

Development of the real time monitoring system for the national disaster information system in Korea

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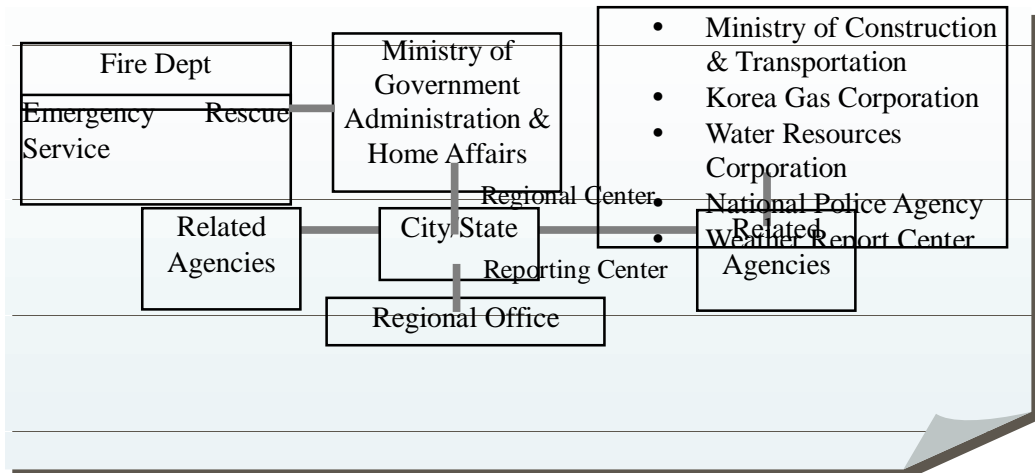
Abstract

The objective of this research is to develop a model for national disaster information system in Korea. The national disaster information system can manage to link federal level and local level for providing a procedures and guideline for the disaster response. The national level incidents and accidents can be resulted in loss of life, casualties and severe environmental impacts. The research question is how to develop effective information system for the risk of unusual events. The national level risk management is the process of determining whether an identified risk is involved more than two local district area what action is to be taken to control a risk that have been identified. The regulations and policies for the response are not well prepared and defined for the level of national level risk management. The national disaster information system model in this research is to develop the system of real-time monitoring system for national level management in Korea. The real-time monitoring system would be driven based on the local area risk assessment and response procedure. The dynamic disaster response model combines the fire response system simulation tools are defined as natural disasters, technological disaster and foreign disasters. The databases are collected to response the type of disasters and to interlink to report facilities information.

1. Introduction

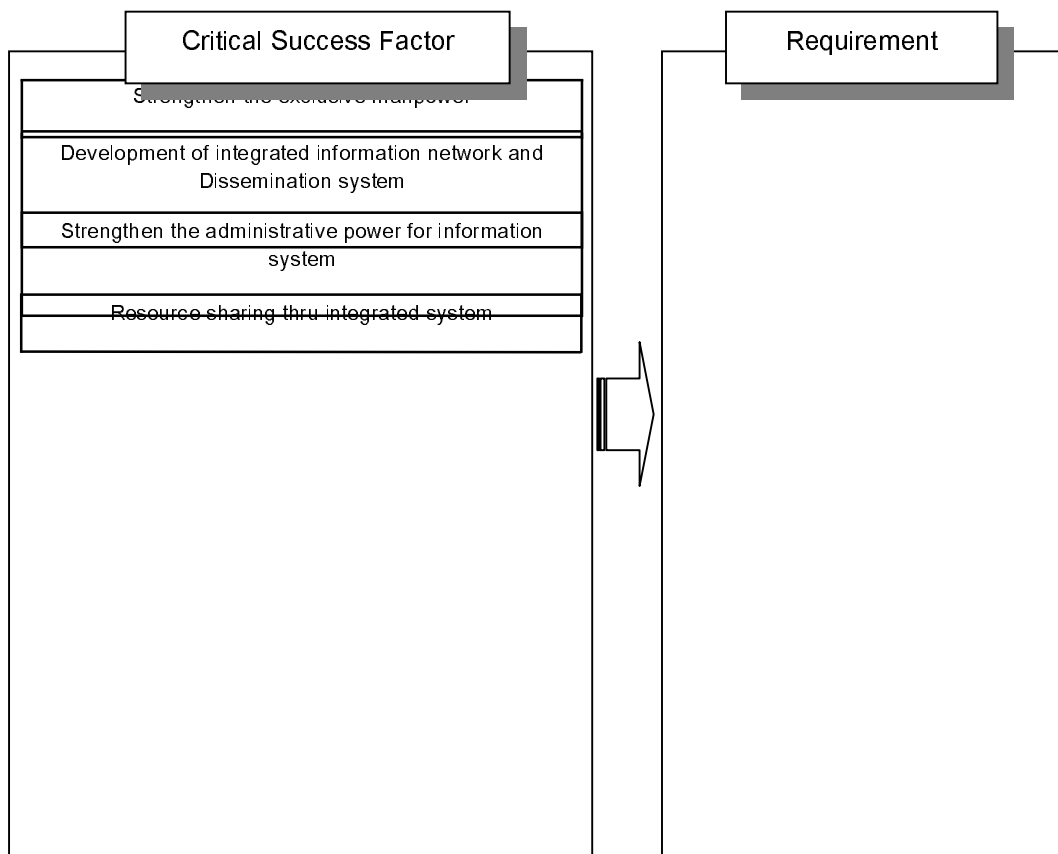
Every year Korea is hit by numerous disasters, both large and small scales. The national level of disaster response system is needed to be a well-organized, effective disaster management system. The national disaster response model is developed to coordinate wide range of organizations and activities, public and private. The disaster response system is also minimize the human and financial loss as sets the contingency plan involving correspondence of organization, recovery strategy for the various risk that could damage the nation. The national disaster response system has been developed to integrate the local governments

