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**CENTER OF INFORMATION TECHNOLOGY AND SCIENTIFIC COMPUTING**

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Internet and Websites

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# **History of Internet**

**August 1962: Galactic Network Concept**

J.C.R Licklider of MIT who was the first head of the computer research program at DARPA (The Defense Advanced Research Project Agency), wrote a series of memos discussing his “Galactic Network” concept. The memos were the first recorded description of the social interactions that could be enabled through networking. He tries to picture a globally interconnected set of computers through which everyone could quickly access data and programs from any site.

**July 1964: Packet Switching Theory**

Leonard Kleinrock published the first book on packet switching theory. He explained the importance and conventionality of using packets rather than circuits.

**1965: Experiments of Packet Switching**

An Experiment aimed to explore the way to make the computers talk to each other Kleinrock, Thomas Merrill and Roberts used a low speed dial-up telephone line to connected the TX-2 computer in Massachusetts to Q-32 computer in California This was the first wide area network ever built. The result cleared showed using circuit switched telephone system was not up to the job of running programs and retrieving data on the remote machine and the need for a better switching system, that is packet switching. There were also other two parallel researches done in NPL (National Physical Laboratory) and RAND (Research AND Development) separately, that strongly concluded the need for using packet switching system.

**1967: ARPANET Design**

The plan for the Advanced Research Project Agency Network (ARPANET) and developed concept of the computer networking was put together and published by Roberts at DARPA. The ARPANET design was proposed to use line speed of 50Kbps. The other key specification component for the development was the packet switches called Interface Message Processors (IMP’S).

**September 1969: ARPANET Connected**

The first node on the ARPANET was chosen to be Kleinrock’s Measurement Center at University of California, Los Angeles (UCLA) and when Bolt Beranek and Newman (BBN) install the IMP, it become the first host computer connected. The second node was Doug Engelbart’s project on “Augmentation of Human Intellect” (which included an early hypertext system) at Stanford Research Institute (SRI). SRI supported the Network Information Center and maintained tables of the host name to address mapping. After one month, two more nodes were added at UC Santa Barbara and University of Utah and Soon after there were more computers connecting to the network. The first host-to-host message sent over ARPANET was from Kleinrock’s laboratory to SRI.

**December 1970: Network Control Protocol**

The initial ARPANET Host-to-Host protocol called the Network Control Protocol (NCP) was developed and implemented by Network Working Group under S. Crocker. This gave the users a chance to begin developing applications.

**October 1972: ARPANET Goes to the Public and Email**

At the International Computer Communication Conference (ICCC) ARPANET network technology first demonstration to the public was organized by Kahn.

Ray Tomlinson wrote the basic email message send and read software. And introduced the initial “hot” application and electronic mail. Later Roberts improved its utilities by adding list, selectively read, file forward, and respond to messages.

**1973: The first trans-Atlantic connection**

The first non-US connections to the ARPANET, the forerunner of the modern internet, were set up. The two countries to connect were the UK and Norway.

**1974: The beginning of TCP/IP**

A new protocol was implemented as the Transmission Control Program, the first of TCP/IP was published in 1974. At the start TCP handled both datagram transmission and routing. But soon it become inflexible and unable to scale efficiently. Therefore, TCP was split into two protocols, TCP and the Internet Protocol (IP).

**1977: The PC modem**

Dale Heatherington and Dennis Hayes created the world’s first PC modem, the 80-103A. a modem that offered the feature to connect directly to the phone, something that was impossible for users.

**1978: The Bulletin Board System (BBS)**

Ward Christensen and Randy Suess launch the first public dialup bulletin board system. BBS is a computer server running software that allows users to connect to the system using a terminal program.

**1979: Usenet**

Usenet, created by two graduate students, was internet-based discussion system, allowing people from around the globe to converse about the same topics by posting public messages categorized by newsgroups.

**1980: ENQUIRE software**

Tim Berners-Lee wrote a hypertext program that allowed scientists at the particle physics lab to keep track of people, software, and projects using hypertext (hyperlinks).

**1984: Domain Name System (DNS)**

New scheme called DNS for referring to Internet site was deployed to solve the inefficient and error-prone of keeping multiple copies of the hosts file. DNS is a registered range of IP addresses associated with a domain name.

**1988: IRC – Internet Relay Chat**

IRC was first deployed. IRC is an application layer protocol that facilitates communication in the form of text. It paved the way for real-time chatand the instant messaging programs we use today.

**1989: The proposal for the World Wide Web**

Sir Tim Berners-Lee invented the World Wide Web. Tim had written the three fundamental technologies that remain the foundation of today’s web. HTML (Hyper-Text Markup Language), URL (Uniform Resource Identifier), and HTTP (Hypertext Transfer Protocol.)

