Tablet computer

From Wikipedia, the free encyclopedia

A **tablet computer**, or simply **tablet**, is a mobile computer with display, circuitry and battery in a single unit. Tablets are equipped with sensors, including cameras, microphone, accelerometer and touchscreen, with finger or stylus gestures replacing computer mouse and keyboard. Tablets may include physical buttons, e.g., to control basic features such as speaker volume and power and ports for network communications and to charge the battery. An on-screen, pop-up virtual keyboard is usually used for typing. Tablets are typically larger than smart phones or personal digital assistants at 7 inches (18 cm) or larger, measured diagonally.[1][2][3]

iPad (1st generation), a tablet computer

Hybrids that include detachable keyboards have been sold since the mid-1990s. Convertible touchscreen notebook computers have an integrated keyboard that can be hidden by a swivel or slide joint. *Booklet* tablets have dual-touchscreens and can be used as a notebook by displaying a virtual keyboard on one of the displays.

Conceptualized in the mid-20th century and prototyped and developed in the last two decades of that century, the devices became popular in 2010.

As of March 2012, 31% of U.S. Internet users were reported to have a tablet, which was used mainly for viewing published content such as video and news.[4] Among tablets available in 2012, the top-selling line of devices was Apple's iPad with 100 million sold by mid October 2012 since its release on April 3, 2010,[5] followed by Amazon's Kindle Fire with 7 million, and Barnes & Noble's Nook with 5 million.[6][7][8] As of May 2013, over 70% of mobile developers were targeting tablets[9] (vs. 93% for smartphones and 18% for feature phones).

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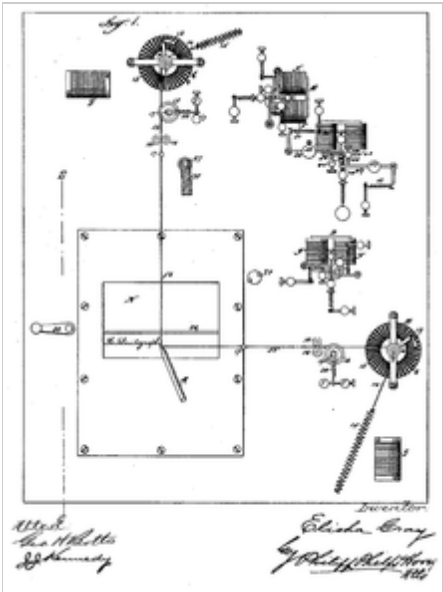
History

Main article: History of tablet computers



1888 telautograph patent schema

The tablet computer and its associated operating system began with the development of pen computing.[10] Electrical devices with data input and output on a flat information display existed as early as 1888 with the telautograph,[11] which used a sheet of paper as display and a pen attached to electromechanical actuators. Throughout the 20th century devices with these characteristics have been imagined and created whether as blueprints, prototypes, or commercial products. In addition to many academic and research systems, several companies released commercial products in the 1980s.

Fictional and prototype tablets

Tablet computers appeared in a number of works of science fiction in the second half of the 20th century, with the depiction of Arthur C. Clarke's **NewsPad**,[12] in Stanley Kubrick's 1968 film *2001: A Space Odyssey*, the description of **Calculator Pad** in the 1951 novel *Foundation* by Isaac Asimov, the **Opton** in the 1961 novel *Return from the Stars* by Stanislaw Lem, *The Hitchhikers Guide to the Galaxy* in Douglas Adams 1978 comedy of the same name, and the numerous devices depicted in Gene Roddenberry 1966 *Star Trek* series, all helping to promote and disseminate the concept to a wider audience.[13]

In 1968 computer scientist Alan Kay envisioned a **KiddiComp**, while a PhD candidate[14][15] he developed and described the concept as a **Dynabook** in his 1972 proposal: **A personal computer for children of all ages**,[16] the paper outlines the requirements for a conceptual portable educational device that would offer functionality similar to that supplied via a laptop computer or (in some of its other incarnations) a tablet or slate computer with the exception of the requirement for any Dynabook devise offering near eternal battery life. Adults could also use a Dynabook, but the target audience was children.

The sci-fi TV series Star Trek The Next Generation featured tablet computers which were designated as "padds".

[*citation needed*]

In 1994 the European Union initiated the 'OMI-NewsPAD' project (EP9252), inspired by Clarke and Kubrick's fictional work.[17] Acorn Computers developed and delivered an ARM-based touch screen tablet computer for this program, branded the NewsPad. The Barcelona-based trial ended in 1997.[18]

During the Nov, 2000 COMDEX Microsoft used the term Tablet PC to describe a prototype handheld device they were demonstrating.[19] and 2001.[20][21]

In Pikmin 3 (2013), Alph, Brittany, and Charlie have KopPads (parodies of iPads) that match the color of their uniforms to communicate to each other when separated and gain data and info about fruits, pikmin, and devices on earth.

In 2001 Ericsson Mobile Communications announced an experimental product named the *DelphiPad* which was developed in cooperation with the Centre for Wireless Communications in Singapore, with touch-sensitive screen, Netscape Navigator as web browser and Linux as its operating system.[22][23]

Early devices

Following their earlier tablet-computer products such as the Pencept PenPad[24][25] and the CIC Handwriter,[26] in September 1989, GRiD Systems release the first commercially available tablet-type portable computer, the GRiDPad.[27] All three products were based on extended versions of the MS-DOS operating system.

In 1991 AT&T released their first EO Personal Communicator, this was one of the first commercially available tablets and ran the GO Corporation's PenPoint OS on AT&T's own hardware, including their own AT&T Hobbit CPU.

Apple Computers launched the Apple Newton stylus based computer in 1993. It utilised Apple's own new Newton OS, initially running on hardware manufactured by Motorola and incorporating an ARM CPU, that Apple had specifically co-developed with Acorn Computers. The operating system and platform design were later licensed to Sharp and Digital Ocean, who went on to manufacture their own variants.

In 1996 Palm, Inc. released the first of the Palm OS based PalmPilot touch and stylus based PDA, the touch based devices initially incorporating a Motorola Dragonball (68000) CPU.

Intel announced a StrongARM[28] processor-based touchscreen tablet computer in 1999, under the name WebPAD. It was later re-branded as the "Intel Web Tablet".[29]

In April 2000 Microsoft launched the Pocket PC 2000, utilising their touch capable Windows CE 3.0 operating system. The devices were manufactured by several manufacturers, based on a mix of: x86, MIPS, ARM, and SuperH hardware.

In 2002, Microsoft attempted to define the Microsoft Tablet PC[30] as a mobile computer for field work in business,[31] though their devices failed, mainly due to pricing and usability decisions that limited them to their original purpose.[32]

In 2005 Nokia released the first of its Internet Tablet range, the Nokia 770. These tablets ran a Debian based Linux OS called Maemo.

Android was the first of today's dominating platforms for tablet computers to reach the market. In 2008 the first

plans for Android-based tablets appeared. The first products were released in 2009. Among them was the Archos 5 that was first released with a proprietary operating system and later (in 2009) released with Android 1.4. The Camangi WebStation was released in Q2 2009. The first LTE Android tablet appeared late 2009 and was made by ICD for Verizon. This unit was called the Ultra, but a version called Vega was released around the same time. Ultra had a 7 inch display while Vega's was 15 inches. Many more products followed in 2010. Several manufacturers waited for Android Honeycomb, specifically adapted for use with tablets, which debuted in February 2011.

