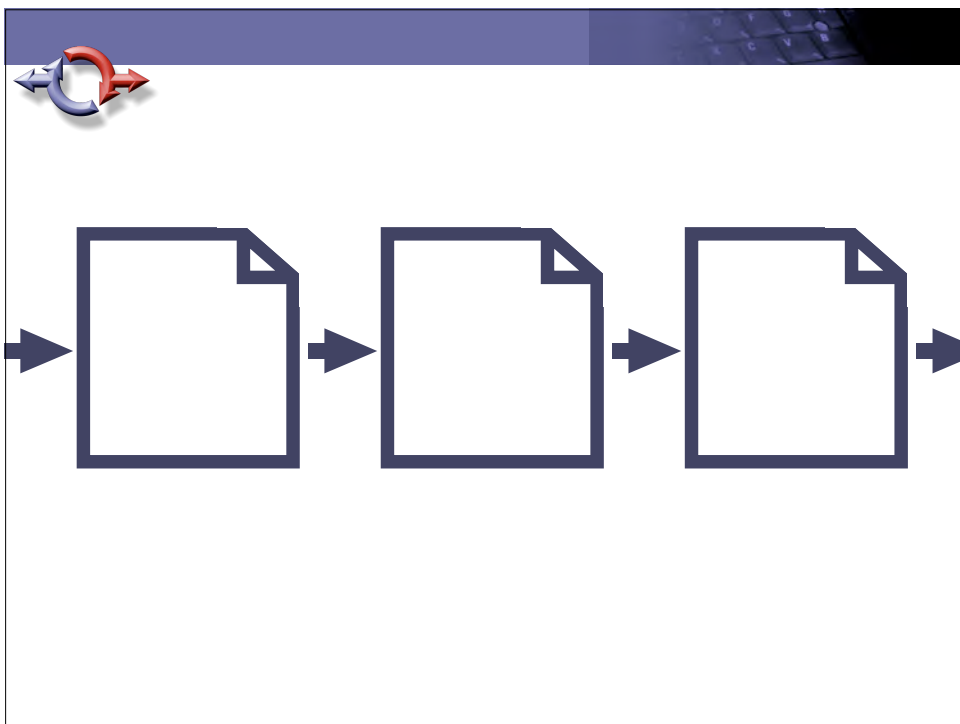



Ajax


Next generation websites. An introduction
Joe Walker



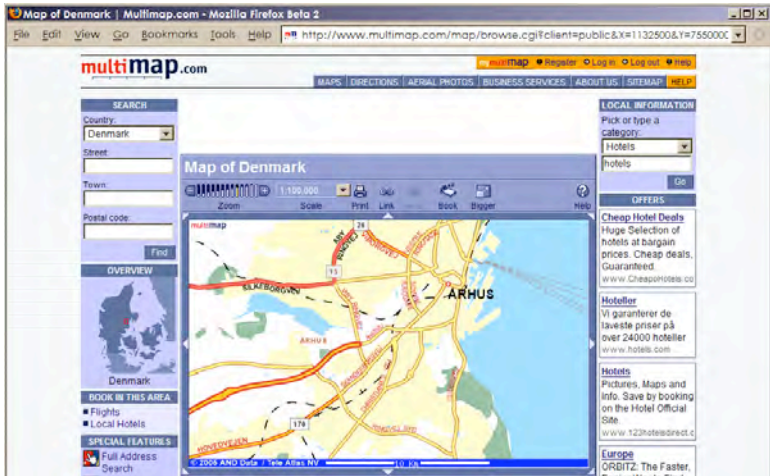


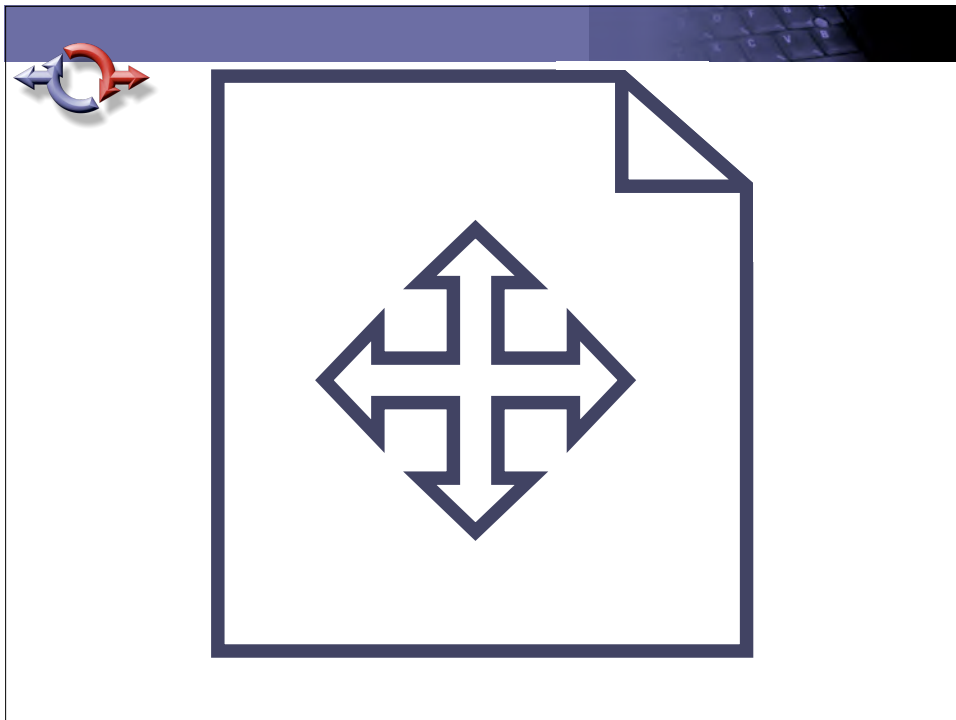
The Old Web Model

- View a page
- Click a link
- Wait for new page to load
- Repeat



The Old Web Model



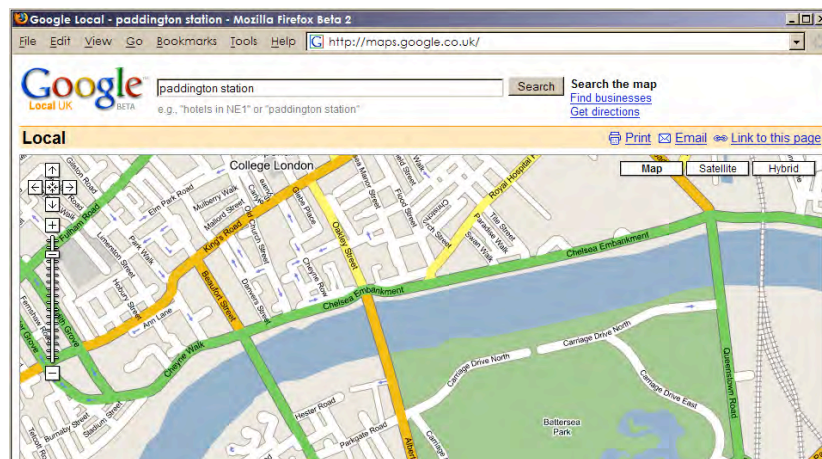


The New Web Model

- **Single pages become places to explore**
- **Pages change to match the user interest**

