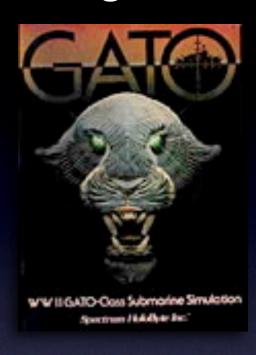
# Ajax Patterns

Rich interaction idioms

Bill Scott Yahoo! Ajax Evangelist bscott@yahoo-inc.com





### **JavaScript for Rich Internet Applications**

A A HIGHIO

Demos Documentation Downloads

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 Spanish 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 Airline Solutions to create a suite of rich internet components, behaviors and effects for the web application space.

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

### **OPEN SOURCE**

Rico is provide free and open-source (Apache 2.0 License) for either your personal or commercial use. Sabre Airline Solutions 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

### 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 XmlHttpRequest. Rico provides a very simple interface for registering Ajax request handlers as well as HTML elements 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

### 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 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 raw HTML and sprinkle in some behaviors and what do you get? Well in Rico you can get an Accordion 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 behaviors are planned!

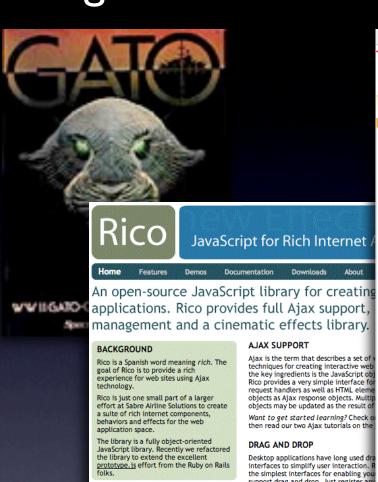


**NEW! LiveGrid Behavior!** 

Check out the Alternative to Paging!

RICO AJAK SEAR

See Rico in Action!



support drag and drop. Just register an JavaScript object as a draggable and ar

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Developer Network Home Help

Search

### YAHOO, DEVELOPER NETWORK

### Design Pattern Library

Yahoo! Developer Network > Design Pattern Library

Breadcrumbs ▶ Faceted Navigation

Fly-out Menus Horizontal Bar Hub and Spoke

Left Navigation - Tabs

Module Tabs

### Navigation Tabs EXPLORE DATA

Auto Complete Calendar Picker

Pagination

Item Pagination Search Pagination

### **▶ ORGANIZE DATA**

### GIVE FEEDBACK

Architecture Review 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

### IMPROVE READABILITY

### Ratings & Reviews

Review Architecture

### GROUP RELATED ITEMS

▶ ORGANIZE SCREEN/PAGE

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?

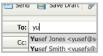
A pattern describes an optimal solution to a common problem within a specific context. more.

lew York City > Things to do

### Recent Patterns

Auto-Complete

Module Tabs



### Breadcrumbs

The user needs to enter an User needs to navigate item into a text box which potentially large quantities of could ambiguous or hard to information efficiently, remember and therefore has without becoming lost. the potential to be mis-typed



Drag and Drop Modules

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



### Navigation Tabs

\*\*\*

Read 20 reviews

金金金金金

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



### Object Pagination

The user needs to view data items from a potentially large set of sorted data that will not be easy to display within a single page.



### Rating an Object Writing a Review

User wants to share her opinion with others about an object (place, person, thing) in greater detail than a simple rating.

### Results Page:

The user needs to navigate

panes of content without

refreshing the page.

through one or more stacked

### 1 2 3 4 Next

### Search Pagination

The user needs to view a set of search results ranked by relevance that is too large to easily display within a single

### A user wants to quickly leave their opinion on an object, with minimal

interruption to any other task flow they are involved in.

Mac IE 5.2 support. Support will be

provided in a near future release for



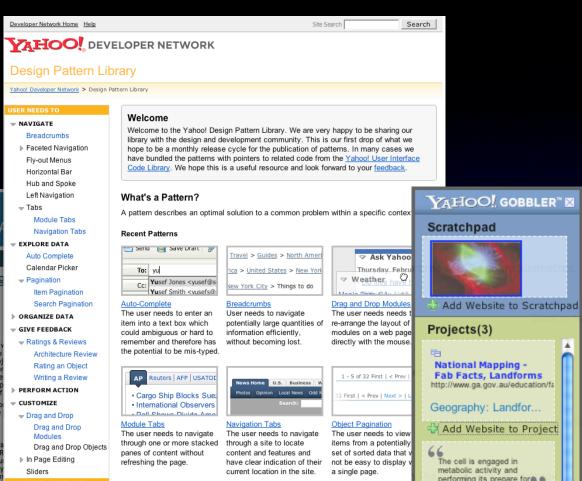
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Read 20 reviews

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leave their opinion on an

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interruption to any other task

Rating an Object

easily display within a single

See Rico in Action!

Great

Writing a Review

simple rating.



### 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.

### How to deconstruct patterns?

- Interaction event, timer, invitation
- Operation
   lookup, action, validate, message
- Presentation
   update to the interface





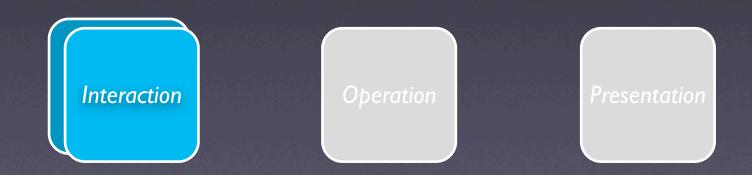


### interaction.

• Every pattern starts with an interaction User event (event)
System event (timer)

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

• Some patterns are about inviting interaction



### operation.

- Lookup. I can get information when I need it.
- Action. I can take action in context.
- Validate. I can prevent errors early.
- Message. I can communicate instantly.



### operation. lookup.

• I can get information when I need it

Auto Complete. Deferred Content Loading.
Dynamic Goal. Narrowing Choices. Refining
Search. Live Search. Dynamic Filter. Detail Zoom.
Endless Scrolling. Expandable Paging Boundary.
Fresh Content. Hover Detail. In Place Drill Down.
On Demand Refresh. Periodic Refresh. Resizable
Modules. Scrolling Modules. Auto Form Fill.

Interaction

Lookup Operation

Presentation

### operation. action.

I can take action in context

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. Auto Save. Remembered Collection. Remembered Preferences. Rating an Object.

Interaction

Action Operation

Presentation

### operation. validate.

· I can prevent errors early

inline validate. validate then suggest. balloon error tip. character counter. live preview.

Interaction

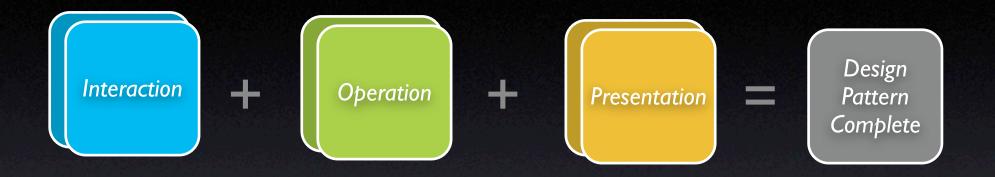
Validate Operation

Presentation

### presentation

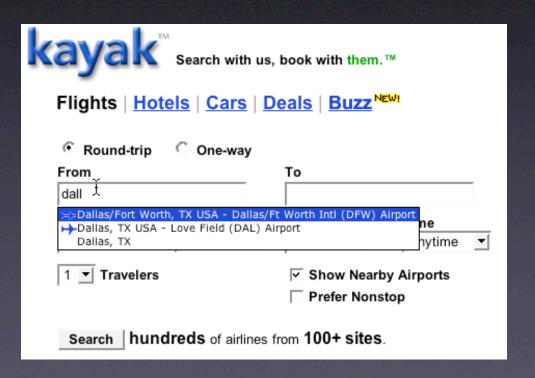
Indication. Busy Indication. Cursor Busy. In Context Busy. In Context Progress. Inline Status. Transition. Brighten Transition. Cross Fade Transition. Dim Transition. Expand Transition. Fade In Transition. Fade Out Transition. Flip Transition. Move Transition. Self-Healing Transition. Collapse Transition. Slide Transition. Available. Selected. Slide-out. Popup Balloon.