2010 and afterwards

See also: Mobile operating system

Today's tablets use capacitive touchscreens with multi-touch, unlike earlier stylus-driven resistive touchscreen devices. After 2010, multi-touch and other natural user interface features, as well as flash memory solid state storage and "instant on" warm-booting; external USB and Bluetooth keyboards defined tablets. Some have 3G mobile telephony applications.

Most tablets released since mid-2010 use a version of an ARM processor for longer battery life. The ARM Cortex family is powerful enough for tasks such as internet browsing, light production work and mobile games.[33]

As with smartphones, most mobile tablet apps are supplied through online distribution, rather than boxed software or direct sales from software vendors. These sources, known as "app stores", provide centralized catalogues of software and allow "one click" on-device software purchasing, installation and updates. The app store is often shared with smartphones that use the same operating system.[34]

Apple is often credited for defining a new class of consumer device.[35] It shaped the commercial market for tablets in the following years.[36] iPads and competing devices have been tested by the US military.[37] The most successful tablet is the Apple iPad, using the iOS operating system. Its debut in 2010 pushed tablets into the mainstream.[38][39] Samsung's Galaxy Tab and others followed, continuing the trends towards the features listed above.

In 2013, Samsung announced a tablet running Android and Windows 8 operating systems concurrently; switching from one operating system to the other and vice versa does not require restarting the device, and data can be synchronized between the two operating systems.[40] The device, named ATIV Q, was scheduled for release in late 2013 but has since been delayed.[41] Asus has announced the Transformer Book Trio, a tablet that is capable of running two operating systems, Windows 8 and Android.[42]

Touch interface

A key component among tablet computers is touch input. This allows the user to navigate easily and type with a virtual keyboard on the screen. The first tablet to do this was the GRiDPad by GRiD Systems Corporation; the tablet featured both a stylus, a pen-like tool to aid with precision in a touchscreen device as well as an on-screen keyboard.[43]

The system must respond to touches rather than clicks of a keyboard or mouse, which allows integrated hand-eye operation, a natural use of the somatosensory system.[44][45][46] This is even more true of the more recent multi-touch interface, which often emulate the way objects behave.

Handwriting recognition

Some tablet personal computers such as the Galaxy Note 10 support a stylus and support handwriting recognition. Finger-driven screens are potentially better suited for entering "variable-width stroke-based" characters, such as Chinese/Japanese/Korean writing, due to their built-in capability of "pressure sensing". Much of this potential is unused, except in digital art applications such as Autodesk Sketchbook.[47][48]

Samsung Galaxy Tab demonstrating multi-touch

Touchscreen hardware

Touchscreens are usually one of two forms;

- Resistive touchscreens are passive and respond to pressure on the screen. They allow a high level of precision, useful in emulating a pointer as is common in tablet computers) but may require calibration. Because of the high resolution, a stylus or fingernail is often used. Stylus-oriented systems are less suited to multi-touch.
- Capacitive touchscreens tend to be less accurate, but more responsive than resistive devices. Because they require a conductive material, such as a finger tip, for input, they are not common among stylus-oriented devices, but are prominent on consumer devices.

Some tablets can recognize individual palms, while some professional-grade tablets use pressure-sensitive films, such as those on graphics tablets. Some capacitive touch-screens can detect the size of the touched area and the pressure used.[49]

Chinese characters like this one meaning "person" can be written by handwriting recognition (人, Mandarin: *rén*, Korean: *in*, Japanese: *jin*, *nin*; *hito*, Cantonese: jan4). The character has two strokes, the first shown here in dark, and the second in red. The black area represents the starting position of the writing instrument.

Features

Hardware

- High-definition, anti-glare display
- Wireless internet connectivity (usually with Wi-Fi standard and optional mobile broadband)
- GPS satellite location
- Front- and/or back- facing camera(s) for photographs and video
- Lower weight and longer battery life than a comparably-sized laptop
- Bluetooth for connecting peripherals and communicating with local devices
- Docking station: Keyboard and USB port(s)

Software

- Mobile web browser
- Reader for digital books, periodicals and other content
- Downloadable apps such as games, education and utilities
- Portable media player function including video playback
- E-mail and social media
- Mobile phone functions (messaging, speakerphone, address book)
- Video-teleconferencing

Data storage

- On-board flash memory
- Ports for removable storage
- Cloud storage options for backup and syncing data across devices

Additional inputs

Besides a touchscreen and keyboard, some tablets can also use these input methods:

- Accelerometer: Detects the physical movement and orientation of the tablet. This allows the touchscreen display to shift to either portrait or landscape mode. In addition, tilting the tablet may be used as an input (for instance to steer in a driving game).
- Ambient light and proximity sensors, which help distinguish between intentional and unintentional touches.
- Speech recognition
- Gesture recognition

Sizes

Slates

Writing slate with sponge (~1950).

A slate's size may vary, starting from 7 inches (approximately 18 cm).[50] In the larger than 10-inch category reside the Toshiba Excite at 13.3 inches[51] and the Dell XPS 18 at 18.4 inches.[52] As of March 2013, the thinnest tablet on the market was the Sony Xperia Tablet Z only 0.27 inches (6.9 mm) thick.[53] In October 2013, HP announced HP Slate 21 All-in-One (Hybrid) with 21.5" IPS display complete with keyboard and mouse. It runs on Android, but has no internal battery.[54]

Mini tablets

Comparison of several mini tablet computers: Amazon Kindle Fire (left), iPad Mini (center) and Google Nexus 7 (right)

Mini tablets are smaller and lighter than standard tablets. The first successful ones were introduced by Samsung (Galaxy Tab 7-inch), Barnes and Noble (the Nook Tablet), Blackberry Playbook, and Amazon (the Kindle Fire) in 2011, and by Google (the Nexus 7) in 2012. Most of them work like a larger tablet, though some do not have all the features, functions, or capacity found in bigger tablet computers.

In 2012, Apple released the iPad Mini. Its size is 7.9 inches, about 2 inches smaller than the regular size iPad tablet. Apple announced the new smaller-sized tablet on October 23, 2012.[55]

Amazon released an upgraded version of the Kindle Fire, called the Kindle Fire HD, on September 14, 2012, with higher resolution, more features, and a higher capacity than the original Kindle Fire. The Kindle Fire HD mini is 7 inches in size.[56]

Google also released an upgraded version of the Nexus 7 on 24 July 2013, with FHD display, dual cameras, stereo speakers, more color accuracy, performance improvement, built-in inductive Qi wireless charging, and

alternative variant with 4G LTE unlocked support for AT&T, T-Mobile, and Verizon.

Phablets

Main article: Phablet

Since 2010, crossover touch-screen devices with screens greater than 5-inches have been released. That size is generally considered larger than a smartphone and smaller than a tablet, creating a hybrid category, called a *phablet* by *Forbes* and *Engadget*. Phablet is a portmanteau of phone and tablet.[57] Examples of phablets are the LG Optimus Vu,Zync Cloud Z5 (http://zync.in/our-products/tablet-phablets/zync-cloud-z5-detail) Samsung Galaxy Note and Dell Streak. Samsung announced they had shipped a million units of the Galaxy Note within two months of introducing it.[58][59]

Dedicated keyboards

Tablets with dedicated keyboards form the boundary between slate tablets and laptop computers.

Convertibles

Convertible tablets have a slate tablet top-half with a (sometimes detachable) keyboard bottom-half. They more closely resemble laptops, and are heavier and larger than slates. While some convertibles (such as the Asus Transformer series) run Android, the release of Windows 8 increased the prominence of this form factor among the laptop market.

A Lenovo X61 in slate mode

Typically, the base of a convertible attaches to the display at a single joint called a swivel hinge or rotating hinge. The joint allows the screen to rotate through 180° and lie against the back of the keyboard to provide a flat writing surface. This design, although the most common, creates a physical point of weakness.

