

Digital Government System to Respond to COVID-19 of Korea

COVID-19 Contact Tracing System

Sanghoon LEE, Ph.D. | Professor
Korea University



COVID-19 Contact Tracing System

- This presentation will focus on introducing COVID-19 Contact Tracing System (CTS) of Korea. The CTS is an epidemiological investigation system for tracking COVID-19 confirmed patients' movement routes. The CTS was developed through the Smart City Data Hub Platform, the achievement of the National Smart City R&D program.
- This presentation will provide a short background history of the development, main concept of Smart City, operating structure of the system. Participants will understand main framework of the Smart City and some implications of Korea's COVID-19 response related with CTS.

— Structure

- 1 About COVID-19 Contact Tracing System (CTS)
- 2 Understanding Smart City and Data Hub
- 3 Key Functions of the System
- 4 Implications

— Objectives

To understand development background and main function of COVID-19 Contact Tracing System

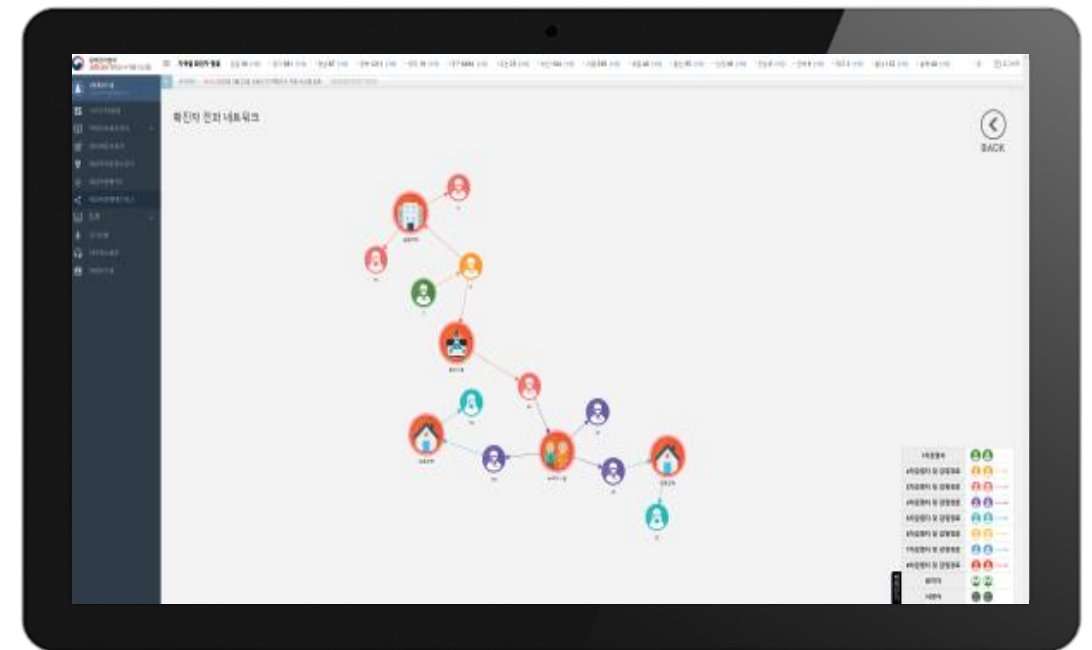
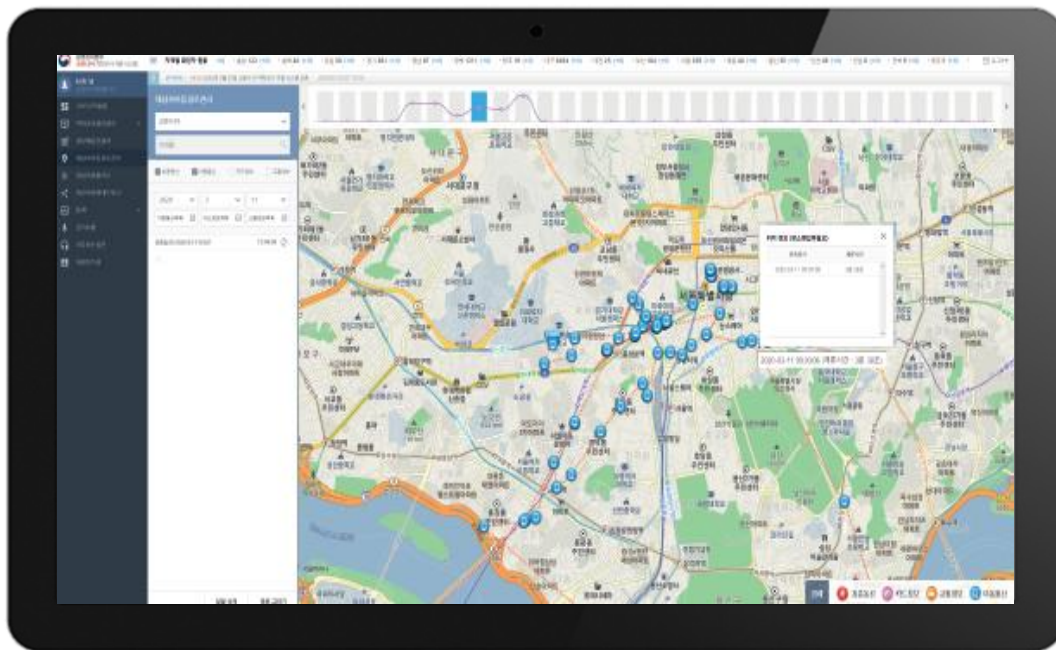
To understand concepts of smart city and data hub that are basis of COVID-19 Contact Tracing System

