



Avid Pro Mixing: A (R)evolution in Mixing

Version 2, November 2013

A (R)evolution in Mixing

Introduction

For the better part of the last 40 years, mixing used to occur in the latter part of a two-phase process. During the recording phase, multiple tracks were recorded onto analog magnetic or digital tape. After recording was completed, engineers would typically stay at or move to another high-end facility—one that could afford a large “big iron” console and outboard effects boxes—to begin mixing the project. This process has since evolved significantly.

Today, audio production has largely moved into the digital realm, where digital audio workstations and computers have replaced tape machines and tape, and digital processing plug-ins are used in lieu of outboard gear. Mixing now begins the moment you record the first tracks and can evolve throughout the project, as the mix moves between different studios and desktop systems. For engineers and artists, these advancements have enabled much more creativity and time to explore ideas without compromises or the limitations imposed by traditional mixing.

Avid® and Euphonix® were both groundbreakers in this evolution. Avid pioneered mixing “in the box” with its highly integrated Pro Tools® software, hardware, and control surfaces. And Euphonix, a leading manufacturer of digital large-format consoles, developed EUCON™ technology to further expand the capabilities of its consoles to control multiple digital audio workstations. With Avid's recent acquisition of Euphonix, and the product developments that have since resulted, Avid has emerged as the clear leader in providing mixing solutions that integrate traditional mixing with powerful DAW control to address modern mixing workflows.

The evolutionary process

When you look at a typical audio console, much of what we think of today as being standard equipment and controls actually took many years to evolve. Early 1960s channel strips featured a very simple microphone preamp, rotary (big knob) level control, and an echo send, primarily custom designed and built by the studio itself (for example, EMI consoles at Abbey Road Studios). Over time, the big rotary level knobs were replaced by linear faders, enabling mix engineers to not only control more levels simultaneously, but also visualize their relative settings more easily.

Soon after, mix engineers began requesting that EQ facilities and panning control for stereo recordings be added to the channel strip, as 4-track recorders became the exciting new development of the day. However, the limitations of these '60s era console designs—particularly in the panning department—only allowed engineers to pan certain channels in certain ways, which is why early Beatles recordings have drums and bass panned hard left and guitars panned right.¹

1. “Recording The Beatles” by Kevin Ryan and Brian Kehew

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Vintage EMI Redd mixing console of the '60s.

The Beatles, Pink Floyd, and other bands during this period set the bar fairly high with their production values and, therefore, pushed the need for manufacturers to develop bigger, more capable consoles. Mixing desks of the '70s began to include channel meters for better level monitoring, more inputs/channels, insert points to patch in and out of external gear, and more auxiliary sends and returns for reverbs and echoes. Also, the physical bus routing of line and microphone inputs grew from 8 to 16, then to 24, 48, and beyond. Fader and mute automation add-on packages began to emerge, giving engineers more power and flexibility to increase the repeatability and complexity of their final mix.

The days of standing on a chair over the console with a camera, taking Polaroid photos of knob positions for recalling their settings, were replaced on high-end desks by “snapshot recall” computer pictures of the entire desk. These pictures would then enable engineers to manually set the EQ, send, and pan knobs to the exact positions they were in the previous mix session. Dynamics processors were also added to every channel to expand the signal processing capabilities, and a mix bus compressor was added to help dynamically control and “fatten up” mixes. Split console designs gave way to “in-line” models to pack even more input capability into any given size.

As each of these improvements and scalable flexible additions were added, the size and price of these powerful mixing desks grew as well. It wasn't uncommon for a large-format console purchase in the mid '90s to top the one million dollar mark.

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Fish-eye view of a large 96-input SSL 9000 analog console, circa 2000.

Due to the cost and scale of the infrastructure required for these large-format consoles, it was very rare for a professional mixing experience to exist outside of a commercial facility or studio. (Of course, successful artists and producers could afford their own home studios, raising the first serious challenge to the commercial studio industry during the late 1980s and early 1990s.) Generally speaking, mixes and recalls were being conducted in commercial studios during this time, and in order to gain artist, producer, and record company approval, it wasn't uncommon for engineers to hold studio time for days or weeks at a time.

In addition to these big dollar consoles, professional analog tape machines in the early to mid '90s topped \$50–\$100k, and digital tape machines were priced in the \$150–\$250k range. But as producers, engineers, and artists tried to work out the budgetary constraints and workflow idiosyncrasies, a groundbreaking new recording paradigm began taking shape—it was called Pro Tools. And from that point, the revolution of mixing began.

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(R)evolutionary idea 1: Shift power from the studios to artists and producers

Pro Tools was first introduced in the early '90s as a simple digital 4-voice recording system. By the mid '90s, the improved Pro Tools III system offered up to 48-voice support. Then in 1998, Pro Tools|24 MIX arrived on the music and post-production scene. This integrated hardware/software system expanded on the recording, editing, and basic mixing experience of Pro Tools III, and provided a much lower cost alternative to a digital tape-based multi-track recorder and large-format mixing console.

