Design Languages and Experience Design

SWE 432, Fall 2018
Web Application Development
Review: Fitt’s law

• Time required to move to a target decreases with target size & increases with distance to the target
• Movements typical consist of
  • one large quick movement to target (ballistic movement)
  • fine-adjustment movement (homing movements)
• Homing movements generally responsible for most of movement time & errors
• Applies to rapid pointing movements, not slow continuous movements
### Review: Design Details - Marking Menus

<table>
<thead>
<tr>
<th>Principle</th>
<th>Refinement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintain visual context</td>
<td>Display only labels</td>
</tr>
<tr>
<td></td>
<td>Ignore pie wedges</td>
</tr>
<tr>
<td></td>
<td>Make labels symmetric</td>
</tr>
<tr>
<td>Hide unnecessary information</td>
<td>Hide parent menus</td>
</tr>
<tr>
<td>Support skill development using graphical feedback</td>
<td>Use eight item menus</td>
</tr>
<tr>
<td></td>
<td>Use compass star around menu center</td>
</tr>
<tr>
<td></td>
<td>Show idealized marks</td>
</tr>
</tbody>
</table>

Tapia & Kurtenbach ‘95
Review: Direct Manipulation
Today

• What (exactly) is, and how can one make effective color design choices?
• What is a design language?
• What are design values, and how do they influence the design process?
Color
What is color?

- **Hue**: What we usually see as color
- **Luminance**: Amount of light entering eye
- **Brightness**: Perceived amount of light
  - (blue appears brighter than white)
- **Saturation**: Purity of color
Color combinations

- Analogous color combinations - adjacent in color wheel
- Triadic color combinations - at corner of wheel

- Analogous: Serene, harmonious
- Triadic: Vibrant
- Complementary: High contrast, vibrant
- Quadratic: Two sets of complementary
Tools for finding color combinations

• Interactive tools can help you find color combinations
  • https://color.adobe.com/
Color & Nature
Guidelines on color use

- Number of colors - use color conservatively, limiting to ~5 colors; redundantly encode info to support color-blind
- Use appropriate color combinations
- Use warmer colors for foreground & colorer colors for background
- Use saturated colors to draw attention & for excited
- Use desaturated, dark colors for serious & professional
Guidelines on color use

• Avoid highly saturated opponent colors at the same time
• Older users need more brightness
• Do not require color discrimination in small areas
• Use color for relative differences, but not numeric information
• Use greater intensity for hues that indicate larger amounts
Color can be iconic

PANTONE 1837
Design Language
Counter Example
Design language

• Many, **many** choices about visual variables and syntax of composition
  • How do you ensure choices are made consistently across web app?
• Solution: design language
  • Describes how to express ideas and concepts in the interface
  • May be communicated through Human Interface Guideline documentation
  • (Example of consistency and standards)
Example: Elements, Google 2004

New York Times - all 633 related »

www.cmu.edu/ Oct 1, 1995 by Andy Harper

4,285,199,774 web p... 16 minutes ago

fluff

Graduating? Cor more » at CMU Inbox (2) Compose Mail

New Features

GMU SWE 432 Fall 2018

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Example: Syntax, Google 2004
Examples: Google 2016
Examples: Google 2016
Examples: IBM

Product Analytics

New Onboarding Statistics
- Completion time (Avg): 38 days
- Error rate (Avg): 18%
- Type of industry: Automotive
- Client feedback score (Avg): 3.5 - 4
- Busiest month: May

New Onboarding Statistics
- Rejected: 21
- Completed: 186
- Pending: 54
- Active: 315
- Total: 576

Service Industry Breakdown
- Automotive: 42%
- Travel: 23%
- Healthcare: 20%
- Retail: 15%
- Total: 100%

Chart showing monthly updates with orange and black dots.
Examples: IBM
# Examples: IBM

