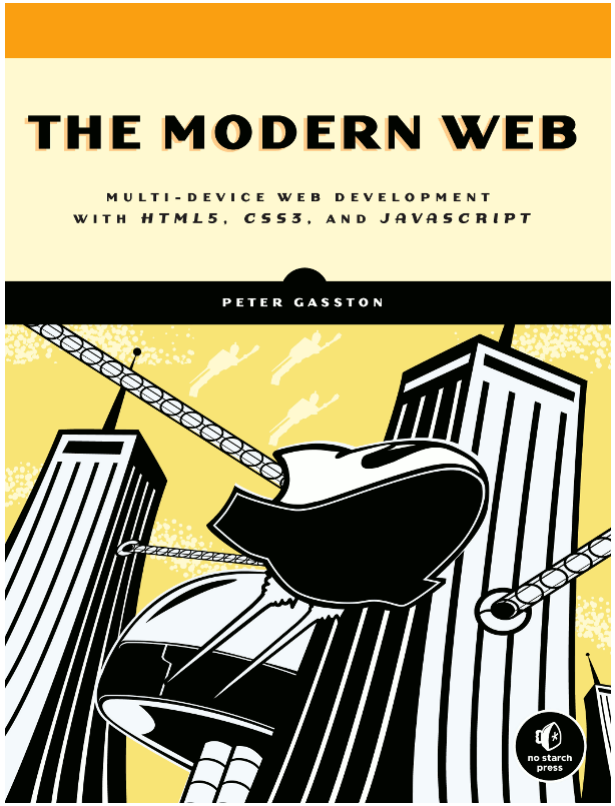
Mobile Web Design

Strategy & Analysis to Design

Course materials

- ***The Modern Web:*** Multi-Device Web Development with HTML5, CSS3, and JavaScript
  by Peter Gasston

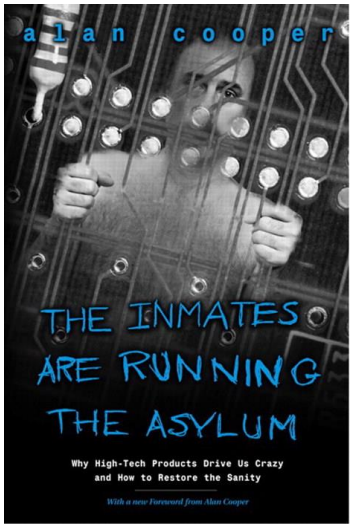
  April 2013



Extra reading - Safari

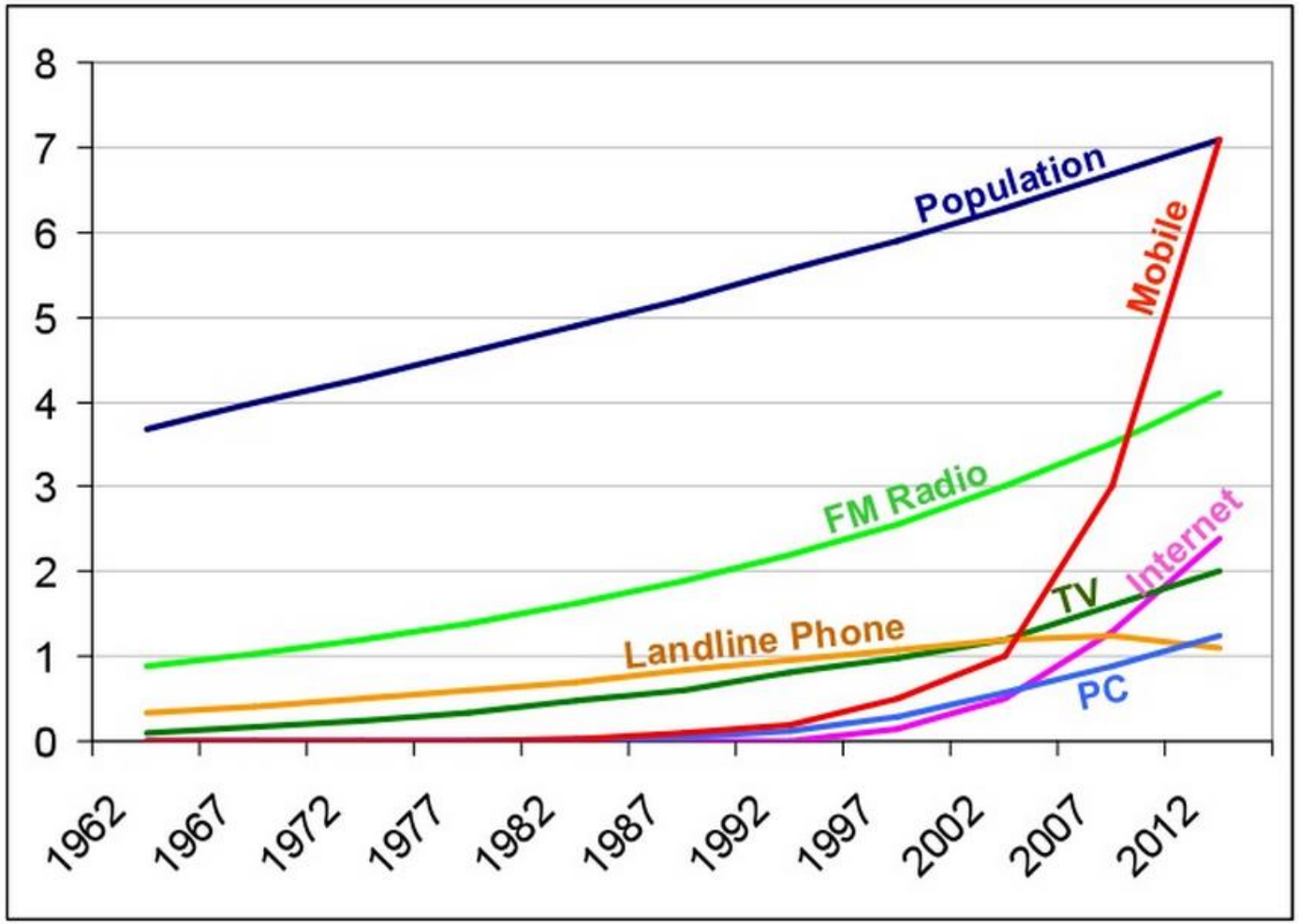
- **Mobile Web Triage: What to Do When Your Website Is Not Mobile Friendly** by Dennis Kardys, Peachpit Press. Jan 2014 – Kindle only

- **Inmates Are Running the Asylum, The: Why High-Tech Products Drive Us Crazy and How to Restore the Sanity** by Alan Cooper, Sams. Feb 2004.



The Market

Statistics – media June 2013



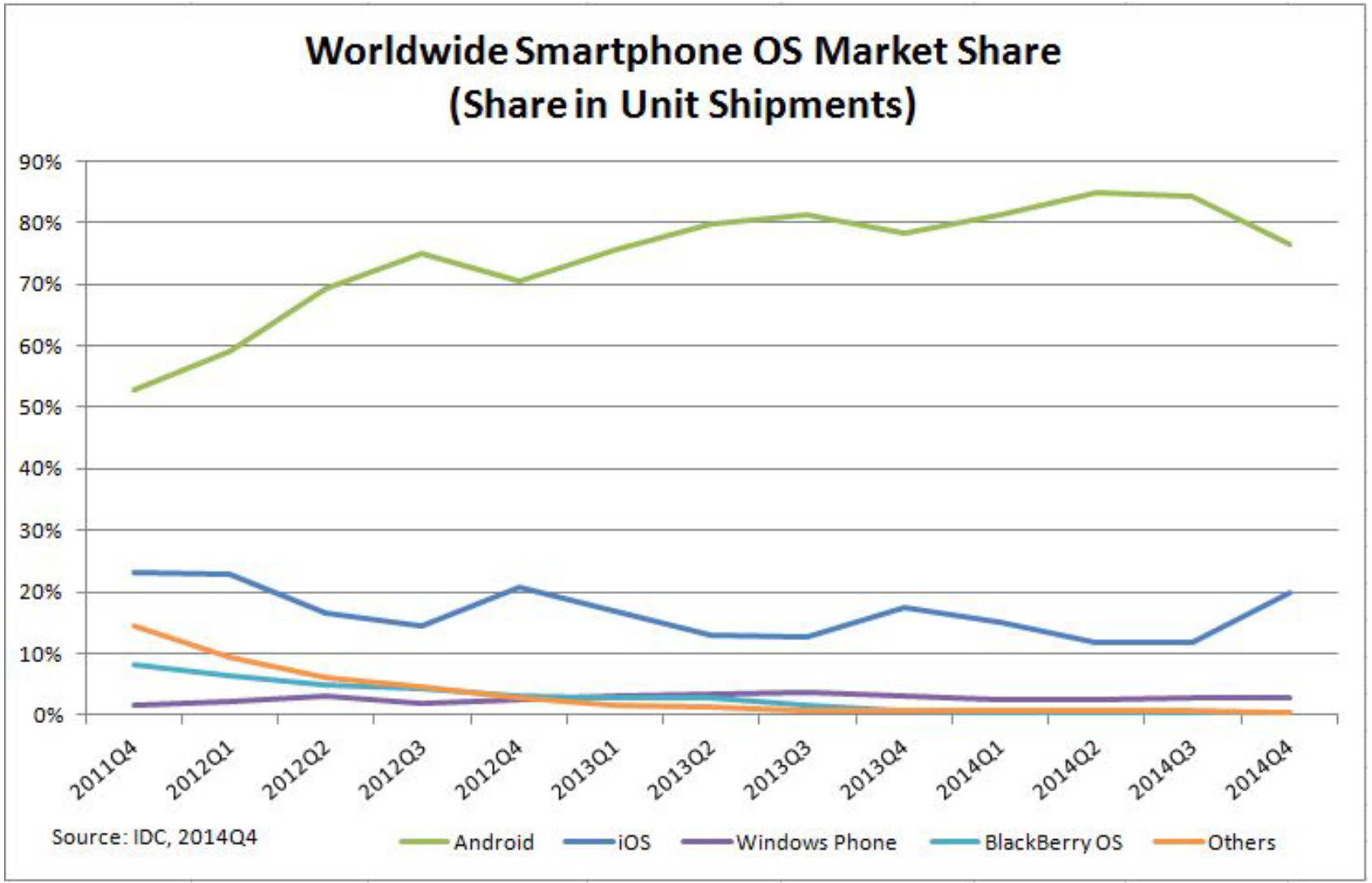
Source: *TomiAhonen Almanac 2012* and *TomiAhonen Mobile Forecast 2012-2015*

Statistics – media

Comparison of Sizes Globally End of 2013	
Newspapers daily circulation	420 million
Cable/satellite TV subscriptions	1.0 billion
Cars registered in use	1.0 billion
Fixed landline telephones	1.1 billion
PCs in use including laptops and tablet PCs	1.5 billion
Smartphones in use	1.7 billion
Email active unique users	1.8 billion
Television sets	2.0 billion
Credit cards - unique owners of	2.2 billion
Banking accounts - unique owners of	2.6 billion
Internet active users (using any access)	2.8 billion
MMS active users	3.3 billion
FM radio receivers	4.2 billion
Mobile phones - unique subscribers	4.5 billion
Mobile phone handsets in use	5.4 billion
SMS messaging active users	5.8 billion
Mobile phone subscriptions in use	7.1 billion

Source: TomiAhonen Almanac 2014

Statistics - platforms



Mobile index by country

- 2013
  - http://en.wikipedia.org/wiki/List_of_countries_by_smartphone_penetration

