

CS 498RK

SUMMER 2017

DESIGN

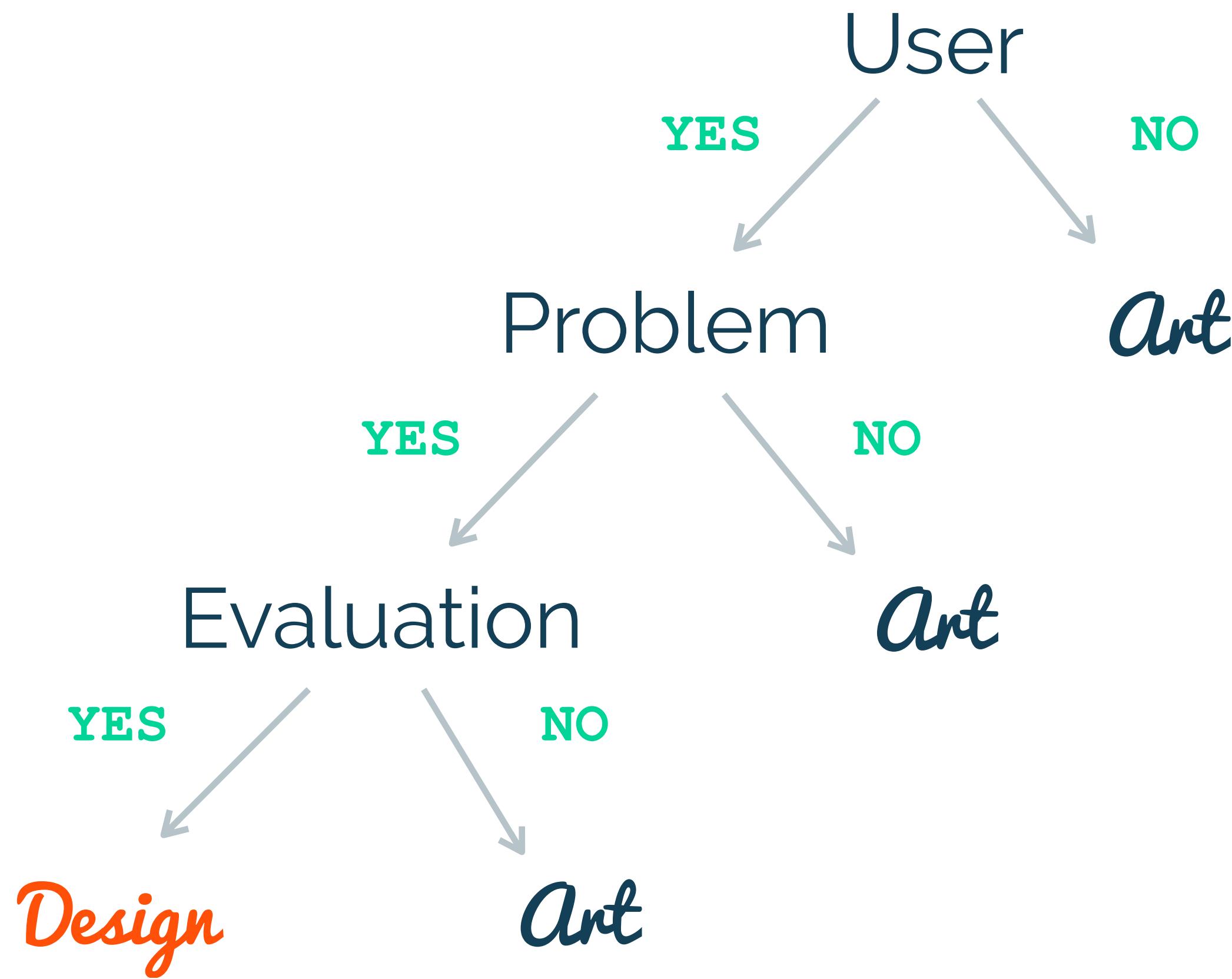
What is Design?

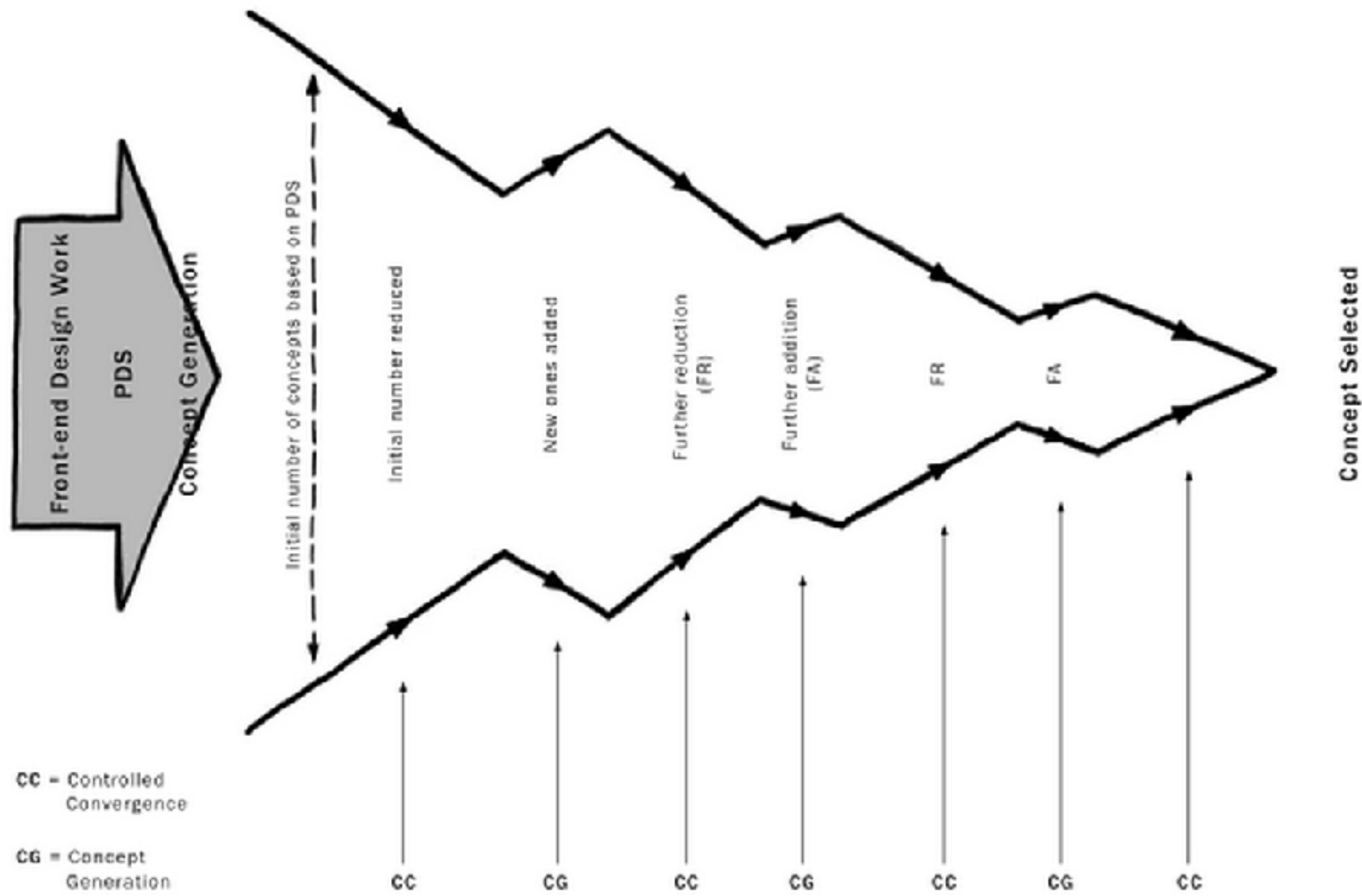
“DESIGN IS DOING THINGS WITH INTENTION,

trying to decide what's important to somebody, building a bunch of prototypes and showing them around, developing a point of view and getting it out so that it has impact in the world. So design is really a process of making impact on the world by doing this kind of creation of something new to the world and then getting it out there.”

David Kelley

<http://boingboing.net/2012/09/22/design-thinking-for-social-goo.html>





Bill Buxton
Sketching User Experiences

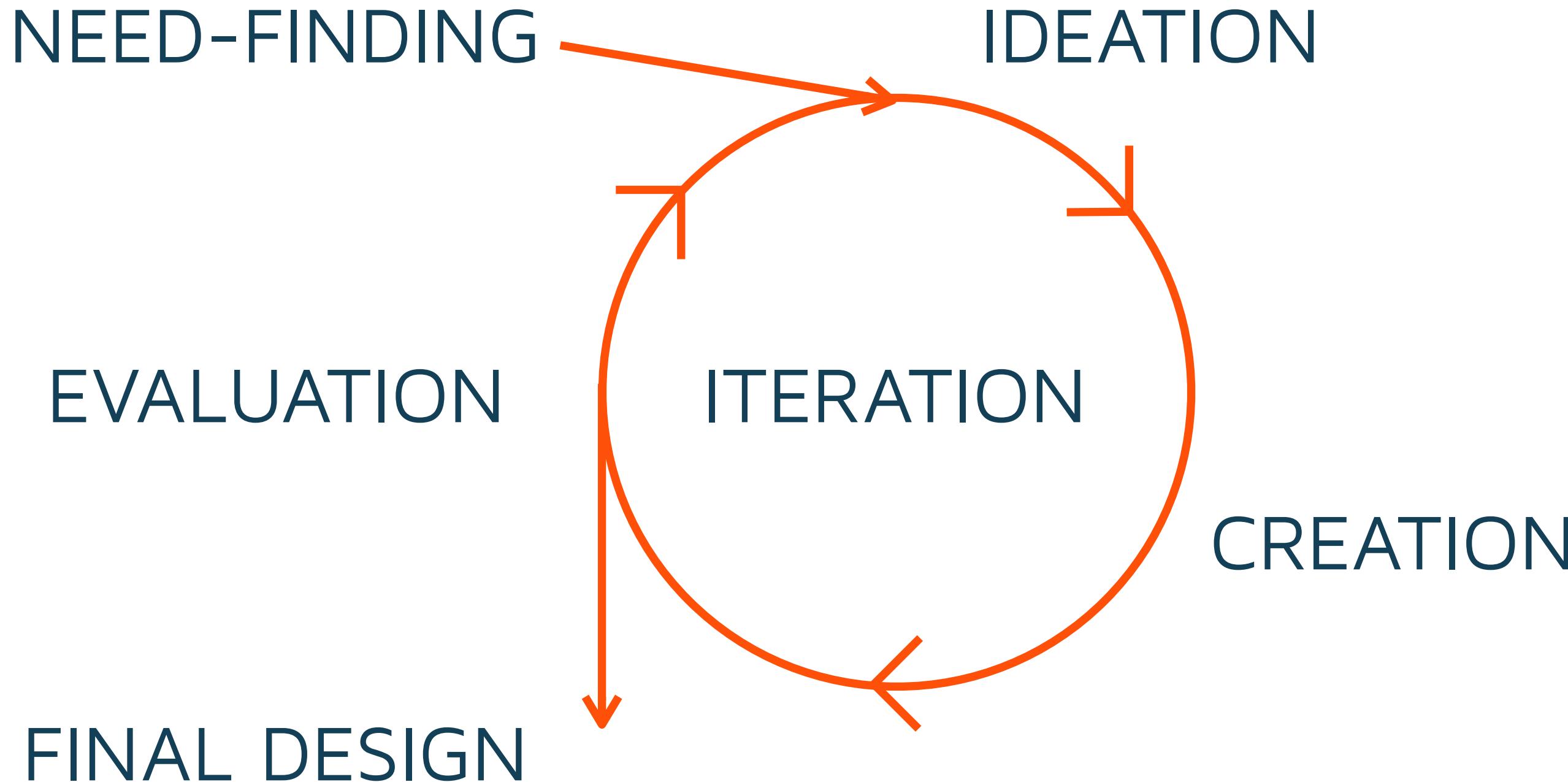
“DESIGN IS CHOICE,

and there are two places where there is room for creativity:

