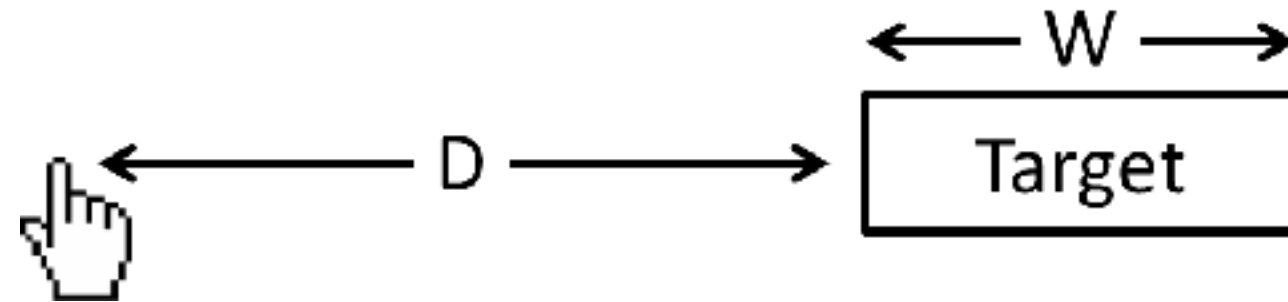


Design Languages and Experience Design

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

Principle

Maintain visual context

Hide unnecessary information

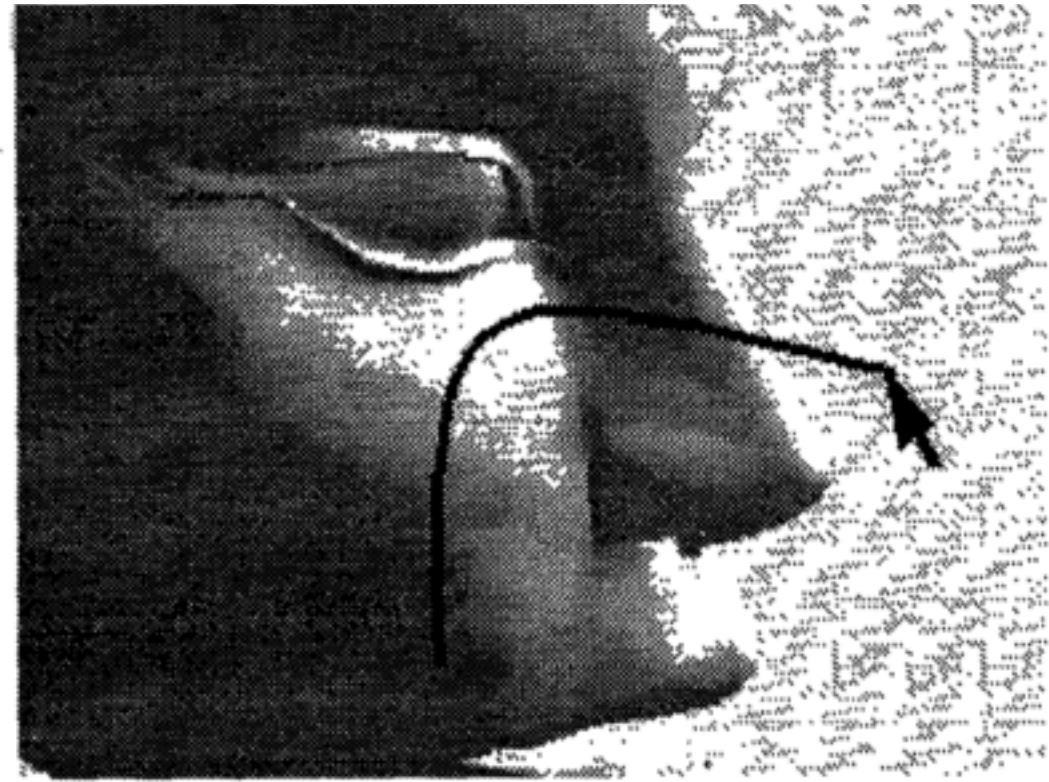
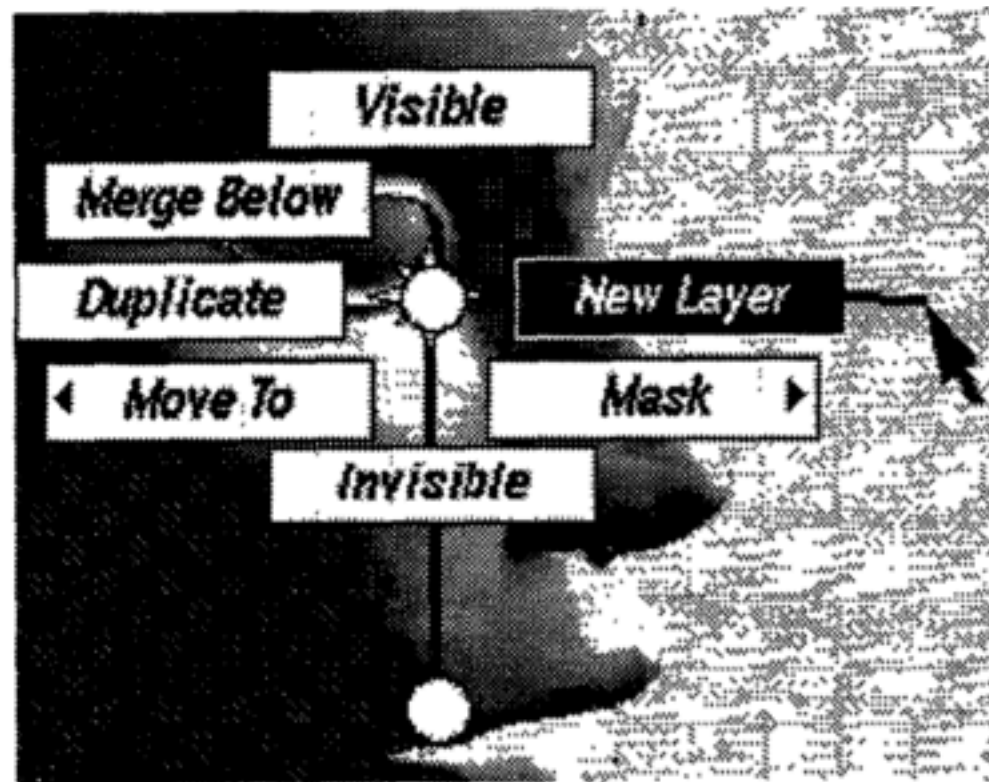
Support skill development using graphical feedback