**1990: First commercial dial-up ISP**

The first Internet Service Provider Telenet, which is the first commercial version of ARPANET was introduced.

**1991: First web page created**

The first web page went live on August 6, 1991. It was dedicated to information on the world wide web project and was made by Sir Tim Berners-Lee. It ran on a NeXT computer at the European Organization for Nuclear Research, CERN. It outlined how to create web pages and explained more about hypertext.

**1991: First content-based search protocol**

The first search protocol that examined file contents instead of just file names was launched, called Gopher. It is a TCP/IP application layer protocol designed for distributing, searching, and retrieving documents over the Internet.

**1993: Mosaic – first graphical web browser for the general public**

The National Center for Supercomputing Applications (NCSA) was a group at the University of Illinois which developed the seminal web browser named Mosaic. It played a huge part in making the web more user-friendly for that even if it is not the first graphical web browser it was considered as one.

**1993: Governments join in on the fun**

Both the White House and the United Nations came online, marking the beginning of the **.gov** and **.org** domain names.

**1994: Netscape Navigator**

Netscape Navigator become user-friendly because its design was unlike the early web surfing application which were index of website like care with tightly packed text information on a single page, but Netscape used color, photos, sound bites, video clips, and, most notably, [hyperlinks](http://home.mcom.com/home/welcome.html), it made web browsing a point-and-click affair. Where there once was dull, blocky text, there was now [eye-popping pixelated color photos](http://www.berghel.net/publications/mosaic-wars/figure1b.gif).

**1995: Commercialization of the internet**

The commercialization the internet began modestly with gateways between commercial services and the global Internet. SSL (Secure Sockets Layer) encryption was developed by Netscape, making it safer to conduct financial transactions (like credit card payments) online. eBay and Amazon become the first site to sale on online market.

**1998: Google!**

Google went live and revolutionized the way people find information online. It became the premier destination for finding about anything on the web.

**2003: VoIP goes mainstream**

Voice Over Internet Protocol (VoIP) system is a transmission of class over high-speed data networks rather than traditional phone lines. Niklas Zennstrom and Janus Friis found skyper, later shortened to skype. Skype is the first video chat website.

**2004: Web 2.0**

The web was updated to web 2.0. Web 2.0 is a second generation of web-based services, which emphasizes online collaboration, connectivity and the ability to share content among users. It involves the evolution of digital applications to wards application aimed to the end user, which include services such as social network, wiki blogs and folksonomies.

# **Popular Websites Change Evolution**

## **Amazon**

In the early days its website was bad looking and hard to even use. The bad part is it had a lot of lines of words which is very disturbing. In 2006 they worked on getting the words in the description low. The search button was on the right side of the site. 2012 was in my eyes a big change in its sight they removed the messy words and included pictures of its delivery stuffs. In 2016 they changed the website completely to its better version.2020 added some pictures and when you click on the pictures you get the descriptions of the stuff with the price included.so in general it became easy to use.

## **YouTube**

YouTube in its early days looks so bad it was a bunch of box of layout and the videos actually looked like a picture. The views of the videos were very low and it had a very few followers. It was blue and white in color. After half a decade it changed its sight from the messy layout to a much better look compared to it’s early looks. And also managed to have big amount of folowers.in 2015 YouTube managed to have a look much similar to its current look. Added some categories make it look fine. Currently YouTube have a red and black content and easy and very good to use for much better business.

# **Categories of Website**

## **Advocacy**

Advocacy website’s purpose is to influence public policy and resource allocation decisions within political, economic and social system and institutions. It also creates awareness on an issue and provide a plan of action to act on what is now known, and open up space for public argumentation on topic/issue. Example:

* Greenpeace: <http://www.greenpeace.org> It is an independent, nonprofit, global campaigning organization that uses non-violent, creative confrontation to expose global environmental problems and their causes.
* Freedom Forum: <http://www.freedomforum.org> It is a forum with the vision of creating an America where everyone knows, understands, values and defends the freedoms of religion, speech, press, assembly and petition.3w
* ACLU: American Civil Liberties Union: <http://aclu.org> It is a union with mission of realizing the promise of the Bill of Right for all and expanding the reach of its guarantees beyond one person, party, or side. They dare to create a more perfect union.
* MoveOn.org: <http://www.moveon.org> is a progressive public policy advocacy group and political action committee.
* World Wildlife Fund: <http://www.panda.org> It is an international non-governmental organization working in the field of wilderness preservation, and the reduction of human impact on the environment.