The Panasonic Toughbook 19, for example, is advertised as a more durable convertible notebook. The HP EliteBook 2760p convertible notebook uses a reinforced hinge that protrudes slightly from the rear of the unit. And the Acer TravelMate C210, has a sliding design in which the screen slides up from the slate-like position and locks into place to provide the laptop mode.

The first tablet to have a sliding screen was the Samsung Sliding PC7 Series,[60] a tablet with Intel Atom processor and a sliding screen that allows the it to be used as a laptop or slate tablet when the screen is locked in place covering the whole keyboard. It is intended to combine the virtues of tablet PCs with those of notebooks. The Inspiron Duo from Dell rotates the screen horizontally when opened.

Further information: List of convertible tablet computer brands

Hybrids

Hybrid tablets have a standard tablet base with a detachable keyboard that resembles a laptop keyboard. They are usually sold together as parts of the same product, unlike slates, whose keyboards are an optional accessory.

The term hybrid was coined by users of the HP/Compaq TC1000 and TC1100 series.[*citation needed*]

Booklets

Booklets are dual-touchscreen tablet computers with a clamshell design that folds like a laptop. Examples include the Sony Tablet P (which was considered a flop)[61] and the aborted Microsoft Courier.

System architecture

See also: Comparison of tablet computers

Two major architectures dominate the tablet market,[62] ARM Holdings' ARM architecture and Intel's x86.

Intel's x86, including x86-64 has powered the "IBM compatible" PC since 1981 and Apple's Macintosh computers since 2006. The CPUs have been incorporated into tablet PCs over the years and generally offer greater performance along with the ability to run full versions of Microsoft Windows, along with Windows desktop and enterprise applications. Non-Windows based x86 tablets include the JooJoo. Intel announced plans to enter the tablet market with its Atom in 2010;[63][64] see the next section for Intel processors for the tablet market.

ARM has been the CPU architecture of choice for manufacturers of smartphones (95% ARM), PDAs, digital cameras (80% ARM), set-top boxes, DSL routers, smart televisions (70% ARM), storage devices and tablet computers (95% ARM).[65] This dominance began with the release of the mobile-focused and comparatively power-efficient 32-bit ARM610 SoC (System on a chip) originally designed for the Apple Newton and Acorn A4 in 1993. The chip was adopted by Psion, Palm and Nokia for PDAs and later smartphones, camera phones, cameras, etc. ARM's licensing model supported this success by allowing device manufacturers to licence, alter and fabricate custom SoC derivatives tailored to their own products. This has helped manufacturers extend battery life and shrink component count along with the size of devices.

The multiple licensees ensured that multiple fabricators could supply near-identical products, while encouraging price competition. This forced unit prices down to a fraction of their x86 equivalents. The architecture has historically had limited support from Microsoft, with only Windows CE available, but with the 2012 release of Windows 8, Microsoft announced additional support for the architecture, shipping their own ARM-based tablet computer, branded the Microsoft Surface, as well as an x86-64 Intel Core i5 variant branded as Microsoft Surface Pro.[66][67][68][69]

Intel tablet platforms

See also: Mobile Internet device#Intel MID platforms

Intel chairman Andy Bryant has stated that its 2014 goal is to quadruple its tablet sales to 40 million units by the end of that year.[70]

Oak Trail platform (2011)

Intel's first generation tablet platform (codenamed **Oak Trail**) contains a 45 nm Intel Atom processor (codenamed **Lincroft**) and a 65 nm Platform Controller Hub (codenamed **Whitney Point**). Since the memory controller and graphics controller are all now integrated into the processor, the northbridge has been removed and the processor communicates directly with the southbridge via the DMI bus interface.

Atom	Oak Trail platform
Mobile chipset	a 65 nm Intel SM35 PCH (codenamed **Whitney Point**)
Mobile processor	a 45 nm Intel Atom processor (codenamed **Lincroft**) with integrated GMA 600 graphics (PowerVR SGX 535 based)
Wireless network	a wireless radio

Clover Trail platform (2012)

Intel's second generation table platform (codenamed **Clover Trail**) contains a 32 nm Intel Atom SoC (codenamed **Cloverview**).

Atom	Clover Trail platform
Mobile processor	a 32 nm Intel Atom SoC (codenamed **Cloverview**) with integrated CPU (codenamed **Saltwell**) and graphics (PowerVR SGX 545 based)
Wireless network	a wireless radio

Bay Trail platform (2013)

Intel's third generation tablet platform (codenamed **Bay Trail**) contains a 22 nm Intel Atom SoC (codenamed **Valleyview**).

Atom	Bay Trail platform
Mobile processor	an Intel Atom SoC (codenamed **Valleyview**) with integrated CPU (codenamed **Silvermont**) and graphics (Gen 7)
Wireless network	a wireless radio

Cherry Trail platform (2014)

Intel's fourth generation tablet platform (codenamed **Cherry Trail**) contains a 14 nm Intel Atom SoC (codenamed **Cherryview**).[71][72]

Atom	Cherry Trail platform
Mobile processor	an Intel Atom SoC (codenamed **Cherryview**) with integrated CPU (codenamed **Airmont**) and graphics (Gen 8)
Wireless network	a wireless radio

Willow Trail platform

Intel's fifth generation tablet platform (codenamed **Willow Trail**) contains a 14 nm Intel Atom SoC (codenamed **Broxton**, by mid 2015).[73]

Atom	Willow Trail platform
Mobile processor	an Intel Atom SoC (codenamed **Broxton**) with integrated CPU (codenamed **Goldmont**) and graphics (Gen 9)
Wireless network	a wireless radio

Operating system

Tablets, like conventional PCs, run multiple operating systems (though dual-booting on tablets is relatively rare). These operating systems come in two classes, desktop-based and mobile-based ("phone-like") OS. Desktop-based tablets usually are thicker and heavier, require more storage, more cooling and give less battery life, but can run desktop applications such as Photoshop in addition to mobile apps and have more ports,[74] while mobile-based tablets are the reverse, only run mobile apps.

At the end of Q1 2013, GlobalWebIndex noted that in 2 years tablet usage increased by 282 percent, with 156 million Android Tablet users and 122 million iPad users making up 75 percent.[75]

Android

Main article: Android (operating system)

Android is a Linux-based operating system that Google offers as open source under the Apache license. It is designed primarily for mobile devices such as smartphones and tablet computers. Android supports low-cost ARM systems. Many such systems were announced in 2010.[76] However, much of Android's tablet initiative came from manufacturers, while Google primarily focused on smartphones and restricted the App Market from non-phone devices.[77]

An ASUS Eee Pad Transformer running Android 3.2.1 Honeycomb; the keyboard is part of a docking station for the tablet.

Vendors such as Motorola[78] and Lenovo[79] delayed deployment of their tablets until after 2011, when Android was reworked to include more tablet features.[80] Android 3.0 (Honeycomb) and later versions support larger screen sizes, mainly tablets, and have access to the Google Play service. Android includes operating system, middleware and key applications.

