

The Ajax Tipping Point

What happened and how it happened

Bill W. Scott, Y! Ajax Evangelist

bscott@yahoo-inc.com

Background

- Games, research, science, military, biz
- Apps, frameworks, widget sets
- Developer, designer
- Object-oriented background
- Software architect, user experience manager
- Current: Yahoo! Ajax Evangelist

Rico JavaScript for Rich Internet Applications

Home Features Demos Documentation Downloads About

An open-source JavaScript library for creating rich internet applications. Rico provides full Ajax support, drag and drop management and a cinematic effects library.

BACKGROUND
Rico is a spinoff word meaning rich. The goal of Rico is to provide a rich experience for web sites using Ajax technology.
Rico is just one small part of a larger effort at Sabre Interactive Solutions to create a suite of rich internet components, behaviors and effects for the web.
The library is a fully object-oriented JavaScript library. Recently we refactored the library to extend the excellent Prototype.js effort from the Ruby on Rails team.

OPEN SOURCE
Rico is provided free and open-source (Apache 2.0 License) for either your personal or commercial use. Sabre Interactive Solutions retains the copyright on the Rico code produced at Sabre.

BROWER SUPPORT
Rico has been tested on IE 5.5, IE 6, Firefox 1.0, Nets, Camino, Mac, Firefox 1.0, Safari. Currently there is no Safari or Mac OS X support. Support will be provided in a near future release for Safari.

AJAX SUPPORT
Ajax is the term that describes a set of web development techniques for creating interactive web applications. One of the key requirements is the XMLHttpRequest object implementation. Rico provides a very simple interface for registering Ajax requests against any XMLHttpRequest or JavaScript objects as Ajax response objects. Multiple elements and/or objects may be updated as the result of one Ajax request.
Want to get started learning? Check out our [demos](#) and then read our two Ajax tutorials on the [Documentation](#) page.

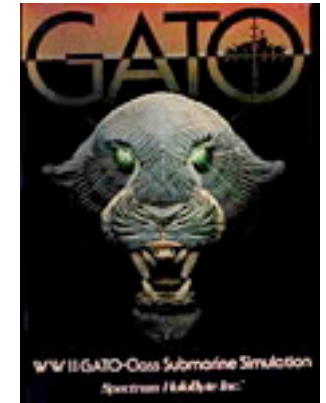
DRAG AND DROP
Desktop applications have long used drag and drop in their interfaces to simplify user interaction. Rico provides one of the simplest interfaces for enabling your web application to support drag and drop. Just register any HTML element or JavaScript object as a draggable and any other HTML element or JavaScript object as a drop zone and Rico handles the rest.

CINEMATIC EFFECTS
When actions are no longer occurring, just at the page level but within the page itself, more cues are required to clue the user on what has transpired. Cinematic effects such as sliding and smooth sliding transitions can communicate change in richer ways than traditional web applications have explored before. Rico provides several cinematic effects as well as some simple visual style effects in a very simple interface.

BEHAVIORS
Take some new HTML and sprinkle in some behaviors and what do you get? Well in Rico you can get an appropriate component like those found in Macromedia Flex and Lasso. Just nest some DIVs and web one line of JavaScript turn your div parents into an accordion. And the latest behavior is the LiveGrid. LiveGrid allows you to control an HTML table to its extent of Ajax requests, Ajax requests are automatically called during table scrolling. The result is now HTML tables can hold an unlimited amount of data scrolled into view on the fly as needed. More behaviors are planned!

NEW! LiveGrid Behavior!
Check out the [Alternative to Paging!](#)

See Rico in Action!



Ship	Airline	On Schedule	On Budget	Verbs	Verification
✓ Austin-Dallas	Airline (10-17-04m, 1:17:14)	●	●		AB01
✓ Dallas-Dallas	Airline (10-17-04m, 1:17:14)	●	●	100	AB01
✓ Dallas-Dallas	Airline (10-17-04m, 1:17:14)	●	●		AB01
✓ Stock-Dallas	Airline (10-17-04m, 1:17:14)	●	●		AB02
✓ Stock-Austin	Airline (10-17-04m, 1:17:14)	●	●		AB02
✓ Austin-Dallas-Dallas	WDR10000 (10-17-04m, 1:17:14)	●	●		AB02
✓ Dallas-Dallas	Manual				
Delayed	Manual				

Ajax at Yahoo!

- Acquisition of Oddpost led to mission to evangelize *Ajax goodness throughout Yahoo*
- Summer 2005 - Ajax Evangelism Team Founded
 - Doug Crockford - JSON, Y! DHMTL Architect
 - Iain Lamb - Founder of Oddpost/Y!Mail Beta
 - Adam Platti - Engineer Oddpost/Y!Mail Beta
 - Me, Ajax Evangelist, Pattern Shepherd

Resources

- Almost all of the reference material can be found at:
<http://billsportfolio.com/ajaxresources.html>
- And a shameless plug for my blog
<http://looksgoodworkswell.com>

Amazon.com Diamond Search

[Click here](#) to return to our dynamic diamond search.

Select a shape(s) [\(Learn more about diamond shape\)](#)

(optional)



Round



Princess



Marquise



Emerald



Radiant



Pear



Oval



Heart

Enter a price range

(optional)

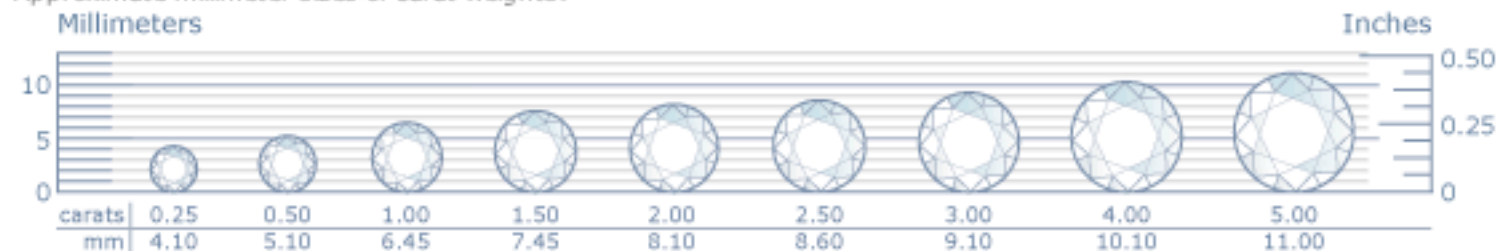
Price from \$ to \$ (Note: Enter a numeric value, for example, 500 to 1000)

Enter a carat weight [\(Learn more about carat weight\)](#)

(optional)

Size from to carats. (Note: Enter a decimal value, for example, .2 to 1)

Approximate millimeter sizes of carat weights:



Diagrams above are not actual size, but the increase in proportion is to scale. To print a page with actual-size diagrams and measurements of all shapes, [click here](#).

Select a cut range [\(Learn more about diamond cut\)](#)

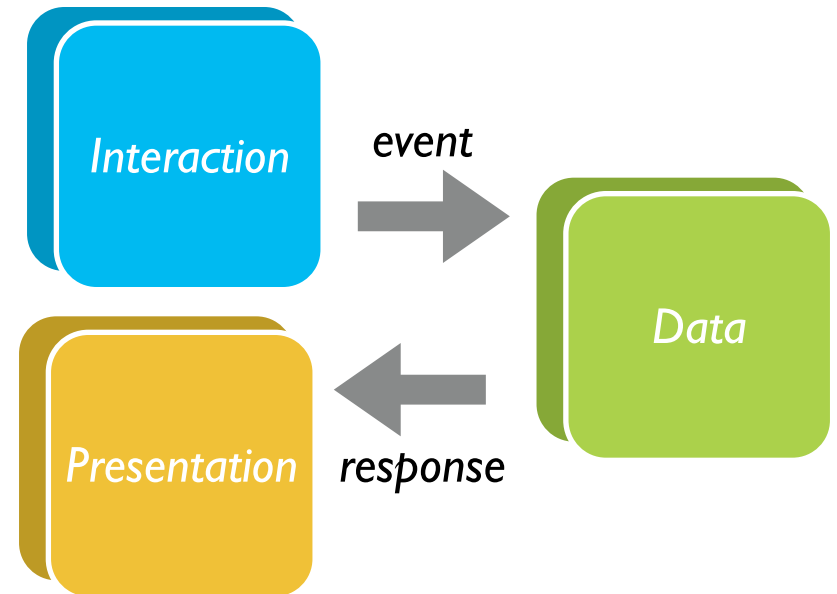
(optional)



What Happened?

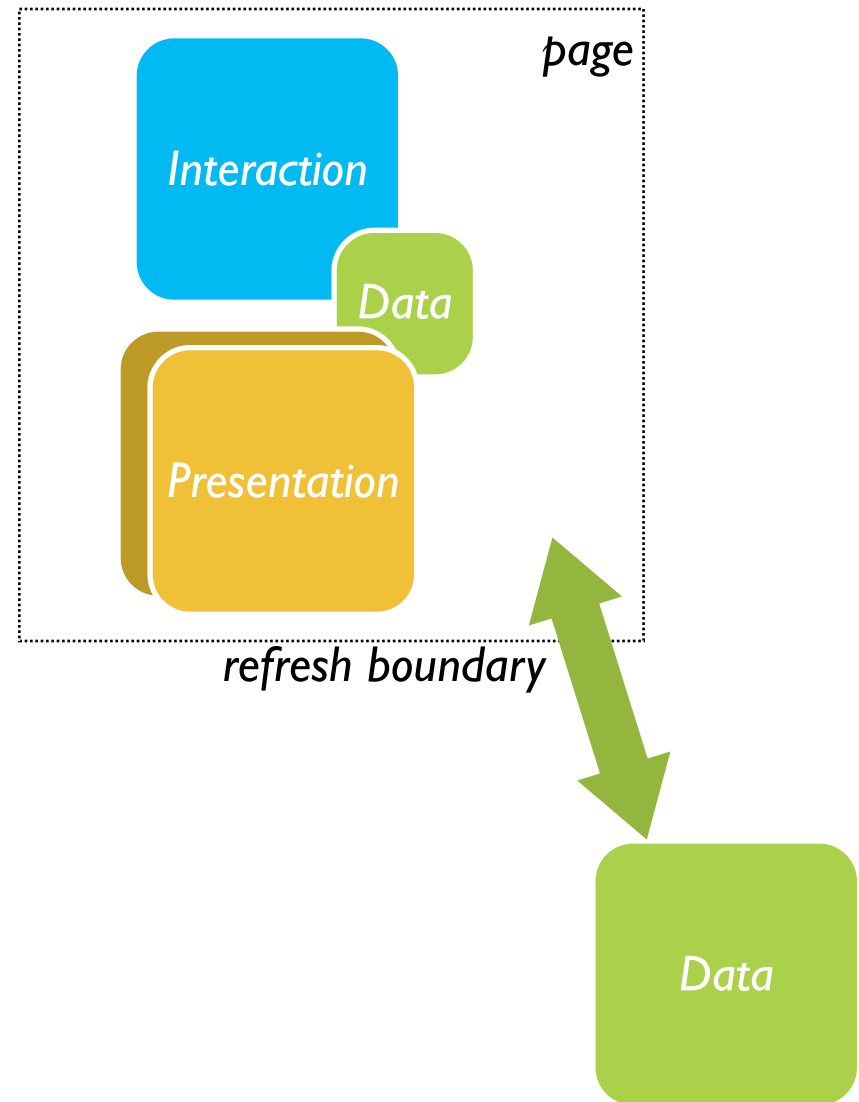
Defining Richness: Web in 3D

- Interaction Dimension
- Data Dimension
- Presentation Dimension

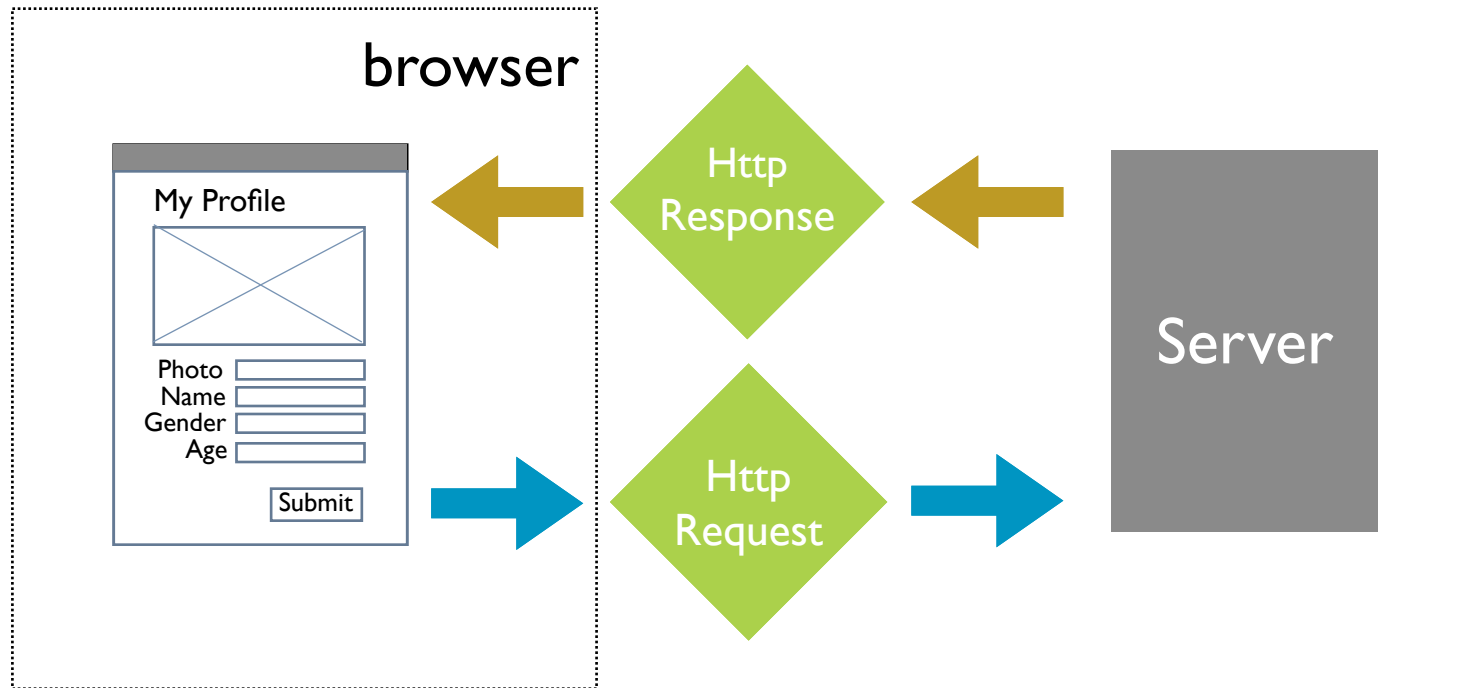


Classic Web

- Interaction course-grained
- Data loaded with the page or obtained via refresh
- Presentation: page-based updates



Classic Web Illustrated



Ajax = Just-in-Time. Immediacy.


Just-in-time data

Most Popular

Most Emailed | Most Viewed | Most Recommended | My Sources

- Lonely elephants, edgy apes baffled by post-Katrina life at zoo Knight Ridder - Sun Oct 16, 4:40 PM ET
- Scientists Study Gorilla
- Inflation Soars Higher
- Rick Springfield's Soap
- Feds Want Banks to

» All Most Emailed



NEW ORLEANS - An AWOL alligator has resurfaced, elephants are forlorn and apes are agitated at Audubon Zoo, one of the nation's most renowned animal sanctuaries, left by Hurricane Katrina both broken and broke.

World


Just-in-time presentation

Crew Id	Last Name	First Name
600922	Peterson	Shelley
349394	Craft	Adrian
432939	Douglas	Elyne
468370	Hill	Petra
999300	Barnes	James
344935	Smith	James
139204	Miller	Gordon

Crew Id	Last Name	First Name
600922	Peterson	Shelley
349394	Craft	Adrian
432939	Douglas	Elyne
468370	Hill	Petra
999300	Barnes	James
344935	Smith	James
139204	Miller	Gordon

S	M	T	W	T	F	S	S
				1	2	3	
4	5	6	7	8	9	10	
11	12	13	14	15	16	17	
18	19	20	21	22	23	24	
25	26	27	28	29	30	31	

S	M	T	W	T	F	S	S
				1	2	3	
4	5	6	7	8	9	10	
11	12	13	14	15	16	17	
18	19	20	21	22	23	24	
25	26	27	28	29	30	31	



Web | Images | Groups | News | Froogle | Local^{New!} | more »

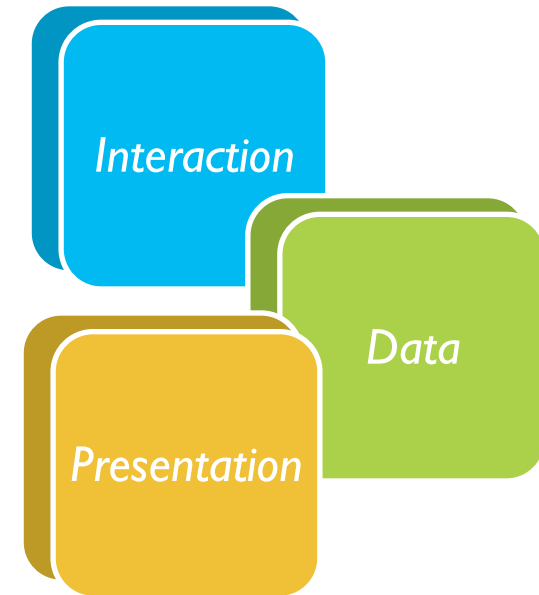
tom cruise

tom cruise	6,670,000 results
tom clancy	1,990,000 results
tom cruise movies	2,670,000 results
height	215,000 results
books	5,780,000 results
filmography	145,000 results
ne	730,000 results
	481,000 results
	552,000 results
	347,000 results

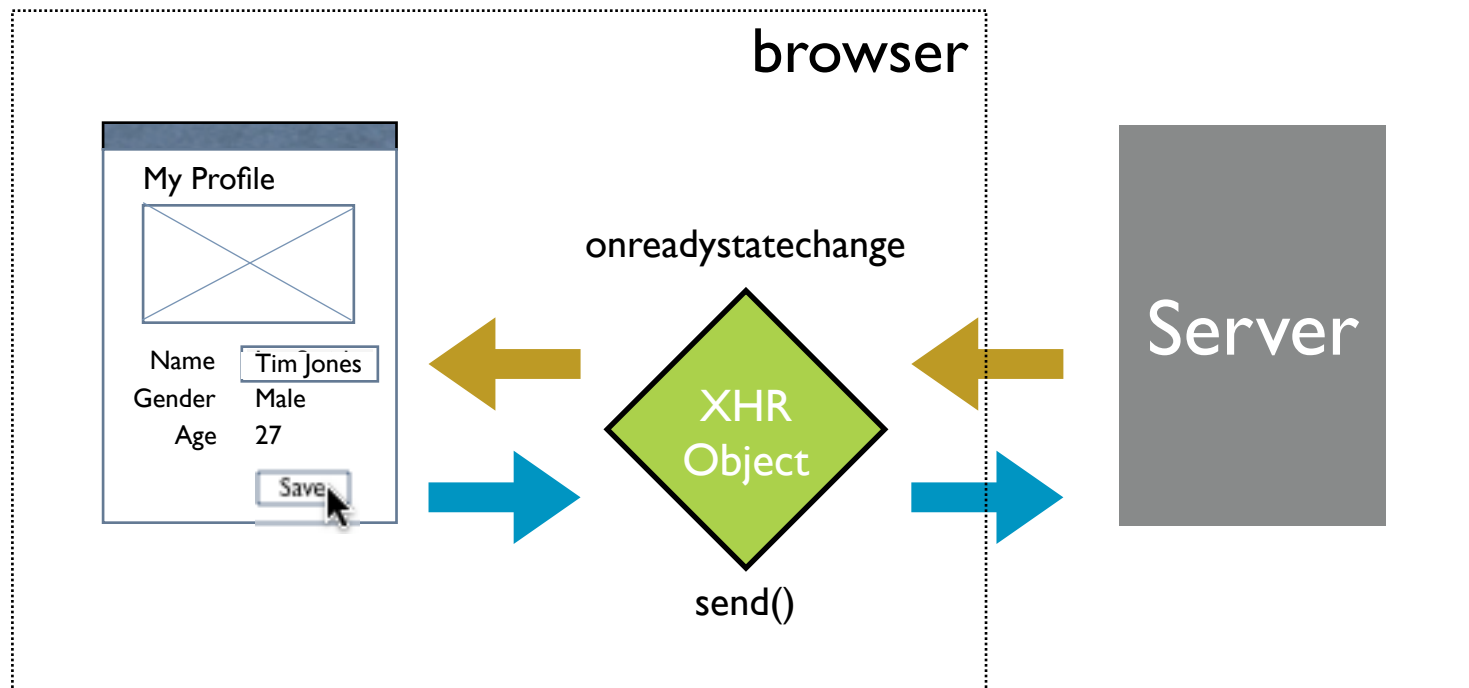
Just-in-time logic

Ajax Model - New & Improved!


- Now with Deeper Interaction!
- Now with Just-in-Time Data & Just-in-Time Logic!
 - ★ XMLHttpRequest (XHR) is the secret sauce!
- Now with Richer Interface!
- All dimensions are closer



Ajax Illustrated



AJAX vs Ajax

- AJAX = Asynchronous JavaScript and XML
 - Strict definition is using XMLHttpRequest (XHR) to retrieve XML within a web page
- Ajax = The set of technologies that allow web applications to provide rich interaction, just-in-time information and dynamic interfaces without required page refresh
- The Secret Sauce 
 - Ajax = XHR + DHTML (HTML, CSS, JavaScript) + Rich design

XHR, Not the Only Game in Town

- Hidden IFrame
- ` src`
- `<script> src` hack
- CSS href hack
- JS to faceless Java applets
- JS to faceless Flash
- NO CONTENT Response
- Cookies



How it Happened

The Tipping Point

- Gladwell's book describes the phenomena of change
- The Law of the Few
 - Connectors
 - Mavens
 - Salesmen
- Sticky Message

A Sequence of Events

- Invented and held captive in Redmond
- Dot com bust
- Innovation under the radar
- Seeds were sown by the browser wars
- From the ashes Firefox rises
- Google's gambit gives the stamp of approval
- Ajax is christened
- Outliers come on board

Invented in Redmond

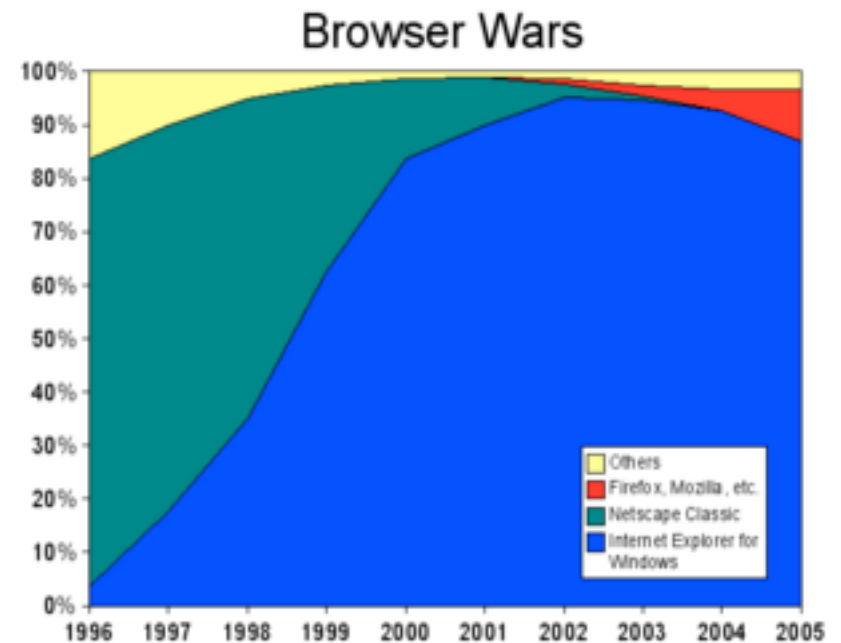
- Part of Internet Explorer 5.0, Sept. 1998
- Used to create the web version of Outlook
- Locked under the asp.net banner
- Not available in Netscape, etc.

Dot Com Boom & Bust

- Dot com boom brought lots of talent into web space
- Bust in late 2000, throughout 2001
- Innovation goes under the radar
 - Brent Ashley - remote scripting
 - Doug Crockford - json
 - Iain Lamb - oddpost

Fog of Browser War Clears

- 1999 - IE 60%
- 2000 - IE 80%
- 2001 - IE 90%



Internet Revival - \$\$

- Google on the move
- Yahoo! survives & thrives
- Amazon turns a profit
- Web 2.0 companies burst on scene
 - flickr
 - delicious
 - blogging

Web 2.0

- Tim O'Reilly's Definition

Web 1.0		Web 2.0
DoubleClick	-->	Google AdSense
Ofoto	-->	Flickr
Akamai	-->	BitTorrent
mp3.com	-->	Napster
Britannica Online	-->	Wikipedia
personal websites	-->	blogging
evite	-->	upcoming.org and EVDB
domain name speculation	-->	search engine optimization
page views	-->	cost per click
screen scraping	-->	web services
publishing	-->	participation
content management systems	-->	wikis
directories (taxonomy)	-->	tagging ("folksonomy")
stickiness	-->	syndication

<http://www.oreillynet.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html>

The “View Source” Culture

- Web as a showcase for talent
- The ability to share code freely and rapidly
- Coupled with blogging

Firefox Emerges

- Ironically out of the ashes of Netscape
- Mozilla 1.0, Firefox 1.0 introduces XMLHttpRequest as native object
- Same API as the Microsoft ActiveX component
- Now > 95% have XMLHttpRequest

Google Gambles

- gmail, google suggests and google maps use XHR
- Legitimizes the use of XHR
- Based on IE + Firefox
- Forces Safari & Opera to come on board

Jesse James Garrett

- Actually, the “godfather” of Ajax :-)
- Created a sticky message
- “Ajax” is a very popular search term

Designing For Ajax

A Fundamental Change in Designing for the Web

Bill W. Scott, Y! Ajax Evangelist

bscott@yahoo-inc.com

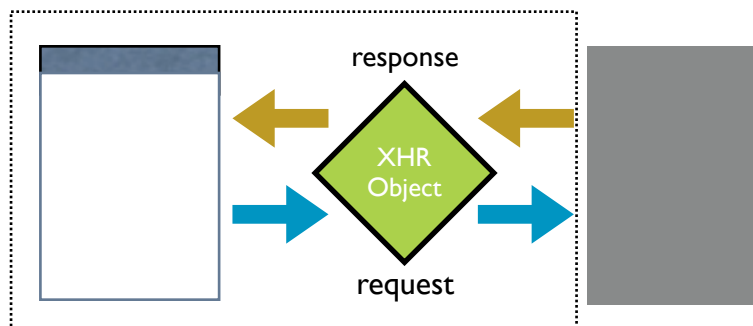


Patterns

Drag and Drop. Drag and Drop Modules. In Page Editing. In Page Custom Editing. Direct State Editing. Grid Cell Editing. Inline Custom Editing. Inline Tag Editing. Popup Custom Editing. Slide-out Custom Editing. Inline Text Editing. Inline Reordering. Indication. Busy Indication. Cursor Busy. In Context Busy. In Context Progress. Inline Status. Auto Complete. Balloon Error Tip. Deferred Content Loading. Dynamic Goal. Narrowing Choices. Refining Search. Live Search. Invitation. Cursor Invitation. Drop Invitation. Tool Tip Invitation. Hover Invitation. Detail Zoom. Opacity Focus. Configurable Module - Faceplate. Configurable Module - Flip It. Configurable Module - Inline Configure. Configurable Module - Slide Out Drawer. Slide Out. Flip. Opacity Fade. Endless Scrolling. Expandable Paging Boundary. Fresh Content. Hover Detail. In Place Drill Down. Inline Assistant. Inline Validation. Validate Then Suggest. On Demand Refresh. Resizable Modules. Scrolling Modules. Auto Save. In Context Tools. Remembered Collection. Remembered Preferences. Auto Form Fill. Live Ratings. Transition. Brighten Transition. Cross Fade Transition. Dim Transition. Expand Transition. Fade In Transition. Fade Out Transition. Flip Transition. Move Transition. Self-Healing Transition. Shrink Transition. Slide Transition. Rich Internet Object. Available. Selected. Identifiable Object.

But What Can XHR Do?

