Leveraging WebEOC in Support of the Haitian Relief Effort: Insights and Lessons Learned

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ABSTRACT

The magnitude seven earthquake that rocked Haiti has been a devastating disaster for the small country (USGS 2010). They are not alone in this crisis, however. When the earthquake struck, thousands of US citizens responded by donating money, resources, people, and time to aid in the disaster relief. To respond to the incident and to create a secure information-sharing environment, the Florida Miami-Dade County and State Emergency Operations Centers (EOC) were activated. The main information system in use at the Miami-Dade EOC is WebEOC, a web-based crisis information management system that aids in secure coordination and collaboration among EOC staff, liaisons, and emergency managers. As a result of the earthquake response efforts using this system, we have identified seven main insights and lessons learned with respect to crisis information management software. In this paper, we discuss Miami-Dade's role in the Haitian relief efforts and how this lead to these insights and lessons learned.

Keywords

Emergency Operations Center, Emergency Management, Geographic Information Systems, WebEOC, Miami-Dade County

INTRODUCTION

An Emergency Operations Center is a secure location where emergency officials gather to prepare for, manage, and coordinate the response to an incident. In day-to-day operations, emergency management staff are involved in preparedness and mitigation strategies for future crises. However, when a disaster strikes, the staff drop their day-to-day roles and take on the role assigned to them by the Incident Commander. This role usually involves leading a section or branch of the incident command system or ICS (Johnson 2010). There are five main branches in accordance with ICS. The main divisions are the operations section, the planning section, the logistics section, and the finance/administration section. Leading the general staff and assuming responsibility for the incident is the Incident Commander. The Incident Commander also has additional support staff as well, called the command staff. The command staff includes a public safety officer, a public information officer, and a liaison officer (Irwin, 1989). See Figure 1.

HAITIAN RELIEF EFFORT: SEQUENCE OF EVENTS

On Tuesday, January 12, 2010, the Miami-Dade EOC staff were going about their daily operations - conducing meetings, taking steps for H1N1 mitigation, and preparing for the Probowl and Superbowl. Then a magnitude seven earthquake struck the small country of Haiti (USGS, 2010). Just as quickly, the Miami-Dade EOC and the state of Florida sprang into action. Both the Miami Dade EOC and the State EOC went to level 3 (a heightened state of monitoring) with the county duty officer and the state watch office monitoring the situation.

Reviewing Statement: This paper represents work in progress, an issue for discussion, a case study, best practice or other matters of interest and has been reviewed for clarity, relevance and significance.

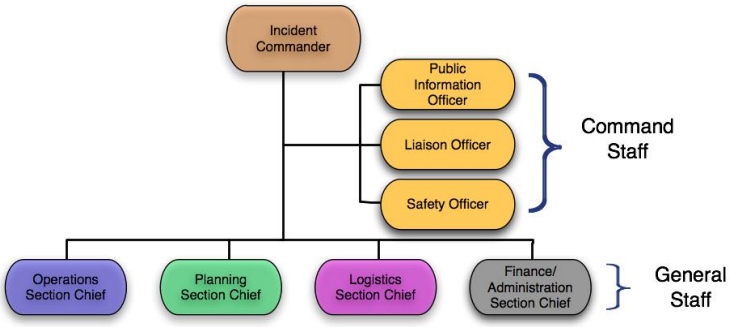

Figure 1: Incident Command System (IS-100.a 2008). The command staff, the general staff, and the agency liaisons assist the incident commander during an emergency.

Urban Search And Rescue, Florida Task Force 1, and Florida Task Force 2 were notified of the situation. Also the U.S. Department of State began response preparations, and Urban Search and Rescue teams from Virginia and California were mobilized.

The next day, as more information became available about the incident, the Miami-Dade County Mayor, Miami-Dade County Commissioner, Florida State Representatives and a Congressman of State of Florida, the Miami-Dade County Chief of Fire, Miami-Dade County Chief of Police, the director of the American Red Cross, the director of Catholic Charities and various other elected officials gathered at the EOC to discuss the impact to the local community. As a result of the meeting, the EOC activated to level 2 in order to support donation preparedness and documentation of surplus county resources to be deployed to Haiti. Level 2 is a partial activation in which only the Lead Agencies who are needed in the incident response are required to report to the EOC (Miami-Dade County Website, 2010).