Other vendors sell customized Android tablets such as Nook and Kindle Fire, which are used to consume mobile content and provide their own app store, rather than using the larger Google Play system, thereby fragmenting the Android market.[81]

Google introduced the Nexus 7 and Nexus 10 tablets in 2012. Hardware makers that have shipped Android tablets include Acer, Asus, Samsung, Toshiba and Sony.[82]

Blackberry OS

The BlackBerry PlayBook is a tablet computer announced in September 2010 that runs the BlackBerry Tablet OS.[83] The OS is based on the QNX system that Research in Motion acquired in early 2010. Delivery to

developers and enterprise customers was expected in October 2010. The BlackBerry PlayBook was officially released to US and Canadian consumers on April 19, 2011.

iOS

Main articles: iOS and iPad

The iPad runs iOS, which was created for the iPhone and iPod Touch. Although built on the same underlying Unix implementation as MacOS, its user interface is radically different. iOS is designed for fingers and has none of the features that required a stylus on earlier tablets. Apple introduced multi-touch gestures, such as moving two fingers apart or together to zoom in or out, also known as "pinch to zoom".[84] iOS is built for the ARM architecture.[85]

The iPad in a case running the YouTube app.

Modbook

Main article: ModBook

Previous to the iPad, Axiotron introduced[86] an aftermarket, heavily modified Apple MacBook called Modbook, a Mac OS X-based tablet personal computer. The Modbook uses Apple's Inkwell for handwriting and gesture recognition, and uses digitization hardware from Wacom. To get Mac OS X to talk to the digitizer on the integrated tablet, the Modbook is supplied with a third-party driver called TabletMagic (http://www.thinkyhead.com/tabletmagic); Wacom does not provide driver support for this device. Another predecessor to the iPad was the Apple MessagePad introduced in 1993.

Linux

The ProGear by FrontPath was an early implementation of a Linux tablet that used a Transmeta chip and a resistive digitizer. The ProGear initially came with a version of Slackware Linux, and later with Windows 98. They can run many different operating systems. However, the device is no longer for sale and FrontPath has ceased operations. Many touch screen sub-notebook computers can run any of several Linux distributions with little customization.

X.org now supports screen rotation and tablet input through Wacom drivers, and handwriting recognition software from both the Qt-based Qtopia and GTK+-based Internet Tablet OS provide open source systems. KDE's Plasma Active is a graphical environment for tablet.[87]

Linux open source note taking software includes Xournal (which supports PDF file annotation), Gournal (a Gnome based note taking application), and the Java-based Jarnal (which supports handwriting recognition as a built-in function). A standalone handwriting recognition program, CellWriter, requires users to write letters separately in a grid.

Many desktop distributions include tablet-friendly interfaces smaller devices. These open source libraries are freely available and can be run or ported to devices that conform to the tablet PC design. Maemo (rebranded MeeGo in 2010), a Debian Linux based user environment, was developed for the Nokia Internet Tablet devices (770, N800, N810 & N900). It is currently in generation 5, and has many applications. Ubuntu uses the Unity UI, and many other distributions (such as Fedora) use the Gnome shell (which also supports Ubuntu).

Canonical has hinted that Ubuntu will be available on tablets by 2014.[88]

TabletKiosk was the first to offer a hybrid digitizer / touch device running openSUSE Linux.

2005

Nokia entered the tablet space in May 2005 with the Nokia 770 running Maemo, a Debian-based Linux distribution custom-made for their Internet tablet line. The product line continued with the N900, with phone capabilities. The user interface and application framework layer, named Hildon, was an early instance of a software platform for generic computing in a tablet device intended for internet consumption.[89] But Nokia didn't commit to it as their only platform for their future mobile devices and the project competed against other in-house platforms and later replaced it with the Series 60.[90]

The Nokia N800

Following the launch of the Ultra-mobile PC, Intel started the Mobile Internet Device initiative, which took the same hardware and combined it with a tabletized Linux configuration. Intel co-developed the lightweight Moblin (mobile Linux) operating system following the successful launch of the Atom CPU series on netbooks.

Tizen

Main articles: Maemo, MeeGo, and Tizen

MeeGo was a Linux-based operating system developed by Intel and Nokia that supports Netbooks, Smartphones and Tablet PCs. In 2010, Nokia and Intel combined the Maemo and Moblin projects to form MeeGo. The first tablet using MeeGo is the Neofonie WeTab launched September 2010 in Germany. The WeTab uses an extended version of the MeeGo operating system called WeTab OS. WeTab OS adds runtimes for Android and Adobe AIR and provides a proprietary user interface optimized for the WeTab device. On 27 September 2011 the Linux Foundation announced that MeeGo would be replaced in 2012 by Tizen.[91]

Windows

Windows 3.1 to 7

Main article: Microsoft Tablet PC

Following Windows for Pen Computing for Windows 3.1 in 1991, Microsoft supported tablets running Windows XP under the Microsoft Tablet PC name.[92] According to Microsoft[93] in 2001, "Microsoft Tablet PCs" are pen-based, fully functional x86 PCs with handwriting and voice recognition functionality. Tablet PCs used the same hardware as laptops but added support for pen input. Windows XP Tablet PC Edition provided pen support. Tablet support was added to both Home and Business versions of Windows Vista and Windows 7. Tablets running Windows could use the touchscreen for mouse input, hand writing recognition and gesture support. Following Tablet PC, Microsoft announced the Ultra-mobile PC initiative in 2006 which brought Windows tablets to a smaller, touch-centric form factor.[94][95] In 2008, Microsoft showed a prototype of a two-screen tablet called Microsoft Courier, but cancelled the project. A model of the Asus Eee Pad shown in 2010 was to use Windows CE but switched to Android.[96]

Windows 8

Main articles: Microsoft Surface and List of Windows 8 and RT tablet devices

In October 2012, Microsoft released Windows 8, which features significant changes to various aspects of the operating system's user interface and platform which are designed for touch-based devices such as tablets. The operating system also introduced an application store and a new style of application optimized primarily for use on tablets.[97][98] Microsoft also introduced Windows RT, an edition of Windows 8 for use on ARM-based devices.[99] The launch of Windows 8 and RT was accompanied by the release of devices with the two operating systems by various manufacturers (including Microsoft themselves, with the release of Surface), such as slate tablets, hybrids, and convertibles.[100] Windows RT is likely to be discontinued.[101]

Surface RT and Surface Pro

On June 18, 2012 Microsoft launched the Microsoft Surface, the first computer[*citation needed*] in the company's history to have its hardware made by Microsoft. The Surface RT is the tablet while the Surface Pro is the fully functioning computer that is the size of a tablet. Although Microsoft was late to enter the tablet sector, it went above and beyond customer's expectations with its Surface. The Surface RT unlike any other tablets on the market comes fully equipped with Office 2013 for free; which gives a customer access to Word, Excel, Powerpoint and One Note. This is a feature that no other tablet has; it is only exclusive to the Surface. The Surface RT is designed for work and play. The Surface RT comes with a Tegra 3 Processor, 1 kick stand position, 2.0 USB port, micro sd card slot to expand storage and 1 megapixel cameras (front and back). All first generation tablet come with Windows 8, but now that Windows 8.1 is available, users can upgrade to Windows 8.1 for free via the Microsoft App Store. Windows 8.1 comes with the latest features and it also adds Outlook email to ones Office suite for free with the update. [102]

The Surface Pro is the computer version which operates 100% like a computer. This version does not come equipped with Office Suite 2013. It comes with a third generation Intel Core i5 processor, 2.0 USB port, Windows 8 (free update to Windows 8.1 available) and it allows you download and run external software and programs which a tablet wont, according to Microsoft. [102]

According to Microsoft, both products are attracting a lot of professionals and students. Target markets enjoy the Surface because it is portable, light weight, easy to carry, split screen features, personalize component and free Office 2013. [102]

Discontinued

WebOS

Hewlett Packard announced that the TouchPad, running WebOS 3.0 on a 1.2 GHz Snapdragon CPU, would be released in June 2011. On August 18, 2011, HP announced the discontinuation of the TouchPad, due to sluggish sales.[103] In February 2013, HP announced they had sold WebOS to LG Electronics.[104]

