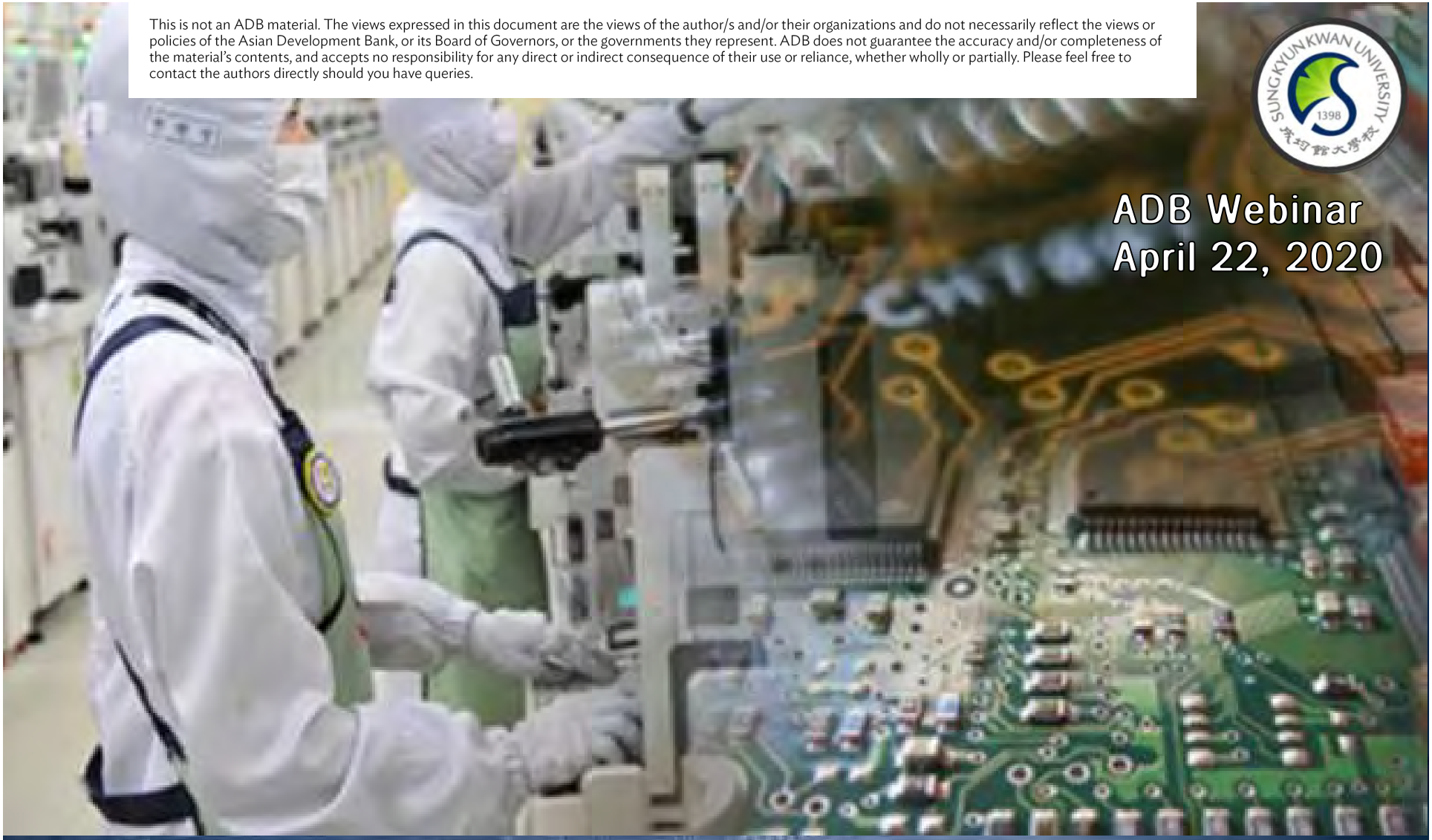


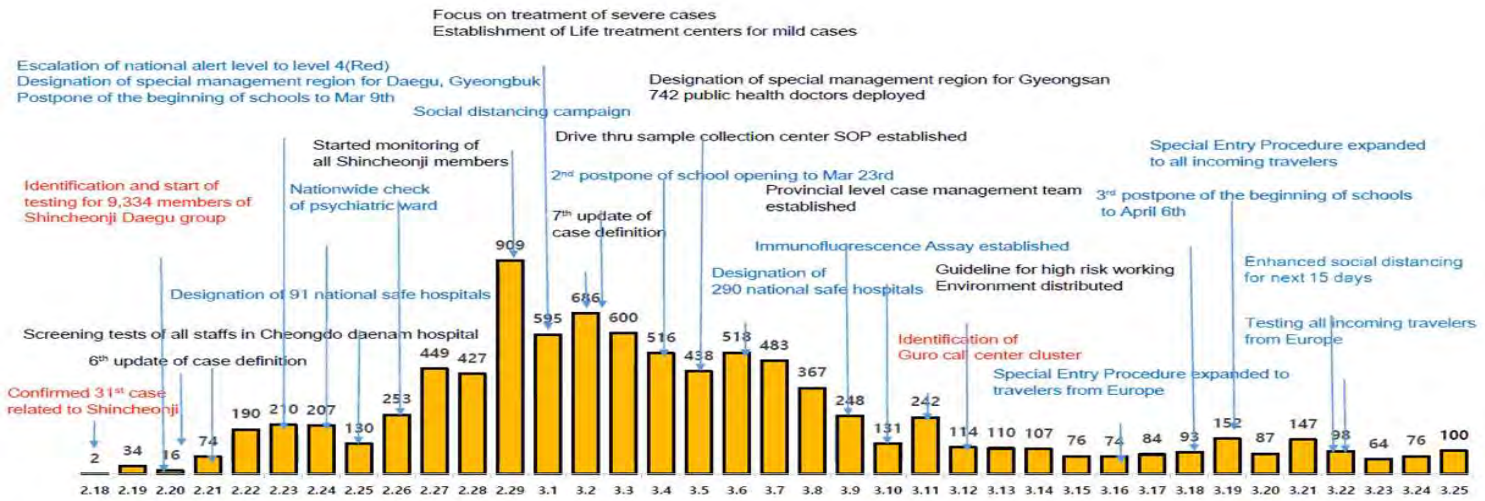
ADB Webinar
April 22, 2020

Using ICT to Control COVID-19 in Korea

Source : Flattening the curve on COVID-19
by The government of the Republic of Korea

Presented by Tai M. Chung
Sungkyunkwan University, tmchung@skku.edu

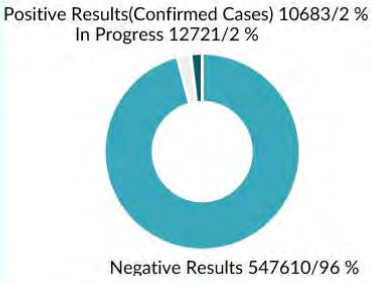
Status Changes of COVID-19 in Korea



- ☞ Detect first confirmed patient from China on Jan. 20, 2020 at the Incheon Airport
- ☞ Peaked at Feb. 29, 2020 with 909 confirmed cases
