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## ***Objective of your project***

I am a Network and Cybersecurity major at Marymount University. During my time at Marymount University I have completed a few assignments and projects that lead me to the question, how big is the connectivity and capability gap between other countries and the United States? I came across this issue in Human Computer Interactive where I had an assignment to see the effect of culture on academic websites. I came across some of Brazil's official websites and saw a dramatic difference compare to those in the United States. I noticed that Brazil capability and the quality of their website was far behind from the academic website of the United States. As an Information Technology major I take for granted the level of resources I have on a daily basis. I am exposed to fast internet, free Wi-Fi and some of the best websites and applications. I never really thought how easy and how good some of these resources was until I started to compare it to others. In some places in the world people have little to no connectivity to the internet. However this is just a small part of this issue. Being connected to the internet is one thing, it is another thing knowing how to use the resources and being able to probably communicate with the rest of the world. I know major corporations like Facebook and Google are working to increase connectivity to developing countries by providing internet to places that have little to no access.

In this research I want to explore the means of connectivity and the importance of it. I also want to research the important of the capability of counties that have access to the internet. I believe that I would come to the conclusion that The United States along with a few other are far in advance in both area. In this new age of the internet it is important to keep all countries connected in an even playing field where all are able to explore and enjoy the advances of being connected.

**Client** (if applicable, background on the organization your project is creating an IT solution for. Who is the organization and what are there IT needs for this project). If no external client then use this section to discuss what point of view, argument, or thesis you plan to convey to the reader

Closing the gap between internet availability has been a major goal for both governments and the tech elite. I found that two of the major players in this pursuit has been Google and Facebook. They have been making strong effort to bring internet to new parts of the world. Conveying the importance of connectivity gap between other countries and those of the United States. Although this is only half the battle seeing major tech elite make this commitment and accomplishment is a point to the right direction.

Google has been working on project Loon. Project Loon is providing network of balloons that can travel to the edge of space. It is designed to connect people in rural and remote areas by filling in the coverage gaps. On April 14, 2014 Google bought a drone maker company "Titan Aerospace" which was founded in 2012. Titan Aerospace makes high-altitude, solar-powered drones that can stay airborne for years at a time. It uses atmospheric satellites and collaborates with Google divisions Google Maps and of course Project Loon.<sup>i</sup>

The goal of the project is to beam Internet access to parts of the world not served by telephone wires or cellphone towers. By doing so Google can reach millions of new customers for their services as more of the world starts to gets connected. One of its current accomplishment was that it launched a balloon 12.4 miles into the skies above New Zealand, providing wireless speeds of up to 3G quality to an area twice the size of New York City. This test set a new record by staying aloft for a total of 187 days.

However one of its current issue is the night. Broadcasting internet signals requires lots of energy which cannot be obtained at night. Collecting energy from the sun is easy however when the sun goes down Google needs to explore alternative means to maintain the connection.

In the other hand Facebook has been working on a project called Internet.org. Their vision is to make the internet accessible to more people by providing them access to a range of free basic services. Internet.org helps make access to basic internet services available to every person in the world and affordable. To accomplish this mission Facebook has bought UK-based drone maker Ascenta to develop high-altitude solar-powered drones that could help supply internet access to remote areas.<sup>ii</sup>

Their goals is to beam Internet access down from solar-powered drones and other connectivity aircraft. Facebook has been working on technology to compress Internet data, cut the cost of mobile phones and extend connections to people who can't afford them or live in places that are too difficult to be reached. Currently Facebook has been able to have participants partner with -Ericsson, Mediatek, Opera software, Samsung, Facebook, Nokia, Qualcomm. Internet.org is now live and is currently providing free basics service in parts of Africa, Latin America and Asia and many more (19 countries in total).

Facebook is also finding other way to make mobile communication easier. Facebook bought WhatsApp for \$19 billion giving it a new approach to attract users in the developing world. The WhatsApp messaging app is particularly popular in countries such as India where telecom carriers still routinely charge for standard text messages. With Facebook messaging app you can use that in place of current wireless carrier's regular texting service. You enter your phone number and WhatsApp looks through your contact list for other people who are using the app. Then you can message those users all you want without limits or overage charges. The app is available on many platforms and is free to download and with no ads.<sup>iii</sup>

Google and Facebook has been making strong effort and reaching amazing accomplishment that cannot go unnoticed. Although they have not found the perfect solution to this problem, within time I know they would be major players in the success in closing the gap.

