dt + UX DESIGN THINKING FOR USER EXPERIENCE DESIGN + PROTOTYPING + EVALUATION

Design Patterns

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Computer Science Department
Stanford University

CS 147
Autumn 2018
November 28, 2018

Hall of Fame or Shame?

Southwest Airlines Home Gate
The home of Southwest Airlines on the World Wide Web

Direct translations

- software telephony solution where users dial a number by clicking on a simulated keypad
- airline web site that simulates a ticket counter

Hall of Shame!

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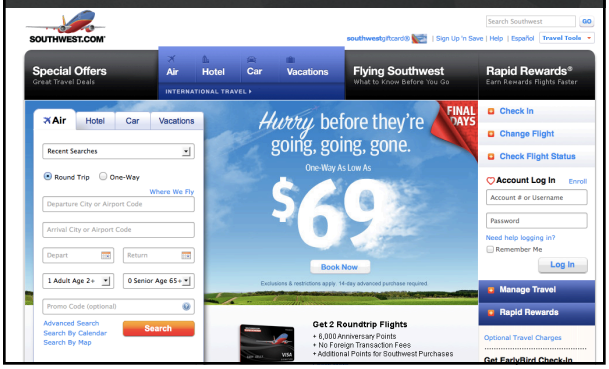
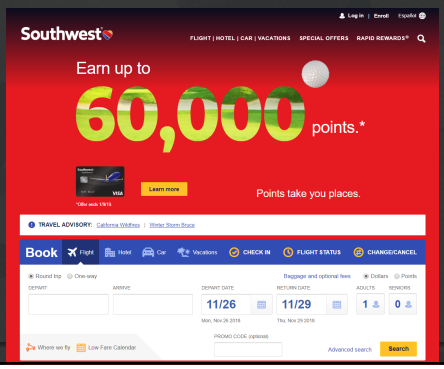
- software telephony solution where users dial a number by clicking on a simulated keypad
- airline web site that simulates a ticket counter

Misused Metaphors!

Improved southwest.com



Improved southwest.com



Hall of Fame or Shame?

Hall of Fame/Shame!

Great at opening up gaming to a wider audience but…

the main thing that differentiated the product (movement in gaming) resulted in it being thrown at windows/TVs

- slippery plastic hard to hold onto. Later designs added rubber case & strap
- lack of a joystick was initial problem resulting in a second controller

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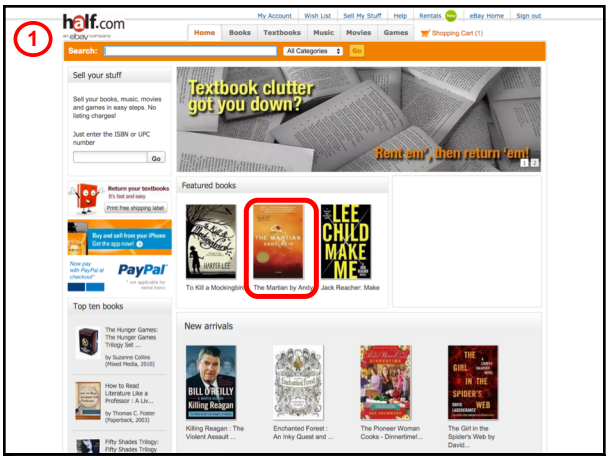
Outline

- Detailed Design Example
- Web Design Patterns
- Team Break
- Patterns in the Design Exploration Phase

1



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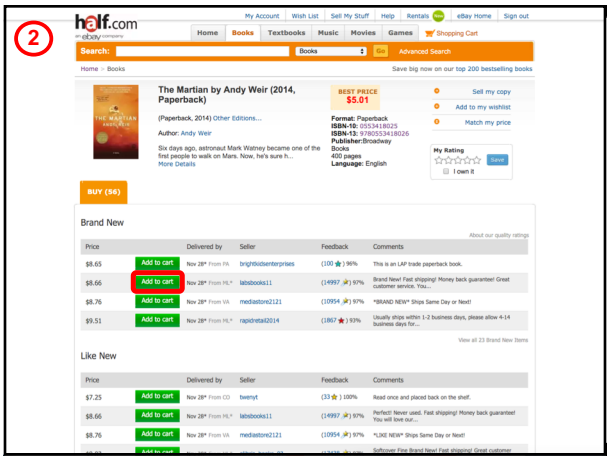

