



Photo courtesy of SDICC-ARC

Preparing for the Worst

San Diego Red Cross disaster center helps with Hurricane Sandy operations

When disaster strikes, time is of the essence for responders. Decisions need to be made and a plan needs to be implemented right away. "We've got 500,000 people we need to evacuate. Where do you want them to go?"

That's a question Dr. Richard Hinrichs, Managing Director of Disaster Services for the American Red Cross in San Diego, has been asked more than once. It's a tough one.

"We need to move the victims to safe locations. We need to provide food, water, electricity, and volunteers. We have a tremendous amount of information to coordinate from police, fire, medical centers, the National Guard, utilities, weather services, local governments and other Red Cross chapters."

According to Hinrichs, the high-tech systems in the new San Diego Chapter Disaster Operations Center (CDOC), used recently for Hurricane Sandy relief has dramatically cut the time needed to start up a response to a major disaster. At the heart of the center is a new concept in emergency planning ,

the 'Common Operating Picture', and a sophisticated technology suite featuring Crestron solutions was developed, in part, by San Diego AV integrator Fluid Sound.

Expecting the unexpected

According to Hinrichs, "People are not good at making decisions based on tables of statistics, so we put everything into a highly visual format based on a map of the impacted area and what we know about it right now." SitCell, a new software program developed by the Red Cross and San Diego State University, creates this multi-layered picture, and a highly innovative AV system brings it to Red Cross staff, volunteers and partners. Crestron DigitalMedia™ managed the distribution of this content.

Perhaps the most striking component of this AV system is a new TouchTable, a collaborative mapping device with a 46" diagonal touch-sensitive LCD work surface. Designed to interact with other TouchTables and PCs with TouchTable software, the device allows users at distant locations to simultaneously manipulate maps and to export them to SitCell and other applications.



Photo courtesy of SDICC-ARC

One issue with the TouchTable, according to Pappenfus, is that “it was obvious that the Red Cross would not have the budget to put TouchTables or even TouchTable software in partners’ facilities, at least not right away. One of our priorities was to create a method for outside agencies to view TouchTable output in real time, even if they were not able to manipulate it.”

Part of the solution was an elaborate video and audio mixing matrix that allows users to move any signal from any connected device in the center to any other, as well as to partners working outside the CDOC.

The TouchTable has three digital video outputs. One carries the map being manipulated, while the second and third carry images captured from these maps. Fluid Sound connected each of these outputs to a Crestron DigitalMedia 32X32 digital matrix switcher using HDMI cables. From the switcher, users can route these outputs, or any other computer or video source in the CDOC, to any of six large-screen displays including three NEC PX750U projectors at the front of the center’s main room and three 55” NEC P551 LCD displays at the back.

To reach partners outside the center, Pappenfus’ team connected outputs from the DM® switcher to three Marshall VS-102-HDI

IP broadcast encoders, which stream video and audio to a server on the Red Cross content delivery network (CDN). “In this way, anyone with the proper credentials and an Internet connection can view 1080p video and audio streaming in real time from the TouchTable and other devices in the center,” he explains. Fluid Sound also routed an output from the DM switcher into a video conferencing system, which the Red Cross uses for two-way communications with other chapters and partners.

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Dr. Richard Hinrichs,

Managing Director of Disaster Services, American Red Cross

Room-combining within one room

Another challenge Pappenfus faced was a need to provide a degree of flexibility far beyond anything in an ordinary meeting center.