Statistics - by region - mobile

- Survey from 48,000 mobile users in 57 countries =
  - Advanced Asia-Pacific: 51% = 191 M users
  - Western Europe: 41% = 168 M users
  - North America: 40% = 135 M users
  - Latin America: 36% = 217 M users
  - Middle East: 34% = 86 M users
  - Eastern Europe: 21% = 71 M users
  - Developing Asia: 16% = 597 M users
  - Africa: 12% = 129 M users
- World total 40% = 1.6 B users

- Sources: TNS Survey April 2012 and
- TomiAhonen Consulting May 2012

Web sites

- Tomi Ahonen Mobile Forecast 2014-2018
  - http://www.tomiahonen.com/
  - http://www.tomiahonen.com/ebook/forecast.html

Constraints

SecurEnvoy says two-thirds of people in the UK experience nomophobia, the fear of losing or being without their mobile phones. TechShout.com | Feb 2012

Intro

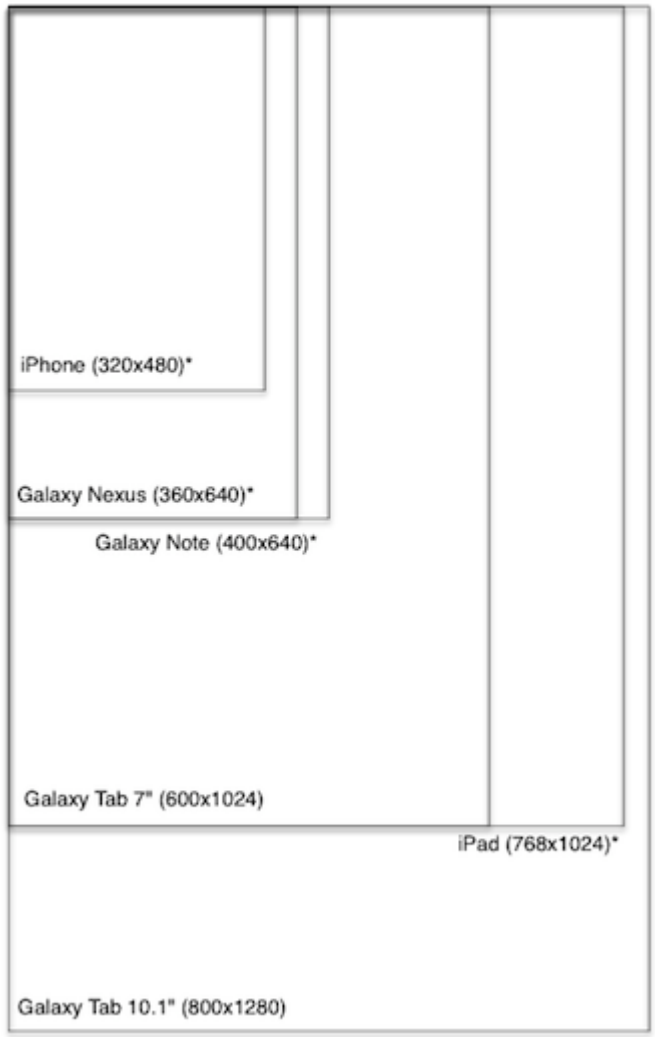
- Embrace constraints – don't fight them
- Identifying the project constraints is a task of analysis.
- Design gradually applies constraints to ideals until an elegant solution remains.

Basic constraints

- Combination of
  - Common user posture
  - Primary input method
  - Average display size
  - Available bandwidth
- Requires unique optimization

Screen size

- Desktop settled on 1024 x 768
- First smartphones were 320 x 480 (-80%)
  - 1 desktop screen = 5 phone screens
  - requires you to focus, not fluff
- Sites
  - Southwest Airlines
  - Flickr
  - BBC



Mobile user behaviors

- Three mobile user behaviors – *Tapworthy* by Josh Clark
  - I'm **microtasking**
    - **repetitive** and frequent jobs
    - **urgent** or changing info, updates
  - I'm **bored** – explore, escape, engage
  - I'm **local** – what's happening here, context

Constraints – device, network

- Device viewport
  - dimensions of browser
    - find with media query or JavaScript
  - **Best solution**: fluid/responsive design
- Device connectivity
  - Mobile requires wireless which often means no internet service especially without cell service
  - **Best solution**: caching (web workers), offline storage

Constraints - network

- Bandwidth = page load time
  - speed of network connection
  - 2-3 seconds max before they go to another site. The expectations have been set by desktop.
  - **Best solutions**: caching, offline storage, AJAX, pre-loading
- Test
  - https://developers.google.com/speed/pagespeed/insights/

Constraints - user

- Context
  - environment of access, activity of user (bored, waiting)
  - no query
  - **Best solutions**: geolocation

Constraints - developer

- Communication
  - Getting and sending **data**
  - **Best solution**: AJAX to RESTful web services, HTTP, Web workers, **WebSockets**
- Client language
  - Being able to perform client **actions**
  - **Best solution**: JavaScript, transpiler to JS, **WebAssembly**
- Graphics
  - Being able to show client dynamic **images**
  - **Best solution**: **CSS3**, SVG, <canvas>

Web sites

- Google Developers Mobile-Friendly Websites
  - https://developers.google.com/webmasters/mobile-sites/

Exercise

- Use Google's Mobile Friendly Test on your company's site to see how well it does
  - https://www.google.com/webmasters/tools/mobile-friendly

Capabilities

Input

- **client** state
  - user
  - browser
    - server push communications
  - sensors
  - data stores
- **server** state
  - date/time
  - apps
  - data stores

Sensors

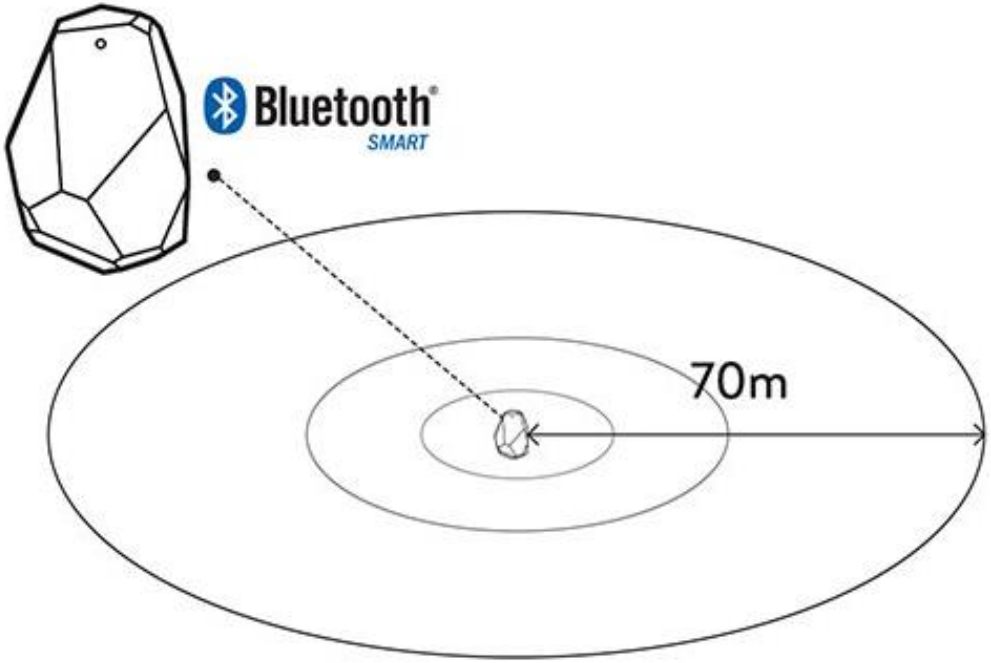
- compass - direction
- gyroscope - 360 degrees of motion
- audio / video / camera
- Bluetooth connections
- proximity
  - NFC – near field comm (bump apps)
  - beacon
- light level – ambient
- etc

Location detection

- Best supported device API
- Four types
  - IP – about 50% accurate by city
  - Cell towers
    - one – 500 - 2,500m
    - two – 100 - 1400m
  - WiFi beacons – 50m
  - GPS – 10m
    - takes time and more power
    - no laptops/desktops

Emerging communication protocols

- **Web Sockets** - direct I/O connections (IE10+)
- **Bluetooth LE** - replacing NFC
  - uses beacons



Device orientation / accelerometer

- Detects pivots, rotations, etc.
- Native and browser support
- Seen most recently in games like
  - https://www.chromeexperiments.com/experiment/roll-it
  - http://www.chromeexperiments.com/detail/world-wide-maze/?f=

Other

- Messaging API
  - Send text messages
  - http://www.w3.org/TR/messaging-api/
- Audio & video

W3C Working Groups

- Device APIs - http://www.w3.org/2009/dap/
  - battery status
  - contacts in addressbook
  - HTML media capture - camera, microphone
    - Media capture API
  - network info - ethernet, wifi, 2g, 3g, 4g
  - sensor API - temperature, air pressure, humidity, ambient light, ambient noise, magnetic fields, proximity
  - vibration API
  - web intents - service discovery

W3C Working Groups

- File Writing - http://dev.w3.org/2009/dap/file-system/file-writer.html
- Filesystems - http://dev.w3.org/2009/dap/file-system/file-dir-sys.html
- Notifications - http://www.w3.org/2010/web-notifications/
- Orientation / acceleration - http://lists.w3.org/Archives/Public/public-device-apis/2009Nov/0026.html

Capabilities -Touch

It’s a constraint of not having a mouse but a capability of touch.

Touch

- A natural interface
- A new set of interactions
  - pull down to refresh
  - swipe for more options
  - draw to select
- Future – all not working too well yet
  - Leap Motion Controller - https://www.leapmotion.com/
  - Google Glass (gesture/voice) - http://www.google.com/glass/start/
  - Microsoft Hololens - http://www.microsoft.com/microsoft-hololens/en-us
  - OmniTouch - http://www.youtube.com/watch?v=Pz17lbjOFn8

Touch

- Small devices require maximum interactive surface.
- Touch is winning
- Best practice designs
  - right size targets
  - right position
  - use common gestures
    - hover not used

Go small by going big

- Shrink content to fit?
- Increase size for convenient UX
  - fingers are bigger than mouse pointers
  - fingers slip
  - iOS says 44x44 points (0.61 in.)
  - MS says 9mm (0.35 in.)
- Visual representation can be up to half of actual target

Go small by going big

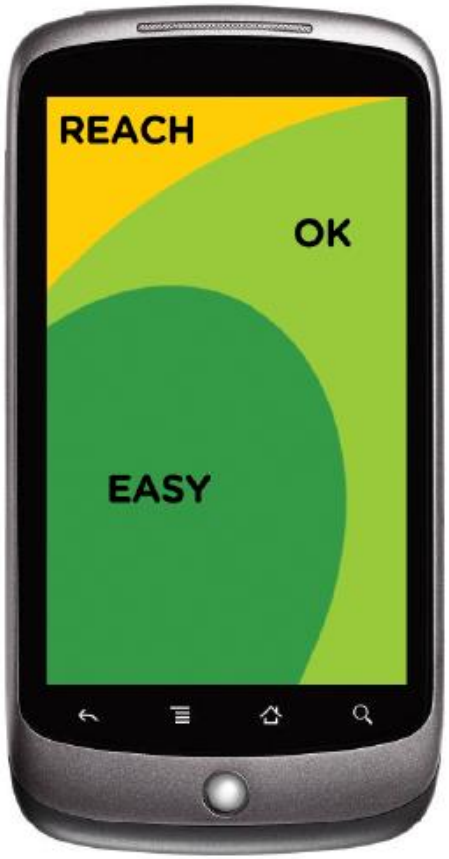
- Make targets bigger when:
  - frequently touched
  - the result of a touch error is severe or really frustrating
    - the UI element is located toward the edge of the screen or difficult to hit
  - when the UI element is part of a sequential task—like using the dial pad

Go small by going big

- Spacing
  - bigger helps
  - separation also helps

Where do we touch?

