

## ANALYSIS AND DESIGN OF DECISION SUPPORT SYSTEM OF DISRUPTION MANAGEMENT IN LOGISTICS SCHEDULING

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Received February 2008; revised August 2008

**ABSTRACT.** *In the logistics and distribution process, disruption happen frequently. Based on the disruption management, to deal with the disruption in the logistics system, disruption events in logistics scheduling are classified by the effect factors: route disruption events, vehicle disruption events, goods disruption events, and mixed disruption events. The whole processes of disruption events treatment need three steps, which is capturing, identifying and resolving. A vehicle monitoring and dispatching system is proposed to monitor and schedule the vehicles in logistics, and a decision support system to manage the disruption events. After analyzing the system function to handle the disruption, the frame of decision support system for disruption management in logistics is designed. Especially, the disruption event processing models are described in detail.*

**Keywords:** Logistics scheduling, Disruption management, Decision support system

**1. Introduction.** Sorts of disruptions usually occur in logistics scheduling, e.g., road interruptions under stress of weather, disabled vehicles and spilled goods caused by traffic accidents. Not only original distribution plans are broken down, but also a great economic loss and social impact are inevitable. Therefore, it is a meaningful and valuable study of disruption management in logistics scheduling.

At present, vehicle monitoring system is widely used in the logistics and distribution system to get the real-time information of vehicles or goods and make logistics scheme, which makes the whole process of logistics scheduling could be seen easily. But in current research, these systems only conclude the functions as follows [1-3]: vehicle locating, the communications between monitoring centre and vehicle terminals, vehicle control etc. They all cannot deal with the disruptions. To deal with disruption events is still not considered.

For the disruption results in logistic need to be covered and the current system can't meet the demand, a new decision support system for disruption management in logistics scheduling is proposed. On the basis of vehicle monitoring and dispatching system, the decision support system were build in the thought of disruption management, in order to deal with the disruption events by classifying, model and propose solution schemes. The system integrates vehicle monitoring, dispatching system and decision support system. When disruption events occur, the system can give a solution scheme quickly, which provides a useful approach for disruption management problems.

Related literatures of this paper include disruption management and disruption management decision support system. Disruption Management proposed by Clausen [4] is a well developed application of operational research. Disruption Management has formed a