

Sound the Alarm! Integrating Mass Notification Systems in Airports

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Over the last several years there have been many opportunities to see how average people respond to emergency situations. Whether the emergency is caused by terrorists or by nature, people need clear direction from the authorities in charge. A well designed and properly implemented emergency notification system can improve human response and potentially eliminate catastrophic losses of life in emergency situations.

While such systems can be designed to meet the needs of every type of facility, airports pose particular challenges for planning and design consultants, airport operators, and agencies including the Transportation Security Administration (TSA) and Federal Aviation Administration (FAA).

What is a Mass Notification System?

The term “mass notification system” refers to a system that manages people’s actions during and after an emergency. These systems are designed to provide information and instructions to people in a building, facility, campus or larger geographic area using intelligible voice communications, visible signaling, and textual and graphical information. Events that will utilize these systems include fire, terrorist attack, biological and hazardous chemical release, weather or other acts of nature, or any other event requiring control of the movement of a large group of people.

Mass notification systems were initially proposed by the Department of Defense as one facet of their multi-printed force protection strategy. As this focus began to change to include all

types of civilian and government facilities, life safety professionals saw the need to develop installation standards for these systems.

The first attempt at standards was undertaken by the National Fire Protection Association (NFPA) as part of revisions to NFPA 72. It is expected that this revision (NFPA 72-2007) will be voted on and published by late 2006. As proposed, Annex E of NFPA 72-2007 will contain recommended standards for Mass Notification Systems. These new standards will change the way safety, security, and building systems are integrated to save lives.

How Does This Apply to Airports?

Although all airports are configured differently, the majority of Class I/Large Hub facilities host 50,000 – 200,000 occupants on average each day. Many of these occupants are new to the facility and will have no idea what to do in response to an emergency signal. Others will have vision or hearing impairments or limited mobility. Controlling the movement of these occupants as well as all other occupants is paramount to reducing the potential for panic and catastrophe. Emergency management and notification



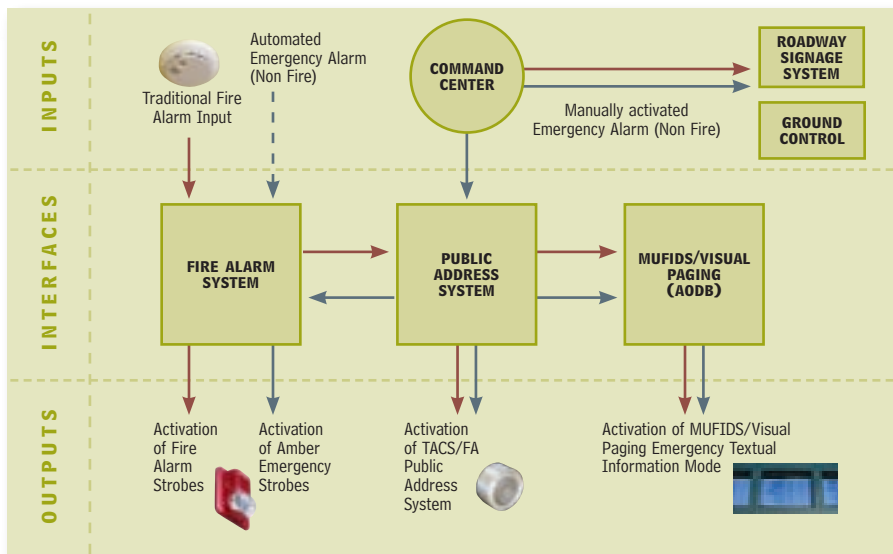


Figure 1

requires the ability to deliver clear and concise direction to all occupants. Notification and directions must reach everyone in or around the facility. To do this the message must be delivered through the use of audible, visual and textual/graphic methods.

Another important element is the activation process. Streamlined processes using one common system usually work best. The responsible parties must be able to operate and manage the system no matter what the emergency, and a system operation must support other emergency activities and not cause interference.

How Do We Get There?

Virtually all airport facilities have emergency systems in place, but do they work in an integrated fashion? Here is a typical scenario that allows for a system interface and expansion project.

Figure one represents a typical facility that has existing fire alarm, public address and Flight Information Display Systems (FIDS) in place. However, in most cases these existing components are not yet interfaced into a complete mass notification system. The theoretical concept entails building an interface between the fire alarm system and the public address system. The public address system will be used for the audio component of the mass notification system while the fire alarm system will be used as the visual signaling component. The fire system will control two groups of strobes — one group uses a clear strobe to indicate fire alarm activation; the other group uses an amber strobe to indicate all other types of emergencies. This use of two colors follows the requirements proposed in NFPA72-2007 and will likely keep the Authorities Having Jurisdiction (AHJ) comfortable with the concept of integrated systems.

An interface from the public address system will activate the FIDS and/or visual paging systems in order to broadcast synchronized audible and textual information for all emergency events in compliance with American Disability Act (ADA) requirements.

As previously stated, a well designed and implemented mass notification system will improve the human response in emergency situations and limit the potential loss of life during these events.

What Are the Challenges Involved?

Similar to all new concepts and technologies, the following must be addressed when considering how to go about establishing an effective means of mass notification:

- What systems should be integrated to form the complete mass notification system?
- Who will manage and operate the facility's mass notification system: police, fire, airport operations, others?
- How do we assign the priority levels of potential events both emergency and non-emergency?
- How do we reduce or eliminate false activations and the inconvenience caused to airport and airline operations?

- What paging capabilities will the airlines have during the different types of events?
- Are fire code variances required in order to interface the fire and other non-fire systems?

Conclusion

While implementing a mass notification system for a large airport presents challenges, they can be overcome cost-effectively through a design and implementation process that combines the existing infrastructure with the controls and interfaces necessary to create one integrated system. If lives are to be saved, it is important that airport planning and design consultants, fire and life safety specialists, the TSA, FAA, airport management, airport operators and airlines be involved in the planning, design and implementation of these systems. ✈