Asia-Pacific Economic Cooperation

2025/SOM3/EPWG/SDMOF/014
Agenda Item: S5.1.2

Korean Master Plan for Disaster and Safety Management Technology Development

Purpose: Information
Submitted by: Korea

APEC 2025 KOREA

18th Senior Disaster Management Officials' Forum
Incheon, Korea
31 July 2025

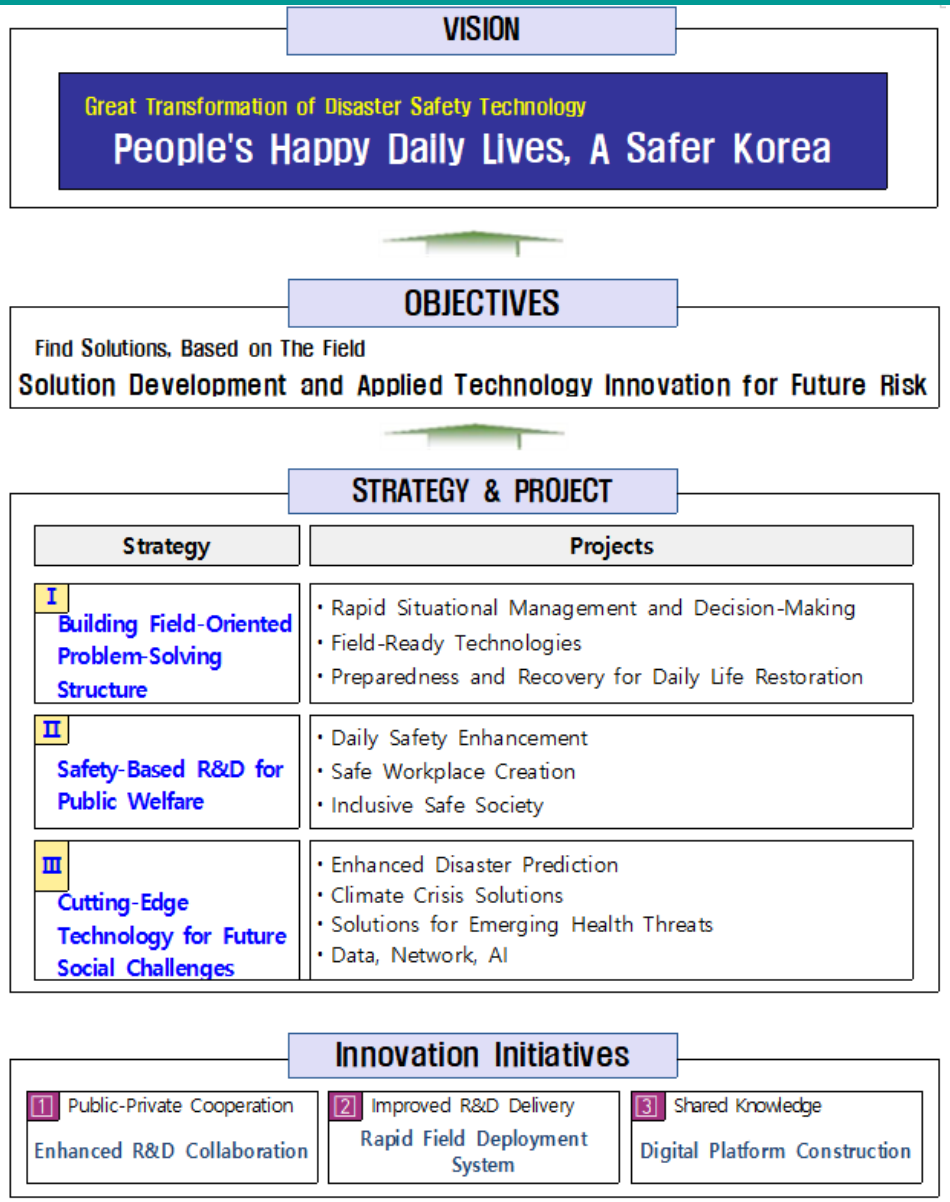
Korean Master Plan for Disaster & Safety Management Technology Development

Ji-Bum Chung (Ulsan National Institute of Science and Technology)