- Bottom is where we hold the phone
  - we use thumbs often
  - most people are right-handed
- Primary actions in middle or bottom of screen
  - left to right layout
- Upper left corner for uncommon actions



Bark

NUI is natural

- Natural User Interface
  - the content is the interface
  - direct interaction with content not chrome
  - reduce visuals that are not content
- NUI videos
  - http://vimeo.com/channels/nui/46022904

NUI is natural

- Icons, menus & pointers are replaced by gestures, intuition and fingers
- Direct, not indirect, is how we really interact
- Still building a common set
  - beginning guides help
  - the iPad four finger swipe

Hover - a no-touch event

- Tool tips that appear on hover (desktop) don't work, so no help there.
  - yes, no giant menus crowding the screen!
- Options to replace
  - put on screen
  - on tap / swipe
  - put on separate screen
  - get rid of it

Hover - a no-touch event

- Support for trackpads, trackballs, keypads, scrollwheels, keyboards?
- :hover can be used to highlight control without JS
  - :focus is not always explicit state
- Older devices still out there. Use:
  - smaller targets
  - progressive enhancement
    - graceful degradation is a **desktop first** strategy

Multi-touch

- https://en.wikipedia.org/wiki/Multi-touch
- Map multi-touch (Oct 2013)
  - http://www.youtube.com/watch?v=BfgYhg1y_rI
- AutoCAD (architecture Apr 2013)
  - http://www.youtube.com/watch?v=2vJIFrXpNOA
- Autodesk Mudbox (animation Jul 2012)
  - http://www.youtube.com/watch?v=rWO3YtppM4U

Retrofitting PCs

- http://air.bar/
- Jan 2016
- $69 - 15.6-inch screens

Cicret bracelet

- http://cicret.com/

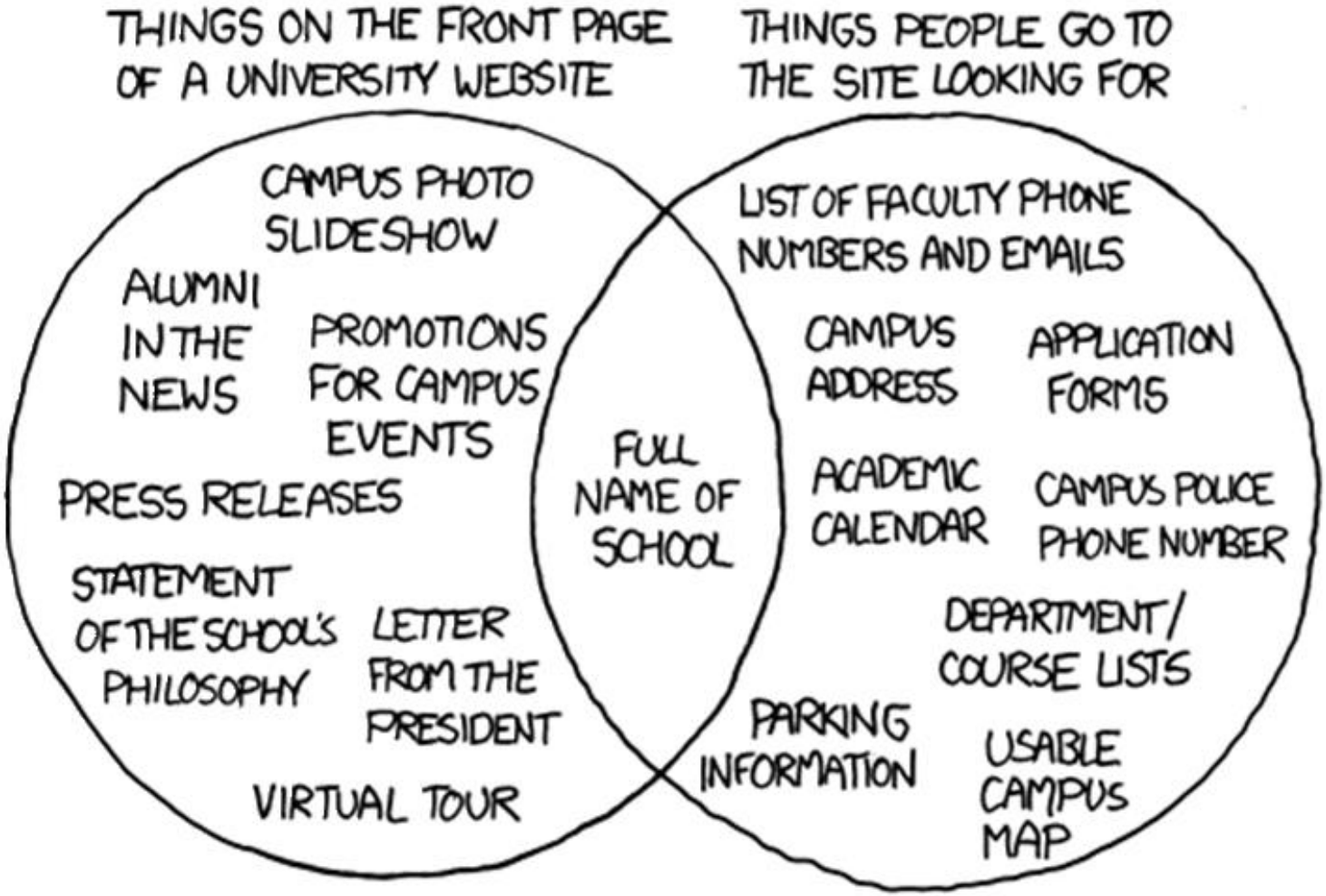
Requirements - process

Mobile web apps generally share a base set of requirements

Requirements

- New use cases
  - hard to define
- Extending current desktop use cases to mobile
  - not a true stakeholder need

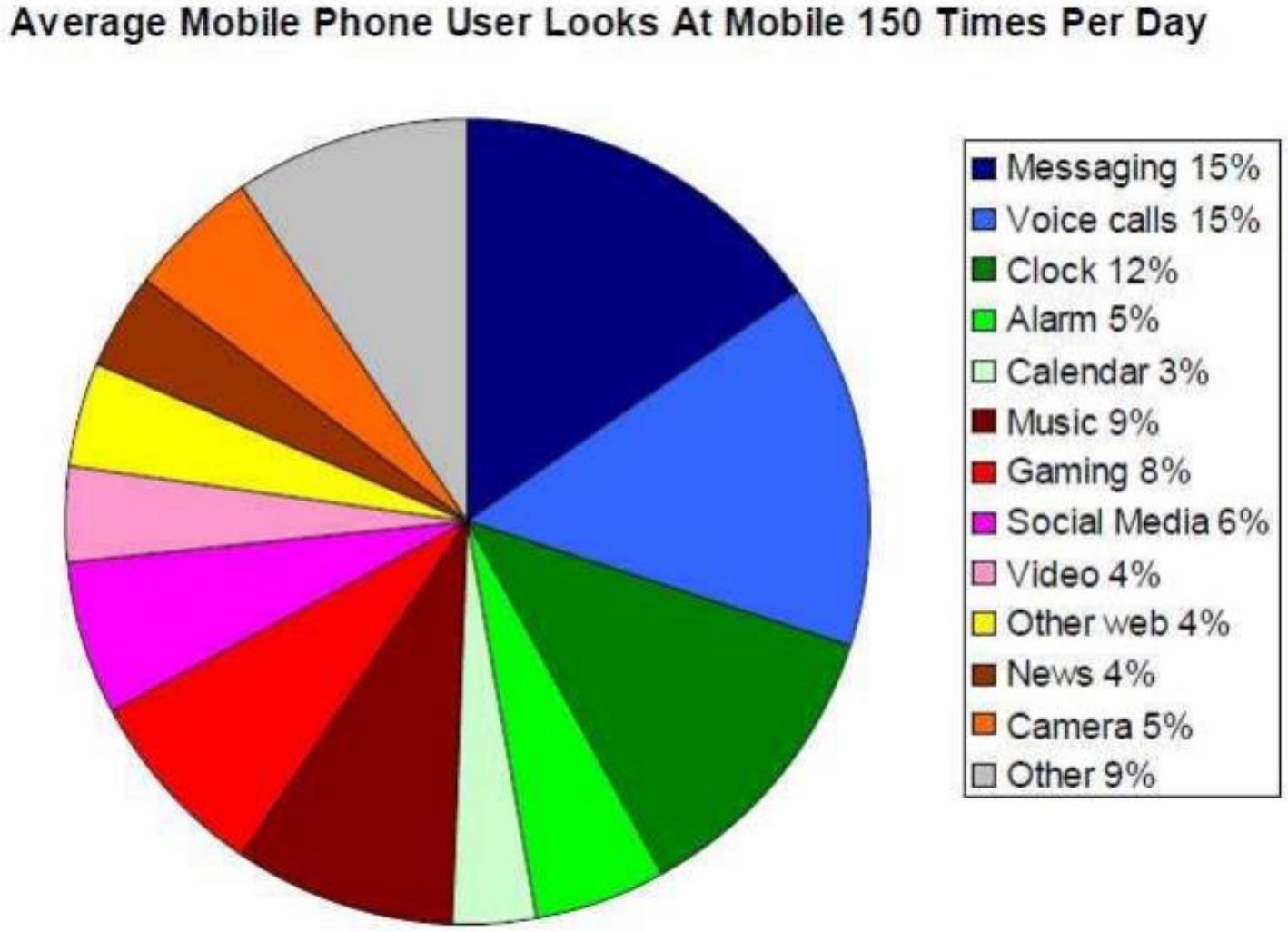
Extending current web to mobile?



