

announcements

node_modules <- don't push this to heroku

some calendar adjustments (all good, I promise)

final project feedback: check your GitHub PR comments

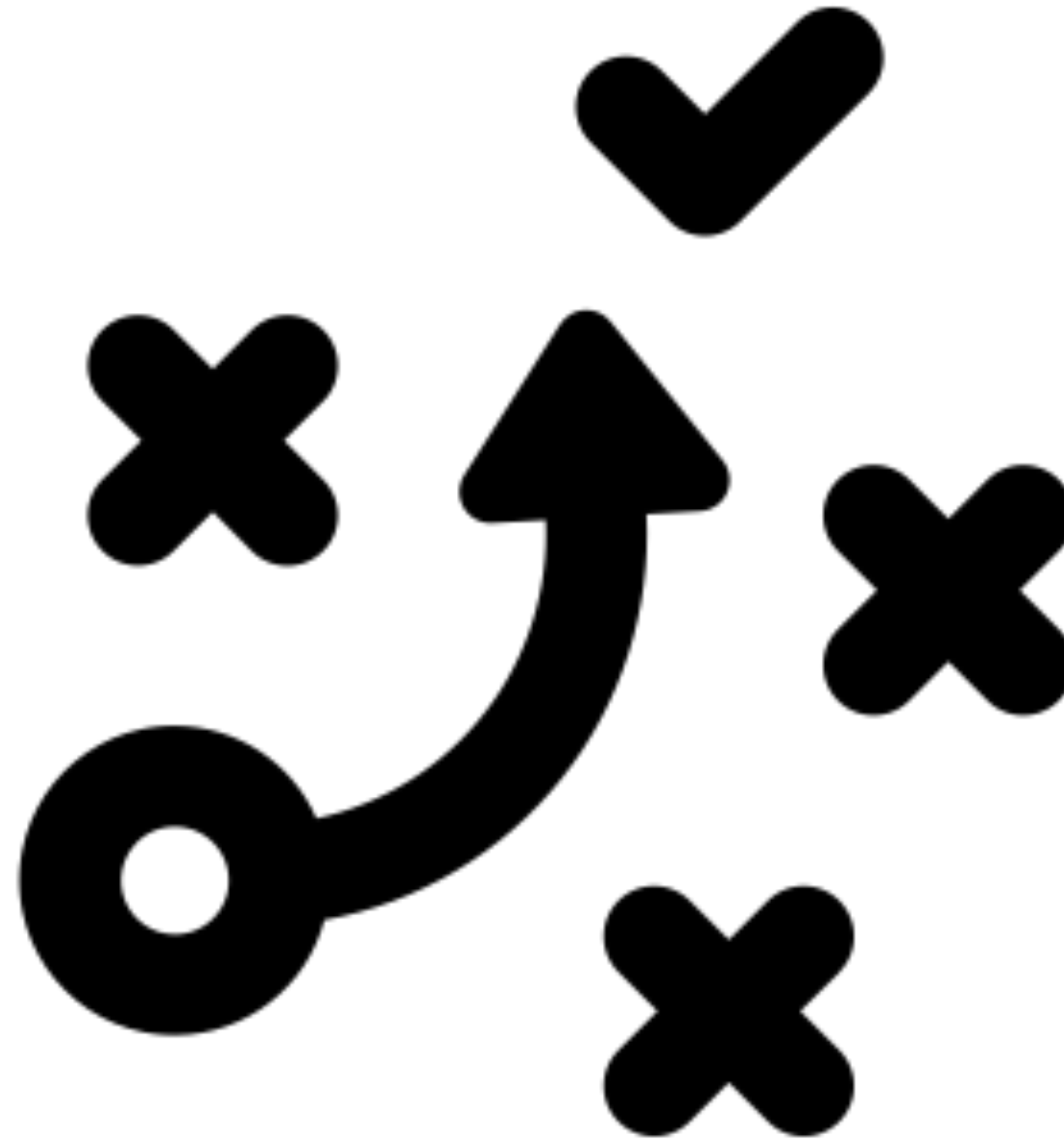
final project day fundraising kickoff



CS 4241

WebWare

design and evaluation



Goals and Motivations

Principles: Three "U"s

Usable

