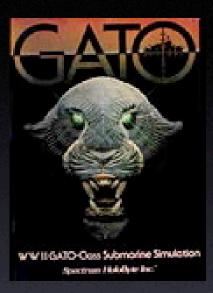
designing for ajax

principles and patterns for rich interaction

Bill Scott Yahoo! Ajax Evangelist <u>b.scott@yahoo.com</u>



background.





JavaScript for Rich Internet Applications

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 just one small part of a larger effort at Sabre Airline 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. is effort from the Ruby on Rails folks.

OPEN SOURCE

Rico is provide free and open-source (Apache 2.0 License) for either your personal or commercial use. <u>Sabre Airline Solutions</u> retains the copyright on the Rico code produced at Sabre.

BROWSER SUPPORT

Rico has been tested on IE 5.5, IE 6, Firefox 1.0x/Win, Camino/Mac, Firefox 1.0x/Mac. Currently there is no Safari or Mac IE 5.2 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 ingredients is the JavaScript object MinittpRequest. Rico provides a very simple interface for registering Ajax request handlers as well as IrML elements or JavaScript objects as Ajax response objects. Multiple elements and onlycts this yeb updated as the recitot of one Ajax request. Want to get started learning? Check out our demos and then read our two Ajax tutorials on the Documentation page.

Desktop applications have long used drag and drop in their Desktop appications have long used orige and origin their interfaces to simplify user interaction. Rico provides one of the simpler interfaces for enabling your welface application to support day a trion jour, but 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 clues are required to clue the user on what has transpired. Cinematic effects such as scaling and smooth size intransitions 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 raw HTML and sprinkle in some behaviors and what do you get? Well in Rico you can get an <u>Accordion</u> component like those found in Macromedia Flex and Laszlo. Just nest some DIVs and with one line of JavaScript turn your div panels into an accordion. And the latest behavior is the LiveGrid. LiveGrid allows you to connect an Html table up to a stream of Ajax responses. 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





NEW! LiveGrid Behavior!

Check out the Alternative to Paging!

The same in in the same

State State



Developer Network Home Help Site Search

YAHOO! DEVELOPER NETWORK

Yahoo! Developer Network > Design Pattern Library

- NAVIGATE

▶ Faceted Navigation Fly-out Menus Horizontal Bar Hub and Spoke Left Navigation

Module Tabs Navigation Tabs

▼ EXPLORE DATA

Auto Complete Calendar Picker Pagination

Item Pagination Search Pagination

▶ ORGANIZE DATA

▼ GIVE FEEDBACK

- Ratings & Reviews Rating an Object Writing a Review

▶ PERFORM ACTION

■ CUSTOMIZE

Drag and Drop Drag and Drop Modules

Drag and Drop Objects

▶ In Page Editing

Sliders

CALL ATTENTION

- Ratings & Reviews

Review Architecture

Welcome

Welcome to the Yahoo! Design Pattern Library. We are very happy to be sharing our library with the design and development community. This is our first drop of what we hope to be a monthly release cycle for the publication of patterns. In many cases we have bundled the patterns with pointers to related code from the Yahoo! User Interface Code Library. We hope this is a useful resource and look forward to your feedback.

What's a Pattern?

A pattern describes an optimal solution to a common problem within a specific context. more.

Recent Patterns



Auto-Complete

The user needs to enter an item into a text box which could ambiguous or hard to remember and therefore has the potential to be mis-typed.

AP Reuters | AFP | USATOR · Cargo Ship Blocks Sue

 International Observers - Dall Chaus Divide Am

Module Tabs

The user needs to navigate through one or more stacked panes of content without refreshing the page.

Results Page:

1 2 3 4 Next

■ IMPROVE READABILITY

Search Pagination GROUP RELATED ITEMS

▶ ORGANIZE SCREEN/PAGE

Travel > Guides > North Amer ica > United States > New Yor New York City > Things to do

Breadcrumbs

User needs to navigate potentially large quantities of information efficiently. without becoming lost.



Drag and Drop Modules

The user needs needs to re-arrange the layout of modules on a web page directly with the mouse

1 - 5 of 32 First | < Prev | Ne

First | < Prev | Next > | Last

The user needs to view data

items from a potentially large

set of sorted data that will

Object Pagination



Navigation Tabs

The user needs to navigate through a site to locate content and features and have clear indication of their current location in the site.



全量量量

Rating an Object

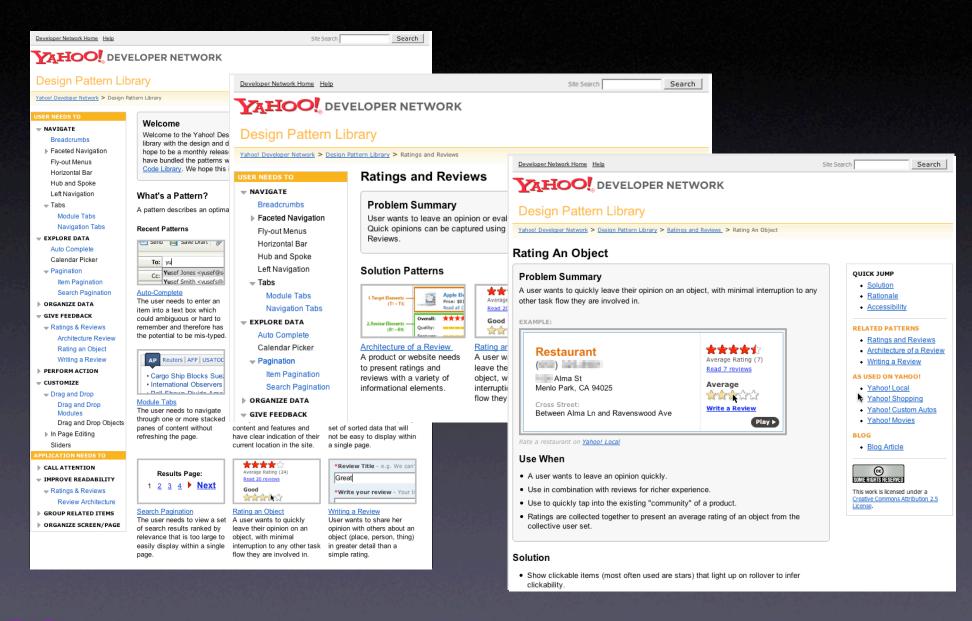
The user needs to view a set A user wants to quickly of search results ranked by leave their opinion on an relevance that is too large to object, with minimal easily display within a single interruption to any other task in greater detail than a flow they are involved in.



