

COVID-19 and E-Government

Taewoo Nam
namtaewoo@skku.edu

**Graduate School of Governance
Sungkyunkwan University**

Introduction

- The Korean government's response to COVID-19 using ICTs, based on principles for national disaster response: **openness, transparency, and collaboration**
- The use of ICTs based on these principles creates innovative strategies through opening data and information, solidifies the partnership with non-governmental parties, and thereby raises citizens' trust in government.
- The Korean government enhances accuracy, promptness, accessibility, and usability of disease-related information by linking data among information systems from diverse agencies and opening data to the public.

Introduction

- Various front office and back office systems of Korean e-government for managing the COVID-19 crisis were established with cooperation between various ministries, local governments, and public agencies.
- Stabilization phase (halting the rapid spread of the disease) through actively utilizing mobile-based technologies to manage confirmed patients inside and outside the country.
- Korea harnessed ICTs to manage the COVID-19 crisis in terms of **four stages (Screening and Diagnosis, Epidemiological Investigation, Patient and Contact Management, Prevention)** considering the importance of administrative and policy-related implications above technical implications.

1. Screening and Diagnosis Stage

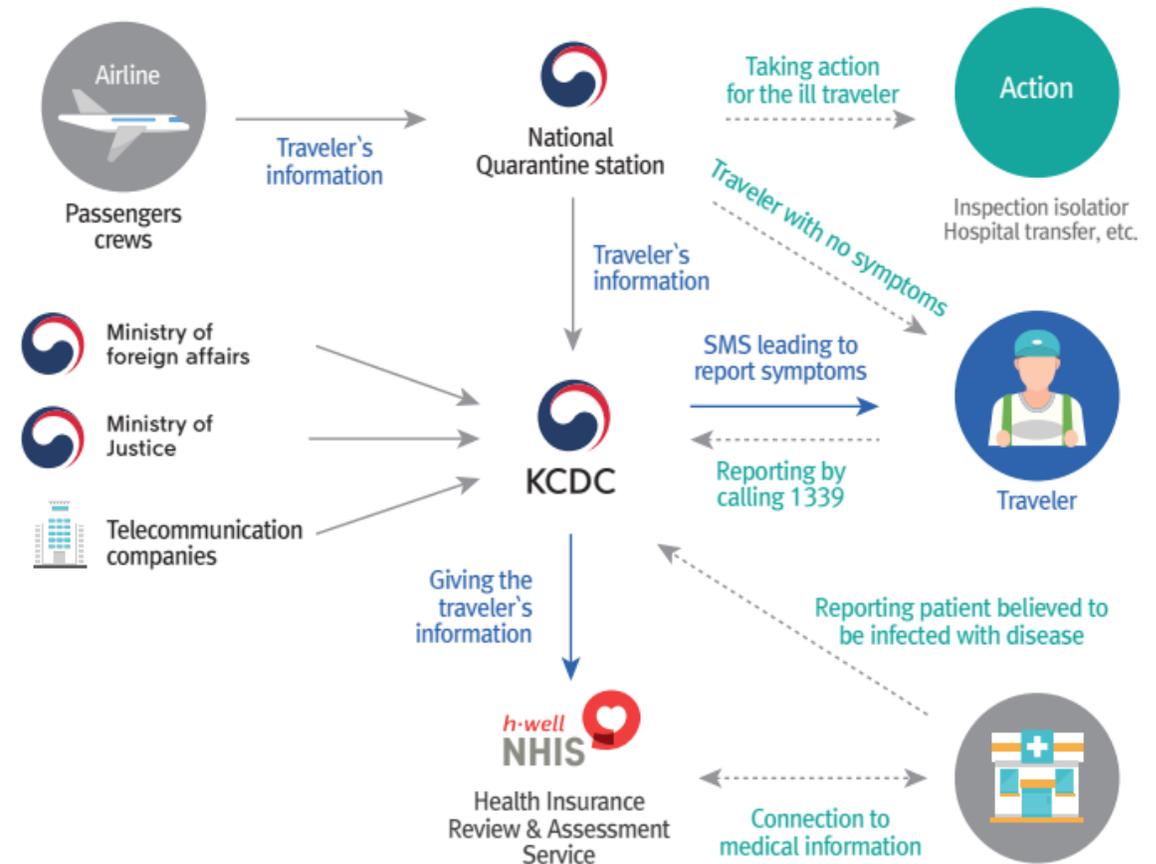
- Drug Utilization Review (DUR) and International Traveler Information System (ITS) allow medical institutions to have access to data on entrants from countries affected by COVID-19
- Taking preventive measures via a smart quarantine system that helps efficiently check the information of travelers entering Korea via a third country.
- Local residents and long-term visitors who do not have any abnormal symptoms at the time of entry or who are confirmed negative after examination should install a **self-isolation stability protection app** released by a government agency, and foreigners should install the **self-health check app** for daily health screening.

