

Segment #1: Propose Two Topics (1st choice, and 2nd choice)

Topic narrative: Describe the topic in one paragraph (4-6 sentences) including what you finding interesting about what the future might hold for this topic. Also, how does this topic relate to technology?

Topic #1 narrative: My first choice for future forecast project is mobile computing. Whether that is smart phone, tablets, and ultrabooks, mobile computing is going to shape our daily lives – how we interact, collaborate, and communicate. As an Emerging Technologies Specialist at UW-Eau Claire, one of the many things I’m constantly looking for is the direction of mobile computing. How it’s going to affect our students, faculty and staff on campus? How do we prepare for it?

Resource about topic	Describe in your words why you think this is important as it relates to the future of this topic.	<u>Citation</u> (APA or MLA)
Key fact #1 for future	Mobile computing plays a major role in how we interact, communicate, and collaborate with one another. Whether this is on a personal or professional level, mobile computing is growing fast and will not slow down any time soon. Mobile devices are spreading faster than any other consumer technology in history (Regalado, 2013). In fact, this is just the begging of mobile computing. “According to a recent global report, Digital Megatrends 2015, by Oxford Economics, almost 60% of senior corporate executives expect mobile technology to provide the biggest boost to their businesses over the next five years, versus about 35% for business intelligence and cloud computing, and about 30% for social media.” (Tan, 2011)	Regalado, A. (2013, March 1). <i>Mobile Computing Is Just Getting Started</i> . Retrieved from MIT Technology Review: http://www.technologyreview.com/news/511766/mobile-computing-is-just-getting-started/ Tan, T. (2011, August 3). <i>Five Reasons Why Mobile Computing is Accelerating in Organizations</i> . Retrieved from Industry Week: http://www.industryweek.com/companies-amp-executives/five-reasons-why-mobile-computing-accelerating-organizations
Website #1	The Educause website provide a lot of information on mobile computing. They include Mobile Computing 101, Current and Future Trends in Mobile Computing, Pew Reports, and other mobile computing related topics.	http://www.educause.edu/
Insightful article #1	In this article Ken discusses the “Super Tablet” that is both mobile and powerful enough to anything that a regular laptop can. He talks the smart phone, iPad, iPad Mini, Surface RT, and the full Surface. (Hess, 2013)	Hess, K. (2013, October 4). <i>The future of mobile computing: a phone, a mini tablet, and a super tablet</i> . Retrieved from ZDNet: http://www.zdnet.com/the-future-of-mobile-computing-a-phone-a-mini-tablet-and-a-super-tablet-7000021882/
Respected author #1	An article by Craig Mathias points out that the next 5G or whatever it’s going	

	to be called is not going to be about throughput but capacity. Due to the vast varieties of connections such as M2M/IoT devices with highly-variable capacity requirements, a per-user (or per-device) throughput is not as important.	
Stakeholder #1	From global perspective, the stakeholders are almost everyone who has or thinking of having a mobile device. However, to narrow it down to my current position at UW-Eau Claire, it's the students, faculty and staff. Mobile computing will allow students and faculty a tremendous flexibility in communication and submitting assignments/homework.	

Topic #2 narrative: My second choice for future forecast project is the use of the 3D printing. At the current state, 3D printing is just at the early stage but I believed it has a lot of potential. There are already developments underway in print 3D heart and NASA just launched a 3D printer to the International Space Station. Per my case, I believed it's going benefit UW-Eau Claire tremendously in many of the science labs and history etc.

Resource about topic	Describe in your words why you think this is important as it relates to the future of this topic.	Citation (APA or MLA)
Key fact #1 for future	Here are a couple of facts about 3D printing. On the consumer side, users can order designs from online and print it on their own 3D printers at home (Mufsonde, 2013). On the military front, 3D can be used in large floating military ship printing small pieces and parts (Templeton, 2013). "NASA has 3D-printed rocket parts and successfully test-fired them, proving on the grandest stage — space exploration — that 3D printing is no longer just for teacups with structural flaws." (Plafke, 2013) On the researchers side, there are wide spread of printing biological structures. Printing a total organs that is stable overtime is no easy task. However, "the first stable 3D-printed ear was achieved not too long ago by researchers at Cornell using a very similar method." (Hewitt, 2013)	Hewitt, J. (2013, May 2). <i>Researchers create world's first 3D-printed bionic organ</i> . Retrieved from extremetech.com: http://www.extremetech.com/extreme/154893-researchers-create-worlds-first-3d-printed-bionic-organ Mufsonde, B. (2013, December 02). <i>The Future of 3D Printing in 3 Minutes</i> . Retrieved from Mashable.com: http://mashable.com/2013/12/02/3d-printing-future/ Templeton, G. (2013, May 27). <i>extremetech.com</i> . Retrieved from US Navy looks to 3D printing to turn its city-sized aircraft carriers into mobile factories: http://www.extremetech.com/extreme/156773-us-navy-looks-to-3d-printing-to-turn-its-city-sized-aircraft-carriers-into-mobile-factories
Website #1		

Insightful article #1		
Respected author #1		
Stakeholder #1		

You may use this document to enter you information. Allow the cells to expand as needed in correspondence to the amount of information you enter. If you elect to use a different format, please be certain to include all the elements called for in this segment which included two topic narratives and ten key resources, five for each topic.

Segment #2: Dig deeper, 5-4-3-2-1 more resources

In this segment, the purpose is for you to begin to understand the topic you've selected with greater depth. The following elements will give you an opportunity to conduct research about where the topic is at NOW. Later we'll consider the history, but for this segment you're looking to capture a very clear portrait of the topic's breadth, depth, complexity, significance, and overall scope. There aren't necessarily right answers though there should be little or no need to repeat a finding described in one resource again in another. Most every topic has a wide array of features to 'what it looks like' and this exercise should convey to the reader and yourself the size and importance of this topic.

As part of this exercise you're continuing the pattern of resource gathering started in Segment #1. The headers are the same, just more. These are resources you'll use later as part of constructing what is called a baseline future, so be certain to gather quality information and from sources that will help you understand where this topic might be headed in the future. Always be thinking as your selecting items, "So how might this related to the future for my topic?"

Topic

Resource about topic	Describe in your words why you think this is important as it relates to the future of this topic.	Citation (APA or MLA)
Key fact #2 for future	Based on this article, if Apple actually goes ahead and start implementing this feature in their future iPads or mobile devices, it will be a game changer for file management. Instead of drag and drop, users can use motion gestures or simply move their mobile devices to organize, sort, arrange, and move files/folders around. This is an interesting idea that Apple is thinking of and it will change the future on how we interactive with our files, folders, icons, or just about any objects in the OS. (Etherington, 2014)	Etherington, D. (2014, September 16). <i>Apple Patents A Strange Physics-Based GUI For iPad File And Folder Manipulation</i> . Retrieved from http://techcrunch.com/ : http://techcrunch.com/2014/09/16/apple-patents-a-strange-physics-based-gui-for-ipad-file-and-folder-manipulation/ Thorn, T. (2014, February 25). <i>Wi-Fi Direct: what it is and why you should care</i> . Retrieved from http://www.techradar.com/ : http://www.techradar.com/us/news/phone-and-communications/mobile-phones/wi-fi-direct-what-it-is-and-why-you-should-care-1065449
Key fact #3 for future	Wi-Fi Direct will sure play a major role in mobile computing. Users no longer have to punch in an access point's SSID, user name, and password. It just works once it's Wi-Fi Protected Setup. The problem of finding an Internet access to print, share files, screen cast etc. will be much faster and frustration free. Wi-Fi Direct does not need Internet access. It works similar to Bluetooth but at much faster speed. It will change the future of conference room, class room, or in the living room of a user. At this point, Wi-Fi direct is already in all of the recent Android, iOS 7, BB OS, and even the newer Xbox. Best of all, there is no need for manufactures to add additional hardware to the devices. According to this article, there are already 1,100 devices that have been certified since October 2010 including	Thorn, T. (2014, February 25). <i>Wi-Fi Direct: what it is and why you should care</i> . Retrieved from http://www.techradar.com/ : http://www.techradar.com/us/news/phone-and-communications/mobile-phones/wi-fi-direct-what-it-is-and-why-you-should-care-1065449

