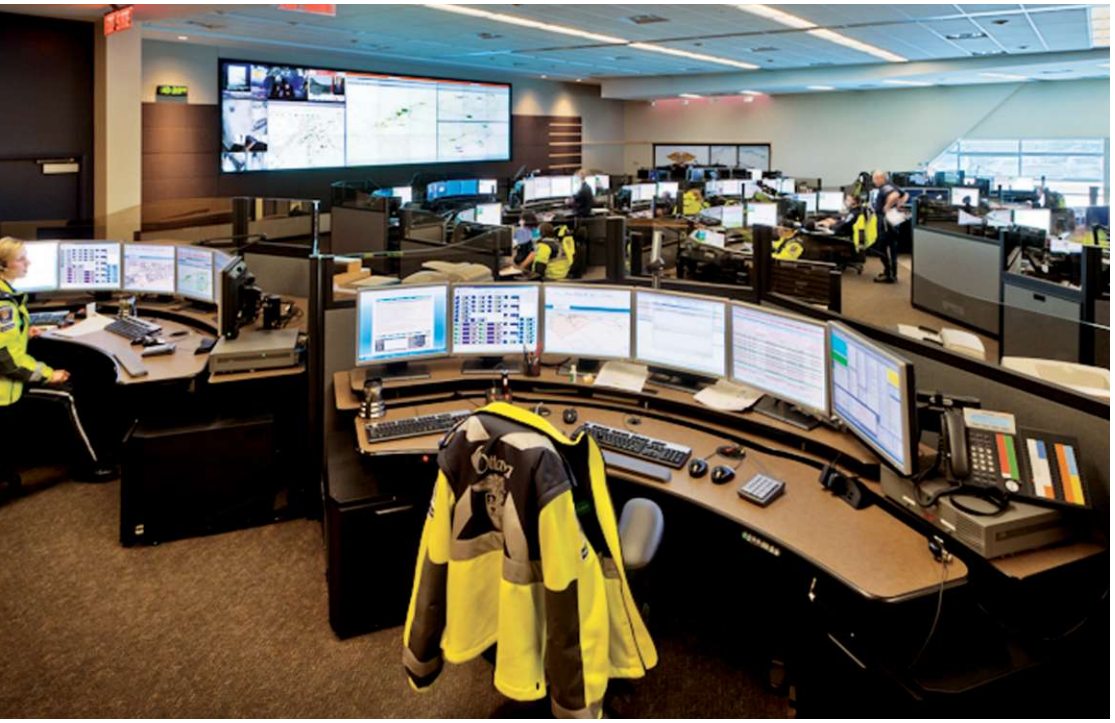

Emergency Response

When it came time to give Ottawa ambulance operators a better picture of the city they work in, one videowall wasn't enough. Planners designed a replica control room as a fail-safe and a place for people to train.

BY LINDA SEID FREMBES

PHOTOS: BRAD HOWELL

CHALLENGE: Design a command-and-control center that maximizes AV technology to provide situational awareness, redundancy, and on-the-job training.

SOLUTION: Replicate the experience offered by a giant videowall and networked workstations in a smaller, replica training center while maintaining live links between the two so that one can continue to function or support the other in case of emergency.

The Ottawa Central Ambulance Communications Centre undertook a process-engineering exercise to help determine how best to design and lay out its workstations around a 3x9 videowall so that staff could maximize its use of visual information for improved siutational awareness.

OTTAWA, ONTARIO, IS THE BUSTLING CAPITAL OF Canada and the centerpiece of the nation's largest province by population with approximately 13 million citizens. The city's Ottawa Central Ambulance Communications Centre (OCACC) handles more than 100,000 emergency calls per year, responding to diverse (and often dangerous) situations. Like in other cities, visual situational awareness is critical to its success.

The Ottawa center works on a 24/7/365 schedule during which 70 ambulance communications officers answer calls and dispatch more than 450 paramedics. Their operations are critical to public safety, so when it came time to design and build a new facility, the focus was on careful planning and working with trusted partners.

"The terrorist attacks on 9/11 put new focus on the need for first responders to access and share information quickly," says Pierre Poirier, deputy chief for the Ottawa Paramedics Service (OPS), which oversees the OCACC operations. "Our previous facility was built in the 1990s and lacked the infrastructure to support new technologies. Modern-day government agencies also rely on system redundancies for information technology, electrical systems, and security—none of which we had."

The Ottawa ambulance center also lacked access to the information flow that would give it situational awareness—the ability to understand the emergency and to deploy the right resources to the right destination. "It made tactical planning much more difficult," Poirier says. "We couldn't deal well with special events or unplanned events because we would be overrun with calls."

Therefore an ambitious plan came together to design and build a new center in only three months. Poirier managed engineering, construction, and AV design congruently. He worked with Aecon Construction in Toronto, as the construction lead. Duocom Canada, with offices in Ontario, served as the AV systems-integration partner on the 9,000-square-foot communications center—a role that the AV firm had played before. According to Dominic Taylor, account manager at Duocom, his firm had also worked with Poirier on the construction of the 100,000-square-foot OPS Headquarters

just a few years before. As a result, Duocom understood the agency's business needs and processes.

VISUAL COMMUNICATIONS

Before the new ambulance center was built, the Ottawa Paramedics Service embarked on a process-engineering exercise with CAE, a simulation and modeling services company in Montreal. With CAE's help, Poirier and his team created a 3D model of ambulance service delivery, including dispatch, deployment, and destination.

"We are the second largest [ambulance communications center] after Toronto. Our process engineering focused on understanding the needs of call-taking and dispatch as a priority, then we built a center to support the new ordering of our business processes," Poirier says.

