

■ Tablet PCs

Portable computers have been around for decades and have revolutionized the tech industry. We are now an 'always-on' culture basking in productivity and convenience. But it seems like there are an endless number of tech terms for portable computers these days; laptops, notebooks, netbooks, convertible laptops, tablets, slates, UMPCs (ultra mobile PCs), Smartphones. It's easy to get confused since nearly all manufacturers tout that their device will solve all of your problems and make your life easier.

That's where knowing the difference between these devices gives you an advantage.

■ Tip of the Month

Multi-touch Monitors

If you primarily do all of your computing at a desk and don't want to get left behind as far as multi-touch capabilities go, don't worry ... multi-touch monitors are available that you can attach to a PC and use multi-touch gestures such as pan, zoom and rotate with your fingers. For this scenario to work, you'll need two things:

1. A monitor with a touch enabled surface

Several manufacturers including Dell, HP, 3M and Acer currently offer touch monitors. Look for many more manufacturers in the coming months.

2. A PC with a multi-touch capable OS *

Windows 7 (Home, Premium and Ultimate versions) has touch capabilities built-in to the OS giving you an all around unified touch experience. Other OS makers like Apple, Linux and Android (Google) also support multi-touch capabilities.

* Or by downloading specific drivers for Windows XP or Vista offered by the manufacturer of certain touch enabled monitors. Not all monitors will have drivers for older operating systems.

The feature that draws all of these devices together is the fact that they are all portable while the difference lies in computing power and interface.

So let's describe the differences very briefly.

Laptops and notebooks are synonymous - full featured computing devices; **netbooks** are smaller, have less computing power and less features than a full size laptop; **convertible laptops and slates** are types of tablets - they are similar to laptops and netbooks but with a touchscreen interface similar to many Smartphones. Smartphones are cell phones that offer web browsing and access to email and data files in a small pocketable format. The term **UMPC** can be used to describe any of these devices constrained only by size (less than 12") and weight.

Since we last discussed tablets in our September 2006 newsletter, there have been many advances. In this newsletter, we'll go over the history of tablets, describe the best applications for them and list the four types of tablets on the market right now.

What is a Tablet?

At the basic level, a tablet is a portable computing device that has a touchscreen (using a finger or stylus) or multi-touch screen (using several fingers at once). Most are capable of accessing the Internet, email and Office documents as well as having the ability to download software.

Some tablets are similar to laptops, others most closely resemble smartphones or PDAs. We'll discuss 4 types of tablets later on but first we'll give a brief history of the technology and discuss who might benefit by using a tablet PC.

■ Website Worth Watching

- ▶ <http://www.wififreespot.com> - Need to find a free wi-fi location? Print out this list - covers cities in all 50 states and many international destinations.

Tablet History

Tablet computers are not new. The first patent for a stylus device that captured handwriting was granted in 1888. Many options throughout the 1900s were created but cost and marketability kept the technology at bay. The most well known option of a tablet computer was IBM's ThinkPad line, released in 1993. For the past seventeen years, tablets have been growing in popularity because the technology has grown more robustly giving the user more features while keeping the costs reasonable.

After IBM's introduction, Microsoft first began its foray into tablets in 2000 and in 2003, released Windows XP Tablet PC Edition to manufacturers. Two reasons

why the technology didn't take off then were hardware related: 1) the devices were expensive and 2) they required a stylus to complete tasks.

Despite the lack of attention tablet devices received when they were first introduced, certain industries, like healthcare, transportation, and warehouse management, have been using tablets for many years. These fields, in particular, have many people who need to take notes or record data while standing up and moving around. In these industries and others, any device without wires, keyboards or mice interfering is an advantage.

Multi-touch Technology

Although tablet PCs weren't an instant hit, the technology was worthy enough that it has been slowly improving over the years. At first, touchscreens were developed that allowed the user to touch the screen with a finger or stylus in one location at a time. Now, multi-touch screens have been developed that allow multiple touches simultaneously. Instead of tapping the screen to turn the page, users can now glide their finger across the screen to advance to the next page or use three fingers to make a ball spin. To see multi-touch technology in action, visit the following website:

<http://www.perceptivepixel.com/>

While the video on this site's home page shows a large multi-touch screen on a wall, the technology can be scaled down to function on any size screen including cell phones, computer monitors, laptops and more.

Before multi-touch technology was introduced in 2006, tablets with touchscreen interfaces were being used in select industries:

1. Design professionals have been using tablets for years – using a stylus (computerized pen) for drawing is indispensable compared to a keyboard and mouse. Wacom is the current leader in this market and although it's a niche area, the touch-

screen interface has consistently been improving due to industry demand.

2. Home automation has also helped to further the technology. Many homes have been using touchscreen interfaces to allow them to control lighting, heating, cooling, music and security all from a central location. Touch interfaces allow onscreen instructions and buttons to guide the user through the process of making adjustments and verifying inputs - helpful for the average consumer.
3. Other touchscreen interfaces include grocery store self-checkout kiosks and ATMs. While these units aren't portable, they have helped people feel more comfortable with touchscreen devices in general which has spurred the industries growth.