users of the site can readily perform the tasks the site supports

Universal

site supports users of varying abilities / backgrounds

Useful

site actually has functionality to address the problem / experience it aims for



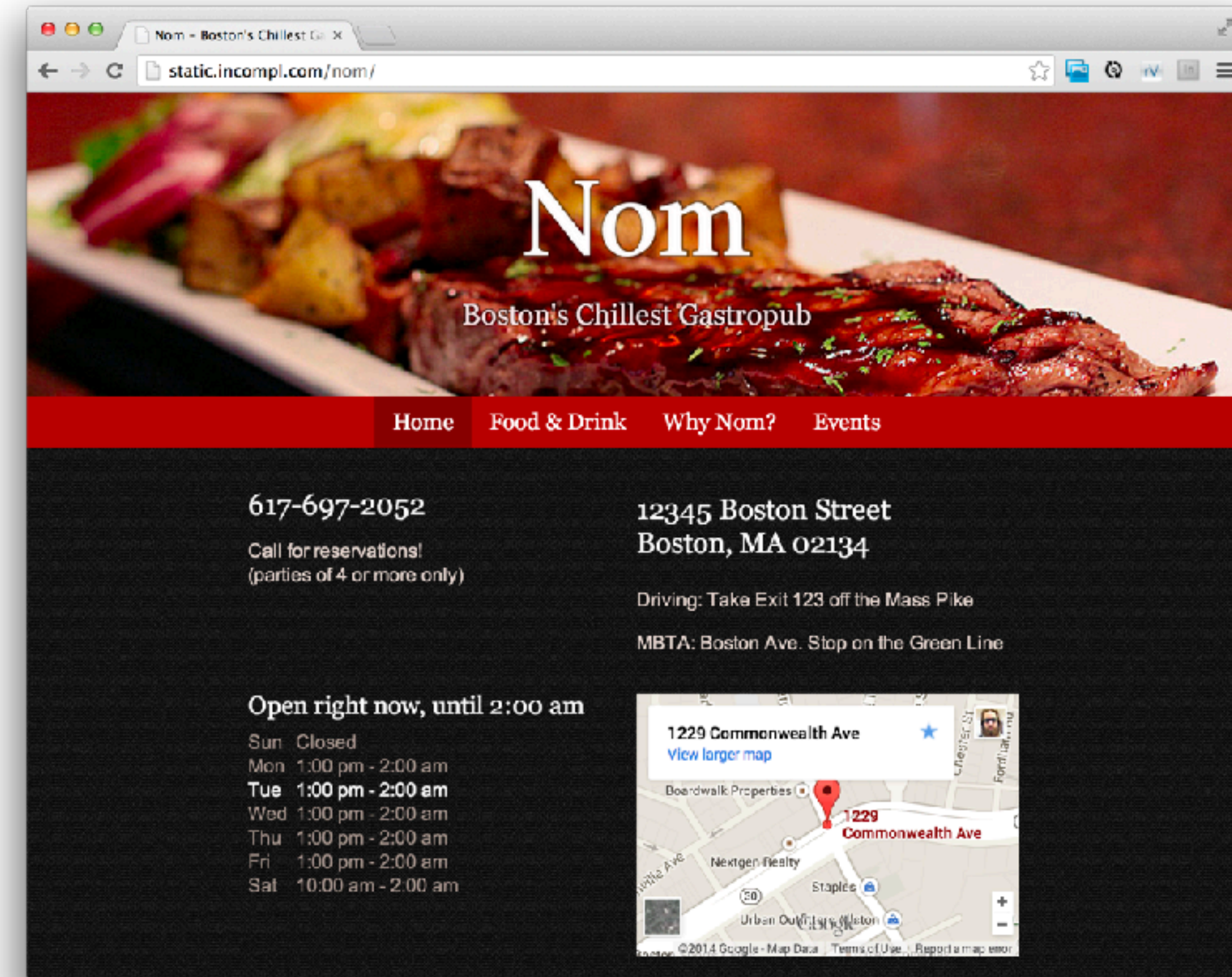
Beyond "User Friendly"

Beyond functionality, website design must take into account:

User differences

Tasks users should do

(next level) Emotional alignment of all aspects of design

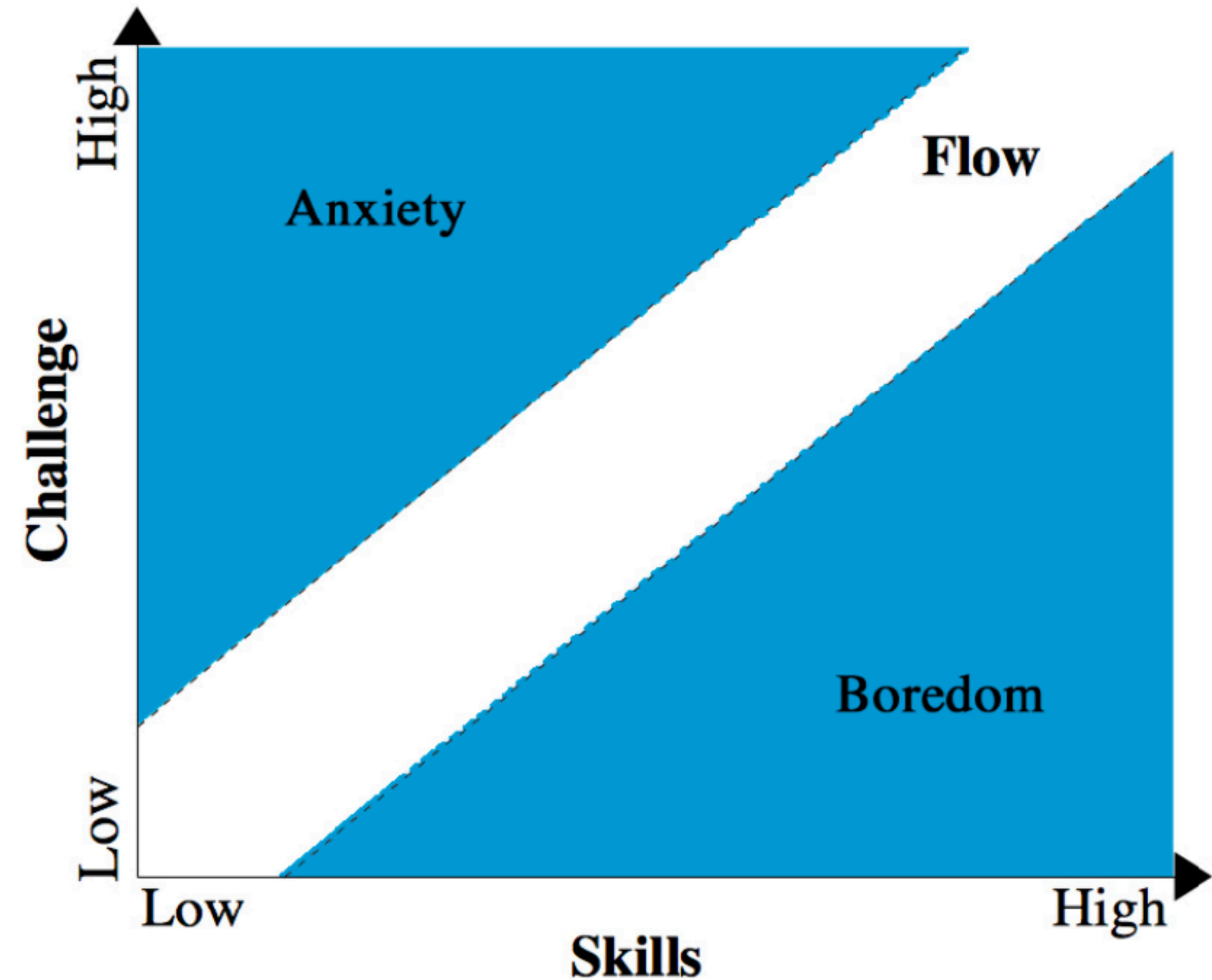


Invisible Interfaces

Q: who has gotten lost in some challenging activity, like coding/writing/designing?

The best interfaces "disappear".

(Requires both great design & experience)



for more on flow, see Mihaly Csikszentmihalyi

Design is Business

Poorly designed websites rarely make it

(Especially in the face of equally priced/featured competitors)

Design + Evaluation -> less time on dev



design is an oft-cited reason as to why Myspace lost the social media market


Planting the seed: common evaluation measures

1. Time to learn
2. Speed of tasks
3. Error Rate
4. Retention
5. Subjective perceptions

Liking a Tweet or Moment

Likes are represented by a small heart and are used to show appreciation for a Tweet or a Moment. You can view Tweets an account has liked from their profile page by clicking or tapping into the likes tab.

To like a Tweet

1. Click or tap the **like** icon  and it will turn red, confirming that you've liked the Tweet.
2. You can also like a Tweet from an account's profile page and a Tweet's permalink page.