- Make a request
- Return a response
- And do it asynchronously



Anatomy of a Pattern

- Ajax design patterns contain three steps
 - **Trigger** (event or timer)
 - **Operation** (Ajax, remote scripting)
 - **Update** (presentation)



Trigger

- Every pattern starts with
 - a user event
 - a timer event

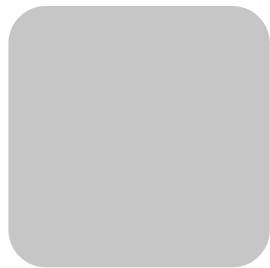
mouseout hover keypress keydown mousedown
drop filter choices mouseup drag click mousedown select
focus blur resize move timeout



Update

- Finally, patterns reflect a visual change

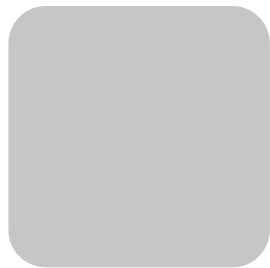
slideout slideover dropdown popup balloon
busyicon mousecursor fade dim brighten selfhealing additems
finishedindicator remove show hide resize



Operation

Ajax patterns open the door to immediacy

- **Lookup** I can get information when I need it
- **Persist** I can save in real-time
- **Validate** I can prevent errors early
- **Invoke** I can make things happen now
- **Message** I can communicate instantly



Operation. Lookup

I can get information when I need it

endless scrolling **dynamic detail form auto-fill** narrowing
actions refining search deferred loading dependent choices **dynamic**
updates **live search suggestion** blind content toggle on-demand
update look before you leap **periodic refresh** dynamic filter





type, Google will offer suggestions. Use the arrow keys to navigate the results. [L](#)

[Feedback](#) - [Discuss](#) - [Terms of Use](#) - [FAQ](#)

©2006 Google



Instant Search **BETA**



Instant Search gives you answers as you type -- no more waiting!

Why feel lucky when you can be right? With Instant Search, results instantly appear for [Yahoo! Shortcuts](#) and common searches. Give it a spin! Type in these examples below, or try your own searches:

- boston weather
- wikipedia
- nfl
- 22 5th ave new york ny
- san francisco coffee shops
- dmv



Rico LiveGrid

RICO AJAX SEARCH

LiveGrid Demonstration

Powered by Yahoo! Search

Select Search Category: **Web** Images Videos

Search the Web:

- Search Results Results 1 - 5 of about 10600000 for monterey bay
- [Monterey.com](#)
guide to attractions, lodging, dining, and more. A service of the Monterey Peninsula Visitors and Conventions Bureau.
<http://www.monterey.com/> - text/html
 - [California State University, Monterey Bay](#)
comprehensive state university which values service through high quality education.
<http://csumb.edu/> - text/html
 - [Monterey Bay - National Geographic](#)
Monterey Bay @ nationalgeographic.com ...
http://www.nationalgeographic.com/monterey/ax/primary_fs.html - text/html
 - [Monterey Bay Aquarium](#)
mission is to inspire conservation of the seas.
<http://www.mbayaq.org/> - text/html
 - [Monterey Bay Aquarium: Live Web Cams](#)
Eight live web cameras of the Monterey Bay Aquarium's marine life exhibits and Monterey Bay, Monterey, CA. ... Monterey Bay Aquarium, 886 Cannery Row, Monterey, CA 93940 Tel: (831) 648-4800. © 1999-20
http://www.mbayaq.org/efc/cam_menu.asp - text/html

The screenshot shows the Yahoo! Mail Beta interface. At the top, it says "Welcome, b.scott" and "Sign Out, My Account, Switch Back". There are navigation links for "Yahoo! | My Yahoo! | News" and a search bar. Below the navigation, there are buttons for "Check Mail" and "Compose". A search bar for messages is present. The main area is divided into a left sidebar with folders (Inbox, Drafts, Sent, Spam (501), Trash (3), Contacts, Calendar, Notepad, All RSS Feeds) and "My Folders" (dojo-mailist (4), ID Disc, Karthik-Referrals, Keep, MerchantSpam (149), ux mail lists (1863)). The main pane shows an "Inbox" with 2324 messages. A table lists messages with columns for "From", "Subject", and "Receive". The selected message is from "me" with subject "Re: rico question". Below the inbox, there are promotional banners for "What's your Credit Score?", "Netflix-Try Free! No Late Fees", and "Online Degree Programs".

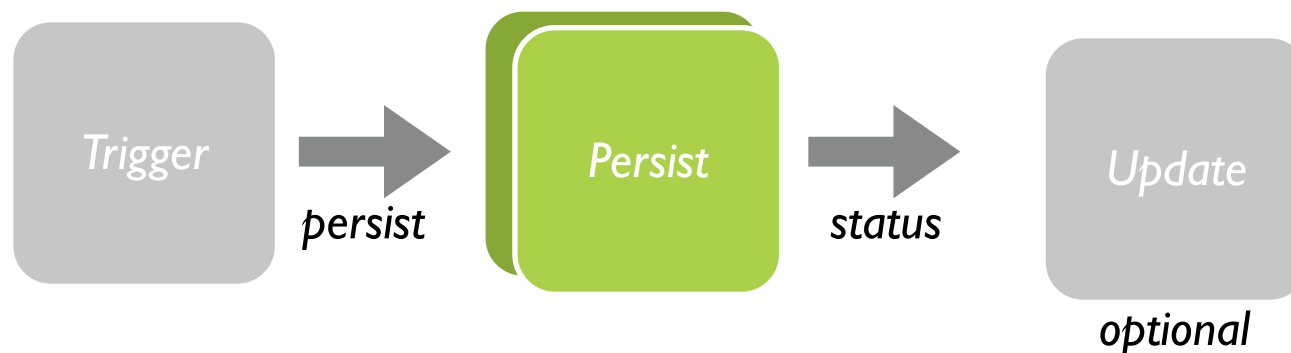
Yahoo! Mail Beta (Oddpost)



Operation. Persist

I can save in real-time

hover spy **in page edit** inline tagging rating persistent preferences
inline grid editing inline rearrange silent submit remembered collection
persistent portals



Rocky Waters

ADD NOTE SEND TO GROUP ADD TO SET BLOG THIS ALL SIZES ORDER PRINTS ROTATE DELETE X



Add tags

Test Page

Body List Notes Files Images Writeboards Links Sharing ?

Notes

First Note (modified) Posted 30 Nov
This is just a note that I added. And some more text was added.

[Add note](#)



Persist persistent portals

The screenshot shows the Yahoo! Plus homepage with a navigation bar at the top. Below the navigation bar is a search bar and a weather widget. The main content area is divided into several modules:

- Scoreboard:** Displays sports scores for NHL and NBA games.
- Message Center:** Shows email status and a notification for 14 friends on Messenger.
- Software News:** Lists recent software news items.
- eHub:** Lists eHub interviews and news items.
- Best Fare Tracker:** Shows flight prices for various destinations.
- Weather:** Displays weather forecasts for several cities.
- Maps:** Shows a map of the user's locations.



Operation. Validate

I can prevent errors early

per field validate keystroke validate
inline form validate invalid but suggest



Operation. Invoke

I can make things happen now

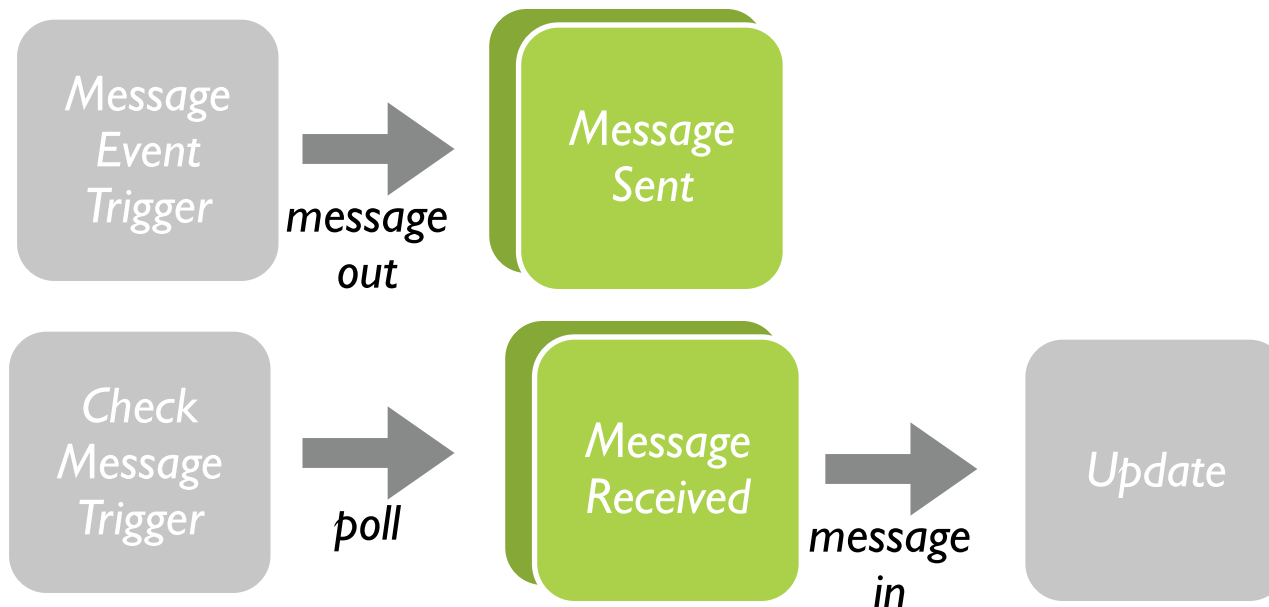
fire and forget lightweight action



Operation. Message

I can communicate instantly

two-way chat real-time auction
collaborative white board



Pattern Ingredients

- Trigger + Operation + Update defines Ajax patterns
- So, let's make some patterns



Pattern-O-Matic



Drag and Drop. Drag and Drop Modules. In Page Editing. In Page Custom Editing. Direct State Editing. Grid Cell Editing. Inline Custom Editing. Inline Tag Editing. Popup Custom Editing. Slide-out Custom Editing. Inline Text Editing. Inline Reordering. Indication. Busy Indication. Cursor Busy. In Context Busy. In Context Progress. Inline Status. Auto Complete. Balloon Error Tip. Deferred Content Loading. Dynamic Goal. Narrowing Choices. Refining Search. Live Search. Invitation. Cursor Invitation. Drop Invitation. Tool Tip Invitation. Hover Invitation. Detail Zoom. Opacity Focus. Configurable Module - Faceplate. Configurable Module - Flip It. Configurable Module - Inline Configure. Configurable Module - Slide Out Drawer. Slide Out. Flip. Opacity Fade. Endless Scrolling. Expandable Paging Boundary. Fresh Content. Hover Detail. In Place Drill Down. Inline Assistant. Inline Validation. Validate Then Suggest. On Demand Refresh. Resizable Modules. Scrolling Modules. Auto Save. In Context Tools. Remembered Collection. Remembered Preferences. Auto Form Fill. Live Ratings. Transition. Brighten Transition. Cross Fade Transition. Dim Transition. Expand Transition. Fade In Transition. Fade Out Transition. Flip Transition. Move Transition. Self-Healing Transition. Shrink Transition. Slide Transition. Rich Internet Object. Available. Selected. Identifiable Object.

Yahoo! Patterns

The image shows a screenshot of the Yahoo! Developer Network Design Pattern Library. The page is titled "Design Pattern Library" and features a navigation menu on the left with categories like "USERS NEED TO", "EXPLORE DATA", "ORGANIZE", "RECEIVE FEEDBACK", "PERFORM", "CUSTOMIZE", "APPLICATIONS NEED TO", "CALL ATTENTION", "IMPROVE READABILITY", "GROUP RELATED ITEMS", "ORGANIZE SCREEN/PAGE", and "SCREEN SIZE LIMITATION". The main content area is divided into several sections:

- Welcome:** A brief introduction to the library.
- What's a Pattern:** A definition of a design pattern.
- Featured Patterns:** A list of featured patterns, including "Auto Complete" and "Breadcrumbs".
- Sub-Topics:** A list of sub-topics, including "Pagination", "Chronological Pagination", and "Search".
- Pagination:** A detailed section on pagination, including a "Problem Summary", "Rationale", and "Solution".
- Pagination List:** A section showing a "Problem Summary" and "Use When" for a pagination list.
- RELATED PATTERNS:** A list of related patterns, including "Pagination (jQuery)", "Chronological Pagination", and "Search Result Pagination".
- AS USED ON YAHOO!:** A list of examples of the pattern used on Yahoo!, including "Yahoo! My Web" and "Yahoo! Mail Beta".
- CODE EXAMPLES:** A list of code examples, including "Code Example 1" and "Code Example 2".

The page also includes a search bar, a "Site Search" button, and a "Copyright © 2006 Yahoo! Inc. All rights reserved." notice at the bottom.



Principles

Common Ajax Principles

1. Keep it direct
2. Provide live feedback
3. Offer an invitation
4. Use dynamic space
5. Cross borders reluctantly
6. Leave a light footprint
7. Show transitions
8. Think in objects
9. Tell a story



Keep it direct

Prefer interaction inside the page

Use direct editing on content

Keep your tools nearby

Create smart tools that infer context

Use drag and drop where appropriate

submit **hyperlink**



mouseout **hover** keypress keydown **mousedown**
drop filter choices **mouseup** drag click select **focus**
blur resize **move** **timeout**

Drag and Drop. Drag and Drop Modules. In Page Editing. In Page Custom Editing. Direct State Editing. Grid Cell Editing. Inline Custom Editing. Inline Tag Editing. Popup Custom Editing. Slide-out Custom Editing. Inline Text Editing. Inline Reordering.



YAHOO! PLUS

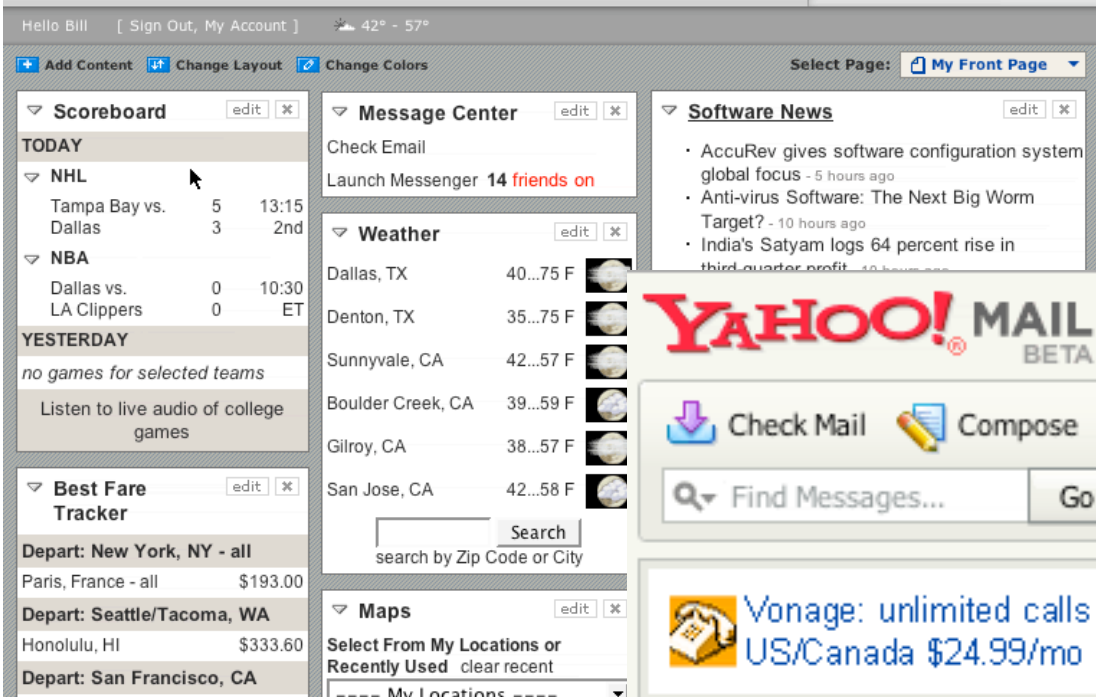
Select Type: **Web** | Images | Local | News | Shopping

Animated Tour Useful New Features | We Upgraded Mail Storage: Now 2G

Search: Search

My Services | Feedback

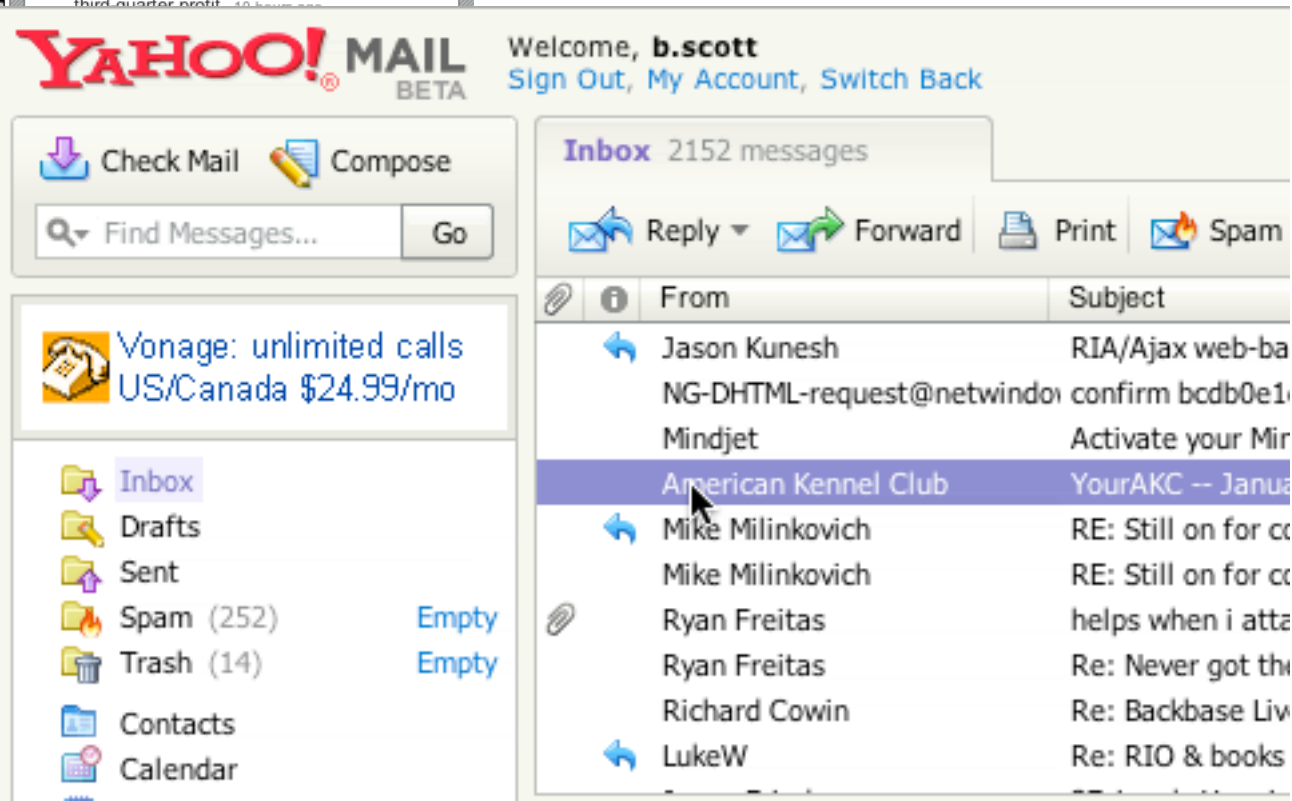
Music | Video | Mail | More



Hello Bill [Sign Out, My Account] 42° - 57°

Add Content | Change Layout | Change Colors | Select Page: My Front Page

- Scoreboard**
 - TODAY
 - NHL
 - Tampa Bay vs. Dallas 5-3 13:15 2nd
 - NBA
 - Dallas vs. LA Clippers 0-0 10:30 ET
 - YESTERDAY
 - no games for selected teams
 - Listen to live audio of college games
 - Best Fare Tracker
 - Depart: New York, NY - all
 - Paris, France - all \$193.00
 - Depart: Seattle/Tacoma, WA
 - Honolulu, HI \$333.60
 - Depart: San Francisco, CA
- Message Center**
 - Check Email
 - Launch Messenger 14 friends on
- Weather**
 - Dallas, TX 40...75 F
 - Denton, TX 35...75 F
 - Sunnyvale, CA 42...57 F
 - Boulder Creek, CA 39...59 F
 - Gilroy, CA 38...57 F
 - San Jose, CA 42...58 F
- Maps**
 - Select From My Locations or Recently Used clear recent
 - My Locations
- Software News**
 - AccuRev gives software configuration system global focus - 5 hours ago
 - Anti-virus Software: The Next Big Worm Target? - 10 hours ago
 - India's Satyam logs 64 percent rise in third-quarter profit - 10 hours ago



YAHOO! MAIL BETA

Welcome, b.scott | Sign Out, My Account, Switch Back

Check Mail | Compose

Find Messages... Go

Vonage: unlimited calls US/Canada \$24.99/mo

Inbox | Drafts | Sent | Spam (252) Empty | Trash (14) Empty | Contacts | Calendar

From	Subject
Jason Kunesh	RIA/Ajax web-ba
NG-DHTML-request@netwindo	confirm bcd0e1
Mindjet	Activate your Mir
American Kennel Club	YourAKC -- Janua
Mike Milinkovich	RE: Still on for c
Mike Milinkovich	RE: Still on for c
Ryan Freitas	helps when i atta
Ryan Freitas	Re: Never got th
Richard Cowin	Re: Backbase Liv
LukeW	Re: RIO & books

Rocky Waters

[ADD NOTE](#)
[SEND TO GROUP](#)
[ADD TO SET](#)
[BLOG THIS](#)
[ALL SIZES](#)
[ORDER PRINTS](#)
[ROTATE](#)
[DELETE](#)



Add tags

Test Page

[Body](#)
[List](#)
[Notes](#)
[Files](#)
[Images](#)
[Writeboards](#)
[Links](#)
[Sharing](#)

Notes

First Note (modified) Posted 30 Nov

This is just a note that I added. And some more text was added.

[Add note](#)

My Grade:

B-
Fair

[write a review](#)

A
B+ B B-
C
D
F

0	1	2
0,0	0,1	☆☆☆☆☆
1,0	1,1	☆☆☆☆☆
2,0	2,1	☆☆☆☆☆

Scheduled Items

Wed 11/23/05 (day 1) - Yosemite Natl Pk, Yosemite National Park

  **Yosemite Lodge** [View](#) | [Delete](#)

From \$97.00 to \$146.00 per night. [Reserve Now](#)

 559-252-4848

Yosemite Natl Pk, CA 95389

United States

In the valley of Yosemite National Park

Notes: [\[Edit \]](#)


Tags: [\[Edit \]](#)

Dates: [\[Add \]](#)

Wed, Nov 23rd - Fri, Nov 25th [\[Edit \]](#)




  **Tunnel View**

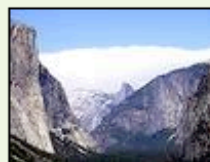
 +1 209 372 1000




Wawona Rd

Yosemite National Park, CA 95389

United States

This breathtaking and spectacular sight is located on Highway 41 just north of Wawona, and just south of the Valley Floor. This popular spot is the most photographed view of the valley. It received 



 	From	Subject
	Peter Boersma	Re: [REDACTED]
	Yahoo! Toolbar	Welcome to
	Weekend Extra	5 Tips for

- Inline Text Editing
 - Do we need save/cancel? Is so, when?
 - Try to not disturb the page when switching modes
- Discoverability
 - Not expected model of most content
 - Any visual treatment clutters the screen
 - On page tips?
- Once someone learns it, is it so useful it outweighs initial discoverability issues?
- Combine with invitations, spotlights, inline indicators

2

Provide live feedback

Design for immediacy

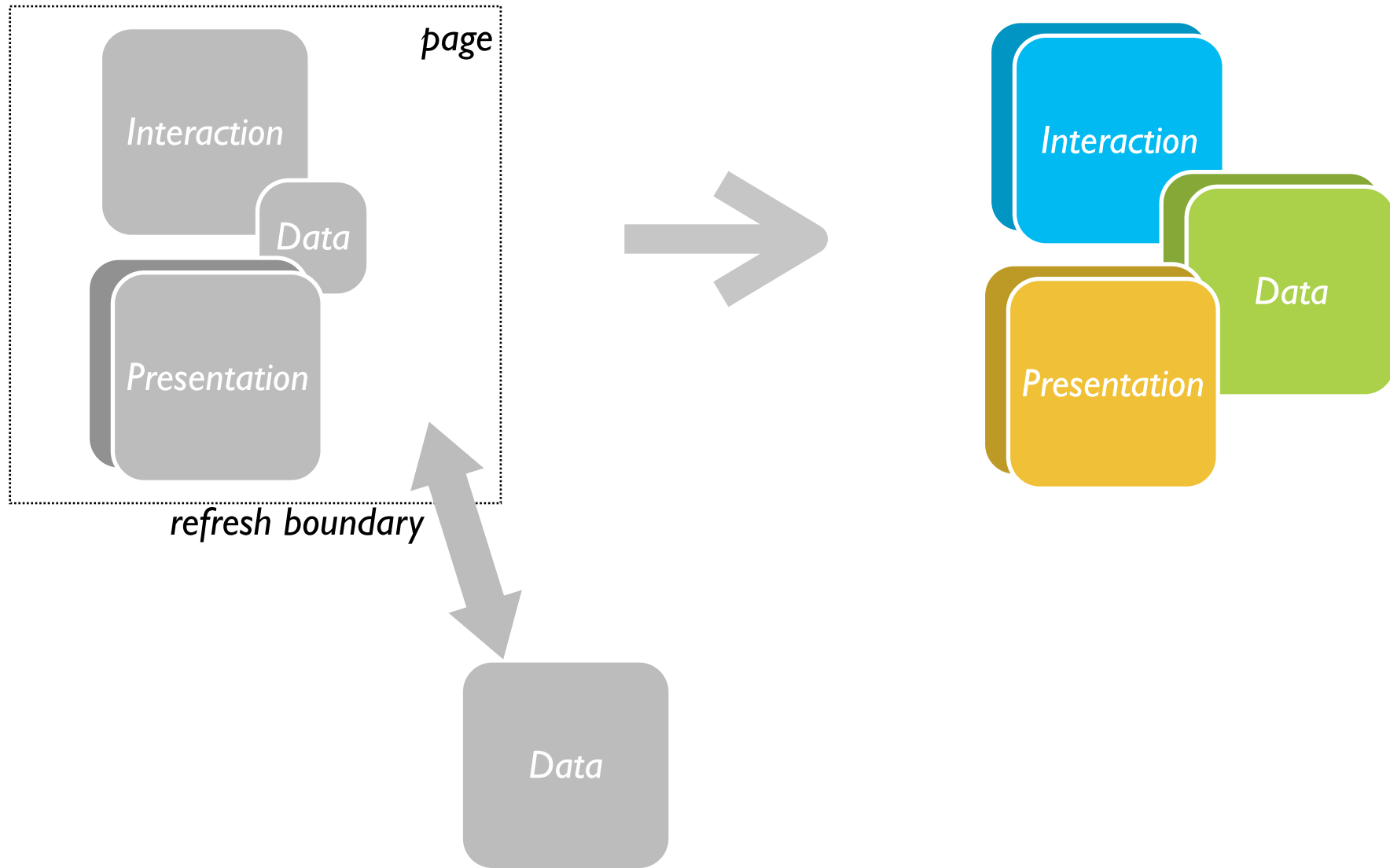
Design for relevancy

Use live previews (look before you leap)

Play the confidence game

Create nimble clients

Watch out, feedback can be distracting



**Indication. Busy Indication.
Cursor Busy. In Context
Busy. In Context Progress.
Inline Status. Auto
Complete. Balloon Error Tip.
Deferred Content Loading.
Dynamic Goal. Narrowing
Choices. Refining Search.
Live Search.**

Most Popular

Most Emailed | Most Viewed | Most Recommended | My Sources

- Lonely elephants, edgy apes baffled by post-Katrina life at zoo Knight Ridder - Sun Oct 16, 4:40 PM ET
 - Scientists Study Gorilla
 - Inflation Soars Higher
 - Rick Springfield's Soaring
 - Feds Want Banks to Stay
- » All Most Emailed



NEW ORLEANS - An AWOL alligator has resurfaced, elephants are forlorn and apes are agitated at Audubon Zoo, one of the nation's most renowned

animal sanctuaries, left by Hurricane Katrina both broken and broke.