Now that the technology is expanding and more manufacturers are getting involved (about 20 companies currently manufacture multi-touch devices), multi-touch screens will start to replace touchscreens.

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Touchscreen Benefits and Applications

Right now, the following applications/users would benefit from tablets and touchscreen technology:

- On-site insurance claims
- Real estate transactions
- Surveyors / Appraisers
- Field work, research
- Healthcare
- Inventory
- Business presentations – display notes, graphics
- Students – note taking
- Architects / Designers
- Transportation – recording mileage logs, data entry
- Any application that requires handwriting recognition, filling out forms

Instead of single taps on the screen, a multi-touch screen will allow you to pinch the screen with two fingers to zoom, swipe the screen to scroll, and use one or two fingers to pan (rotate or move objects horizontally). Whereas a traditional touchscreen can only register one touch at a time, a multi-touch screen can process many gestures at once; all without using a keyboard or mouse.

If you have an iPhone or know someone who does, you can see this technology in action right now. It's important to point out that there are plenty of cell phones/Smartphones that offer touchscreens - Apple isn't the only choice. HTC, Palm, LG, Motorola, and Blackberry all offer these advanced screens - they're more expensive but the cost will come down as the new technology matures.

Tablet PCs – 4 Types

There are four main categories of tablets with varying features: booklets, slates, convertibles, and hybrids.

1. **Booklets** are clamshell devices with dual screens, a stylus and features such as handwriting recognition. Example: the Entourage eDGe (*Figure 1*); one side has an e-Ink display measuring 9.7" and the other is a color touchscreen measuring 10.1" for surfing the web, checking email, word processing and more. The eDGe runs the Android OS, has 3 GB of memory and offers a virtual keyboard. Overall specs: weight: 3 lbs, size: 8 1/4" x 10 3/4" x 1". On the horizon is a booklet from Microsoft called Courier. Currently in late prototype stage, the Courier will behave very similarly and run Windows 7.
2. **Slates** are PCs with a processor and memory but forego a dedicated keyboard. Instead, inputs are completed via stylus or fingertouch. Some slates have on-screen virtual keyboards while others, like the new Apple iPad (*Figure 2*), offer detachable keyboards as an add-on. Many newer slates are being geared towards consumers who want to access the Internet, email, chat, watch movies and play games on a handheld device.



Figure 1. Entourage eDGe - open, flat view of the booklet showing two different screens.



Figure 2. Apple iPad shown on the docking station. The iPad measures 9.5" x 7.4" x .5" and weighs 1.5 lbs.

3. **Convertible tablets** (*Figure 3*) more closely resemble traditional laptops except the screen will pivot and swivel enabling it to function like a clipboard in addition to a laptop; helpful for jotting notes down, drawing on the screen or for displaying information to others while you type. Convertible tablets are full featured devices with ample hard drive space, numerous ports for connecting peripherals, robust graphic cards, and either internal or external optical drives. And like all other tablets, they have a responsive touchscreen or multi-touch screen with finger or stylus.



Figure 3. Dell Latitude XT2 - a convertible tablet with a multi-touch screen capable of running a full Windows OS and full suite of software. The XT2 has a 12" screen and weighs 3.6 lbs.

4. **Hybrids** combine the features of slates and convertibles allowing the screen to be detached from the keyboard. A hybrid tablet due to be released in Summer 2010 by Lenovo has a keyboard base and multi-touch screen that can be detached (*Figure 4*). The base includes a Windows OS while the screen includes a separate Linux processor making this a highly versatile device whether you're on the go or sitting at your desk.



Figure 4. Lenovo IdeaPad U1 - the screen completely detaches from the cover making this a full size notebook as well as a tablet.

Conclusion

Tablet PCs have been available for years but they haven't received much attention. Now that touch technology has improved and the costs have come down, tablets are set to take off. There are many options on the market right now with varying specifications to suit individual needs.

Many consumer tablets are thin, lightweight, offer multimedia content, touch gestures, and allow people to connect the way they want to – via email, chats, Twitter, Facebook, webcams and more. Other tablets geared for businesses have rugged exteriors and high-quality components such as solid state hard drives (no moving parts in the drive improves the failure rate when dropped or mishandled).

With touch based screens, tablets are ideal for healthcare workers, warehouse or inventory management, or anyone looking for a handheld device for use during meetings or small-scale presentations. In this arena slates can really shine giving attendees

access to supplemental documents, images, web sites and more. Presenters no longer need a whiteboard or projector; individual slates can fill nearly every need.

When researching tablets, keep in mind that not all touchscreens will have multi-touch capabilities. If you're interested in this feature, look for the phrase 'multi-touch' in the devices' specifications.

Finally, if you want to eliminate buttons, wheels and sliders in addition to mice and keyboards, touchscreen technology is available in many electronic devices such as wireless internet radios, alarm clocks, and other handheld devices. In the next few years, we will continue to see improvements in this truly revolutionary technology.

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