Design Patterns for the Web

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Hall of Fame or Hall of Shame?

- java.sun.com

Good branding
  - java logo
  - value prop
- Inverted pyramid writing style
- Fresh content
  - changing first read
  - news in sidebar
- Obvious Links

Overview of Heuristic Evaluation

- Have evaluators go through the UI twice
- Ask them to see if it complies with heuristics
  - note where it doesn't & say why
- Combine the findings from 3 to 5 evaluators
- Have evaluators independently rate severity
- Alternate with user testing

Outline

- Review of Heuristic Evaluation
- Web Design Process, Specialties & Artifacts
- Detailed Design Example
- Web Design Patterns
Good Web Site Design Matters

- NY Times, Aug 30 1999, on IBM Web site
  - “Most popular feature was search because people couldn’t figure out how to navigate the site”
  - “Second most popular feature was help button, because search technology was so ineffective.”
- After redesign
  - use of the “help” button decreased 84 percent
  - sales increased 400 percent

Good Web Site Design can Lead to Healthy Sales

Web Design Process

Design Specialties

- Information Architecture
  - encompasses information & navigation design
- User Interface Design
  - also includes testing & evaluation

Artifacts of Design Practice

- Designers create representations of sites at multiple levels of detail
- Web sites are iteratively refined at all levels of detail

Site Maps  Storyboards  Schematics  Mock-ups

Site Maps

- High-level, coarse-grained view of entire site

Storyboards

- Interaction sequence, minimal page level detail
**Schematics**

- Page structure with respect to information & navigation

**Mock-ups**

- High-fidelity, precise representation of page
Basic Web Design

• Let's take a closer look page by page

• What site is this?
  – Logo in top-left corner denotes the site
  – Another logo at top-right to reinforce
  – examples of SITE BRANDING (E1)

• What kind of site is this?
  – Shopping cart icon
  – Tab row content & categories on left
  – Prices in content area
  – UP-FRONT VALUE PROPOSITION (C2)
  – example of PERSONAL E-COMMERCE (A1)
• What can I do here?
  – Welcome for new visitors
  – Tab row / Search on top
  – “Categories”
  – Prices
  – Examples of OBVIOUS LINKS (K10)

• Most important info visible without scrolling
  – ABOVE THE FOLD (I2)

• What site am I at?
  – Logo in upper-left reinforces brand, can click to go to home
  – Same font, layout, color scheme also reinforces
  – examples of SITE BRANDING (E1)

• Where am I in the site?
  – “Home > Music” are LOCATION BREAD CRUMBS (K6)
  – TAB ROW (K3) says “Music”
  – Album cover, “Product Highlights”, and CD cover

• Can I trust these sellers?
  – Who am I buying from?
  – Are they reputable?
  – What about shipping?
• The Fold
  – Hmm, what’s below here?

• Impulse buy
  – PERSONALIZED RECOMMENDATIONS (G3)
  – About this album
  – Lots of unused space
  – Still more info below…

• Is this product any good?
  – Editorial reviews
  – Customer reviews
  – RECOMMENDATION COMMUNITY (G4)

• What site am I at?
  – Logo in upper-left
  – Colors, layout, font
  – examples of SITE BRANDING (E1)

• Where am I in the site?
  – Last link clicked was “Buy”
  – “Shopping Cart” and “Proceed to Checkout” reinforce that this is “the right page”
  – SHOPPING CART (F3)
• Cross-selling
  – Possibly a pleasant surprise
  – Impulse buy
  – CROSS-SELLING & UPSELLING (G2)

• What am I going to buy?
  – Easy to remove
  – Easy to move to wishlist
  – CROSS-SELLING & UPSELLING (G2)

• What can I do?
  – “Proceed to Checkout” HIGH VISIBILITY ACTION BUTTON (K5)
    – Visually distinct
    – 3D, looks clickable
    – Repeated above and below the fold

• What if I don’t have a User ID?
  • What if I forgot my password?
  • SIGN-IN/NEW ACCOUNT (H2)
- **What site?**
  - Logo, layout, color, fonts
- **Where in site?**
  - Checkout, step 1 of 3
  - “Choose shipping address”
  - QUICK-FLOW CHECKOUT (F1)

- **Note what’s different**
  - No tab rows
  - No impulse buys
  - Only navigation on page takes you to next step
- **This is a PROCESS FUNNEL (H1)**
  - Extraneous info and links removed to focus users

- **Easy to change shipping and billing**
- **Easy to save this info**
  - Easier to setup info in context of specific task
  - Clearer to users why this info is needed
Design = Solutions

- Design is about finding solutions
- Unfortunately, designers often reinvent
  - Hard to know how things were done before
  - Why things were done a certain way
  - How to reuse solutions

Design Patterns

- Design patterns communicate common design problems and solutions
  - First used in architecture [Alexander]
  - Ex. How to create a beer hall where people socialize?