and related agencies by the Ministry of Interior since 1996. However, the emergency service that is operated by the fire department has not been included. The initial response system is designed to integrate emergency service and resource allocation. The emergency service has been developed and stabilized since early 1990's. The integrated disaster response model is as follows :



2. Research Background and Purpose

The national disaster response system is to develop the total mechanisms and structures by which the national government will mobilize resources and response activities to response efforts. The possibility of incident lead to accident are identified and used to develop response model with related agencies. The following table listed Critical Success Factors and requirements are considered as contributing risk factors to the situations. (Table 1)



Establish information link	Weather data
Adoption Model from advanced nation	Ranfall information
Develop Information support system	Recycling of system
Recycling of current system	Inhabitants information

Table 1. Critical Success Factors and Requirements

The integrated response model is divided into detailed purpose of risk management system base on the information related to the different aspect of management

National level disaster response management side -

1. Reorganize the national disaster response concepts and operation and strengthen the utility of the security management system with related agencies
2. Providing the updated information technologies in liaison with the related agencies
3. Creating the effectiveness of information management for the response (Data Collection and dissemination system)
4. Linking information system with emergency service system on the fire fighting dept

Emergency Rescue Service by fire fighting dept side –

1. Quick emergency response system to minimize the damage
2. Develop standard procedure for initial response on 911 service
3. Each cities and districts are directed by the format of the Emergency Service on Fire Dept

Common Part with two sides –

1. Reform new information model to retest emergency rescue service allied with two different operations
2. Develop performance evaluation plan
3. Use advanced foreign prevention plan for system comparative analysis

As the implementation of disaster response monitoring system that manage the risk through factor analysis related to the type of disaster, and the monitoring system prevent from major disaster and response from national level disaster.

3. Disaster Information System Development Tasks and Execution Plans

The tasks and execution plans are developed to interlink two parts of information systems, national level and emergency rescue service. The following tasks and Execution plans are developed.