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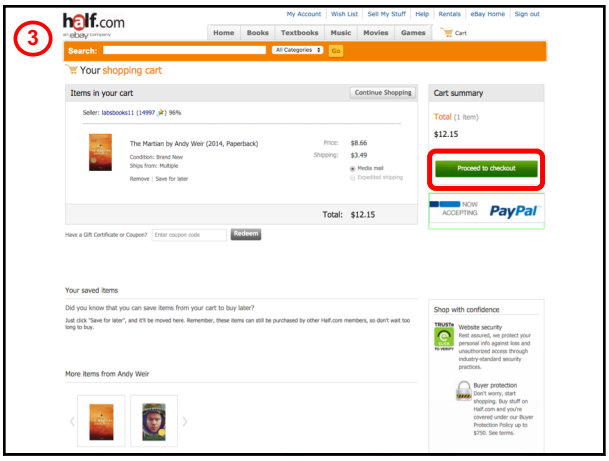
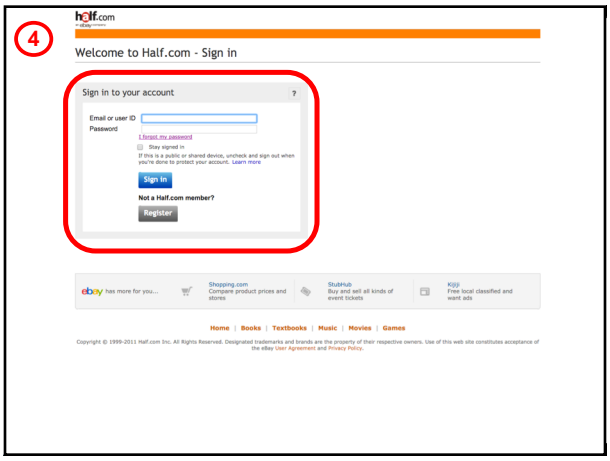
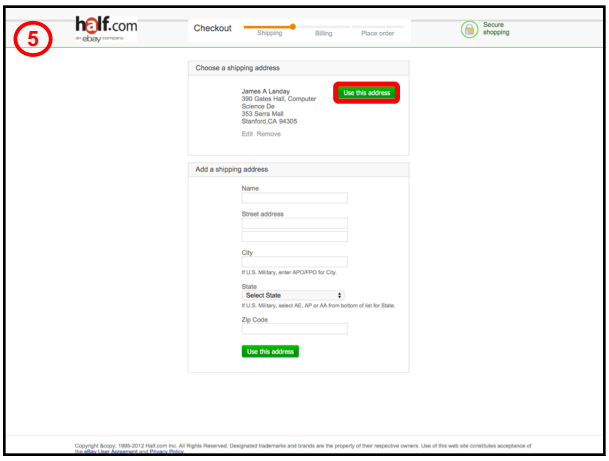
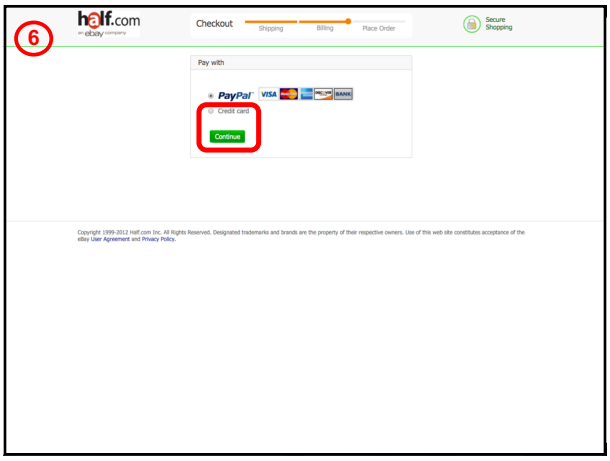
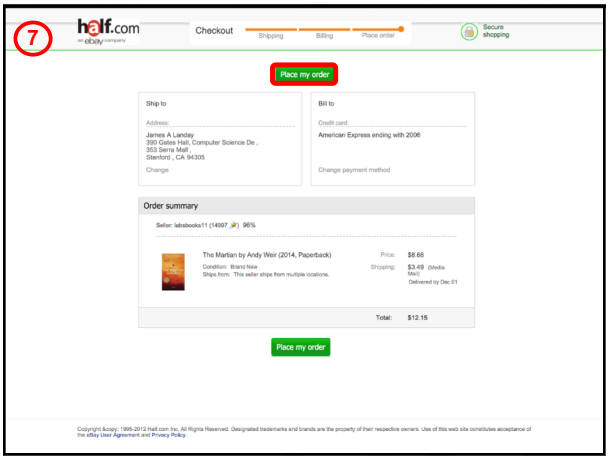




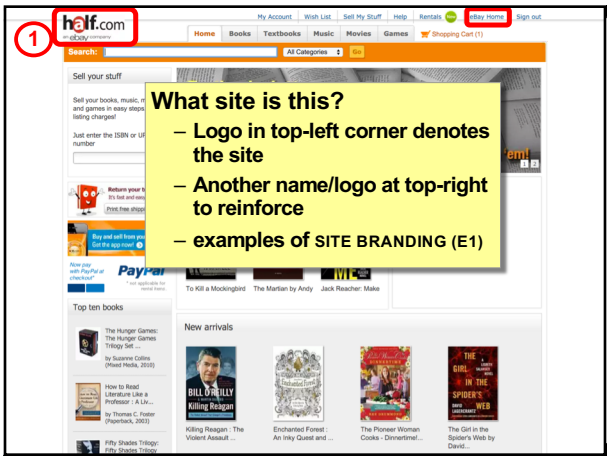


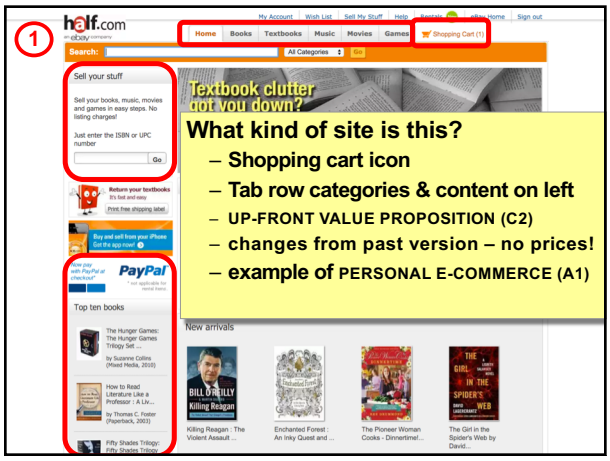


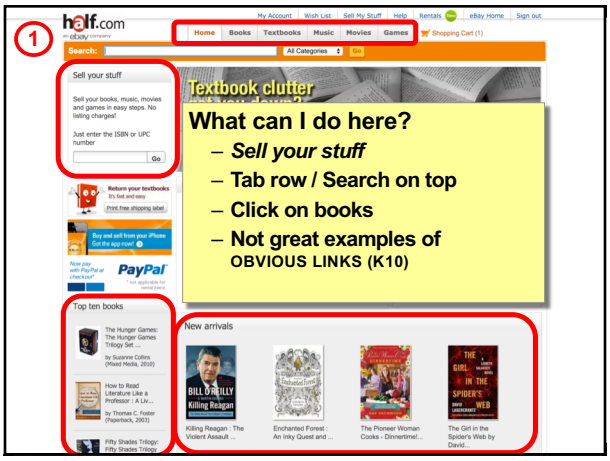


Basic Web Design

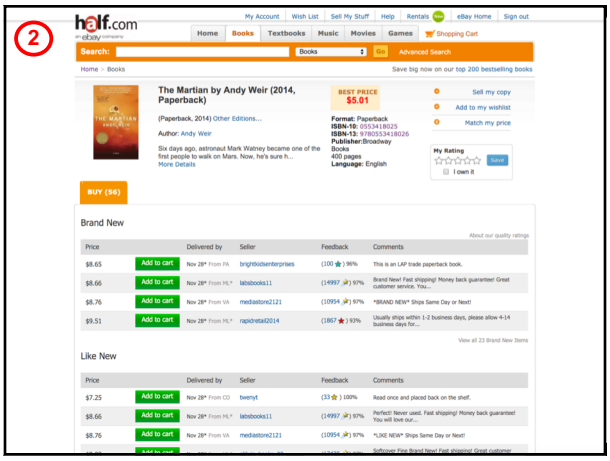
- Let's take a closer look page by page


1
What site is this?
– Logo in top-left corner denotes the site
– Another name/logo at top-right to reinforce
– examples of SITE BRANDING (E1)


1
What kind of site is this?
– Shopping cart icon
– Tab row categories & content on left
– UP-FRONT VALUE PROPOSITION (C2)
– changes from past version – no prices!
– example of PERSONAL E-COMMERCE (A1)


1
What can I do here?
– Sell your stuff
– Tab row / Search on top
– Click on books
– Not great examples of OBVIOUS LINKS (K10)

