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ETC Eos Apex

By: Rob Halliday

It may shock you—it certainly shocked me—to realize that ETC's Eos console range is now 16 years old, perhaps just over 20 if you count the years of behind-the-scenes development before its 2006 debut. To any of us who grew up on consoles pre-Eos, it still feels like the new kid on the block, but the truth is that we've probably now been using it longer than we used those others.

Before Eos' launch, ETC had rather lost its way in lighting control: the company had become known as the Source Four company, despite its very name being Electronic Theatre Controls. The company's founder, the late Fred Foster, started a project that he saw as taking the company back to its roots, almost back to the garage where the company began: a small team on a mission to build a new control platform. Fred being Fred, he really wanted to build a garage in the center of the company's headquarters as the base for this team; eventually, he contented himself with a garage door on one side of his office.

What he did do was lure Anne Valentino back as product manager. She'd worked at Strand on the Light Palette, been part of ETC's Obsession team, then went to Vari-Lite to help create the Virtuoso console. She brought the knowledge of all those products and worlds and philosophies with her to Eos, combined in a really well-thought-out way. She was still leading Eos until she retired during the first pandemic year, 2020; many of the team have been involved since the beginning and others, such as new Eos product manager Nick Gonsman, for many years. This stability perhaps helps explain the steady way the console has evolved, embracing new technologies such as LEDs and media servers but doing so



Figure 1: The Eos Apex family.

in a way that feels consistent to the original Eos ethos.

The result is a product that is now the de-facto standard lighting control in theatres around the world and in many TV studios—and, beyond that, is in a constant tussle with its arch-rival, MA Lighting's grandMA, to win other users and types of shows.

But ETC is not resting on its laurels, and we're here to talk about the future of Eos as defined by the new Eos Apex range of consoles—the single-screen/five-fader Apex 5; double-screen/ten-fader Apex 10, which I got to play with; the what can really only be described as the slightly OTT Apex 20, plus a rack-mount Apex-in-a-box (Figure 1).

This is probably the third generation of Eos hardware, if you consider the first to be the original Eos, baby Ion, plus Element for tiny venues, and the second the Ti/Gio/Gio@5 and updated Ion XEs and Element2. What's interesting here is the difference in approach between ETC and

MA. Each new generation of grandMA has thrown away both hardware and software to start completely from scratch—but has then had to back-track by allowing the old software to run on the new hardware until the new software gets to a point when users want to switch to it. ETC, by contrast, has kept going with the same software, every now and again creating new hardware to support it rather than sweeping all the old away.

Some of the existing products—Gio@5, Ion Xe, Element2—will continue alongside the Apexes (Api?). But the software is the heart of the thing; that's what the Eos name now really describes. Until quite recently, with the launch of Eos V3, any Eos hardware could run any Eos software. Now the original Eos/Ions can't run V3 but can still function in the last V2 version, and V3 can both save showfiles that the older consoles will load, and happily load show files from any Eos version. That's quite an achievement. For comparison, try opening a

15-year-old Word file (as I've just tried to do to check back on my review of Eos at its launch!); it does not go so well.

Hardware: Eos Apex

The ongoing conundrum: We all know that the heart of all these lighting consoles is just a PC. And we also know that, if we want to, we can just take the software for Eos or most other consoles and run it on our PC (or Mac). With the right network interface and dongle, we can even get data out to the lights.

Yet, despite it being a PC, people keep spending lots and lots of money to buy “real” lighting consoles. For good reason: Just as a pilot doesn't fly with a keyboard and mouse, you can do your job better and faster with specialist hardware. In the time-pressured world of entertainment, where time in the venue really is money, quicker is always better. So, too, is hardware that's locked down, so some other app's spinning beach ball doesn't interrupt that critical cue.

Of course, if you have established hardware, changing it is a delicate balance. You want to advance things, but your users know your existing products, often intimately. Change too much and they'll have a lot of learning to do.

This is another difference between MA and ETC: The grandMA3, which we'll be looking at soon, has a quite different style of physical key and control surface layout from grandMA2. The Apex layout is very, very like that of the Ti (not quite identical: a few key buttons, particularly Display and Undo, have moved, some new blank ones have appeared as a nod to the yet-to-be-invented future, and the position of Go relative to shift is different, which makes using that key combination one-handed to jump through cues slightly uncomfortable), with identical key-types and key-cap shapes. Existing users can just sit down behind it and get going, hardly a beat missed.



