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The Internet and The web

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# History of the Internet [The evolution]

Even though the concept of the Internet as we know it today is very young, the history and evolution of the Internet span over half a century. As there was no master plan guiding the Internet’s development from beginning to present, whenever talking about the History of the Internet, it is better to break it down into the various inventions and ideas that contributed to the process.

The Internet was a child of the competition of the United States and the Soviet Union during the Cold War. However, before discussing the history of the Internet, we need to be informed about how the pre-Internet communication systems functioned. During those times, communication methods were landline telephones, telegrams, and radios. These methods of communication were based and heavily relied on a centralized system, meaning that the sender and recipient directly connected through a pre-defined route. They were also hard to maintain and very expensive because the equipment used to connect the two parties had to be reliable and had to last long.

At the time of the Cold War in the US, there were worries that if the USSR launched nuclear missiles. It would only take one strike at the central station to wipe out all communication in the country, and it would become impossible to strike back without communication between the various parts of their military. In order to make this communication, they needed a system that was nuclear catastrophe proof. At the Research and Development (RAND) Corporation, an American-Polish engineer Paul Baran came up with a solution that would change the existing centralized communication by proposing a new way of distributed networks. In 1962, Baran described in his paper how his proposed way of communication worked. His implementation was worked by placing various nodes across the country and removed the need for a central control station to route the connection; a message would jump from node to node by finding the most accessible route until it reaches the recipient. This method was reliable in case of a nuclear attack because the message will avoid the places which suffered from destruction and go around them and deliver the message. His implementation was also cheaper as the components did not need to be as reliable as the earlier methods of communication. However, when operating, his system required many relay stations that communicated with other nodes and the technology available at the time was not able to handle it.

Then, Baran and a British computer scientist Donald Davies independently concluded that by chopping the message into smaller packets, it would be possible to send the message over a long distance and reconstruct them at the end and deliver the full message. This concept would then lead to the TCP/IP protocol that the Internet uses today. Because RAND did not have the infrastructure to build the nationwide system, they proposed the idea to AT&T; they rejected them because a distributed communication system did not make sense to them as they were accustomed to the centralized system. Even when the idea of a distributed system gained momentum, AT&T was not willing to implement the new system because it would generate more income by using the existing system.

After the USSR launched its first satellite, the united states government established Advanced Research Projects Agency (ARPA) to facilitate research in technology with potential military applications. In 1962, Joseph Licklider joined ARPA as the head of Command and Control research. This position gave him the freedom to pursue various ideas in computing. He believed that humans working with computers could create a better world. Because of that, ARPA would become the birthplace of not only the Internet but also computer graphics, parallel processing, simulations, and others. Licklider created the platform, but Bob Taylor was the first person to propose a significant networking project. Bob had three computer terminals in his office, and all of them were incompatible with each other, so they were not able to communicate with each other. This situation led him to propose the idea to ARPA’s director by explaining how his team could successfully implement a computer network researchers at various ARPA facilities can communicate and use programs of computers located in a different campus. This new network, which is the predecessor of the Internet, would later be known as ARPANET.

ARPANET first linked four universities: Stanford University, UCLA, University of Utah, and UC Santa Barbra. It was used as a messaging service to connect scientists and engineers at different institutions. One of the critical features of ARPANET was that it used packet switching that resembled the ones proposed by Baran and Davies. Messages split into small packets would then be sent over the network. Every computer had the address of every computer on the network, so when one computer sends a packet, it sees the address of the packet and sends it to the next closest computer. The next computer does the same thing until the packet reaches its destination. However, as ARPANET grew and more computers connected to it, some problems arose because every computer had to have the address of every computer on the network to send data to another computer. Then the people at ARPA decided that there should be one computer that kept all the addresses on the network and that every other computer can update their addresses from that computer.

In 1978, ARPANET made a significant leap when it crossed the Atlantic Ocean and connected to other existing networks in Europe. This created an opportunity to standardize how packets were made because every network used different packets. That’s when TCP/IP (Transmission Control Protocol / Internet Protocol) was introduced it made links possible between different computers on different networks. The TCP made sure that every packet is formatted according to a standard format, and IP made sure that every computer had its specific address to avoid naming conflicts. TCP/IP became the standard and ARPANET became the Internet. TCP/IP is the packet protocol still being used on the Internet today.