1
• Most important info visible without scrolling
• ABOVE THE FOLD (I2)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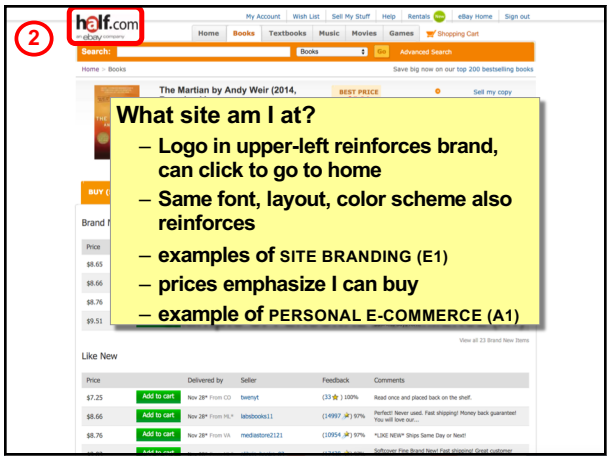
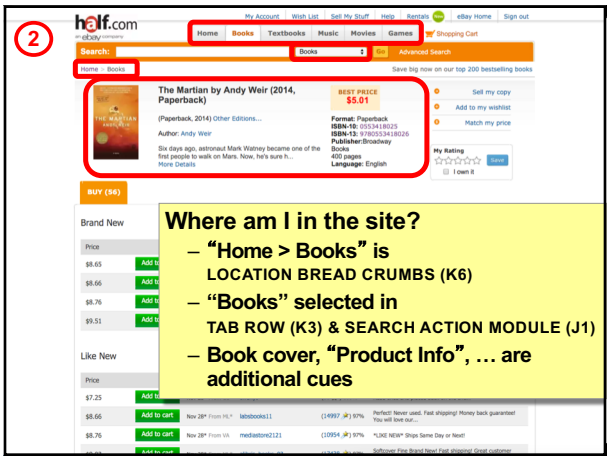
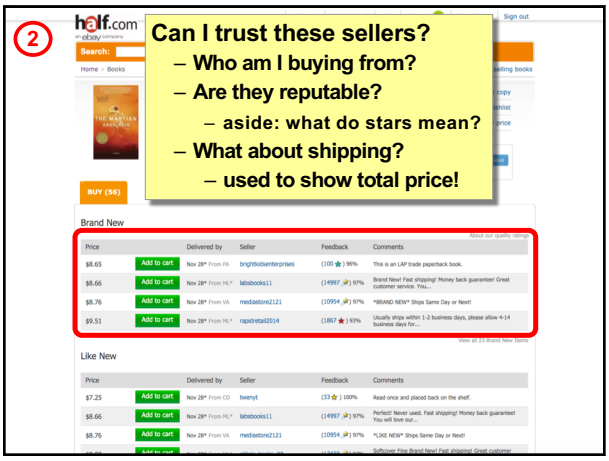
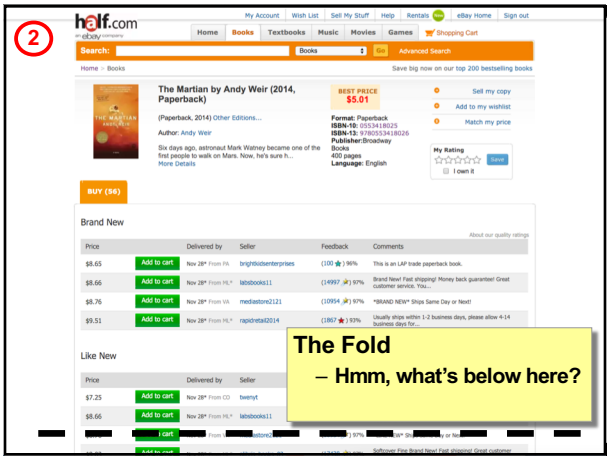
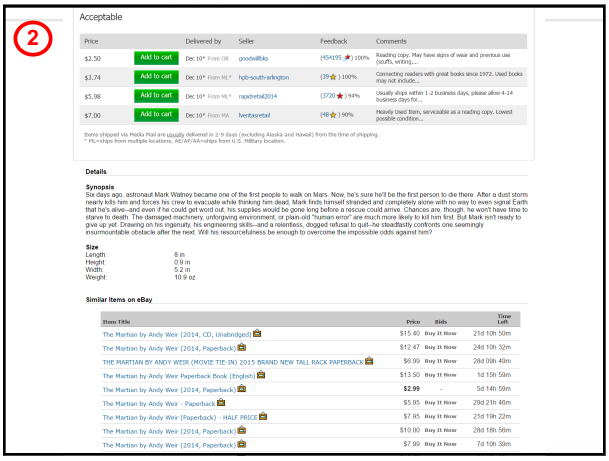

2
What site am I at?
– Logo in upper-left reinforces brand, can click to go to home
– Same font, layout, color scheme also reinforces
– examples of SITE BRANDING (E1)
– prices emphasize I can buy
– example of PERSONAL E-COMMERCE (A1)


2
Where am I in the site?
– "Home > Books" is
LOCATION BREAD CRUMBS (K6)
– "Books" selected in
TAB ROW (K3) & SEARCH ACTION MODULE (J1)
– Book cover, "Product Info", … are additional cues


2
Can I trust these sellers?
– Who am I buying from?
– Are they reputable?
– aside: what do stars mean?
– What about shipping?
– used to show total price!