## **Blog**

Blog (is short for weblog) websites is an online journal or information websites displaying information in the reverse chronological order, with the latest posts appearing first. They are typically run by an individual or a small group of people to present information in a conversational style. Example:

* BreakingintoStartups.com: <http://www.breakingintoStartups.com> It contains motivational stories about startups and the people who work in them and create hem.
* KnowTechie.com: <http://www.knowtechie.com> It is a blog for people who love tech, but doesn’t have a deep knowledge about it. It tries to make tech news reach all by not being too much technical and confusing.
* MyWifeQuitHerJob.com: <http://www.mywigequitherjob.com> It is useful and inspirational for people wanting to change their live for something that will allow them to work a little and spend more time off work.
* We The Parents: <http://www.wetheparent.com> It is a blog to make parent lives easier by doing the research for them to help them get the best product for their family by considering both parents view.
* Life hacker: <http://www.lifehacker.com> is a blog about life hackers and software. The posts cover a wide range of topics including: Microsoft Windows, Mac, Linux programs, as well as general life tips and tricks. It known for its fast-paced release schedule from its inception, with content being published every half hour all day.

## **Business/ Marketing**

Business website is a website focused on engaging the visitor, leading them into specific area of interest, whilst providing and incentive to possibly buy one or more products that have been specifically chosen for them. Example:

* Amazon.com: <https://www.amazom.com> It is an American multinational technology company based in Seattle that focus on e-commerce, cloud computing, digital streaming, and artificial intelligence.
* Best Buy: <https://www.bestbuy.com> It is an American multinational consumer electronics retailer based in Richfield, Minnesota.
* eBay: <https://www.ebay.com> It is an American multinational e-commerce corporation based in San Jose, California, that facilitates consumer-to-consumer and business-to-consumer sales through its website.
* Walmart: <https://www.walmart.com> It is an American multination retail corporation bead in Bentonville, Arkansas, that operates a chain of hypermarket, discount department stores, and grocery stores.
* The Home Depot: <http://www.homedepot.com> is the largest home improvement retailer in the United States, supplying tools, construction products, and services.

## **Content Aggregator**

A content aggregator website does not produce their own content. Instead the collect content from other websites around the Internet and categorize and sort it into one easy-to-find location. They gather and distribute content to suit their customer’s needs. Example:

* Travel Blogger community: <http://www.travelbloggercommunity.com> It aggregates content from travel bloggers all around the world in one accessible place.
* WP News Desk: <http://www.wpnewsdesk.com> is a content aggregator website that focuses specifically on WordPress. It pulls in content from a variety of WordPress blogs and companies and display posts on the front page.
* The Web List: <http://theweblist.net/> is a one-page content aggregator website that collects content from a huge variety of sources. It’s highly customizable.
* Alltop.com?: <http://alltop.com> is one of the biggest names in content aggregation, it pulls in the latest posts from websites on the a variety of topics and give the user permission to search for an aggregated content on specific topic.
* Metacritic: <http://www.metacritic.com> is news aggregator websites and a review aggregator that includes games and music.

## **Educational**

Educational websites are website that act as tools to enhance learning and supplement classroom teaching. These websites help make the process of learning entertaining and attractive to the students.

* EdX: <http://www.edx.org> founded by Harvard University and MIT in 2012. It is an online learning destination and MOOC provider, offering high-quality courses to learners everywhere.
* Academic Earth: <http://www.academicearth.org> they give huge variety of academic option to students from traditional to contemporary studies. They provide online degree courses
* Coursera: <http://www.courser.org> they have a number of interesting courses available with user-friendly website. When finishing a course, they give a sharable electronic course certificate.
* Khan Academy: <http://www.khanacademy.org> is an online coaching website. It gives students liberty to learn on their pace, as it has a personalized dashboard to gauge the progress report.
* Big Think: <http://www.bigthink.com> the website contains experts write articles and record tutorials for the students, later the content is further refined by the editorial team of the website, giving authentic material to the students.

## **Entertainment**

Entertainment websites showcase entertaining information for visitors. They are designed to be easy to navigate and frequently updated in order to keep users coming back for more information and they also use dynamic content, such as videos, podcasts and slideshows to be more engaging. Example:

* YouTube: <http://www.youtube.com> is an American video-sharing platform based in San Bruno, California. It allows users to upload, view, rate, favorites share, report, comment on videos, and subscribe to other users.
* Netflix: <http://www.netflix.com> is an American media-services provider and production company based in Los Gatos, California. That produces movies and Tv shows and stream them online on any smart screen.
* Soundcloud: <http://www.soundcloud.com> is a European online audio distribution platform and music sharing website, based in Berlin, Germany, that enables its users to upload, promote, and share audio.
* Spotify: <http://www.spotify.com> is an international media services provider, based Stockholm, Sweden. It provides an audio streaming platform.
* 123Movies: <http://ww7.123moviesfree.sc> was a network of file streaming websites based in Vietnam which allowed users to watch films for free.