	televisions, smartphones, printers, PCs and tablets (Thorn, 2014).	
Key fact #4 for future	Although this is not huge; however, it is not something to be dismissal either. Apple's announcement of their "Continuity" with their iOS 8 and Yosemite OS is a great addition to mobile computing. It will allow users to start their work on an iPad and finish it on their Mac computer. If the user's not within reach of their iPhone and the phone rings, he/she can pick up the call on their MacBook Pro or MacBook Air. This ability will allow the user much more mobility while not missing a call. The next step is to push this to their Apple Watch and Apple TV (Sterling, 2014).	Sterling, N. (2014, July 24). http://mashable.com/ . Retrieved from How Apple Is Forging Deeper Connections Between Desktop and Mobile: http://mashable.com/2014/07/24/ask-dev-apple-continuity/
Key fact #5 for future	Mobile computing cannot be mobile without the advancement in Wi-Fi. Currently most enterprise and some home users may already have IEEE 802.11ac. The speed of an 802.11ac runs roughly around 1 gigabits per second. If the speed of a Wi-Fi keeps going up as in the past, Wi-Fi will pretty much dominate the mobile computing communication. Based on this article, the 802.11ad will run a 7Gbps (Shankland, 2014). With the increase in speed, mobile streaming, capturing, and delivering of HD or perhaps 4K content is possible. Not only is the expanding in Wi-Fi presence benefit mobile devices, it also enables the IoT to be connected to the Internet allowing it to be controlled anywhere in the world. With the expansion of Wi-Fi coverage and speed, VoLTE is also possible on mobile devices such as smartphones. VoLTE has a much better sound quality than traditional cell tower communication (Pogue, 2014). This shows that the future of mobile computing and communication lies heavily on Wi-Fi.	Shankland, S. (2014, May 31). <i>Coming to a network near you: Faster Wi-Fi</i> . Retrieved from http://www.cnet.com/ : http://www.cnet.com/news/coming-to-a-network-near-you-faster-wi-fi/ Sterling, N. (2014, July 24). http://mashable.com/ . Retrieved from How Apple Is Forging Deeper Connections Between Desktop and Mobile: http://mashable.com/2014/07/24/ask-dev-apple-continuity/
Key fact #6 for future	And the mobile computing cannot be possible without storage solution. Cloud storage is the next big thing. All of these mobile devices have to have access to their files, images, audios, videos etc. Many businesses and universities around the country are either dropping their own on premise files storage servers or are already in hybrid with cloud storage for their mobile users. Cloud storage is also a good way of having files backup and versioning automatically. Accessing files from mobile devices are much friendlier and faster. The future of mobile computing does not relied on static file storage.(Kendrick, 2014)	Kendrick, J. (2014, February 26). <i>Cloud storage: It's not just about the files</i> . Retrieved from http://www.zdnet.com/ : http://www.zdnet.com/cloud-storage-its-not-just-about-the-files-7000026777/

Website #2	This is a great website to get an overall feeling of what mobile computing is. It involves anywhere from equipment, solutions, networks, services and more. Mobile computing is not just about one solution or about devices. This website tries to provide a wide variety of information about mobile computing but quite generic in my opinion.	http://www.mobilecomputing.com/
Website #3	Here's another great place to check out the latest mobile devices, reviews, news and more. What I have not seen so far on this website is mobile computing services or solutions. If one wants to know what's hitting the market then this is a great place. Although this site is geared toward consumers, it does provide good information on the current status of the mobile computing and BYOD.	http://www.technewsworld.com/perl/section/mobile-tech/
Website #4	This is another sub site from within CNN's Money site. This site is gearing towards more news/reporting and less of reviews. It also shows a cost or "money" perspective. The site usually shows the latest news at the very top so users don't have to scroll down. It has a simple format for navigation.	http://money.cnn.com/technology/mobile/
Website #5	And this website is totally devoted to mobile tech review and comparison. This site is all about the mobile devices. Whether it's consumer or enterprise, this site has it. One example is the HP ZBook 15 laptop. One other thing about this site is that it provides a forum for users to interact and provide their own reviews if anyone are interested.	http://www.mobiletechreview.com/
Insightful article#2	Cloud storage/computing is only as good as its security. Given the rise of cloud storage due to the increase in mobile computing, security is a big issue. Popular services like Amazon Web Services, Drop Box, Google Drive etc., security is a major concerns. Survey "done in previous years indicated that around 80 percent of the members were skeptic about entering cloud computing due to security concerns." (Passary, 2014)	Passary, S. (2014, June 15). <i>Cloud computing is the future but not if security problems persist</i> . Retrieved from http://www.techtimes.com/http://www.techtimes.com/articles/8449/20140615/cloud-computing-is-the-future-but-not-if-security-problems-persist.htm
Insightful article#3	This is an insightful article in that Intel is not giving up on making mobile chips despite its losses of \$1.12 billion in July from its mobile segment. By investing \$1.5 billion in two mobile chips companies owned by the Chinese government, Intel is hoping to dominate the mobile chip as it did with the PCs and data centers. According to the article, the new partnership chips expected to be available by early 2015. Even though Intel's stock has taken some hit, due to Intel's strong core PC and data	Rubin, B. F. (2014, September 26). <i>Intel doubles down on mobile with \$1.5B China investment</i> . Retrieved from http://www.cnet.com/http://www.cnet.com/news/intel-doubles-down-on-mobile-with-1-5-billion-china-investment/

	center businesses, their shares are actually up 32 percent since the start of 2014 (Rubin, 2014).	
Insightful article#4	One of the biggest issues of mobile computing is that it's only as good as the power it's running on. If there is no power, the device is only good for paperweight. This article gives a glimpse into how to prolong power mobile devices. Researchers found a material that once added to the transistors it acts as a layer of filter and the signal that passes through use much less energy. (University of Texas, Dallas, 2014) This will allow mobile computing devices and wearable gadgets to get longer life.	University of Texas, Dallas. (2014, September 26). <i>New technology may lead to prolonged power in mobile devices</i> . Retrieved from http://www.sciencedaily.com/ : http://www.sciencedaily.com/releases/2014/09/140926112052.htm
Respected author #2	Here's a bit about the author. Dirk Nicol is the program director for IBM Mobile Strategy and Product Management at IBM. He has spent years helping IBM advance new and emerging technologies. This book goes through a lot of crucial topics. It covers enterprise mobility, business value, challenges, framework, development, security and management and much more including planning mobile project etc. Based on the abstract, he offers insights critical to evaluating mobile technologies, supporting BYOD, and integrating mobile, cloud, social, and big data.	Nicol, D. (2013). <i>Mobile Strategy: How Your Company Can Win by Embracing Mobile Technologies</i> . IBM Press.
Respected author #3	In this book, "The Mobile Wave: How Mobile Intelligence Will Change Everything", Michael stress the point that we must adapt or risk to be parish in an instant. Everything we used to know such as books, magazines, cash, CD/DVD etc. are coming into the cyber world in mobile computing. Mobile computing allows anyone to gain more knowledge and information in real time. The book covers some of the major topics that will help businesses or enterprise to adapt and become successful in the "Mobile Wave."	Saylor, M. J. (2012). <i>The Mobile Wave: How Mobile Intelligence Will Change Everything</i> . Vanguard Press.
Stakeholder #2	Apple, Wi-Fi alliance, Institute of Electrical and Electronics Engineers, Dropbox, Box, Google, Amazon, Intel, Microsoft, Samsung etc. almost mobile device and services manufacture.	

Segment #3: History, change and S-T-E-E-P

This segment is intended to help us see the large picture about the context of your topic. In the previous segment you explored the present whereas now we want to look at how things came to be as they are today. This segment presumes that you're beginning to get a broader understanding of the topic you've selected and can now look across the history of your topic and discern important from unimportant change. Take time to read 01-Change and you'll come to understand five basic attributes of change and learn about a mnemonic called STEEP. These elements form the core of this segment.

As with Segment #2, your work is now specific to your select topic. If you're not clear about your topic at this point, please take time to visit with your instructor to refine or clarify your topic or focus. In this segment you're looking at the past; history as it relates to your topic. We use the content from 01-Change to align with this work. As with the previous segments, complete the framework that follows with evidence that supports each item requested. Allow cells to grow as needed to accommodate your narrative.

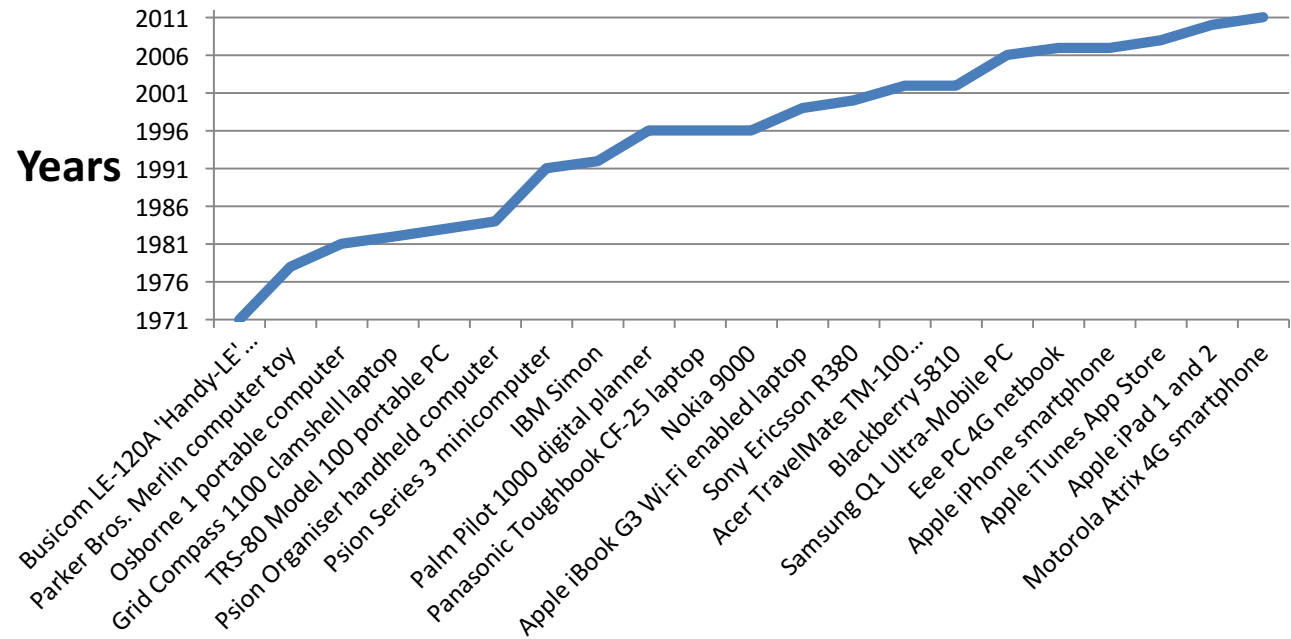
Topic:

Description of task	Explain with illustrations	Sources: Citation (APA or MLA)
<p>Discuss a historical event or series of events that illustrate 'from where' change on your topic tends to come. Is your topic driven more from inbound or outbound change, and what is a historical event that prominently illustrates that source?</p>	<p>Mobile computing involves so many things such as battery power, wireless access, software, and services etc. to make it possible. However, in this segment, I'm going to focus on mobile devices. It has gone through many changes in the last 50 years or so. All of these historical changes were the result of outbound change. Each manufacture was trying to influence what the future will be with the introduction of their device. Below is a list of historical events or series that illustrate where the changes of mobile computing has evolved from. I've combined from two sources, (Paul, 2011) and (Kjeldskov, 2013).</p> <ul style="list-style-type: none"> 1971: Busicom LE-120A 'Handy-LE' calculator 1978: Parker Bros. Merlin computer toy 1981: Osborne 1 portable computer 1982: Grid Compass 1100 clamshell laptop 1983: TRS-80 Model 100 portable PC 1984: Psion Organiser handheld computer 1991: Psion Series 3 minicomputer 1992: IBM Simon 1996: Palm Pilot 1000 digital planner 1996: Panasonic Toughbook CF-25 laptop 1996: Nokia 9000 	<p>Kjeldskov, J. (2013). <i>Mobile Computing</i>. Retrieved October 18, 2014, from The Interaction Design Foundation: https://www.interaction-design.org/encyclopedia/mobile_computing.html</p> <p>Paul, I. (2011, March 29). <i>Milestones in the history of mobile computing</i>. Retrieved October 18, 2014, from Computer World UK: http://www.computerworlduk.com/slideshow/mobile-wireless/3267504/milestones-in-the-history-of-mobile-computing/</p>

	<p>1999: Apple iBook G3 Wi-Fi enabled laptop 2000: Sony Ericsson R380 2002: Acer TravelMate TM-100 laptop/tablet hybrid 2002: Blackberry 5810 2006: Samsung Q1 Ultra-Mobile PC 2007: Eee PC 4G netbook 2007: Apple iPhone smartphone 2008: Apple iTunes App Store 2010-2011: Apple iPad 1 and 2 2011: Motorola Atrix 4G smartphone</p>	
<p>Here discuss where change is taking place. Discuss the 'level of change' and provide specific historic examples that illustrate that level of change. Keep in mind, technology can generate change at many levels.</p>	<p>Despite so many devices were invented in the past 50+ years, what really took off was during 2007 when Apple invented their iPhone. Blackberry was king of the hill for mobile computing especially for enterprises. However, with the introduction of Apple's iTunes app store and touch screen smartphone, the iPhone just took off. It was a major change or turning point for mobile computing. With Apple's introduction of the iPad in 2010, it accelerates the process of mobile computing further. Apple has sold millions of their iPad device. The device alone itself won't do much, just look at Windows Phone, but Apple has 300 hundred thousand of apps in their app store by 2010 (Ahlund, 2010). There were other devices that have wireless access for communication but they're basically for text and voice. The iPhone revolutionized the mobile devices "...with relatively fast and simple Web access, an innovative and intuitive touch screen, and the creation/promotion of mobile applications and a mobile app marketplace." (Knudsen, 2013) The invention of an iPhone caused both an immediate and global changes. For the first time, it "...enabled its users to directly surf the Internet through its mobile Safari browser instead of using the mobile carrier's own portal, providing device manufacturers direct customer and revenue</p>	<p>Ahlund, A. (2010, December 26). <i>The Top 40 iPhone Apps of 2010</i>. Retrieved October 18, 2014, from Tech Crunch: http://techcrunch.com/2010/12/26/top-40-iphone-apps-2010/ Knudsen, C. (2013, Januray 29). <i>Smartphones, tablets and the mobile revolution</i>. Retrieved October 18, 2014, from Mobile Marketer: http://www.mobilemarketer.com/cms/opinion/columns/14667.html</p>

	relationships.” (Knudsen, 2013) It has changed the social, technological, economic, environmental, and political.	
<p>Here provide historical snapshots that illustrate how long changes tend to take with regard to your topic. Also discuss whether these changes have been continuous or discontinuous.</p>	<p>Base on these sources, (Mobile Computing, 2012), (Paul, 2011) and (Kjeldskov, 2013), mobile computing technology has progressed continuously. However, it did take about 50+ years to get where we are. The graph bellow shows that progress. Based on this graph of mobile computing devices innovation over the years, the changes were fairly continuous. From the late of 1968 Alan Kay’s Dynabook concept, it was thought as a children’s toy; however entrepreneur and GRiD Systems founder, John Ellenby, saw it different. “The first laptop computer was the GRiD Compass 1101 designed by Bill Moggridge as early as 1981 in response to the design brief of fitting within half the space of a briefcase (Kjeldskov, 2013).</p>	<p>Kjeldskov, J. (2013). <i>Mobile Computing</i>. Retrieved October 18, 2014, from The Interaction Design Foundation: https://www.interaction-design.org/encyclopedia/mobile_computing.html Mobile Computing. (2012, October 10). <i>History of mobile computing</i>. Retrieved October 18, 2014, from Mobile Computing: http://mobilecomputingproject.wordpress.com/2012/10/10/history-of-mobile-computing/ Paul, I. (2011, March 29). <i>Milestones in the history of mobile computing</i>. Retrieved October 18, 2014, from Computer World UK: http://www.computerworlduk.com/slideshow/mobile-wireless/3267504/milestones-in-the-history-of-mobile-computing/</p>

Mobile Devices Over Time



Discuss the shape of change as it relates to your topic and provide illustrations or data that reinforce your shape of change claim.

Based on the shape of change as it relates to mobile computing devices, it's more of a steady progress. As soon a good mobile device came along, other manufacture already have something in the pipe line to compete with that device. It is especially true with the competition between Apple and Samsung. Some might argue that this competition fuels the innovation of their devices. From the graph above, there was a small stagnation between 1984 and 1991. For about a decade, there was not much development in the mobile devices. According to Kjeldskov, "In the 1980s and early 1990s, mobile phones were not really considered to be computers. However, with the introduction of the digital Global System for Mobile Communications (GSM) mobile phone system in 1991, which also included the Short Message Service (SMS) communication

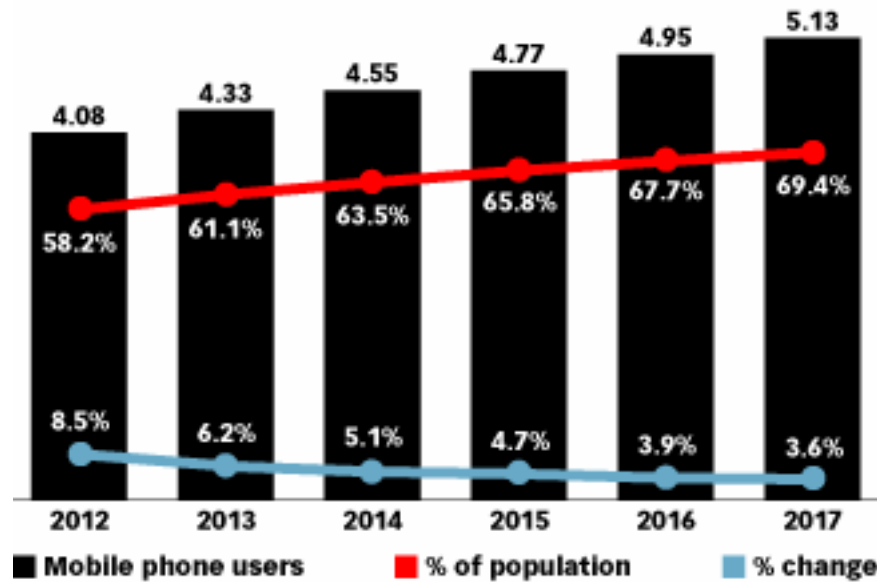
	component, the complexity and functionality of handsets began evolving rapidly.” (Kjeldskov, 2013)	
Describe what you believe has been an illustration of punctuated equilibrium as it relates to your topic. This should be a past event or series to events that point to the idea of a punctuated equilibrium.	Based on the graph above, there was no drastic punctuated equilibrium as the graph steadily shows the progress. One could argue that after 1990 the mobile devices took off due because it was not thought of as laptop computing but mobile computing. In 1990, “Tim Berners-Lee, a researcher at CERN, the high-energy physics laboratory in Geneva, develops HyperText Markup Language (HTML), giving rise to the World Wide Web.” (Zimmermann, 2012) Not only that, in 1990, the “IEEE 802 Executive Committee establish the 802.11 Working Group to a create a wireless LAN standard.” (Livingston, 2013)	Livingston, D. J. (2013, December 3). <i>Introduction & history of mobile computing</i> . Retrieved from Slide Share: http://www.slideshare.net/davidjlivi/introduction-history-of-mobile-computing Zimmermann, K. A. (2012, June 4). <i>History of Computing</i> . Retrieved from Live Science: http://www.livescience.com/20718-computer-history.htm