***Faculty Advisor with summary of qualifications*** (who is your faculty member and what work have they done in this area)

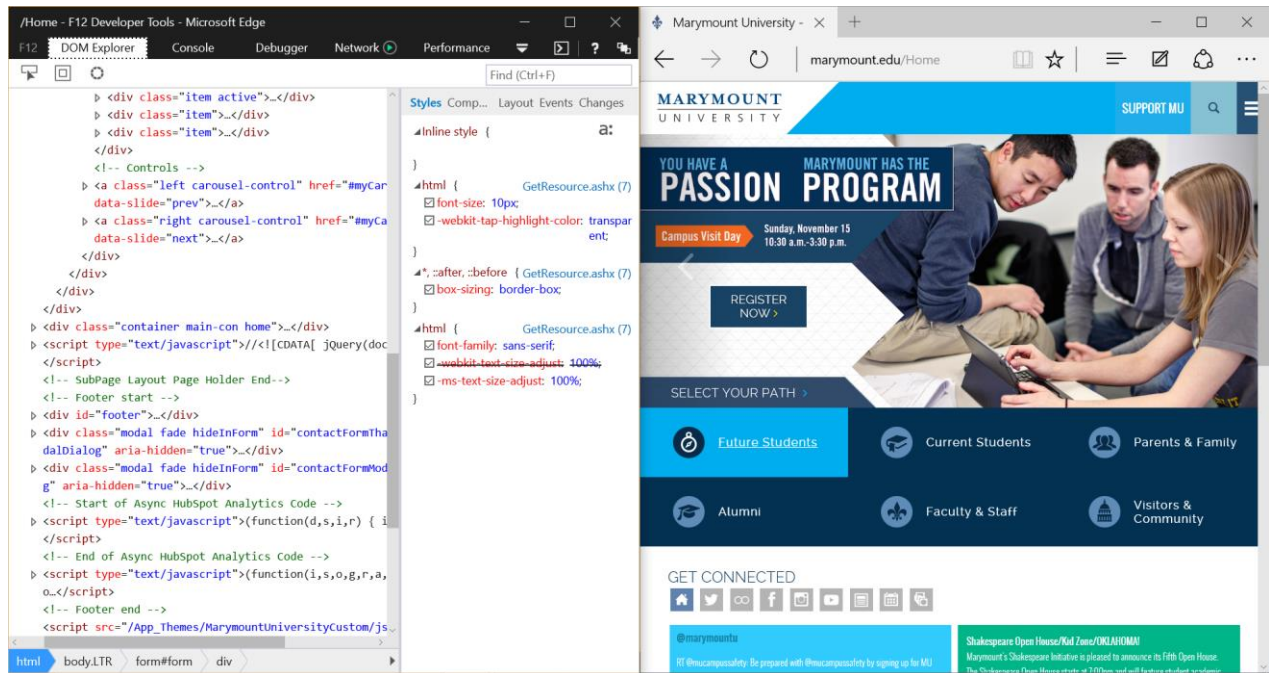
Dr. Tom Narock teaches a variety of undergraduate courses, including Web development, mobile app development, and data science. Prior to joining the Marymount faculty in 2014, Dr. Narock worked as a research scientist at NASA.

His research interests focus on intelligent information systems and Big Data problems. He has a particular research interest in the intersection of science and technology and enjoys working with students in this context. Applications of his work have involved computational reasoning to enhance search and retrieval within the Earth sciences and Data Science applications in the geosciences. Dr. Narock is also active in information technology professional societies and serves on the editorial board of peer-reviewed journals.

His work in web development and understanding the process and skill level required for the design can help me break down the level of capability of other countries. For instance seeing web adaptation to size changes and windows display could be an example of JavaScript skills set. However seeing basic structures and lack of modern implantations could be a sign of basic web development tools.

Also by analyzing the codes acquired from the sites we can review and determine what level of skill was obtained to implement those commands. For instance in the picture below we can see Marymount University's official website on the right and to the left we can see their source codes. By simply seeing their code we can find evidence of javascript knowledge and division skills sets.

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With Dr Narock skills and my knowledge of web developmetn I know we can find a sytem to analyze websites across the world and find out how big the capability gap is between other countries and the United States.

**Project Plan** (what will you do and how will you do it, include a planned schedule, how long do you anticipate each step will take)

In order to accomplish my research I need to select which target countries I would compare the United States with. Once I make my selection I need to find the websites that satisfies each category (academic, government, local company). I also need to conduct the User Interface Testing and make a report of my result and finding. After my report I need to find a way to present the finding, either with a grading point system or a pass/fail system.