Instead of incurring expensive long-term studio rental expenses, artists and producers began using the record company's "advance" money to invest in their own personal Pro Tools systems, which served as high-quality, super powerful, 32-track/24-bit digital recording machine replacements. Pro Tools provided them with easy recording options, worry-free punching, strong editing capabilities, and creative plug-ins, which added up to more control over their own recording and mixing process.

These Pro Tools systems were also portable, and session files could be shared with anyone who had a Pro Tools system for further work. This made it easy to do overdubs and edits at a home studio, hotel room, or any location with high-quality mic pres and vintage mics and equipment, saving studio budget money and offering more creative flexibility. It also made it possible to capture inspiration whenever it struck instead of forcing creativity to happen during the booked studio time.

As artists and producers grew comfortable using Pro Tools as a recording, editing, and processing tool, they soon began to discover its powerful mixing capabilities too. They could easily weave level and plug-in automation into a session from the beginning of working on a song or movie soundtrack—not just at the end, as was standard procedure decades before. This was a true game changer for artists and mix engineers, as they could now quickly move between songs or film reels with ease and tweak, mix, and create at the same time—all from one solution.

Because artists, engineers, and producers could create master-quality sessions from the beginning of the process, the line between producing a "demo" or "rough mix" and what would ultimately be the "final mix" was obliterated. Before long, momentum had reached a critical mass where producers, musicians, engineers, mixers, post editors, and even commercial studios were relying on Pro Tools as their primary recording and mixing tool. As the industry standard, Pro Tools sessions were being shared easily with other musicians and mixers, and brought in and out of the "big" studios for overdubs or final mix checks.

This power shift continues today as professional Pro Tools systems can be purchased for under \$1,000, and scalable control surfaces for hands-on Pro Tools control, such as the Avid Artist Series, are available for under \$1,400.

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(R)evolutionary idea 2: Introduce Ultimate Recall

From the '70s through mid '90s, recalling a music mix on a console for an album or fixing a mix for a movie final dub at a later date was nothing short of miraculous. Even with “total recall,” where engineers would manually set knobs back to the target positions, dealing with outboard gear and patching was still extremely difficult to produce a near-exact recall as your starting point. Thus, in the music world, the practice of creating a “vocal up 1 dB” and “vocal down 1 dB” mix was always practiced for safety once a mix was deemed “final.” In the post world, creating and relying on pre-dubs and stems allowed for some level of a fallback position.

With a Pro Tools “mixing in the box” approach, nothing is left to chance. Within a matter of seconds, by just opening a Pro Tools session, you can have the system recall everything in your mix, including every edit, parameter, setting, and automation move. With the easy portability of a hard drive, you can take complete sessions with you to London, Paris, New York, L.A.—basically anywhere you want to mix. You can even send session files over the Internet to other musicians, engineers, and producers for further mixing, and they can return just the session file back to you to further tweak their mixes.

Being able to recall an extremely complex (and non-destructive) mix in seconds is a game-changing enhancement to the world of mixing, and can buy back hours or days for mixers, who are now able to switch gears at a moment's notice. Because of its backwards compatibility support, Pro Tools sessions from 1995 can be opened in the latest version of Pro Tools, with all automation, plug-ins (if they still exist), and edits intact. This is a reassuring safety net for mixers, as they can pick up a project right from where they last left it—be it several days, weeks, months, or years from that point in time. Ultimate Recall in Pro Tools leverages your computer for what it does best—remembering data with incredible amounts of detail and exactness. The Auto-Save feature is also a fantastic safety net for mixing, enabling you to jump back several minutes—or even hours—and change your mind.



The Pro Tools automation window enables you to set automation for a variety of parameters. This window shows that everything but mute capabilities is hot, and that Auto Join, Preview, and Capture are all active and ready to be used.

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On the more traditional “out of the box” mixing side of things with audio consoles, Euphonix led the way initially with its CS series of digitally controlled analog consoles, which enabled engineers to easily automate and recall all key parameters. The company continued to pioneer evolutionary mixing features, moving into the digital realm and introducing breakthrough innovations. One notable feature is “Snapshots,” which takes a picture of all parameter states on the console at any given moment, enabling you to store and recall settings quickly when needed. Professional mixers rely on advanced automation features, such as Preview, Capture, and Snapshots, on a daily basis, and these items are featured in its latest DSP consoles (including the Avid System 5 and S5 Fusion, formerly Euphonix), as well as integrated into Pro Tools HD software’s automation capabilities (since Pro Tools HD 7.2).

(R)evolutionary idea 3: Your mix, your way

Avid Pro Mixing consoles and control surfaces, including System 5, S5 Fusion, and the ICON family, all provide the advanced features professional audio mix engineers need to complete projects fast—a modern integrated surface, deep tactile control, intuitive ergonomics, streamlined workflows, and extended visual feedback. The consoles also offer you a highly flexible and easy way to customize your system the way you want for your mixes. But it didn’t always used to be this way.