Refinement

Display only labels
Ignore pie wedges
Make labels symmetric

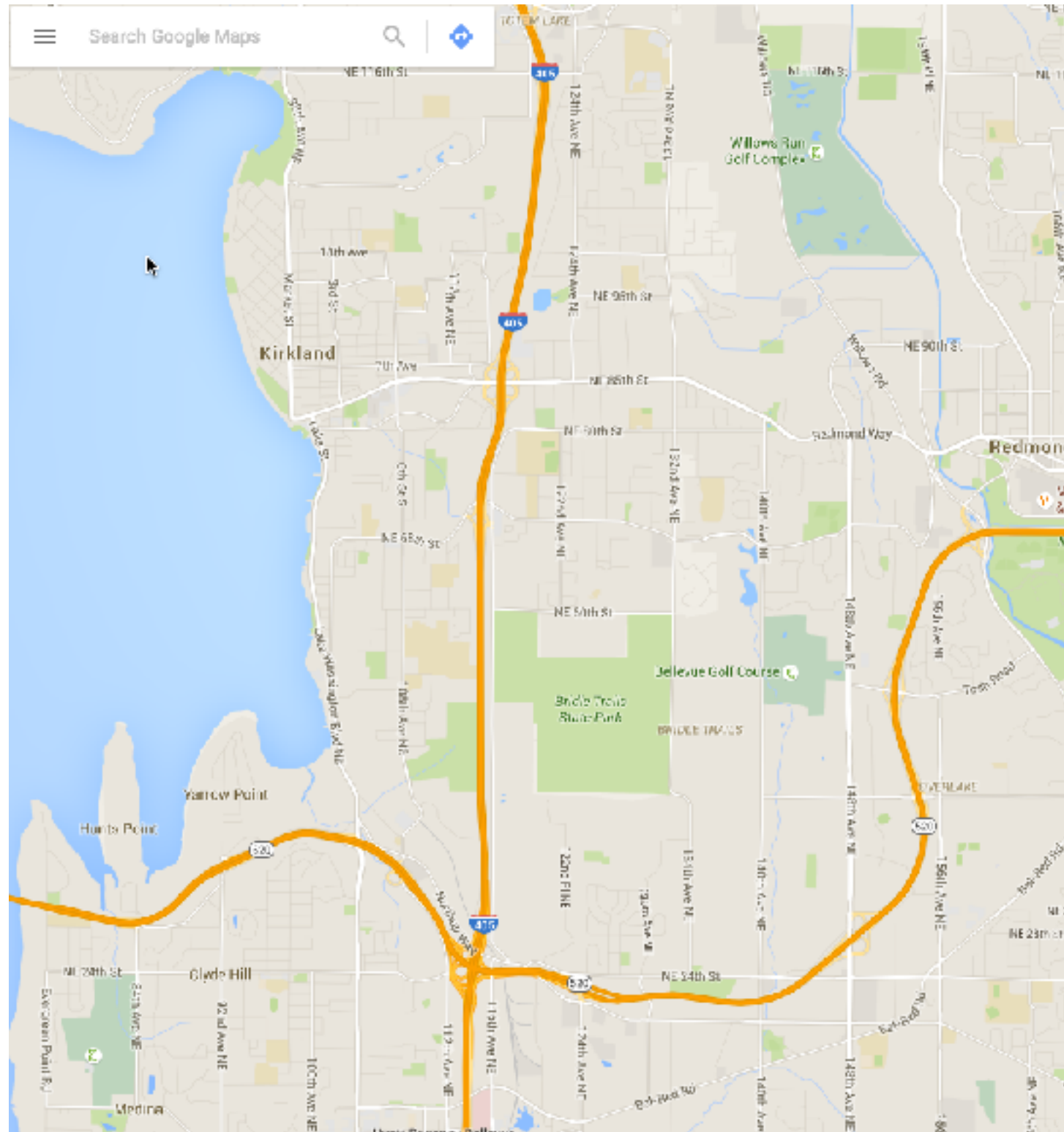
Hide parent menus

Use eight item menus
Use compass star around menu center
Show idealized marks



Tapia & Kurtenbach '95

Review: Direct Manipulation



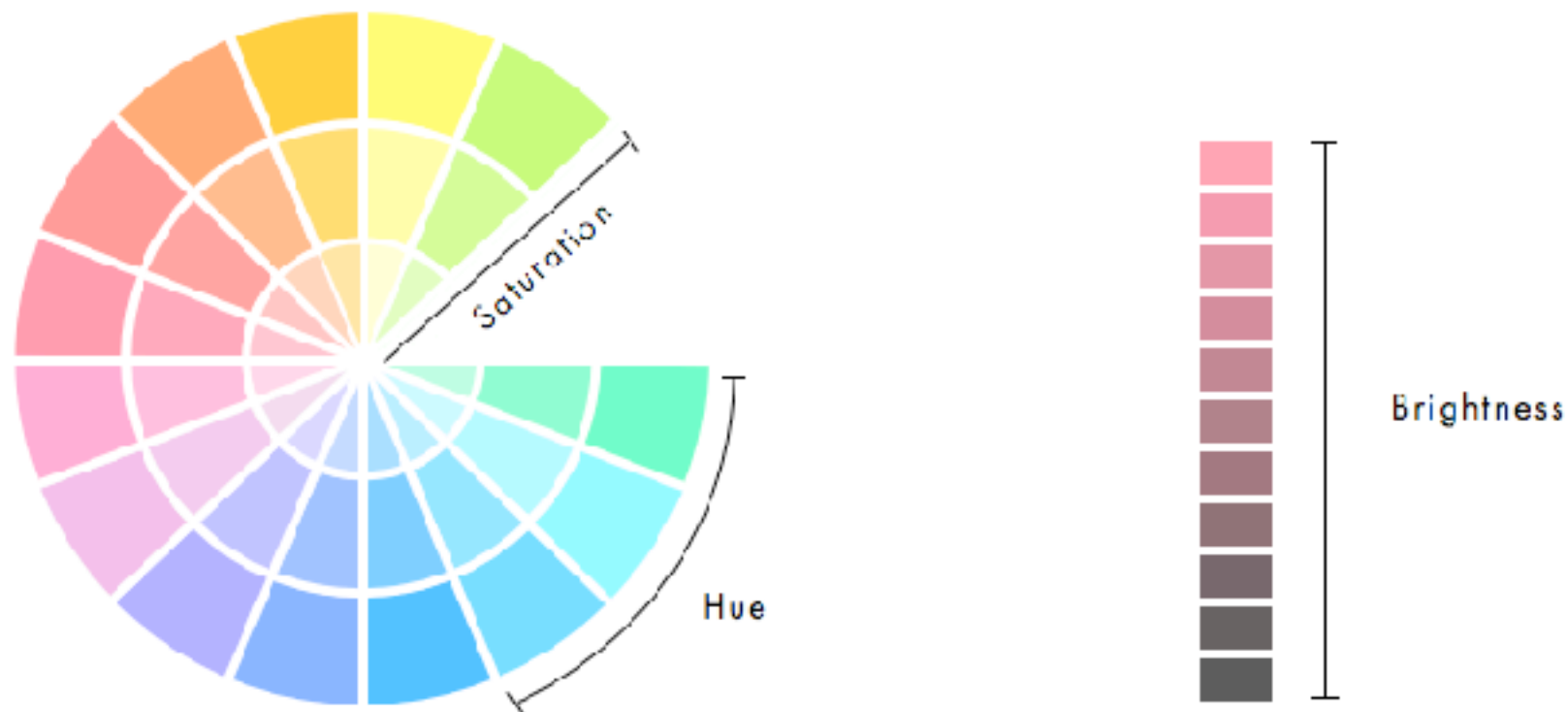
Today

- 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

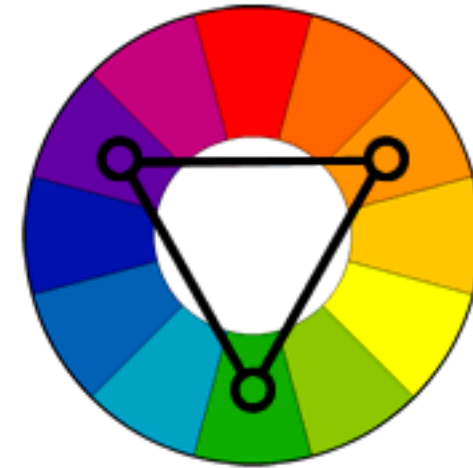


Color combinations

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



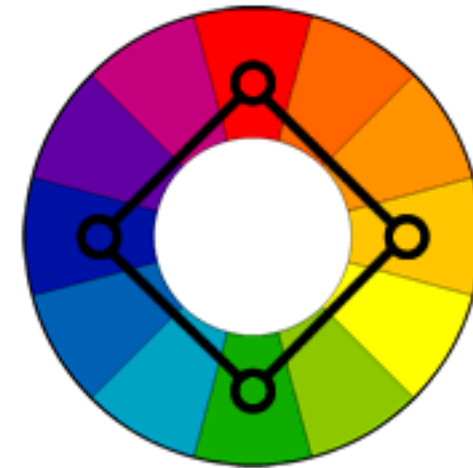
Analogous
Serene, harmonious



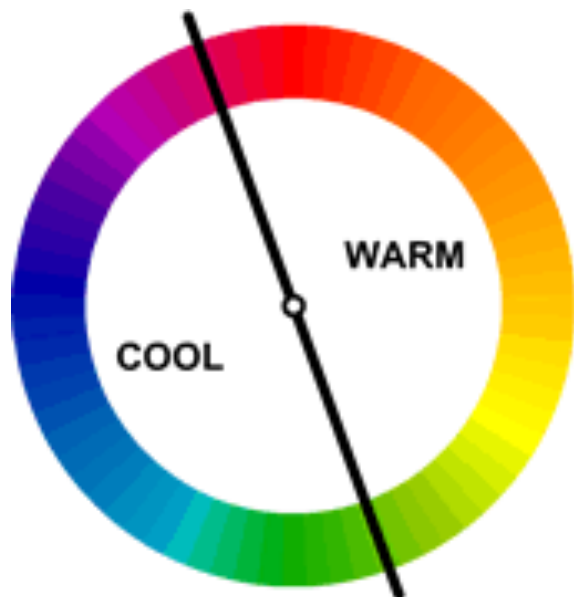
Triadic
Vibrant



Complementary
High contrast, vibrant

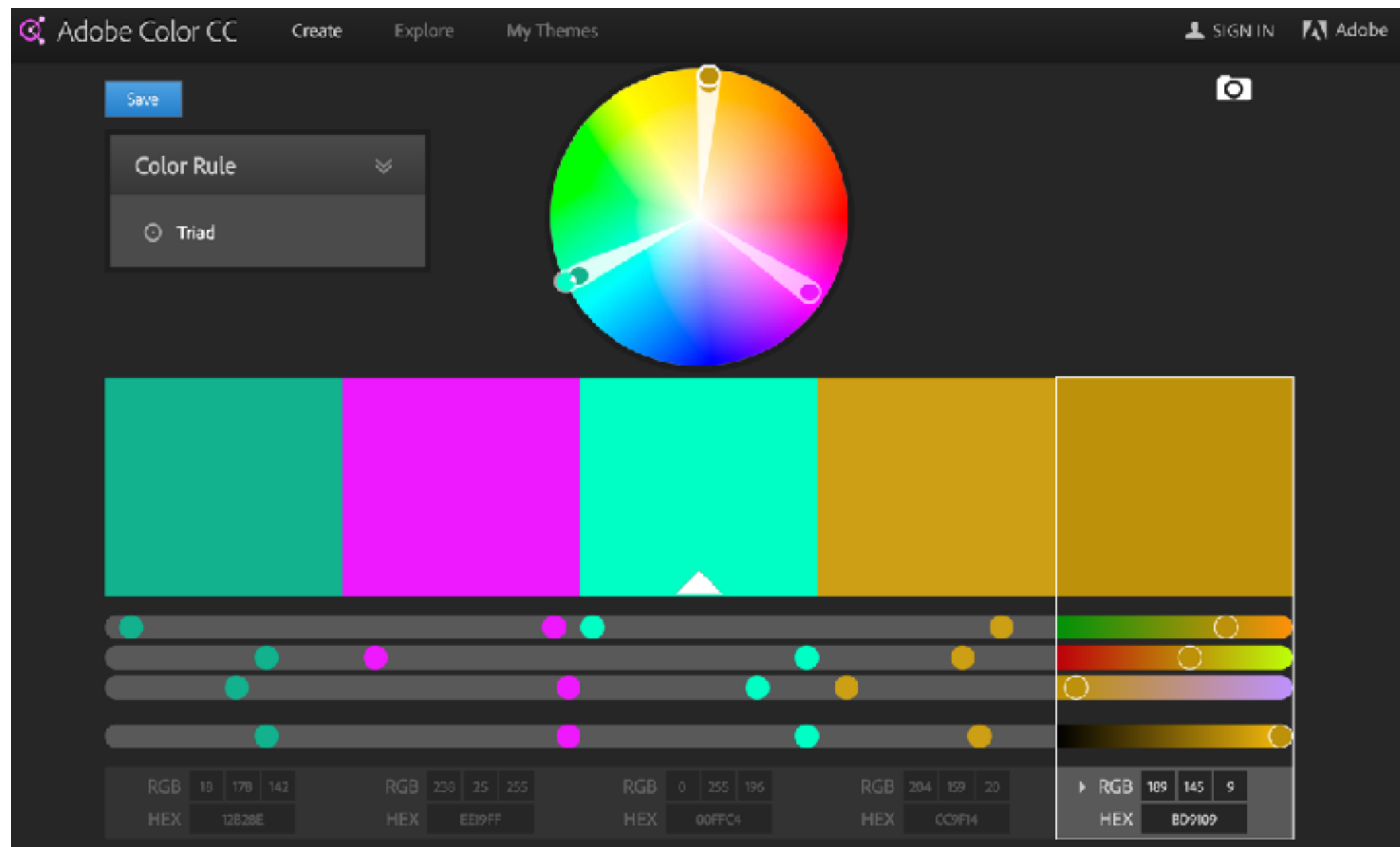


Quadratic
Two sets of complementary

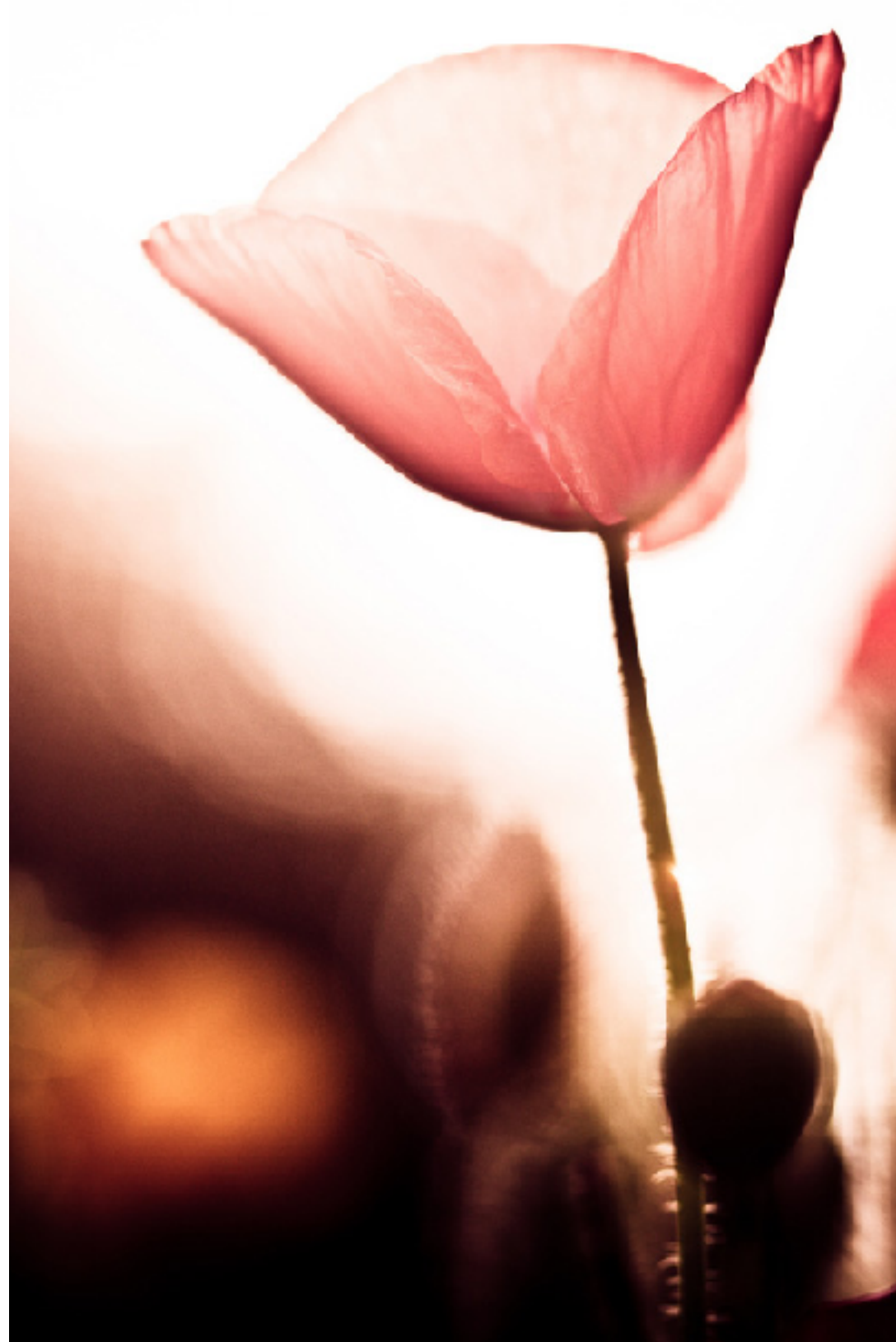


Tools for finding color combinations

- 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 & cooler colors for background
- Use saturated colors to draw attention & for excited
- Use desaturated, dark colors for serious & professional

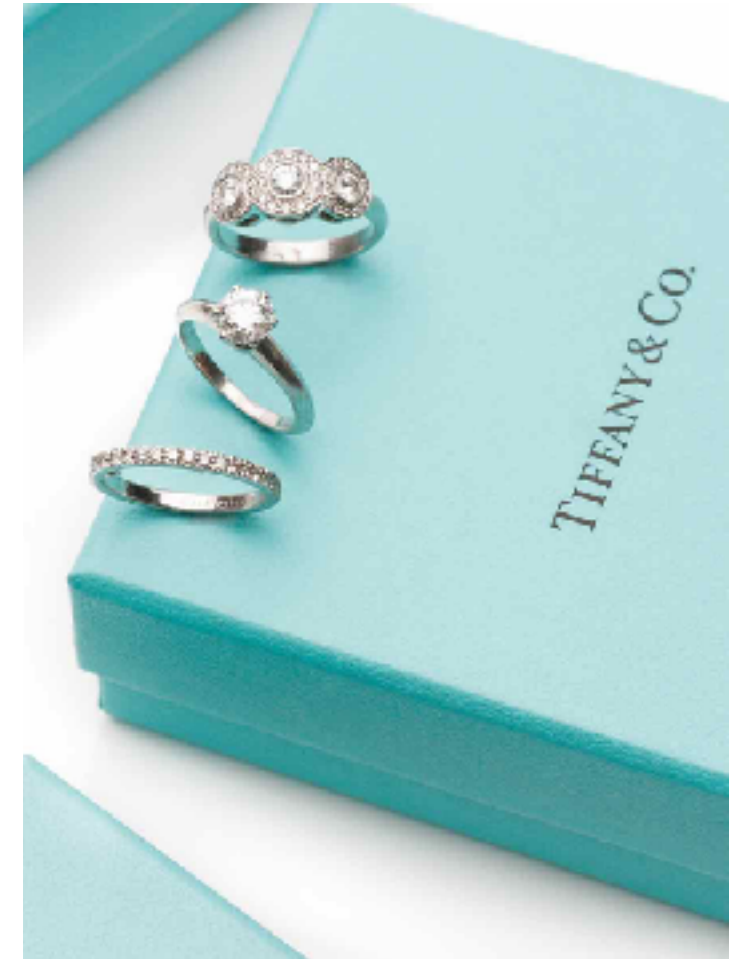
Guidelines on color use

- 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**



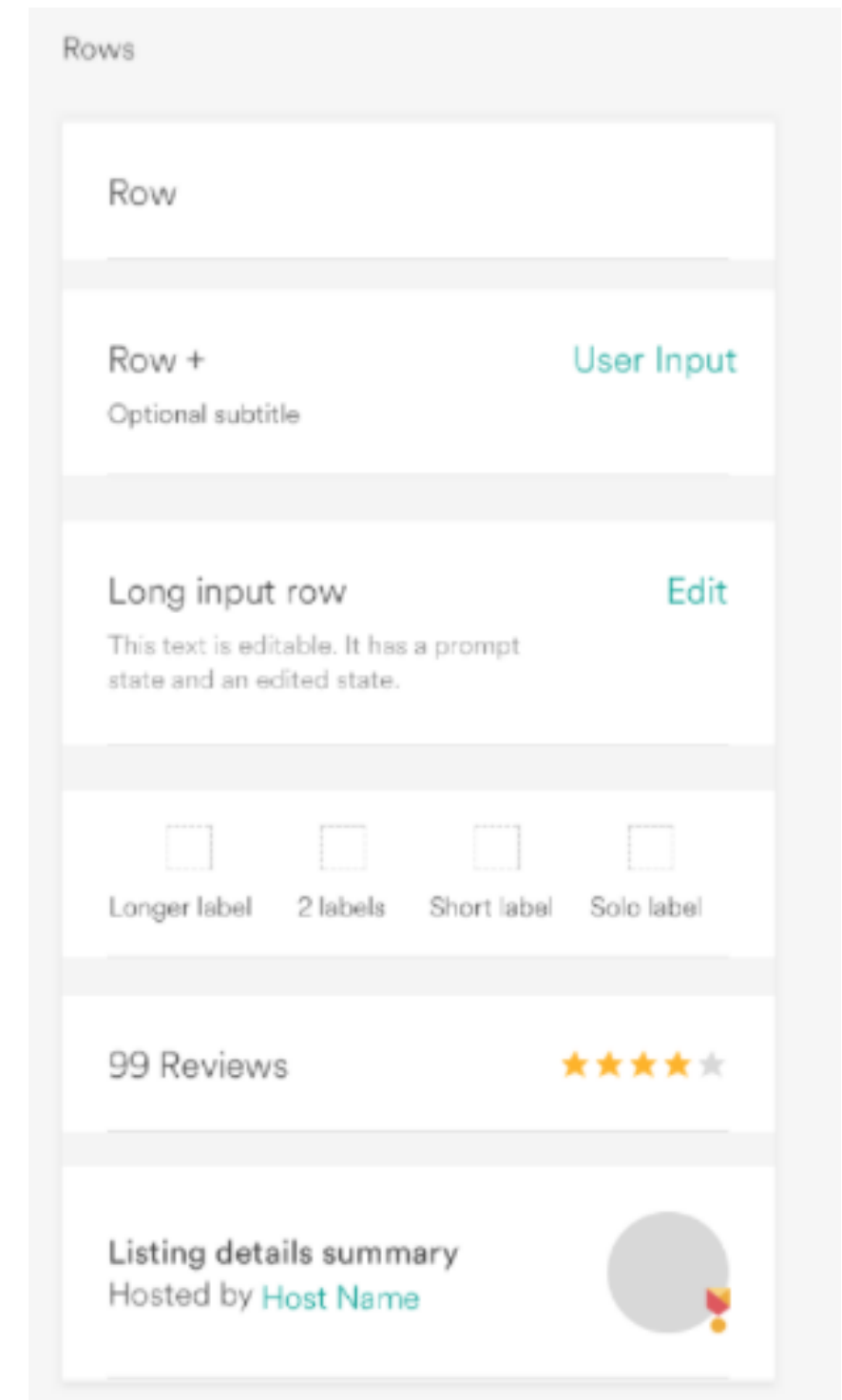
Design Language

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

[Images](#) [Groups](#) [News](#) [Froogle](#) [All sizes - Large - Medium - Small](#) **view**