Application market

See also: Mobile development

Mobile device suppliers typically adopt walled garden approach, wherein the supplier controls what applications are available. Software development kits are restricted to approved developers. This can be used to reduce the impact of malware, provide material with an approved content rating, control application quality and exclude

competing vendors.[105]

Apple, Google, Amazon and Barnes and Noble all adopted the strategy. The latter originally allowed arbitrary apps to be installed,[106][107][108] but, in December 2011, excluded third parties.[109][110][111][112][113]

Proponents of open source software violate the spirit of personal control that traditional personal computers have always provided.[114][115][116]

Market share

As of October 2012, display screen shipments for tablets began surpassing shipments for laptop display screens.[117]

According to a survey conducted by the Online Publishers Association (OPA) in March 2012, 31% percent of Internet users in the United States owned a tablet, up from 12% in 2011. The survey also found that 72% of tablet owners had an iPad, while 32% had an Android tablet. By 2012, Android tablet adoption had increased. 52% of tablet owners owned an iPad, while 51% owned an Android-powered tablet (percentages do not add up to 100% because some tablet owners own more than one type).[118]

Among tablets available in the market, Apple's iPad (left) is the top-selling tablet with 170 million units sold by mid-October 2013, followed by Amazon's Kindle Fire (right) with an estimated 7 million sold as of May 2012.

Tablet market share (in percent)[119][120]

Vendor	Q3 2013	Q3 2012	Year-over-Year Increase/(decrease)
Apple	29.7	40.2	(10.5)
Samsung	22.2	12.4	9.8
Asus	7.4	6.6	0.8
Others	42.6	40.8	1.8

Note: Others consists of small vendors with market share about one percent or mostly less. In one year Apple market share dropped significantly and, on the other side, Android vendors' market share increased with Samsung dominating.

Usage

Tablet use by businesses has jumped in recent years, as business have started to use them for conferences, events and trade shows.[121]

See also

- Comparison of tablet computers
- History of tablet computers
- Smartbook
- Ultra-Mobile PC
- E-book reader
- Pen computing

- Early tablet computers

References

1. ^ Editors PC Magazine. "Definition of: tablet computer" (http://www.pcmag.com/encyclopedia_term/0,2542,t=tablet+computer&i=52520,00.asp). *PC Magazine*. Retrieved April 17, 2010.
2. ^ Editors Dictionary.com, "tablet computer – 1 dictionary result" (http://dictionary.reference.com/browse/tablet+computer), *Dictionary.com*, retrieved April 17, 2010
3. ^ What makes a tablet a tablet? (FAQ) (http://news.cnet.com/8301-31021_3-20006077-260.html?tag=newsLeadStoriesArea.1) CNET.com May 28, 2010
4. ^ Angela Moscaritolo (2012-06-18). "Survey: 31 Percent of U.S. Internet Users Own Tablets" (http://www.pcmag.com/article2/0,2817,2405972,00.asp). *PC Magazine*. Retrieved 2012-10-20.
5. ^ Brian X. Chen (2012-10-23). "Apple, Facing Competition, Introduces a Smaller iPad of no significant change" (http://www.nytimes.com/2012/10/24/technology/apple-facing-competition-introduces-a-smaller-ipad.html?ref=technology&_r=0). *The New York Times*. Retrieved 2012-10-24.
6. ^ Brian X. Chen (2012-10-19). "How Are 7-Inch Tablets Doing?" (http://bits.blogs.nytimes.com/2012/10/19/7-inch-tablets/). *The New York Times*. Retrieved 2012-10-20.
7. ^ Poeter, Damon (2012-12-27). "Non-Apple Tablets Making Small Gains on iPad | News & Opinion" (http://www.pcmag.com/article2/0,2817,2413605,00.asp). PCMag.com. Retrieved 2013-07-08.
8. ^ "Massacre of the tablets | FP Tech Desk | Financial Post" (http://business.financialpost.com/2011/12/24/massacre-of-the-tablets/). Business.financialpost.com. 2011-12-24. Retrieved 2013-06-14.
9. ^ Developer Economics Q3 2013 analyst report - http://www.visionmobile.com/DevEcon3Q13 - Retrieved July 2013
10. ^ Notes on the History of Pen-based Computing (Youtube) (http://www.youtube.com/watch?v=4xnqKdWMa_8&feature=youtu.be)
11. ^ Gray, Elisha (1888-07-31), *Telautograph* (http://www.freepatentsonline.com/386815.pdf), United States Patent 386,815 (full image)
12. ^ Did Arthur C Clarke invent the iPad? (http://margaretpuls.wordpress.com/2012/02/12/worlds-first-ipad/)
13. ^ NewsPad depiction - 2001 A Space Odyssey (http://www.youtube.com/watch?v=JQ8pQVDyaLo)
14. ^ Richards, Mike (January 23, 2008). "Why the iPhone makes 2008 seem like 1968 all over again" (http://www.open2.net/blogs/scitechnature/index.php/2008/01/23/why_the_iphone_makes_2008_seem_like_1968). Open2.
15. ^ Steinberg, Daniel H. (April 3, 2003). "Daddy, Are We There Yet? A Discussion with Alan Kay" (http://openp2p.com/pub/a/p2p/2003/04/03/alan_kay.html). O'Reilly Media.
16. ^ Kay, Alan (1972). "A Personal Computer for Children of All Ages" (http://www.mprove.de/diplom/gui/kay72.html).
17. ^ Visions and Realities in the NewsPad Constituency, by Alfonso H Molina (http://books.google.co.uk/books?id=bIwnzZvP2lEC&pg=PA559&dq=NewsPad&hl=en&sa=X&ei=hxqjUJW2LcmEygGyyICIAQ&ved=0CC8Q6AEwAA#v=onepage&q&f=false)
18. ^ Editors Risc User Magazine. "The Story of NewsPAD" (http://www.computinghistory.org.uk/big/27005/Risc-User-Volume-9-Issue-10-October-1996/). *Risc User*. Retrieved February 20, 2013.
19. ^ Bill Gates introduces Tablet PC, COMDEX Nov 2000 (http://www.microsoft.com/presspass/features/2000/nov00/11-13comdex.mspx)
20. ^ Page, M Microsoft Tablet PC Overview (http://www.transmetazone.com/articleview.cfm?articleID=499), TransmetaZone, December 21, 2000
21. ^ Kuhn, Bradley M. Free software and cellphones (http://www.fsf.org/working-together/next-steps/free-software-phones), Free Software Foundation, 2010
22. ^ "Ericsson, CWC develop Linux handheld PC" (http://www.telecompaper.com/news/ericsson-cwc-develop-linux-handheld-pc--256081). 2001-01-12. Retrieved 2013-08-14.
23. ^ "///Ericsson Forum - Infos and support" (http://www.esato.com/board/viewtopic.php?topic=48353&start=10260). 2012-03-21. Retrieved 2013-08-14.
24. ^ *Users Manual for Penpad 320* (http://users.erols.com/rwservices/pens/biblio85.html#Pencept84d), Pencept, Inc., 1984-06-15