Figure 2.



Figure 3.

But there are changes. The pageable, motorized faders, on the left, are now half-height rather than full height, the space above them used to house small displays making it clearer which fader is doing what without eating up space on the main screens. The main keypad, backlit, is in the center. Then all the Apexes follow the touch screen and six encoders to the right layout of the big Ti console rather than the four-above-the-keyboard version of the smaller desks, the bottom two generally dedicated to pan/tilt, though Eos now allows you to configure them all if you wish (Figure 2). Then our first new discovery: To the left of these

encoders are now nine small rotaries, like those found on sound desks, which ETC introduced to lighting on the Cobalt console, MA brought to the MA3, and others are now copying (Figure 3). These are backlit, so can change color to indicate function and click when pushed. They're amazing when you've got lots of parameters to deal with simultaneously—shutters, say, or the eight LED colors in ETC's Lustr3 (the ninth encoder is dedicated to changing the encoders' function). They're amazing, almost to the point of wondering why those four big flat encoders are still there, other than familiarity.



Figure 4.

On the bigger two consoles, the next addition is found just to the left of these rotaries: ten of what ETC calls target keys and I'm calling the "fancy buttons"—square buttons with built-in color OLED displays, allowing them to change color or label or show graphical images such as gobos (Figure 4). These behave exactly like the on-screen direct selects that have always been the basis of selecting things via Eos' touch screens, complete with big up/down arrows to page through them and can be mapped to whatever direct selects you like—except, of course, they are real buttons that you can operate while looking at the stage, a descendent of the screen overlay buttons the original Eos offered. There are more of these buttons: one set on either side of the main angled touch-screen area, then two keys above the master playback faders. But these buttons also present a differentiator between the small Apex 5 console and the bigger ones: The differences in number of faders (it's in the name...) and number or size of screens are obvious but, looking at the pictures, you miss at first glance that the 5 doesn't have the fancy keys next to the encoders or the further set to the left of the faders that the bigger ones do (Figure 5). This is slightly surprising, given the talk in ETC's launch videos about the consistency of key layouts between the consoles, and for how useful it feels like they're going to be; the company says it was to keep the width of 5 down. Also surprising is the little delay in the labels updating when you page through these keys—there's a definite sense of them "filling up" with new information rather than it just appearing, and I thought I kept catching a refresh flicker out of the corner of my eye, which was distracting. That's software, so will, hopefully, improve in time. Having access to things through a real, physical, labeled button is a great addition, though.

Other new things that are consis-



Figure 5.



Figure 6.



Figure 7.



Figure 8.

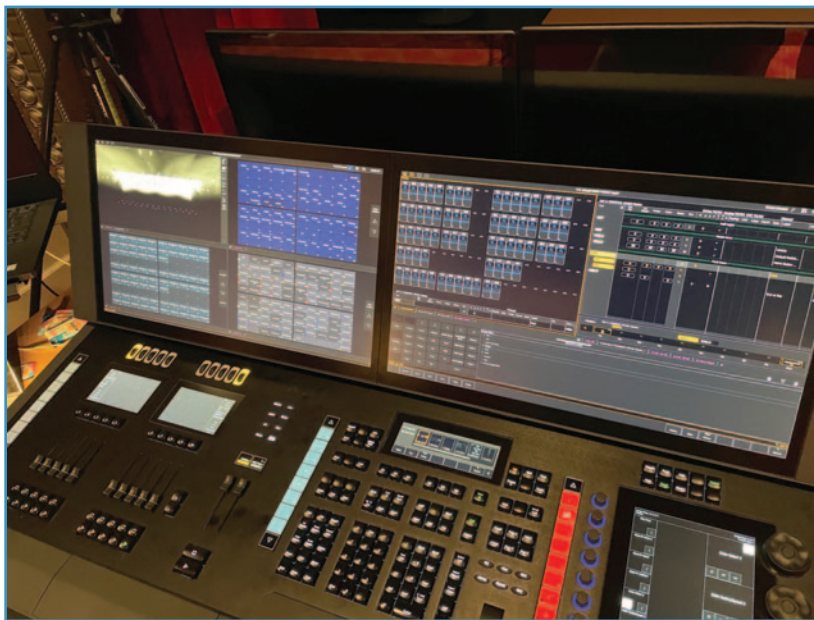


Figure 9.