Before these integrated surfaces came along, console audio signal flow was extremely inflexible—even if a mixer didn’t mind re-patching channels around. These consoles offered a one-to-one relationship, where a multitrack channel was tied to a specific mixing console channel. With multiple tracks, mixers needed to physically move to the channel strip where the track was patched, and this often moved them out of the mixing “sweet spot.” This also meant that mixers would likely need a very large console (and the studio space to accommodate one) to deal with 32–48 tape returns, 24 effects returns, and more.

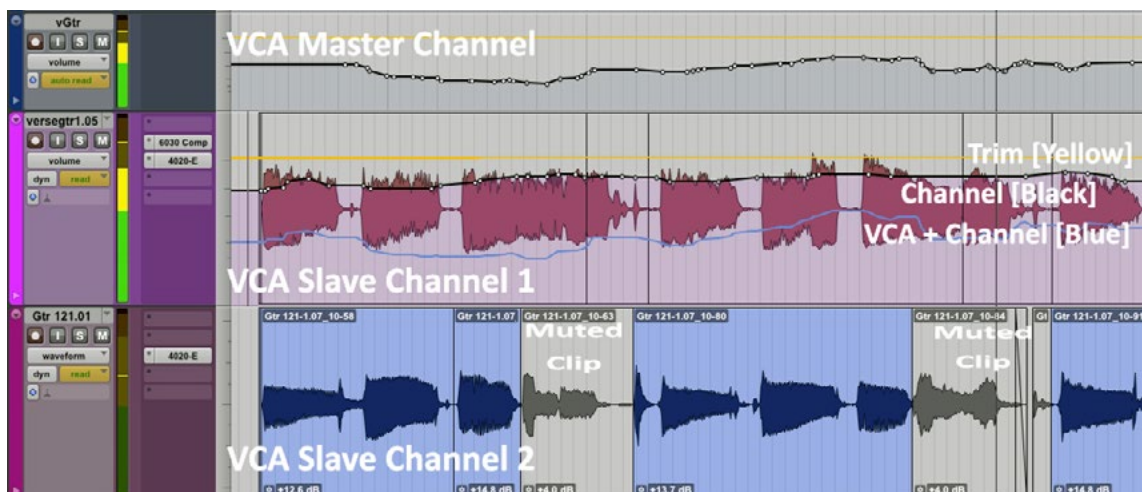
Avid Pro Mixing consoles and control surfaces changed this paradigm, enabling you to build views, or layouts, of channel strips in a neat and organized fashion. You can design layouts, customize views, and create combinations of channels that keep you in the mixing “sweet spot” and enable you to find things more quickly.

For example, with the System 5, you can place audio DSP channels in any order, side-by-side or as a swap layer on the same channel strip, with EUCON-enabled digital audio workstation (DAW) channels—even channels from multiple DAWs. In fact, the console is so customizable and well-organized that Academy Award-winning mixer Mike Minkler now prefers to use only eight faders on his System 5 surface to manage all of his dialog and music tracks using layouts.

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(R)evolutionary idea 4: Automation you can see and touch

One of the main reasons that Pro Tools mixing became very popular was the unique visual and graphical way in which automation could be viewed, manipulated, and edited. Many mixers agree that using a mouse to grab a fader and mix is laborious and tedious at best, but drawing in a curve to automate a volume move for just one syllable on a lead vocal or dialog track, most agree, is intuitive and time-saving. Pro Tools automation offers highly visual interaction and an easy-to-edit approach, enabling you to see, say, a problematic instance of sibilance as a high-quality 2D waveform. You can zoom in on it, highlight the offending part, and draw a curve to automate the volume down for a split second and then back up again—something that's extremely difficult to do with your hand on a fader, even with multiple attempts.



This guitar track is shown in volume graph mode. The black line indicates the channel volume automation, the yellow line is the trim automation, and the blue line is the combination of the black line plus what the VCA Master is doing to control it. The grayed-out clips are “muted” clips.

Audio post mixers used to require printed “cue sheets” that were basically a roadmap of where incoming audio sounds were at a specific timecode in the reel, thus giving them a heads-up. In the post-production world, Pro Tools is now referred to as a “virtual cue-sheet” that enables you to see a scrolling view of the upcoming audio regions and their relative loudness.

This same concept has also translated into a more visual way of performing mute automation, which inherently can be difficult to determine if and when it will turn on or off on a console or surface, and mixers have complained that they are “fighting it.” The methodology has evolved so that you can now mute the clip directly in the Edit window of Pro Tools. This gives you a visual confirmation, as the clip graphically “grays out” in the window, confirming that you’ve chosen to mute that section and not hear it. This differs from writing physical automation on the mute button itself, which only changes the light status to indicate that the channel is muted, with no visual cue of an upcoming status change.

