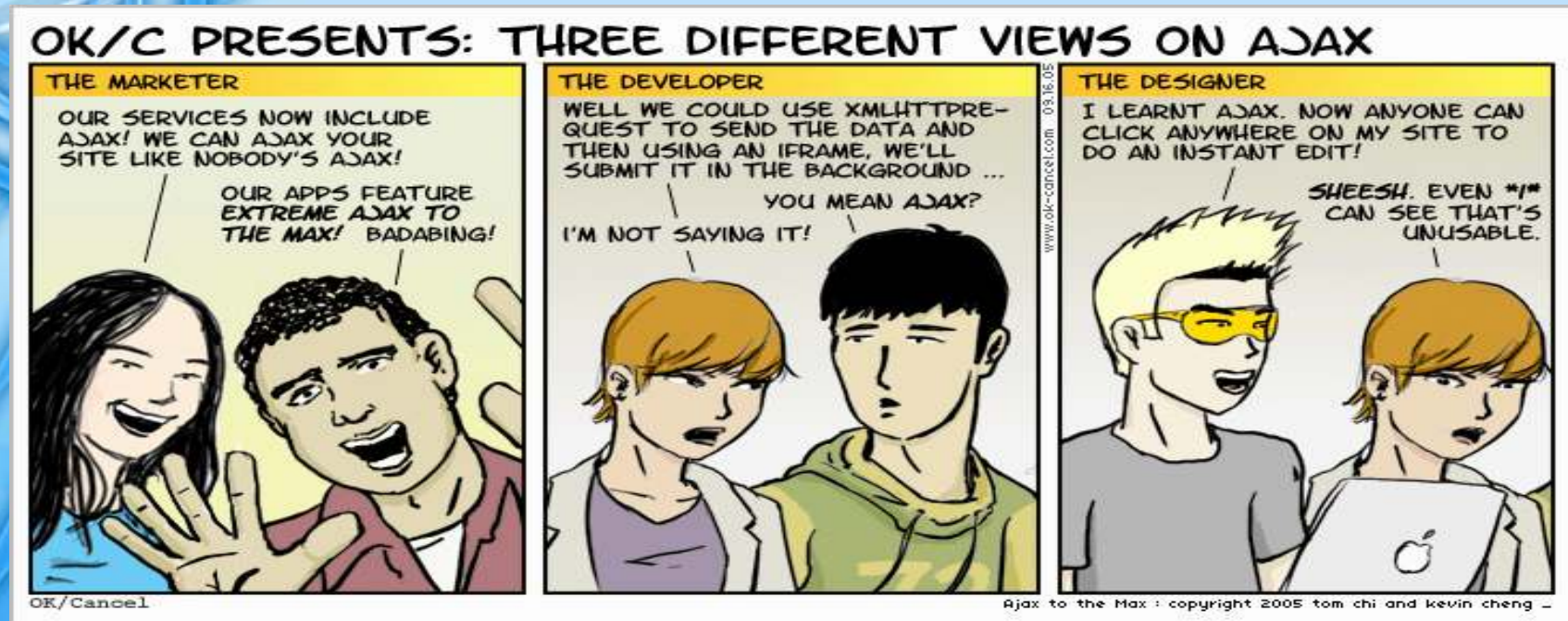


AJAX

A PRESENTATION BY THE FANTASTIC FOUR AKA "TEAM OF FOUR"



SOFTWARE ENGINEERING II – UNIVERSITY OF TORONTO – 2006 -2007



Outline

1. What you're in for...
2. What's AJAX?
3. Why AJAX?
4. Look at some AJAX websites
5. Web 2.0 in 5 minutes



What you're in for...

- An introduction to the essential elements of AJAX
- Latest buzzwords in the web development ...AJAJ, Web 2.0



What is AJAX?

- Asynchronous Javascript and XML
 - Not all AJAX apps involve XML
- Combination of technologies
 - XHTML, CSS, DOM
 - XML, XSLT, XMLHttpRequest, JavaScript
 - Some server scripting language
- A method for building more responsive and interactive application



AJAX Components

XHTML and CSS

Ajax applies these familiar Web standards for styling the look and feel of a page and to markup those areas on a page that will be targeted for data updates.

DOM (document object model)

Ajax uses the DOM to manipulate dynamic page views for data and to walkthrough documents to “cherrypick” data. The DOM enables certain pieces of an Ajax page to be transformed and updated with data.

