

# 1

## THE NEED FOR TECHNOLOGY IN EMERGENCY MANAGEMENT

### ***Starting Point***

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Go to [www.wiley.com/go/pine/tech&emerggmt\\_2e](http://www.wiley.com/go/pine/tech&emerggmt_2e) to assess your knowledge of using technology.

Assess your knowledge of emergency management and technology. (Determine where you need to concentrate your effort.)

### ***What You'll Learn in This Chapter***

- ▲ The definitions of focusing events and windows of opportunity
- ▲ The types of technology as applied to the emergency management process
- ▲ How technology can assist in emergency preparedness, mitigation, response, and recovery

### ***After Studying This Chapter, You'll Be Able To***

- ▲ Examine what technology is used in emergency management.
- ▲ Examine what technology tools have been applied during disasters.
- ▲ How focusing events can be used to gain community support for greater emergency management resources.

### ***Goals and Outcomes***

- ▲ To be able to select technology that improves disaster preparedness, response, mitigation, and recovery
- ▲ To perform a comprehensive technology needs assessment for emergency management
- ▲ To understand the value of encouraging a community to commit greater resources toward emergency management by using focusing events and the needs assessment

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## INTRODUCTION

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We live in a highly connected global community where we have the potential to observe the nature and extent of disasters firsthand. We can receive and transmit information within seconds and can communicate from anywhere, at any time, and anyplace. **Technology** allows those engaged in emergency management to utilize resources from local, regional, and national organizations reflecting public, private, and nonprofit entities (Hodgkinson and Stewart, 1991). Technology may be used by those involved in emergency management in decision making, communication, hazard situational awareness, operational functioning, and public safety. Technologies have been developing at a fast pace and have had a dramatic impact on emergency management in communities, at regional and national levels.

We can only imagine the new ways that technology will evolve and be used in the future. Technology has allowed us to use a broader range of information resources and enhance resource acquisition and allocation. We, thus, have been able to make use of new tools and technologies and become more efficient and allow the public, public safety, and healthcare personnel to anticipate and meet community needs in disasters (Cutter et al., 2015). Technology has enabled us to better analyze complex issues, enhance our decision making, and communicate in times of crisis. The key is to recognize that technology is critical in all stages of disaster management and supporting rapid scientific assessment of usable knowledge to decision makers (Alcántara-Ayala et al., 2015).

### **1.1 Technology and Disaster Management**

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Emergencies and disasters are extreme events that cause significant disruption. Effective response efforts in a disaster require timely information and deliberate decision making. Effective action requires coordinated application of resources, facilities, and efforts beyond those regularly available to handle routine problems. Disasters arise from both natural and human-caused events. Fortunately, we now have more technology tools and systems available for our use than ever before so that communities, organizations, and individuals manage effectively in a disaster. Technology provides a means of applying scientific concepts, methods, and principles to achieve desired outcomes (NRENnaissance Committee, 1994). Technology supports the emergency management process including the following:

- ▲ Organizational and personal communication;
- ▲ Timely observations of the nature and extent of events;
- ▲ Enhancement in capabilities to estimate and model potential outcomes of disaster events;
- ▲ Recording the changing nature of response and recovery events;

- ▲ Communicating with multiple organizations and individuals simultaneously;
- ▲ Analyzing events to understand how disasters evolve and change over time;
- ▲ Connecting individuals and organizations so as to enhance communication;
- ▲ Extending how public and private organizations may access information as disaster evolve;
- ▲ Using mapping and geo-positioning systems (GPSs) to support situational awareness; and
- ▲ Taking advantage of hazard modeling technology to enhance our understanding of both the threats associated with hazards and their potential impacts.

Technology enables individuals and organizations to contribute to the emergency management process in new ways and with productive impacts (Kara-Zaitri, 1996). For example, we can identify the location of those in need for timely and effective emergency response. We can communicate simultaneously with multiple partners to enhance our capacity to cope with evolving complex situations. We have the tools not only to communicate with an unlimited audience but also to engage this audience in community and organizational decision making. Technologies allow both individuals and organizations to communicate and share information and make informed decisions as a disaster unfolds (Fischer, 1998). We can incorporate new information with existing data and visualize our analysis results in different and useful forms (Steering Committee, 1996). Technologies thus allow us to expand our individual and organizational capacities to more effectively prepare, mitigate, respond, and recover from disasters. Science-driven applications of technology allow disaster risk management to help communities become more resilient and reduce the human and economic impacts of disasters (Alcántara-Ayala et al., 2015).