- 1. the creativity that you bring to enumerating meaningfully distinct options from which you choose*
- 2. the creativity that you bring to defining the criteria, or heuristics, according to which you make your choices.”*

Bill Buxton
Sketching User Experiences

THE DESIGN PROCESS



DESIGN IS *Wicked* HARD

indeterminate, incomplete, contradictory, and
changing requirements

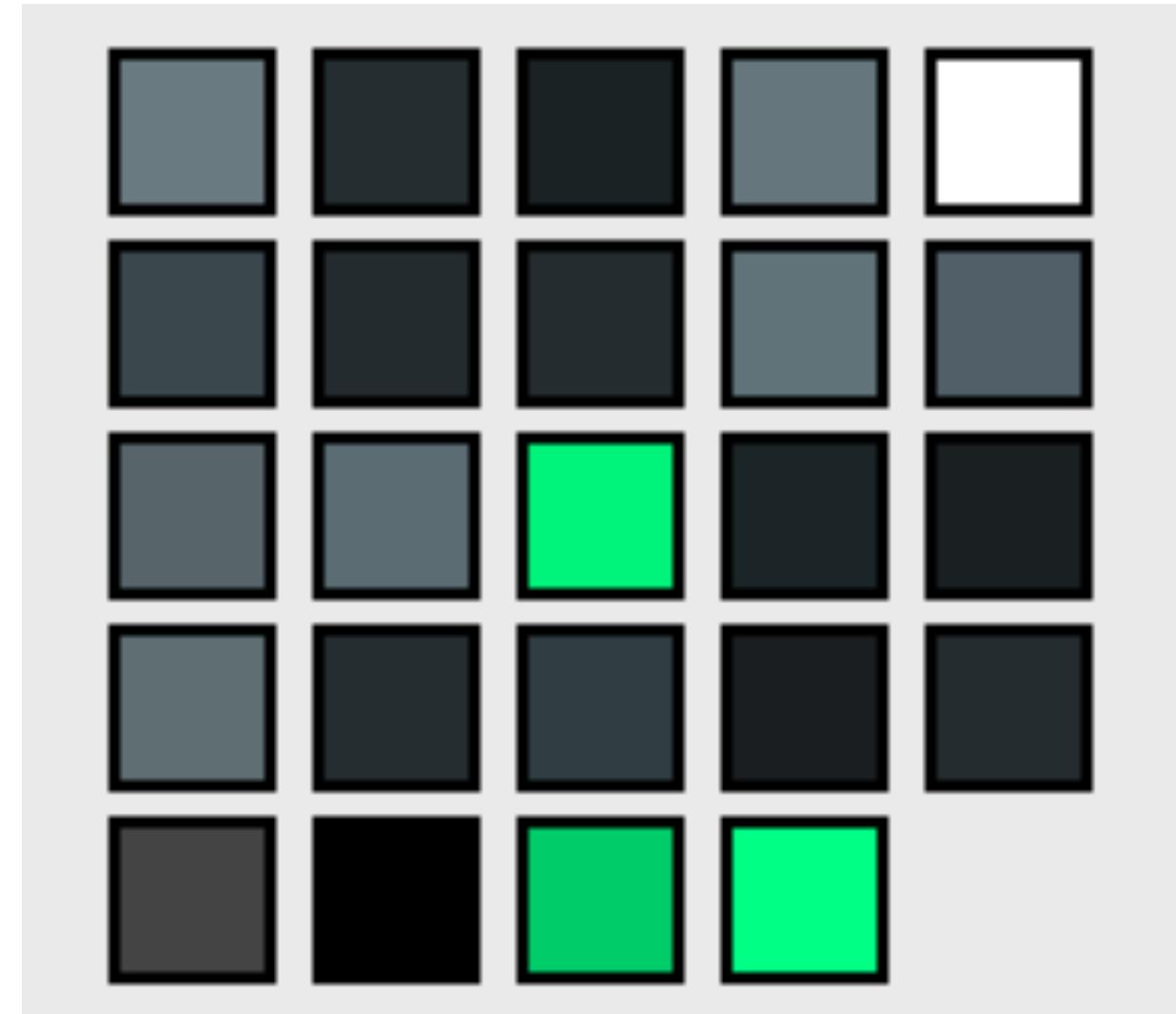
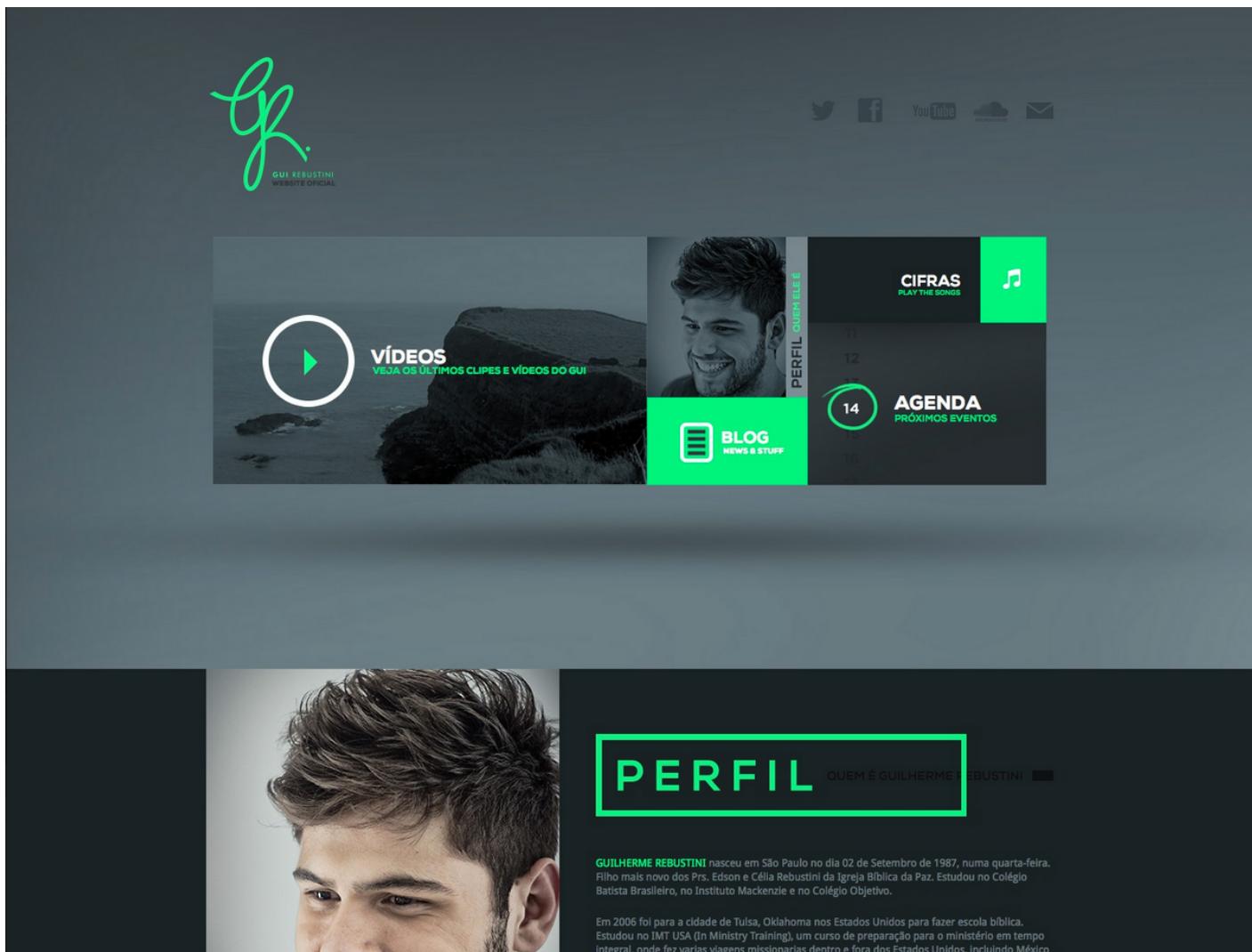
Wicked Problem

Exploring enough of the solution space

Evaluating amongst alternatives

Knowing when you're done

NUMBER OF DESIGN DECISIONS



Fifty Shades of Grey

What is Good Design?