Using Design Patterns

- Not too general and not too specific
  - Use a solution “a million times over, without ever doing it the same way twice”
- Design patterns are a shared language
  - for “building and planning towns, neighborhoods, houses, gardens, & rooms.”
  - Ex. Beer hall is part of a center for public life…
  - Ex. Beer hall needs spaces for groups to be alone… ACOVES

A Web of Design Patterns

- (8) Mosaic of Subcultures
- (31) Promenade
- (33) Night Life
- (90) Beer Hall
- (95) Building Complex
- (179) ACOVES
- (181) The Fire

Web Design Patterns

- Now used in Web design
- Communicate design problems & solutions
  - how to create navigation bars for finding relevant content...
  - how to create a shopping cart that supports check out...
  - how to make e-commerce sites where people return & buy...

NAVIGATION BAR (K2)

- Problem: Customers need a structured, organized way of finding the most important parts of your Web site
**NAVIGATION BAR (K2)**

- Solution diagram
  - Captures essence on how to solve problem

**Pattern Groups**

Our patterns organized by group

- **A** Site genres
- **B** Navigational framework
- **C** Home page
- **D** Content management
- **E** Trust and credibility
- **F** Basic ecommerce
- **G** Advanced ecommerce
- **H** Completing tasks
- **I** Page layouts
- **J** Search
- **K** Page-level navigation
- **L** Speed
- **M** The mobile web

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**PROCESS FUNNEL (H1)**

- Problem: Need a way to help people complete highly specific stepwise tasks
  - Ex. Create a new account
  - Ex. Fill out survey forms
  - Ex. Check out

**PROCESS FUNNEL (H1)**

- What’s different?
  - No tab rows
  - No impulse buys
  - Only navigation on page takes you to next step

**PROCESS FUNNEL (H1)**

- What’s the same?
  - Logo, layout, color, fonts

- Problem: What if users need extra help?
Patterns Support Creativity

- Patterns come from successful examples
  - sites that are so successful that lots of users are familiar with their paradigms (e.g., Yahoo)
  - interaction techniques/metaphors that work well across many sites (e.g., shopping carts)
- Not too general & not too specific
  - you need to specialize to your needs
- Patterns let you focus on the hard, unique problems to your design situation
  - every real design will have many of these

Patterns Offer the Best of Principles, Guidelines, & Templates

- Patterns help you get the details right, without over-constraining your solution
  - unlike principles, patterns not too general, so will apply to your situation
  - unlike guidelines, patterns discuss tradeoffs, show good examples, & tie to other patterns
  - unlike style guides, patterns not too specific, so can still be specialized
  - unlike templates, patterns illustrate flows among different pages
- Patterns can serve as documentation for team-oriented environments
Format of Web Design Patterns

- Pattern Name and Number
- Exemplar
- Background
- Problem
- Forces
- Solution
- Solution Diagram
- Related Patterns

Example of How to Use Patterns

Sarah is designer on e-commerce site selling custom t-shirts to businesses
- Her team notices drop-off in checkout process (abandoned shopping carts)

She turns to design patterns
- Looks to Pattern Group F – Basic E-Commerce
  - QUICK FLOW CHECKOUT (F1) catches her eye
- Looks to references
  - PERSONAL E-COMMERCE (A1) – skims & sees too high level for current issue
  - SHOPPING CART (F3) – looks promising, but not now
  - PROCESS FUNNEL (H1) – how to keep people on task – exactly what her team needs!