E-Government for Managing the COVID-19

1. Screening and Diagnosis Stage

➤ Smart Quarantine System

- National quarantine system based on an ICT-based network connection among the Passport Information Comprehensive Administration System (PICAS), Immigration Information System (IIS), DUR, and telecommunication companies



1. Screening and Diagnosis Stage

➤ **Smart Quarantine System**

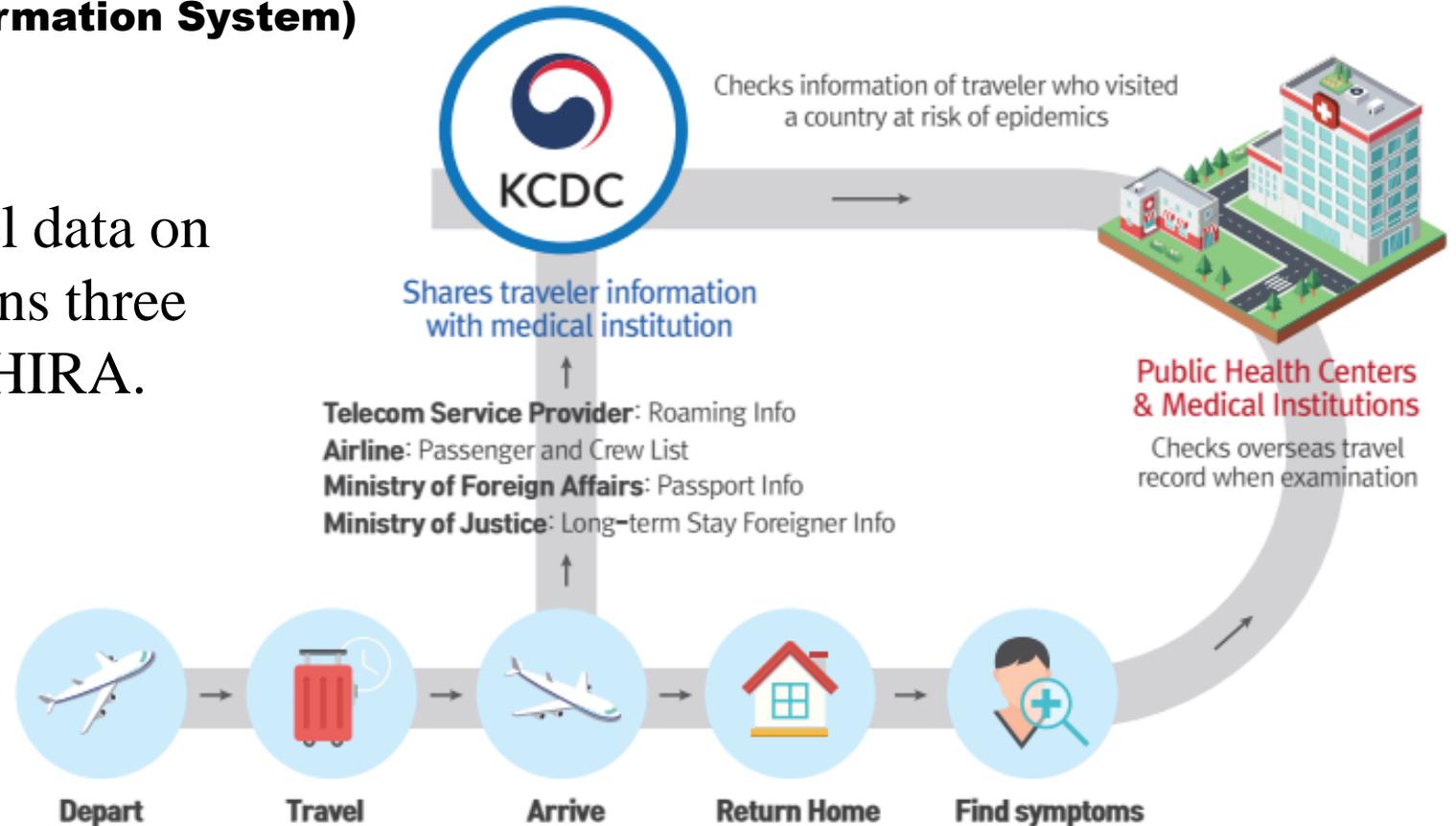
- By sharing and using data from MOFA and HIRA and other related agencies, information from entrants from countries affected by infectious diseases are checked and text messages are sent to the entrants to report any potential infection.
- This system shares the information with medical institutions to monitor potential patients during the incubation period since entry into Korea.
- Using the smart quarantine information system helps gather information on arrivals from countries where infectious diseases have occurred and those entering via a third country and allows tracking and monitoring of infectious diseases during the incubation period.

