Era of New Portable Devices

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1. Abstract
Users are now demanding for portable devices more than ever before and with technology getting cheaper and smaller, brand new generations of new portable devices are becoming possible. First came laptops, mobile phones, Apple Newton, 3com PDA, and several other portable devices, and now eReaders, tablets, and netbooks. In this paper, I review general purpose portable devices such as netbooks and tablets, and dedicated reading portable devices such as Amazon's Kindle.

2. Introduction
When it comes to new portable devices, there are so many out there and every month there are new manufacturers getting into the game. In general, there are 5 major classes of portable devices: notebooks/netbooks, tablets, eReaders, MP3 players, and mobile phones. Some manufacturers are trying to combine the classes into one device to offer popular features from each class. Some are trying to reinvent the old popular devices such as laptops or tablet PC and turning them into more portable device such as netbooks, and netbooks tablets.

For example, Apple’s iPod Touch is a device in a class on its own and is a very good example of ‘the little device that could’. It can play MP3 music, videos, and has a multi-touch screen for ease of use. It has a built-in Wi-Fi and you can browse the web with it. The screen is so sharp and clear that even though is a bit small, it can be easily read.

When it comes to the operating systems for the new portable devices, some have proprietary operating systems such as iOS for iPad, and some have open source operating system like Android. Weeks before writing this paper, I spent some time researching and getting to know Android. The more I looked, the more I liked Android as an alternative to proprietary operating system for portable hand-held devices.

When I was doing research on tablets and eReaders for my preparation of writing this paper, I couldn’t believe how many companies are making tablets and eReaders. I found a new tablet manufacturer almost every week. My Google search for the phrase “iPad competitors” brought up about 173 million results, of which was a good article by Jason Hiner, “iPad competitors: The top 20 to watch” [3]. Similarly for eReaders, Google search for the phrase “Kindle competitors” brought up about 216 million results.

This is an explosive era for portable devices, and no one knows where it’s going. Almost every manufacturer of high tech devices wants a piece of the tablet business.
3. The Netbook Class

3.1 Netbook PC
Netbooks were designed to address two major issues of notebooks, i.e. weight and cost. Netbooks are what I consider as light duty computer and they are lightweight and compact to carry around with you. Netbooks have an adequate keyboard and built-in Wi-Fi which makes them an ideal companion computer to browse the web, access e-mail, and run some light duty applications. The smaller screen size of about 10 inches and no CD/DVD drive, smaller amount of RAM, smaller keyboard, slower CPU and basic graphics are the reasons netbooks are cheaper and lighter than notebooks. Very well-known PC manufactures are making the netbooks, e.g. Dell, HP (Figure 1a), Toshiba, Acer and Asus to name a few.

The specifications of netbooks don’t seem to be improving much from year to year. For instance, a Compaq netbook specifications from last year to this year seems to be somewhat stuck with a slower CPU, 1GB RAM, and a small hard disk.

While most netbooks run the notebook or desktop computer’s operating system, some netbooks can only run a reduced version of the operating system. An example is a netbook made by Sylvania (Figure 1b) which is being marketed and sold by CVS. This netbook comes with Windows CE, and very low end hardware configuration. Its browser quality is of some mobile devices limited to text or reduced graphics.

The latest store Ads during the Thanksgiving week shows how cheap one can buy these netbooks. A Compaq netbook was being offered for $149.99 for 160GB model, and CVS was offering their Sylvania netbook for $94.88.

Figure 1a – Compaq Netbook

Figure 1b – Sylvania netbook sold at CVS
3.2 Netbook Tablet PC
Lenovo is very inventive with their IdeaPad S series netbooks. The IdeaPad S10-3t (Figure 2) is an eye-catching new netbook design, adding a swivel-screen touch display to turn the netbook into a convertible tablet. With prices in $500+ range, it is a very expensive netbook on the market today. In this price range and having a touch screen it can be a competitor to an iPad.

![Lenovo IdeaPad S10-3t Netbook](image)

3.3 MacBook Air
Though Apple CEO Steve Jobs has repeatedly derided the netbook form factor, MacBook Air (Figure 3) is about as close as Apple will ever come to making one [4].