As the incident unfolded on Thursday, EOC staff took on the additional mission to support the State Department to repatriate US citizens and permanent residents of the United States. It continued planning for the deployment of donations and county resources to Haiti. In addition, the EOC established and deployed a county relief effort website (Situation Report #3, 2010). Comcast and AT&T also began working with the county to facilitate a multiple-line phone bank for toll-free calls to Haiti for individuals trying to reach family members. (Situation Report #3, 2010). Miami International Airport and Homestead Air Reserve Base began receiving U.S. citizens from Haiti for repatriation.

On Friday, the EOC went to 24-hour operations as it continued cataloguing both county and non-county deployable and donated resources. It also continued working with the Department of State and the Miami-Dade Aviation Department on the repatriation plan. The EOC next began coordinating with appropriate Federal and State agencies in preparation for a potential mass migration event resulting from the earthquake. On Sunday evening, as incident stabilized, the EOC was able to resume daytime only operations with a small contingent of staff providing 24-hour support for Homestead Air Reserve Base to increase repatriation effort coordination (Situation Report #11, 2010). See Figure 2 for a timeline of these events.

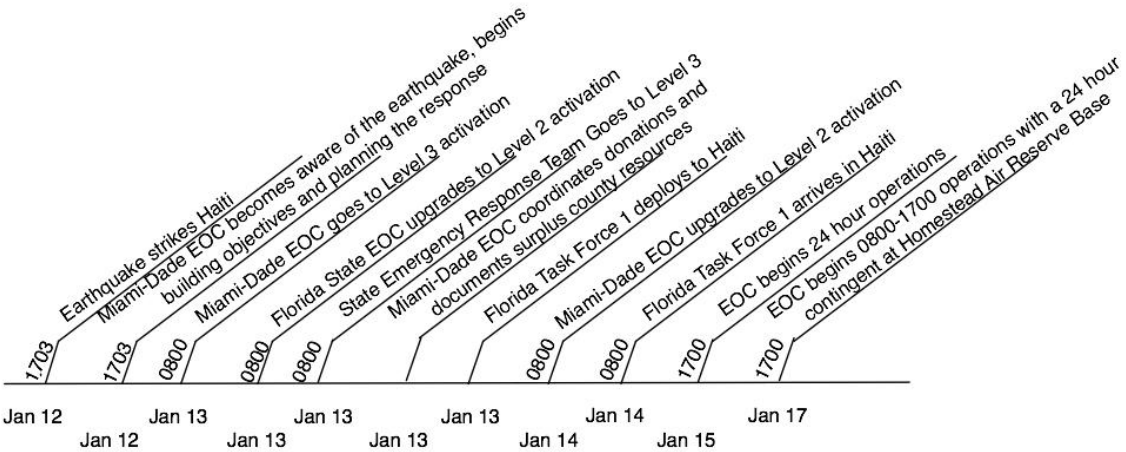

Figure 2: Haiti Relief Effort Timeline. This is the sequence of events that occurred as the EOC began the Haiti relief operations.

TRACKING RESOURCES IN THE RELIEF EFFORTS

The main crisis information management software in use at the Miami-Dade EOC is WebEOC. Miami-Dade, along with several other counties in the region, began using WebEOC earlier this year. WebEOC, a product released by ESi Acquisition Inc., is a web-based crisis information management system that enables agencies and staff within the EOC and among EOCs to share real-time information in a secure manner (DuVal 2008). One of the main features of WebEOC is that anyone with proper administrative rights can create a board, which is the main vehicle for sharing information. Boards are interfaces with various inputs and views that enable individuals with appropriate access rights to input, modify, and view data that is stored in a backend database. Each board has various levels of access rights for each registered user (ESi Acquisition, Inc. 2009).

Since the EOC acquired the software in April, 2009, it has gone through various exercises and has been tweaking its implementation (Florida Department of Emergency Management, 2009; Miami-Dade EOC, 2009). However, this was the first time the EOC used WebEOC in support of an actual incident. When the earthquake occurred, the WebEOC administrator created a unique incident space for the Haiti Relief effort. After that, staff and liaisons were able to use situational report boards, position logs, significant events, and various additional boards to help organize the common operating picture. However, in addition to the normal boards the EOC had created *a priori*, it needed an additional way to track resources. In particular, a way to track donations and repatriation efforts was necessary, especially information such when the airplanes were arriving, how many passengers each plane was carrying, at which airport the airplane was landing, how many passengers were injured, and how many were given food. Second, the EOC needed a way to track county and non-county resources that were being donated, what items were being donated, and how many of each item. Taking the basic boards, the EOC administrator modified the fields to create the two additional boards that were needed to track these efforts. Using WebEOC, the boards were complete in less than 30 minutes. See Figures 3 and 4.