XML, JSON (Javascript Object Notation), HTML, or plain text

Ajax can use any of these standards to provide structure to the data it passes to and from a page.

XMLHttpRequest object

The heavy lifter for Ajax: It's a javascript object embedded in most modern browsers that sets up data request/response pipelines between client and server.

Javascript

Lightweight programming language that Ajax uses for instructions to bind all of the components together.



Why AJAX?

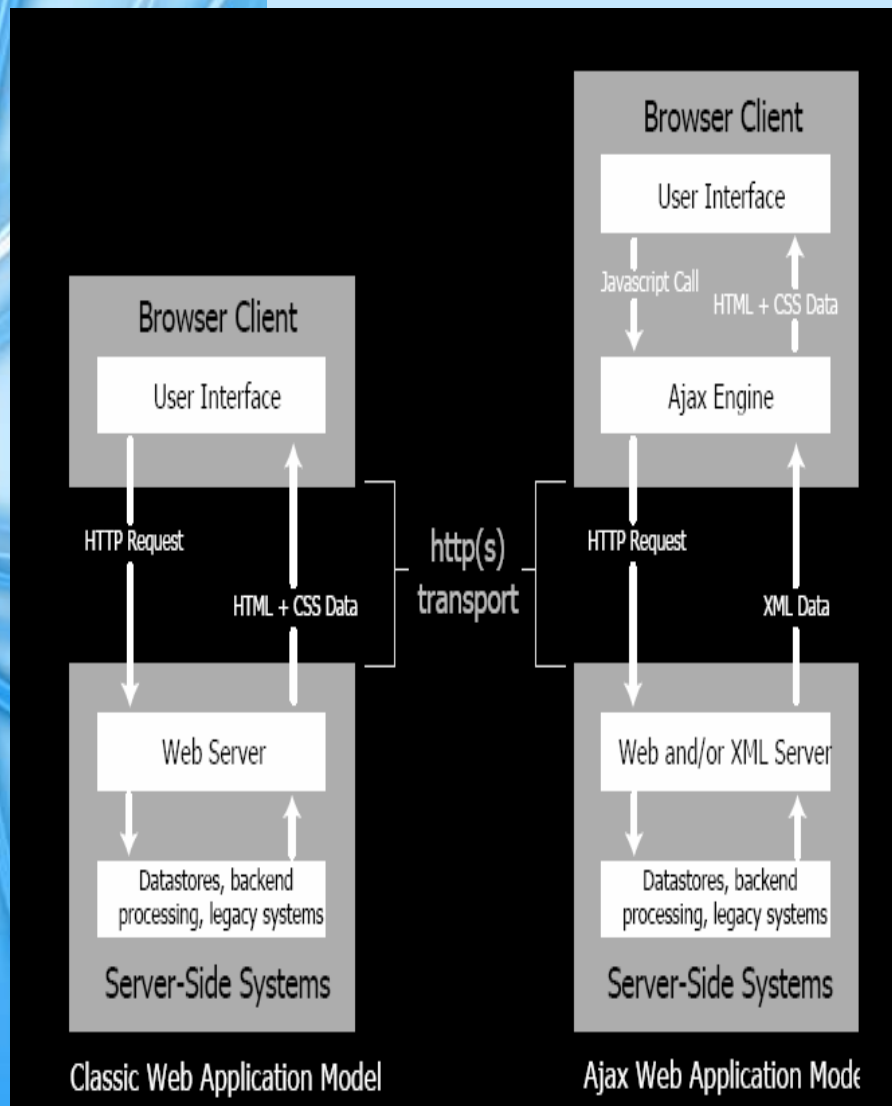
- Want to make your applications more interactive
- Want to incorporate data from external Web Services
- Don't want your users to have to download a plugin



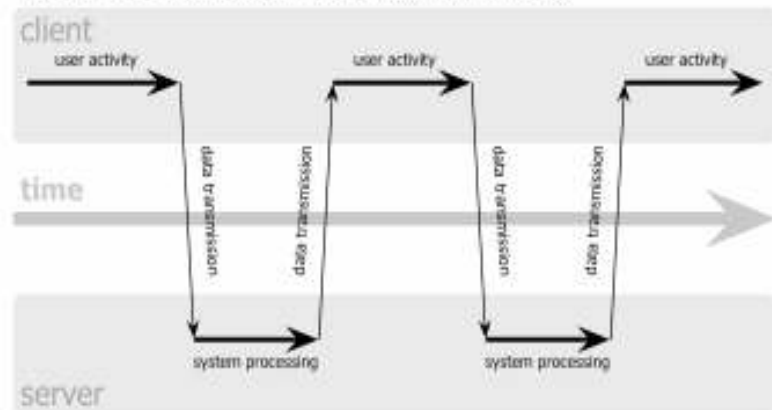
Client vs. Server Scripting

- Client scripting
 - Web browser does all the work
- Server Scripting
 - Web server does all the work
- AJAX leverages both client and server side scripting

