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## Makings of the Internet

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## ABSTRACT

This assignment is a compilation of answers to various questions. Starting off with talking about the history of internet, the introduction of this paper takes a look at how the internet became what we as a society recognize today. The different efforts that went into building the networks that made the internet are explored.

Next, the paper takes a look at 5 popular websites and how they have evolved over the years. It takes into consideration themes, technical advances, and the like. The websites chosen are of very different kinds to make it as accurate a sample as possible.

The paper then lists 5 websites for each of the 12 categories of websites on the internet. This helps define the designation among these categories by giving examples the reader may already be familiar with.

Lastly, the paper evaluates two popular websites based on guidelines from the W3C. This will help the reader understand what sorts of evaluation techniques will be used when looking at websites

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## INTRODUCTION

This introduction will cover the history of the Internet. In October 4, 1957, the Soviet Union launched the first ever satellite Sputnik into orbit. To keep up with the technological strides being made by the Soviet Union, the United States Department of Defense established the Advanced Research Projects Agency, ARPA. Networks at the time relied on central hubs that, if destroyed, would cripple all communications. ARPA funded research to create a decentralized network capable of withstanding such attacks. They called this project ARPANET. Though the scientists who pioneered the development of the network claim that they did not have military use in mind when developing ARPANET, they still had the idea of a robust and decentralized network in mind. In 1965 the idea of building a network that worked by sending and receiving data in small chunks, called packets, was conceived by scientists Leonard Kleinrock and Donald Davies.

With the central architecture in place, ARPANET was launched by Bolt Beranek and Newman (BBN) in the end of 1969. Initially, ARPANET had 4 nodes at the University of California at Los Angeles (UCLA), the Stanford Research Institute in California, the University of California at Santa Barbara, and the University of Utah which together comprised the Network Working Group (NWG). A fifth node was later added at BBN's headquarters. Each node consisted of a computer owned by the respective university and an Interface Message Processor (IMP) supplied to the Universities by BBN.

These IMP machines would create communication between the different computers. To avoid having these machines as a permanent part of the network's architecture, protocols were introduced. Protocols are an agreed upon set of signals that would open up communication between computers.

In 1974, Vint Cerf and Robert Kahn developed a set of protocols that implemented the open architecture philosophy. These new protocols were the Transmission Control Protocol (TCP) and the Internet Protocol (IP). TCP includes rules that computers on a network use to establish and break connections; IP includes rules for routing of individual data packets. The Transmission

Control Protocol/Internet Protocol (TCP/IP) organizes the data into packages, put them into the right order on arrival at their destination, and checked them for errors.

In the mid 1980's, ARPANET split into MILNET (Military Network) and the normal public ARPANET. As more and more nodes joined the network, congestion of the limited capacity telephone lines caused private telecom companies to start providing services. To trim down the traffic load on the ARPANET, a network run by the National Science Foundation, called NSFnet, merged with another NSF network, called CSNet, and with BITNET to compose one network that could carry much of the network traffic.

In 1989, Englishman Tim Berners Lee proposed the idea of using a universal set of protocols to use the nodes as a distributed hypermedia server. Berners-Lee called this the World Wide Web (WWW). He wrote the first client software (a browser) and most of the communications software including HTML, URL, and HTTP. His program enabled people to access, link, and exchange different forms of data easily. This saw a massive expansion in the 1990's. It got to the point where finding the information one wants became extremely difficult with maze of information present on the net. This problem was solved by Larry Page and Sergey Brin when they created their search engine Google. The 2000's saw great increases in social media usage.

## **Website Review**

Below, observations of the changes that have happened to five websites will be recorded. The websites chosen here are Ethiopia Daily, Reddit, Ubisoft, Research Gate, and Instagram. These sites are chosen for their diversity in country, target demographic, and objective. This will help the reader understand the advancement in website presentation not only in a specific niche of the internet, but in the large scheme as well.

### **Ethiopia Daily**

The first site being observed is Ethiopia Daily. Comparing the what the site looked like in 2006 with how it looks in 2016, which unfortunately is the most recent snapshot of the site, a clear drawback in text can be observed. There are more options that lead to more links, instead of having all the links at the index site like 2006. The newer version has colors outlining the different panels, making it easier for the average user. To sum up, the site went in the direction

of adding more graphics to make the outlines more visible and adding more options so as to not overwhelm the user on home page.