- ☞ The curve has flattened and down to 9 confirmed cases on Apr. 21, 2020
- ☞ 10,683 confirmed cases and 237 death as of Apr. 21, 2020

Tests Performed	571,014
Tests Concluded	558,293
* Positivity Rate	1.9 %

* postitive tests / total number of tests concluded * 100%



Confirmed Cases (accumulation)	=	Released from isolation (Released from Quarantine)	+	Isolated	+	Deceased
10,683		8,213		2,233		237
Daily Change + 9		+ 99		- 91		+ 1

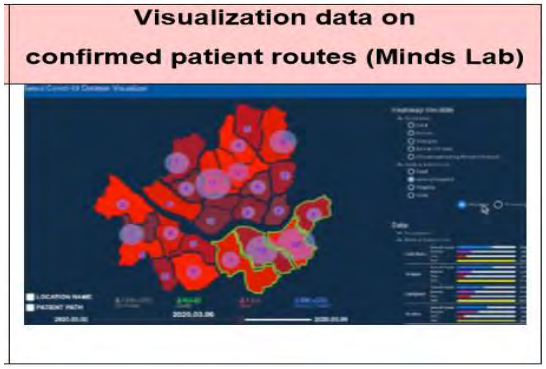
Key Factors for Managing COVID-19 in Korea

