The World Wide Web

By Mehakpreet Kaur

Mehakpreet Kaur

IT 101

Prof. Richard Wolodkwicz

4th November 2019

World Wide Web

The World Wide Web (WWW), also known as The Web, is the most popular information system used by people around the world as a means of finding information. According to w3.org, World Wide Web is "the universe of network-accessible information, and the embodiment of all human knowledge". It connects various sources and documents through hypertexts and hyperlinks and every web resource has its own URL (Uniform Resource Locator) through which it is identified. The World Wide Web is a resource that is available and free to all users by a software application called "web browser".

The World Wide Web initially started as a networked information project at the European Organization for Nuclear Research (CERN) in Switzerland, as in invention by an English Contractor, Tim Berners-Lee. It started with the building of a personal database of people and software models, called ENQUIRE, which used hypertext as a way of linking different pages. This was followed by a proposal filed by Berners-Lee for "a large hypertext database with typed links." For which he was encourages by his boss Mike Sendall who offered to let Berner-Lee implement his system on a newly acquired NeXT workstation. By 1990, Berners-Lee had built all tools required, like HTTP-the application protocol for distributed, collaborative, hypermedia information systems, HTML-the language used to build the web sites and Web Browser-the application used to access the information of the WWW. According to

CERN, to prevent the computer, NeXT, from being accidentally switched off, it had a hand-written label in red ink: "This machine is a server. DO NOT POWER IT DOWN!!". However, one problem that arose was that the Web could now only run on NeXT and nothing else. This problem was solved when Nicola Pellow, one of the nineteen members of the WWW project at CERN created a simple text browser called “Line Mode Browser” which could run on almost any computer. IN order to encourage the use of the Web at CERN itself, Berners-Lee put the telephone directory of the research facility on the Web in order to ease the work of people using telephone logs to look up phone numbers.

However, even though The Web was born and had its first webpage opened at CERN, it had to “move out” because of unrest in the Computing and Network department which accused Berners-Lee of misallocating CERN’s IT resources as exchange of information was not their core activity. Thus, Berners-Lee, left for MIT (Massachusetts Institute of Technology) where he further developed the HTTP and found the World Wide Web Consortium (W3C) - an international community devoted to developing open web standards.

Many people have The Web confused with The Internet and believe the two to be the same, however, they’re not. The Internet is the infrastructure, via which The Web allows access to collected information. In more professional terms, The Internet is the “global system of interconnected computer networks” while The Web is just a service accessed through that network. AT some level, some even consider The Internet to be the hardware and The Web to be the software.

The Web resources are accessed through, as mentioned, HTTPS and Hyperlinks which assist the user to move from one point to the other. A web page consists of various parts, the most important one being its URL-Uniform Resource Locator-which acts as the web address of

each web page. It is what makes each web page stand out from the rest of them. A web page in itself is of two types, a Static page (displays the same information for all users, from all contexts) and a Dynamic page (construction is controlled by an application server processing server-side scripts). Second comes the content of the web page, which is typed into it through a markup language called HTML. The web browser analyzes the HTML and interprets it. Many web pages use HTML to reference the URLs of other resources such as images, other embedded media, scripts that affect page behavior, and Cascading Style Sheets that affect page layout. With Cascading Style Sheets (CSS) and JavaScript, it forms a triad of cornerstone technologies for the World Wide Web.

These aforementioned web pages run on web browsers of different kinds. A web browser is a software application for accessing information on the World Wide Web. It's not the same thing as a search engine, though. For a user, a search engine is just a website, such as Google Search, or Bing, that stores searchable data about other websites however, a web browser is an application or program on your computer or your device that allows you to browse websites on the internet while a search engine is a website that allows you to search for content on the internet.

With the increased involvement of users with The Web, there is more need of Web Governance than ever. Web Governance is a system for managing an online presence in a controlled & orderly way. This delivers operational certainty and stability. Any system of Web Governance is composed of four categories of activity. These categories are- Leadership, Development, Maintenance, Infrastructure. However, web management and governance are not ends in themselves. They are means to an end. They simply put order and control on essential activities so that you get on with more important things - like creating great content.

The Web, while becoming more and more liberal and accessible, also needs to protect user interest. This brings in The Deep Web. The Deep Web is, unlike common opinion, different from The Surface Web. Computer-scientist Michael K. Bergman is credited with coining the term “deep web” in 2001 as a search-indexing term. Deep Web was also a part of the web at its conception, like the surface web, and is literally the opposite of “surface” web. It is anything that does not show up on the web browser when someone searches for a website. It is anything a search engine cannot find. The Deep Web, like surface Web is accessible to the users, however it requires a password encrypted browser or a specific login to be accessed.

