

The Internet Torn Asunder

Michael Doyle and University of California take on Microsoft and win — US\$521 million and counting

by Dan Brill and Bob Connolly

The Internet as we know it may be about to go through a dramatic change.

U.S. patent number 5,838,906—patent '906, as it has come to be called—was filed in October, 1994 by Michael D. Doyle, David C. Martin and Cheong Ang of the University of California under the innocuous title *The Web Application Platform*. It was issued by the U.S. Patent and Trademark Office on November 17, 1998.

The Web Application Platform refers to “a distributed hypermedia method for *automatically* invoking external applications to provide interaction and display of *embedded* objects within a hypermedia document.” The key words are “automatically” and “embedded”.

First demonstrated publicly in 1993, this technology enabled Web browsers to act as platforms for fully interactive embedded applications, and its patent addresses browsers which support popular technologies such as Microsoft's ActiveX components, Java applets, and Navigator plug-ins. These are helper applications for Macromedia Flash, Apple QuickTime and Adobe Acrobat and other apps which enable media playback inside a Web page.

In a surprise decision released on August 11, 2003, a U.S. federal jury ruled that Microsoft had violated this patent, and ordered the software giant to pay US\$521 million to Eolas Technologies Inc. (www.eolas.com), a company founded by Michael Doyle and exclusive licensees of the technology. The award, if it stands, would be the second largest in U.S. patent lawsuit history—and the first time Microsoft has lost a case outright.

WHERE DID THIS COME FROM?

To understand how this case began, we need to go back ten years to the birth of the Internet. At that time, universities and government agencies from around the world were still using faxes and crude forms of e-mail and message boards such as CompuServe to communicate with each other.

But research projects often required the timely publication and distribution of documents that contained photographs and graphics. The invention of HTML (Hypertext Markup Language) served this purpose well. This new computer language enabled the creation of Web pages that contained graphics and hypertext, which allowed for interactivity—hyperlinks to other Web pages.

At first, Web pages were used only for text and two-dimensional pictures, and lacked “rich media” content. Virtual reality and other rich media were only accessible through applications that used their own formats, such as Apple’s QuickTime VR.

However, a group of scientists at the University of California, led by Dr. Michael Doyle, decided that Web pages were too static, and they invented a method for external computer applications to be embedded into Web pages. For example, 3D images could be inserted to allow scientists all over the world to rotate 3D models of a human organ. Or a room or virtual world could be explored remotely, as we do today with virtual reality tours. Today this innovation powers sophisticated e-commerce websites.

While waiting for the ’906 patent application to be approved, Doyle proceeded to offer it to companies such as Microsoft. However, Microsoft decided to employ this technology in its Internet Explorer browser without licensing it from Doyle, as did other software developers such as Netscape.

Doyle has always been a believer in the “open source” community, where computer programmers could create free software and others would improve upon it in the original spirit of the Internet—a place where knowledge could be shared for the benefit of all. For this reason, he has, right from the beginning, been willing to license his software free for non-commercial use.

Doyle sat back and watched as the technology became widely adopted, breathing life into millions of static Web pages. Soon the Internet grew into the dot-com monster we now know, where millionaires were made overnight.

Late in 1998, the ’906 patent was officially approved. By this time, Microsoft had bundled Internet Explorer with its Windows operating system, a strategy that eventually led to the decline of its main competitor, Netscape. Doyle, like so many others, felt that by tightly intertwining Explorer with Windows, Microsoft was competing unfairly with companies like Netscape, Real and Apple. Moreover, Microsoft was now selling an operating system that included a Web browser which incorporated Doyle’s invention.