1. Preventive Measures against COVID-19 in Korea
   - Early lesson from ShinCheonJi Cluster Infection (5,212 : 48.8% of total confirmed cases)
   - Successful Social Distance Campaign
2. Aggressive Use of ICT Infrastructure & Services
   - 100% internet penetration rate (100Mbps) & 99% of population for internet use
   - Contributions of ICT applications to settle down the situation
3. **ICT Software and Services to Cope with COVID-19**
   - **Information provision to promote the status and way to respond**
   - **To stabilize the society from the panic**
   - **Accelerate developing examination Kit & Self-Diagnosis**
   - **Surveillance & Tracking System for tracing move of self-isolators**
4. Selfless Services of Volunteers
   - 66,500 volunteers for medical services & 67,600 for emergency services
   - 390,000 volunteers for administration
   - 4,000,000 volunteers Total

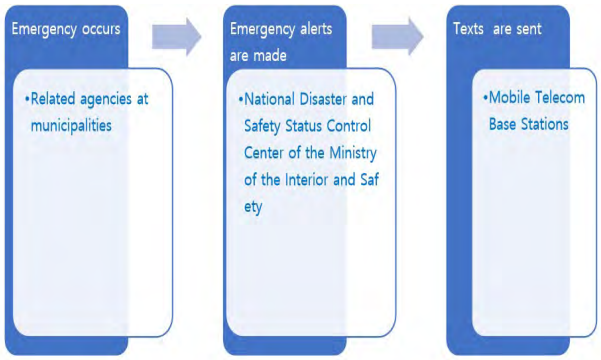
Information Provision by Government

Korean Government's Official Website on COVID-19 to release all relevant information

Data released in API format for private developers to get information about secure hospitals and screening centers



Mind Map : Gathered from local governments' websites and repackaged with additional geographical information



Cellular Broadcasting Service : transmit emergency alert text messages on disasters to cell phones by government in Korea.

Information Provision by Private Companies

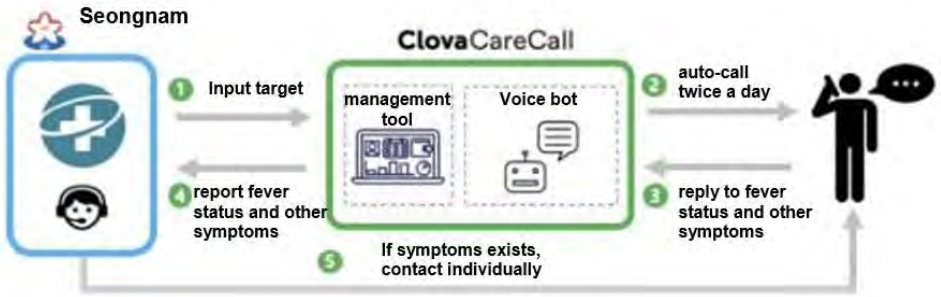
KSIC.net
(주)한국공간정보통신

Korea Spatial Information & Community :
Map for Route of Patients, Place for diagnosis, and places for Attention based on GIS data

WISEnut

Corona119 Chatbot : Public chatting robot service to inform the way of preventing and correctly responding corona virus

NAVER



Clover Carecall : AI based voice robot automatically calls the people under self-quarantine to ask health condition, and informs to public health center