To understand the success factors of K-quarantine, such as ICT infrastructure, governance system between ministries and medical agencies, institutional foundation, etc.

01 About COVID-19 Contact Tracing System

| Enabled the Automation of the Epidemiological Investigation Process

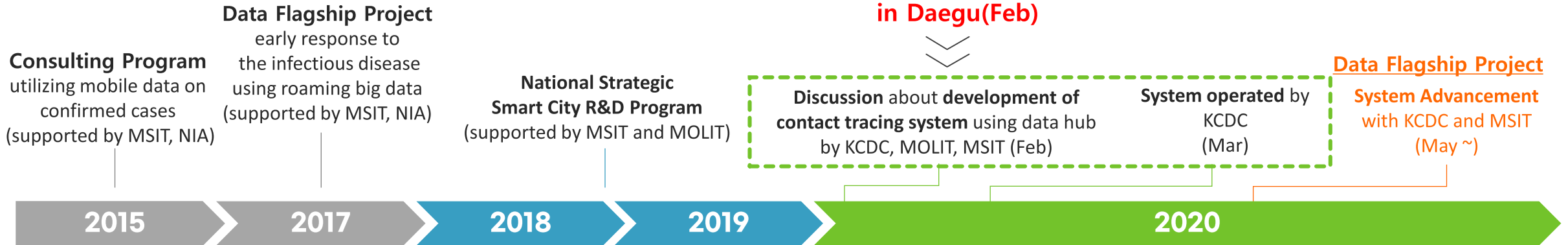
- **Automatic analysis of movement routes, source of infection, and transmission network**
 - By 'the Act on Infectious Disease Control and Prevention'
 - Using location data from GPS and credit card use history
- **Also called COVID-19 Smart Management System (SMS) in Korea**



01 About COVID-19 Contact Tracing System

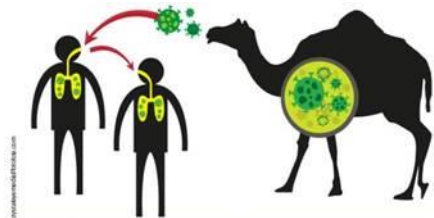
| Brief Timeline of Development of the System

- Developed from Smart City R&D Program



Amended Infectious Disease Prevention Management Act

(to provide information on confirmed cases by mobile carriers and credit card companies based on the experience of MERS('15))



MERS-COV
Middle East Respiratory Syndrome

Smart City Data Hub (KETI and 15 institutions)



Source: Korea Agency for Infrastructure Advancement (KAIA), World-leading Smart City R&D Program Plan (Presentation on R&D Preliminary Feasibility Study), 2017.5.25.

COVID-19 Contact Tracing System (KETI and 4 companies)

일	월	화	수	목	금	토
2/23	24	25	26	27	28	29
3/1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28

Source: Korea Agency for Infrastructure Advancement (KAIA), Leaflet of COVID-19 Smart Management System (SMS) – Korean Version, 2020.3.26., http://www.smartcities.kr/library/library_detail.do

Data-based System Advancement (KETI and 4 companies)



Source: National Information Society Agency(NIA), Midterm briefing report – 2020.9.25.

02 Understanding Smart City and Data Hub

| National Smart City R&D Program

Korea National Strategic Smart City Program (NSSC) has launched for the purpose of **developing standardized Open Data Hub Architecture** on existing cities which will be the common bases to apply transparent and shared administrative services and facilitate digital economy.