In the early 1980s, more and more computers were connecting to the Internet because computers were getting cheaper, faster, and spread across the world. This made keeping a central record of all the addresses of every computer very difficult. Scientists needed to come up with a way to solve this problem. So they created the domain name system (DNS). The DNS was a significant invention because it eliminated the need to know the address of the destination. DNS used a hierarchical way of getting addresses from the top down. For example, if we need to connect to “aait.edu.et” first it searches the top-level domain for a computer (DNS server) with the name “et” then from that computer it would navigate to a computer with the name “edu” and so on until it reaches its destination.

# Comparison of Websites from Web archive

For this question, I chose to view and give an assessment on the web archive of the following popular websites.

1. [Stackoverflow](https://stackoverflow.com/)
2. [Facebook](https://www.facebook.com/)
3. [Reddit](https://www.reddit.com/)
4. [Amazon](https://www.amazon.com/)
5. [Gmail](https://www.google.com/gmail/)
6. [Twitter](https://twitter.com/?lang=en)
7. [Apple](https://www.apple.com/)

A lot has changed on the web in the last two decades. I have put the observations I have made in the following text below.

One of the most obvious changes that have happened is there is a lot of media content like images, music, and videos nowadays on almost all websites. My prediction is back then there was only a few media content on websites because at that time the available internet connection was not sufficient to load them fast enough. That’s why most websites mostly contained textual information.

Another thing I have noticed is that the older websites looked like they were only written in HTML and had no styling added to them. As we progress through time, I saw that the advancement of CSS has made websites more appealing to the eye. These additions include various colors, textures, text and shape stylings, and animations.

Websites have also become more interactive and responsive. I have come to see this on various social networking websites. For example, in the early times, people had to refresh to see if they have got a new message.

Finally, Advertisements on websites have also changed a lot. Back then advertisements were not targeted to a specific group they were just shown to anyone who was on the website. However now websites show Ads based on the information they collect from the users.

# Categories of websites

## 3.1. Portal websites

* [foresthillspediatrics.com/patient-portal](https://foresthillspediatrics.com/patient-portal): A patient portal website for Forest Hills Pediatrics where patients log in to see details about their status.
* [portal.aait.edu.et](http://portal.aait.edu.et/): A portal website for students of AAiT to see their grades, progress, and other information.
* [admissions.dickinson.edu/apply/status](https://admissions.dickinson.edu/apply/status): An application portal of Dickinson College where prospective students who apply see their status.
* [iportal.barclays.com](https://iportal.barclays.com/): The portal website of Barclays Bank where its customers see their information.
* [login.dominos.com](https://login.dominos.com/): An employee portal for employees working in Domino’s pizza.

## 3.2 News Website

* [edition.cnn.com](https://edition.cnn.com/): the website of an American paid news television channel.
* [ebstv.tv](http://ebstv.tv/website/): An Ethiopian entertainment and news channel website.
* [www.bbc.com](http://www.bbc.com): The website of a British public service broadcaster.
* [www.foxnews.com](http://www.foxnews.com): The website of an American conservative news channel.
* [www.nbc.com](http://www.nbc.com): The website of a radio and television network that is a flagship property of NBCUniversal.

## 3.3 Informational Websites

* [www.wikipedia.org](http://www.wikipedia.org): A website that contains information on almost every topic.
* [www.tripadvisor.com](http://www.tripadvisor.com): A website that has information that is helpful when planning trips.
* [www.imdb.com](http://www.imdb.com): IMDB is an informational website that contains data related to movies, series, and TV shows.
* [www.ranker.com](http://www.ranker.com): An incredibly useful website when comparing almost anything on the Internet.
* [www.billboard.com](http://www.billboard.com): A website that contains information on different songs that is helpful when choosing music to listen to.

