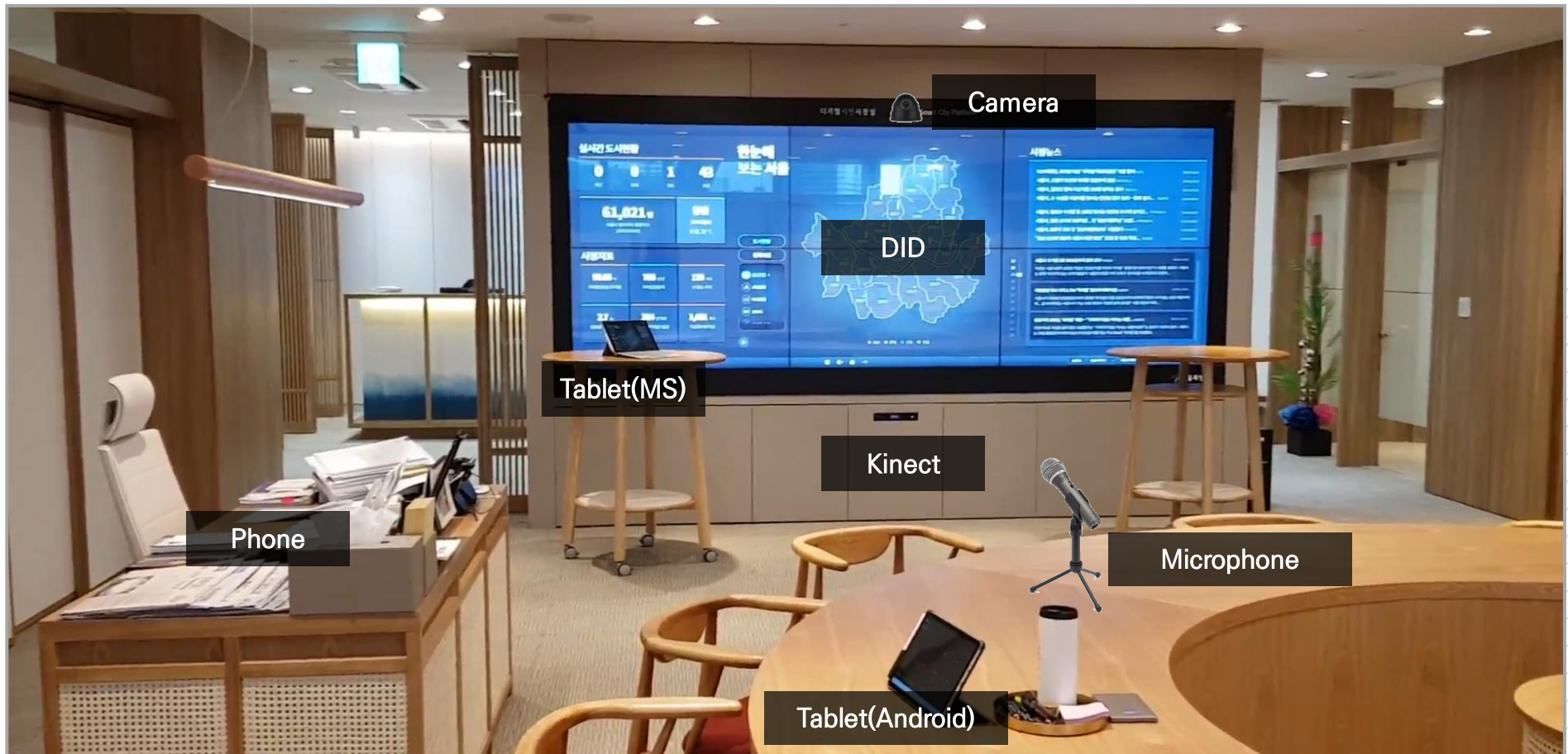
07 | Guideline on data visualization

Define a guideline to design an user interface for user convenience and intuitive data visualization and analyze usage patterns of major users upon forming categories and scenarios

Design concept

Providing complicated information in a simple manner by expressing it in emotion−based visual motifs depending on characteristics of information

1. GPS−based digital civic affairs
 − Visualizing Seoul at a glimpse based on GPS with the entire map of Seoul as the main visual
 − Expressing complicated information on Seoul in maps of simple lines, and using visual tricks to express core information (data)
 − Expressing real−time information e.g. disaster safety, transportation and air environment, and city projects of Seoul on maps
2. Simplification in providing information
 − Simplifying complicated information through interaction
 − Seeking for diversification (changes in 3−dimensionality, motion, and colors
used for emotional expression) in data−based mapping

Design elements

1. 3−dimensionality by utilizing paper shadow effects driven by light, while leveraging strengths of material design and flat design
2. Using visual tricks to make complicated information Seoul to be simply controlled by adopting simple line based mapping