Requirements - what

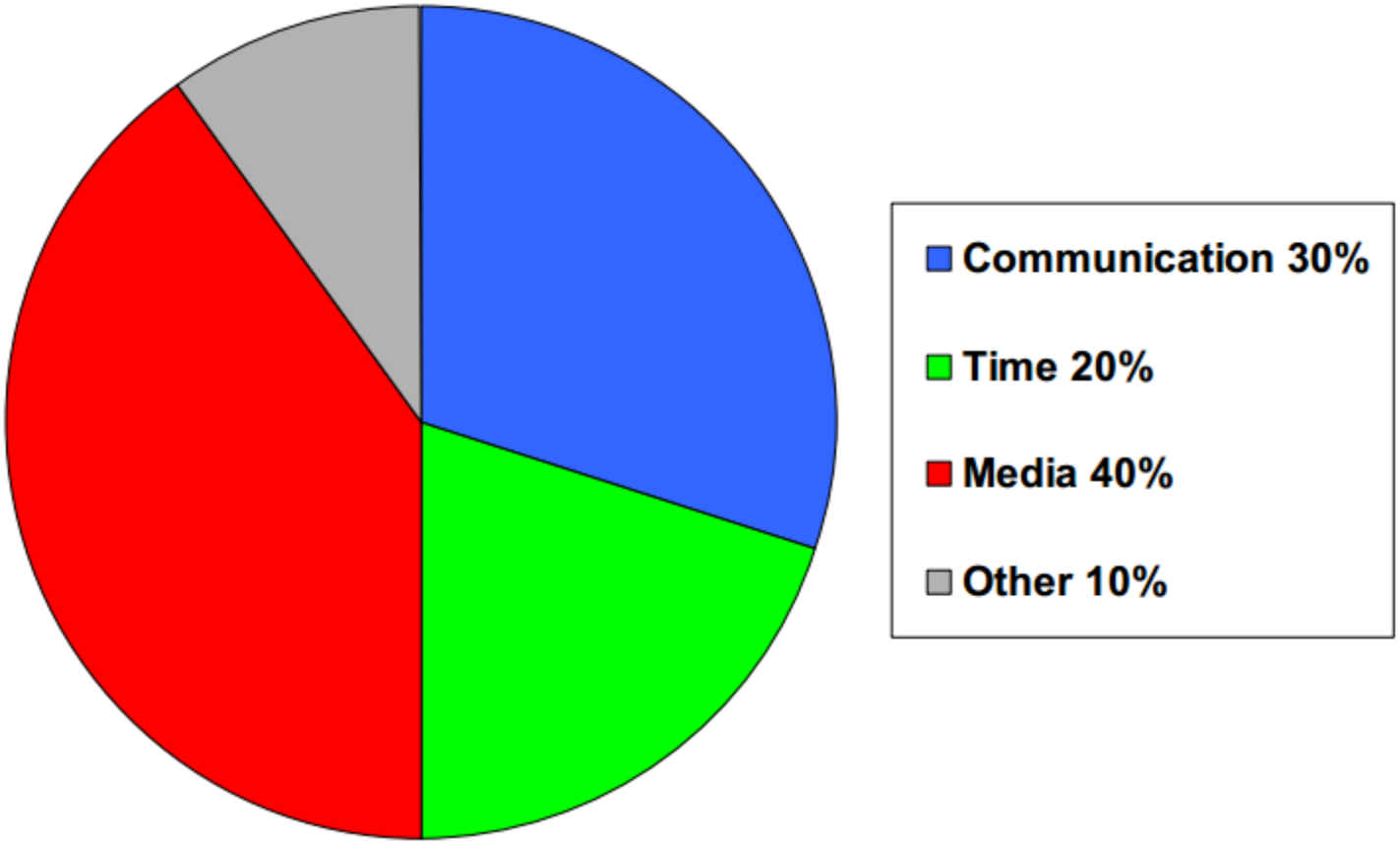
- Customers drive mobile behavior
  - business analysis processes create use cases (requirements) for designers/developers
- Users need
  - to communicate something
  - to know something
  - to be entertained
  - to buy something
  - to remember something

Statistics - activity times per day

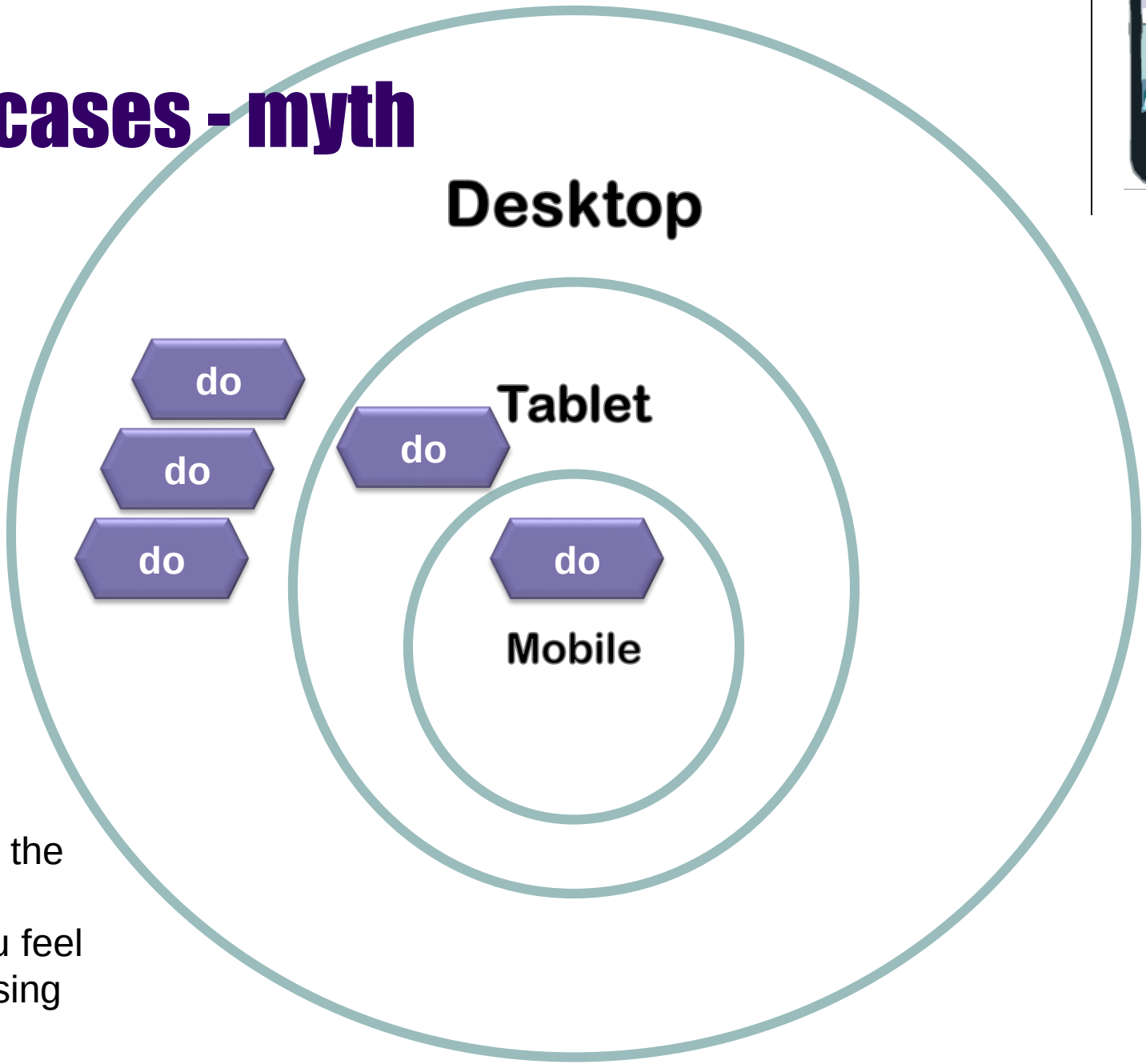


Tomi Ahonen Almanac 2013

Activity – Rule of 1-2-3-4



Use cases - myth



Do you click the desktop link because you feel you are missing out?

Use cases - real

know
know
know
comm
buy
know
know
know
comm
comm
comm
play
know
buy
buy
know
buy
know
know
comm
play
play

Non-functional requirements

- Hardware preferences
  - Screen size - phone, tablet, desktop
  - Device sensors - accelerometer, gyroscope, Bluetooth, ambient light detection, orientation, location by beacon or GPS
  - Device I/O - camera, keyboard, touch screen, video, speech
  - Connection - WiFi, cell tower, bandwidth
  - Power - battery

Non-functional requirements

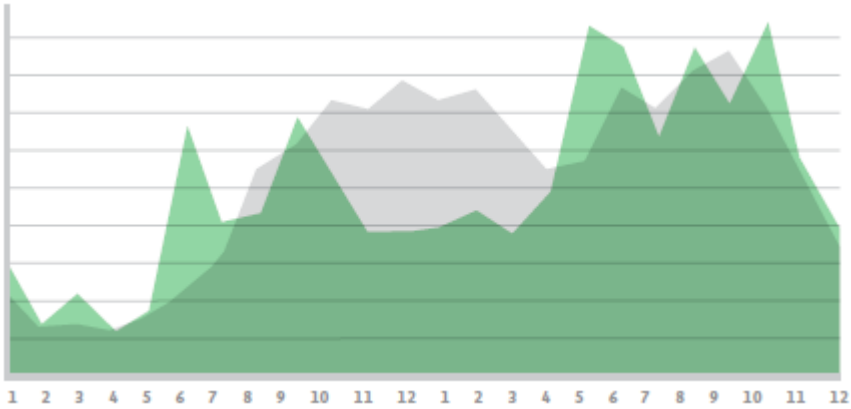
- Software preferences
  - OS - iOS, Android, browser
  - Security
  - Database storage – to retain information over time
- Behavioral
  - quick task completion
  - entertainment
  - local use
  - one finger, one eye

Non-functional requirements

- Environmental
  - Location
    - mostly at home, in downtime, watching TV
    - often waiting in lines, shopping, at work
  - with/without noise
  - light sources
- Project
  - cost, drop-dead dates, project member training or availability, etc.

Non-functional requirements - time

- Desktop peak times - grey
  - 9 am-2 pm, 6-9 pm
- iPhone peak times
  - 6-7am, 9-10am, **5-7 pm, 8-11pm**
- iPad peak times
  - 6-7am, 5-7pm, **8-11pm**



Interface

- Users need a way to talk to the app
  - Best UIs are ones that mimic reality
  - Best current solutions
    - content first – when content is implicitly navigable
    - touch enabled – when gestures are understood
    - voice

Interface

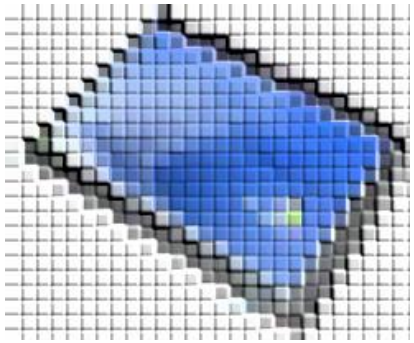
- Users need the app to talk to them
  - visual
    - text (typed, written) & icons
    - light/dark/color
  - audio
    - voice & sounds
    - volume/timbre
  - kinesthetic
    - vibrate
    - speed

Requirement prioritization

- Functional prioritization - use cases
- Non-functional prioritization – constraints, goals
- Metrics
  - External value
    - How many can use it?
    - How much value do they see in it (amount willing to pay)?
  - Internal value
    - How many will use it?
    - How business critical is it (how high in the org chart is it managed) ?
  - Proxy – if it were built, what happens when it fails?

Exercise

- Follow instructions in Exercises handout for
  - Prioritize design goals



Design Strategy

A designer's choices are a small limited form of tyranny. - Ethan Marcotte

Design

- Solving the requirements while using constraints.

> **Constraints shape and focus problems**, and provide clear challenges to overcome...
>
> – Marissa Mayer

How Constraints Cultivate Growth

@shayhowe

A mobile web experience

- Understand the user and solve their problems
  - Find the capabilities that work
- Not another web site
  - Don’t redirect to other URLs. Better in one site.
- Not just an app
  - What’s the goal for the container?
  - The web experience is just water.

Design vs. user experience

Kneejerk design

- Requirements / constraints
  - NO: Screen is smaller *ergo* use cases are fewer
- Design solution
  - Reduce and simplify
    - **model** - text and images
    - **view** - layout and style (CSS)
    - **controller / logic** - JavaScript
- Mobile = less **or** mobile = different?
  - War and Peace in paperback?

