Preface

In the world of ubiquitous computing the next big device to hit the market is the iPad and its competitor the Google Android 7” PC tablet. The world already has the netbook, a small portable PC with a very small but usable keyboard designed for surfing the web. The netbook has become a very affordable way to access the net. The cheapness of the hardware is partly enabled by cheap solid state storage devices, cost effective monitor production and market demand. Netbooks are available in the market for approximately $USD300. However, current scans of the electronics department stores show that laptop computers are the main stable choice with these types of personal computers occupying the largest area of the store. Laptops still have several distinct advantages over netbooks – being the size of the screen is much larger and much clearer, there is still a CD in most laptops and this is still the predominant way of installing software or accessing large amounts of data (conference proceedings for example). The keyboard is larger and less fiddly (netbooks have function keys and the layout of the arrow keys and numeric keys are very compact) and finally the stand alone battery power is much better for a laptop than for a netbook.

The original launch of the iPad as a device was not as a replacement for any of our current devices, but as a new breed of device & certainly the plans of all of Apple’s competitors to make a iPad clone suggest that the iPad is a certain class of its own – a sort of electronic clipboard. In this article I investigate whether the introduction of the iPad and the PC tablet herald a new era in ubiquitous computing.

Mark Weiser, in his seminal work on calm computing (Weiser & Brown 1995) predicted that computers would move to the periphery (meaning crucial but also not the central focus). Given the availability of the netbook generation of the computer and also the smart phone, what is this attraction of the iPad and Google Android 7” PC tablet?

Over the period when I was writing this article, I took every opportunity that I could get to ask my colleagues and friends about whether they already had a new generation PC tablet device (yes, I had to use the iPad word so that they would know what I was talking about), whether they had any desire to own one and what they would use it for. Some of the people I asked could not justify the purchase of a PC tablet and felt that their laptop could do any or all of those tasks just as well as the PC tablet. However, some people had some very interesting suggestions about how to use the PC tablet.

I will start by saying that lugging of a laptop is cumbersome and having to have a separate laptop carry case is a pain. So, for several years now myself and some of my female colleagues have had ‘mini-laptops’ especially set-up for being on the road. I have retired my laptop and it doesn’t leave the house. At the moment I have donated it to one of the projects that my students are doing and my older laptop is confined to my husband’s computer desk where he uses it for the purposes of earning points in an online game. The mini-laptop and in my case the netbook is great because it has speakers and a web cam built in. It sits inside my case and it is available when-ever – and is light enough to be with me always.
When I first started looking at the PC tablet, my colleagues recommended it to me because they know that I am currently working on a mobile phone application that can assist rehabilitation. Much of the aspects that the rehabilitation patients like about the mobile phone application is that they can use the application on the phone without needing too much extra hardware and that the mobile phone also serves many other purposes such as playing games, making calls, taking photos and playing music. So, even though the PC tablet would allow us perhaps more screen size to play with, it doesn’t tick many of the boxes for our users at least anecdotally. We haven’t yet conducted the research to back that up. Such empirical evidence is still some way down the track for our team.

The first most fascinating use of the PC tablet that came out for me was the number of people who I spoke to who would never buy a kindle ebook reader because all that you can do with the ebook reader is to read books. However, they either have or are planning to buy a PC tablet because you can download ebooks and you can also read news from all around the world and you can read blog sites and you can watch YouTube videos. As I write this, news is currently online. That is, you need a current Internet connection in order to be able to read the news. However, I have read in blogs and have thought myself that news companies would do well to publish news and magazines delivered in bulletins so that it is possible to download a bulletin of news in the same way that you can download an ebook. This might be especially relevant for magazines as there isn’t the same timeliness issue as with current affairs and breaking news stories. This would fit in with the iPad being the perfect travel companion allowing users to read news on planes. However, it also makes sense that just like a podcast, users can download the news bulletin every morning when they are at home using their much cheaper and faster broadband connection and then read the news on the train or the bus as they go to work. In addition, the table size and format is much easier in coach seating to manage. Sitting in coach on a plane, if you are using your laptop, you will need to put that away while they serve the meal and if the person in front of you reclines their seat, you can barely keep your laptop open at the right angle to view the screen. Also, getting the laptop to start and shutdown has come a long way, but being able to press the home and have the device and operating system perfectly manage the sleep process mean that if someone arrives, you can simply press one key and put the PC tablet away much like you would fold away the newspaper or a magazine or mark your place in a paperback novel. It is important not to seem like a geek giving all your attention to your beloved laptop making sure that it shuts all the files down correctly and saves everything back into storage that has been being maintained in a gigantic swap file in the sky.