### **1.1.1 Focus on Current and Emerging Technology**

Alcántara-Ayala et al. (2015) suggest that there is a lack of a comprehensive assessment of disasters limiting our understanding of disaster risk research, practice, and experience. This text is intended to examine the current state of technology and emergency management and clarify how technology may be used to support those engaged in all phases of disaster management.

Technologies are being used in innovative ways and are impacting our capacity to manage effectively in times of crisis (Cutter et al., 2015; Hodgkinson and Stewart, 1991). Becoming more aware of the application of technology in emergency management allows individual citizens and organizations to cope in times of crisis and minimize or avoid the adverse effects of disasters.

Research on the weather–climate nexus has also advanced our understanding of the global oceanic forcing of drought and flood conditions across continents. Public health surveillance systems and disease outbreak detection have been enhanced with the use of the Internet and social media such as Twitter, providing real or near-real time health surveillance (Brownstein et al., 2009; Chunara et al., 2013).

Despite our great success in understanding of the dynamics and processes behind hazards, there are still many challenges related to hazards science. Specifically, we need to reduce uncertainties in forecasting of hazard events, local resolution of models, and prediction of lead time, among others (Alcántara-Ayala et al., 2015). Technology provides us with many tools and resources to allow us to reduce uncertainties.

In this chapter, we will gain insights on how technology contributes to the emergency management process and how to prioritize what technology tools are needed, and understand what resources are required for the effective use of technology.

## 1.2 Technology as a Management Tool

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We use technology to manage our personal time and our organization. We also use technology to manage disasters and hazards. **Hazards** are events or conditions that have the potential to create loss. Technology can be used to prepare for, respond to, recover from, and mitigate future disasters. We prepare for disasters before they happen, often without definite knowledge that they will happen. We respond to disasters when they happen and recover from disasters after they happen. During and after recovery and preparation, we try to mitigate disasters. To **mitigate** a disaster means that we try to lessen the effects of the disaster. For example, to mitigate a levee collapse, the Army Corps of Engineers would try to strengthen it with sandbags or use barges to prevent the water from flooding an area. To mitigate the effects of a hurricane, many home and business owners board up their property to prevent damage. Throughout the entire emergency management cycle, technology is a key contributor to building resilient communities. Technology helps us in many ways. We can be better prepared by recording weather data in remote locations. We can do this by using satellites. We can also process information in new ways. We can directly observe disaster events. In an emergency response, computer applications allow us to access detailed information, such as data about hazardous chemicals, in more assessable ways (Pine, 2014). In mitigation and recovery, we use technology to model disasters and devise an emergency response plan. Technology is especially important in conducting mitigation activities. Mitigation activities include boarding up homes before a hurricane, evacuating an area, and other actions that reduce losses.

Alcántara-Ayala et al. (2015) stress that scientific assessments of disaster risks can contribute to our enhancement of knowledge on risk at scales ranging from local to global. Bessis et al. (2011) stress that during an emergency response information management becomes crucial.

Technology gives us the ability to receive and send information quickly. Information is critical for all involved in the emergency management process. Weather, chemical, security, and transportation information are just a few types of essential data. Quick access to information is important not only to emergency managers, but also to citizens. The quicker emergency managers can give orders to evacuate or to shelter in-place, the more lives are saved. Technology ranges from individual sensors that record information to internal and external organization

networks, including the Internet, to the Emergency Broadcast System. Communication devices are ever-changing, from vehicle-mounted applications to remote satellite systems and real-time video teleconferencing. The frequency of natural disasters has steadily increased from 405 per year in 1980 to 650 in the 1990s, 780 in 2000–2009, and 800 events in 2010s (Wirtz et al., 2014).

