SUMMER-IZE YOUR iPOD: The hottest accessories for fun in the sun p16

Mac|Life

CREATE SHARE ENJOY

JULY 2007 NO.6

WEB 2.0

HOW TO MAKE IT WORK FOR YOU

Use your Mac to stake your claim on the new Web frontier.

PLUS: The raddest sites you *haven't* heard of! p22

A Day in the Life of an Apple Genius

Tales from the other side of the Genius Bar p44

HOW TO:

- **Remotely Control an Army of Macs**
- **Turn Your Cell Phone into a Mac Remote**

REVIEWED: Best Kids' Software p35

$5.99US $7.99CAN
07
Future MEDIA WITH PASSION
0 09281 01096 8

5 Breakthrough Technologies You Must Know About

Every year, dozens of technologies emerge that promise to revolutionize the consumer electronics industry. Remember magnetic-bubble memory? And the Newton's much-jeered-at first-generation handwriting recognition? In the last few years, development of a variety of wireless, high-speed Internet access and high-definition audio and video technologies has flourished. We weeded out the improbable and half-baked ideas to identify five innovations that promise to bring cool new capabilities to the Mac and other Apple gadgets. **BY LOGAN KUGLER**

ULTRA WIDEBAND

Ground-penetrating radar is used by search-and-rescue teams to explore the rubble of collapsed buildings. Archeologists use a similar technology to make sure they don't start a dig in vain. Soon, that same radio technology—called ultra wideband (UWB)—will allow you to wirelessly beam high-definition TV signals from the Mac in your bedroom to the TV in your living room. In a typical scenario, UWB would operate at speeds of up to 110 megabits per second (110Mbps), enough bandwidth to carry compressed HDTV signals out to a Bluetooth-like range of about 30 feet through typical interior obstructions like walls and doors. When range between a device and a base station decreases to, say, 3 feet, there have been reports that UWB can transmit at speeds up to 2 gigabits per second (2Gbps)—but that's not likely to be available anytime soon, and the distance limitation makes it somewhat pointless. Speeds of up to 480Mbps within a 10-foot range are more likely.

Since Apple has been rumored for some time to be planning a Wi-Fi-enabled iPod, the possibility that Apple might also add UWB to its music player might not be all that farfetched. Within a year or two, you might be able to transfer a 1.4GB high-definition movie to your sixth-generation iPod in a mere 13 seconds—while it's still in your pocket.

WIRELESS HIGH-DEFINITION INTERFACE

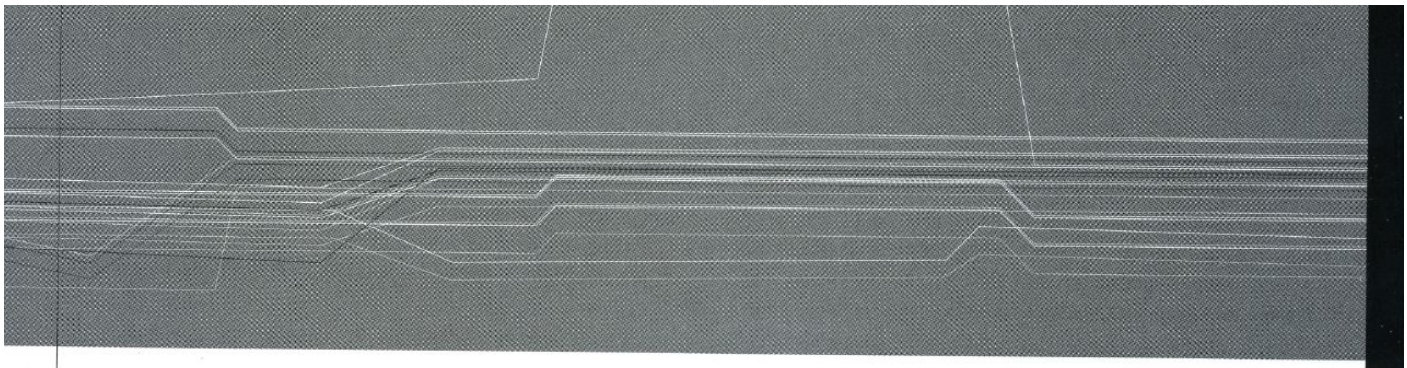
Back in the day, VHS beat Betamax for supremacy in the first video-format war. Today, dual-format players may render the Blu-ray vs. HD-DVD battle moot. On the other hand, ultra wideband and another technology called wireless high-definition interface (WHDI) are likely to coexist peacefully. That's because UWB is a data-transfer technology that can also transmit video, while WHDI is specifically designed to replace video cables altogether. WHDI is essentially being positioned as a wireless alternative to HDMI (high-definition multimedia interface), which connects HD-capable devices such as TVs and set-top boxes like the Apple TV.

WHDI promises a range and bandwidth triple or quadruple that of UWB. With Apple now concentrating its efforts on capturing the digital media market and bringing high-definition video to all comers, it's likely that the company is looking at WHDI. With WHDI and UWB working together, future versions of Apple's AirPort Extreme may possess the ability to link up with an HD network, just as the base stations now access Wi-Fi networks. Imagine sitting in an airport lounge and not just checking your email, but also viewing the latest episode of *30 Rock* in HD. Such services aren't likely to be free, however. The fact that WHDI uses some of the same technology as HDMI allows the stream to be encrypted, meaning that video-content providers can control the flow of programming. Expect licensing deals to be announced later this year, with the first WHDI products appearing soon after.

