



Web Application Development with AJAX

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IT Insight podcast

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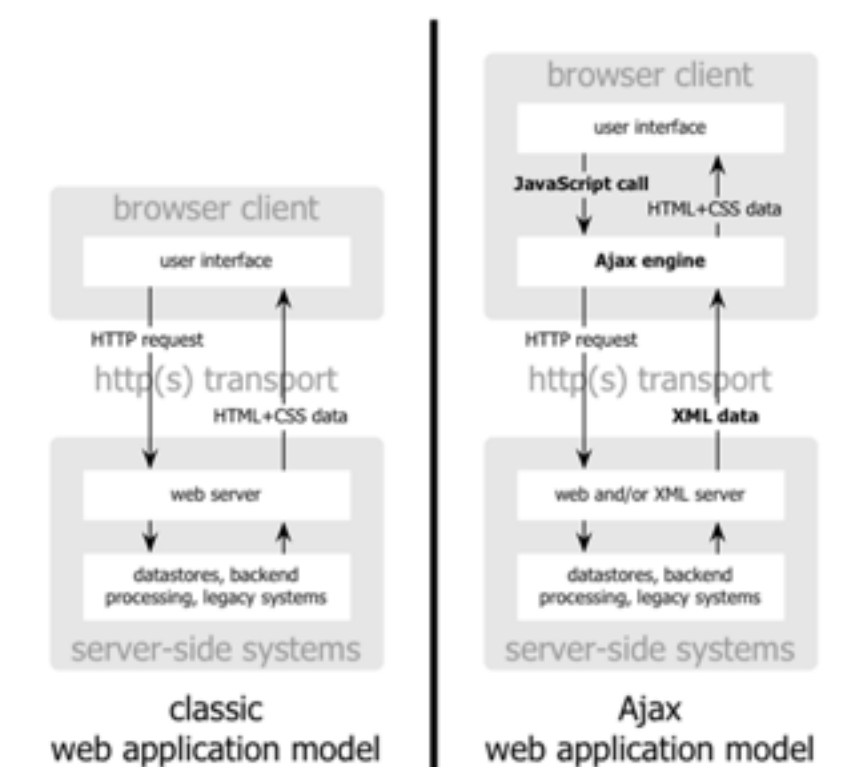


¿Qué es AJAX?

- AJAX stands for
- Asynchronous Javascript
And
XML
- This term was coined by a company called Adaptive Path to refer to Web 2.0 applications that offer richer and better user interfaces
- Microsoft developed the first AJAX application, Outlook Web Access using proprietary HTML extensions

What problem does AJAX solve?

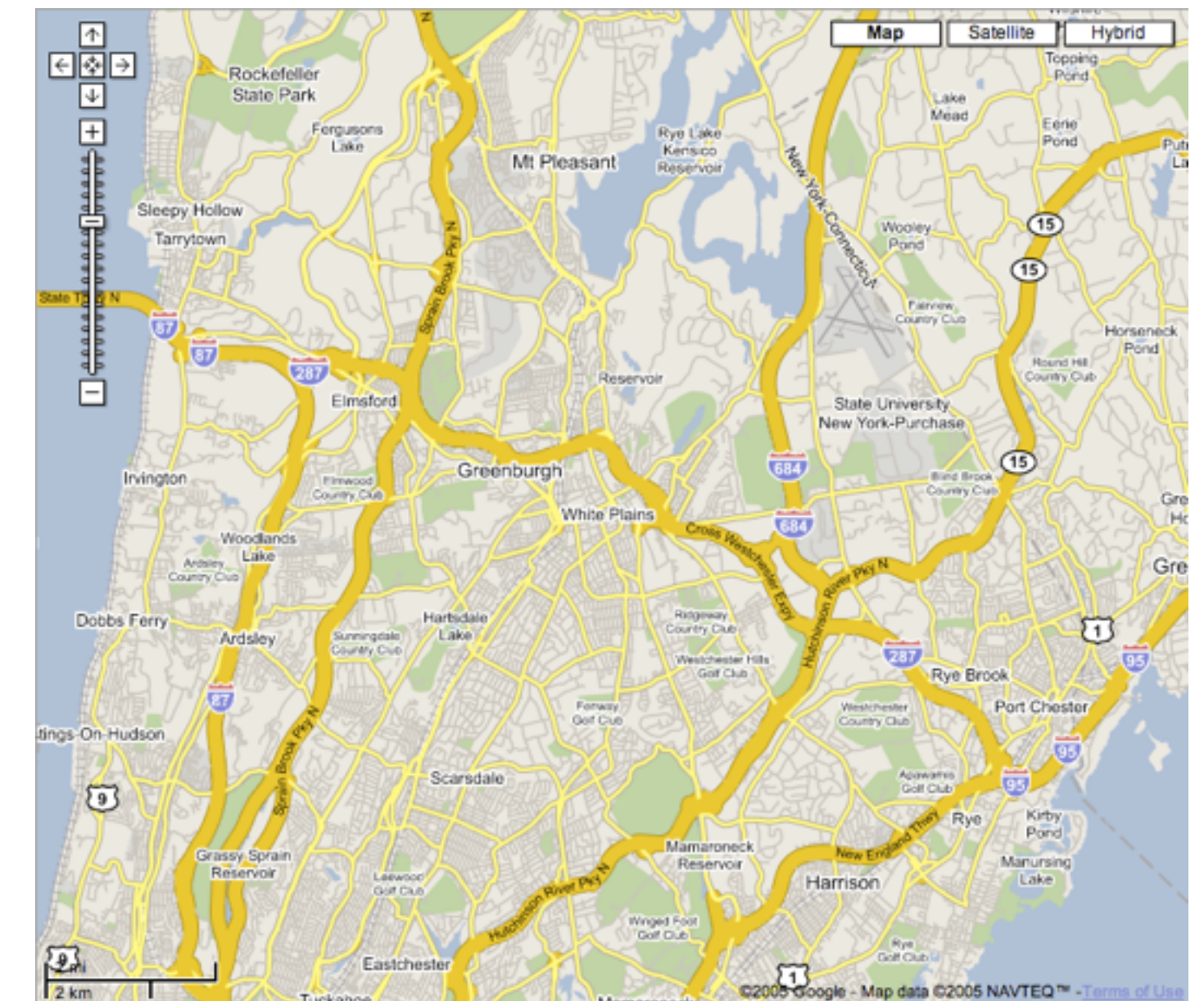
- Before AJAX, each time a web application interacted with a server, the complete page had to be reloaded
- Using AJAX technologies this is no longer true. Instead, a JavaScript routine connects to the server through an XMLHttpRequest and the result is displayed using dynamic HTML to update the page
- The result is faster web apps that look more like traditional C/S applications