## 3.4 Business/Marketing websites

* [www.amazon.com](http://www.amazon.com): a massive online retailer for almost every item in the world and known for leading the eCommerce market.
* [www.newegg.com](http://www.newegg.com): is a shopping website for computer hardware and electronics.
* [www.ebay.com](http://www.ebay.com): is an eCommerce website that focuses on the consumer to consumer and business to consumer transactions.
* [www.tesla.com](http://www.tesla.com): An electric car manufacturing company website, it offers various models and ordering on the website.
* [www.samsung.com](http://www.samsung.com): The website of a tech company known for producing electronics like phones, tablets, and computers.

## 3.5 Educational Website

* [www.khanacademy.org](http://www.khanacademy.org): The website of a company set out to make education free, various courses are on the website.
* [brilliant.org](https://brilliant.org/): The website of a paid educational website aimed at making learning science, math, and programming easy.
* [www.duolingo.com](http://www.duolingo.com): The website of a language learning website, it offers an approachable way of learning a new language.
* [www.udacity.com](http://www.udacity.com): A website offering higher-level courses that are both paid and free.
* [www.udemy.com](http://www.udemy.com): Another website that offers advanced courses in paid and free versions.

## 3.6 Entertainment websites

* [www.netflix.com](http://www.netflix.com): The website of a movie streaming service, it offers feature films and series with a subscription.
* [www.youtube.com](http://www.youtube.com): YouTube is a video-sharing website that is free to use.
* [www.disneyplus.com](http://www.disneyplus.com): A streaming service of a movie production company.
* [www.hbo.com](http://www.hbo.com): Another movie streaming service for renting and watching movies.
* [www.spotify.com](http://www.spotify.com): An entertainment website for a free music streaming company.

## 3.7 Advocacy Website

* [www.change.org](http://www.change.org): A non-profit website dedicated to making changes by offering a platform to make and sign petitions.
* [www.redcrosseth.org](http://www.redcrosseth.org): The website of the Red Cross branch in Ethiopia.
* [www.amnesty.org](http://www.amnesty.org): The website of amnesty international, an organization that helps to preserve human rights.
* [www.un.org](http://www.un.org): The non-profit website of the United Nations.
* [En.unesco.org](https://en.unesco.org/): The non-profit website of an organization that promotes education, sciences, and culture.

## 3.8 Blog Website

* [www.wordpress.com](http://www.wordpress.com): is a blogging website that is freely available to anyone.
* [www.blogger.com](http://www.blogger.com): A website that is used to share knowledge and experiences on the web.
* [www.medium.com](http://www.medium.com): A platform where people can publish their ideas.
* [www.ghost.org](http://www.ghost.org): An opensource platform created soley for the purpose of blogging.
* [www.squarespace.com](http://www.squarespace.com): is a website building website and also a blogging platform.

## 3.9 Wiki Websites

* [www.stackoverflow.com](http://www.stackoverflow.com): A community website where programmers share ideas and help each other when they have problems.
* [www.wikipedia.org](http://www.wikipedia.org): is an encyclopedia website that is written by the community using it.
* [www.britannica.com](http://www.britannica.com): is the oldest encyclopedia that is now in the form of a website.
* [www.quora.com](http://www.quora.com): A community website where people ask questions and others answer it.
* [www.wikihow.com](http://www.wikihow.com): A wiki-style website to show others how to do things.

## 3.10 Social Network

* [www.reddit.com](http://www.reddit.com): The website of a social media company that serves as social news aggregation, web content rating, and discussion website.
* [www.twitter.com](http://www.twitter.com): A social networking company that acts as a microblogging website.
* [www.facebook.com](http://www.facebook.com): A social network platform that is used to connect people with the same interests.
* [www.instagram.com](http://www.instagram.com): A photo and video sharing social networking website
* [www.telegram.org](http://www.telegram.org): A website and an app that is used as instant messaging and voice over IP service.

## 3.11 Content Aggregator

* [www.techmeme.com](https://www.techmeme.com/): A news aggregator website that filters and presents news related to technology.
* [www.alltop.com](http://www.alltop.com): A website that aggregates all the top news in real-time.
* [www.feedly.com](http://www.feedly.com): Another news aggregator website that filters all the news according to the users’ preference.
* [www.popurls.com](http://www.popurls.com): one of the best news aggregators on the web. It has a single page aggregation of websites from social media to the news.
* [www.reddit.com](http://www.reddit.com): Reddit is also an aggregator website covering a wide range of topics.