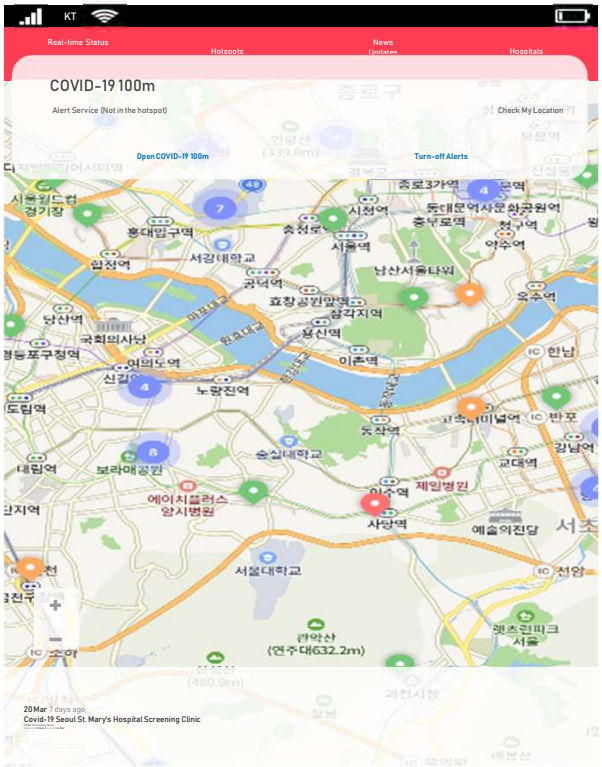
Dable

Dable News : Information service to provide media trends by analyzing the corona relate articles collected from over 1,800 media companies

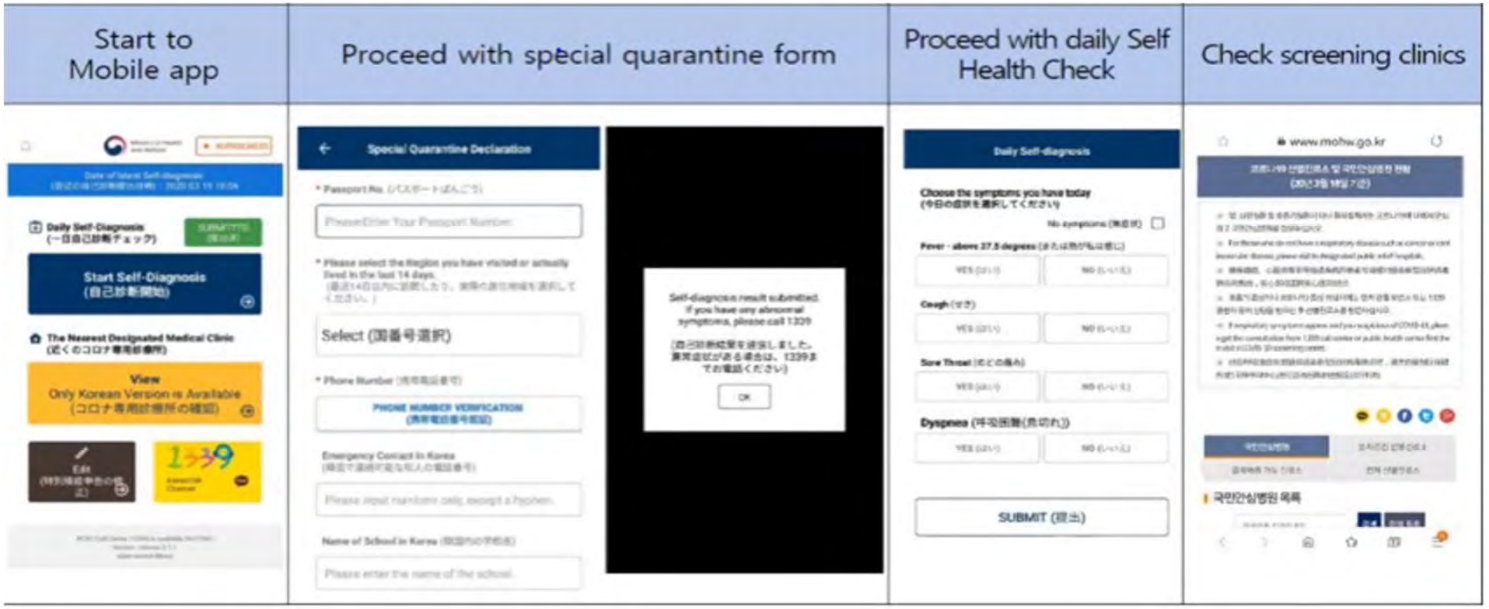
Early Day Mobile Apps Developed by Students

Corona Now : Show the status of confirmed cases and perilous places, which was developed by junior high school students in Feb. 3, 2020

Corona Near-by : Show the status of confirmed cases and perilous places within 100M which was developed by college students in Feb. 3, 2020