When I thought about eBooks for a PC tablet, I thought immediately of novels. I didn’t think of non-fiction. However, then I got to thinking about text books. Text books are used all through high school, college and university. They are generally so big that you need to purchase a locker at school or college to leave your books in otherwise you are going to break your back carting the things around with you (some students use trolley bags). Generally, you either pay a fee to loan one from the school or you have to buy the text book and sell it again at the end of the semester hoping that the professor won’t change the text book and that the course will be offered in both semesters otherwise, you have to keep the text book until next year and remember to sell it then. The iPad would be the perfect text book viewer. As I write this, I will tell you that the libraries have already started to allow for electronic access to some text and theory books. However, they are yet to get the system perfectly right. At the moment, the library pays for a certain number of users which is an estimated number based on the number of students in the class. However, everyone knows that when you are a student, you start thinking about doing the assignment the week before it is due and work yourself up to doing the assignment the day before it is due setting aside the whole 12 hours to do the assignment in – so demand for the eText was very slow
until the day before the assignment was due and then demand was very high. Students worried that if they closed their view of the eText, they would not be able to get back to view the eText kept their page open, meaning that the library did not have enough instances of the eText to meet demand for that day and therefore, some very frustrated students.

Incidentally, many of my students will show me examples of my online course materials that they want to ask a question about on their smart phone. Student assignment work is becoming increasingly electronic and the concept of a hand back and needing to go to the newspapers to read your university results or to go to the student commons and push for a place to find your student number in a long list of printed numbers and then hold that position long enough to write down the grade for each of four or five courses is now gone. Results are online was well as electronic feedback marked up on documents for assignments. Coursework too is completely online, so there is no need to go to the bookshop and purchase the course handbook which is essentially a set of readings and notes published by the lecturer. All the slides used in the lectures, all the activities completed in class and all the recommended and alternate readings will be as a matter of due course; accessed electronically, therefore, the iPad is already a great alternative to hard copy materials. In much the same way as in the beginning of the 21st century we have seen the Universities shift the expectation of students from providing free print quote and Internet quota, to students providing these for themselves, we are now seeing the demand for computer laboratories change significantly. The age of the personal computer means that mostly, students prefer to do their work from their home office with their own laptop. Laboratories are becoming obsolete and demand for meeting rooms in libraries may also become obsolete as students harness the power of VOIP.

In fact, during 2009 when here in New Zealand we had our strongest Swine flu alert ever, I shared with my students just how important online course materials and tools are to the University because in the face of any Swine flu alert where the University may ask everyone to stay at home, the online course materials allow the university to carry on with business as usual providing classes and class materials in the online environment.

Many bloggers have written that the PC tablet is not great for printing. We need to somehow leave this idea that we would print out the whole eBook or eText. Many years ago I read how Sara Henderson (a prominent Australian author who wrote From Strength to Strength in the early 1990s) printed every page that she wrote on her old computer and pieced the hard copy printouts together in order to submit the manuscript for review. Printing has always been a proxy for security of electronic copies of data or perhaps a fail-safe for those who can’t or won’t plan to automatically backup their data. With storage media being as inexpensive as ever, it is perfectly achievable to mirror whole storage disks. The idea that users should need to print is completely dead with the arrival of a PC tablet.

If you have ever had a procedure that required more than overnight in hospital or sat by someone’s bedside while they had a procedure, you will know that you always think that you are going to be getting lots of work done so you take your laptop. If it is you having the procedure, then your mind is not working straight either due to drugs or natural emotional upheaval and so you find that all you really need is core services like your email, social networking accounts and maybe some access to important files. I even found that I wasn’t able to concentrate on a novel, but I could read short magazine type stories and I liked playing cards to pass the time. Again, the PC tablet is perfect for use while you are sitting in bed yourself or you are sitting in a seat with someone who is sitting in the bed. Also, if you are not lucky enough to have TV in your room in hospital, you can watch some TV on your PC tablet.