Data expression

1. Expression of data through interaction
 − Simplifying a lot of complicated information through interaction
 − Adjusting the intensity of design elements − title, text and icon, etc. − for orderly arrangement, implementing the solidness of the screen, and adjusting the amount of major information depending on the scale
 − Grouping key information by category, and transferring it to target information intuitively
 − Changing the screen consecutively with a certain time interval in between
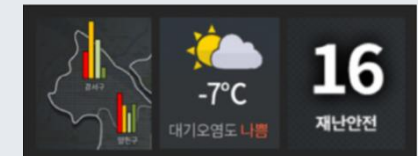
08 | Effects of improved administrative accountability and transparency in policies

Creating a business environment to provide identifiable information to major decision-makers at all times, and providing the identical information to citizens in the service, which induces the effects of improved administrative accountability and transparency in policies

Real-time status of the city/Accident monitoring

Providing the CCTV videos in integrated control rooms aligned with administrative systems for disaster, fire, emergency rescue/transportation/air/waterworks, etc.

Integrated safety control room, integrated Arisu control room, fire safety center, TOPIS, air environment of Seoul and CCTV, etc.

Planning balanced performance, 4-year planning for civic affairs and key investment projects, etc.

Integrating 300 data in 10 areas of civic affairs indices

Digital public opinions among citizens

Trends in public opinions obtained digitally e.g. news, social media and response stations

Online news, response stations, websites, Democracy Seoul, social media, share in each channel, etc.

Expanding public/national childcare centers, outreach residential community centers, jobs for youths, expanding the supply of public rental housing and increases in foreign tourists, etc.

Providing information on key municipal projects e.g. safety, welfare and job

Current status of civic affairs

Review of key civic policy projects

Need to set up an environment to identify civic policies, their current status and information on accidents by integrating the scattered data on the current status in many websites

| Only monitoring in control rooms is possible. | Reporting in individual perspectives for projects | Inconveniences in reviewing in alignment with key policy projects | Inadequate usage of BSC process data |

Key features and use cases of the Smart City Platform

01 | 2019 Smart City Platform

Transforming into a fast and convenient digital business process by integrating data produced in departments and administrative information system, and optimizing accessibility through innovation in the open Smart City Platform
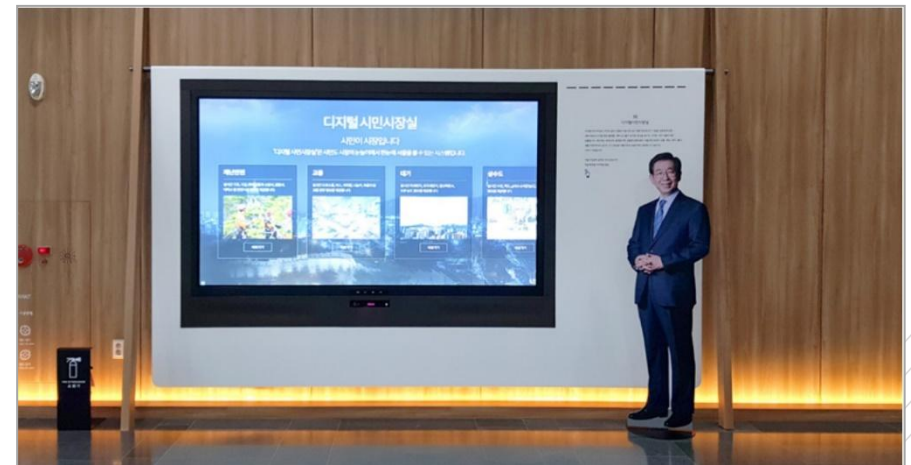
02 | Publicly opening the Smart City Platform