![MacBook Air](image)

"We've taken everything we've learned about miniaturization from the iPod and iPad and applied it to the MacBook," Jobs said in his presentation of MacBook Air. MacBook Air is as light as a netbook just under 3 pounds and it uses flash storage.
4. The Tablet Class
The explosion of tablet devices on the market is massive. Tablets also have the capability to be used as an eReader thus doing the job of two devices with one device, although it is not without its compromises. Tablets are bound to be a hot item for this holiday season. In this section I will look at the top two major manufacturer’s tablets on the market today, i.e. Apple’s iPad and Samsung Galaxy Tab.

4.1 Apple iPad
The iPad – It looks so good it must be good for something [5]. Apple’s iPad is a big device with 9.7 inch multi-touch screen running Apple’s iOS.

When iPad was released, one of my colleagues bought one and then lend it to me for a few hours to check it out. I was so excited to play with a new technology but didn’t know what to expect and how to use it. My colleague gave me a quick demo of the iPad showing its touch screen with multi-touch capability and showing me built-in and her favorite apps which she installed on it. When I saw how easy it is to use an iPad, the first thought came to my mind was that, it’s a bigger version of iPod Touch with bigger screen. Since I was already familiar with the way iPod Touch worked, within minutes of first use of an iPad I was able to connect to Wi-Fi, browse the web, check email, and play with its installed apps. When an interface is familiar and easy to use, it’s incredible how fast one can learn how to use a new device.

Figure 4 – Apple iPad, front, back, and side view
The iPad released early this year, was the first generation of Apple’s idea of a tablet, thus it is lacking certain features that other manufacturers are already fulfilling. One major feature is lack of a camera on the iPad. The iPod Touch 4th generation released later this year has a camera on
its front and back, which might be an indication that 2nd generation of the iPad would have built-in camera as well.

Could the iPad Be My New Travel Computing Device? The iPad is tempting because, looking at it, I can see the day where my computing line-up consists of three devices: iPhone, iPad and 15-17 inch MacBook Pro. My iPhone would be always with me. My MacBook Pro would be my primary heavy computing machine, with a large screen but still portable to move around to various places in my house or to other places in town (like for co-working). Then for being ultramobile, such as going to trade shows, I would have my iPad to use alongside my iPhone. [6]

Apple’s iPad is not as perfect as it may sound, in fact I’ve found several sites that emphasized its shortcomings, e.g. a site listed 13 Glaring iPad Shortcomings as follows [7]:

1. It's awkward (too big)
2. It's heavy
3. It's slippery
4. The screen has too much glare
5. Forget reading in the sun
6. Fingerprints are annoying
7. It does not multitask
8. The browser is limited
9. The virtual keyboard stinks
10. There's no USB port
11. iPhone-only apps look horrible
12. The price is just too high
13. It doesn't replace anything

I’ve found iPad’s most important shortcomings to be the lack of support for Adobe Flash Player. Although at first it seemed like a big deal, apps such as YouTube app [8] was designed to address that issue (Figure 5). Never the less the lack of industry standard Flash Player was initially seen as a missing important feature for iPad.

There is a positive side to the lack of Adobe Flash Player support in iPad; it shows that there aren’t many alternatives to Flash Player technology other than Adobe and Microsoft proprietary silver light. I hope this momentum for a need for Flash Player alternative would create a push toward open source technology for allowing user to play videos within web pages.
4.2 SAMSUNG Galaxy Tab

Samsung Galaxy Tab (Figure 6) has a slick look with a 7-inch display and it is smaller than an Apple’s iPad. Due to a smaller form factor Galaxy Tab can fit nicely in the palm of your hand. It has a multi-touch screen with capability of touch scrolling and zooming. It has a great browser for browsing the web and checking emails. It can be used in portrait or landscape mode by simply rotating it. Galaxy Tab supports Adobe Flash Player, which can be used to play flash videos that are offered within web pages.