Meeting expectations

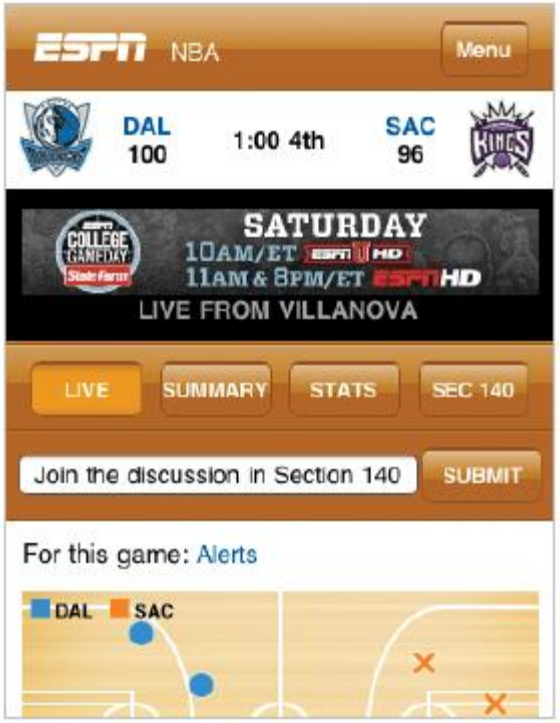
- Reduced logic or simple apps?
  - Clarity
  - Data rich is for desktops
- People don’t want dumbed-down
  - Facebook was initially stripped down. Not happy.
- People might want simple
  - Gmail spun off Inbox

Design goals

- General rule: content takes precedence
  - no site maps / navigation webs
- Pivot and explore
  - show mostly content
  - put navigation options in other places
    - bottom of scrolled page is best one-handed
    - link at top can connect to bottom navigation
    - use contextual nav options for tasks or deeper nav

Design goals

- Maintain clarity and focus
  - Maximize primary function
  - Minimize navigation



Developer design goals

- Reuse
  - Content
    - **Best solution**: component frameworks (Angular, Polymer, Web Components)
  - Code
    - **Best solution**: HTML5, JavaScript frameworks
- Ease of development
- Maintainability

Accessibility

- Web Content Accessibility Guidelines 2.0
  - W3C recommendation
- Perceivable
  - Provide text alternatives for any non-text content
  - Provide alternatives for time-based media.
  - Create content that can be presented in different ways without losing information or structure.
  - Make it easier for users to see and hear content.
- Sites
  - https://www.section508.gov/

Accessibility

- Operable
  - Make all functionality available from a keyboard.
  - Provide users enough time to read and use content.
  - Do not design content in a way that is known to cause seizures.
  - Provide ways to help users navigate, find content, and determine where they are.

Accessibility

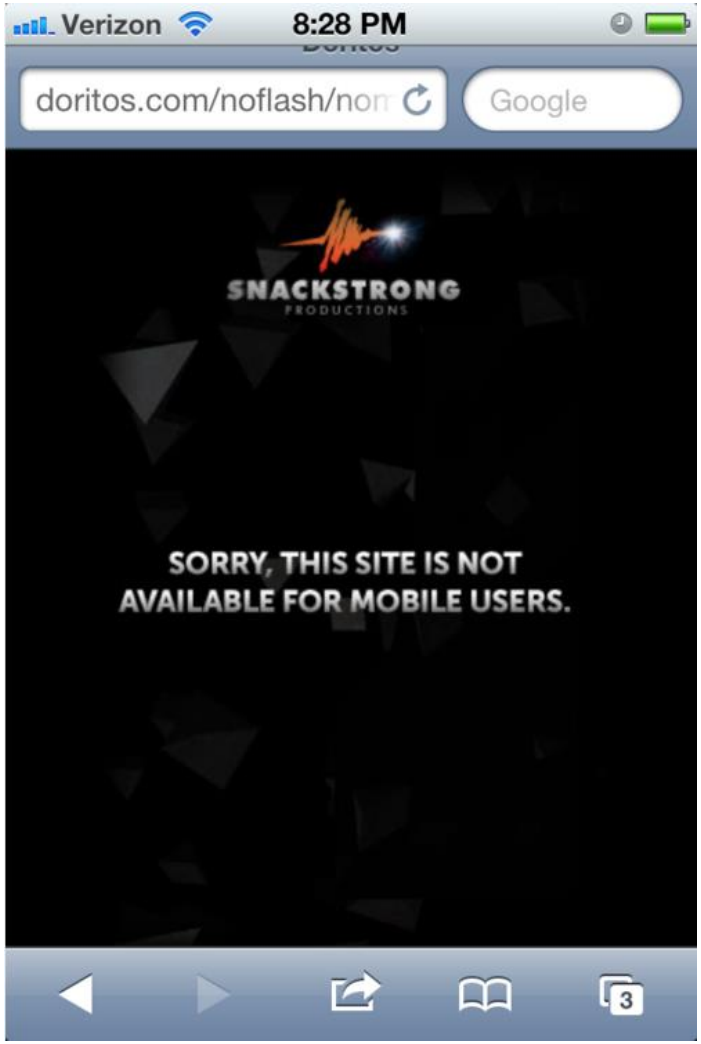
- Understandable
  - Make text content readable and understandable.
  - Make web pages appear and operate in predictable ways.
  - Help users avoid and correct mistakes.
- Robust
  - Maximize compatibility with current and future user agents, including assistive technologies.

The native vs. web question

- Native solutions - pro
  - access to system resources
  - hardware capabilities
  - better performance
  - app stores
- Native solutions – con
  - each platform uses different language
  - maintenance costs high
  - less people use, requires pull install
  - no testing ability

Web design strategy A

- Deal with it
  - desktop usually too much for a mobile site



Web design strategy B

- Dumb down the desktop
  - media queries route to different layouts
    - Conde Nast uses custom iPad apps with two separate orientation layouts per magazine. Page views are declining.
    - NPR uses a CMS to publish to layouts over the web and has an API. Page views are increasing.
  - too many devices to do well for full site
  - graceful degradation
    - use for special features

Web design strategy C

- 2nd/3rd/4th fluid web site for mobile/tablet/etc.
  - allow for switching to desktop version
  - multiple times the work
  - allows for greenfield development
  - redirect problems which affects performance
    - ESPN delayed 1.3 seconds before any new content loaded
    - client-side redirects are even slower than server side
    - Cache HTTP Redirects on the CDN. HTTP 301 Redirects w/ a future Expiry

Web design strategy D

- Responsive designs
  - client side solution - a façade architectural pattern
  - progressive enhancement - uses mobile first
  - rearrange and substitute elements based on device/breakpoints
  - hidden content is still downloaded
  - media queries do/ don’t stop downloaded resources
  - 2/3 of the average page is images. Use a way to minimize them.
  - Measure before and after

Web design strategy E

- Proxy server
  - reuses content and creates new site
  - a server side solution to responsive design
  - mobify.me
  - dudamobile.com

Web design strategy F

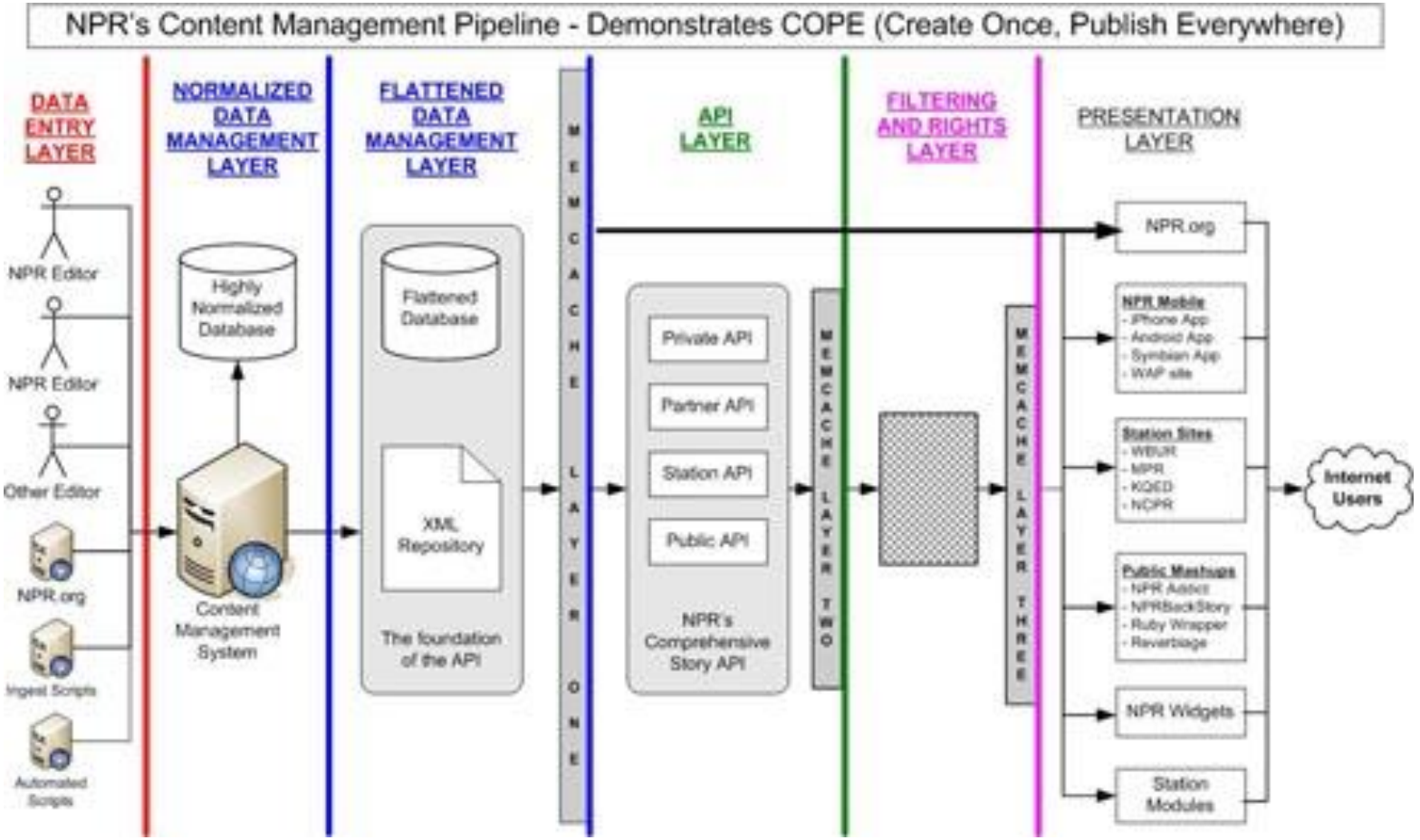
- Server side tailoring
  - get client device specs first
  - adapt layout and content based on device with server side code
    - small screens + touch (mostly phones)
    - large screens + touch (mostly tablets)
    - large screens + keyboard/mouse (mostly desktops/laptops)
  - requires much more analysis

Web design strategy G

- Hybrid web site for specific device
  - tailor experience to a device class
  - wrap in Apache Cordova, Xamarin, Ionic etc.
  - publish

Web design strategy H

- Content management delivery system



Frameworks

- Famo.us – web graphics like native
- jQuery Mobile
  - relies on HTML first and then enhances
- PhoneGap
  - Adobe purchased Nitobi in Oct ‘11 & created Apache Cordova
  - uses a native wrapper around web app
  - goal is to expose as many device APIs as possible

Material design

- Multiple screens, adaptive, reality themed UX, Polymer
- Google Design
  - http://www.google.com/design/
- Material Design (Nov 2014)
  - http://www.google.com/design/spec/material-design/introduction.html
  - Dev Summit - https://www.youtube.com/watch?v=tfSiXRy1vEw
  - Mashable - https://www.youtube.com/watch?v=w2JUhDd0CAA
- YouTube Google Developers Channel
  - https://www.youtube.com/channel/UC_x5XG1OV2P6uZZ5FSM9Ttw

Exercise

- Follow instructions in Exercises handout for
  - Select a design strategy

Requirements - content

Content process

- Reusable content starts with structured content
  - content authors write/create
  - content managers structure / markup with metadata
  - content publishers/designers create flexible layouts for metadata
  - content editors prioritize content for layouts and act as release managers / art directors

Mobile First

- Ethan Marcotte (The Boston Globe)
  - Mobile first means you are making a commitment to the content on the page.
  - What is the value of every element on the page?
  - Mobile forces you to simplify things on all device experiences.