Opened the mobile web in April, 2019, and installed 100-inch touch screen within Hongik Univ. Station, Yeouido Station, Changdong Station and City Hall Station
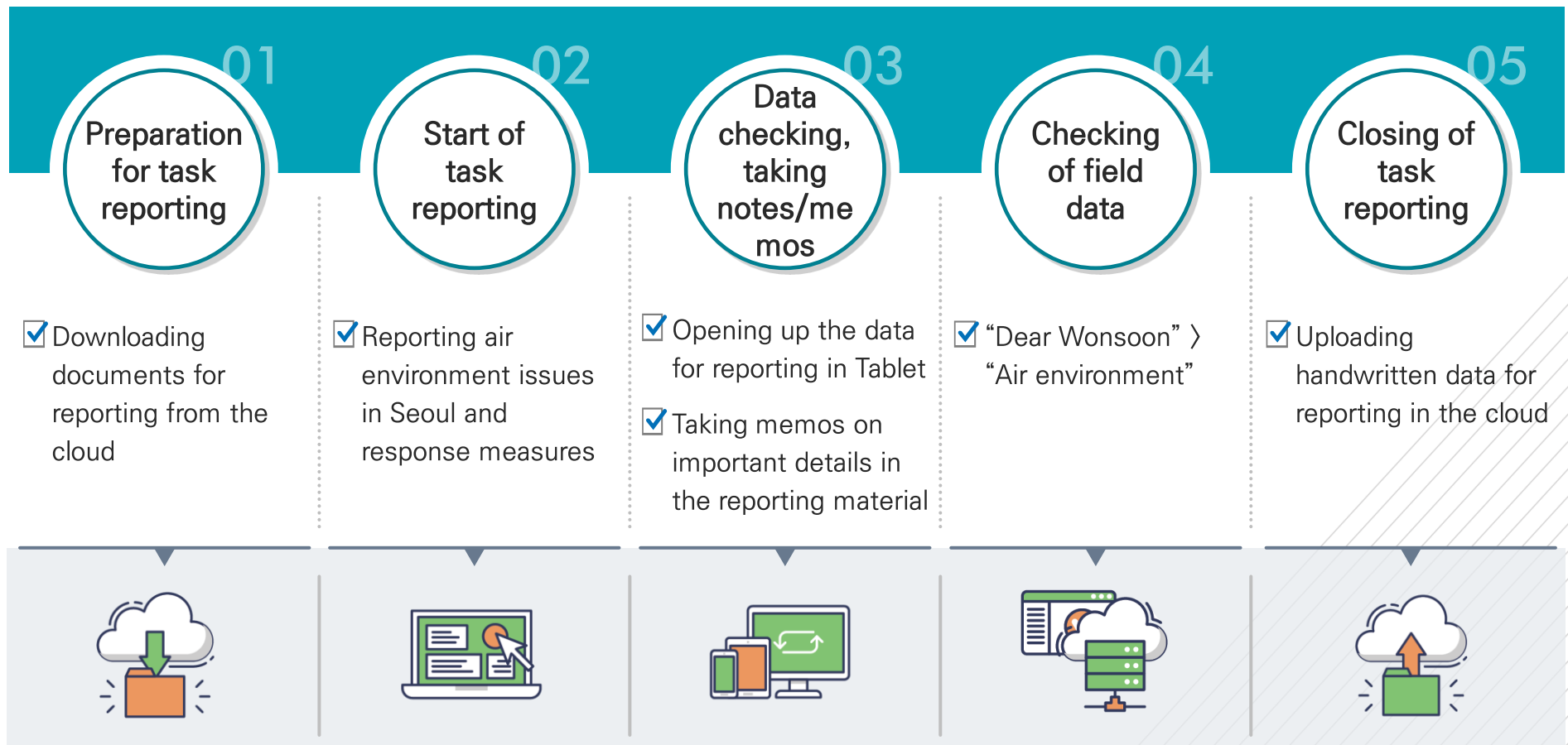
03 | Scenario of the Smart City Platform

- Transforming the mayor's tasks with a focus on the tasks related to key policy–making, while reducing regular current status reporting e.g. current status on the city, public opinions of citizens, the extent of initiating policy tasks and current status of indicators
- Providing a business environment where the entire reporting procedure is digitalized for prompt and convenient usage, and reporting data can be easily searched

01	02	03	04	05
Preparation for task reporting	**Start of task reporting**	**Data checking, taking notes/memos**	**Checking of field data**	**Closing of task reporting**
☑ Downloading documents for reporting from the cloud	☑ Reporting air environment issues in Seoul and response measures	☑ Opening up the data for reporting in Tablet ☑ Taking memos on important details in the reporting material	☑ "Dear Wonsoon" 〉 "Air environment"	☑ Uploading handwritten data for reporting in the cloud

04 Examples of using the Smart City Platform

05 | Composition of visualization content

| Menu		Composition and Features
Main page		Key civic affairs information e.g. Dulle–gil trails & parks, international cooperation and visualization information on living
real–time city status	Disaster safety	Disaster alert, firefighting drone, seismic monitoring, flood–prone areas, CCTV and safety facility information
	Transportation	Real–time information on bus & subway routes, subway routes, passenger car accidents, etc.
	Air quality	Weather, rainfall, snowfall, air quality video and satellite imaging, etc. by autonomous district
	Prices	Specific current status on highest & lowest price of major consumables, and information on lowest price markets/hypermarkets
	Financials	Details on yearly tax–based projects and current status on the budgetary tax revenues
	Waterworks	Water purification centers, service reservoirs, and real–time water quality information to households
	Dulle–gil Trails. Parks	Key spots in Dulleg–gil Trails, accessible routes, courses, current status of parks and usage status, etc.
	Living population	Daily and hourly status of living population for each autonomous district/administrative neighborhood
Utilization of city data		Olbaemi bus(Night bus), Ddareungi rental stations, taxi–hailing service for the disabled and 119 Resources
Public opinions of citizens		Current status of petitions in response stations, current status of the website, citizen suggestions and information of interest
Current status of civic affairs	Civic affairs indices	62 indices by sector and details of each chart, etc.
	City project	Outline, documents, timeline and related news on 36 key projects by sector
	Civic affairs content	Providing information by theme (Seoul for walking, outreach, good looking, job and fun)
	Pledge map	Pledge map and specifics on innovation, citizens and policies
	International cooperation	Current status of friendly/sisterhood city of policy export for each city
Documents for approval		Reviewing a list of documents subject to the mayor's approval, and reviewing the documents
Digital Archive for Citizens		Viewing the list/documents e.g. white paper on civic affairs, research report, and brochures
Profiles of Seoul		Current status of major indices in Seoul, its global ranking and foreign media coverage
Common features		Video and voice call, voice assistant service, motion mouse, etc.
Mobile service		Mayor's office–exclusive tablet and mobile–reactive web
Mobile web for opening to citizens		Web service opened to citizens available on smartphones and PCs
Kiosk opened to citizens		Service open to citizens via touch screens in public places e.g. subway stations