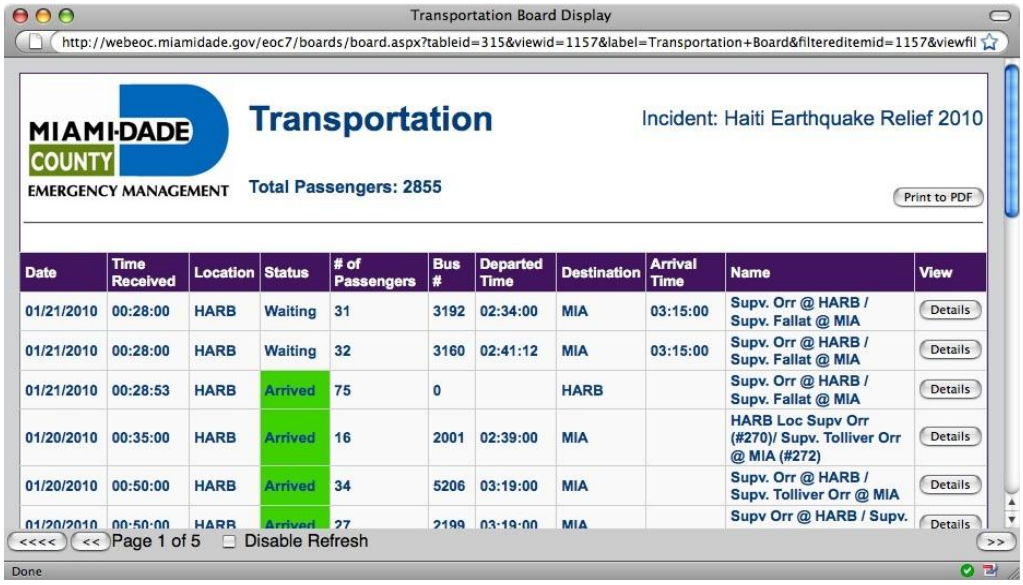

Figure 3: The Transportation Board. This board was used to track airplanes and passengers coming into Miami International Airport and Homestead Air Reserve Base. This is the list view.

In addition, the EOC had to provide logistical support as well, that is, the ability to track and deploy county resources. The two vehicles of choice were the Mission/Task board and the Resource Manager plug-in. Each one had strengths and weaknesses. The Resource Manager had the ability to allocate and deploy items. However, it had pre-defined resource typing which limited the flexibility of the plug-in (Lebsock 2010). In addition, the Resource Manager had training data in the board, which could not be deleted at the local level. Thus, ESi had to delete the data for the EOC before it could begin using the board. The Mission/Task board allowed deletion of data at the local level; however it did not have the ability to deploy and track assets. The EOC began by using Mission/Task, and then, after ESi was able to delete the current data from the Resource Manager, the EOC began using resource manager as well.

Finally, the EOC needed Geographic Information System (GIS) maps. The GIS Unit Leader already had a collection of county resources geocoded in ArcMap. Thus, when the decision was made for all police stations, fire stations, and libraries to be dropoff points for local donations for the Haiti Relief Effort, she was able to create dropoff point maps in a matter of minutes.

