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**ADDIS ABABA INSTITUTE OF TECHNOLOGY**

**CENTER OF INFORMATION TECHNOLOGY AND SCIENTIFIC COMPUTING**

DEPARTMENT OF SOFTWARE ENGINEERING

Website review

Assignment I

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**Table of Contents**

[1. List of tables 4](#_Toc34377035)

[1. History of the Internet 1](#_Toc34377036)

[2. Five Most Popular Websites looks in different years 3](#_Toc34377037)

[2.1 www.youtube.com 3](#_Toc34377038)

[2.2 www.bbc.com 3](#_Toc34377039)

[2.3 www.wikipedia.org 3](#_Toc34377040)

[2.4 www.reddit.com 4](#_Toc34377041)

[2.5 www.facebook.com 4](#_Toc34377042)

[3. List of Website on each 12 categories 4](#_Toc34377043)

[3.1 Portals 4](#_Toc34377044)

[3.2 News 4](#_Toc34377045)

[3.3 Informational 5](#_Toc34377046)

[3.4 Business/Marketing 5](#_Toc34377047)

[3.5 Educational 5](#_Toc34377048)

[3.6 Entertainment 5](#_Toc34377049)

[3.7 Advocacy 6](#_Toc34377050)

[3.8 Blog 6](#_Toc34377051)

[3.9 Wiki 6](#_Toc34377052)

[3.10 Social Network 6](#_Toc34377053)

[3.11 Content Aggregator 7](#_Toc34377054)

[3.12 Personal 7](#_Toc34377055)

[4. Guidelines to evaluate websites 8](#_Toc34377056)

[4.1 Perceivable 8](#_Toc34377057)

[4.1.1 Guideline 1.1 Text Alternatives 8](#_Toc34377058)

[4.1.2 Guideline 1.2 Time-based Media 8](#_Toc34377059)

[4.1.3 Guideline 1.3 Adaptable 8](#_Toc34377060)

[4.1.4 Guideline 1.4 Distinguishable 8](#_Toc34377061)

[4.2 Operable 8](#_Toc34377062)

[4.2.1 Guideline 2.1 Keyboard Accessible 8](#_Toc34377063)

[4.2.2 Guideline 2.2 Enough Time 9](#_Toc34377064)

[4.2.3 Guideline 2.3 Seizures 9](#_Toc34377065)

[4.2.4 Guideline 2.4 Navigable 9](#_Toc34377066)

[4.3 Understandable 9](#_Toc34377067)

[4.3.1 Guideline 3.1 Readable 9](#_Toc34377068)

[4.3.2 Guideline 3.2 Predictable 9](#_Toc34377069)

[4.3.3 Guideline 3.3 Input Assistance 9](#_Toc34377070)

[4.4 Robust 9](#_Toc34377071)

[4.4.1 Guideline 4.1 Compatible 9](#_Toc34377072)

[5. Website reviews based on WCAG 2.0 guideline 10](#_Toc34377073)

[5.1 www.youtube.com 10](#_Toc34377074)

[5.2 www.reddit.com 11](#_Toc34377075)

[6. Reference 12](#_Toc34377076)

# List of tables

[**Table 1: www.youtube.com WCAG 2.0 guideline review** 9](#_Toc34367492)

[**Table 2: www.reddit.com WCAG 2.0 guideline review** 10](#_Toc34367493)

# History of the Internet

The first recorded description social interaction through networking was a series of memos written by J.C.R Licklider of MIT in August 1962. The first paper on packet switching theory was published in July 1961. After Kleinrock convinced Roberts of the theoretical feasibility of communications using packets, Roberts with Thomas Merril made the other key step in computer networking. In 1965, they connected the TX-2 computer in Mass to the Q-32 in California with a low speed dial-up telephone line creating the first wide-area computer network ever built. In 1966, Roberts went to DARPA (Defense Advanced Research Projects Agency) and put together the plan for ARPANET and published it in 1967. When he presented the paper, there was also another paper on a packet network concept by Donald Davies and Roger Scantlebury of NPL (National Physical Library). Later, Scantlebury told Robert of another paper on packet switching networks for secure voice in the military by the Rand group. The word packet was adapted from the work at NPL.