[1](#) [2](#) [3](#) [4](#) [5](#) [6](#) [7](#) [8](#) [9](#) [10](#) **Sorted by relevance** [Sort by date](#)

[World »](#)  **Groups** **where**

[Top Stories](#) [World](#) [Pos](#)

[New York Times - all 633 related »](#) [www.cmu.edu/](#) [Oct 1, 1996 by Andy Harper](#) **source**

cmu [\[definition\]](#) **(0.48 seconds)** **1 - 37 of 37** **details**

4,285,199,774 web pages found 16 minutes ago

Reuters ©2004 Google Sponsored Links **fluff**

(Note: Setting preferences will)

[Graduating? Cor](#) [more »](#) [at CMU](#) [Inbox \(2\)](#) [Compose Mail](#)

action

[Invite 7 frie](#) [New Featu](#) [New!](#) Never lose a **act now**

Example: Syntax, Google 2004

task

Find results with **all** of the words
with the **exact phrase**
with **at least one** of
without the words

To:

Subject:

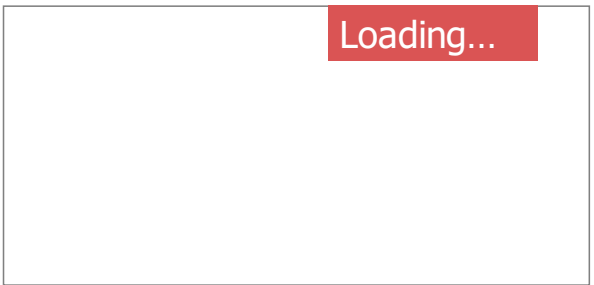
[Add Cc](#) | [Add Bcc](#)

[Attach a file](#)

[Tips](#) | [Dissati](#)

Results Window ☐ C

placeholder



toolbar

[Show search options](#) [Create a filter](#)

[Advanced Search](#)

[Web](#) [Images](#) [Groups](#) [News](#) [Froogle](#) [more »](#)

[Advanced News Search](#)

Search and browse 4,500 news sources updated continuously.

list

<input type="checkbox"/>	(unknown sender)	(no subject) - Received: from ima
<input type="checkbox"/>	(unknown sender)	(no subject) - Received: from ima
<input type="checkbox"/>	(unknown sender)	(no subject) - Received: from ima
<input type="checkbox"/>	(unknown sender)	(no subject) - Received: from ima
<input type="checkbox"/>	(unknown sender)	(no subject) - Received: from ima
<input type="checkbox"/>	Thomas LaToza	» FW: Bb F04-17651: My apologies
<input type="checkbox"/>	(unknown sender)	(no subject) - Received: from ima

bugs.gif
299 x 526 pixels - 75k
[www.cs.cmu.edu/sf/cs/user/mw/ww/images/bugs.gif](#)

CMU-AstronClub-1stMinutes...
807 x 610 pixels - 413k
[www.cs.cmu.edu/sf/cs.cmu.edu/sf/amon/www/C... \[More results from www.cs.cmu.edu \]](#)

Uranus.obstacle.970227.2.jpg
640 x 480 pixels - 52k
[www.fic.it.cmu.edu/~hpm/project.archive/image...](#)

cmu charters.jpg
360 x 254 pixels - 47k
[www.andrew.cmu.edu/org/KPL/history.htm](#)

cmu colony.jpg
250 x 191 pixels - 60k
[www.andrew.cmu.edu/org/KPL/testing.htm \[More results from www.andrew.cmu.edu \]](#)

cmu800r.gif
474 x 255 pixels - 64k
[machines.hyperreal.org/~images/cmu800r.gif](#)

Carnegie Mellon University
Prospective Students Faculty Visitors Researchers General Visitors Corporate Visitors
Alumni Current Students Faculty & Staff Site Index Contact Us google, ...
[www.cmu.edu/](#) - 19k - Oct 18, 2004 - [Cached](#) - [Similar pages](#)

Central Michigan University
... For a more interactive version of the CMU home page, please enable JavaScript
in your browser window and reload this page. Otherwise ...
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Software Engineering Institute (SEI) Home Page
... services, courses, and events, contact Software Engineering Institute Carnegie Mellon
University Pittsburgh, PA 15213-3890 412-260-5900 [http://www.sei.cmu.edu/](#) ...
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RhymeZone rhyming dictionary and thesaurus
RhymeZone ...
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SCHOOL OF COMPUTER SCIENCE/Carnegie Mellon University
... Hall Fall SCS Calendar Submit an event! Seminar Series CMU Calendar Academic
Calendar. Home SCS Home webteam @ [cs.cmu.edu](#) ARCHIVES.
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Welcome to Lycos!
Search: The Web Shopping News Pictures: People Search; Yellow Pages; Search
Advertising: Advanced Search. Fun Search: Cast Instant Love ...
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The Robotics Institute
... RI Seminar Navlab Core Technologies Jay Gowdy & Rob MacLachlan, SAIC & CMU, Oct
15 2004, 3:30 PM, NSH 1305 ... This page maintained by [robotwebmaster@n.cmu.edu](#).
[www.n.cmu.edu/](#) - 46k - Oct 18, 2004 - [Cached](#) - [Similar pages](#)

Collegiate Readership Program initiated at CMU
The Tartan, PA - Oct 18, 2004
by Louisa Kinoshi. by Louisa Kinoshi. Carnegie Mellon is currently sponsoring a free one-month trial of the USA Today
Collegiate Readership ...
[John Kerry, Condoleezza Rice to appear on campus](#) The Tartan
[From the desk: Student government always seeks to respond to you](#) The Tartan
[all 2 related »](#)

Huskie tailback Wolfe darts to second MAC Player of the Week title
Dekalb Daily Chronicle, IL - 11 hours ago
... Central Michigan, "The offensive line and our tight ends did a great job (blocking)." Wolfe said after the CMU
game. "They make my life easier." ...
[Wolfe runs away with MAC POW award](#) Northern Star Online
[An all-access pass to the NU locker room](#) Northern Star Online
[Northern Illinois pounds CMU, 42-10](#) DailNews.com
[Northern Star Online - Northern Star Online - all 31 related »](#)

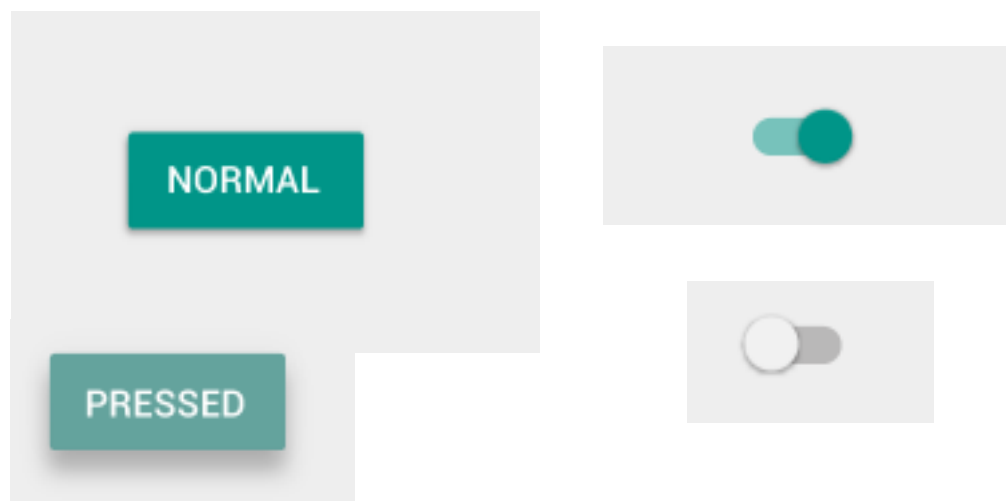
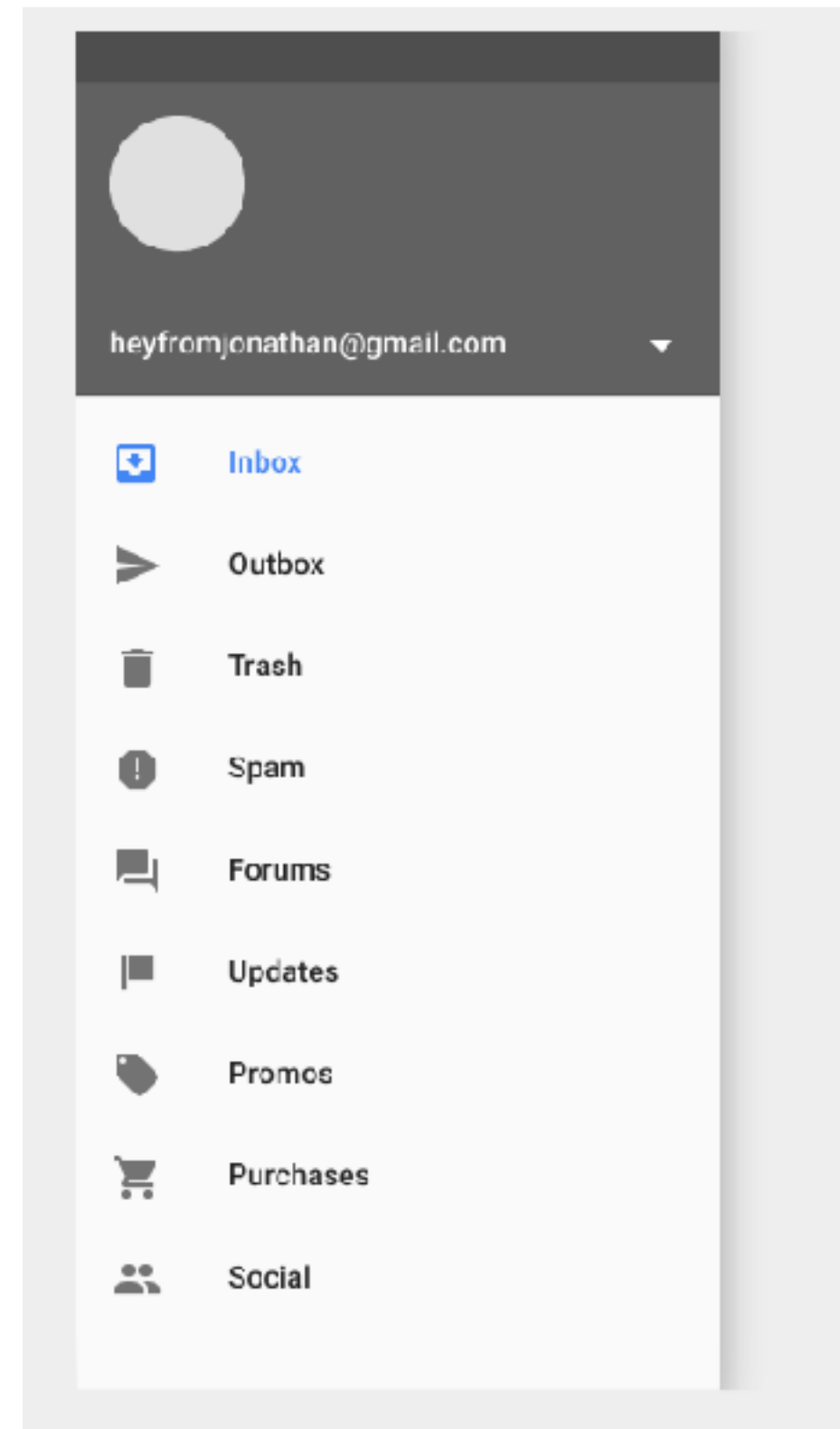
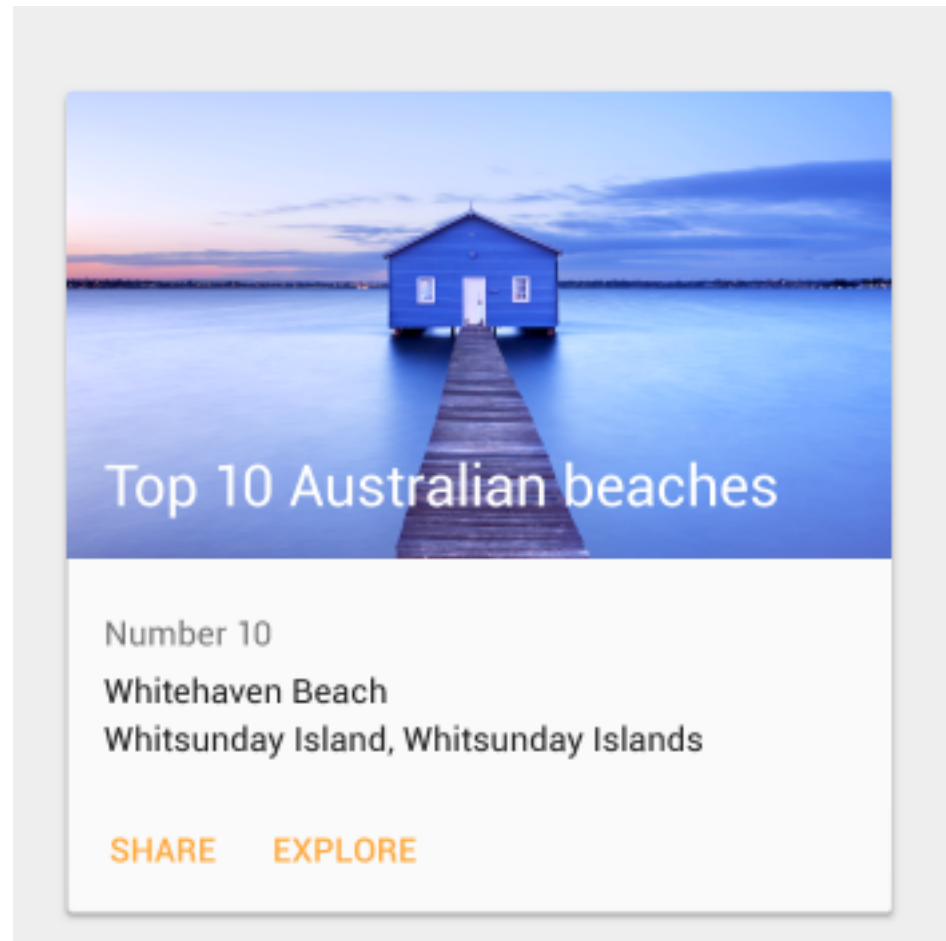
CMU students prepare for Solar Decathlon
The Tartan, PA - Oct 18, 2004
by Ann Wootton. by Ann Wootton. Carnegie Mellon students are leading the Pittsburgh Synergy team designing and building a
solar house ...
[Fringe turns on the heat at the Chili Cook-off](#) The Carnegie Pulse
[all 2 related »](#)

Rocker to Rally for Kerry at CMU
KDKA, PA - Oct 18, 2004
For the second time in six months, singer Jon Bon Jovi will perform in Pittsburgh for a political cause. The
New ...