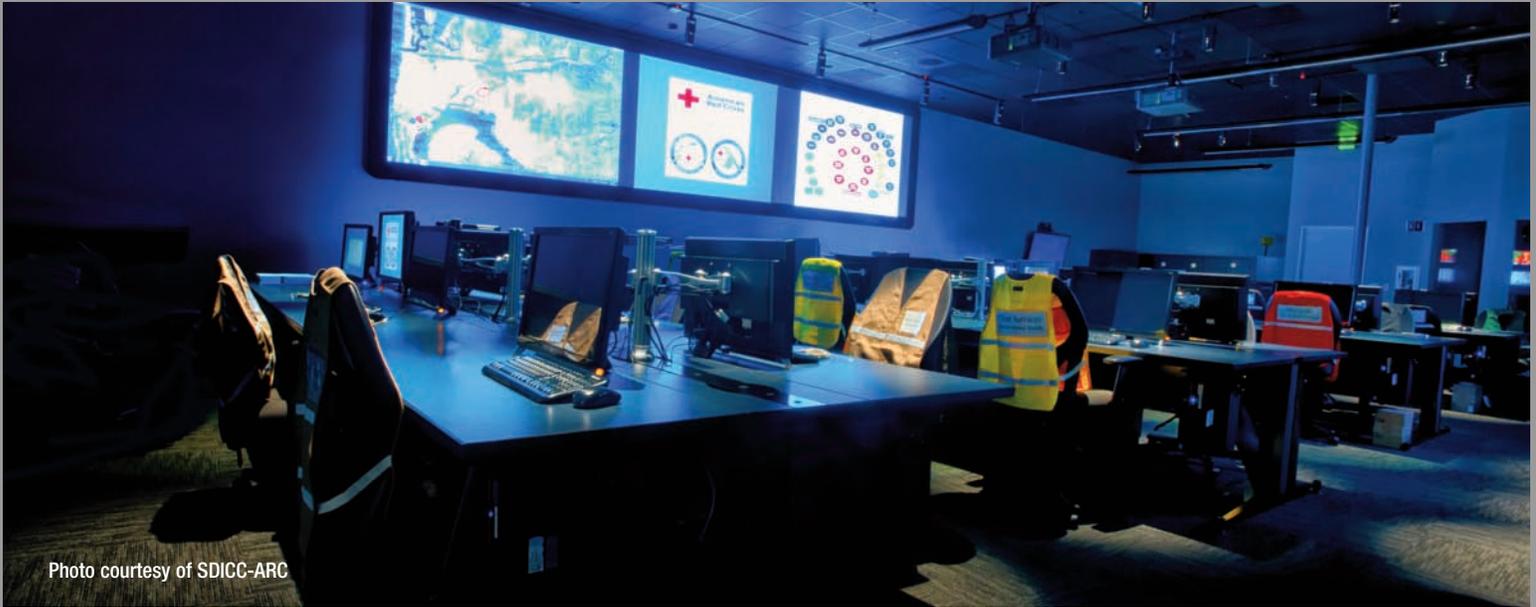


Photo courtesy of SDICC-ARC

Much of the work during a crisis is done by staff members grouped at four work islands or around a conference table in the main room of the CDOC. Workgroup members can share files with each other via the computer network, the group leader can take over one of the large screen displays as they work, or they use one or more displays to share material with another team or the whole center during a staff meeting. The CDOC is designed, in fact, to be used for multiple simultaneous crises, and each of the workgroups can function independently or combine in various ways with other groups.

“What makes this possible is the Crestron AV switching system and a room combining audio system that isolates the sound from workstation to workstation, even though there are no walls separating them,” Pappenfus explains.

“We have six discrete zones of audio,” Pappenfus says, “the room as a whole, the four work islands, and the conference table.”

Next, Fluid Sound technicians created crossovers in the DSP that isolate the frequencies used by the human voice, then feed them into highly-directional ceiling speakers mounted above each work area. Because there are no low tones, the resulting audio is hyperdirectional, allowing workers in one area to listen to voice communications from a microphone,

teleconference, radio or a TV news feed while others, sitting just a few feet away, can’t hear them at all.

Video processing, video capture and simplified control

The innovative design work did not stop with these systems. Although there are only six large screen displays, staff can use them to monitor up to 12 video and computer feeds via two Crestron DVPHD multi-window video processors, which also give them the ability to annotate live or freeze-frame video. “Someone might freeze an image from the news or the TouchTable showing a fire line, write notes on it, send it to SitCell and show it on one or more of the displays,” Pappenfus explains.

The chapter is also able to create full 1080p video press releases using Crestron Capture HD® coupled with an automated Sony camera. To use this setup, a spokesperson would typically assemble maps or graphics from SitCell and video from the field into a presentation on a computer. Then, at the touch of a button, he or she can begin recording, explaining the situation while switching back and forth from a ‘talking head’ to the video and graphics. “Once they’ve captured their message, they can move it to a server for partner access or push it out to the news media, all without the need for a production crew,” Pappenfus explains.



Photos courtesy of SDICC-ARC

The final step in creating the CDOC technology was designing a simple way to operate it without confusion during a crisis. To do so, Fluid Sound used a large, 24" Crestron V-Panel, coupled with a Crestron processor and DGE-2 graphics engine. "Because we drive high-definition preview images to the touch screen, users with little or no training can route images from any source to any output."

Hurricane Sandy

Although major crises are relatively rare, the CDOC is used on a daily basis. "We take part in roughly 300 operations each year, most involving only a handful of people," Hinrichs says. Because Red Cross chapters share personnel and other resources in any large emergency, the CDOC was used throughout the Hurricane Sandy efforts.

The Red Cross used the center to track the path of the storm and, after it made landfall, to produce maps of the affected area based on data from several sources that included FEMA, the State of New York, local governments and other agencies. According to Andy McKellar, Director of Disaster Services for the American Red Cross San Diego/Imperial Counties, the chapter created a multi-layered map of area hospitals, power

outage information, shelter locations, fixed feeding sites, food distribution sites, and real-time local traffic conditions, and was able to produce mapping products to share with partner agencies.

"Over the past few months," McKellar explains, "the CDOC and SitCell have proven to be very effective tools. In response to several localized wildfires, we were able to select shelter locations and deploy material and personnel far faster than in the past. In one instance, for the Shockey Fire in rural eastern San Diego County, we were able to set up a shelter at the local high school in about 30 minutes. Before the advent of these systems, it would have taken us approximately two hours to accomplish the same task."

"We're excited about the place," Hinrichs adds. "It has moved us forward light years in our ability to handle an emergency."

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