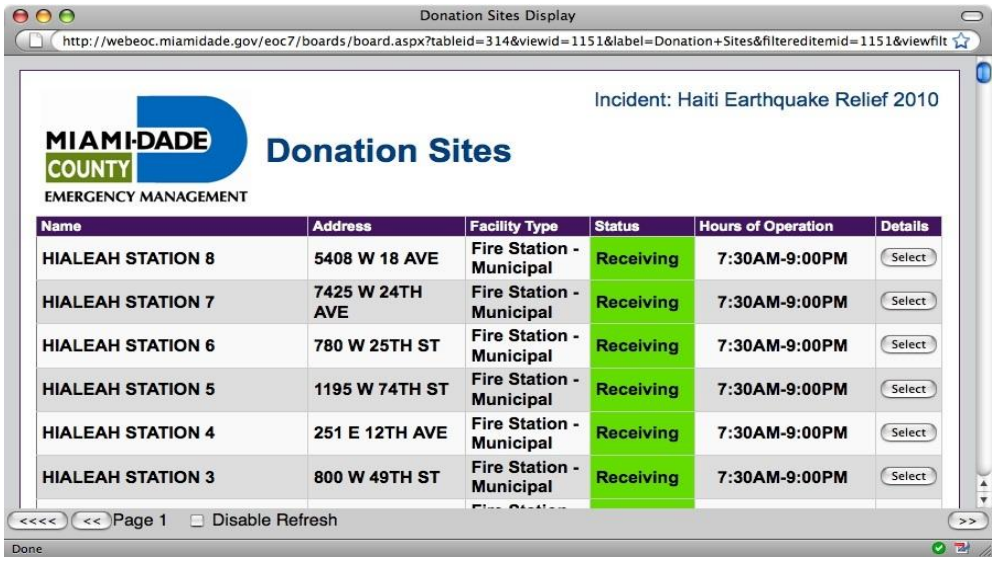

Figure 4: The Donation Board. This board was used to track non-county resources. This is the list view.

INSIGHTS AND LESSONS LEARNED FROM THE HAITI RELIEF EFFORTS

This activation highlighted the need for several insights and lessons learned with respect to crisis information management software.

1. ***The need for on-demand boards, that is, boards that can be built on-the-fly.***
   Crises, by definition, are rare events, and the best laid plans sometimes need tweaking. In its incident management preparation, the EOC did not anticipate the need for additional boards in the middle of a crisis. With WebEOC, the EOC was able to build the needed boards quickly and import data to those boards quickly as well. This greatly contributed to the success of the relief operations.

2. ***The need for web-accessible boards that can be accessed from any computer, any time, anywhere.***
   During this crisis, the EOC did not anticipate the need for additional logins for individuals who were not assigned to the EOC to access WebEOC and input data. Although it was not anticipated, the EOC was able to quickly provide individuals at Homestead Air Reserve Base and partner agencies restricted access to the system in order to coordinate the relief efforts.

3. ***The need for intuitive, easy-to-use software that can be learned in a matter of minutes, and the ability to provide different levels of access controls to various users.***
   The individuals who needed access to the transportation board were not regular liaisons at the EOC. They had never used WebEOC before and had to learn how to input and view the data they needed to share with the Miami-Dade EOC. The short learning curve of WebEOC enabled these new liaisons to accomplish this. Because the EOC allowed non-EOC personnel to use its system, it also needed to have various read-only access permissions to allow the individuals to see the same data that the staff and lead agencies were seeing. Even within the EOC, various branches needed write access while restricting others from modifying the data.

4. ***The ability to jump from day-to-day operations to an incident quickly, and the ability to separate day-to-day and emergency data quickly and easily.***
   Unlike some events, like hurricanes, the earthquake struck Haiti with little notice. The EOC needed the ability to change from day-to-day operations to the incident in a matter of minutes. It also needed the ability to separate the incident space from day-to-day data and from other incidents in the system.

RECOMMENDATIONS FOR FURTHER IMPROVEMENT

1. ***The ability to recover from failure quickly.***
   Luckily, there was not a software failure during this incident. However, the rush of the relief operations dictated that if there were a failure, the EOC would need to access its backup system within minutes of the failure. With WebEOC, it is estimated to take approximately 30 minutes to bring the

backup system online. Additionally, if the EOC were not able to recover a backup database or if the backup database was not recently synchronized with the current database, then the EOC would not be able to access the data that previously had been entered into the system. The entire common operating picture would have been lost.

2. ***The ability to integrate the crisis information management system with GIS.***
   In the case of the Haiti relief efforts, there were many data for which it was useful to geocode and map. One example was the location and operating hours of all of the public donation drop-off points in the county. Although, the WebEOC administrator was able to import this information into the board and geocode it to share with others, there was no direct link between the crisis information management system and the GIS software, and this would have been beneficial.

3. ***The ability to create various reports.***
   The transportation board had a number of fields which were being entered. However, when displaying a list of each record side-by-side, it was not practical to view all of the fields. Therefore, the EOC needed a way to create various reports quickly and easily that would print out the fields that it was interested in.

CONCLUSION

Thousands are dead and millions more have been affected by the Haitian earthquake (USGS, 2010). In this paper we have discussed the timeline of events that occurred at the Florida Miami-Dade County EOC as the situation progressed. Next we discussed how WebEOC provided an easy-to-use and easy-to-modify crisis information management system for the EOC during the incident. Finally, we concluded with seven insights and lessons learned concerning crisis information management systems in response to emergency events.

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