World

Just-in-time data



Web | Images | Groups | News | Froogle | Local^{New!} | more »

tom cruise	6,670,000 results
tom clancy	1,990,000 results
tom cruise movies	2,670,000 results
tom cruise height	215,000 results
ns	5,780,000 results
e	145,000 results
cy books	730,000 results
se filmography	481,000 results
olin	552,000 results
trane	347,000 results

Just-in-time presentation

Students to Enroll

Crew Id	Last Name	First Name
600922	Peterson	Shelley
349394	Craft	Adrian
432939	Douglas	Elayne
468370	Hill	Petra
999300	Barnes	James
344935	Smith	James
139204	Miller	Gordon

Course Calendar

S	M	T	W	T	F	S	3
	4	5	6	7	8	9	10
	11	12	13	14	15	16	17
	18	19	20	21	22	23	24
	25	26	27	28	29	30	31

Students to Enroll

Crew Id	Last Name	First Name
600922	Peterson	Shelley
349394	Craft	Adrian
432939	Douglas	Elayne
468370	Hill	Petra
999300	Barnes	James
344935	Smith	James
139204	Miller	Gordon

Course Calendar

S	M	T	W	T	F	S	3
	4	5	6	7	8	9	10
	11	12	13	14	15	16	17
	18	19	20	21	22	23	24
	25	26	27	28	29	30	31

Just-in-time logic



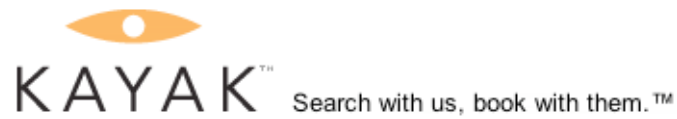
Instant Search BETA

Instant Search gives you answers as you type -- no more waiting!

Why feel lucky when you can be right? With Instant Search, results instantly appear for [Yahoo! Shortcuts](#) and common searches. Give it a spin! Type in these examples below, or try your own searches:

- boston weather
- wikipedia
- nfl
- 22 5th ave new york ny
- san francisco coffee shops
- dmv





Flights | [Hotels](#) | [Cars](#) | [Deals](#) | [Best Fare Buzz](#)

Round-trip
 One-way
 Multi-city

From **To**
 Show Nearby Airports
 Show Nearby Airports

Leave **Time**
Return **Time**

Travelers **Cabin**

Prefer Nonstop

for [hundreds of airlines.](#)

[Show BCC](#)

[Plain Text](#)



[Flights](#) | [Hotels](#) | [Cars](#) | [Deals](#) | [Buzz](#)

No

San Jose, CA to Las Vegas, NV Wed 15 Feb 2006 - Wed 22 Feb 2006 / round-

Find [Hotels](#) or [Cars](#) for this trip

[Start search over](#)

515 of 515 results shown [show all](#)

Stops

nonstop 1 stop 2+ stops

Airlines

- [select all](#) | [clear](#)
- | | |
|---|---|
| <input type="checkbox"/> Alaska Airlines | \$285 |
| <input checked="" type="checkbox"/> America West | \$198 \$212 |
| <input checked="" type="checkbox"/> American Airlines | \$189 \$194 |
| <input checked="" type="checkbox"/> JetBlue Airways | \$192 |
| <input checked="" type="checkbox"/> Multiple Airlines | \$198 |
| <input checked="" type="checkbox"/> US Airways | \$198 \$212 |
| <input checked="" type="checkbox"/> United | \$193 \$203 |

Leave depart arrive
 Wed 5:00a 10:30p

Return depart arrive
 Wed 6:00a Thu 12:00a

Price*	Airports	Airline	Depart	Arrive	Stops (Duration)
\$189	SJC > LAS LAS > SJC	American Airlines	12:57p 10:00a	2:21p 11:25a	0 (1h 24m) 0 (1h 25m)

[buy direct at:](#)

[\\$192](#) OAK > LAS
LAS > OAK

[buy direct at:](#)

[\\$192](#) OAK > LAS
LAS > OAK

[buy direct at:](#)

[\\$192](#) OAK > LAS
LAS > OAK

[buy direct at:](#)

[\\$192](#) OAK > LAS
LAS > OAK

[buy direct at:](#)

[\\$192](#) OAK > LAS
LAS > OAK

[buy direct at:](#)

Welcome, **billwaynescott**
[\[Sign Out\]](#), [\[My Account\]](#)

[FareChase Home](#)

[Save to My Web](#) [Recom](#)

Flight Results Results 1 - 7 of 7 for San Jose, CA to Las Vegas, NV (02/22 - 03/01) (A)

Flights **Hotels**

[Change Your Search](#)

Refine Results:

Flight Times from

DEPARTURE

5am - 9am [\\$187](#)

9am - 3pm [\\$166](#)

3pm - 9pm [\\$166](#)

9pm - 5am [\\$192](#)

RETURN

5am - 9am [\\$196](#)

9am - 3pm [\\$194](#)

3pm - 9pm [\\$192](#)

9pm - 5am (n/a)

Airports

Oakland - OAK

San Francisco - SFO

San Jose - SJC

SPONSOR RESULTS

Flight to Vegas: Compare at Travelzoo
 Save on flights to Vegas at Travelzoo - Get great deals on flights to Vegas by comparing f...
[www.travelzoo.com](#)

Flights to Las Vegas: Sherman's Travel
 Search dozens of sites at once for discount offers on airfare, hotels, cruises, car rental...
[www.shermanstravel.com](#)

Sort by: **Low price** | [Departure times](#) | [Return times](#)

\$192 Ted (flight details)
 per person **10:19p-11:43p** Non-stop SFO-LAS
7:17p-8:45p Non-stop LAS-SFO **GO!**
[Book it now](#) - [Email](#) - [IM](#)
[flyted.com](#)

\$194 Multiple Carriers (flight details)
 per person **10:19p-11:43p** Non-stop SFO-LAS
10:00a-11:25a Non-stop LAS-SJC† **GO!**

[Book it now](#) - [Email](#) - [IM](#)
[cheaptickets.com](#)

Great Flight + I for Las Vegas
 Save with add-on hotel to your flig Vegas and save r
[www.cheapticket](#)

Save with Flight deals for Las V
 Build your trip to find a great deal! and Go.
[www.orbitz.com](#)

Las Vegas Vac Packages from Lodging.com
 Save more when hotel with your fl Vegas.
[www.lodging.com](#)

blog: Looks Good Works Well | settings | help | sign out | feeds

measuremap

An overview of visitors during January 2006

Visitors to your blog

1480
740

Today

Feb

visitors overview

5271 visitors came to your blog
That's 2140 more than an average 10 day period.

10% of those visitors had been to your blog before
That's 521 visitors, 122 more than an average 10 day period.

Some numbers since you started tracking

Your blog has had **908** web sites have made **1424** links out from

Measure Map is
Questions or comments? Visit the

- VISITORS
- LINKS
- COMMENTS
- POSTS
- BROWSERS
- COUNTRIES
- TIMES

back to DASHBOARD

Check Mail Compose

Find Messages... Go

DEPARTURE	
<input type="checkbox"/> 5am - 9am	\$187
<input checked="" type="checkbox"/> 9am - 3pm	\$166
<input checked="" type="checkbox"/> 3pm - 9pm	\$166
<input checked="" type="checkbox"/> 9pm - 5am	\$192
RETURN	
<input checked="" type="checkbox"/> 5am - 9am	\$187

Flights to Las Vegas: Sherman's Travel

Search dozens of sites at once for discount offers on airfare, hotels, cruises, car rental...

www.shermanstravel.com

Sort by: **Low price** | [Departure times](#) | [Return times](#)

\$166 [JetBlue](#) (flight details)

per person 11:40a-5:10p 1-stop OAK-LAS

Standard Header | Hide Pane
Wed Feb 1 17:06:45 2006

Your Domain Is Active

Yahoo! Webhosting <wh-professional@yahoo-inc.com>

To: yuiblogger@yahoo.com

Cc: billwscott@gmail.com

Airports

<input checked="" type="checkbox"/> Oakland - OAK
<input checked="" type="checkbox"/> San Francisco - SFO
<input checked="" type="checkbox"/> San Jose - SJC

\$166 [JetBlue](#) (flight details)

per person **1:55p-5:10p** 1-stop OAK-LAS

3 return times available at this price **GO!**

[Book it now](#) - [Email](#) - [IM](#)

jetblue.com

Vegas and save

www.cheapticket.com

Save with Flight deals for Las Vegas

Build your trip to find a great deal! and Go.

www.orbitz.com

Las Vegas Vacation Packages from Lodging.com

Save more when hotel with your flight Vegas.

www.lodging.com



My Grade:	A		
B-	B+	B	B-
Fair	C		
	D		
write a review	F		

:BETA:

Search Tags Blog Finder Popular About

president bush in All Blogs Search Options

882,052 posts about:

[Add to Watchlist](#)

president bush [Search related blogs](#)

Related tags: [Politics](#), [Hurricane Katrina](#), [Iraq](#), [Katrina](#), [Hurricane](#), [Supreme Court](#).

- ▶ **Recent Posts** tagged [president bush](#) [View Tag »](#)
- ▶ **Top Blogs** about [president bush](#) [View Blogs »](#)


Loading

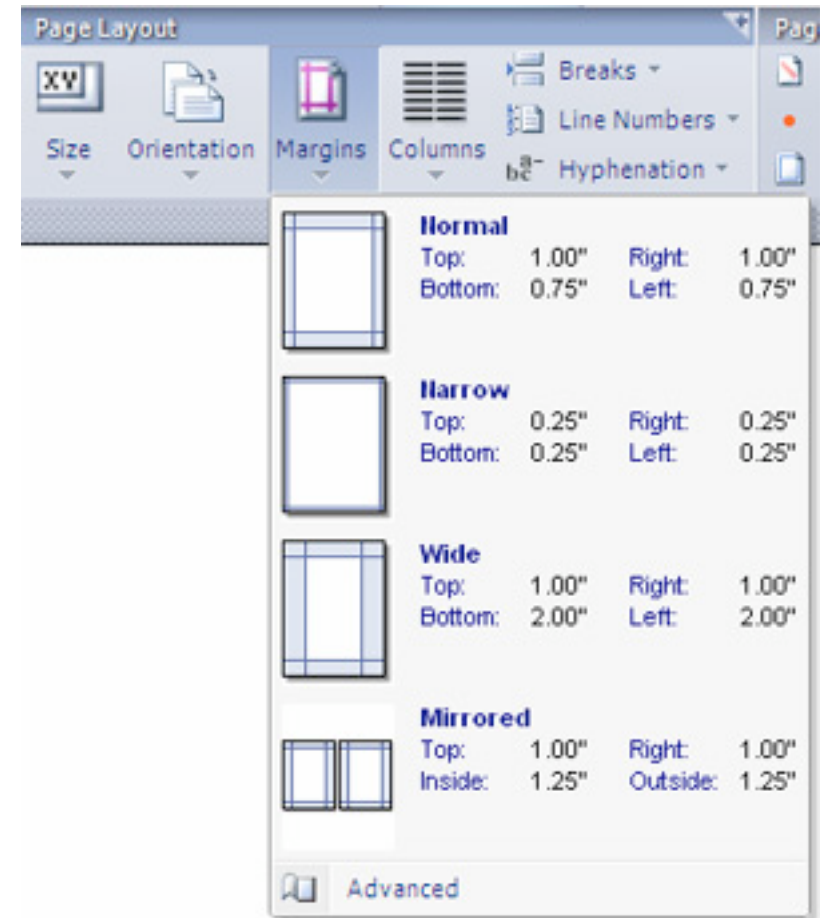

Loading

20 posts in the last 44 minutes in [All Languages](#)


Weapons-grade Bullshit
to bring down the evil **Bush**/Cheney/Rumsfeld neo-con cabal, but tragically scoring only collateral... and essentially accused the Vice **President** of the United States of treason—with absolutely no evidence
Posted 9 minutes ago in [protein wisdom](#) [1,004 links](#) [Search this blog](#)

The Shocking Case of Ahmed Omar Abu Ali
members into the U.S. by means of Mexico, to commit aircraft piracy, and to kill **President Bush**
Posted 12 minutes ago in [Cassel: Civil Liberties Watch](#) [0 links](#)
[Search this blog](#)

- Microsoft Vista/Office 12
 - Hover over gallery item
 - Shows live preview without committing
 - Only on click is the preview accepted
 - At which point the menu goes away and selection is retained
 - Otherwise mouse out returns to normal view



size & color
overview
X



more views

Pique polo
Imported.
[only at gap.com](#)

Buy More and Save

select Color:
white
\$29.50 **Buy 2 or more, \$25.00 each**

~~\$29.50~~ **\$9.99**

select Size:

XS

S

M

L

XL

XXL

XXXL

also in tall
(prices may vary)

select qty

[size chart](#)
[more details](#)

white
\$29.50

add to bag

- Distracting or narrowing? When live search works
- Search is hard to narrow without distracting
Its only distracting when I don't like the results
 - Google suggests information I don't want - distracting
 - Yahoo! Instant search narrows too quickly
 - Auto complete is a bounded problem - easy to narrow
 - Oddyssey of Y!Mail Beta Search
- Obvious conclusion
 - The results are direct results-- not indirect results
 - The results are actually narrowing and not diverging
 - The results are narrowing and yet not distracting

- In context feedback should
 - Not disturb the unrelated elements on the page
 - Be close in proximity
 - Either animated or clearly visible
 - Be transient
 - Not jerky (distracting)

3

Offer an invitation

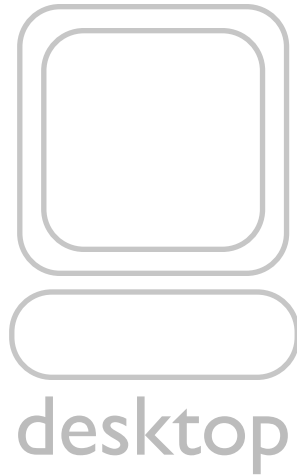
Rediscover hover

Use invitations to aid in discoverability

Use lightweight events as the welcome mat

Don't confuse invitation with action - keep it safe

Invite, don't proselytize



hover blur focus **click key**
shiftclick doubleclick
drag dragdrop dragflipdrop
shiftdoubleclick tripleclick shifttripleclick

hover blur focus **click key**
shiftclick doubleclick
drag dragdrop dragflipdrop
shiftdoubleclick tripleclick shifttripleclick



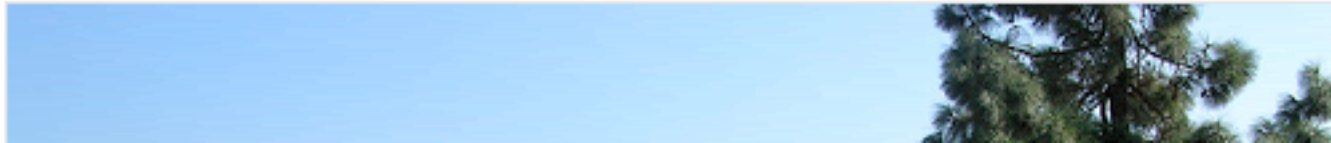
hover blur focus **click**
key shiftclick doubleclick dragdragdrop

hover blur focus **click**
key shiftclick doubleclick drag dragdrop

**Invitation. Cursor Invitation.
Drop Invitation. Tool Tip
Invitation. Hover Invitation.**

Park near our new home

ADD NOTE
 SEND TO GROUP
 ADD TO SET
 BLOG THIS
 ALL SIZES
 ORDER PRINTS
 ROTATE
 DELETE



Lists

Remove this item

Add item or **I'm done adding items**

[Make a new list](#)

My Grade:

	A
B-	B+ B B-
Fair	C
	D
write a review	F

classic



Pique polo
\$9.99-\$29.50
 Buy More and Save



double mini striped
 pique polo
 \$29.50
 Buy 2 or more, \$25.00
 each [See All](#)



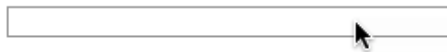
allover striped pique
 polo
 \$29.50
 Buy 2 or more, \$25.00
 each [See All](#)



rugby stripe pique polo
 \$29.50
 Buy 2 or more, \$25.00
 each [See All](#)

	From	Subject
	Peter Boersma	Re: [unreadable]
	Yahoo! Toolbar	Welcome to
	Weekend Extra	5 Tips for


To see a product preview in action, hover over the link below.



Forty Associates recently added product previews to their Web site as part of a small beta program. During the beta, visitors to Associate sites who viewed a product preview clicked through to Amazon.com over 4% of the time; those clicks resulted in a purchase nearly 6% of the time.

Now we're opening the beta up to all Associates to further improve product previews. The first 500 Associates who refer a sale through a product preview-enhanced link will receive a \$5 Amazon gift certificate. [Click here to join your fellow Associates in beta testing product previews.](#)

Don't worry if you don't already have Basic Display Product Links on your Web site. You can create them as part of the sign-up process. [Click here](#) for answers to questions you might have about the beta program.

Hello Bill [Sign Out, My Account]  48° - 60°

[+](#) Add Content [↕](#) Change Layout [🎨](#) Change Colors

▼ **Best Fare Tracker** edit ✕

Depart: New York, NY - all

Paris, France - all	\$193.00
---------------------	----------

Depart: Seattle/Tacoma, WA

Honolulu, HI	\$333.60
--------------	----------

Depart: San Francisco, CA

London, United Kingdom - all	\$253.00
------------------------------	----------

Find other Best Fares:

From:

To:

Adults: ▼

▼ **Scoreboard** edit ✕

TODAY

no games for selected teams

YESTERDAY

▼ **NHL**

Detroit vs.	1	F
Dallas	2	ot

▼ **NBA**

Utah vs.	89	F
Dallas	103	

Listen to live audio of college games




▼ **Message Center** edit ✕

Check Email

Launch Messenger **11 friends on**

Disclaimer
* Some taxes and fees additional.

Students to Enroll

	Crew Id	Last Name	First Name
	349394	Craft	Adrian
	432939	Douglas	Elayne
	468370	Hill	Petra

Course Calendar

DEC 2005						
S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
	600922/Peterson		999300/Barnes 344935/Smith 139204/Miller			
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

- Discovering Idioms
 - Idioms must be discovered and learned
 - User is not even aware of inline editing on a web page
 - Challenge is how to get them to discover and learn the idiom
- Discovering Features
 - Features employing a learned idiom must be first discovered
 - Challenge is how to indicate an idiom is employed with the least amount of visual clues

- Help tip announcing the feature that employs the idiom
 - But users don't often read text
- One-Second Spotlight on tip to catch user's attention
 - Once they have successfully used feature, remove help text
- Help switch
 - Depress to see help bubbles, tips around the page
 - Combine with tip to spotlight the feature
- Tour
- Hover techniques

4

Use dynamic space

Planning the backstage

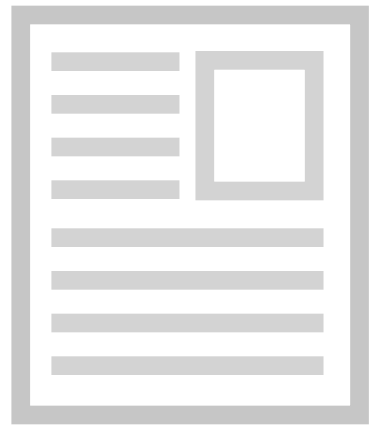
Use overlays and expands correctly

Use time to your advantage

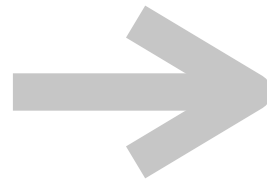
Use slide, zoom, flip, lens, overlay to extend space

Use transitions to introduce new characters

Use zoom to focus on detail



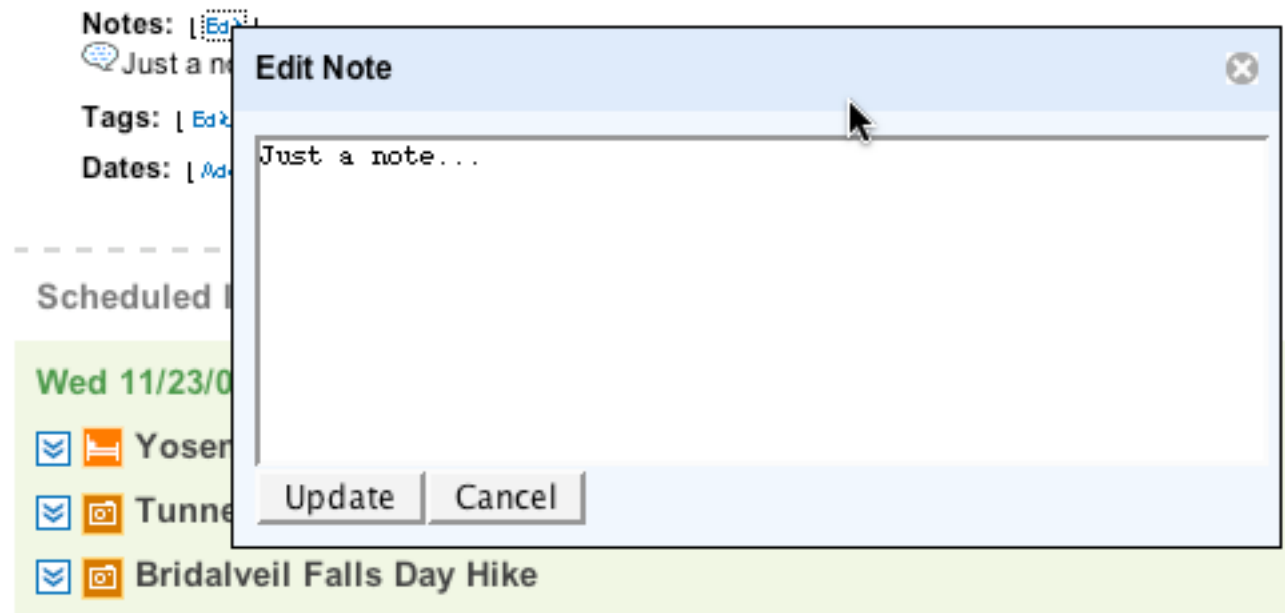
static page



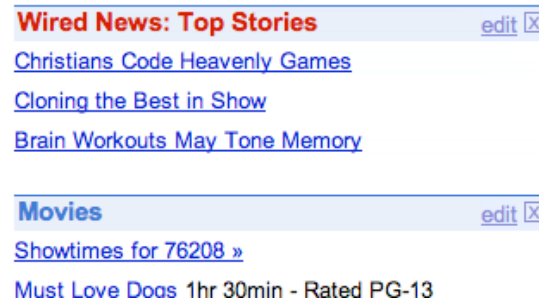
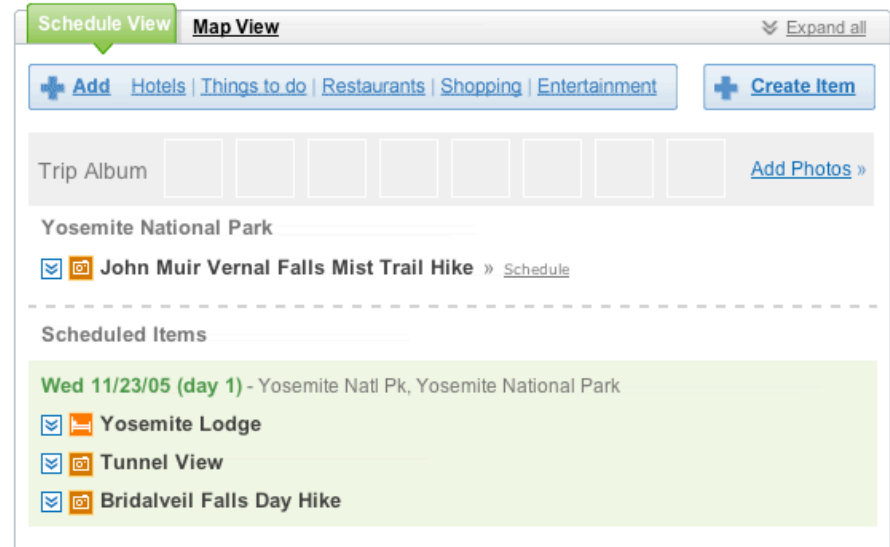
virtual page

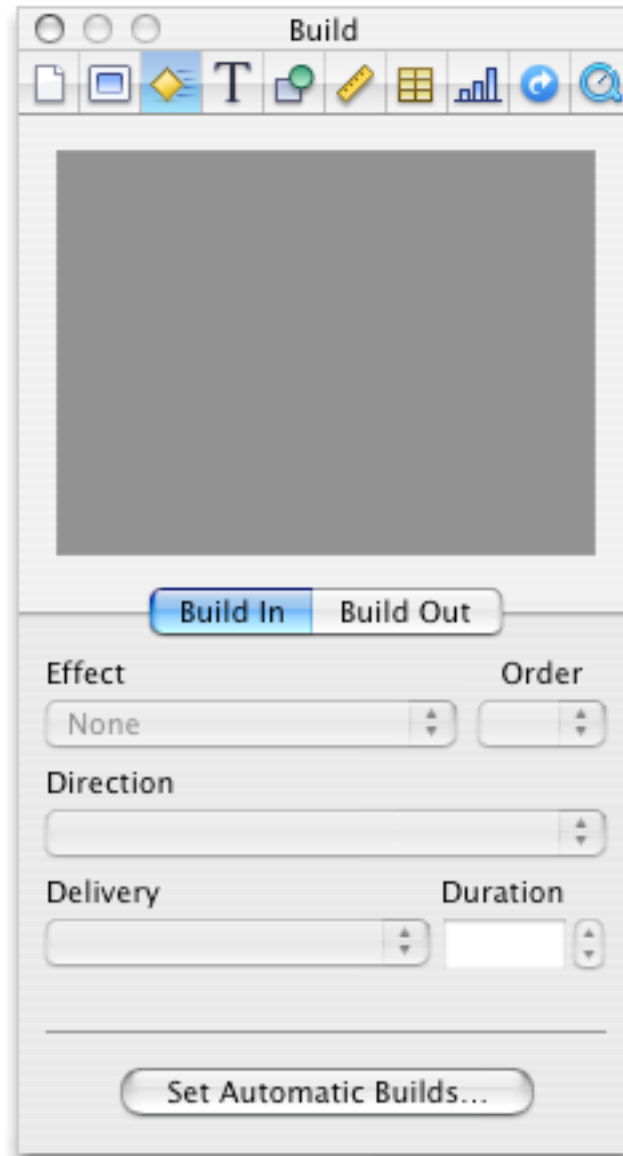
**Detail Zoom. Opacity Focus.
Configurable Module-
Faceplate. Configurable
Module-Flip It. Configurable
Module-Inline Configure.
Configurable Module-Slide
Out Drawer. Slide Out. Flip.
Opacity Fade.**

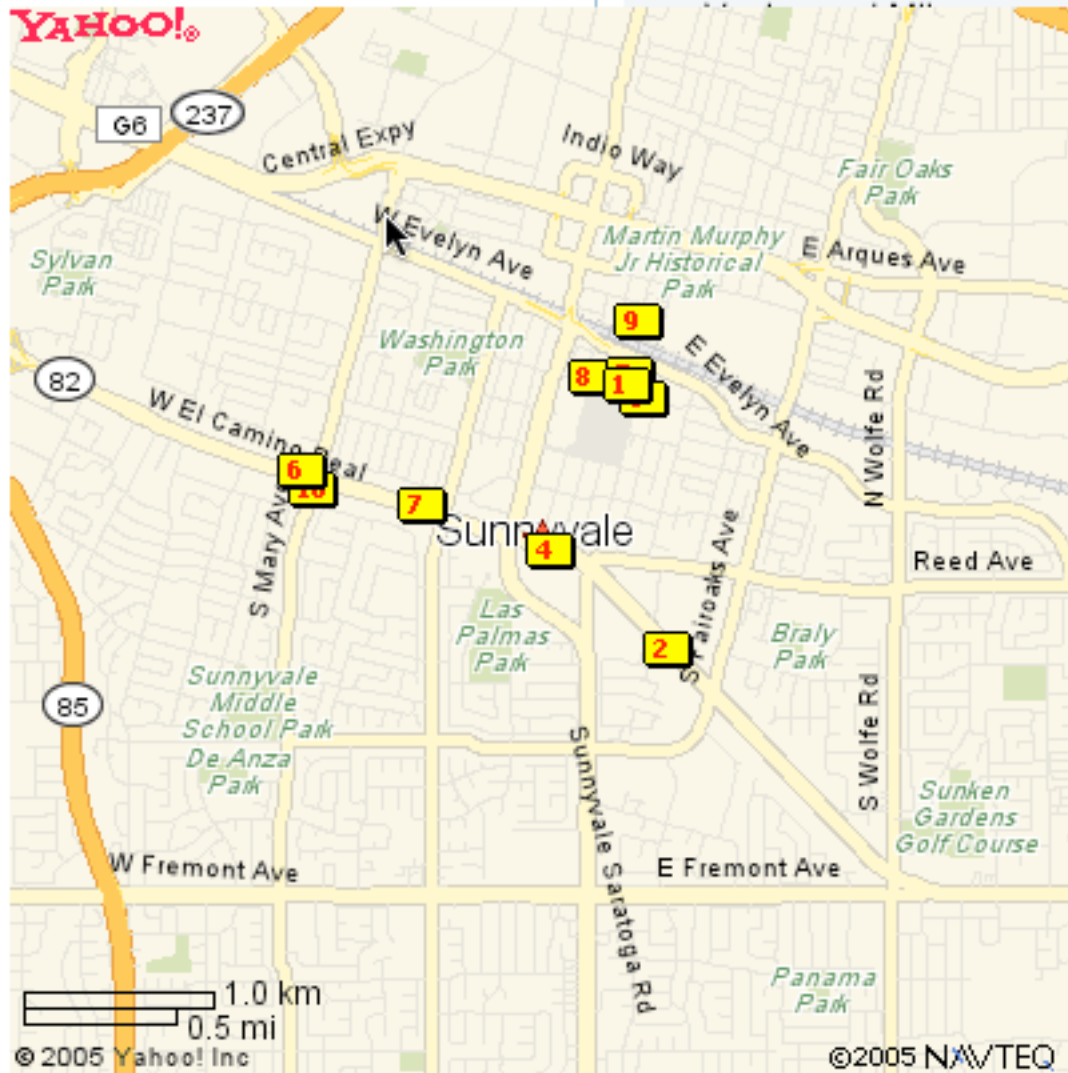
- Overlays float above the document layer
- Does not disturb the page
- Use overlays for
 - Information that is not part of collection
 - Something temporarily has priority, focus
- To replace page transition
- For transient input
- For contextual information



