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A Man and His Vision for the Browser

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Tim Berners-Lee invented the World Wide Web in 1989 and introduced the first Web client in 1990, touching off a technological revolution that continues to play out in today's rapidly evolving Internet space.

The inventor and self-proclaimed "user interface engineer" continues to help guide development of the Web and related technologies from his position as director of the W3C (Worldwide Web Consortium) and senior researcher at the Massachusetts Institute of Technology's CSAIL (Computer Science and Artificial Intelligence Laboratory).

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Much of this work currently revolves around his concept for a more abstract, data-oriented online communications network, or what he calls the Symantec Web.

Berners-Lee recently spoke with eWeek.com Senior Writer Matt Hines about the current state of Web browsing technologies and further outlined his plans for improving the software to help make his vision for the future a reality.

Since launching the first Web client in 1990, the browser software arena has evolved in a lot of different ways. Is there anything about all of the different browser development that's been done to this point that really surprises you?

When I wrote the browser, people were using documents with wizzywig editors, so I really assumed that what people were going to use for preparing content was wizzywig, or what you see is what you get.

Browser success can't be measured in market share. Click here to read more.

So that's why I made it an editor and I was really surprised when on platforms which didn't have wizzywig editors, that people were prepared to go to the trouble of learning all the angle brackets and doing the html.

And a lot of people still do, so that was something that the user interface engineer in me was horrified to find that people would put up with such a terrible interface.

So almost from the start, things moved in a different direction than you'd expected?

My goal with creating the original browser had been very much to make it a creative tool, to make the Web a creative space where people could input things and share information and build a common hypertext Web together.

So, what's happened since then is that browsers became more sophisticated and the editors therefore either weren't capable of generating the full power of a modern Web page or they were simplistic. As html got more complicated, there still weren't easy editors.

Here we are in 2005 and you see this craze around blogs and wikis, which anybody can edit. In a way that sort of ratifies my original assumption that anybody can edit and that people wanted to be creative and have the power to write as well as to read.

So you feel that with the addition of more creative editing tools, we'll start to see a more interactive element of the Web, and that will effect future browser development?

I still feel that blogs and wikis and sub-optimal, there not as easy as they should be; it's not as simple as it should be to mark text up. In fact, there's no reason why we shouldn't have a wizzywig editor for a blog or wiki. The thing we missed earlier is that the browser needs to be in a safe environment where

you're not going to mess up the Web site.

Blog software constrains you, so you can just do some writing and editing but you can't mess up all the formatting. So when it comes to user interface devices, I think we've still got some way to go.

Next Page: The importance of open source.

Do you feel that there are enough people focused on building Web technologies that will support that sort of advancement?

If you look at the technology that's available to browsers now, not only have the browsers matured but the standards behind them and html as well. You have scalable vector graphics for example, which has been around for a while now, and that gives you a very different sort of feel, a very exciting dynamic feel to a Web site. There's AJAX and xForms, and these are the type of standards that are maturing and people are really picking them up.

So, there's more technology out there which is going to make both the reading and input of data much more powerful. It would be a mistake to think that the browser is a static well-defined object as it is now. I think we'll see a lot more development in that area.

Firefox faces uphill battle, analysts predict. Click here to read more.

With Firefox and open source, you have a technology that people can take and modify to better suit their needs or preferences. Has the growth of Firefox impressed you, versus the more closed commercial models from Microsoft and Apple?

You're not going to get me to comment on the browser wars, but remember that we had browser wars in cycles with different people being feared as the outright winner in the past and things can change remarkably quickly. What I'd say is that it's healthy for the Web to be supported by a selection of open-source and commercial software.

A lot of people really want to have an arrangement to provide them with the software that is maintained, and to pay for that support. So, there's a place for the commercial software makers. But the open-source community is absolutely essential for the development of the Web. That's very important to maintain a healthy community.

Security has become such a major issue in the browser space. What do you think needs to be done to help solve the problems related to securing widely-distributed technologies better?

The question of security has got a lot of different facets. There have been software flaws in some browsers which have been regrettable, and some operating systems without which there would not have been the same virus scams, particularly not the sort of spam-born virus which has taken off through various software bugs. Fixing the holes in the operating systems which led to that is really important.

Looking at the recent spate of phishing attacks, that really brings to the fore the importance of the browser acting as the user's agent, or of the user understanding who they are really talking to online.

And security there has got a lot to do with the user interface. When you're looking at the bank's Web site and wondering if it really is the bank's Web site, how does the browser let you know that? If you click on the little padlock a couple of times you might find out who the certificate is actually made out to, but that's not really working.

We're actually going to get some people together at the W3C to talk about making the browser really report carefully to the user what's going on, and making it much more clear who they're really talking to.

We have the technologies for having a secure channel, and we have the technologies for signing certificates. Core technology for security is there, we need to finish up by getting that into the user interface to inform the end user better.

Is that the greatest shortcoming of today's commercial browser technologies? Or is there another pain point that jumps out at you?

There's a rather long document on the WC3 site about common user agent problems (laughs). Not having a letterhead licensing certificate is the biggest one, but we've talked about that.

Next Page: What's new with browsers?

OK, then how do developers do a better job of addressing the issues we know about?

Going forward, there's an important need to use more standards. It's surprising how the standards that we have like SVG are not used in the latest browsers, and that's a bit disappointing to see.

What's new in the browser space that really excites you?

A lot of the things I'm excited about are changes in the way that people think about browsers. People have thought about the desktop and laptop, but you have all these news devices coming out with high resolution screens and a choice of downloadable browsers.

Some of those browsers support html and SVG, and Nokia has a phone that has the same engine as Safari. So, one of the things that's happening is that the whole browser development space is moving to these smaller devices.

How do you help ensure compatibility between the Web that people know now through their PC-based browsers and this new emerging Web for mobile devices?

The W3C has the Mobile Web Initiative to make sure that the one, same Web is usable by all kinds of devices. That's been the mantra from the start, device independence and making these things so they'll work on any device that comes out.

We've got people working with the browser developers to make sure they integrate the right way, and giving advice to Web site builders because they're going to find that soon the number of browsers on phones will exceed the number of browsers on computers.

With the smaller screen, does the browser experience change in that it takes up less space and isn't as prominent a part of people's Web usage?

I think that you'll still be browsing, searching for things and following links, but there will be things like voice input so that you can jump quickly by giving only a voice command, and you'll have these systems without screens at all that just talk back to you like in your car.

There will still be this challenge of presenting this information in a really abstract space as effectively as possible.

If you look at some of the things that people are doing with AJAX, they're very much data-driven applications. They're things like Google Maps and all the mash-ups built off of that. That will be based on data interactivity capabilities, and that's what the Symantec web is about, allowing people much more power to access data and combine it.

Click here to read about Microsoft's plans to improve Internet Explorer security.

I think we'll see a lot of user interfaces where you can graph or tabulate things together, like throwing a bank statement against your calendar application and gain some valuable insight from that. That's a very powerful user interface system that needs underlying data interoperability to look at information across applications.

So, the information space will get a lot more complicated and rich, compared to the sort of things you see now as documents that look sort of static. There will be much more of these interfaces that you can manipulate.

How do browsers need to change in order to support the development of the Symantec Web as you see it?

Unlike Web pages when you have data that can be joined with other data across the Web, it means that the number of views you have of the data are mind bogglingly different. I think that we've got this huge explosion of interest in the user interface which comes with the Symantec Web which comes with the challenge of allowing you to cruise through the tie and space dimension of it all.

It will still be to a certain extent about how data is repurposed, and there should be some really interesting user interfaces. But people will get more power to access and work with data.

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