

An All-Star AV Experience for Fans at MAPLE LEAF SQUARE

By Kevin Young

Amidst the Toronto Raptors' historic playoff run to ultimately win the 2018-19 NBA Championship, it wasn't uncommon for nearly 10,000 frenzied fans to unite in the courtyard at the west end of Scotiabank Arena and its surrounding area to cheer on their squad during both home and away games.

Officially called Maple Leaf Square and informally dubbed "Jurassic Park" for Raps-related gatherings, the 170,000-sq.-m space welcomes crowds to take in pro sports matches in addition to other publicly focused events.

The AV systems occupying the space, anchored by a large LED video wall and directional audio system, was covered peripherally in a 2009 *Professional Sound* article focusing on the two-phase overhaul of the arena's main bowl audio system, an upgrade to the primary control room and overall broadcast infrastructure, and implementation of an integrated BSS Soundweb-based networked audio system.

After the Raptors captured their first title in franchise history, Maple Leaf Sports & Entertainment dramatically enhanced the fan experience with a massive new LG LED video wall and the latest iteration of Ren-

kus-Heinz's Iconyx digitally-steerable loudspeaker arrays.

Maple Leaf Square

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Maple Leaf Square's original AV set-up was anchored by a three-story LED wall and two Renkus-Heinz Iconyx ICL-FWR digitally-steerable arrays discreetly mounted on each side of the screen, which, with the exception of the loss of one driver – likely owing to an overenthusiastic fit of power



MAPLE LEAF SQUARE, WITH 62 X 35-FT. LG VIDEO WALL SUPPORTED BY RENKUS-HEINZ ICLIVE X DIGITALLY-STEERABLE ARRAYS.

washing – worked flawlessly for over nine years.

Courtney Ross, MLSE's Senior Audio Engineer/Supervisor, Venue Technology Operations, explains that the guiding principle behind the initial system design was to "do more with less" in terms of audio.

While the new video wall's overall size has been increased by 37 per cent, and the loudspeaker count raised to 10 of Renkus-Heinz's latest-generation Iconyx ICLive X array modules, that ethic also drove the project – and, specifically, the choice to re-invest in a Renkus-Heinz steerable solution – this time around.

As with the previous system, powerful but compact and aesthetically discreet loudspeaker arrays were necessary, as was ensuring the sound was precisely targeted at the crowd and not the surrounding buildings.

The initiative to update the square began with the rebranding of the facility as Scotiabank Arena following the financial institution's purchase of naming rights in 2017 – an effort Ross describes as "the reimagination of the arena" pertaining to everything from seating, signage, and wayfinding to the building's exterior façades and, most recently, the 2019 upgrade to Maple Leaf Square.

Work in the square, however, had to wait until the NBA playoffs wrapped up – which, thanks to the team's success, didn't come until mid-June.

Chuck Roscoe, MLSE's Manager of AV Integration, says that the choice of LG LED display products for Maple Leaf Square was made relatively early on. "It's obviously a larger video wall and an upgrade in resolution, and LG is a global partner with MLSE, so we wanted to support them as they support us," he explains. "It's about functionality for us. We had the back-end in place to deliver 4K, and complementing that is the 62 by 35-foot LED wall, with an 854-inch diagonal. It's quite massive, with 5,300,000 pixels, a max brightness of 6,500 nits, and a pixel pitch of 6 mm. In all, there are almost 1,300 outdoor-rated, custom-produced display modules specifically built and designed for this project."

A team from nationwide firm Pattison Sign Group's Scarborough location was tasked with integrating the video wall and its associated components, working in close collaboration with Roscoe and David



SIX RENKUS-HEINZ ICLIVE X DIGITALLY STEERABLE ARRAY MODULES COVERING THE NORTH SIDE OF MAPLE LEAF SQUARE



FOUR DISCREET RENKUS-HEINZ ICLIVE X MODULES COVERING THE SOUTH SIDE OF MAPLE LEAF SQUARE

August, MLSE's Director of Venue Technology and Production, and general contractors PCL Construction.

"We wanted to make the screen bigger, and as we were doing that, the question was what to do with the existing audio infrastructure," Ross shares. "So David August and I sat down and researched new technology and came right back to the Renkus-Heinz products, specifically because the new products were a marked improvement over what was installed in the square. Not that the previous system wasn't good, but the ICLive X fit the philosophy of making this a bigger and better experience."