tent between consoles: There's a small touch screen above the main keyboard area, complete with haptic feedback to give an indication when you've selected something (Figure 6). At the moment, this shows the console's softkeys, which can also still be found on the main touch screen (a long way to the right, showing just how big these screens have got compared to the original Eos) and accessed with physical s1-6 keys, and a limited range of other things, including mini-magic sheets. And

then there are the tiny fader wheels, above the fader displays on the left, these also backlit and able to change color (Figure 7). I am so excited about the potential for these, hopefully offering a return to the ability to mix state from groups with the group assignments then stored as part of the cue, a functionality lost since the demise of Strand's Galaxy. For now, they're just behaving as an additional set of faders; the hardware is ahead of the software here, but brings possibilities...

The last two detail changes on the main control surfaces: The "flat white" buttons, for changing display modes and playback settings have now become black rubber keys, which allows them to have backlit labels for the first time but has also left them a little stiffer than on recent consoles (Figure 8). And the fancy keys next to the main displays means the macro keys between the screens (the last things you needed to label with tape and pen!) have gone. Also gone: the rate wheel that used to live in the center of the console, and the fader-page button; for the latter, you now need the "secret knowledge" that fader-page-up-plus-number now achieves the same thing, which is how Eos external fader wings have long worked but which feels less obvious when figuring out or training people on the console.

The displays themselves are quite something: big (23.8" on the 5, twin 23.8" on the 10, twin 27" (!!) on the 20), all multi-touch, wide-screen, 4K, high-DPI, HDR, and with a 180° viewing angle to give super-clear images, particularly in the console's built in Augment3d visualizer (Figure 9). They look great. You can adjust the angle, of course, but they also have a new trick: They're not hinged at their base but at a new articulation point. Working behind the console? Flip the screen over, then invert the display. Love magic sheets more than pressing keys? Hinge it forward and tilt it flat and have the console become a giant iPad, with just the master Go button poking out (Figure 10). The dust cover required to wrap all of this up is quite something in itself.

Around all of that? A keyboard in a slide-out drawer, of course, though given that bits of the console are now easier to operate or, in some cases, are only accessible via a mouse, it's a shame there isn't also a permanent mouse or trackpad somewhere. There are lots of USB ports, both USB-A and USB-C, for connecting storage devices or charging your phone;



Figure 10.



Figure 11.

some of the ports are deliberately power-only to take away the fear of the console trying to sync with your phone while charging it. As well as the backlit keys and encoders, there's warm-white task light around the edge of the console, throwing an elegant glow on the surface below—with all that, it's perhaps no wonder the console now includes a “blackout console” option for when you're looking at a dark state onstage or during a camera take in a studio.

Round the back is interesting. On the original Eos, ETC made the then awfully brave choice to have just an Ethernet connector, with no real DMX outputs or any other IO. The future, the company said, was the network, and you'd put boxes (called “Gateways”) on the network to provide the connectivity you needed

close to where you needed it. That has largely turned out to be the way we all do things, but they perhaps jumped a bit early, and the later consoles backtracked, with real DMX and certain other connectors alongside pairs of Ethernet ports.

On Apex, you can have it either way. There are network connectors, of course, lots of them: four 1 Gigabit RJ45 ports then two 10 Gigabit fiber ports. They'll support 24,000 DMX slots of output on Art-Net or sACN/ETCNet3 (support for some older protocols, including ETCNet2 and AVAB, is gone). If you need to go beyond this, one suspects ETC will ultimately move to an MA/Hog-style external expansion processor module approach, since both companies make their money selling hardware rather than software, but they're not

there yet, so, for now, if you need more, have your people call their people... Though not enabled yet, labels on the back of the console also reveal both Bluetooth and Wi-Fi wireless connectivity. Bluetooth will help with mics. Wi-Fi is interesting, given the wireless capabilities built in to ETC's latest fixtures and the various lockdown projects controlling lighting around the world, though ETC haven't indicated its plans for this yet.