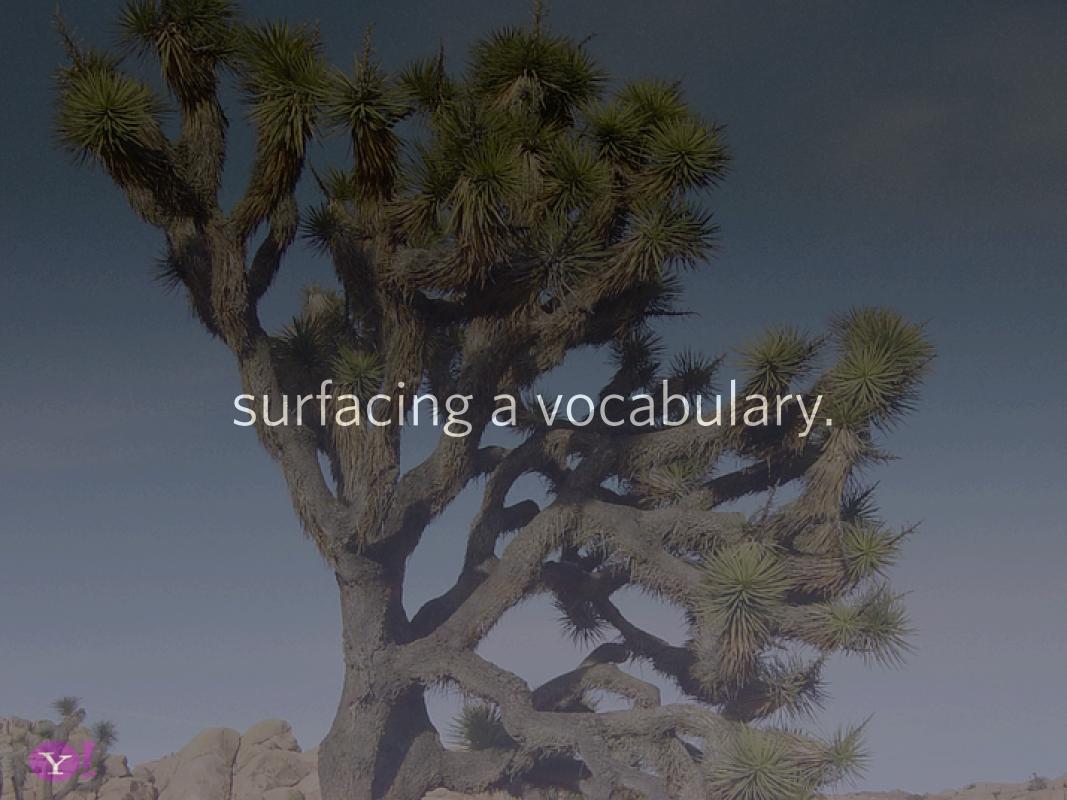
Writing a Review User wants to share her

opinion with others about an object (place, person, thing) simple rating.

developer.yahoo.com/ypatterns







current patterns.

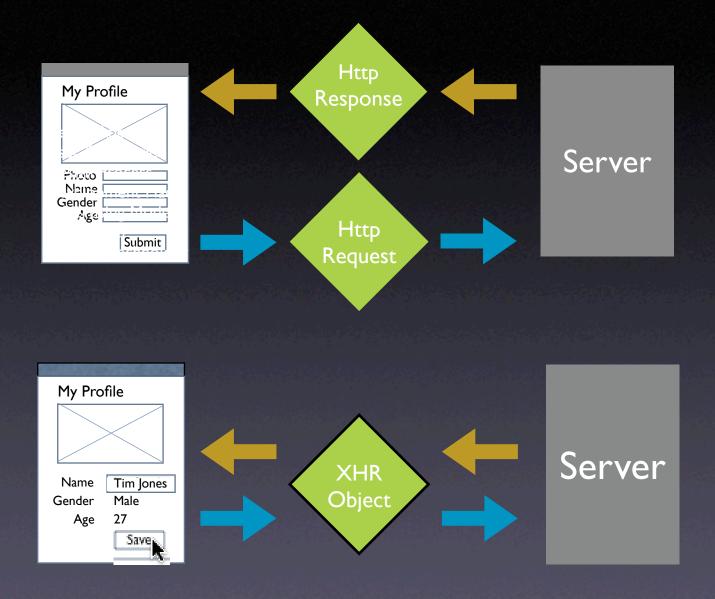
Breadcrumbs. Module Tabs. Navigation Tabs. Auto Complete. Pagination. Item Pagination. Search Pagination. Ratings and Reviews. Architecture of a Review. Rating an Object. Writing a Review. Drag and Drop. Drag and Drop Modules. Transition. Dim. Brighten. Cross Fade. Contract. Expand. Fade In. Fade Out. Move. Self-Healing. Slide. Highlight. Invitation. Cursor Invitation. Drop Invitation. Tool Tip Invitation. Hover Invitation.

rich 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. Persistent Portals. 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. Dynamic Filter. 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. Periodic Refresh. Resizable Modules. Scrolling Modules. Auto Save. In Context Tools. Remembered Collection. Remembered Preferences. Auto Form Fill. Rating an Object. Transition. Brighten Transition. Cross Fade Transition. Dim Transition. Expand Transition. Fade In Transition. Fade Out Transition. Flip Transition. Move Transition. Self-Healing Transition. Collapse Transition. Slide Transition. Rich Internet Object. Available. Selected. Identifiable Object.

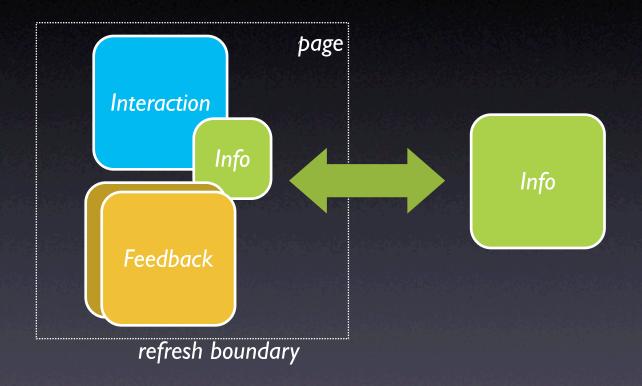


classic model. rich model.



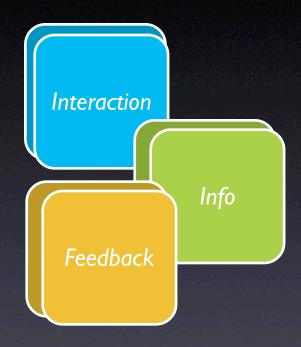


interaction. presentation. data.





data near. interaction rich.





 Interaction

 Feedback

 Info

design principles for richness

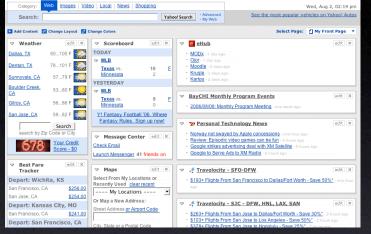


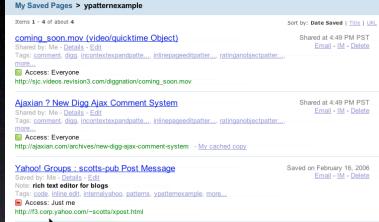
Interaction Feedback

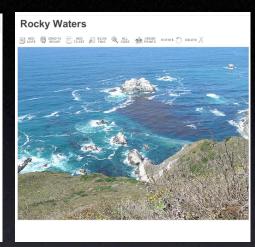
interaction principles



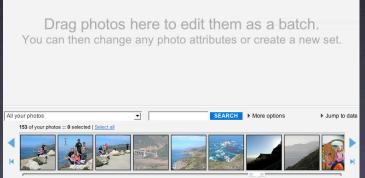
principle. make it direct.



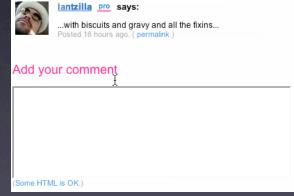




pattern. drag and drop.



pattern. inline editing.



Pick Up at the Store

Milk
Corange Juice
Tomatoes
Lettuce
Bread
Chips

pattern. in-context tools.



What about discoverability?



State park near our home in San Jose

Click to edit

5 photos | Add a comment?

Photos are from 22 Oct 05.



What about discoverability?