While the new build and systems offer up enhanced sights and sounds befitting the Raptors' first full season as reigning NBA Champions, Renkus-Heinz ICLive X loudspeakers actually present a smaller individ-

ual footprint than their previous versions and more sophisticated control over exactly where the sound hits and where it doesn't.

Integrators Ramcom Communications Inc. were charged with the construction aspects of integration and the final install of the ICLive X arrays and related components. "They installed the first LG LED product we went with at the Coca-Cola Coliseum and I had a great experience with them there," says Roscoe, who managed all aspects of the timing and cooperation between various teams for construction and integration of the current infrastructure.

The sheer scale of the project carried some inherent challenges, according to Thomas Stipac, Ramcom's project manager for Maple Leaf Square. Ensuring the installation of all the AV elements was done properly and safely was the biggest preoccupa-

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tion, Stipac adds, crediting Ramcom's AV manager, Mike Mayhew, for running point on the mounting solution.

"We attached the speakers to the 'beam to beam' structure that holds the actual video wall so we could get them set up in the optimal position," Stipac explains.

The new iteration of Iconyx represent Renkus-Heinz's latest developments in digitally steerable line array loudspeaker systems for demanding acoustic environments such as Maple Leaf Square. Among the innovations, there's the new Acoustic Source Multiplier (ASM) waveguide, an overall increase in weather resistance, and, forgoing wood, the use of an ultra-dense, recyclable PVC plastic compound for the construction of the enclosures. A single module comprises six 19-mm compression drivers on an ASM waveguide coaxially mounted in front of two 8-in. woofers. The built-in amplifier boasts eight amplifier channels, each with its own dedicated DSP channel.

Specifically, the ICLive X series provides wider, more detailed, and consistent coverage. Ross continues: "We were able to cover the area with the previous system, but with multiple beams, and not as precisely or loudly. Whereas with the new uni-beam technology, it's one beam that starts about 25 feet in front of the screen and extends all the way out to York Street."

Throughout the entire space, he adds, "The consistency and coverage are pretty mind blowing."

In all, six ICLive X arrays are deployed on the LED wall's north side to cover the entire square down Bremner Blvd., all the way to York St., and four are placed on the south side to cover the area from the screen to the adjacent buildings. "We're flanking the screen in a stereo configuration – north and south," Ross clarifies. "On the south flank, we only needed about 100 feet of coverage because that's where we're hitting a building, but we're steering the sound away from the building, so there's 100 feet of total coverage with no reflections. On the north flank,

we needed direct coverage all the way out to York Street, so we used the additional two boxes to get the coverage we were looking for."

Again, the concept is similar to that applied to the square's initial AV system from 2009. "Originally, we were steering the sound with multiple beams to [cover] our distance. With the new ICLive, we're able to tailor each array that so you can get pretty impressive shading detail. Now, not only do we have high- and low-pass filters for each section of that beam, but we have a volume control as well. As we get up the street, we're not looking to blow anybody away with volume; just to make it intelligible, and that can be controlled, so we're not blasting the front of the square, but giving them more volume to provide more detail and make it a more interactive experience. With the four boxes on the south side, we can steer away from the buildings and get right to the crowd standing in front of the screen or adjacent to it. And again, with the uni-beam, we can shade on the north side as needed and not disturb our neighbours."

The digital steering is done within the proprietary RHAON II (Renkus-Heinz Audio Operations Network) platform and allows for both conventional and uni-beams, moveable beam centres, and multiple beams – all independently adjustable in terms of aim, opening angle, and level. This offers a degree of accuracy that essentially allows sound to be directed, literally, right to the head height of people standing in the rear of the square and no further.

Stipac points out that this is Ramcom's fourth installation of an ICLive X audio solution, which he believes was one reason they were tapped for the job. "It's a great product, we know how to use it, and it was a perfect fit for this install," he enthuses. "Once we fired the system up to do a test and, even before any of the tuning was done, we were blown away by how great it sounded. We absolutely loved being part of this project. I was very impressed with all the teams that worked

together to get the speakers installed, the system dialed in, and the job done."

The project also involved the implementation of a new Dante network to augment control and connectivity. "As a facility, we'll be moving to Dante throughout, so we introduced a Dante bridge with the new ICLives, which works in conjunction with our existing BSS BLU Link and CobraNet infrastructure. We inserted another BSS unit with the primary function of converting the signals to Dante," Ross explains.