### 1.2.1 Response to Complex Disaster Events

Kapucu and Garayev (2013) note that the complex nature and great impacts of disasters proves to be a major factor for a single organization to tackle on their own and reveals the need for a collaborative approach to management. Organizations find themselves involved in a networked governance that involves shared goals and responsibilities as well as the need for a coordinated and unified action to produce desired community results. Networked governance is a combination of inter-organizational interactions spread across a timeline and greatly influenced by the structure of the network, the organizational relationships, and contextual factors (Birkland, 1997; NII 2000 Steering Committee, 1996).

Networks are dynamic structures comprising multiple organizations often located in geographically different sites. A **network** is a set of two or more devices, typically called **nodes**, which are connected in some way to allow communication between them (see Chapter 2). They are multisite groups of organizations with different informal preferences, norms, and values or mandated by legal or regulatory arrangements coming together for a common goal and relying mainly on common interfaces and communication (Isett et al., 2011). Networks are generally characterized by a flexible administrative structure but impacted by issues pertaining to leadership, trust, accountability, and performance measurement (Ward and Wamsley, 2007).

Kapucu and Garayev (2013) found that information communication technology, network relationships, and network complexity all contribute to the overall effectiveness of collaborative networks and impact the sustainability of the network. They note that “emergency management networks are effective to the extent that agency relationships are enhanced for more sustainable relationships” (p. 325).

Further, the exposure of people, assets, and infrastructure in hazard-prone areas affects vulnerability (UNISDR, 2013). Changing population patterns and human-induced environmental changes increase the adverse impacts of disasters (Pelling and Blackburn, 2013) so as to create the frequency of billion dollar events.

### 1.2.2 Ease of Use of Technology

Technology needs to be easy to use for anyone in the emergency management process. It should not be viewed as an “expert system” only available to a select few. Ongoing training for officials will be critical in the effective use of technology in crisis situations.

Singh et al. (2009) stress the importance of information sharing in response to catastrophic events. Given the interdependence of organizations in disaster response,

organizations can benefit from sharing information quickly in a secure environment. They stress the need for information quality including timeliness, security, accessibility, completeness, accuracy, coherence, relevance, validity, and format.

We have seen improvements in hazard modeling and geo-referenced tools and spatial information (Birkland, 2014; Emrich and Cutter, 2011). We thus have great tools for evidence-based hazards analysis to base our emergency preparedness programs. Disaster risk data associated with vulnerability and exposure are a key research and policy issue. Data reflecting our assets and human capital is not widely available and must be developed beyond baseline effort to allow officials to make sound decisions (Gall et al., 2009; Kron et al., 2012; Wirtz et al., 2014).

Information technology is widely used extensively and effectively throughout the United States as explained by Reddick (2011). This national study of emergency managers identified a wide range of technologies used in emergency preparedness and response. All the technologies were viewed as very helpful but the lack of financial resources and support from public officials was a significantly limiting factor on state and local capabilities. Organizational performance was enhanced where public agencies utilized e-government technology and had robust information networks and capable support staff.

