Introduction to the Communication and Information Systems Technology for Emergency Management Minitrack

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The world spends annually between 16 and 23 billion US dollars in disaster assistance. In 2010 an estimated 373 natural disasters occurred, causing 296, 800 victims and affecting more than 207 million people. By 2050 the number of people living in areas especially prone to natural disasters will probably double (from 680 to 1500 million).

Communication and Information System Technology is profoundly changing the management of disasters and emergencies. Mobile devices and social media are being used by citizens in innovative ways to help them manage the consequences of disasters for themselves, families, and communities. The trend of increasing traffic flow originating from affected citizens poses many research challenges.

This minitrack, which is “new” in that it was established in Spring 2012, attracted a satisfactory number of submissions from which eight were selected to be presented at the conference. The first session of four papers deals with data collection to aid better management. The second session comprises papers about lessons learned, decision support and evacuation modeling.


“A Knowledge Base for Capturing Comprehensive Mission Experience” by Dennis Anderson targets a very important and little explored issue, owing to its intrinsic difficulty. The paper proposes a knowledge base for capturing and retaining information for first responders in crises to support sharing of mission experience.


“Improving the Crisis to Crisis Learning Process” by Eliot Rich, Jose M. Sarriegi, Jose J. Gonzalez, Ana Lange, and Josune Hernantes argues that post-mortem accounts of crises often identify factors that accumulate over time and increase the likelihood of failure. A study done using a systems-based model of crisis management illuminates the role of knowledge sharing and its relation to the development of trust among organizations.

“Decision Modeling for Assignments of Collaborative Rescue Units During Emergency Response” by Felix Wex, Guido Schryen, and Dirk Neumann proposes a non-linear optimization model and suggests a Monte Carlo-based heuristic solution procedure for decision support systems.

“Robust Emergency Management Strategies: Providing Support for Sequential Decisions” by Tina Comes develops approaches for better considering the interdependencies between decisions in emergencies and addresses the problem of available time by decision makers.

“Crowd Models for Emergency Evacuation: A Review Targeting Human-Centered Sensing” by Jaziar Radianti, Ole-Christoffer Granmo, Noureddine Bouhmala, Parvaneh Sarshar, Anis Yazidi, and Jose J. Gonzalez reviews widely used crowd models for emergency evacuation and discusses their advantages and shortages from the angle of human-centered sensing.

These papers represent significant progress in a number of research areas that can improve future management information systems.