Use direct editing on page content

What about save/cancel?
Avoid page jitter
Reduce the feeling of modes



State park near our new home in San Jose (next to Milpitas)

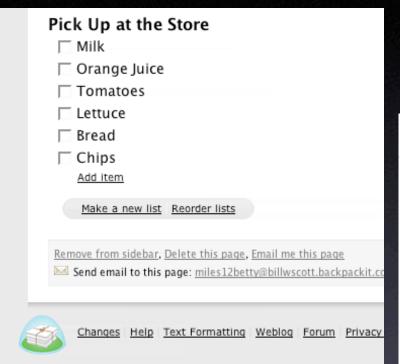
SAVE

OR

CANCEL



What about discoverability?



Use direct editing on page content

What about save/cancel?
Avoid page jitter
Reduce the feeling of modes



Create a home page for the VisDe to make findability easier



Account for experimental patterns as well as established patterns

Provide in-context tools

Only good for single operations

Can actually slow you down



DRAG Lettuce

message package?

Can I transfer my message credits?

How do I delete my HandyPay

What if I didn't receive my full

I need to contact customer care

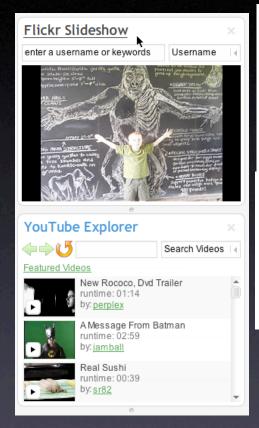
regarding the Compose Text Message

What is spam?

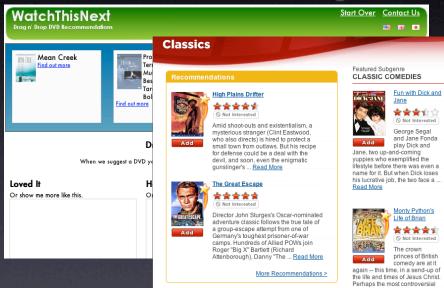
account?

service.

What about discoverability?





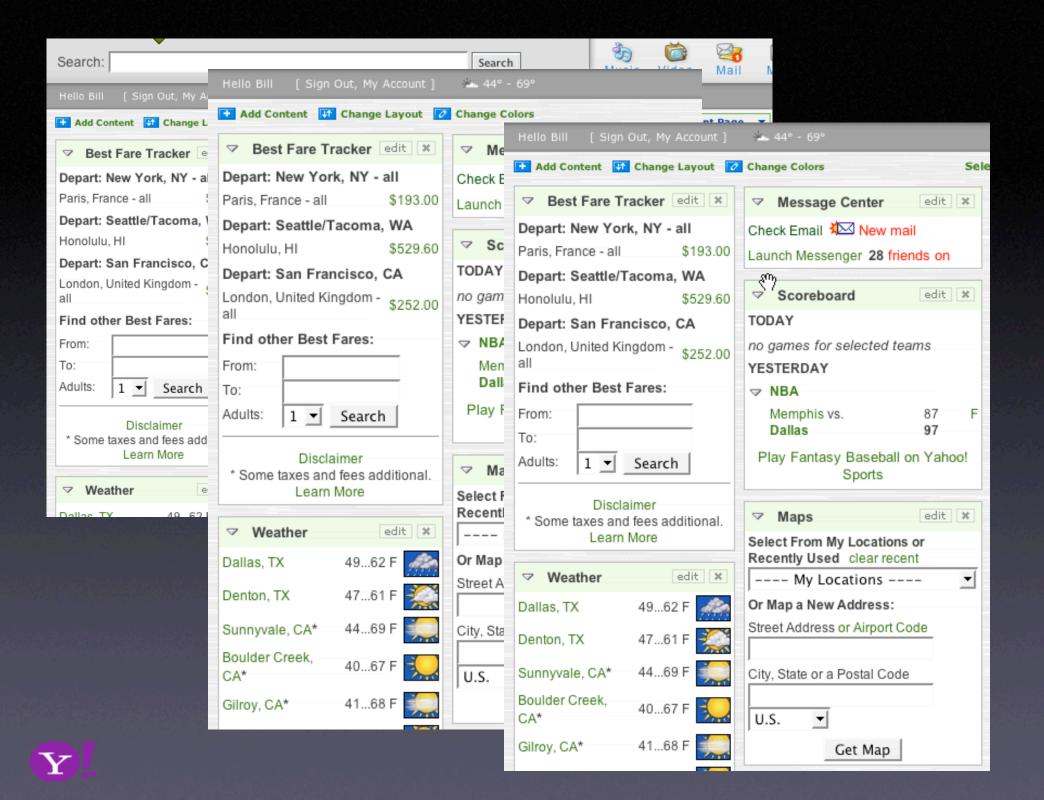


Use drag and drop where appropriate

Not for simply setting an attribute Good for layout changes or containment Needs transitions

Provide in-context tools
Only good for single operations
Can actually slow you down





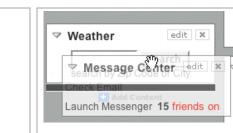
Take care of the interesting moments

Drag and Drop Modules - Interesting Moments Grid ID: Bill Scott & Eric Miraglia Currently on beta.my.yahoo.com Nov-05 Mouse Drag Over Drag Over Drag Over Drop Drop Hover Mouse Down Drag Initiated Accepted Rejected Cursor CSS Move curs CSS Move cursor Normal Cursor Normal Cursor Tool Tip rag Object ▼ Message Center edit × ▼ Message Canter edit × ▼ Message Canter ledit * ▼ Message Center edit * Search search by Zip Cook or City Check Email Check Email Check Email Message Center edit x Launch Messenger 15 friends on Launch Messenger 15 friends on Launch Messenger 15 friends on Launch Messenger 15 triends on Launch Messenger 15 friends on Check Email Modules animates into the area Modules animates back to Full Opacity Reduced Opacity Reduced Opacity Reduced Opacity & Invalid Badge Reduced Opacity just below insertion bar the home area Message Center edit x Weather Message Center (ed): Module comes to rest in new Module comes back to rest area at full opacity Message Center edit aunch Messenger 15 riends o Modules slide up in a self-healing transition to close hole Prop Target Message Conter edit × ✓ Message C⁽ⁿ⁾)ter edit × Message Center edit 2 Weather Check Email ✓ Message Celeter edit × t Message Center edit ▼ Message Celeter edit × Weather Weather Check Email search by Zip Code or City Insertion bar is removed as first Insertion bar is removed No insertion bar, just a gap Insertion bar showing where it will drop No insertion bar, just a gap as first frame of animation ani



Drag and Drop Modules - Interesting Moments Grid

Date: Bill Scott & Eric Miraglia Drag Over Drag Over Drag Over Drop Valid Target **Invalid Target** Parent Container Accepted Initiated CSS Move cursor CSS Move cursor CSS Move cursor Normal Cursor ▼ Message Cedit × nter edit x edit 🗶 Search Check Email Check Email Check Email search by Zip Code or City ▼ Message Center edit * Launch Messenger 15 friends on r 15 friends on Launch Messenger 15 triends on Launch Messenger 15 friends on Check Email Launch Messenger 15 friends on Modules animates into the area **Reduced Opacity** Reduced Opacity & Invalid Badge Reduced Opacity iust below insertion bar Weather Search search by Zip Code or City Message Center edit x Launch Messenger 15 friends on Module comes to rest in new area Search search by Zip Code or City Message Center edit × Add Content Modules slide up in a self-healing transition to close hole r edit x ✓ Message Center edit × edit 🗶 edit 🗶



friends on







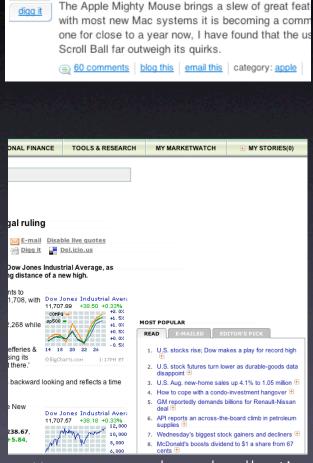
principle. keep a light footprint.

