

Study on scenario deduction of major emergency

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Abstract

Major emergencies are complex and uncertain, which bring great technical challenges to emergency preparation process, seriously affected the efficiency and quality of emergency management process, "scenario - response" is a new mode to deal with non regular emergencies effectively. Through analyzing the decomposition of the situation in the space and time, to determine the possible relationship between scenarios. Collected and decomposed the information of the scene, cluster and assimilate the data, established the logical structure of all kinds of events, integrated and complemented the event scenarios. Using scenario analysis method for data processing and disaster rapid assessment of the scene to construct the major emergencies situation deduction strategy based on the "scenario - response", tested the scenario deduction process with emergency platform simulation training software system, which verified repeatedly and improvement continuous to complete the scenario deduction of major emergencies.

Keywords

major emergencies, evolutionary process, situation deduction strategy, scenario deduction.

1. Research status

Major emergency scenario deduction theory and method is the forefront research direction of public safety [1-2], which is given attention by academic circles to research in this direction in domestic and foreign, is not entirely the important theoretical value, more important is that major emergency scene of deducing is an indispensable support and guidance on emergency preparedness planning, emergency management, emergency training and drills and other series of emergency management practice[3]. Through the "scenarios" to lead and integrate, so that the emergency management programming, planning and exercise the three main body of the work can be consistent in the target and direction.

Study on the evolution of the event is mainly through reasoning based on the case [4], established the model to study influencing factors of events [5-7] and taken the Bayesian networks to construct evolution analysis model of non regular emergencies [8-9] in order to achieve the evolutionary probability of all major states in disaster evolution path. Inference rule is somewhat involved in the field of emergency, but it is not the formal representation on scene, which lack of historical scenarios, real-time situational relevance analysis and the precision[10-12].

2. Research significance

Major emergencies with the characteristics of discrete random small probability make forms of every event very complex, with a high degree of uncertainty and the different failure strength, spread to the scope and catastrophic behavior, which brought great challenges to emergency preparedness planning, emergency management, emergency response training and emergency drills organized, serious impact the efficiency and quality of the emergency management process from prevention and preparedness to respond and recover. In the increasingly serious public security threats, through scenario deduction can develop the unified, flexible, efficient ability, to deal with the various major emergencies for effective prevention, preparation, response and recovery with the strength of

countries or districts, which is contribute to prepared to deal with emergencies of extremely small probability or "almost never", thereby improve the ability of processing the complex, cross major emergencies.



Figure 1. Emergencies

3. Research content

Scenarios from the original state in accordance with the incident, the natural law of development and human interference through the outside world, through different state points and produce a new situation known as the evolution of the scene. In fact, scenario is almost in change at any time, but in emergency decision process, decision makers to focus on is facing the key decision points in the scene. Therefore, in the context of evolution process, a new scene is defined as the decision-making body in the new key decision points in the face of the situation.

Emergency decision makers face an uncertain environment, especially the harm is serious and the catastrophic events that difficult to predict, obvious characteristics of complex and changeable, the emergency need situation analysis and dynamic response for event scenarios. Therefore, the analysis and response to the emergency incident need to rely on the incident scene, and the emergency management also needs to be changed from the traditional "forecast - response" to "situation - response" model.

The emergency classification, which mainly emphasizes the intensity of the event itself and the difficulty degree to response, and is especially concerned with the ability of emergency preparedness and emergency response. Therefore, the task designing of emergency preparedness and emergency response capability requirements become the main body of the emergency scenario, which can be called the classification of event intensity and ability. This classification method of emergency scene planning is beneficial to the management of all kinds of events.

(1) On the basis of analyzing the characteristics and present situation of the emergency management of major emergencies, to research the construction and the method system of the major emergencies. Including the key factors and extraction and representation of the mechanism, emergency situation chain construction under multi-source information fusion, the emergency scenario deduction and deduction results evaluation and coping effectiveness evaluation of "situation - response".