MENTAL MODELS

User's understanding of how
something works

Inferred from the interacting with
the design

MENTAL MODEL

Good design communicates the right mental model

Bad design: designer's model differs from user's model

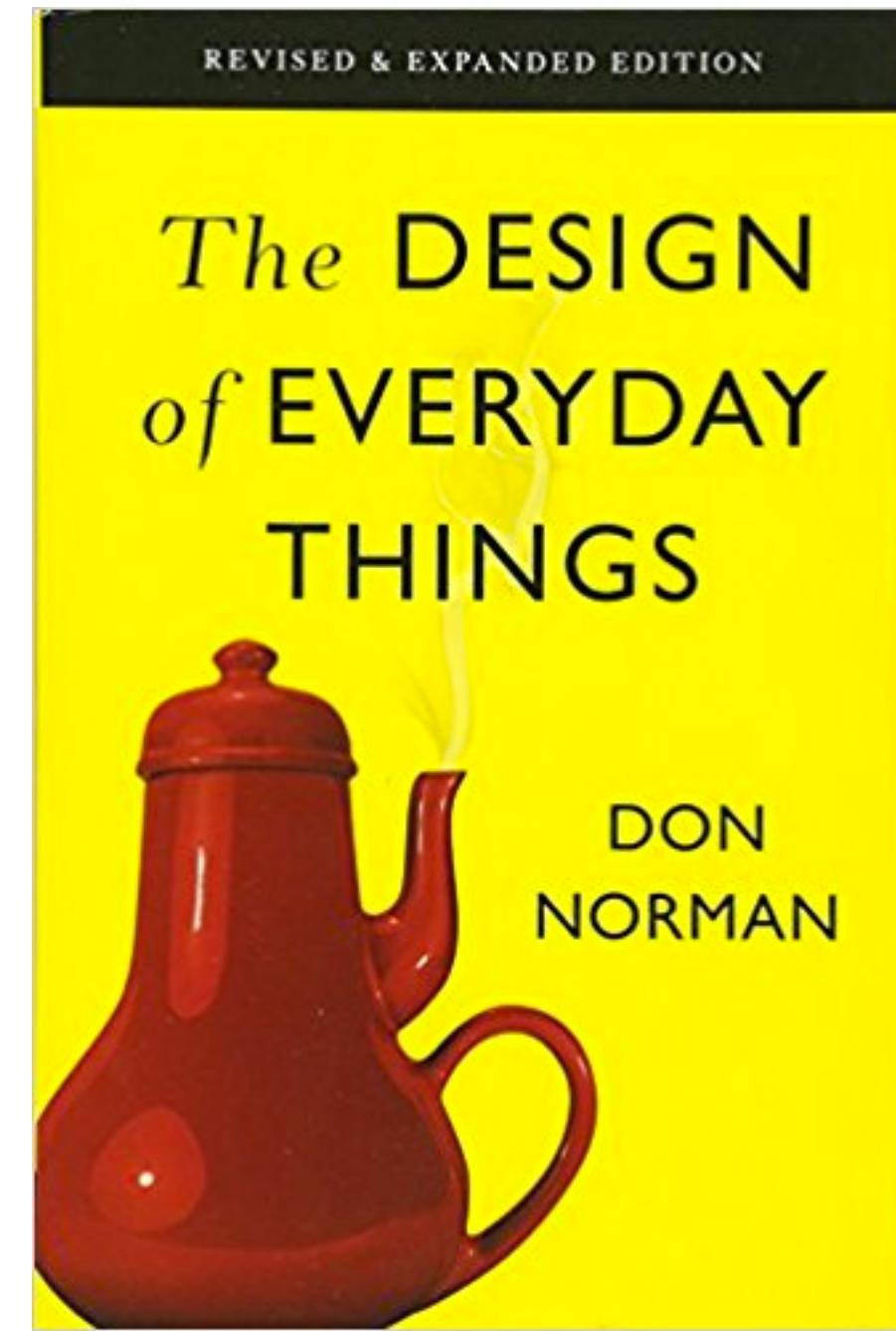
Intention vs Perception



clear **mapping** between
controls and functionality

not a natural mapping!

RECOMMENDED READING



The Web Design Process

DISCOVERY

a.k.a. Need-Finding, Research

figure out with the client what to build

analyze previous designs, competitors' designs

understand audience/users

determine scope, requirements, and constraints

Deliverable: Product Requirements Document (PRD)

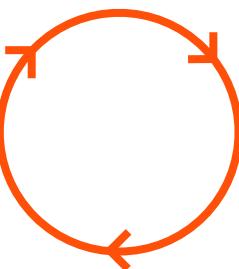
DISCOVERY

PRD

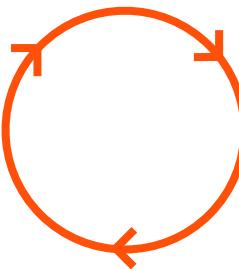


DESIGN

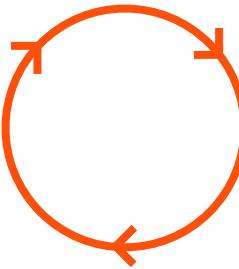
UI/UX Design



Information and
Navigation Design



Visual Design



takes up to 50% of
total project time

*many distinct concepts
are explored*

More on prototypes...

PROTOTYPES

Cheap and fast

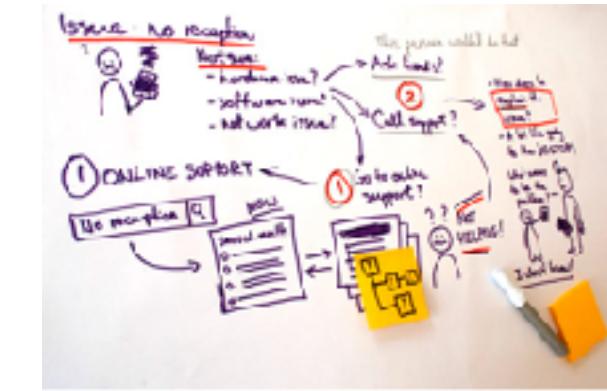
Spectrum of fidelity

Multi-resolution design

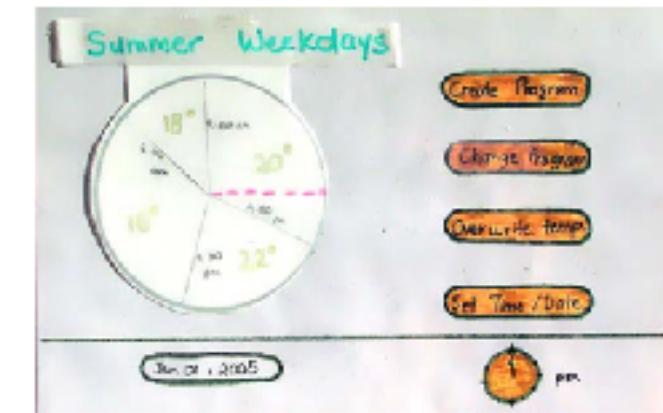
Tools: paper & pen, powerpoint,
photoshop, balsamiq

