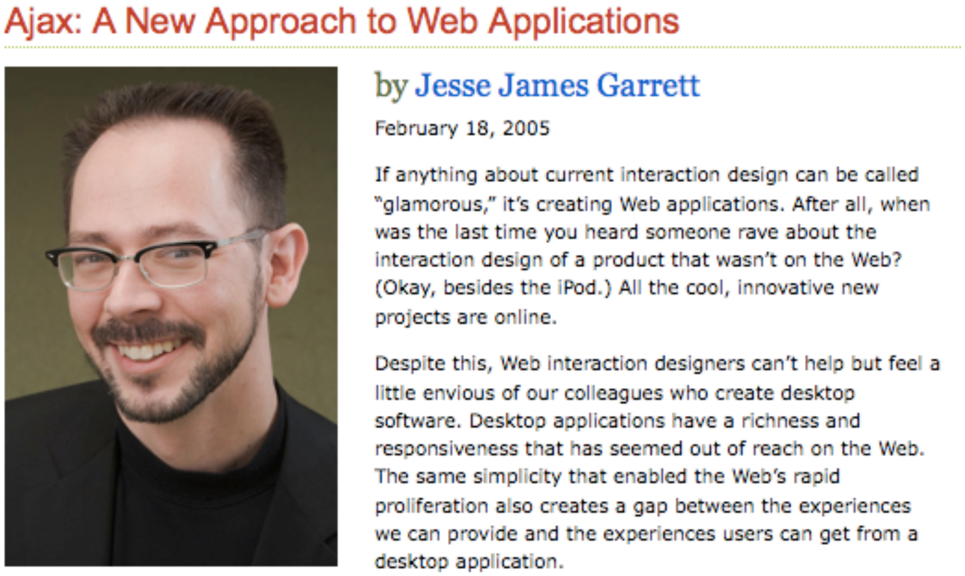
Ajax

Asynchronous JavaScript+CSS +DOM+XMLHttpRequest



Ajax: A New Approach to Web Applications

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If anything about current interaction design can be called "glamorous," it's creating Web applications. After all, when was the last time you heard someone rave about the interaction design of a product that wasn't on the Web? (Okay, besides the iPod.) All the cool, innovative new projects are online.