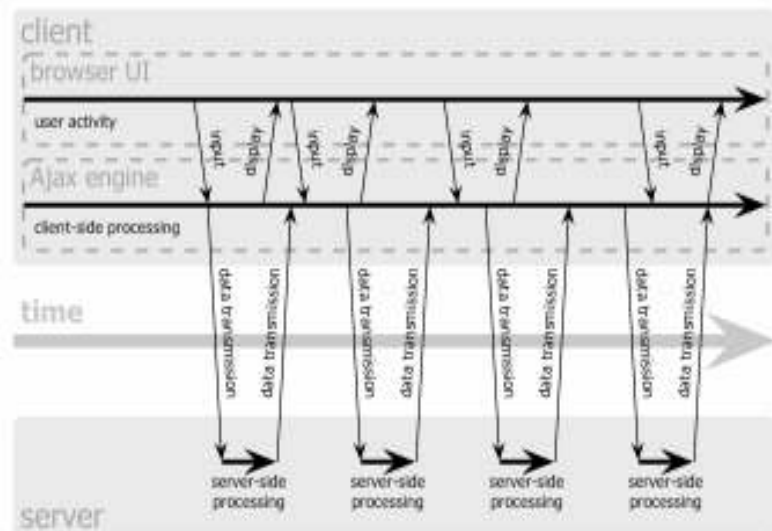
How AJAX Works



classic web application model (synchronous)



Ajax web application model (asynchronous)





Potential Problems

- Javascript MUST be enabled
- Back button doesn't always work
- Pages can be difficult to bookmark
- Search engines may not be able to index all portions of an AJAX site
- Cross browser differences in how XML is dealt with



Potential Problems

- Accessibility
 - Mainly problems with updates to interface (real-time changes)
 - Both sighted and non-sighted users
 - Although problems experienced by non-sighted users are more challenging
 - Screen Reading Programs
 - Linear Approach
 - Problems Handling Dynamic Changes
 - Complex AJAX Websites



Possible Solutions?

- Inform users from the beginning that Javascript is required
- Inform user that page is updated
- Highlight recently updated areas
 - “Yellow-Fade” technique
- Alert in the form of pop-up box when information is updated

Some AJAX websites

Hotmail



Gmail



More websites...

Home | Tags | Groups | People | Invite

Logged in as Matito | Your Account | Help | Sign Out


Photos | Yours | Upload | Organize | Your Contacts | Explore

flickr BETA

I can change the title

SAVE OR **CANCEL**

ADD NOTE | SEND TO GROUP | ADD TO SET | RENAME THIS | RESIZE | ORDER PRINTS | ROTATE | DELETE



One of the courtyards of the Musée du Louvre, cour Carrée is beautifully lit at night

Add your comment

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23 photos
View as slideshow

Cream of the Crop - Read the Rules First! (Pool) (X)

Architecture (Pool) (X)

Buildings/Architecture (Pool) (X)

Night Shots (Pool) (X)



Basic AJAX Components

- **Server-side Component**
 - Communicates with the database, or web service
 - Can be written in any server-side language (PHP, ASP, Coldfusion, etc)
- **Client-side Component**
 - Written in Javascript, often uses XMLHttpRequest
 - Accesses the server side page in the background



Hidden Frame Method

- Communication with server takes place in a frame that user can't see
- Back and Forward buttons still work
- If something goes wrong user receives no notification



XMLHttp Method

- Code is cleaner and easier to read
- Able to determine if there is a failure
- No browser history, Back and Forward buttons break



Potential Uses for AJAX

- Error checking in Forms
- AutoSuggest
- Drag and Drop objects functionality
- Dynamically move view around on image or map
- Preload content you want to show later
- Apply limits to search results and get new results quickly



Final thoughts – What's Next?

- That's AJAX and an AJAX application in a nutshell.
- AJAJ Buzzword !!!
- Consider AJAX advantages and disadvantages
- Fundamentals of method are there
- Keep practicing and learning

Web 2.0 video



Questions