TYPES OF PROTOTYPES

Storyboarding



Paper prototypes



Video prototypes

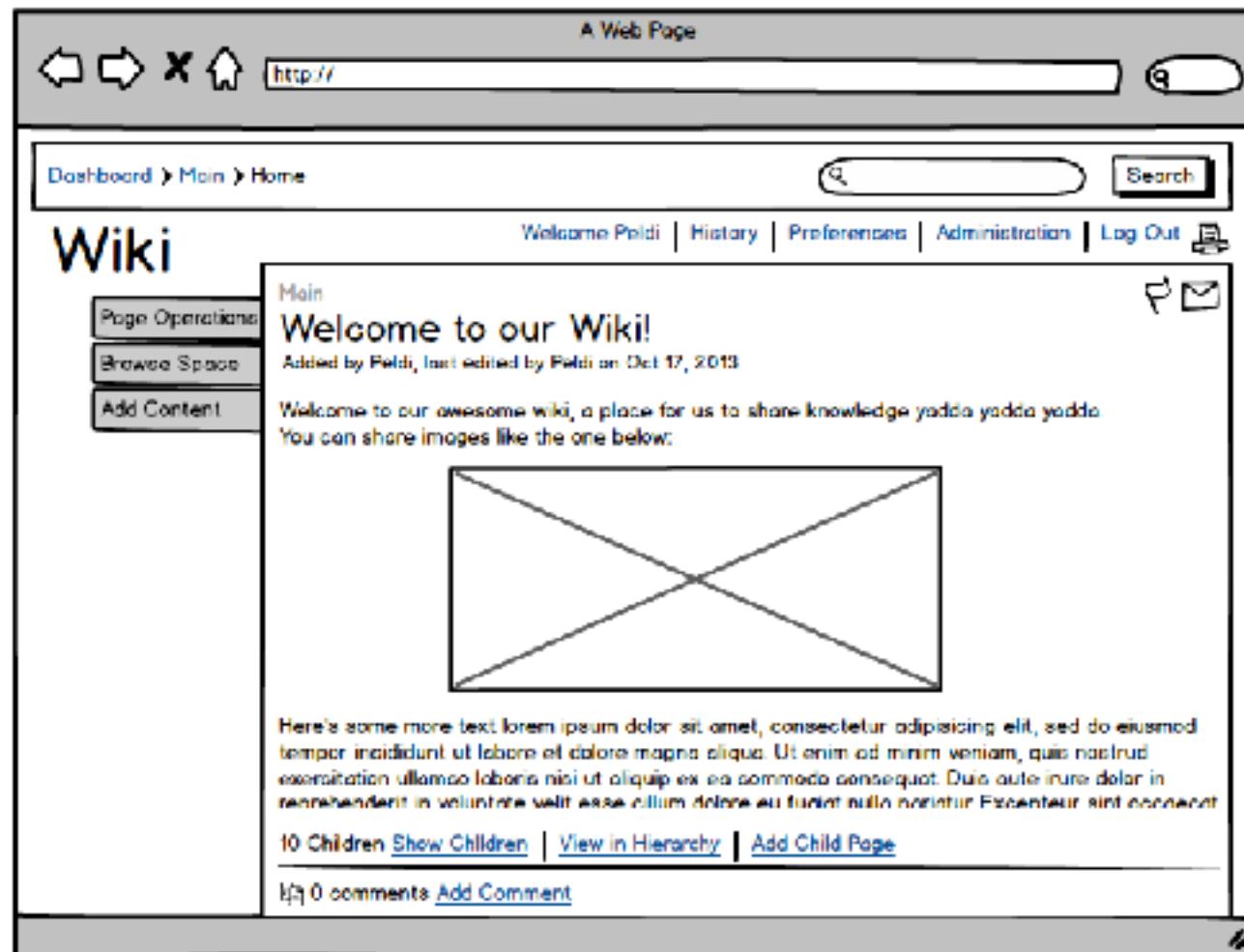
Functional prototypes

higher fidelity

WIREFRAMES

a.k.a. Schematics

Balsamiq



not the final visual design

content (information, navigation, interface elements) and layout

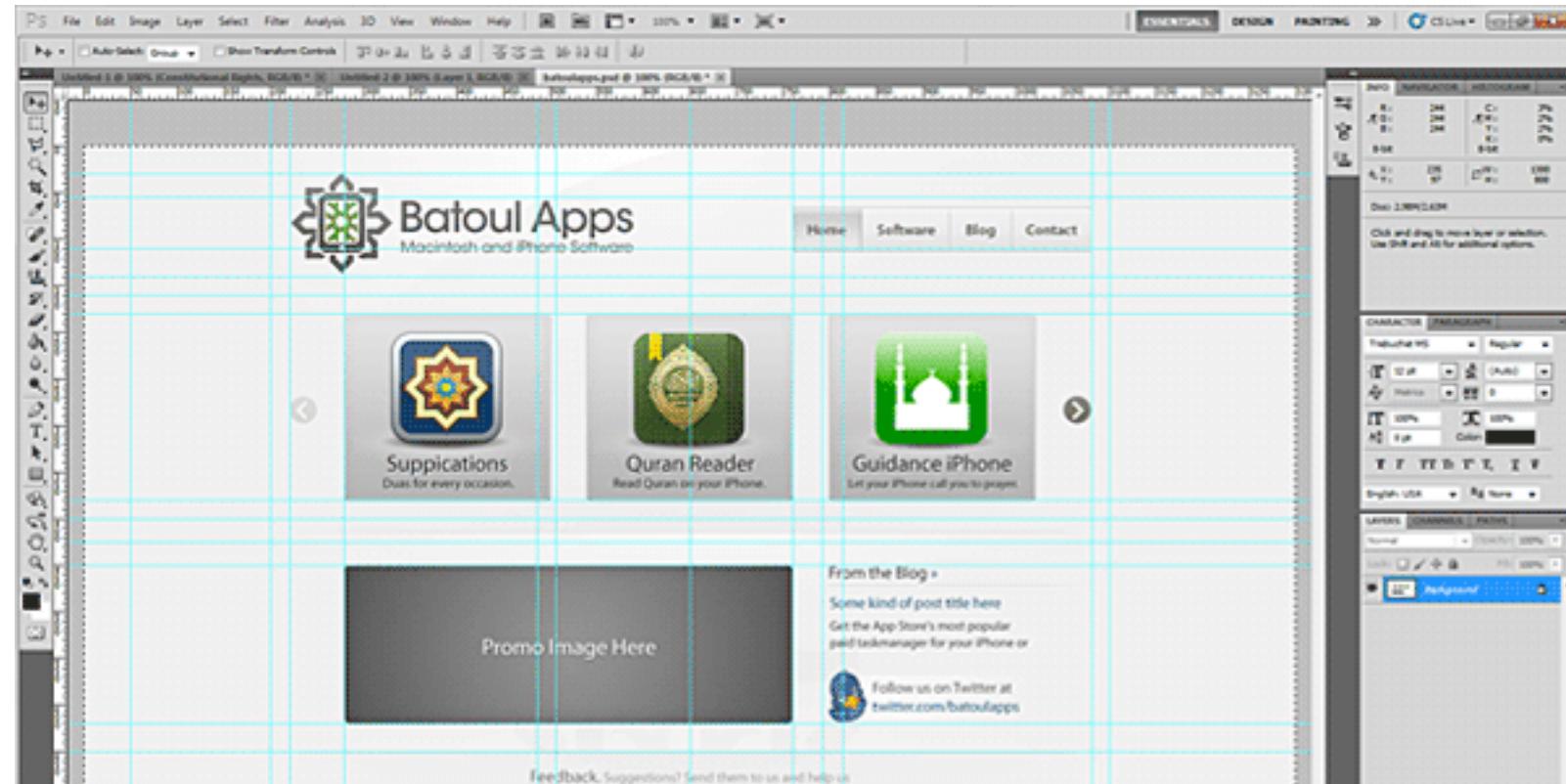
mixture of real content and annotated placeholders (images)

variations in color, typography used to differentiate different types of content

MOODBOARDS



MOCKUPS



high-fidelity prototypes of visual design

static: created in Photoshop, Illustrator, Sketch

WHY LOW TO HIGH FIDELITY?

HIGH-FIDELITY MAKES IT HARD TO...

get useful feedback

get the right feedback

iterate quickly

calibrate clients

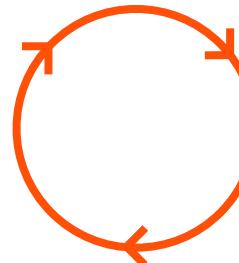
Separation of Design and Development

DISCOVERY

PRD



DESIGN

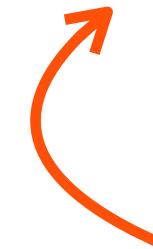


mockups and style guides



PRODUCTION

VISUAL DESIGN



a.k.a. Graphic Design

GOALS OF VISUAL DESIGN

structure content: relative importance,
relationships, ordering

richer experience: branding

WHY IS VISUAL DESIGN IMPORTANT?



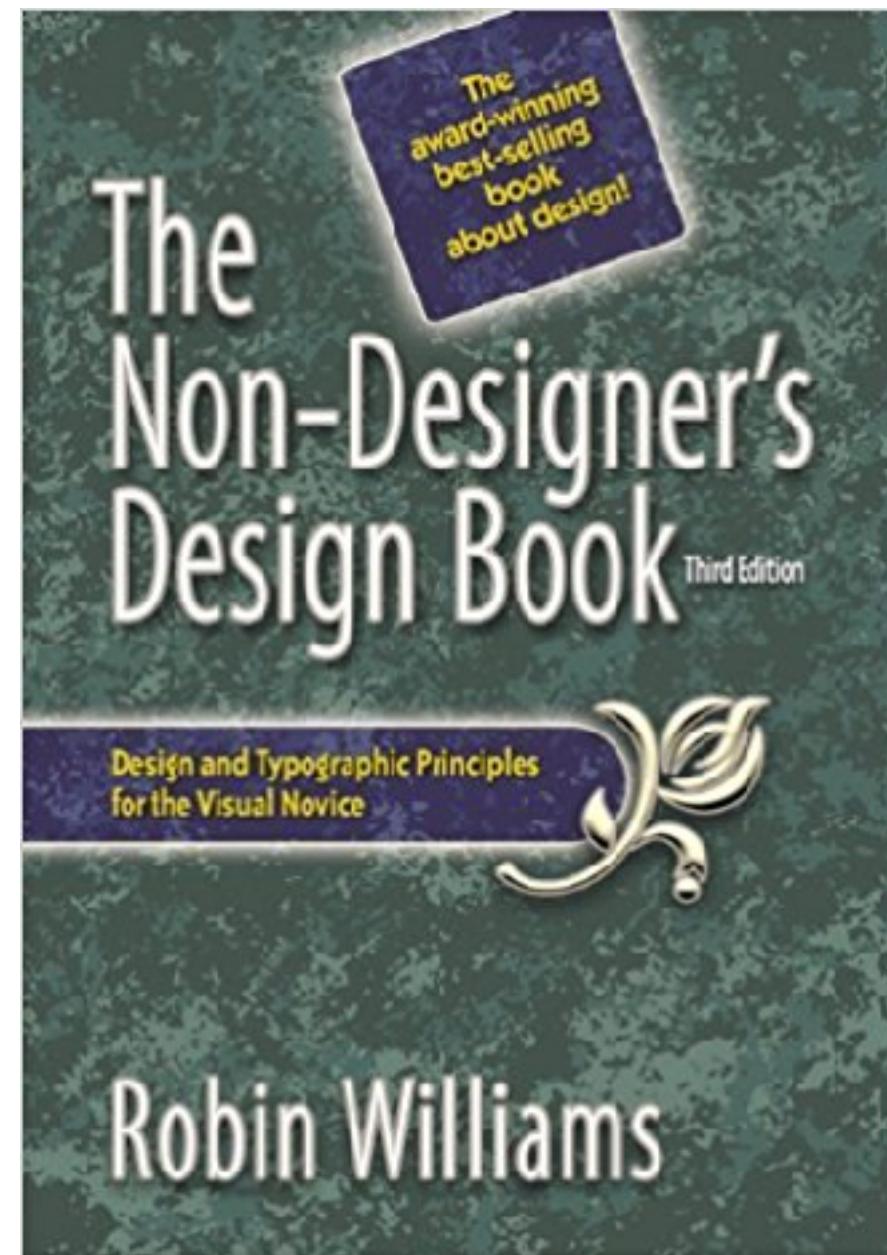
50 milliseconds to make a good first impression!

perceptions about trustworthiness, usability are based on visual appeal

What Do You See When You're Surfing? Buscher et al., CHI 2009
Attention Web Designers, Lindgaard et al., Behaviour & Information Technology 2006

Human Perception plays a
big role in visual design

RECOMMENDED READING



COMPONENTS OF VISUAL DESIGN

Layout

Color

Typography

layout

arrangement of visual elements

spacing, alignment, and relative
sizing

VISUAL HIERARCHY



The Outspoken website homepage features a large, central image of a man in a suit shouting into a megaphone. The text "Is Your Brand Outspoken?" is overlaid on the image, along with the subtitle "Use text, picture and video messaging to ensure your brand is heard." Below the image, there are three main service sections: "Messaging" (represented by a speech bubble icon), "Aggregation" (represented by a double arrow icon), and "Transcoding" (represented by a gear icon). Each section includes a brief description and a blue "See Features" or "Learn More" button.

Outspoken
Be Seen. Be Heard. Be Remembered.

Messaging | Aggregation | Blog | Get Started | Login
Contact us at 888.777.9882

Is Your Brand Outspoken?
Use text, picture and video messaging to ensure your brand is heard.

Messaging
If you're a brand or agency, our feature-rich SMS and MMS platform is perfect to help you increase your ROI on your mobile marketing campaigns.

Aggregation
Working with carriers can be complicated. We give you the power of over 700 carriers in 250 countries simply with one API for SMS and MMS.

Transcoding
Connect to the Outspoken transcoding API to optimize MMS video, picture, audio and other rich media for individual carriers, OS and phone make/model.

[See Features](#) [Learn More](#) [Try it Now](#)

What's important?

What's related?

How can you tell?