After completing an assessment of the capability of their website I need to do a report on their internet connectivity. I would need to find out their internet provider, speed, access, price, etc. Finally I need to map out the different level of connectivity in a creative way that would illustrate the connectivity gap across the world. After I collected all the information I am going to make the connection and try to come to the conclusion that must countries are far behind in connectivity and if they are their capability compared to The United States.

**Project Draft Submission:** [October 22, 2015](#)

Presentation preparation: October 22-December, 2015

**Peer Review 2:** [November 6, 2015](#)

Peer Correction: November 6-December 1, 2015

Review final paper: December 1- 4, 2015

**Final Project Report:** [December 4, 2015](#)

Practice presentation: December 4- ? , 2015

**Project Presentation:** [December, 2015](#)

**Project Retrospective:** [December 11, 2015](#)

**Resources** (do you need access to any IT resources such as servers, storage devices, cloud computing, special software? If so, how will you obtain access? Will the organization provide these resources? Are they free?)

To test website connectivity and capabilities I would be using free online tools that can provide detail information of the website that I am testing. The test can be executed in many ways, one way it can be performed is by manual testing. Manual testing can be performed by evaluating the website by user testing and self-evaluation of the codes. I can also use validator service to validate the code. This is done in the development process however using website analyzer we can input a website and check their code. If I cannot get access of the code I will also be using a screen reader tool that focuses on the navigations, forms, and dynamic contents of the page instead of the code.

There are many methods of evaluating websites for standards, each providing different procedures and tips for evaluation and testing. The World Wide Web Consortium is the main international standards organization for the internet. They had set a few practices for web pages to meet these standards. Each testing method gives an approach to meet the standard set by them. When following these methods one can get an idea whether or not standard is addressed in the most basic ways, to a more complex and comprehensive ways.

I will also be using other resources tools like Speedtest.net that can test the connectivity level and the download and upload speed of a network. I am also familiar with software tools like Wireshark that can provide data speed information that can be used to analyze packet speed and other network details. Majority of these tools are free and are also offered as webserver allowing it to be used easily without any downloads.



***Project Details*** – this is where you make your argument, support your points with data and references, and provide a detailed discussion of your capstone project. Describe what you have done with the project up to this point. What do you have left to do?

I am under the impression that the United States and a few other countries have a major advantage when it comes to being connected to the internet. Although some other developing countries have minimum access their capability has not yet meet common standard. In this research I expect to find a huge gap between connectivity and capability throughout the world. I would primarily focus in developing countries and use the United States as a reference point. I will measure the different mean of connectivity and standards in the world. I will explore which internet provider have facility outside the United States and check if they provide the same service and meet the same standards. I would also have three specific area of website I would explore to conduct a User Interface Testing. Academic website, official government website and local company website. The goal of this test will be to compare the user interface between all three areas across the world. I would verify if the website allows for proper navigation and functionality. I would also test the design, layout, links, buttons and all the other website behaviors. The test will show the capability of each explored country testing there range of skills. It would show which website show sign of advance webpage development and which do not.

As we move to a world that is more connected, we need to learn which of our brother and sister countries are falling behind in their connectivity and capability and assist them in closing the gap. We should not allow the gap to continue to grow and stand by and do nothing. We need to find more companies like Facebook and Google who are finding solution and learn how to assist them in this fight. We should not stand by and continue to make technological advancement while developing countries are struggling. By doing so we can help connect the world closer together while creating the standard and to ensure we all share common capability.

***Knowledge being applied*** (which courses, background knowledge, or prior experience might be applicable to this project? What might you have to learn this semester to successfully finish this project?)

For this research project a few knowledge is required. For instance Web development; Html, CSS, and JavaScript is required to identify and analyze the source codes of the websites. Software testing is also required to conduct white box testing and come up with test case scenarios. I also believe computer network is also required to understand the connectivity requirements and practices. Also computer network skill is required to obtained network information and analyze it for the conclusion of my research.

A basic understanding of Information technology is also required to understand the current projects that are out there and how they operate. Understanding Google and Facebook Project Loon and project Internet.org requires understanding of who they are, what they're doing, how it works, and the impact it is having. Knowing that the Information technology consist of ongoing changes is one thing, however keeping up with the changes and understanding the directions requires some knowledge of information technology.

I have work on a few projects that have enable me to understand some of the tools and software required for this research. I also will be using the initial assignment on Brazil's university websites and trying to complete a full circle. I first became aware of the issue however doing the research I should be able to understand why it is so far behind, what is being done to fix it, how everything works, and finally what can we do to help close the gap in the future.