APEC 2025 KOREA

Master Plan for Disaster & Safety Management Technology Development

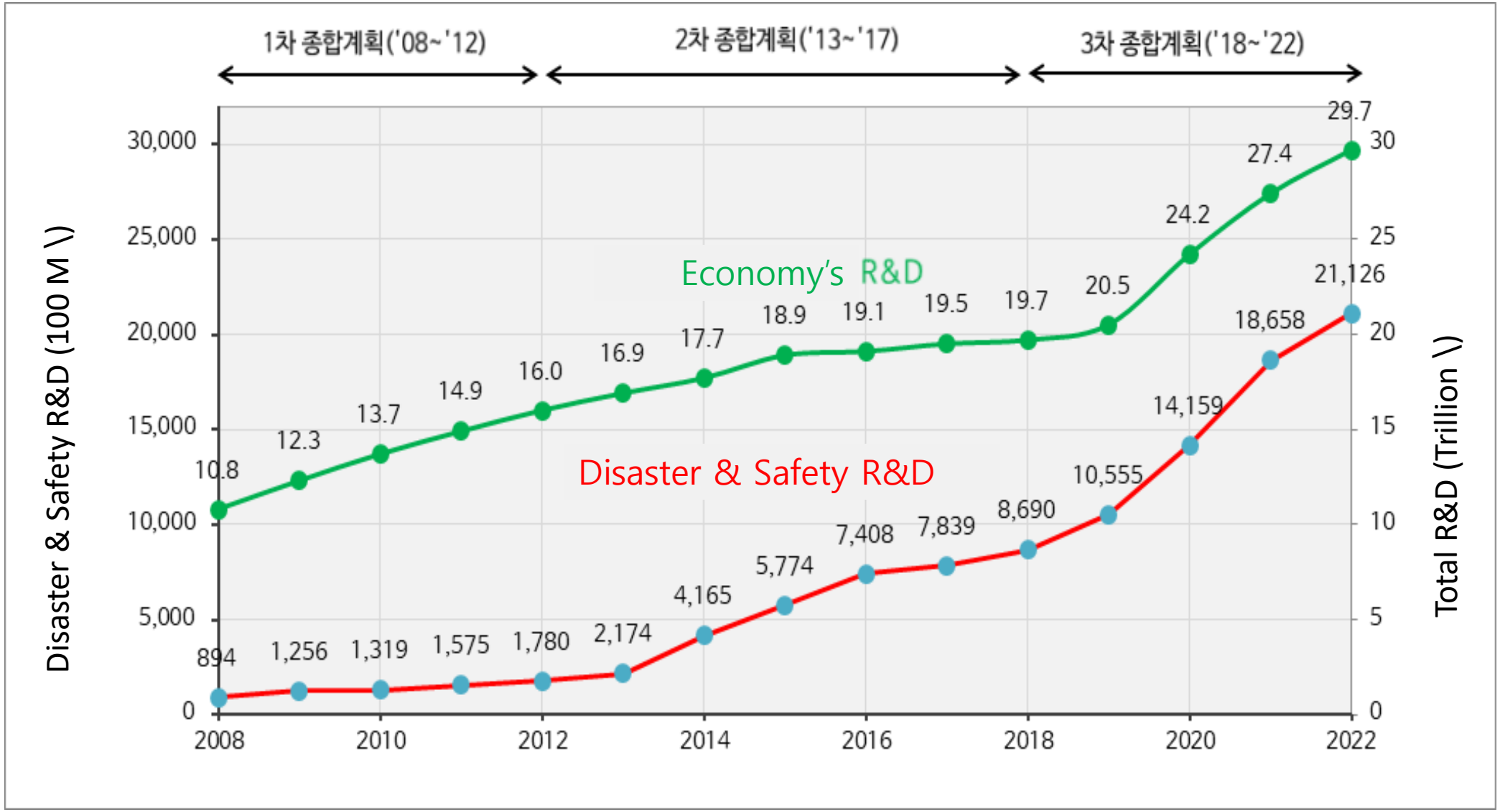
3rd Master Plan



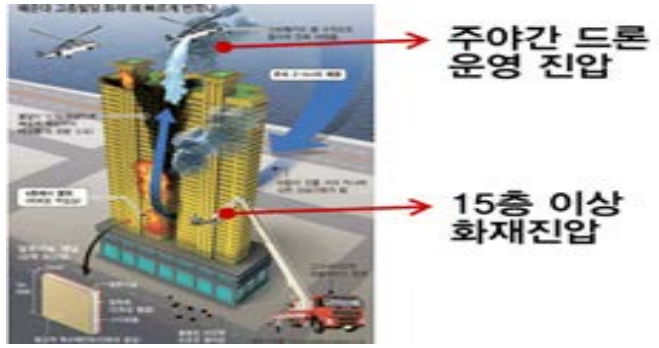
- **Master Plan for Disaster & Safety Management Technology Development**
- Established every **5 years** in accordance with Article 71-2 of the "**Framework Act on the Management of Disasters and Safety**."

