

# The Art of Rapid Prototyping

## Building Useful Prototypes

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Download these slides at [tinyurl.com/PrototypeMore](http://tinyurl.com/PrototypeMore)

# Prototypes

“A prototype is an **early sample** or model built to **test a concept** or process or to act as a thing to be replicated or **learned from**.”

-Wikipedia

# Rapid Prototypes

A “Just Good Enough”  
representation of a design that  
answers a specific question.

# Rapid Prototypes

Mitigate Risk

Make Informed Decisions

Gather High-Fidelity Feedback

# Four Principles

Know Your Goal

Use the Right Tools

Do Just Enough

Lather, Rinse, Repeat

# Know Your Goal

Define what you are trying to test.

Razor sharp precision.

# Use The Right Tools

Choose the tools with the least overhead to start and the most flexibility for iteration

# Do Just Enough

## Cut Corners Always

Ask “What value does this  
add to my goal”

Lather, Rinse, Repeat

Throw It Away!

# Lather, Rinse, Repeat

Goal of Prototype is  
Improved Design

Different design

=

Different Code Architecture

# Lather, Rinse, Repeat

Prototype Early,  
Prototype Often

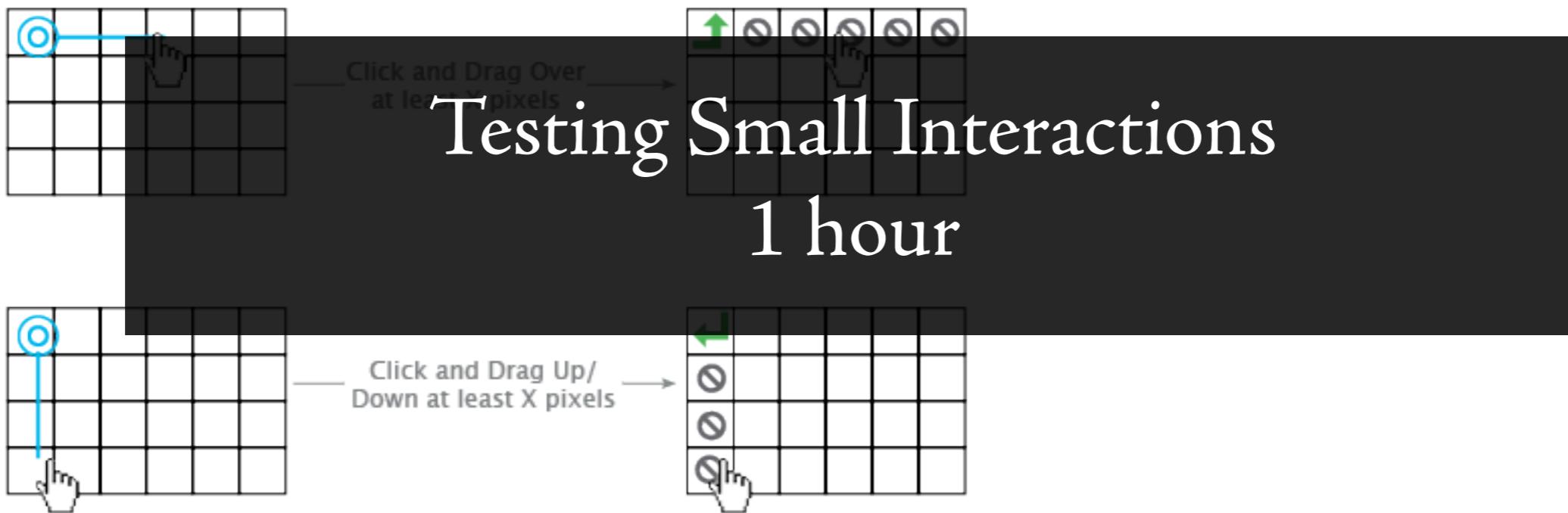
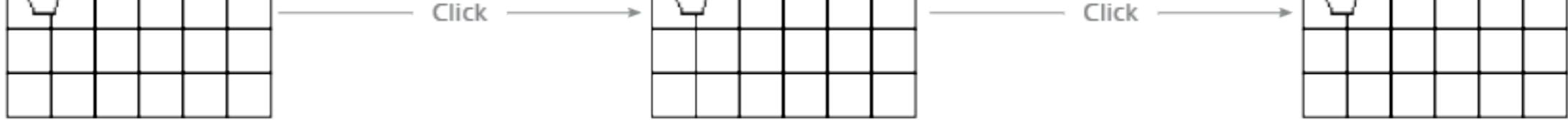
# My Typical Tools

HTML5 for Layout

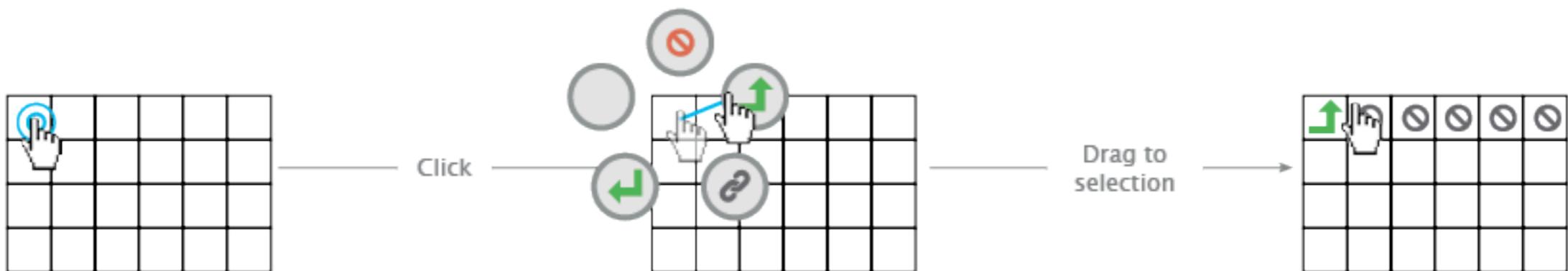
Javascript for Interaction

CSS3 for Basic Styling

Static images for anything complex



## 8 TABLE INTERACTION – CLICK AND SELECT



Slow breathing animation to make the drag interaction more discoverable

Goal

Is it an awkward interaction in a desktop?

Answer

No.

What's Good

Quick access to tools

Long click is discoverable

What's Bad

Obtrusive if the interaction is triggered by accident

Know Your Goal

Is it an awkward interaction in a desktop?