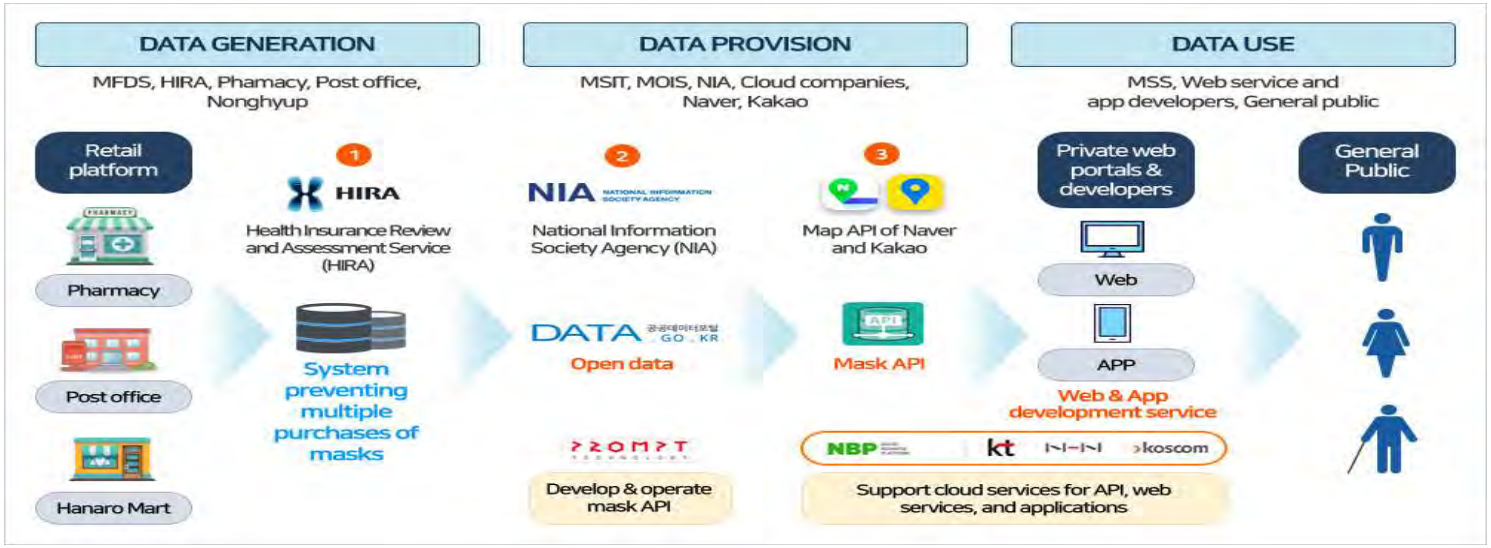


Self-Diagnosis Mobile App



- ☞ To prevent the spread of COVID-19 by monitoring all inbound travelers from abroad
- ☞ Require all inbound travelers to install and report their health condition (body temperature, cough, sore throat, or difficulty breathing) using the application once a day during their 14 days of quarantine.
- ☞ Installed by 170,000 users and 9,000 appropriate actions taken
- ☞ Provide various necessary information : phone numbers to contact for consulting or emergency

To stabilize the society from the panic



☞ Promote the retailers to buy masks : public and private sector collaborate to use public data for people to buy limited number of masks conveniently

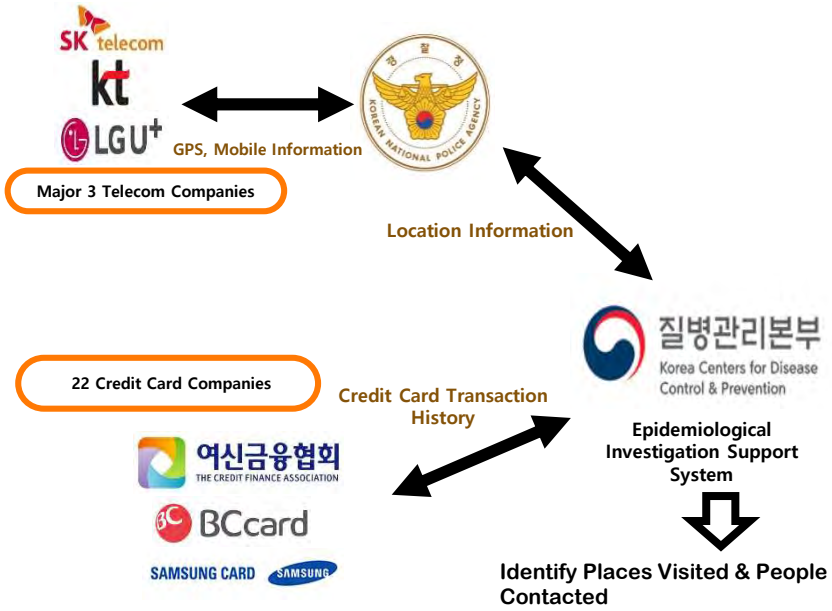
① Face mask sales and inventory data from the retailers are collected in HIRA(Health Insurance Review and Assessment Service : government subsidiary)

