

But That's Obsolete - Not

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Serial ports have disappeared from PCs but are they really gone?

The title may use an idiom that is obsolete, or at least out of vogue, but the idea is one embedded developers should remember. What may obviously be obsolete in one context does not make it so for all contexts. In particular, that obsolete technology may still be the best choice so do not ignore a solution just because you might think it is obsolete.

On the plus side, examples abound in the embedded space where many think that older technology is obsolete but where these older solutions are a very important part of today's electronic ecology. Take serial ports as an example. It is one technology that the uninitiated thinks has disappeared because they look at electronic products like PCs, laptops and tablets where USB and wireless connectivity is the norm. There is not a serial port to be found. In this arena, the raw serial port has disappeared but to those that know, it is just hidden behind a USB adapter.

Many low end debug interfaces on development platforms still utilize a serial port interface even though they have a USB connector. The Turtlecore (*see [TurtleCore Tacks Cortex-A8 On To iRobot Create](#)*) works this way. I use minicom, a serial port terminal emulator, to interface with the Gumstix module on the robotic platform.

USB does have many advantages over serial ports which is why USB is dominant in the PC and mobile space. It can handle multiple devices and uses a single interface to do it. USB 3.0 runs rings around the typical serial interface and USB profiles and classes provide a level of standard APIs that serial ports lack allowing interchange of third party USB devices without modification to the host software. Few remember when every USB device, include flash drives, had a custom driver.

One place raw RS-232/422 serial ports abound is on embedded motherboards. The typical PC motherboard has only USB ports along with PCI Express slots, SATA/SAS connectors and possibly a video and audio connector. Serial, parallel and PS/2 keyboard ports used to be in the list in place of USB ports. PS/2 ports are obsolete but serial and parallel interfaces live on.

Many embedded motherboards have headers for half a dozen serial ports. This is because they provide a standard interface, are easy to connect and easy to program. It makes the host easy to program and the device easy to create. The cost is low and serial interfaces have a couple of advantages over USB including distance and EMI resistance especially over long distances. The interface can also be used without additional drive electronics when used within a system or when the host and device are on the same board.

Serial ports do have competition from other interfaces like SPI and I²C but these out of the public eye as well. They are also well known to embedded designers and suffer the same fate when compared to PCI Express, MIPI and USB. Still, each has a niche where the others do not go.

If you think that serial ports are an exception to the obsolete idiom then look a little closer to all those technologies that you use now. Think about VME versus VPX, CompactPCI and CompactPCI Serial, PC PCI and PCI Express. The migration to high speed serial interfaces is well underway but those parallel bus platforms still have a lot to offer and will not go away.

Like serial interfaces, the latest PC and laptop motherboards lack PCI or even the older ISA interfaces. PCI Express has taken over. Look on the embedded side and PCI and even ISA is alive and well. Why? High speed interfaces are overkill in many applications especially control applications. They are harder to design with and more costly to build. Try doing PCI Express Gen 3 on a single or double sided motherboard of any complexity. It can be done but not easily.

So before you state that a technology is obsolete, take a closer look. It may not be what you want for your solution but, then again, it might be the right technology to choose.

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