Duration

2018 ~ 2022

Total Amount of Budget

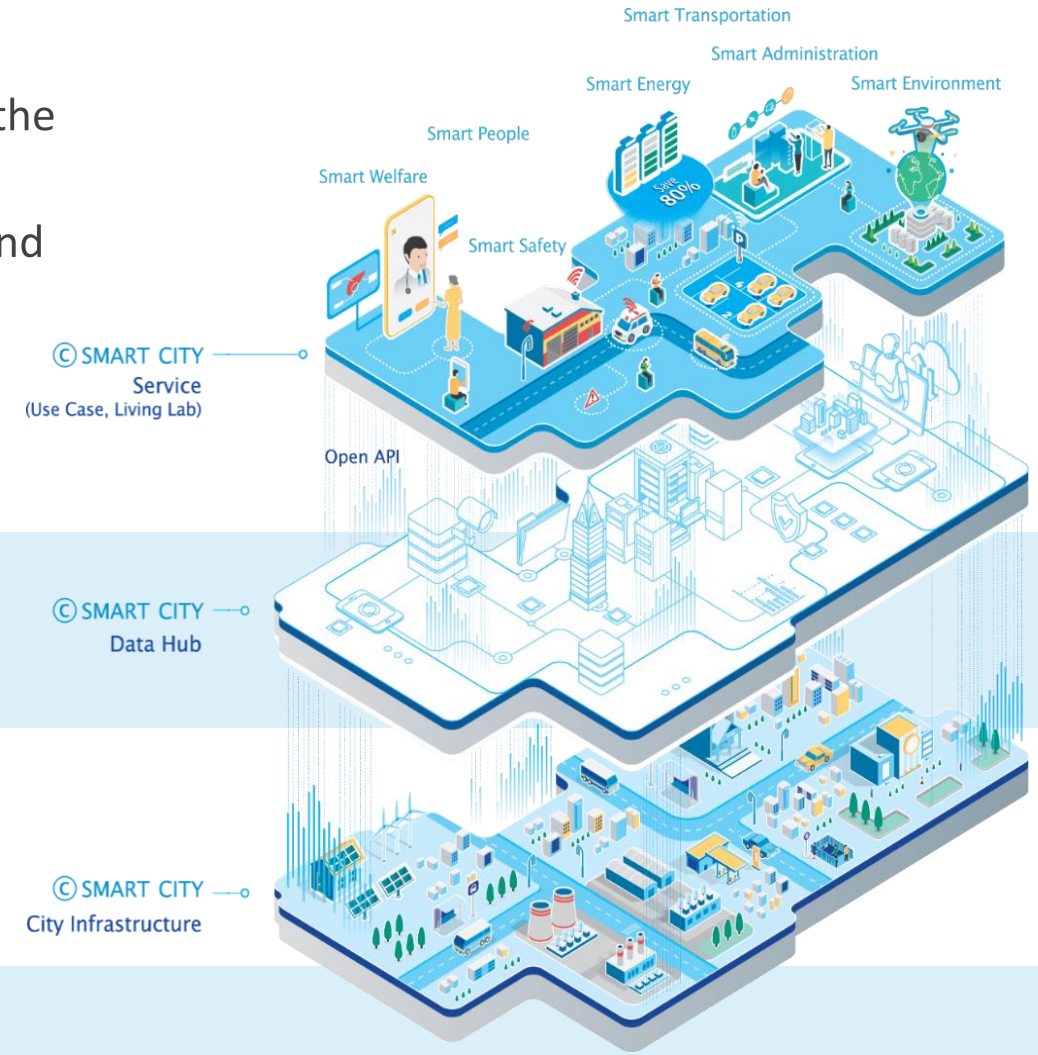
Approx. US\$ 120 million

Participants

more than 120 organizations with approx.
1,200 research members

Competent Ministries

Managed by MOLIT / Supported by MSIT

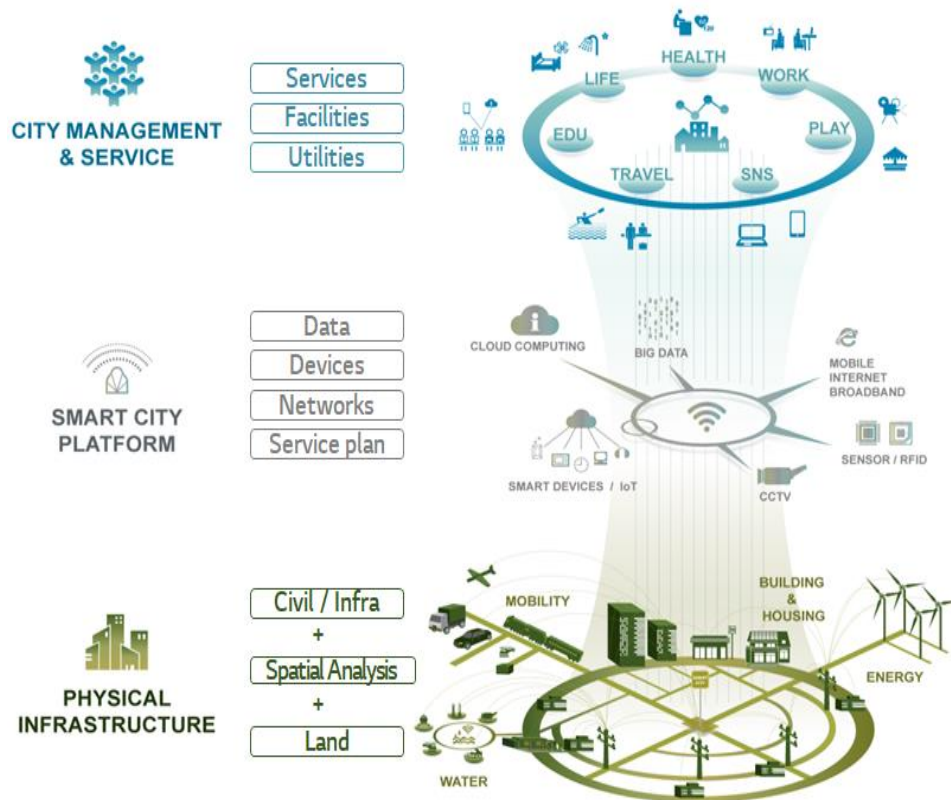


Source: Korea Agency for Infrastructure Advancement (KAIA), Smart Cities Brochure – English Version, 2019.5.26., <http://www.smartcities.kr/about/about.do>