Progressive enhancement

- The Filament Group
- The inverse of graceful degradation
- Build a solid foundation for any browser
- Add stuff on top
  - browsers should only do what they understand
  - use animations and transitions, don’t expect them to work

Text

- Structure your data with the client first
- Use metadata
  - Use microformats (schema.org)
- Web fonts
  - limit to desktop sizes due to files sizes and readability (Ethan Marcotte)

Flexible images & media

- Video loses aspect ratios on different screens.
  - http://fitvidsjs.com/ - flexible video embedding
- Only make one HTTP request per image.
- Only simple incomplete solutions for now.
  - Start with the small screen image first then enhance up.

Ads

- Ads are fixed width and inflexible. A challenge.
- Hiding ad content on smaller screen sizes hurts performance.
  - Smashing Magazine (phone and tablet portrait)
- Layout is the easy part of responsive design. Advertising is proving to be a worthy adversary.

Performance

- Do anything to increase performance
  - send less stuff
    - use HTML5 application cache
    - minify files
    - reduce JS libraries
    - use CSS3 for effects, not images
    - limit CSS grid systems
    - don’t use @import, use link
  - use fastest solutions

Design - Layout

Intro

- Focus first on content in the site structure, not layout.
  - Site structure is hard to create & change.
  - Layout is fast.
- Continual change requires layout flexibility

Flexible / fluid grids

- Convert fixed positioned units to fluid units
  - Target / context = Result
- Manage proportions, not fixed units.
  - Percentages, not pixels.
- Width, hierarchy, interaction and density all influence layout.

Responsive design

- Ethan Marcotte
- First used to dumb-down desktop sites
  - More than stretching items by percentage
- Mobile first - Luke Wroblewski
  - progressively enhance as size increases
  - easy to use media queries to check support

Responsive design

- flexible grids
- flexible content
  - font sizes / families
  - images & media
    - foreground
    - background
    - resolution (Retina)
    - progressive JPEGs again?
- media queries for breakpoints

Responsive design

- Breakpoints
  - break points are at common device/design sizes
  - CSS based on **min-width** governs break points
- Traditional breakpoints
  - 320, 480, 640, 800, and 1024 pixels
- It's not about the break, it's about in-between behavior
- Ethan Marcotte - I'm a big, big believer of matching breakpoints to the design, not to individual devices.

UX patterns - responsive

- The Select Menu

UX patterns - responsive

- The Left Nav Flyout

Design - UX

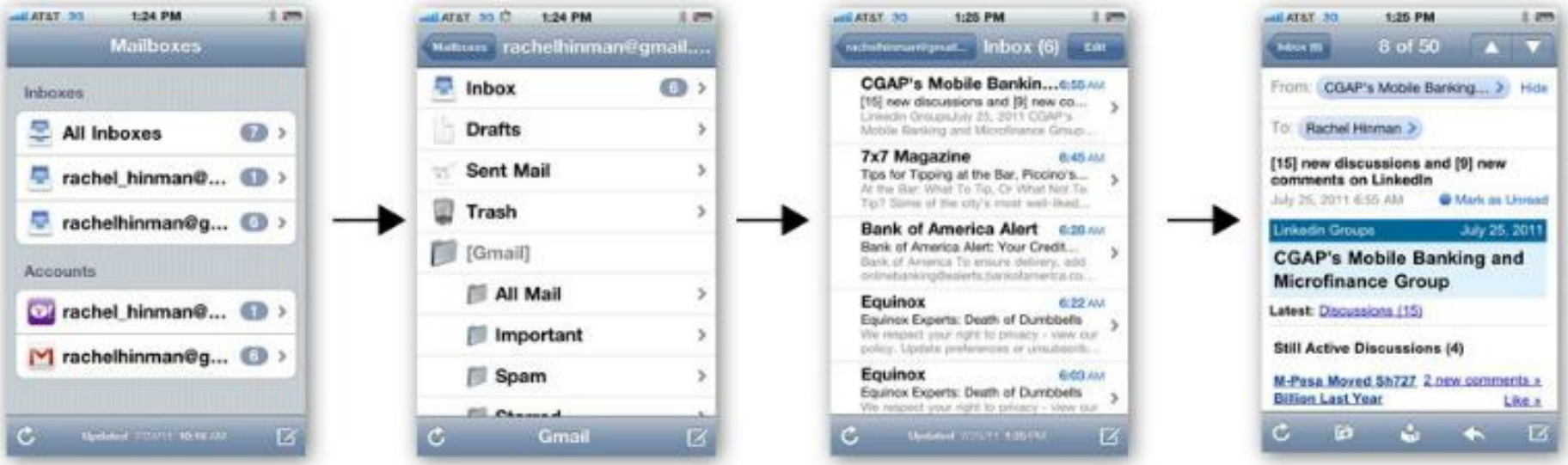
User experience

GUI vs UX

- GUI design
  - component by component on a page
- UX design
  - workflow for a task
  - more significant when the screen is smaller

UX patterns

- Nested doll – big, medium, small, detail

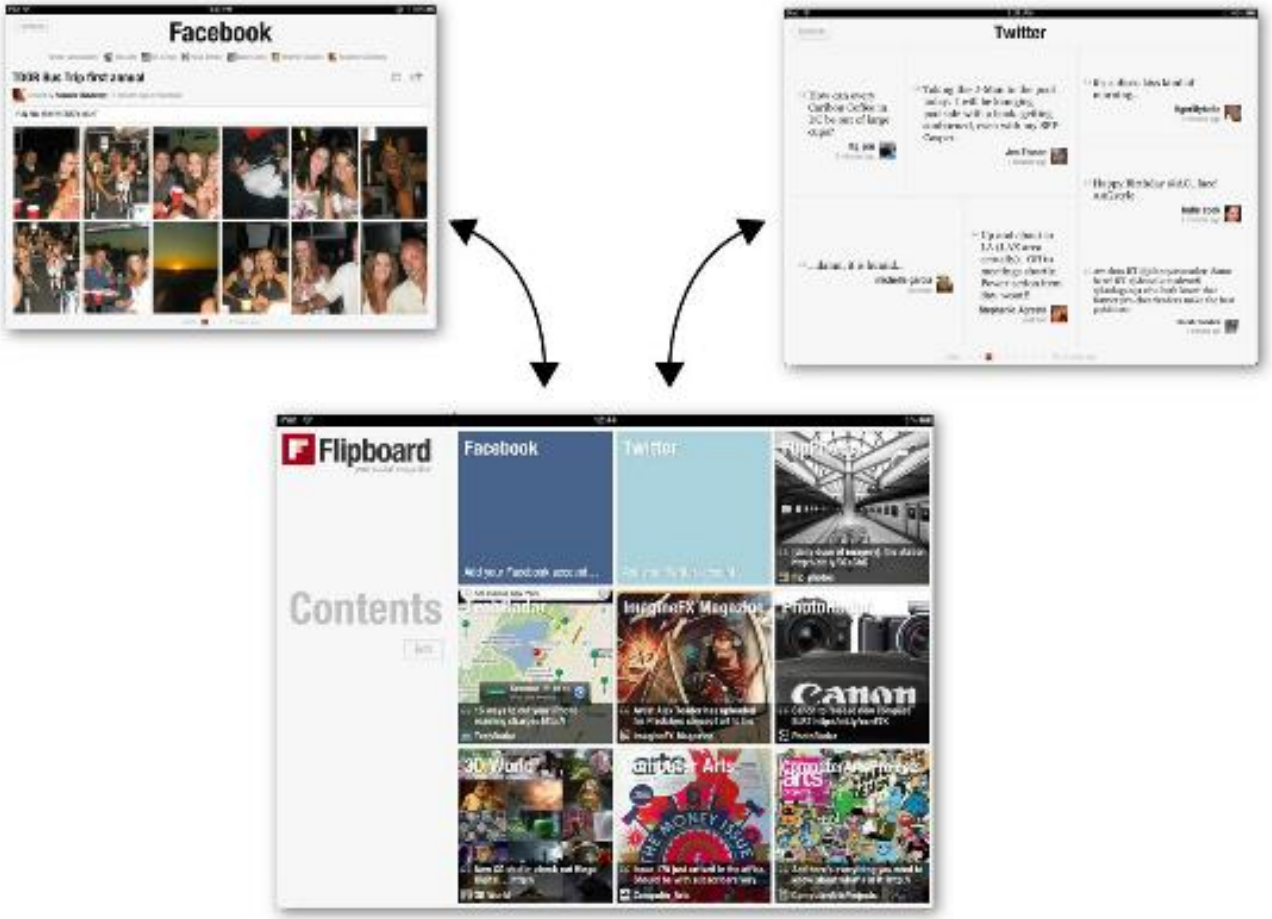


UX patterns

- Filtered view: many to few

UX patterns

- Hub and spoke – one to many (Flipboard)



UX patterns

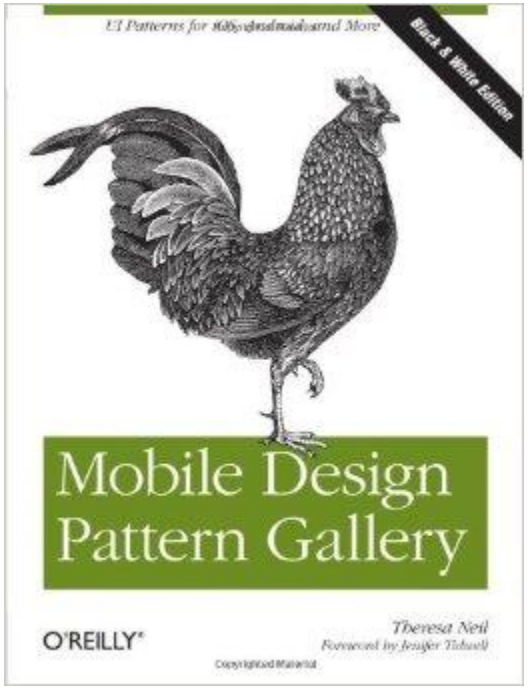
- Bento box – the grid

UX patterns - web sites

- http://ui-patterns.com/ - gallery
- http://patternry.com/ - library building
- http://patterntap.com/ - gallery
- http://www.smileycat.com/design_elements/ - gallery
- http://developer.yahoo.com/ypatterns/ - one example each
- http://patternbrowser.org
- http://www.ecommr.com/ - ecommerce patterns

UX patterns

- **Mobile Design Pattern Gallery,** 2nd Ed, by Theresa Neil, O'Reilly Media, Inc. May 2014
  - Navigation, forms, tables, search, tools, charts, tutorials, social patterns, feedback, help, anti-patterns



Exercise

- Follow instructions in Exercises handout for
  - Inspect a responsive web design
  - Check out other styleguides at
    - http://blog.hubspot.com/marketing/web-design-style-guide-examples (Apple, Atlassian, Mozilla, Buffer, Yelp, Gov.uk, Deviant Art, Disqus)