The power of the YouTube video is not be underestimated. The videos are in many cases very educational and empowering. I will tell you this story because my husband loves me very much and he
won’t mind me sharing this with you. With my kitchen drawers, I happened to fill one too full with small things and one day a pack of rubber gloves were high in the drawer. They slipped toward the back and then they fell down behind the drawers and they went all the way to the very bottom of the cabinet. This was very annoying because it meant that the bottom drawer always sat out a little. It also meant that because the drawer was open just a bit, it caught all the crumbs and food bits and I was forever needing to clean out the drawer.

On numerous occasions I had looked at the drawer myself and tried all combinations of having different ones open to try to fish the rubber gloves out. I tried to slip the drawers out, so that I could reach into the back, but the drawer slide mechanism seemed to be a closed system and so I could not open the racks. I also tried asking my lovely husband to take a look at it. I think he tried once or twice, but since it really didn’t bother him as much as it bothered me, then he didn’t try that hard. Also might have something to do with my accusation that he was going to break the drawer runner mechanism with brute force.

This went on for quite a while until one day I decided to solve my problem on the Internet. I don’t remember the exact search keywords that I put in – but very quickly I had a video from an expert installer of the type of kitchen that I have. This 8 minute video showed me exactly which tools to use and where to remove the drawer runner so that I could retrieve the rubber gloves from the bottom of the drawer unit and fix the problem. I watched the video and then within about 5 minutes, I had solved my own problem all because I had immediate access to an expert who knew how to fix the problem.

Another very social use of the 7” PC tablet is to view photos. If the memory cards are compatible (current versions of the 7” PC tablet do not appear to have usb), photos taken with a digital camera can be uploaded and viewed by the group. So, if there was an event on that day, upload all of the photos onto the PC tablet and view them together in the same way as you might use a digital photo frame. An interesting extension of this is that using the Internet connection of the PC tablet, photos can be uploaded into a photo album hosted in the Internet cloud and then copies can be printed by members of the group who are allowed access. Sharing family photos are always a struggle as the full resolution is required high quality prints – but most sites encourage users to resize the photos into a lower web-friendly web resolution.

I also posed the question to some about whether they felt they would work from a 7” PC tablet. Many of my colleagues work from cafes with wireless hotspots and so I was interested to see if the 7” PC tablet might be useful. The answers varied. If the purpose of being on the wireless hotspot was to answer email, then yes, the 7” PC tablet is OK for this purpose. Using a web mail interface, emails can be addressed, however if the purpose was creative, such as making a report, then definitely no. The lack of keyboard and inability to multi-task are a big disadvantage.

Online meetings via the PC tablet are possible without the video. Who really needs the video? Many different organisations run daily teleconferencing meetings without even the use of a computer. Participants simply dial a number and enter and access key and a pin number. This process is also possible using VOIP and therefore is much cheaper if the user would like to be mobile as opposed to using a landline. The added benefit of VOIP is that tools allow the meeting to share documents and although there is the procedural thing of, ok, everyone got access to their email and opened the business minutes today – where invariably, someone missed the email and someone else meant to download it before the call but didn’t and now doesn’t have the necessary information in front of them to make the meeting productive. Now we are going to applications where a copy of the business minutes is in front of the user and the speaker can take master control of that document, scroll and highlight or even, during the discussion, think of an example, and then switch the whole call to their desktop, browse their documents and show an example model or photo to the meeting.
An interesting trend at conferences has been the number of people who have given a presentation via video conferencing. I have been to several conferences in the last 5 years where the main keynote speaker has dialled in from their home office to make a presentation. Culture seemed to dictate that it was OK for the keynote to do this if the organisers for some reason could not negotiate the fee or the travel expenses for the speaker. If you were a conference presenter and for some reason could not make the presentation – you faced then the conference did not deliver the whole service. Now, the game has changed and many speakers present via very low technology one way video camera and microphone to a lecture hall that does not return an image of the audience or even any audio for the audience. This is like doing an audio interview only if you are the speaker. You just launch off to regale the audience of something that you hope is appropriate but for which you have no idea whether people are engaged, bored or indifferent. Perhaps with the PC tablet, we can skip the need to have an audio and video image from the audience and go straight to having a one too many connection to a PC tablet.