## **Reddit**

The next one is Reddit. Reddit is an American social new aggregation, web content rating, and discussion website. Reddit in 2020 looks completely different that how Reddit looked in 2005. There are a lot of things that went into revamping the look and feel of the site. Looking at the older version, content is presented as a long list of hyperlinks. There was a small navigation bar at the top and a login block in the right corner. The original site was much more simple, looking more like sites that came out with the advent of the markup language itself. Fast forward fifteen years, the entire website looks entirely different. Content is presented in blocks that contain user ratings, sources, and the like. The site has different yet cohesive hover animations distributed evenly across the user's screen to make the experience more responsive and thus more enjoyable. New features like dark mode have been added to encourage users to spend more time on site. Images and videos are associated with most of the posts found on the first page, giving users a glimpse of the content in each block. These updates along with many more not covered in this writing, have made Reddit a much more modern and enjoyable site.

## **Ubisoft**

Ubisoft is a French video game company with several development studios across the world. Looking at the website in 2005, it had paid much more attention to graphics and menus than a lot of other websites did at that time period. Though it still had its fair share with hyperlinks on index, It was much more polished in the sense that navigation was made easier by a plethora of images, icons, and options. However, the need of all this necessitates that users install plugins to support all the graphics on the home page, limiting the experience for users without the plugin pre-installed.

The website today has doubled down on it's attention to detail, but has changed major aspects of how users are greeted. Buttons are significantly bigger, images have higher resolutions, more

animations take place, and all the menus can be accessed from a single button at the corner of the screen, making it more accessible and saving screen real estate.

### **Research Gate**

Research Gate is a European commercial social networking site for scientists and researchers to share papers, ask and answer questions, and find collaborators. The older website had less graphics and more links. The new one introduces a set piece, which is a short sentence or a slogan followed by a button inviting users to explore the site or create an account.

### **Instagram**

Instagram is an American photo and video sharing social networking service owned by Facebook. Instagram being a fairly recent website, it has not gone through some of the revolutionary changes others might have since 2010. The website had a focus on graphics and did have a set piece to set the tone and theme for the entire site, but the site hadn't mature enough for it to be a full fledged web app, which is why the user would only download the iOS application from the link provided at their homepage. Today, however, a user can not only find download links to both the iOS and Android versions of the mobile application, he/she can also use Instagram through his web browser by logging in or creating an account.

## **Websites per Category**

Below are 5 examples for each category of websites.

### **Portal**

- UAB Medicine (<http://www.uabmedicine.org/>) - this site hosts a free patient portal with a directory of various healthcare providers categorized by specialty, gender and location.
- Forest Hills Pediatrics (<https://www.foresthillspediatrics.com/>) - this patient portal features the ability to request appointments and refills, review growth charts, print immunization records, and fill out surveys for check-ups and other portions of the medical record.
- Certification Commission for Health Information Technology (<http://www.cchit.org/>) - The Certification Commission for Health Information Technology (CCHIT) introduced a new portal



with content, self-paced learning, and readiness tools with the goal of streamlining the Electronic Health Record (EHR) certification training and assessment process for its clients.

- Grants ([www.grants.gov/](http://www.grants.gov/)) - The mission of Grants.gov is to allow applicants for federal grants to apply for and manage grant funds online through a common website.

- Camden ([www.camden.gov.uk/](http://www.camden.gov.uk/)) - With services ranging from housing control to social care, Camden wanted an online experience that was personalized for citizens and local businesses, as well as simplified with a single sign-on for streamlined services.

## **News**

- Google News ([news.google.com](http://news.google.com)) is a news website developed by Google that filters user content by location and user interests.

- Yahoo! News ([news.yahoo.com](http://news.yahoo.com)) Yahoo! News is a news website that originated as an internet-based news aggregator by Yahoo!.

- HuffPost ([www.huffpost.com/](http://www.huffpost.com/)) - is an American news and opinion website and blog with localized and international editions.