OLED DISPLAYS

SOLEDs, PLEDs, and TOLEDs are a family of new display technologies based on organic light-emitting diodes, or OLEDs. (The extra letters in the abbreviations stand for stacked, polymer, and transparent, respectively.) Many Apple watchers believe the company has been planning to use OLEDs in its products since as early as 2003—and some have even speculated wildly that the iPhone may sport an OLED touchscreen display when it ships in June. We doubt Apple will switch from a TFT display to an OLED one for the first-generation iPhone, however.

OLEDs have had their share of problems, including poor resistance to water, and a display life as short as 5,000 hours—that's just over a year at 12 hours of use per day. But one area where OLEDs shine is in energy consumption: The displays use considerably less power than LCDs because they don't need to



be backlit. Apple is already trying to wrangle better battery life out of the iPhone, so it stands to reason that the company might consider OLEDs' power-saving potential. Compared to LCDs, OLED displays also offer improved color and brightness, and better viewing angles. Sony recently debuted an OLED display with a full high-definition 1080p resolution and a 1 million-to-1 contrast ratio—and it's only 0.35 inches thick.

OLED displays are still expensive—another reason we don't expect the technology to be integrated into the iPhone until the second or third generation. It's reasonable to expect that Mac notebooks will start shipping with OLED displays at some point in the next couple years too.

WIRELESS POWER

Ever since the advent of home electronics, cords and cables have been a reality for consumer devices. But in the last decade almost everything has gone wireless—Internet, TV, email, music and video sharing, and more. But no matter how much the tangle of wires behind your Mac has shrunk, there's still one cord you always have to connect: the power cable. That's the only limitation that keeps you from placing a Mac in *any* corner of your home or office. But a completely wireless Mac—or TV, or stereo, or other device—would free you up to arrange your home office or theater any way you please.

The technology is called electricity broadcast, and it works using the physics phenomenon of resonance, or the tendency of a system to vibrate at maximum amplitude at a certain frequency. People often associate resonance with acoustics, but it can also be mechanical or electrical in nature.

A completely wireless Mac would free you up to arrange your home office any way you please.

A startup company called Powercast and its first major partner, electronics giant Philips, are set to debut the first electricity-broadcast device—an LED light stick—by the end of 2008. Millions more small devices, such as MP3 players, temperature sensors, and even hearing aids, should follow from other vendors. The technology works by plugging a transmitter (about the size of a MacBook power adaptor) into a power outlet, which converts the electricity into a radio frequency that's picked up by a receiver (about the size of a dime) that's built into the device. The receiver turns the radio waves into DC electricity to charge the battery.

There are limits to the charging capabilities of Powercast's technology. For one, distance will initially be around 3 feet (1 meter) from the power source. Also, larger electronics, such as computers or televisions, won't be able to use the company's solution at first, because they require too much power. The size limit for now seems to be at the cell-phone level for effective charging, company executives say. The good news is that the technology will be able to wirelessly charge iPods with their current power requirements. Powercast expects that the technology could power laptops within five years. One hurdle, however, could be getting government approval to operate on the necessary wireless frequency.

ULTRA HIGH-SPEED INTERNET

Internet speed junkies may lament the fact that countries like South Korea, France, and Japan enjoy far faster broadband speeds at better prices than U.S. Web surfers do. For instance, last summer, France rolled out a residential trial service in Paris that boasted maximum transfer speeds up to 2.5Gbps downstream and 1.2Gbps upstream and offered households Internet access, digital television, and unlimited phone calls—all for €70 per month (about $96 at press time).

But the United States could catch up. Comcast, Cox, and Time Warner Cable all currently offer download speeds in the 5Mbps to 15Mbps range for residential service, while Verizon peaks at a whopping 50Mbps—and, of course, such cable connections are shared among multiple subscribers. With Verizon's new gigabit passive optical network (GPON), which runs over the carrier's existing fiber network but with faster equipment at each end, that speed will increase to 200Mbps download and 40Mbps upload.

Now let's talk about real speed: 160Gbps. Enter IBM's new optical transceiver chipset, which could bring us the next generation of high-speed Internet. At only 2.5mm by 3.5mm in size, the chipset is 1/15 the area of a U.S. dime. By the time this chipset reaches the consumer market—probably about five years from now—processor and other speeds will have caught up. If you could take advantage of all the speed made available by the new chipset, you'd be able to download an entire HD movie *in a second*—compared to the hours it takes today. Considering, however, that residential customers will more likely share a 160Gbps line among 100-plus households, it's more likely you'd be looking at about a 1Gbps download rate. IBM expects the new chipset to hit the market in a couple of years, at which point service providers will get to bid against each other on who gets first dibs at installing it. But, of course, only homes wired for fiber will be able to take advantage of the new lightning-fast Net connection.

Logan Kugler recently traveled to the future in his homemade time machine and got to use every one of these technologies himself. Then he woke up.