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1. Screening and Diagnosis Stage

➤ ITS (International Traveler Information System)

- Providing international travel data on entrants to medical institutions three times a day via the DUR of HIRA.



1. Screening and Diagnosis Stage

➤ **ITS (International Traveler Information System)**

- Medical institutions can check patients' overseas travel history, promptly screen those suspected of infection during consultation if they visited contaminated areas, take proper and preemptive measures, and provide selective treatment.
- ITS allows for checking patients' travel history (i.e., whether they have been to contaminated areas abroad), thereby ensuring agile and early response to infectious diseases introduced from overseas.

2. Epidemiological Investigation Stage

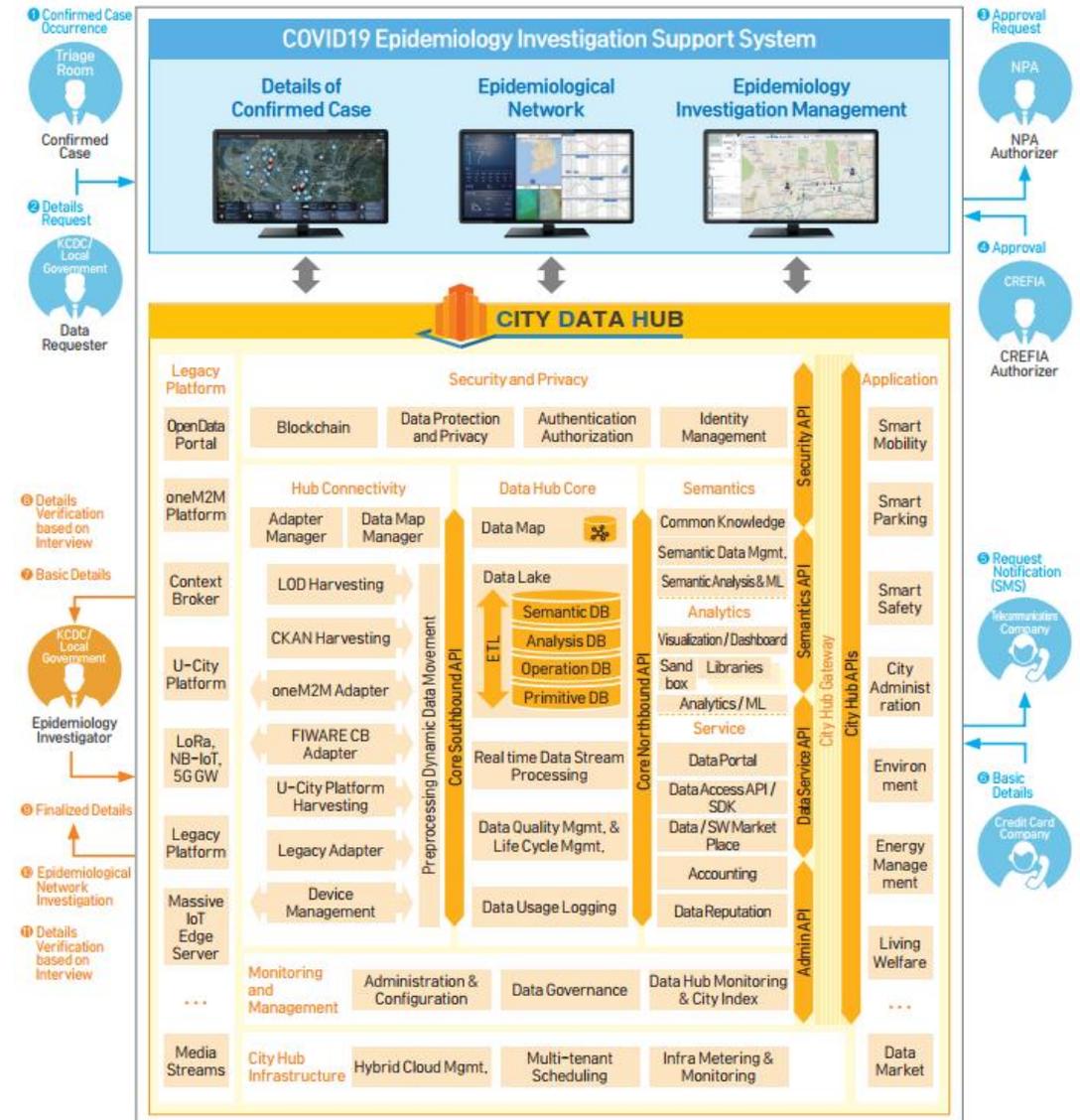
- Using the data from credit card statements, surveillance camera (CCTV), and from mobile phones (location) to precisely identify recent movements of individuals confirmed with COVID-19 and to track the spread of infection by carrying out prompt epidemiological investigations

