Pre-Spec Work
Part 1 - Know Thy Users

CSE 112
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Sad Truths

• The majority of software you work on will be poorly specified
• Truth: Writing specs are hard
• Truth: People don’t always know what they want
• Truth: Specs often require speculation about an unknown topic or future action
Fuzzy Spec Reactions

- With fuzzy specs we have two reactions from our previous discussion
  1. Spend time on big think
  2. Jump in and try to figure it out and adjust
- Both are fraught with peril but currently choice two is vogue for at least “progress” appears to be made and it appears less risky
It’s Partially Our Fault

• We enable this activity when we aim to be programmers coders rather than engineers or architects
  • We are indeed one of the two parties to allow insanity in our projects
  • Either don’t grumble or do something about it - you must realize the spec

• Interestingly Agile with its user stories is forcing you to do this as is the big think “discovery process”
User Acceptance

• Is paramount ... this will be formally called verification
  • “Are we doing the right problem even?”
• It trumps the how we accomplish things
• Users ultimately are the overall acceptor/rejector of the app in nearly all cases
• Sadly “customers don’t know what they want. Stop expecting them to know what they want”

http://www.joelonsoftware.com/articles/fog0000000356.html
What to do...

- It is **our** job to figure out what users want
  - Both business owners and the end user
  - We have to be an advocate for both

- Beware: General design tension of control
Control

• Who is in control is a key idea of the vision phase of requirements
  • Too much user control - trouble, chaos, etc.
  • Too much owner control - missing real needs

• Again we see something
  • User control ~ bottom up
  • Owner control ~ top down
Practice Las Vegas Design

- Balance of power
- Illusion of control
- Benevolent Dictator
- Measure, measure, measure
Accept the App Iceberg

- Interface
- Wireframes, blueprints
- Metadata, classification schemes, thesauri
- Information architecture strategies, project plans

- Users
  - needs, behaviors

- Content
  - structure, meaning

- Context
  - culture, technology
This iceberg thing...

- Might go deeper if we applied it to the people themselves
- Freud thinking as iceberg
- Why they think the way they do about our app?
What do users want?

- Law: You are **not** the user*
- Reaction: Ask the users!
- Law: Users are **not** designers
  - “Sure you gave us what we asked for but it isn’t what we want”
    -- your users
  - They aren’t aware of themselves as much as you think - it’s up to you
User Naturalist

- Study your prey users in their habitat
- Do so with as little interference as possible
- Try to think like they do with empathy
  - No robots nor stereotypes, real people with real problems and personalities
  - And know that you can’t please them all
We live in our own worlds

Figure 2-4. *The user’s universe*

We go to them not the other way around really
A Common User Environment

Lighting
Brightness and glare may alter visibility

Environmental effects
Noise and distractions may cause user to lose focus or miss audio info

Screen
Presents visual info to user (screen distance and size could effect perception)

Speakers (optional)
Presents audio info to user

User interacts with site using keyboard and mouse (text entry, pointing device)

Figure 2-1. Typical environment of user interacting with a site

There are many others
Watching Users

• Go meet them and listen
  • Avoid focus groups
• Watch out for testing artifacts
• Employ the power of passive monitoring
• Ultimately - “Don’t spook your prey!”
Meeting Those Users

• Video - “What is a browser”

• Truth: Most of them don’t care how you build something and are quite surface-y
  • No: ZOMG Facebook used PHP!!?!
  • Yes: I don’t like how it looks.

• Might be tough to engineer against the irrationality...even when it can be predictable
Our App and Users?

- Mostly our cheese will not overcome even mild shock
- Exceptions? *Fear Factor*
- Equate electric grid to ease of use
Usability

- Definition: Usability is the extent to which an app can be used by a specified group of users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use.