Main page
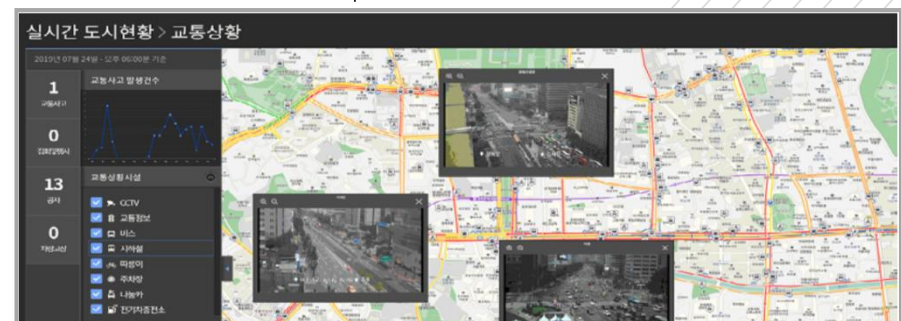Screen to simply show information of key interest of the mayor
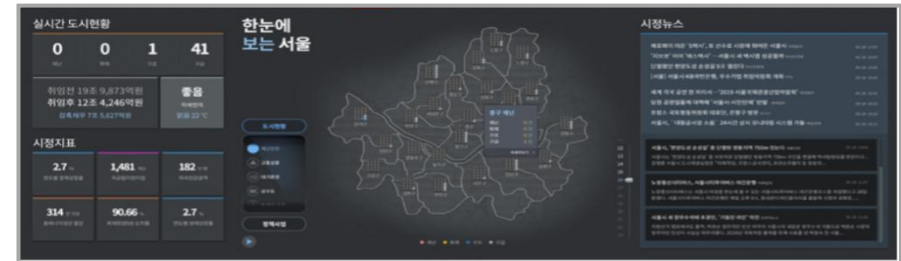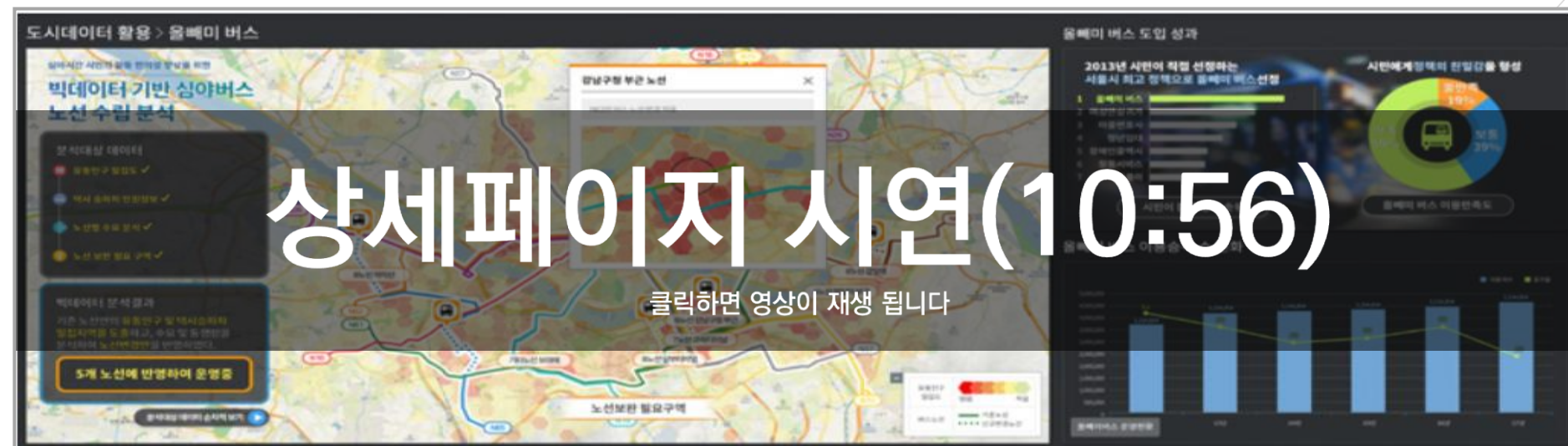