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2. Epidemiological Investigation Stage

➤ Epidemiological Investigation System

- COVID-19 epidemiological investigation system automates the process of contact tracing for COVID-19 confirmed patients.
- Easily visualizing geospatial information regarding travel routes of confirmed patients on a map embedded in the platform and providing related statistical information.



2. *Epidemiological Investigation Stage*

➤ **Epidemiological Investigation System**

- Using smart city technologies that collect and process large-scale city data sets—such as the analysis tool “Smart City Data Hub” (developed under the National Strategic Smart City Program initiated by the Korea Agency for Infrastructure Technology Advancement).
- Based on data from individuals regarding time, travel routes, and location of confirmed patients, and public data on the information about public transportation and the status of screening stations.
- The big-data analysis platform automates the contact tracing of COVID-19 patients, automatically extracting location data from cellular base stations.

3. Patient and Contact Management Stage

- The national hospital ward management support system helps effectively manage hospital capacities and prepare for any shortages.
- The mobile safety protection app for people under self-quarantine is applied to monitor and prevent them from leaving their isolated (designated) place.

3. Patient and Contact Management Stage

➤ Self-quarantine safety protection app

- The self-quarantine safety protection app effectively supports and manages the monitoring of people under self-quarantine.
- Supporting both individual citizens under self-quarantine (as system user) and assigned caseworkers (as system managers)



3. Patient and Contact Management Stage

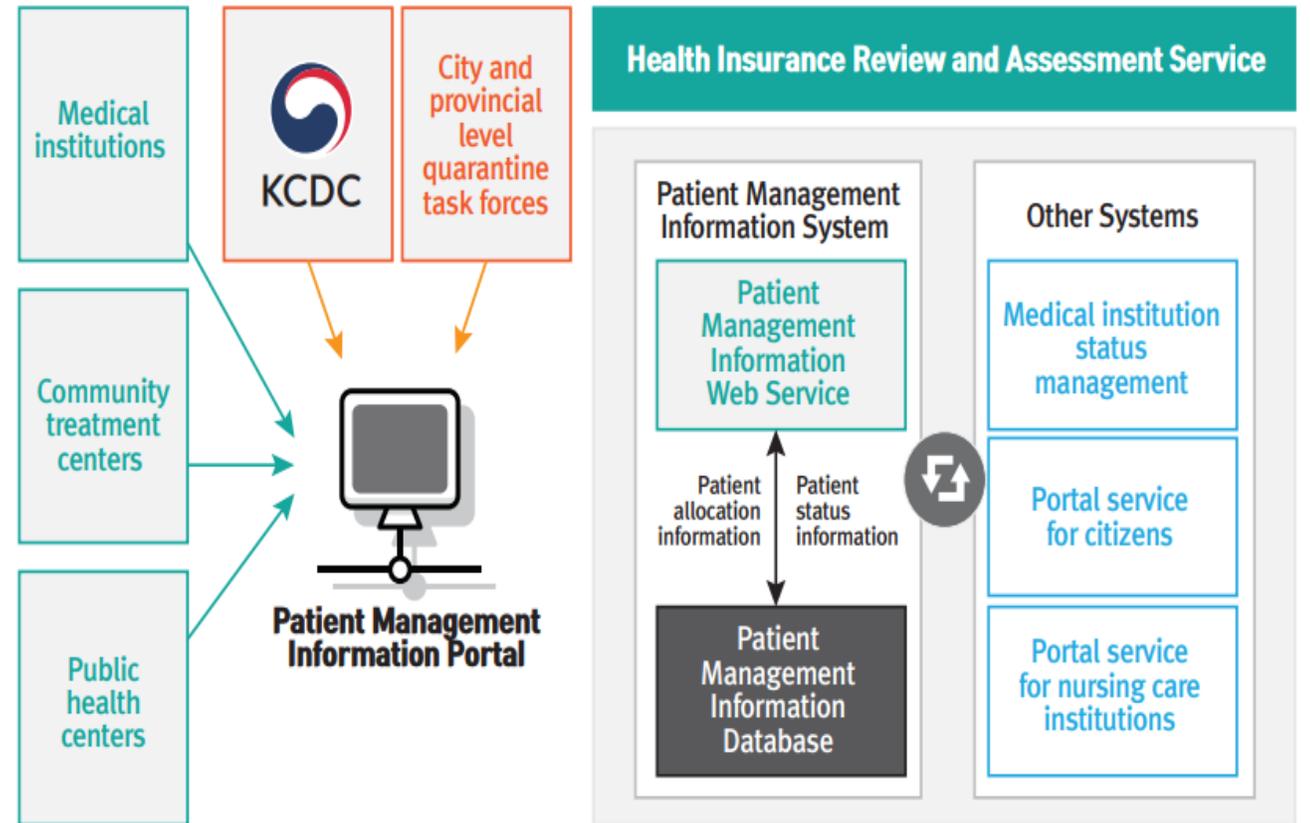
➤ **Self-quarantine safety protection app**