2
The Fold
– Hmm, what's below here?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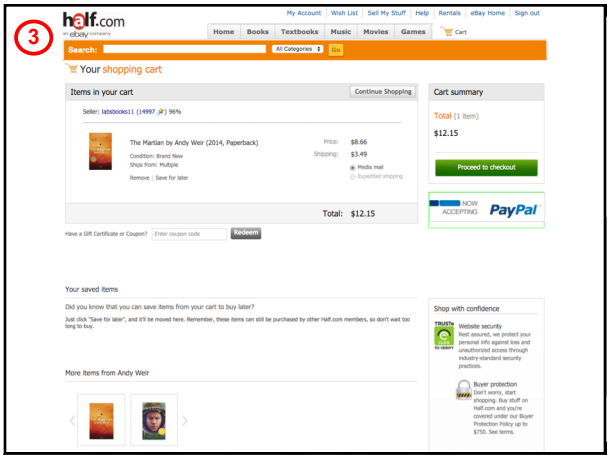
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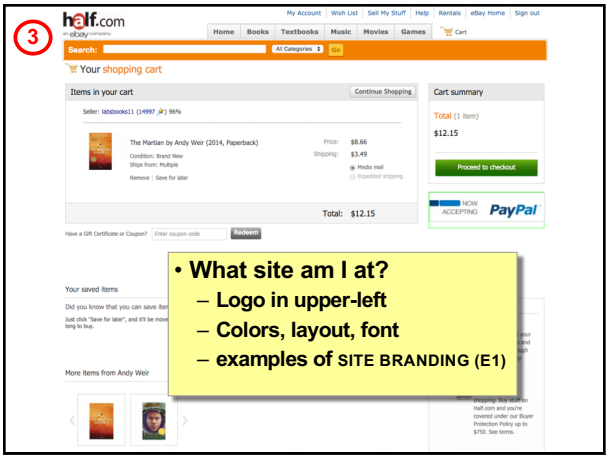
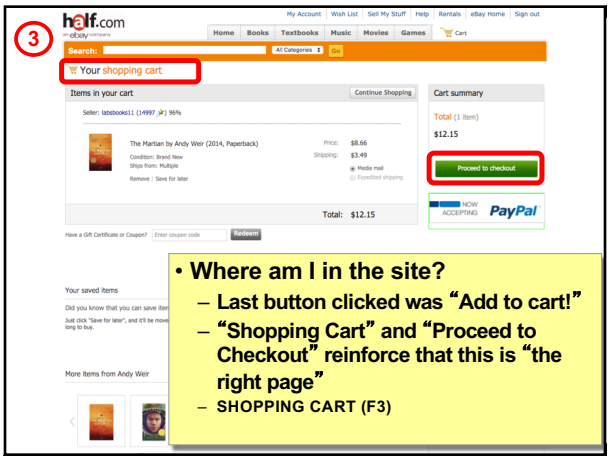
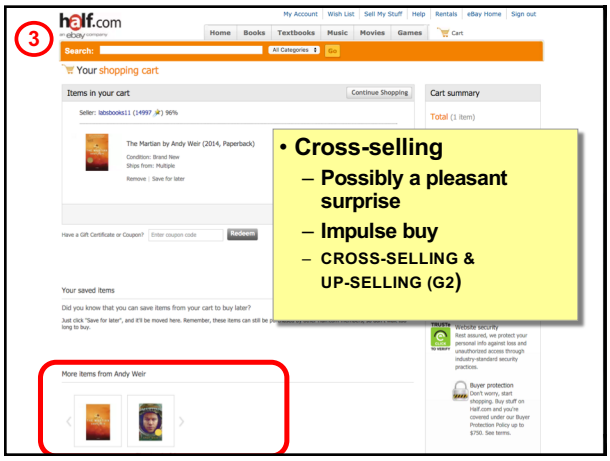
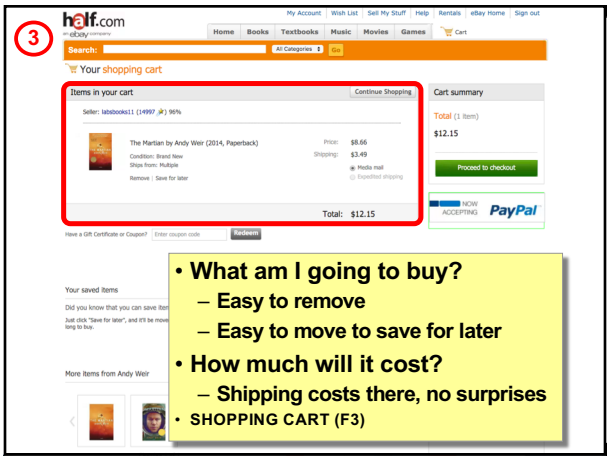
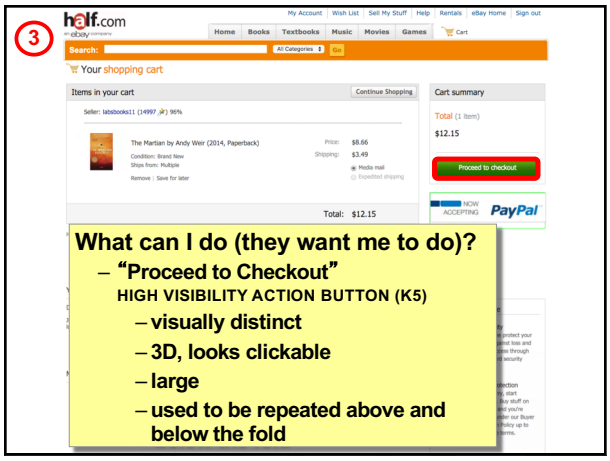
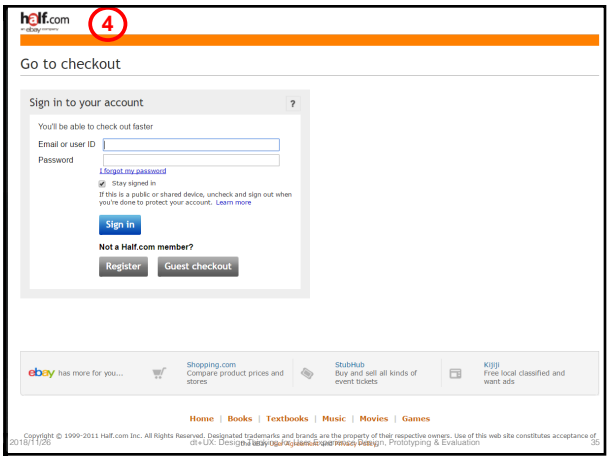

3
• What site am I at?
– Logo in upper-left
– Colors, layout, font
– examples of SITE BRANDING (E1)

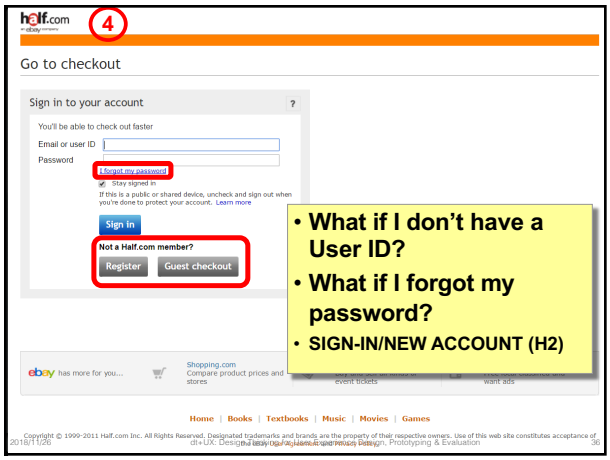

3
• Where am I in the site?
– Last button clicked was "Add to cart!"
– "Shopping Cart" and "Proceed to Checkout" reinforce that this is "the right page"
– SHOPPING CART (F3)