Then, Roberts and the DARPA funded community refined the overall structure and specifications for the ARPANET and BBN (Bolt Beranek and Newman) worked on the IMP’s (Interface Message Processors) with Bob Kahn playing a major role in the overall ARPANET architectural design. The first node on the ARPANET was Network Measurement Center at UCLA. While, the second node was provided by Standford Research Institute. By the end of 1969, four host computers were connected together into the initial ARPANET. In December 1970, the Network Working Group working under S. Crocker finished the initial ARPANET Host-to-Host protocol called the Network Control Protocol (NCP) which enabled network users to develop applications. In October 1972, the first public demonstration of this new network technology was done. In March Ray Tomlinson at BBN wrote the basic email message send and read software. After Roberts expanded its utility by writing the first email program to list, selectively read, file, forward, and respond to messages, email took off as the largest network application for over a decade.

But, NCP had its drawbacks. It didn’t have the ability to address networks further downstream than a destination IMP on the ARPANET. It trusted ARPANET to provide end-to-end reliability, no error packet loss tolerance. Thus, Kahn decided to develop a new version of the protocol which could meet the needs of an open-architecture network environment, where the individual networks may be separately designed and developed and each many have its own unique interface. This protocol would be called the Transmission Control Protocol/Internet Protocol (TCP/IP).

Four ground rules were critical to Kahn’s early thinking:

* Each distinct network would have to stand on its own and no internal changes could be required to any such network to connect it to the Internet.
* Communications would be on a best effort basis. If a packet didn't make it to the final destination, it would shortly be retransmitted from the source.
* Black boxes would be used to connect the networks; these would later be called gateways and routers. There would be no information retained by the gateways about the individual flows of packets passing through them, thereby keeping them simple and avoiding complicated adaptation and recovery from various failure modes.
* There would be no global control at the operations level.

After Kahn began work, he would later ask Vint Cerf to work with him on the detailed design of the protocol. Together they would write a paper on one protocol, TCP which provided all the transport and forwarding services in the Internet. However, the model worked fin for file transfer and remote login applications, but some applications failed like voice applications. In some cases, packet losses should not be corrected by TCP. These led to reorganization of the original TCP into two protocols, the simple IP and the separate TCP. For those applications that did not want the service of TCP, an alternative called UDP (User Datagram Protocol) was added in order to provide direct access to the basic service of IP.

Following, there has been the formation of organization, research teams and many benefactors of the Internet. This recent development and widespread of the World Wide Web brought with it new communities. A new coordination organization was formed, the World Wide Web Consortium (W3C). W3C has taken the responsibility for evolving the various protocols and standards associated with the Web. Internet started to get commercialized which led to the improvement of TCP/IP and the internet products.

“In the beginning of the Internet, the emphasis was on defining and implementing protocols that achieved interoperation. As the network grew larger, it became clear that the sometime ad hoc procedures used to manage the network would not scale. Manual configuration of tables was replaced by distributed automated algorithms, and better tools were devised to isolate faults. In 1987 it became clear that a protocol was needed that would permit the elements of the network, such as the routers, to be remotely managed in a uniform way. Several protocols for this purpose were proposed, including Simple Network Management Protocol or SNMP (designed, as its name would suggest, for simplicity, and derived from an earlier proposal called SGMP) , HEMS (a more complex design from the research community) and CMIP (from the OSI community). A series of meeting led to the decisions that HEMS would be withdrawn as a candidate for standardization, in order to help resolve the contention, but that work on both SNMP and CMIP would go forward, with the idea that the SNMP could be a more near-term solution and CMIP a longer-term approach. The market could choose the one it found more suitable. SNMP is now used almost universally for network based management.” The internet is now almost a “commodity” service and the latest focus has shifted on the use of this global information infrastructure for support of other commercial services.” [[1]](#endnote-1)

# Five Most Popular Websites looks in different years

## [www.youtube.com](http://www.youtube.com)

Back in 2005, [www.youtube.com](http://www.youtube.com) looked like it was designed for smaller screen. To play videos, you were required to install Adobe Flash Player. All buttons were generic and not styled. Navigation looked like a browser tab. Layout was one section.