Since Bill Gates and company were profiting from the implementation of a patented technology, the patent holders and its licensee—namely the University of California and Eolas Technology—decided it was time to collect their share. They took legal

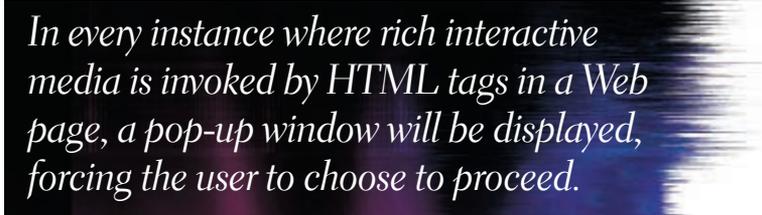
action against Microsoft, seeking a judgment based on the sales of Windows. In its customary fashion, Microsoft dragged out the court proceedings for several years. But finally, in August, the court ruled in favour of the patent owners—to the tune of more than half a billion dollars.

GLOBAL IMPACT — POP-UP BOXES EVERYWHERE

But Microsoft has refused to pay this award. Instead, it has now decided to remove Internet Explorer’s ability to automatically play embedded media (such as Flash animations or QuickTime, Real, or Windows Media videos) if they rely on commonly used HTML tags such as `<object>`, `<embed>` or `<applet>` (details are at <http://msdn.microsoft.com/ieupdate>).

The words “automatically” and “embedded” are the real focus of the lawsuit. Microsoft contends that by altering the way Explorer handles embedded applications, it will void any future liability.

Specifically, Microsoft intends to revise its browser so that if rich interactive media invoked by certain kinds of code (like the



In every instance where rich interactive media is invoked by HTML tags in a Web page, a pop-up window will be displayed, forcing the user to choose to proceed.

ones mentioned above) is in a Web page, a pop-up window will be displayed, forcing the user to choose to proceed. And Explorer will do this with *every single instance* where media is embedded in this fashion, making the Internet experience in Explorer inconvenient, to say the least.

Since ’906 describes *automatically* invoking embedded external applications, Microsoft has determined that this is how it can avoid violating the patent. By displaying a pop-up box and forcing the user to *manually* accept the graphic, Microsoft believes that any liability would be transferred to the user—as well as whomever created the Web page.

Macromedia—which, due to the widespread use of Flash-based websites, would probably suffer most under these changes—recently notified all its registered users and developers about the pending revisions to Internet Explorer. To address the situation for the moment and in order to ameliorate the impending uproar that will ensue once Microsoft deploys its new browser, Macromedia and other vendors, including Apple and Real, are providing Web developers with an “easy” way to manually alter HTML code. Their fix consists of open source JavaScript code that can be downloaded and inserted in place of the offending tags (see www.macromedia.com/devnet/activecontent/articles/devletter.html or <http://developer.apple.com/internet/ieembedprep.html>).

But the need for handwritten code to do Web authoring which was required several years ago has now been replaced by applications which are all drag-and-drop. And because of its ease

of use, Macromedia Dreamweaver is the most widely used program for creating Web pages. With Dreamweaver, you don't need to understand a single line of JavaScript to create websites that contain embedded media like Flash and QuickTime.

Macromedia says that it is upgrading Dreamweaver to insert working HTML/JavaScript code into new web pages, and to report on code that will cause a prompt in the new Explorer. Its developers are also planning to release a set of automated site fixing utilities very soon, and are looking at ways to incorporate them into the program.

But some observers believe that even JavaScript does not represent a solution, since, according to the wording, if a browser runs *any* embedded external application such as a Java applet, it may theoretically be in violation of Doyle's sweeping patent. On the other hand, if an application such as QuickTime Player is launched manually to let the video float over top of the page, that's fine. Or if a PDF is downloaded and viewed in Adobe Reader, that, too, is okay.

But there are thousands of Java applets that require an HTML Web page to function. For example, IPIX Virtual Reality tours of hotel rooms require a Java applet to run. And ActiveX, Microsoft's own language that became the replacement for the Netscape browser plug-in, is also affected. Millions of Web pages all over the world will fail to work properly with Microsoft's new browser, including hundreds of Fortune 1000 information systems built entirely on ActiveX technology. Companies which have cumulatively paid billions of dollars to develop in-house systems are now being asked to re-engineer their websites.

