



FEATURE

The Story So Far

How the Web crossed the Atlantic and became more than a plaything for European physicists.

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There's no doubt that the accomplishments of Tim Berners-Lee and his colleagues at CERN, the European Laboratory for Particle Physics in Switzerland, were revolutionary. They created the four building blocks of the World Wide Web: HTML, the Web protocol HTTP, a Web server and a basic browser.

By Christmas 1990, Berners-Lee had set up a Next computer - an easy-to-program, Unix-based black cube that was the brainchild of Steve Jobs - as the world's first Web server.

But at the time, the Web didn't exactly look impressive. And it wasn't "World Wide" at all. In fact, it was more like a small intranet for CERN physicists. Information traveled no farther than a few buildings.

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That changed after Stanford University physicist Paul Kunz got a peek at the future during a September 1991 visit to Berners-Lee's office in Geneva.

When Berners-Lee demonstrated information retrieval via the Internet between Next computers, Kunz wasn't impressed. But when he saw it was possible to send a query from the Next box to CERN's IBM mainframe and retrieve the results, Kunz started to get interested. Document retrieval from incompatible computer systems opened up many possibilities. But would it work between computers half a world apart?

"Tim couldn't demonstrate how well this is going to work because all the world's Web servers were at CERN," Kunz recalls. "It's not a very exciting demo."

So they used the Internet to remotely set up Kunz's computer at the Stanford Linear Accelerator Center (SLAC) with a browser and retrieved a Web page.

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"We were both shocked at how well it worked," Kunz recalls.

Kunz and Berners-Lee then discussed putting something substantial - Stanford's meaty bibliographic database of 300,000 physics references - on the Web. Kunz returned to Stanford to do exactly that, with help from SLAC librarian Louise Addis.

On Dec. 12, 1991, the first Web server outside Europe went online at SLAC in Stanford, Calif. The next month, Berners-Lee demonstrated his Web application to more than 200 physicists at a conference in France. For his grand finale, he connected to the Stanford server and performed a search on the bibliographic database.

"People went home from this meeting telling their colleagues of a new way to access [the database]," Kunz says. "It was called the World Wide Web, and it was great."

The Stanford database is considered the Web's first "killer app" because it provided a compelling reason to use the new technology.

Web for the Masses

Though it was a hit with physicists, to reach a wider audience, the Web needed a browser for the masses. Many Web browsers were developed in academic or scientific settings, but the one that captured widespread attention was Mosaic, created by University of Illinois student Marc Andreessen. What made the Mosaic browser different is that it was a graphical user interface, instead of being text-based, and it worked on the ubiquitous Windows desktop.

Andreessen's team released Mosaic for Windows in October 1993. By the next year, thousands of people were downloading the free browser every day. The number of Web servers jumped markedly, and the Web took off. A page-and-a-half article about the Web and Mosaic that appeared in The New York Times didn't hurt, either.

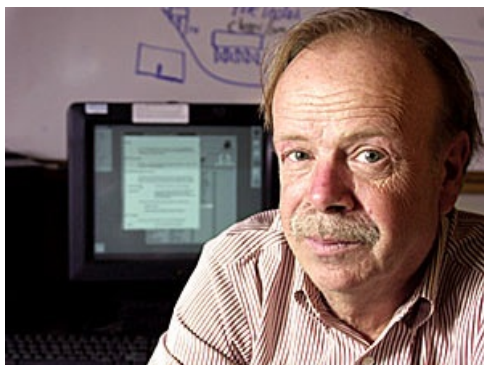
Soon the Web took on a commercial flavor, as cybermalls opened and closed, Yahoo became the major directory of Web sites and Amazon.com Inc. started selling books and music CDs.

During the dot-com boom of the 1990s, some Web sites were slapped together quickly, and the biggest challenge for webmasters was keeping up with the spikes in traffic generated by their Super Bowl ads. Crashes and outages were headline news.

After the dot-com bust, the new goal was to apply time-honored IT disciplines, such as scalability, reliability and security, to make Web sites solid platforms for doing business.

But Web sites are growing increasingly complex, with multiple servers, load balancing, caching, firewalls, search engines and personalization - all geared toward improving the end user's experience.

And now, on with the story. . . .



1991: Paul Kunz, a physicist, installs the first Web server in the U.S., at Stanford University.

Photo Credit: L.A. Cicero/Stanford University

1987: Larry Wall creates the programming language Perl, which later is widely used for Web site applications.



1989: European physicists Tim Berners-Lee and Robert Cailliau propose the World Wide Web.

1991: Paul Kunz, a physicist, installs the first Web server in the U.S., at Stanford University.

1993: Marc Andreessen, a student at the University of Illinois' National Center for Supercomputer Applications (NCSA), develops Mosaic, the first Web browser with mass appeal.

1994: Andreessen and colleagues leave NCSA to form Mosaic Communications Corp., which announces a Web browser called Netscape Navigator and a Web server called NetSite. The company later adopts the name Netscape Communications Corp.

1989: European physicists Tim Berners-Lee and Robert Cailliau propose the World Wide Web.

1990: The Web protocols on Berners-Lee's Next computer undergo initial implementation.



1993: Marc Andreessen, a student at the University of Illinois' National Center for Supercomputer Applications (NCSA), develops Mosaic, the first Web browser with mass appeal.



1995: Sun Microsystems Inc. debuts Java 1.0.

1995: The open-source Apache Web server software is officially released to the public.

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1996: The browser wars heat up as Microsoft Corp. releases Internet Explorer 3.0 and Netscape releases Navigator 3.0.

2000: Hackers take down major Websites with massive distributed denial-of-service attacks.

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