Utilization of city data
Screen on administrative innovation cases and their current status improved through data analytics
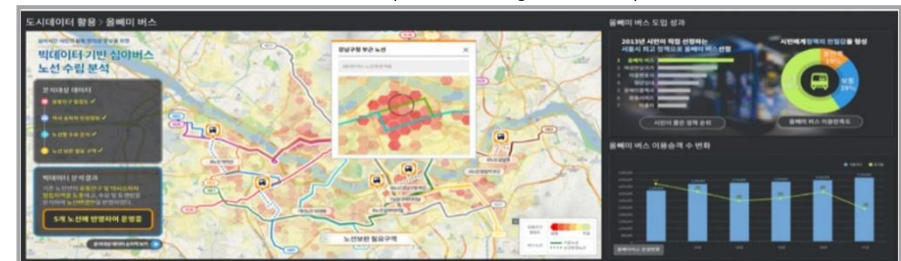

Real–time city status
Screen to provide specifics on CCTV, disaster, transportation and air

05 | Composition of visualization content (demo)

06 | Key functions #1

Applying latest technologies to check out information via voice anywhere in the mayor's office as well as smart TV and tablets to share and review reporting data as well as the mega-size touch screen to identify the current status easily
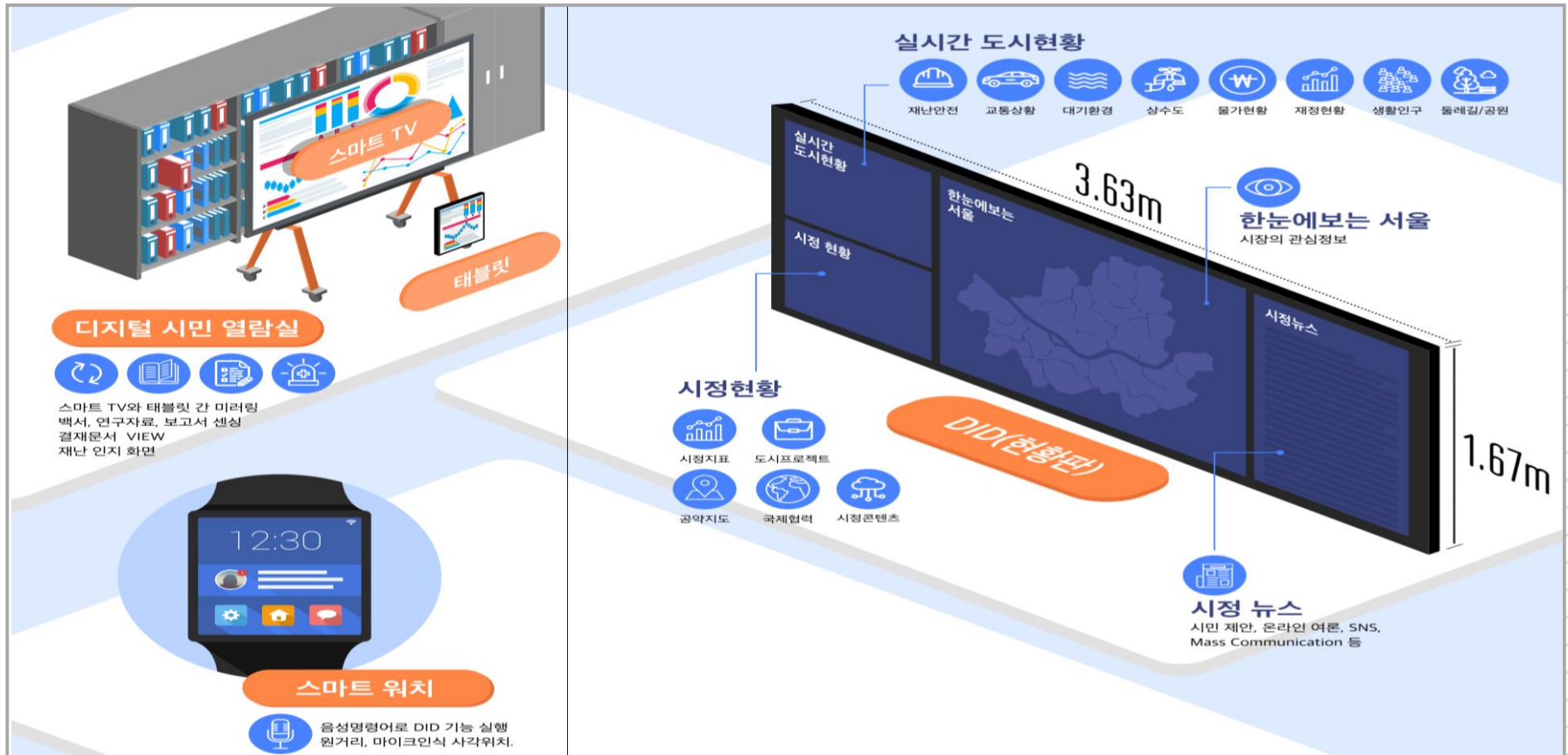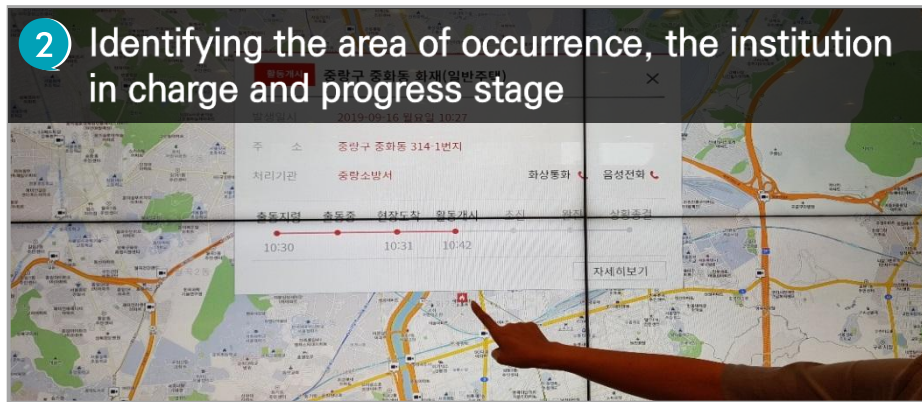
06 | Key functions #2