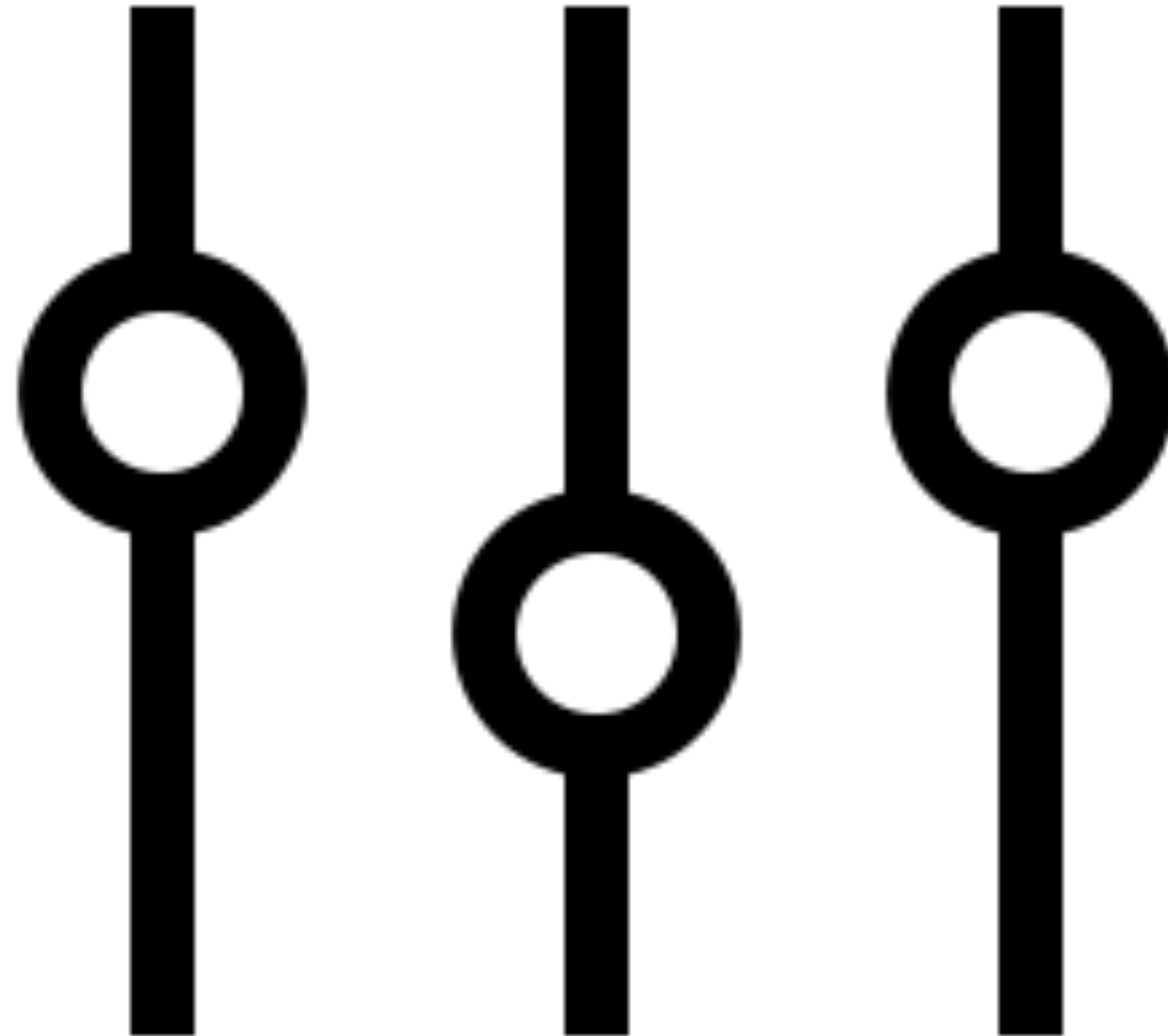
Note: If you like Tweets by accounts who have protected their Tweets, the update will not appear in the likes tab on your profile (unless the viewer is a follower of the Tweet's author).

To undo a like from a Tweet

1. Click or tap the **liked** icon  to undo the like.

many popular website features: likes, RTs, playing songs, etc, are always only a few clicks away

If it took 10+ clicks to post to Twitter and 2 weeks to learn it to proficiency, who would use it?