For each of the STEEP categories, provide a modest discussion about how your topic is influenced by that category and provide a web site to support. Recognize that these affiliations between your topic and the STEEP category may range from very direct to very loosely connected. The purpose here is to look for relationships that influence your topic, hence the reason for the column where you rate the STEEP category to the influence that category seems to exert on your topic. For each topic the level and type of influence each STEEP category contributes will vary. So while your opinion is subjective, it is valuable to accurately depict where and how various STEEP categories interact with your topic. Think of it as a way of searching for dependent and independent variables related to your topic and potential future change contributors.

S-T-E-E-P Categories	Level of influence this category has on my topic; high, medium, low.	The ways this category influences my topic	Source
Social (demographic or cultural)	High	Based on eMarketer, they expect 4.55 billion users worldwide will use a mobile phone. “Between 2013 and 2017, mobile phone penetration will rise from 61.1% to 69.4% of the global population.” (eMarketer, 2014) In 2014,	eMarketer. (2014, January 16). <i>Smartphone Users World Wide Will Total 1.75 Billion in 2014</i> . Retrieved from eMarketer:

smartphone users have reached 1.75 billion. Below is a graph from eMarketer showing mobile phone users worldwide from 2012-2017. The adoption of mobile devices has been so rapid that there now more devices than people on earth, an announcement by the International Telecommunications Union (ITU) at this year's Mobile World Congress (Pramis, 2013)

Mobile Phone Users Worldwide, 2012-2017
billions, % of population and % change



Note: individuals of any age who own at least one mobile phone and use the phone(s) at least once per month
Source: eMarketer, Dec 2013

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www.eMarketer.com

<http://www.emarketer.com/Article/Smartphone-Users-Worldwide-Will-Total-175-Billion-2014/1010536>
Pramis, J. (2013, February 28). *Number of mobile phones to exceed world population by 2014*. Retrieved from Digital Trends:
<http://www.digitaltrends.com/mobile/mobile-phone-world-population-2014/>

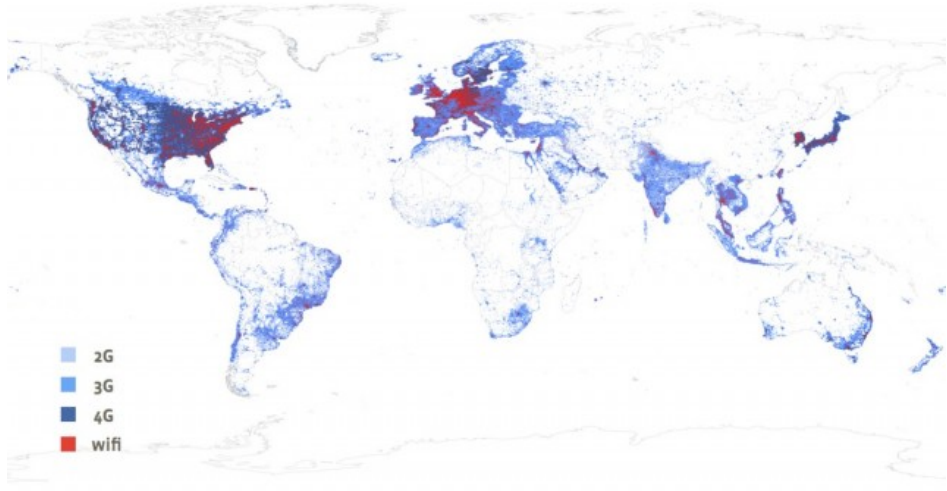
Technological

High

Mobile computing is essentially based on technology so yes, it has a lot of influence on mobile computing. Any new development in the technology arena will have a major impact on mobile computing such as material, battery life, and Wi-Fi etc. One example is that Samsung just announced that it's developing a new 60Ghz WiFi technology that is five times faster than today's maximum of 866 megabits per second. For a 1GB file, it will take three seconds to transfer from device to device. (Santus, 2014) A new development in battery technology "...is supposed to last for 10,000 cycles, a lifespan estimated at two decades and more than 10 times longer than what we're used to." (Santus, New Battery Said to Recharge in Minutes and Last 20 Years, 2014) These new developments will definitely influence the mobile computing.

Santus, R. (2014, October 15). *New Battery Said to Recharge in Minutes and Last 20 Years*. Retrieved from Mashable: <http://mashable.com/2014/10/14/lithium-ior-battery-lasts-20-years/>
Santus, R. (2014, October 13). *Samsung Says It's Developing Wi-Fi That's Five Times Faster*. Retrieved from Mashable: <http://mashable.com/2014/10/13/samsung-wifi-faster/>

Economic	Medium	<p>Economic does play a big role in influencing the mobile computing. In 2007, analyst were saying market for mobile phone was saturated and anyone who wants a phone already has one. An average wholesale price of a smartphone was \$120 and falling. However, “since then, prices have leapt by 50 percent, and the revenue from all mobile handset sales has doubled.” (Regalado, 2013) Since 2007 Apple has introduced about nine iterations of their iPhone line to date. Not only were there gains in mobile devices, wireless carriers (900 globally), has earned \$1.3 trillion each year (Regalado, 2013). Below is a graph of the wireless carrier from MIT Technology Review.</p> <p>The latest line of iPad Air 2, just announced October 16, has Apple’s own SIM card. It will allow iPad Air 2 owner to pay as they go and change carrier as they see fit instead of choosing a wireless carrier than pick the version of an iPad (Rubin, 2014). It allows user to avoid stuck with a carrier that their service might not work in a certain location. This is a good of example of economic influencing the development in mobile computing.</p> <div data-bbox="430 701 1304 1312" data-label="Figure"> <p>Where the Money Is Wireless network operators account for most of mobile revenues.</p> <p>Source: Benedict Evans, Enders Analysis</p> </div>	<p>Regalado, A. (2013, March 1). <i>Mobile Computing Is Just Getting Started</i>. Retrieved from MIT Technology Review: http://www.technologyreview.com/news/511766/mobile-computing-is-just-getting-started/</p> <p>Rubin, B. F. (2014, October 16). <i>iPad Air 2, iPad Mini 3 equipped with carrier-hopping Apple SIM</i>. Retrieved from CNet: http://www.cnet.com/news/ipad-air-2-ipad-mini-3-come-equipped-with-carrier-hopping-apple-sim/</p>
Environmental	Low	<p>In the realm of environmental impact on mobile computing, I’m including the ability to mine or develop new material from the natural environment. Base on these two articles, (Heath, 2014) and (Whitney, 2014), Apple had to scrap the iPhone 6 with a sapphire glass due to problems in the supply of sapphire. This is a classic example of one factor impacting the other. One other</p>	<p>Heath, A. (2014, September 10). <i>Why the iPhone 6 lacks sapphire display</i> Read more at http://www.cultofmac.com/295124/world-iphone-6s-sapphire-display/#dhBv1OVTISLMDE41.99. Retrieved from Cult of Mac: http://www.cultofmac.com/295124/world-iphone-6s-sapphire-display/#dhBv1OVTISLMDE41.99</p>