Possible to use no matter where they are located e.g. voice recognition, motion recognition, video call, voice call, alignment with tablets, smart watch, smart TV, and facial recognition camera sensor, etc.

| Functions	Use Cases
Voice recognition	'Hey, Seoul' → Waiting for voice recognition (3 sec) → Calling the name of the content → Changing the information on the large screen
Motion recognition	Moving the large screen to the front → Raising the right hand (3 sec) → Moving the cursor by using both hand motions once an icon is changed and selecting content
Video conference	Selecting the button for video conference at the bottom of the large screen → Opening the window to select the online conference room → Selecting the conference room in demand → Starting the online conference
Video call	Selecting key projects → Selecting the video call button on the right side of the dept information → Selecting 'Invite' → Starting the video call once the receiver responds
Voice call	Selecting the disaster event → Selecting the voice call button on the right side of the dept information → Starting the video call once the receiver responds
Alignment with tablets	Executing the app for the Smart City Platform → Content icons are indicated on the screen → Selecting the content in demand → Changing the information on the large screen along with the voice instruction
Smart watch	Executing the app for the Smart City Platform→ Selecting the voice icon → Selecting the content in demand → Changing the information on the large screen
Smart TV	Selecting the cloud folder → Selecting the reporting materials → Starting the conference
Facial recognition	Selecting the non-open mode at the bottom of the large screen → The camera screen is shown → The mayor's face is recognized
Camera sensor	Opening up the library door → Selecting and retrieving a book → The content of the book shown on the large screen

07 | Usage cases #1

The mayor's biggest interest is urban safety inspection at all times, identifying the progress in real time disaster information e.g. large fire, landslide and water quality inspection through alerts or interactive infographics, and making commands by being connected to the field

① Disaster alert or recognition of disaster situations

② Identifying the area of occurrence, the institution in charge and progress stage

③ Identifying CCTVs around the area along with the content of the incident, checking out drone videos and related facility information

Connecting to the site if necessary

07 | Usage cases #2

Possible to read a report at a mayoral policy briefing via a large touch screen, a smart pad, a smart TV or voice recognition technology, and check out relevant information

Smart City Platform
(Digital Mayor's Office)