- In context panels expand/collapse in place
 - When one of many can be manipulated
 - To manage large collections
 - To manage navigation container
 - To manage content container







stanc
an
Murp
direc
eat p
able
ce O
E
El Ca
direc
e de
kets
ce O

3. [Il Postale](#)

- Diminish disruption to the flow
- Use transitions to communicate origin, destination
- Use transitions to communicate symmetry of action
- Discoverability. Users may not discover your hidden areas. Use invitations to expose where hidden areas are

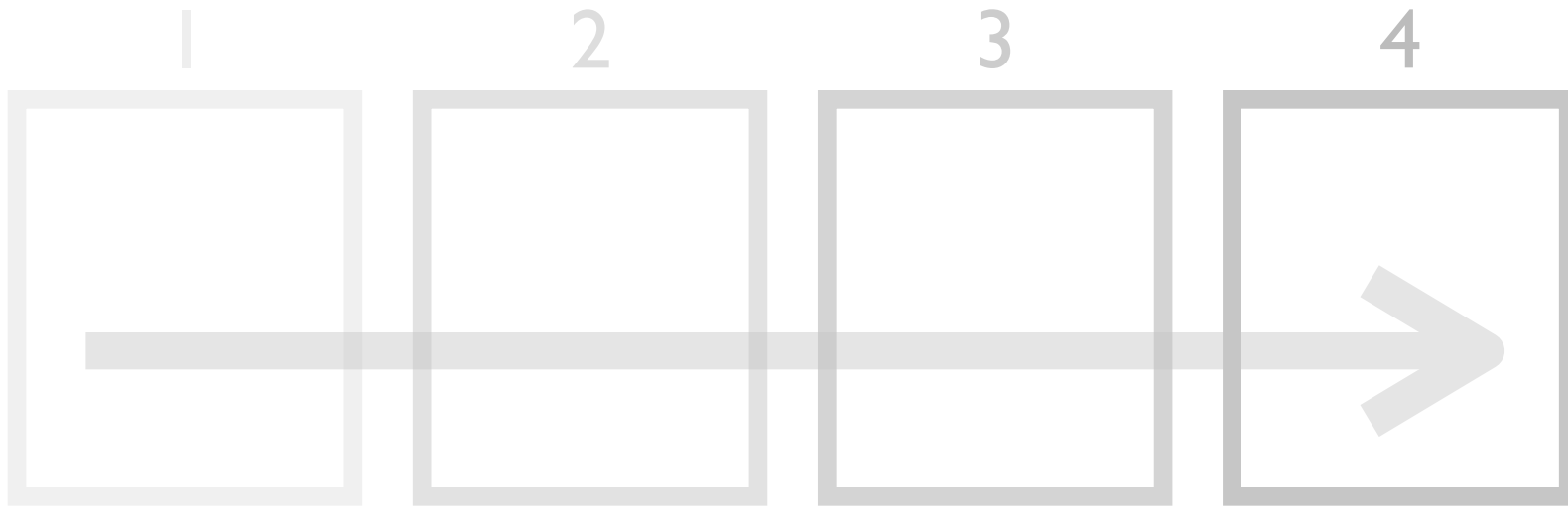
5

Cross borders reluctantly

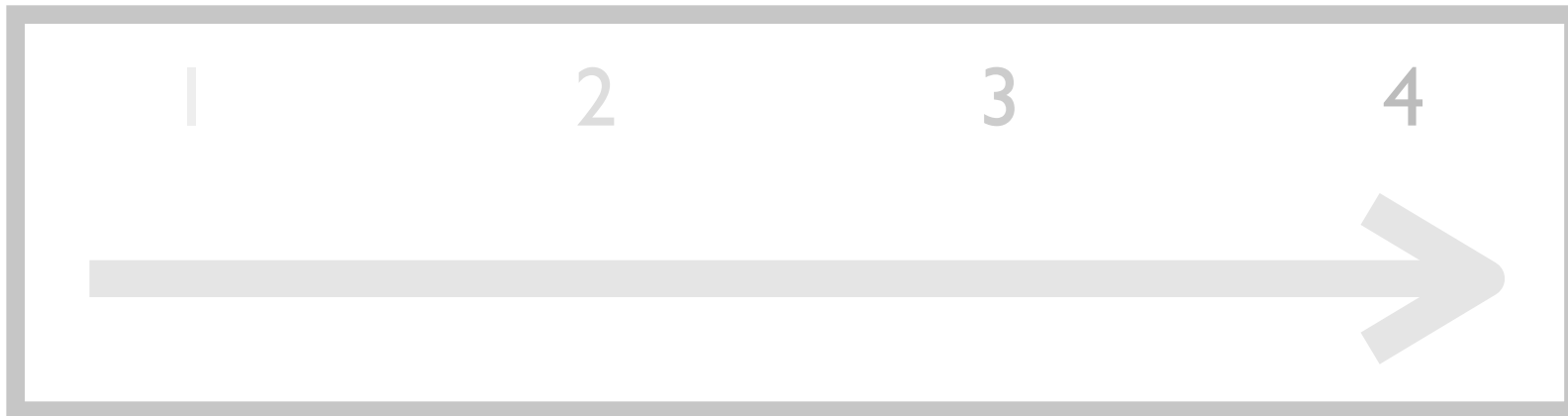
Page boundaries cause mental interruptions

When paging make it lightweight as possible

Use lightweight in-context popups to stay in page



classic flow across pages



rich flow within page

**Endless Scrolling.
Expandable Paging
Boundary. Fresh Content.
Hover Detail. In Place Drill
Down. Inline Assistant.
Inline Validation. Validate
Then Suggest. On Demand
Refresh. Resizable
Modules. Scrolling
Modules.**

Rico LiveGrid

RICO AJAX SEARCH

LiveGrid Demonstration Powered by Yahoo! Search

Select Search Category: **Web** Images Videos

Search the Web:

- Search Results Results 1 - 5 of about 10600000 for monterey bay
- Monterey.com**
 guide to attractions, lodging, dining, and more. A service of the Monterey Peninsula Visitors and Conventions Bureau.
<http://www.monterey.com/> - text/html
 - California State University, Monterey Bay**
 comprehensive state university which values service through high quality education.
<http://csumb.edu/> - text/html
 - Monterey Bay - National Geographic**
 Monterey Bay @ nationalgeographic.com ...
http://www.nationalgeographic.com/monterey/ax/primary_fs.html - text/html
 - Monterey Bay Aquarium**
 mission is to inspire conservation of the seas.
<http://www.mbayaq.org/> - text/html
 - Monterey Bay Aquarium: Live Web Cams**
 Eight live web cameras of the Monterey Bay Aquarium's marine life exhibits and Monterey Bay, Monterey, CA. ... Monterey Bay Aquarium, 886 Cannery Row, Monterey, CA 93940 Tel: (831) 648-4800. © 1999-20
http://www.mbayaq.org/efc/cam_menu.asp - text/html

YAHOO! MAIL BETA Welcome, **b.scott** [Yahoo!](#) | [My Yahoo!](#) | [News](#)

Inbox 2324 messages [Send Feedback](#) | [Options](#) | [Help](#)

From	Subject	Received
me	Re: rico question	Thu, 1/19/2006 10:19:22
Bill Scott	[Looks Good Works Well]	1/19/2006 01:13:22
JDJ Industry Newsletter	Java Named "Programming Language of the Year"	Thu, 1/19/2006 01:13:22
Travelocity Member Services	Price Alert! Flight + 5 Night Hotel to Honolulu	Thu, 1/19/2006 01:13:22
Theresa Neil	Re: Job Description	Thu, 1/19/2006 01:13:22
Damon Houglund	Job Description	Thu, 1/19/2006 01:13:22
Finan, Angelique	RE: Speaking Engagement Opportunity	Thu, 1/19/2006 01:13:22
David Schontzler	Re: [ng-dhtml] assert(), isNaN(), isOfT	Thu, 1/19/2006 01:13:22
TagWorld	This week in TagWorld	Thu, 1/19/2006 01:13:22
me	rico question	Thu, 1/19/2006 01:13:22
Anonymous	[Looks Good Works Well]	1/19/2006 10:22:22
Anonymous	[Looks Good Works Well]	1/19/2006 10:19:22
Anonymous	[Looks Good Works Well]	1/19/2006 10:19:22
Anonymous	[Looks Good Works Well]	1/19/2006 10:19:22

My Folders

- Inbox**
- Drafts
- Sent
- Spam (501) **Empty**
- Trash (3) **Empty**
- Contacts
- Calendar
- Notepad
- All RSS Feeds **Add**

Standard Header | [Hide Pane](#)

Got your eye on one of those messages up there?
 To view your message down here in this handy Reading pane, just click on it. To select more than one, hold the Shift or Command key.

What's your Credit Score?

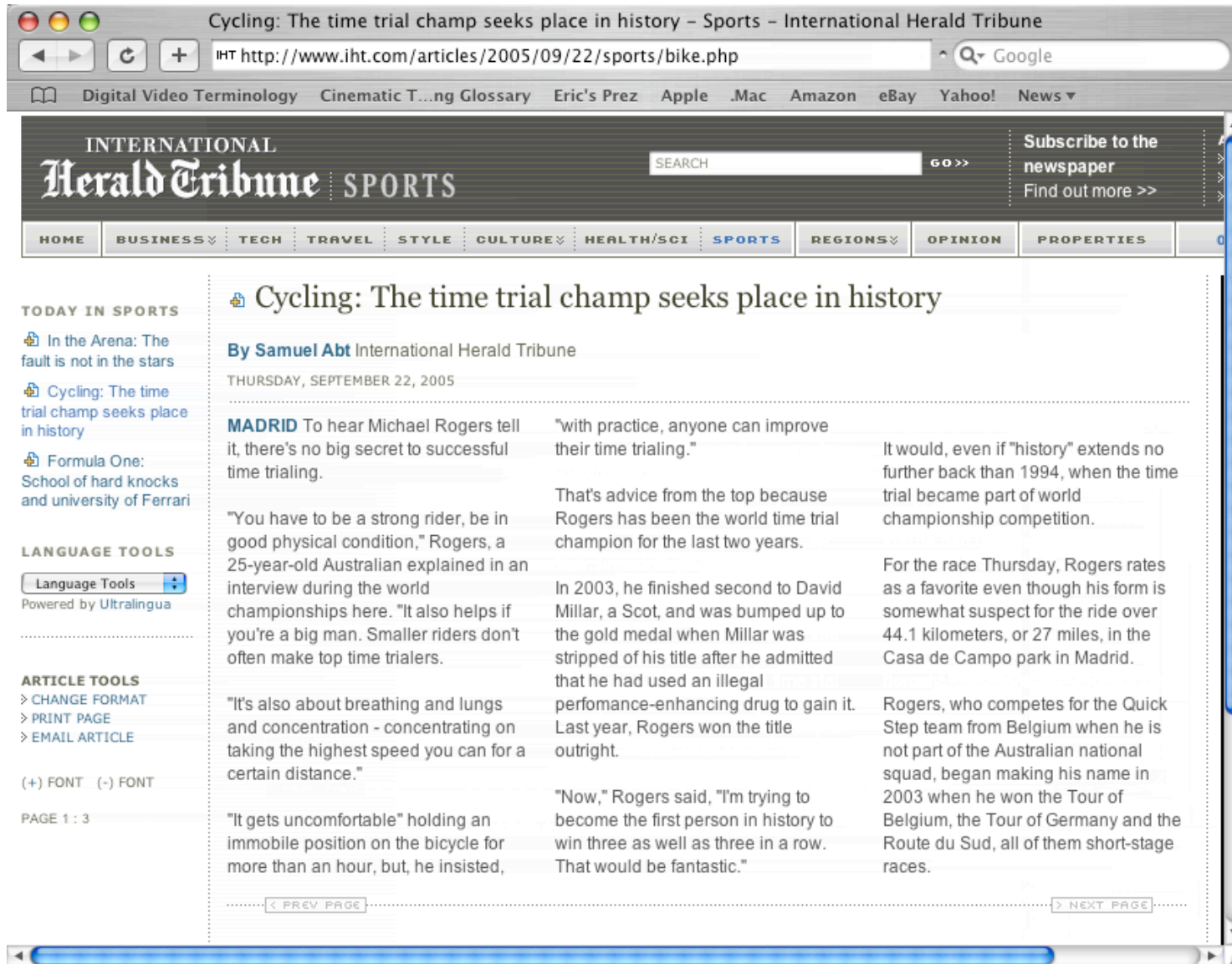
Netflix-Try Free! No Late Fees

Online Degree Programs

Yahoo! Mail Beta (Oddpost)


- Scrolling search
 - Normally only the first few results matters
- Scrolling collections
 - Very useful, sorting & scrolling used to explore the results
 - Not sure what is useful
 - Each item is unique in specific attributes
 - Example: games, merchandise, mail messages, photos
- Is the data naturally chunked?
- Can you solve the dual scroll bar problem?
- Will sorting, filtering, exploring be important?

- At the very least make your paging fast



Buy 1 or more, save \$14.55 each [See All](#) #308593 prices may vary

select Color: navy
\$44.50 Buy 1 or more, save \$14.55 each [See All](#)



select Waist: 38W select Length: 30L

28W	29W	30W	31W
32W	33W	34W	35W
36W	38W	40W	42W
44W	46W		

28L	30L	32L	34L
-----	-----	-----	-----

[size chart](#)

Quantity: navy, 38W 30L
\$44.50 [add to bag](#)

CH [Search by topic](#)

Contact: [Private](#)

How can we be of service?

Select...



Signed in as [billwscott](#) | [Send Feedback](#) | [Help](#) | [My](#)

- Select Page: or [Create new page](#)
- Review Item:

VideoEgg
About VideoEgg
 Added by billwscott (12/1/05) from www.videoegg.com
 It means internet video publishing as simple as it ought to be—like posting a photo or frying an egg. VideoEgg, Inc. is an innovative, venture-backed company committed to...

Does it look OK to you? If not, then [fix details](#).
- [Submit](#) [Cancel](#)

select Color: **babe pink combo** #357223
\$14.50

select **Size:**

[size chart](#)

Quantity: babe pink combo
\$14.50

please select a Size before adding to bag

[more views](#)

Required information for Google account

Your current email address:

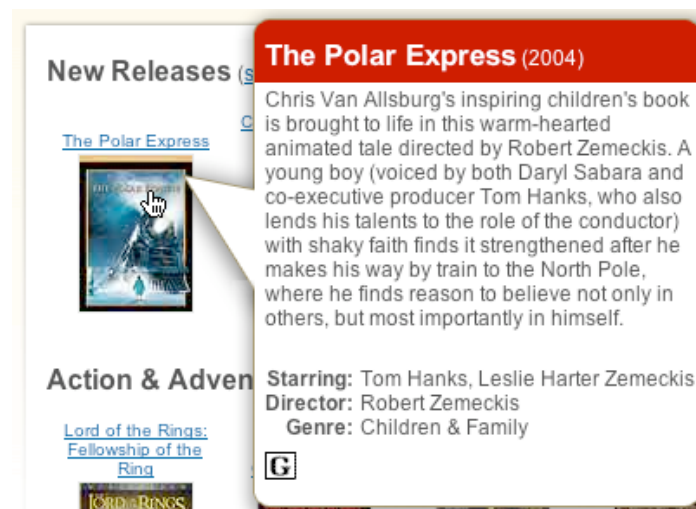
e.g. myname@example.com. This will be your username and sign-in.

Choose a password:

Minimum of 6 characters in length.

Password strength: Too short

- For **introduction** of features
- For giving **instruction**
- For revealing **information**
- For **interrogative** feedback
- For obtaining **input**
- For important **interruptions**
- For **indication** of status or progress
- For offering an **invitation**



- Make activation & deactivation feel lightweight
- Avoid using secondary browser windows
- Use visual styles that suggest lightness
- Think of popups as auxiliary areas of the screen

- Invitation
- Activation
- Expand
- Collapse
- Move
- Resize
- Close

6

Leave a light footprint

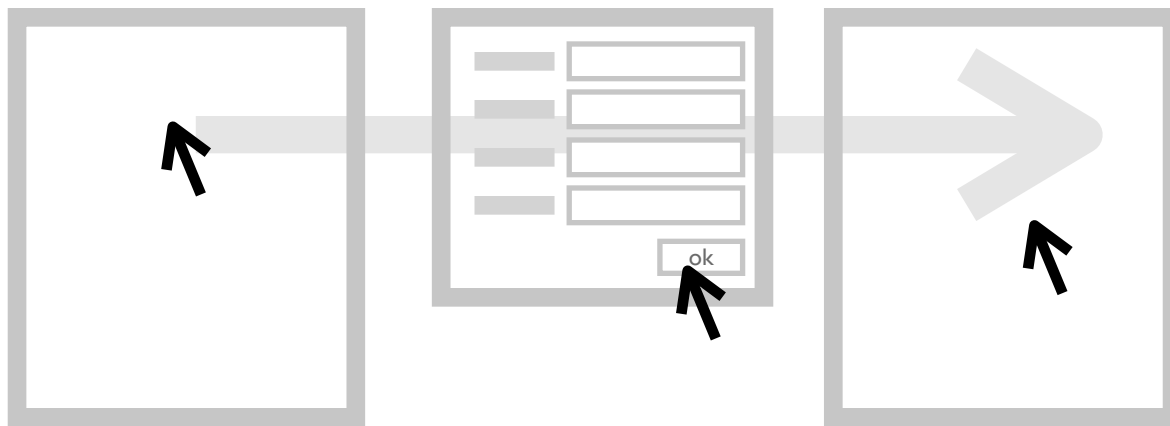
Use hover, blur, focus, click as footprints

Keep actions immediate and light

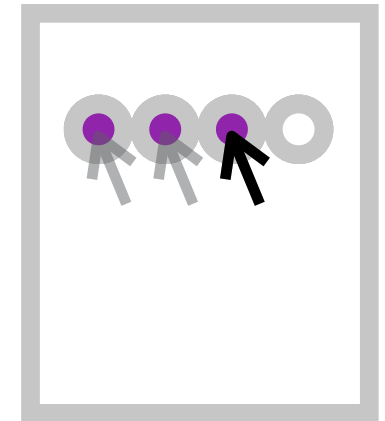
Watch your click weight

Design for engaging moments

Use invitations



heavy click-weight



light-weight actions

**Auto Save. In Context
Tools. In Page Action.
Remembered Collection.
Remembered
Preferences. Auto Form
Fill. Live Ratings.**

1 2 3 4 >> [See All](#)

straight fit



loose staight fit
(sandblasted vintage)
\$49.50



straight fit corduroy
pants
\$44.50
Buy 1 or more, save
\$14.55 each [See All](#)



straight fit (blasted
black)
\$49.50



straight fit (dark
authentic)
\$44.50

  **Tunnel View** [View](#) | [Map](#) | [Delete](#)

  **Bridalveil Falls Day Hike**

Pages Writeboards Reminders

Add tags

Bill's Work – To Do

Body List Notes Files Images Writeboards Links Sharing ?

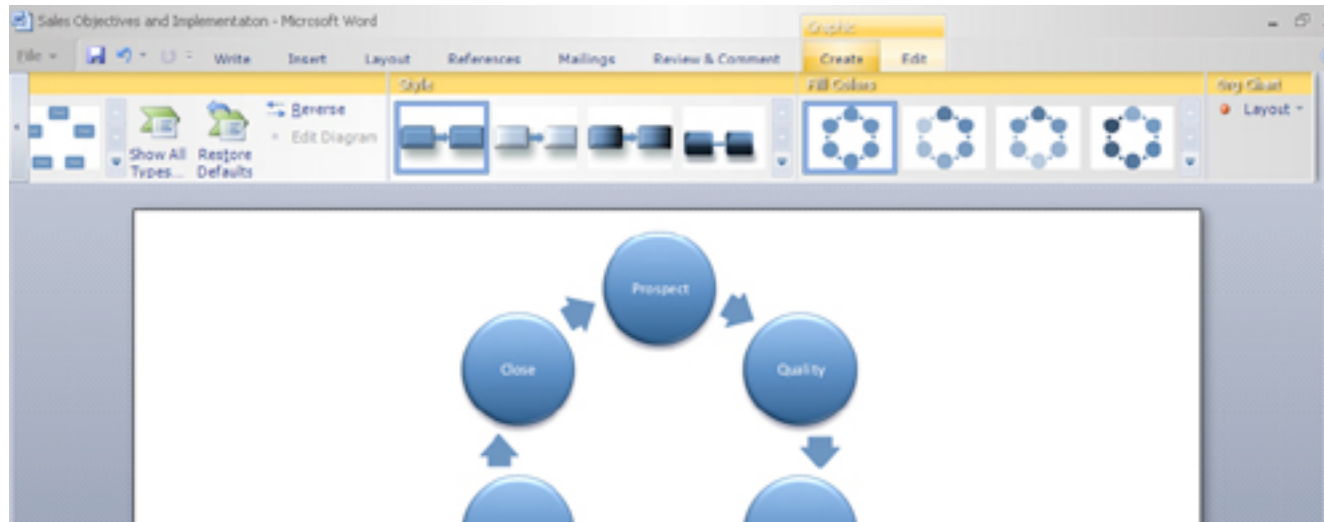
[Lists](#)

Public Pattern Project

- Create Taxonomy Tree for all current patterns
- Finish Transition Patterns
- Move public patterns to new template and stage
- Creative Commons License
-
- YDN Patterns Blog Article
- Schedule review meeting for Wed
- Schedule review meeting for Friday

[Add Item](#) | [Reorder](#)

- Microsoft Vista, Office 12
Contextual Command Tabs



RECOMMEND THIS STORY

Recommend It:



Average (63 votes)



Sauce

(415) 252-1369

131 Gough St
San Francisco, CA 94102

Cross Street:
Near intersection of Gough St and Lily St

www.saucesf.com



Average Rating (10)

[Read 10 reviews](#)

Rate it:



[Write a Review](#)



0 items in [my bag](#) [checkout](#)

Pique polo

only at gap.com

overview

you'll also like

Soft cotton pique knit.

Short-sleeved, button neckline.

- [Need large quantities? Click for Corporate Apparel!](#)
- 100% Cotton. Machine wash. imported.

regular

tall

Buy More and Save

#346927

prices may vary

select Color: **royal grape**

\$29.50 **Buy 2 or more, \$25.00 each**



~~\$29.50~~ **\$9.99**



select Size:



[size chart](#)

Quantity:

royal grape

~~\$29.50~~ **\$9.99**

[add to bag](#)

7

Show transitions

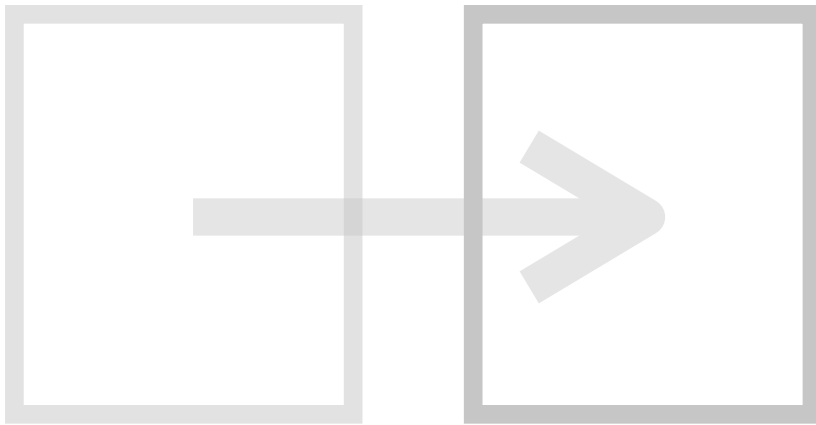
Keep transitions to a minimum; communication is the key

Engage the user during longer transitions

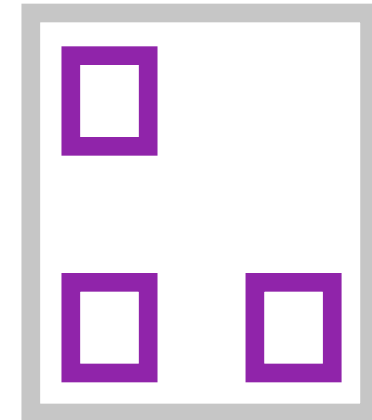
Communicate status & progress for *waiting transitions*

Communicate change for *state transitions*

Show relationships for *relational transitions*

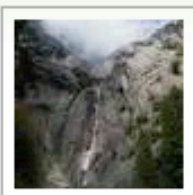


page-based transitions



multiple transitions,
single page

**Transition. Brighten Transition.
Cross Fade Transition. Dim
Transition. Expand Transition.
Fade In Transition. Fade Out
Transition. Flip Transition.
Move Transition. Self-Healing
Transition. Shrink Transition.
Slide Transition.**



Yosemite Thanksgiving [\[Edit \]](#)

A trip to YOSEMITE NATIONAL PARK
Fun in Yosemite with Daniel & Kids

[This trip is public](#) • [Sharing settings](#) • [Email this trip](#)

[\[Update photos \]](#)

Schedule View

Map View

[Expand all](#)

[+ Add](#) [Hotels](#) | [Things to do](#) | [Restaurants](#) | [Shopping](#) | [Entertainment](#)

[+ Create Item](#)

Trip Album



[Add Photos »](#)

Yosemite National Park

[☑](#) [📷](#) **John Muir Vernal Falls Mist Trail Hike** » [Schedule](#)

Scheduled Items

Wed 11/23/05 (day 1) - Yosemite Natl Pk, Yosemite National Park

[🏠](#) **Yosemite Lodge**

From \$97.00 to \$146.00 per night. [• Reserve Now](#)

[📞](#) 559-252-4848

Yosemite Natl Pk, CA 95389

United States

In the valley of Yosemite National Park



Notes: [\[Edit \]](#)