***Risk factors*** you should also consider any risk factors for your client. For example, while your solution may solve one technical challenge for the client, would it introduce problems elsewhere in the organization? Would it eliminate jobs? What would a full-scale production deployment of your solution involve? Could the customer/client afford this?

Although both Facebook and Google have come with some issues on their own in pursuit on providing internet to other locations. They have find ways to overcome and continue on with their projects. When dealing with new territories the possibility of risk is always high. Nonetheless understanding the potential outcomes and the importance of this issues is far much more rewarding that not finding a solution.

In this research I may not find all the information I need to conduct a full analysis. I understand that I might not be able to conduct a full scan, find the source code, etc. However I have find multiply tools and software that can perform the same jobs. This would give me more channels of opportunity to obtain the information I need. I also would love to get a responds from Google and or Facebook to learn more of their projects. I am aware that this could be challenging and might not happen so I have not put a strong infancies on it.

Seeing the success and the direction the nation is going to close the gap I find the risk factor will be really low. Although it might be expensive and the technology might not be fully complete, the gap of connectivity and capability through the world is slowly closing.

***Work to be performed by others*** (are you using software, resources, or work provided by others? You need to make it very clear what you will be doing and what others will be doing. It needs to be clear that you are providing a significant amount of work this semester. You are welcome to reuse and build upon other's work. However, it must be clear that you are significantly extending that work.)

Closing the connectivity and capability of the internet gap is a huge task that I cannot do on my own. Luckily there're a few organization that are working to fix this issue. Their working on huge millions dollar project to find solutions and means to close the gap as much as possible. However I feel like this is only half the battle. My research will test if rural locations and developing countries are meeting standards and seeing their capabilities with the resources they have. The internet is a powerful tool and learning how to use should be the most important aspect of providing internet to new locations.

My work in the research will be collecting all the network information and breaking it down to a presentable manner. I also have to conduct testing on other developing countries websites and determine their capabilities. On top of that I must also continue to conduct my research and find some of the currents solutions to this problem, figure out how they work and how their extending it to become better.

**Reference**— Your project must include at least 10 scholarly articles, technical web sites, or books related to your topic.

1. Project Loon (Loon for All – – Google)  
<http://www.google.com/loon/>
2. Google to Buy Titan Aerospace as Web Giants Battle for Air Superiority (WSJ)  
<http://www.wsj.com/articles/SB10001424052702304117904579501701702936522>
3. Internet.org by Facebook (Facebook)  
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4. A New Facebook Lab Is Intent on Delivering Internet Access by Drone (The New York Times) By: Goel, Vindu.  
[http://www.nytimes.com/2014/03/28/technology/a-new-facebook-lab-is-intent-on-delivering-internet-access-by-drone.html?\\_r=0](http://www.nytimes.com/2014/03/28/technology/a-new-facebook-lab-is-intent-on-delivering-internet-access-by-drone.html?_r=0)
5. Facebook's WhatsApp Acquisition Explained (Time)  
<http://time.com/8806/facebooks-whatsapp-acquisition-explained/>
6. Here's How The World Is Trying To Get Internet Across Oceans And Underwater (Business Insider) By: Wagstaff, Jeremy.  
<http://www.businessinsider.com/heres-how-the-world-is-trying-to-get-internet-across-oceans-and-underwater-2014-4>
7. New Indian tech could help rural communities bridge digital divide - CNET (CNET)  
<http://www.cnet.com/news/new-indian-tech-to-help-rural-communities-bridge-the-digital-divide/>
8. Morris, T. (2013). Web development and design foundations with HTML5 (7th ed.). Boston: Pearson.
9. Pressman, R. (2005). Software engineering: A practitioner's approach (6th ed.). Boston, Mass.: McGraw-Hill.
10. West, J., & Dean, T. (2016). CompTIA® Network guide to networks (7th ed.). Boston, MA: Cengage Learning.

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<sup>i</sup> Project Loon (Loon for All – – Google)

<http://www.google.com/loon/>

<sup>ii</sup> Internet.org by Facebook (Facebook)

<https://internet.org/>

<sup>iii</sup> Facebook's WhatsApp Acquisition Explained (Time)

<http://time.com/8806/facebook-whatsapp-acquisition-explained/>

<sup>iv</sup> Morris, T. (2013). Web development and design foundations with HTML5 (7th ed.). Boston: Pearson.