Use the Right Tools

Basic HTML/JS/CSS

Images for anything complex

Do Just Enough

No focus on styling or context

Lather, Rinse, Repeat

Tested alternative interactions

Luminaire Coffee  
26.May.2013

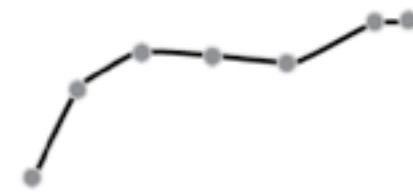
## Profile Creation and Editing on Touch Devices

### Drawing and Editing a Profile

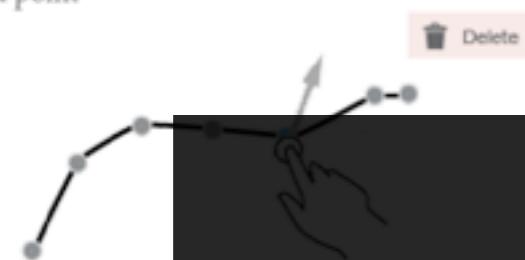
- 1 Draw a profile with your finger



- 2 On release, profile is "simplified"



- 3 Drag a point

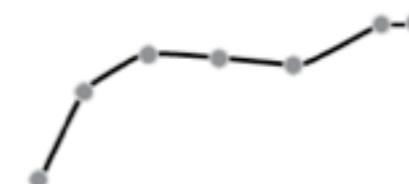


- 4 Feedback on where the point was and where it will be on release.

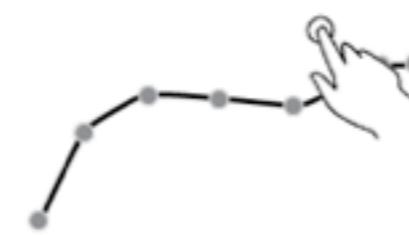


### Adding a point

- 1 Begin with simplified profile.



- 2 Tap at new point location.

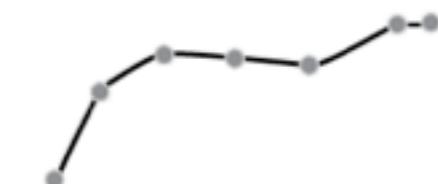


- 3 New Point is created



### Adding a series of points

- 1 Begin with simplified profile.



- 2 Drag new portion of curve



- 3 Points along x axis are replaced



This one definitely needs to be prototyped. It could be really powerful but could also be really weird.

Goal

Is it weird to edit curves in a different way than I drew?

Answer

Not really.

What's Good

The simplification of curves makes it much easier to edit.  
Drawing with my finger is fun.

What's Bad

When I click near a point, I want it to be replaced.  
The “trash” area needs to be wide and central.

Know Your Goal

Is it weird to edit curves in a different way than I drew?

Use the Right Tools

HTML/JS/CSS. Not native Objective C.

Adapted an example from PaperJS library

Do Just Enough

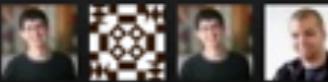
No focus on styling or context

Lather, Rinse, Repeat

Built v2 completely from scratch

boston/cambridge/brookli x

boston.craigslist.org/gbs/hhh/ star icon

GroupList  Ben

CL > boston > boston/camb/brook > housing [ help ] [ post ]

[all boston](#) [boston/camb/brook](#) [northwest/merrimack](#) [metro west](#) [north shore](#) [south shore](#)

**housing**

search for:  in:   title  entire post  
rent:     cats  dogs  has image

[list view](#) [pic view](#) [grid view](#) [map view](#)

[ [housing forum](#) ] [ [fair housing](#) ] [ [EFF](#) ] [ [avoiding scams](#) ]  
[ [personal safety](#) ] [ [CL {tv}](#) ] [ [blog](#) ]

Wed Jun 26

[★ Liked](#) [⚐ Disliked](#) [👤 Waiting on You](#) [⚑ All Reviewed](#)

[Avail 8/1...Marlborough St Penthouse, Laundry in Unit, Storage - \\$2795 / 1br - \(Back Bay - Boston\)](#) [pic](#) [map](#) [apts](#) [broker fee](#)

**★ YOU** **Eric** [CENTRAL AIR. 2 BATHS. FIRE PLACE. nex to RT-60, Rt-16. JUL 1. 1/2 FEE - \\$2400 / 4br - img](#) [apts](#) [broker fee](#)

**★ Eric** [Hug 2 Bed split with 3 large rooms in palace rd avail 9/1 - \\$3150 / 2br - \(Fenway,Boston,Simmons, Berklee, Mcphs\)](#) [apts](#) [broker fee](#)

[2 Bd, 2 Bath, Avail Now, Carpet, Parking For Rent - \\$4242 / 2br - \(Cambridge - Kendall Square\)](#) [img](#) [apts](#) [broker fee](#)

**★ Eric** [2 Bd, 2 Bath, Avail 09/15, Bike Storage, Fitness Center, Microwave - \\$3750 / 2br - \(Fenway\)](#) [img](#) [apts](#) [broker fee](#)

[3 Bd, Avail Now, Shared Yard, Separate Kitchen, Laundry in Building - \\$2400 / 3br - 1300ft² \(Medford\)](#) [img](#) [apts](#) [broker fee](#)

**Eric** [1 bedroom in a 3 bedroom apartment for July and August - \\$650 / 3br - \(Jamaica Plain\)](#) [sublets](#) & temporary

[Can U ImaginarLo: Sunny Home 4 U. My Fav 4 Bed. BEST PRICE! Why you... - \\$3000 / 4br - \(Oak Square\)](#) [img](#) [apts](#) [broker fee](#)

[BACK ON MARKET! Cozy BackBay Studio, Steps to Newbury ST AV 9/1 - \\$1225 \(Backbay\)](#) [pic](#) [apts](#) [broker fee](#)

Social Browsing of Craigslist

2 days

Goal

Does Social Craigslist browsing simplify the apartment hunting process?

Answer

Kind of, but not unless I control Craigslist.

What's Good

Data curation lets me quickly identify what's important

What's Bad

Data curation is not visible after ~1 hour

Need complete control of the process to go forward

Know Your Goal

Does Social Craigslist browsing simplify the apartment hunting process?

Use the Right Tools

Chrome Extension

Sinatra (instead of Rails)

Bootstrap for styles

Do Just Enough

Most basic set of functionality

Lather, Rinse, Repeat

Take only insights.

# Brewing Coffee





Hot Water

Coffee

Scale

Brew Recipe  
28g Coffee  
340 ml Water  
2:30 Pour



Brew Recipe  
28g Coffee

340 ml Water  
2:30 Pour

Shouldn't this  
be a flow rate?



# Proof of Concept Prototype - 2 Days



Goal

Does real time flow rate feedback help a barista?

Answer

Yes.

What's Good  
Form Factor

What's Bad  
Data Quality  
Data Presentation

# Data Viz Prototype - 2 Weeks



Goal

Does workflow with graph + recording profiles fit the workflow?