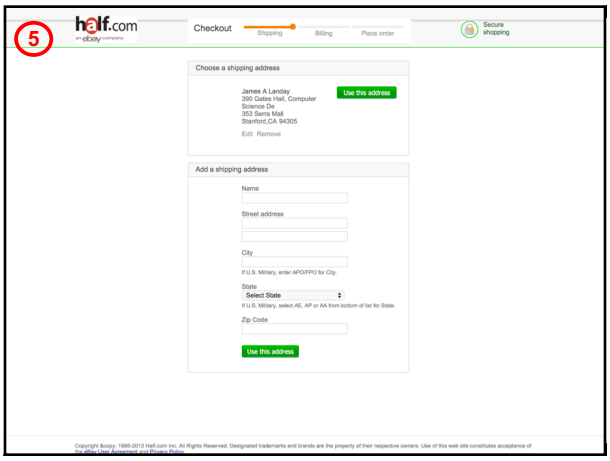

3
• Cross-selling
– Possibly a pleasant surprise
– Impulse buy
– CROSS-SELLING & UP-SELLING (G2)

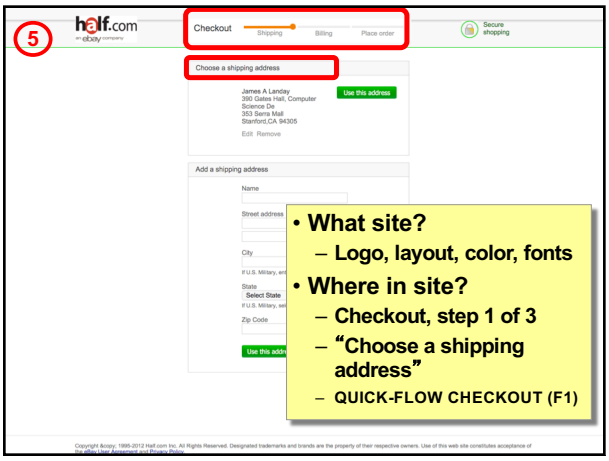

3
• What am I going to buy?
– Easy to remove
– Easy to move to save for later
• How much will it cost?
– Shipping costs there, no surprises
• SHOPPING CART (F3)

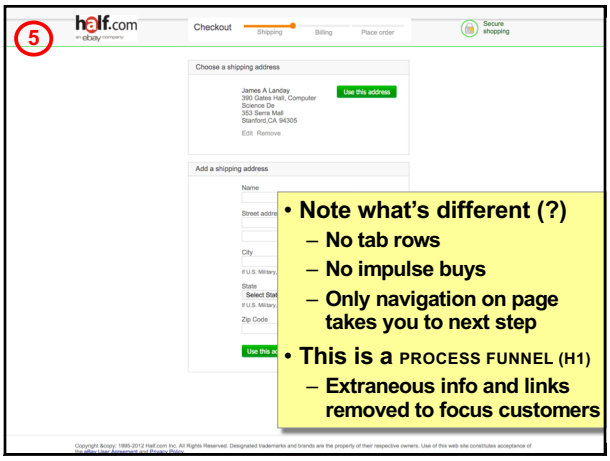

3
What can I do (they want me to do)?
– "Proceed to Checkout"
HIGH VISIBILITY ACTION BUTTON (K5)
– visually distinct
– 3D, looks clickable
– large
– used to be repeated above and below the fold

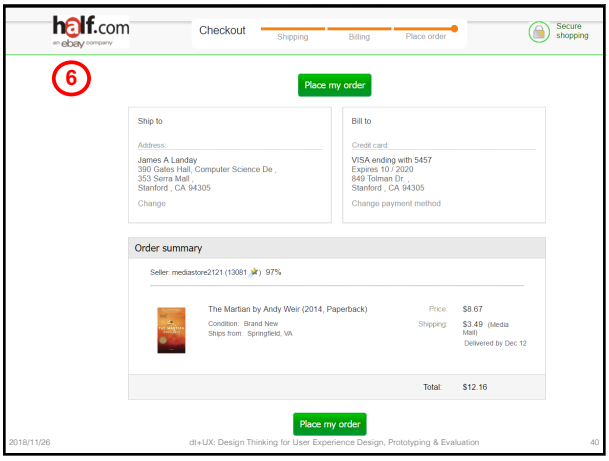

4
Go to checkout
Sign in to your account
Not a Half.com member?
Register
Guest checkout

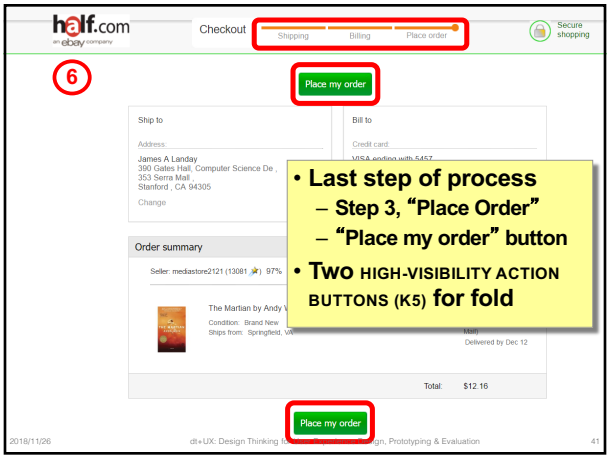

4
Go to checkout
Sign in to your account
Not a Half.com member?
Register
Guest checkout
• What if I don't have a User ID?
• What if I forgot my password?
• SIGN-IN/NEW ACCOUNT (H2)

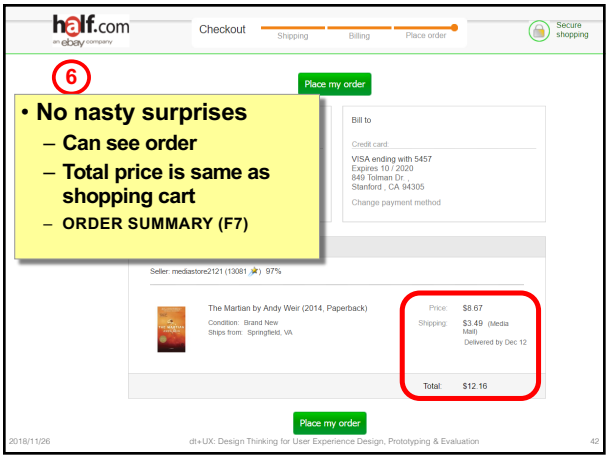

5
half.com
Checkout
Shipping
Billing
Place order
Secure shopping
Choose a shipping address
Use this address
Add a shipping address