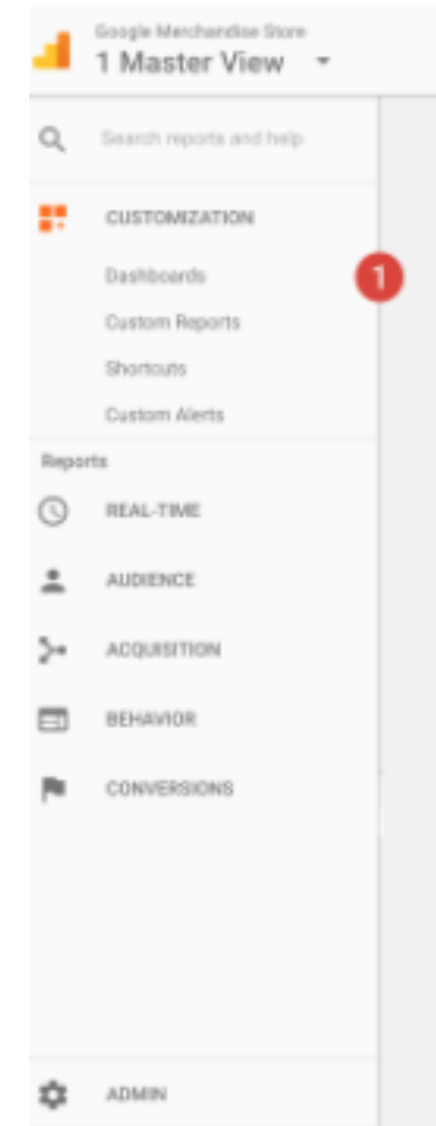
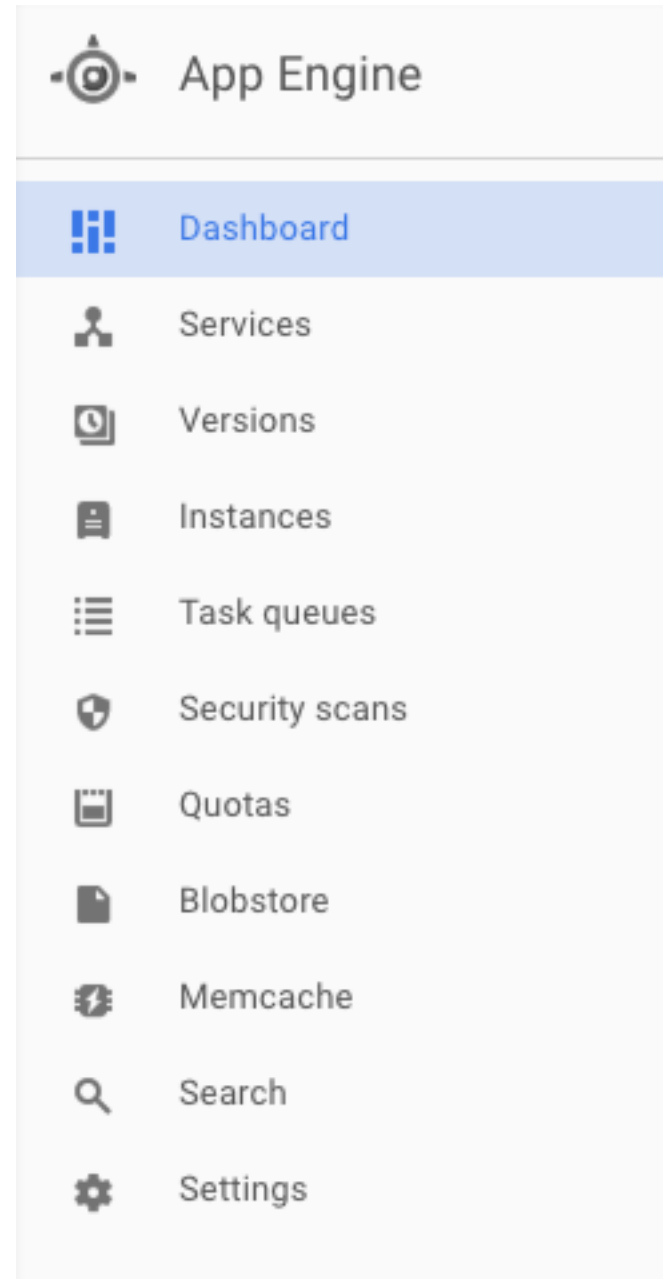
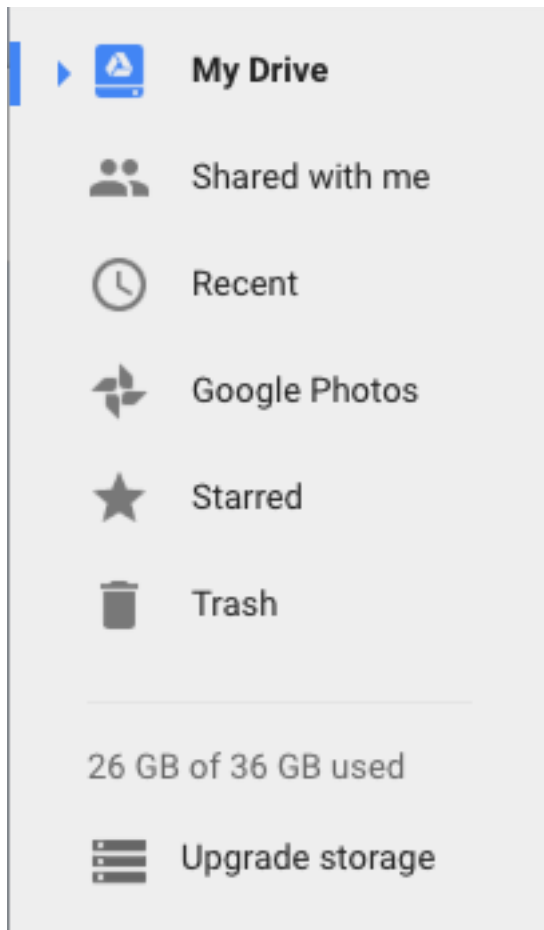
Video From The CMU Robotics Institute Showcase
Slashdot - Oct 18, 2004
mposst writes "This last week the CMU Robotics Institute showed off some of the stuff they were doing. They were showing the
new stuff they were working on ...

Northern Illinois Rolls by CMU 42-10
Gardner.com - Oct 16, 2004
... The win dropped CMU's record to 2-4 for the season and 1-2 in MAC action. NIU is now 4-0 in the league and

Examples: Google 2016



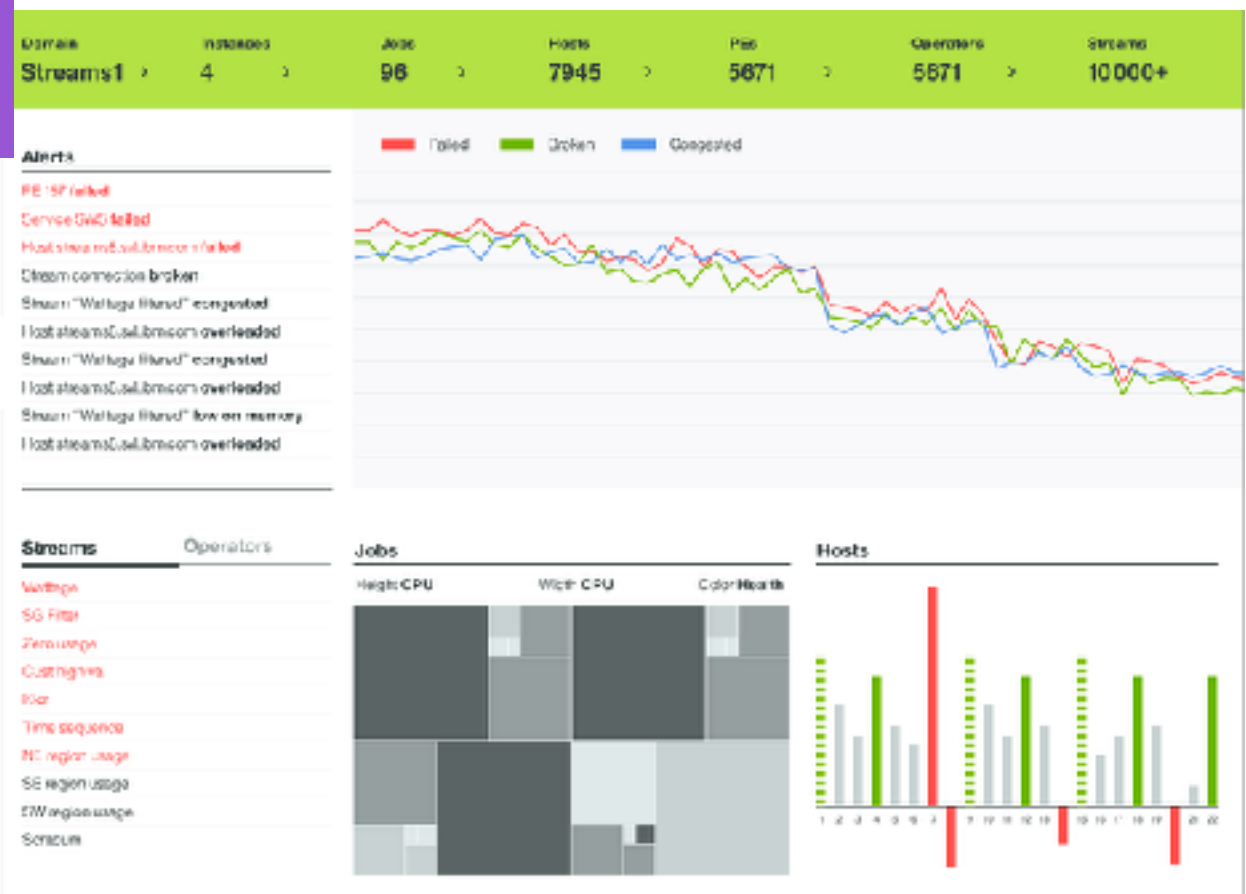
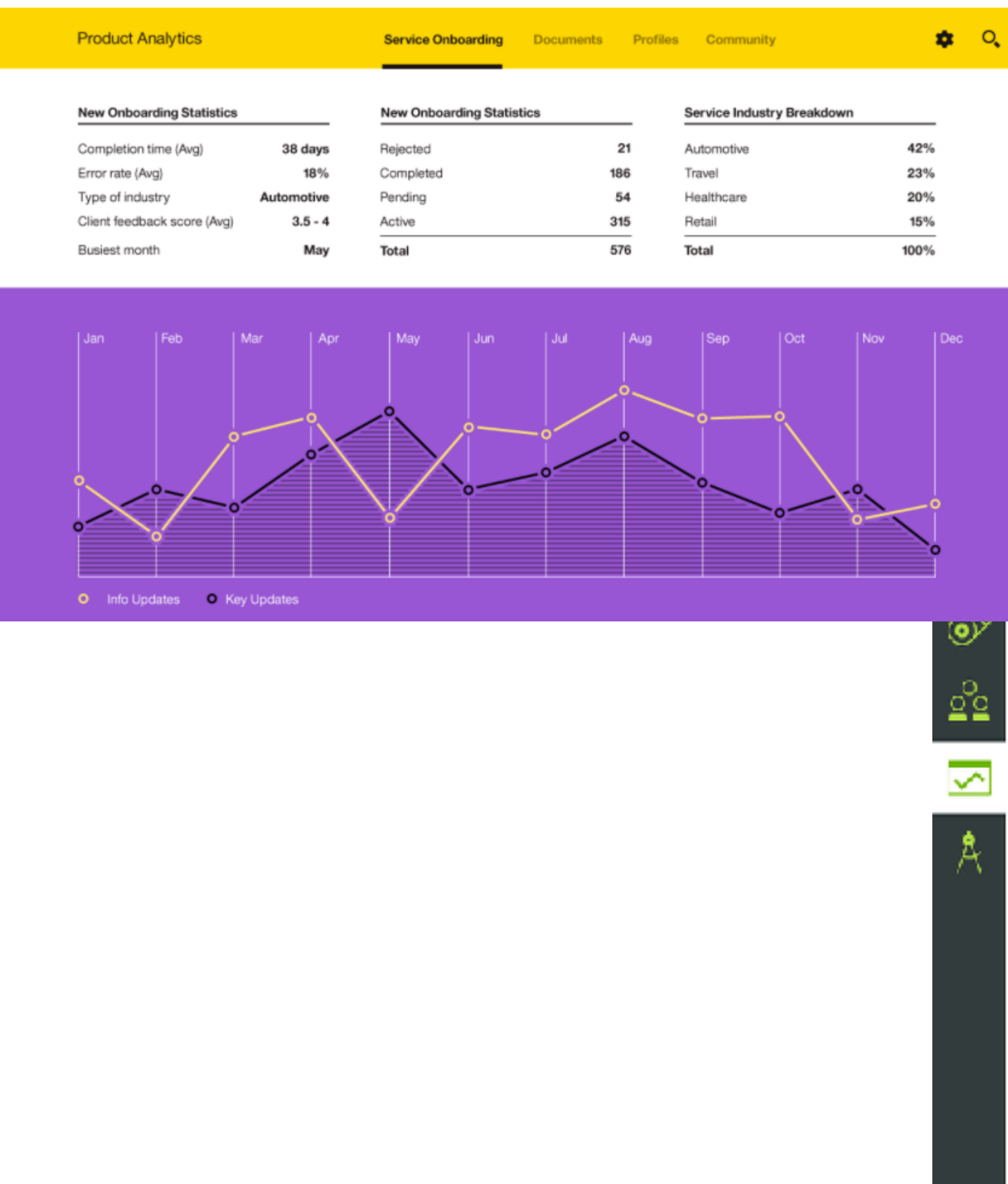
Examples: Google 2016



