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The Promising Future of Pro Audio

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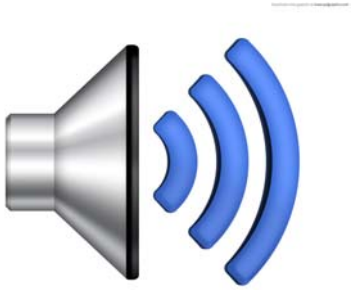

You might think the world of pro-audio hasn't changed much recently – you know, the same old loudspeakers, amps and mixing consoles – but you would be mistaken. There have been numerous improvements and enhancements that make everything we do with pro audio, from concept and design to engineering and installation, an interesting and constantly evolving adventure. With the decreasing cost of digital signal processors (DSPs) there is an exciting change in pro audio equipment that has many of us very excited. With all the added digital processing power comes a multitude of new and better ways of doing the jobs we do.

Loudspeakers: DSP based loudspeaker arrays have come into their own recently with applications ranging from small Churches to factory floors, and as a large as EDM (electronic dance music)festivals. Companies such as EAW (Eastern Acoustic Works), Renkus-Heinz and Meyer Sound have developed digital processor controlled sound systems that are capable of narrowly focusing audio into small pathways, thereby avoiding acoustic issues associated with traditional loudspeaker systems. A Renkus-Heinz, Iconyx™ loudspeakers system is capable of generating a dispersion pattern as narrow as 5 degrees vertically – this is very useful in older cathedrals or other facilities with excessive reverberation times that create intelligibility issues. By focusing that narrow beam of sound directly at the listeners, we are able to avoid exciting the room with

sound energy and still receive high quality articulation and intelligibility in a room that was very difficult to hear in previously. EAW has developed a system called ANYA™, designed to make set-up and operation of large scale, touring sound systems easier and faster. Touring systems currently rely on a complex set of pins and plates attached to a long string of modular loudspeaker components to create a dispersion pattern by adjusting individual components, in a way that is tailored to the venue de-jour, based on the output of some prediction software. ANYA™ hangs straight down, avoiding the complicated process of assembling a j-curve or spiral modular loudspeaker array; and via DSP, the system sets itself up through actual real-time measurements.

Microphones: TOA has developed a new microphone product called AM-1, a podium microphone that is able to track the talker while rejecting other noises. This tracking happens in real time and can follow someone by as much as 30 degrees off the center axis. This happens seamlessly via an array of 8 microphone elements and a dedicated DSP box, which contains a built in web server so the tracking activities can be monitored in real time via a PC or an iPad. Rupert Neve Designs has the Portico 5045 Primary Source Enhancer – while it's a little difficult to describe the exact effect this device has, most would say it is quite stunning. Used on a podium or a single headset microphone, the 5045 has the ability to bring the source audio up out of the mix and can add as much as 20dB of gain before feedback. None of these microphone improvements would be possible without DSP.

Mixing Consoles: In the last few years, digital audio mixing consoles have gone from exotic to mundane. Nearly all small performing acts, bar bands and even churches have adopted a digital mixing console. The cost is equal to, or less than, an equivalent analog counterpart, and there are the added bonuses of having everything in one package, the ability to recall settings/mixes and superior sound quality. Behringer has stood the pro audio world on its ear with the X32 digital mixing platform – an inexpensive mixer with all the features one would expect of a console that costs 10 times as much. Midas, Digico, Yamaha and Avid make world-class digital audio consoles easily and within financial reach of most mid-scale performers, venues and Churches, while Allen & Heath as well as Soundcraft have offerings that suit-up well in many situations. All of these systems and products allow functions that were never possible in the analog world. Just being able to get up from the console operators position was nearly impossible with an analog console. Now, with wireless iPad connectivity, the operator can effectively "take the console with them" and go listen in different areas, gaining freedom and the ability to effectively operate the system from anywhere in the venue.

Networking: Audio DSP and network technology have also allowed us to effectively create large-scale audio "networks" to inexpensively send multi-channel audio to any "node" in a system. This is quite effective in large single-building, or corporate / educational campus-wide paging, emergency communication and mass notification systems. Using Audio networking, we have effectively created systems that incorporate features such as flexible room configuration, video conferencing, VOIP and standard AEC based teleconferencing, courtroom recording, multi-channel background music, distance learning, medical procedures and surveillance AV systems. For critical applications, central and local paging, announcements with background music and voice evacuation systems can be designed with a decentralized architecture to avoid a single-point-of-failure scenario. The networked approach helps us build a mission-critical backbone for reliable and stable systems that we can monitor for higher education, healthcare, transportation and other industries.

The possibilities are endless for DSP based audio solutions, and the future looks even more promising. DSP based solutions help us hear better, increase ease of operation and allow for flexibility in both design and implementation. ESCO Communications is uniquely poised to help you understand the benefits of DSP and help you with the decision-making process when audio needs arise.

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