		<p>illustration of environmental influence mobile computing is Internet connectivity. Mobile computing is only as good as their ability to connect to the Internet. If a user is in a location that has no connectivity, mobile computing is nonexistent. According to Google, "Project Loon is a network of balloons traveling on the edge of space, designed to connect people in rural and remote areas, help fill coverage gaps, and bring people back online after disasters." (Smith-Spark, 2013) Facebook is also in the card to fly a WiFi drone that will provide Internet connectivity. It will "provide free Wi-Fi to the two-thirds of the world's population that lack Internet access." (Wagstaff, 2014) Below is a map of the world's Wi-Fi Internet connectivity from Extremetech. The drone will be solar powered and remain in the air much longer than Google's project Loon (Hruska, 2014).</p> 	<p>iphone-6s-sapphire-display/ Hruska, J. (2014, April 1). <i>Facebook details its plans to bring drone internet access to the masses – but will monopolistic telcos stand idly by?</i> Retrieved from Extremetech: http://www.extremetech.com/computing/179519-facebook-details-its-plans-to-bring-drone-internet-access-to-the-masses-but-will-monopolistic-telcos-stand-idly-by Smith-Spark, L. (2013, June 15). <i>Up, up and away: Google to launch Wi-Fi balloon experiment.</i> Retrieved from CNN: http://www.cnn.com/2013/06/15/world/asia/new-zealand-google-balloons/ Wagstaff, K. (2014, September 14). <i>Facebook Wi-Fi Drone the Size of 747 Could Fly in 2015.</i> Retrieved from NBC News: http://www.nbcnews.com/tech/innovation/facebook-wi-fi-drone-size-747-could-fly-2015-n210546</p>
Political	Medium	<p>One of the latest news regarding mobile computing is that Apple and Google decided to develop software that will encrypt data on device. FBI Director James Comey criticized Apple and Google for creating a "smartphone encryption so secure that police can't easily access information stored on the devices — even when they have search warrants." (Timberg & Miller, 2014) Google and Apple argued that they can't do business if users can't trust their device that it's secure, "particularly in foreign markets like China and Europe, where consumers fear American tech products might come pre-loaded with ways for American surveillance agencies to access their data." (Frizell, 2014) This is what looks like government is trying to influence technology especially in the mobile computing.</p>	<p>Frizell, S. (2014, September 27). <i>The FBI and NSA Hate Apple's Plan to Keep Your iPhone Data Secret.</i> Retrieved from Time: http://time.com/3437222/iphone-data-encryption/ Timberg, C., & Miller, G. (2014, September 26). <i>FBI chief rips Apple, Google over smartphone encryption.</i> Retrieve from Dallas News: http://www.dallasnews.com/news/local-news/20140921-fbi-chief-rips-apple-google-over-smartphone-encryption.ece</p>

Segment #4: Present Direction

In our previous two segments you've come to understand both the past and present about your topic. In Segment #2 we assembled a variety of snapshots from an array of sources to help us describe what's happening today with regard to your topic. In Segment #3 we tried to get a historical feel for how the topic has emerged over time including the contributors of change, levels and rate of change, and thoughts about potential punctuated equilibriums of the past. These exercises have been intended to build your level of knowledge about your topic, perhaps even hinting at forming early stages of expertise.

In Segment #4 we are looking for specific indicators of future direction; in Framework forecasting nomenclature we are looking for drivers that will contribute to the development of our baseline future, the expected future. Dr. Bishop's discussion about baseline development on pages 7-9 in 07-Framework forecasting article is an advised reading. Under the Framework forecasting theory change is fueled by three basic drivers—trends, events, and issues. To assist us with being systematic in assembling resources to form our baseline, we also look for change indicators categorized under four themes: constants, cycles, plans, and projections. Also our work in the S-T-E-E-P categories in Segment #3 provides fertile ground for understanding what future changes might matter most.

In this stage you are to assemble ten indicators of where the future of your topic is 'expected' to go. This expected future needs to be anchored in documented materials. This doesn't mean the future has already been described rather using what is known today, supported by what is known about the topic in context with other realities (e.g., S-T-E-E-P categories) we will be able to apply logical presumptions to form a baseline future. However, before we create your baseline future, we need to assemble a set of evidence that describes where the future for this topic is heading. That is the focus of Segment #4.

The table below provides the organization for assembling ten or more important indicators about the future direction of your topic. As with previous segments, use the narrative section to clarify your understanding and meaning behind the evidence or source you're citing. Seek to assemble important indicators that capture the breadth of you topic and the ways this topic will likely change in the future.

Segment #4, Part 1: Key indicators of future change (2 points per)

Topic title:

Relates most closely to this category: trend, event, issue, constant, cycle, plan, projection	Relates most closely to this STEEP category	Source	Discuss how to interpret this information or data source such that you believe it is an indicator regarding the future for the topic.
Trend		<p>Bell, K. (2013, November 4). <i>Microsoft Office apps will sync right to your Dropbox account</i>. Retrieved from Mashable: http://mashable.com/2014/11/04/microsoft-dropbox-partnership/</p> <p>Kendrick, J. (2014, February 26). <i>Cloud storage: It's not just about the files</i>. Retrieved from ZDNet: http://www.zdnet.com/cloud-storage-its-not-just-about-the-files-7000026777/</p> <p>Santus, R. (2014, October 27). <i>Microsoft Office 365 Now Offers Unlimited Cloud Storage</i>. Retrieved from http://mashable.com/2014/10/27/office-365-cloud-storage/</p>	<p>Cloud storage/access is one the trends of future mobile computing. Microsoft not only increase its OneDrive space to unlimited, it also is partnering with DropBox. Microsoft apps can access/edit/store files directly in Dropbox (Bell, 2013). Office 365 subscribers will have unlimited storage on their OneDrive cloud storage (Santus, Microsoft Office 365 Now Offers Unlimited Cloud Storage, 2014). This allows enterprise users access to all their files on the cloud wherever and whenever (Kendrick, 2014).</p>
Trend		<p>Goodwins, R. (2013, June 3). <i>Next-generation wireless networks: From Gigabit Wi-Fi to white space</i>. Retrieved from ZDNet: http://www.zdnet.com/next-generation-wireless-networks-from-gigabit-wi-fi-to-white-space-7000016176/</p> <p>Santus, R. (2014, October 13). <i>Samsung Says It's Developing Wi-Fi That's Five Times Faster</i>. Retrieved from Mashable: http://mashable.com/2014/10/13/samsung-wifi-faster/</p>	<p>Another very important trend is in the next generation wireless networks whether it's in the future of LAN, WAN, small cells, LTE-D and so forth, the performance will only go up (Goodwins, 2013). Samsung is also building a "60GHz Wi-Fi technology, which would speed up data transmissions to 4.6 gigabits per second." That would be the same as downloading a 1GB file size to a device in three seconds (Santus, Samsung Says It's Developing Wi-Fi That's Five Times Faster, 2014).</p>
Event	IBM and Partnership	<p>Hess, K. (2014, July 29). <i>What the IBM and Apple deal means to you and me</i>. Retrieved from ZDNET: http://www.zdnet.com/what-the-ibm-and-apple-deal-means-to-you-and-me-7000032049/</p>	<p>This event will give Apple a strong position in the enterprise computing. (Hess, 2014) And IBM's analytics could help Apple make sense of all data their devices are gathering. In addition, IBM's Watson could be a boost to Apple's Siri performance (Rubin, 2014). Apple iOS</p>