- Rapid Situational Management and Decision-Making for **Emergency Operation**
- **Daily Safety Enhancement Technology**
- Safe **Workplace** Creation
- Enhanced Disaster **Prediction**
- **Climate Crisis** Solutions
- Solutions for **Emerging Health Threats**
- **Data, Network, AI**

Efforts to Increase Science & Technology Budget for Disaster Management



Rapid Situational Management and Decision-Making for Emergency Operation



Fire Suppression in High-Rise Buildings Using Drones

Robot Technology for Emergency Management

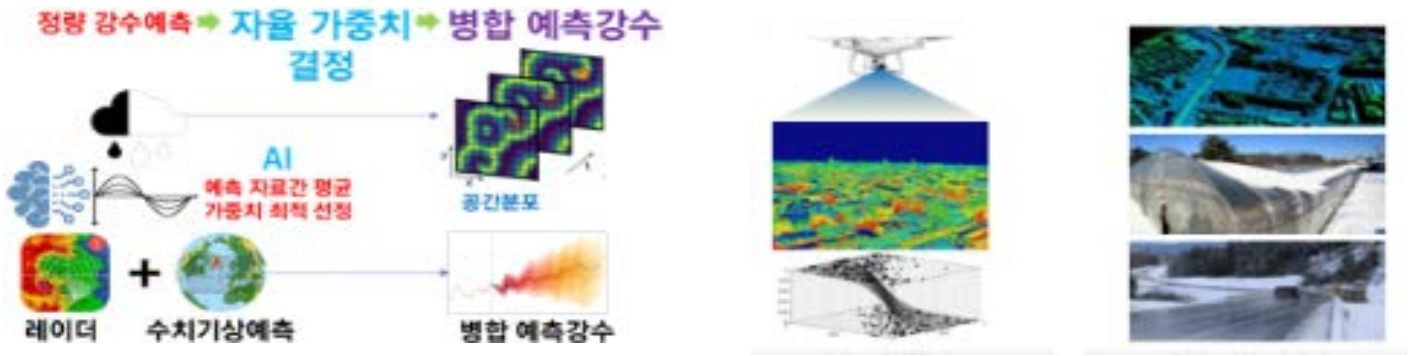
Daily Safety Enhancement Technology

Cooling Vest for Heat-Related Illness Prevention

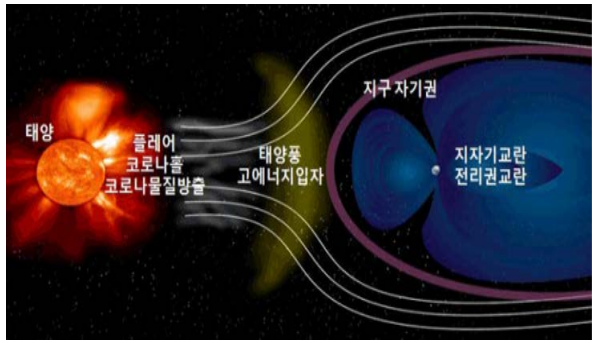
Traffic Accident Prediction Technology

Road Surface Ice Management Technology