25. ^ *Software Control at the Stroke of a Pen* (http://www.open-video.org/details.php?videoid=8023&surrogate=storyboard), Pencept, Inc., 1985, retrieved 2009-05-21
26. ^ *Handwriter (R) GrafText (TM) System Model GT-5000* (http://users.erols.com/rwservices/pens/biblio85.html#CIC85), Communication Intelligence Corporation, 1985-01-15
27. ^ *The BYTE Awards: GRiD System's GRiDPad* (http://users.erols.com/rwservices/pens/biblio90.html#GridPad90a), BYTE Magazine, Vol 15. No 1, 1990-01-12, p. 285
28. ^ "Intel to use StrongARM in Web Tablet" (http://news.cnet.com/Intel-to-use-StrongARM-in-Web-Tablet/2110-1040_3-253142.html). Cnet. Retrieved May 29, 2013.
29. ^ Intel Web Tablet (https://www.youtube.com/watch?v=ihUjWMUUWHM) on YouTube
30. ^ Markoff, John (August 30, 1999) "Microsoft brings in top talent to pursue old goal: the tablet (http://www.nytimes.com/1999/08/30/business/microsoft-brings-in-top-talent-to-pursue-old-goal-the-tablet.html)" *The New York Times*
31. ^ "Tablet PC: Coming to an Office Near You?" (http://www.datamation.com/netsys/article.php/1495701/Tablet-PC-Coming-to-an-Office-Near-You.htm). datamation.com. Retrieved September 8, 2013.
32. ^ Bright, Peter Ballmer (and Microsoft) still doesn't get the iPad (http://arstechnica.com/microsoft/news/2010/07/ballmer-and-microsoft-still-doesnt-get-the-ipad.ars), Ars Technica, 2010
33. ^ The Coming War: ARM versus x86 (http://vanshardware.com/2010/08/mirror-the-coming-war-arm-versus-x86/) Mirror for: *The Bright Side of News* April 8, 2010
34. ^ Damon Poeter (Dec 27, 2012), "Non-Apple Tablets Making Small Gains on iPad", *PC Magazine* (http://www.pcmag.com/article2/0,2817,2413605,00.asp) Matt Hartley (December 24 2011),"Massacre of the tablets", *Financial Post* (http://business.financialpost.com/2011/12/24/massacre-of-the-tablets/)
35. ^ "The iPad's victory in defining the tablet: What it means" (http://www.infoworld.com/d/mobile-technology/the-ipads-victory-in-defining-the-tablet-what-it-means-431). Infoworld.
36. ^ Gilbert, Jason (August 19, 2011). "HP TouchPad Bites The Dust: Can Any Tablet Dethrone The IPad?" (http://www.huffingtonpost.com/2011/08/19/hp-touchpad-ipad-tablet_n_931593.html). *Huffington Post*.
37. ^ "Taking iPads into battle" (http://www.latimes.com/business/la-fi-isoldiers-20110926,0,2255882,full.story). Los Angeles Times. Retrieved 30 June 2013.
38. ^ Roger Kay on Intel and Microsoft, as quoted April 29, 2011: "Clearly, each one is looking at a post-PC world..." MarketWatch (http://www.marketwatch.com/story/microsoft-offers-more-muted-view-of-pcs-2011-04-29)
    - Kevin Parrish (28 Oct 2010) "Microsoft's Ray Ozzie sees Post-PC world", *Tom's Hardware US (http://www.tomshardware.co.uk/Ray-Ozzie-Cloud-Computing-post-PC-chief-technical-officer-connected-devices,news-34468.html)* "It's important that all of us ... form a realistic picture of what a *post-PC world* would actually look like ... Those who can envision a plausible future that's brighter than today will earn the opportunity to lead [in the market]." —Ray Ozzie's memo to Microsoft on the eve of his retirement.
39. ^ Worstall, Tim (July 2, 2011). "iPad: One of the Most Successful Products Ever" (http://www.forbes.com/sites/timworstall/2011/07/02/ipad-one-of-the-most-successful-products-ever/). *Forbes*. Retrieved June 10, 2013.
40. ^ "Can't Decide Between Windows or Android? Samsung's ATIV Q Convertible Does Both." (http://allthingsd.com/20130620/cant-decide-between-windows-or-android-samsungs-ativ-q-convertible-does-both/). June 20, 2013.
41. ^ "[단독]삼성 괴물 노트북 '아티브Q' 전면 보류" (http://news.naver.com/main/ranking/read.nhn?mid=etc&sid1=111&rankingType=popular_day&oid=092&aid=0002032241&date=20130822&type=1&rankingSeq=1&rankingS). *ZDNet Korea* (in Korean). Naver. Retrieved 29 August 2013.
42. ^ Latest gadgets from Nokia, Asus and Samsung (http://www.3news.co.nz/Latest-gadgets-from-Nokia-Asus-and-Samsung/tabid/412/articleID/315164/Default.aspx). *3 News NZ*. 30 September 2013.
43. ^ Barnett, Shawn. "Jeff Hawkin" (http://www.pencomputing.com/palm/Pen33/hawkins2.html). *The man who almost single-handedly revived*. Pen Computing Magazine.
44. ^ Best Buy: iPad cutting into laptop sales (http://news.cnet.com/8301-13579_3-20016818-37.html)
45. ^ Notebook sales growth goes negative. Can we blame the iPad yet? (http://tech.fortune.cnn.com/2010/09/17/notebook-sales-growth-goes-negative-can-we-blame-the-ipad-yet/)
46. ^ Tablets hurt PC sales but not Macs (http://www.marketwatch.com/story/tablets-hurt-pc-sales-but-not-apples-mac-2010-10-13)
47. ^ China using keyboards versus tablet input (http://webcache.googleusercontent.com/search?q=cache:rX3A5F0UJKQJ:ca.news.yahoo.com/s/afp/100826/technology/lifestyle_hongkong_china_japan_culture_technology+ca.news.yahoo.com/s/afp/100826/technology/lifestyle_hongkong_china_japan_culture_technology&cd=1&hl=nl&ct=clnk&gl=nl)
48. ^ Annotated bibliography of references to handwriting recognition and tablet and touch computers