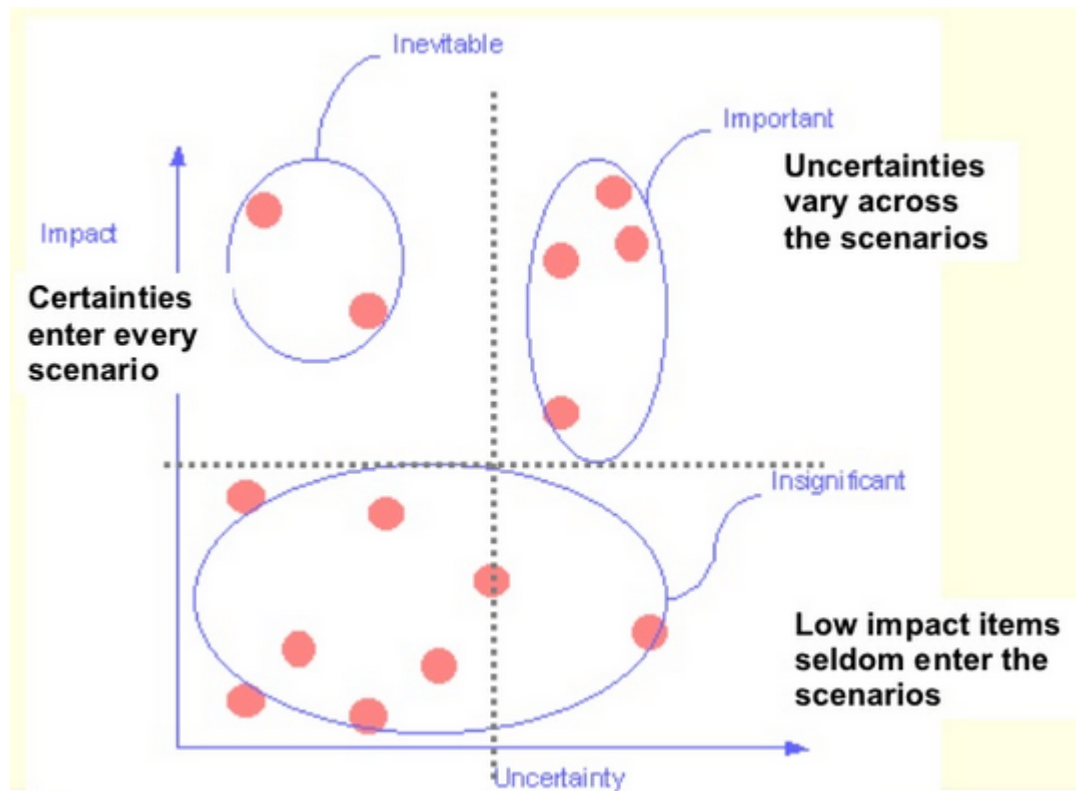
		Rubin, R. (2014, July 26). <i>Apple-IBM partnership: Microsoft today, Google tomorrow</i> . Retrieved from CNET: http://www.cnet.com/news/apple-ibm-today-microsoft-tomorrow-google/	devices can start to really compete with desktop and laptop that was traditionally not very mobile.
Issue		Miller, C. C. (2014, October 30). <i>Why the U.S. Has Fallen Behind in Internet Speed and Affordability</i> . Retrieved from The New York Times: http://www.nytimes.com/2014/10/31/upshot/why-the-us-has-fallen-behind-in-internet-speed-and-affordability.html?abt=0002&abg=0 Thomson, I. (2014, September 4). <i>FCC boss Wheeler: Lack of broadband choice is screwing Americans</i> . Retrieved from The Register: http://www.theregister.co.uk/2014/09/04/fcc_chairman_americans_getting_screwed_by_lack_of_broadband_competition/	The biggest issue with mobile computing is Internet connectivity. The US Federal Communications Commission chairman Tom Wheeler has issued an indictment that half the US citizens have only one ISP that provides 25Mbps or faster connections (Thomson, 2014). Not only is the speed is slow in the US, it is also very expensive compare to other places like Seoul, Hong Kong, Tokyo, Zurich, Bucharest and Paris (Miller, 2014).
Issue		Anthony, S. (2016, November 6). <i>WireLurker: A new breed of iOS and OS X malware that has infected thousands</i> . Retrieved from Extreme Tech: http://www.extremetech.com/extreme/193673-wirelurker-a-new-breed-of-ios-and-os-x-malware-that-has-infected-thousands Reisinger, D. (2014, February 11). <i>10 Mobile Security Issues That Should Worry You</i> . Retrieved from eWeek: http://www.eweek.com/mobile/slideshows/10-mobile-security-issues-that-should-worry-you.html/	With the increase in mobile computing devices, security is a real concern. With “92 percent of the top 500 Android apps carry either a security or privacy risk, according to recent data from security firm MetaIntell.” (Reisinger, 2014) Security concerns are not only limited to software even though a majority of them are from software. Hardware can be stolen, or used in malicious ways when outside the view of the IT staff. Another example of security is the new WireLurker malware/virus that’s “possibly already infecting hundreds of thousands of iOS and OS X users.” (Anthony, 2016)
Constant			
Cycle			
Plan		Fiegerman, S. (2014, June 2). <i>Report: Google Will Spend \$1 Billion on Satellites to Expand Internet Access</i> . Retrieved from Mashable: http://mashable.com/2014/06/02/google-satellites-billion/ Franceschi, L. (2014, March 27). <i>Facebook Will Use Drones and Lasers to 'Beam' Internet to the World</i> . Retrieved from Mashable: http://mashable.com/2014/03/27/zuckerberg-facebook-connectivity-lab-internet-org/	Expanding Internet coverage is some of the plans in mobile computing. Google rolled out testing gigabit Internet access in certain cities of the US. Google and Facebook as launched their own plans on how to expand Internet coverage lately. Google launched their Project Loon last year and Facebook “plans to use drones, satellites and lasers to deliver Internet to the world.” (Franceschi, 2014) Google is “s planning to spend more than \$1 billion and perhaps much as \$3 billion on satellites that expand Internet access to more remote parts of the world.” (Fiegerman, 2014)
Projection			

Projection			
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Segment #4, Part 2: Most important and most uncertain.

You are now quite familiar with the strengths and vulnerabilities about the topic. Thinking about what is 'most important AND most uncertain' is essential in planning for the future. Specific to your topic, describe three items related to its future direction that are both IMPORTANT and UNCERTAIN. Describe your understanding as to why the items you mention are both IMPORTANT and UNCERTAIN. List the item, three in total, and then follow with your own explanation for selecting that item as both IMPORTANT and UNCERTAIN. (2 points per)

For extra credit, produce an impact and uncertainty graph similar to the sample found at <http://www.slideshare.net/adgo/scenario-building-workshop-how-to-build-and-use-scenarios>, and specifically located on slide #79. A snip shot is here from Adam Gordon's online presentation. Label the graph points.



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Anthony, S. (2016, November 6). *WireLurker: A new breed of iOS and OS X malware that has infected thousands*. Retrieved from Extreme Tech: <http://www.extremetech.com/extreme/193673-wirelurker-a-new-breed-of-ios-and-os-x-malware-that-has-infected-thousands>

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Reisinger, D. (2014, February 11). *10 Mobile Security Issues That Should Worry You*. Retrieved from eWeek: <http://www.eweek.com/mobile/slideshows/10-mobile-security-issues-that-should-worry-you.html/>

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Thomson, I. (2014, September 4). *FCC boss Wheeler: Lack of broadband choice is screwing Americans*. Retrieved from The Register: http://www.theregister.co.uk/2014/09/04/fcc_chairman_americans_getting_screwed_by_lack_of_broadband_competition/

<p>Mobile Computing <i>(topic of the forecast)</i></p>	<p>Mobile computing is any type of portable computing device that uses Internet or Intranet to access its data and information from anywhere and any time. These devices include laptops, ultrabooks, tablets, and smartphones etc. These mobile devices communicate through the use of 2G, 3G, 4G, WiMAX, Wibro, WiFi, EDGE, GPRS and many others technologies.</p> <p>Mobile computing is revolutionizing how people communicate and work in the future. Already we've seen signs of desktop sales slowing down and mobile device goes up. Google Chromebook is starting to penetrate many education institutions due to its mobility and price range. However, for mobile computing to dominate in the future, fast Internet speed access and bandwidth as well as security and safety have to be there to support it.</p>
<p>What's In <i>(specific topic elements that are core to the topic forecast)</i></p>	<p>Some of the major factors in mobile computing involve speed and accessibility of Internet, long lasting power, security and safety. A portable device can be mobile but it's not very useful if it has no way to access data and information with an optimal speed to the Internet. Long battery life is also a challenge among mobile device manufactures but there are developments in this technology. And last but not least, mobile computing has to be secure and safe. In every two weeks or so, you hear about a breach of security on the news somewhere. Security has to be a major factor for mobile computing to be trustworthy and reliable.</p>
<p>What's Out <i>(potential topic elements that are purposely excluded from topic forecast)</i></p>	<p>Things that will not be considered in this forecast are development in processor chips, advancement in different types of operating systems, mobile computing accessories, and various apps or programs. While these may affect the outcome of mobile computing's forecast, there is just not enough time to cover every aspect of mobile computing in details.</p>
<p>Geography <i>(if applicable, the geography this forecast includes or does not represent)</i></p>	<p>For the most part this study is will focus on the United States. There are lots of other places in the world that are still lacking the network foundation and support system for mobile computing to cover in this study although Google and Facebook is trying to change that. Mobile devices are still relatively expensive for citizens of third-world countries to afford it.</p>
<p>Time Horizon <i>(future year this forecast seeks to portrait)</i></p>	<p>In the year 2025, pretty much every person attending a class will have mobile device and interact with their professor wirelessly. Internet speed will double or quadruple in the next 10 years. Mobile devices will double or triple its battery life and wirelessly charging their devices from across the room. Mobile device/app management systems will be used ubiquitously in the enterprise. The number of security threats and hacks will be less frequent but more focused and targeted.</p>
<p>Summary, take away <i>(important highlights of the future or key insights the)</i></p>	<p>Advancement in mobile computing is steadily improving especially in the mobile devices and Internet speed. Every year mobile devices are getting lighter, thinner, and faster. Although we have not seen much improvement in Internet speed and</p>

forecast seems to reveal)

bandwidth, there are various entities that are working to change that. Samsung is one of these entities. Other companies are also working on improving battery life, faster charging, and even wireless charging. However, one other very important factor in mobile computing is security. Security in mobile computing will have to be on par with the advancement in mobile computing technologies to be reliable and useful.

Baseline

Beep, beep, beep, I rolled over and hit the snooze button on my 2014 alarm clock. It's Christmas Day 2025. My youngest son entered the room and said, "Dad, why are you still using this old alarm clock? I'm sure you can set the alarm on your iPhone and customized your ringtones and schedules." I didn't answer him because I knew he was referring to his Christmas' present – which he has been asking for a smartphone since he was 10 years old. I bought him the latest model of Apple's iPhone that supports WiTricity's wireless charging technology. My oldest daughter gets a 12" iPad Pro that runs the latest IEEE's WLAN standard and equipped with 5G capable cellular connection. It also runs Apple's latest iOS version that contains intelligent security solutions.