## Application data

<table>
<thead>
<tr>
<th>Title</th>
<th>Value</th>
<th>Date</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imperial</td>
<td>true</td>
<td>9456234</td>
<td>21. Feb 2014</td>
</tr>
<tr>
<td>Hard</td>
<td>false</td>
<td>987345</td>
<td>21. Feb 2014</td>
</tr>
<tr>
<td>Cider</td>
<td>false</td>
<td>42567</td>
<td>21. Feb 2014</td>
</tr>
<tr>
<td>Anaerobic</td>
<td>true</td>
<td>324543</td>
<td>21. Feb 2014</td>
</tr>
<tr>
<td>Cold filter</td>
<td>false</td>
<td>432456</td>
<td>20. Feb 2014</td>
</tr>
<tr>
<td>Barrel head</td>
<td>true</td>
<td>324539</td>
<td>20. Feb 2014</td>
</tr>
<tr>
<td>Pump wort</td>
<td>true</td>
<td>4567</td>
<td>20. Feb 2014</td>
</tr>
<tr>
<td>Dry hopping</td>
<td>false</td>
<td>84567</td>
<td>20. Feb 2014</td>
</tr>
<tr>
<td>Carbonation</td>
<td>true</td>
<td>434567</td>
<td>20. Feb 2014</td>
</tr>
<tr>
<td>Mash tun</td>
<td>false</td>
<td>9456234</td>
<td>20. Feb 2014</td>
</tr>
<tr>
<td>Bittering hops</td>
<td>true</td>
<td>987345</td>
<td>20. Feb 2014</td>
</tr>
<tr>
<td>Heat exchanger</td>
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<td>42567</td>
<td>19. Feb 2014</td>
</tr>
<tr>
<td>Lauter aerobic</td>
<td>false</td>
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<td>19. Feb 2014</td>
</tr>
<tr>
<td>Abbey soldal</td>
<td>true</td>
<td>432456</td>
<td>19. Feb 2014</td>
</tr>
<tr>
<td>Brewhouse</td>
<td>false</td>
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<td>19. Feb 2014</td>
</tr>
<tr>
<td>Brewpub adjunct</td>
<td>true</td>
<td>4567</td>
<td>19. Feb 2014</td>
</tr>
<tr>
<td>Dextrin soldal</td>
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<td>34567</td>
<td>19. Feb 2014</td>
</tr>
<tr>
<td>Aeu beer</td>
<td>false</td>
<td>434567</td>
<td>19. Feb 2014</td>
</tr>
<tr>
<td>Krug abv</td>
<td>true</td>
<td>43°</td>
<td>19. Feb 2014</td>
</tr>
</tbody>
</table>
Examples: AirBnb
Examples: AirBnb
Examples: Microsoft
Examples: Microsoft
Example: Header with text blocks layout

From: http://ranjithakumar.net/resources/webzeitgeist.pdf
Elements strongly associated with position

From: http://ranjithakumar.net/resources/webzeitgeist.pdf
Web design languages over time

https://blog.hubspot.com/marketing/look-back-20-years-website-design#sm.00000ip14jejk1d51u53crk6cwrns
Web design languages over time
Web design languages over time
Web design languages over time
Web design languages over time

Heritage Styles Are Back

What's New
Gift Ideas
Tops
Bottoms
Accessories
View All

Classic, versatile, transformative. We're
Web design languages over time
Common visual idioms, circa 2016

- Hero images: large attractive header image
- [https://envato.com/blog/exploring-hero-image-trend-web-design/](https://envato.com/blog/exploring-hero-image-trend-web-design/)
Common visual idioms, circa 2016

- Single page designs: hero image with a navbar
- [https://envato.com/blog/exploring-hero-image-trend-web-design/](https://envato.com/blog/exploring-hero-image-trend-web-design/)
Common visual idioms, circa 2016

- Rotating image galleries (carousels)
- [https://envato.com/blog/exploring-hero-image-trend-web-design/](https://envato.com/blog/exploring-hero-image-trend-web-design/)
Why it matters

• Users will have idioms they expect to see, particularly if suggested by other related elements

• Branding: Users will see your website and have particular associations based on what it exemplifies
Goals in designing a design language

• Offer guidance and options on
  • Colors: examples of color palettes
  • Typography: justification, sizes, fonts, different heading levels
  • Organization

• Support different resolutions, devices
Design Values
Example: Information Density
Is this too much?

• If task is to show influence of Elvis Presley on subsequent bands, yes.
  • But what if task might also be to understand influences of pop soul?

• Flexibility / usability tradeoff
  • Can design more powerful flexible interfaces that trade effectiveness of a specific task for supporting a broad range of tasks

• What’s the right answer?
  • A value choice, rather than a usability question.
  • Need to know what priorities are.

• Often called **experience design** rather than usability
Discussion of course structure

• Choosing project topic vs. canned assignment?
• Project split into 11 assignments vs fewer bigger deadlines?
• Teams vs. individual assignments?
• Pacing of assignments and lectures. Topics that were too fast or too slow?
• Quizzes vs. midterm?
• Previous offerings: 10 usability lectures, 3 PHP, 12 Java Servlets lectures
  • What did you think about usability last?
  • Alternative: Backend, asynchronous programming, Usability, then frontend?