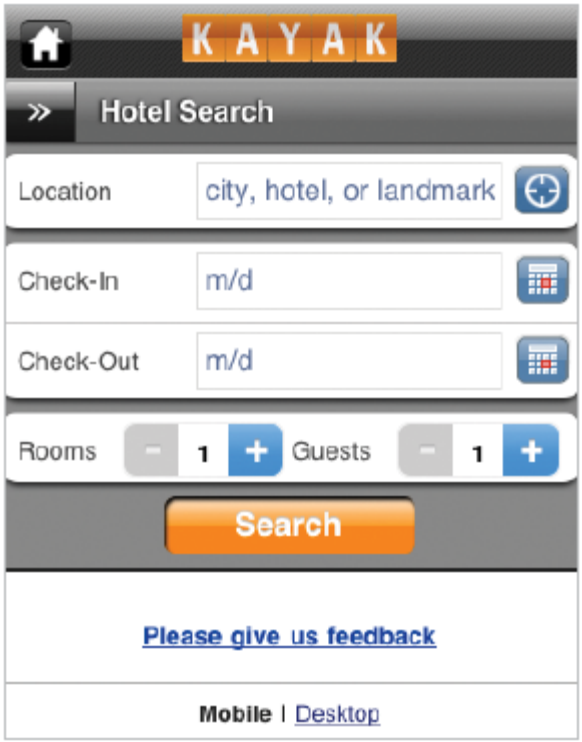
Design - Components

Mobile form labels

- Form labels have to be redesigned
  - top-aligned are good
  - supporting text below
  - virtual keyboards take up bottom half
  - labels in fields are best (HTML5 placeholder)
    - must not be used in output, must be different (gray)

Mobile answers

- Input types
  - checkbox, radio button, passwords, drop-downs…
  - HTML5 URLs, dates, emails…
- Avoid long lists
  - use separate page
  - use different control
  - use smart defaults



Masking the hard stuff

- Provide clear input cues and restricts mistakes
- Common in native apps
- Use JavaScript for web apps
- Don’t change the mask as you type

Tax ID

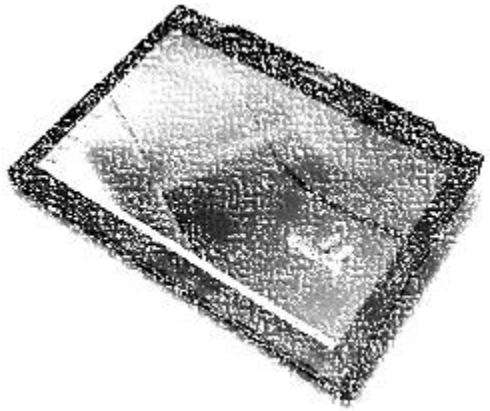
122-88-____

Laying out the options

- Three scenarios
  - sequence of related questions
    - fewer the better
  - non-linear updates
    - not all fields need updating at once
    - shows answers not input fields
  - in-context inputs for immediate responses
    - inline input

Beyond forms and input fields

- Use native capabilities when possible
  - Google Maps
  - Google Calendar
  - Web services
- Coming in the future



Prototyping

Purpose

- A prototype is used to
  - **brainstorm** for requirements from stakeholders
  - **elicit and validate** requirements from stakeholders
  - **understand** requirements domain
  - **communicate** a recommended design to designers, developers, and stakeholders
  - **visualize** solutions by designers

UX sketching

- sketching is efficient
  - no technology to distract
  - focuses you
  - lets you to take risks
  - communicates & helps understand problem

- sketching (analysis) vs. drawing (design)

Prototyping tools

- Fast, simple, limited
  - Photoshop (old school), Balsamiq, Pop (prototype on paper)
- Slow, complex, most interaction
  - Xcode
- In-between, rich, fairly quick
  - Quartz composer, Origami (iOS)

Slide decks

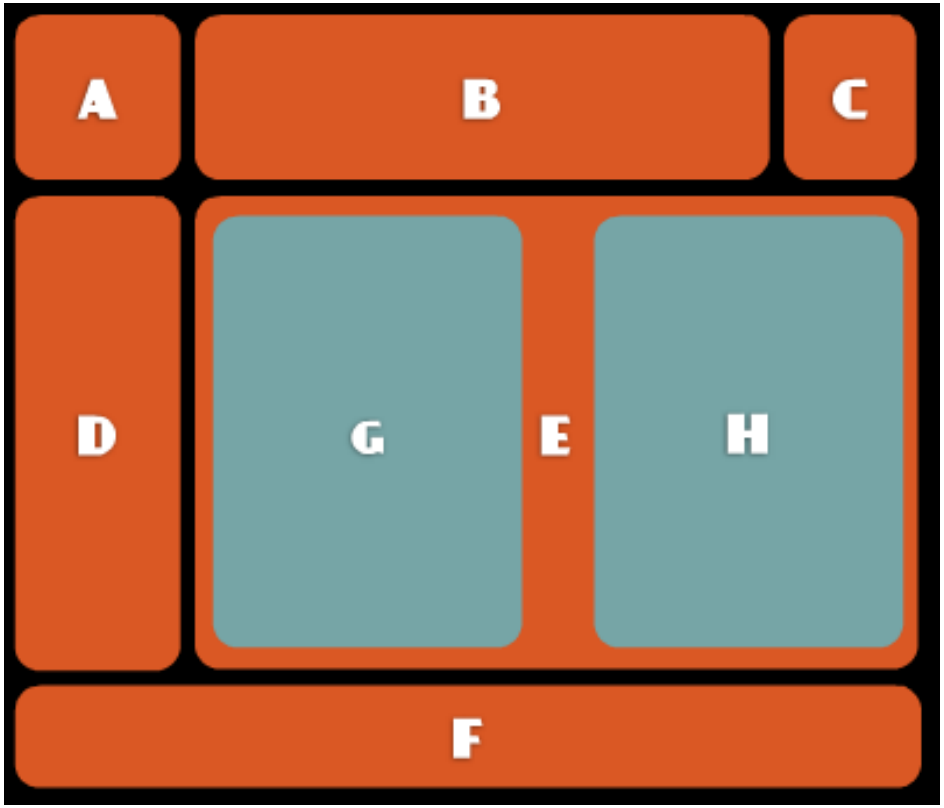
- Other animation tools with better fidelity do not simulate the real mobile experience.
- Microsoft PowerPoint, Apple's Keynote

Wireframing

- Somewhat known environment
- Paper or computer graphics
- Types
  - content reference
    - should not look like a final product, use sketching / HTML
  - in browser for layout testing
    - enhanced to show clients, use screen shots

Wireframing - content reference

- A - logo
- B - company name
- C - login
- D - nav bar
- E - main content
  - G - posts
  - H - ads
- F - footer



UX sketching process

1. Start with a 30% light grey marker
   - dot intersections, add lines
   - outline the basic divisions / sections
2. Use ball point pen
   - to add detail
3. Use 60% grey marker
   - to reinforce critical areas

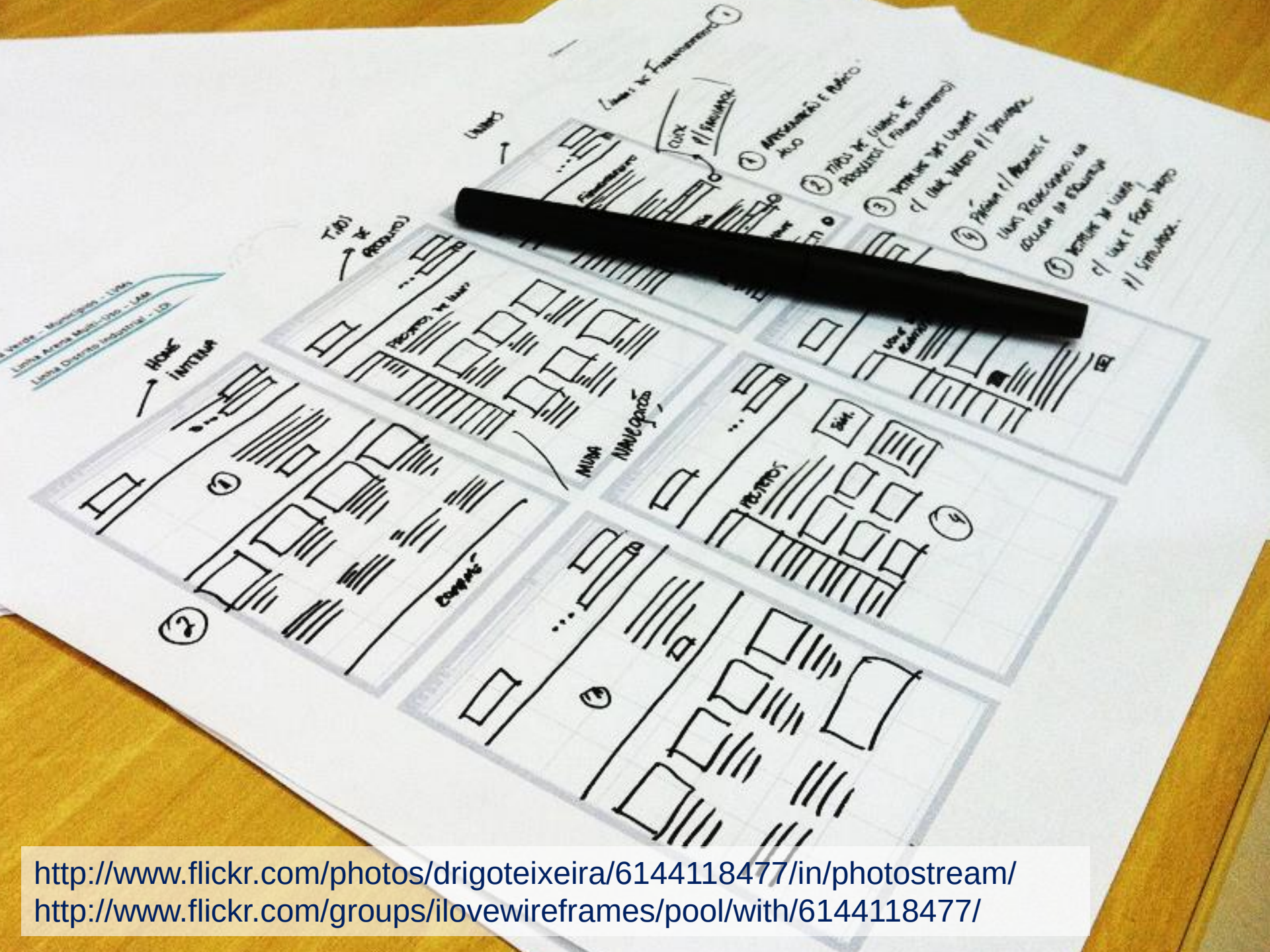
- Create refs to details

UX sketching techniques

- Use sticky notes for tooltips, dropdowns, …
  - easily added, removed for scanning/copying
  - cut, combine, use different colors for types
- Templates – photocopy basic layout
  - change layouts by taping over with copies
  - reuse sketch as underlay – copy at 20%
- Use a quilting ruler for even spacing, cutting paper, dark lines to make light areas pop.

Sketching tips

- Use context to make it real
  - sketch mobile at full scale
  - draw/picture surrounding environment on a few
- Use 8 ½ x 11" paper
  - hang on wall
  - batch scan, copier friendly, cheaper paper
- Tools
  - Cool Grey Prismacolor 12/set
  - Collins Quilt & Sew Ruler 2“x18"



http://www.flickr.com/photos/drigoteixeira/6144118477/in/photostream/
http://www.flickr.com/groups/ilovewireframes/pool/with/6144118477/

Sketch to mobile

- For a more real experience
  - Hang sketches on wall and photograph
  - Adjust size so they fit your device
  - Keep sequence in order
  - Upload to mobile device and swipe through.