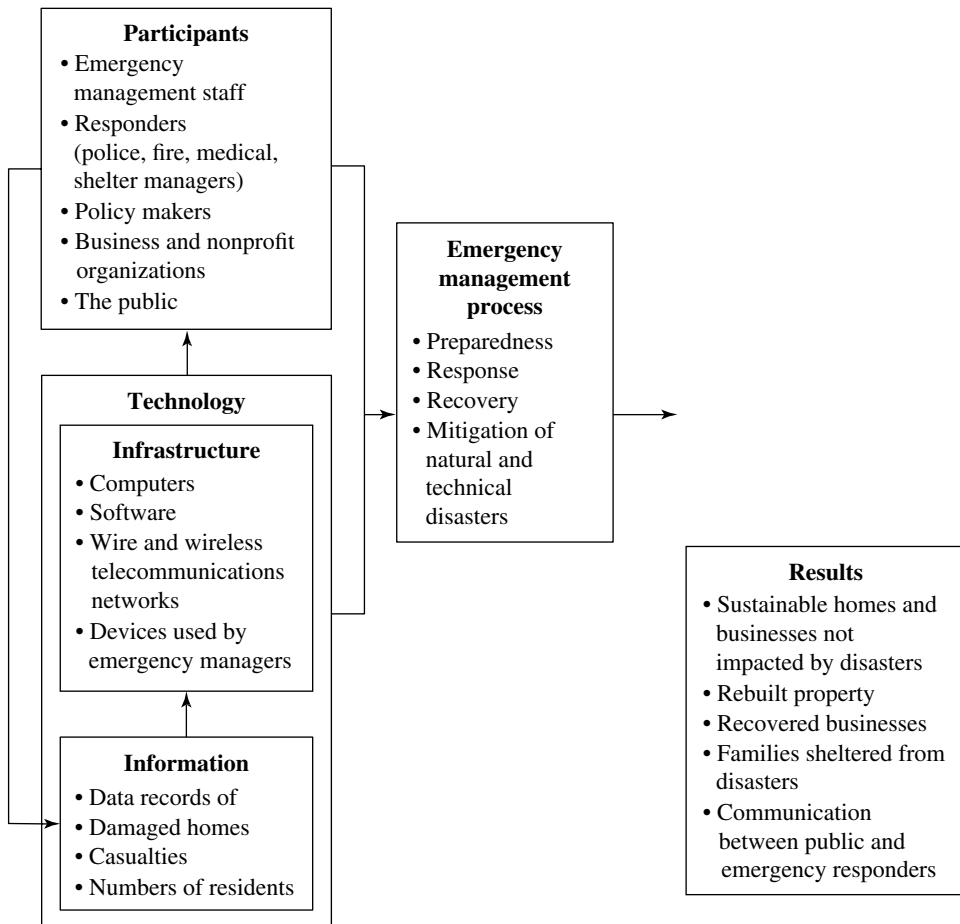
### **1.3 Using Technologies**

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Also, not every new technology will be applicable for every hazard nor will every new technology be applicable to every emergency management organization. For example, you may live in California and appreciate earthquake risks and be concerned about preparing for earthquakes. Another emergency manager may live in Texas and be concerned about the next hurricane. You may wish to understand how to utilize hazard modeling and remote sensing technologies that clarify possible hazards and provide current information for an emergency response. We thus need to use technology effectively within our own region to support emergency management activities. In a survey of state emergency management agencies, information technology was viewed as very helpful and effective in the emergency planning and response phases (Reddick, 2011). Communication technologies, database resources, mapping sciences, and hazard modeling were seen as very helpful in times of disaster. Figure 1-1 diagrams the role of technology in the emergency management process.

Information technologies have been widely adopted not only in networks and communication devices but also in interconnected objects that provide information from environmental sensing associated with buildings, transportation networks, community utilities, business transactions, and the analysis of information to provide information for situational awareness. The range and extensiveness of things that are now connected allows for the manipulation and control of our systems so that if there is a system failure, immediate action may be possible for immediate action (Gubbi et al., 2013). The Internet of things allows the technology to make critical infrastructure elements and services including administration, education, healthcare, public safety, real estate, transportation, and utilities more aware, interactive and efficient (Belissent, 2010). One ends up with a smart home or office environment, smart business transactions, an array of smart city utility services, smart agriculture, and

Figure 1-1



The role of technology in the emergency management process.

transportation. Information and communication technology reflecting business, information, and social processes and able to interact with the environment to exchange data and take action without direct human intervention. The system may be user-centric but also has the capacity to operate within a large network so as to store and analyze information on an ongoing basis (Zanella et al., 2014).

### FOR EXAMPLE

#### When Technology Fails

In May 2006, a strong earthquake with a magnitude of 6.0 hit near Tonga, a group of 170 islands. The Pacific Tsunami Warning Center in Hawaii issued a tsunami alert. Tonga, however, failed to receive the warning due to power outages. Although a tsunami did not occur there, the inability to receive the warning was troubling and is forcing the Pacific Tsunami Warning Center to create additional methods for sending warnings.