In healthcare, professionals have been crying out for the equivalent of a tablet that will allow a touch type interface to view patient records and add in patient files. There have been several high end tablets developed that allow shared view of all a patient's test results together without the need to rekey written information. The current lack of handwriting recognition is probably something to overcome in healthcare. However, in decisions about treatment, especially in non-central areas, there is a need to access research and to confer with experts & this is where something as portable as a PC tablet could very beneficial.

Courier drivers already use their own type of hand held PC to collect signatures and to enter details of deliveries made and so on. Field sales man who do home visits could benefit greatly from a PC tablet already because in many fields there are disclosures that they must show the customer and the customer must acknowledge that they have been shown the disclosure. Pricing and product information can always look slicker as calculators and links back to proprietary back office systems. Real Estate people are another group of business people with paperwork to fill out. A tablet PC could be used to deliver online visual presentations to prospective customers without the need to visit each and every property. The offer may also be made from the road rather than needing to return to the office and complete the paperwork or to go between the respective residences of buyer and seller getting offer and counter offer information. In a business where impressions count for a great deal, using a PC tablet and especially an iPad where impressions of the type of car that the person drives or the type of clothes and physical appearance of that person counts, then it is likely that doing business with the iPad would influence buyer perception and quite possibly sales.

Interestingly, the iPad has no GPS. Some map information and way finding information useful to visitors or tourists would still be accessible. Some location based information might be still available based on the network that the device is connected to. The larger screen size and therefore better screen resolution will be much easier to read.

The 7” PC tablet is ideal for social media. The Twitter and Facebook interfaces are designed with less typing and users can do many tasks through only touching the screen.

I have not tried out whether it would be possible to use VOIP services using a 7” PC tablet. You could definitely use the VOIP to chat or SMS. The iPhone does have a speaker, headphone jack and microphone. Therefore, the VOIP services would be available as well as audio conferencing facilities made available through something as simple as Skype. Video conferencing which is available on a netbook for example, is not available on the 7” PC tablet. So in terms of a 7” PC tablet being more like a piece of paper, the functionality here is more like passing a note in a conference presentation rather than full video.
Some students felt that a 7” PC tablet would be excellent for taking notes in class and of course viewing Wikipedia entries and online course materials. In the digitally enhanced age of the lecture theatre, power point slides are provided and the students can annotate their own copy with the notes section.

A 7” PC tablet would also be great for reviewing documents. A lot of what I personally do is reading and commenting on work produced by my students and grading it. In the age of the working mother, it is great to be productive while waiting for ballet lessons or karate lessons to be over and so, a 7” PC table would be great. If you are wondering, I would not load anything onto the hard disk; I would be accessing all documents from the Internet Cloud. In the case of reviewing work, either from my email account or the online course electronic submissions box. This move to storing work in the cloud is very powerful as it removes the need to synchronise everything or to run some sort of brief case document. Apple and probably other companies are releasing productivity software, which coupled with cloud computing will make working on documents and presentations much easier.

I have an executive friend who takes reading with him on the plane. He has his secretary print out the readings and then she binds them with spiral binding – so he has his own personalised magazine to read on the plane. This approach would migrate really well to a 7” PC tablet without the need to print out the material.

Speaking of travel, many budget methods of travel do not have movie services. However, since the 7” PC tablet is great for viewing movies, then it is the perfect device for viewing movies during travel with the added advantage of being able to personally choose the movie titles and to finish viewing the movie at a later time.

The 7” PC tablet is great for entertainment gaming (as opposed to serious gaming). From racing games, brain teaser puzzle games to civilisation and shoot-em-up adventure games, every genre is already covered and the price of the games are so much cheaper than those for the PC – sure to be a hit with parents the world over. Entertainment gaming is an activity done to pass the time as opposed to serious gaming which I regard as a serious hobby that people engage in because they have a desire to do so, not just to pass the time or relieve the boredom.