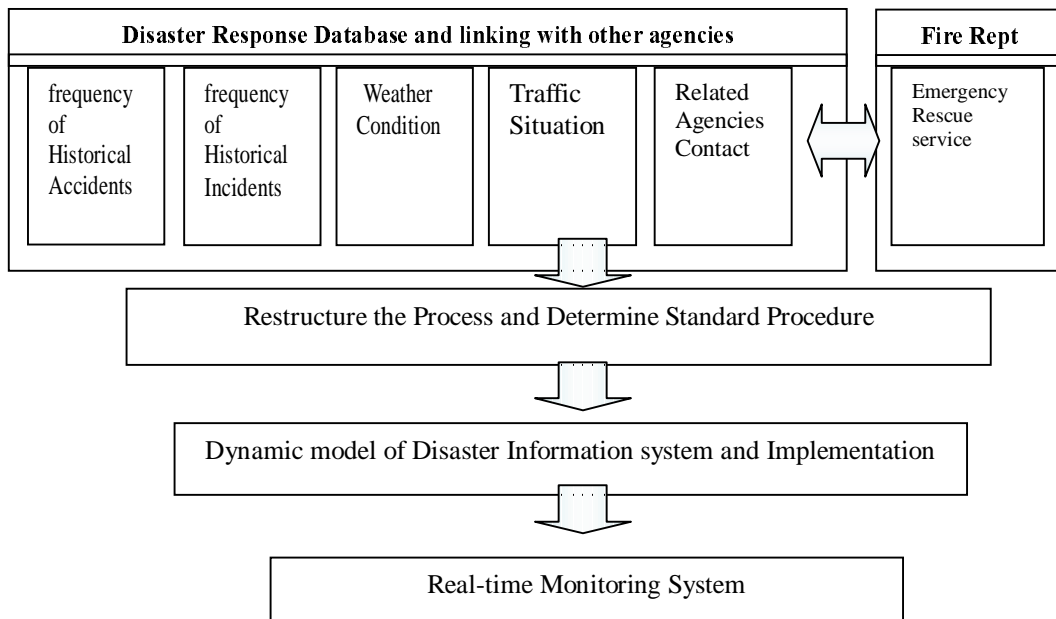
Tasks	Execution Plans
National safety and emergency rescue process linking process	-Remodeling the process by the BPR -Emergency Rescue service defined -Adoption plan from advanced foreign disaster response system thru comparative analysis
Information system infrastructure development	-Analysis of current local government roles and system -Design standardize emergency rescue systems -Standardize code and common DB repletion plan -Linking design of development system and interface design -ANI,ALI information & Link practical system design with information system -Dual telecommunication design VHF/UHF,TRS -Design Group/individuation task operation -Design of wire and wireless communication network -Traffic Concentration processing way of voice and data communication -Sender chasing system of wire/wireless communication -Identifying current facilities, data integrity, capacities -Information infra construction & integration equipment -Information plan and steps for integration
Restructuring the Organization	-Redesign for unified and information administration formation process of emergency rescue service of fire fighting system/operation plan

Table 2. Tasks and Execution Plans

4. Information Modeling Steps

The following steps are the development of pilot system for disaster response model

- **Step 1 : Identifying Current Disaster Response System Process for National Level** : Analysis of Risk assessment, response and recovery based on scenario as the current disaster response plan
- **Step 2 : Restructuring the Disaster Response Plan Based on the scenario allied with Emergency Rescue Service** : Reorganize the risk management plan based on the scenario on working with Emergency Rescue Service
- **Step 3 : Response System Management Using Real-time Monitoring System** : Real-Time Response Monitoring System for the national level using the dynamic models



5. Disaster types and inter-link with other related agencies

The national disaster information system is defined the type of disaster as follows

A. Natural disaster

- Typhoon, Flood, Heavy Rain, Storm, Heavy Snowfall, Drought, Earthquake

B. Technological disaster

- Fire, Collapse, Explosion, Traffic Accident, Environmental Pollution,
CBR (Chemical, Biological, Radiological, Unclear)

C. Foreign disaster

- Aircraft, Vessel

6. Conclusions

Building a national disaster system, with its special demands for high performance and high reliability of organizational elements, is difficult in any system of government. It is also an interesting and challenging case for researchers concerned with the social and economic aspects of response and recovery. The issues in this paper presents processes of development only a few of the areas that need integration of emergency service and national level response system. During the system development, few questions and conflicts are projected. Those were the most difficult kind of management issues. The national government must provide leadership through structured incentives but shared governance also requires cooperation and negotiation to achieve jointly established strategic objectives. The national real-time monitoring service is important to prevent and quick response from the major impacted damaged area as possible. The purpose of real-time monitoring system minimize the damaged area and implement the efficient and cooperative accommodation system. The national disaster response system is also to provide the operational condition of response condition change accompany with the valid national security since the nation's trust of risk and security management is advertised what main strategy of the national government. However, the national level development must deal with the myriad of organization involved. And the roles and functions should be defined clearly before system development.

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