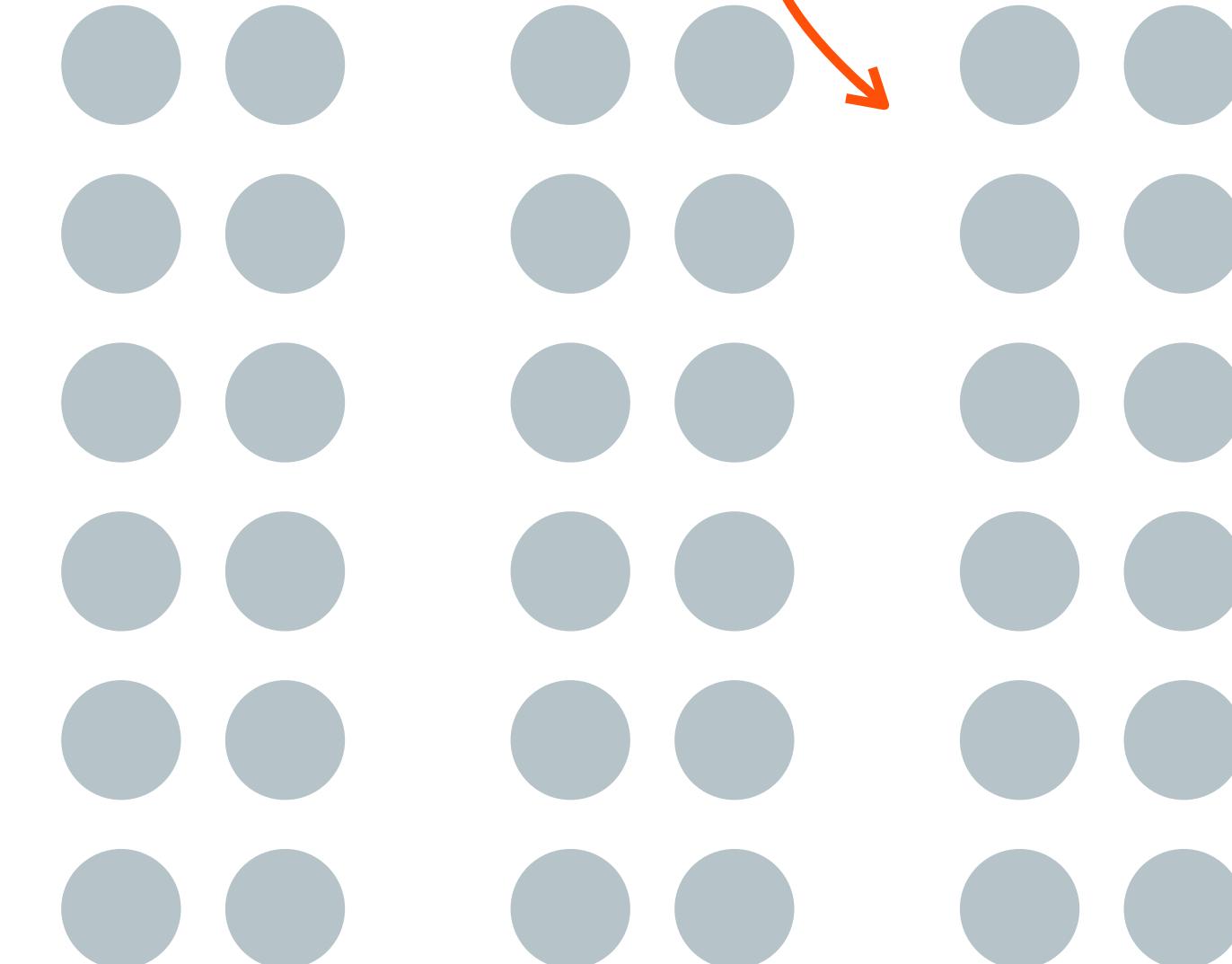
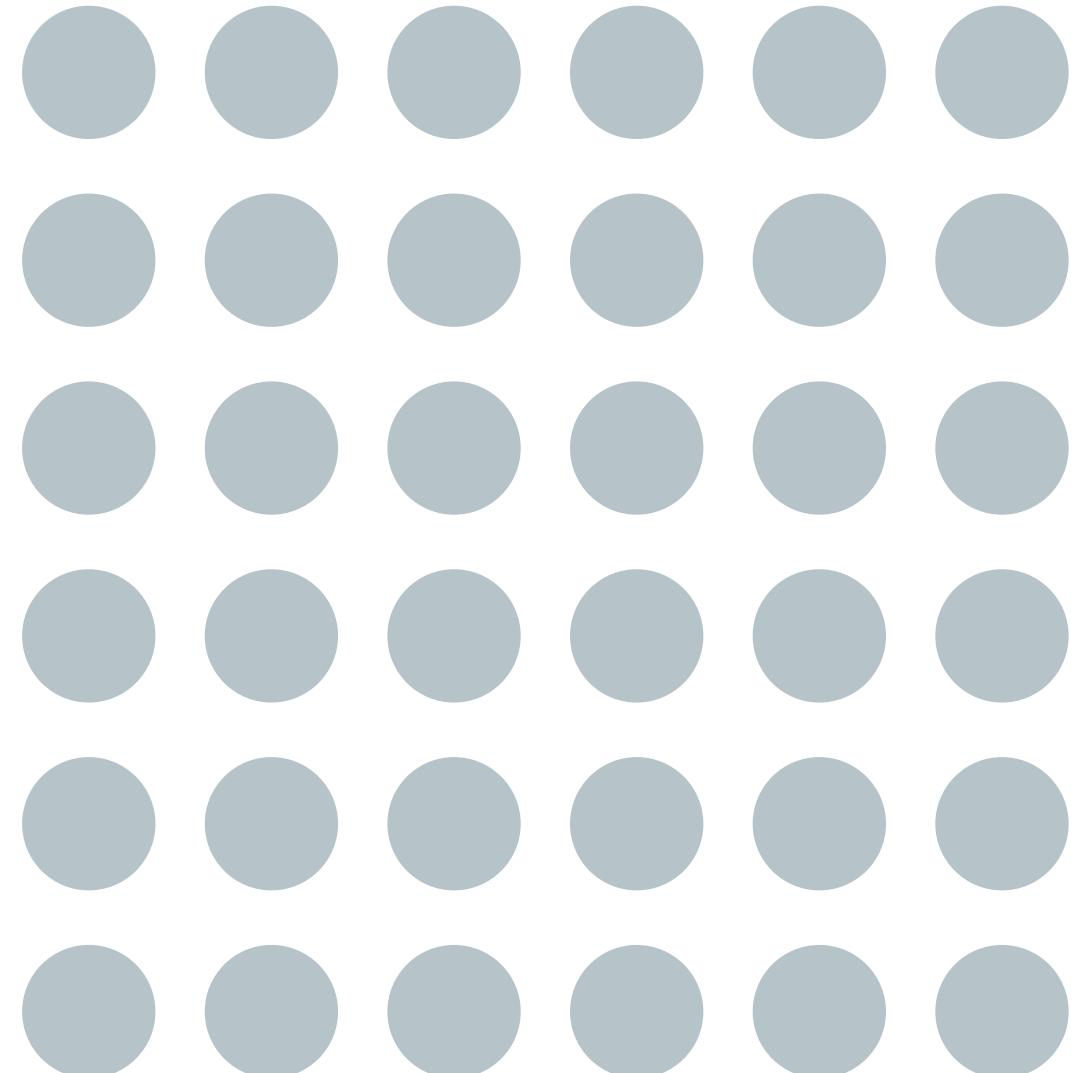
GESTALT LAWS

theories of visual perception (1920s)