Auto Complete. Deferred Content Loading. Dynamic Goal. Narrowing Choices. Refining Search. Live Search. Dynamic Filter. Detail Zoom. Endless Scrolling. Expandable Paging Boundary. Fresh Content. Hover Detail. In Place Drill Down. On Demand Refresh. Periodic Refresh. Resizable Modules. Scrolling Modules. Auto Form Fill.



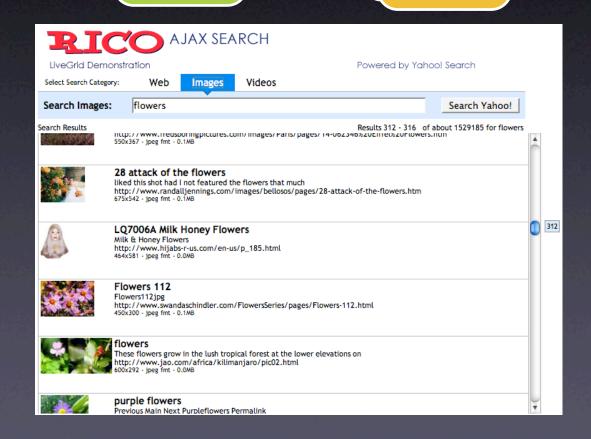


Onscroll Event Lookup

Grid Cell Updates

- 1

Endless Scrolling





7. The Last Samurai

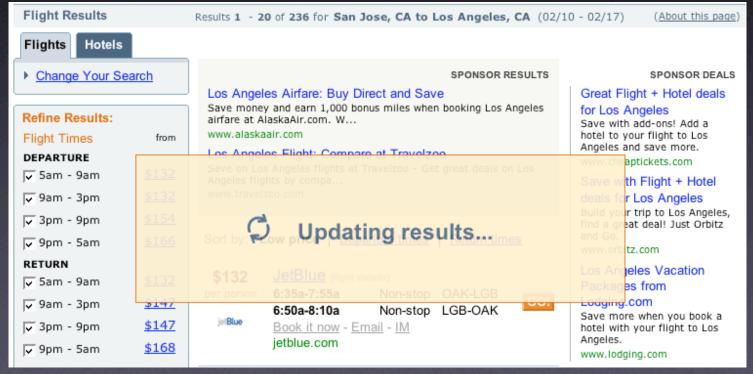
Add

8. The Day After Tomorr R

9. The Bourne Supremacy

Genre: Thrillers







Drag and Drop Modules. In Page Editing. In Page Custom Editing.

Direct State Editing. Grid Cell Editing. Inline Custom Editing. Inline Tag

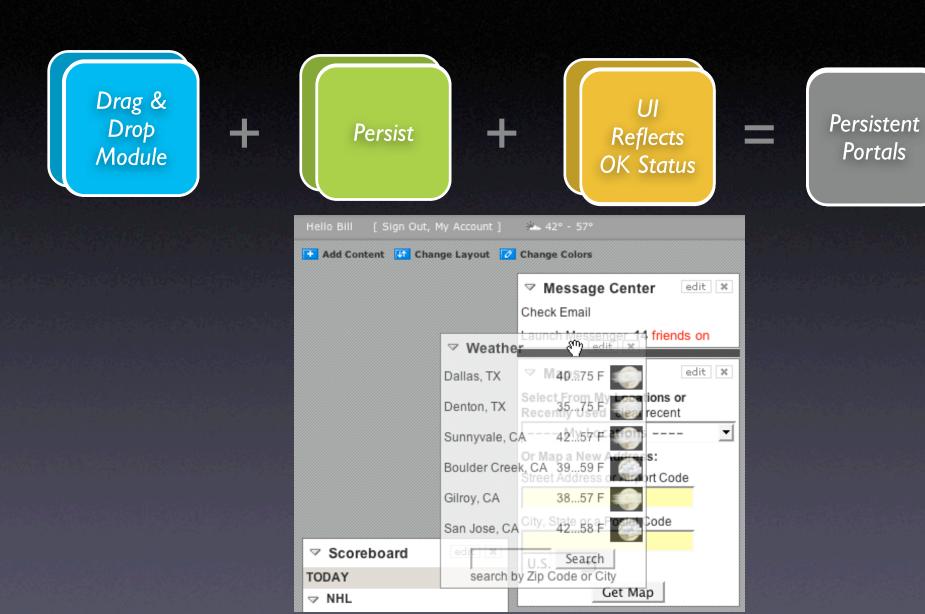
Editing. Popup Custom Editing. Slide-out Custom Editing. Inline Text

Editing. Inline Reordering. Auto Save. Remembered Collection.

Remembered Preferences. Rating an Object.