02 Understanding Smart City and Data Hub

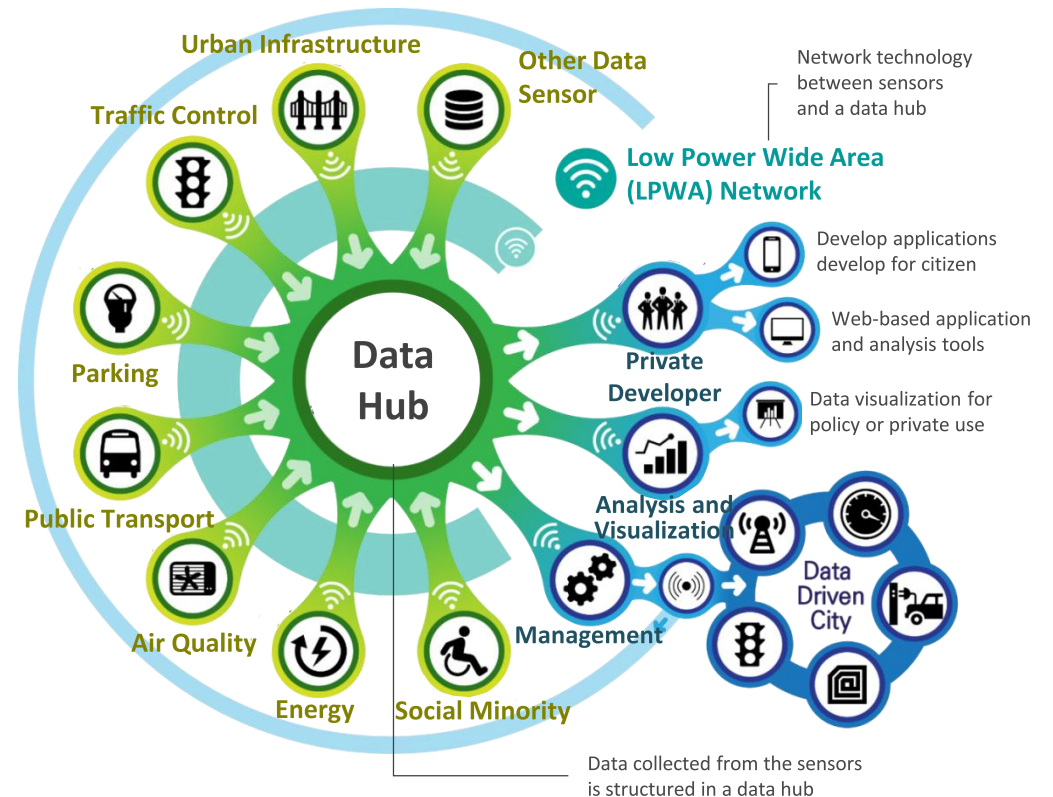
| Concepts of Smart City and Data Hub

Framework Design of Smart City



Source: Korea Agency for Infrastructure Advancement (KAIA), World-leading Smart City R&D Program Plan (Presentation on R&D Preliminary Feasibility Study), 2017.5.25.