- From Nielsen 5 aspects of usability
  1. Learnability
  2. Rememberability
  3. Efficiency of use
  4. Reliability in use
  5. User satisfaction

- Q: Does one matter more than others ultimately?
Usability

• Rule: There is no absolute idea of a usable application.
• Rule: Usability varies by the user
• Rule: Usability depends on medium of consumption
• Rule: Usability is highly influenced by app type and familiarity with app
Avoid Sporknifes

Law: Good usability and user satisfaction are directly related
Humans to Tech not the Reverse

Discuss the right and wrong of this idea
Ok if I am wrong ... this will be us in the “future”

Information worker in Tom Cruise wave your arms world
Take 2: Talking to the Computer

Again let’s reason this out given our theory
Ok I am wrong...we need these then

I Demand the Cone of Silence!
Common Characteristics

• While there may not be a totally typical person people do have similar capabilities. Remember the main way that a user interacts with a Web site (keyboard, mouse, monitor).

• Sight

• Movement and Reaction time

• Memory

• Other possibilities may include hearing

• All capabilities have ranges - example: vision
Vision

• Visual design of our app must account for vision limits

• Contrast
  • Light on light, dark on dark = BAD
  • Consider - road signs, typical print media
Vision Contd.

• Size and Spacing
  • Avoid too small and too big
  • Too close together

• Noticeably different
  • Thresholds and the “fuzzy eye” test

• Gestalt Principles - similarity, continuation, closure, proximity, figure & grouping
  • http://graphicdesign.spokanefalls.edu/tutorials/process/gestaltprinciples/gestaltprinciples.htm
Vision Contd.

- Don’t forget color
  - Is it all we rely on in an interface?
  - What about color blind?
  - How is it perceived?
    - Social, Culture, Taste
  - Not absolute even w/o human - monitor age, settings, gamma, etc.
Memory

• Rule: Users try to maximize gain and minimize work. (The lazy person rule)

• Memory requires work!

• Rule: Recognition is easier than recall, so don’t force users to memorize information.
Memory Contd.

• Miller’s Law - Short term memory wise, users are able to remember around 7+/− 2 items.

• This is important to consider in app dev

• Add to it though the depth and breadth problem
  • Sequential memory constraints - 3?

http://en.wikipedia.org/wiki/The_Magical_Number_Seven,_Plus_or_Minus_Two
Time and Speed

• Not absolute
• Reaction times have a floor
  • Sub 1-second
• Attention times checkpoints
  • 0-1s, 1s, 5-10s, >10s
• Never have enough speed, though wait to correlate
• Speed should be a feature
Movement

• Consider finger, mouse, keyboard

• Zen UI - Minimize movement

• Fitt’s Law - the math basically shows time to acquire/activate target is function of distance to and size of target
  • Big and close vs. small and far

\[ T = a + b \log_2 \left( 2 \frac{D}{W} \right) \]
Engineering UI Thinking

• Acknowledge the fallibility of our humans
• As a good engineer have a fail safe
• If you have a system you have many ways to succeed in case a system fails
  • Many ways to accomplish task - keyboard, mouse, wizard, etc.
  • Many ways to notice button/link - color, style, location
General User Types

• In general there are three types of users
  1. Novices
  2. Infrequent intermediates
  3. Power users
• These are gross groupings
• Q: What should we focus on?
Real Users

- Users are not so simple as we have heard already.
- Each is an individual
  - We may find personas useful though
- Talking to real users will be confusing
- Do not be an absolutist here and really believe next slide
Humans - Irrational, Mostly-Constant, Social Animals

- Humans are not computers
- Humans have emotions
- Humans are fairly constant, technology is variable
  - Slow change over time (aka evolution)
  - Do not confuse societal changes
- Lots of Real Challenges Out There - Movie time: https://www.youtube.com/watch?v=PriSFBu5CLs
Back to Vegas

• If we understand them better than they understand themselves is that an advantage?

• Visiting Cialdini’s Influence ideas
  • http://en.wikipedia.org/wiki/Robert_Cialdini

• Google does this? Amazon does this?
Starting to Get Practical

• Before writing code need to have a pretty good idea what the user interface will look like

• “The interface is the application”

• This suggests interface first, wireframing, etc.

• Of course we need to consider back-end too but this fits iceberg model

• Up next ...
  • Medium Constraints
  • Requirements