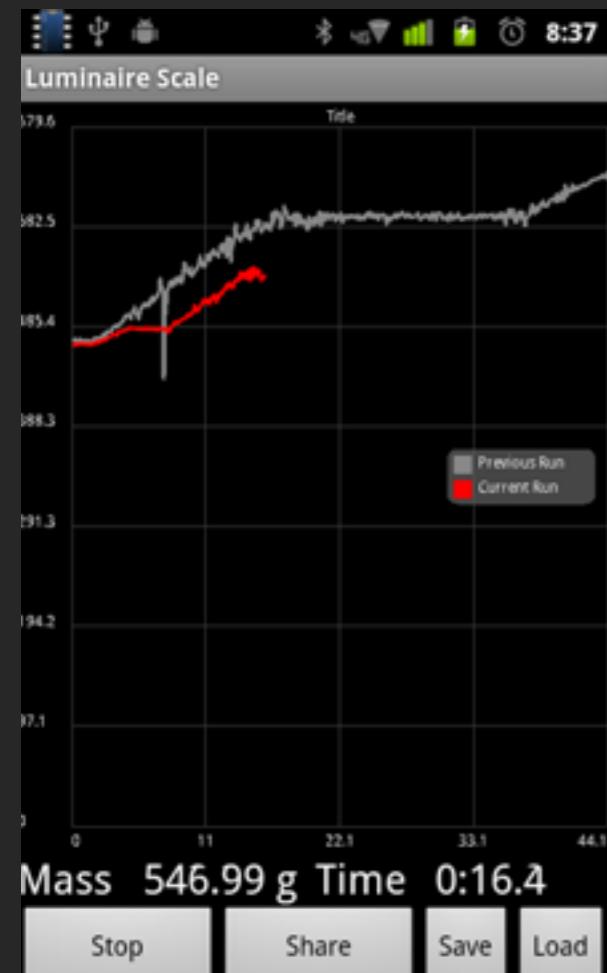
Answer

Yes.

What's Good

Data Presentation

High Resolution Graphs



What's Bad

Data Quality

# Proof of Concept Prototype - 2 Days

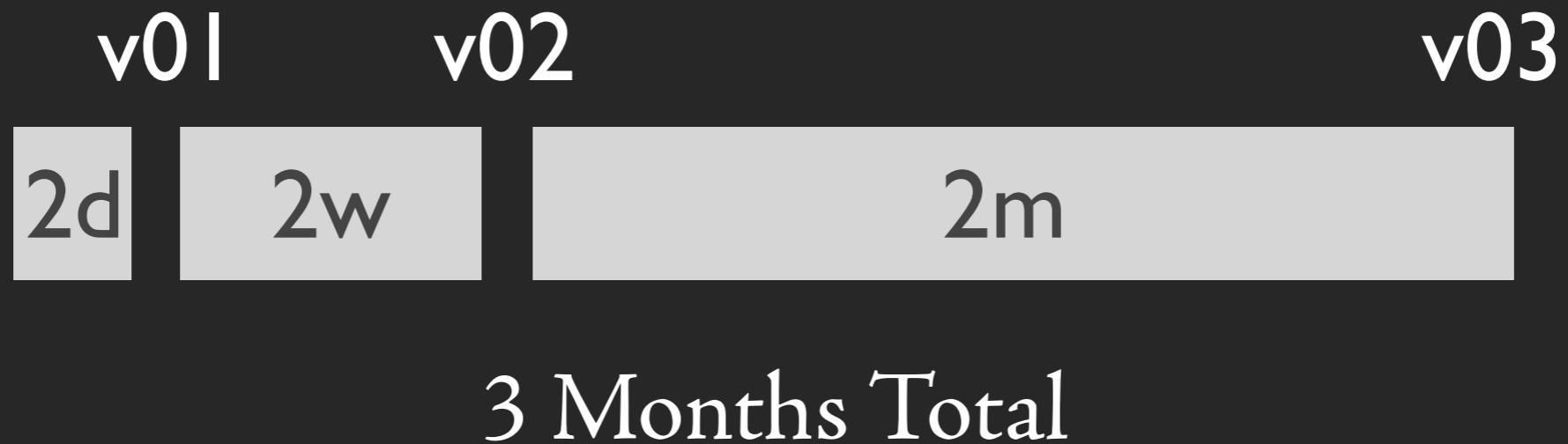


Goal  
Does this fit into a coffee shop workflow?