Tags: [\[Edit \]](#)

yosemite, hiking

Women

GapBody

GapMaternity

GapKids

babyGap

my account

see order status

sign in



3 items in **my bag**

checkout

Shoes, Belts & More

1 2 >> [See All](#)

bags



Premium canvas duffle bag
\$49.50



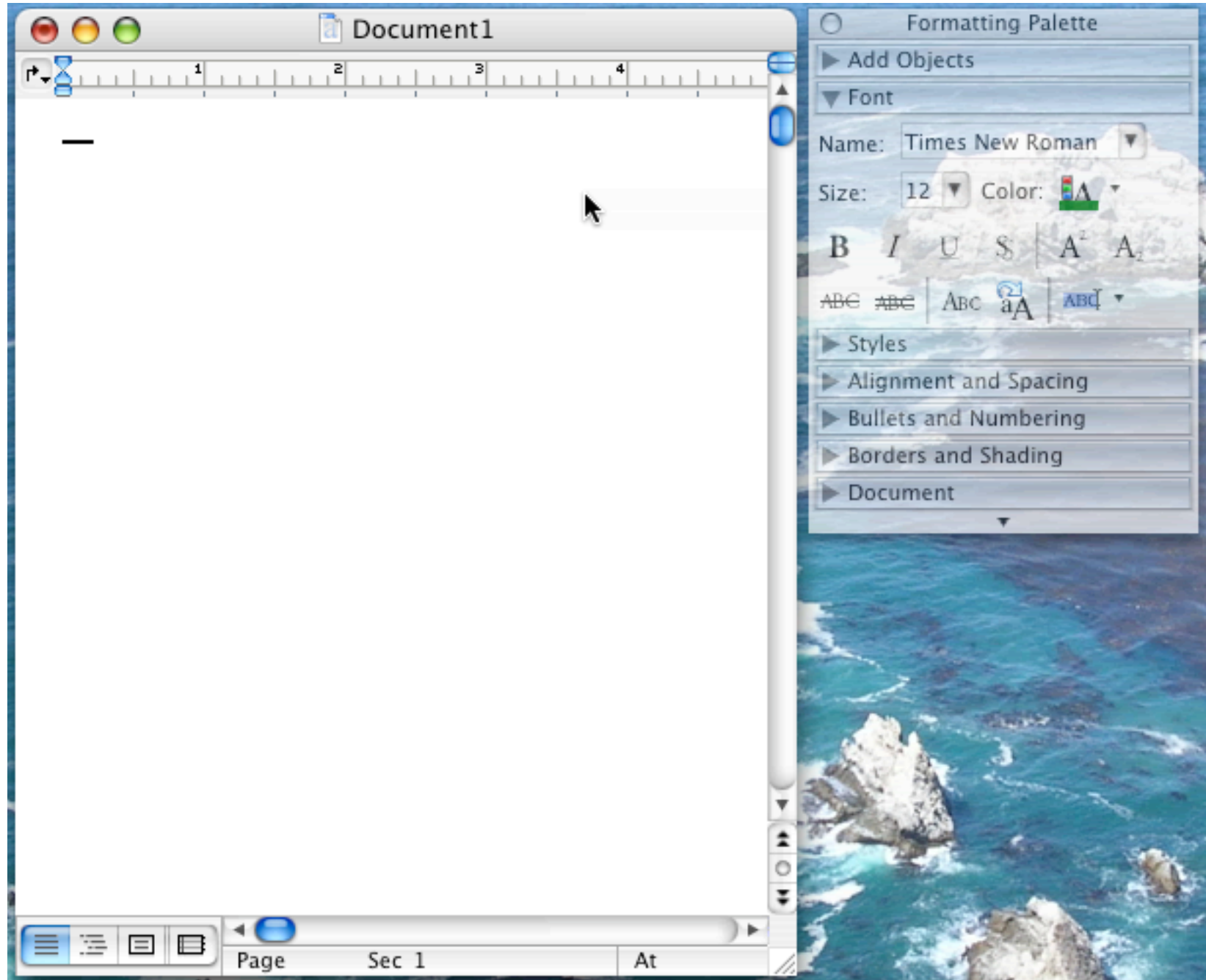
urban nylon sling
\$34.50



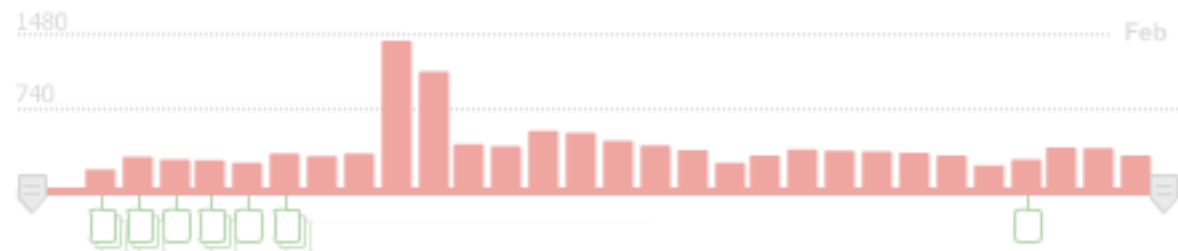
urban nylon backpack
\$29.50



nylon commuter bag
\$68.00



Visitors to your blog



9080 visitors came to your blog
That's 313 fewer than an average 30 day period.

digg
home » spy

Recently dug stories (auto-refreshing)

[Christian Gaming](#)

submitted by [mck9235](#) 25 minutes ago (<http://wired.com/news/games/0,...>)

[Text files from BBS's](#)

submitted by [Phobia](#) 7 minutes ago (<http://textfiles.com/>)

[CDs that won't play on iPods sell...WELL!](#)

submitted by [akaidiot](#) 6 hours 37 minutes ago ([http://today.reuters.com/news/...](http://today.reuters.com/news/))

[Google Television!](#)

submitted by [Lanze](#) 1 hours 45 minutes ago (<http://www.current.tv/>)

[See what apps are auto-starting on your PC](#)

submitted by [camalot](#) 1 day ago (<http://www.sysinternals.com/ut...>)

[A Day In The Life of An Internet Entrepreneur](#)

submitted by [Edwin](#) 8 minutes ago (<http://www.venturus.com/index...>)

[Google It You Moron](#)

submitted by [twistymcgee](#) 1 hours 17 minutes ago (<http://www.googleityoumoron.co...>)

[Google now a hacker's tool](#)

submitted by [Albertpacino](#) 14 hours 19 minutes ago ([http://www.pcworld.idg.com.au/...](http://www.pcworld.idg.com.au/))

[Map Sex Offenders online with Google Maps](#)

submitted by [ajcannon](#) 5 minutes ago (<http://dailytechfeed.com/?p=14>)

[Bush Wants Other Theories Than Darwinism Taught In Schools](#)

submitted by [cyrusgades](#) 10 hours 41 minutes ago (<http://news.ft.com/cms/s/e3658...>)

[NBC to stop annoying DVR owners](#)

submitted by [rayskin](#) 8 hours 1 minute ago (<http://www.pvrblog.com/pvr/200...>)

[How Much Does Google Make a Second](#)

Lists

Remove this item

And this one too



adding a new item

Add item or **I'm done adding items**

Lists

Remove this item

And this one too

Add item or **I'm done adding items**

- Brighten. Raise importance
- Cross Fade. One leaves, another enters
- Dim. Lower importance
- Expand. Open in context of others
- Fade In. Good for adds
- Fade Out. Good for deletes
- Flip. Edit configuration
- Move. Change relationship, tweening
- Self-Healing. After delete or “yank”
- Shrink. Close in context of others
- Slide. Similar to expand but child window

- Cut transitions in half?
- Try to communicate without transitions, then turn up the contrast knob -- adding them in incrementally
- Use when
 - Multiple items change
 - In context deletes, adds, moves
 - Items hide/show
- Don't overuse

8

Think in objects

Think rich internet objects instead of documents

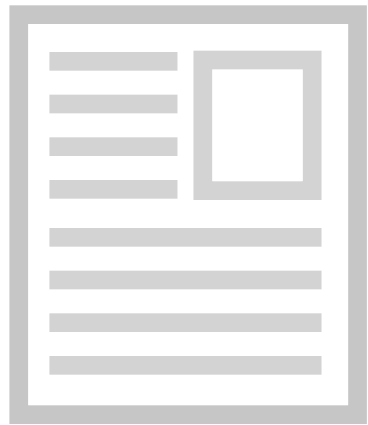
Objects have identity (recognizable)

Objects have a life (permanence)

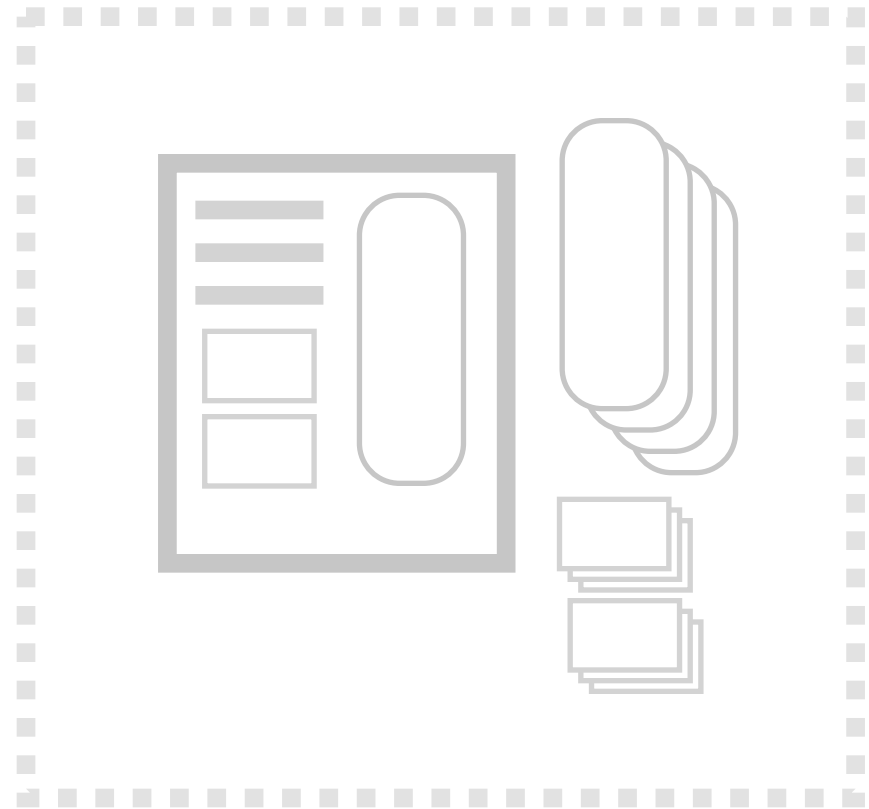
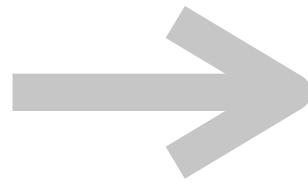
Objects are owned (personal)

Objects are shareable (community)

Objects have personality (engagement)



page



objects

**Rich Internet Object.
Available. Selected.
Identifiable Object.**

	Page-Based Web	Rich Internet App
Richer Model	Document	Rich Internet Object
Longer Lifecycle	Transient	Permanent
Community/ Sharing	Bookmark	Content, properties, and behaviors

Schedule View
Map View
⌵ Expand all

+ Add
Hotels |
 Things to do |
 Restaurants |
 Shopping |
 Entertainment

+ Create Item

Yosemite National Park

⏪
📍
John Muir Vernal Falls Mist Trail Hike
»
Schedule |
 View |
 Delete


📞 +1 209 372 0200
 Happy Isle Shuttle Stop #16
 Yosemite National Park, CA 95389
 United States

This hike is also known as the Mist Trail because it passes right beside Vernal Falls, which in the spring blows a heavy mist everywhere. This 1.4 mile roundtrip hike is considered a moderate ⋮

Notes: [Edit]

Tags: [Edit]

Dates: [Add]



Scheduled Items

Wed 11/23/05 (day 1) - Yosemite Natl Pk, Yosemite National Park

- ⏪ 🏠 **Yosemite Lodge**
- ⏪ 📍 **Tunnel View**
- ⏪ 📍 **Bridalveil Falls Day Hike**

- How to distinguish from content?
- How to share, mail, print, etc. (in context tools?)
- How to create collections and share
 - Photos, albums
 - Trips, sets

9

Tell a story

Design is about telling a story

Design for interesting moments

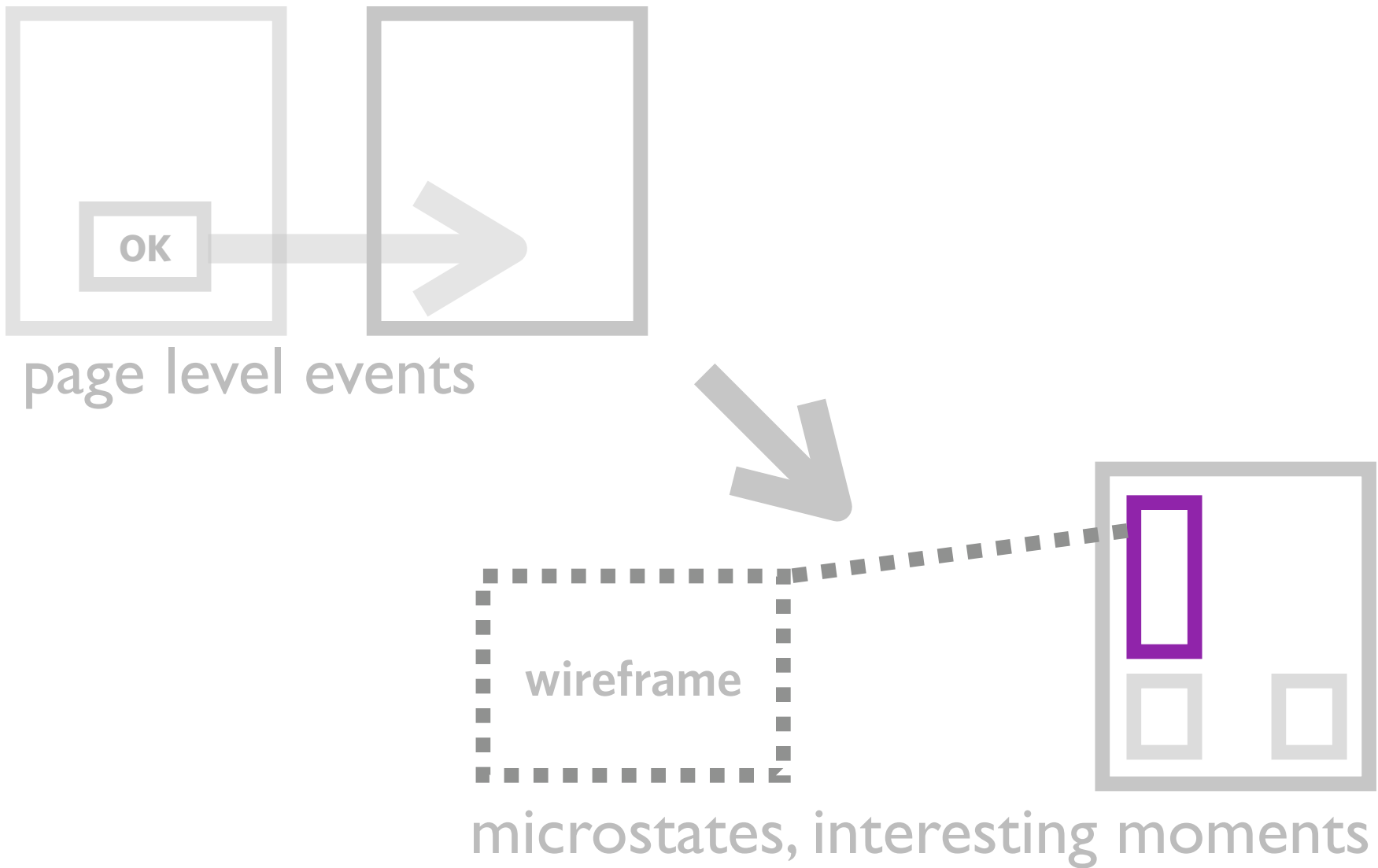
Cast your events and actors carefully

Use storyboarding



Wireframing Ajax is a [expletive]...
We have to determine all of the things a user might do, and wireframe the blessed moments of each possibility."

- Jeffrey Zeldman, *Web 3.0*



Time

Detail

Context

Drag and Drop Modules - Interesting Moments Grid

on beta.my.yahoo.com ID: Bill Scott & Eric Miraglia Date: Nov-05

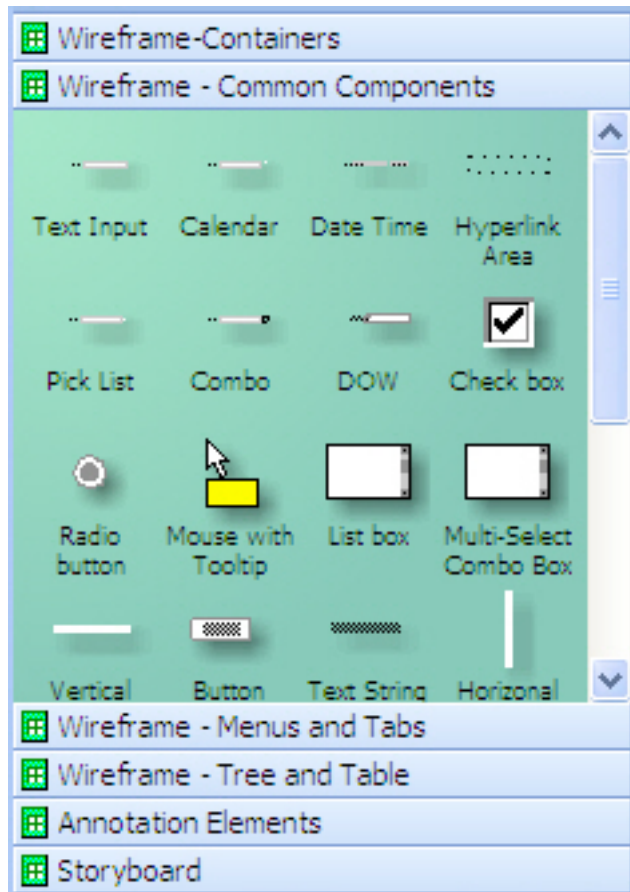
Mouse Down	Drag Initiated	Drag Over Valid Target	Drag Over Invalid Target	Drag Over Parent Container	Drop Accepted	Drop Rejected	Drop On Parent Container
Normal cursor	CSS Move cursor	CSS Move cursor	CSS Move cursor	CSS Move cursor	Normal Cursor	Normal Cursor	Normal Cursor
Module is visible	Reduced Opacity	Reduced Opacity	Reduced Opacity & Invalid Badge	Reduced Opacity	Modules animates into the area just below insertion bar	Modules animates back to the home area	Modules animates back to the home area
					Module comes to rest in new area	Module comes back to rest at full opacity	Module comes back to rest at full opacity
					Modules slide up in a self-healing transition to close hole		
Insertion bar, just a gap	No insertion bar, just a gap	Insertion bar showing where it will drop	No insertion bar, just a gap	No insertion bar, just a gap & original hole	Insertion bar is removed as first frame of animation	Insertion bar is removed as first frame of animation	Insertion bar is removed as first frame of animation

- Drag & Drop Interesting moments
 - Page load
 - Mouse hover over drag-able object
 - Mouse down on drag-able object
 - Drag initiated (mouse down, mouse moves ≥ 3 pixels)
 - Drag over valid target area
 - Drag over invalid target area
 - Drag over original location
 - Drop accepted
 - Drop rejected
 - Drop on original location

- Drag & Drop actors
 - Page
 - Cursor
 - Tool Tip
 - Drag object
 - Drag ghost
 - Original location
 - Drop target

- Documentation has centered around layout, priority and behavior of content and functional items
- Interactions typically defined as discrete states (pages)
- Multiple page flow diagrams are now a single page with rich interactions
- Storyboarding provides a way to capture design flow

- Animations can provide timing in context
- Hard to capture branches
- Tools. Visio, Photoshop CS2, etc.



Yahoo News RSS: Los Gatos

- [Smith living a dream \(The Wichita Eagle\)](#) - 3 hours ago
- [Smith eager to start earning his money \(Monterey County Herald\)](#) - 9 hours ago
- [Won't you be his neighbor? \(San Jose Mercury News\)](#) - 9 hours ago

Reuters Technology

- [Nokia picks Kallasvuo to succeed Ollila as CEO](#) - 7 hours ago
- [Ford to factory-install Sirius radio in some cars](#) - 7 hours ago
- [China emerging as chip design center -iSuppli](#) - 11 hours ago

Apple Insider RSS

- [Apple to host media event in Tokyo](#) - 15 hours ago
- [iPod chip supplier hints at upcoming plans](#) - 21 hours ago
- [Apple unveils faster iBooks](#) - 1 day ago

Connection Manager

The Connection Utility is a wrapper around asynchronous and synchronous http requests made via the XMLHttpRequest object. The utility provides browser abstraction, object pooling, error handling, status indication, and callback functionality, enabling rapid prototyping and construction of user interactions involving asynchronous transactions between client and server.



Participant Interface Notes

Title: Register page

Date: 18 July 2005

Version: 1.0

Functional Notes:

The registration page allows users to signup for Participate simply by entering a user name and a valid email address.

- 1 Provide the user with some notification of what the email a friend action is worth in Participate points to encourage follow-through and introduce non-registered users in the Incentive program.
- 2 On click, commit the user's entered email addresses and message, send to target addresses, and link user to a confirmation page
- 3 For users who have invited friends over email, provide reporting on # invited and # accepted. Hide actual names by default, but allow users to view them by clicking the "view" link

- a When user completes name entry and clicks to email entry, compare the entered name to previously claimed names on the site. If the name is a match, generate alternates that can be clicked on to fill the entry field.

The name ryan_c is unavailable.
How about:
ryan_c_01
iam_ryanc
ryan_c_ismc

↓ User makes selection or inputs new name that is valid & available:

That name works. Thanks!

- b Is it possible to treat the "submit" button click as a call to validate the form of the user's entered email? If there are any formatting errors, alert the user and prevent the page from loading the confirmation.

The address you entered isn't formatted properly.

branding & navigation

register

All we really need is a unique name and email, everything after that is gravy. Lorem ipsum dolor sit amet, nulla at fermentum nonummy turpis mauris rutrum justo, nec. Cras malesuada, nulla at fermentum nonummy.

create a username:

enter your email:

alternate names *

email error *

hot posts 1

Instruction text lorem ipsum dolor sit amet, consectetur adipiscing elit. [archive >](#)

Tuesday, July 19, 2005

written by: [authorname](#) tag: [campaign](#)

psum dolor sit amet, consectetur adipiscing elit. Cras malesuada, fermentum nonummy, turpis mauris rutrum justo, nec molestie dolor eros porttitor lorem. Proin pharetra wisi eu tortor. Vivamus cursus tortor id purus. Suspendisse potenti. Ut dui. Vestibulum tincidunt. [comment on this post](#) | [more by this author](#) | [permalink](#)

written by: [authorname](#) tag: [film](#) 2

psum dolor sit amet, consectetur adipiscing elit. Cras malesuada, fermentum nonummy, turpis mauris rutrum justo, nec molestie dolor eros porttitor lorem. Proin pharetra wisi eu tortor. Vivamus cursus tortor id purus. Suspendisse potenti. Ut dui. Vestibulum tincidunt. [comment on this post](#) | [more by this author](#) | [permalink](#)

Monday, July 18, 2005

written by: [authorname](#) tag: [campaign](#)

psum dolor sit amet, consectetur adipiscing elit. Cras malesuada, nulla at fermentum nonummy, turpis mauris rutrum justo, nec molestie dolor eros porttitor lorem. Proin pharetra wisi eu tortor. Vivamus cursus tortor id purus. Suspendisse potenti. Ut dui. Vestibulum tincidunt. [comment on this post](#) | [more by this author](#) | [permalink](#) [archive >](#)

Sign me up for the mailing list 3

Time

Animations

Detail

Storyboard Grid

Context

Storyboards, Wireframes + Key Frames

- **Photoshop CS2 animations**
<http://looksgoodworkswell.blogspot.com/2005/11/animating-interactions-with-photoshop.html>
- **Boxes and arrows article**
http://www.boxesandarrows.com/view/storyboarding_rich_internet_applications_with_visio
- **Interesting Moments Grid**
<http://looksgoodworkswell.blogspot.com/2005/11/interaction-matrix.html>
- **Interesting Moments**
<http://looksgoodworkswell.blogspot.com/2005/12/storyboarding-interesting-moments.html>

Ajax 101

Where we get down and dirty with Ajax operations, JavaScript events and the DOM

Bill W. Scott, Y! Ajax Evangelist

bscott@yahoo-inc.com

Anatomy of a Pattern

- Ajax design patterns contain three steps
 - **Trigger** (event or timer)
 - **Operation** (Ajax, remote scripting)
 - **Update** (presentation)





Operation. Using XHR

Operation. Using XHR

- The five operations are not built into XHR
- The simple send/response mechanism can be used to implement lookup, persist, validate, invoke and message
- To create these operations, one must understand how to use XHR
- A simple HelloWorld example will illustrate using XHR

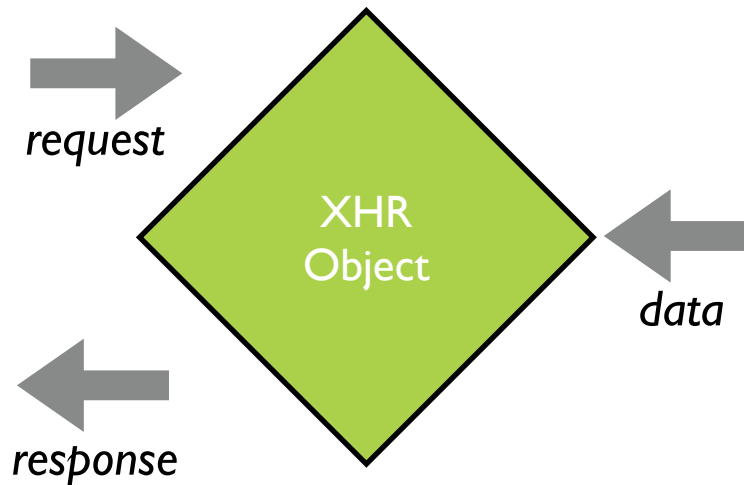
Simple Ajax 'Hello World'

Ajax Hello World

Clicking the link below will use XHR to fetch the data and then show the result in the box below.

[Make an ajax request for data](#)

This data was brought to you by Ajax!



```
<?xml version="1.0" ?>
<root>
This data was brought
to you by Ajax!
</root>
```

/response.xml

- Clicking the link makes an XHR request
- Response is inserted into the area outlined in blue

Ajax How To

1. Create a request object
2. Write a callback
3. Make the request
4. Parse the response

```
if browser is mozilla or safari or opera then  
  create a new XMLHttpRequest
```

```
otherwise it is IE then  
  create a new ActiveXObject
```

```
otherwise
```

```
  error - browser does not support XMLHttpRequest
```

- IE5+ implements XHR as an ActiveX object
- Mozilla 1.0+, Safari 1.2+, Opera 8+, IE7 provide an XMLHttpRequest object in their API
- All XHR objects have the same methods & properties

XHR Methods

Method	Description
<code>open("method", "url", [, asyncFlag [, "username" [, "password"]]])</code>	Sets up the request object for sending a request
<code>send(content)</code>	Sends the request to the server. Can be null.
<code>abort()</code>	Stops the request.
<code>getAllResponseHeaders()</code>	Returns all response headers for the HTTP request as key/value pairs.
<code>getResponseHeader("header")</code>	Returns the string value of the specified header.
<code>setRequestHeader("header", "value")</code>	Sets the specified header to the supplied value.