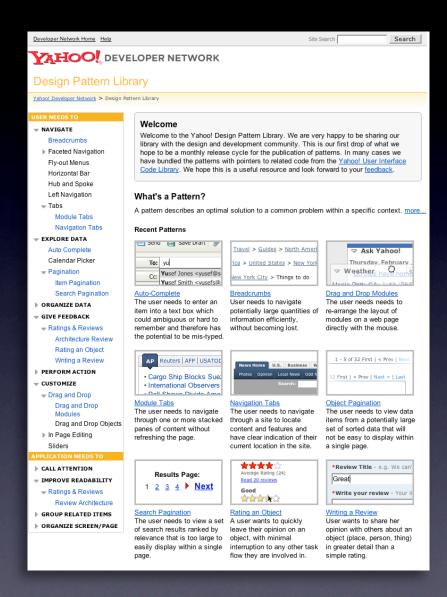




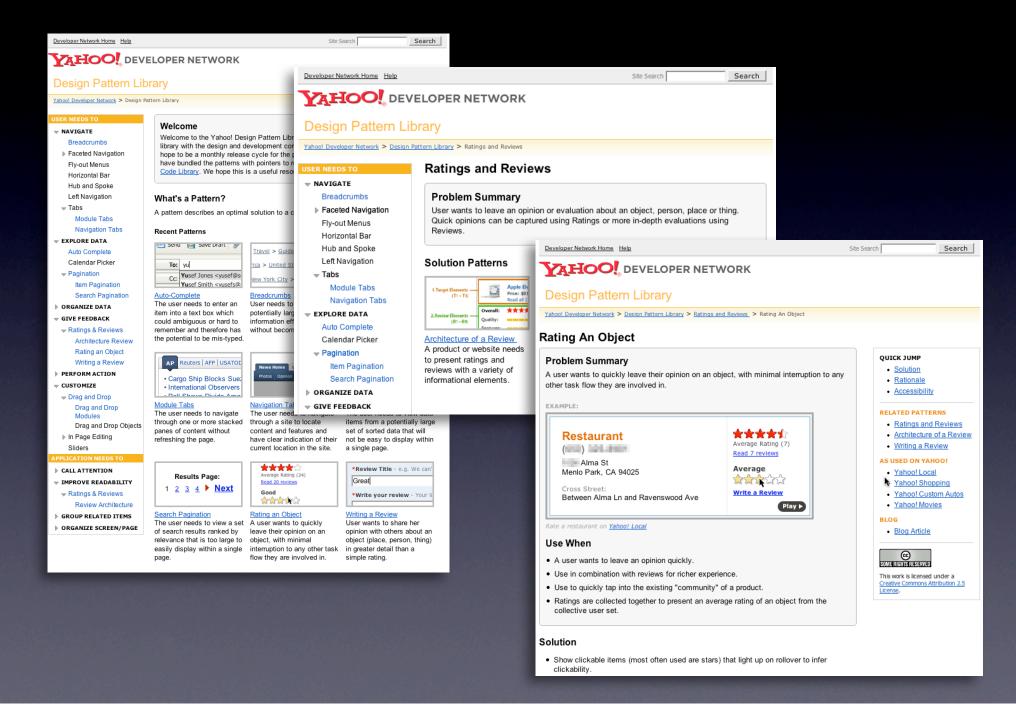


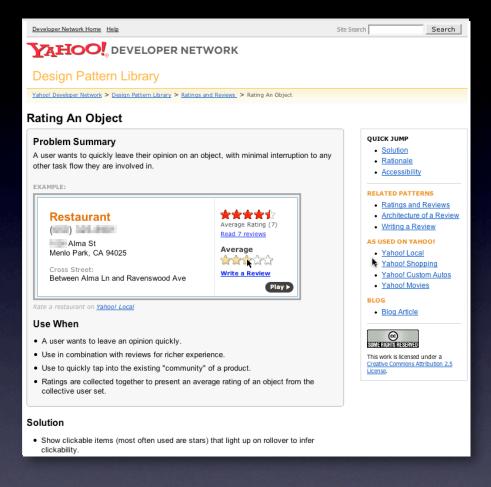


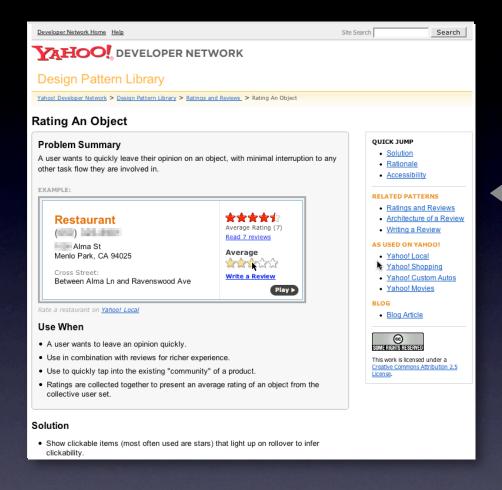
### How to Open up Patterns?



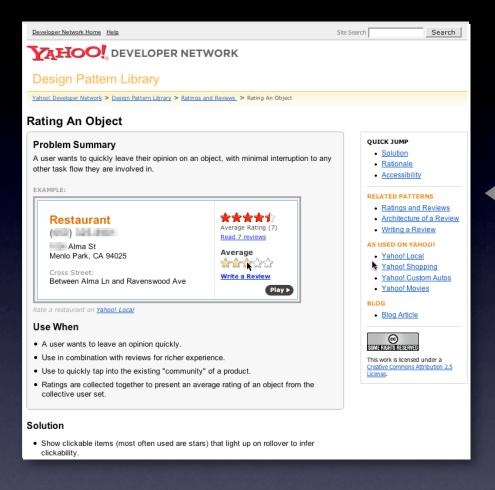
### How to Open up Patterns?





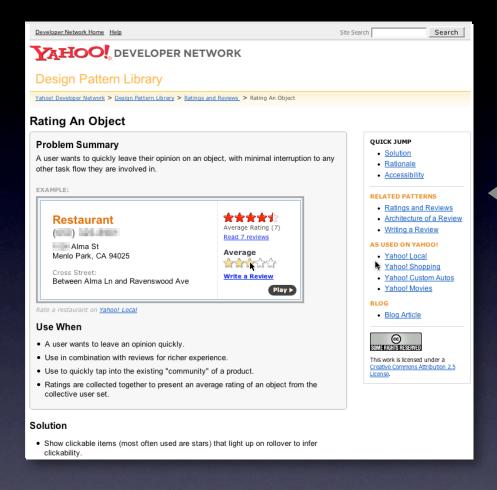


Pattern Service



Yahoo! service
responds with a JSON
representation of a pattern.
Allows anyone to mashup the
patterns into a corporate
pattern library

### Pattern Service

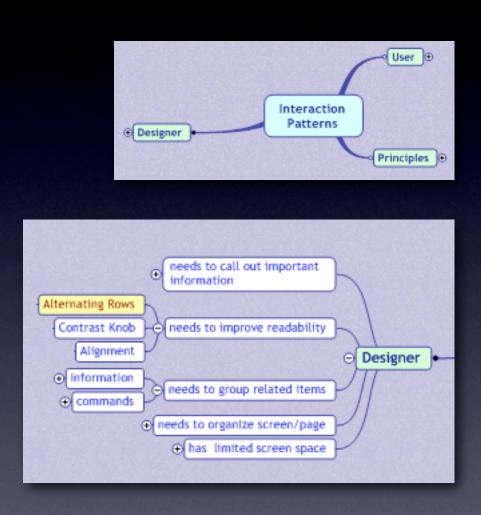


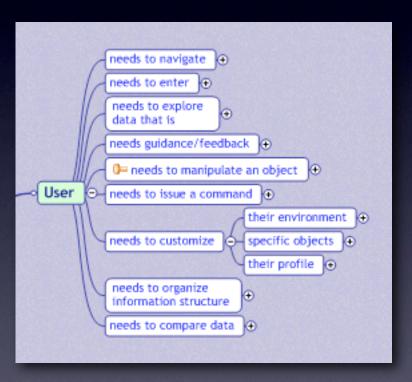
Yahoo! service
responds with a JSON
representation of a pattern.
Allows anyone to mashup the
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Pattern Service

Corporate
Branded
Pattern
Site
(mashup)

## How to Organize?





### How to Teach Patterns?



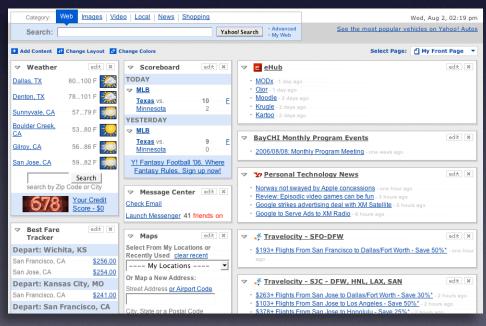
design principles for richness



pattern. in-page action.



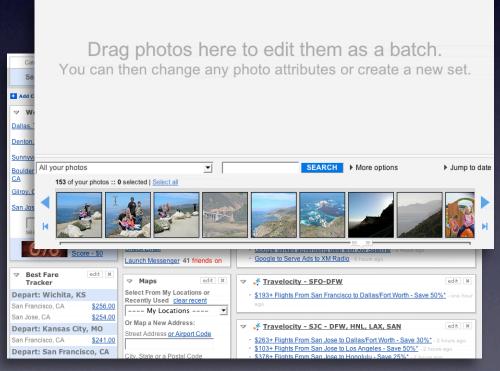
pattern. in-page action.



pattern. drag & drop.



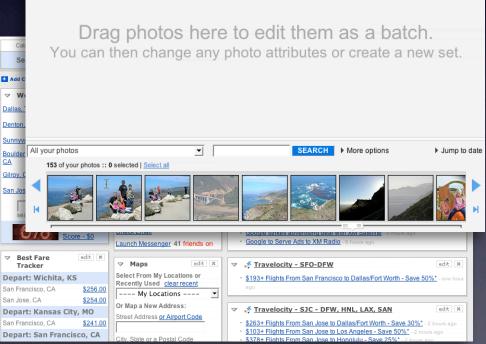
pattern. in-page action.