Enhanced Disaster Prediction & Climate Crisis Solutions

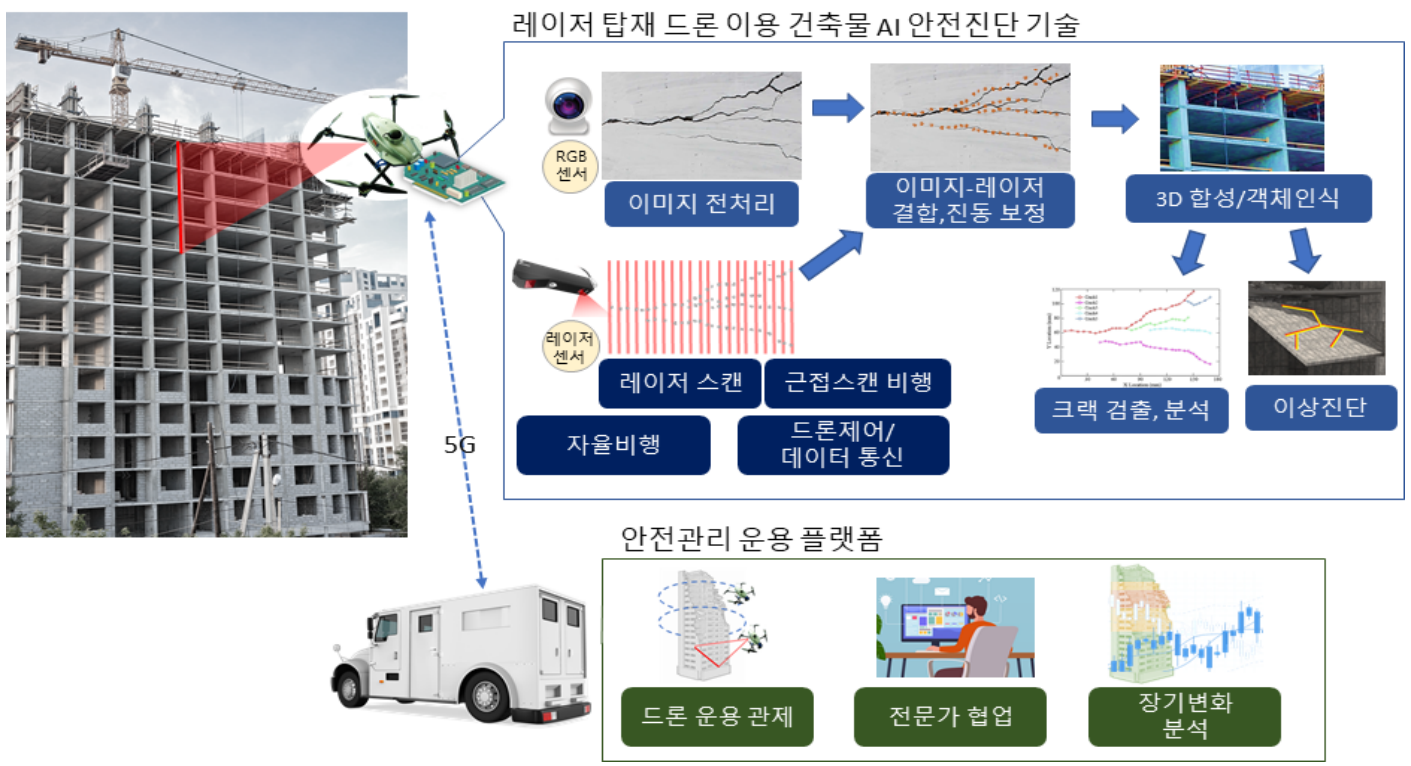


Rainfall and Heavy Snow Prediction Technology



Prediction of Earth's Radio Environment Changes Due to Solar Wind

Data, Network, AI



Building Safety Inspection Using AI

IoT Sensors

Best Practices

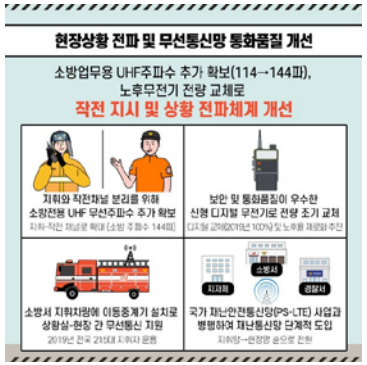
Korea Safe-net & Early Warning (Wireless Emergency Alert)

Emergency Management & Multi-Agency Cooperation

- Should be Fast and Efficient
- Need Cooperation with many agencies (Fire, police, Medical, Infrastructure, …)

- In case of a Disaster, generally,
- Need multi-agency cooperation
- Need **secure, stable, and efficient communication tools** between agencies.
- However, they used their own radio equipment

Police
TRS(Trunked Radio System)