Who uses AJAX?

- AJAX has gained a lot of popularity since Google started using it in their extremely successful web applications
- GMail, Google Maps, Google suggest, Google calendar
- Other companies are also adopting AJAX
 - <http://www.flickr.com>
 - <http://www.kiko.com>
 - <http://www.protopage.com>
 - <http://www.writely.com>



Which browsers support AJAX?

- In order to support AJAX, a browser has to support the latest W3C standards such as CSS 2 and 3, Javascript and the XMLHttpRequest object or equivalent
 - Safari 1.2 and later or Konkeror (browsers based on kHTML) Internet Explorer 4.0 and later (Microsoft)
 - Firefox 1.0, Mozilla 1.0, Netscape 7.0, Camino 1.0 (browsers based on the browser engine from the Mozilla Foundation)
 - Opera 7.6 and later



Problems faced by AJAX applications

- The back button may not work as expected, and something similar applies to bookmarking
- Search engines cannot easily index pages that include AJAX code
- The Javascript code has to be able to handle communications problems with the back-end server transparently for the user and this requires a lot of code since Javascript was not really designed to handle complex tasks
- The MVC paradigm tried to separate the application code from the presentation layer. AJAX makes this impossible, once again



The XMLHttpRequest object

- In order to communicate with a server, the Javascript code needs to use an XMLHttpRequest object
 - Despite its name, this object does not require to use data written in XML format, any type of data can be used
 - Internet Explorer does not support the XMLHttpRequest object but supports similar functionality through ActiveX objects
 - The XMLHttpRequest object offers different methods that can be used to interact asynchronously with a back-end server. This allows the application to process multiple connections in parallel without blocking the browser until a response is received



Creating an XMLHttpRequest object and invoking a URL on a back-end server

```
var req;

function loadXMLDoc(url)
{
    if (window.XMLHttpRequest)
    {
        // The browser supports the XMLHttpRequest object
        req = new XMLHttpRequest();
        req.onreadystatechange = processReqChange;
        req.open("GET", url, true);
        req.send(null);
    }
    else if (window.ActiveXObject)
    {
        // This code is required to support IE
        req = new ActiveXObject("Microsoft.XMLHTTP");
        if (req) {
            req.onreadystatechange = processReqChange;
            req.open("GET", url, true);
            req.send();
        }
    }
}
```

Asynchronously processing the response from the back-end server

```
function processReqChange()
{
    // Request completed
    if (req.readyState == 4)
        // Result is "OK"
        if (req.status == 200) {
            // This code handles the response...
            // ...and updates the page accordingly...
        }
        else {
            alert("There was a problem:\n"
                + req.statusText);
        }
    }
}
```





How to write de the back-end server code?