### **1.3.1 Technology in a Changing Environment**

Emergency management is an ever-changing process and is not static. We respond to emergencies in an effort to reduce losses which are defined as loss of property and loss of life. As we saw with Hurricane Katrina (2005) and later for Hurricane Sandy (2012), natural hazards can create great losses. As we saw with the terrorist attacks of 9/11, human-caused hazards can cause substantial direct and indirect losses as well. Emergency managers try to reduce any and all potential losses. To do this, we have to prepare for disasters, have a good response plan when there is a disaster, and reduce our vulnerability to hazards. Emergency management is based on a systems approach, which means that each organization has a unique role in reducing losses and contributing to an effective local response. In addition, public agencies at all levels have to all work together to successfully prepare for and respond to hazards.

To reduce losses, emergency managers and agencies have to achieve a high degree of performance. Any misstep could cost lives. Technology not only enhances emergency response capabilities in times of crisis, but also helps in a wide range of preparedness activities. Technology has also had major effects on all organizations, allowing emergency managers to clarify the nature and extent of a potential hazard. In addition, technology can help us understand risks from hazards locally, regionally, and nationally. Further, technology such as remote sensing can be used to clarify the nature of a hazard over time.

### **1.3.2 Examples of Technology**

Chemical sensors help us detect harmful chemicals. After the devastating tsunami of 2005, the Pacific Rim countries have installed a tsunami warning system for a timely emergency response. There are several software programs that help model what would happen if an area were hit by a disaster. For example, before Hurricane Katrina, emergency managers simulated what a Category 5 storm would do to New Orleans. The software modeling program showed public officials that the city of New Orleans would flood. These modeling programs help responders know what the outcome of different hazards could be, and therefore know what planning should address. GPS software can help in effective response effort and track supplies, getting the supplies to their target destination very quickly. They can pinpoint where to direct emergency personnel for rescue operations or postdisaster cleanup of chemical containers, boats, or building debris.

### **1.3.3 Communicate Quickly**

With cell phones, the Internet, e-mail, and satellite phones, we can now communicate in any type of disaster, regardless of the damage to the area's infrastructure. We can also quickly send large amounts of information instantaneously through e-mail. Plus, we can quickly warn people to evacuate through the use of



information on Web sites and e-mails in addition to the traditional media of television, radio, and newsprint.

#### **1.3.4 Develop a Better Understanding of Hazards**

With our advanced equipment, we can better understand how hazards occur. For example, with the tsunami sensor system in place in the Pacific Rim, we can gain a better understanding of tsunamis and increase our ability to predict and warn residents of a tsunami.

#### **1.3.5 Improve Response**

With the enhanced ability to communicate quickly, we also know when response activities are not going well. For example, during Hurricane Katrina we all saw that there were problems getting supplies to New Orleans. Based on that information, public and nonprofit agencies were able to adapt their efforts to get supplies to the hurricane victims.

#### **1.3.6 Increase Coordination**

With increased communication and an increased ability to predict hazards, it is easier for emergency managers to work with first responders in their own community. It is also easier for emergency managers to work with state emergency management agencies and the Federal Emergency Management Agency.

#### **1.3.7 Improve Efficiency**

Computers and other forms of technology have made all organizations more efficient, which has led to a reduction in the number of people needed in each organization.

#### **1.3.8 Training**

Improve training and risk communication programs. With software programs, it is very easy to scan the results of surveys on training and risk communication programs and evaluate the results. This evaluation process leads to improvements in the programs.

The National Research Council noted in 2005 that many technology issues are human in nature and not just issues associated with the technology resources used by public agencies. They note that “better human organization, willingness to cooperate and a willingness of government at higher levels to listen to those at local levels are critical factors in making better use of information technology for disaster management” (p. 2).

## 1.4 Completing a Needs Assessment

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### FOR EXAMPLE

#### Training

For the use of technology to be effective, staff members must be trained. Research has indicated that many tools that are available to emergency managers and staff, such as software modeling programs, are not used because the staff is not properly trained on how to use it. FEMA and state emergency management agencies offer different types of training. Not only should staff members be trained initially on the technology, but refresher courses should also be held periodically.

