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The Work and Impact of Timothy Berners-Lee

INTRODUCTION

Sir Timothy Berners-Lee is an English computer scientist who is generally credited as the inventor of the World Wide Web.

Prior to 1989, Transmission Control Protocol/Internet Protocol (TCP/IP) and Domain Name System (DNS) were already being used for emails. The idea of hypertext systems were also in use, however their use was confined to the one computer.

Timothy Berners-Lee used what he already knew about previously figured out systems and connected them together in order to create the World Wide Web. (1)

THE EARLY LIFE OF TIM BERNERS-LEE

Sir Timothy Berners-Lee was born in London on the 8th June 1955 to parents Conway Berners-Lee and Mary Lee Woods. His parents were both computer programmers who worked in a team that developed the Ferranti Mark 1, the world's first commercial stored program electronic computer. (3)

Berners-Lee attended Sheen Mount Primary School and then went on to London's Emanuel Grammar School from 1969 to 1973.

As a child, he was extremely interested in electronics and developed a passion for trains and the workings of railways.

Computing came naturally to Berners-Lee, having grown up surrounded by computer scientist parents, and as a child, would tinker with his own model railway. (1)

From 1973 to 1976, Berners-Lee studied at The Queen's College Oxford, where he received a first-class bachelor of arts degree in physics. (2)

THE WORK OF TIM BERNERS-LEE

After graduating from Oxford in 1976, Berners-Lee worked as an engineer at the telecommunications company Plessey in Dorset where he helped create type-setting software for printers. While there, he also worked on distributed transaction systems, message relay and bar code technology.

Berners-Lee then went on to spend a year and a half as an independent consultant, which included a six month stint at CERN, the particle physics laboratory in Geneva.

While at CERN between June to December 1980, he developed a program, Enquire, based on the concept of hypertext, to facilitate sharing and updating information among researches. Berners-Lee wrote this first program for his own private use to store information using random associations. This program was never published, but it formed the conceptual basis for the future development of the World Wide Web.

After leaving CERN, Berners-Lee worked for Image Computer Systems Ltd. in Dorset for three years where he was responsible for the company's technical design. Working here included real time control firmware, graphics and communications software and a generic macro language.

In 1984, he returned to CERN to work on the design of the laboratory's computer network, developing procedures that allowed multiple computers to communicate with one another and researchers to control remote machines. Among other things, he worked on FASTBUS system software and designed a heterogeneous remote procedure call system. (5)

THE WORLD WIDE WEB

In 1989, Berners-Lee drew up a proposal for creating a global hypertext document system. His goal was to provide researchers with the ability to share results without having to constantly exchange emails. Using similar ideas underlying his previously developed Enquire system, he designed and built the first web server (the central repository for the files to be shared) and the first web client or 'browser'. (1)

The first website was put online on the 6th August 1991 for the first time. The first ever web address, http://info.cern.ch/hypertext/WWW/TheProject.html, was an informational web page on which visitors could learn more about hypertext, details for creating their own web page and an explanation on how to search the web for information.

In 1994, Berners-Lee founded the World Wide Web Consortium (W3C) at the then, Laboratory for Computer Science (LCS), which merged with the Artificial Intelligence Lab in 2003 to become the Computer Science and Artificial Intelligence Laboratory (CSAIL) at the Massachusetts Institute of Technology (MIT). The organisation comprises companies that develop specifications, guidelines, software and tools to lead the web to its full potential. Berners-Lee made his idea available freely, with no patent and no royalties due. Based on this, W3C decided its standards should also be based on royalty-free technology, so that they can easily be adopted by anyone. (5)

POST WORLD WIDE WEB

In 1999, Berners-Lee became the first holder of the 3Com Founders chair at the Laboratory for Computer Science.

In December 2004, he was named a professor in the Computer Science Department at the University of Southampton.

In June 2009, then-British Prime Minister Gordon Brown announced Berners-Lee would work with the UK government to help make data more open and accessible on the web. Berners-Lee and Professor Nigel Shadbolt are the two key figures behind data.gov.uk, a UK government project to open up almost all data acquired for official purposes for free re-use.

AFFORDABLE INTERNET AND NET NEUTRALITY

In November 2009, Berners-Lee launched the World Wide Web Foundation to fund and coordinate efforts to further the potential of the web to benefit humanity by acting as a medium for positive change. (1)

In October 2013, the World Wide Web Foundation launched the Alliance for Affordable Internet (A4AI) which is a global coalition that aims to make the internet more affordable to people around the world. Major members of the coalition include Google, USAID, Facebook, Cisco, Intel, Microsoft, UN Women and many others from the public, private and civil society sectors. The A4AI seeks to broaden internet access in the developing world, where only 31% of people are currently online. Berners-Lee's aim is to decrease internet prices so that they fall below the UN Broadband Commission's worldwide target of 5% of monthly income. (6)

Berners-Lee is one of the pioneer voices in favour of net-neutrality – the principal that Internet service providers treat all data on the internet equally, and not discriminate or charge differently by user, content, website, platform, application, or method of communication. He has expressed the views that connectivity should be supplied on a 'no strings attached' basis and advocates the idea that net-neutrality forms the building blocks of human rights. He participated in an open letter to the US Federal Communications Commission to cancel a vote on the 14th December 2017 to uphold net-neutrality. (4)