② NIA(National Information Society Agency : government subsidiary) modify the data to add store name, address, amount in stock, date etc.

③ Naver, Kakao, KT(Private Portals) provide API and Cloud for development and operation

④ Web-App based 'Mask App' services are published (more than 30 launched within 2 weeks)

Surveillance & Tracking Confirmed and Suspected



☞ Deploy Epidemiological Investigation Support System(EISS)

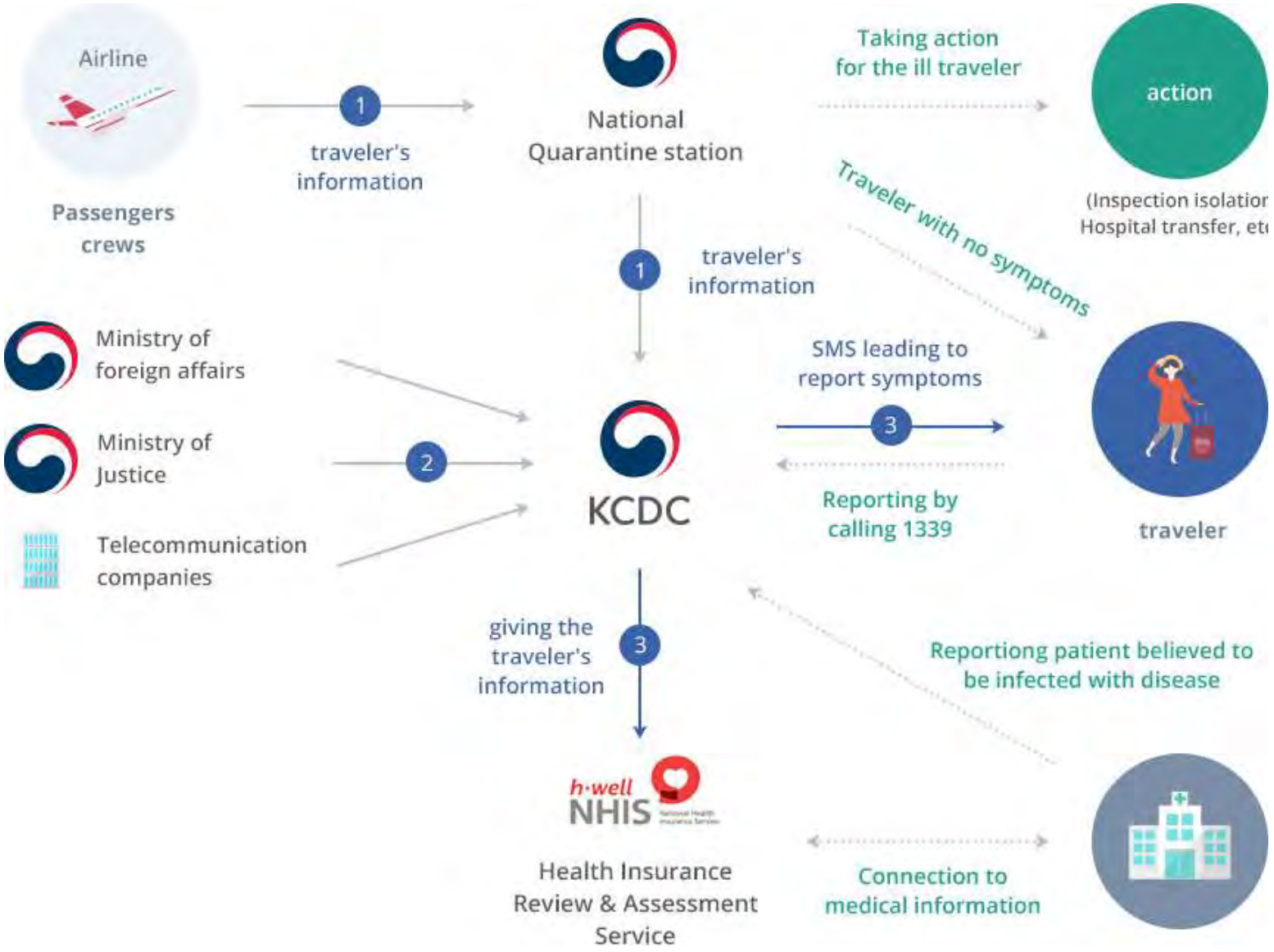
- Use of city hub of the Smart City project in Daegu, Korea
- Support Epidemiological Investigations based on the temporal and spatial analysis to identify "where to visit and whom to meet" of the infected