In the 2014 when I attended my children's teachers conference, I brought home a bunch of activity sign up sheets, school works, and field trip papers. This year, 2025, I have choice of attending the teacher conference via my mobile device using Microsoft's Lync, Skype, and Google Hangout or Blue Jeans video conferencing. However, I chose to attend in person. I was surprised that this year, I barely received any paper from all the teachers. In the past couple of years, I had to sign some forms that stated I chose to go with e-paper. This year I was not even asked. All the relevant information was easily accessible via the Internet on my mobile device. Once logged into my children's account, I can see all their grades, classes, after school activities, teacher conference appointments, homework guidance for parents, and a direct communication channel with the teachers. I even have access to all kinds of analytical data about my children's class performance such as class participation, homework, tests, quizzes, labs, projects, attendance, tardiness and so on. I have plenty of opportunities to intervene my children's learning if they start to fall behind. I will get notifications on my mobile device via email, instant messaging, texts, and alerts etc. whichever choice I opt-in.

My oldest child is in Sophomore College. She has the options of attending her classes via videoconference on her tablet or smartphone. I have seen her backpack getting lighter and smaller every year since high school until she entered sophomore year where all she carry is her tablet or smartphone. Since the University has upgraded their network, she is able to stream lecture videos in 4K qualities on her tablet. Professors are able to record their lectures sitting on a beach in California and post it online instantly via 5G technologies with their 41-megapixel Carl Zeiss smartphone camera. All of her homework and reading assignments are accessible via the web. Homework and projects are stored on OneDrive or

DropBox where she has unlimited storage. On one of her general class, Art, she took digital painting where it utilizes a stylus with Wacom's 2000 pressure sensitivities and automatically saved it to her OneDrive cloud storage waiting for other students and the professor's feedback.

On the University I work at, we have eliminated 95% of printers and 60% of desktops. The whole campus is going wireless with mobile computing being the driving force. We support pretty much any mobile device on the market. We use a combination of mobile device/app management systems to manage accessibility, permission, and app installation and removal. If it's a University owned device, we can remotely clean, wipe, and take control over the mobile device. Our Real-time Intelligent Security Enterprise (RISE) system analyzes threats in real-time and predicts any future attacks. If a breach of security is likely to occur based on preset levels set by administrators, the RISE system will take the necessary security measures and alerts the user and administrators.

On the University campus, we have several wireless charging technologies in place so regardless of which brand/model of a mobile device students, faculty/staff carry, all their mobile devices will always be connected and charged at all times wirelessly. Major city downtowns have implemented this similar wireless power charging capability and so students are taking advantage of their mobile computing capability.

The High Security Life

There are just too many passwords for everything from websites, computer logins, bank accounts, email accounts, PIN numbers and many other security passwords and codes. "How do you remember of all of those passwords," my youngest son asked. "I don't." For the most part I used a password manager. At the University where I work, we use a single sign on system similar to what Okta has. All students, faculty/staff just have to remember one main password. Once they're logged into the University domain, anywhere else they go on the Internet, the user name and password field will automatically be populated. There are not many complaints about spyware and virus.

However, our real-time threat and security assessment and scanning is a major resource hog on many of our deployed mobile devices. The Internet connection hasn't been improved much despite all the network foundation has been laid out. The Student Help Desk receives calls all the time regarding their lecture video freezes and showing the spinning wheels when streaming on their tablets and lots of staff/faculty complained about too tight of security that it hinders on their work. It's a high security system but not very practical.

The Good 'Ole Day

This is a tried-and-true good 'ole day. It is still working fine. Internet speed has not been improved for the last 10 years but, hey, it hasn't stopped us from moving forward. Occasionally students streaming lecture videos from our University media server will see buffering bars on their screen. Video conferencing is still blurry and choppy at times but it works. The University still put out warning about phishing and information regarding connecting to any public free Wi-Fi as unsecure. People has been get used to the low Internet speed and daily phishing and spyware on their mobile devices. When working from off campus, students know they run the risk of speed and connection problems.

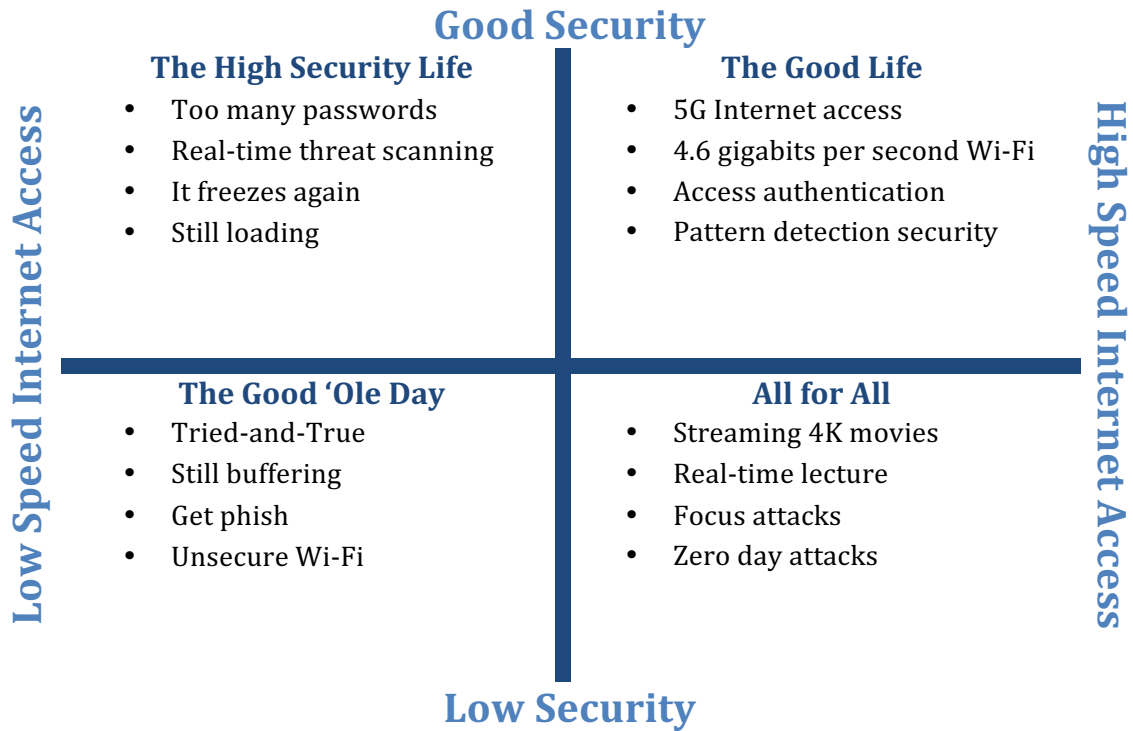
The Good Life

Our students can pretty much connect from anywhere in the lower 48 states with a 5G LTE-D connection. Online students enrollment are increased dramatically and traffic to online resources increased a thousand percent. On campus students access all their course materials and homework on the University's 4.6 Gbps WiFi network. Our media students can shoot 4K video out in the field and upload it online for editing, color correcting, and grading right from their tablet. The Student Authentication Wristband (SAW) automatically determines a student's unique cardiac rhythm to authenticate his/her access to the mobile device as well as to the University's network. The SAW provides two-step verification for security and safety for students as well as the University. The Real-time Intelligent Security Enterprise (RISE) system analyzes the user's pattern for its predictive real-time threat assessment. In the extreme example of a student or professor being held at gunpoint to access the University's restricted network or database, even wearing the SAW device, the RISE system will prevent access to the restricted information because the pattern is irregular. The RISE system is also working in conjunction with the SAW device to determine the rate of heartbeat, oxygen level, and body temperature. The RISE system will automatically notify administrators for clearance if the pattern is out of the normal range. All email phishing, spyware, and hack attempt will automatically being blocked from the RISE system.