What's Good  
Compact Form Factor  
Dedicated Device  
Battery Powered

What's Bad  
No Profile Editing  
Small Screen

# With Prototypes



# Without Prototypes

Timeline >6 Months

Resulting Product Would Be Worse

# Four Principles

Know Your Goal

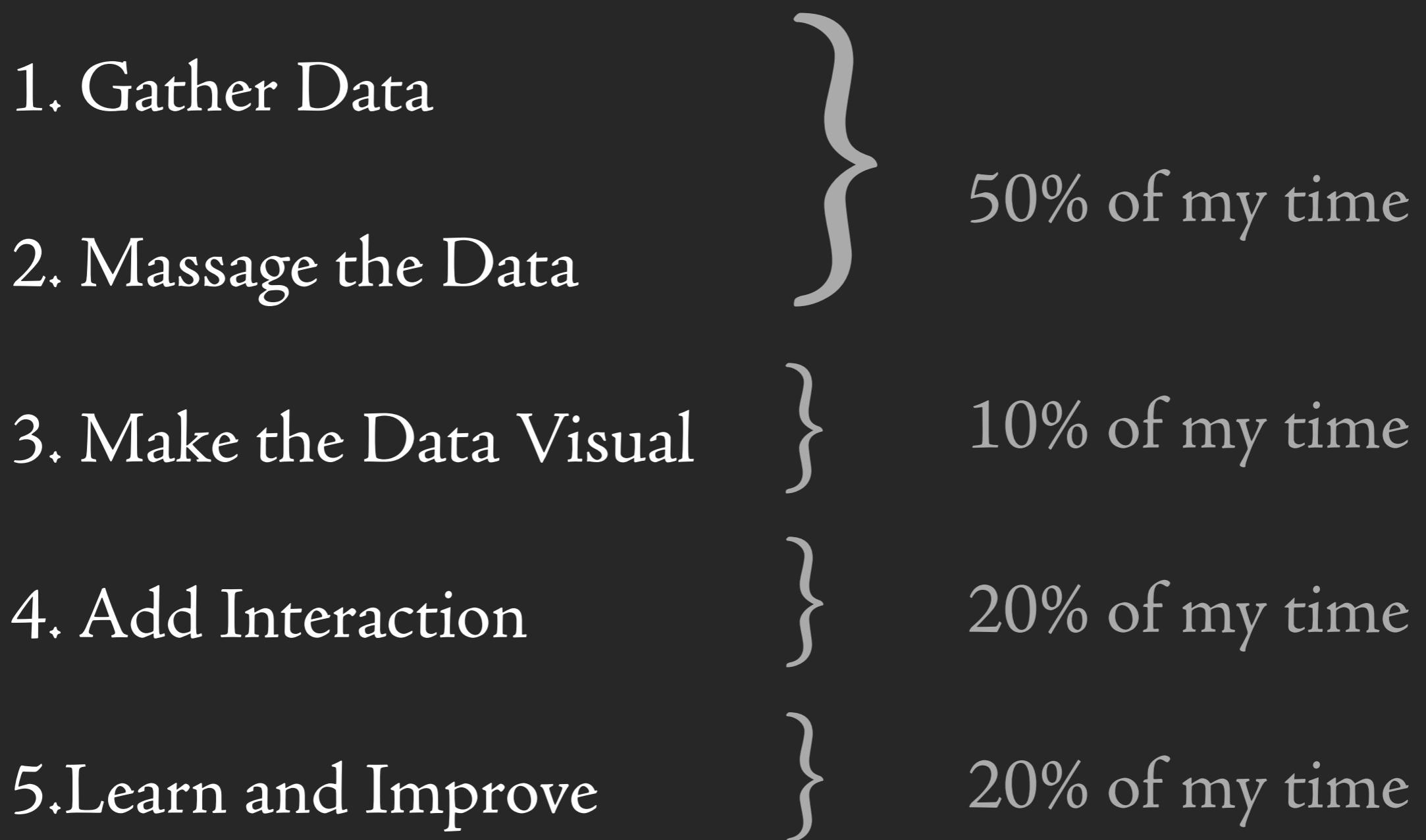
Use the Right Tools

Do Just Enough

Lather, Rinse, Repeat

Let's Get Practical

# My Process



# Data Formats

```
Label,Impressions,Actions,Spend,CPA  
12/1/2012,53373,68,311.3521811,4.608125  
12/2/2012,54908,64,312.2052007,4.90725  
12/3/2012,47936,72,321.5961719,4.47975  
12/4/2012,45627,58,279.6663775,4.86675  
12/5/2012,45368,53,257.5343943,4.891375  
12/6/2012,50576,64,301.2710395,4.736875  
12/7/2012,49981,70,293.4542773,4.2275
```

```
[ { "Label": "12/1/2012",  
  "Impressions": "53373",  
  "Actions": "68",  
  "Spend": "311.3521811",  
  "CPA": "4.608125"  
},  
 { "Label": "12/2/2012",  
  "Impressions": "54908",  
  "Actions": "64",  
  "Spend": "312.2052007",  
  "CPA": "4.90725"}]
```



CSV for editing  
and processing



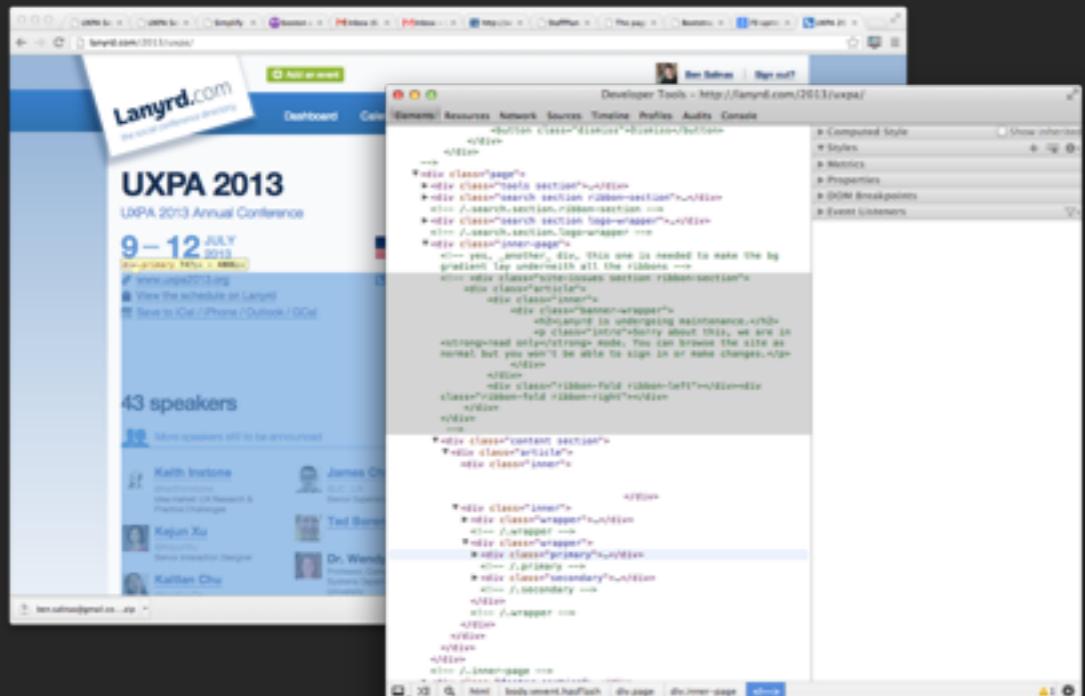
JSON for  
consuming and  
small changes