Source: *Foundations of Ajax* - APress

XHR Properties

Property	Description
<code>onreadystatechange</code>	The event handler that fires at every state change.
<code>readyState</code>	The state of the request: 0=uninitialized, 1=loading, 2=loaded, 3=interactive, 4=complete
<code>responseText</code>	The response from the server as a text string
<code>responseXML</code>	The response from the server as an XML document
<code>status</code>	The HTTP status code from the server for the request object: 200: Ok; 201: Created; 400: bad request, 403: Forbidden; 500: internal sever error
<code>statusText</code>	The text version of the HTTP status code

```
function handleAjaxResponse  
begin  
    do something with the data that is returned from XHR  
end
```

- JavaScript function is invoked when the readystate changes on the XHR object

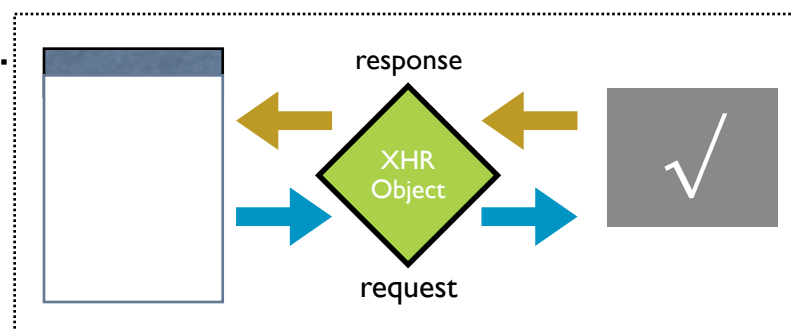
set `onreadystatechange` to callback function - `handleAjaxResponse`

open a request on the `xhr` object

send the request through the `xhr` object

- The JavaScript function *getResponse* will be invoked when the `readystatechange` property changes on the XHR object
- Same site rule
- 'GET' or 'POST'
- Asynchronous flag

server must be accessible via relative url



- Use **GET** for
 - For retrieve
 - REST services
 - When passing parameters
 - Idempotent URLs
 - Small amount of data
- Use **POST** for
 - Modification
 - Large amounts of data passed to server
 - Non-idempotent URLs

3. Make the Request: Handling the Request on the Server Side

- Its just a normal XMLHttpRequest
 - Normal mechanism for getting request parameters
- Raw POST (`xhr.send(someData)`)
 - Java/JSP: `request.getInputStream()` - read as raw post
 - Rails: `@request.raw_post`
 - PHP: `$data = file_get_contents('php://input')`

```
function handleAjaxResponse
begin
    if response is valid then
        get responseXML
        get rootNode
        get helloArea on the page
        stuff the rootNode value into the helloArea DIV
    endif
end
```

- **readystate** values

0 - Uninitialized

1 - Loading

2 - Loaded

3 - Interactive

4 - Completed

- XML version must be first line

```
<?xml version="1.0" encoding="ISO-8859-1"?>
```

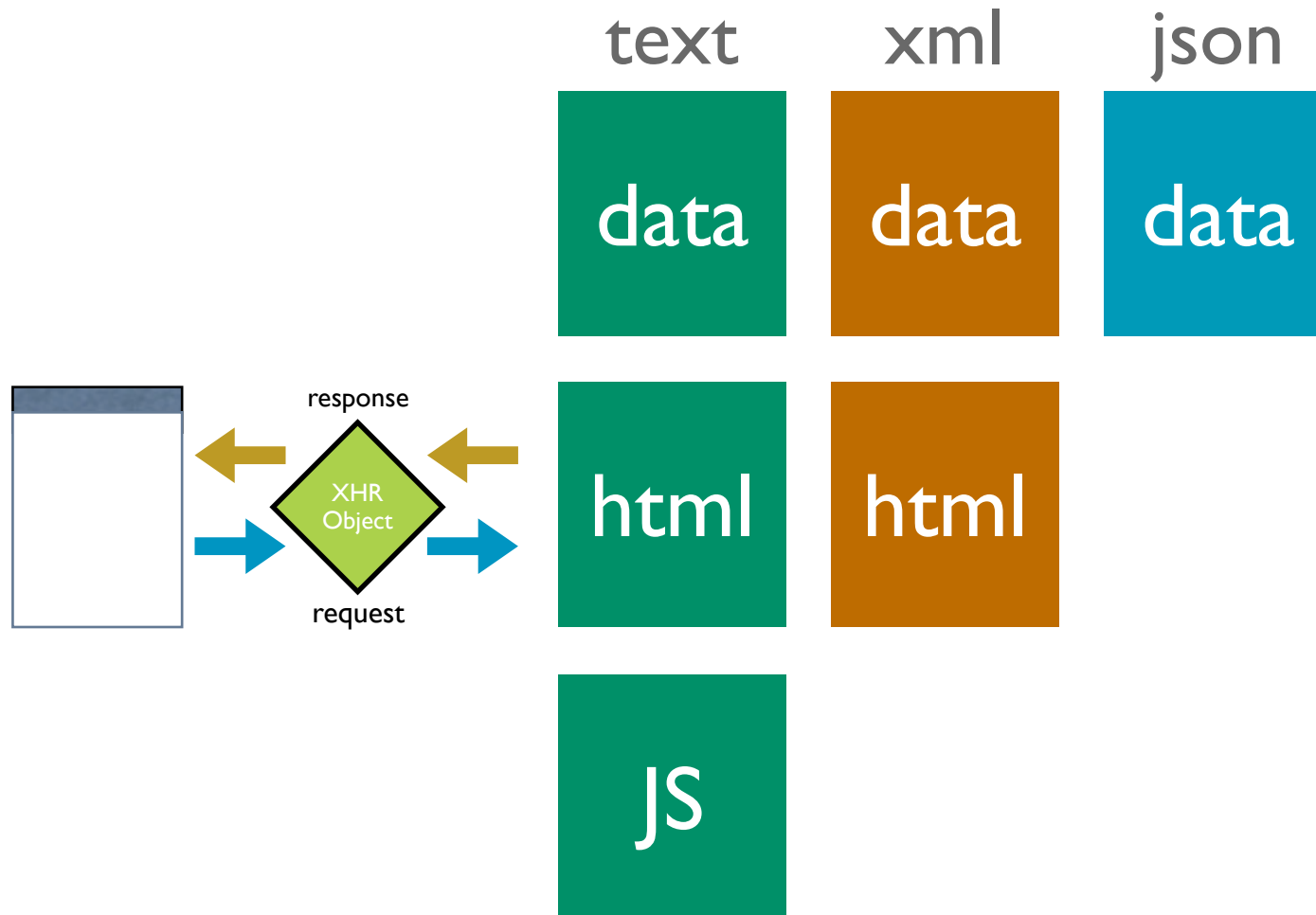
- Set up response header's Content-type
“Content-Type”, “text/xml”
- Use well-formed XML

- Use XHR property **responseXML** to get the response as an XML DOM (XmlDocument)
- Use standard JavaScript DOM methods
 - Mozilla, Safari, Opera & IE support a common set of methods and properties
 - Watch out for IE only stuff (e.g., **children** property)
 - Watch out for whitespace issues
- Other options
 - Use XML library for JS (e.g., XML for <script>)

Property/Method	Description
documentElement	Returns the root element of the document
firstChild	Is the first element within another element (the first child of the current node)
lastChild	Is the last element within another element (the last child of the current node)
nextSibling	Is the next element in the same nested level as the current one
previousSibling	Is the previous element in the same nested level as the current one
nodeValue	Is the value of a document element
getElementsByTagName	Used to place all elements into an object

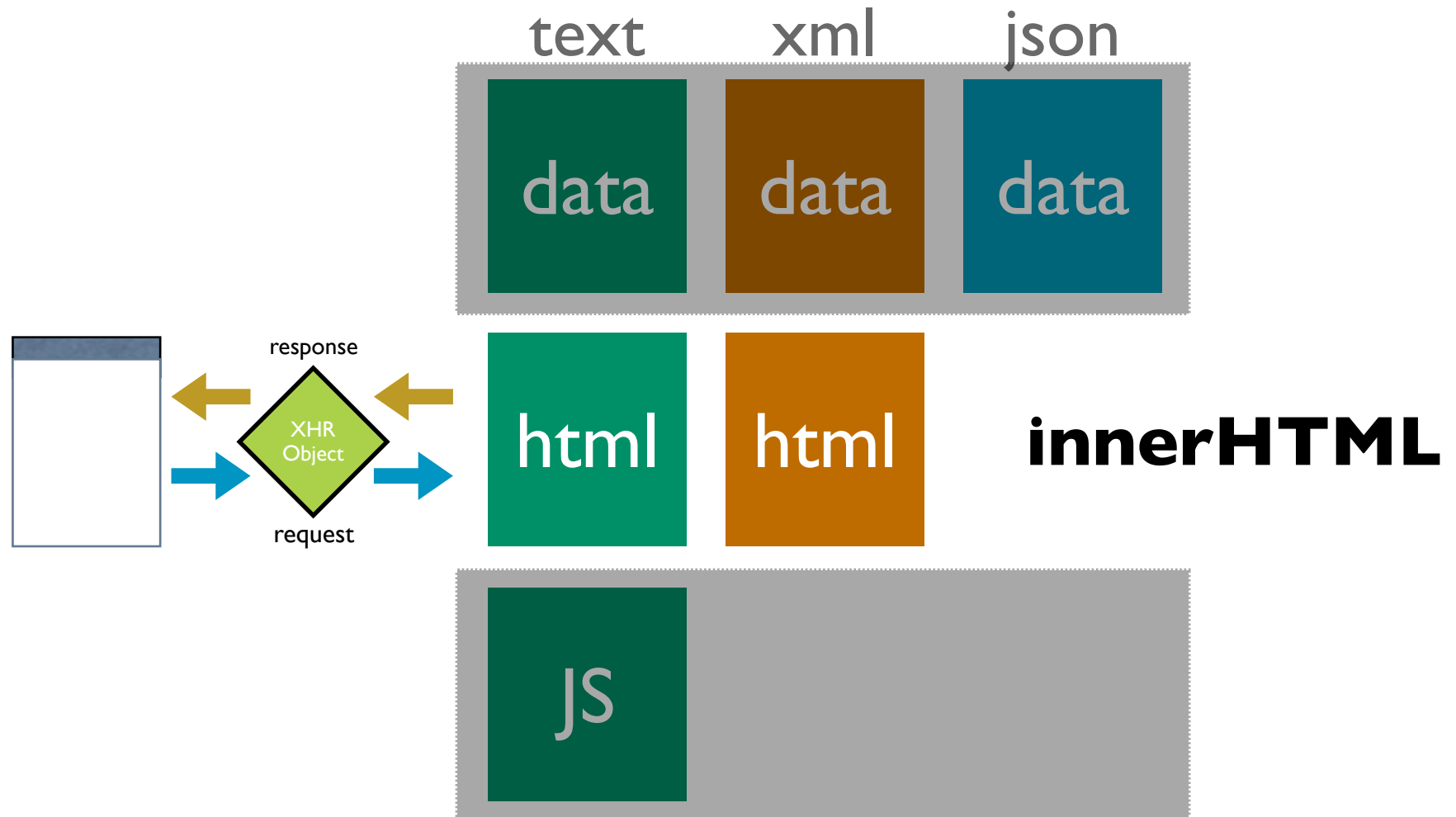
Response Options

- Different types, different formats



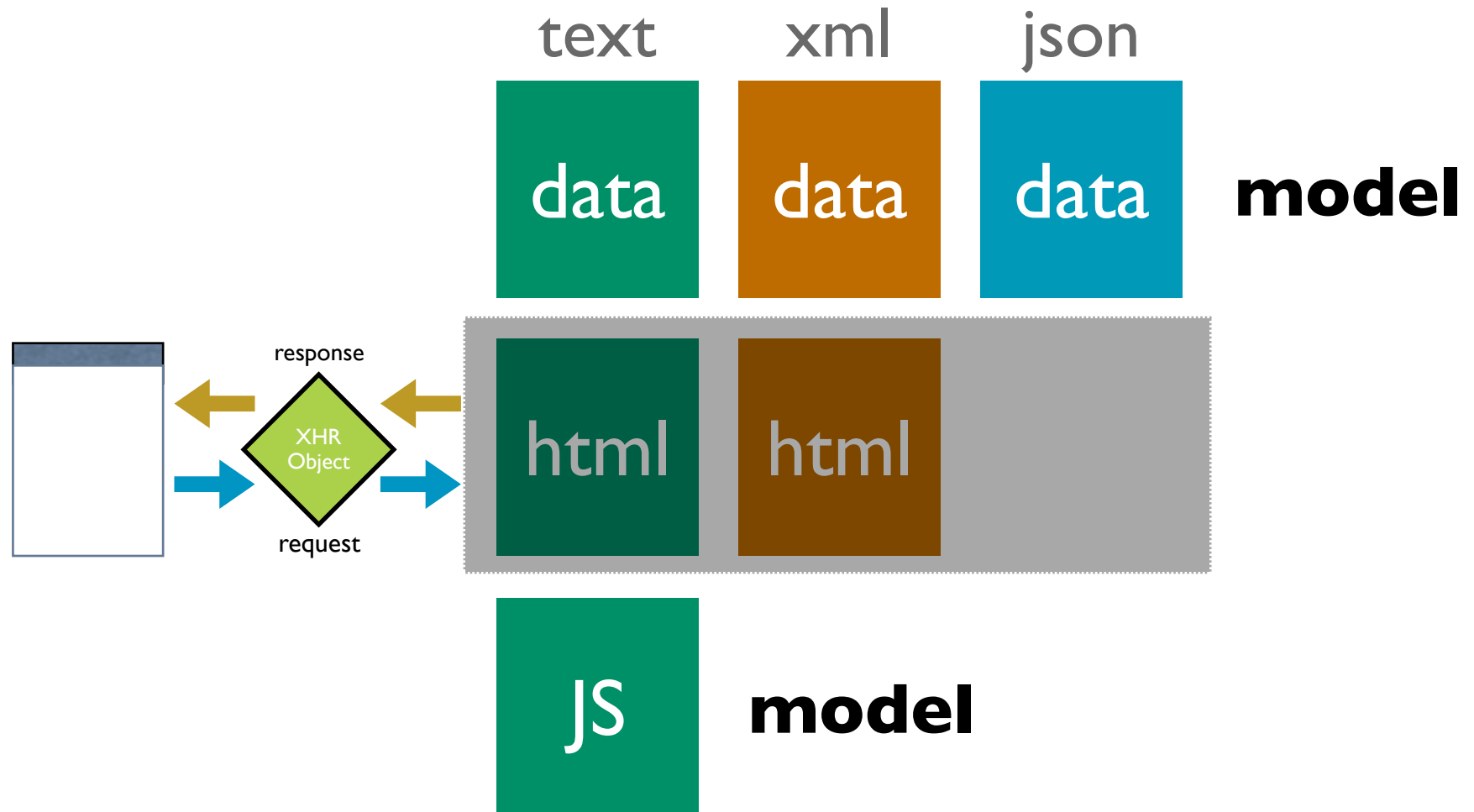
Response Options

- Snippets of HTML returned, stuffed into innerHTML



Response Options

- Data returned from the server, interface built from it



JSON

- JavaScript supports several string based notations
 - Allows the basic types to be represented as string literals
 - Strings are easy to pass over the wire
- JSON (JavaScript Object Notation - json.org)

```
{"name": "Jack B. Nimble", "at large": true, "grade":  
"A", "level": 3}
```

name	Jack B. Nimble
at large	true
grade	A
level	3

```
["Sunday", "Monday", "Tuesday", "Wednesday",  
"Thursday", "Friday", "Saturday"]
```

array of 7 named days

```
[  
[0, -1, 0],  
[1, 0, 0],  
[0, 0, 1]  
]
```

3x3 array

- JSON's simple values are the same as used in JavaScript
- No restructuring is requested: JSON's structures are JavaScript!
- JSON's object is the JavaScript object
- JSON's array is the JavaScript array

- Parsing is simple, native

- Obtain responseText
- Parse the responseText

```
responseData = eval('(' + responseText + ')');
```

OR

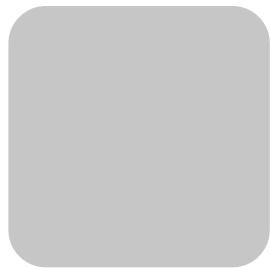
```
responseData = JSON.parse(responseText);
```

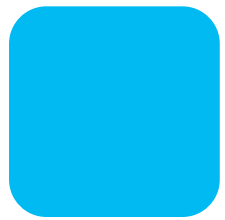
- <http://api.search.yahoo.com/WebSearchService/V1/webSearch?appid=YahooDemo&query=finances&start=1&results=1&output=json>

```
{
  "ResultSet":
  {
    "totalResultsAvailable": "69200000",
    "totalResultsReturned": "1",
    "firstResultPosition": "1",
    "Result":
    {
      "Title": "Yahoo! Finance",
      "Summary": "manage the market and your money with Yahoo! Finance. Includes stock market quotes, business news, mutual funds, online bill pay, banking tools, loans, insurance, retirement planning, and tax tips and advice.",
      "Url": "http://finance.yahoo.com/",
      "ClickUrl": "http://finance.yahoo.com/",
      "ModificationDate": "1137225600",
      "MimeType": "text/html"
    }
  }
}
```

Ajax Operations

- **Lookup** I can get information when I need it
- **Persist** I can save in real-time
- **Validate** I can prevent errors early
- **Invoke** I can make things happen now
- **Message** I can communicate instantly





Trigger. JavaScript Events

Trigger. JavaScript Events

- Ajax interactions are kicked off by event & timer triggers
- There are issues with event management within the browsers
- You do need to understand these implications to write good Ajax applications

First, the Events

onAbort	onBlur
onChange	onClick
onDbClick	onDragDrop
onError	onFocus
onKeyDown	onKeyPress
onKeyUp	onLoad
onMouseDown	onMouseMove
onMouseOut	onMouseOver
onMouseUp	onMove
onReset	onResize
onSelect	onSubmit
onUnload	

Problem in a Nutshell

- Different event models
- Timing Issues
- Confusing madness around the **this** pointer
- Browser incompatibilities
- Memory leak issues

- Two Models (actually three!)
 - Classic style
 - `<element onclick=func() >`
 - `element.onclick=func;`
 - W3C event model
 - `addEventListener`, `removeEventListener`
 - IE event model
 - `attachEvent`, `detachEvent`

- Attempting to attach events before the page is loaded will cause problems
- Do it on the onload

- Inline registration

```
<a href="#" onclick="clickHandler(this)">
function clickHandler(anchorDOMElem) {
    // this == window --> window owns the function
    this = anchorDOMElem; // fix the 'this' pointer
}
```

- Event handler with function

```
anchorDOMElem.onclick=clickHandler;
function clickHandler() {
    // this == anchorDOMElem --> anchorDOMElem owns the
function
}
```

- Event handler with Object prototype

```
function AnchorLink(anchorDOMElem) {
    // this == AnchorLink object
    this.anchorDOMElem = anchorDOMElem; // save DOM elem
    this.anchorDOMElem.onclick = this.clickHandler; // event handler
    this.anchorDOMElem.anchorLinkObj = this; // store this on dom elem
}
AnchorLink.prototype.clickHandler = function() {
    // this == anchorDOMElem, not AnchorLink object
    // confusing since this normally refers to AnchorLink
    // grab our normal this
    anchorLinkObj = this.anchorLinkObj;
}
```

- Arbitrary number of event handlers
- Way to remove events
- Defines capture & bubble flow
- No way to get list of handlers
- And the browsers play differently:

Internet Explorer	Mozilla (FF), Safari, Opera [W3C]
<code>addEventListener()</code> , <code>removeEventListener()</code>	<code>attachEvent()</code> , <code>detachEvent</code>
<code>this == window object</code>	<code>this == DOM event object</code>

- IE's garbage collection does reference counting
- Attaching events and not removing them when finished will cause memory leaks
- Can use an Observer pattern to cache event handlers and at the end clean them up
- Most Ajax frameworks provide this capability



Update. The DOM

Update. The DOM

- Browsers represent the user interface as a set of objects (or elements)
- Since a page has a hierarchy of containment, each of these elements are related as parent-child or siblings
- This takes the shape of a tree
- The tree of elements is called the *document object model* or DOM
- Any change to the DOM structure or a DOM element is reflected immediately on the web page

DOM Example

- Represented as a tree of nodes

nodeName	id	class
▼ #document		
▼ HTML		
▶ HEAD		
▼ BODY		
#text		
▶ SCRIPT		
#text		
▶ H2		
#text		
▶ P		
#text		
▶ SPAN		ajaxlink
#text		
▶ DIV	helloArea	
#text		

Ajax Hello World

Clicking the link below will use XHR to fetch the data and then show the result in the box below.

[Make an ajax request for data](#)

Using the DOM

- JavaScript is the DOM manipulator
- Use it to
 - Find DOM elements
 - Add new elements
 - Remove elements
 - Modify element attributes

Finding DOM Elements

- `document.getElementById`
 - Prototype library shortcut: `$("#idName")` or `$(id)`
- `parentNode`
- `childNodes`

DOM Manipulation

- Creating new interface elements
 - `innerHTML`, `createElement()`, `createTextNode()`, `appendChild()`
- Changing element styles
 - Visual attributes
 - Geometry

```
<h2>Ajax Hello World</h2>
```

```
<p>Clicking the link below will use XHR to fetch the data and  
then show the result in the box below.</p>
```

```
<span class="ajaxlink" onclick="makeRequest('response.jsp')">  
Make an ajax request for data  
</span>
```

```
<div id="helloArea"></div>
```

Ajax Hello World

Clicking the link below will use XHR to
fetch the data and then show the
result in the box below.

[Make an ajax request for data](#)

This data was brought to you by
Ajax!

```
var helloArea = document.getElementById("helloArea");  
helloArea.innerHTML=rootNode.firstChild.data;
```

Keeping it Clean

- Separate presentation style from content with CSS
 - Supports degradability
 - Supports accessibility
 - Simplifies maintenance
- This is called good semantic markup

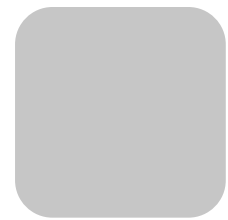

```
<div id="weather">
  <div id="current">
    <div id="currentHeader" class="accordionTabTitleBar">
      Current Conditions
    </div>
    <div class="weatherTabContentBox">
      <div class="weatherPanel" id="ccInfo">
      </div>
    </div>
  </div>

  <div id="moon">
    <div id="moonHeader" class="accordionTabTitleBar">
      Moon
    </div>
    <div class="weatherTabContentBox">
      <div class="weatherPanel" id="moonInfo">
      </div>
    </div>
  </div>

  <div id="sun">
    <div id="sunHeader" class="accordionTabTitleBar">
      Sunlight Summary
    </div>
    <div class="weatherTabContentBox">
      <div class="weatherPanel" id="sunInfo">
      </div>
    </div>
  </div>
</div>
```



```
new Rico.Accordion( 'weather', {panelHeight:220, expandedBg:'#39497b'}
```



Summary

Understanding Ajax

- Learn the **patterns**
- Know how to perform basic Ajax **operations**
- Know how to work with JavaScript **triggers** (events, timers)
- Know how to **update** the DOM
- Understand the **issues** that surround Ajax
 - *We will discuss these issues this afternoon*

Ajax Architecture

- The Ajax DNA (events, data, presentation) is just a restatement of Model-View-Controller software pattern
- It is an architectural approach that separates these three concerns
 - **Model:** keep it pure, avoid presentation artifacts
 - **View:** keep HTML clear of style. Keep style in CSS.
 - **Controller:** don't mix events in HTML markup, use observer style of event management

Pulling It All Together

- Two Projects that
 - Show XHR in action
 - Explores XML vs JSON
 - Explores Web Services

Ajax & Web Services

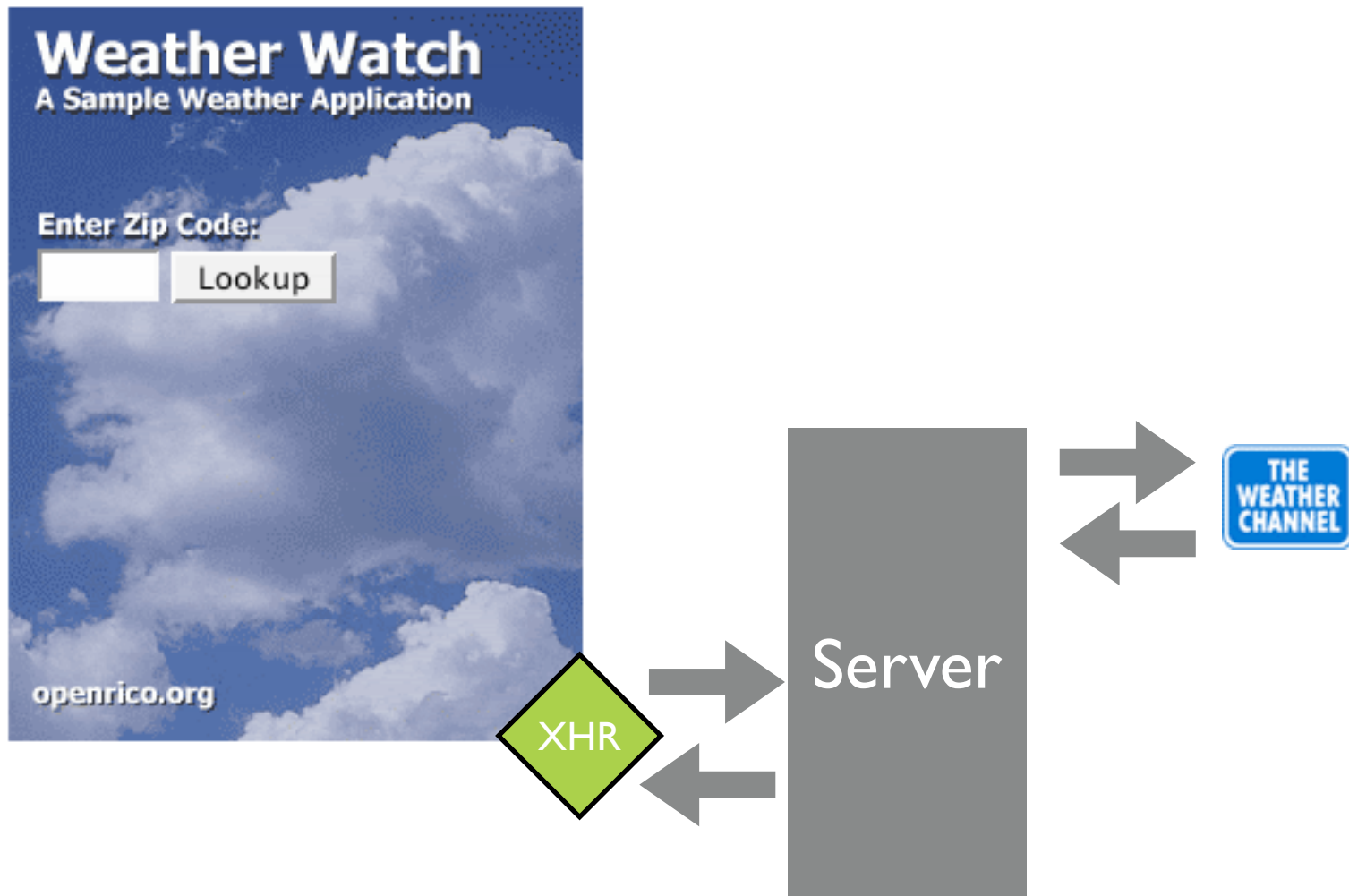
XML and JSON Examples

Bill W. Scott, Y! Ajax Evangelist

bscott@yahoo-inc.com

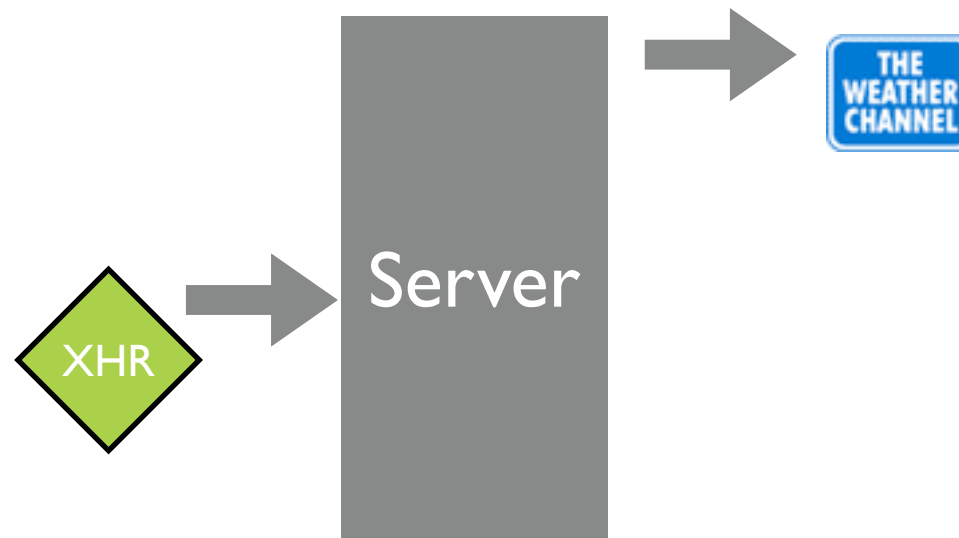
Building an Ajax Weather Widget

Using an XML Service



weather.com exposes its weather service via an URL that includes a partner key and license key

`http://xoap.weather.com/weather/local/95132?cc=*&link=xoap&prod=xoap&par=PARTNER_KEY&key=LICENSE_KEY`



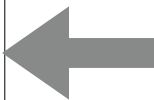
XML Response from weather.com

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<weather ver="2.0">
  <head>
    <locale>en_US</locale>
    <form>MEDIUM</form>
    <ut>F</ut>
    <ud>mi</ud>
    <us>mph</us>
    <up>in</up>
    <ur>in</ur>
  </head>
  <loc id="95132">
    <dnam>San Jose, CA (95132)</dnam>
    <tm>8:37 PM</tm>
    <lat>37.4</lat>
    <lon>-121.86</lon>
    <sunr>7:18 AM</sunr>
    <suns>5:20 PM</suns>
    <zone>-8</zone>
  </loc>
```

```
<cc>
  <lsup>1/21/06 7:53 PM PST</lsup>
  <obst>San Jose, CA</obst>
  <tmp>49</tmp>
  <flik>46</flik>
  <t>Mostly Cloudy</t>
  <icon>27</icon>
  <bar>
    <r>30.27</r>
    <d>rising</d>
  </bar>
  <wind>
    <s>7</s>
    <gust>N/A</gust>
    <d>350</d>
    <t>N</t>
  </wind>
  <hmid>80</hmid>
  <vis>10.0</vis>
  <uv>
    <i>0</i>
    <t>Low</t>
  </uv>
  <dewp>43</dewp>
  <moon>
    <icon>21</icon>
    <t>Waning Gibbous</t>
  </moon>
</cc>
</weather>
```

weather.com responds with an XML response that describes the weather's current conditions

Server



Rico/Prototype Response

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<ajax-response>
  <response type="element" id="ccInfo">
    <div class="weatherTitle">San Jose, CA (95132)</div>
    <div>
      <span></img></span>
      <span class="weatherTemp">49&#176;F</span>
    </div>
    <div class="weatherDescr">Mostly Cloudy</div>
    <div>
      <table cellpadding="0" cellspacing="0" border="0">
        <tr class="weatherDetail">
          <td class="weatherDetailTitle">Humidity:</td>
          <td>80&#37;</td></tr>
        <tr class="weatherDetail">
          <td class="weatherDetailTitle">Barometer:</td>
          <td>30.27&quot;</td></tr>
        <tr class="weatherDetail">
          <td class="weatherDetailTitle">Wind:</td>
          <td>From N at 7 mph</td></tr>
        <tr class="weatherDetail">
          <td class="weatherDetailTitle"></td>
          <td>gusting to N/A mph</td></tr>
        <tr class="weatherDetail">
          <td class="weatherDetailTitle">Dewpoint:</td>
          <td>43&#176;F</td></tr>
        <tr class="weatherDetail">
          <td class="weatherDetailTitle">Heat Index:</td>
          <td>46&#176;F</td></tr>
      </table>
    </div>
  </response>
</ajax-response>
```