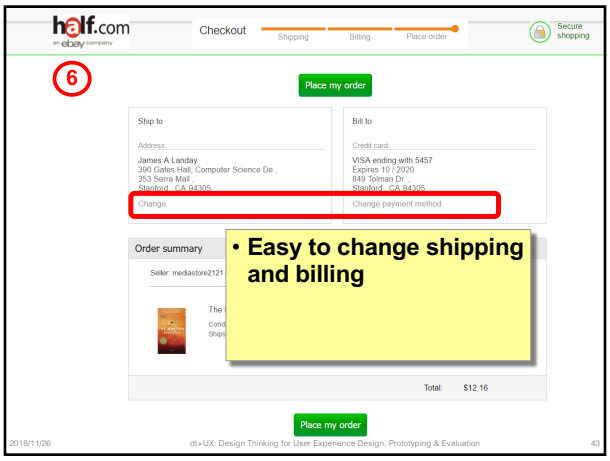

5
half.com
Checkout
Shipping
Billing
Place order
Secure shopping
Choose a shipping address
Use this address
Add a shipping address
• What site?
– Logo, layout, color, fonts
• Where in site?
– Checkout, step 1 of 3
– "Choose a shipping address"
– QUICK-FLOW CHECKOUT (F1)


5
half.com
Checkout
Shipping
Billing
Place order
Secure shopping
Choose a shipping address
Use this address
Add a shipping address
• 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 customers


6
half.com
Checkout
Shipping
Billing
Place order
Secure shopping
Place my order
Ship to
Bill to
Order summary
Total: $12.16
Place my order


6
half.com
Checkout
Shipping
Billing
Place order
Secure shopping
Place my order
Ship to
Bill to
Order summary
Total: $12.16
Place my order
• Last step of process
– Step 3, "Place Order"
– "Place my order" button
• Two HIGH-VISIBILITY ACTION BUTTONS (K5) for fold


6
half.com
Checkout
Shipping
Billing
Place order
Secure shopping
Place my order
Bill to
Order summary
Total: $12.16
Place my order
• No nasty surprises
– Can see order
– Total price is same as shopping cart
– ORDER SUMMARY (F7)

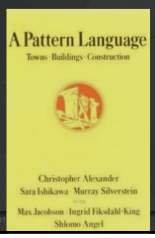


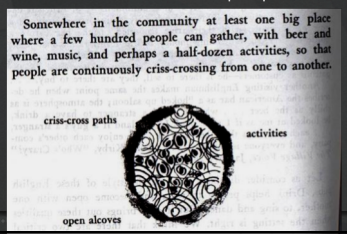
Design = Solutions

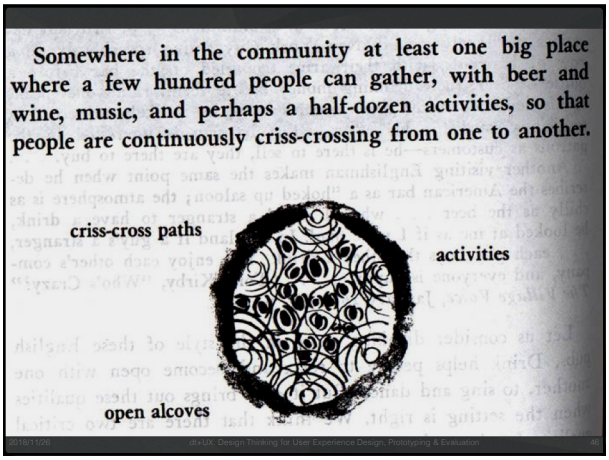
- Design is about finding solutions
- Unfortunately, designers often reinvent
  - Hard to know *how* things were done before
  - *Why* things were done a certain way
  - *How* to reuse solutions

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?



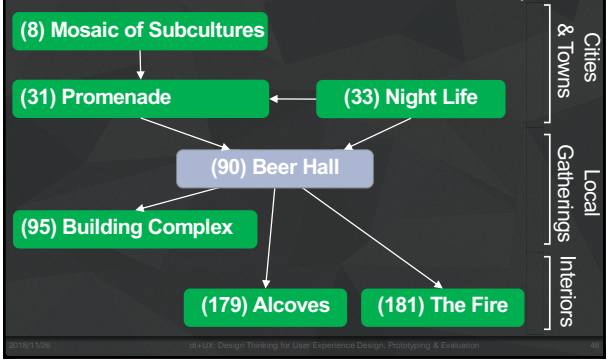




Using Design Patterns

- 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… ALCOVES

A Web of Design Patterns

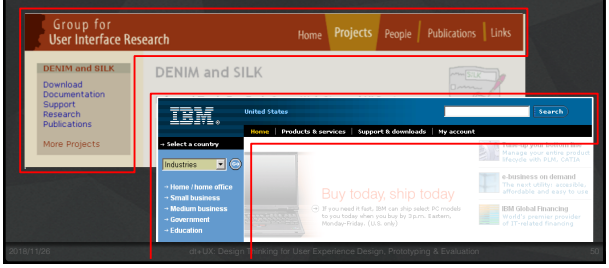


Web Design Patterns

- Now used in UI 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…

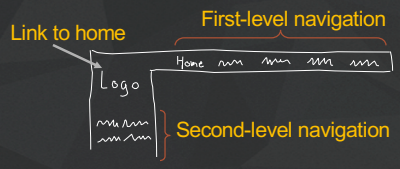
NAVIGATION BAR (K2)

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

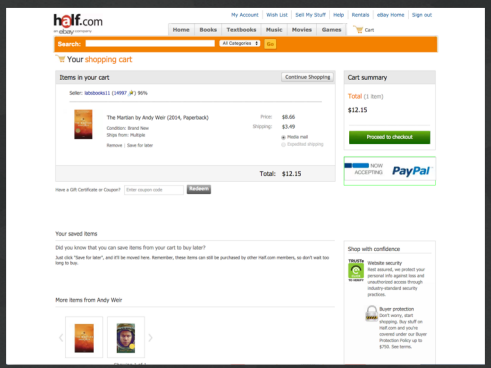
Our patterns organized by group

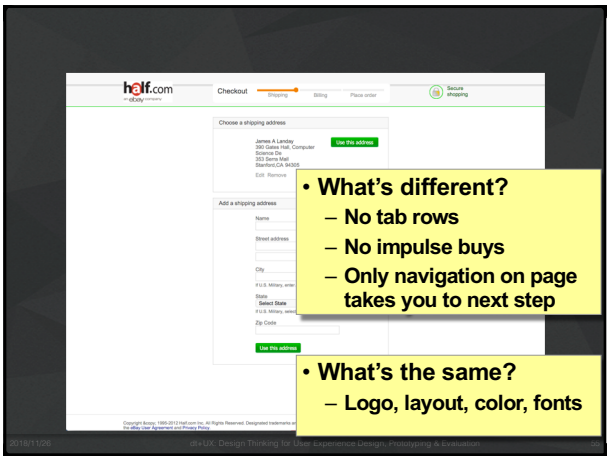
- A Site genres
- B Navigational framework
- C Home page
- D Content management
- E Trust and credibility
- F Basic ecommerce
- G Advanced ecommerce
- H Completing tasks
- I Page layouts
- J Search
- K Page-level navigation
- L Speed
- M The mobile web