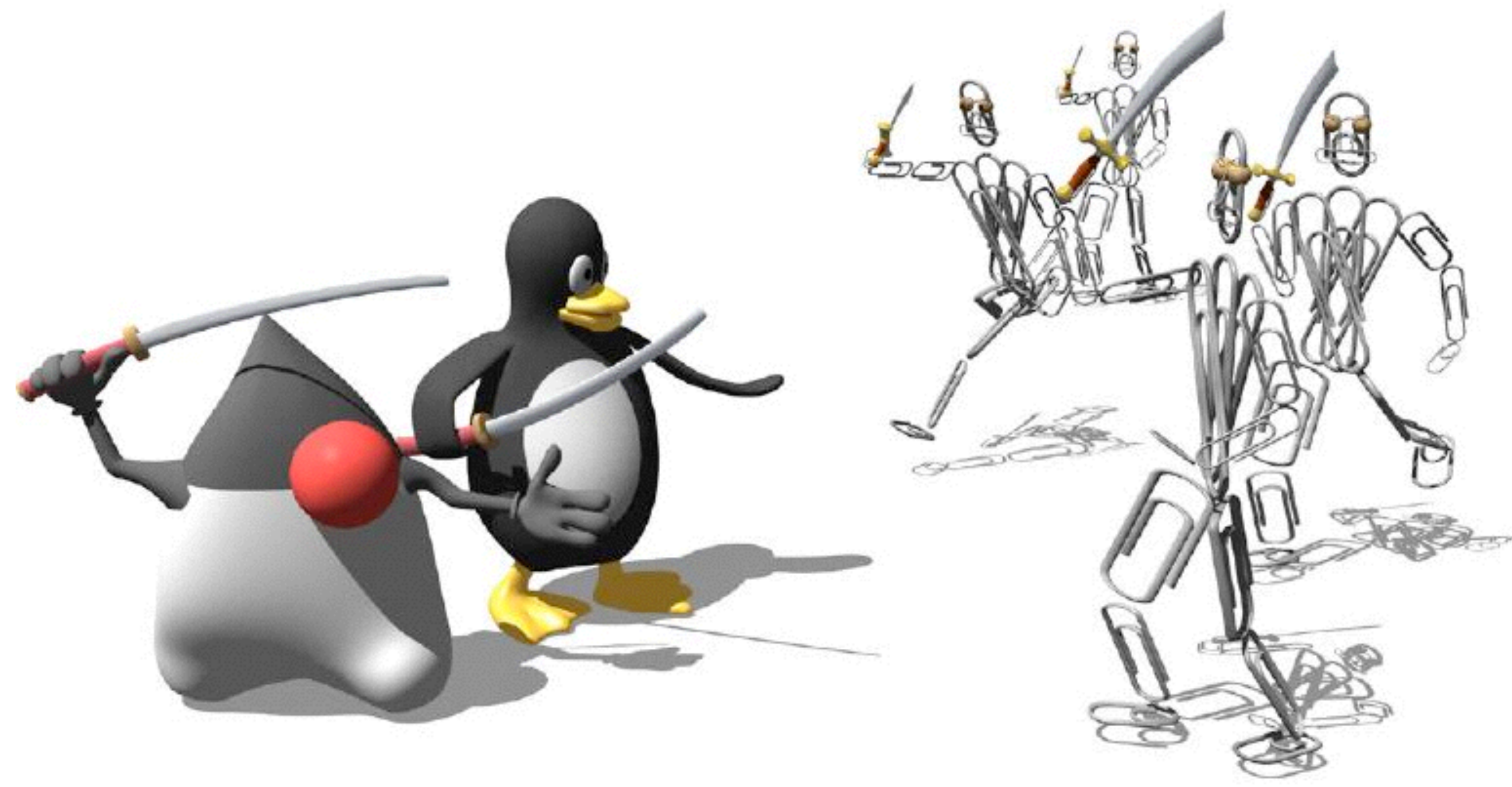
- AJAX applications do not care about the language used to write the back-end application.
- All that is needed is that the reply has a Content-Type of text/xml if the response is an XML document or text/plain or text/html otherwise
- This means that the back-end server code can be written in almost any language
 - C/C++ CGI's
 - Java Servlet, Java Server Page
 - PHP
 - ASP,etc





Final thoughts

- AJAX is not only about the XMLHttpRequest object. In order to write a successful AJAX application it is necessary to have a very thorough understanding of other W3C standards such as DOM and CSS
- Since AJAX is based on cutting edge browser technologies, differences between the three major browsers (IE, Mozilla and Safari) must be understood and properly handled
- Because of the previous points, writing AJAX applications is still quite complex. That is why, no one uses AJAX for a whole site, instead its use is limited to certain applications that can benefit from the technology



For more information, please contact me at huibert_aalbers@mac.com