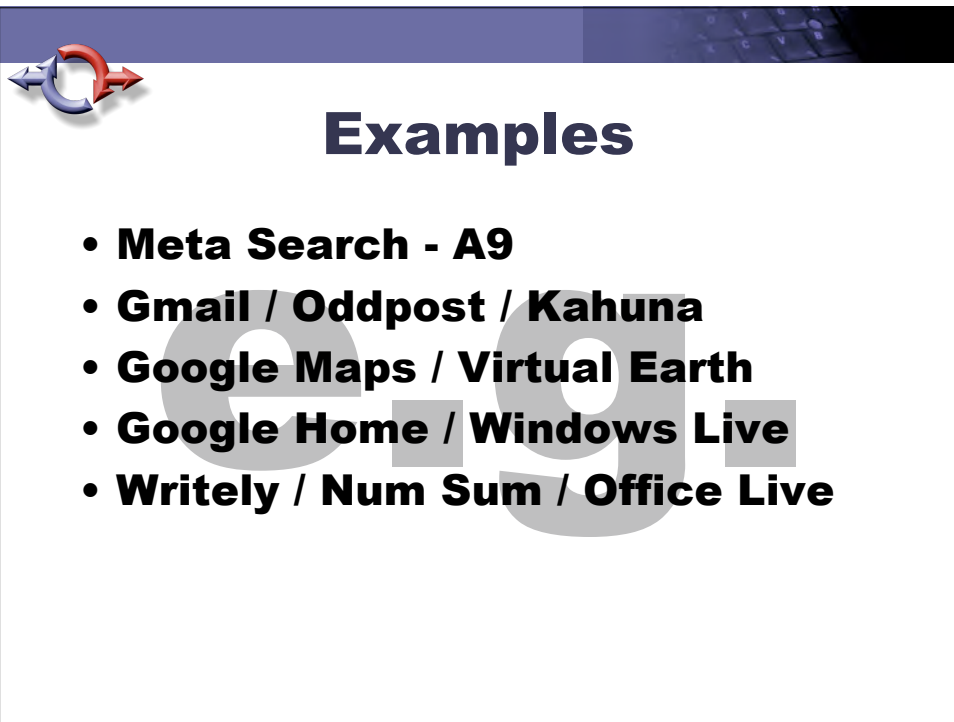


The New Web Model



The buzzword of 2005/2006

- **Google has 100m pages on Ajax**
- **Majority are about the tech, not the city, cleaner or FC**
- **Several million new pages per month**
- **Ajax is used heavily by Google, Microsoft, Yahoo, Amazon, etc**






What's Good?

- **User experience**
- **Speed**
- **Neater architecture**
- **Widespread acceptance**