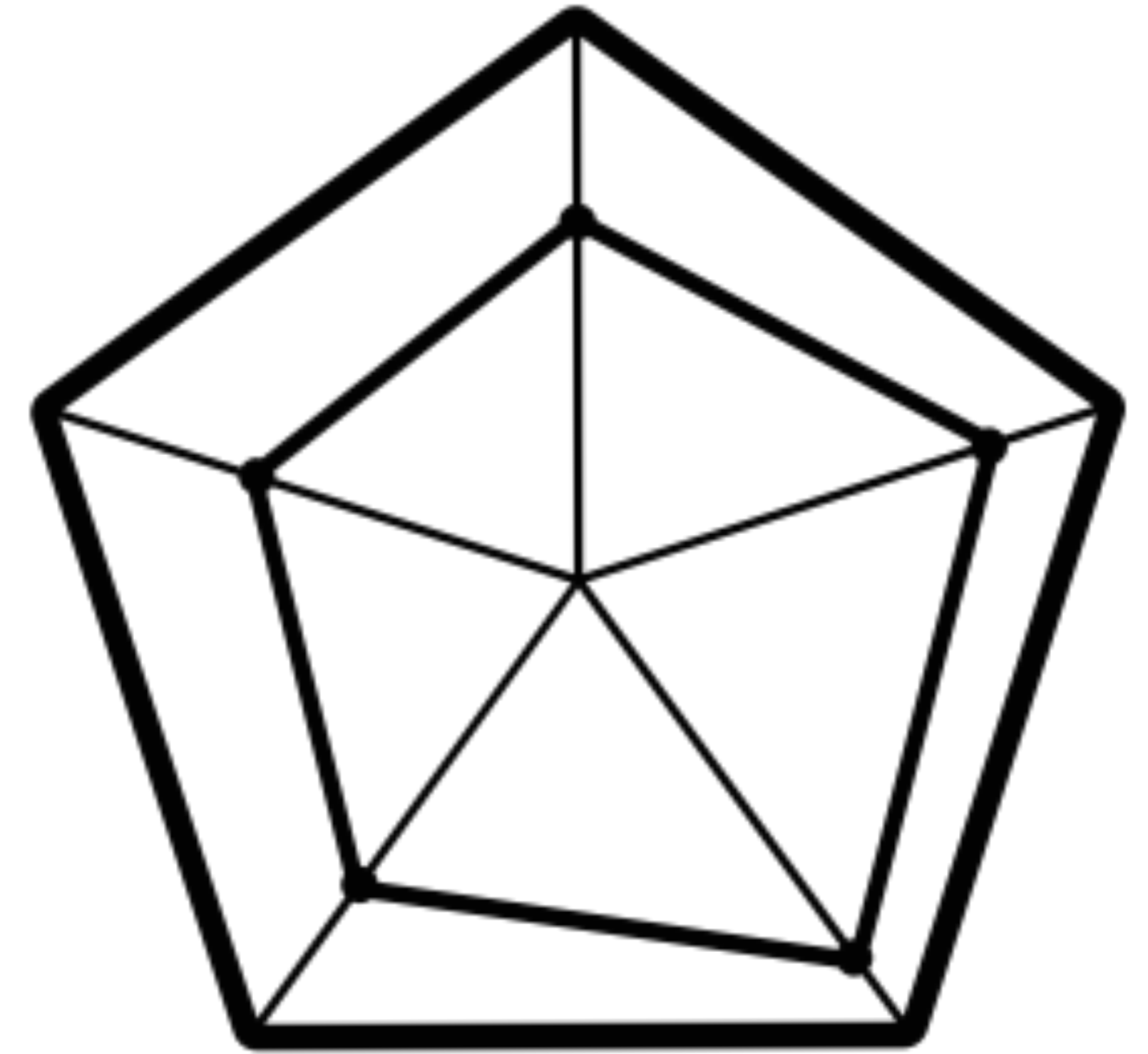


Abilities and Accessibility

Universal

Common factors considered:

1. education
2. age
3. culture
4. experience
5. environment
6. personality



use these to trigger considerations in design and evaluation

Individual ability sub-categories

Perceptual fatigue, visual impairment,
color / contrast issues

Cognitive short/long-term memory
risk perception
language, learning

Motor precise, small movements
long, involved movements
gestures

14pt text passes

18pt text passes

14pt text fails

18pt text passes

14pt text fails

18pt text fails

Environments

Noise

Comfort

Movement

Social factors

impacts: error, motivation



BC Kwon created content stabilization techniques for reading text while moving

Q: What are examples of websites/apps you use in diff environments?