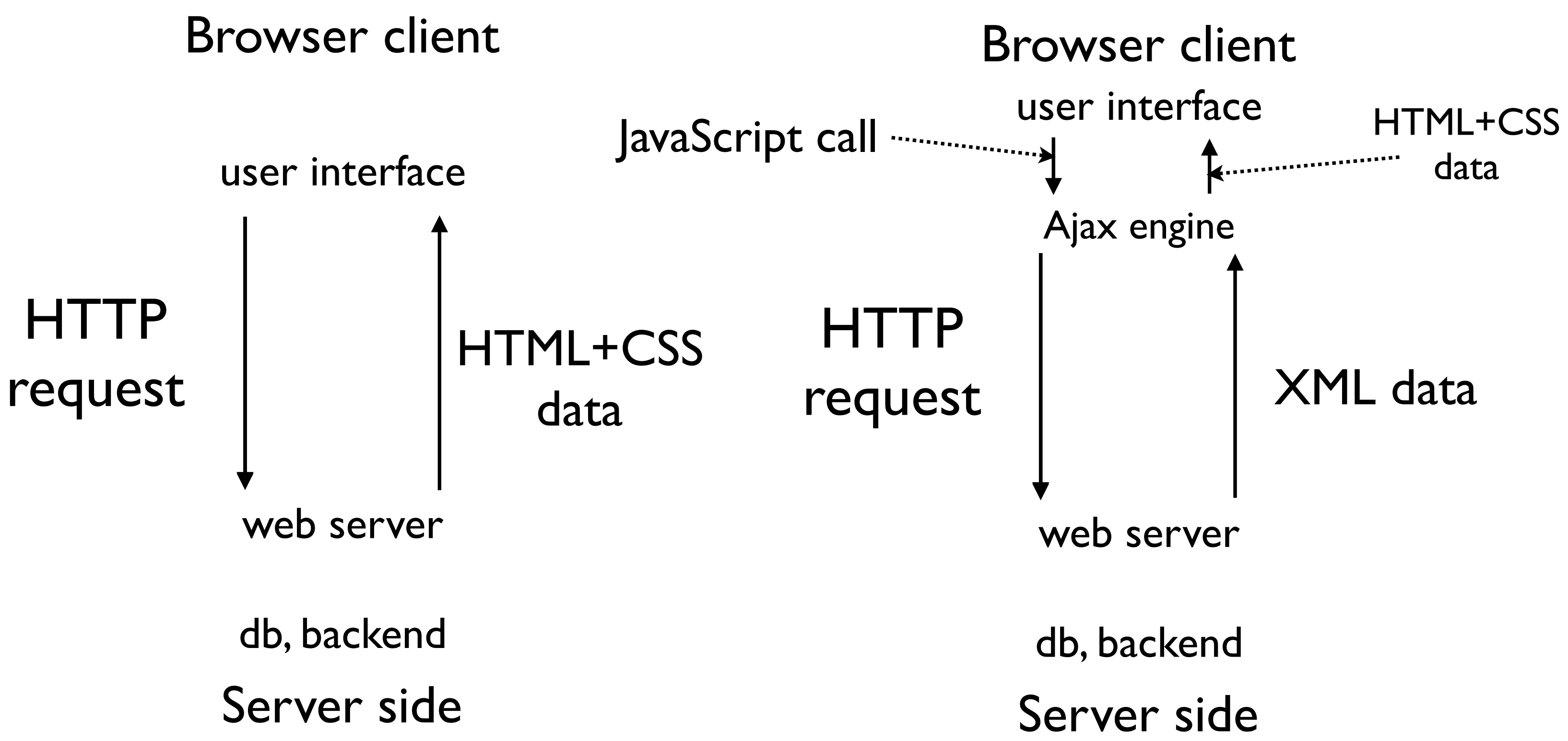
Despite this, Web interaction designers can't help but feel a little envious of our colleagues who create desktop software. Desktop applications have a richness and responsiveness that has seemed out of reach on the Web. The same simplicity that enabled the Web's rapid proliferation also creates a gap between the experiences we can provide and the experiences users can get from a desktop application.

- Coined the term Ajax in 2005
- Describing technology already in use.

What is it?

- Combines several technologies:
  - (X)HTML, CSS - presentation
  - DOM - structured data
  - XML (for interchange)
  - XMLHttpRequest - asynchronous communication
  - JavaScript

Basic idea


Browser client
user interface
HTTP request
HTML+CSS data
web server
db, backend
Server side
Browser client
user interface
JavaScript call
HTML+CSS data
Ajax engine
HTTP request
XML data
web server
db, backend
Server side

History

- Asynchronous loading of content first possible with Java applets (1995)
- XMLHttpRequest - concept created by Microsoft for Outlook WebAccess
- Mozilla implemented it in 2002 (?)
- And there it sat.
- Google suggest - 2004
- And then the idea took off...

General approach

1. Get whatever data you need from the Web form.
2. Build the URL to connect to.
3. Open a connection to the server.
4. Set up a function for the server to run when it's done.
5. Send the request.
6. Response is sent in XML or ...
7. JavaScript - onreadystatechange - takes action

XML or ?

- XML was “the” solution for structured text for a while.
- But it is often more cumbersome than necessary.
- Alternatives?

JSON

- JavaScript Object Notation
- A light-weight data-interchange format
- Subset of JavaScript
  - collection of name value pairs
  - un-ordered list of values
- A JSON object can be eval'd by JavaScript

Example

```
{
   “name” : “Karen Reid”,
   “courses” : 5,
   “address” : {
      “street” : “40 St. George”,
      “city” : “Toronto”
   }
 }
```

When Not to Use Ajax

- If the content never or rarely changes.
- If you don’t see any benefits.
- When it will result in more calls to the server than necessary

When to use Ajax

- When you want to stage in a lot of data or let the user decide which data to bring in.
- Filtering data
- Form validation (but do it on the server too)
- Instant feedback (polls)

Advantages

- More responsive UI
- Potentially fewer connections to the server
  - only changing data needs to be updated

Drawbacks

- Complexity
- Back button
- Bookmarks
- Search engines
- Same origin policy
- Debugging and testing
- Security
- Performance!
- Accessibility