My server code translates the weather.com XML into a Rico/Prototype ajax-response. Notice the response is an **HTML code snippet**. The response is of type element, and mapped to **id="ccInfo"**



Simple DIV Structure Defines the Accordion

```
<div id="weather">
  <div id="current">
    <div id="currentHeader" class="accordionTabTitleBar">
      Current Conditions
    </div>
    <div class="weatherTabContentBox">
      <div class="weatherPanel" id="ccInfo">
    </div>
  </div>
</div>
```

```
<div id="moon">
  <div id="moonHeader" class="accordionTabTitleBar">
    Moon
  </div>
  <div class="weatherTabContentBox">
    <div class="weatherPanel" id="moonInfo">
  </div>
</div>
```

```
<div id="sun">
  <div id="sunHeader" class="accordionTabTitleBar">
    Sunlight Summary
  </div>
  <div class="weatherTabContentBox">
    <div class="weatherPanel" id="sunInfo">
  </div>
</div>
</div>
```



```
<script>
onloads.push( accord );
function accord() {
  new Rico.Accordion( 'weather',
    {panelHeight:220, expandedBg:'#39497b'} );
}
</script>
```

The Ajax Code

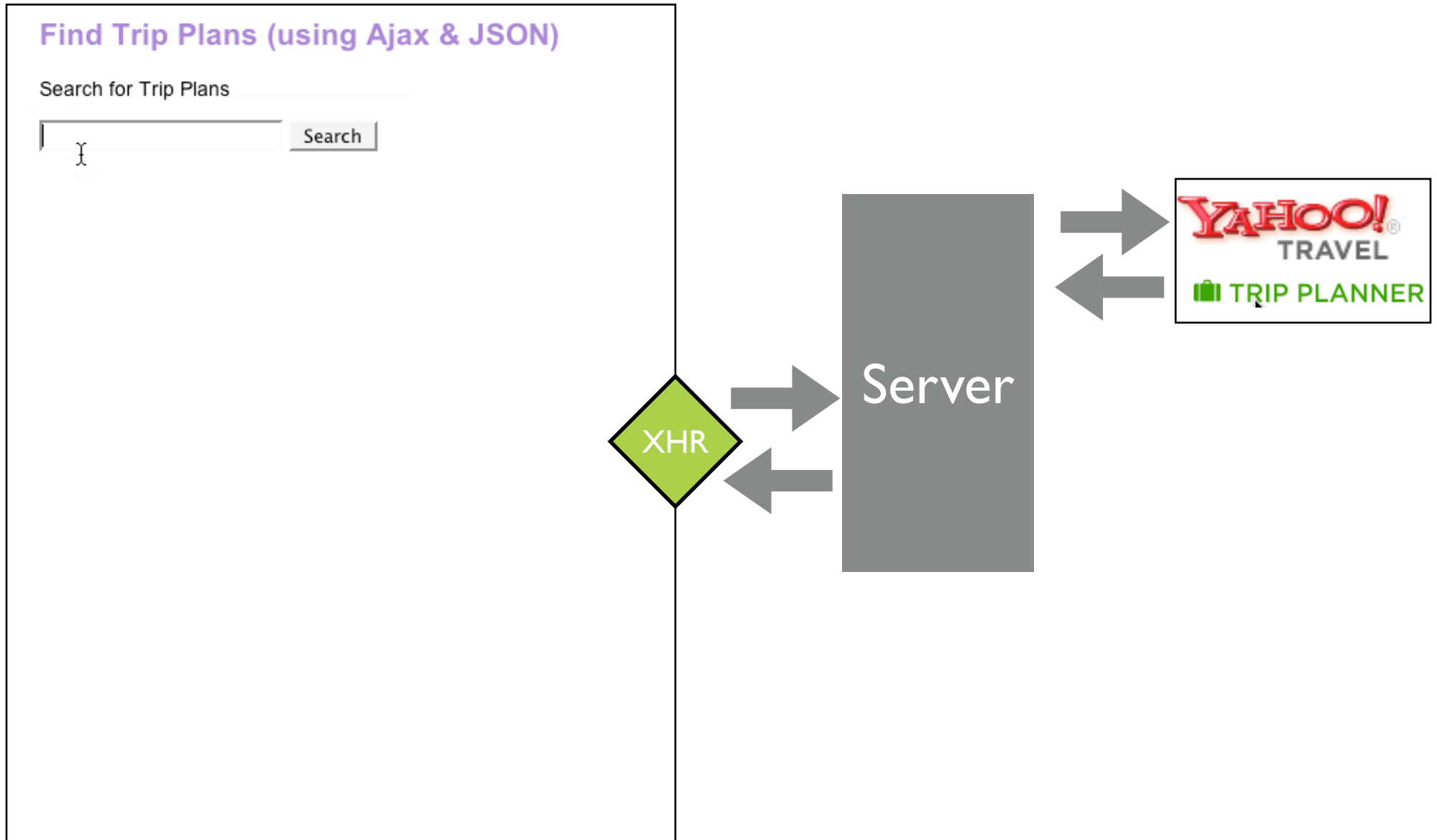
```
function registerAjaxStuff() {
    ajaxEngine.registerRequest( 'getWeatherInfo', 'ajax_weather_info' );
    ajaxEngine.registerAjaxElement( 'ccInfo' );
    ajaxEngine.registerAjaxElement( 'moonInfo' );
    ajaxEngine.registerAjaxElement( 'sunInfo' );
    ajaxEngine.registerAjaxElement( 'sponsoredLinks' );
    $('zip').onkeydown = handleEnterKey.bindAsEventListener($('zip'));
}
function getWeatherInfo() {
    $('checkanother').style.visibility='visible';
    new Rico.Effect.Position( $('zipinput'), 200, null, 100, 10);

    new Rico.Effect.FadeTo( 'frontdoor', 0, 100, 10,
        {complete:function() {$('frontdoor').style.display = 'none';}}
    );

    ajaxEngine.sendRequest( 'getWeatherInfo', "zip=" + $('zip').value);
}
function resetWeather() {
    $('zipinput').style.left = '12px';
    $('checkanother').style.visibility='hidden';

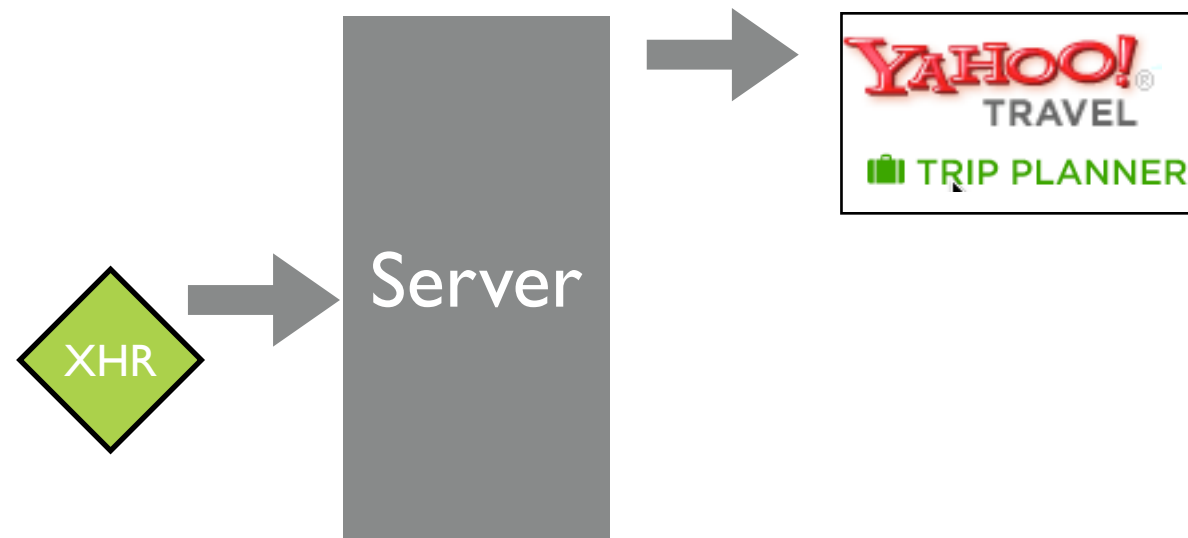
    $('frontdoor').style.display = ''
    $('zip').focus();
    new Rico.Effect.FadeTo( 'frontdoor', .99999, 100, 10, {complete:emptyContents});
}
```

JSON Trip Finder



Yahoo! Trip Planner exposes its service via an URL that requires a free partner key. Notice output=json.

```
http://api.travel.yahoo.com/TripService/V1/tripSearch?  
appid=PARTNER_KEY&query=alaska&output=json
```



```
{ "ResultSet": { "firstResultPosition":  
1, "totalResultsAvailable": "16", "totalResultsReturned":  
10, "Result": [  
  
  { "id": "351102", "YahooID": "jk_95661", "Title": "Cruise to Alaska  
from Vancouver", "Summary": "Things to do: Whistler Blackcomb -  
Hiking, ... Hotel: Hyatt Regency Vancouver, Howard  
Jho...", "Destinations": "Vancouver, Anchorage,  
Vancouver, Ketchikan,  
Se...", "CreateDate": "1130437928", "Duration": "10", "Image": { "Url": "http://us.i1.yimg.com/us.yimg.com/i/travel/tg/poi/ca/100x100_cde24409e413d4d6da27953f6a4e14b47e29e731d3093b94afa37e.jpg", "Height": "75", "Width": "149", "Latitude": "61.190361", "Longitude": "not available"}, "Url": "http://travel.yahoo.com/trip/?pid=351102"},  
  
  { "id": "400333", "YahooID": "brdway_grl", "Title": "Alaska", "Summa  
ry": "Things to do: Moose's Tooth Pub and Pizzer...  
Restaurant: Orso, Simon's & Seafort's  
Salo...", "Destinations": "Anchorage", "CreateDate": "1134676973",  
, "Duration": "10", "Image": { "Url": "http://us.i1.yimg.com/us.yimg.com/i/travel/tg/poi/ca/100x100_cde24409e413d4d6da27953f6a4e14b47e29e731d3093b94afa37e.jpg", "Height": "75", "Width": "149", "Latitude": "61.190361", "Longitude": "not available"}, "Url": "http://travel.yahoo.com/trip/?pid=400333&action=view"},  
  ...  
] } }
```

Y! service responds with a JSON text string, valid JavaScript object notation. This is passed directly back as the XHR result



The Ajax/JSON Code

```
<script>
function showResponse() {
    if (xhr.readyState == 4) {
        if (xhr.status == 200) {
            var jsonText = xhr.responseText;
            var helloArea = document.getElementById("helloArea");
            var theTrip = eval( '(' + jsonText + ')' );
            var tripPlanHTML = "";
            for(var i=0; i<theTrip.ResultSet.totalResultsReturned; i++) {
                var result = theTrip.ResultSet.Result[i];
                tripPlanHTML = tripPlanHTML + '<div style="padding:4px;
border:1px solid gray;width:'+result.Image.Width+';"></img></div>'+
'<div ><a href="'+result.Url+' "><span style="font-weight:bold;font-size:
18px;">'+result.Title+'</span></a></div><div>'+result.Summary+'</div><br/>';
            }
            helloArea.innerHTML=tripPlanHTML;
        } else {
            alert('There was a problem with the request.');
```

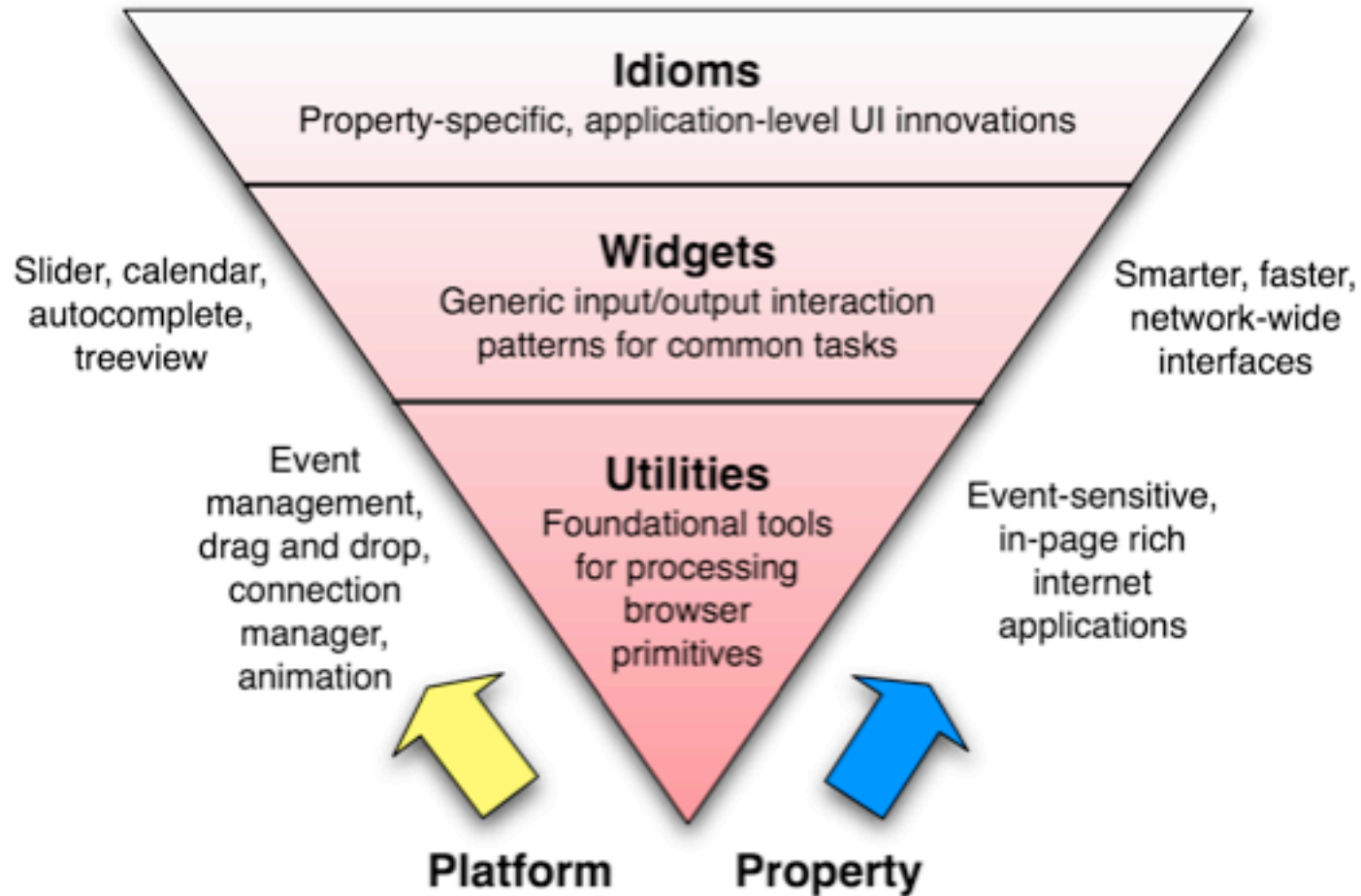

Ajax Toolkits

Designing and Building Ajax Applications with Ajax Toolkits

Bill W. Scott, Y! Ajax Evangelist

bscott@yahoo-inc.com

What a Toolkit Provides



Evaluating Toolkits

- What language is it targeted for?
- Are you looking for XHR abstraction or high level?
- Will you use XML or JSON?
- Is it \$\$ or open source?
- Does it simplify general JS development?
- Community of support?
- Likelihood it will be around next year?

Ajax Toolkits: Open Source JavaScript Libraries

Prototype	Inspired by Ruby, simplifies DOM manipulation, events, Ajax connectivity. Several frameworks based on it. Notable for the <code>\$()</code> function among many other shortcuts. OO extends.
Scriptaculous	Built on Prototype, nice effects, animations, drag and drop, widgets. Nicely documented
Rico	Built on Prototype, nice effects, animations, behaviours (widgets), drag and drop, nice Ajax engine abstraction, style effects. Lots of demos.
Behaviour	Built on Prototype, separates event management from HTML using CSS selectors
Dojo	Widget library, drag and drop, effects, widget framework, event management, animation, bookmarkability, manipulating location history, extensive deployment support
Zimbra	Extensive set of widgets (data list, wizard, button, rich text editor, tree, menus, etc.). MVC, debugging facilities
Microsoft Atlas	In developer release. Support for drag and drop, animation, full XML specification for wiring widgets together, behavior abstraction, will be integrated in full suite of MS dev tools.
MochiKit	Widgets, painless DOM manipulation, task management, JSON-like notation, logging. Active community
Sarissa	Encapsulates XML functionality in browser-independent calls

TIBCO GI	Very extensive framework with full IDE. Dozens of widgets, vector based charting package, support for SOAP. IDE has WYSIWYG GUI layout, step through debugging as well as code completion
Bindows	Been around since 2001, lots of great widgets and library routines. Not always browser independent
JackBe	Focused at corporate environments. Able to emulate a desktop application. Very fast performance even on a dial-up line. Uses a proprietary “screen” format that gets interpreted by a JavaScript runtime engine.
Active Widgets	Rich set of JavaScript widgets. Rich grid widget is a high spot.

AjaxAC	Separates events from HTML, subrequest support, event management, easily remotes to PHP methods, start of a widget framework
Cajax	Low level. Simplifies server side programming, limits client side JS required, suggest widget, plugin for form submission.
CakePHP	OO, modeled after Ruby on Rails, integrated CRUD, fast, flexible templating, nice docs
CPAINT	OO library for Ajax connectivity. Local & remote functions, single or multiple XHR, supports both POST & GET
JPSpan	PHP remoting via JavaScript
XAjax	Low level. PHP remoting via JavaScript. Simplified DOM updates on XHR response.
XOAD	Uses JSON and native PHP serialized objects, security emphasis, server side events, HTML manipulation. Tutorials and documentation.

Ajax JavaServer Faces Framework	Converts JSF applications to Ajax
Ajax JSP Tag Library	Set of tags for Ajax. Autocomplete, callout, select, toggle, update fields
DWR	For remoting Java methods from JavaScript code. Contains a number of widgets.
Echo2	Auto generate HTML & JavaScript from server side. Write in pure Java.
Guise (\$\$)	Application framework that uses the desktop UI approach to components and events (hides HTML generation and DOM manipulation.) Controls, dialogs, flyovers,
JSP Controls Tag Library	For portlet style JSP components. Supports Ajax and non-Ajax modes
SWATO	JS library based on Prototype. Uses JSON for marshalling. Direct remoting for POJOs. Widgets include auto suggest, template, logger.
AjaxAnywhere	Turns existing JSP/JSF/Struts/Spring components into Ajax Aware components
WebOrb for Java	Ties together Ajax, Flash and Java objects with XML services

Prototype

```
function makeRequest(url) {  
    var xhr = new Ajax.Request(url, {method:'get', onComplete: showResponse});
```

- `$()` }
- `$F()` }
- `Try.these()`
- `Ajax.request()`
- `Ajax.Updater()`
- `Element.show/hide/toggle/remove`
- Object-oriented extensions

- Makes Ajax request/response simple

```
function makeRequest(url) {  
    var xhr = new Ajax.Request(url,  
        { method: 'get', onComplete: showResponse });  
}
```

```
function showResponse(xhr) {  
    $('helloArea').innerHTML = xhr.responseText;  
}
```

- Rico allows multiple targets in the response

Dojo



- Events: multiple listeners, browser abstraction, memory leak protection
- Aspect-oriented
- I/O: common interface for multiple transports, single/multi response
- Built-in packaging system
- Widget building w/HTML & CSS fragments, automatic reuse

Microsoft Atlas Features

- Extensible core adds lifetime mgmt, inheritance, multicast event handler, and interfaces
- Base class library: strings, timers, tasks
- UI framework for attaching behaviors to HTML
- Simple connectivity
- Set of rich UI controls (auto complete, popup panels, animation, and drag and drop)
- Browser compatibility layer

Microsoft Atlas: Interesting Concepts

- Update panels: mark region for auto update
- Behaviors: encapsulate actions to associate with DHTML events [floating, hover, popup, autocomplete]
- Validators [required, type, range, regex, etc.]
- Data binding: connect controls & manage flow between them [data entered, reflected elsewhere]
- Bindings transformers: support transform event as part of a binding [ToString, invert, etc.]

Microsoft Atlas

- Two models: XML scripting & JS API
- Will be fully supported by Microsoft tools
- Big Q? Tied to ASP.NET?
 - Language on the site is confusing
 - Similar to how XHR got lost!
 - But I have been assured they intend the Atlas Client Scripting Framework to be totally independent of Microsoft technologies (although they want you to use them!)

Advanced Topics

Problems and Challenges with Building Ajax Applications

Bill W. Scott, Y! Ajax Evangelist

bscott@yahoo-inc.com

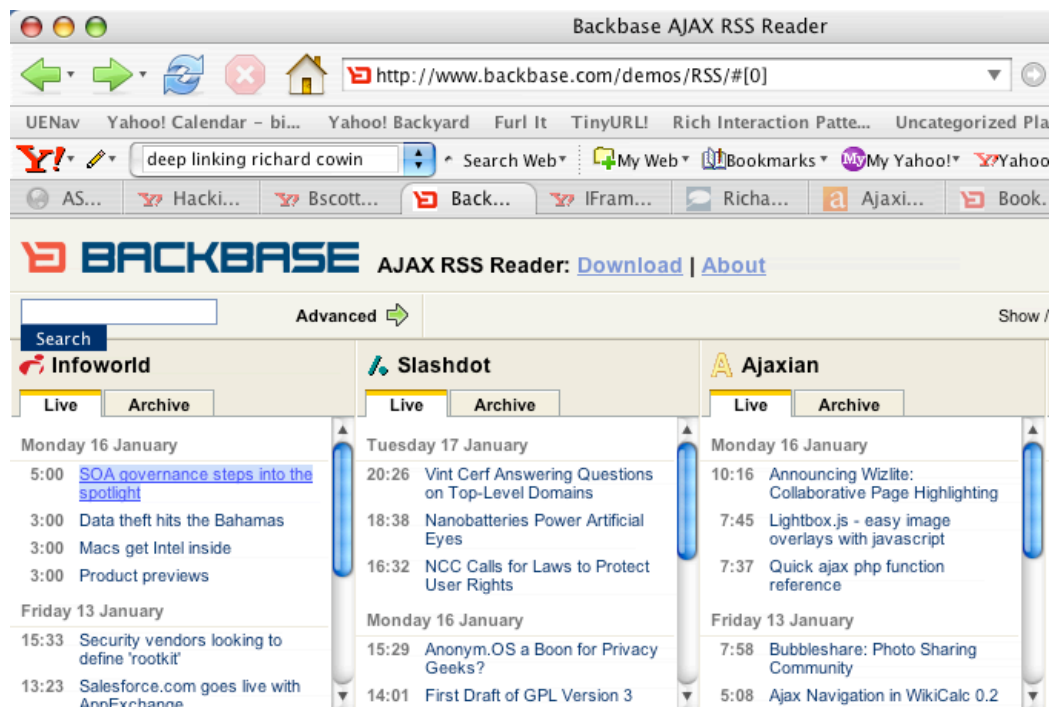
How Ajax Changes Things

Classic Web	Ajax/Web 2.0	Problems/Challenges
Page to page navigation	Micro content	Back button, SEO, bookmarking, accessibility, security
URL/Link = User's location	Application state	Back button, SEO, bookmarking, accessibility
Browser history	Application history	Back button, bookmarking, accessibility
Back button = Undo	Is unpredictable	Back button, bookmarking, accessibility
Little JavaScript	More JavaScript	Accessibility, degradability, security, memory, performance, debug, obfuscation, error handling
Document model	Application model	Back button, SEO, bookmarking, accessibility
Static content	Dynamic content	SEO, bookmarking, accessibility
Course-grained events	Micro states	Back button
Synchronous	Asynchronous	Error handling
Browser chrome	Application controls	Back button, bookmarking, accessibility
Page Services	Web Services	Security, XML vs. JSON

Back Button

- Problem: Ajax application state changes, URL does not. No browser history of state changes/navigation
- What does the user expect?
 - Often confused with Undo
 - True context view changes should be part of history
 - Navigation tabs; but not content tabs?
 - Steps in a process
 - Tree selection when views change
- Impact of tabbed browsers?

- URL hash, fragment identifier (**http://a.com#loc** does not trigger a page reload
- Fragment identifier (string after '#') can be used to record state changes in the URL



- Yahoo! Maps Beta also uses this technique
- Bottom line: tricky to implement
 - Dojo, Backbase provide direct support
 - One approach:
<http://www.contentwithstyle.co.uk/Articles/38/fixing-the-back-button-and-enabling-bookmarking-for-ajax-apps>
 - All links have fragment
 - Clicking link changes URL, not page
 - Timer monitors `window.location.href` & updates

- Technique: use iframes to control browser history for recording state changes
- Tricky issues abound
 - Fragile across browsers
 - onload issues
 - audible transition (on IE if sound enabled)
- Bottom line: problematic

Search Engine Optimization (Deep Linking)

- All the content may not be statically available for search engine crawlers
 - Won't find content to index your pages correctly
- Possible solutions
 - **Lightweight Indexing:** leverage existing tags such as meta, title and h1
 - **Extra Links:** extra links are placed on the site.
 - **Secondary Site:** a secondary site is fully accessible to the search engine. (See degraded experience)

source: backbase.com

Bookmarking

- Since we have broken the history and URL paradigm, bookmarking become problematic
- What does the user expect?
 - Do they expect to bookmark application state? content viewed?
 - Desktop apps often support bookmarking. It is always content based.

- Allow the user to save a bookmark at an interesting moment in an Ajax application
- Perhaps dynamically generate a link for bookmarking
- The URL generated for the bookmark is sufficient to restore the state

- Google Maps
 - Link is generated on each new map address
 - Link contains URL parameters to return to the page

 [Print](#)  [Email](#)  [Link to this page](#)

- OpenRico LiveGrid

http://richardcowin.typepad.com/blog/2005/07/there_has_been_.html

Listing movies

#	Title	Year
1	Mr and Mrs Smith	0
2	Shichinin no samurai	1954
3	The Lord of the Rings: T	2003
4	Buono, y il brutto, il cattivo, Il	1966
5	The Lord of the Rings: The Fellowship of the Ring	2001
6	Star Wars	1977
7	The Lord of the Rings: The Two Towers	2002
8	Star Wars: Episode V - The Empire Strikes Back	1980
9	Raiders of the Lost Ark	1981
10	Apocalypse Now	1979

Name: Listing movies 61 - 70 of 894

Create in: Bookmarks

Cancel Add

[http://openrico.org/rico/livegrid.page?](http://openrico.org/rico/livegrid.page?data_grid_index=60&data_grid_sort_col=rating&data_grid_sort_dir=ASC)

[data_grid_index=60&data_grid_sort_col=rating&data_grid_sort_dir=ASC](http://openrico.org/rico/livegrid.page?data_grid_index=60&data_grid_sort_col=rating&data_grid_sort_dir=ASC)

Accessibility

DHTML Provides	Accessibility Expects	Problem
JavaScript enabled markup, new user interface controls	Simple markup	Markup has more meaning than expected. How does the assistive technology understand this is a tree control? How does it understand the state of a control?
Dynamic pages & content	Fairly static pages	How do I announce dynamic content?
Weak support for keyboard navigation	Keyboard navigation	Sight-impaired users will not be using rich interactions; they will use the keyboard (or another device that simulates the keyboard) But how to tab key, arrow key, select items with the keyboard?

