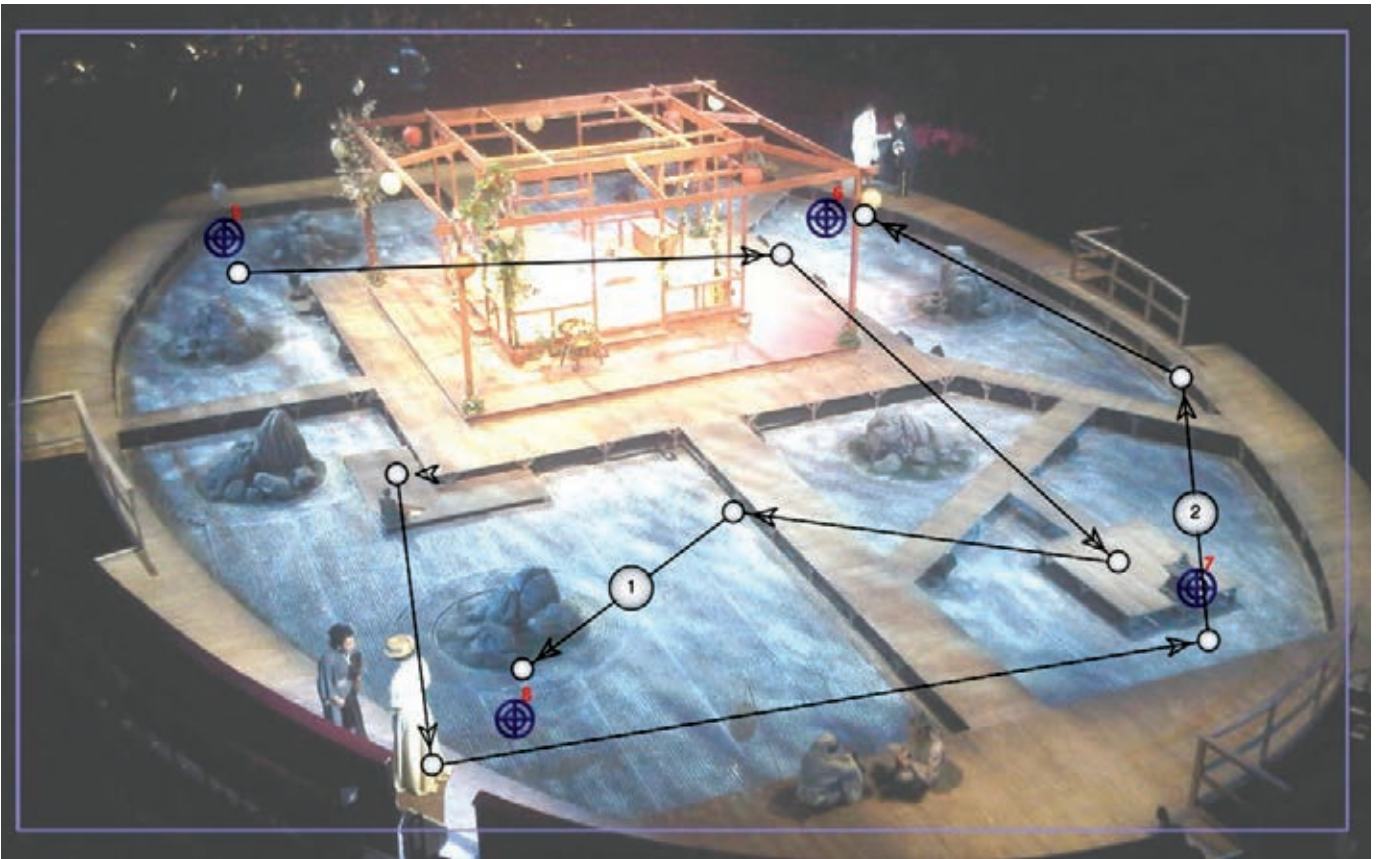


# TOP TECHNOLOGY ON DISPLAY AT GLENN GOULD STUDIO



TiMax PanSpace graphical user interface permits localization of performers and sound effects by dragging objects around a jpeg of the stage or field or play.

By Alan Hardiman

The second annual technology showcase staged by pro AV firm Contact Distribution was held last month in Toronto at the CBC Broadcast Centre's Glenn Gould Studio.