Above the network ports are four slots ETC calls the “I/O Garage” (Figure 11). If network connectivity does everything you need, leave them empty. But if you need on-board IO-DMX outputs, or MIDI inputs or SMPTE or serial, then slot in the appropriate Response Gateways and you've given yourself that functionality. It's a versatile solution. You can never make everyone happy, but this has a good go.

Put all this together and it's very clearly an Eos but evolved. Sitting behind it as an Eos user is familiar, comfortable—yet feels like it's full of new opportunities. It also feels, at first, a little overwhelming—even on the 10, the main screens are quite dominant and quite high, to the point where you wonder about seeing over them to the stage in some production desk setups. I'd imagine the 20, where the console is wider and the screens even bigger, feels more so. I think you'd have to be in a quite particular situation for the 10 not to be more than enough console. Using any of them will, I suspect, invite Eos users to rethink the way they lay their console screens out, and while the console also supports three external touch screens, I think there will be more occasions than before when you might just not need them.

Two things to be aware of: They're quite heavy. And, at least in the early production console I got to try, the fans felt quite loud and present, in part because they would ramp up and down regularly when running the visualizer. ETC says it has improved

the way it monitors and control these fans in more recent consoles and that the Apexes should be quieter than the outgoing Ti.

Software: Eos

It is quite an achievement that the same software running shows in schools (on the very-baby Element, or even a laptop) is running the biggest shows and venues in the world. Sixteen years in, the Eos software presents an incredibly wide and incredibly deep console; few people will use all it can offer, but the day you need something and it's just there waiting for you is always satisfying.

That said, the new consoles provide an interesting inflection point for the software. It was originally conceived for a very different console with a deliberately fixed and unyielding way of working operated through keypad and touch screens while “heads up” looking at the stage. But spreading it onto smaller consoles, without the touch screens and onto laptops without any of the physical controls, meant new ways of working were needed. Bringing those back to the big consoles means you now have many ways of doing things—with buttons, with touch screens, with a mouse; by typed commands or via a graphical interface. Each has its place, moment, and fans. But just sometimes you now stumble across something that only works one way or the other.

What's also evolved over time is the configurability of everything. It used to be that you could sit at any Eos anywhere and know immediately where everything was because nothing could move. Now, no doubt in pursuit of the seemingly infinitely configurable grandMA, everything is much more customizable, with the ability to customize the screen grid expanded in V3.1 for the larger displays (Figure 12).

And, of course, new functionality has appeared over time. If you don't

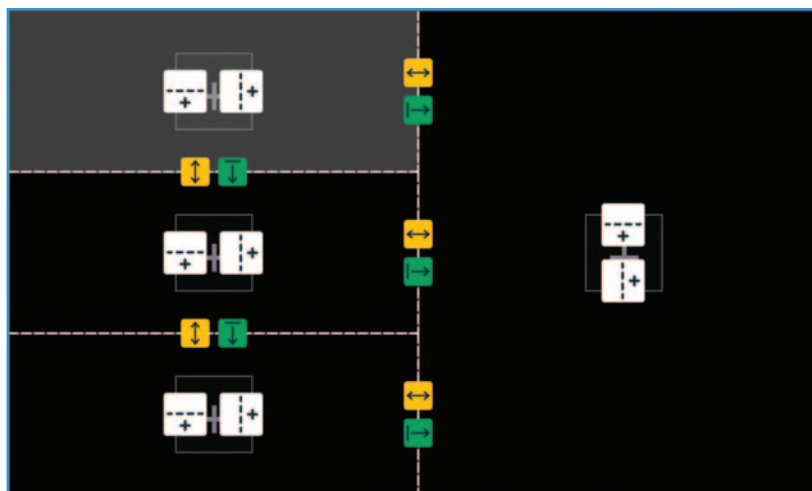


Figure 12.



Figure 13.