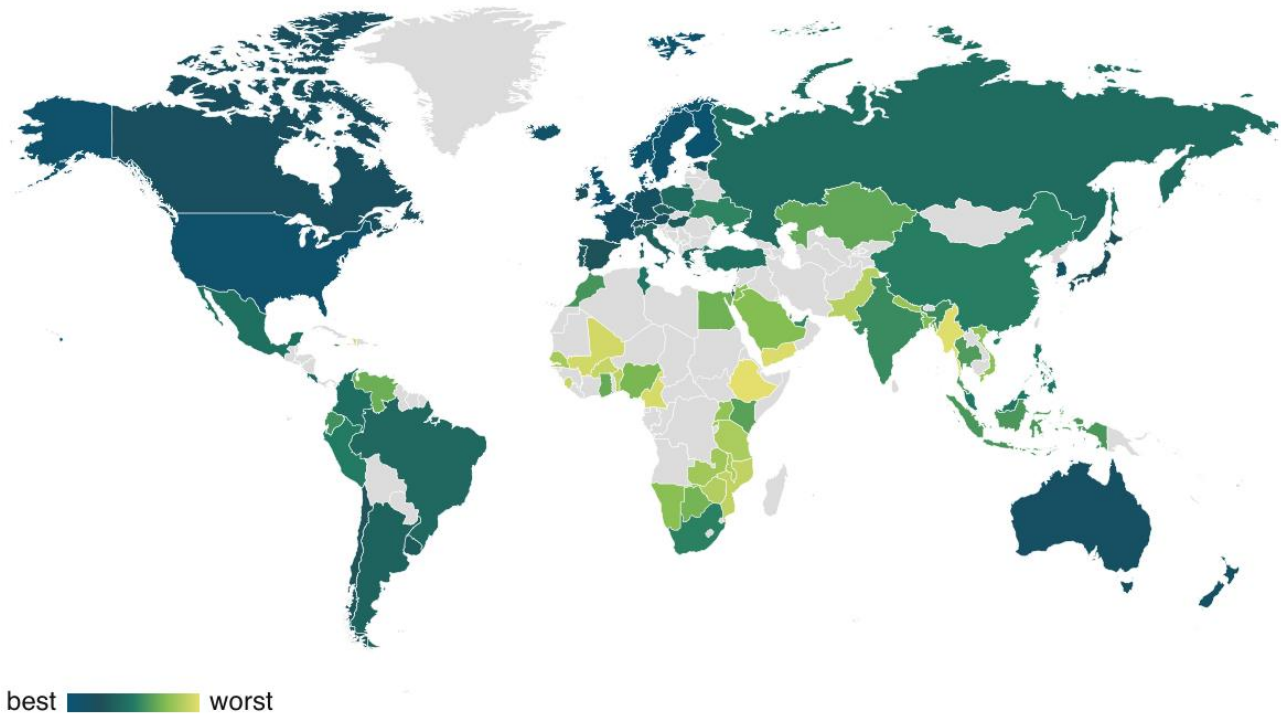
On the 30th September 2018, Berners-Lee announced a new decentralised web project made by Inrupt called Solid, which pushes for individuals, not firms to control their data. His concerns centre on the power that massive corporations have due to the wealth of data they have amassed, and how they've used this data to target specific groups to seize more of the market, gain more power and hoard yet more data. The open source project, developed with a team at MIT, will allow an individual to create their own personal online data store and then manage access to it, allowing them to link and share data with whoever they want. Berners-Lee is taking sabbatical from his current role at MIT, reducing his work with the World Wide Web Consortium in order to run Inrupt with co-founder John Bruce. Their mission is to ensure that Solid

becomes widely adopted by developers, businesses, and eventually everyone; in the hope that it becomes the fabric of the web. (7)

THE IMPACT OF TIM BERNERS-LEE

Berners-Lee created a web for everyone, a level playing field where anyone, anywhere could access the internet. (8)

The World Wide Web Foundation launched the Web Index, an online tool designed to measure the internet's economic, political, and social impact across the world. (9) The site also assesses the quality of network infrastructure and combines this with other indicators to rank each country's 'state of the web'.



The Web Index compiles country-level data pertaining to three general indicators: web usage, readiness (a country's communications infrastructure, regulatory and censorship policies) and human impact (the penetration of social networks and business web usage). (10)

The idea, according to Berners-Lee is to quantitatively measure the web's impact on humanity. (9)

In a list of 80 cultural moments that shaped the world, chosen by a panel of 25 eminent scientists, academics, writers, and world leaders, Berners-Lee invention of the World Wide Web was ranked number one, with the entry stating, "The fastest growing communications medium of all time, the internet has changed the shape of modern life forever." (2)

CONCLUSION

Berners-Lee changed the world with the creation of the World Wide Web. He is responsible for a global wave of creativity, collaboration and innovation, that directly resulted from the use of the World Wide Web. For this achievement, he has received many awards and honours – including a knighthood in 2004 by Queen Elizabeth II. (1)

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Bibliography

(1) https://www.britannica.com/biography/Tim-Berners-Lee
(2) https://en.wikipedia.org/wiki/Tim_Berners-Lee
(3) https://en.wikipedia.org/wiki/Mary_Lee_Woods
(4) https://www.w3.org/People/Berners-Lee/Kids.html
(5) https://internethalloffame.org/official-biography-tim-berners-lee
(6) https://a4ai.org/who-we-are/
(7) https://www.theregister.co.uk/2018/10/01/tim_berners_lee_solid_inrupt/
(8) https://webfoundation.org/take-action/impact/
(9) https://www.theverge.com/2012/9/6/3295075/web-index-internet-social-political-economic-impact
(10) https://thewebindex.org
(11) **Image:** https://www.forbes.com/100-greatest-business-minds/person/tim-berners-lee