describe how people organize visual elements into groups

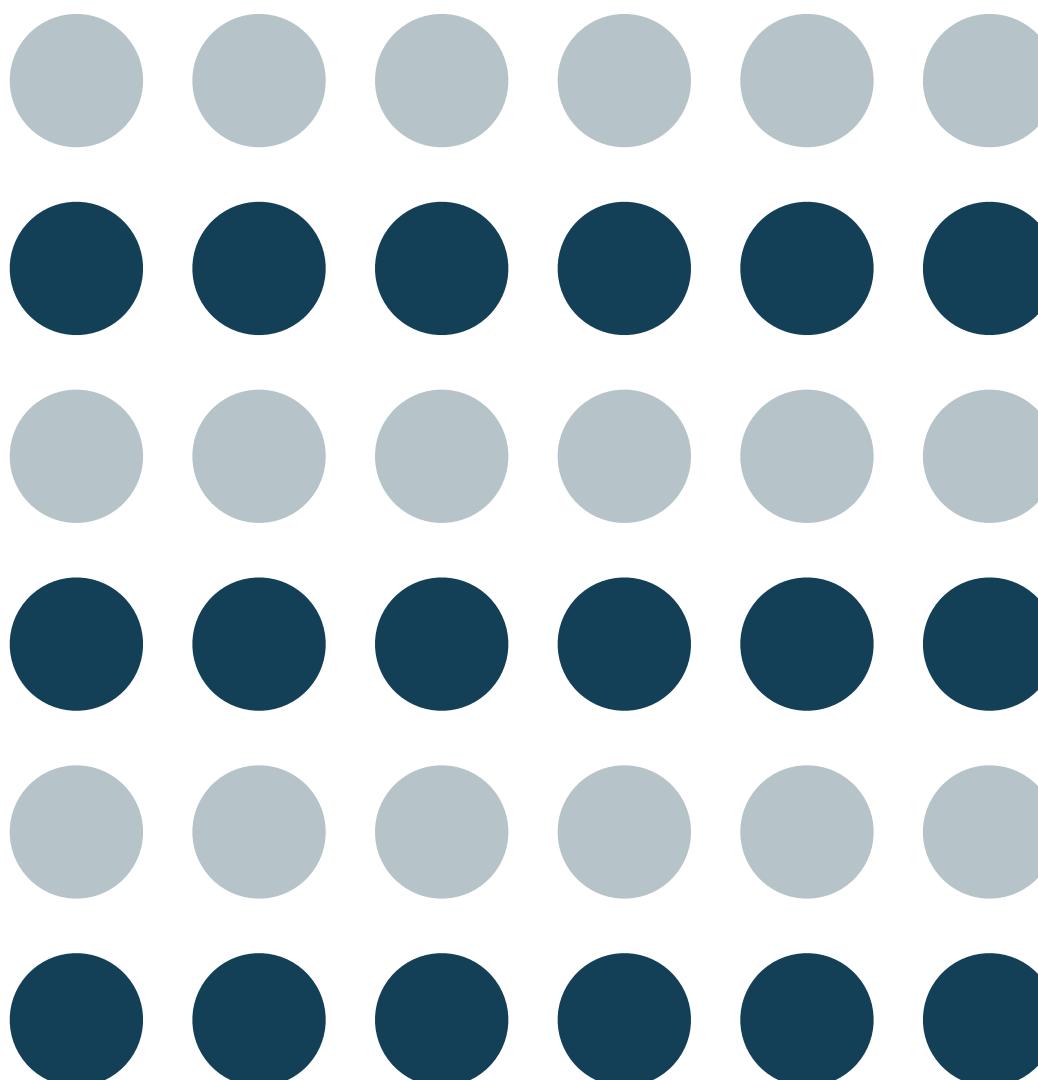
important for layout design

PROXIMITY



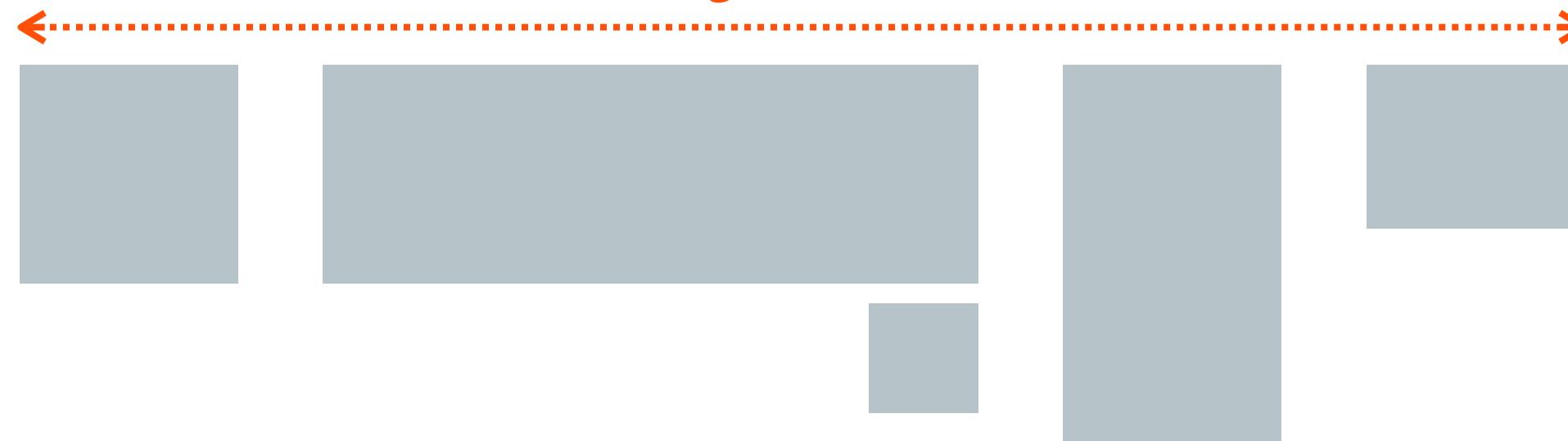
white space matters

SIMILARITY

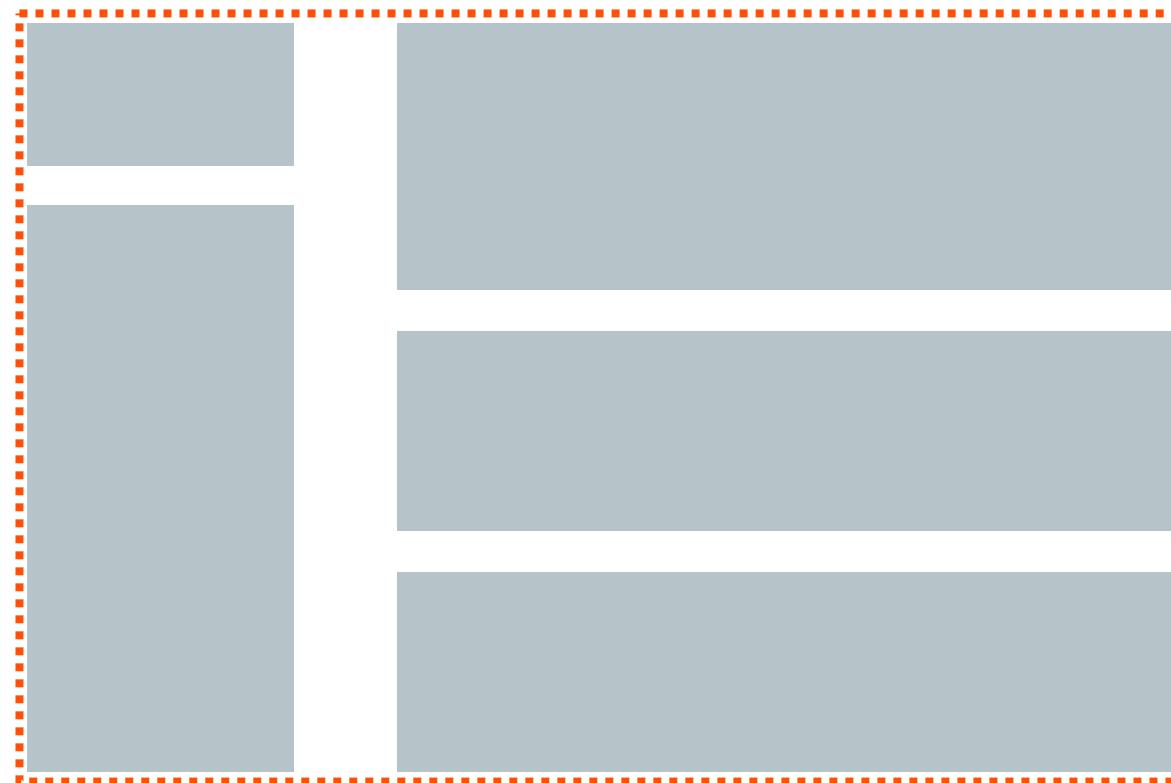


CONTINUITY

alignment

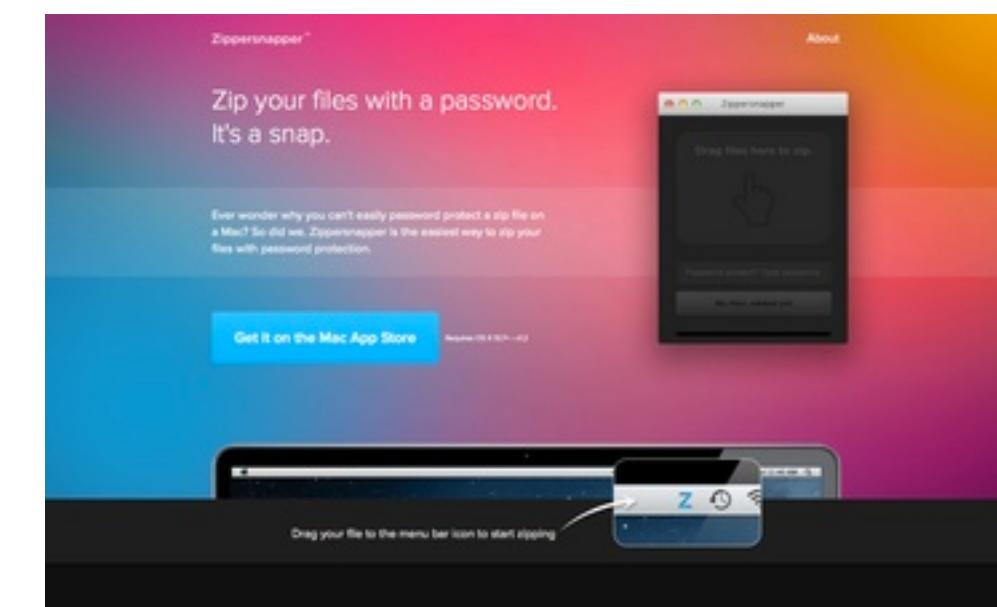
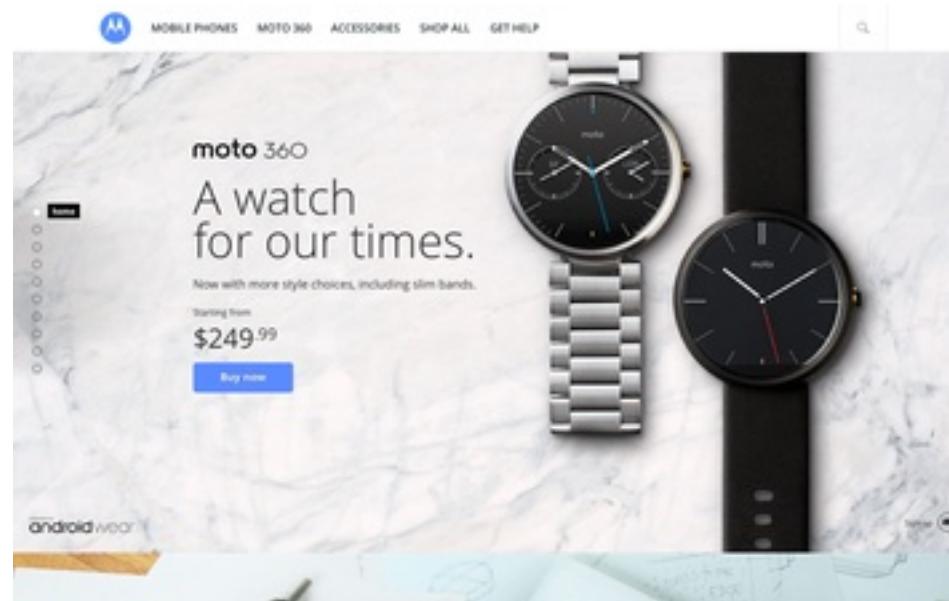


CLOSURE



en.wikipedia.org/wiki/Gestalt_psychology

Call-to-Action Buttons



TINT

DISPLAY ANY SOCIAL FEED FOR...

In-Store Screens

Twitter Google+ Facebook LinkedIn YouTube Instagram Pinterest Tumblr

An all-in-one platform that allows you to showcase social media in minutes, helping audiences engage.

TRY IT FREE WATCH VIDEO

SEE HOW IT WORKS

Horizontal Stripe

CONNECT

CONNECT any social feeds & hashtags

Please connect to a third-party account to see your latest posts from social networks.

DISPLAYS

Custom brand your social hub

It's easy to change themes, colors, and add more rows. Go to our design studio.

CLASSIC GRID GRID

LIVEVIEW

Control your content from anywhere

Streamline to enjoy posts from any device or screen.