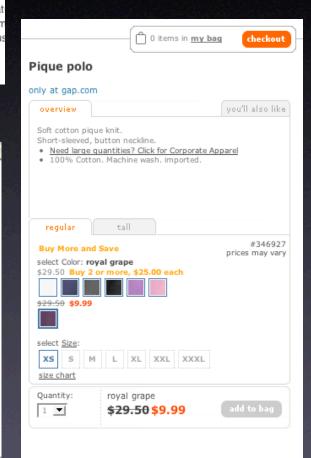
pattern. in page action.

282

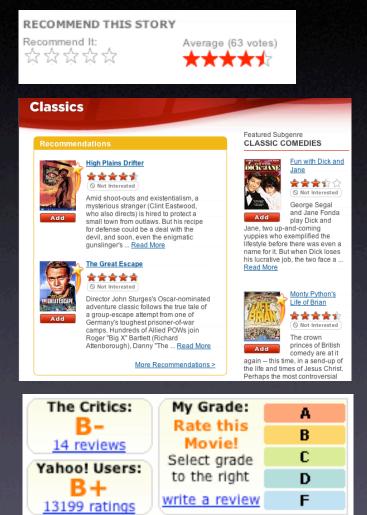
Fixing the Mighty Mouse

submitted by usedmac 1 day 1 hour ago (via http://mac





pattern. rating an object.

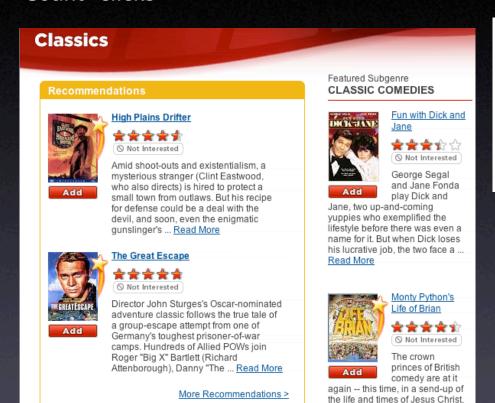


pattern. remembered collection.



Watch your click weight

Keep actions immediate and light Count "clicks"



Perhaps the most controversial

Fixing the Mighty Mouse

diggs digg it

282

submitted by usedmac 1 day 1 hour ago (via http://mac

The Apple Mighty Mouse brings a slew of great feat with most new Mac systems it is becoming a comm one for close to a year now, I have found that the us Scroll Ball far outweigh its quirks.

(apple 60 comments | blog this | email this | category: apple

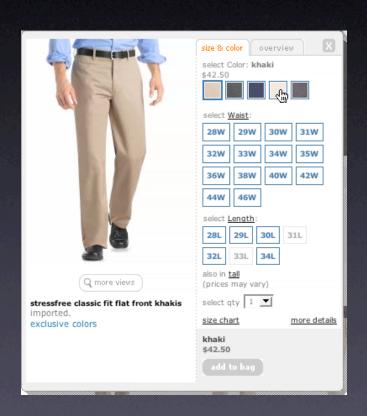


Watch your click weight

Keep actions immediate and light Count "clicks"

Design for engaging moments

Use invitations Keep it fun, exciting and light Treat it like an impulse aisle







Watch your click weight

Keep actions immediate and light Count "clicks"

RECOMMEND THIS STORY

Recommend It:



Use lightweight events

Hover
Blur, focus
Click. Avoid double-click

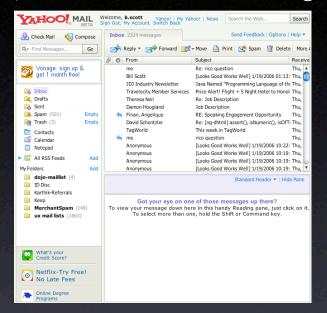


Design for engaging moments

Use invitations Keep it fun, exciting and light Treat it like an impulse aisle

principle. cross borders reluctantly.

pattern, on-demand scrolling.

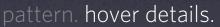


pattern. in-context expand.



pattern. inline assistant.



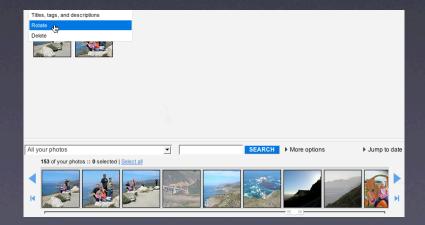




By sector, semiconductors (\$SQX: 461.44, +2.45, +0.5%), networkers (\$NWX: 238.63 +2.01, +0.8%), biotech (\$BTX: 668.93, +8.68, +1.3%) and oil (\$QIX: 585.28, +6.57, +1.1%) and oil service (\$QSX: 185.02, +3.76, +2.1%) stocks put in soil digatine.

Market Watch

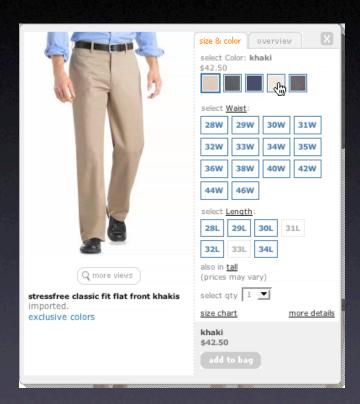
pattern. lightweight popup + lightbox





Rethink process flows

Its the user's model, not the page model Every page jump is a mental speed bump







Rethink process flows

Its the user's model, not the page model Every page jump is a mental speed bump

Rethink paging

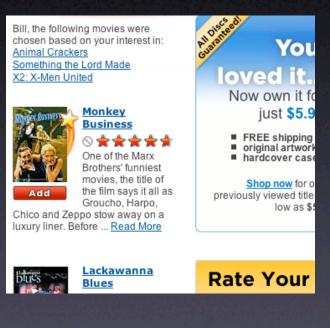
Its the user's model, not the paging model
Use scrolling for "owned" data
Watch out for dual scroll bar issue