- IBM/Mozilla Accessible DHTML API/Spec
 - Direct support for keyboard traversal
 - Supports tab key to a container, arrow keys to navigate inside the container and enter key to select item
 - Setting tabindex=-1 allows focus to be set on a object without it being in the tab order
 - A way to add metadata to HTML markup for assistive technologies to understand:
 - Widget roles, properties, values and events
 - Working with assistive technology vendors to make them aware of this API (funded development)
- Microsoft's plans

tabindex value	Purpose	Tab key navigable?
Not set	Accept default behavior	Default behavior Form elements
tabindex = “-1”	For child elements (nodes in a tree)	No. You must set the focus with JavaScript
tabindex = “0”	To tab in HTML code order	Tabbing moves you field to field in the order they are added to the page
tabindex > “0”	To specify an exact order for each field	Value describes the tab order

- Roles

```
<span tabindex="0" xhtml2:role="wairole:checkbox"
  property:checked="true"
  onkeydown="return checkBoxEvent(event);"
  onclick="return checkBoxEvent(event);">
```

Any checkbox label

```
</span>
```



- Provides clues to assistive technologies

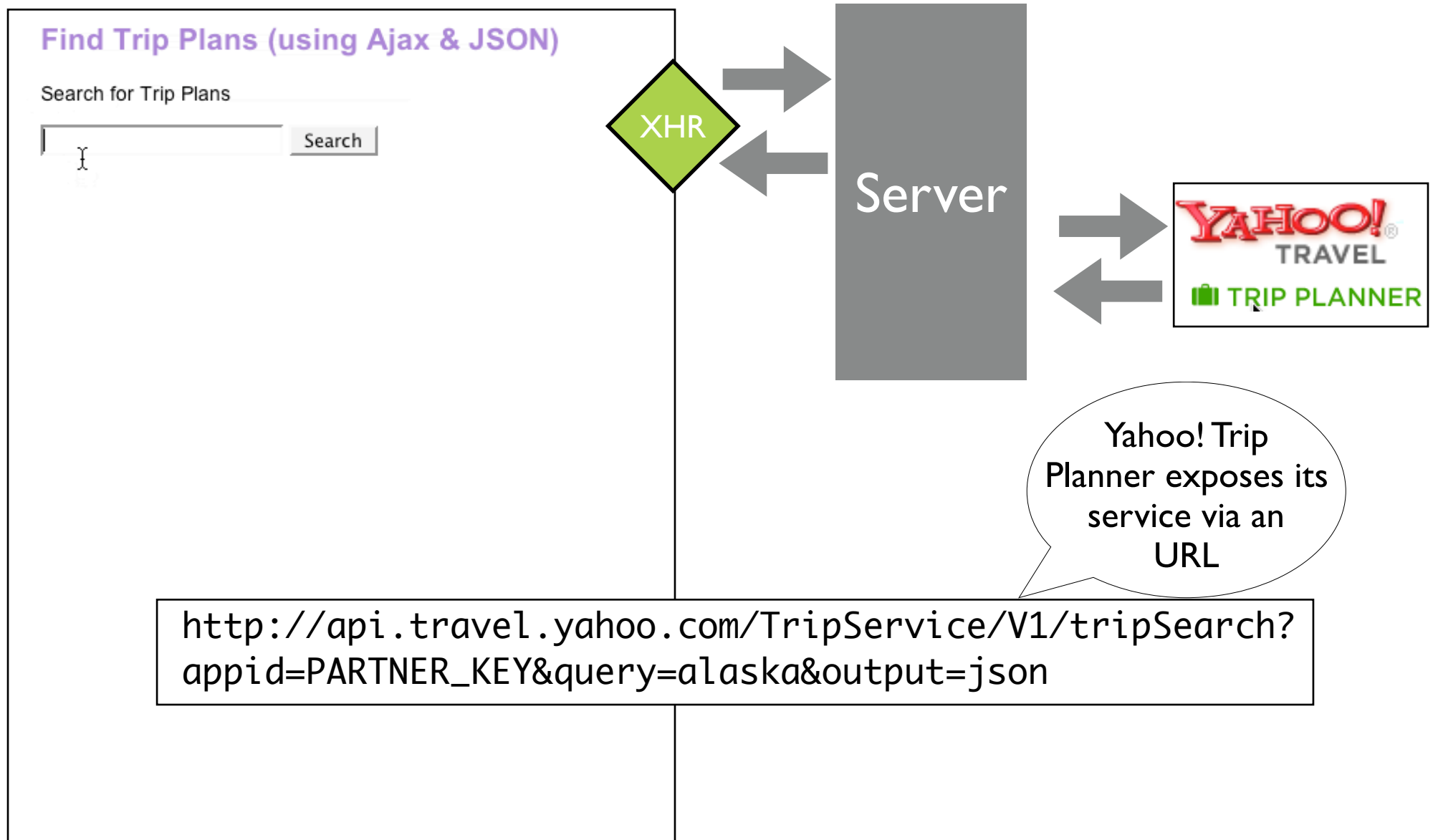
Degradability

- Degradability - Managing the user experience as you move down in device/browser capability
- At Yahoo! we grade the browser by experience we will provide (A, B, C grade)
 - A-grade experience (majority of our users; greatest visual fidelity and richest interactions)
 - B-grade experience (almost A-grade, but either they are on bleeding edge, low adoption or low economic value). Not considered in development or testing
 - C-grade experience (baseline of support; content but little style or interaction). Crawlers and old browsers get this experience.

- Pre-emptive nag bar
- Semantic Markup
 - What's good for accessibility is good for degradability
- Design Issues
 - What is the experience for C-grade browsers?
 - What is the experience for non-browsers?

Web Services

- Web 2.0 - Web as a Platform. Lots of web services!
-  **DEVELOPER NETWORK**
 - del.icio.us, Financ, Flickr, HotJob, Maps, Merchant Solutions, Music, RSS Feeds, Search, Search Marketing, Shopping, Travel, Traffic, upcoming.org, weather, webjay, widgets
-  **Google Web APIs (beta)**
 - maps, search, desktop, sitemaps, adwords



- JSON means
 - Trivial parsing
 - Faster than XML
 - Friendlier for developer
 - Runs everywhere
 - It's JavaScript, simpler programming model
 - Very stable... never will change!
 - Strong community, wide acceptance
- Yahoo! behind it

Security: Same Site Rule

- The domain of the URL request destination must be same as one that serves up page containing script
- Why? XHR requests to a different site would carry cookies. Cookies would spoof authentication.
- Solutions
 - Proxies
 - `<script>` hack
 - Other remote scripting tricks
 - XMLHttpRequest (coming)

- I want to access multiple services (from different domains) without setting up a separate server (scalable, simpler to implement)
- Solution: Protocol that POSTs JSON text, gets response, parses the response into JavaScript value
 - No cookies sent
 - No other file formats accepted. Must be valid JS
 - JSON is safe JavaScript (data not functions)
 - Little or no error information provided to a miscreant
 - Accumulates random delays before trying again to frustrate denial of service attacks
 - Can support duplex!

Memory Management

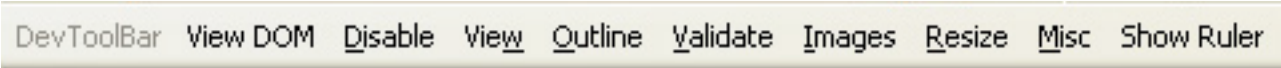
- Hey, Internet Explorer is leaky!
 - Its memory garbage collector is the culprit
 - Uses reference counting; JS uses Mark & Sweep
 - Often closures are blamed
- Common problem that causes memory leaks
 - DOM <--> Application object reference each other
 - Event handlers left hanging around
- Tool for IE: Drip

JavaScript Performance

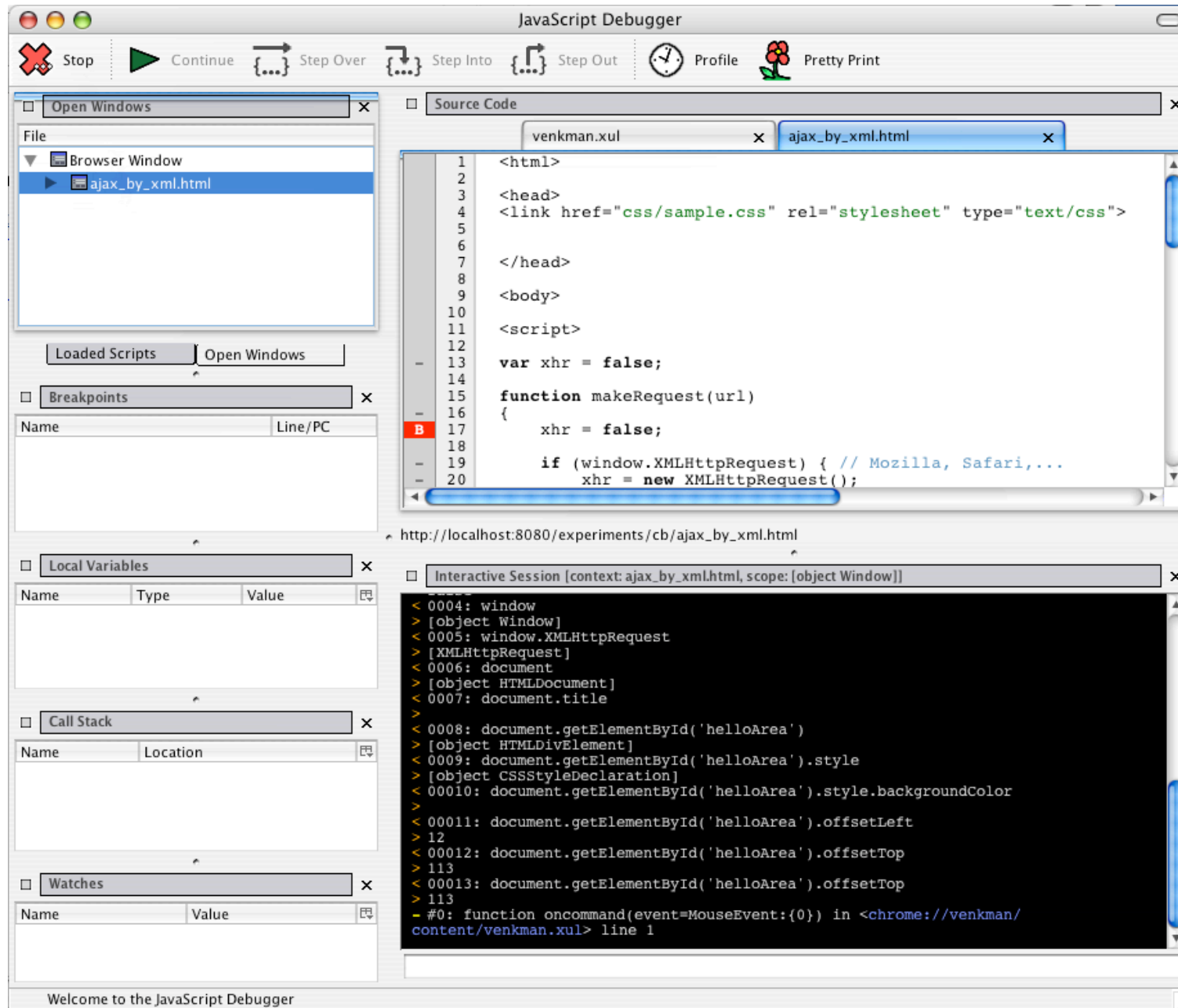
- JavaScript requires common sense
 - Cache repeatedly accessed objects
 - Always use var for local variables
 - Use numbers for number and strings for strings
 - Avoid using eval() for accessing properties
eval("obj."+propName) --> obj[propName]
 - Look to your loops
- And a few surprises
 - Build DOM trees downward
 - Use array.join for lengthy string concatenations

source: Adam Platti

Debugging Tools

- Microsoft Script Editor
- Instant Source (IE Plugin)
- IE Dev Toolbar The image shows a screenshot of the Internet Explorer Developer Toolbar menu. The menu items are: DevToolBar, View DOM, Disable, View, Outline, Validate, Images, Resize, Misc, and Show Ruler. Each item has a small icon to its left.
- Venkman (Mozilla)
- DOM Inspector (Mozilla)
- Web Developer Tools (Mozilla)
- Safari JavaScript Console
- JSLint

Debugging: Venkman



- Breakpoints
- Local variables
- Watches
- Call Stack
- Profiling
- Source view
- Debug toolbar

- Lint are syntax checkers and validators
- JavaScript needs lint
- <http://www.crockford.com/jslint/lint.html>
- Scans source file & looks for common syntax problems
 - Nice way to catch silly mistakes
 - Try it at: <http://jslint.com>

Obsfucation or Minification

- JavaScript is easy to see with a Save or a <ctrl>-U
- JavaScript can increase page size & page load
 - Obsfucators mangle the code into unreadable form
 - Minifiers strip white space & comments
- Obsfucators go too far
 - Makes development way too hard
- Minification & compression do just enough
 - JSMin (<http://www.crockford.com/javascript/jsmin.html>)

Error Handling

- Asynchronous error handling
 - Keep design simple (do you need multiple requests going at once?)
 - Will increase implementation issues
- Normal error handling
 - Check for error codes ($\neq 200$)
 - Roll your own HTTP status error codes
- Minimize server-side errors with intentional validation (error prevention)

- Difficult to correct XML, JSON or even HTML over the wire. XML & JSON are slightly harder. Server issue, but how to handle
- Use error handlers provided by Ajax frameworks
 - Prototype try.these
 - JavaScript try/catch
 - DWR has global error handler
 - Dojo error handlers



Questions?

Yahoo! UI Library

Yahoo!'s Approach to an Ajax Framework

Bill W. Scott, Y! Ajax Evangelist

bscott@yahoo-inc.com

Yahoo! UI Library

- Normalization (Event Utility)
- Messaging (Connection Manager for AJAX)
- Direct Representation (Animation and Position)
- Direct Manipulation (Drag and Drop)
- Rich Interactive Widgets (Slider, TreeView, Calendar, AutoComplete)



Utilities.

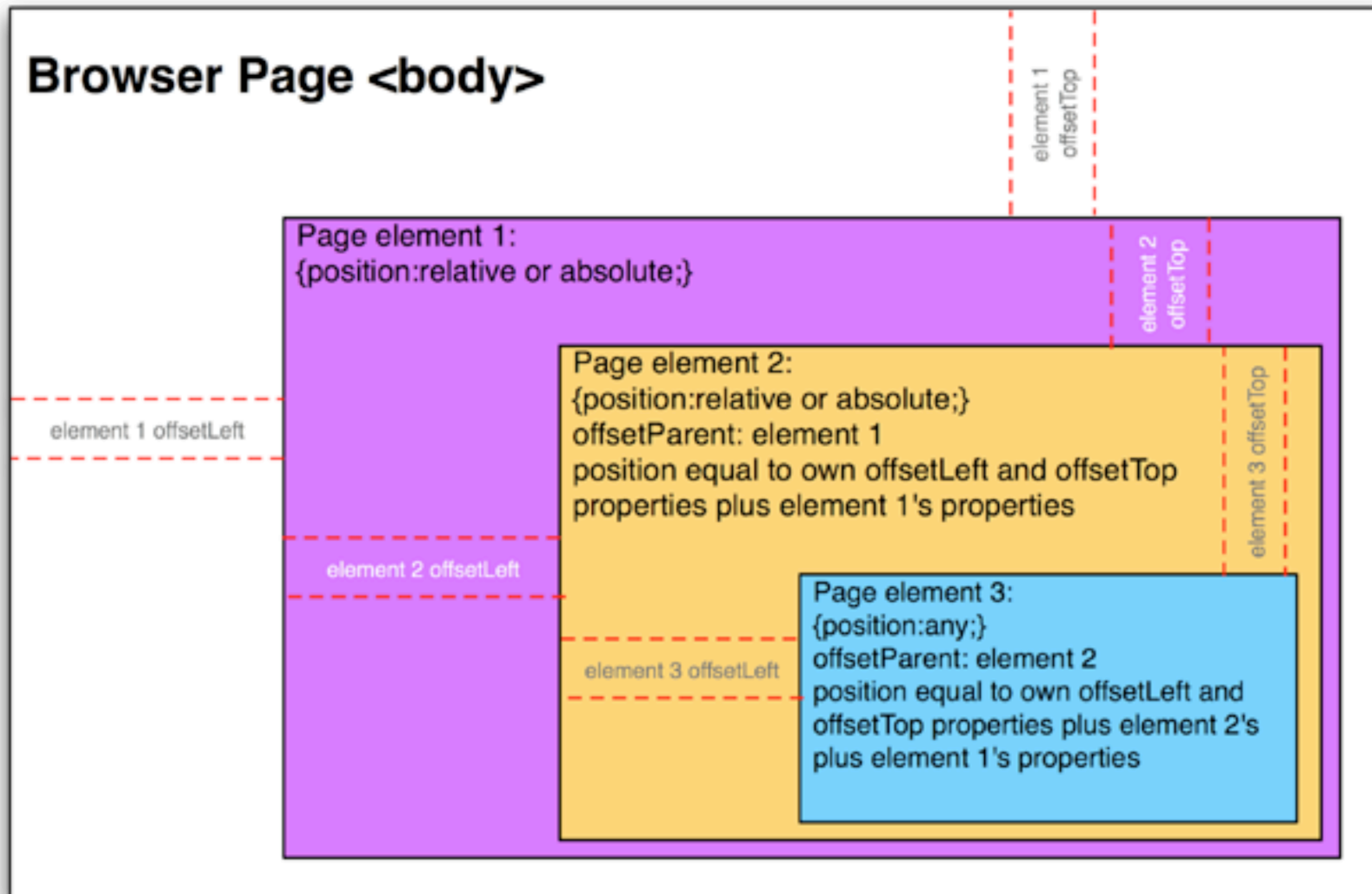
Event, Connection,
Position, Animation, Drag & Drop

- Flexible method of attaching event handlers to one or more elements
- Automatically defers attaching handlers to elements that are not yet available (automatic, optimized deferral)
- Automatic scope correction (this is the element object, not the window object)
- Ability to include an arbitrary object to be sent to the handler with the event
- Automatic event object browser abstraction
Automatic listener cleanup

- Browser abstraction for XHR's various flavors
 - XHR transactions can be reduced to two lines of code
- Object creation/nullification:
 - Connection Manager intelligently reuses objects where reuse is supported by the browser
 - Up to two concurrent requests possible — additional pending requests are queued automatically
- Two methods for interacting with XHR's response in Connection Manager version 1:
 - Define a callback function
 - Use a unique transaction ID to retrieve the XHR message

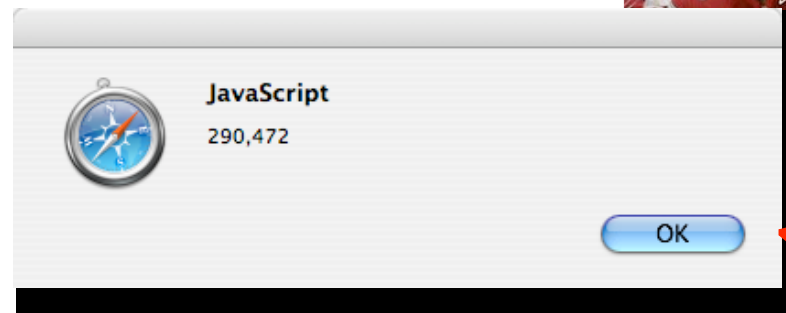
```
<script>
  refreshNews = function() {
    var obj = ygConn.getObject()
    ygConn.http.asyncRequest(obj, 'GET', 'getRss.php', true,
      processRss, null);
  }
</script>
```

- Connection Manager, Version 2: Even Easier
 - Initiate an XHR request in a single line
 - Inclusion of an onProgressChange API method to facilitate monitoring requests
 - Automatic handling of common issues such as authentication and session maintenance
 - Improved queue management
 - Protocol Stack: A companion utility to facilitate YRest, JSON requests



Yahoo! UI: Position

```
<script>
  var elRef=document.getElementById("myImage");
  var aPos = ygPos.getPos(elRef);
  alert(aPos.toString());
</script>
```



Yahoo! Sports

Welcome, ericmraglia [Sign Out, My Account]

Home NFL MLB NBA NHL NCAAF NASCAR Golf U.S. Open World Soccer More... Fantasy Shop

Today in Sports

Opinion & Analysis Photos College Broadcasts SportStream Video Donate to Hurricane Relief

Sights set on Longhorns-Buckeyes battle

Two football powerhouses go head-to-head Saturday when Texas visits Ohio State in a much-anticipated matchup. [Preview](#)

Related

- Fans flocking from near and far
- Tressel won't announce starting QB

Elsewhere in sports

- U.S. Open: [Sharapova-Clijsters face off](#)
- PGA: [Bell Canadian Open leaderboard](#)

Featured Opinion

Ryne Sanberg

Welcome back, Barry... you think Barry Bonds is turning just to chase Hank Aaron's home run record, link again. [more](#)

More Opinions

- Season's greetings
- Cris Carter (Yahoo! Sports Exclusive)
- Switched on
- Charles Robinson (Yahoo! Sports Exclusive)
- You can go home again
- Marty Burns (SI.com)
- Spoiler alert!
- Stephen Cannella (SI.com)

[Dan Wetzel](#) | [All Analysts](#)

Scoreboard Quick Links
[MLB](#) - [NFL](#) - [NCAAF](#) - [PGA](#) - [TEN](#) - [WNBA](#)

PGA Leaderboard [Edit](#)

Bell Canadian Open (Round 2)

Pos	Name	Thru	Total (+/- par)
1	Mark Calcavecchia	F	-8
2	Jesper Parnevik*	9	-7
3	J.P. Hayes*	9	-5
T4	Lucas Glover	F	-3
T4	Aaron Baddeley*	9	-3
T4	Bob Heintz*	4	-3
T4	Mathias Gronberg	3	-3
T8	Carlos Franco	F	-2
T8	Jerry Kelly	F	-2
T8	Brandt Jobe	10	-2

[Full Leaderboard](#)

* Started on back nine.

Go to "http://rocinante.corp.yahoo.com/ncaaf/photo?slug=ohj11109032001.miami_ohio_ohio_st_ohj111&prov=AP"

- Simple: Two Core Methods
 - `ygPos.getPos(elRef)`: returns the absolute (pageX, pageY) coordinates of the top left corner of the inspected element
 - `ygPos.setPos(elRef, endPos)`: moves the target element to specified coordinates
- Smoothing out Browser Eccentricities
 - IE tends to drop the parent's border when the parent has a width set
 - In IE, `offsetTop/Left` is added twice when a parent is `{position: relative;}` and the original element is not positioned and has no width defined
 - Gecko tends to drop a parent's `borderWidth` when parent is `{position: relative;}`
 - IE uses a proprietary `currentStyle` property in opposition to the DOM standard `computedStyle` property, so when computing positions you need to account for these differences.

- Optimized performance
 - All animation instances run on a single thread via the Animation Manager, rather than separate threads per animation
- Real-time correction
 - Animation Manager drops frames when needed to make sure the animation ends at the specified duration
- Built-in Bezier paths
 - The Animation Utility includes Bezier math for computing complicated animation paths
- Ease of use
 - Set-up, call an animation in two lines of JavaScript

- Simple instantiation of draggable objects (1 line of code)
- Included subclasses provide an out-of-the-box foundation for common drag-object implementations
- Flexible, powerful API allowing for highly implementation-specific drag-and-drop interaction
 - Write code to address only the interesting moments of the drag interaction
 - Built-in handling for drag-object groups
 - Built-in support for drag-handle specification, element handle exclusion, and a host of other granular drag and drop characteristics

- How simple is it to add this to your site?
 - Include current Drag and Drop library
 - Style your drag handle with a “move cursor” in CSS:

```
.module .hd {margin-top:0px; cursor:move;}
```
 - Create a drag object on your draggable element; set its “handle” region:

```
var oDD = new ygDD(“myModule”);  
oDD.setHandleElId(“myModuleHandle”);
```



Widgets.

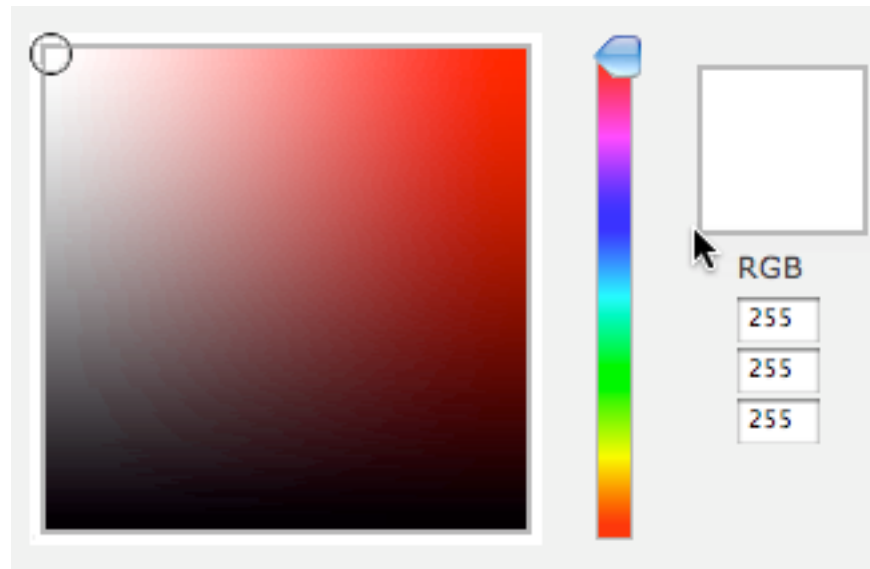
Slider, Calendar,
Auto Complete, Tree View

- Slider Control
 - Simple support for vertical and horizontal sliders as a direct-manipulation alternative to input boxes
 - Simple API to script onChange behavior
 - Support for smooth or graduated slider action
 - Built-in support for click-to animation of slider
 - Builds on top of:
 - Drag and Drop Utility
 - Position Utility
 - Animation Utility (optional)

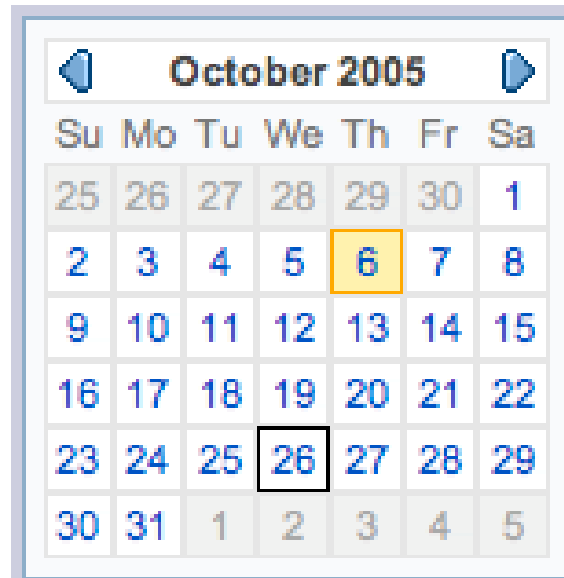


```
<div>
  <div id="horizHandleDiv">
  </div>
</div>
```

```
var mySlider = ygSlider.getHorizSlider("horizBGDiv",
    "horizHandleDiv", 100, 100);
mySlider.onChange = function(offsetFromStart) {
  document.getElementById("horizVal").value =
    offsetFromStart;
}
```



- Simple date selection widget that can be implemented with only a few lines of code
- Fully client-side calendar navigation
- Built-in multi-select or single-select capability, in single or two-up views
- Support for advanced implementations such as:
 - localization
 - blacked-out date sets
 - custom holiday formatting



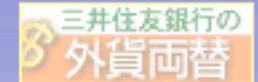
```
<script>
  var myCal;
  function init() {
    myCal = new ygCalendar("myCal", "myCalContainer");
    myCal.render();
  }
</script>
<div id="myCalContainer"></div>
```



こんにちは、ゲストさん

[ログイン](#)

Yahoo!トラベル 海外航空券予約



[トップ](#) > [海外航空券予約](#) > [アメリカ、カナダ](#) > [アメリカ合衆国](#) > [ヒューストン](#)

[PR] [癒しのニュージーランド旅行で豪華賞品&ボーナスマイルをゲット!](#)

出発日別最安料金検索 出発日（当月を含む6か月以内）を選択すると、選択された出発日の前後3日間の最安料金を検索できます。

2005年 10月 26日

このリストから条件を指定して絞り込む

・ 出発地:

・ 航空会社:

・ 料金: 円以上 円未満

・ 有効期間: 日以上

・ 座席クラス: エコノミー ビジネス ファースト

・ 旅行形態: 往復（帰国便変更不可） 往復（帰国便を現地で変更可能） 片道

・ その他の条件: 直行便 カード決済可能 子ども料金あり オンライン空席照会、予約可能



flickr Calendar Widget

Photos taken in May 2005

Su	Mo	Tu	We	Th	Fr	Sa
 1	 2	 3	 4	 5	 6	 7
 8	 9	 10	 11	 12	 13	 14
 15	 16	 17	 18	 19	 20	 21
 22	 23	 24	 25	 26	 27	 28
 29	 30	 31	1	2	3	4
5	6	7	8	9	10	11












- Provides “as-you-type” list of matching items
- List navigable via the mouse or keyboard
- Configurable dropdown styles and animation
- Data subset cache
- Configurable delay prior to lookup
- “Starts with” or “Contains” matching patterns
- Limit-to-list feature (combo box vs. select box)
- Common and custom data formats supported:
 - Delimited text
 - JavaScript Array literals

Search

To: [Show BCC](#)

Cc:

Subject: [Plain Text](#)

Times New Roman 12 **B** *I* U         

- Flexible support for hierarchical information views:
 - Table of contents
 - Threaded discussion
 - Hierarchical Menus
- API gives you easy scripting access to interesting moments:
 - When nodes are clicked
 - When nodes expand
 - When nodes contract
- Support for dynamic loading of node contents
- Styling driven entirely by CSS

[Expand all](#) [Collapse all](#)

+ label-0

+ label-1

+ label-2

+ label-3





Road Map.

More Utilities,
More Widgets, More CSS Help

Utilities	Widgets	CSS/HTML	R&D
Event Utility Event Manager Selection Utility/ Manager Connection Manager Prototol Stack Drag & Drop Animation Position	Tree Control Slider Calendar AutoComplete Data Table Tabs Progress Bar Splitter Combo Box Dialog Menu Scope Button	LSM Fonts Modules Page Templates	Chart Map Ratings & Review