User Interaction: AJAX Basics /
Observer Pattern

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• **AJAX**
  • “Asynchronous Javascript and XML”
  • although XML can be replaced with any data format
  • Developed to support “rich clients”
  • One of the big enablers of Web 2.0/ web apps
Consider a spreadsheet, once can
- Edit data in place
- Changes are updated in real-time
- Dependencies across the document
- Feedback from the mouse and cursor
- Cells highlight
- Overall a pretty rich user interface experience
• “Rich Client”
  • Rich
    • In the U/I sense
    • “Spread-sheet” like
  • Client
    • Lives in a networked world
Desktop/Laptop World

AJAX in action: Crane
• Desktop World
• Cloud Computing World

AJAX in action: Crane
Network introduces delays, always worse than local. Absolute delay is variable.
Building a rich client is harder than building a web page
rich client
rich client
Why have so many non-rich web pages been successful?
What limits our ability to create rich web clients?
• Sovereign Application vs.
• Transient Application
I am typing the most important document of my life
What can we do to overcome network latency?
• Asynchronousness

AJAX

AJAX in action: Crane
What does this enable?
Defining principles of AJAX

1. Browser hosts an application, not content
2. Server delivers data not content
3. User interaction with the application can be fluid and continuous
4. This is real coding
1. Browser hosts an application, not content

- **Static/Dynamic Web model**
  - every *page* is new content
  - vs
- **Real-time Web model**
  - download a program at first
  - new *data* replaces elements on one page
  - Some server functionality is moved to browser
  - example, the shopping basket is in the client
1. Browser hosts an application, not content
• Browser hosts an application, not content
2. Server delivers data not content
2. Server delivers data not content

Web 1.0
2. Server delivers data not content
2. Server delivers data not content
3. User interaction with the application can be fluid and continuous

- Typically when a page is submitting data, the user is in limbo
  - Use the shopping cart example
  - Google Suggest
- Sovereign versus Transient Applications
4. This is real coding

- jQuery (http://jquery.com)
- Angularjs (http://angularjs.org/)
- Backbonejs (http://backbonejs.org/)
- emberjs (http://emberjs.com)
- Prototype (http://www.prototypejs.org/)
- ExtJS (http://www.extjs.com/)
  - very good for prebuilt themes and controls, but not very customizable
- YUI (http://developer.yahoo.com/yui/)
- MooTools (http://mootools.net/) - very compact, much smaller than the others
- Dojo (http://dojotoolkit.org/)
• Observer Pattern