# Gathering Data

Steal JSON over the wire

Scrape the screen

Type it up



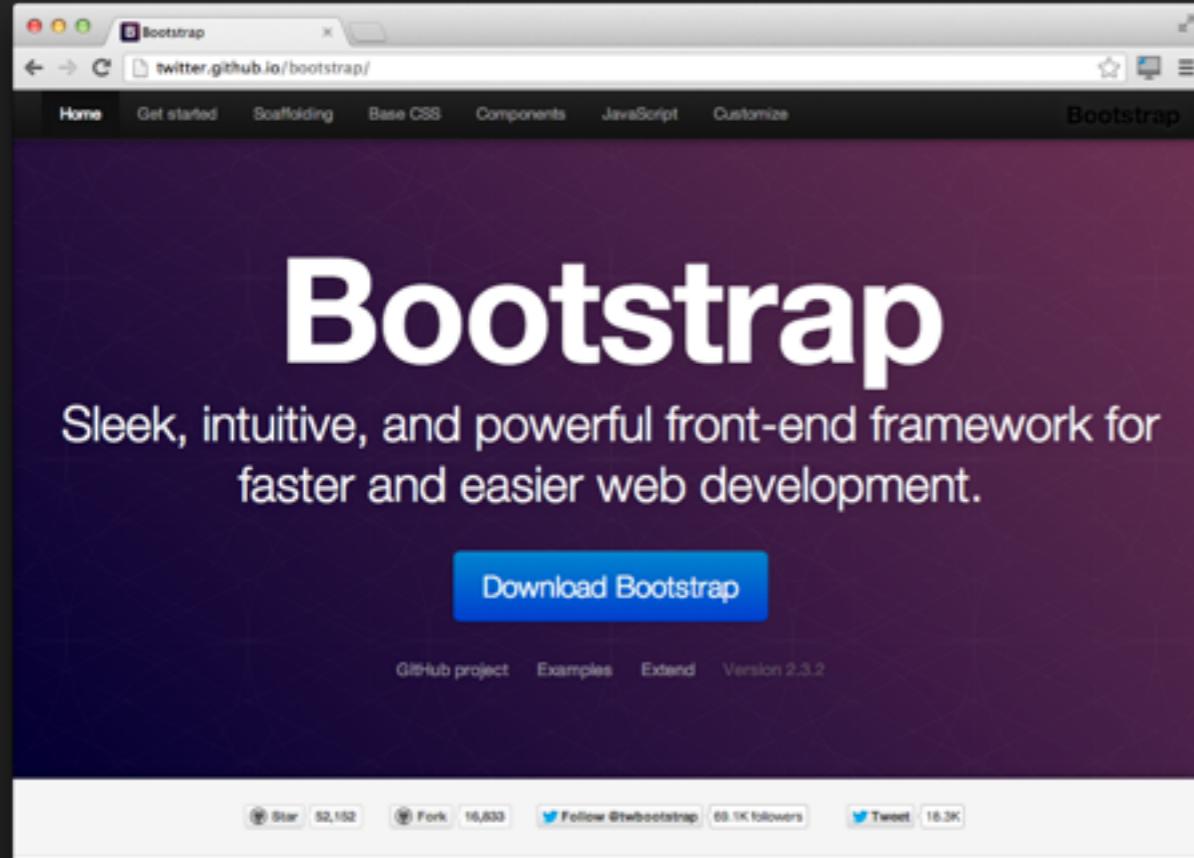
## Chrome Inspector

A screenshot of the ScreenScraping application interface. It displays a list of speakers from the UXPA 2013 website. Each speaker entry includes a small profile picture, their name, Twitter handle, and a link to their profile. Below the list, there are buttons for "Download JSON" and "Download CSV". A sidebar on the left lists "More speakers still to be announced".

## ScreenScaper

A screenshot of Adobe InDesign. A data merge field is open, showing placeholder text: '&lt;&lt;Twitter&gt;&gt;', '&lt;&lt;Name&gt;&gt;', and '&lt;&lt;Organization&gt;&gt;'. The InDesign interface includes various panels for text, layers, and links, and a preview window at the bottom.

## InDesign Data Merge

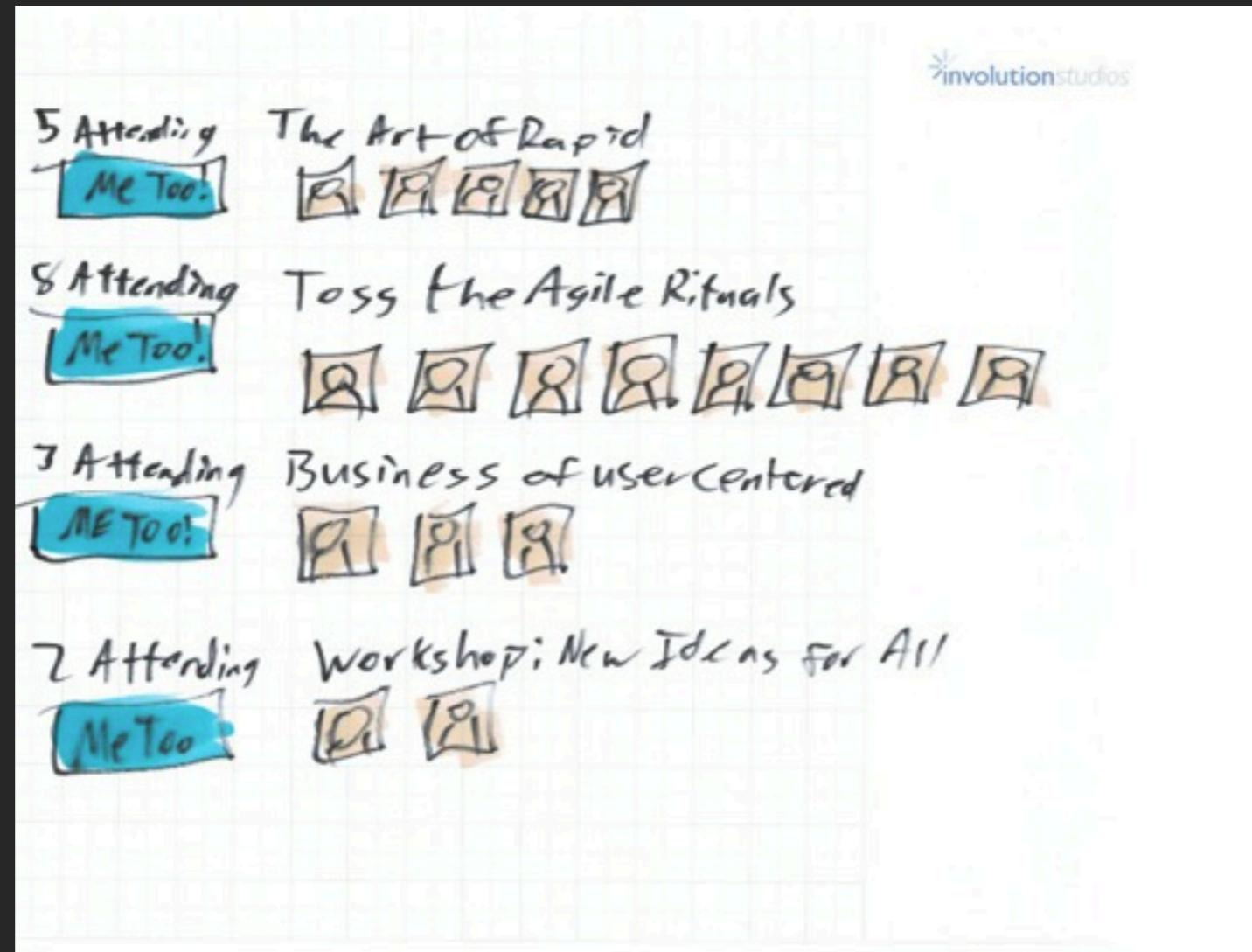


## Twitter Bootstrap

## Mustache Templates

```
<script type="text/html" id="eachPresentation">
  <div class="presentation">
    <span class="label count" data-id="{{i}}>
      {{number}} Attendees</span>
    </img>
  <ul class="attendees thumbnails" data-id="{{i}}>
    <li class="attendee">
      <a class="btn btn-primary attendBtn" data-id="{{i}}" data-attending="no">N
    </li>
    {{#people}}
      <li class="attendee thumbnail">
        </img>
      </li>
    {{/people}}
  </ul>
</div>
</script>
```

