

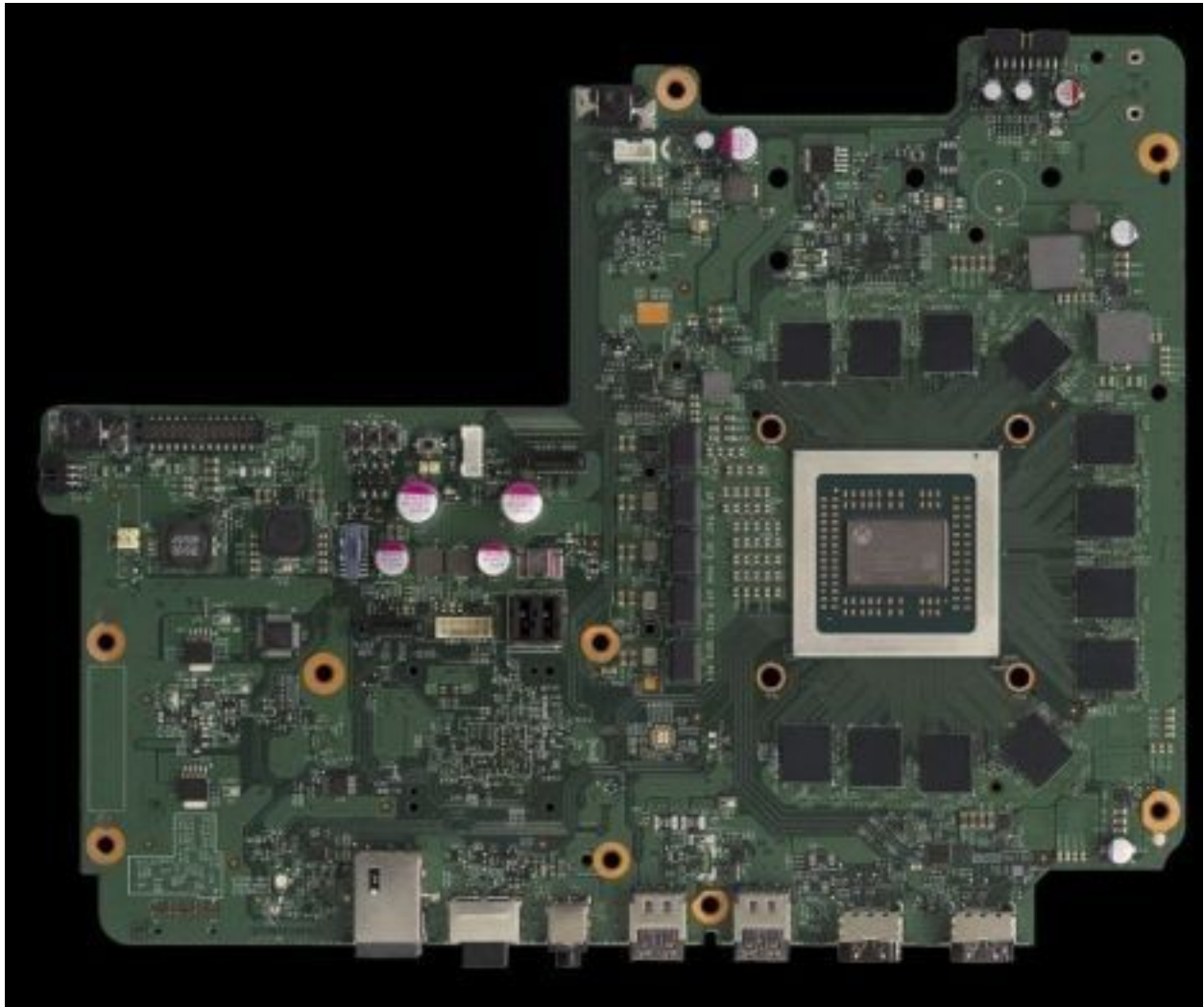
Gaming Console

We're all spending a majority of our time indoors these days, and finding mental escapes wherever possible is definitely helpful for our mental health. That's why we love video games. Visiting and playing in other worlds (where consequences rarely exist) isn't just for teenagers, there is truly a video game system and game out there for everyone to enjoy. Whether you own a Nintendo Switch, a PS4 Pro, or an Xbox One X, you've got a platform capable of playing new, cutting-edge games – but what sets these machines apart from each other, or from mainstream gaming PCs? In many cases, less than you might think. The Q-SYS User Control Interface (UCI) provides a means by which a user can control defined parts of a Q-SYS design via a networked device such as the Q-SYS touchscreen controller (TSC) panel, Windows based PC, Apple iPad, iPhone, and others. The UCI is created in Q-SYS Designer, and has one or more pages that can contain controls, indicators, and graphic objects dragged in from the Schematic. Graphic objects and images can also be inserted directly into UCI pages by dragging and dropping, or copying and pasting from other applications (Not all applications support both methods)

