Disaster Situation Control in the Republic of Korea
- The Operations and Systems -

2013. 5.
CONTENTS

✓ Operation of the Situation Control Center

✓ One-Step Ahead Response Systems using IT
  - The Nine Systems -

✓ Conclusions
1. Operation of the Situation Control Center

Types of Disasters

- **Natural Disaster**
  - typhoon, flood, downpour, strong wind, wind and waves, tidal waves, snowstorm, thunder, drought, earthquake, yellow dust, etc.

- **Man-Made Disaster**
  - fire, collapse, explosion, traffic accident, chemical accident, and environmental pollution accident

- **Social Disaster**
  - spread of diseases and the paralysis of national infrastructure such as energy, telecommunications, traffic, finances, etc.

Reference: Article 3 of Disaster and Safety Management Basic Law
1. Operation of the Situation Control Center (cont’d)

19 Acts with the “Disaster & Safety Management Basic Act”

- Natural Disaster Countermeasures Act
- Disaster Relief Act
- Small River Improvement Act
- Disaster-prone Area Improvement Project and Relocation Special Act
- Voluntary Disaster Mitigation Activities Support Act for Businesses
- Earthquake Disaster Countermeasures Act
- Wind and Flood Insurance Act
- Steep-Slope Disaster Prevention Act
- Reservoir and Dam Safety and Disaster Prevention Act
- Hazardous Materials Safety Management Act
- Fire Fighting Acts and Others ...
1. Operation of the Situation Control Center (cont’d)

**Normal Time**
- 550 NEMA staffs take responsibilities on
  - Legislation, Regulations, Training, Standards, System Development, etc.

**During Emergency**
- NEMA acts as the Control Tower with 38 Central Ministries & Agencies,
  230 Local Governments, and 202 Fire Stations

**Advantage**
- Low cost and highly efficient system
- Localization during Normal Time vs. Centralization during Emergency
2. One-step Ahead **Response Systems using IT**

A. **Early Warning using Disaster Analysis and Decision-making System for Risk Prediction**

**Using**
- Digital Elevation (3-D) and Other Thematic Maps
- Real-time Rainfall Data by Time and Location
- Short-term Rainfall Prediction Data
- Drainage System Information

**Can Do**
- **Prediction** of River Water Volume Increase with Time
- **Scan** Incoming Data, Analyze the Output, and Judgment
- **Forecast** Location and Severity of Possible Flood & Inundation
- Effective and Scientific **Early Warning and Evacuation**
2. One-step Ahead Response Systems using IT (cont’d)

B. NDMS: National Disaster Management System

- Comprehensive disaster information system for disaster prevention, preparedness, response, and recovery

- Reducing time for damage data compilation and recovery budget dissemination after disasters
2. One-step Ahead Response Systems using IT (cont’d)

C. CBS: Cell Broadcast Service for Disaster Information
   - Sending disaster information to cell phone users in disaster area

D. DMB: Digital Multimedia Broadcasting
   - Development of receiving and process technology for disaster warning to each personal device

CBS and DMB have advantages on
   - Raising Public Awareness
   - Sending Practical Information such as “What-to-Do Manual”
   - CBS is not a Mass Media. It Selects Specific Users
E. Unmanned Rainfall Warning System

- Measurement in upstream for the warning in downstream
- 1,708 Sites in 227 local governments

The location of the system is higher than that of AWS and the gap of measurement is not small.
2. One-step Ahead Response Systems using IT (cont’d)

F. Earthquake Response System
- Resource mobilization system based on damage prediction
- Strengthened emergency support functions for rescue and relief
- Rapid recovery and support

G. Nationwide Network of CCTV
- Connecting existing 3,971 CCTV for Disaster Monitoring
  1,770 from local governments
  2,201 from 13 public agencies such as the Police Agency

H. Remote Sensing System for Damage Survey
2. One-step Ahead Response Systems using IT (cont’d)

I. Disaster Premonitory Information Management System

a. What is Premonitory Information?

Sampoong Dept. Store, June 29, 1995
- Changed Building Design
- New Air-conditioning System at Roof
- Severe Vibration
- Cracks inside
- Heaved Floor

Sungsoo Grand Bridge, Oct. 21, 1994
- Bad Welding
- Bumped Road
- Twisted Guardrail
I. Disaster Premonitory Information Management System

b. How does it work?
I. Disaster Premonitory Information Management System

c. Example of “Sorae” Steel Bridge

- Estimated as Class C (Caution) with 63.7 Points based on Database Comparison (Similarity with collapsed Jeongrim Bridge)
- Determined as Class B (Alert) due to the large number of tourists

Automatic Text Mining

- Damaged Pier, Dong-A Daily, Dec. 17, 2009
- Cracks found, Chosun Daily, Dec. 18, 2009

Ranking

The system ranked the information as Rank # 1 to be reviewed

Risk Analysis

- Closing the Bridge
- Detailed Safety Survey for Maintenance Plan

Board Review

Safety Measures

- Add as a Case in Main Database System
- Feedback as Reference

Legend:
- On-line Process
- Off-line Process

- Near Famous Harbor
- 27,000 Tourists per Day
3. Conclusions

**Strengthening DRR Capacity**

**Strengthening Proactive & Preemptive Response**

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Reduced Death Toll
Thank You!

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