![Samsung Galaxy Tab front and back view](image)

Figure 6 – Samsung Galaxy Tab front and back view

Galaxy Tab is supported by most big wireless carriers e.g. Sprint, Verizon, T-Mobile. Having several carrier options allows consumers to have more choices when picking wireless carriers.

Galaxy Tab uses Android 2.2 operating system with Samsung enhancement to make it work more smoothly for a tablet device. I think using open source operating system will give an edge to this tablet rather than using a proprietary operating system.
4.3 Apple iPad Vs. Samsung Galaxy Tab

The iPad and Galaxy Tab are in similar price range, which makes it only harder to choose which one is right for you. The following are comparisons of some important features to consider [10].

**Size:** The first difference you see is their size factor. Galaxy Tab’s physical size is similar to a Kindle and it’s smaller than an iPad (Figure 7). Galaxy Tab is easier to hold for a long time.

**Screen:** iPad has a sharper and crystal clear screen than Galaxy Tab.

**OS:** Galaxy Tab uses open source Android 2.2 with Samsung’s optimization for tablet use. The iPad uses Apple’s proprietary iOS. Open source has a lot more flexibility for consumers than a closed source.

**Wireless:** Both have Wi-Fi and option of 3G network. Galaxy Tab is available for every carrier, thus consumers can pick any carrier. The iPad has only AT&T as the carrier.

**Storage:** Galaxy Tab offers a built-in storage and option of using microSD device to expand memory. The iPad has a fixed amount of storage.

**Camera:** Galaxy Tab has two cameras, a 1.2 MP on the front and a 3 MP on back. The iPad does not have any cameras.

**Browser:** Galaxy Tab has a better browser due to support for full Flash Player 10.1. The iPad has no support for Flash Player.

**Performance:** Although the hardware specification is very similar, iPad is a bit snappier than Galaxy Tab.

**Battery life:** The iPad has a larger battery with 10 hours battery life. Galaxy Tab with 7 hours battery life
5. The eReader Class
There are several eReaders on the market today which use various technologies and user interfaces such as E Ink display, LCD screen, buttons and keyboard, and touch screen.

The most popular eReaders are the Kindle by Amazon, NOOK by Barnes & Noble, and Sony eReader by Sony. While Amazon and Barnes & Noble designed their eReaders to sell books, Sony designed their readers to sell the eReader device but later on to compete with other manufacturers, they offered a book store to be used by their eReader. The eReader that I liked was the ones with the E Ink technology. The E Ink technology makes the screen look like a paper.

5.1 Amazon Kindle
Amazon released its 3rd generation of Kindle (Figure 8a) mid this year. Kindle comes in three different models; Wi-Fi and Wi-Fi+3G are both with 6 inch display, and DX model (Figure 8b) with 9.7 inch display. Kindle DX is marketed as more suitable for displaying newspaper and textbook content. The 3G network is a free service which allows the user to buy books from anywhere that can get 3G signal. An experimental browser based on the popular WebKit rendering engine is included, as well as text-to-speech menu navigation [15].

![Figure 8a – 3rd generation of Kindle](image1.png)

![Figure 8b – 3rd generation vs. DX model](image2.png)

Overall I was very impressed with the new Kindle as an eReader; however, I did notice a few things. Although it has a simple user interface, it did not look as intuitive as people talked about. And when I flipped through pages, it blinks in reverse video before showing the new page.
Amazon released a "Kindle for PC" application (Figure 9) in late 2009, available as a free download for Windows 7, Vista, and XP. Amazon later released a version for the Macintosh, in early 2010. In June 2010, Amazon released a "Kindle for Android" version, putting it farther ahead of its competitors in offering a read-everywhere experience. With the Android application release, versions for the Apple iPhone, the iPad, PC and Mac computers, and BlackBerry cellphones are also available [15].