After 5 years, in 2010, the styling and the look changed to somewhat pleasing interface. Layout changed from a single section page to, two column pages. And there were custom categories now like favorites, most watched, active channels and more. It was still behind on adapting to different screen size.

A decade later from its creation, in 2015, [www.youtube.com](http://www.youtube.com) had a responsive and pleasing look with consistent color and good contrast. GUI components were custom made and welcoming to use. Layout was divided into three sections. Videos this time didn’t require adobe flash player to be installed.

## [www.bbc.com](http://www.bbc.com)

In 2000, ww.bbc.com looked like it was designed for a very small screen. Its layout was divided into three sections with main content in the middle and taking more space than the side sections. All UI components were default buttons provided by the browser. Navigation was on the left side listed downward.

In 2005, there isn’t much difference except the page is wider and color theme changed from purple to light blue.

In 2011, BBC website has adapted a new color theme, and now had more consistent color contrast and look. This time it was red. It had a mobile view feature to click though it wasn’t automatically responsive.

In 2016, BBC color theme has changed again to black and is now more content full with many branching points for views to explore. Each category has its own color theme, like for sport yellow, while the homepage is black. It hosted videos and galleries this time. BBC continues with this color theme till the year of this document draft.

## [www.wikipedia.org](http://www.wikipedia.org)

In 2001-2005, Wikipedia was a plain html document with no styling. It was list of lists with links that leads to another page with just paragraphs and more links. It wasn’t attractive but useful.

In 2010, Wikipedia homepage had a log in the center and featured many languages to browse with. It was pleasing and it had a search feature this time with lots of pictures. In the further years, they added more category and citations. Each link had a small popup when hover at to give overview of the link.

## [www.reddit.com](http://www.reddit.com)

In 2005, the website was scarcely styled and it featured website links. It had custom made buttons for up and down vote and login card with username and password field. Theme color was blue with a reddit logo.

In 2010, the website grew in providing different categories and the look improved with increased font and fairly clickable buttons. Its layout was sectioned into two. They had threads implemented each nested under its parent and indented visually to reflect sub thread.

In 2015, the website seems to be consistent with its previous year’s theme color and layout. It was responsive in different screen sizes. It featured a search feature. It listed content based on the vote count like previous years. It offered email subscription. Accounts this time had their own avatar with the user’s picture.

## [www.facebook.com](http://www.facebook.com)

In 2006, Facebook had fancy looks with custom made buttons and blue color theme. It offered registration for college students and high school students. It had a single page layout with simple form for registration.

In 2011, Facebook moved its registration and login place to one page. It became a single page web to enter and use Facebook. It continued with the blue theme. It featured different languages for users.

In 2016, GUI components were easy to spot and easy to click. While the looks stayed the same with only few touches, the page were welcoming to use. Form fields were visible and interactive to use.

# List of Website on each 12 categories

## Portals

* <https://www.australia.gov.au/>
  + a government portal for the Australian
* <https://www.india.gov.in/>
  + a government portal for the Indian
* <https://asistdl.onlinelibrary.wiley.com/>
  + online library to borrow digital books from
* <https://www.commonapp.org/>
  + student portal to apply for college
* <https://academy.oracle.com/en/oa-student.html>
  + oracle academy portal for courses provided by oracle

## News

* <https://www.foxnews.com/>
  + News feed by foxnews
* <https://www.nbcnews.com/>
  + News feed by nbcnews
* <https://www.theguardian.com/world>
  + News feed by the guardian
* <https://www.africanews.com/news/>
  + News feed by Africa news
* <https://www.aljazeera.com/>
  + News feed by aljazeera

