Tim Berners-Lee

Current Employment

European Particle Physics Laboratory (CERN)
Computing and Networks Division, 1211 Geneva 23, Switzerland
Fellow September 1984 - February 1987; Staff Member February 1987 to present.

Originator and architect of the **World Wide Web** (W3) initiative. Led the technical effort involved in the development of the W3 protocols, software and information infrastructure. Built and co-ordinated informal collaboration of technical experts within organisations including the National Center for Supercomputer Applications (NCSA), BSD Incorporated, the University of California at San Francisco (UCSF), O'Reilly Associates (ORA), Cornell's Legal Information Institute (LII), who have contributed W3-based software. Defined W3 policy and resulting architectural invariants. Introduced W3 protocols to the Internet Engineering Task Force and leads discussion and processing toward Internet Standard status. Co-ordinates librarians of specific subject areas, in a web of currently over 300 W3-specific servers and thousands of gatewayed resources. The High Energy Physics (HEP) field alone has a web of about 20 servers, with information available extending from physics data through personnel, calendars, maps, minutes of meetings, drawings, technical notes, library catalogues and pre-prints to real time status information of particle accelerators.

Identified key information providers at HEP institutes and elsewhere, and promoted the development of leading-edge exemplary services. Managed a registry of services, and encouraged quality by providing feedback channels and preview audiences for new services.

What is the World-Wide Web and why is it important?

W3 is a global information architecture in use by commercial, academic and government organisations connected through the Internet. Described by some as the most important development in computing since networking, W3 realises of the dream of Vannevar Bush's "Memex", and Ted Nelson's "Xanadu", in creating a global information space. The flexible architecture allows the seamless inclusion of any existing or future information, whilst a few critical protocol conventions allow inter working between information providers and consumers using greatly disparate computing platforms.

Since my proposal in 1989, and its initial development in 1990 by a small team at CERN, W3 use has grown exponentially, doubling every 4 months. It is now being seized on by publishers, corporations, universities, museums and libraries as the definitive method of providing information of all kinds to customers, employees, and the general public of Internet-connected customers. W3 is a successful, appropriate technology, and is on the brink of three events. One is the development of efficient access to phone-connected as opposed to directly Internet-connected users in homes, grade schools, and small businesses, enormously enlarging the audience. A second is the introduction of direct billing for information on the web. A third is the introduction of direct interaction allowing "readers" to enter their own information, augmenting the knowledge base, engaging in transactions, and making the web part of the fabric of their everyday lives.

Influential in the Web's success has been the rapid development of prototypes by the Internet community, the bootstrapping of value by gatewaying of existing information services, and the dedication of the dispersed band of "W3 Wizards". Technical factors include its flexibility, representative power, and ease of use especially for the information consumer who needs no training at all.

The Web is an abstract information space which exists thanks to an underlying network infrastructure. Currently Internet based, the web will also thrive on new network protocols and mixed network environments.
Throughout W3's short but rapid growth, CERN has co-ordinated its development, cementing CERN's prestige in networking circles. However, the generality of the Web contrasted with CERN's specific charter as an HEP laboratory make it inappropriate for CERN to continue this function indefinitely. A more suitable host organization would be one which

- is interested in playing a large part in networked information field during the next 20 years;
- has resources to support and co-ordinate web development, in collaboration with other involved organisations;
- would like to be in a position to influence the developing common practices and be aware of trends at an early stage;
- would like to build up in-house expertise and experience with live systems, and in doing so transform its own internal information access;
- has a commitment to closely coupling leading-edge research with live implementations.

Apart from my track record as innovator and facilitator of change, I would bring to that company a personal reputation as a leader in the field, and a great deal of enthusiasm which I would hope will, if left to spread unfettered, inspire teams and drive innovation throughout the organization.

Previously at CERN

Heterogeneous distributed computing using real time multi-language Remote Procedure Call (RPC) for data acquisition systems. Standardisation of FASTBUS Application Program Interface IEEE-1177. For new fast parallel data acquisition interface, design of software architecture, communications protocol. Co-ordination of software development for high speed interconnect development.

Previous Employment

June 1981 -	July 1984	Technical Director, Image Computer Systems Ltd, Wimborne, UK, manufacturers of graphics, communications and text processing hardware and software.
Jan 1980 -	June 1981	Independent consultant in communication systems and process control.
1978 -	Dec 1979	Software engineer, D.G.Nash Ltd, Wimborne, UK
1976 -	1978	Assistant engineer though Principle Engineer, Plessey Telecommunications Ltd, Private Communication Systems division.

Education

The Queen's College, Oxford:
First Class Honours, B.A. Physics, 1976

Personal

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email address:	timbl@info.cern.ch
Date of Birth:	8 June 1955
Nationality:	British (wife is a US citizen).
Status:	Married with one child.

Publications

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Berners-Lee, T.J, Cailliau, R., and Groff, J-F, "The World-Wide Web", *Computer Networks and ISDN Systems* 25 (1992) 454-459. Noth-Holland

Berners-Lee, T.J. and Cailliau, R., CERN, "The World-Wide Web", in proceedings of the conference "Computing in High Energy Physics", Annecy, France, 1992. Yellow report, CERN, Geneva, Switzerland.

Berners-Lee, T.J., et al, "World-Wide Web: Information Universe", *Electronic Publishing: Research, Applications and Policy*, April 1992.

Berners-Lee, T.J., et. al., "World-Wide Web: an Information Infrastructure for High-Energy Physics", Proceedings of the Second Workshop on Artificial Intelligence and Software Engineering for High energy Physics, La Londe, France, January 1992. *New Computing Techniques in Physics Research*, World Scientific, Singapore. pp157-164.

Berners-Lee, T.J., and Rimmer, E.M., "An intelligent Approach to Complex System Architectures", *IEEE Trans. on Nuclear. Science,* Vol. NS-33 No. 1 (February 1986)

Berners-Lee, T.J., "Experience with Remote Procedure Call in Data Acquisition and Control", *IEEE Trans. on Nuclear. Science,* Vol. NS-34 No. 4 (August 1987)

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See also co-authored:

Mueller, H, et al., "The CHI : a new Fastbus interface and processor", *IEEE trans. nucl. sci.* : 37 (1990) - 361-364

Adye, T., et al., "Online communications in the DELPHI experiment", *Comput. phys. commun.* : 57 (1989) - 466-474

Heyes, G, et al., "The integration of VAX and VALET-plus data acquisition software", *IEEE trans. nucl. sci.* : 36 (1989) - 1572-1576

Burckhart, D, et.al., "Software support for the CERN Host Interface", *Proceedings of the International conference on the impact of digital microelectronics and microprocessors on particle physics*, Trieste, Italy, 28 - 30 Mar 1988

McLaren, R A, et al., 'The CERN host interface and the optical interconnect", ibid.

Perrin, Y, et al., "The VALET-Plus embedded in large physics experiments", *Proceedings of the ESONE VMEbus in research conference*, Zurich, Switzerland, 11 - 13 Oct 1988, Ed. Eck & Parkman, (North Holland)

McLaren, R A, et al., "Connecting Digital Equipment Corporation VAXes to the VMEbus", ibid.

McLaren, R A, et al., ; "The CERN host interface", *IEEE trans. nucl. sci.* : NS35 (1988) - 321-323

Berners-Lee, T, et al., "The VALET-Plus, a VMEbus based microcomputer for physics applications", *IEEE trans. nucl. sci.* : NS34 (1987) - 835-839

Languages	English (mother tongue), French (good spoken and reading, moderate writing)
Other Interests	Amateur opera and drama; skiing, windsurfing, walking, painting.