CHAPTER **IV**
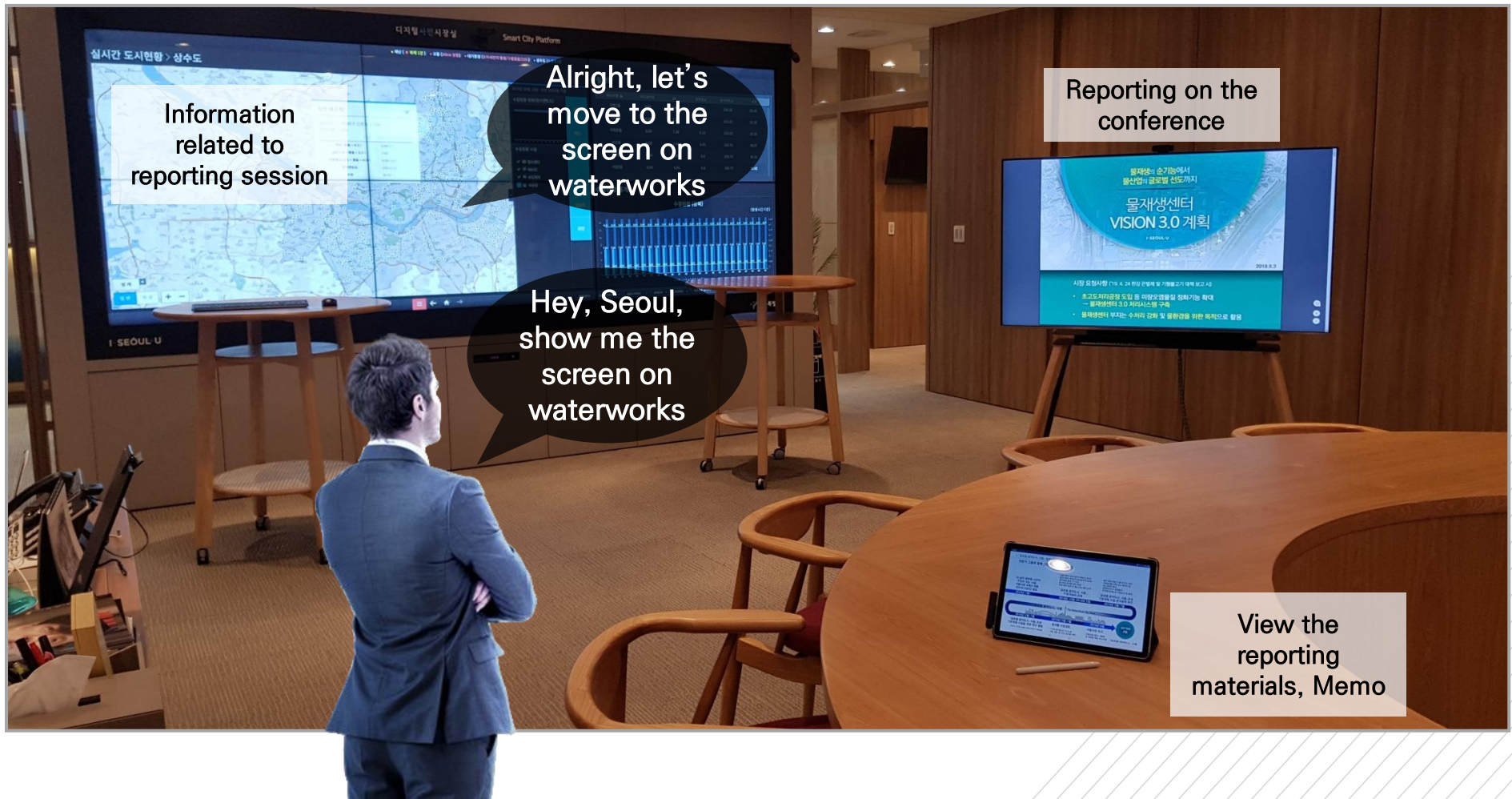
International prestige and future directions of the Smart City Platform

1. Smart City of Seoul seen from outside

2. Future directions

01 | Smart City of Seoul seen from outside

Ranked No.1 in smart city benchmarking among over 200 cities worldwide that have visited Seoul via international events, etc.

2017. 9. 20. Korea Joongang Daily

Moscow is jealous of Seoul , Park Won-Soon gives a special lesson on 'Urban Policy'

The hot topic of discussion was the 'Smart City Platform' that Seoul introduced for the first time in the world. After watching the video of Mayor Park demonstrating the Smart City Platform for the public, an attendee said "this is an essential function for Moscow" and went on to say "Mayor Park has visited Moscow and demonstrated this good feature, we hope for Moscow to have [a similar system]".

A CEO of the media said, "[If Moscow introduces the system] the citizens can be monitored. Maybe this function will make the administration man-less?". Mayor Park replied, "All accumulated information can cause human rights violation issues and we are aware of that. I think it is applicable to other cities as well. The only differences among those cities are IT infrastructures or digital technologies; that's why Ulyanovsk is holding the WeGo General Assembly, to overcome the problems".

Regarding concerns about the reduction of administrative jobs, he mentioned, "it is expected that 5 million jobs will disappear and 200 million will come because of the 4th industrial revolution … even though the number of jobs will decrease, we can overcome the issue with new creative jobs based on future predictions".

2017. 9. 10 Oh My News

A professor of Harvard Univ. surprised by a screen in the mayor of Seoul's office, praised the 'Smart City Platform'

The US monthly IT magazine Wired praised Seoul's Smart City Platform, saying that "it could be a sprout of democracy". Wired released an article on "How Seoul has turned into a Technology Utopia" on June 6th after Professor Susan Crawford from Harvard Law visited Seoul City Hall in person last year.

The professor said that "the screen shows how safe the City is, how well the elderly and children are cared for, as well as how eco-friendly and open-minded the City is". He pointed out that the Smart City Platform shows the number of sports facilities, senior welfare facilities and public data disclosures with different colors, "Media might love this feature, but it is not very functional; it's just colorful cards".

However, she said that there is real usefulness when it comes to the status board; when Seoul staff demonstrated the Smart City Platform, it recognized the fire situation in real time and it showed the process of putting out the fire.

The professor mentioned that most of the Smart City Platform information will be disclosed to public and this will be a potential "the sprout of democracy". When the information goes to the public, the citizens will understand why they need to trust the government since they get to see how the government takes care of a multitude of factors including the air we breathe everyday, the price of apples all the way to traffic jams we encounter in our daily lives.