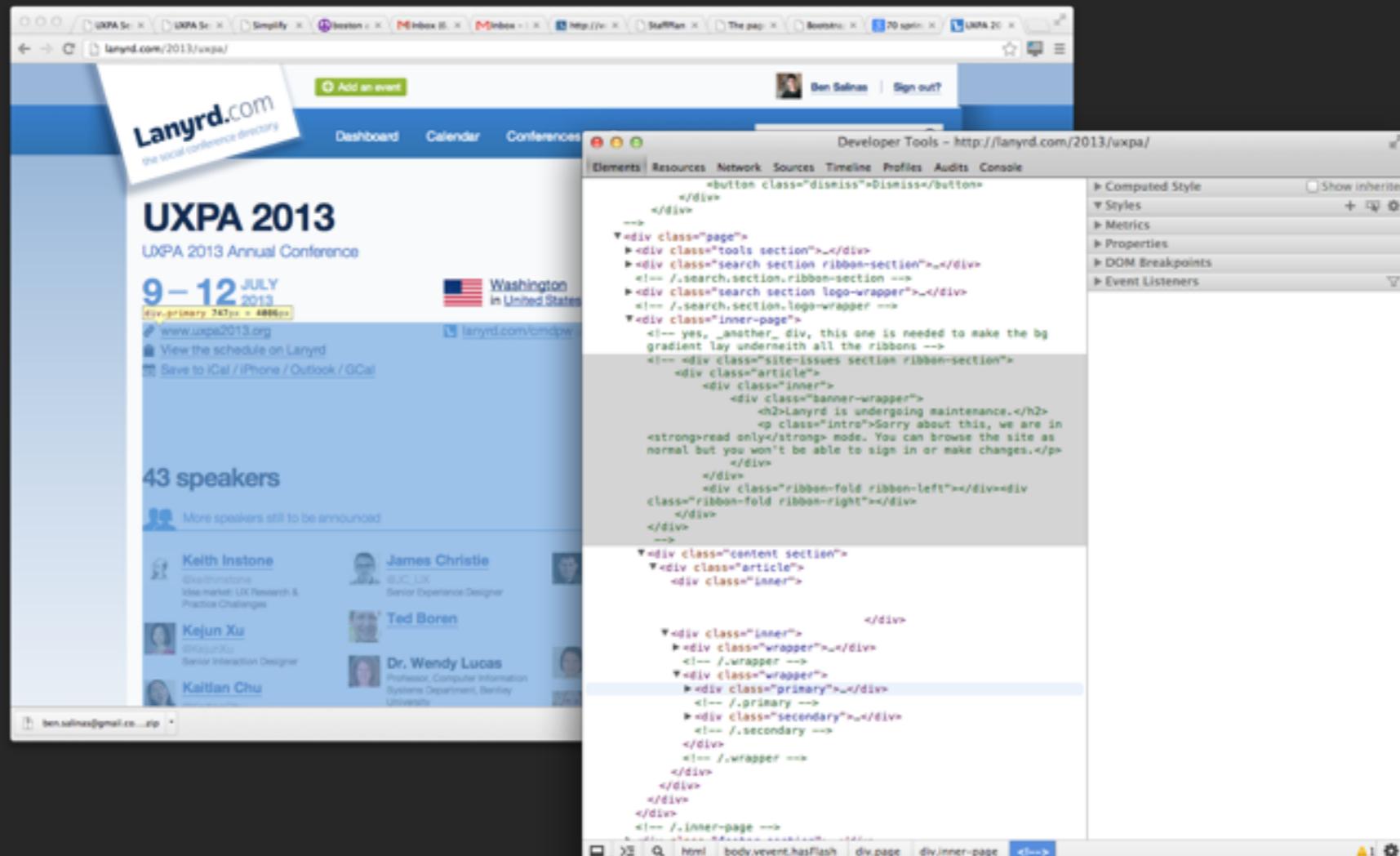
Prototype a version of the Lanyrd site that lets me understand what sessions I am going to.



Goal: Does this presentation and interaction make it easy to select sessions to attend?