☞ Detect incidents of cluster infection and the source of transmission

Security & Privacy Protection

- ☞ Frequent phishing & smishing attacks to health authorities and patients
- ☞ Minimum data collected and deleted right after official response ended
- ☞ Require approval & permission for investigators to access private data
- ☞ Security Clearance needed for KCDC and local government officials
- ☞ Modern security solutions applied and monitored by security experts

Information Flow to Control COVID-19



Developing Examination Kit Using AI and Big Data

Seegene

Speed up the development of diagnosis kit up to 2 weeks using AI technology (deployed in more than 50 countries.)

Lunit and VUNO

Classify intensive patients by examining X-ray of Lung with in 3 seconds with AI technique(used in public health centers)

JLK INSPECTION

Examine Lung Disease within seconds using AI technique (being used in Hospitals)

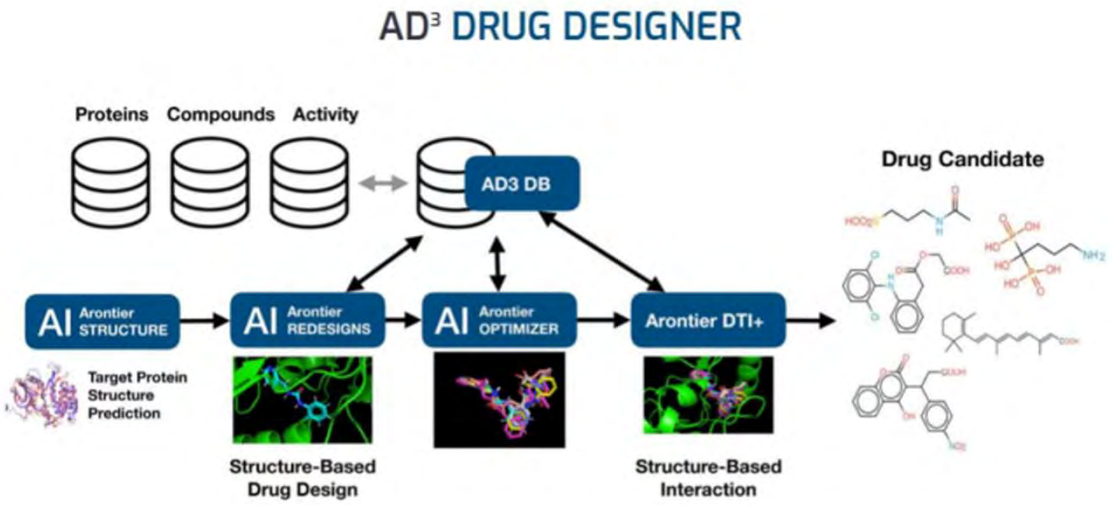
The Government of the Republic of Korea

Aims to assist the private sector in achieving economic and social innovation by collecting, processing, and using large-scaled data and ICT technologies in the field of Healthcare such as remote medicine platform and digital therapeutics