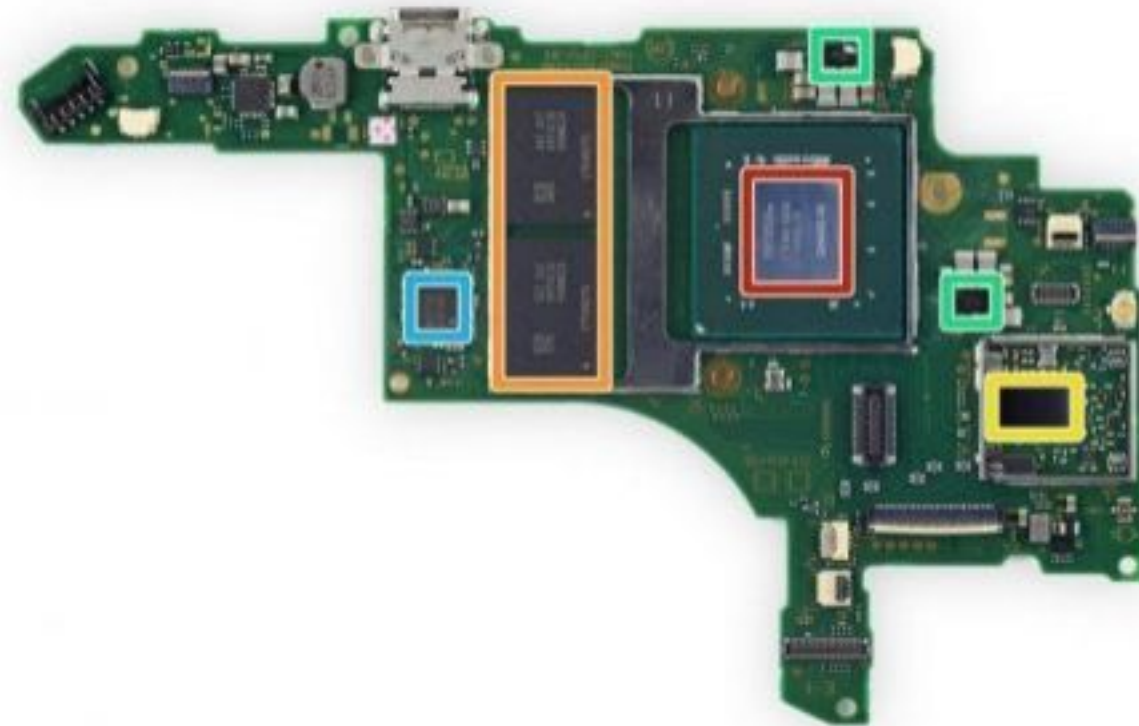


The Nvidia-built GPU is on the left, the Cell Broadband Engine (CPU) is on the right, and the chip above the CBE is the southbridge, where I/O connectivity was provided. The CPU's XDR RAM is

the four blocks just to the right of the CBE.



While machines like the PS3 eventually moved to a single SoC later in the platform's lifespan, the Xbox one X and Ps4 debuted with these technologies in place. The rationale is simple: The fewer chips on the board, the less complex the routing and the fewer components you have to pay to install. The Xbox One X's central SoC is the large processor on the board surrounded by its memory. While we've focused on the Xbox One X and Switch as the most-and-least powerful consoles of their respective generations, these trends hold true for the PS4 and PS4 Pro as well.



This image, from iFixit, shows the Switch's SoC (red), the 4GB of RAM (orange), and its Wi-Fi and Bluetooth controllers (2x green boxes).

What's surprising isn't that mobile devices are tightly integrated, but that we've seen this integration play out even in large systems. The same is absolutely true of PCs. While many PCs continue to offer large numbers of external expansion ports via PCI Express (thereby requiring certain minimum amounts of real estate), many to all of those connective ports use silicon built directly into AMD and Intel's latest CPUs. At a hardware level, PCs and consoles are more alike than ever. Switch runs on ARM, but the Xbox One and PS4 (and their upgrades) are all x86 processors that use a PC-derived graphics architecture. Practically speaking, the only difference between the Xbox, PS4, and PC is the operating system and the capabilities the developer has chosen to expose to end-users.