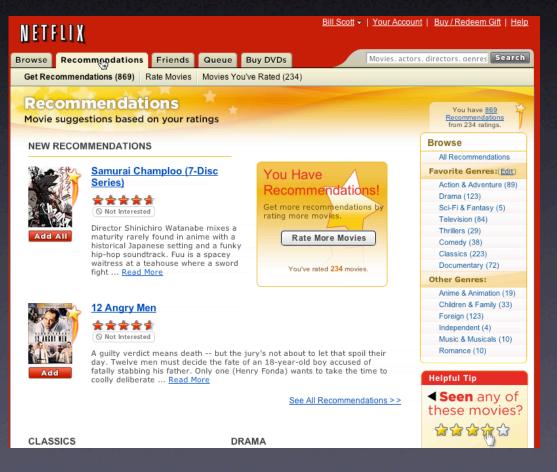
Photo Click for info	Price	Bd/Ba Sq Ft	Address and Area Presented By	(Click P	More Photos Click for Click for Click for
				TO TA	AJAX SEARCH
	\$1,750,000 Single Res	6+, 4+ 3700	14080 BEAR CREEK RD Boulder Creek, CA 95006 (San Lore Valley) Schwarzbach Associates	LiveGrid Demo	nonstration Powered by Yahoo! Search gory: Web Images Videos
AND TO	\$1,995,000 Single Res	6+, 4+ 5675	17617 MOUNTAIN CHARLIE RD LOS GATOS, CA 95033 (Unincorporated Los Gatos Mtns) Almaden Oaks Realtors	Search Images:	flowers Search Yahoo!
				Search Results	Results 1 - 5 of about 1580284 for flowers
				0.0	flowers 025 flowers021jpg 110k 29Feb2004 flowers022jpg 783k 29Feb2004 flowers023jpg 186k http://wp.li.ru/flowers 1024x768 - jpeg fmt - 0.3MB
A CONTRACTOR	\$2,286,000 Single Res	5, 4+ 4800	20930 PANORAMA DR Los Gatos, CA 95033 (Los Gatos M Alain Pinel Realtors		
					flowers 063 flowers059jpg 122k 29Feb2004 flowers060jpg 134k 29Feb2004 flowers061jpg 120k http://wp.li.ru/flowers 1024x768 - jpeg fmt - 0.1MB
	\$2,750,000 Single Res	5, 4+ 5000	155 LARITA DR Ben Lomond, CA 95005 (San Lorer Valley) Network Alliance Real Estate		flowers 045
					flowers041jpg 277k 29Feb2004 flowers042jpg 125k 29Feb2004 flowers043jpg 744k http://wp.li.ru/flowers 1024x768 - jpeg fmt - 0.1MB
	\$2,777,000 Single Res	5, 4+ 5819	777 HAPPY VALLEY RD Scotts Valley, CA 95065 (Scotts Val Linda Burroughs Real Estate		flowers 076
				00	flowers072jpg 820k 29Feb2004 flowers073jpg 160k 29Feb2004 flowers074jpg 120k http://wp.li.ru/flowers 1024x768 - jpeg fmt - 0.1MB
New Search << Pre			<< Pre		flowers 019 flowers015jpg 781k 29Feb2004 flowers016jpg 455k 29Feb2004 flowers017jpg 143k
		199			http://wp.li.ru/flowers 1024x768 - jpeg fmt - 0.3MB



Use overlays

For more information
Replace page transition
When editing an individual, more complex item
Be symmetrical
Try not to disturb the page











Home



Prints & Gifts



View Cart



Settings



Help ▼

Search My Tag

Upload Photos

🔼 All My Photos







My Friends' Photos

All My Photos

Slideshow

Create -

Share -

Edit -

Prints & Gifts -

Drag photos into this tray and choose a task above.

Sort by: Date -



Sunset



Underneath



View from the Top







Eiffel Pulley



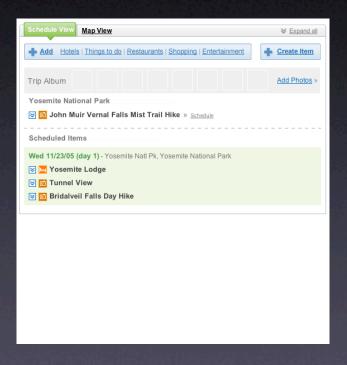
From Second Floor Up



Eiffel Tower

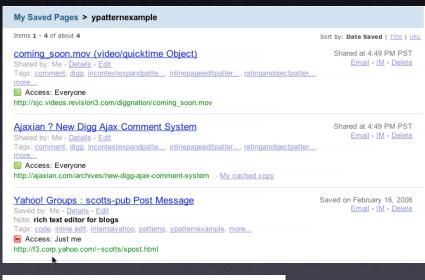
Use overlays

For momentary interruption
Replace page transition
When editing an individual, more complex item
Be symmetrical
Not disturb the page



Use in-context expands

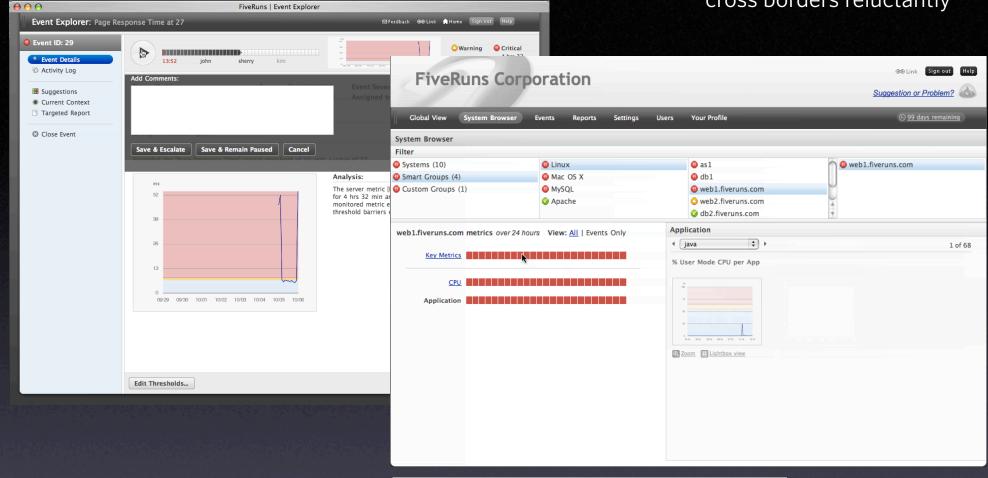
For editing part of a collection Need to see surrounding context For managing content modules







cross borders reluctantly



Use real-estate creatively

Use Slideouts
Us in-place zoom
Remember the backstage





Prefer direct, lightweight, in-page interaction.



Interaction

Feedback

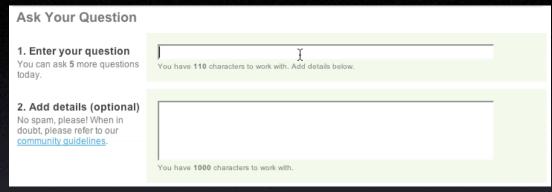
Info

feedback principles

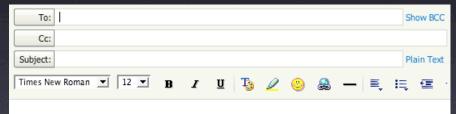


principle. give live feedback.

pattern. live suggest.



pattern. auto complete.



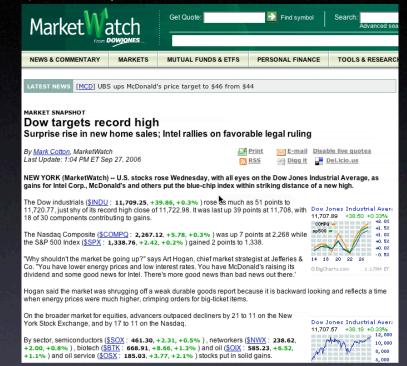


pattern. busy indicator.



pattern. live previews.

pattern. periodic refresh.



Keep the goal in mind

Design for relevancy Is it narrowing or is it distracting?