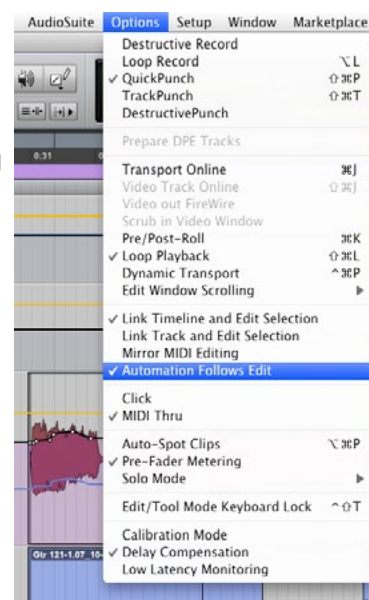
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(R)evolutionary idea 5: (Dis)connect automation to audio clips

A major challenge facing mixers who use large-format consoles equipped with a modern automation package and a DAW (like Pro Tools) has to do with changes requested after a final mix is well under way or even completed. For example, if a picture editor shortens a scene, moves a scene, and lengthens another scene in a film, the underlying soundtrack will be greatly impacted. While the Pro Tools session has conform software applications that can help automate the process, console automation is another story and requires more tedious and complex work to salvage the mix and smooth any jumps caused by the process.

In the Pro Tools “mixing-in-the-box” scenario, all automation can be tied to the audio clips (formerly called “regions”). It’s as easy as simply turning on the “Automation Follows Audio” function and then doing the conform; the automation will move with the clips and can then be flagged for minor blending or clean up. Aux channels, master faders, and VCAs can also be conformed graphically, even if there is no specific audio clip.

There are, of course, situations where a mixer might prefer not to have the automation follow the audio. Consider an ADR (Automatic Dialog Replacement) line, where much time is spent automating the volume, pan, reverb sends, and EQ mix. Now the director changes his mind and wants another ADR take in its place. This time you can simply turn off “Automation Follows Audio,” which will keep the existing automation in place while you drop in the new audio clip. The choice and flexibility is a big timesaver in both situations. Major changes to a song and, on the post side, conforming the session are no longer a source of major pain or time-consuming work.



(R)evolutionary idea 6: Expand the plug-in universe beyond coveted outboard gear

Throughout modern mixing, professional mixers have turned to external rack gear as a tool to expand their palette of sound sculpting tools beyond the basics of what a modern console could provide. They’ve inserted, sent to, and returned from a variety of (often sophisticated and expensive) outboard analog and digital rack-mount gear. From the '70s through early '90s, mixers often only had access to a handful of outboard EQs, gates, compressors, delays, and reverbs. The higher quality processors were often used for tracking (bypassing the console), as well for mixing to optimize the sound quality and resources.

Not many studios or facilities could afford several (if any) Fairchild 660 vintage compressors (for example), nor the upkeep costs to keep them sounding great. And the sound quality of the same hardware processor could vary from unit to unit due to the state of the tubes and capacitors. Even if a studio had a large arsenal of outboard gear, patching and settings for mix recall was still a manual operation.

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Enter the software plug-in.

Plug-ins began as very humble, basic tools without much sonic character or graphic flare, and were considered more utilitarian in nature. Soon though, Avid and third-party Pro Tools development partners started to model (in both audio sound quality and graphical user interface) expensive, coveted, classic pieces of outboard gear. These developers would listen to several seed units and partner with golden-ear mixers to pick the best unit to physically model. Over the years, the programmers have continually refined and improved the sound quality of their plug-ins to where engineers are more than satisfied, and in listening tests these plug-ins were found to be nearly indistinguishable from the real article, if not (in some cases) more preferred.



Here are just some of the vast array of third-party plug-ins available for the Pro Tools|HDX platform.

In retrospect, plug-ins truly changed the face of mixing forever and it's easy to overlook its weight and importance. Mixers could now be freed from the chains of renting or buying expensive hardware processors, dealing with the performance variances, not being able to automate or recall their settings, or use them multiple times across different channels in the mix.

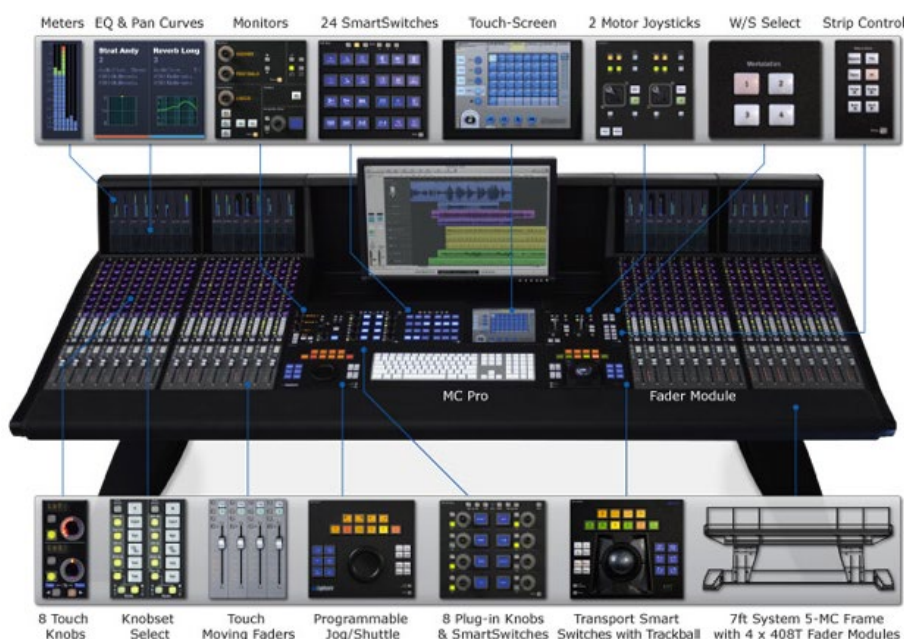
Of course, plug-in developers didn't stop at just modeling vintage analog and digital gear; they invented entirely new effects processors that achieved new heights in creativity and sound quality. What's more, all of these effects and processor plug-ins are available at just a fraction of the cost of what the professional hardware units were selling for in the '70s, '80s, and '90s.