## Informational

* <http://who.int/>
  + World health organization that provides information regarding world health
* <http://www.w3.org/>
  + World wide web consortium official page about web standards
* <http://www.nobelprize.org/>
  + Site that provides information about the latest research winners of noble prize
* <https://techcrunch.com/>
  + Site that updates readers with new tech technologies
* <https://howstuffworks.com/>
  + Site that gives reader information on how things are made

## Business/Marketing

* <https://www.ebay.com/>
  + Online market place to sale and buy
* <https://www.amazon.com/>
  + Online market place to sale and buy
* <https://www.bestbuy.com/>
  + Online market place to sale and buy
* <https://www.walmart.com/>
  + Online market place to sale and buy
* <https://www.target.com/>
  + Online market place to sale and buy

## Educational

* <https://www.edx.org/>
  + place to take online course (MOOC)
* <https://www.coursera.org/>
  + place to take online course (MOOC)
* <https://alison.com/en>
  + place to take online course (MOOC)
* <https://ocw.mit.edu/index.htm>
  + courses by MIT
* <https://www.khanacademy.org/>
  + Online class for high school students

## Entertainment

* <http://netflix.com/>
  + Online movie streaming
* <https://www.hulu.com/>
  + Online movie streaming
* <https://www.spotify.com/>
  + Online and offline music streaming
* <https://www.youtube.com/>
  + Online video streaming
* <https://www.tiktok.com/en/>
  + Online video streaming

## Advocacy

* <http://www.worldadvocacy.com/>
  + is the world's premier list of advocacy groups?
* <http://www.greenpeace.org/>
  + environment protecting advocacy group
* <http://www.animalactivism.org/>
  + animal rights advocacy group
* <http://www.panda.org/>
  + protecting the ecosystem advocacy group
* <http://nature.org/>
  + environment protecting advocacy group

## Blog

* <https://www.paulosyibelo.com/>
  + Paulos Yibelo’s blog posts about security
* <https://me.getify.com/>
  + Kyle Simpson’s blog posts about web
* <https://www.crockford.com/blog.html>
  + Douglous Crokford’s blog post about web
* <https://inmyencounters.wordpress.com/>
  + Abenezer Sleshi’s blog post about anything
* <https://powerseductionandwar.com/blog/>
  + Robert Greene’s blog post on Human Nature

## Wiki

* [www.aboutus.com](http://www.aboutus.com)
  + a place to look about place, websites, business or anything
* <https://www.encyclopediaofmath.org/>
  + topics and descriptions on mathematics
* <https://www.geonames.org/>
  + search by geography
* <https://www.nukapedia.com/>
  + information repository to promote sharing and to facilitate education of new professionals.
* <https://rosettacode.org/>
  + it is a code repository solving a problem with as many language as possible

## Social Network

* <https://facebook.com/>
  + A social media that connects people through chat messaging and posts
* <https://instagram.com/>
  + A social media that connets people through picture posts
* <https://telegram.org/>
  + a social media that connects people via chat messaging with additional features like channels and groups
* <https://twitter.org/>
  + a social media that connects people via a post that is limited in character and re-posting someone else’s post
* <https://www.linkedin.com/>
  + a social media that connects people using their resume

## Content Aggregator

* <https://alltop.com/>
  + aggregates all of the top news and information in real time
* <http://popurls.com/>
  + aggregates all kinds of feeds from different sites
* <http://theweblist.net/>
  + news and other feed aggregator
* <https://news.google.com/>
  + aggregates all of the top news and information in real time
* <https://news.ycombinator.com/>
  + aggregates all of the top news and information in real time

## Personal

* <http://vizualize.me/sandrakreis>
  + Sandra Kreis personal site to share about herself
* <http://www.allisonstadd.com/>
  + Alisons Tadd personal site to share about herself
* <http://joshuamccartney.com/>
  + Joshoua’s personal site to share about himself
* <http://www.stephaniepal.com/>
  + Stephan’s personal site to share about himself
* <http://ellensriley.com/>
  + Ellen’s personal site to share about herself

# Guidelines to evaluate websites

There are many criteria to evaluate a website. For example, search engines like google have their own standards to rank different website while indexing. Beside these, the world wide web consortium (w3c) has 4 principles each with their own guideline for websites to follow. The document will explore these 4 principles with their guidelines. The four principles are:

* Perceivable
* Operable
* Understandable
* Robust

Below are the guidelines extracted from w3.org website on WCAG 2.0 guidelines. For further exploration, the author of this document suggests a visit to the site to have a comprehensive understanding.