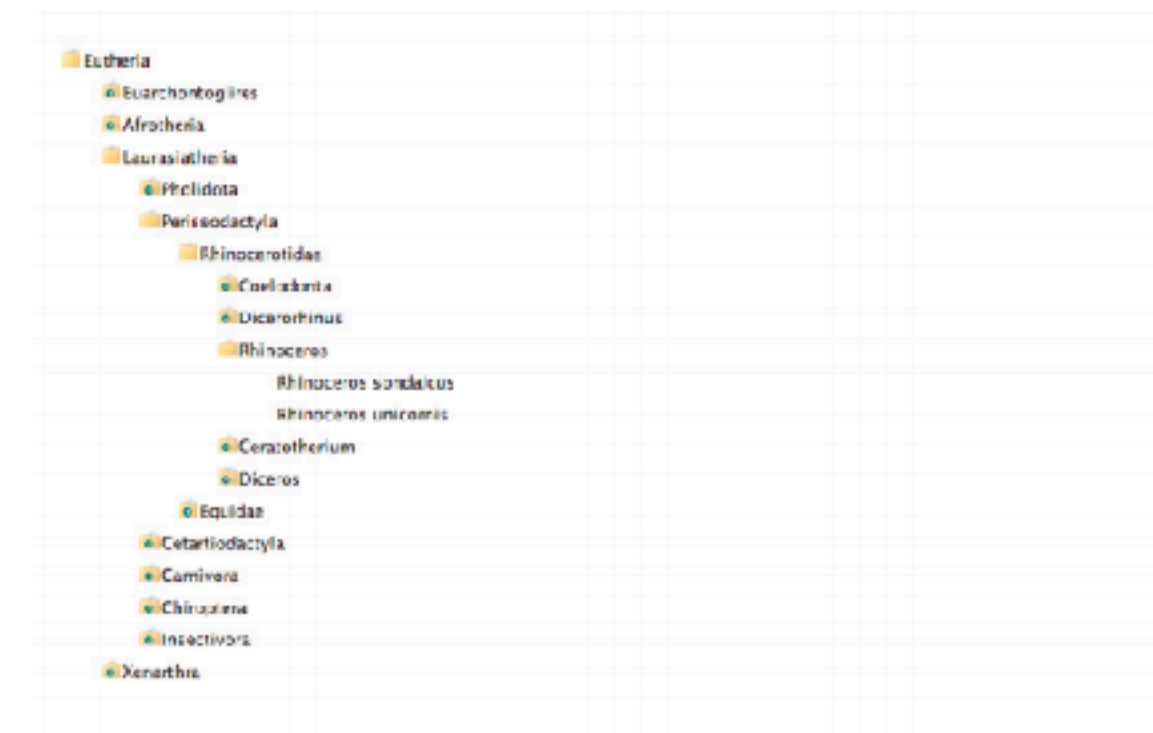
Personality

OCEAN: openness,
conscientiousness,
extraversion, agreeableness,
neuroticism

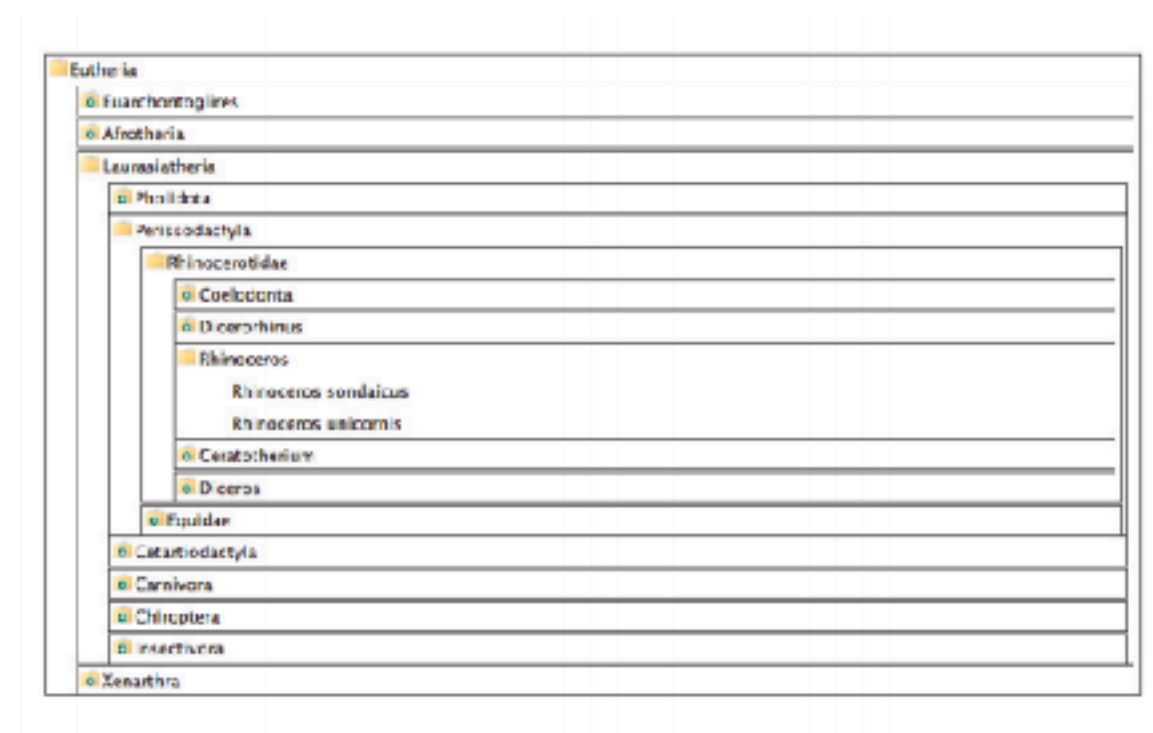
Locus-of-control

Risk tolerance

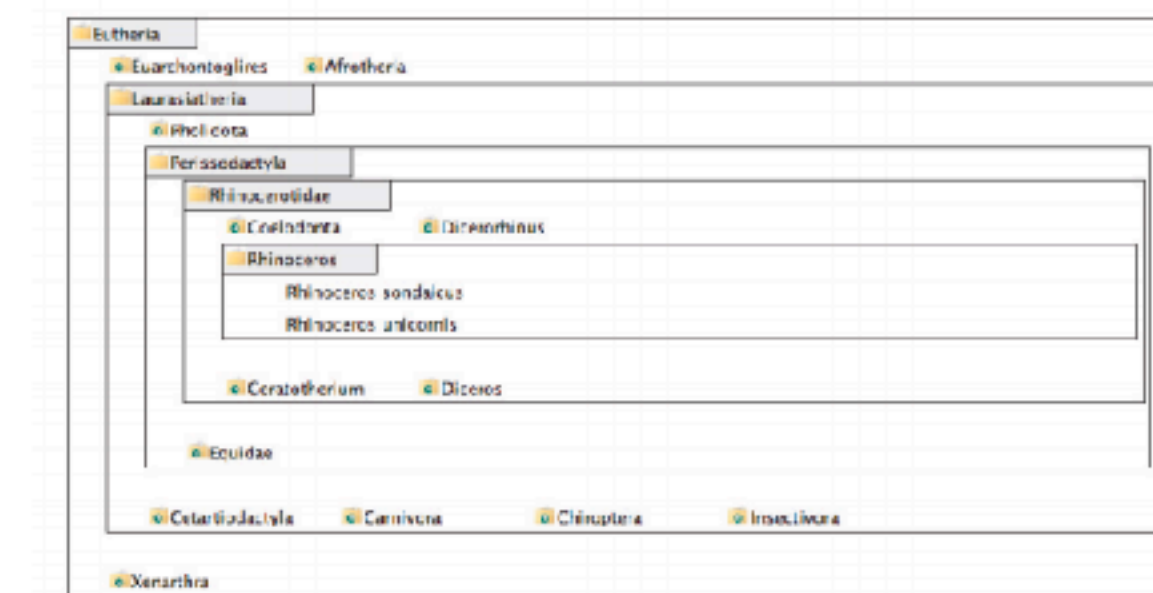
hard to use in design; can be controversial



(a) V1: Basic Tree View



(b) V2: Bordered Tree View



(c) V3: Indented Boxes View



(d) V4: Nested Boxes View

Ziemkiewicz et al found that folks w/ external locus of control perform better w/ the bottom right; internal, top left.

Culture

- reading direction
- date/time formats
- measurement systems
- color preference
- complexity preference



yahoo japan and yahoo us show diff complexity of info in the same amount of space

widely used in design; under-studied

Accessibility (a11y)

websites should be accessible
to folks with disabilities

vision/hearing impairments
are common, as is motor
impairment

accessible design is often
better for many reasons: SEO,
machine readability, etc

How-tos

[How-to: Create accessible data tables.](#)

What you need to create an accessible data table.

[How-to: Use Placeholder Attributes](#)

How-to use placeholders on input elements.

[How-to: Using Caption Services with HTML5 Video](#)

How to implement captions on HTML5 video (and audio) elements.

[How-to: Use Skip Navigation links](#)

Use skip nav links to ease keyboard user fatigue and frustration.

[How-to: Use TITLE attributes](#)

Short answer: Avoid using title attributes except in a few special circumstances.

Categories

[How-tos](#)

[Myths](#)

[Quick tests](#)

[Quick tips](#)

[Assistive technology](#)

[Basics](#)

a11yproject.com has tons of tutorials/posts on accessible
web features

Accessibility (a11y), broadly

w3c a11y consortium:

- text alts for images
- captions for videos
- distinguishable text/graphics/icons
- predictable interfaces

(right) Americans with Disabilities Act is pushing for laws to make websites (businesses) accessible

Federal disability laws await comprehensive update in the digital world. The Americans with Disabilities Act (ADA) is being updated [from the DOJ in 2018](#).