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(R)evolutionary idea 7: Bring deep, fast, hands-on control to top DAWs with EUCON

Until the mid-2000s, most console manufacturers were averse to the concept and sound quality of mixing “in the box” and, therefore, didn’t support the idea of offering tactile surface control of applications such as Pro Tools and Nuendo. One console manufacturer changed all that—Euphonix, now part of the Avid family.

While Euphonix was enjoying success with its large-format DSP consoles, it embraced and evangelized the idea of “in the box” mixing. From 2005–2006, the company invested resources and built support and consensus in the software community to adopt a high-speed, high-quality Ethernet-based protocol that would enable engineers to use a single surface to control multiple digital audio workstations and MIDI sequencers simultaneously. This was the evolution of hybrid mixing—blending the unique capabilities of DAW control and DSP consoles into a single integrated control surface.



System 5-MC professional EUCON control surface

Euphonix developed its EUCON technology to incorporate but improve upon the limited control capabilities of its predecessor—the MIDI-based HUI protocol, developed by Mackie. The company designed EUCON and its EUCON-enabled control surfaces to provide great bandwidth (8x the speed of MIDI), high-resolution control, powerful user customization, and a wide variety of controls, giving audio software users a rich and efficient experience with its modern mixing consoles. EUCON recognizes that today’s audio professionals may use several different audio applications, and enables them to control multiple applications simultaneously—running on one or more computers—from a single control surface.²

2. “EUCON Technical White Paper for AES 2006”

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EUCON functionality has enabled modern mix engineers—especially those facing economic and market pressures to diversify their services—the ability to simply connect and control multiple applications and quickly switch between them. Featured in a variety of control surfaces—from Avid's portable Artist Series controllers to the large-format System 5-MC, as well as the new S6 surface, EUCON enables mixers to work on music and audio post projects, created in a variety of popular applications, easily. It also maximizes their mixing surface investment and allows for complete user customization in both software and hardware (see (R)evolutionary idea 9).

(R)evolutionary idea 8: Introduce hybrid consoles and leverage virtual pre-dubs as modern post workflows

The EUCON protocol is not limited to just control surfaces such as the S6, System 5-MC, and Artist Series. It was also designed to work on and with the System 5 family of digital consoles, including S5 Fusion, creating an entirely new workflow and flexibility for mixers everywhere.

These consoles, which combine standalone DSP power and a fully integrated monitor section with EUCON DAW integration, are known as hybrid consoles, and were designed to help solve the issues many audio post professionals were facing.

Over the last 30 years, feature film track counts and overall sonic complexity have increased at an exponential rate. High-profile films and TV shows often contain a minimum of 300–400 audio tracks, and some of the bigger budget projects can have as many as 1,200–1,500 tracks.

Take a World War II battle scene, for example; to create the soundtrack, sound supervisors and re-recording mixers often have the daunting task of pre-mixing, or pre-dubbing, the numerous Russian Army gunshot channels, German Army gunshot channels, and all of the ricochets, tank engines, artillery shells, and more down into smaller groups of tracks to make them more manageable. By doing so, they then have pre-mixed each group in detail and can make some basic decisions on levels, effects, and panning, and then print it all to a smaller set of tracks—usually a 5.1 set for the final mix.

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Technicolor at Paramount Studios in Hollywood, CA, houses a hybrid, dual-operator System 5 console, which controls multiple Pro Tools|HD systems.

This pre-dubbing methodology has been used for many years by top mixers, but has become less and less effective for four reasons:

1. Visual effects shots are, often times, not completed until the last minute, so sound design, editing, and mixing will likely need to change closer to the end of the process once the final visual FX shot is put into place.
2. With non-linear picture editing (such as with Avid Media Composer®), a “locked” picture isn’t necessarily locked, and edited sequences may constantly change and be tweaked often at or near the final mix stage.
3. With the flexibility that non-linear video and audio systems provide, directors and producers know that they can easily get back into the pre-dub and change out or adjust just one sound, or even re-balance all of the nested levels together.
4. Pre-dubbing is time-consuming and expensive on a big dub stage. Many editors and sound supervisors now have decent 5.1 monitoring in their edit suites and are doing more pre-mixing with Pro Tools clip gain and volume graphing.