Instant Search BETA

Search the Web

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

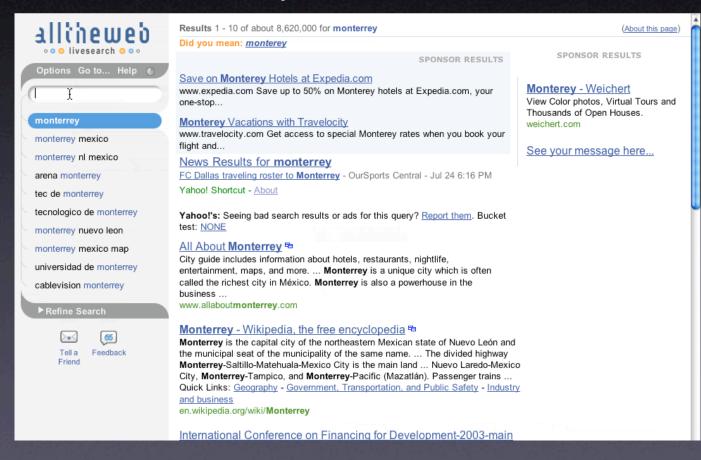
- 22 5th ave new york ny
- san francisco coffee shops
- dmv





Keep the goal in mind

Design for relevancy
Is it narrowing or is it distracting?
Use feedback to boost confidence
Let the user iterate where possible



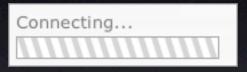


Keep the goal in mind

Design for relevancy
Is it narrowing or is it distracting
Use feedback to boost confidence
Let the user iterate where possible

Keep the user engaged

Time passes faster Look for engaging moments







Keep the goal in mind

Design for relevancy
Is it narrowing or is it distracting
Use feedback to boost confidence
Let the user iterate where possible

Keep the user engaged

Time passes faster Look for engaging moments

Find a domai	n name:		
www. billsportfol	io.com	Search	
(ex. widgetdes	signs.com)		
Designation of the second	il sa sak na na man alasa.	the same of the base of the same of the sa	
Required information fo	r Google account		
Your current email address:	someone@somewhere.com		
	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	

Use live-previews

Look before you leap



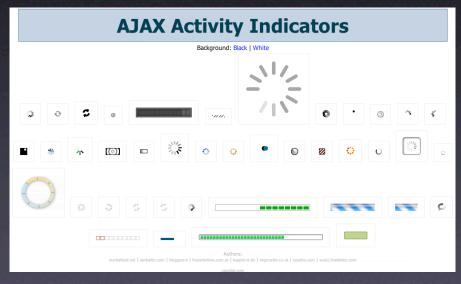
Keep the goal in mind

Design for relevancy
Is it narrowing or is it distracting
Use feedback to boost confidence
Let the user iterate where possible

Keep the user engaged

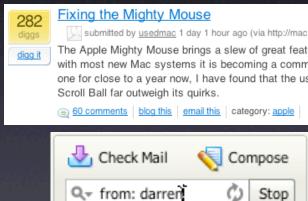
Time passes faster Look for engaging moments





Use live-previews

Look before you leap



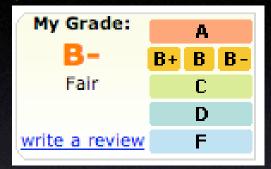
Keep feedback focused

Keep it in context
Avoid creating feedback noise/jitter
Show dynamically what is relevant
Updating too many areas at once will be confusing



principle. offer an invitation.

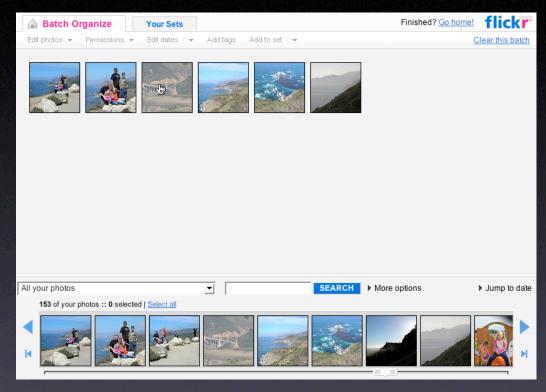
pattern. hover invitation.



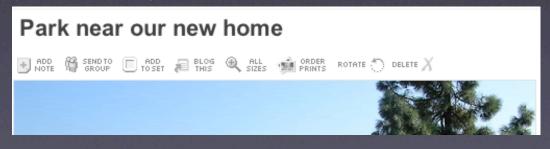
pattern. tour invitation.

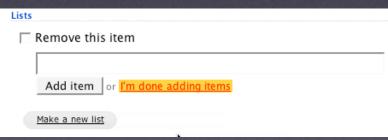


pattern. drop invitation.



pattern. tooltip invitation + hover invitation + cursor invitation.

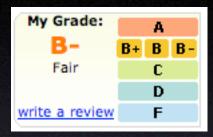


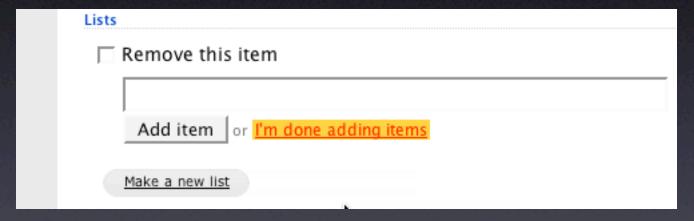




Make it engaging

Use lightweight events as a welcome mat Rediscover the hover







Make it engaging

Use lightweight events as a welcome mat Rediscover the hover



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

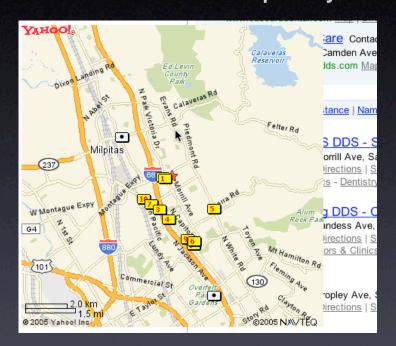
Forty Associates recently added product previews to their Web site as part of a small beta program. During the beta, visitors to Associate sites who viewed a product preview clicked through to Amazon.com over 4% of the time; those clicks resulted in a purchase nearly 6% of the time.

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. <u>Click here</u> for answers to questions you might have about the beta program.

Keep actions out of it

Don't make the user afraid to explore Don't proselytize



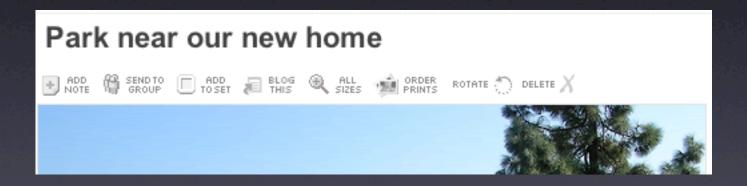


Make it engaging

Use lightweight events as a welcome mat Rediscover the hover

Keep actions out of it

Don't make the user afraid to explore Don't proselytize



Get the actors involved

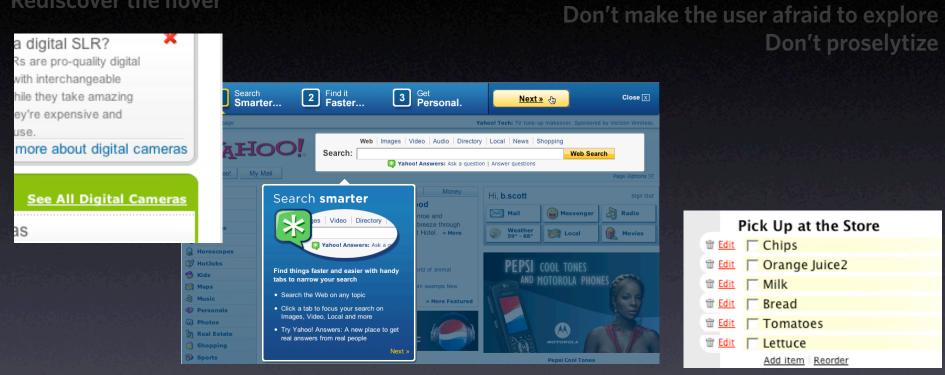
Hover Invitation Cursor Invitation Tooltip Invitation



Keep actions out of it

Make it engaging

Use lightweight events as a welcome mat Rediscover the hover



Get the actors involved

Hover Invitation Cursor Invitation Tooltip Invitation

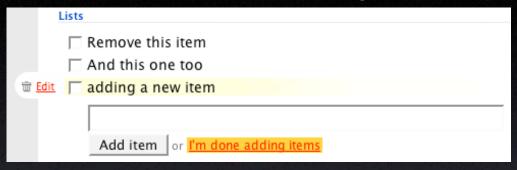
Use invitations to aid discoverability

Two challenges: idiom & feature Adding signposts, always-on clues doesn't scale Add tours, help pedals, tips, spotlights

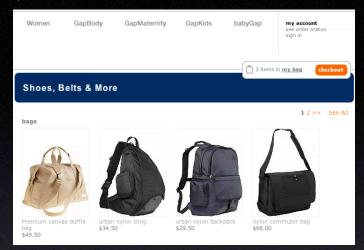


principle. show transitions.