1-800-888-1234 ext. 123456

All your content on any website or screen

Twitter Google+ Facebook LinkedIn YouTube Instagram Pinterest Tumblr

NASDAQ iPhone iPad Laptop

TRY IT FREE

Trending: Horizontal Stripe

Color

hue, saturation, value

FUNCTIONAL COLOR

Contrast between background and text is key to readability

Design in greyscale first and keep those luminance values when moving to color

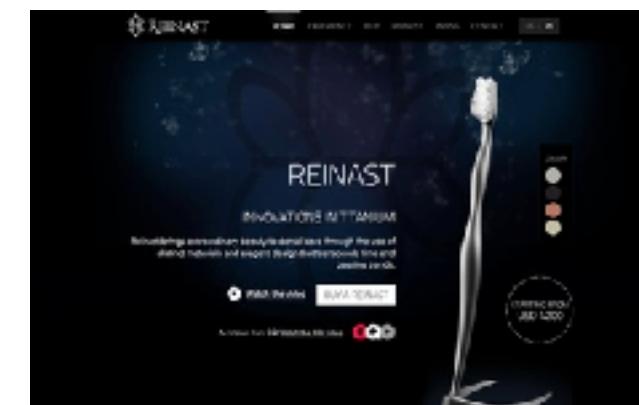
Colorful



Warm



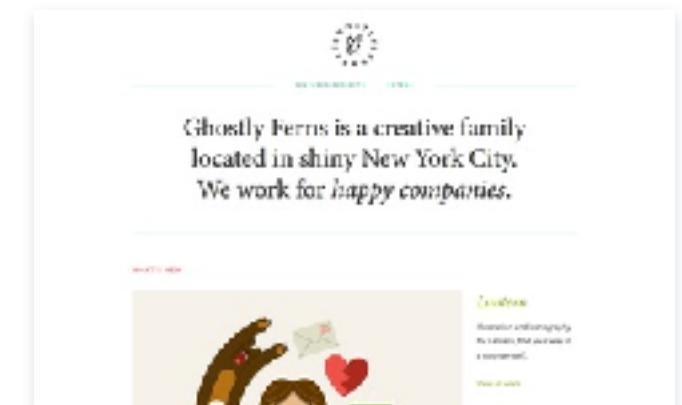
Dark



Greyscale



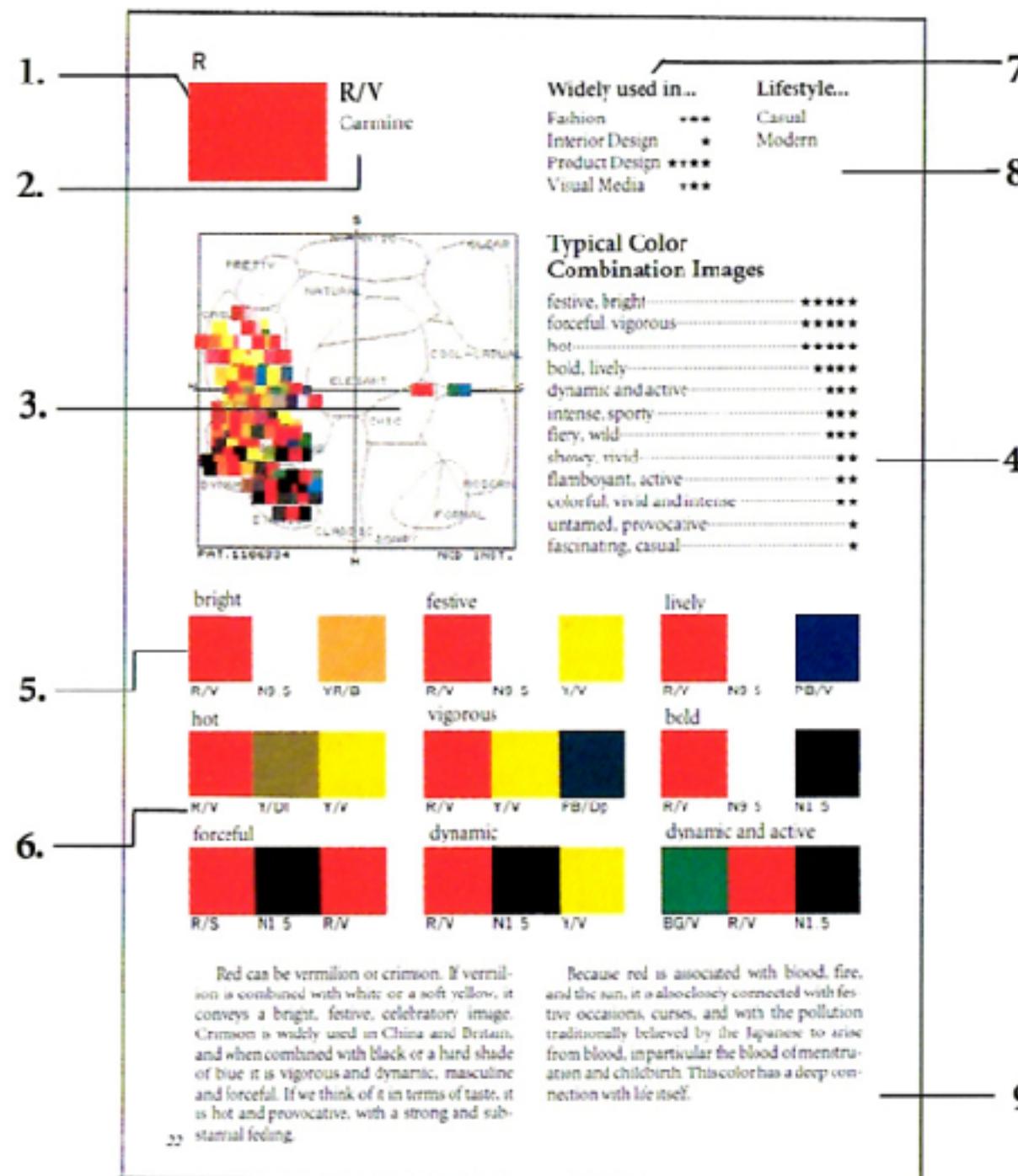
Cool



light

Expressive

SEMANTIC MEANING



Color Image Scale, Kobayashi

Trending: Greyscale with Accent Colors

ABOUT BLOG WORK CONTACT

Google Material Design's Animated Loading Spinner Using HTML, CSS and SVG

05 DECEMBER 2014

A look at how to create an animated loading spinner in the style of Google's Material Design.

Simple Static Web Server with 1 Line of Python

23 JULY 2014

Setup a simple static web server for local development with just 1 line of Python
SimpleHTTPServer.

Typography

Letterform Anatomy



Serif

Sans Serif

Slab Serif

Script

Display

Monospace

FONT GUIDELINES

For small text, higher x-height easier to read

serif or sans serif?

2-3 font faces: use variations in size, weight,
and style for contrast

SPACING GUIDELINES

Use leading and margins

distance between lines

line-height: 120%

Keep text paragraphs narrow

60-75 characters / 12-15 words /
30-45 em

RESPONSIVE DESIGN





number of devices on which people view Web content is exploding



GOAL OF RESPONSIVE DESIGN

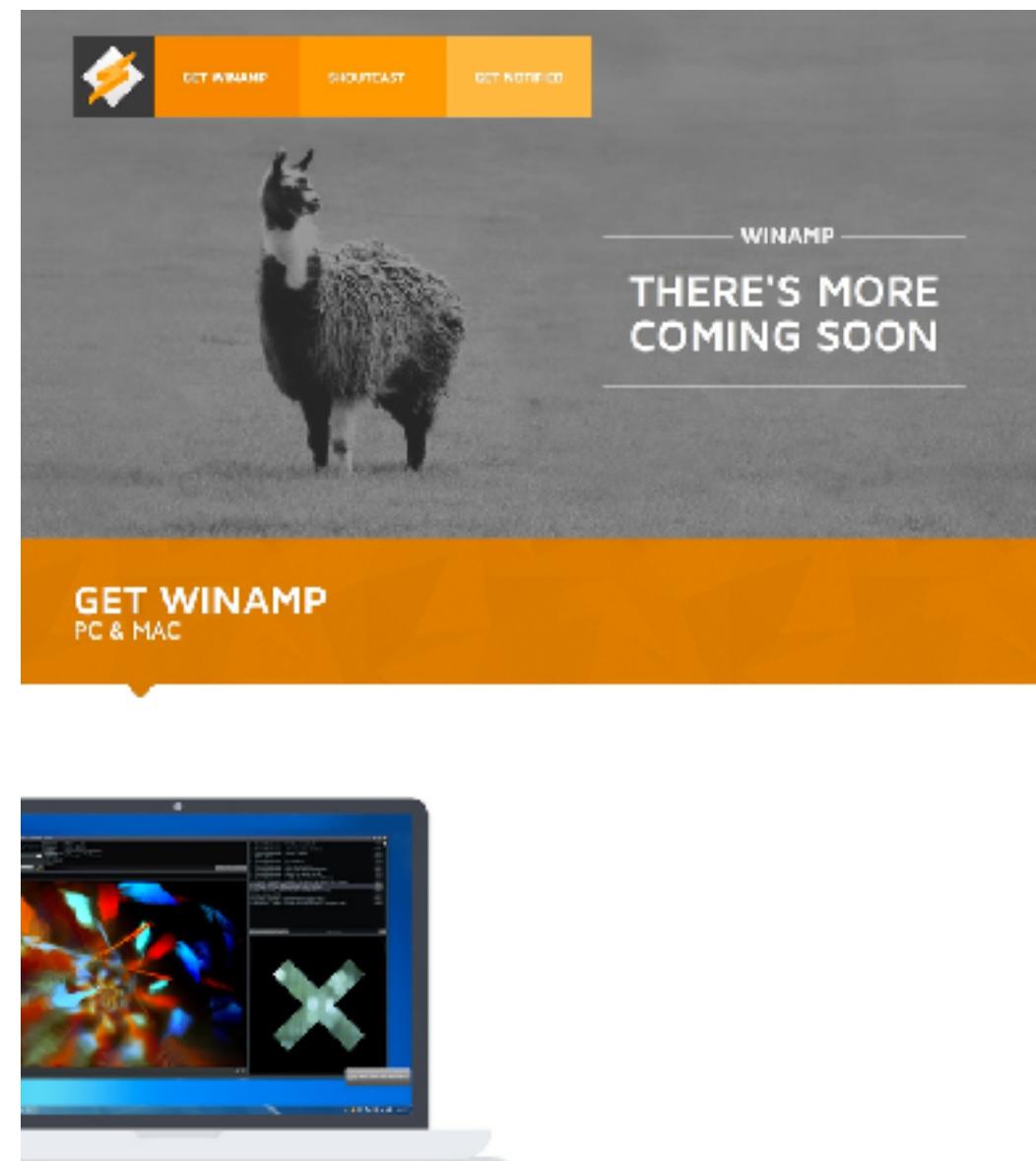
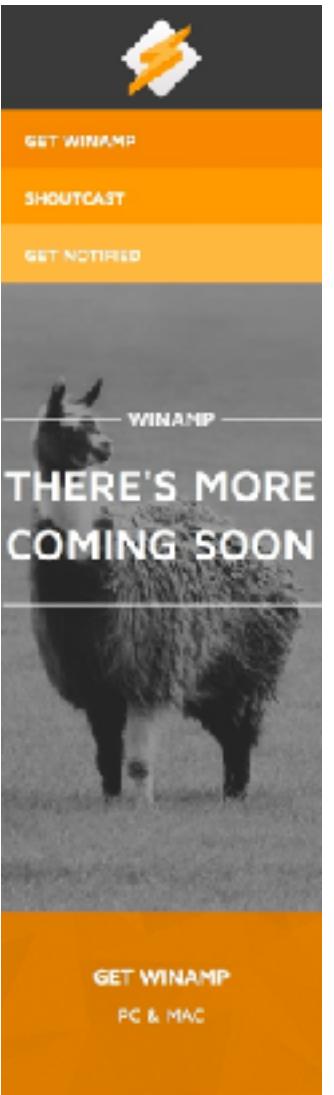
optimize design for different form factors



and everything
in between



DESIGN CONSIDERATIONS



How do styles and layouts change?