A part of the Deep Web is The Dark Web which describes the wider breadth of content that does not appear through regular internet browsing activities, unlike the other two. It is the encrypted online content that is not indexed by conventional search engines.

It was initially created by the US Military to allow spies and agencies to anonymously send and receive messages. They called it “The Onion Router”, which was later coined the name Tor. It is now accessible to anyone with the right tools as it eases the work of the military. The strategy behind it is to make it harder to find the anonymous messages sent by the military if everyone who has access to it is sending anonymous messages themselves. It would thus make it harder for counterintelligence to discover their messages.

However, today The Dark Web has become an online marketplace for illegal goods. Many of the innovations from legitimate online sellers like Amazon and eBay, like customer reviews and seller ratings, have been adopted to facilitate the sales of black-market items. It attracts users who seek anonymity when conducting business. Intentions can be noble, such as with journalists seeking to interview citizens of repressive countries, where communications are

monitored. Contrarily, the anonymity of the dark web attracts criminal actors like drug-dealers and hackers.

Commercial darknet markets, which mediate transactions for illegal drugs and other goods, attracted significant media coverage starting with the popularity of the Silk Road . As a response to the increasing crime rate through the dark web, governments and international institutions are attempting to directly regulate the cryptocurrencies that are fueling dark web marketplaces. In June 2019, for example, the "Financial Action Task Force" issued guidance that urges companies processing cryptocurrency transfers to identify both the sender and receiver of fund transfers.

The dark web and the deep web are often erroneously used interchangeably, however, as mentioned earlier, the deep web includes all the pages that don't pop up when you run a web search (this covers everything requiring a login, such as personal email, online banking) while the dark web relies on encryption to keep indisputably nefarious content anonymous. This is a common lack of knowledge among most users.

Similarly, a lot of the population isn't aware of Web 2.0 - the term given to describe a second generation of the World Wide Web that is focused on the ability for people to collaborate and share information online. The major change is the transition from static HTML Web pages to a more dynamic Web that is more organized and is based on serving Web applications to users. It pays more emphasis on social networking, content generated by users, and cloud computing from that which came before. Web 2.0 is characterized by greater user interactivity and collaboration, more pervasive network connectivity and enhanced communication channels.

One of the major differences between Web 2.0 and the traditional World Wide Web is greater collaboration among Internet users, content providers and enterprises. Originally, data was posted on Web sites, and users simply viewed or downloaded the content. Increasingly, it has become more user friendly, wherein the users have more input into the nature and scope of Web content and in some cases exert real-time control over it.

Today, after more than 30 years of a free and accessible world wide web to all, it might seem almost normal to not view it as a commodity that one purchases or a service that is only accessible to few. However, when The Web initially came into being, there was a major debate whether to leave it as a commodity that one purchases from the company or even CERN, (whoever the owner might be in the then future) or to let it be free to the masses. Robert Callibu, Tim Berners-Lee's first collaborator on the World Wide Web project at CERN, mentioned how and why they came to the conclusion of The Web being free, *"*It took some time to decide what to do, because the arguments were complex and it was not clear what would happen to WWW in either case. Finally, as we were more interested in the excitement of making something useful than in getting rich, we decided to use the traditional CERN model for technology spin-off: make it freely available. The concept of Open Source licensing still being in its infancy, we opted to put the WWW software in the public domain, relinquishing CERN's intellectual property rights in it*"*. Tim Berners-Lee even said, "Had the technology been proprietary, and in my total control, it would probably not have taken off. You can't propose that something be a universal space and at the same time keep control of it."

In the time today, even the thought of purchasing rights to access the surface web seems insane. It might even have mind wander to what might have been had The Web not been given as a free service to all. Tim Berners-Lee's invention took the world by a storm. It led to thousands of new

innovations, ranging from Social Media to Online Marketing. We can say the word and the web has some sort of a service related to it on it. Life would never be the same again.

Works Cited

- https://en.wikipedia.org/wiki/World_Wide_Web
- https://home.cern/science/computing/birth-web/short-history-web
- https://home.cern/science/computing/birth-web
- https://www.promptcloud.com/blog/surface-web-deep-web-dark-web-crawling/
- http://www.differencebetween.net/technology/internet/difference-between-web-1-0-and-web-2-0/