- A patient conducts a self-health check twice a day through the app, and the results are automatically delivered to the assigned caseworker.
- Information about the citizen's location is managed based on the GIS.
- If the user leaves the quarantine area, a notification is immediately sent to the user and the assigned caseworker simultaneously, allowing the caseworker to respond to and handle the situation as soon as possible.

3. Patient and Contact Management Stage

➤ Patient management information system

- The patient management information system systematically manages COVID-19 patients to prevent further spread and check their real-time status.



3. Patient and Contact Management Stage

➤ **Patient management information system**

- KCDC, local quarantine task forces in 17 cities and provinces, public health centers, community treatment centers, and medical institutions manage information on the allocation of confirmed patients to monitoring organizations, their illness conditions, hospitalization or transfer, and isolation or release.
- Medical institutions check real-time patient and retrieve the current availability of negative pressure rooms and facilities to in which to assign COVID-19 confirmed patients to appropriate treatment.
- The quarantine institution can manage patient information to check the patient's status in real time (for example, in case of patient transfer to another institution, reconfirmation of infection after discharge)

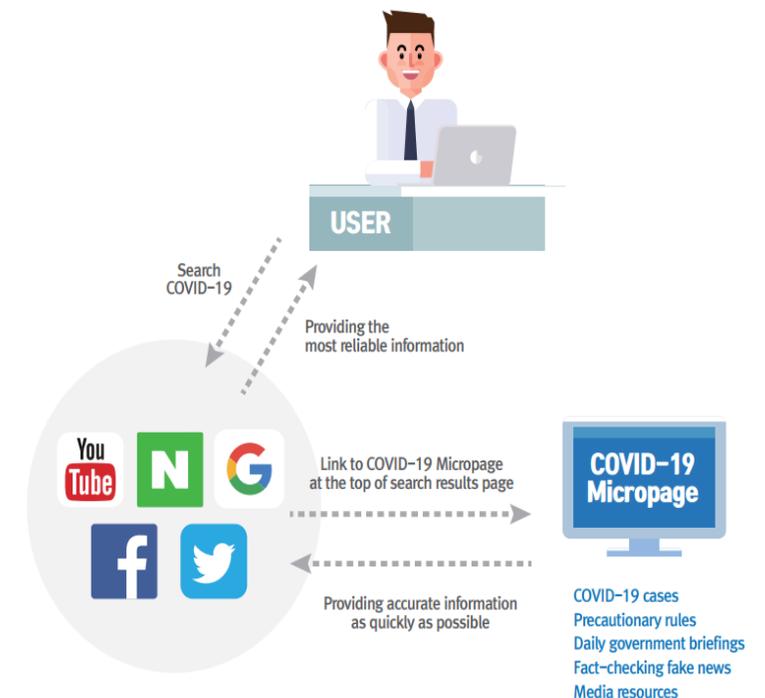
4. Prevention Stage

- Systems using open public data: COVID-19 micropage, Coronamap service, Coronaita, and COVID-19 chatbot
- A early success case: disclosure of information on face masks, screening stations, and designed hospitals
- The Korean government disclosed public data for face mask sales and available masks in the form of an open application programming interface (API).
- Developers released face mask notification apps and web-based services to mitigate problems caused by mask shortages.