Examples: IBM



Examples: IBM

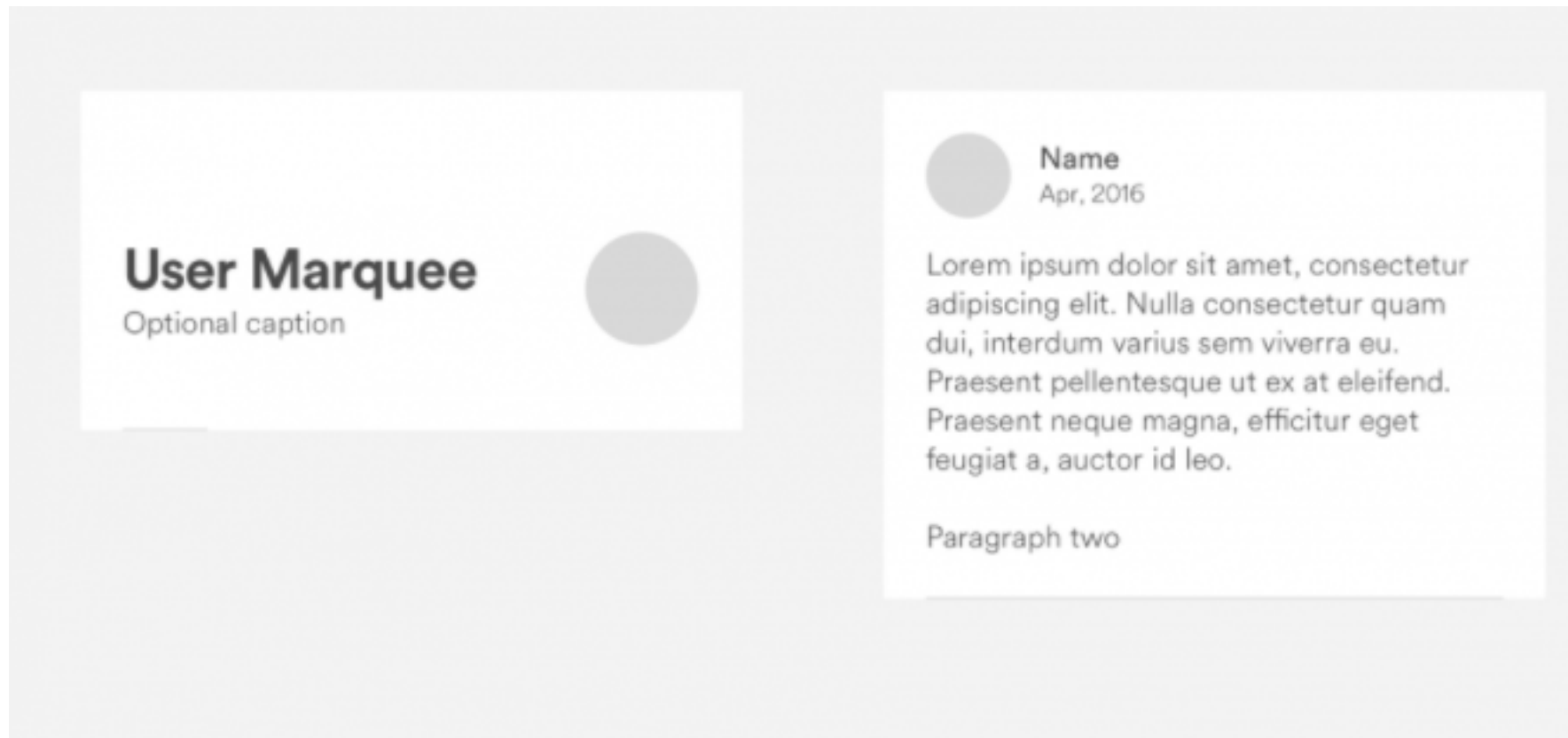


Examples: IBM

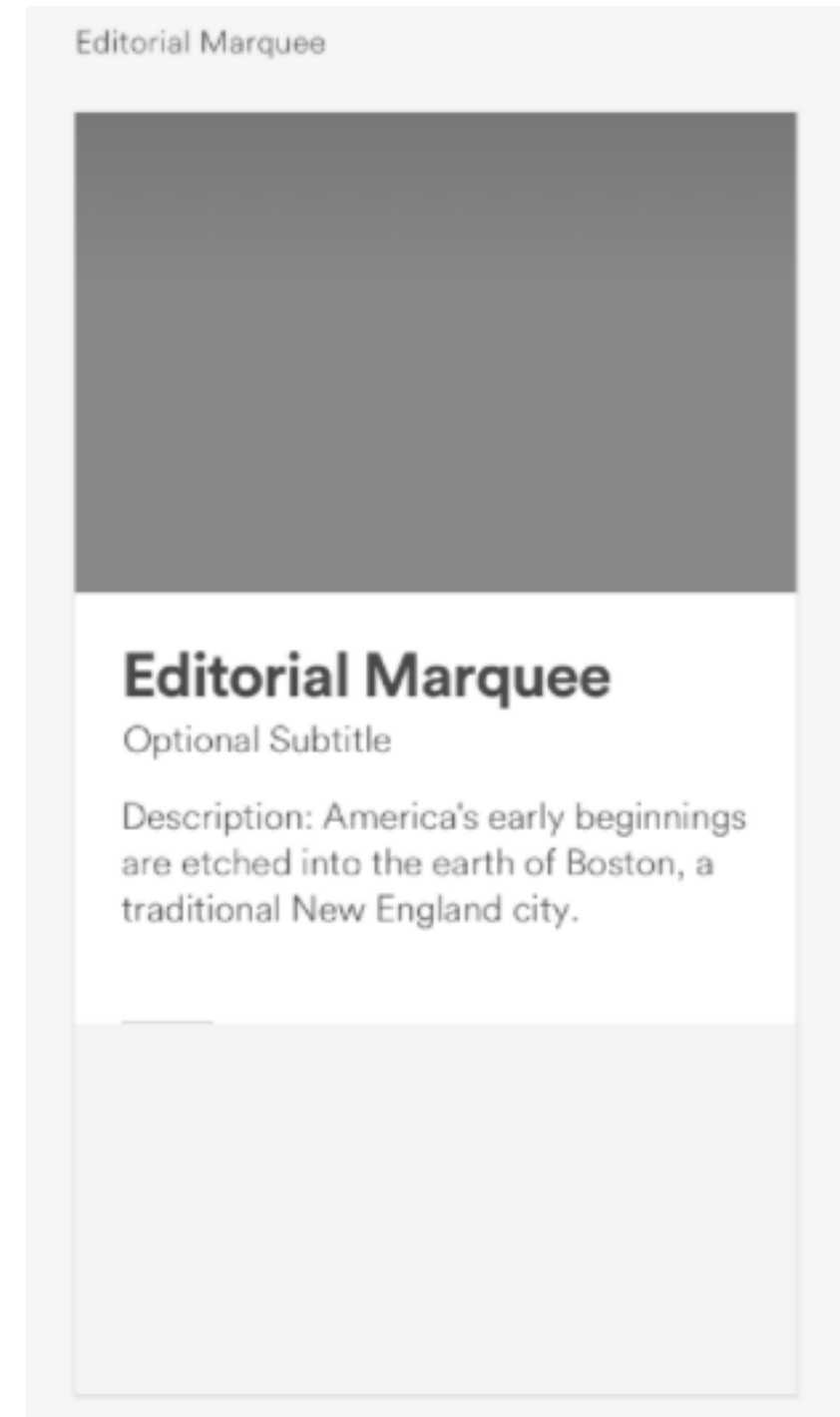
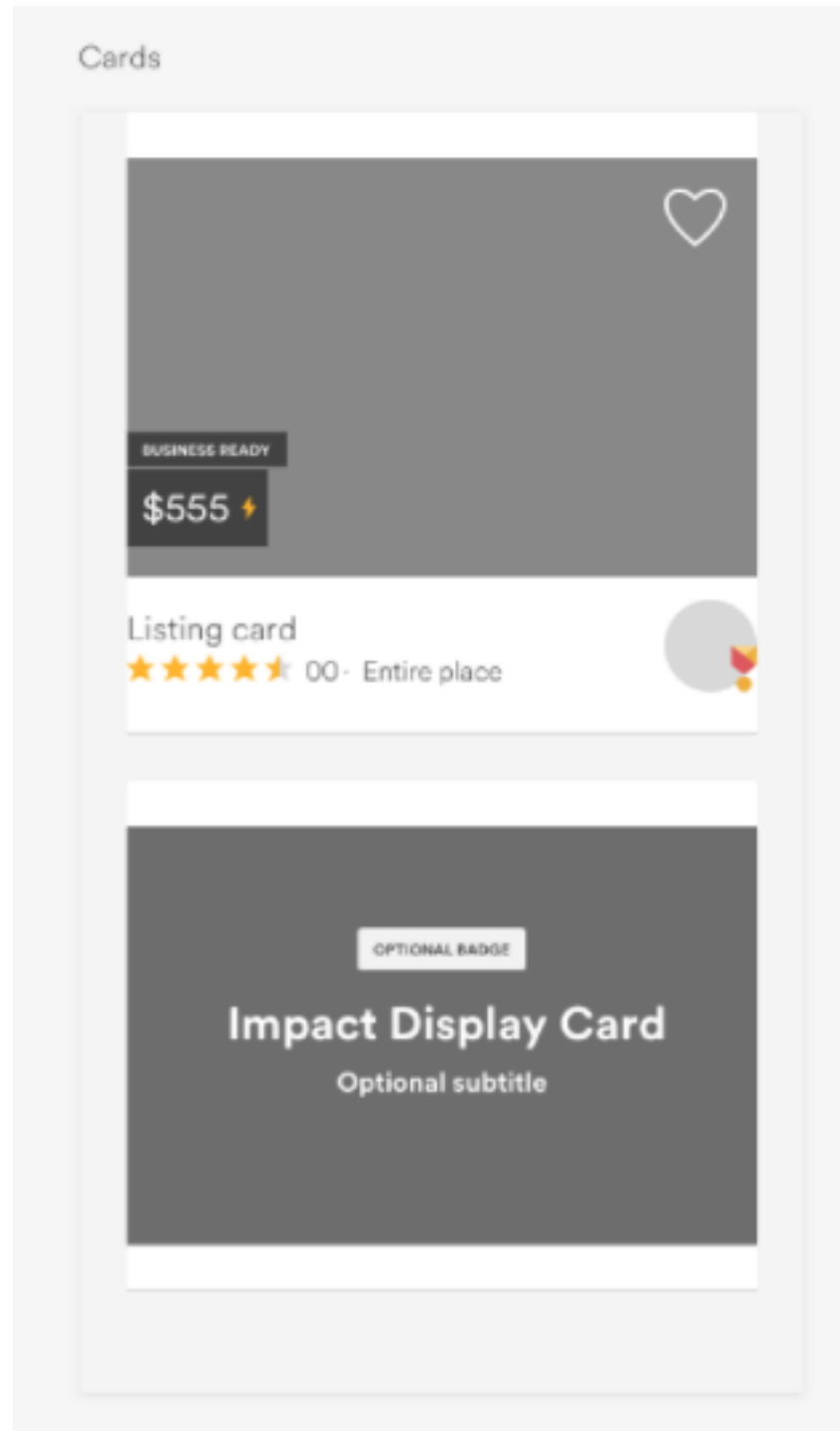
Application data

Application data				
Application data				
Title	Title	Value	Date	Value
Imperial	true	9 456 234	21. Feb 2014	9 456 234
Hard	false	987 345	21. Feb 2014	987 345
Cider	false	43 567	21. Feb 2014	43 567
Anaerobic	true	324 543	21. Feb 2014	324 543
Cold filter	false	432 456	20. Feb 2014	432 456
Barrel hand	true	32 432	20. Feb 2014	32 432
Pump wort	true	4 567	20. Feb 2014	4 567
Dry hopping	false	34 567	20. Feb 2014	34 567
Carbonation	true	434 567	20. Feb 2014	434 567
Mash tun	false	9 456 234	20. Feb 2014	9 456 234
Bittering hops	true	987 345	20. Feb 2014	987 345
Heat exchanger	false	43 567	19. Feb 2014	43 567
Lauter aerobic	false	324 543	19. Feb 2014	324 543
Abbey seidel	true	432 456	19. Feb 2014	432 456
Brewhouse	false	32 432	19. Feb 2014	32 432
Brewpub adjunct	true	4 567	19. Feb 2014	4 567
Dextrin seidel	true	34 567	19. Feb 2014	34 567
Aau beer	false	434 567	19. Feb 2014	434 567
Krug abv	true	434	19. Feb 2014	434

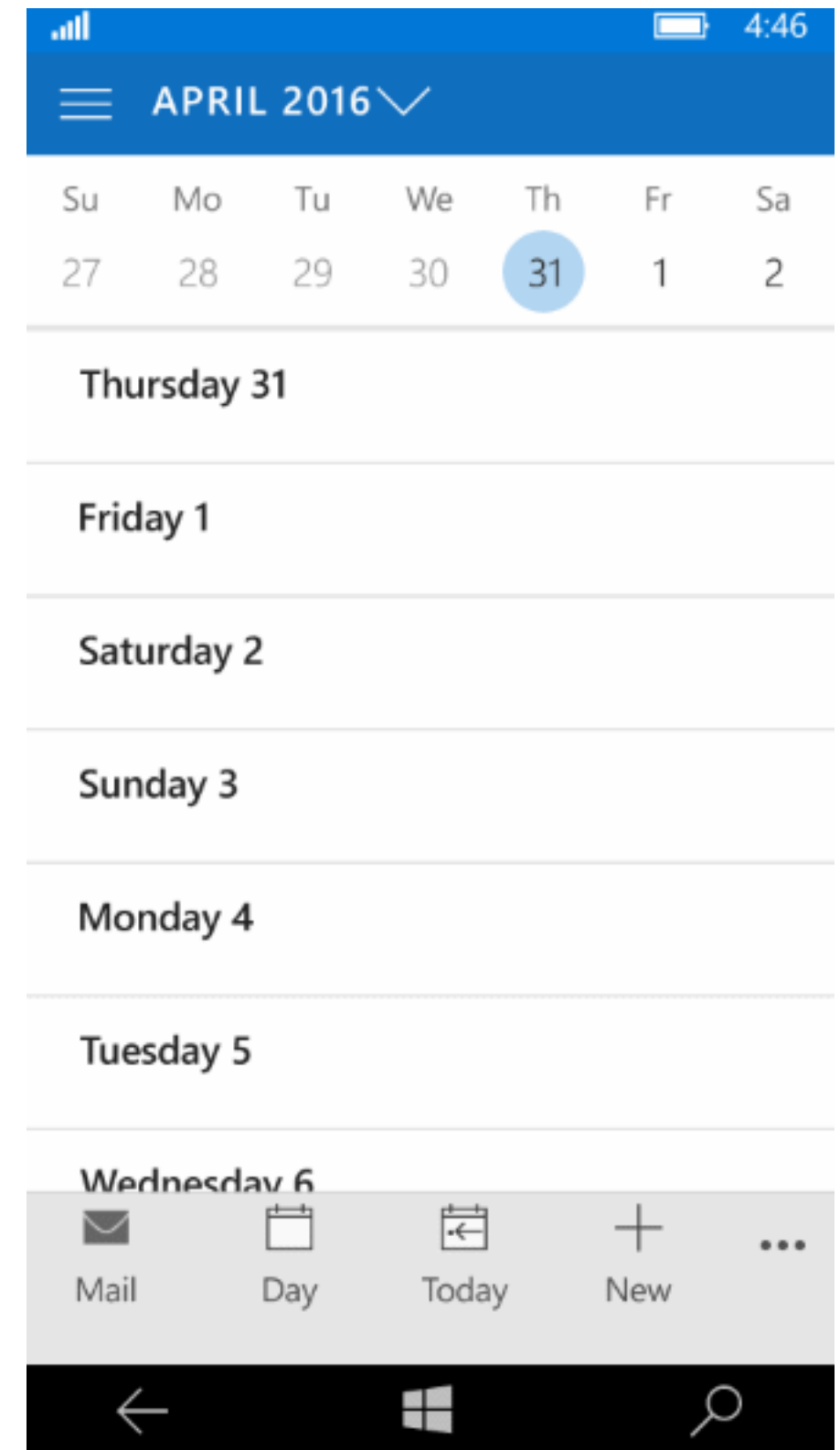
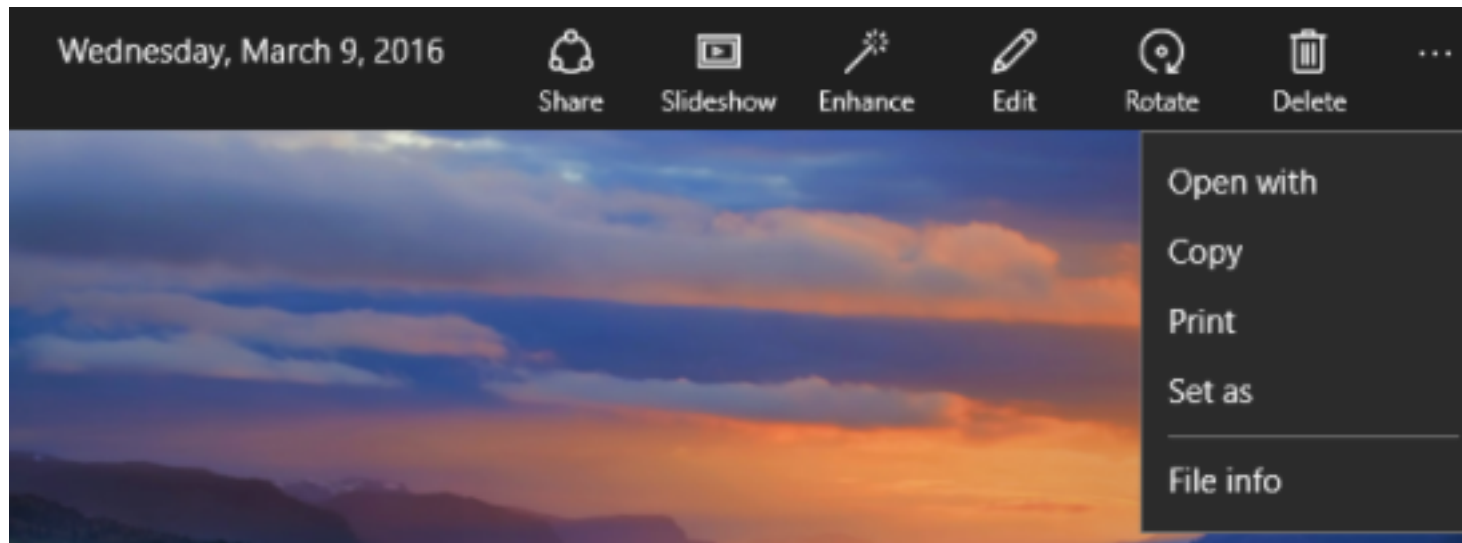
Examples: AirBnb