Fire
VHF, UHF

Needs for effective multi-agency communication

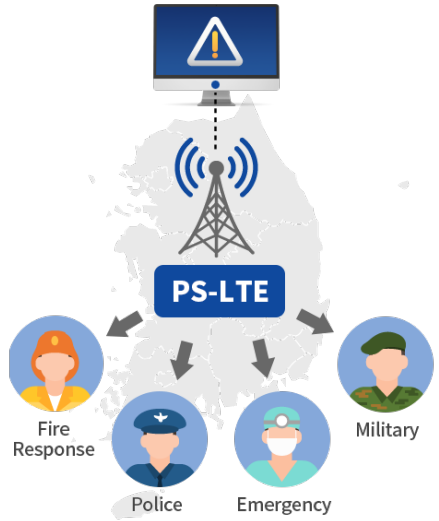
Daegu subway accident, 2003

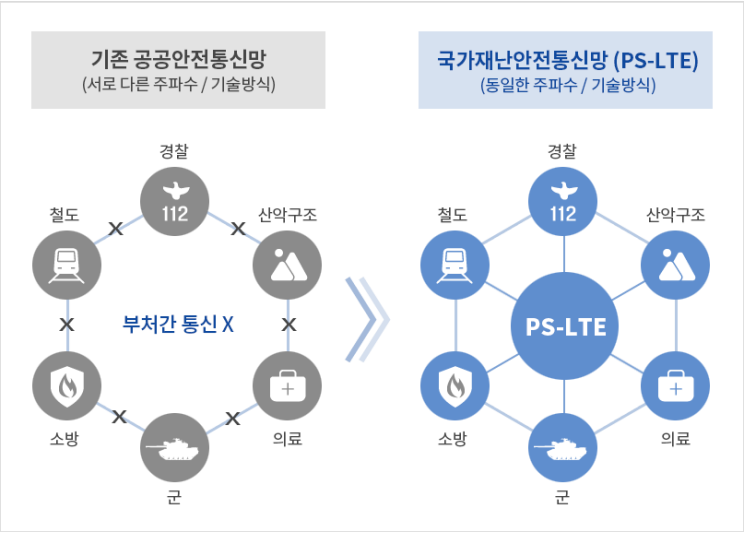
Sewol Ferry disaster, 2014

- 2002: Proposal for a integrated wireless communication network encompassing all central disaster-related agencies
- 2003: After Daegu fire, the plan was officially initiated.
- However, a decade-long conflict over wireless communication methods and costs.
- 2014: After Sewol Ferry disaster, decide **PS-LTE** method and initiated the project
- 2015 Implemented a pilot project in Gangwon Province.
- 2018 main project started, central region (2019), southern region (2020), and the capital region (2021)
- 2021: launched the service in May 2021.

Disaster and Safety Communications Network (Korea Safe-net) – PS-LTE

- Enables policemen, firefighters, and other groups to communicate efficiently using dedicated terminals.
- Single communication network on a economy-wide scale supporting one channel of command and control, and integrated response at disaster sites
- Fourth-generation wireless technologies, **PS-LTE (Public Safety Long Term Evolution)**
- Frequency Bands Allocation: 718~728 MHz, 773~783 MHz
- Total Cost: approximately 1.1 B US$





Cases in other economies (PS-LTE)

FIRSTNET
Built with AT&T

ESN
Emergency
Services Network

Category	Disaster Safety Network (Korea)	FirstNet (USA)	ESN (UK)
Implementing Organization	Government (Ministry of Interior and Safety)	Public Agency (Department of Commerce)	Government (Home Office)
Operations Management	Government (Ministry of Interior and Safety)	Private Entity (Contracted: AT&T)	Private Entity (Contracted: EE/BT)
Network Ownership	Government	Private	Private
Construction Completion Date	March 2021	Under construction/operation	Under construction (Scheduled for 2024)
Coverage	Economy-wide	4.41 million km² (76.2% of U.S. territory)	-
Frequency Securing	Dedicated Frequency	Dedicated Frequency	Shared with Commercial Frequencies

Korea Safe-net

ALL 4 One
Nationwide coverage**,** One seamless integrated service

•High-performance base stations
•Mobile base stations (vehicle-mounted)
•Railroad and aviation communication (LTE-M/R)
•Satellite communication

