

Disaster Decision Support System

The Disaster Decision Support System is a technology that provides predictive simulation data based on 3D spatial information to assist in decision-making for disaster response within urban areas.

During a disaster, the system supports policy decision-makers by offering real-time simulation results, road maps, evacuation guides, and other essential information required for effective response. It aims to facilitate swift and informed actions against natural disasters occurring in urban environments.



▲ A local government official is analyzing areas at risk of flooding due to river overflow and simulating evacuation routes.

Issues to Tackle

- ☑ Requires prior identification of areas affected by disasters such as floods and earthquakes, along with preliminary damage reports.
- ☑ Need for step-by-step response manuals that include collaboration guidelines with related organizations during disasters.
- ☑ Real-time updates on disaster situations and secure guidance on evacuation routes to safe locations.

Expected Benefits ☒

- ☑ Provides concrete data for decision-making by simulating disaster scales and regional damage based on spatial information in urban areas.
- ☑ Enables swift communication and action with related organizations during disasters through real-time situation updates.
- ☑ Minimizes citizen casualties and economic loss by ensuring safety during disasters.

💡 Key Services

- Provides disaster response decision-makers with scenario-based simulations and analysis results.
- Predicts disaster types, locations, and statuses using numerical models and AI, enabling effective response.
- Offers a mobile application that reports disaster situations and guides users to evacuation locations.
- Provides evacuation route services for safe movement from disaster-prone areas to designated shelters.

⚙️ Use Cases

- In Busan, the system was deployed in July 2023 to enhance flood response capabilities, offering online access to flood predictions, rainfall data, CCTV footage, and evacuation route information.
- In Daejeon, during the August 2024 festival season, the system was used to manage potential disasters by providing services such as automatic CPR stations, safe shelters for evacuees (citizens, migrants, and tourists), and designated rest areas.
- In Ulsan's Eonyang District, the system has been in use since 2021, simulating natural disasters like typhoons and floods, setting disaster triggers, and building an information-sharing network for swift responses.

Key Components

Configuration

Disaster Decision Support System

1.3D Disaster Visualization



GIS Management



Scenario Management



Building Damage Assessment



Earthquake Movements

2.Simulation



Flood Models



Earthquake Models



Air Pollution Models



AI Learning

3.Situation Reporting App



Organization Management



Real-Time Chat



Event Management



Location Management

4.Citizen Safety Evacuation Routes



Evacuation Centers



Evacuation Routes



Real-Time Optimal Routes



Additional Information Guides

Key Technologies

1. 3D GIS Urban Disaster Visualization System for Policy Development and Management

- Provides solutions for flood response, simulation-based policies, and urban disaster management.

2. Disaster Simulation Modules

- Processes real-time data such as DEM, watershed data, soil infiltration, and flood predictions to simulate and assess flood extent, volume, and flow patterns.

3. Real-Time Communication and Reporting Application

- Sends real-time photos/videos and location-based situation reports from onsite personnel while offering map search and data management functions.

4. Citizen Safety Evacuation Route Solutions

- Offers optimal evacuation routes and nearby shelter information based on GPS, including capacity, contacts, and integrated road data.



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