## 3.12 Personal Website

* [www.biography.com](http://www.biography.com): A website for publishing personal stories of popular people.
* [www.gatesnotes.com](https://www.gatesnotes.com/): The personal website of Bill Gates, the founder of Microsoft.
* [allaboutstevejobs.com](https://allaboutstevejobs.com/): The personal website of Steve Jobs.
* [www.nelsonmandela.org/content/page/biography](https://www.nelsonmandela.org/content/page/biography): The personal website of Nelson Mandela.
* [www.markzuckerbergofficial.com](http://www.markzuckerbergofficial.com/): The personal website of Mark Zuckerberg.

# Guidelines for evaluating Websites

**Purpose**: refers to the quality of whether a website contains information that is clear or not. This can vary from website to website as the message the creator wants to pass might be different however once decided it should have a constant theme on the entire website.

**Content**: The content is the characteristics of the quality of information on the website. This is a measure of how well-researched, unbiased, and useful the content presented on the website so that the users’ experience is worthwhile.

**Authority**: The website must show clearly who developed and is in charge of the website. The contact information of the person or organization responsible for the website must also be on the website. A site that has this quality shows that it is transparent and accountable to its users and is likely to be trusted.

**Functionality**: This is the quality of a website that makes sure a website is functioning as it is supposed to be. A site that works to increase its functionality is more likely to attract more users than a website that is hard to use for even simpler tasks.

**Aesthetics**: refers to the feel of the website when people are using it. It can range from using the right colors to nice shapes to animations. It is hard to appeal to every person that uses our websites because people have different choices but creating a nice-looking website is following general guidelines and make a website that pleases others.

To demonstrate how to apply the guidelines to evaluate a website we will use the following websites.

* [YouTube](https://www.youtube.com/)
  + Purpose - I think the purpose of YouTube is well-defined because it has shown very clearly that it is a video sharing website and anyone who is not familiar with it can pretty much guess it.
  + Content - This is not a strong quality of YouTube because it does not control what is uploaded to the website. However, YouTube is trying to moderate some content that might be off-limits and offensive.
  + Authority - This is very clear and we can see from the website that Google is the organization that controls YouTube.
  + Functionality - YouTube, in my opinion, has great functionality because of two reasons. First, it is very easy to use anyone who has ever used a video player can easily use YouTube, and secondly, it has a great search bar which makes finding the content we want very easy.
  + Aesthetics - YouTube has a good interface that stays consistent from page to page which makes it pleasing to use.
* [Wikipedia](https://www.wikipedia.org/)
  + Purpose - The purpose of Wikipedia is also straightforward it is to create the largest online encyclopedia created by the community that everyone can use for free.
  + Content - Wikipedia suffers in this evaluation criteria the content is completely generated by the users. So anyone can write anything on Wikipedia. This lessens the credibility of Wikipedia as a primary information source.
  + Authority - Wikipedia is managed by the non-profit organization called Wikimedia Foundation however this organization has no control over the content on Wikipedia or its sister websites.
  + Functionality - Wikipedia has good functionality. It is very easy to find a page on the topics we need and it creates various hyperlinks which are useful to explain terms which we don’t know.
  + Aesthetics - Wikipedia’s website looks a little too old and doesn’t have much styling, which is why reading some materials seem a lot and frustrating.
* [Khan Academy](https://www.khanacademy.org/)
  + Purpose - The purpose of the website as we can see from the content and the homepage is to make high-quality education accessible to everyone.\
  + Content - Khan Academy has great content because it offers quality courses and teaching materials that are developed by qualified people.
  + Authority - From the homepage, we can see that the website is run by the non-profit organization Khan Academy.
  + Functionality - Khan Academy has good functionality in the way it offers learning by making short tutorial videos, different quizzes, and tests.
  + Aesthetics - It is a great website aesthetically which makes students spend more time on the website.

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