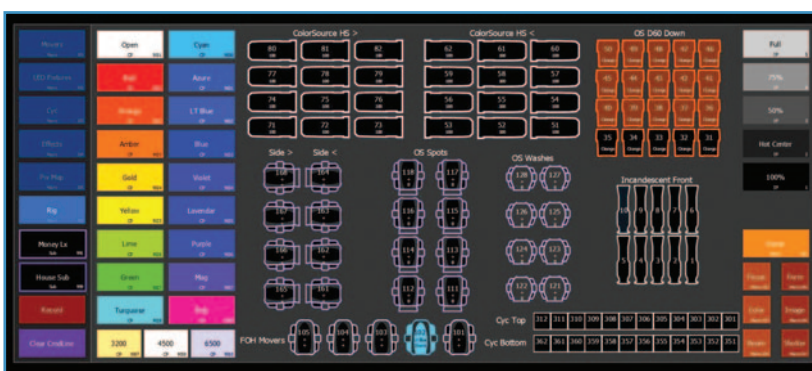


Figure 14.

like Eos' grid of channels, seen in Figure 13, (and fundamentally, in perhaps the clearest link back to Light Palette and other early memory consoles, each light is still identified by a

channel number), you can now create your own displays or even complete graphical interface using Eos' magic sheets (Figure 14). If you're dealing with big arrays of lights, use the built-

in pixel mapper/media server to control them—once you get the hang of setting it up, you can achieve an awful lot with it. The headline feature of Eos V3 is the Augment3d visualizer. ETC is at pains to say this isn't intended to create stunning sell-the-project renders, but rather as a programming tool built right into the console. You can ignore it if you want or dabble your toe by just adding position information into the softpatch (Figure 15) and as a result see lights appear in 3D space (Figure 16). Then you realize you can see what you're doing in blind as well as live (though it's worth keeping in mind that as part of this, Augment3d works even without fixtures being patched to addresses; unlike an external visualizer, you can't rely on it to prove you have everything patched correctly...) Then you realize you can focus all the lights to a point by just clicking on that point or by wandering on stage with your iPhone and saying, "Point here"—and then you wonder why you've spent so long in life messing around with encoders and focusing lights one at a time. The aim is that at the next venue on tour you refocus the lights manually to a known lineup position and the console then back-calculates the new real-world positions of the lights and then updates all your focuses. I haven't tried that in real life, but if it works, it's a game-changer.

Of course, for that to work, it relies on the console having a deep knowledge of the actual lights. Eos doesn't have that for every light, though it does for the most common. And, of course, ETC also makes lights, and it definitely has the data for them. That's useful in the visualizer, but its real strength is the symbiotic relationship between console and lights when it comes to dealing with color, something we all thought was easy until LEDs came along, and we discovered we didn't really understand it at all. ETC, at the behest of Fred Foster, has spent a lot of time and

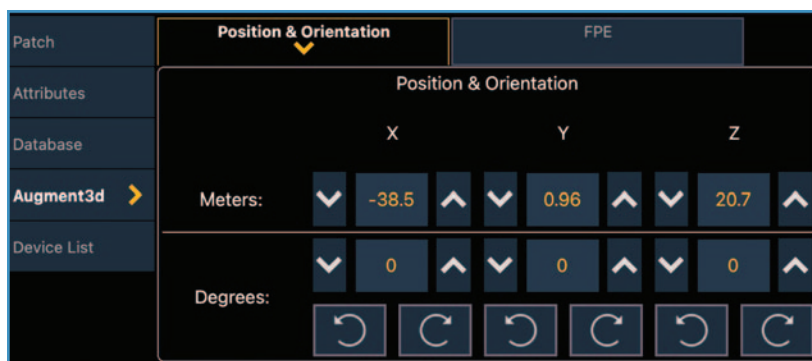


Figure 15.