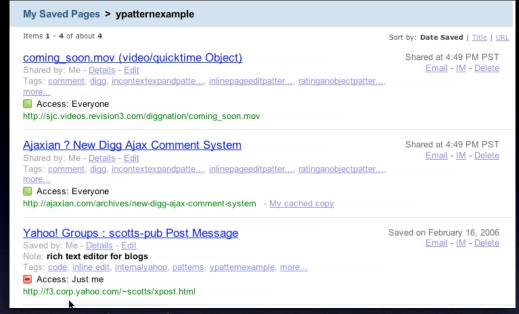


pattern. drag & drop.



pattern. in-page action.



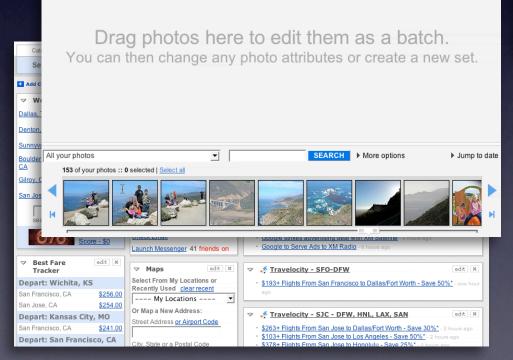


pattern, inline editing.

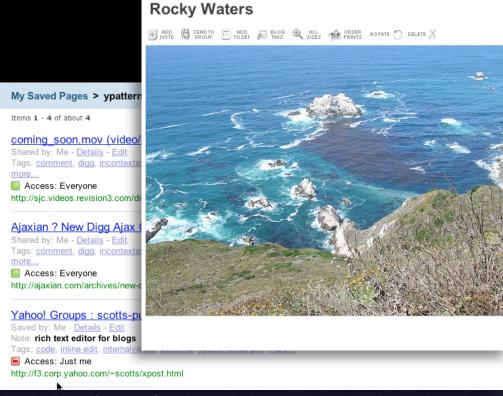
pattern. drag & drop.



pattern. in-page action.



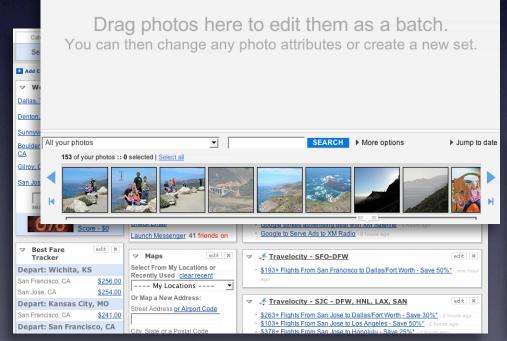
pattern. drag & drop.



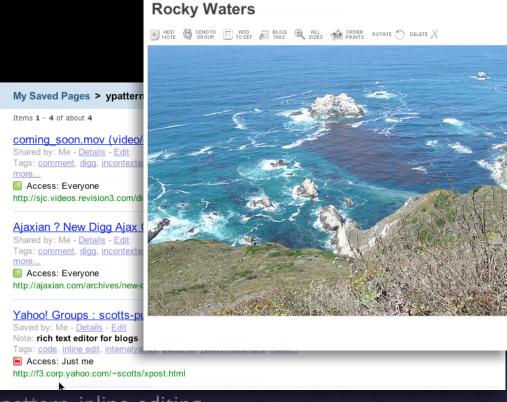
pattern. inline editing.



pattern. in-page action.



pattern. drag & drop.



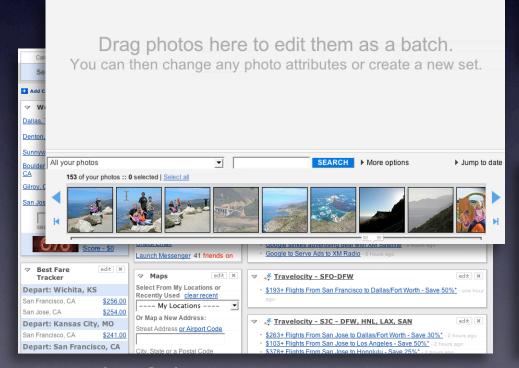
pattern. inline editing.



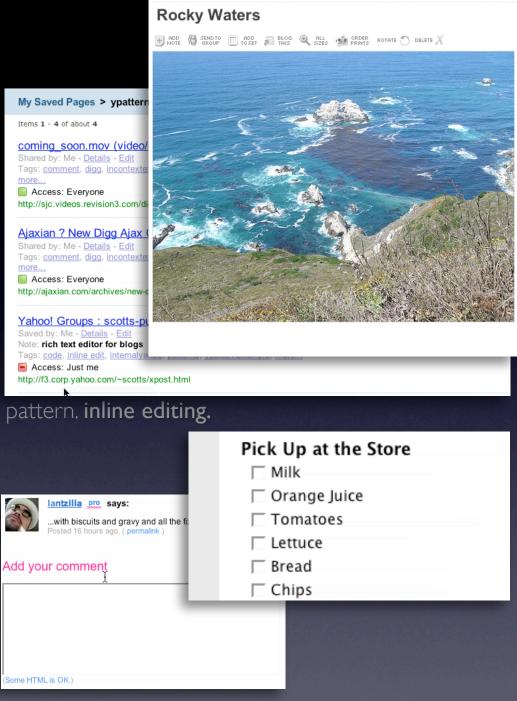
pattern. in-context tools.



pattern. in-page action.



pattern. drag & drop.



pattern. in-context tools.

### pattern. in page action.



#### Fixing the Mighty Mouse

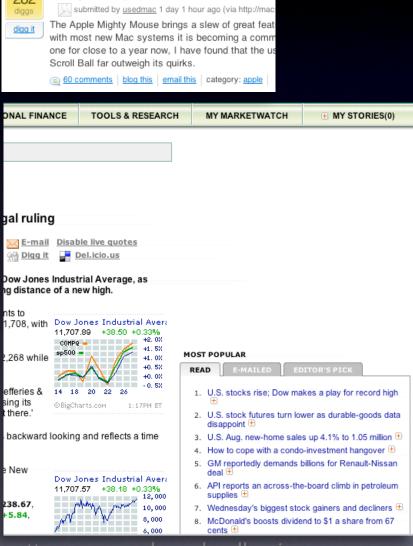
submitted by usedmac 1 day 1 hour ago (via http://mac

The Apple Mighty Mouse brings a slew of great feat with most new Mac systems it is becoming a commone 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

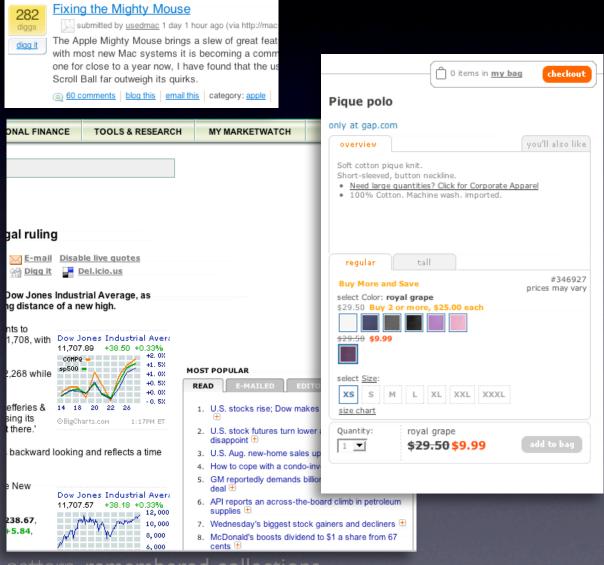
### pattern. in page action.