- CNN([www.cnn.com/](http://www.cnn.com/)) - is an American news-based pay television channel owned by AT&T's WarnerMedia.

- New York Times([www.nytimes.com](http://www.nytimes.com)) - is an American newspaper based in New York City with worldwide influence and readership.

## **Informational**

- Refdesk ([www.refdesk.com](http://www.refdesk.com)) - is a free and family-friendly web site that indexes and reviews quality, credible, and current web-based resources.

- The United States Census Bureau ([www.census.gov](http://www.census.gov)) - is a principal agency of the U.S. Federal Statistical System, responsible for producing data about the American people and economy.
- Best Places ([www.bestplaces.net](http://www.bestplaces.net)) - is a website created and maintained by author and researcher Bert Sperling. It offers information about cities and zip codes in the United States.
- 50 States ([www.50states.com](http://www.50states.com)) - offers state information in an easy-to-navigate format.
- Find Articles ([www.findarticles.com](http://www.findarticles.com)) – is a website which provided access to articles previously published in over 3,000 magazines, newspapers, journals, business reports and other sources.

## **Business**

- State Farm ([www.statefarm.com](http://www.statefarm.com)) – is a large group of insurance companies throughout the United States with corporate headquarters in Bloomington, Illinois.
- Berkshire Hathaway Inc. ([www.berkshirehathaway.com](http://www.berkshirehathaway.com)) - is an American multinational conglomerate holding company headquartered in Omaha, Nebraska, United States.
- Liberty Mutual ([www.libermutual.com](http://www.libermutual.com)) - is an American diversified global insurer and the third-largest property and casualty insurer in the United States.
- AllState ([www.allstate.com](http://www.allstate.com)) - is an American insurance company that is in the United States.
- Progressive Corporation ([progressive.com](http://progressive.com)) - is an American insurance company. It is one of the largest providers of car insurance in America.

## **Educational**

- Coursera ([www.coursera.com](http://www.coursera.com)) – is an American online learning platform founded in 2012 by Stanford professors Andrew Ng and Daphne Koller.

LinkedIn Learning ([www.linkedin.com/learning](http://www.linkedin.com/learning)) - is an American website offering video courses taught by industry experts in software, creative, and business skills.

Udemy ([www.udemy.com](http://www.udemy.com)) - is an online learning platform aimed at professional adults and students, developed in May 2010. As of Jan 2020, the platform has more than 50 million students and 57,000 instructors teaching courses in over 65 languages.

Udacity ([www.udacity.com](http://www.udacity.com)) - is a for-profit educational organization founded by Sebastian Thrun, David Stavens, and Mike Sokolsky offering massive open online courses.

Khan Academy ([www.khanacademy.org](http://www.khanacademy.org)) - is a non-profit educational organization created in 2008 by Salman Khan with the goal of creating a set of online tools that help educate students.

## **Entertainment**

- Netflix ([www.netflix.com](http://www.netflix.com)) - is an American media-services provider and production company headquartered in Los Gatos, California, founded in 1997 by Reed Hastings and Marc Randolph in Scotts Valley, California.

- Vudu ([www.vudu.com](http://www.vudu.com)) - is an American content delivery and media technology company responsible for Vudu-branded interactive media services and devices.

- Amazon Prime Video ([www.primevideo.com](http://www.primevideo.com)) – is an American Internet video on demand service that is developed, owned, and operated by Amazon.

- Crackle ([www.crackle.com](http://www.crackle.com)) – is a US based video streaming platform that is a joint venture between Chicken Soup for the Soul Entertainment and Sony Pictures Television.

- Disney+ - is an American subscription video on-demand streaming service owned and operated by the Direct-to-Consumer & International division of The Walt Disney Company.

## **Advocacy**

- Advocates for Children in Therapy ([www.childrenintherapy.org](http://www.childrenintherapy.org)) - Advocates for Children in Therapy is an educational and public advocacy organization dedicated to halting the dangerous cruelty done to children by Attachment Therapy
- Bully Project (<http://www.thebullyproject.com/>) - is an advocacy organization focusing on issues of highschool and online bullying.
- Class Action (<https://classism.org/>) - is an organization dedicated to ending classism, being discriminated against by what class a specific individual may find himself/herself in.
- The Home for Little Wanderers (<http://www.thehome.org/site/PageServer>) – is an organization dedicated to coupling orphans with families.
- Spark Action (<https://sparkaction.org/>) - is an organization dedicated to motivating young people to participate and educate themselves. It is also involved in increasing accessibility to the vital materials needed for education.