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Many audio post professionals agree that not printing down pre-dubs into new audio files and instead keeping them virtual in Pro Tools automation is the way to go. These virtual pre-dubs can be easily conformed, and since they're not being “printed,” with the source files hidden away somewhere and harder to find later, they allow for a smoother workflow. This makes it easy to go back and forth between the mix stage and editorial when more work needs to be done.

What has often been the sticking point though, is how do re-recording mixers get their hands on this “layer” of Pro Tools pre-mix automation, which is separate from their digital audio console automation layer? Some mixers have attempted to solve this problem by installing an ICON control surface or having a C|24 “sidecar” side-by-side with their main analog or digital desk to handle these dual workflows. However, these aren't ergonomically optimal solutions and are—at best—merely workarounds for a truly integrated system.

The innovative answer lies in the hybrid console—namely, the System 5 and S5 Fusion. By having a large-format, professional digital audio console—with all of its advantages for monitoring, routing, and PEC direct control of stems—integrated fully with EUCON to control and mix multiple Pro Tools systems, audio post pros could now mix both DSP and Pro Tools channels side by side on the same surface, with full customization capabilities.



With the hybrid System 5 and S5 Fusion consoles, you can place both DSP and Pro Tools channels right next to each other on the surface.

The power of this hybrid technology enables you to build and manage many different combinations of views and channel layouts. This makes it easy to stay on the DSP mix layer for final mixing and, whenever necessary, dive into the Pro Tools automation layers of the “virtual pre-dubs.”

In addition, DSP mixers have begun setting up additional Pro Tools rigs to serve as creative “toy boxes.” These automatable Pro Tools sessions don't contain any audio clips, but are used as giant effects palettes to harness tons of plug-in reverbs, delays, modulation, fuzz box effects, and other sound processors, with the System 5 acting as a great big automatable router and send/return device.

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(R)evolutionary idea 9: Replace traditional monolithic consoles with customizable, modular surfaces

With the continued rise of “mixing in the box” and all the flexibility and benefits it provides mixers, large- and mid-format mixing solutions—such as Avid’s ICON D-Control™, D-Command® and System 5-MC—became very popular control surfaces from 2004 on, overtaking their analog and digital predecessors to become the best selling large format consoles of all time. But recently, as digitization of the creative process began to accelerate, many found that they needed a more flexible solution that could be easily scaled to handle the increasing session complexity and grow their business—without fear of future outgrowth.

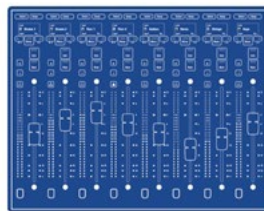
In surveys of ICON and System 5-MC owners (as well as prospective ones), mixers described the need to still have high-quality, professional tactile control, but in a solution that offered more flexibility and modularity than what was available at the time. Many expressed their wish to have more granular control than what D-Control offered, with its large 16-channel sections and six knobs per channel—and have an option for a smaller center section. There were also ergonomic considerations—essentially, choosing what controls were situated in a mixer’s primary reach zone, as well as the acoustic sweet spot. And from an economic standpoint, mixers wanted to be able to scale their system easily at a later date, as project opportunities arose. Facilities who hire independent mixers on a job-by-job basis also liked the idea of having modules, so they could quickly re-configure the surface and scale up or down mix rooms as needed.

All agreed that the ideal surface would still contain the proven building blocks of a great mixing console—faders, knobs, switches, high-resolution TFT meter displays, transport and automation controls, and a Soft Keys section for programming favorite commands—but also offer newer innovations, such as touchscreen technology that could be used for specific tasks like navigation, surround panning, and manipulating plug-ins.

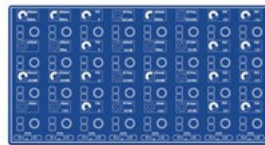
And with that, the principle design element for the Avid S6 (announced September 2013) was born. This revolutionary control surface offers first-of-its-kind modularity, with compact Ethernet modules—sporting faders, knobs, or processing controls—built in 8-channel (approximately 1 foot) widths that can be installed in a number of ways within simple, ergonomic console frames. With its unique design, S6 enables mixers to scale and customize their ideal mixing surface cost-effectively—both in depth and width—choosing the modules they desire for their workflow and budget needs now and in the future.

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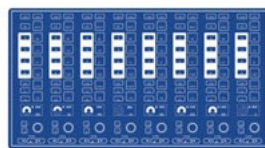
S6 Modular Design



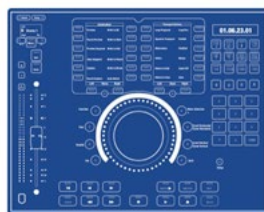
► Fader Module



► Knob Module



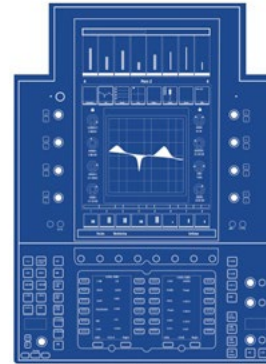
► Process Module



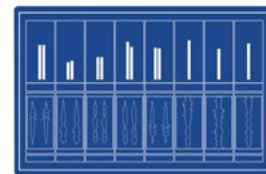
► Automation Module



► Blank Module



► Master Touch Module



► Meter Module

S6 is fully modular, enabling mixers to choose the modules they need to match their current workflow and budget, with the ability to scale the surface in the future.