(http://users.erols.com/rwservices/biblio.html)
49. ^ Buxton, Bill. "Multitouch Overview" (http://www.billbuxton.com/multitouchOverview.html)
50. ^ Franklin, Eric (2012-10-30). "Tablets buying guide | Tablets - CNET Reviews" (http://reviews.cnet.com/tablet-buying-guide/). Reviews.cnet.com. Retrieved 2013-06-14.
51. ^ Franklin, Eric (2012-04-10). "The Toshiba Excite 13 sports the largest tablet screen yet | Android Atlas - CNET Reviews" (http://reviews.cnet.com/8301-19736_7-57411547-251/the-toshiba-excite-13-sports-the-largest-tablet-screen-yet/). Reviews.cnet.com. Retrieved 2013-06-14.
52. ^ King, Charles. "Dell's XPS 18 is the latest 'big tablet' innovation" (http://tabtimes.com/analysis/ittech-tablets/2013/03/14/dell-xps-18-latest-big-tablet-innovation). TabTimes. Retrieved 30 June 2013.
53. ^ "Xperia™ Tablet Z | Waterproof and dustproof tablet" (http://www.sony.co.uk/product/xperia-tablet-z/tab/overview). Sony. 2013-03-26. Retrieved 2013-06-14.
54. ^ "Hewlett-Packard has the Slate 21 an all-in-one PC with Android" (http://techalertz.com/hp-slate-21-aio-hybrid-android/). Retrieved October 26, 2013.
55. ^ "Events" (http://www.apple.com/apple-events/). Apple. Retrieved 2013-06-14.
56. ^ Heather Kelly and Doug Gross - Amazon announces new wave of Kindles (http://www.cnn.com/2012/09/06/tech/mobile/amazon-kindle-event/index.html) - *CNN Tech* - September 6, 2012. Retrieved 2 December 2012.
57. ^ Kay, Roger. "5" Is the market ready for a 'phablet'?" (http://www.forbes.com/sites/rogerkay/2012/02/07/is-the-market-ready-for-a-phablet/). *Forbes*.
58. ^ "5" Smartphones: LG Optimus Vu vs. Samsung Galaxy Note" (http://us.generation-nt.com/lg-optimus-vu-samsung-galaxy-note-smartphone-news-3384341.html). February 14, 2012.
59. ^ "Samsung tablet PC" (http://samsungtabletpc.org).
60. ^ product presentation and demo Samsung Sliding PC7 Series (http://www.alltouchtablet.com/touchscreen-tablet-news/samsung-sliding-pc-7-is-the-slider-laptoptablet-you-ever-wanted-6343/), AllTouchTablet, 2011
61. ^ "The 8 biggest product flops of 2012 (#4)" (http://www.marketwatch.com/story/the-8-biggest-product-flops-of-the-year-2012-12-28). Marketwatch. Retrieved 30 June 2013.
62. ^ Intel has ARM in its crosshairs (http://news.cnet.com/Intel-has-ARM-in-its-crosshairs---page-2/2100-1006_3-6210033-2.html?tag=mncol)
63. ^ Intel shows pricing pressures for Atom due to competition from ARM (http://www.theregister.co.uk/2010/10/17/intel_tablets/) accessdate=2010-10-17
64. ^ Intel launches FPGA-equipped Atom (http://www.thinq.co.uk/2010/11/22/intel-launches-fpga-equipped-atom/) accessdate=2010-11-23 An FPGA, or field programmable gate array can then be custom-programmed by tablet computer vendors who have purchased these integrated circuits from the semiconductor device manufacturers; in October 2013, Intel's foundry operation announced plans to build FPGA-based quad cores for ARM processors, as well as for x86 <http://news.cnet.com/8301-1001_3-57610120-92/intel-on-track-to-build-two-chips-with-arm-inside/>.
65. ^ Jeff Chu (18 Dec 2012) "Where's ARM at CES?" http://blogs.arm.com/smart-connected-devices/870-ever-wonder-where%e2%80%99s-arm-at-ces/
66. ^ "Apple iPad Price, Features Say "ARM" All Over" (http://www.bnet.com/blog/mobile-internet/apple-ipad-price-features-say-8220arm-8221-all-over/133). bnet.
67. ^ ARM vs. Intel: How the Processor Wars Will Benefit Consumers, By TIM BAJARIN, 2012-7-16 (http://www.economist.com/node/21542402)
68. ^ The Economist - Space invaders, America's Intel and Britain's ARM have long dominated different bits of the global chip market. Now each is attacking the other's stronghold, Published 2012-01-07 (http://www.economist.com/node/21542402)
69. ^ 25bn ARM processors shipped, 2012 (http://www.arm.com/products/processors/index.php)
70. ^ Andy Bryant: "We seemed to have lost our way." (http://allthingsd.com/20131121/intel-chairman-we-seemed-to-have-lost-our-way/) accessdate=2013-11-21
71. ^ "Intel: Major Upside Ahead, 2014 Estimates Too Low" (http://seekingalpha.com/article/1428481-intel-major-upside-ahead-2014-estimates-too-low). *Seeking Alpha*.
72. ^ "アウトオブオーダーと最新プロセスを採用する今後のAtom" (http://pc.watch.impress.co.jp/docs/column/ubiq/20121130_576105.html).
73. ^ Brian Krzanich's statement regarding Broxton, accessdate=2013-11-21 (http://allthingsd.com/20131121/intel-chairman-we-seemed-to-have-lost-our-way/)
74. ^ "Microsoft Surface Pro review" (http://www.engadget.com/2013/02/05/microsoft-surface-pro-review/). engadget. Retrieved 16 June 2013.

75. ^ "Study: Android Tablets Surpass iPads In Q1, Tablet Usage Up 282% Since 2011" (http://marketingland.com/study-android-tablet-users-surpass-ipad-users-by-34m-in-q1-with-tablet-usage-up-282-since-2011-2-47740). June 10, 2013.
76. ^ "9 Upcoming Tablet Alternatives to the Apple iPad" (http://mashable.com/2010/01/27/9-upcoming-tablet-alternatives-to-the-apple-ipad/). Mashable. Retrieved August 7, 2010.
77. ^ "Don't bank on KMart's $150 Augen tablet getting Android Market access" (http://www.liliputing.com/2010/08/dont-bank-on-kmarts-150-augen-tablet-getting-android-market-access.html). liliputing. Retrieved August 7, 2010.
78. ^ Motorola Android tablet in 2011 (http://www.marketwatch.com/video/asset/digits-motorola-plans-tablet-device-2010-09-16/7CC13B36-0A8B-42E0-AD1A-72FF9BF04348)
79. ^ Lenovo is waiting for Honeycomb (http://www.slashgear.com/tablets-a-prescription-for-confusion-24109978/) accessdate=2010-10-24
80. ^ The successor to *Gingerbread*, Android project *Honeycomb* is targeted for tablet computers. – Daniel Lyons (Oct. 11, 2010), *Newsweek* p. 49
    - Google demonstrated Android Honeycomb Tablet 12/7/2010 (http://www.pcmag.com/article2/0,2817,2373943,00.asp)
    - Andy Rubin's demo of Motorola Honeycomb tablet (http://www.marketwatch.com/video/asset/digits-best-buys-tv-bust-2010-12-14/FD6C213F-D320-4212-BE7C-FECD5B8FEA33?dist=afterbell#!88F98ADB-3F87-49DF-AD08-385D66B0DDE8)
81. ^ Google has lost control of Android (http://betanews.com/2012/04/28/google-has-lost-control-of-android/) By Joe Wilcox Beta News, 2012 April 28
82. ^ "15 best Android tablets in the world" (http://www.techradar.com/us/news/mobile-computing/tablets/15-best-android-tablets-in-the-world-905504). Cnet. Retrieved 12 June 2013.
83. ^ BlackBerry PlayBook preview (http://www.youtube.com/watch?v=eAaez_4m9mQ) BlackBerry PlayBook announcement September 27, 2010 (http://www.youtube.com/watch?v=eAaez_4m9mQ)
84. ^ "Six Years Ago, Apple Made a Crowd Gasp With Pinch to Zoom and Swiping" (http://petapixel.com/2013/03/29/six-years-ago-apple-made-a-crowd-gasp-with-pinch-to-zoom-and-swiping/). Retrieved 12 June 2013.
85. ^ "Apple tablet rumors redux: 10.7-inch display, iPhone OS underneath" (http://www.engadget.com/2009/09/29/apple-tablet-rumors-redux-10-7-inch-display-iphone-os-undernea/). Engadget. Retrieved August 6, 2010.
86. ^ Tifanny Boggs (2007) "Axiotron and OWC Unveil the ModBook" (http://www.tabletpcreview.com/default.asp?newsID=695)
87. ^ "Plasma Active" (http://plasma-active.org/).
88. ^ "Ubuntu coming to tablets, phones and smart TVs by 2014" (http://www.engadget.com/2011/10/31/ubuntu-coming-to-tablets-phones-cars-and-smart-tvs-by-2014/).
89. ^ Andrew Orlowski. "Nokia's Great Lost Platform" (http://www.theregister.co.uk/2011/11/21/nokia_hildon_the_great_lost_platform/). The Register.
90. ^ "Nokia's Great Lost Platform - Page 4" (http://www.theregister.co.uk/2011/11/21/nokia_hildon_the_great_lost_platform/page4.html).
91. ^ Sousou, Imad. "What's Next for MeeGo" (https://www.meego.com/community/blogs/imad/2011/whats-next-meego). meego.com. Retrieved 28 September 2011.
92. ^ Microsoft Tablet PC (http://msdn.microsoft.com/en-us/library/ms840465.aspx)
93. ^ Tablet PC Brings the Simplicity of Pen and Paper to Computing: In a conversation with PressPass, Tablet PC general manager Alexandra Loeb discusses how the Tablet PC will bring... (http://www.microsoft.com/presspass/features/2000/nov00/11-13tabletpc.mspx)
94. ^ "Live from Steve Ballmer's CES 2010 keynote" (http://www.engadget.com/2010/01/06/live-from-steve-ballmers-ces-2010-keynote/). Engadget. Retrieved August 4, 2010.
95. ^ Initial Windows 7 tablets are slated to appear during holiday 2010 season. (http://news.cnet.com/8301-13860_3-20019267-56.html?tag=mncol;mlt_related) accessdate=2010-10-19
96. ^ "ASUS Eee Pad EP101TC opts for Android, dumps Windows Embedded Compact 7" (http://www.engadget.com/2010/07/20/asus-eee-pad-ep101tc-opts-for-android-dumps-windows-embedded-co/). Engadget. Retrieved May 28, 2013.
97. ^ Einstein, Dave (October 11, 2012). "Microsoft Betting BIG on Cloud with Windows 8 and Tablets" (http://www.forbes.com/sites/netapp/2012/10/11/windows-8-release-date-tablet-microsoft-cloud/). *Forbes*. Retrieved October 27, 2012.
98. ^ Miller, Michael. "Build: More Details On Building Windows 8 Metro Apps" (http://forwardthinking.pcmag.com/show-reports/287736-build-more-details-on-building-windows-8-metro-apps). *PC Magazine*. Retrieved February