The inclusion of the accelerometer in the 7” PC tablet allows game developers to incorporate the natural action of using the device like a joystick console. This is a very intuitive use of the technology and will allow more intuitive interface with the application. Game developers are also working with the larger touch area which means that interfaces are likely to advance from just being thumbs or one finger as with the iPod and smaller touch screen interfaces to being able to work with five finger touch based commands that could be used for more detailed targeting for example.

To continue the analogy of whether a 7” PC tablet is a piece of paper or a computer – the iPad in particular is not upgradable. It is difficult to swap batteries in and out and the type of RAM used is not upgradable. Interestingly, Apple make a big advertisement about how green the iPad actually is without the use of mercury and made from recyclable glass and aluminium, the impact on the environment is designed to be low – however, with the currency of such devices being measured in months rather than years, it is not intended that you can upgrade your tablet PC after purchase. I have kept the same mobile phone for the last 6 years and now I am very subtly being forced to choose a new mobile phone as not only the mobile phone technology, but also the telecommunications network that it runs on have become obsolete.

Could the 7” PC tablet be useful on a day out for example at the museum even if you weren’t a tourist or a visitor to the city? As bizarre as it seems, a 7” PC tablet would be a great tool. It can act as a sketch book through a basic drawing application, a guide book to replace the three or four useful brochures
using the museum website to gain up to the minute information as well as a historical knowledge book on just about any topic from dinosaurs to arctic expeditions through access to Wikipedia.

Using a 7” PC tablet in front of the television is also a possibility. Many people like to surf during the adverts or might like to multi-task. The size of the 7” PC tablet seems perfect for this. The tablet would also be great for use in the kitchen for viewing recipe details rather than searching for a recipe on a desktop and then making a printout of the page. The tablet could also help with measurement conversions and ingredients that can be substituted.

To spin the above scenario around, how about watching TV at a sports game on an iPad. This gives you two experiences, the experience of seeing the game live and also access to replays and various game statistics and so on. For example, you could watch the game in person, view the telecast live and use the Internet to provide background on game rules and so on.

In addition, as if there wasn’t enough TV in the house, it is possible to pay for and download TV episodes using a music service provider such as iTunes. Some television networks understand the competition and so they allow viewers to download programs for free. Then you can watch TV episodes where ever you might want to around the home.

In the IT industry it is very common for sales people or contractors to take along a laptop with a slide show presentation to support their sales pitch or to support a project proposal. As visitors don’t have any control over the meeting room or type of computer facilities provided, imagine showing up to your next sales pitch meeting and directing the client to a presentation on a tablet PC. There are also other more social uses of this sized tablet PC which include having a game of monopoly or perhaps chess after dinner somewhere on the a 7” tablet PC. The 7” tablet PC could reside on the coffee table rather than being a personal device like a mobile phone of laptop. Social uses could be view of television programming or perhaps viewing of CD or movie collections. It may be possible that the 7” tablet PC could become a very sophisticated remote control for all the computing devices around the home including the air conditioning control, music playing and theatre system.

One Sydney restaurant uses a tablet PC for their menu. Customers can scroll through the menu and can read tasting notes and information about local produce. Their selection is sent wirelessly through to the kitchen. Interesting advertising strategy that may prove to be an interesting strategy to attract people or could prove to be a winner.

Apple has definitely started a new class of device – the PC tablet. Clearly not a mobile phone and also not a netbook, the PC tablet is a class of its own. In my opinion, the PC tablet is likely to remain a distinct type of device as it is not suited well to taking over the functionality of a mobile phone or a laptop. The PC tablet is definitely more likely to be a more social device than a personal phone or a personal netbook and in that regard, likely to become similar to a family PC setup in the lounge. The lack of size and also portability does mean that the iPad and other PC tablet clones do take society in the direction of truly ubiquitous computing as Wieser envisioned with the PC tablet likely to be in the periphery (perhaps living on the coffee table) and then becoming the focus replacing perhaps a home information system or a games cupboard.

REFERENCE