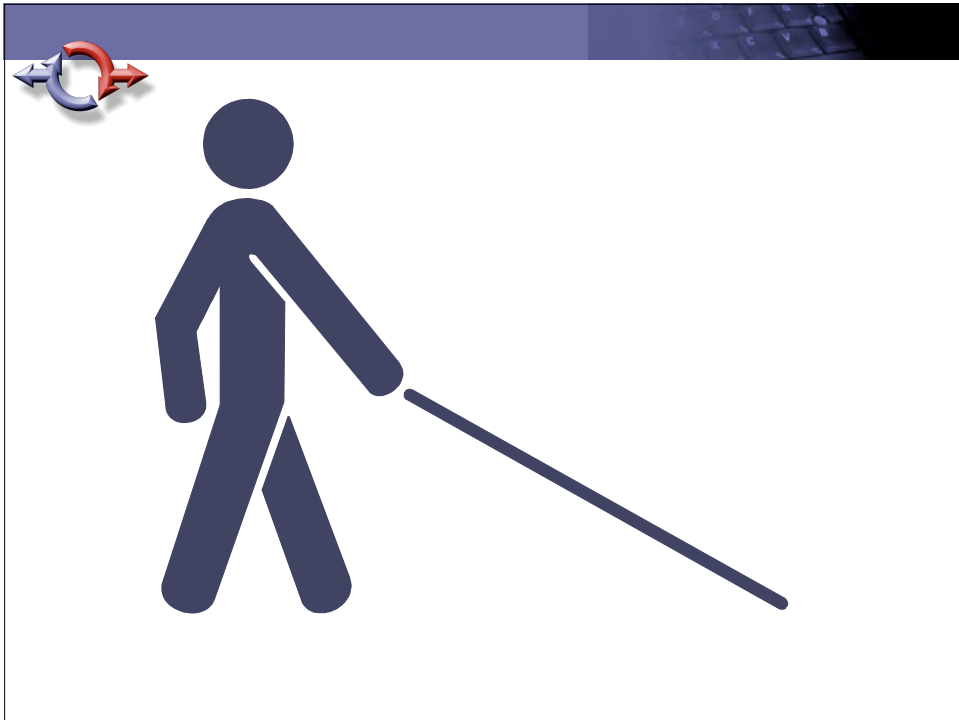




What's Bad

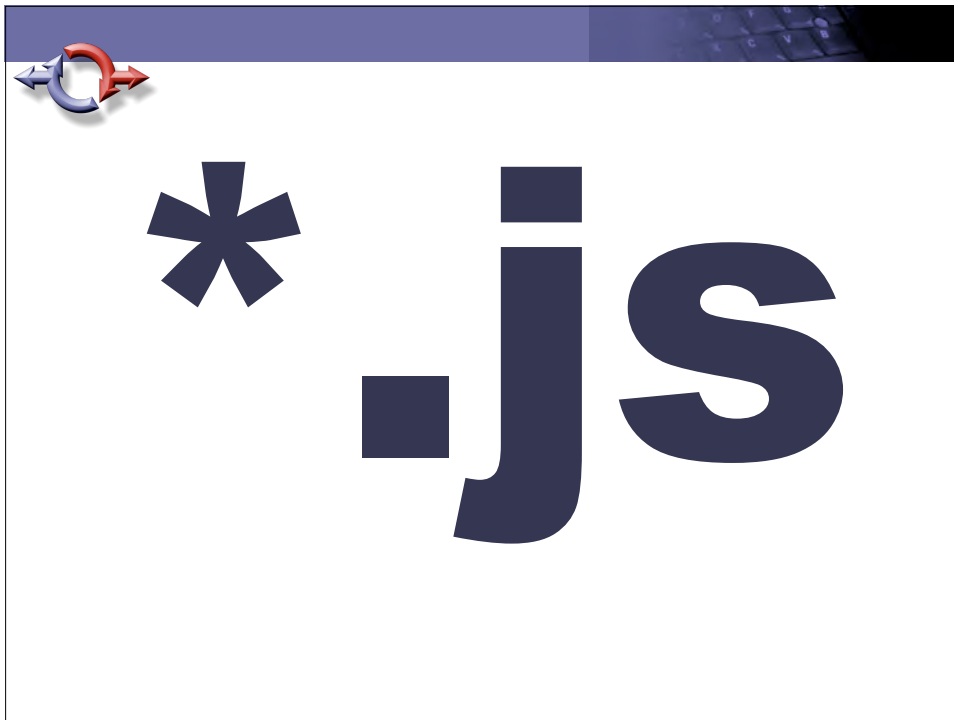
- **Accessibility**
- **Javascript**
- **Back-button**

A slide with a white background and a dark blue header bar. The header bar is split into two sections: a lighter blue section on the left and a darker blue section on the right, which contains a faint image of a keyboard. In the top-left corner of the white area, there is a small icon consisting of two overlapping circular arrows, one blue and one red, with arrowheads pointing outwards. The main content of the slide is a list of three items, each preceded by a bullet point. The items are 'Accessibility', 'Javascript', and 'Back-button', all in bold black text. A large, faint, light blue 'X' mark is overlaid on the slide, centered behind the list items.