10, 2012.
99. ^ Gara, Tom. "What Does the 'RT' In Windows RT Stand For?" (http://blogs.wsj.com/corporate-intelligence /2012/10/26/what-does-the-rt-in-windows-rt-stand-for-nothing-andor-something/). *Wall Street Journal*. Retrieved 10 July 2013.
100. ^ "Best Windows 8 tablets: all the Windows 8 tablets we've reviewed" (http://www.techradar.com/us/news /computing/windows-8-tablets-release-date-specs-and-prices-916134). Tech Radar. Retrieved 12 June 2013.
101. ^ One of the following Windows OSs will be discontinued: Windows Phone, Windows RT, and Windows 8 (http://blogs.computerworld.com/windows/23194/microsoft-confirms-windows-rt-will-die) Mary Jo Foley, reporting (http://news.cnet.com/8301-10805_3-57613698-75/microsoft-aims-to-whittle-windows-variants-on-mobile/) accessdate=2013-11-25
102. ^ *a b c* "Surface RT - The Original Microsoft Tablet" (http://www.microsoft.com/surface/en-ca/products/surface). Microsoft.com. Retrieved 2013-12-03.
103. ^ HP Webcast announcing the end of Touchpad, webOS devices (http://www.hp.com/investor/2011q3webcast) accessdate=2011-08-18
104. ^ "LG Electronics Acquires webOS from HP to Enhance Smart TV" (http://www8.hp.com/us/en/hp-news/press-release.html?id=1375489#.USvx7qK-q2E). Retrieved 10 June 2013.
105. ^ This "vicious cycle" (slow hardware development masking slow hardware, causing slow response, causing slow software development, causing sluggish performance at an unrealistic price, causing sluggish sales) serves only to impede further software investment. "HP reboots to confront Tablet Effect" *Barron's*, August 20th, 2011
106. ^ Austin Carr (December 17, 2011). "Kindle Fire Vs. Nook Tablet: "Choice" And Trash Talk" (http://www.fastcompany.com/1795503/barnes-noble-nook-tablet-choice-amazon-kindle-fire). *fastcompany.com*. Retrieved March 28, 2012.
107. ^ Eric Mack (December 22, 2011). "How to root the Nook Tablet" (http://www.gizmag.com/root-nook-tablet-add-android-market-honeycomb/20926/). *Gizmag.com*. Retrieved March 28, 2012.
108. ^ By Sorin Nita (November 17, 2011). "Nook Tablet Can Sideload Android Apps without Needing Root" (http://news.softpedia.com/news/Nook-Tablet-Can-Sideload-Android-Apps-without-Needing-Root-235103.shtml). *news.softpedia.com*. Retrieved March 28, 2012.
109. ^ Smith, Peter (December 21, 2011). "Kindle Fire and Nook Tablet both get 'upgraded' with reduced functionality" (http://www.itworld.com/mobile-wireless/234809/kindle-fire-and-nook-tablet-both-get-upgraded-reduced-functionality). *IT World*. Retrieved January 10, 2012.
110. ^ Verry, tim (December 21, 2011). "Kindle Fire and Nook Tablet Receive Root Access Killing Software Updates" (http://pcper.com/category/tags/update). *PC Perspective*. Retrieved January 10, 2012.
111. ^ Joseph Parishon (December 20, 2011). "Nook Tablet firmware update 1.4.1 disables sideloading apps" (http://www.theverge.com/2011/12/20/2649463/nook-tablet-firmware-update-1-4-1-disables-sideloading-apps). *TheVerge.com*. Retrieved March 28, 2012.
112. ^ "B&N NOOK Tablet 1.4.1 update kills sideloading, lets you keep apps installed so far" (http://liliputing.com /2011/12/bn-nook-tablet-1-4-1-update-kills-sideloading-lets-you-keep-apps-installed-so-far.html). *Liliputing.com*. Retrieved March 28, 2012.
113. ^ Troy Wolverton, *San Jose Mercury News* (November 25, 2011). "Barnes and Noble's new Nook Tablet doesn't measure up to Kindle Fire: Barnes & Noble's latest digital tablet may be an upgrade to the Nook Color, but is not as strong as Amazon.com's Kindle Fire" (http://seattletimes.nwsource.com/html/businesstechnology /2016840500_ptnook26.html). *Seattle Times*. Retrieved March 28, 2012.
114. ^ Brown, Peter iPad is iBad for freedom (http://www.fsf.org/news/ibad_launch), Free Software Foundation, 2010
115. ^ Cherry, Steven The iPad Is Not a Computer (http://spectrum.ieee.org/consumer-electronics/portable-devices /the-ipad-is-not-a-computer), *IEEE Spectrum*, 2010
116. ^ Conlon, Tom "The iPad's Closed System: Sometimes I Hate Being Right" (http://www.popsci.com/gadgets/article /2010-01/ipad%E2%80%99s-closed-system-sometimes-i-hate-being-right), *Popular Science*, 2010
117. ^ October tablet display shipments exceed laptop display screen shipments (November 2012) (http://news.cnet.com /8301-1035_3-57553868-94/tablet-display-shipments-jump-top-laptops-in-october/)
118. ^ Angela Moscaritolo (2012-06-18). 31 Percent of U.S. Internet Users Own Tablets "Survey: 31 Percent of U.S. Internet Users Own Tablets". PC Magazine. Retrieved 2012-10-20. (http://www.pcmag.com/article2 /0,2817,2405972,00.asp)
119. ^ "ASUS and Samsung gain wide swaths of tablet market share in Q3" (http://www.engadget.com/2013/10/30/idc-tablet-share-q3-2013/). October 30, 2013.
120. ^ "iPad Market share analysis" (http://bgr.com/2013/10/31/ipad-market-share-analysis/). October 31, 2013.

121. ^ iPad Rentals for businesses (http://www.flyingconnected.com)/

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