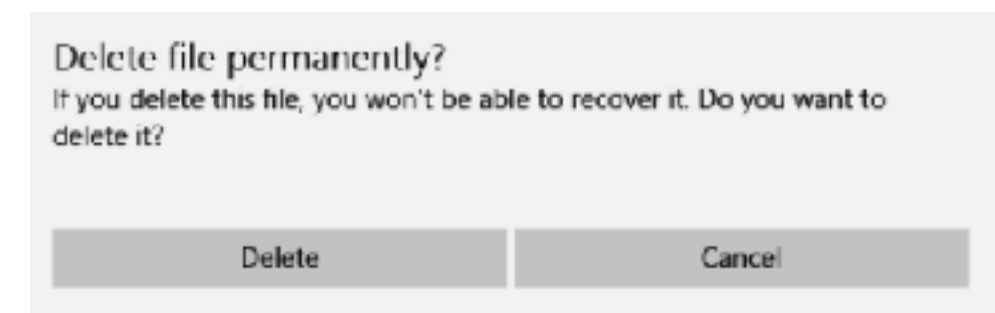
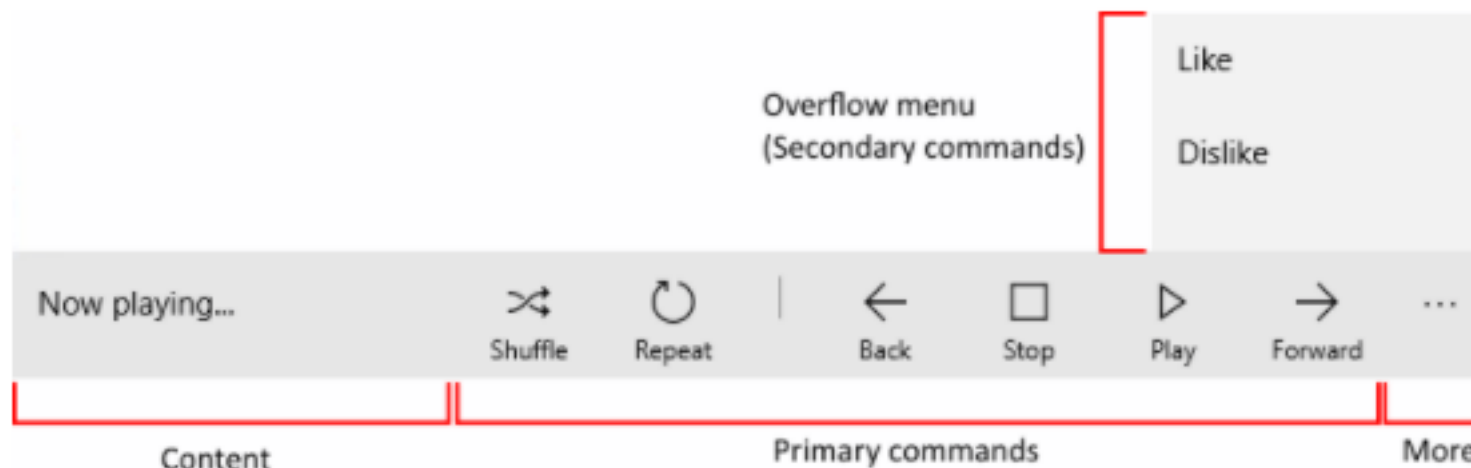
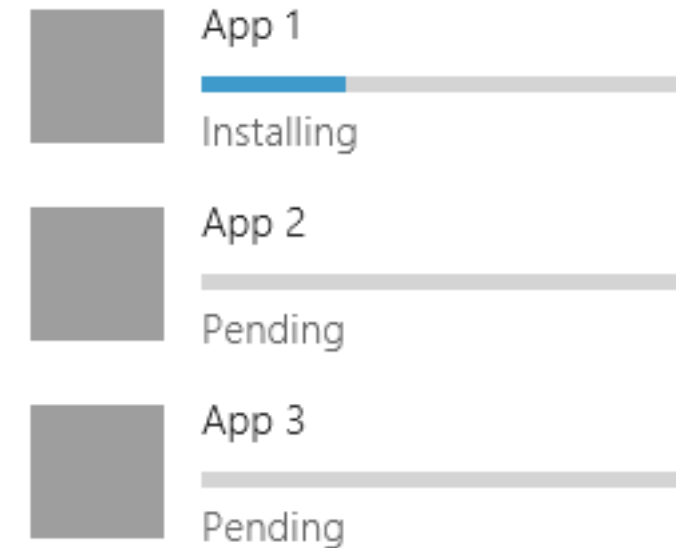
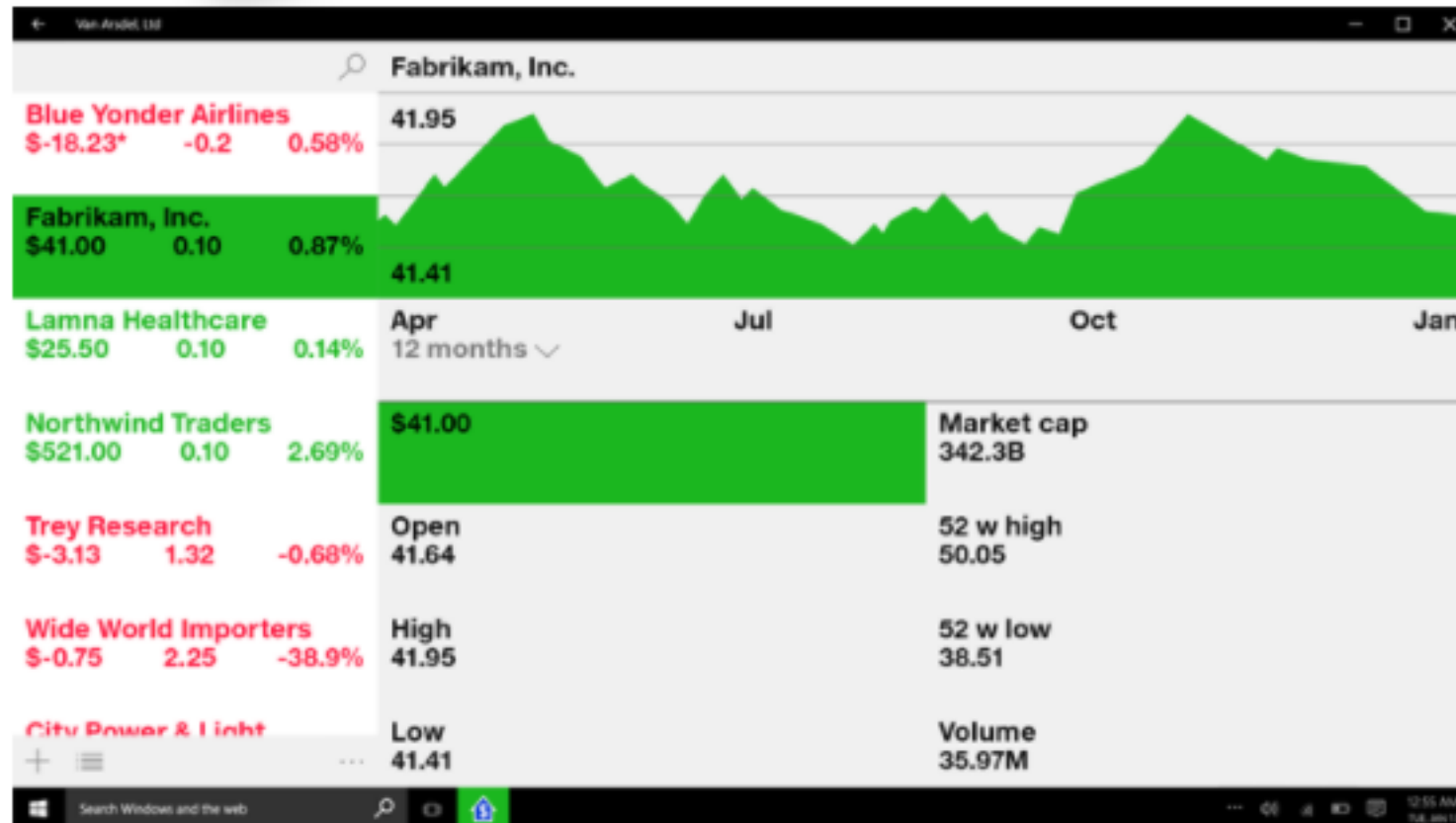
Examples: AirBnb



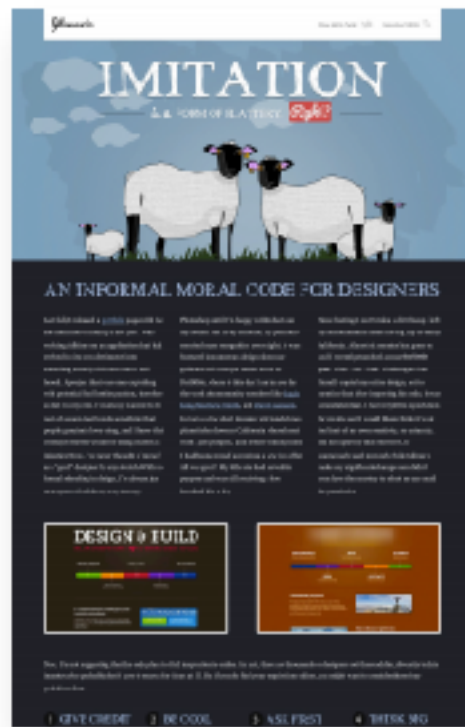
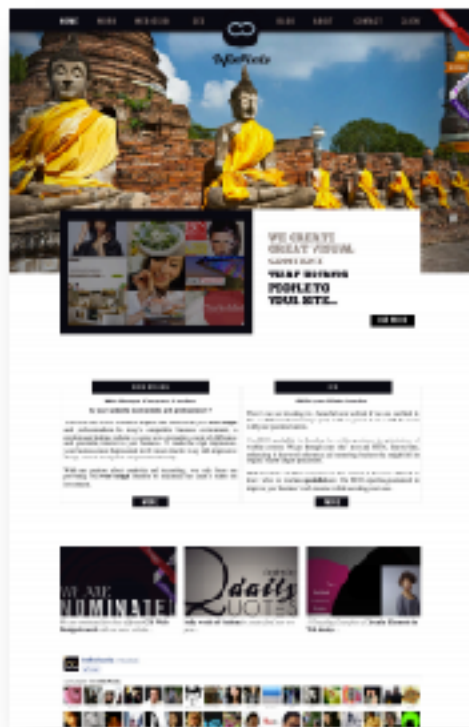
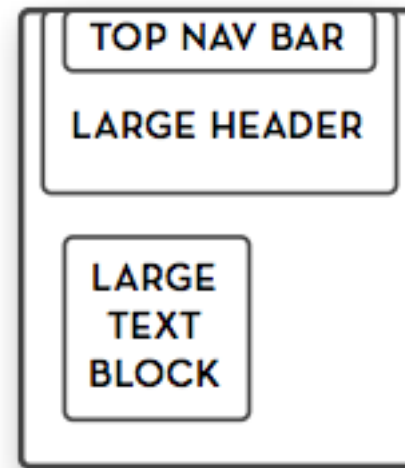
Examples: Microsoft