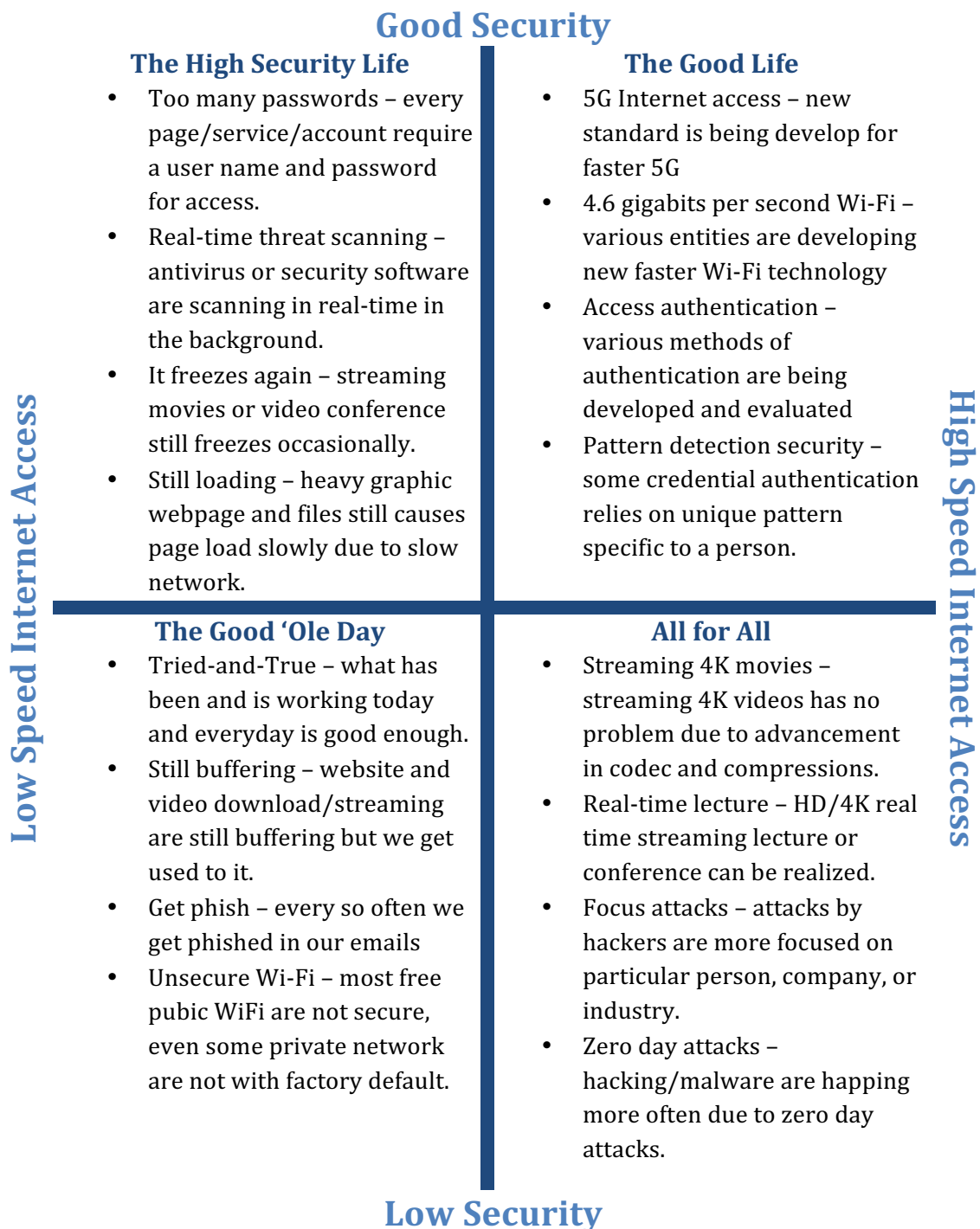
All for All

Everybody is happy. Internet speed is fast. Students and professors are able to collaborate on 4K video projects across the country. Professors giving lectures across different Universities in real-time over high speed Internet access. However, zero day attacks has increased and getting harder to detect. Attacks are getting more focused rather than random and in masses. Every so often a company has been breached or a particular high profile celebrity or politician has been hacked.

The University has been trying hard to protect its property and students. High speed Internet access in itself is a vulnerability when security is lacking. A hacker can literally steal more than 34GB of data in one hour. Since many universities and institutions outsourced file storage to cloud solutions, attackers are really honed in on these cloud services. Companies like Google, Microsoft, and Apple are big targets for attackers. United States Department of Defense Cyber Crime Center is working with other agencies to prevent acts of terrorism and security breach to large financial institutions; however, it proved to be more difficult than previously thought. It is an all for all environment and mobile computing are especially at high risk.



2x2 Scenario Planning Matrix



Scanning and Information Sources

The Good Life

- IEEE-SA: Wired and Wireless Communications Projects
 - <http://standards.ieee.org/news/index.html#content-news-left>
 - The four tabs in this page.
 - This is a good place to check out what's happening or coming down the pipe. In the Board Approvals tab, one can see what are the new standard, revisions, and modifications. It is a scanning hit confirming this future.
- InformationWeek NetworkComputing: Wireless Infrastructure
 - <http://www.networkcomputing.com/wireless-infrastructure.asp>
 - The information is under the Expert Analysis section.
 - The page provides experts analysis related to wireless, security, and collaboration services/options. The right side column shows various quotes from other experts allowing interested to drill down for details. It's a confirmation.
- ComputerWeekly: Mobile Technology
 - <http://www.computerweekly.com/resources/Mobile-technology>
 - This page as well as sub categories on the left side, Mobile Software and Mobile Networking.
 - Occasionally this page will have information on mobile securities and everything related to mobile technologies. There are articles about mobile phone network hacking. Although the site does not show specific articles of trends or statistics update, it gives an overall view of how the current market trends of mobile security and where Internet speed. For example, there is an article talking about 36% UK people abandon slow retail sites. In this case, it would be a disconfirming and people are jumping off the ship to other sites.
- US-CERT: United States Computer Emergency Readiness Team
 - <http://www.symantec.com/connect/security/forums>
 - It's the Security Forum page with various security groups to start a discussion.
 - This is a place to monitor where the current conversations regarding security are heading. Even though a security company runs it, any users can register and start a conversation. This is where one can see consumers of securities come and express their frustrations or satisfactions. Based on some of this information, it is more like to be a scanning hit confirming.
- TechTarget:SearchSecurity
 - <http://searchsecurity.techtarget.com/resources/Web-Authentication-and-Access-Control>
 - On the top will be the "New & Notable" articles. A bit lower below this section are all the other articles.

- This is an excellent page that shows the latest articles and information regarding Web Authentication and Access Control. It will be a scanning hit once there are more news and articles about the success of some software or updates that fix certain vulnerabilities. It has information on the multifactor authentication in the enterprise.

All of All

- US-CERT: United States Computer Emergency Readiness Team
 - <https://www.us-cert.gov>
 - It's on the Home tab as well as the Alerts and Tips
 - This site will show all the vulnerabilities, security issues, and any announcement regarding phishing, malware, and incidents. The United States government runs this site. Users have the option to subscribe to the list for stay up to date with vulnerabilities in software, hardware, and network securities. This is confirming of the security issues in this future.
- CSOOnline: Mobile Security
 - <http://www.csoonline.com/category/mobile-security/>
 - The top half of the page are news articles, next is white paper, and lower bottom are opinions, slideshows, and news alternating.
 - This contains Mobile Security news, analysis, research, how-to, opinion, and video. The Mobile Security page is a place to scan through the different news, analysis, research, and opinion to see where the trend is heading. More news on securities vulnerabilities means a hit on this future. Thus, it will be a low security future all for all.
- CSOOnline: Vulnerabilities
 - <http://www.csoonline.com/category/vulnerabilities/>
 - At the top of this page will be the latest news regarding vulnerabilities and below this are all the older news.
 - This page has all the vulnerabilities news, information, and how-to advice. Two of the current interesting articles are "Over 30 vulnerabilities found in Google App Engine" and "Cheapest tablets pose biggest security risks." This will be a scanning hit confirming this future.
- NetworkWorld:NetworkSecurity
 - <http://www.networkworld.com/category/network-security/>
 - At the top will show the latest news articles and towards the bottom are other vulnerabilities and malware articles.
 - This page provides a scanning hit for an alternate future that lacks security. Basically this page provides network security news, trend analysis and opinion on some of the latest security flaws, vulnerabilities, attacks and challenges. It is a scanning hit confirming this future.
- REELSEO:Video Technology
 - <http://www.reelseo.com/video/technology/>

- At the top of the page are the latest news/articles on video codec and streaming.
- This page is about compression, codecs, nonlinear editing software, streaming and everything about video. This page also provides article that tries to forecast the future of HTML5 video that will be friendlier to mobile devices. This will be a scanning hit and confirm this future.

High Security Life

- FIDO Alliance: News & Events
 - <https://fidoalliance.org/news>
 - It is under the News & Events tab then News & More category.
 - The page talks about the different type of password authentication and moving beyond passwords. There are articles about the death of password authentication and moving to something like biometric, two-step-verification, and universal authentication. This is a scanning hit for the high security life future.
- LifeHacker: Password Managers
 - <http://lifelhacker.com/tag/password-managers>
 - The main page news feed.
 - The page contains review of the latest or most popular password managers. It is a scanning hit for high security. Some password managers automatically change the password every so often.
- SCMagazine: Single Sign On
 - <http://www.scmagazine.com/single-sign-on/products/82/0/>
 - Main page newsfeed
 - This is a scanning hit. The page provides reviews of latest new technology and vendors of single sign on. It is a confirmation.
- Spiceworks: Product Reviews
 - <http://community.spiceworks.com/security/single-sign-on/reviews>
 - Main page newsfeed. The left sides are links to other security reviews.
 - This is another scanning hit. The page provides reviews of various single sign on services and software.
- National Broadband Map
 - http://www.broadbandmap.gov/speedtest#v=speedtest_advertised_discrepancy/download&c=5.00/41.484/-101.690
 - The whole page shows different tabs for different information.
 - This is a map of the US showing broadband speed in different parts of the country. Based on this information, it's a confirmation that the Internet speed is still slow despite the advertised or theoretical speed. It's a scanning hit; however, these data are subject to change as technology and new standards are adopted.