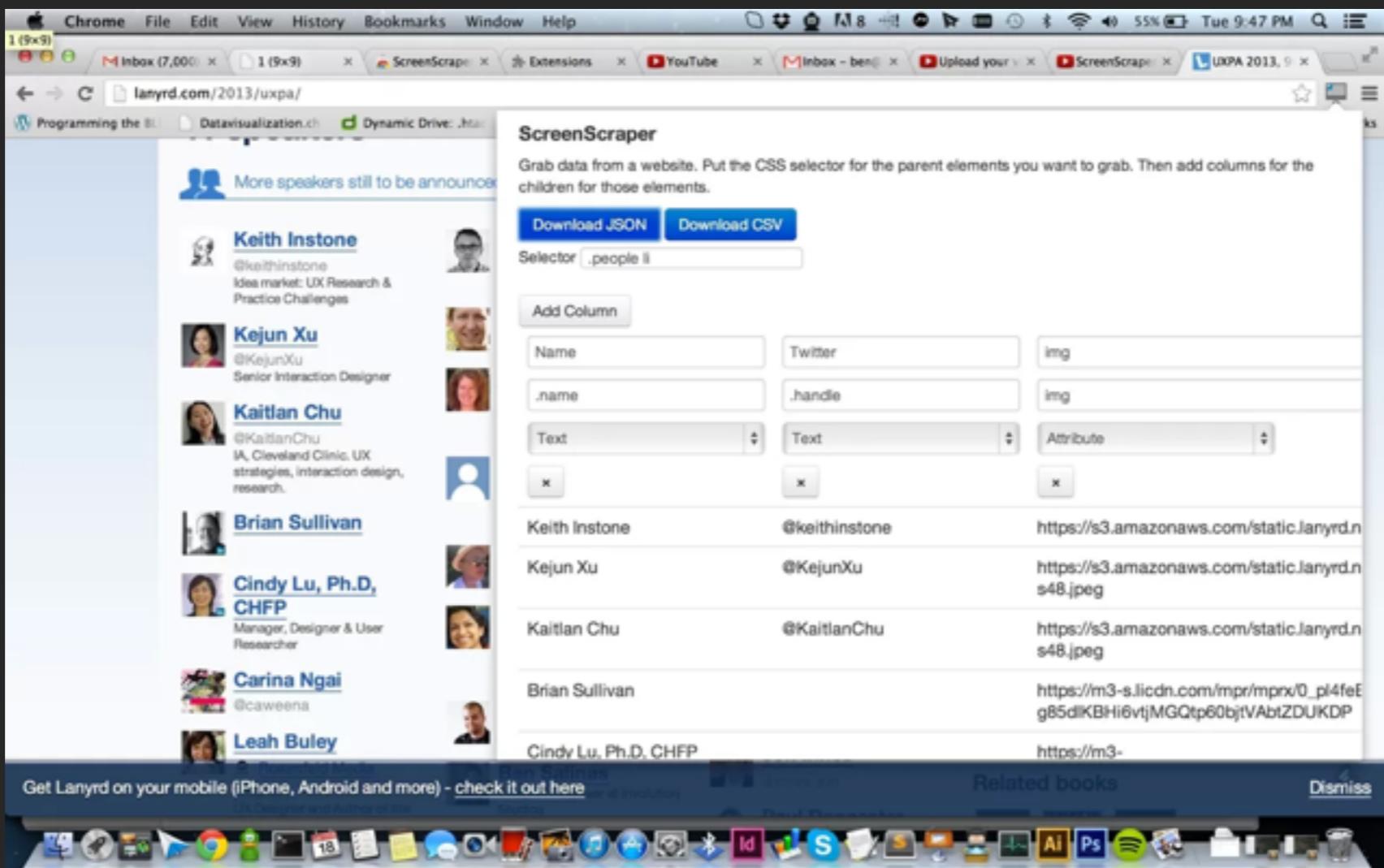


# Chrome Inspector



View a Website Structure, make CSS changes, and run Javascript snippets.

# ScreenScraper

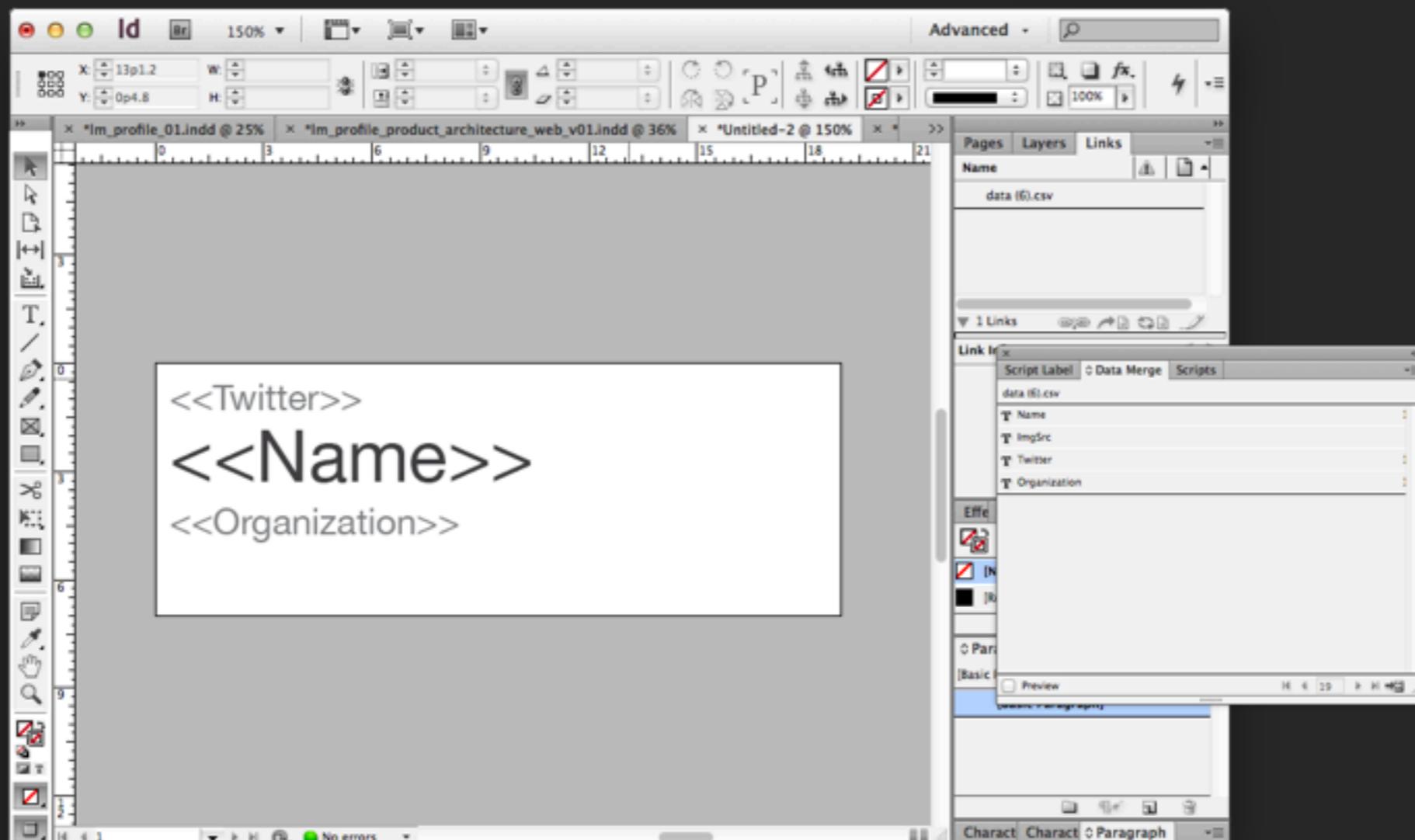


Grab data from a website in a structured format.

[bit.ly/15RgURg](http://bit.ly/15RgURg)

(or search Screen Scraper on Chrome Web Store)

# InDesign Data Merge



Embed CSV data directly into a design.  
Make your design real.