Examples: Microsoft

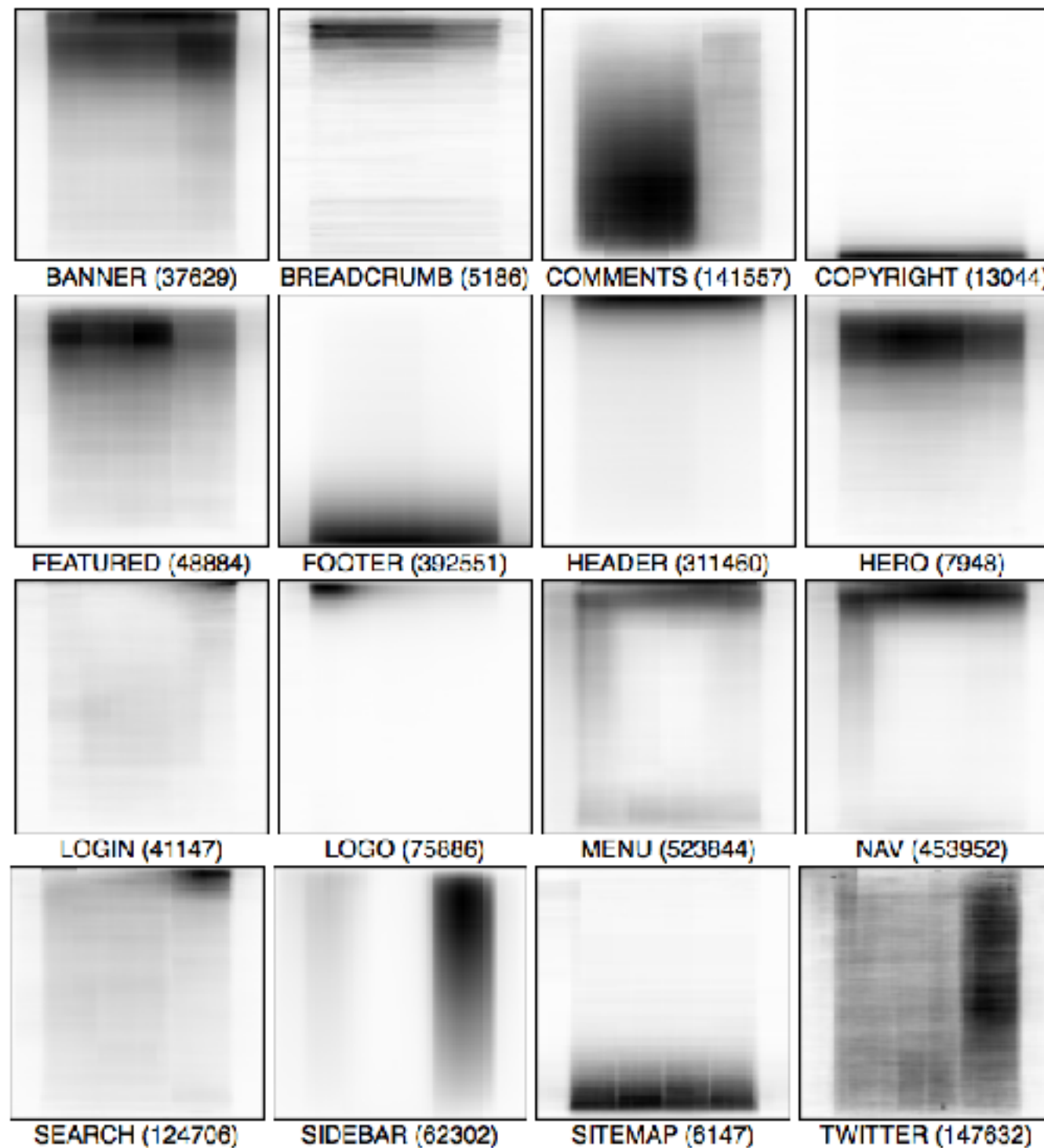


Example: Header with text blocks layout



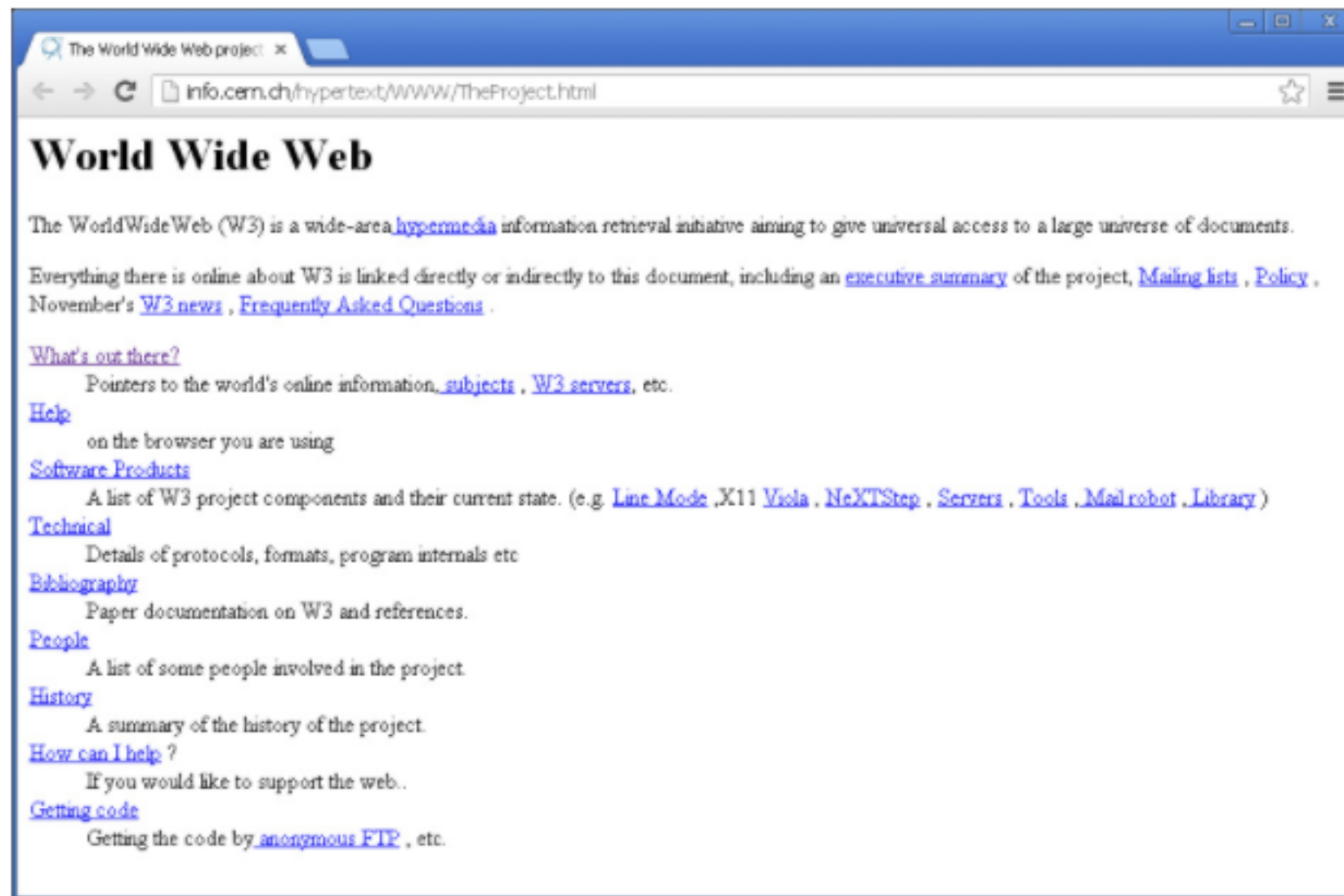
From: <http://ranjithakumar.net/resources/webzeitgeist.pdf>