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

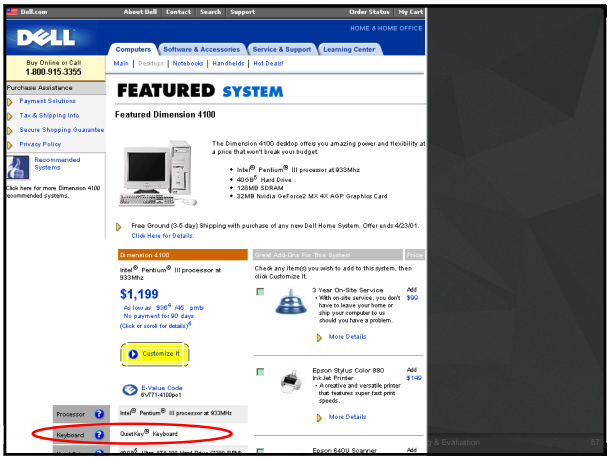
PROCESS FUNNEL (H1)



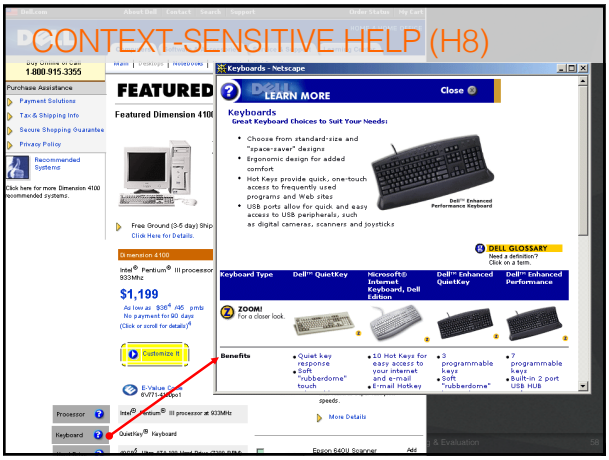


PROCESS FUNNEL (H1)

Problem: What if users need extra help?

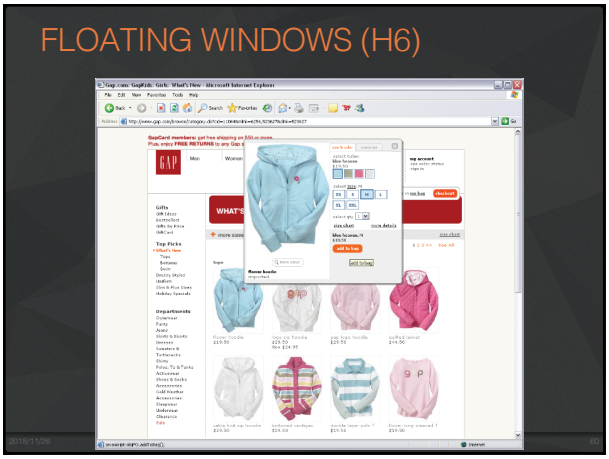


CONTEXT-SENSITIVE HELP (H8)

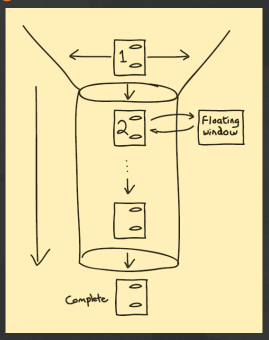


FLOATING WINDOWS (H6)

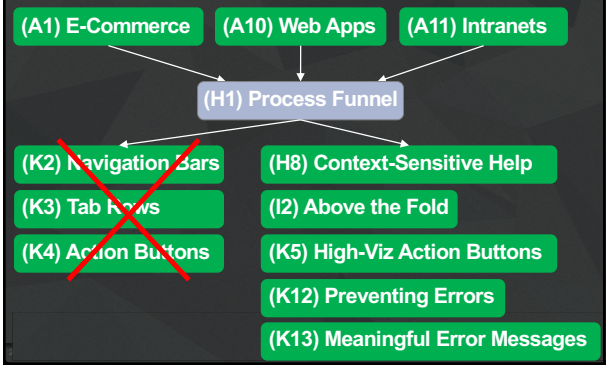
FLOATING WINDOWS (H6)



PROCESS FUNNEL (H1)
Solution Diagram



PROCESS FUNNEL (H1)
Related Patterns



Patterns Support Creativity

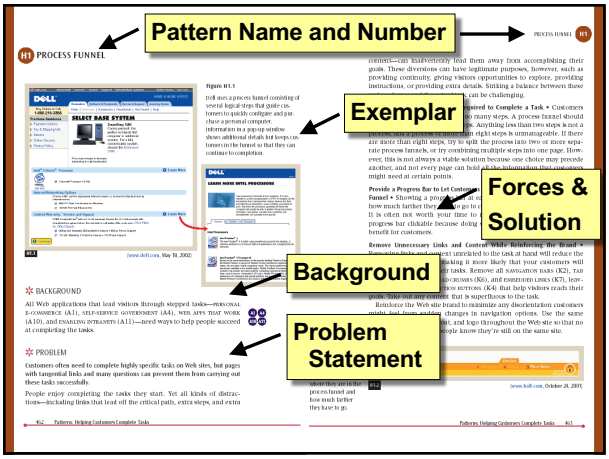
- Patterns come from successful examples
  - sites that are so successful that lots of users are familiar with their paradigms (e.g., Google, Amazon, Yahoo, Facebook…)
  - interaction techniques/metaphors that work well across many sites (e.g., shopping carts)
- Not too general & not too specific
  - 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

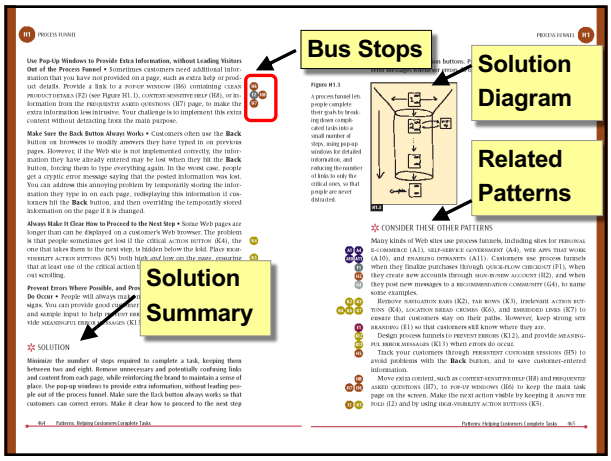
Patterns Offer the Best of Principles, Guidelines & Templates

