

Chapter 1

Toward the Improvement of Emergency Response Utilizing a Multi-Tiered Systems Integration Approach: A Research Framework

Michael A. Erskine

Middle Tennessee State University, USA

Will Pepper

Better Than Free LLC, USA

ABSTRACT

This chapter presents an extension of the Emergency Description Information Technology (EDIT) project to facilitate the effective collection and communication of information during an emergency. New academic findings and industry technologies inform a modified research framework. The research framework contains four primary research areas that are described in detail. Extending the design-science approach used for the EDIT project could improve emergency communications during large-scale international gatherings, as well as for community emergency response.

DOI: 10.4018/978-1-5225-6204-7.ch001

INTRODUCTION

According to the National Emergency Number Association (NENA), there are over 6,000 public-safety answering points (PSAPs) in the United States alone (NENA, 2014). Yet, public safety representatives suggest that a large number of emergency calls cannot be completed, as the current generation of wireless communication technology cannot adequately determine the position of a caller (Fung, 2014a). Additionally, of one thousand PSAPs, only 187 report a ‘great deal’ of confidence when receiving data from wireless carriers (Fung 2014a). Furthermore, it has been stated that only a fraction of all PSAPs can receive and interpret short messaging service (SMS) data. Yet, over 70 percent of the 400 thousand individuals in the United States that call PSAPs each day connect via mobile devices. Most of these mobile devices likely had the capability to transmit SMS data. While the United States Federal Communications Commission (FCC) recently voted to mandate that all cellular service providers must support the capability of mobile devices to connect to PSAPs using SMS, it is still unclear how incident location information will be provided to dispatchers (Fung 2014b).

While there are initiatives to support the transmission of emergency information using short message service (SMS) communications, organizations such as the FCC, CTIA and NENA continue to emphasize the importance of voice communication in emergencies unless there are significant reasons that prohibit someone from doing so (CTIA, 2014; FCC, 2014; NENA, 2014). Thus, it will be essential for such a system to demonstrate viability and positive improvements before gaining acceptance and endorsements from organizations that represent emergency response services. While there have been advances in the development of improved PSAP technology, it has been slow to be implemented. For example, many PSAPs do not yet have the capability to respond to SMS, a technology that has existed for over 25 years and is already experiencing declines as it is replaced with instant messaging services. For instance, recent data suggests that 22% of U.S. adults use the WhatsApp messenger service (Pew, 2018).

While PSAPs are challenged by technical constraints, they must also deal with human communication barriers, including excess background noise, language barriers, caller hysteria, or the inability to precisely describe the incident location. As these challenges exist during normal PSAP operation (Osher, 2013), large-scale public events further highlight the need for an improved process and technology. For instance, public events, such as the Olympics, the Munich Oktoberfest and the Vienna Donauinselfest attract 680 thousand international visitors, 6.4 million total visitors and over 1 million international visits, respectively (Office for National Statistics, 2012; Oktoberfest, 2013; Die Presse, 2014). Perhaps, of a greater concern are the large pilgrimages, such as those including the 120 million pilgrims

23 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/chapter/toward-the-improvement-of-emergency-response-utilizing-a-multi-tiered-systems-integration-approach/208724

Related Content

Organizational Readiness Assessment for Knowledge Management

Kaveh Mohammadi, Amir Khanlariand Babak Sohrabi (2010). *Strategic Information Systems: Concepts, Methodologies, Tools, and Applications* (pp. 1712-1728). www.irma-international.org/chapter/organizational-readiness-assessment-knowledge-management/36785

Representation Type Preferences in Operational Business Process Redesign: A Quasi-Experimental Field Investigation

Ned Kock (2011). *International Journal of Strategic Information Technology and Applications* (pp. 44-66). www.irma-international.org/article/representation-type-preferences-operational-business/54709

ICT Strategy4Development: Public-Private Partnerships—The Case of Egypt

Nagla Rizkand Sherif Kamel (2012). *International Journal of Strategic Information Technology and Applications* (pp. 72-90). www.irma-international.org/article/ict-strategy4development-public-private-partnerships/67351

The Duality of Information Technology Roles: A Case Study

M. Gordon Hunter (2011). *International Journal of Strategic Information Technology and Applications* (pp. 37-47). www.irma-international.org/article/duality-information-technology-roles/52070

The Power of Unstructured Data: A Study of the Impact of Tacit Knowledge on Business Performance

Armando E. Paladino, Kathleen M. Hargissand Caroline Howard (2016). *International Journal of Strategic Information Technology and Applications* (pp. 64-93). www.irma-international.org/article/the-power-of-unstructured-data/186763