Fixing the Mighty Mouse



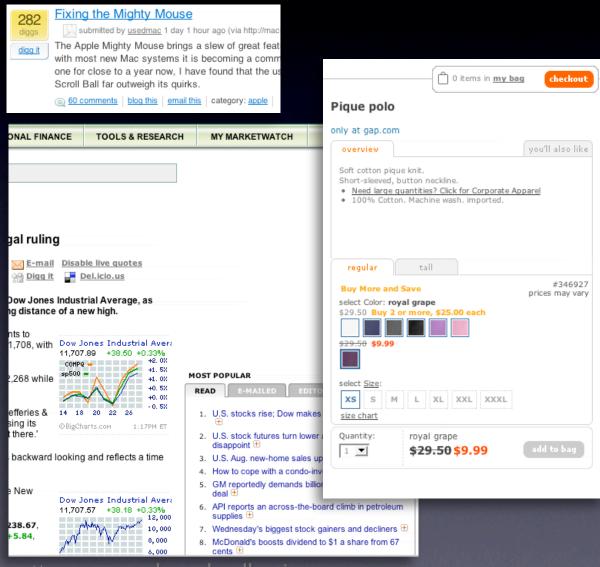
pattern. remembered collections.

pattern. in page action.

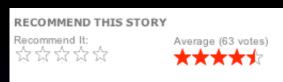


pattern. remembered collections.

### pattern. in page action.

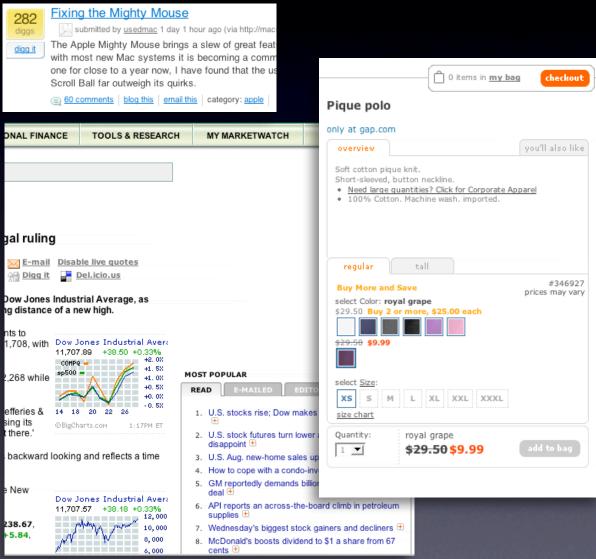


pattern. rating an object.



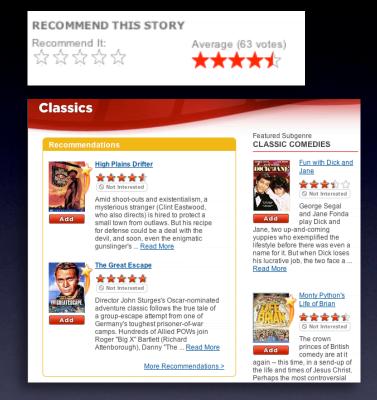
pattern. remembered collections.

### pattern. in page action.

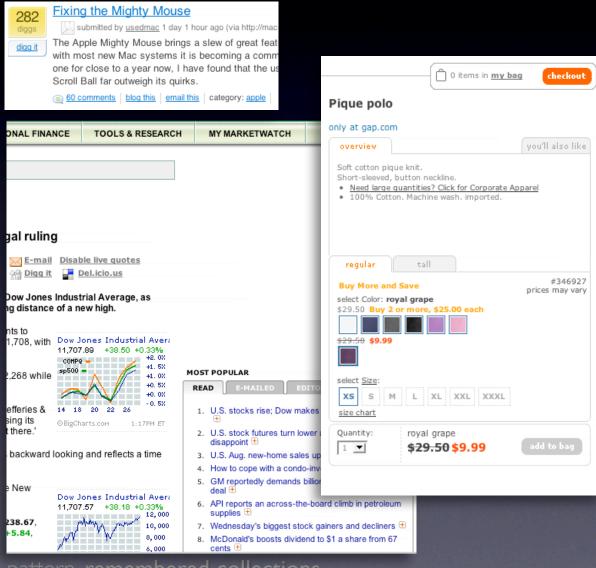


pattern. remembered collections.

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### pattern. in page action.

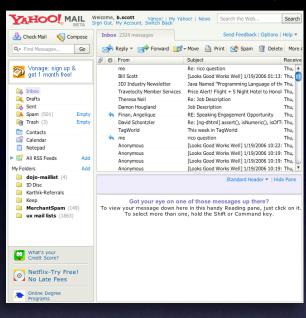


pattern. rating an object.

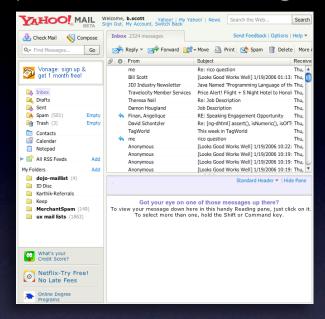


pattern. remembered collections

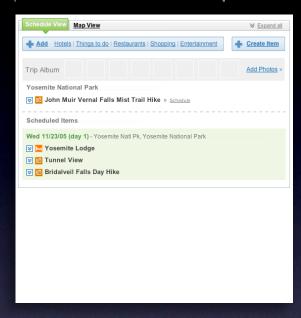
pattern. on-demand scrolling.



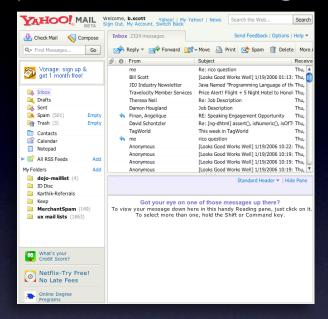
pattern. on-demand scrolling.



pattern. in-context expand.



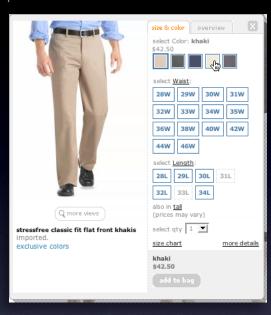
pattern. on-demand scrolling.



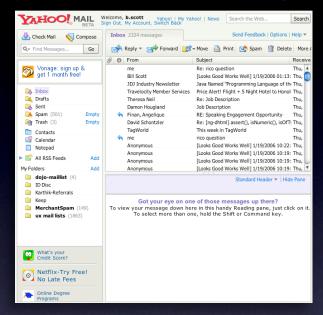
pattern. in-context expand.



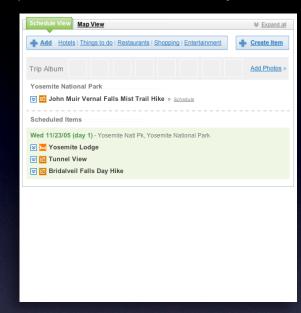
pattern. inline assistant.



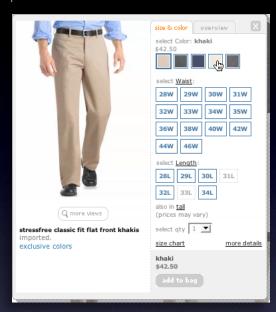
### pattern. on-demand scrolling.



#### pattern. in-context expand.



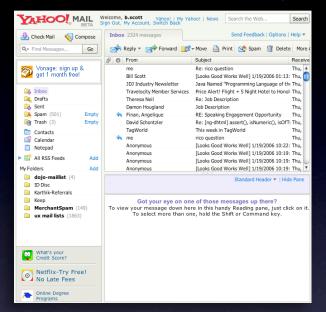
### pattern. inline assistant.



#### pattern. hover details.



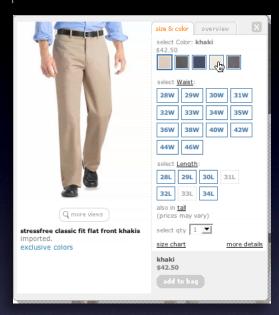
### pattern. on-demand scrolling.

