

Simulating Communications Center Functionality

A solution to facilitate operator training.

By Dominic Taylor

In the city of Ottawa, Canada, more than 400 highly trained paramedics respond to 100,000-plus calls each year involving a wide range of medical emergencies, fires, water rescues, industrial accidents, hazardous material incidents and police operations. The Ottawa Central Ambulance Communications Centre (OCACC) employs a team of more than 70 communications officers and superintendents to handle call taking, resource deployment, responder dispatch and patient-destination management for the city and a large portion of the eastern Ontario region.



The OCACC is a 24/7/365 operating environment in a newly constructed 5000-square-foot room with a 14-foot-high ceiling and clear sightlines to a 9x3 display wall. Data and video are displayed real time and can be seen by all Communications' staff, enabling high levels of situational awareness. A 400-square-foot room within the building is designated as a training and simulation lab, and mimics the functionality of the OCACC to enable Communications Officer training. It also serves as the onsite backup center.

As the systems integrator, Duocom was asked to make all of the applications used in the OCACC available in similar configurations in the training and simulation lab. Working with our client, we selected a multi-display 2x2 matrix of 46-inch thin-bezel LCDs (NEC 461UX series) to mimic the larger OCACC display wall. We selected the Jupiter PixelNet system to provide a scalable, reasonably priced interface that is similar to the Jupiter Fusion 980 controller in the OCACC. The system provides the same real-time feel of the OCACC without impacting network bandwidth and meets the stability and reliability requirements of a backup system.

Redesigned Centre

In 2008, the Ottawa Paramedic Service began the redesign of its call response processes and Communications Centre in order to integrate situational awareness into the service delivery model. Duocom worked with the Ottawa Paramedic Service as the systems integrator on the new OCACC.

The Communications Centre is a 5000-square-foot room with high ceilings and a clamshell console layout that provides all Communications Officers with a shared view of the display wall. As a result, Communications Officers can use real-time data to make informed decisions in life-or-death situations.

The display wall consists of 27 Mitsubishi VS-50XL70U 70 series dual-lamp display wall cubes arranged in a 9x3 matrix. It provides constant situational awareness with a visual report of all incoming calls, deployment status, resource levels, live video feeds from traffic cameras, and news and weather reports to support operational decision making. A Fusion 980 controller manages all the input signals and a Crestron control

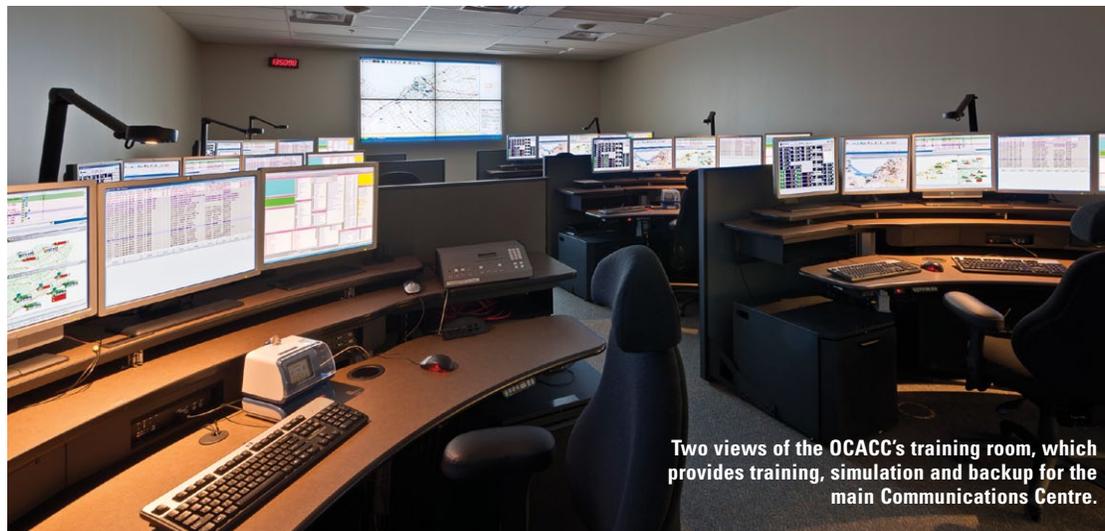
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system manages the OCACC five-zone audio system.