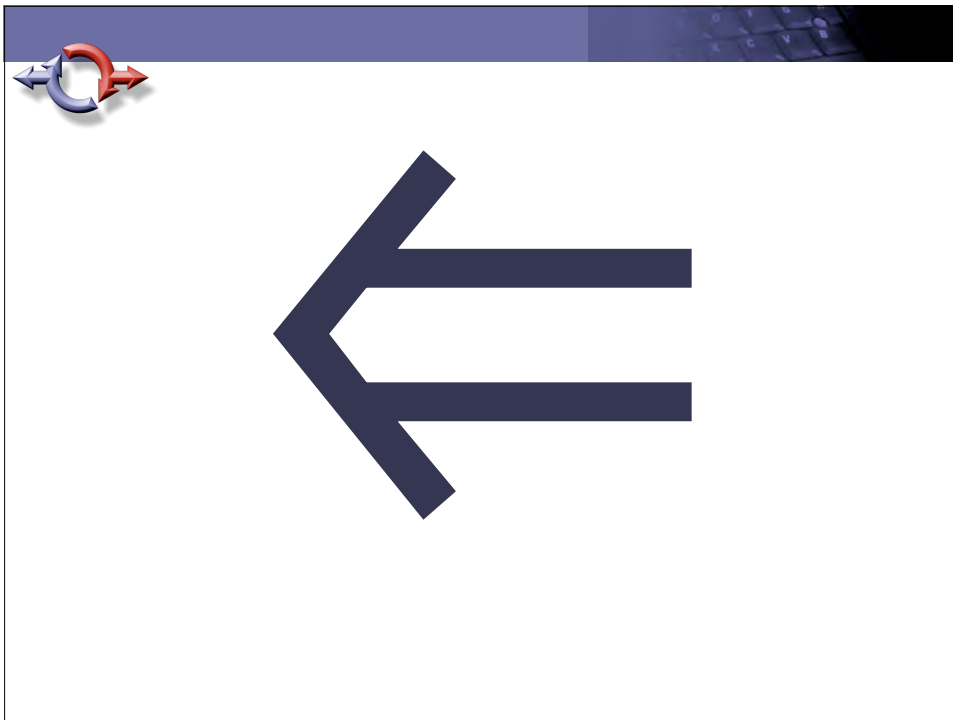
Accessibility

- **Both are broad terms:
Specific questions are needed**
- **Screen-readers playing catch-up**
- **Direct approach**
- **Second site approach**



Javascript

- **Another thing to learn**
- **Not the most elegant language**
- **Javascript is the only real option**
- **Sometimes turned off**



Back button

- **Also book-marking**
- **Annoyance level**
- **Solutions exist**
- **Advanced history**
- **Banks**



Ajax 101

- **Ajax stands for 'Asynchronous Javascript and XML'**
- **Phrase coined by AdaptivePath in Feb 2005**
- **Ajax is a great buzzword**
- **It's not a technical definition**



What does Ajax mean?