(R)evolutionary idea 10: Provide more comprehensive visual feedback for the modern mixer

Since the late 1960s, track counts and session complexity have grown exponentially from the days of 4- and 8-track analog tape recorders. The jump to 16, 24, 32, and then 48 tracks—where it stayed for many moons—gave producers, engineers, and artists more flexibility in their recordings and mixes. With the introduction of computer-based recording, track counts rose even higher—all the way up to the current 756 tracks that a single Pro Tools|HDX 3 system offers.

Of course, more tracks means more complexity and adding to that, today's mixers are faced with constant pressure to deliver great sounding mixes in less time—often with a more limited budget—while trying to maintain their sense of creativity. Being efficient and managing thousands of sound files coming at them every second is extremely challenging and requires not only great auditory skills, but also a keen eye, with the ability to spot problems before they occur and act on them effectively.

Adding to those pressures, today's strict broadcast regulations on audio levels are more critical than ever before in mixing history, and can often mean a mix being rejected by a network, requiring more time and scrutiny.

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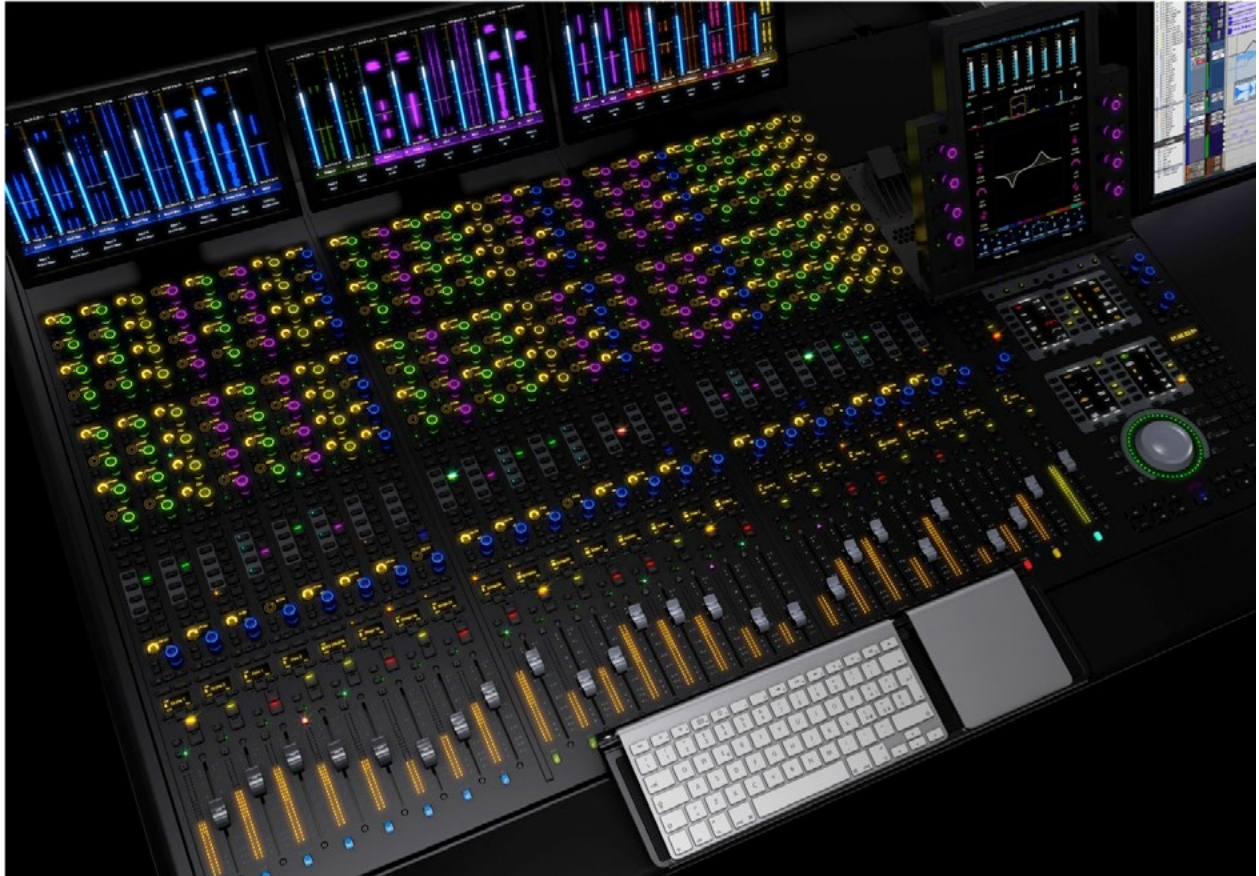
Mixing in the box—even with the professional metering ballistics and scale improvements in Pro Tools HD 11—offers only a limited view into a mix and a limited ability to act on it “serially” with a mouse. With any given project, mixers must continually scan a myriad of inputs, such as channel levels, gain reduction, send levels, plug-in settings and information, surround fold-downs, clipping, panning, routing, upcoming clip information, automation modes and states, automation match levels, and other items on the console to ensure the integrity of their mix. They also constantly need to see what modes and automation states their channel strips are in to know what control to grab and how it will react when they touch it.