Professor Crawford finished the article by saying 'If Seoul can do it, the great cities in the U.S. will be able to do the same".
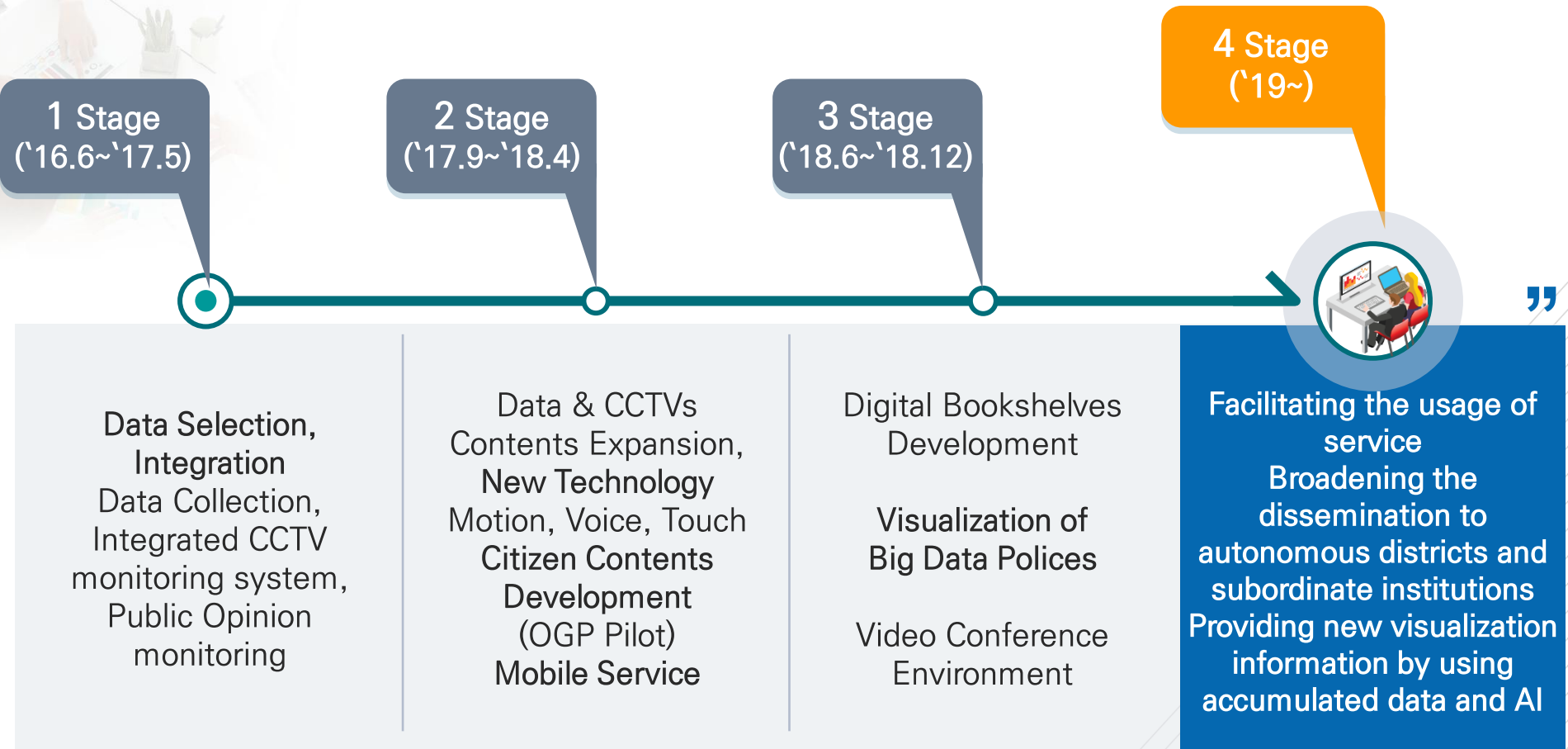
02 Future directions

Disseminating the conversion from the analogue-style reporting among key decision-makers into the digital reporting style to a broader scale, and researching and applying ways to utilize AI and accumulated data

1 Stage
('16.6~'17.5)

2 Stage
('17.9~'18.4)

3 Stage
('18.6~'18.12)

4 Stage
('19~)

Data Selection,
Integration
Data Collection,
Integrated CCTV
monitoring system,
Public Opinion
monitoring

Data & CCTVs
Contents Expansion,
New Technology
Motion, Voice, Touch
Citizen Contents
Development
(OGP Pilot)
Mobile Service

Digital Bookshelves
Development

Visualization of
Big Data Polices

Video Conference
Environment

Facilitating the usage of
service
Broadening the
dissemination to
autonomous districts and
subordinate institutions
Providing new visualization
information by using
accumulated data and AI

I·SEOUL·U 서울특별시

Thank you

Smart City Platform

SMART CITY

Q & A