Intelligent Incident Response Units Dispatching
Using GIS and Traffic Simulation Engine

Bo Huang[*]

Associate Professor of GIS
Department of Geomatics Engineering
University of Calgary
Calgary, AB, T2N 1N4
Canada
Tel: 403-220-7377 Fax: 403-284-1980
E-mail: huang@geomatics.ucalgary.ca

Xiaohong Pan

MEng of Transportation
Department of Civil Engineering
National University of Singapore
Singapore 119260
Tel: (65)-6874-2153 Fax: +65-6779-1635
E-mail: engp2370@nus.edu.sg

Abstract

Incident response measures are continuously being developed to deal with each incident in an effective and timely manner. One component in incident response actions is to deploy appropriate response units to the incident scene and clear the incident as quickly as possible. This paper presents a novel approach to response units dispatching in real time, with an aim to minimize total response travel time of all the response units within available resources. The TransCAD geographic information system (GIS) was applied to incorporate an optimization model for response units dispatching, conduct data processing, and visualize the results. To test the proposed GIS-based dispatching model, a microscopic traffic simulation tool named PARAMICS was used to simulate incidents in a network, gather link travel times at regular intervals and transmit this time dependent information to TransCAD for dispatching optimization and dynamic routing of response vehicles. The results show that a GIS furnished with real time traffic information provides a powerful platform for intelligent incident response dispatching.

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[*] Corresponding author.