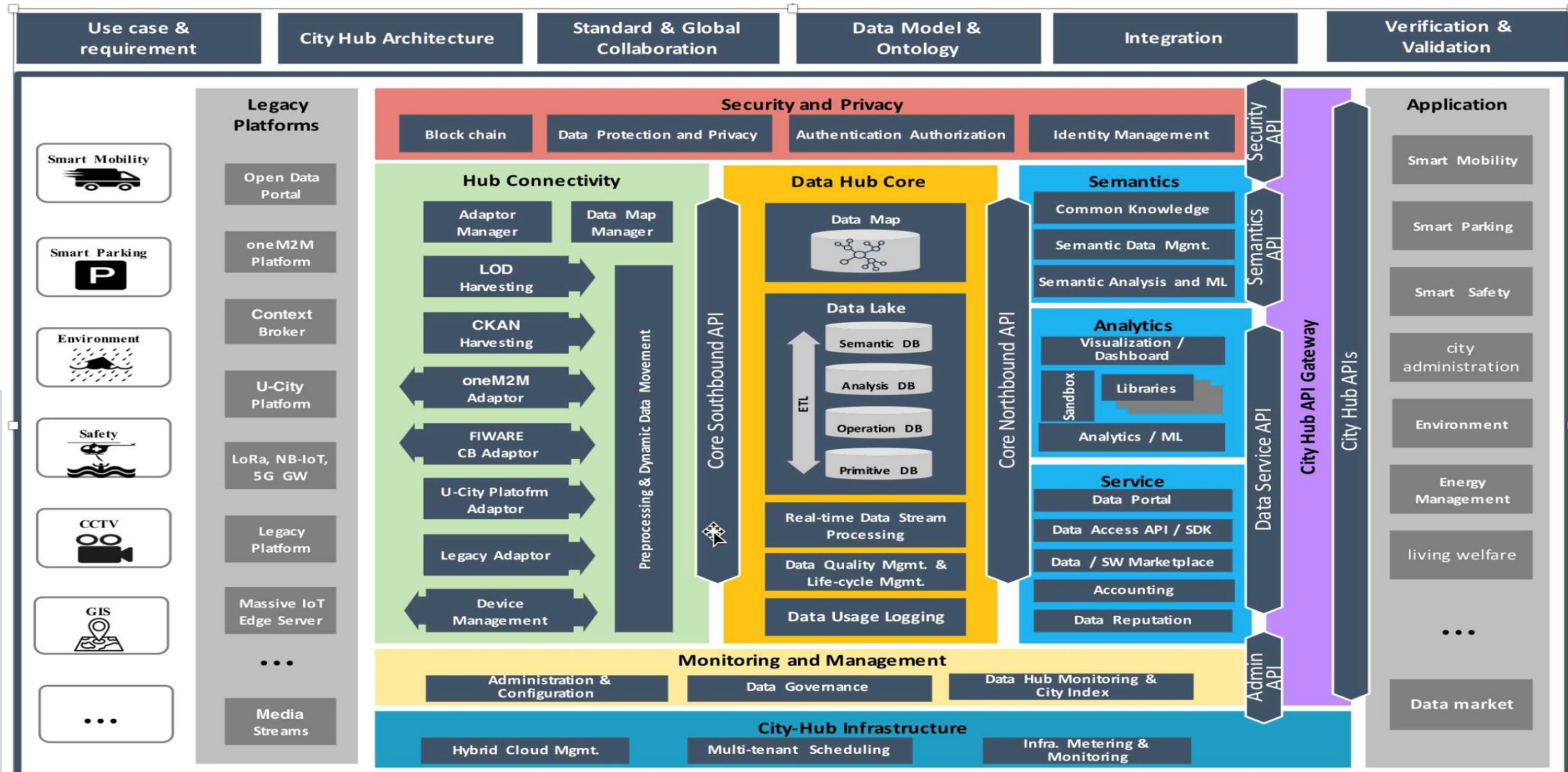
Concept of Smart City Data Hub



Source: Korea Agency for Infrastructure Advancement (KAIA), World-leading Smart City R&D Program Plan (Presentation on R&D Preliminary Feasibility Study), 2017.5.25.