The show presented an array of powerful new products and late-breaking developments with a host of complementary systems, including loudspeakers from Renkus Heinz, OWI and One Systems; microphone technology from Countryman Associates and Lectrosonics; signal transport systems from Optocore and Rane; new amplifier technology from Linea Research; TiMax source-oriented reinforcement from Out Board; coms from Pro Intercom; new analog mixers from APB Dynasonics; and carbon-fibre equipment support systems from Crane Hardware.

Space limitations here preclude covering everything at the

event, but among the impressive showings Linea Research, with an 8-channel 2,000 W amplifier in a 2 RU package, designed around banks of large capacitors that can supply instant charge when needed for signals with a very steep leading edge. Designer Ben Ver explained that, because the massive instantaneous discharge will melt just about any gauge of conventional hook-up wire, they have chosen instead to use sturdy steel screws as conductors in this part of the circuit.

Linea Research is a new OEM company founded by the core design team formerly at BSS. To date they have over 50,000 other product units out in the marketplace, sporting some of the industry's best-known brand logos on the faceplates.

Most notable for me at the show were two innovations

incorporated into the TiMax Soundhub, a delay-matrix audio server that contains up to 64 inputs and outputs with 4,096 I/O cross points in a 2 RU package. I should add that, as an experienced user and producer of TiMax online training videos, I was at the show to explain the technology from the perspective of a working sound designer.

First, Out Board director Dave Haydon showed the new PanSpace software, an intuitive user interface with which you can drag objects around a jpg image of your stage or field of play. An object can be a mic input from an actor, or a sound effect replayed from the unit's internal 64-track hard-drive. Both level and delay of an input or effect can be adjusted at each cross point, so TiMax accomplishes localization and panning using Haas-effect precedence rather than amplitude alone.

Due to the individually unique combination of level and delay from every input or effect to every loudspeaker distributed throughout a the venue, accurate localization works for more than 90 per cent of the seats, in contrast to conventional amplitude-based panning, which works well only for those seated close to the centre-line between loudspeakers.

The second TiMax innovation at the show is an add-on wide-band radar system to localize performers to within 6 inches in any dimension. Small (1" square) radar tags worn by performers are located using time-of-arrival and angle-of-arrival by a small number of receivers around the venue. This system is currently in use in Disney's stage musical Aladdin on Broadway, which opened first at the Ed Mirvish Theatre in Toronto last fall.

The difference between conventional sound reinforcement and TiMax performer localization is akin to the difference between good stage lighting design and just turning up the house lights to see what's happening onstage. There's simply no comparison. Even fellow actors were astonished as the voices of Aladdin and Jasmine rose and floated 20 feet above the stage during the magic carpet scene.

As long as the direct sound from the performer arrives at a listener's ears 15-25 ms earlier than all the "reflections" (which is the reinforcing sound from all the loudspeakers), those "reflections" are not heard as distinct sounds from a different source, but rather are fused with the direct sound and localized to where the direct sound is coming from (that is, from the performer). This takes advantage of the psychoacoustic Haas effect: we naturally localize a sound in the direction from which it first appears.

During pre-production, the stage area is divided up into a number of zones, each a circle about 8 - 10 feet in diameter. The delays and levels to each loudspeaker in the house from a mic in the centre of each circle are set so that a sound from the centre of the circle appears to emanate only from there. This is done for each zone, of which there can be

more than 20. There can be zones above the stage (as in Tosca and Aladdin), as well as left-right and front-back.

Of course, the sound source at the centre of each circle (the "anchor" sound) has to be loud enough to be heard in every seat. The reinforcing sound from the loudspeakers can be 6 - 10 dB louder than the original sound without being perceived as a separate distinct source, so useful levels of sound reinforcement can be obtained.

A weaker voice can be made into a stronger anchor using correctly timed loudspeakers located above the stage behind the proscenium valance.

This technique works best for theatre and opera, not so well for loud rock shows with stage levels above 110 dB SPL. Localization achieved using this technology works for at least 90 per cent of the seats in the house. Seats close to the walls and in acoustically poor areas are not as well-served. It takes about as much time to set this up as it does to SIM a Meyer sound system: several hours, and TiMax provides calibration tools for those unfamiliar with the system.

Most users are theatres, including Cirque du Soleil, and museum-type venues such as Kennedy Space Centre and Las Vegas' Fremont Street Experience, but word that a major Canadian sports facility is close to finalizing a TiMax specification means that folks in the glass-protected expensive seats will be able to hear what's going on rinkside, or court-side, with even more clarity and presence.

The tech fair was attended by an almost equal distribution of end users, engineers and consultants. Two days hardly seemed sufficient time to cover everything on display.

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