Example of How to Use Patterns

Sarah uses PROCESS FUNNEL (H1) to find flaws & redesign checkout process
- e.g., notices current checkout is heavy with text instructions & many links that leave the page

Using PROCESS FUNNEL (H1), sketches 3 new designs
- Gets feedback on new designs from team
- Iterates to produce 2 designs
- Performs a quick 1 day evaluation w/ 5 users
  - visits them at work & has them use old design
    - anticipated many of the problems, but notes a few new ones
  - next she shows new design & has user describe where each link will go & asks whether content makes sense
  - uses the results to iterate again & present to team

Example of How to Use Patterns

PROCESS FUNNEL (H1)
- (A1) E-Commerce
- (A10) Web Apps
- (A11) Intranets
- (K1) Navigation Bars
- (K2) Tab Rows
- (K3) Action Buttons
- (K4) High-Viz Action Buttons
- (K5) Preventing Errors
- (K12) Meaningful Error Messages
MEANINGFUL ERROR MESSAGES (K13)

• Problem: When customers make mistakes, they need to be informed of the problem and how to recover
• Solution
  – Clear statement of problem
  – Explain how to recover
  – Position near the problem

Clear error message?  
– two messages at top
– Explains how to recover?  
– only implies it is missing required information
– Positioned near the problem?  
– error messages far
  – required info differs in green/red -> problem for users w/ color deficiency

MEANINGFUL ERROR MESSAGES (K13) Solution Diagram
Web Design Process

Patterns in Exploration Phase

- Use Exploration-level patterns to design overall structure
  - different choices will give radically different designs
- For example, how to organize information
  - HIERARCHICAL ORGANIZATION (B3)
  - TASK-BASED ORGANIZATION (B4)
  - ALPHABETICAL ORGANIZATION (B5)

Patterns in Exploration Phase

TASK-BASED ORGANIZATION (B4): Link the completion of one group of tasks to the beginning of the next related task(s)

Design Exploration Example

- John given the task of designing a new subsite for showing maps to businesses
  - listings found by typing in address
  - key feature: show nearby businesses
- John comes up with two design sketches
  - Design #1 uses ALPHABETICAL ORGANIZATION (B5) for list of nearby businesses
  - Design #2 uses TASK-BASED ORGANIZATION (B4) for list of related nearby businesses

Design Exploration Example

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Design #1
ALPHABETICAL ORGANIZATION (B5)

Design #2
TASK-BASED ORGANIZATION (B4)
Evaluating Which Design to Choose

- Low-fidelity Usability Test
  - sketches the rest of the key screens on paper
  - brings in 5 participants to his office
  - asks each to carry out 3 tasks while John’s colleague Sam “plays computer”
  - John observes how they perform

- Tasks
  1) look up 1645 Solano Ave., Berkeley CA
  2) look up 1700 California Ave, San Francisco CA & find Tadich Grill
  3) look up 2106 N 55th St, Seattle WA & find a Sushi restaurant nearby

Evaluating Which Design to Choose

- Results with Design #1 (Alphabetical)
  - Task 1: look up 1645 Solano Ave
    - no difficulties encountered – warm-up task!
  - Task 2: look up 1700 California & find Tadich Grill
    - several users didn’t notice that the list of nearby businesses was scrollable (due to paper affordances?)
    - those that scrolled took awhile to find in list of over 500
  - Task 3: look up 2106 55th St & find nearby Sushi restaurant
    - 3 users only picked restaurants that had “restaurant” in the name & thus couldn’t find “Kisaku”

Evaluating Which Design to Choose

- Results with Design #2 (Task-based)
  - Task 1: look up 1645 Solano Ave
    - no difficulties encountered – warm-up task!
  - Task 2: look up 1700 California & find Tadich Grill
    - 1 user took awhile to figure out that Tadich Grill was a restaurant & to click on the “Restaurants” link
    - all others found it in 2 clicks (Restaurants->Tadich Grill)
  - Task 3: look up 2106 55th St & find nearby Sushi restaurant
    - 3 found “Kisaku” in 2 clicks
    - 2 others asked for a listing of Japanese restaurants

Evaluating Which Design to Choose

- General comments
  - 2 users said they often want to email maps to friends who they will be meeting (task-based)
  - 3 users wanted driving directions (task-based)

→ TASK-BASED ORGANIZATION (B4) worked better, but still had some minor problems
Summary

- Lots of issues involved in designing web sites
- Design patterns one way of capturing good design knowledge

Further Reading

Books on Web Design


Websites on Web Design

- UsableWeb.com, links to other usability sites
- Usability.gov, for building accessible websites
- User Interface Engineering, at [http://www.uie.com](http://www.uie.com)
Next Time

• Low-fi Prototyping
• Read
  – Prototyping for Little Fingers by Rettig (online)