Developing Medicine using AI

DEARGEN

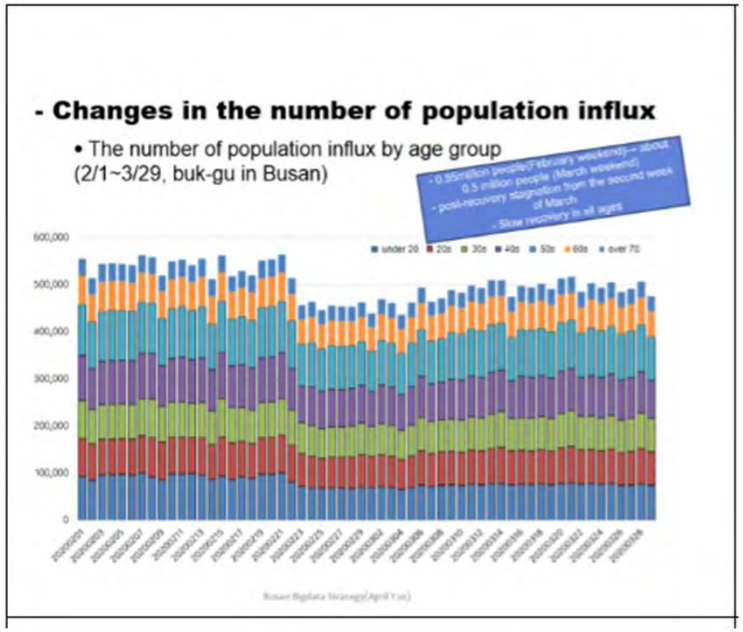
Using AI deep learning Algorithm to predict the interaction of Drug-Protein, propose candidate medicine such as medicine for HIV virus



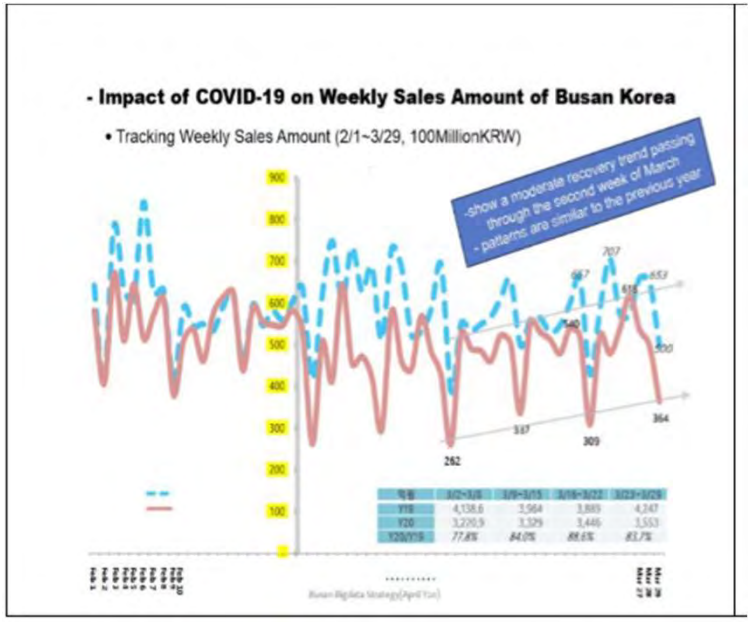
ARONTIER

Developing Platform to find candidate substances to treat corona virus more quickly

Policy Making based on AI & Big Data Analysis



Set the social policy based on the number of population influx by age group (2/1~3/29, buk-gu in Busan)



Set the economic policy based on impact of COVID-19 on weekly sales amount of Busan, Korea by tracking weekly amount

Conclusion : Lessons and Issues

- ☞ Even though we are paying so much tuition to learn from COVID-19, we should together make best efforts to **turn the crisis into opportunity** because the tragedy will be ended soon or later.
- ☞ Corona Virus is not the last, we may face more severe disease soon or later; thus, we all need to **prepare another combat**.
  - Build ICT Infrastructure and e-government centered digital society
  - Collaborative preparation of public and private sectors
  - Reform law and regulation for remote work, remote education, remote medicare, etc.
  - Organize International Information sharing community among the nations for preventing another global disaster
- ☞ We can not escape from the past, but can **build the future** by well managing the present.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Thank You All Who
Volunteered & Contributed
to Overcome COVID-19
In the World