Veteran AV systems consultant Andrew Foord was largely responsible for that component of the project, in part acting as a liaison between Renkus-Heinz and Dante developer Audinate to engineer seamless interconnectivity between the BSS and Dante infrastructures.

Foord describes his involvement as peripheral to the work on the square itself. "I worked to integrate the ICLive into the existing DSP system," he explains. "I was engaged with Scotiabank Arena in summer 2019 for a couple of upgrades. We're making changes to their DSP system and are in the process of migrating everything but the bowl from BSS onto [QSC's] Q-Sys." As part of that effort, he adds, "The new loudspeaker arrays in the square were integrated over Dante, partially into the new and partially into the existing DSP systems."

He continues: "Scotiabank Arena wanted to move all of their audio networking, ultimately, onto the corporate LAN, so we were able to put the Q-Sys Q-LAN and all of the components tied into it onto the corporate LAN."

A pair of Q-Sys Core 510i integrated processors located in the arena's data centre will eventually service all of the venue's clubs. "We've also integrated the existing BSS platform with Q-Sys via Dante over the corporate LAN, and added a BSS BLU-806 to the existing BSS infrastructure as a bridge to Dante, which is then distributed over the corporate LAN to get to the ICLives. Signal distribution is coming from the BSS system



(L-R) AV CONSULTANT ANDY FOORD, RENKUS-HEINZ'S BRANDON HEINZ & MLSE'S COURTNEY ROSS IN THE SCOTIABANK ARENA CONTROL ROOM.

that runs the whole back-of-house and the ICLives are managed from a PC in the main control room over the corporate LAN."

All control is achieved via the main-frame computer handling the back-of-house systems. "That specific BSS network now includes the square, which has its own GUI page. All DSP was done within the ICLives, but the routing is done through BSS and in the form of presets," Ross explains before offering an example: "For a preset like 'Doors Open,' I hit one button and it changes all back-of-house zones immediately – everything from the bathrooms and hallways to the concourse, and, now, the square as well. So that turns on at game time and plays the broadcast."

For special events like "tailgate" parties staged outside leading up to and during Leafs and Raptors games that may involve MCs and live performances, any of the arena's consoles (which are all Dante compatible) can be deployed in the square.

"Setting up front-of-house out there can now be done via the Dante bridge and one Ethernet connection," Ross explains. Presets will still be used for various situations, such as switching control from the main control room to back-of-house and the portable console and, at the end of a

game or event, turning everything off in the square and routing control back to the control room.

Again, the degree of control provided by the ICLive technology allows for multiple zones in the square to get exactly what's required to engage fans: from the screen to the buildings facing the south side of the LED wall, through the bulk of the square proper, and finally, roughly 450 ft. further, all the way to York St.

Although it's an outdoor venue, given that the square is surrounded by buildings with highly reflective glass, metal, and concrete surfaces, it's still a very "live" space, acoustically speaking. That said, system tuning was done very quickly – in one estimate, roughly 45 minutes – by Renkus-Heinz Project Manager, Brandon Heinz. Heinz is also a professional DJ who regularly uses the company's technology in performance and played a supporting role in assisting MLSE and Bill Coons of Contact Distribution, the brand's Canadian distributor, throughout the design, integration, and commissioning process.

During commissioning, there was no physical adjustment of the ICLive arrays, Heinz explains, describing the process

briefly as a matter of sending pink noise out through the system, making minor adjustments to the beam steering to provide coverage to three specific locations or zones (the first from the screen to roughly 100 ft. out, from there to 250 ft. further, and finally, across the entire street and square to York St). Following that, and, as Heinz puts it, "a bit of EQing to taste," the necessary presets were stored for recall and the job was done.

The project was underway immediately following the Raptors' massive championship parade on June 17, 2019, which brought upwards of 1.5 million fans into the streets of Toronto for a one-of-a-kind celebration, and the end result was unveiled in time for the Raptors' 2019/20 season home opener on Oct. 22, 2019 against the visiting New Orleans Pelicans.

"It's a great thing to happen within the first year of our partnership with Scotiabank, and was a great way to start off our new seasons with an improved sound system and video wall," Ross says in closing. "It's just great timing and great results all around."

Kevin Young is a Toronto-based musician and freelance writer.