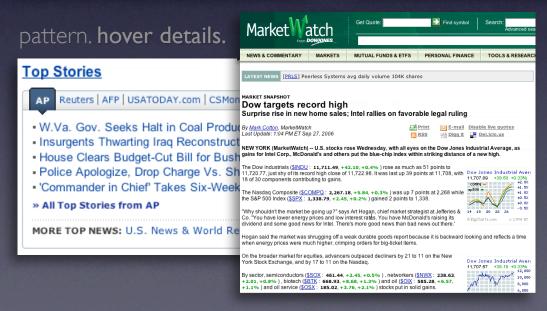


#### pattern. in-context expand.

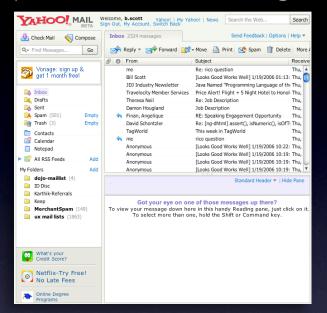


### pattern. inline assistant.

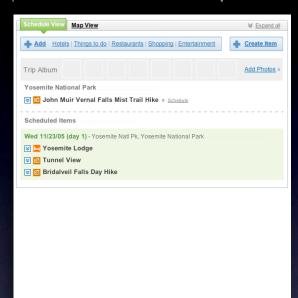




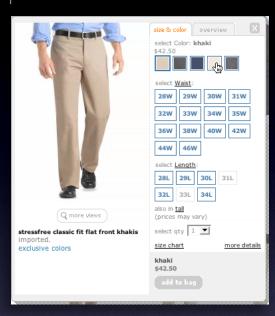
#### pattern. on-demand scrolling.



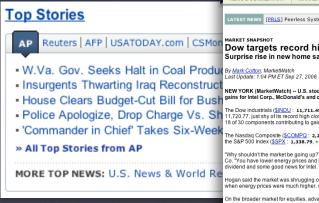
#### pattern. in-context expand.

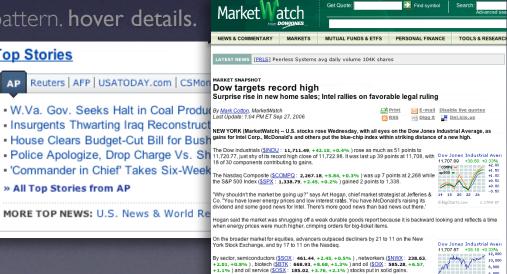


### pattern. inline assistant.

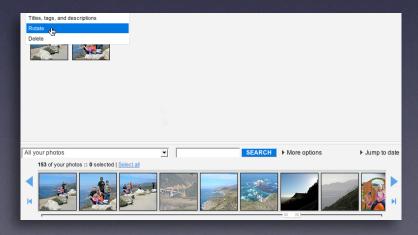


#### pattern. hover details.

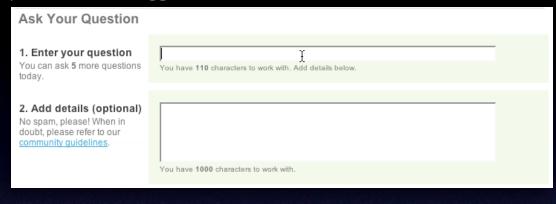




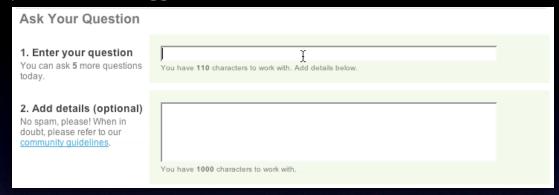
#### pattern. lightweight popup + lightbox.



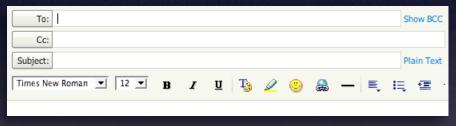
### pattern. live suggest.



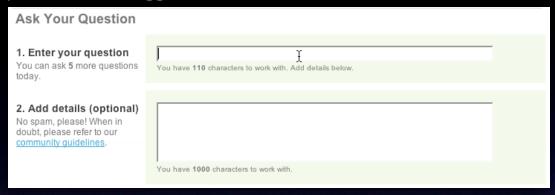
### pattern. live suggest.



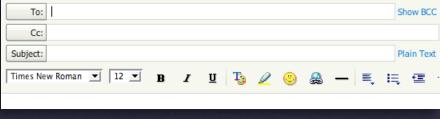
### pattern. auto complete.