Sketch sheets

- http://jeremypalford.com/arch-journal/responsive-web-design-sketch-sheets

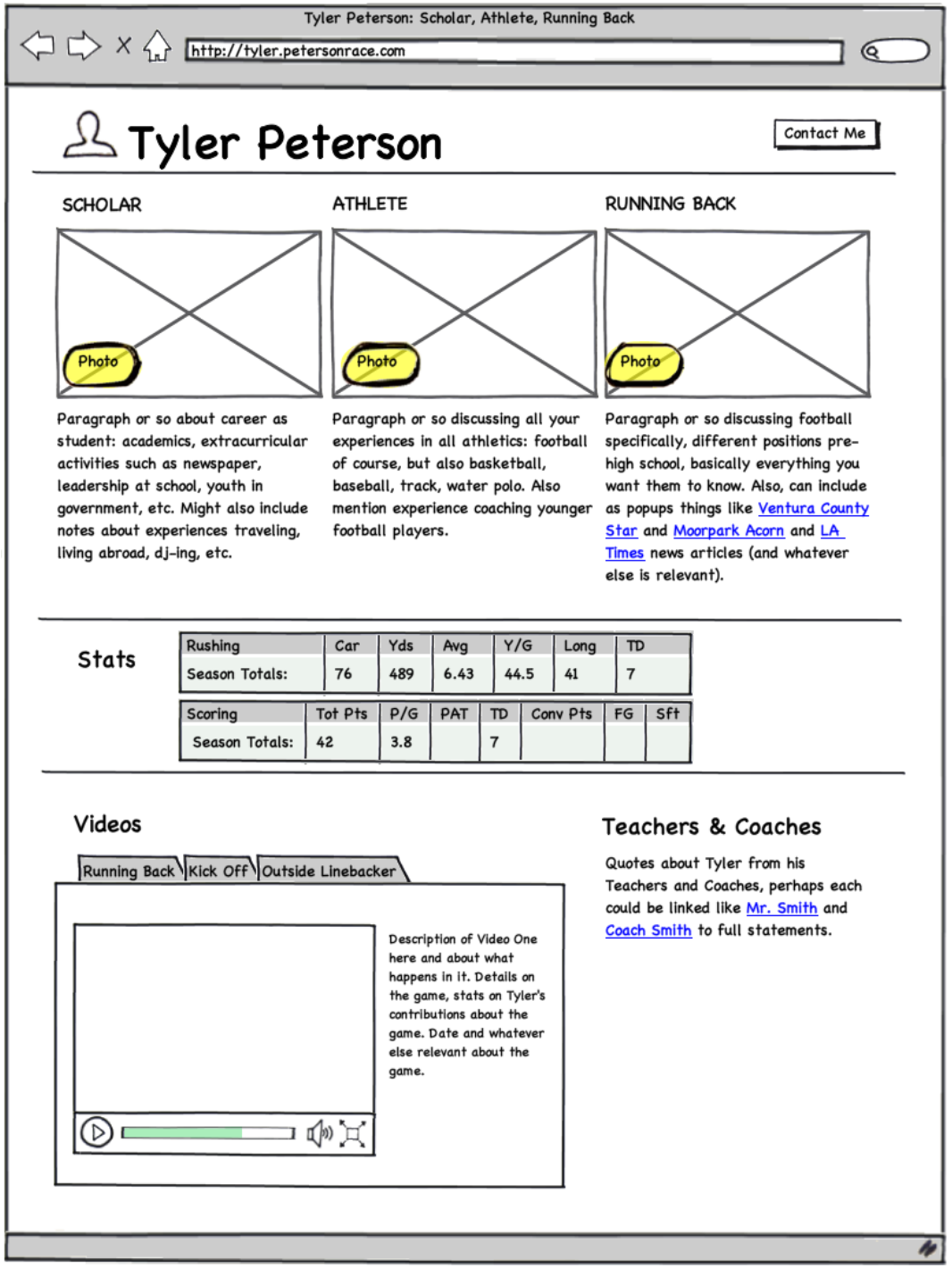
Wireframes

- allows developers to build logic to support it
- allows designers context to work on visuals

Wireframe for Wellstone Action homepage

Wireframes for various Wellstone Action internal pages

Balsamiq



http://www.flickr.com/photos/artlung/4424880628/
http://www.flickr.com/photos/artlung/4424110897/

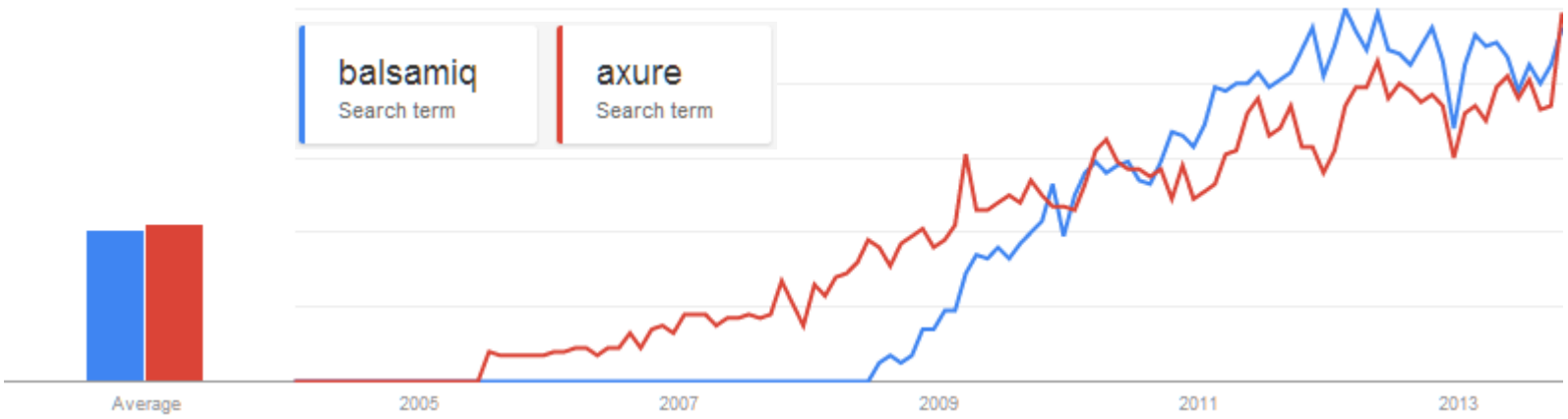
Balsamiq

- http://balsamiq.com/
- desktop ($79) or web ($12/mo)

- Exporting your mockups to code
  - http://support.balsamiq.com/customer/portal/articles/135659

Tools - wireframing

- Balsamiq wireframing - http://www.balsamiq.com/
  - mockups for iPad, Android, etc. - http://mockupstogo.net/
- Axure - $289/589 - http://www.axure.com



Tools – Mac only

- Origami - http://facebook.github.io/origami/
- Sketch - https://sketchapp.com/

Designing in the browser

- After sketching, wireframing, etc.
- Client feedback on iterations
  - embellish screenshots in Photoshop
- Designers like
  - CSS that is almost complete
  - direct interaction with final medium
  - creating websites, not pictures of websites

Design / project management

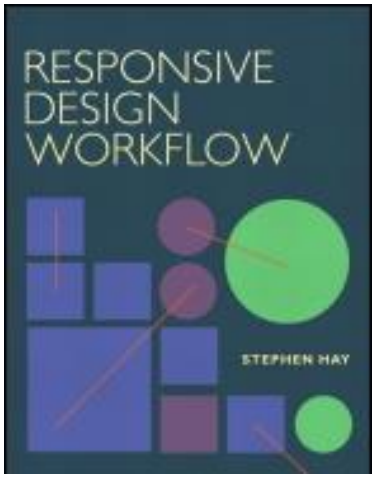
- Invision - https://www.invisionapp.com/
  - one free prototype

Exercise

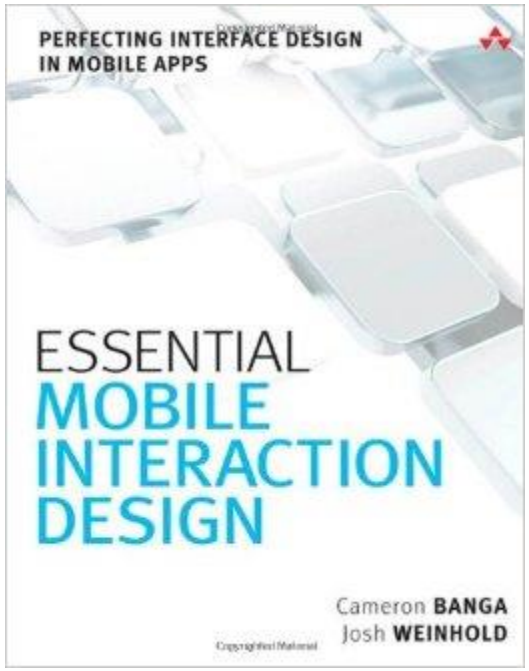
- Get set up for a Balsamiq account.
- Follow instructions in Exercises handout for
  - Reverse engineer a prototype

End matter

Books



- **Responsive Design Workflow**
  by Stephen Hay,
  New Riders. Apr 2013
- **Essential Mobile Interaction Design: Perfecting Interface Design in Mobile Apps b**y
  Cameron Banga; Josh Weinhold,
  Addison-Wesley Professional. March 2014



Web sites - Email

- Litmus - https://litmus.com - $$
  - Preview/update across 30+ email clients and devices
- Campaign Monitor -
  - http://www.campaignmonitor.com/testing/
  - 20+ clients, price scales by emails sent

Web sites

- Zurb -$ http://zurb.com/apps

Web sites

- Zurb - free http://zurb.com/apps

Strike
Lets people quickly set up tasks and then knock 'em down altogether.
More about Strike »

Reel
Get your design ideas online and start reeling in the feedback.
More about Reel »

Chop
Paste code snippets, add notes. Send to nerds.
More about Chop »

Clue
A fun and easy way to test what people remember on your website.
More about Clue »

Axe
Trap bad web designs, cut out the fat and share the meaty results.
More about Axe »

Plunk
An easy way to test clicks on a mobile phone.
More about Plunk »

Bounce
A fun and easy way to share ideas on a website.
More about Bounce »

Spur
A fun and easy way to critique your web pages.
More about Spur »

Galleries

- Landing Pad
  - http://landingpad.org/
  - iPad apps
- TappGala
  - http://www.tappgala.com/
  - Mobile app

TappGala

Tools

- The Tools Designers Are Using Today
  - http://tools.subtraction.com/
- http://www.uxpin.com/
- https://webflow.com/
- https://www.flinto.com/
- http://www.irise.com/
- Adobe Comet
  - http://landing.adobe.com/en/na/products/creative-cloud/comet/229818-notifyme.html

Case studies

- Scripp's National Spelling Bee
  - http://www.smashingmagazine.com/2015/09/rapid-app-development-buzzworthy-spelling-bee-app/

Conferences / Meetings

- International - Lanyrd
  - http://lanyrd.com/topics/web-design/
  - http://lanyrd.com/topics/mobile-web/
  - http://lanyrd.com/topics/mobile-ux/
- Local - Meetup
  - http://www.meetup.com/Mobile-Media-Club/
  - http://www.meetup.com/KCDesignCore/
  - http://www.meetup.com/KCWebCore/

Final items

- Certificates
- Evaluation
  - http://www.metricsthatmatter.com/centriqfoss1