How is content remapped?

@media

CSS media queries are used to define different style rules for different devices

usually defined on browser width and/or height

can also query device width, height, orientation, resolution, etc.

@media SYNTAX

```
@media not|only mediatype and  
(media feature) {  
    CSS-Code;  
}
```

screen, print, tv
max-width, min-width, width,
max-height, min-height, height,
max-resolution, ...

@media EXAMPLE

```
@media only screen and  
(max-width: 640px) {  
  body {color: blue; }  
}
```

Hide style sheets from
older user agents

breakpoint

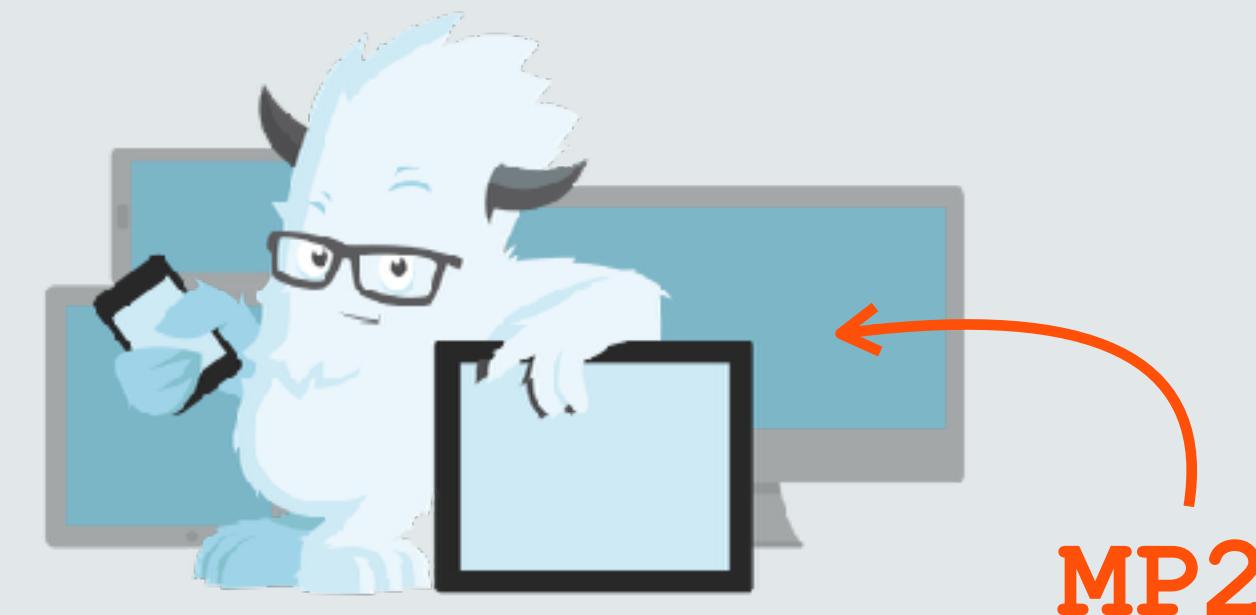
CODEPEN

writing media queries by hand is hard!

CSS FRAMEWORKS



Twitter
Bootstrap



Zurb
Foundation



GRID-BASED DESIGNS

divide screen into equal-width columns

columns separated by gutters

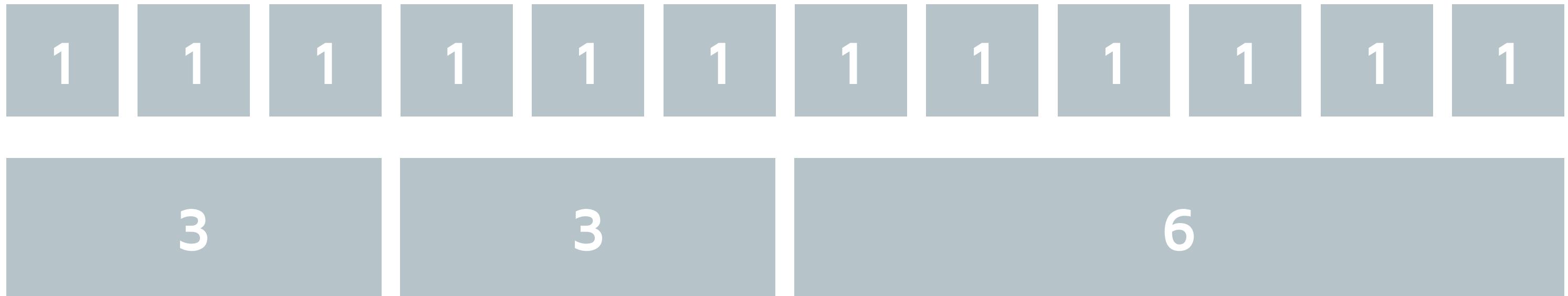
margins on both sides of window

elements may span multiple columns

elements start or end at column boundaries

alignment reduces visual clutter

12-COLUMN GRIDS



GRID CLASSES

use predefined class libraries to
create layouts and define
responsive behaviors



GRID CLASSES



```
<div class="row">  
  <div class="small-3 columns">...</div>  
  <div class="small-3 columns">...</div>  
  <div class="small-6 columns">...</div>  
</div>
```

All children of rows
must be columns!



COLUMN CLASSES

small-# **max-width: 640px**

medium-# **min-width: 641px and max-width: 1024px**

large-# **min-width: 1025 and max-width: 1440px**

xlarge-# **min-width: 1441 and max-width: 1920px**

xxlarge-# **min-width: 1920px**



COMBINING CLASSES



```
<div class="row">  
  <div class="small-3 columns">...</div>  
  <div class="small-3 columns">...</div>  
  <div class="small-6 columns">...</div>  
</div>
```

why don't we see any
responsive behavior?



MOBILE FIRST

design mobile first, then desktop

Google's approach, Eric Schmidt 2010

graceful degradation vs progressive enhancement



MOBILE FIRST BEHAVIOR



```
<div class="row">  
  <div class="medium-3 columns">...</div>  
  <div class="medium-3 columns">...</div>  
  <div class="medium-6 columns">...</div>  
</div>
```

larger devices will inherit
styles from smaller ones

CODEPEN



MOBILE FIRST BEHAVIOR

```
<div class="row">  
    <div class="small-3 large-2 columns">...</div>  
    <div class="small-3 large-2 columns">...</div>  
    <div class="small-6 large-8 columns">...</div>  
</div>
```

what does this do?



NESTING GRIDS

```
<div class="row">  
  <div class="small-3 columns">...</div>  
  <div class="small-9 columns">  
    <div class="row">  
      <div class="medium-6 columns">...</div>  
      <div class="medium-6 columns">...</div>  
    </div>  
  </div>  
</div>
```

CODEPEN



MORE GRID CLASSES

```
<div class="row">  
  <div class="small-4 small-offset-2 columns">...</div>  
</div>
```

offset columns

```
<div class="row">  
  <div class="small-3 small-centered columns">...</div>  
</div>
```

center columns

CODEPEN



REORDER COLUMNS

```
<div class="row">  
  <div class="medium-9 medium-push-3 columns">...</div>  
  <div class="medium-3 medium-pull-9 columns">...</div>  
</div>
```

CODEPEN



CSS PREPROCESSOR INTEGRATION

Bootstrap is built on LESS,
but also has SASS port

Foundation works with SASS



CUSTOMIZING WITH SASS

customize grid with SASS variables in `_settings.scss`

```
$row-width: rem-calc(1000);
```

```
$column-gutter: rem-calc(30);
```

```
$total-columns: 12;
```



Device Apple iPhone 5 Network No throttling
320 × 568 2 Fit UA Mozilla/5.0 (iPhone; CPU iPhone O...
ANNOUNCEMENT Enrollment is at max capacity – keep checking online for openings.
PIAZZA LABS AND MPS RESOURCES
THE ART AND SCIENCE OF WEB PROGRAMMING
CS458RK SPRING 2015 UIUC MONDAY AND WEDNESDAY 11AM-12:15PM SIEBEL 0216
OVERVIEW
Presents client- and server-side technologies that enable modern Web applications. Topics include the building blocks of the Web (HTML, CSS, the Document Object Model, Javascript) and data exchange (HTTP, JSON, RESTful APIs, and SQL/NoSQL databases). Programming

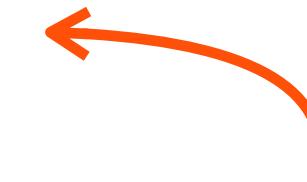
The screenshot shows a mobile web page for a course titled "THE ART AND SCIENCE OF WEB PROGRAMMING". The page includes details about the course (CS458RK, Spring 2015, UIUC, Monday and Wednesday, 11AM-12:15PM, Siebel 0216), an "OVERVIEW" section, and an "ANNOUNCEMENT" box stating "Enrollment is at max capacity – keep checking online for openings." The developer tools are open at the bottom, showing the "Elements" tab selected. A red circle highlights the "Elements" tab icon. The left sidebar of the developer tools shows the DOM tree, and the right sidebar shows the "Styles" panel with CSS rules like "element.style {" and "@media only screen and (max-width: 40em)".

TAILORED EXPERIENCES

screen size is just one part of a user's context

there's **a lot** more you know: where people are in the world, where they've just come from, how long they've been on the site, etc.

design algorithms and interfaces that take into account more of the user's context



percentage of influence specifier?