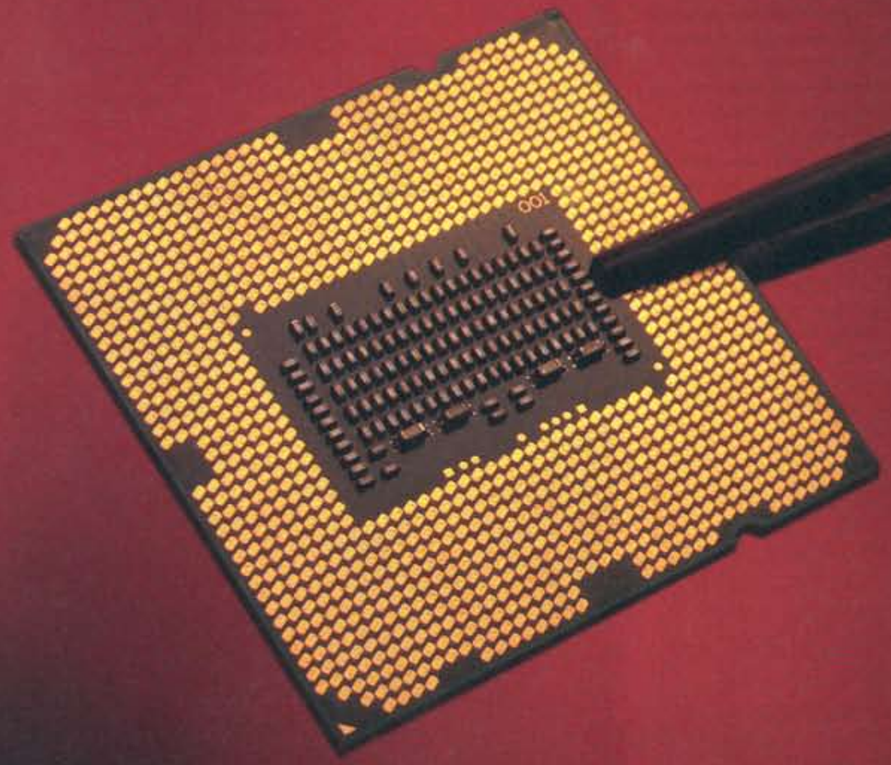
THE TECHNOLOGY OF 2010



WE'VE SEEN THE FUTURE

AND IT'S FULL OF NEW AND EXCITING HARDWARE FOR POWER USERS

BY GORDON MAH UNG, NATHAN EDWARDS, LOYD CASE, AND JASON CROSS

So much in life is unknowable. Will the economy rebound? Hard to say. Will oil prices skyrocket? Maybe, maybe not. Will Brangelina add to their brood? Frankly, we don't care. But one thing's for sure: Technology is ever-changing and each year guarantees new advances for the PC user.

As we do every year around this time, we got on the horn with our industry contacts—experts in their respective fields—and pressed them for details about what new and exciting hardware power users can look forward to in 2010. Some of what we learned was expected (SATA speeds will double), some came from out of left field (six 30-inch panels on a single videocard?!), and some just plain make sense (like a Nehalem chip for the masses).

Read on to find out how your personal computing landscape stands to be altered in the year ahead.

USB 3.0

Like USB 2.0, but 10 times as fast

The maximum data transfer speed of USB 2.0 is 480Mb/s, which was fine when it was invented. Now that you have to fill dozens of gigabytes of apps, music, and movies on your cell phone or iPod, it seems kind of pokey. Enter USB 3.0, dubbed SuperSpeed USB (2.0 is officially Hi-Speed USB). The new spec boosts transfer speeds 10x to 4.8Gb/s, which means in the real world you might see transfer speeds up to around 400 megabytes per second. It also operates in full-duplex mode, meaning the USB host can send and receive data simultaneously. All previous USB specs are half-duplex.

SuperSpeed USB ports will be backward compatible with Hi-Speed USB—of course, you won't get the additional speed. You'll notice that the ports and cables used for SuperSpeed mode are a little different, though. The heads are a little longer, with the additional pins for the SuperSpeed mode data extending beyond the usual USB plug.

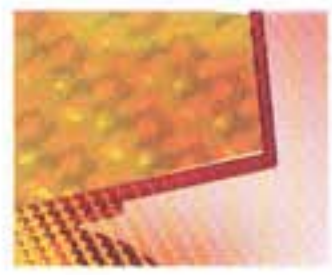
Other nice additions to the spec include new power management modes and an increase in the base power load, so charging your USB 3.0–compatible devices may be 50–80 percent faster than with USB 2.0. The best part? Motherboards with USB 3.0 ports should start rolling out by the end of this year—if we're lucky. –JC

DisplayPort

Smaller, simpler, faster

DisplayPort is not so much an "upcoming" technology as an "already here" one. AMD, Dell, and Apple already ship a few products with DisplayPort support, for instance. This new VESA digital display connection standard is essentially a replacement for DVI for external monitors and LVDS for internal connections to notebook displays.

What's so special about it? Well, the connector is smaller, simpler, and doesn't have those annoying thumb screws that catch onto every cable like a grappling hook, for starters. The cables are slimmer, and a DisplayPort-only monitor could itself be slimmer—and cheaper.



Primarily, DisplayPort provides more data per wire than DVI. You know how you need a dual-link DVI cable to use a monitor with a resolution over 1920x1200? A "single-link" DisplayPort cable should provide enough bandwidth for 2560x1600, or deeper color modes. There's also an auxiliary 1Mb/s bidirectional data channel that could be used to carry touch-screen data, data for a built-in microphone, etc. The spec supports HDCP content protection, but don't expect it to replace HDMI on consumer electronics. Each will serve its own market. DisplayPort might pick up traction fastest in notebooks to replace LVDS to drive the display with fewer wires. Hinge space is already at a premium and crammed with wires, so less is more. –JC

Touch

It's not just for your cell phone anymore

It seems like touch-screen technology is everywhere these days. The resistive touch screens seen on old Windows Mobile devices and the Nintendo DS are quickly being replaced by more finger-friendly capacitive multitouch technology (iPhone, Zune HD). It seems like every smartphone in the world and half the portable media players these days are built around the idea that you'll operate them entirely by smearing your grubby fingers all over the screen.

Touch might be poised to enter the main computing world, too. Sure, you can get an HP TouchSmart all-in-one or a Tablet PC today, but those aren't exactly the norm. Microsoft is desperately interested in touch technology these days, and where Microsoft goes, the PC industry often follows. Witness the Surface computer and Windows 7. The latest OS out of Redmond incorporates native touch controls throughout and a multitouch API for developers. Windows 7 is clearly designed primarily for a mouse, but the seeds have been planted.

All we need now is a proliferation of touch-screen PC hardware. We need desktop monitors that are touch-enabled, and notebooks with touch screens (that aren't necessarily Tablet PCs). Building this kind of support into devices is getting cheaper all the time, but the push these days is to lower-cost PCs, not premium features. Will touch for mainstream PCs and notebooks take off? It's hard to say, but it's definitely worth keeping an eye on. –JC