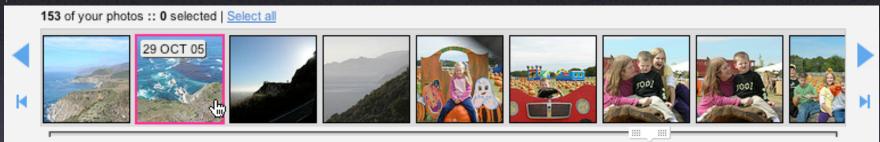
pattern. fade transition + self-healing transition.



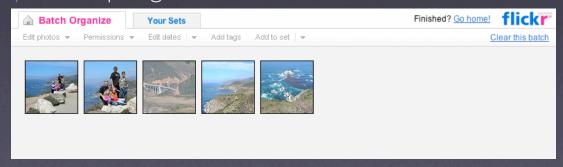
pattern. zoom box.



pattern. slide + animate.

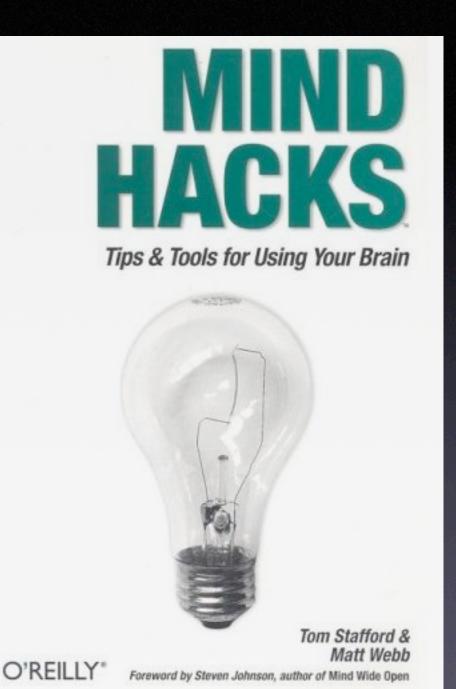


pattern. spotlight.



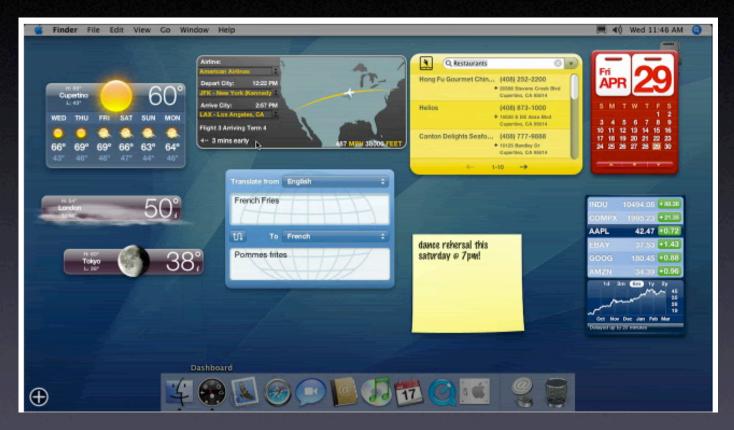


Understanding attention processing





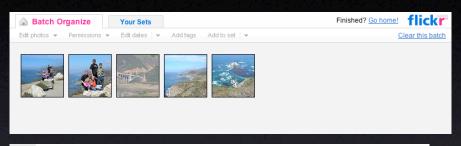
Understanding attention processing Sending the wrong message

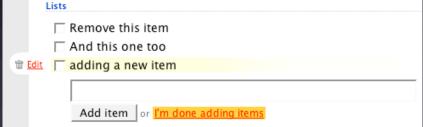


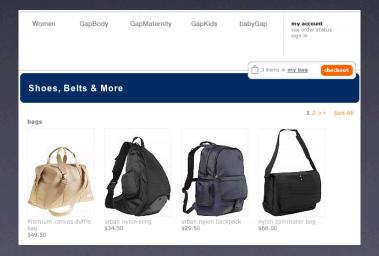




Understanding attention processing Sending the wrong message







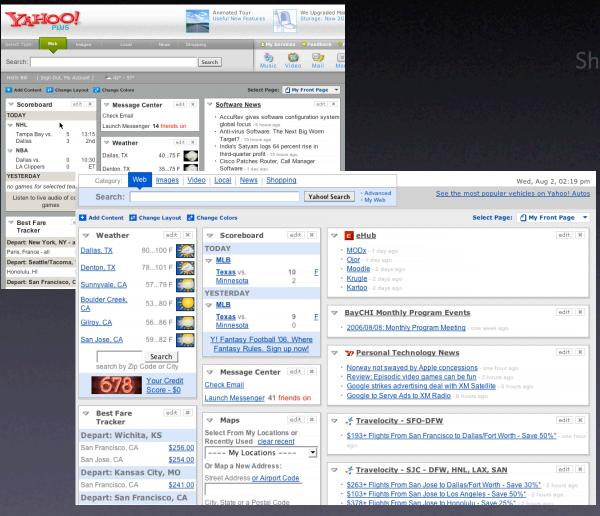
What you can communicate

Speed up time Slow down time Show state change Show relationships between objects Focus attention





Understanding attention processing Sending the wrong message



What you can communicate

Speed up time Slow down time Show state change Show relationships between objects Focus attention

Keep it sane

"Cut in half" rule of thumb Use a "contrast knob" approach Don't overuse



key principle

Provide invitations beforehand, transitions during, and feedback after interaction



Interaction

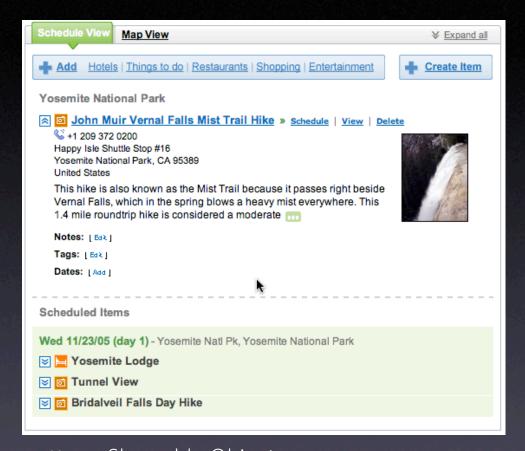
Feedback

Info

information principles



principle. think in objects.



pattern. Shareable Object.