## **Informational**

Informational website is to share specific, helpful information to a specific user/audience so that the reader learns something new or understands a topic better. They often contain how to do, tip and tricks, fix and repair, guidance, support information, directions, instructions. Example:

* Mint: <http://www.mint.com> is a free, web-based personal financial management service for the US and Canada. Its service includes track bank, credit card, investment, and loan balances and transactions, create budget and set financial goals through a single user interface.
* Polygon: <http://www.polygon.com> is an American video game website that publishes news, culture, reviews, and videos. It sought to distinguish itself from competitions by focusing on the stories of the people behind the games instead of the games themselves.
* FreshBooks: <http://www.freshbooks.com/> is an accounting software package developed and marketed by 2ndsite Inc. its products are geared mainly toward small to medium-sized businesses and offer cloud-based accounting application that send invoices to clients to bill for time and expertise.
* Good Guide: <http://www.goodguide.com> is an online web tool which enables consumers to retrieve evaluation of the heath, environmental, and social impacts of consumer products.
* TEDx: <http://www.ted.com> is an event organizer that help passionate individuals who seek to uncover new ideas and the latest research in their local areas and spark conversation in their communities.

## **News**

News website is an online newspaper that is the online version of a newspaper as a stand-alone publication or as the online version of a printed periodical.

* Al-Jazeera: <http://www.aljazeera.com> is a Qatari state-funded broadcaster in Doha, Qatar, owned by Al Jazeera Media Network. It is a major global news organization, with 80 bureaus around the world.
* Washington post: <http://www.washingtonpost.com> is a major American daily newspaper published in Washington, D.C.
* TRT world: <http://www.trtworld.com> is a Turkish state international news channel broadcast 24-hours per day in English based in Istanbul. It provides worldwide news and current affairs with a pronounced emphasis on news relating to Turkey and Europe.
* Google News: <http://news.google.com> is a news aggregator app developed by Google. It presents a continuous, customizable flow of articles organized from thousands of publishers and magazines.
* Fox News: <http://www.foxnews.com> is an America conservative cable television news channel. It is provided in 86 countries worldwide.

## **Personal**

A personal website is a group of web pages that someone creates about themselves. It basically contains things that are personal, it does not have to be about the creator and contain personal information but need to be personal. Example:

* Nia Shanks: <http://www.niashanks.com> is a personal website of Nia Shanks, who is a coach and writer. She shares health and fitness information more focused on women.
* Tim Harford: <http://timharford.com> is a personal website of Timothy Douglas Harford who is an English economist, broadcaster and journalist in Oxford. His writings reveal the economic ideas behind everyday experiences.
* Joshua McCartney: is a personal website of Josh McCartney a New York based, Northern England born Senior freelance art director. He showcases a broad spectrum of his abilities on design.
* Pascal van Lemert: <http://www.pascalvangemert.ni> is a personal website of Pascal Van Gemert who is an all-round web developer and senior programmer. He showcases his projects on web development.
* Ximena N. Larkin: <http://ximenalarkin.com> is a personal website of Ximena N. Larkin who is a communication specialist and writer based in Chicago. She works on creating and executing effective communication strategies.

## **Portal**

Poral website is a specially designed website that often serves as the single point of access for information. It helps in search navigation, personalization, notification and information integration, and also features like task management, collaboration, and business intelligence and application system. Example:

* AAIT Portal: <http://portal.aait.edu.et> is created to ensure that AAIT shall deliver its boarding and non-boarding students 24 hours accessible, gender sensitive, timely, standard and quality basic services.
* York university passport York: <http://passportyork.yorku.ca> is the central information source for 55,000 students and a convenient one-stop shop for both internal resources and external data. It includes personal course information, grades, students account information and more.
* Council of Europe portal: <http://www.coe.int> was created for the protection of human rights, democracy and the rule of law across the continent. The portal allows users to manage content across the councils’ different programs and improve internal communication between the programs.
* Grants.gov: <http://www.grants.gov> is to allow applicants for federal grants to apply for and manage grant funds online through a common website. It is unique in that it sends more than 1 million email notifications at the public’s request and receives more than 4 million-page views weekly.
* Britam financial advisement portal: <http://www.britam.com> is a leading diversified financial services group with a presence in seven different countries in Africa. It built a financial advisor portal, a customer service portal and a partner service portal on a single platform to be able to give a better service and empower both internal and external audiences.