## **Blog**

Wordpress (<https://wordpress.org/>) is a free and open-source content management system (CMS) written in PHP[4] and paired with a MySQL or MariaDB database.-

Wix(<https://wix.com>) - is a Israeli software company, providing cloud-based web development services.

Squarespace ([www.squarespace.com](http://www.squarespace.com)) - is a private American company, based in New York City, that provides software as a service for website building and hosting.

Weebly([www.weebly.com](http://www.weebly.com)) - is a web hosting service specifically oriented for online shopping, headquartered in San Francisco.

Blogger([www.blogger.com](http://www.blogger.com)) - is a blog-publishing service that allows multi-user blogs with time-stamped entries.

## **Wiki**

Wikipedia([www.wikipedia.com](http://www.wikipedia.com)) - is a multilingual online encyclopedia created and maintained as an open collaboration project by a community of volunteer editors using a wiki-based editing system.

Fandom([www.wikia.com](http://www.wikia.com)) - is a wiki hosting service and domain operated by Fandom, Inc. (formerly known as Wikia, Inc.), a for-profit Delaware company founded in October 2004 by Jimmy Wales and Angela Beesley.

Wikihow.com ([www.wikihow.org](http://www.wikihow.org))- is an online wiki-style community consisting of an extensive database of how-to guides.

Wiktionary ([www.wiktionary.org](http://www.wiktionary.org)) - is a multilingual, web-based project to create a free content dictionary of terms (including words, phrases, proverbs, etc.) in all natural languages and a number of artificial languages.

Word Refenece ([www.wordreference.com](http://www.wordreference.com)) - is a online translation dictionary for, among others, the language pairs English-French, English-Italian, English-Spanish, French-Spanish, Spanish-Portuguese and English-Portuguese.

## **Social Network**

Facebook ([www.facebook.com](http://www.facebook.com))- is an American online social media and social networking service based in Menlo Park, California and a flagship service of the namesake company Facebook, Inc.

Instagram ([www.instagram.com](http://www.instagram.com))- is an American photo and video-sharing social networking service owned by Facebook, Inc.

Twitter ([www.twitter.com](http://www.twitter.com))- is an American microblogging and social networking service on which users post and interact with messages known as "tweets".

MySpace ([www.myspace.com](http://www.myspace.com))- is an American social networking website.

Tumblr ([www.tumblr.com](http://www.tumblr.com))- is an American microblogging and social networking website founded by David Karp in 2007 and currently owned by Automattic.

### **Content Aggregator**

Alltop ([www.alltop.com](http://www.alltop.com)) - aggregates all of the top news and information in real time.

Popurls([m.popurls.com](http://m.popurls.com)) - Popurls encapsulates headlines from the most popular websites on a single site.

The Web List ([www.theweblist.net](http://www.theweblist.net)) – contains links to the latest information and news on the web.

WP News Desk ([www.wpnewsdesk.com](http://www.wpnewsdesk.com)) – is a content aggregator that specializes in collecting new information about Word Press.

Blog Engage([www.blogengage.com](http://www.blogengage.com)) - is a blogging community where all bloggers submit their latest blog articles for exposure, backlinks and traffic. All articles submitted are sent to the “upcoming” page where users read and vote on the submissions. When articles receive enough votes they become published and are then found on the Blog Engage home page.

### **Personal**

Ximena Vengoechea ([www.ximenavengoechea.com/](http://www.ximenavengoechea.com/)) - is a writer, illustrator, designer & researcher. Her background is in product strategy, behavioral design, and storytelling.

Devon Stank ([www.devonstank.com/](http://www.devonstank.com/)) - is a square space developer and designer.

Kristi Hines ([www.kristihines.com/](http://www.kristihines.com/)) - is a freelance writer from Arizona who offers freelance and content writing services.