4. Prevention Stage

➤ COVID-19 Micropage

- The MOHW and HIRA provided data on COVID-19 screening stations and designated National Safe Hospitals, and MOIS and NIA reprocessed it as open data through open API and disclosed it to the public data portal (data.go.kr).
- Developers in the private sector including civic hackers, startups, developer communities, and internet portal providers in the private sector released search apps and web services for COVID-19 screening stations and designated national safe hospitals by using the open data.



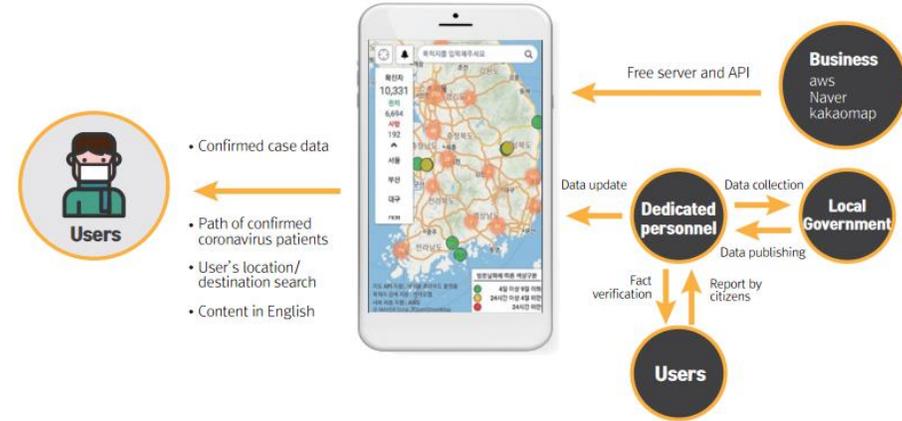
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4. Prevention Stage

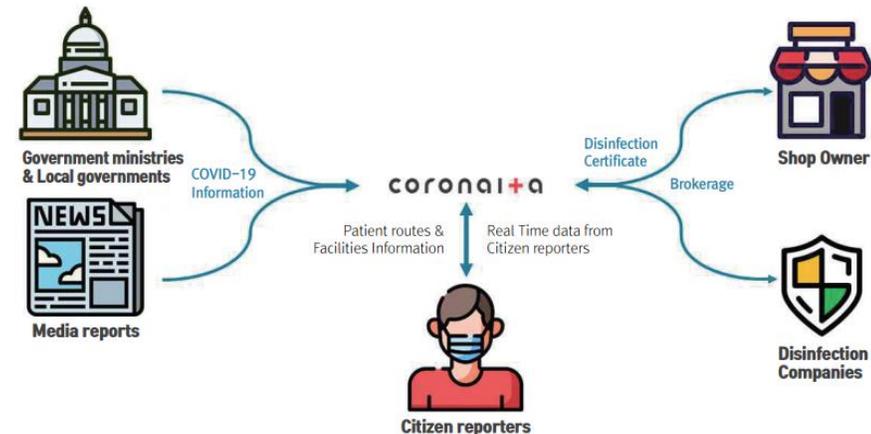
➤ Corona Map & Coronaita service

- Based on the government open data, corona maps that can visually check the current status of corona confirmed cases and movement routes by region.
- Coronaita service helps check the places where the confirmed person has visited and check whether the place has been disinfected, are helpful in prevention.

Corona Map



Coronaita service



Policy Implications

- **The use of ICTs and e-government systems is indispensable to Korea's national efforts to control COVID-19.**
- **This system has transformed the whole processes of responding to COVID-19,** comprising screening and diagnosis, epidemiological investigation, patient and contact management, and prevention.
- **The basic principle of open government** can lead to a more creative and innovative way to plan and implement disease-driven crisis management by sharing information with related ministries and agencies within each public sector.
- Prioritizing the public values of **transparency and sharing** fosters public-private collaboration and citizen engagement in social efforts to manage the pandemic crisis.