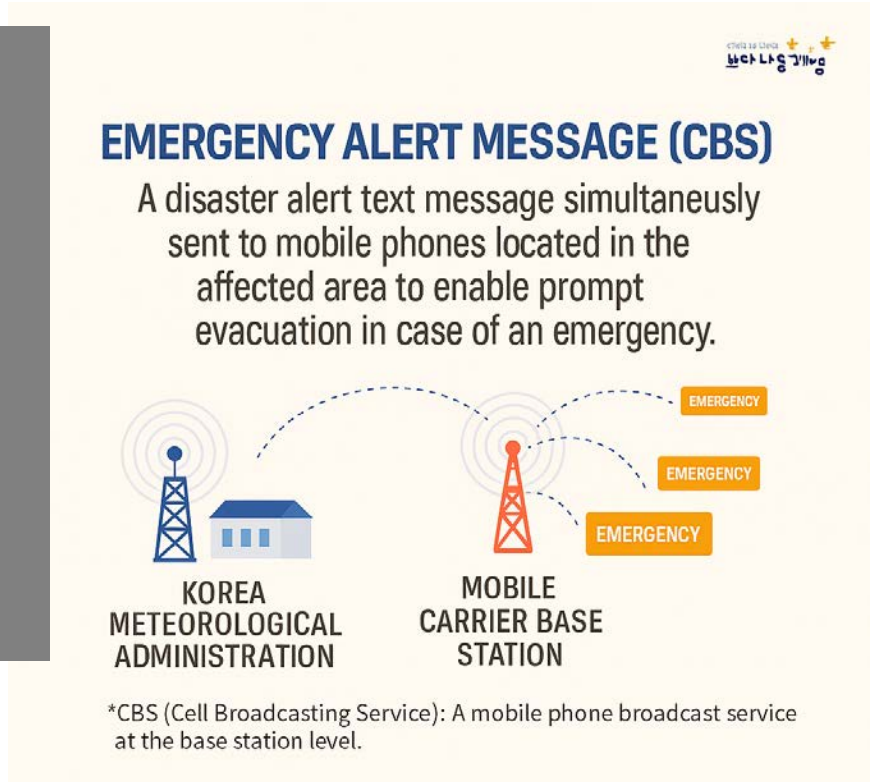
3 Operation centers
Seoul, Daegu, and Jeju

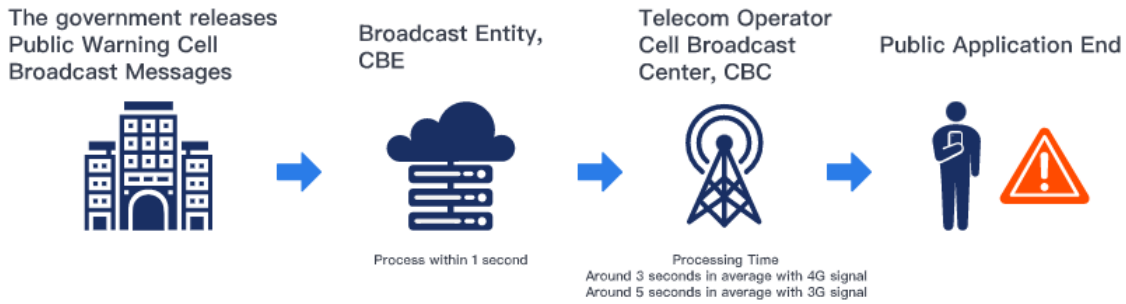
Independently operation,
But interconnected each other to backup each station.

Terminals and Dedicated Devices

- Smartphone terminals
- Wireless radio terminals
- Rugged tablets
- Dedicated Device
- Terminal Control System

Wireless Emergency Alert





- Using data collected from KMA (earthquake, Typhoon, etc.)
- KMA and other government agencies send Emergency alerts through their integrated notification system.
- The emergency alert information is simultaneously sent to MOIS, broadcasting companies, and mobile communication companies.
- This allows broadcasting companies to issue emergency warnings through TV and radio,
- while each communication company sends WEA (Wireless Emergency Alerts) to the individuals' mobile phones.

Wireless Emergency Alert

- Capability of disaster detection and alert has continuously been upgraded since Gyeongju Earthquake (2016)

	Gyeongju Earthquake (2016)	Pohang Earthquake (2017)
Earthquake Occurrence	September 12, 2016 8:32:54 PM	November 15, 2017 2:29:31 PM
Initial detection	8:32:57 PM	2:29:34 PM
Emergency Alert	8:33:23 PM	2:29:53 PM
Emergency Alert Message Transmission	8:41:06 PM	2:29:57 PM
Time from Initial Observation to Emergency Alert	26 seconds	19 seconds
Time from Initial Observation to Alert Transmission	8 minutes 9 seconds	23 seconds

Thank you!

Ji-Bum Chung (learning@unist.ac.kr)