### pattern. live suggest.

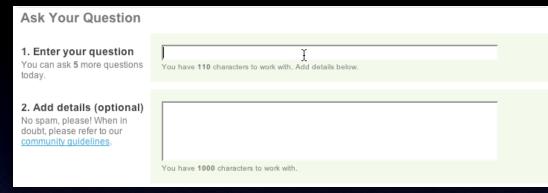


### pattern. auto complete.

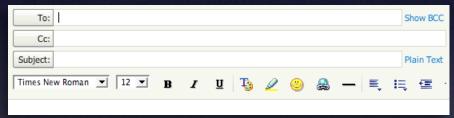




#### pattern. live suggest.

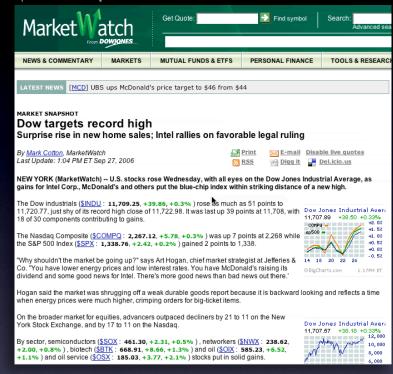


#### pattern. auto complete.

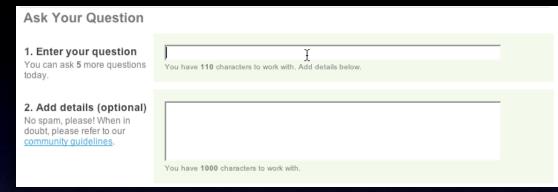




### pattern. periodic refresh.

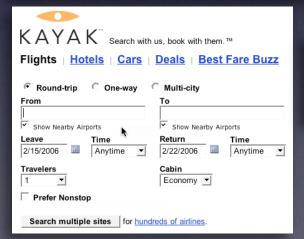


#### pattern. live suggest.

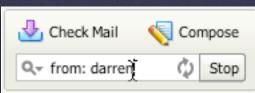


#### pattern. auto complete.

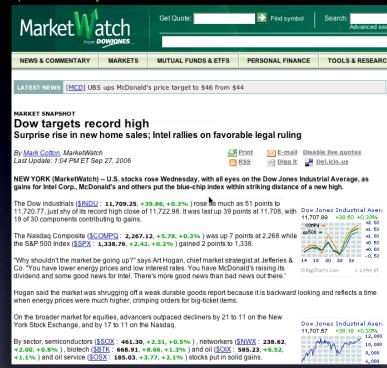


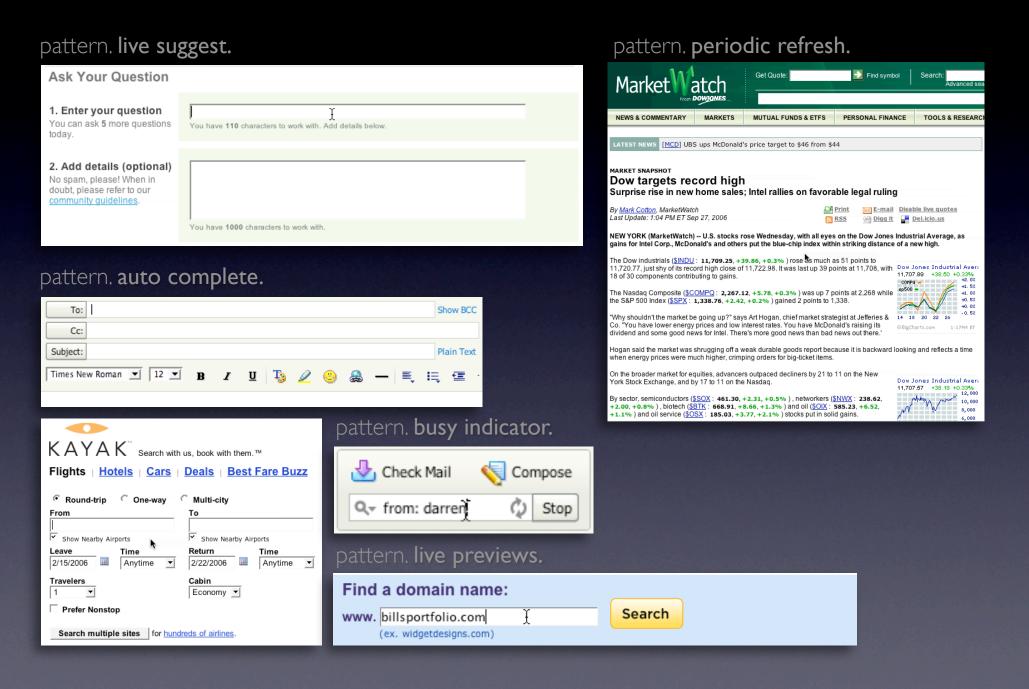


#### pattern. busy indicator.

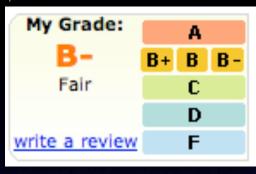


### pattern. periodic refresh.

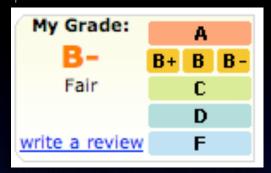




pattern. hover invitation.



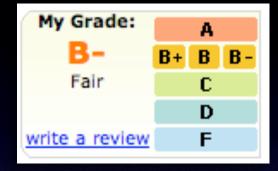
### pattern. hover invitation.



### pattern. tour invitation.



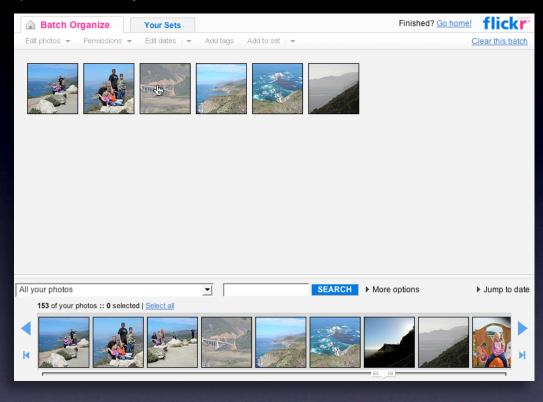
pattern. hover invitation.



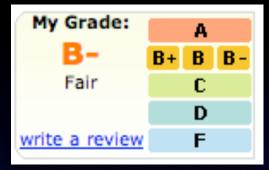
pattern. tour invitation.



pattern. drop invitation.



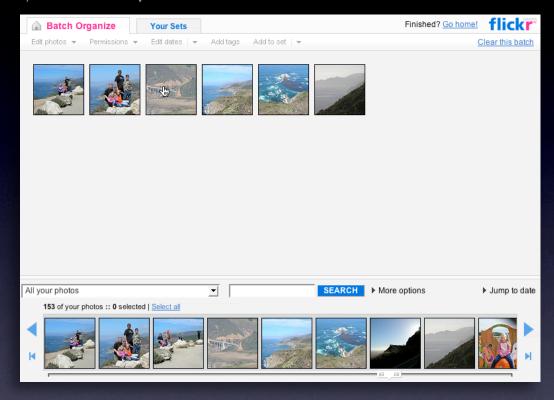
pattern. hover invitation.



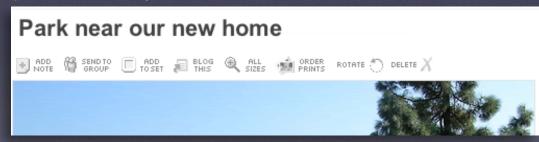
pattern. tour invitation.



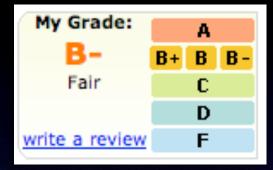
pattern. drop invitation.



pattern. tooltip invitation + hover invitation + cursor invitation.



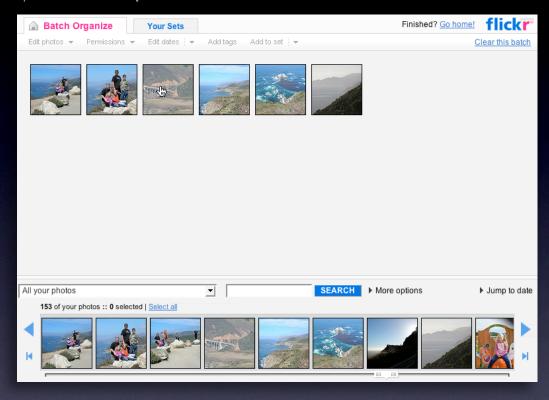
pattern. hover invitation.



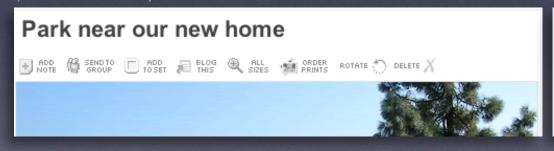
pattern. tour invitation.

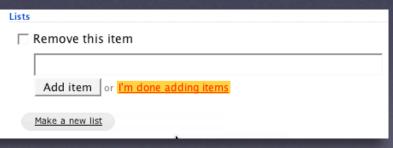


pattern. drop invitation.

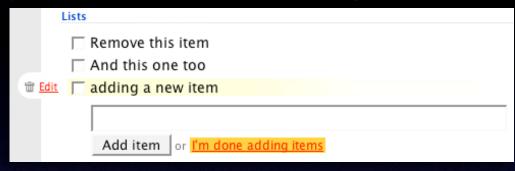


pattern. tooltip invitation + hover invitation + cursor invitation.

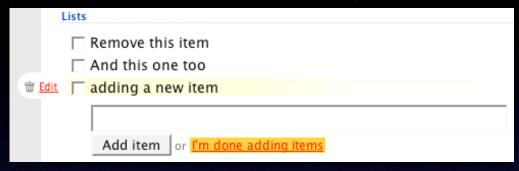




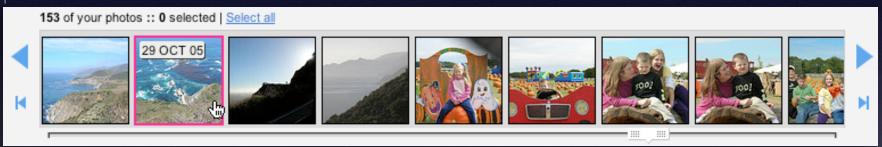
pattern. fade transition + self-healing transition.



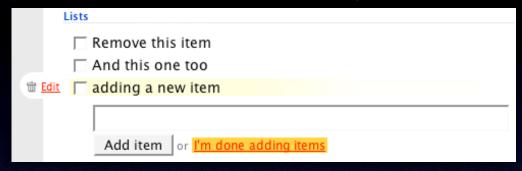
### pattern. fade transition + self-healing transition.