Mimic The OCACC

Even as the Communications Centre was being built, our client realized it would have to train Communications Officers on the new OCACC functionality. A room adjacent to the OCACC was designated as the site for a training and simulation lab and backup Com-

More than 70 Communications Officers and Superintendents handle call taking, resource deployment, responder dispatch and patient-destination management at the Ottawa Central Ambulance Communications Centre (OCACC).



Two views of the OCACC's training room, which provides training, simulation and backup for the main Communications Centre.

All photos: R. Brad Howell, madmantstudio.com

munications Centre for both the Ottawa Paramedic Service and other regional Paramedic Communications Centres. We had to focus on making all of the applications used in the OCACC available to trainees in the training and simulation lab in a similar configuration to that used in the main Communications Centre.

Given the room's much smaller size, we used a 2x2 matrix of 46-inch thin-bezel NEC 461UX series LCD screens for the display wall in the training lab. To provide similar real-time data acquisition from the training stations, we recommended the use of a Jupiter PixelNet system, which captures, distributes, controls and displays digital and analog video sources for audiovisual applications.

Using packet-switching technology, any information source can be shown on any display, as a window on a single display, or as a window spanning multiple display devices in a display wall, and any source can be shown at any size on any display or array of displays. All input nodes and output nodes are connected via Cat6 cable through a switch that would be familiar

Tips

- **Look and feel:** Specify display equipment and controllers that closely duplicate the configuration and capabilities of the main Communications Centre. Ensure ease of use in the system for trainers to facilitate learning.
- **Network impact:** Design the training-room system to minimize the amount of data that must move across the existing LAN. Reuse existing appliances already accounted for, such as existing servers and PCs on the LAN, to produce information that the AV system can use in kind.
- **Budget:** Because the funding available to implement a training solution often is limited, creative solutions are required. Identify the main goal of the space and offer what's truly required for the space (no need for duplication of complete Communications Centre functionality).
- **Redundancy:** Because the system does have a role as a backup Communications Centre, ensure that the system can perform in an extended-hours environment and that, in the event of failure, minimal downtime occurs.

to any IT administrator. Switching is done entirely in the digital domain to preserve signal integrity and switching on a pixel-by-pixel basis with built-in up- and down-scaling; any rectangle of pixels from *any source* can be sent to any destination rectangle on any display device or as a window spanning multiple display devices in a display wall and shown at any size on any display or array of displays. This system is independent of any operating system or computer architecture.

Additional Equipment

Additional equipment used outside of the displays and controller includes a single Crestron automation system to provide ease of use in the system with simple layout recall and reorganization capability. The automation system provides a user-friendly interface to manipulate the system and change the information on the displays. It is configured to allow the end users to rearrange information on the display wall by recalling and manipulating a preset series of layouts as stored on the controller. It also allows the end user

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SIMULATING COMMUNICATIONS CENTER FUNCTIONALITY

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to manage the media monitoring within the room (internet feeds for news/weather, as well as a television tuner).

During training, Communications Officers can draw out the key elements for situational awareness and display them on the smaller screen. The focus is on managing the call at the Communications Officer's desk while looking at the display screen to gain a system perspective of the situation. The Ottawa Paramedics Service is still exploring the full functionality of the training and simulation lab as it develops its training regimen.

Minimize Demands

Supporting a training regimen that closely resembles the environment of the OCACC without creating the same networking or processing demands was a significant challenge. The client did not want to have activity in the training and simulation lab impact OCACC performance by moving large amounts of data across the LAN. Because a PixelNet system is a network of nodes,

not a single-box processor, the signals do not compete for limited bandwidth on a common bus. Data transmission from one node to another is completely independent of other communicating nodes.