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



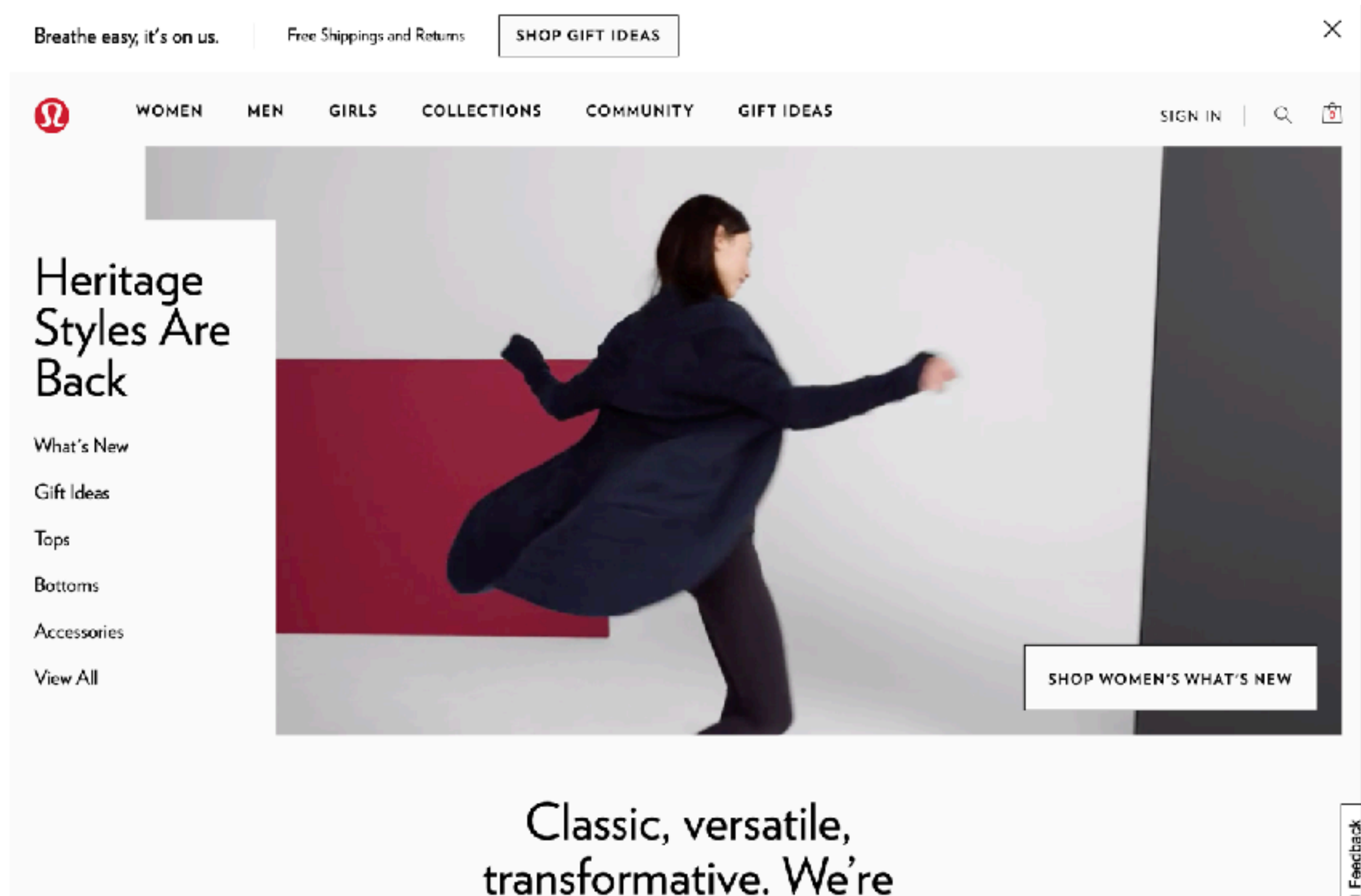
Web design languages over time



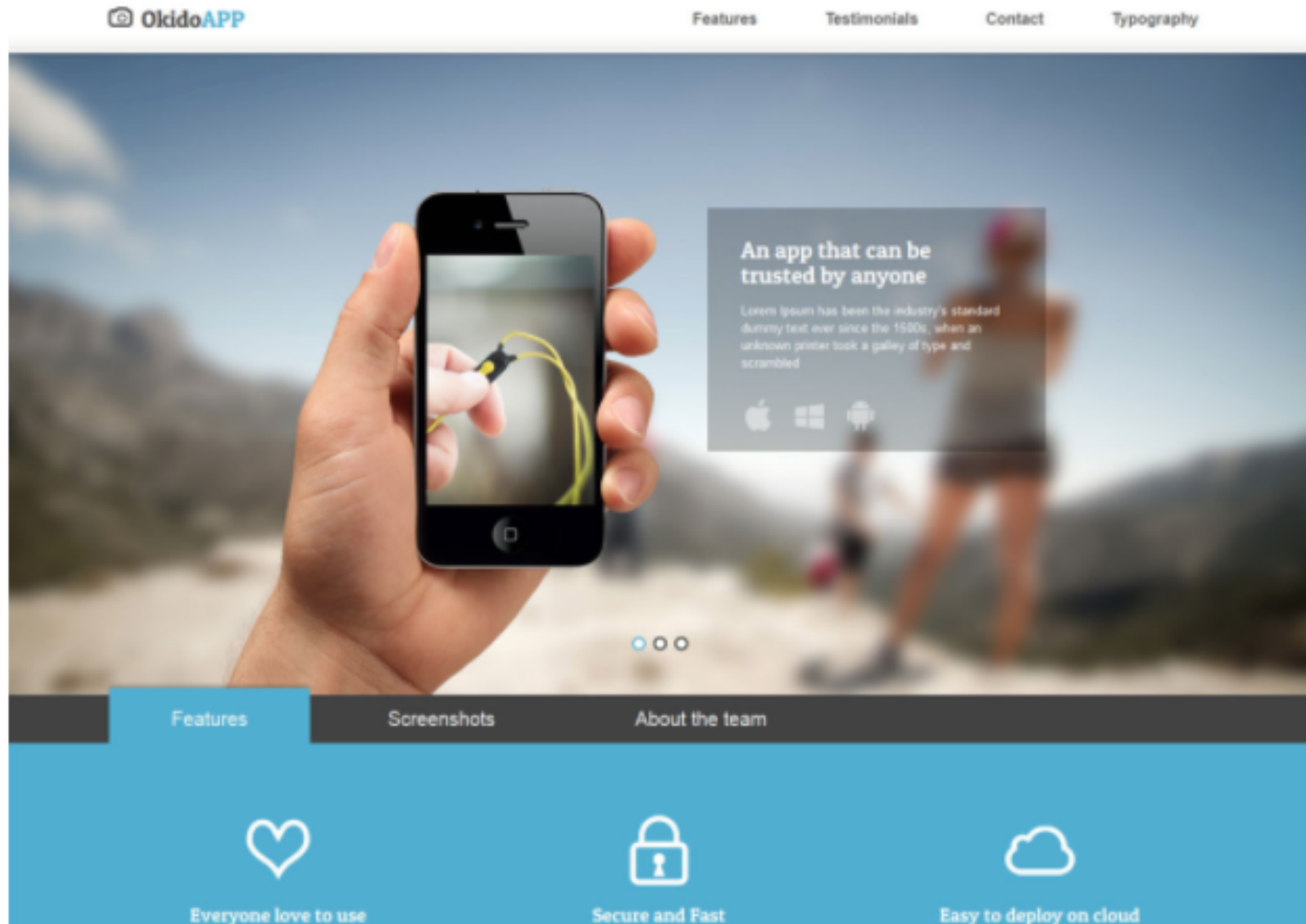
Web design languages over time



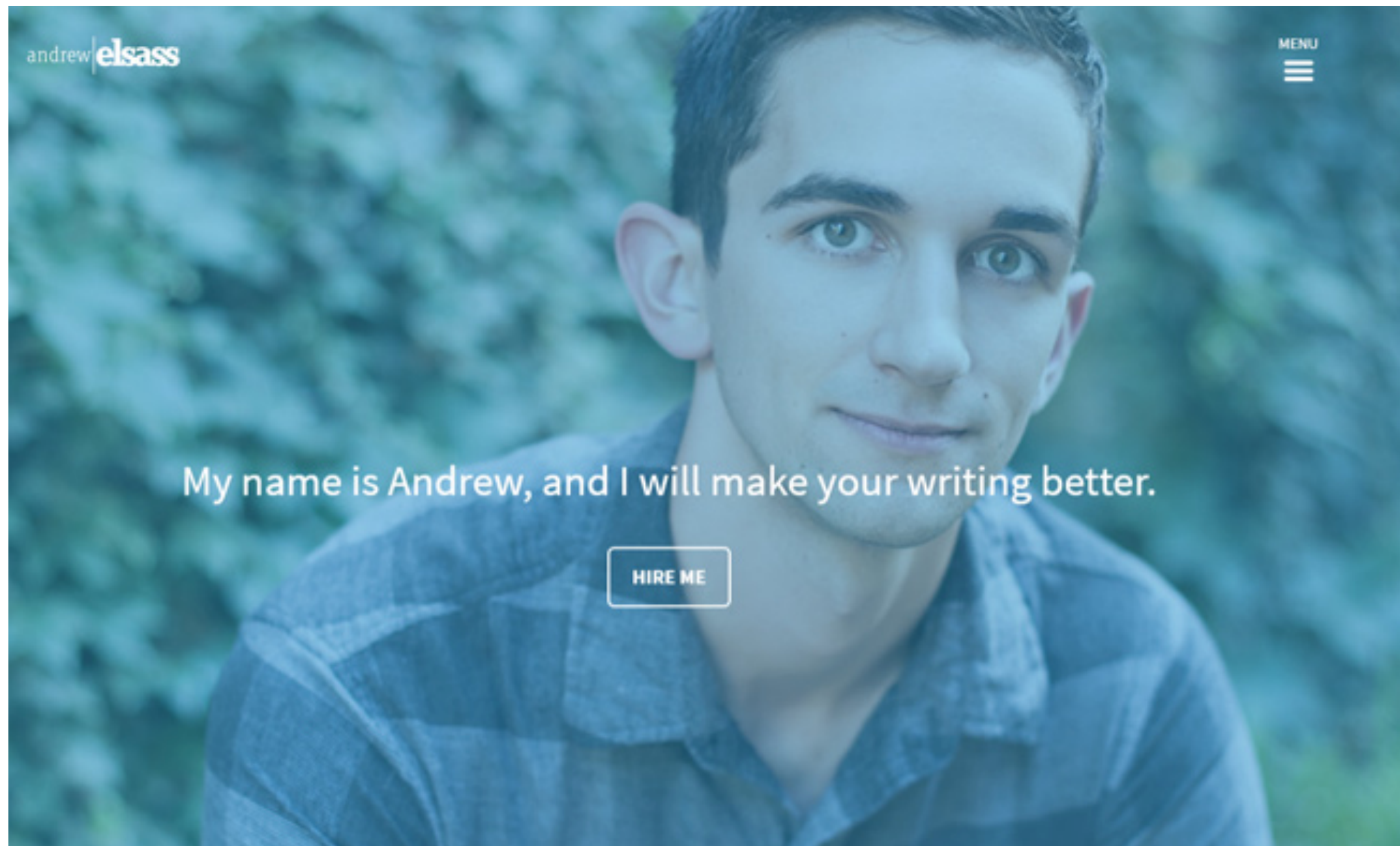
Web design languages over time



Web design languages over time

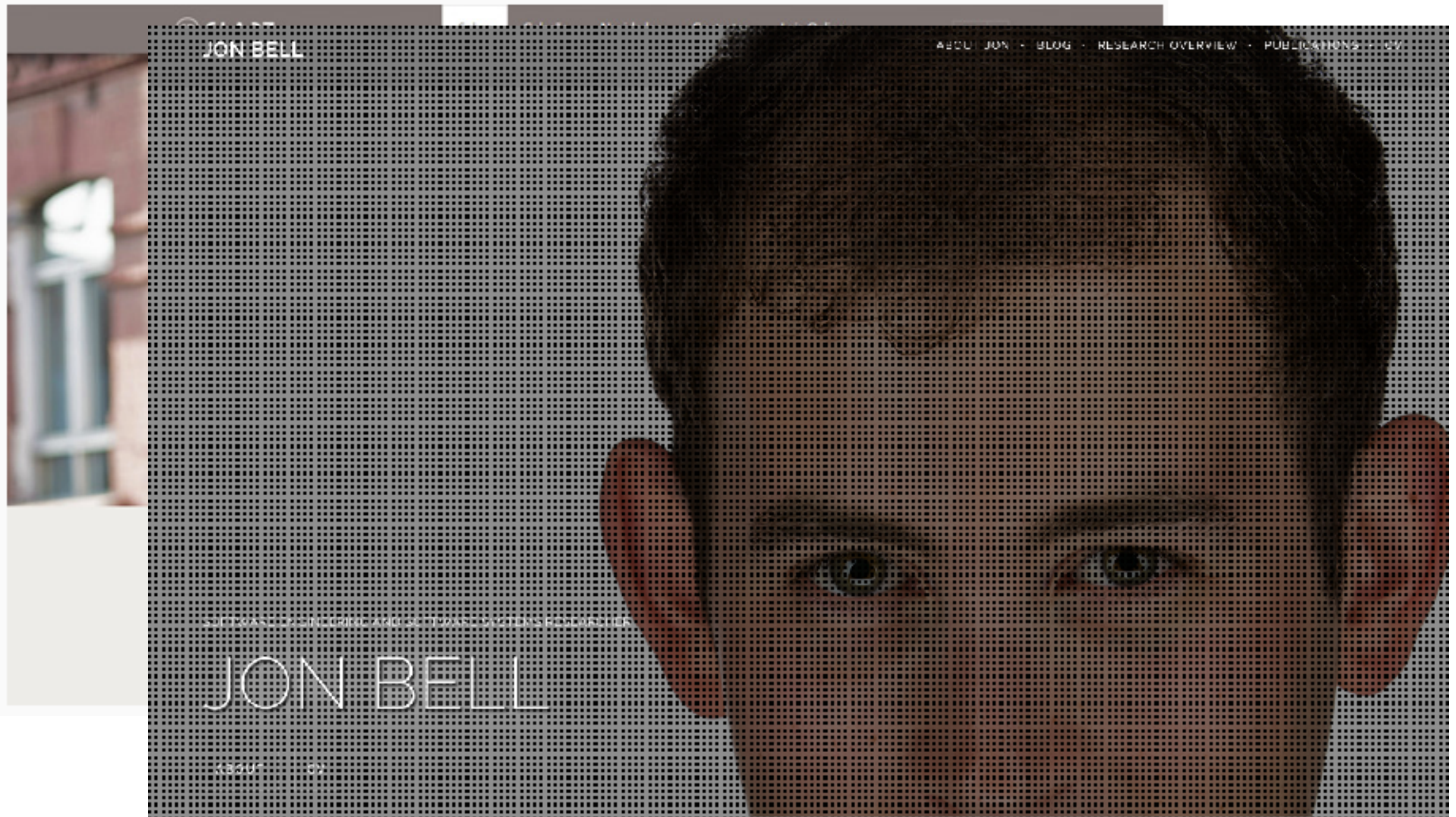


Common visual idioms, circa 2016



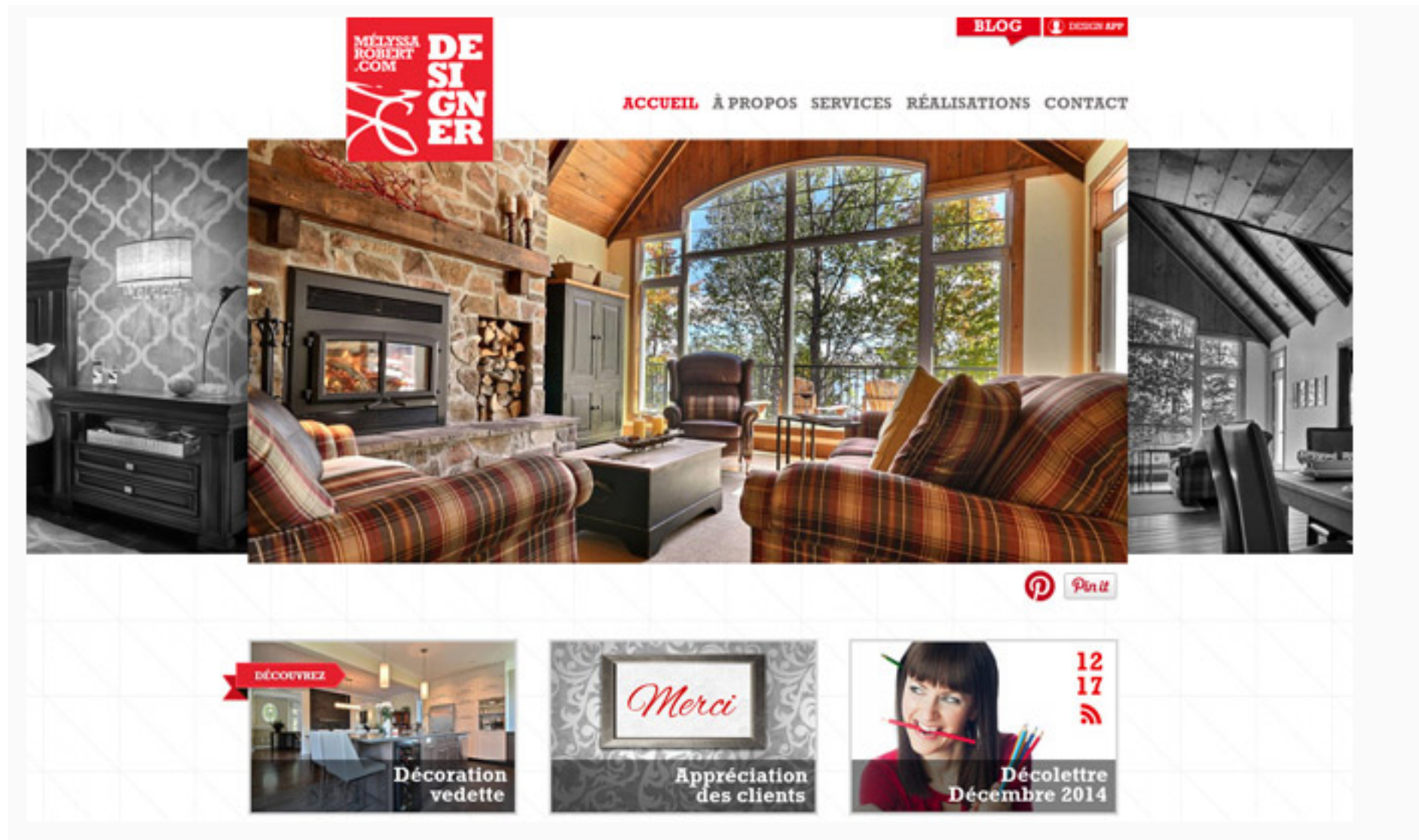
- Hero images: large attractive header image
- <https://envato.com/blog/exploring-hero-image-trend-web-design/>

Common visual idioms, circa 2016



- Single page designs: hero image with a navbar
- <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/>

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

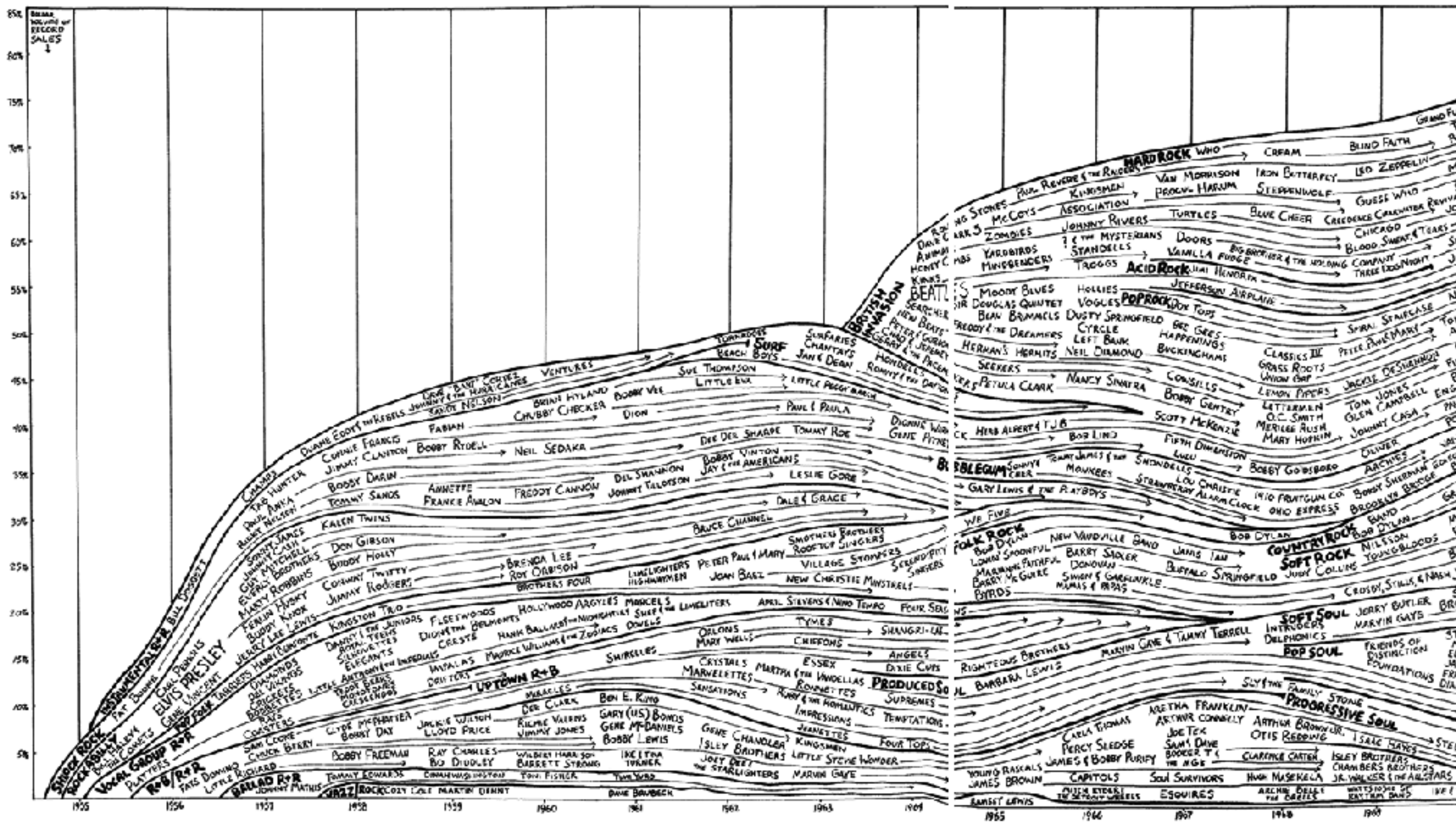


Goals in designing a design language

- 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?