Red Russak ([www.redrussak.com/](http://www.redrussak.com/)) - is a entrepreneur and software developer from Yeshiva University.

Simon Sinek ([www.simonsinek.com](http://www.simonsinek.com)) - is an American author (British) and motivational speaker.

## Website Evaluation

The guidelines for evaluating the value of a website are as follows.

- Text Alternatives: Provide text alternatives for any non-text content so that it can be changed into other forms people need, such as large print, braille, speech, symbols or simpler language.
- Time-based Media: Provide alternatives for time-based media.
- Adaptable: Create content that can be presented in different ways (for example simpler layout) without losing information or structure.
- Distinguishable: Make it easier for users to see and hear content including separating foreground from background.
- Keyboard Accessible: Make all functionality available from a keyboard.
- Enough Time: Provide users enough time to read and use content.
- Seizures: Do not design content in a way that is known to cause seizures.
- Navigable: Provide ways to help users navigate, find content, and determine where they are.
- Readable: Make text content readable and understandable.
- Predictable: Make Web pages appear and operate in predictable ways.
- Input Assistance: Help users avoid and correct mistakes.
- Compatible: Maximize compatibility with current and future user agents, including assistive technologies.

Two websites will be evaluated next. These are [nike.com](http://nike.com) and [lenovo.com](http://lenovo.com).

## **Nike**

- Text Alternatives: The home page of the Nike website greets the user with images of different shoes and products to market. If a user was not able to load these images in, text alternatives like “Women’s Shoe” and “Men’s Shoe” would start showing up, making the website easier to index for different web crawlers and potentially easier to access for different devices and/or people with various disabilities.
- Time-based Media: Nike does not have any time-based media.
- Adaptable: The website was designed with all aspect ratios and display types in mind. Opening the website on a phone versus opening it on a laptop show different results, because that is how the website is designed.
- Distinguishable: Most of the text on the site is black with white backgrounds, making it very easy to read.
- Keyboard Accessible: Other than scrolling, there is no functionality this site provides.
- Enough Time: There are no time limits on this site.
- Seizures: There are no flashing lights in this website.
- Navigable: This site is very easy to navigate. It has buttons for every promotional image and has a menu bar at the top right corner for accessing different parts of the website.
- Readability: The site supports multiple languages and asks for user preference when visiting the site for the first time.
- Predictable: The layouts for the different pages on the site have a uniform layout.
- Input Assistance: Errors that may occur when entering account information is detected and highlighted by the system so users can see where they went wrong.



- Compatible: the HTML code for the login pages have set the input types to password and email where necessary.

## **Lenovo**

- Text Alternatives: The home page of the Lenovo website market's the company's different products by presenting the user with images of their top-selling items. These items are replaced by texts like "PC & Tablets" and "Smart Devices" in the event that the user cannot load in any or all of the images.

- Time-based Media: The home page of Lenovo also has videos showcasing their different product line-ups. If a user, for some reason, disables autoplay on his browser settings, an audio track replaces the previous GIF video.

- Adaptable: The different layouts for each device makes it very adaptable.

- Distinguishable: The text presented on top of the images and products are done so they would have contrast with their background, preserving their readability.

- Keyboard Accessible: Other than scrolling, there is no functionality this site provides.

- Enough Time: This site has no time limits.

- Seizures: The only animations on this site is that of sliding images. There are no flashing lights, and so will not cause seizures.

- Navigable: This site has search bar on top along with a tool bar. It also has a menu button to navigate through the entire website.

- Readability: The site uses the English language without abbreviations for its products, making it readable for the majority of it's users. It also has options for other languages.

- Predictability: The pages on the site have the same layout.

- Input assistance: errors that may occur when trying to purchase a product are highlighted for the user to see.
- Compatible: the HTML code for the login pages have set the input types to password and email where necessary.

## CONCLUSION

In conclusion the internet has come a long way from the 4 nodes that connected universities to the world wide network used to connect billions of nations. As we come to grow more and more dependent on the internet, day to day activities that would previously take considerable amounts of time can now be done in seconds. The internet has changed the way we live our day to day lives.

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