## **Social Network**

Social network (media) websites are to make it very easy to share and connect with friends, family, co-workers, acquaintances and even strangers. They are used by businesses to build direct connections with their customers to feedback on their products and services. Example:

* Snapchat: <http://www.snapchat.com> is a multimedia messaging mobile app and service that allows users to send and receive “self-destructing” photos, videos, and message.
* Telegram: <http://web.telegram.org> is a cloud-based instant messaging and voice over IP service. Users can send message and exchange any type of files. Also provides end-to-end encryption for voice calls.
* Instagram: <http://www.instagram.com> is an American photo and video sharing social networking service owned by Facebook, Inc. It allows posts can be shared publicly or with pre-approved followers and browse other users’ content by tags and locations, and view trending content.
* WhatsApp: <http://wahtsapp.com> is a freeware, cross-platform messaging and voice over IP service owned by Facebook, Inc. It allows users to send text messages and voice messages, make voice and video calls, and share images, documents, user locations, and other media.
* Twitter: <http://twitter.com> is an American microblogging and social networking service on which users post and interact with messages knowns as “Tweets”. Registered users can post, like, and retweet tweets, but unregistered users can only read them.

## **Wiki**

Wiki website is a knowledge base website on which users are allowed to add and update content on the site from their browser. They are created mainly by a collaborative effort of the site visitors. In other words, wiki website is a community-edited website that acts as a knowledge base for a particular subject matter. Example:

* Wiki-How: <http://www.wikihow.com/Main-page> is an online wiki-style community of an extensive database of how-to guides. The website aims to create the world’s most helpful how-to instructions to enable everyone in the world to learn how to do anything.
* AboutUs.com: <http://www.aboutus.com> is a wiki Internet domain directory. It listed websites along with information about their content. It allows Internet users to add entries or modify information.
* Cata-wiki: <http://www.catawiki.com> is an online auction platform for buying and selling special items and collectibles. It hosts weekly online auctions, in various categories such as vintage comic books, model trains, coins, watches, art, jewelry and classic cars.
* nLab: <http://ncatlab.org> is a wiki for research-level notes, expositions and collaborative work, including original research, in mathematics, physics, and philosophy, with a focus on methods from category theory and homotropy theory.
* Answers.com: <http://www.answers.com> is an Internet-based knowledge exchange. It has tens of millions of user-generated questions and answers, and provides a website where registered users can interact with one another.

# **Guidelines for Evaluating a Website’s Value**

It is very important to evaluate the quality of web pages. There six criteria that should be applied when evaluation any web site given in Table 1. For each criterion, there are several questions to be asked. The more questions that can be answered “yes”, the more likely the website is qualified.

## **Accuracy**

* Are the sources for factual information clearly listed so they can be verified in another source?
* Is the information free of grammatical, spelling, and other typographical errors?

## **Authority**

* Is it clear who is responsible for the contents of the pages?
* Is there a way of verifying the legitimacy of the owner?
* Is the author qualified to write on the subject?
* Is the information from sources known to be reliable?

## **Coverage**

* Are the topics properly addressed?
* Is the content coherent with other proven work on the subject?
* Is the target audience identified?

## **Currency**

* Is the date of release mentioned?
* Is the date of update mentioned?

## **Objectivity**

* Is the informational content clearly differentiated from any advertisings?
* Is the goals and purpose of the sponsoring part described?
* Is the content biased?

Examples of two websites being evaluated by the above criteria:

**AboutUs.com**

It is a comprehensive website that provides detailed and well explained guides so every visitor who use it can tackle problems and complete projects with confidence and more knowledge about the subject. To omit any confusion the content is written with almost no grammatic, spelling, and typographic errors. The articles and solutions provided relate to the problem they aim to address. This website provides viewers a brief explanation of its working so that they will know what they are looking at and how it got on the website. It keeps all of this content UpToDate and. It provides all the necessary contact information. Every link refers to its own site.

**E! News**

The website present entertainment news, celebrities, celeb news, and celebrity gossip. It keeps its content free from any biased topics that could affect a particular group in a negative way. The founders and the developers together with all the team members are stated clearly and contact information is also provided. The topics are explained to certain extent. This website is more of a comprehensive one including almost all types of information. The majority of the links refer to its sites plus it doesn’t provide information without a relevant outside link. Provides up-to date and trend related news and entertainment. It doesn’t have any reference list. It sure does seem to have no exaggerated content which any viewer would believe.

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