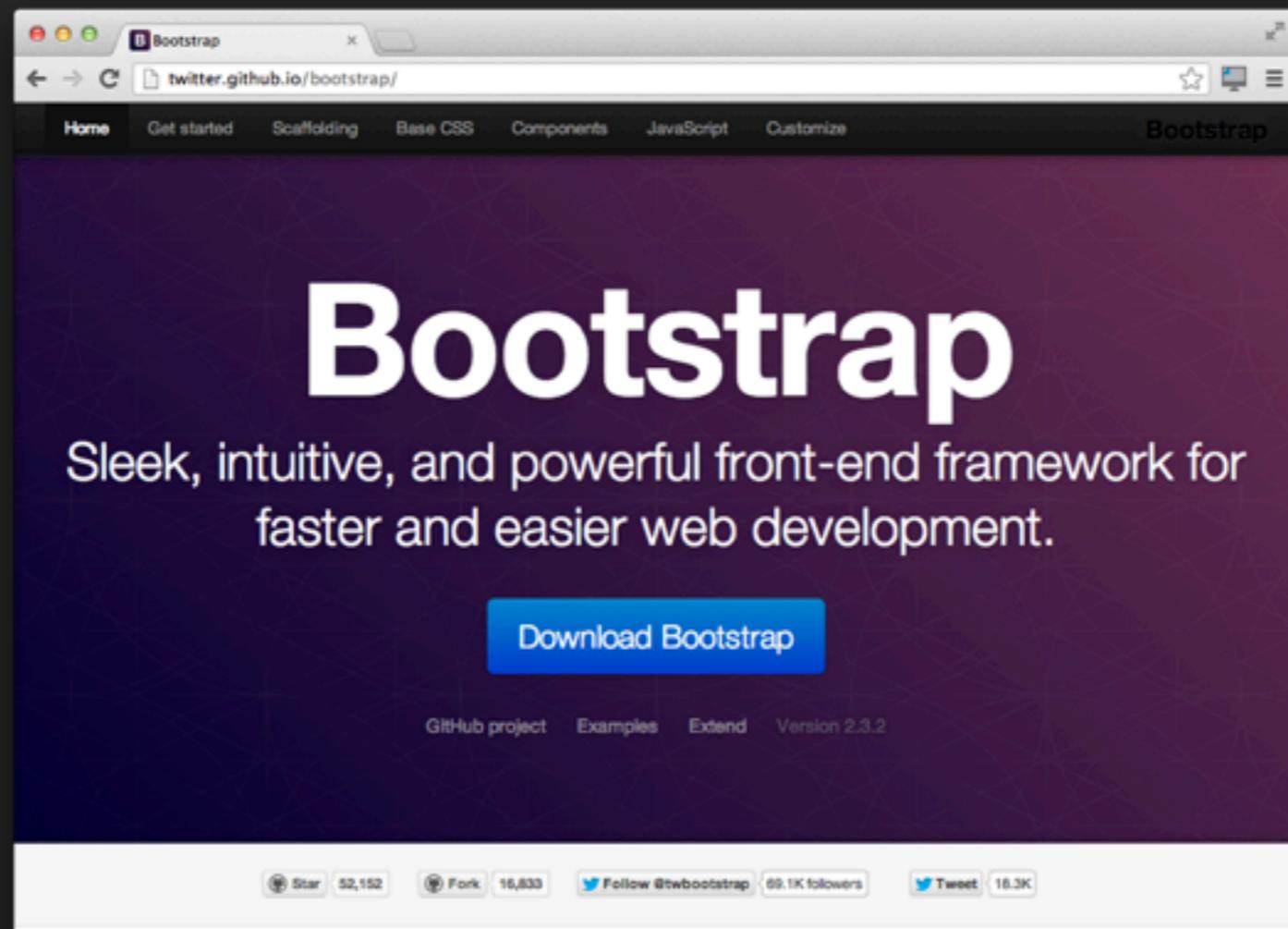
# Mustache Templates

```
<script type="text/html" id="eachPresentation">
<div class="presentation">
  <span class="label count" data-id="{{i}}>
    <span class="number">{{number}}</span> Attendees</span>
    </img>
  |
  <ul class="attendees thumbnails" data-id="{{i}}>
    <li class="attendee">
      <a class="btn btn-primary attendBtn" data-id="{{i}}" data-attending="no">Me Too!</a>
    </li>
    {{#people}}
      <li class="attendee thumbnail">
        </img>
      </li>
    {{/people}}
  </ul>
</div>
</script>
```

Embed JSON data into an HTML Template

<http://mustache.github.io>

# CSS/JS/HTML Libraries



CSS + JS for buttons, forms, layout, tables,  
autocomplete, alerts, modals ++

# Some Other Tools

## Mr. Data Converter

I will convert your Excel data into one of several web-friendly formats, including HTML, JSON and XML.

Fork me on [GitHub](#).

### SETTINGS

- Delimiter:  Auto  Comma  Tab  
 First row is the header  
Transform:  lowercase  uppercase  none  
 Include white space in output  
Indent with:  tabs  spaces

Input CSV or tab-delimited data. Using Excel? Simply copy and paste. No data on hand? [Create sample](#)

NAME	VALUE	COLOR	DATE
Alan	12	blue	Sep. 25, 2009
Brian	13	"green"	blue"
John	45	orange	Sep. 29, 2009
Krisna	27	teal	Sep. 30, 2009

Output as [JSON - Properties](#)

```
[{"NAME": "Alan", "VALUE": 12, "COLOR": "blue", "DATE": "Sep. 25, 2009"}, {"NAME": "Brian", "VALUE": 13, "COLOR": "green\\blue", "DATE": "Sep. 27, 2009"}, {"NAME": "John", "VALUE": 45, "COLOR": "orange", "DATE": "Sep. 29, 2009"}, {"NAME": "Krisna", "VALUE": 27, "COLOR": "teal", "DATE": "Sep. 30, 2009"}]
```

<http://shancarter.github.io/mr-data-converter/>



**JSON Formatter & Validator**

The JSON Formatter was created to help with debugging. As data expressed as JSON is often written without line breaks to save space, it became extremely difficult to actually read and make sense of it. This tool hopes to solve the problem by **formatting** and **validating** JSON data so that it is easy to read and debug by human beings.

This third major iteration of the JSON Formatter & Validator has been immensely improved by users suggestions. Thanks everyone. If you have any other requests, be sure to [post them](#) here.

**JSON Formatter & Validator**

feedback

JSON Data:

JSON Template:

Validate JSON:

DISRUPT THE MARKET  
WITHOUT DISRUPTING YOUR APPLICATION  
[SEE MORE >](#)

rockspace  
the open cloud company

Clear Process

Learn About JSON

To learn more about JSON check out some of the links below:

- [json.org](#)
- [Wikipedia:JSON](#)

<http://jsonformatter.curiousconcept.com/>



# Adding Interaction

Click Events

Javascript Hide/Show/Animate

Changing img src to another pre-rendered piece of content

Data Attributes to save state

CSS Classes with styling

# CSS/JS/HTML Libraries

Rule of Thumb:

If the library does exactly what you want and you aren't super worried about styling, use it.

Otherwise, think really hard.



# Four Principles

Know Your Goal

Use the Right Tools

Do Just Enough

Lather, Rinse, Repeat

# Why Use Rapid Prototypes

# High Fidelity Feedback

Some decisions can't be made without experiencing the design.

Make the right decisions at the right time.

# Mitigate Risk

Your Design Will Live in Code

If you wait until the build phase, it  
will be too late to fix.

# Complete The Design

You will make design decisions  
while prototyping

You want to be around to  
make them

Questions/Comments:  
[ben@goinvo.com](mailto:ben@goinvo.com)

Thanks to:

Eric Benoit, Juhan Sonin, Involution Studios

Download slides at [tinyurl.com/PrototypeMore](http://tinyurl.com/PrototypeMore)