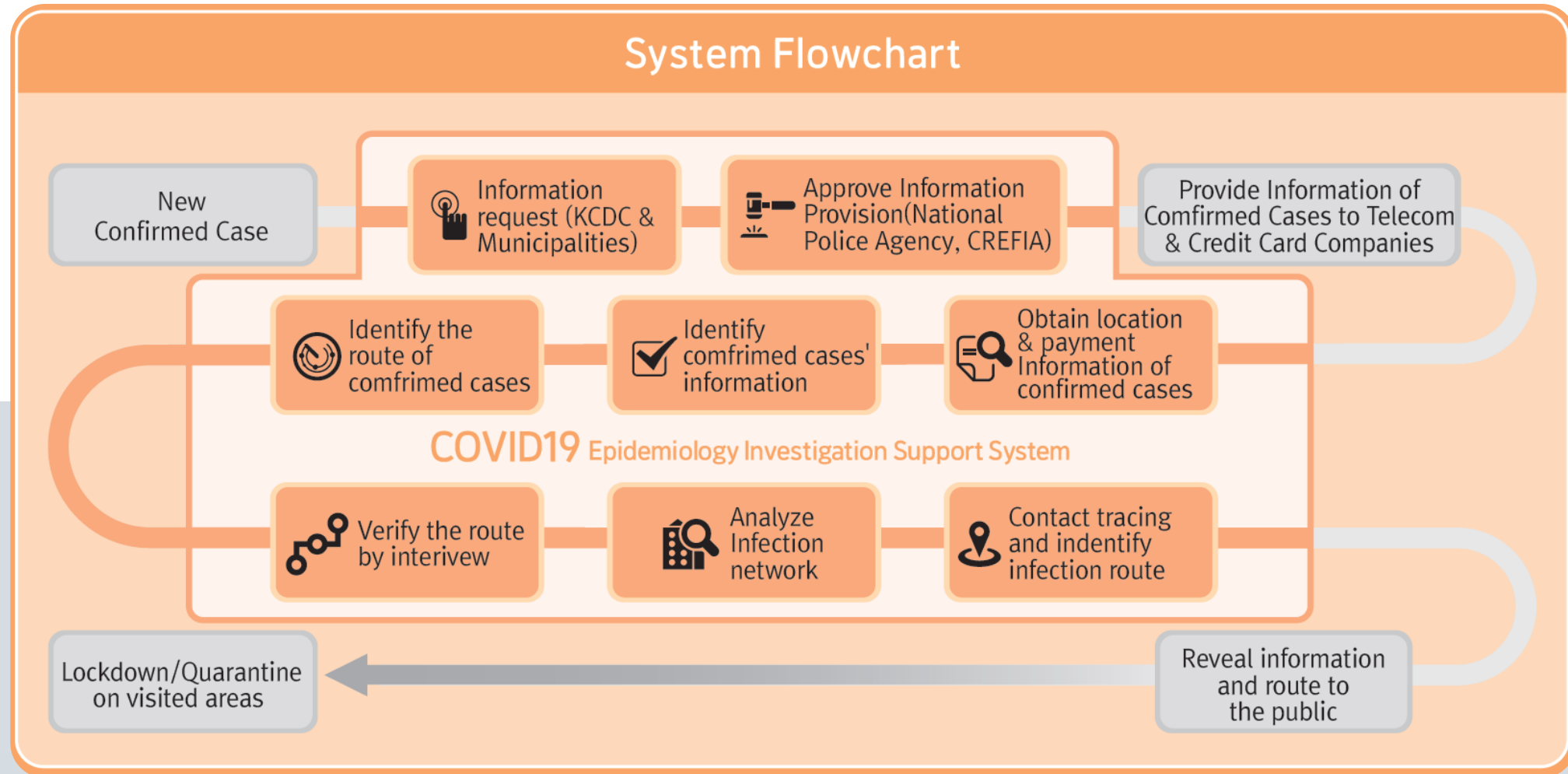
02 Understanding Smart City and Data Hub