- Patterns help you get the details right, without over-constraining your solution
  - unlike principles, patterns not too general, so can see how to 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 page 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





Administrivia

- Final assignments online later today
- Project Questions?
- Project Fair Questions?
- Exam should be graded by tonight

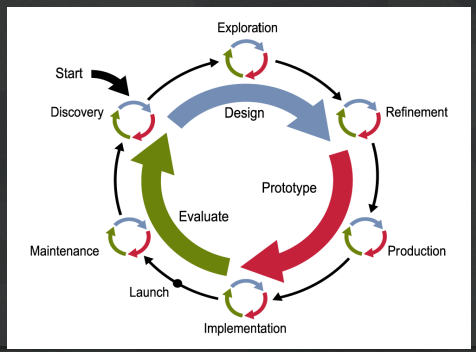
Quiz

https://goo.gl/forms/oQ2cEv86VjwAcpZ42

TEAM BREAK (20 MINUTES)

WORK ON MIDWAY MILESTONE PRESENTATIONS

Web Design Process

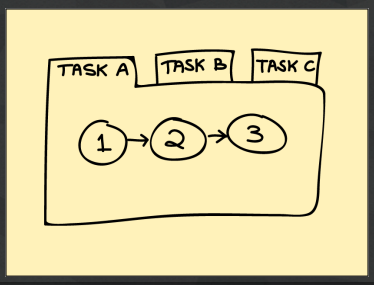


Patterns in Exploration Phase

- 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

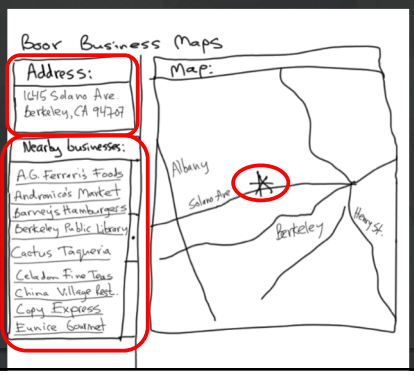
TASK-BASED ORGANIZATION (B4): Link the completion of one group of tasks to the beginning of the next related task(s)



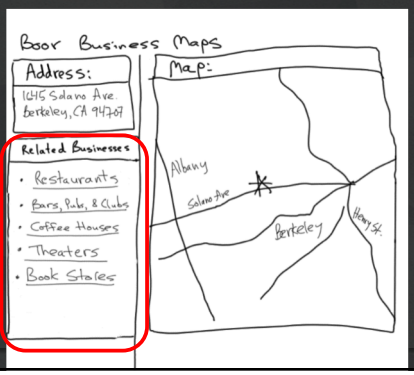
Design Exploration Example

- 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 all nearby businesses
  - Design #2 uses TASK-BASED ORGANIZATION (B4) for list of related nearby businesses

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

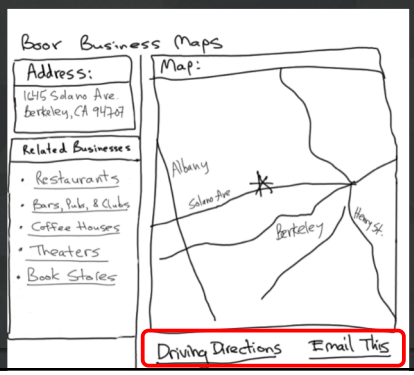
- Results with Design #2 (Task-based)
  - Task 1: look up 1645 Solano Ave
    - no difficulties encountered – warm-up task!
  - Task 2: look up 1700 California & find Tadich Grill
    - 1 user took awhile to figure out that Tadich Grill was a restaurant & to click on the "Restaurants" link
    - all 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

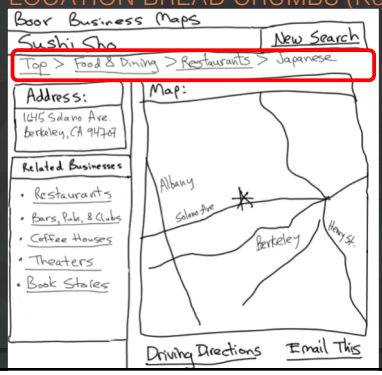
- General comments
  - 2 users said they often want to email/SMS maps to friends who they will be meeting (task-based)
  - 3 users wanted driving directions (task-based)

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

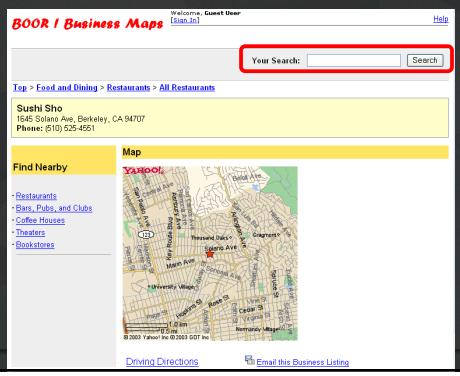
Design #2 – Revision 1
Adding More Related Tasks



Design #2 – Revision 2
Adding HIERARCHICAL ORGANIZATION (B3) & LOCATION BREAD CRUMBS (K6)



Design #2 – Revision 3 Hi-Fi Prototype
Adding SEARCH ACTION MODULE (J1)



Summary

- Lots of issues involved in designing compelling, usable web sites
- Design patterns are one way of capturing good design knowledge
  - generative (help you create new designs)
  - consider trade-offs
  - concrete examples of successful uses
  - a networked language that works together

Further Reading
Books on Web Design

- *The Design of Sites*. Doug Van Duyne, James Landay, Jason Hong. Addison-Wesley. 2nd edition. 2007.
- *Information Architecture for the Web and Beyond*. Louis Rosenfeld, Peter Morville, Jorge Arango. O'Reilly. 4th edition. 2015
- *Don't Make Me Think!, Revisited.* Steven Krug. Que. 3rd edition. 2014.

Further Reading
Websites on Web Design

- UsableWeb.com, links to other usability sites
- Usability.gov, for building accessible websites & more
- User Interface Engineering, at http://www.uie.com
- Mark Hurst's creativegood.com
- Jakob Nielsen's www.nngroup.com

Next Time

- Mon
  - Team Work on Project
- Wed
  - Smart Interfaces for Global Grand Challenges