WHO'S TO BLAME?

To some, Michael Doyle is the culprit. They feel that the '906 patent should be revoked, if not due to "prior art" (the legal term for technology that is relevant to an invention and was publicly available at the time an invention was made) pre-dating his patent application, then simply for the good of all who use the Internet.

But Doyle defends his action, saying that if Microsoft just paid the judgment and licensed the technology, there would be no need to alter Explorer or re-write millions of Web pages. This money would go not to Eolas but to the University of California, to be used to develop next-generation Internet applications for medicine and other non-commercial fields.

Just as we were preparing to go to press with this story, no less a personage than Tim Berners-Lee, recognized as the inventor of the Internet and now director of the World Wide Web Consortium (W3C), entered the fracas with a letter written October 28th to James E. Rogan, Under Secretary of Commerce for Intellectual Property and director of the U.S. Patent and Trademark Office (see the full text at www.w3.org/2003/10/27-rogan.html).

In an unprecedented move, Berners-Lee implored the patent office to reverse its approval of the '906 patent, citing examples of "prior art" and saying, in part:

"The impact of the '906 patent reaches far beyond a single vendor and even beyond those who could be alleged to infringe the patent. The existence of the patent and associated licensing demands compels many developers of Web browsers, Web pages, and many other important components of the Web to deviate from the fundamental technical standards that enable the Web to function as a coherent system. In many cases, those who will be forced to incur the cost of modifying Web pages or software applications do not even themselves infringe the patent..."

"The practical impact of withholding unrestricted access to the patented technology from use by the Web community will be to substantially impair the usability of the Web for hundreds of millions of individuals in the United States and around the world... Nearly every Web user relies on plug-in applications that add services such as streaming audio and video, advanced graphics and a variety of special purpose tools..."

WHAT ABOUT THE FUTURE OF ONLINE VIDEO?

With high-speed Internet connections becoming so common in North America, we will soon see interactive video in many Web pages. Flash can also play video with embedded hot spots that let you click on a video scene to bring up additional information about the program you're watching.

Ironically, Doyle's objective was to increase competition and broaden the market for people who want to develop applications to run in a browser. Foremost in his mind is the future of Internet video. But if Microsoft responds to its legal setback by installing an MPEG-4 movie player directly into Internet Explorer, then the net result could be that we will all have no choice but to use Windows Media Player to view videos.

Video producers continue to wonder why there seems to be a real shortage of software to produce this type of interactive video for Windows Media Player. Given all the research and development resources Microsoft has behind it, it seems surprising that Media Player is so "clunky". But if we look closely at another patent which was recently awarded to Doyle, we may be able to understand where all this might be heading.

U.S. patent 6,616,701, filed on May 23, 1998 and just issued to Michael Doyle on September 9, 2003, describes an invention called zMap—moving hotspots on video clips ("a method and apparatus for identifying features of multidimensional image data in hypermedia systems").

A description of zMap is as follows: "This invention turns full-motion video into a fully interactive experience. Imagine, for example, viewing a movie trailer and being able to click on individual actors as they move across the screen which brings up Web pages with more information on their bios, other films, etc. Or imagine that you're watching a video of the 1996 NBA finals, and being able to click directly on any of the players at any time to retrieve their stats, where they are now, etc. The zMap technology makes all that possible, and more."

Apple and Macromedia have been providing interactive video in QuickTime and Flash for years, although the use of both products has been provided to the public at no charge. However, now that the zMap patent has been issued, it would seem as if the waters may be muddied with respect to the development of interactive video creation tools.

When we asked Dr. Doyle about his position with respect to the possibility that developers in this field might now be transgressing upon his latest patent, his reply was, “All of Eolas’ time and resources have been consumed by the Microsoft litigation over the last several years. This is likely to continue for quite a while. Therefore, we expect that we won’t be able to devote any resources to investigating any products that may be infringing the zMap patent for quite some time...”