The results of the process engineering are seen throughout the new center. Each dispatcher's $30,000 workstation includes a hydraulic system for height adjustment, a dozen USB ports to accommodate devices, and multiple inputs for headsets and radio systems. The room design includes 14-foot ceilings that create a pleasant work environment and eliminate the breeze from the HVAC system onto workers' necks. Attention was also paid to acoustical treatment, lighting, and work flow. In order to offer the most lighting options, for example, a series of windows dominates one wall, and lighting is zoned so that each shift can manage its preferred settings.

Process engineering also informed the room layout and how best to situate the workstations for optimal sight lines of the main videowall—a 3x9 matrix of 27 50-inch Mitsubishi VS-50XH70U XGA dual-lamp cubes with inputs managed by a Jupiter Systems Fusion980 wall controller. Dispatcher workstations are arranged in an open clamshell configuration and placed closest to the videowall, while call-takers are seated at the sides of the room. Every workstation features six Hewlett-Packard 2065 monitors, each displaying pertinent data or video feeds.

"Mitsubishi and Jupiter Systems are a great technology combination for this environment," says Duocom's Taylor. "Mitsubishi has a strong presence in the area and was willing to collaborate with us to ensure success. Jupiter Systems also provided great support. Their display controllers offer true real-time data acquisition and analysis. I have clients who have used Jupiter products for years in a 24/7 environment and there is never an issue."

The center's superintendents sit at workstations located on the bridge, an area elevated 6 feet off the ground to the left of the videowall, so that they can interact with and monitor staff members. Superintendents from the bridge are able to control the room's AV systems using a 12-inch Crestron TPMC-12B touch panel connected to a Crestron CP2E control system.

"Information from the bridge's PC feed into the Jupiter controller and are made available to the videowall," Taylor says. Eight Extron distribution amplifiers—one per server located on the bridge—allow for signal splitting and ensure signal integrity to both local monitors and the Jupiter controller.

"Our new communications center gives us the situational awareness to make decisions in an efficient manner," Poirier adds. "We now have access to multiple feeds from city traffic cameras, the Ministry of Transportation highway feeds, security cameras, Internet maps, our computer-aided dispatch software, and ambulance GPS data."

Fourteen TOA Electronics F2352C speakers owered by five Stewart Audio CVA-50 amplifiers provide five zones of audio that cover the entire communications center's main operating area. But the job didn't end there. The installation and design team were also tasked with creating a replica center, but on a smaller scale.

AGAIN, ONLY SMALLER

Adjacent to the main Ottawa communications center is the facility's training and simulation room. While most agencies, such as the Ottawa Paramedics Service, have training facilities, this one had to be different. The OPS wanted to make sure that trainees had access to the actual applications used next door in the live facility, and they wanted the training and simulation room to serve as an actual communications center in the event of an emergency or any technical problems with the main center.

The smaller, 400-square-foot training and simulation room is used primarily to teach ambulance communications officers the skills they need to operate in Ottawa's and other provinces' communications centers. The AV and IT systems, and their advanced functionality, were integrated to be almost identical to main center. One major difference: Due to space limitations, the training room required a smaller videowall. Duocom installed a 2x2 matrix of 46-inch NEC 461UN-TMX4, thin-bezel LCD displays.

In order to provide similar real-time data acquisition and distribution among the training stations, Duocom recommended a Jupiter PixelNet distributed videowall system. Unlike the powerful, centralized Fusion wall processor used in the main communications center, a PixelNet network is composed of various input nodes to capture different types of video signals, output nodes to drive displays or audio devices, and Ethernet switches to connect them all together.

EQUIPMENT LIST

Below is a partial list of the equipment installed by AV integrator Duocom Canada at the new Ottawa Central Ambulance Communications Centre.

Crestron TPMC-12B 12-inch touch panel
Crestron TPMC-8T wireless touch panel
2 Crestron CP2E compact control processors with Ethernet
8 Extron P/2 DA2xi VGA distribution amplifier
Jupiter Systems Fusion980 videowall controller
Jupiter Systems PixelNet system with four RGB/four CV in and four display channels
4 Kramer PT-102A stereo audio distribution amplifiers
Cisco Linksys DIR655 wireless gateway (for TPMC-8T touch panel)
27 Mitsubishi VS-50XH70U 50-inch XGA dual-lamp cubes
27 Mitsubishi VC-B70G2 analog RGB input cards
Middle Atlantic Products ERK-3525-AV rack kits
NEC MultiSync X461UN-TMX4 46-inch 2x2 tiled videowall display
5 Stewart Audio CVA-50 compact power amplifiers
14 TOA Electronics F-2352C ceiling speakers
4 TOA Electronics F-122CU2 ceiling speakers
2 TOA Electronics F-1300BT box speakers
TOA Electronics M9000CU modular mixer/matrix switcher
TOA Electronics D-001R unbalanced dual-line input modules
TOA Electronics T-001T dual-line output modules

SOURCE: DUOCOM CANADA

A PixelNet network can also connect to a Fusion system. PixelNet Domain Control software gives administrators a drag-and-drop interface that makes it easy to control and manage multiple inputs, outputs, and display walls.

"Although small, this training room is a regional asset because it can be used as a live backup for three other dispatch centers within 300 kilometers," Poirier says. A Crestron TPMC-8T wireless touch panel is used for AV control, with Kramer PT-102A stereo distribution amplifiers sending audio feeds to TOA F-122CU2 loudspeakers.

Both the main communications center and the backup training room are adjacent to a common AV rack room, outfitted with Middle Atlantic racks. "Due to forethought and careful planning, the AV rack rooms for the entire facility allow easy access and are not overcrowded," Taylor says. "Therefore, we do not impact the operations of the OCACC during a service call."

Taylor says that this project represents what can happen when good products and design planning come together. "In addition, our processes for on-site integration meant no hiccups at system commissioning." **AV**