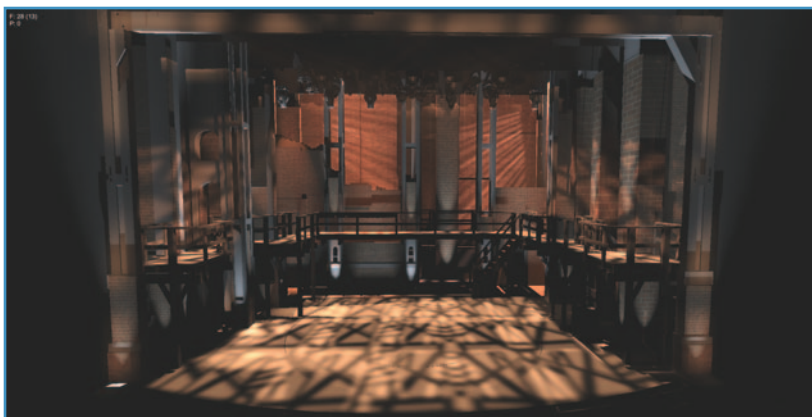


Figure 16.

effort working on this (Figure 17). It still feels like a miracle when you tell a Lustr to go to color Rosco 68, and what feels like exactly that color appears out of the light—yet it's absolutely as it should be, and despite the protestations of the GDTF crowd, is still something that I've only seen Eos consoles with ETC lights achieve. Don't care about gel numbers? Fine—but it'll still be useful to you to select a whole pile of different fixtures and have them all go to the same blue, or to be able to define and control the route a fade from one color to another takes. It's this ability to be precise about the details that endears Eos to the theatre crowd in particular.

That crowd also loves all the things Eos does to help them make a show quickly and reliably, from the most fundamental thing of recording a cue and knowing it's safely captured—

which sounds obvious but is easy to mess up on certain other consoles. There's a lot of thinking that's gone on here; the result is that it almost always feels like Eos is just doing the right thing to help you, even if it's not necessarily the most logically correct thing.

What I suspect the software needs to do now, though, is take a breath from adding new functionality to catch up with some of the things the new hardware offers. For example: The most obvious use-case for adding icons to those fancy buttons is gobo images. The console has them—you see them in its on-screen moving light controls—but adding them to the buttons is a very manual process. It's so clearly wrong it must be very high on the ETC to-do list—but it's not quite to-done yet. Hopefully, soon, and ETC is pretty regular in its releases (I tested the



Figure 17.

console with V3.1.3; 3.1.5 dropped as I was writing this a couple of weeks later).

Right now, the Apex hardware gives good trade show, and the software—particularly with Augment3d running and some well-crafted magic sheets—does, too. That’s all useful in real life too, of course, but the strength of Eos was, is, and continues to be in the less-flashy, less-obvious stuff that’s nonetheless vital to making lighting. Harder to appreciate at a trade show, invaluable in the middle of a crazy tech.

Hopefully, the new hardware—there is some serious CPU and GPU horsepower in there—keeps all that running slickly even with all of the new frills around the edges. And I really hope it gives new opportunities for helping manage the enormous

amounts of information we deal with moment by moment, doing what computers do best by sorting through it for us and presenting it to us proactively rather than just giving us some better tools to manually go hunting for it.

Choosing...

The downside to all this new hardware is, inevitably, price. There’s been a while when a comparable Eos has been much cheaper than an equivalent MA, but that’s not the case anymore, and it does feel like there’s quite a big gap between the @5 and the Apex 5, right where the Gio used to sit. But, just as with the grandMA3, you’re getting a lot of physical console for your money, plus ETC’s great support, plus of course you’re really paying for the cost of developing that

notionally free software.

Eos versus A3? That’s a harder question and, as my very wise friend and colleague Mike Wood would say, that’s ultimately your decision. The stereotype has become Eos as the theatre desk, MA as the live event desk, but the truth is really that anything one can do, the other can do, whether it be large rigs, multi-user control, complex multi-surface control systems, partitioning between users, LED arrays, show control, or more. Sometimes one does something a little better, sometimes a little worse right up to next software release when it all flip-flops. The main difference is that MA is based around the core philosophy of a programmer (by default, it only stores things you’ve adjusted, unless you tell it otherwise), whereas Eos isn’t (by default, it stores everything, unless you tell it otherwise). Some feel comfortable in one world, some in the other and I really believe that’s what’ll make the choice for you.

Either way, the advantage of having two big players racing each other and so constantly pushing each other (plus several others around the sides, to keep them both on their toes) is this: Even as lighting keeps getting more complex, the tools we must deal with lighting keep getting better. Regardless of your allegiance, long may that continue. 📶