### 1.4.1 Nature of a Needs Assessment

Participants in the emergency management system from public agencies, nonprofit and profit business organizations, and the general public all make use of technology. Each agency has its own perspective, role, needs, and capabilities, which enables the emergency management system to function. Understanding the players in the system is critical to effective use of technology. Not every emergency management organization has a budget for all the software and computers that they would like to have. Nonetheless, there are certain items that every organization should have:

- ▲ Satellite phones. During Hurricane Katrina, the New Orleans infrastructure was badly damaged. Mayor Ray Nagin was cut off from all communications and could not contact anyone at the state and federal level to update them on the situation. Mayor Nagin's staff ended up breaking into an office supply store and taking satellite phones so they could communicate their needs. This is just one example of why every emergency manager needs satellite phones.
- ▲ Web sites. Web sites are a great way to warn people of hazards, provide information on hazards, and outline mitigation strategies. For large jurisdictions, you can give specific neighborhood information. For example, some neighborhoods may be in the hazard's direct path and will be more affected than those neighborhoods outside the hazard's path. Web-based resources are being used today by public agencies, citizens, businesses, and nonprofit agencies in gathering information about disasters. The National Hurricane Center provides ongoing information about hurricanes for state and local emergency management agencies, businesses, and the general public to support decision making. The number of people who rely on Web sites for information is growing every day. At the very least, many people will use the Web as one of their sources for information.
- ▲ Digital cameras. You may need to take photos of hazard damage and transmit them quickly over the Internet to state or federal authorities. Digital cameras

were an essential resource in documenting property damage following Hurricanes Katrina and Rita.

- ▲ Access to HAZUS-MH. HAZUS-MH stands for the software program Hazards US-Multi Hazard. You can use this program to estimate losses from earthquakes, floods, and hurricane winds. The program analyzes the impact of a disaster. The program also displays estimates of damages and losses. You can request this program through the FEMA Web site ([www.fema.gov](http://www.fema.gov)).

You may be the emergency manager of a small community. If so, you may need only the basic equipment. Or you may be the emergency manager of a large jurisdiction and need every advantage new technology offers. Before you can submit a budget request for new technology, you must determine what you truly need.

### **1.4.2 Steps to Complete a Needs Assessment**

- Step 1: Inventory your use of technology today. How are you using technology and contributing to the emergency management system? What do you need to know to identify other means of utilizing technology?
- Step 2: Determine your community's vulnerability. For example, if you have several industrial facilities that work with hazmat, then you may need chemical sensors installed. If you live in a community that is on the transportation route for dangerous nuclear waste, you may need cameras installed along the route within your community in an effort to prevent a terrorist hijacking. If you have completed a Hazard Vulnerability Assessment (HVA), this will go a long way in determining what type of technology you need.
- Step 3: Determine how to educate the community on mitigation strategies. For example, you may determine that one way to educate the public is to provide a comprehensive Web site. You may decide that you need to send e-mail messages to residents. Or you could decide to hold several news conferences. Your strategy will most likely consist of reaching people through several different media.
- Step 4: Determine how the emergency management community can better coordinate efforts between agencies (including first responders). For example, you may need satellite phones, GPS devices, or a Web portal to streamline communication and provide assistance more efficiently.
- Step 5: Determine how you could be more effective in predicting hazards. For example, you may need modeling software to determine what parts of the jurisdiction would be affected by a hurricane.
- Step 6: Determine how you could be more effective in responding to hazards. For example, if all traditional lines of communication are knocked out, you may need satellite phones or some other means of communication.
- Step 7: Assess the threat and your needs. What is the most likely threat? What hazard would cause the most damage? What equipment and software would help you the most?

### 1.4.3 Implementing the Needs Assessment

Once you determine your needs, you need to prioritize them based on the greatest need. You will want to submit budget requests for new equipment and software that can be useful for all hazards. You will also want to submit budget requests for equipment that will have a direct impact should you get hit with the hazard that your community is most vulnerable to. Public organizations have been facing critical financial limitation. Expenditures for technology must be viewed as cost-effective, especially in serving the community in nonemergency operations.

Outside the normal budget cycle, a good time to submit a request for new equipment is when there is a **focusing event**. A focusing event is a national disaster resulting in large losses that receives extensive media coverage. Hurricane Katrina is a focusing event. The tsunami in the Pacific Rim is a focusing event. These events give you a **window of opportunity** to advocate for better and newer equipment. A window of opportunity is the chance to argue that a focusing event could occur locally if certain precautions are not taken. During this window of opportunity, you will need to make the argument that such a disaster “could happen here.” Because this window of opportunity will not be open for long, you must take advantage of it as soon as you can. Once decision makers are over the shock of the magnitude of the disaster, they will turn their attention to the annual necessities for the community. For example, decision makers know they have to fund the school bus system, as this is a definite need. Your job is to convince decision makers to prepare for a disaster that may or may not happen.