Figure 9 – Kindle for PC on Windows 7
In my opinion as well as others I’ve found on the web and talk to in person, Amazon not supporting ePUB for the Kindle is viewed as a major weakness for Kindle. I’ve found this great article titled, “EPUB: The final barrier for Kindle Adoption” which states that, “Amazon’s Kindle will emerge as the e-Reader market leader and prime content supplier for electronic books. But the company isn’t doing anything to help improve content standardization” [16]. The full article is available at http://www.zdnet.com/blog/perlow/epub-the-final-barrier-for-kindle-adoption/13804
5.2 Barnes & Noble NOOKcolor
Last year's original NOOK (Figure 10a) was a little odd, with a 6 inch of E Ink display and 3.5 inch TFT Color LCD Navigation touchscreen. It was like mixed features of the iPad and Kindle. The NOOK came in two different wireless configurations, Wi-Fi or 3G+Wi-FI. Now Barnes & Noble is back with the NOOKcolor (Figure 10b). Still based on Android and offering access to a store library of over two million digital titles, the new NOOKcolor features a 7-inch VividView touch screen, 8GB of internal storage, microSD storage expansion, Wi-Fi, a full browser, Pandora, and other applications through the new NOOKdeveloper program — which makes it a whole lot more Apple than Amazon [14]. It seems to me that NOOKcolor is heading in the direction of a tablet rather than staying with the eReader like technology.

When it comes to deciding which one of the Barnes & Noble NOOK to choose from, their online site can be a great help. They have a nice table showing features comparison for their NOOK line. The comparison table can be found at:
6. Display Compromises

6.1 eReader vs. Tablet
There are some issues using a tablet as an eReader. Finger prints and sun light (Figure 11) or a bright area makes it tough to read the tablet’s screen. Reading a LCD screen for a long period of time can also create eye strain that makes your eyes tired as well as causes headaches for some people. Battery life can be shorter on LCD screen due to the amount of power it uses for backlight.

![Figure 11 – Kindle and iPad tablet under sun light](image)

6.2 E Ink vs. LCD screen
When it comes to choosing which type of display technology is good for an eReader, the E Ink technology would win hands down (Figure 12). Since a device with E Ink has easy readability and a long battery life. E Ink seems like a natural paper and no other display can come close to looking like a paper.

![Figure 12 – Magnification of E Ink and LCD display](image)
7. Conclusion
Selecting which types of portable device to buy and carry with you comes down to personal preference and the types of things you need to do with it. Perhaps with today’s technology and with a wide variety of features we demand from a portable device, we are not quite there for having one device replacing all the devices mentioned in this paper. As far as my personal preferences goes, I would get a mobile phone such as Samsung Android phone or Apple iPhone for my mobile phone and carry that with me at all times. For reading books, magazines, and newspapers, I would get the Amazon Kindle, since I like the E Ink technology and how it is so close to be reading an actual paper and I also like the Amazon eBook store. For browsing the internet and checking emails on the go, I would get the Apple iPad. For portable computer to use for light computing, I would buy either Apple’s MacBook, or a netbook PC.

8. References
[1] Picture on the cover page is from:
http://x1uk.blogspot.com/2010/04/ipad-illustrations.html

[2] Smarttech and CNET
http://smarttech.blogetery.com/tag/tablet/
http://reviews.cnet.com/laptops/lenovo-ideapad-s10-3t/4505-3121_7-33955981.html

[3] Jason Hiner, iPad competitors: The top 20 to watch

[4] New 11" MacBook Air: as close to a netbook as Apple gets


[7] 13 Glaring iPad Shortcomings

[8] The YouTube app

[9] Samsung Galaxy Tab Review
http://hothardware.com/Reviews/Samsung-Galaxy-Tab-Review/

[10] Apple iPad Vs. Samsung Galaxy Tab – iOS vs. Android

http://inventorspot.com/articles/kindle_vs_nook_sony_ereader_holidays_34813

[12] E Ink
http://en.wikipedia.org/wiki/E_Ink

[13] NOOKcolor Review
http://www.youtube.com/watch?v=fMEGqQ53-Fg

[14] NOOKcolor
http://www.uncrate.com/men/gear/netbooks/nook-color/

[15] Amazon Kindle
http://en.wikipedia.org/wiki/Amazon_Kindle

[16] EPUB: The final barrier for Kindle Adoption
http://www.zdnet.com/blog/perlow/epub-the-final-barrier-for-kindle-adoptive/13804