Y Amsterdam Trip Plans on Yahoo! Travel

Yahoo! Shortcut - About

My Web Results for amsterdam trip (49)

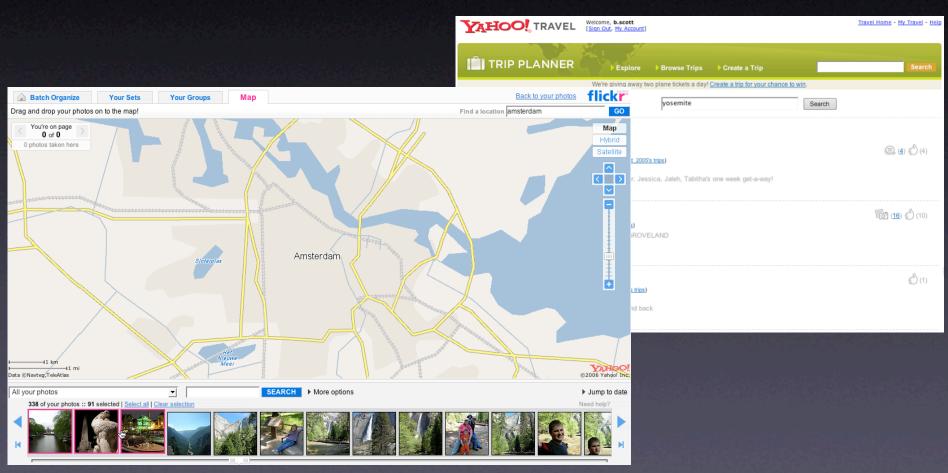
1. Trip to Amsterdam - photos, history, maps - Virtual trip to Amsterdam [□]

Web **trip** to **Amsterdam**. Historical and sightseeing overview ... **Trip** to **Amsterdam**. To begin with **Amsterdam** we should first note, that this city has two features making ... One will never forget a **Amsterdam trip** around the city by river ...

www.medievalamsterdam.com - 9k - Cached - More from this site - Save

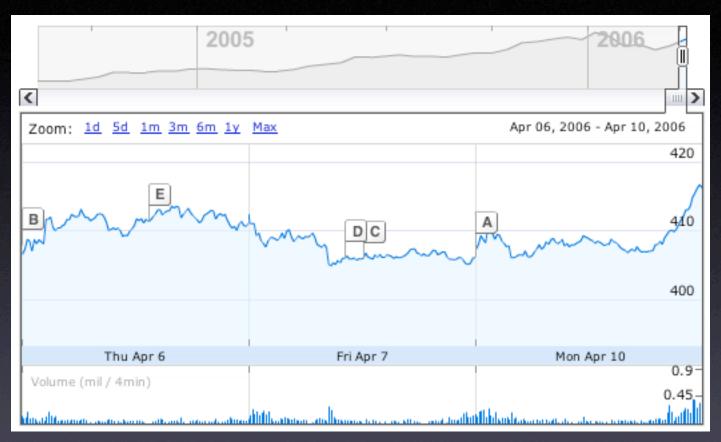
The power of sharing

Bloggable, shareable, findable How to dial-in community Collections





principle. tie information to interactivity.



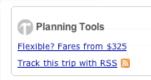
pattern. Multivariate Views.





All Times (Listed) Select Times (Grid) Learn more about List View Results for: Fare Prediction Fare History Leave: All Times 87-Day Low: \$189 Avg Low: \$356 San Jose, CA (SJC) \$575 Fri, Oct 20 2006 Lowest fares rising \$50+ \$495 on average within departure date \$415 Return: All Times \$335 Dallas, TX (DFW) Confidence: 56% \$255 Sat, Oct 28 2006 \$175 Tip: Buy Now. 86 Days Ago Now Change Search Adults: 1

Refine Results	[Reset]]	Price	<u>e</u> ▼	<u>Airlir</u>	<u>ie</u>	Airpo	ort	Depart:	<u> Arrives</u>		Stops	5
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				orbitz.com		flight details		SJC	12:50p	4:40p	1	5h 50	θm
Airlines Compare			\$56	\$561*		Multiple Carriers		FW	12:29p	7:18p	1	4h 49	9m
✓ <u>Alaska</u>	\$73		orbitz.com		flight details		DFW>	SJC	12:50p	4:40p	1	5h 50	θm
✓ <u>America West</u> ✓ American	\$63 \$67		\$561* orbitz.com		Multiple Carriers flight details		SJC>D	FW	12:29p	7:18p	1	4h 49	9m
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▼ Delta	\$11		\$561*		Multiple Carriers		SJC>D	FW	6:15a	1:26p	1	5h 1	1m
Frontier	\$639		orbitz.com		flight details		DFW>:	SJC	12:50p	4:40p	1	5h 50	
its Dividends	1 Day	5 Days	1 Month	3 Months	6 Months	1 Year	2 Years	5 Years	Max	Time Range 🔺		.2004 -	



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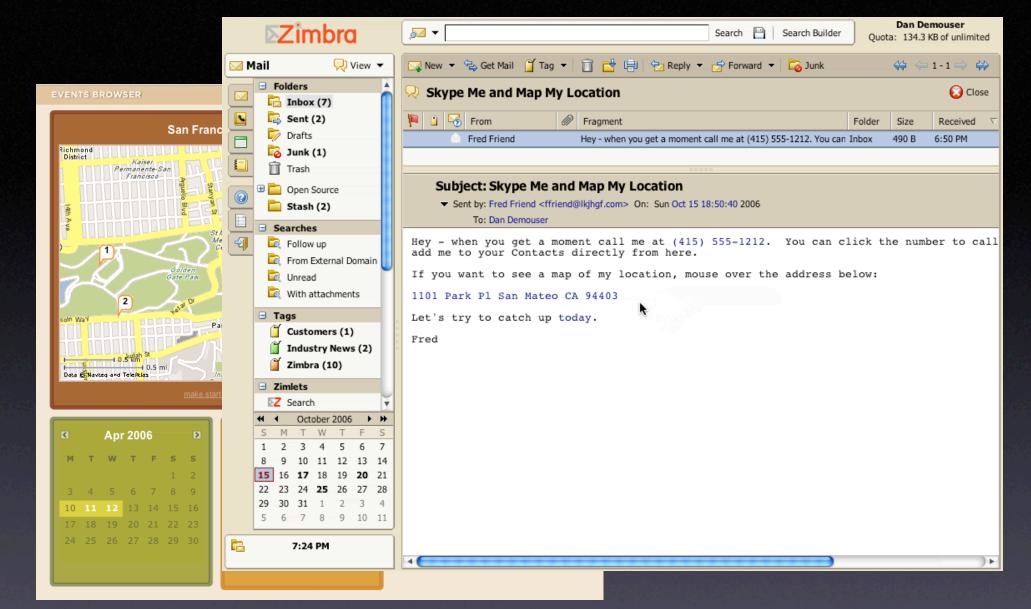
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Think deeper interaction

Multi-variate data





Think deeper interaction

Multi-variate data
Interesting relationships



Stud	lents to E	nroll ———						
	Crew Id	Last Name	First Name					
8	349394	Craft	Adrian					
3	432939	Douglas	Elayne					
3	468370	Hill	Petra					
Cou	rse Calen	dar ———		250 2005				
1				DEC 2005			•	
	S	M	Т	W	Т	F	S	
					1	2	3	
		4 5	6	7	8	0	10	
	4 600922/Peterson			999300/Barnes	0	9	10	
				344935/Smith				
				139204/Miller				
	1	1 12	13	14	15	16	17	
	1	8 19	20	21	22	23	24	

Think deeper interaction

Multi-variate data
Interesting relationships
Just-in-time information



key principle

Think in objects, tie information to interactivity



key principles for richness

Interaction

Prefer direct, lightweight, in-page interaction.

Feedback

Provide invitations beforehand, transitions during, and feedback after interaction.

Info

Think in object, tie information to interactivity



pattern library.
yahoo! blog.
my blog.
this presentation.

developer.yahoo.com/ypatterns yuiblog.com looksgoodworkswell.com billwscott.com/share/presentations/aeboston/