IS THERE A SOLUTION THAT WORKS?

For many in the open source community, what Doyle and the federal court are saying seems to ring true—that it’s time for Microsoft to allow other software companies to assume a greater role in building the next generation of the Internet. There is no logical reason for Web developers to be compelled to re-write millions of Web pages. But what’s the alternative?

At one time, Netscape was the driving force behind the growth of the Internet. Now that it has been embraced and upgraded by the open source community, it seems positioned to again be the catalyst for innovation. If Microsoft carries out its threat to orchestrate pop-up warning boxes for Web pages that infringe the ’906 patent, the world may turn to an alternative browser like Netscape to avoid this annoyance.

In fact, the consensus among web developers is that Netscape’s latest Communicator v7.1 actually works better than Explorer. Apple’s own browser, Safari, is not built into Panther, the latest operating system for the Mac, and it’s also good—and free.

For some companies, this browser issue might even be a blessing in disguise. Adobe, inventor of PDF, recently released its free Adobe Reader which features embedded media playback capabilities. PDF can now function like a Web browser, allowing media such as QuickTime and Flash to be embedded right inside. A PDF can be e-mailed, or you can simply download it, close your browser, and link to “rich media” on the Web, allowing video and Flash content to stream right into the PDF document.

Adobe has been quietly creating a complete suite of applications targeted at the next generation of broadband Internet developers. With this new set of technologies, a Web browser won’t be needed at all. Educational institutions will have the ability to distribute interactive documents in which 3D animations and videos are embedded right inside a standalone self-contained PDF. Textbooks will become video documents. Printed brochures will become interactive video brochures.

If Microsoft follows through on its plan, perhaps Web pages will revert back to where they all began—just text and pictures.

Flashing banner ads will be gone. Fancy animated websites will find a home inside downloadable PDF product brochures. Videos could be embedded inside PDFs and sold like eBooks.

In any case, it will be virtually impossible for all the websites in the world to be changed to avoid Microsoft’s pop-up work-around. At the end of the dot-com frenzy, thousands of Web development companies went bankrupt, leaving clients without the capability to upgrade their sites, and these mom-and-pop clients will likely suffer the most. If and when Microsoft releases its free new “rich media” browser, savvy consumers may decide to keep an alternative browser on their computers as a backup.

Taken to its logical extreme, if the validity of the ’906 patent is upheld, this could ultimately give Microsoft the perfect excuse to develop and sell one monolithic browser/operating system which has only its own technologies built in—and other technologies locked out. But the havoc this would create both for other Web developers and the global Internet community is unimaginable—and not even Microsoft would have the hubris to add this to the

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list of reasons developers might have for disliking its products.

On the other hand, Microsoft could bow to global pressure, reverse its position, pay the judgment, and license Eolas’ technology—but that’s a highly unlikely scenario, given Microsoft’s penchant for controlling technologies it sells.

Or it could make a deal with Eolas and the University of California to settle the judgment and buy the patent—an equally improbable option, since that would put it back in the monopolistic position that it has been defending in the courts for years. Unless, of course, Gates and Ballmer were suddenly seized by a moment of altruistic epiphany, and gave the patent to the W3C to be integrated into the open source standard. However, that would leave Microsoft’s ’906-dependent technologies open to the scrutiny of the open source standardbearers—perish the thought!

Come to think of it, maybe the best answer would be if Eolas and the University of California could arrive at an agreement with Microsoft to do exactly that—hand over the patent to the W3C as part of a settlement for all claims, past and future.

The W3C’s FAQ page at www.w3.org/2003/09/public-faq.html and Browser News’ summary of the implications for designers and users at www.upsdell.com/BrowserNews/res_eolas.htm are a couple of sources of information on the ’906 debate.

Things move fast in cyberspace. It’s conceivable that by the time you read this, the entire issue will have been resolved. And that would be good news for a world that in an amazingly short time has grown dependent on the power and richness of the Web. 🌐