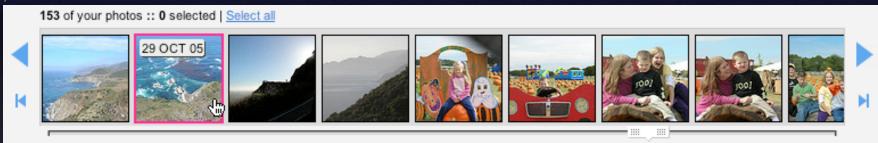
### pattern. slide transition.



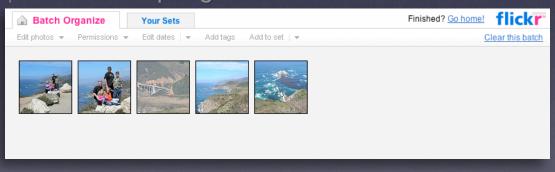
### pattern. fade transition + self-healing transition.



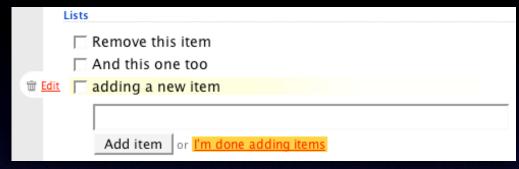
### pattern. slide transition.

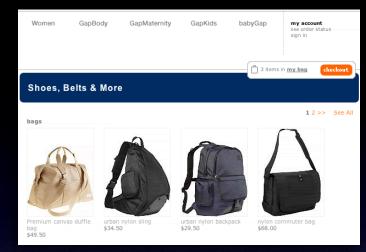


### pattern. active spotlight.

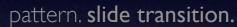


### pattern. fade transition + self-healing transition.



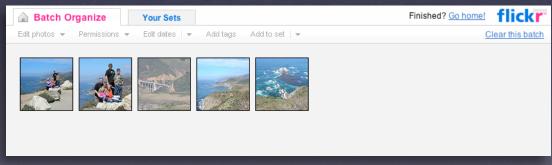


### pattern. zoom box.



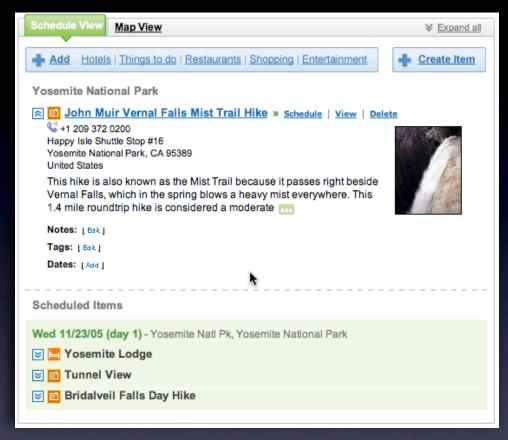


### pattern. active spotlight.



principle. think in objects.

## principle. think in objects.



pattern. shareable object.

principle. tie information to interactivity.

## principle. tie information to interactivity.



pattern. multi-variate views.

## principle. tie information to interactivity.



pattern. multi-variate views.

## A look at the flip-side: Anti-Patterns

big ball of mud. meandering way. borg idiom. tiny targets. mystery meat. buried treasure. hover and cover. pogo stick navigation. novel notions. against the flow. metaphor mismatch. double duty. linkitus. blind type. windows aplenty. animation gone wild. misguided misdirections. unmarked hazards. missed moments. missing scene. one at a time. non-symmetrical actions.

## How to make it easier to prototype?



Protoscript is for prototying. It's simple syntax Protoscript is a simplified scripting language for creating Ajax style prototypes for the Web. With Protoscript it's easy makes it easy to sprinkle behaviors onto any to bring interface elements to life. Simply connect them to

home

demos

Here's an example that fades & removes the image when the user clicks on it. (It's live, so go ahead and try it!)

behaviors and events to create complex interactions.



```
$proto('img#avatar', {
 Click: {}.
 onClick: {
   Fade: {
      opacity: {to: 0}.
     onComplete: {Close : {} },
```

The protoscript above says: for an image with id avatar, fade it out when the user clicks on it and hide it when the fade completes.

web page.

docs

download

forum

Easy to query for interface elements Uses jQuery. Plug-in architecture allows different selector plugins.

Simple to express complex dependent behaviors Just nest behaviors within behaviors or callbacks.

Add new behaviors & events with plug-in architecture

Uses YUI library. Can be extended to use other Ajax frameworks.

## anatomy of a drag/drop

```
'#scratchpad-list img': {
      DragDrop: {
          dropTarget: '#idcard-mini div.icon, h2:contains(My Portfolio)',
          onDragOver: {
               ReplaceStyle: {
                    removeClass: 'not-dragged-over',
                    addClass: 'dragged-over'
           },
          onDragOut: {
               ReplaceStyle: {
                    removeClass: 'dragged-over',
                    addClass: 'not-dragged-over'
           },
          onDragDrop: {
               InnerHtml: {
                    copyFrom: '$draq',
                    onTrigger: {
                         Fade: {
                              opacity: {from:0.0, to: 1.0},
                              duration: 0.25
               },
               ReplaceStyle: {
                    removeClass: 'dragged-over',
                    addClass: 'not-dragged-over'
},
```

## anatomy of a drag/drop

```
'#scratchpad-list img': {
     DragDrop: {
          dropTarget: '#idcard-mini div.icon, h2:contains(My Portfolio)',
          onDragOver: {
               ReplaceStyle: {
                    removeClass: 'not-dragged-over',
                    addClass: 'dragged-over'
          },
          onDragOut: {
               ReplaceStyle: {
                    removeClass: 'dragged-over',
                    addClass: 'not-dragged-over'
          onDragDrop: {
               InnerHtml: {
                    copyFrom: '$draq',
                    onTrigger: {
                         Fade: {
                              opacity: {from:0.0, to: 1.0},
                             duration: 0.25
               ReplaceStyle: {
                    removeClass: 'dragged-over',
                    addClass: 'not-dragged-over'
```

Reads like this:

Make all images in scratchpad draggable.

On drag over, change style to reflect hover. On drag out, restore style.

On drop (on valid target) copy the drag item's HTML into the id photo area, then fade the dropped item from 0 to 100%

### anatomy of a drag/drop

```
'#scratchpad-list img': {
     DragDrop: {
          dropTarget: '#idcard-mini div.icon, h2:contains(My Portfolio)',
          onDragOver: {
               ReplaceStyle: {
                    removeClass: 'not-dragged-over',
                    addClass: 'dragged-over'
          },
          onDragOut: {
               ReplaceStyle: {
                    removeClass: 'dragged-over',
                    addClass: 'not-dragged-over'
          onDragDrop: {
```

Reads like this:

Make all images in scratchpad draggable.

On drag over, change style to reflect hover. On drag



Bill Scott Total Projects 12 Total Points 24

'#idcard-mini div.icon, h2:contains(My Portfolio)'

## '#scratchpad-list img'

#### My Portfolio

Sort by: Recent | Alpha | Points

 Project One view | delete

Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Proin tempor, lectus aliquet ornare suscipit, diam turpis suscipit velit, rhoncus feugiat purus metus gravida turpis. Nam nisl. Nulla et est in neque laoreet consequat. Quisque quis pede. Curabitur pretium. Etiam varius. Suspendisse tempus nisl eu lectus. Integer et velit. Quisque quis magna. Nunc pellentesque pharetra ligula. Morbi semper.

 Project Two view | delete

Quisque nunc. In ac urna egestas arcu egestas imperdiet. Donec id erat id nulla molestie venenatis. Nam a



},

### Behaviors ~ Patterns

Resize. Animate. Spotlight. Fade. Move.
ToggleStyle. Style. ReplaceStyle. Show. Hide.
ToggleShowHide. Eval. Open. Close.
ToggleOpenClose. InnerHtml. AjaxInnerHtml.
Popup. DragDrop. Click. Dblclick. Blur. Focus.
Mouseover. Mousemove. Mouseout.
Keydown. Keyup.