## Perceivable

Information and user interface components must be presentable to users in ways they can perceive.

### Guideline 1.1 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.

### Guideline 1.2 Time-based Media

* Provide alternatives for time-based media.

### Guideline 1.3 Adaptable

* Create content that can be presented in different ways (for example simpler layout) without losing information or structure.

### Guideline 1.4 Distinguishable

* Make it easier for users to see and hear content including separating foreground from background.

## Operable

User interface components and navigation must be operable.

### Guideline 2.1 Keyboard Accessible

* Make all functionality available from a keyboard.

### Guideline 2.2 Enough Time

* Provide users enough time to read and use content.

### Guideline 2.3 Seizures

* Do not design content in a way that is known to cause seizures.

### Guideline 2.4 Navigable

* Provide ways to help users navigate, find content, and determine where they are.

## Understandable

Information and the operation of user interface must be understandable.

### Guideline 3.1 Readable

* Make text content readable and understandable.

### Guideline 3.2 Predictable

* Make Web pages appear and operate in predictable ways.

### Guideline 3.3 Input Assistance

* Help users avoid and correct mistakes.

## Robust

Content must be robust enough that it can be interpreted reliably by a wide variety of user agents, including assistive technologies.

### Guideline 4.1 Compatible

* Maximize compatibility with current and future user agents, including assistive technologies.

# Website reviews based on WCAG 2.0 guideline

## [www.youtube.com](http://www.youtube.com)

**Table 1: www.youtube.com WCAG 2.0 guideline review**

|  |  |  |
| --- | --- | --- |
| **Principles** | **Good** | **Bad** |
| Perceivable | * Has caption for video content * Buttons have words and image * Has Media description * Good presentation that depicts Info and relationships * Good color choice and contrast * Incredible resize support without content loss | * Doesn’t have full text alternatives for videos * Too many things in one page |
| Operable | * Entirely functional with only keyboard and no keyboard traps * Gives enough time for user to read a text * User can continue without data loss after authenticating * No flashes that are more than 3 flashes per second * Navigable with proper title, multiple ways to locate webpage, proper focus order | * Bad at interruption as user cannot postponed * Doesn’t offer jumps to content when appropriate |
| Understandable | * Language of page is programmatically determined * Most things are very predictable * Good input assistance when filling a form | * No abbreviation provided * Reading level is sometimes higher than secondary education level |
| Robust | * Can be parsed, no bad html tags * For elements have proper name, role and value |  |

## [www.reddit.com](http://www.youtube.com)

**Table 2: www.reddit.com WCAG 2.0 guideline review**

|  |  |  |
| --- | --- | --- |
| **Principles** | **Good** | **Bad** |
| Perceivable | * Meaningful sequence, everything is sequenced based on vote * Very good color choice with good contrast * Can resize without losing content | * non-text document usually doesn’t have a text replacement * usually there is no caption |
| Operable | * Very easy to use via keyboard * Everything is accessible from keyboard * Gives enough time for users to read text * No flashes that are more than 3 flashes per second | * Sometimes it is hard to get back to your first feed after re-authentication |
| Understandable | * Predictable on focus, on input, on navigation, on change request and consistent identification * Has a good input assistance * Has error prevention assistance | * Language is not determined programmatically rather just one default language English * No visible place to look for help |
| Robust | * Can be parsed * Have appropriate name, role, value |  |

# Reference

1. # A Brief History of the Internet, <https://arxiv.org/html/cs/9901011?>, Feb 28, 2020.

   # World Wide Web Consortium, <https://www.w3.org/WAI/WCAG21/quickref/>, March 5, 2020.

   [↑](#endnote-ref-1)