| Data Hub Architecture



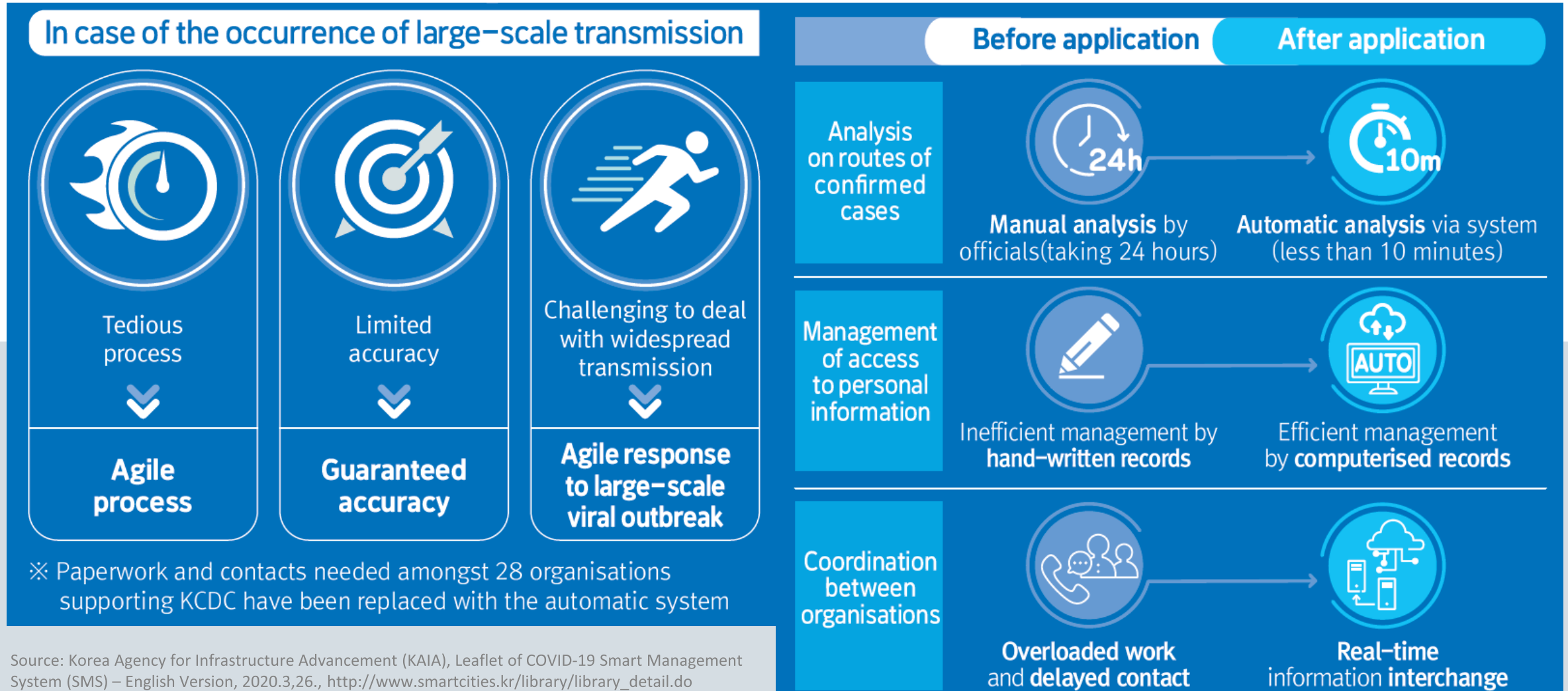
03 Key Functions of the Contact Tracing System