Avid designed S6 to provide an unprecedented level of visual feedback, enabling them to truly immerse themselves in their projects and overcome these daunting challenges in several ways.

With S6, mixers can quickly and easily...

1. **Gauge levels**—View channel levels, gain reduction, and automation match levels using the 32-segment LED stereo meters, which are right next to the faders. This strategic placement means they won't have to lift their eyes up off the faders to see key information. Plus, multicolor LED function switches below the faders display their Pro Tools track colors for easy identification.
2. **Labels and settings**—See channel names, automation modes, and track numbers, as well as settings for knob parameters such as pan, plug-in, or send positions, using the high-resolution OLED displays spread across the surface.
3. **Identify knob functions**—Clearly know what mode they're accessing through top-lit knobs that change color based on its current function. Knobs will display pink for EQ, green for dynamics, yellow for sends, dark blue for pan, and light blue for inserts and other non-EQ or dynamics plug-ins, such as reverbs and delays.
4. **View the big picture or zoom in**—With the central touchscreen display, which provides many “heads-up” views of their mix, mixers can manage monster-sized sessions by viewing the same track color-coding from their Pro Tools tracks in “Matrix Mode,” as well as see an exploded track view that shows all parameters of a selected channel displayed with its color coding. They can also use the high-resolution screen to view detailed metering, panning, and EQ graphs. Channels will blink red when they're record-armed or gray out when muted (or not soloed).
5. **Get unprecedented visual insight**—With any S6 M40-based surface, mixers can add high-resolution TFT Display Modules to serve as an extremely flexible and powerful meter bridge above their Fader and Knob Modules. The Display Module provides several view modes, enabling them to choose the ideal display for their work at hand—from viewing color-coded tracks, channel names, panning, grouping, and routing info, to high-res metering displays and scrolling Pro Tools waveforms. In fact, the display supports all 17 professional metering scales and ballistics in Pro Tools HD 11.

A (R)evolution in Mixing



The revolutionary S6 control surface redefines mixing with its modular design, superior ergonomics, intelligent studio control, and unprecedented visual feedback.

Post audio mixers have always looked for better ways to manage the thousands of sound snippets coming at them fast and furiously across multiple channels in any given film or TV soundtrack. Sound editors would create and print large cue sheets with timecode numbers for the mixers, so they could “see” what was coming and when. But having to constantly read and jump between paper and mix was inefficient at best and oftentimes exhausting.

This practice evolved when ICON mixers began positioning their Pro Tools computer screens in front of them, scanning the scrolling tracks in the Edit window to see all upcoming clips as they moved across the screen horizontally. This wasn't exactly ideal either for a number of reasons, including having to quickly translate what was happening onscreen to the surface—and the fact that computer screens can only display so many tracks at a time.

A (R)evolution in Mixing

To help mixers better overcome this challenge, Avid decided to integrate scrolling waveforms directly into the surface. When used with Pro Tools, S6 offers a scrolling color-coded waveform view on its Display Modules—vertically aligned directly with the channel strips—giving mixers the ultimate real-time cue sheet. The view updates dynamically and includes a playhead indicator, so they know what clips are coming and relatively how long and loud they'll be on a channel-by-channel basis. Even the clip names are displayed, so they can gather more information about the sound playing or coming up.

Conclusion

As with all things, change is inevitable and unstoppable. The art of sound mixing is not immune to change, and will continue to evolve as long as people continue to produce music and video media. Even though the music and post industries have had periods of upheaval and have survived large-scale changes to their entire inner workings, monetary support structure, delivery mediums, and more, audio pros have adapted and continue to find creative and groundbreaking ways to create great mixes.

Avid is uniquely positioned as a leader in professional console and control surface design, with solid momentum and the largest product design, sales, and support staff of any console manufacturer. As demonstrated by the ideas presented, Avid is fully committed to supporting the sound mixing community and its individuals by offering a wide range of innovative, reliable, and scalable mixing solutions that meet the needs and budget of every audio professional—now and into the future.

About the Author



Author Thomas Graham is a 17-year veteran of Avid and specializes in post audio and professional mixing in the marketing department. He has freelanced as an orchestral scoring recordist/editor on over 40 feature films, including *Collateral*, *Ice Age*, *Star Trek Nemesis*, *Solaris*, *Serenity*, and *The Spirit*, to name a few. He has also worked on several major label album projects with artists such as Ray Charles, Quincy Jones, Brandy, and Al Jarreau.

Graham holds a Bachelor of Fine Arts degree in Sound Recording Technology from the State University College of New York at Fredonia, and worked as an “old school” analog recording engineer for several years afterwards in the New York area before making his home in Los Angeles in 1992. You can email him at tom.graham@avid.com

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