In the training and simulation lab, the PixelNet system connects to the outputs of provided servers, which provides the correct real-time feel of the OCACC while avoiding bandwidth restriction encountered with a screen-scraper, LAN-based solution. The input nodes' loop-through means that the client can connect local monitors to the servers without impacting system performance.

By linking servers located on the OCACC's system to PixelNet, the agency has access to the information flowing across the network in real-time format. The system and peripheral AV components introduce a zero-bandwidth load on the network. This ensures that the client can function in a true real-time data acquisition environment, permitting informed decision making to take

place in a truly mission-critical environment, both at the training room and the Communications Centre.

The training and simulation lab also serves as the backup Communications Centre for OCACC and three other ambulance Communications Centres in the area. This further reinforces the requirement for stable systems and reliable controllers. If a node does fail, it will not disrupt the operation of the other nodes in the network. A failed node can be replaced easily while leaving the rest of the network running.

With a fully functional training and simulation lab that mimics and backs up the performance of the OCACC, the Ottawa Paramedic Service can provide Communications Officers with a training experience that closely simulates real-life situations. Effective training can help the Ottawa Paramedic Service gain the full benefit of its new Centre's capabilities and provide the best possible emergency response to the citizens of Ottawa and the surrounding areas. 

DESIGNING MULTI-TOUCH KIOSKS

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Retail Experience

Typically, it is "The Brand" and brand loyalty that keeps consumers buying, whether it is online or in the store. But it is "The Experience at Retail" that builds loyalty and will bring shoppers back to the store. In today's world, the two are synonymous: The Experience is the Brand!

A study conducted by Retail Systems Research (RSS) brought significant information about today's consumer to the forefront. In its report, *The Customer-centric Store 2010: How Retailers Engage Tech-enabled Customers*, RSS states that "The number one opportunity in the current market is to refine the customer's in-store experience," and the number one use of in-store technology (as identified by 76% of the retailers surveyed) is to "maintain and/or improve the customer experience."

Interactive merchandising, whether delivered by a kiosk, an iPad app or digital signage, is no longer an add-on option for the early adopter. It is a crucial differentiator in the retail setting. All retailers and brands have access to the same marketing, merchandising and technology resources. It is the expertise and experience with which they

employ these means to create awareness, satisfy and delight consumers, and convert shoppers into loyal buyers that will translate to success. It is our job to help retailers achieve that goal.

For more information, go to

• www.cetworld.com, Customer Engagement Technology World

- www.digitalscreenmedia.org, Digital Screenmedia Association
- www.touchrev.com, Touch Revolution
- www.frankmayer.com, Frank Mayer & Associates
- www.retailsystemsresearch.com, Retail Systems Research 

TWENTY-FIRST CENTURY SOUND

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vention center's original audio system 30 years ago. Of course, that system was antiquated and, as we visited the site and mapped out how to install the new system, we used some of our staff members who were involved in that installation three decades ago. Having these staff members on site really helped our team figure out how to tackle one of the biggest challenges: how to integrate the new system in the exhibit hall on the second floor and the outer rooms on the first floor with a portion of the old system in the first-floor ballroom, which the convention center was not replacing.

The original cabling system was hard to decipher in that space, and it was difficult at times to discern which sys-

tems were being fed by which cables, microphones and speakers. Having the historical knowledge on site from people who actually recalled details about the original installation helped our team determine how to integrate the systems.

The installation was completed last Summer. Since that time, Buffalo Niagara Convention Center staffers say they have truly appreciated an audio system that matches their other 21st century upgrades. We feel confident that this system will meet the convention center's needs well into the future. Who knows: When the convention center is ready for an upgrade in another three decades, maybe Ronco will visit them again. 