(2) On the basis of the summary and analysis of the characteristics of major emergency scenario deduction, forming the major emergency scenario evolution process, which is a comprehensive consideration of disaster own evolution process and the external effect of mutual relations. To establish the logical structure of the various events, the main risks and threats of that may be encountered in the future to do cluster analysis and evaluation, establish the major emergencies deduction strategy based on "situation - response".

The technical route of the study is as follows:

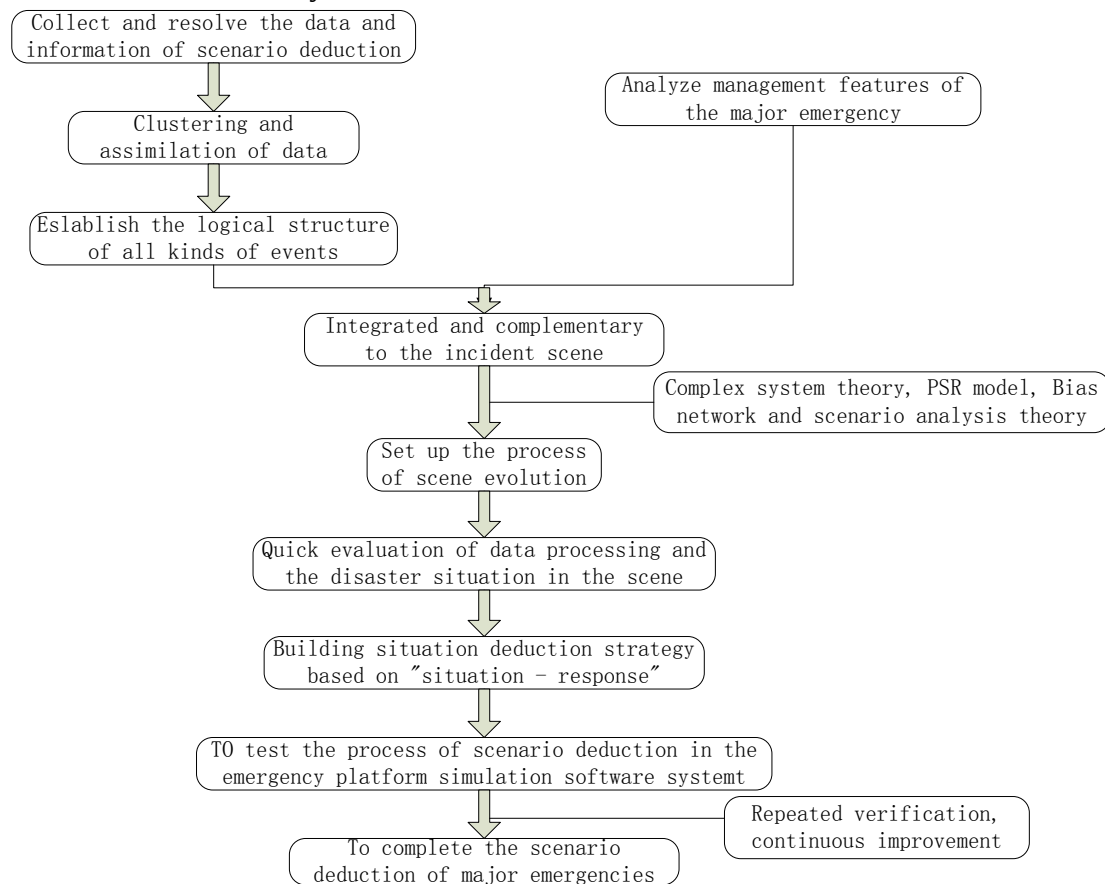


Figure 2. technical roadmap

4. Conclusion

The scene of the emergency is almost in change at any time, those key decision points in the scene is focus by the decision-making body in emergency decision. Therefore, in the scenario evolution process, a new definition of the scene as the decision-making body in the new key decision points in the face of the situation. It can be unified, flexible and efficient to deal with the main risk through the scenario deduction, improve the ability of the country and the local processing complex, cross major emergencies. If you follow the "checklist" your paper will conform to the requirements of the publisher and facilitate a problem-free publication process.

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