- **XMLHttpRequest largest part of original paper**
- **XMLHttpRequest = XHR**
- **Also about DHTML**
- **Perhaps best definition is:
XHR + DHTML = Ajax**



Why the quick uptake?

- **Only recently well known**
- **Investment levels in part 2 years have been much higher than in previous 2**
- **Only recently in all browsers**



The History of XHR

- **Invented by Microsoft**
- **In IE since version 4**
- **Designed for Outlook Web Access**
- **Initially an ActiveX control**
- **Mozilla created Javascript alternative, XHR**
- **IE7 has Mozilla compatibility for XHR**



Irony of Ajax

**1996: Microsoft late to the web
Netscape way ahead**

**1997: IE bundled in Windows
Netscape development slow
Netscape loses market share**

**1998: Microsoft anti-trust trial
Accused of killing Netscape
Claim Netscape killed selves**



Irony of Ajax

**1999: IE 5.0 includes ActiveX
control “XMLHTTP” to support
their Web Mail: “Outlook web
access”**

**2001: IE 6.0 released
IE development slows**

2003: Firefox includes XHR

**2004: Google Web Mail fires off
new web excitement**



Using XMLHttpRequest

- **In IE it's created like this:**

```
new ActiveXObject("Microsoft.XMLHTTP");
```


- **Elsewhere, like this:**

```
new XMLHttpRequest();
```



Getting Started

```
var xhr;  
if (window.XMLHttpRequest)  
{  
    xhr = new XMLHttpRequest();  
}  
else if (window.ActiveXObject)  
{  
    xhr = new ActiveXObject(  
        "Microsoft.XMLHTTP");  
}
```



Deciding what to fetch


```
xhr.open (
  'GET',
  'http://www.example.org/',
  true);
```

**HTTP verb
[GET/POST/...]**

**Should this
request be handled
asynchronously?**

**The server
address**

The diagram shows three callout boxes with arrows pointing to the code. The first box, 'HTTP verb [GET/POST/...]', has an arrow pointing to the 'GET' string. The second box, 'Should this request be handled asynchronously?', has an arrow pointing to the 'true' value. The third box, 'The server address', has an arrow pointing to the URL 'http://www.example.org/'.



Sending the request off

```
xhr.send (null);
```

**The 'POST' verb
enables you to
send extra data
with the request.
If used, it belongs
here.**

The diagram shows a callout box with an arrow pointing to the 'null' argument in the code. The text in the box explains that the 'POST' verb is used for sending extra data with the request.



Getting the reply

```
xhr.onreadystatechange =  
function() { ... };
```

The XHR object will tell you when something happens with the Ready-State-Change event. Register a function to stay up-to-date



Getting the reply

```
xhr.onreadystatechange =  
function() {  
    if (xhr.readyState == 4) {  
        if (xhr.status == 200) {  
            // Data is ready  
        }  
    }  
};
```

4 means 'finished'

200 means 'it worked'



readyState values

- **0 = uninitialized**
- **1 = loading**
- **2 = loaded**
- **3 = interactive**
- **4 = complete**

You only care about 4 (probably)



Getting the data

- **There are 2 methods for accessing the response data:**
 - **xhr.responseText**
 - **xhr.responseXml**



Things to watch out for

- **Safari < 2.0 only does GET**
- **IE sometimes caches GET replies**
- **Don't reuse XHR objects**
- **Watch out for cross domain XHR security**



Alternatives to XHR

- **iframe**
 - Hairy DOM manipulation
 - Much slower
 - Useful in IE if ActiveX is turned off
- **flash**
 - Not in all browsers
 - Generally not required
- **dom + script**
 - Useful for cross-domain Ajax
 - Inherent memory issues
- **images**
 - Possible, but impractical



Data format

Format options

- **HTML** (not useful for general data)
- **XML** (limited & API is hard to use)
- **JSON** (Great API, library support)
- **Javascript** (JSON++, care required)
- **Other** (Harder work, API up to you)



Any Questions?

<http://getahead.ltd.uk/blog/joe>

<http://getahead.ltd.uk/dwr>