Chapter 5
Information Technology and Emergency Management

INTRODUCTION

This chapter examines the impact of information technology (IT) on emergency management. E-emergency management is the use of the digital means as a way of performing professional disaster-related work (Green, 2001). Some of the components of e-emergency management that are being used according to Green (2001, p 79) are:

- Use of emergency management software to communicate internally and externally and to manage data;
- Remote access to emergency operations center databases and communications;
- Access to internet sites to gather information;
- Dissemination of information on the internet both to official response organizations and for public access; and
- Linking dispersed individuals to perform emergency operations center functions remotely

Section 214 of the E-Government Act of 2002 called on the Office of Management and Budget (OMB) in consultation with the Federal Emergency Management Agency (FEMA) to ensure that IT is studied to enhance crisis preparedness and response as a consequence of natural and manmade disasters (Rao, Eisenberg, and Schmitt, 2007). This important e-government legislation demonstrates the vital role of IT in emergency management. E-emergency management is especially critical to understand given the important role that the different levels of government play in disasters.

This chapter will show that there is a need to be comprehensive in IT and emergency management. For effective emergency planning there is a need to use IT to leverage planning efforts. Federalism mat-

ters when doing emergency planning and should be taken into account in these efforts. Citizens play a critical role in emergency management. Information that is timely, and of high quality, is essential for emergency management. The digital divide matters in planning for emergency management and there is an importance of public libraries in the event of a disaster to serve those populations impacted from the disaster.

This chapter first examines the four functions of emergency management to determine how these functions relate to IT. Emergency planning and its application to IT adoption is discussed in this chapter. The intergovernmental aspects of emergency management are discussed to set the context of the environment that emergency responders work under. The role that citizens play in emergency management is discussed to determine the important influence they have over the process. The chapter also examines the impact of management information systems on emergency management. This chapter examines the important organizational, societal, and technology issues of IT and emergency management. There are results from a survey of state government directors of emergency management to determine what impact that IT has had on their departments. Finally, a conclusion summarizes the important findings of this study.

FUNCTIONS EMERGENCY MANAGEMENT

The emergency management activities of the different levels of government are based on an emergency management model (Waugh, 1994). This four phase model was a product of a National Governors Association study of state emergency management in the late 1970s (McLoughlin, 1985). This model divides emergency management into four phases, which are:

1. **Mitigation:** Activities undertaken in the long term, before disaster strikes, that are designed to prevent emergencies and reduce the damage that results from those that occur, including modifying the causes of hazards, reducing vulnerability to risk, and diffusing potential losses;
2. **Preparedness:** Activities undertaken in the shorter term, before disaster strikes, that enhance the readiness or organizations and communities to respond to disasters effectively;
3. **Response:** Activities undertaken immediately following a disaster to provide emergency assistance to victims and remove further threats; and
4. **Recovery:** Short term and long term activities undertaken after a disaster that are designed to return the people and property in an affected community to at least their pre-disaster condition of well being (Donahue and Joyce, 2001, p. 730).

This model is generally accepted by emergency managers and researchers as appropriate for the policy implementation process. These four phases are all of the necessary components of emergency management. However, in practice they are not always linear or clearly delineated (Col, 2007). Towards the end of this chapter, there is survey evidence presented on the extent to which IT has influenced the four phases of emergency management.

A strategic management approach is necessary to establish effective emergency management actions and plans to prepare for disasters (Choi, 2008). The strategic management perspective is characterized by long-term process for developing a continual commitment to the vision of the organization. A comprehensive strategic management approach is a potential tool that emergency managers should be able

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