| Operating Structure



03 Key Functions of the Contact Tracing System

| Operating Structure

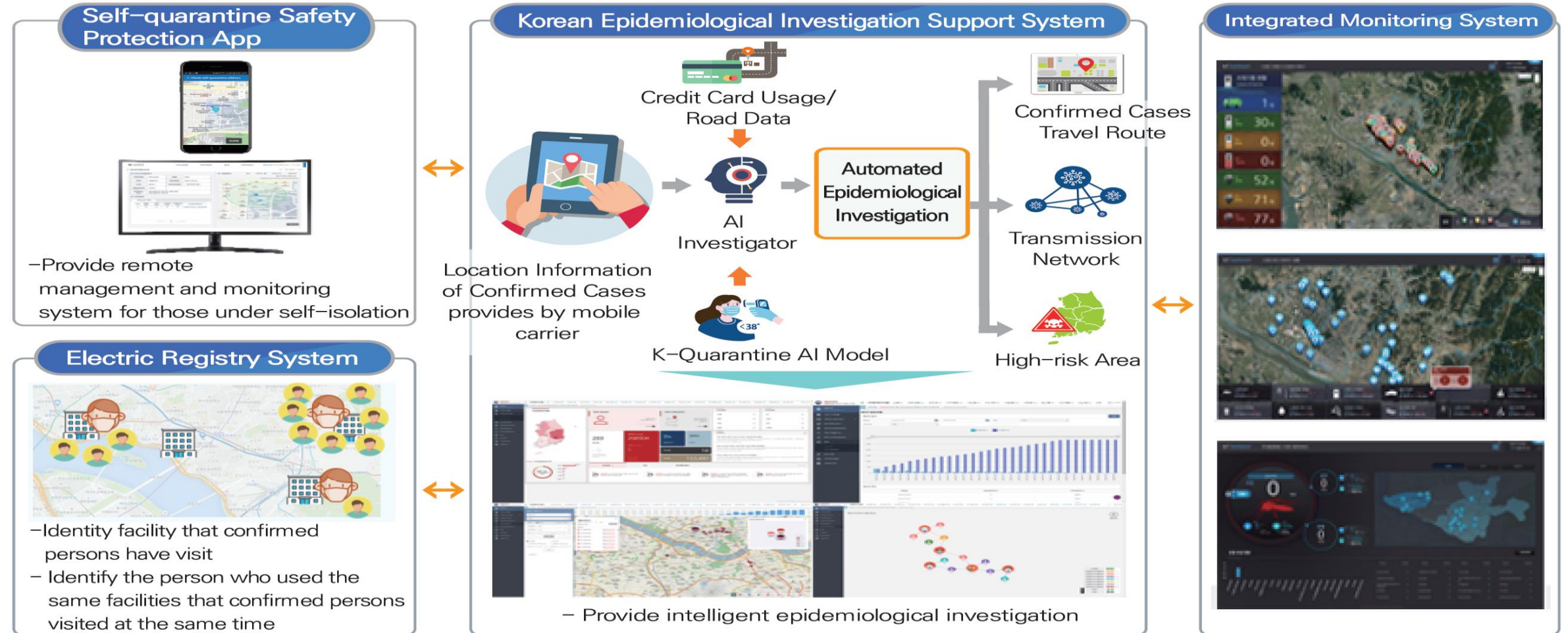


Source: Korea Agency for Infrastructure Advancement (KAIA), Leaflet of COVID-19 Smart Management System (SMS) – English Version, 2020.3.26., http://www.smartcities.kr/library/library_detail.do

03 Key Functions of the Contact Tracing System

| System Advancement

CTS, QR Code Registry System and Self-Quarantine Safety Application can be interacted through the package



04 Implications



Smart City Technology

- ICT, fundamental facilitator of smart city, plays a substantial role in pandemic control

Non-pharmaceutical intervention
such as contact tracing, self quarantine, self diagnosis, etc.

Pharmaceutical interventions, inter alias, digital medicare



Human being, as Main Actor

- Human being, is the main actor making decisions, establishing related systems and intervening crisis through whole process
- Social consensus is needed for making decisions and systems, using personal data

the Act on Infectious Disease Control and Prevention

Strictly cautious to access information

Sanghoon Lee
Professor
Korea University
shlee3324@gmail.com
+ 82 10 9021 1512



- Daeyeon Cho (KAIA), Current Standing and Future Prospects for Smart City in Korea (Presentation on 2019 International Conference on Smart Cities), 2019.7,17.
- The Government of the Republic of Korea, Flattening the curve on COVID-19 - How Korea responded to a pandemic using ICT, 2020.4.15., pp.44-48
- Korea Agency for Infrastructure Advancement (KAIA), World-leading Smart City R&D Program Plan (Presentation on R&D Preliminary Feasibility Study), 2017.5,25.
- Korea Agency for Infrastructure Advancement (KAIA), SmartCities Brochure – English and Korean Version, 2019.5.26., <http://www.smartcities.kr/about/about.do>
- Korea Agency for Infrastructure Advancement (KAIA), Leaflet of COVID-19 Smart Management System (SMS) – English Version, 2020.3,26., http://www.smartcities.kr/library/library_detail.do
- Ministry of Land, Infrastructure, and Transport (MOLIT), KOREA COVID-19 Smart Management System (SMS) Introduction Video – English Version, 2020.4.14., https://www.youtube.com/watch?v=_sjUtzwDiYQ