### 1.4.4 Impacts of Implementing Innovation

Technology innovations have resulted in more than just new devices; they have also resulted in changes in human interactions. The changes, especially those in communications, provide more information for decision making and provide key linkages between response agencies, the public, and local enterprises. This would be a positive impact if it were not for the possibility of inaccurate, incomplete, or misdirected information. So often our developments in technology suggest that there is a quick fix for whatever our problems are (Quarantelli, 1997). A focus on gadgetry leads us in the wrong direction; we need to view technology as simply a tool with strengths and limitations. Technology brings us unprecedented amounts of information that can clarify problems or confuse us. For example, a geographic information system on a personal computer can provide us with extensive information about a jurisdiction; however, the emergency manager may need simple directions from one location to another as provided by many Internet sites, such as MapQuest or Google Earth. The key is to find the fit between technology and our emergency management needs.

The Internet provides a great resource to the emergency management community by allowing agencies to communicate in real time and in a manner that fosters coordinated outcomes and accurate activities. Internet-based system can link and integrate federal, state, local, and nonprofit agencies and facilitate resource allocation and task tracking. Because it is digital, it maintains a historical memory (data files) for evaluating agency response and coordination.

The photo in Figure 1-2, from New Orleans after Hurricane Katrina, illustrates several applications of technology and emergency management. First, the Red

Cross, local government damage assessment teams, and insurance adjusters linked photos of residents, businesses, and critical infrastructure to datasets documenting property damage from disasters. Second, the high watermarks on the house were used by a survey team to document high water elevations in the city; the high water levels were used by digital surveying equipment. Finally, digital images such as this photo of a home are used by the media, public officials, and many other organizations to document in printed and online documents and presentations the social, economic, and environmental impacts of disasters.

### FOR EXAMPLE

#### Focusing Event: 9/11

One of the many tragedies of 9/11 was the fact that so many firefighters had faulty communications equipment, and they did not hear the directive to vacate the World Trade Center. If they had heard these instructions, there is no doubt that more lives would have been saved. The 9/11 Commission issued their report months later and urged all municipalities to ensure their communications equipment is maintained and always works properly.

Figure 1-2



Digital images used in post Katrina needs assessment September 2005.

## SUMMARY

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In this lesson, you have defined focusing events and windows of opportunity. You have assessed different ways that technology can help you be more effective in all phases of emergency management. You have evaluated how to perform a needs assessment and how to ask your community for more resources. Technology provides tools to link local, regional, and national resources. A technology needs assessment is critical because agencies in the emergency management system have different technology needs and financial resources. Once you know your needs, you can ask for the tools that will help you mitigate and respond to hazards more effectively.

## KEY TERMS

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<b>Focusing event</b>	A disaster resulting in losses that receives extensive media coverage as well as public attention by citizens, agencies, and public and private officials.
<b>Hazard</b>	An event or physical condition that has the potential to create loss (economic, social, or environmental).
<b>Mitigate</b>	To take an action that may reduce vulnerability to a hazard.
<b>Network</b>	A set of two or more devices, typically called <b>nodes</b> , which are connected in some way to allow communication between them.
<b>Technology</b>	The application of scientific methods or objects to achieve a practical purpose.
<b>Window of opportunity</b>	A chance to compare areas that have been impacted by a disaster event with other similar areas allowing emergency managers the opportunity to explain that the “same situation could happen here” and to gain support to provide resources to enhance emergency preparedness, response, recovery, and mitigation at a local, regional, or national scale.

## ASSESS YOUR UNDERSTANDING

Go to [www.wiley.com/go/pine/tech&emergmgmt\\_2e](http://www.wiley.com/go/pine/tech&emergmgmt_2e) to evaluate your knowledge of using technology. This website contains MCQ's, self checks, review questions, applying this chapter and you try it.

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