Section 508 of the Rehabilitation Act got an [ICTRe WCAG 2.0](#) accessible web design best practices.

Aside from direct amendments to the laws, disability advocates played a major role in setting precedent for how the internet should be accessible. One landmark case: *NAD v. Netflix*.

The Complaint

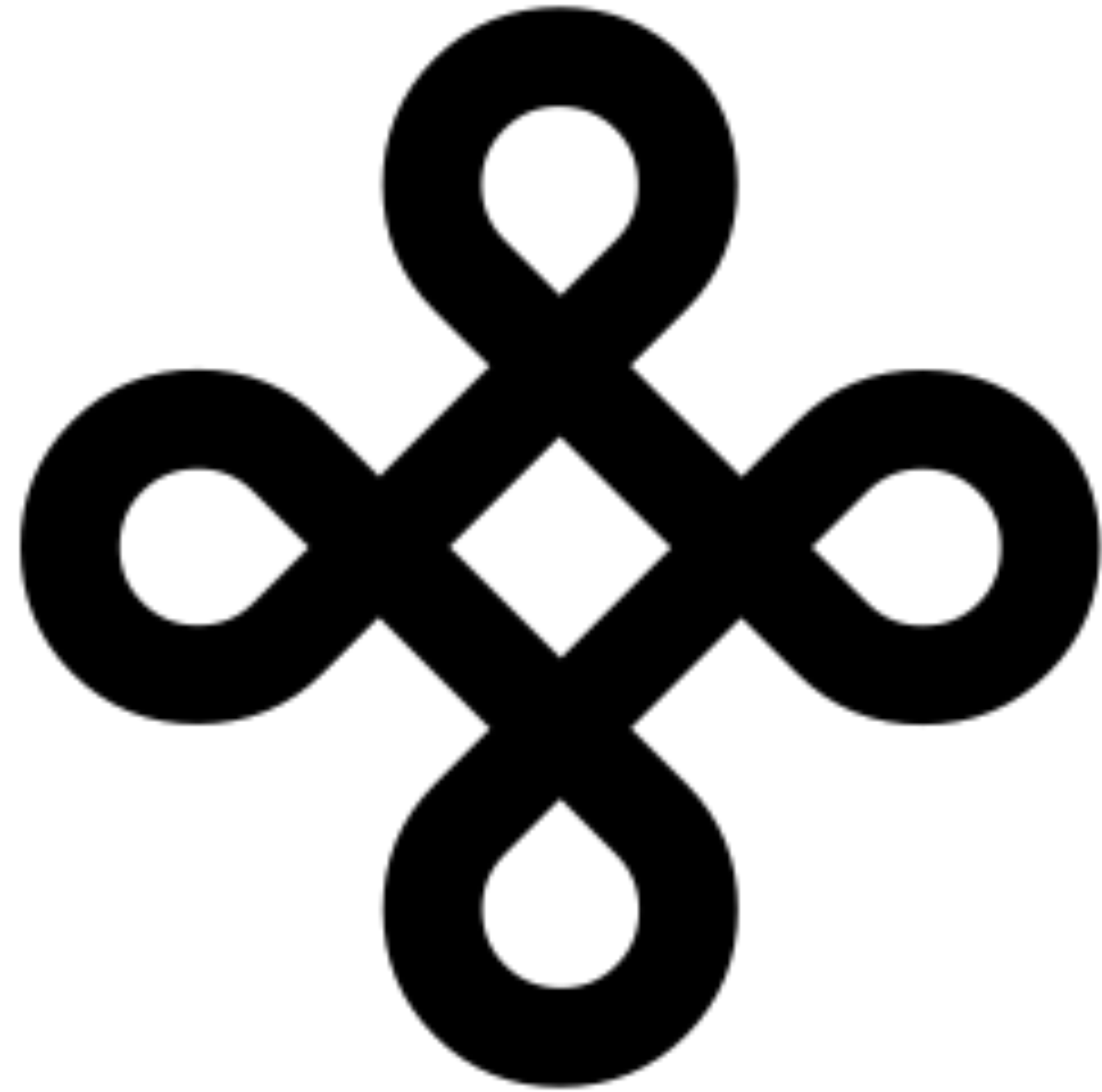
In June 2011, the National Association of the Deaf (NAD) filed a lawsuit [against Netflix](#), citing their lack of closed captioning as a violation of the ADA.

Netflix offers mail-order DVDs, which abide by [FCC](#) rules, but its online streaming service was not captioned.

Since [more than half of all Americans watch Netflix](#), the lack of captions is not accessible to deaf and hard of hearing viewers.

NAD President Bobbie Beth Scoggins explained:

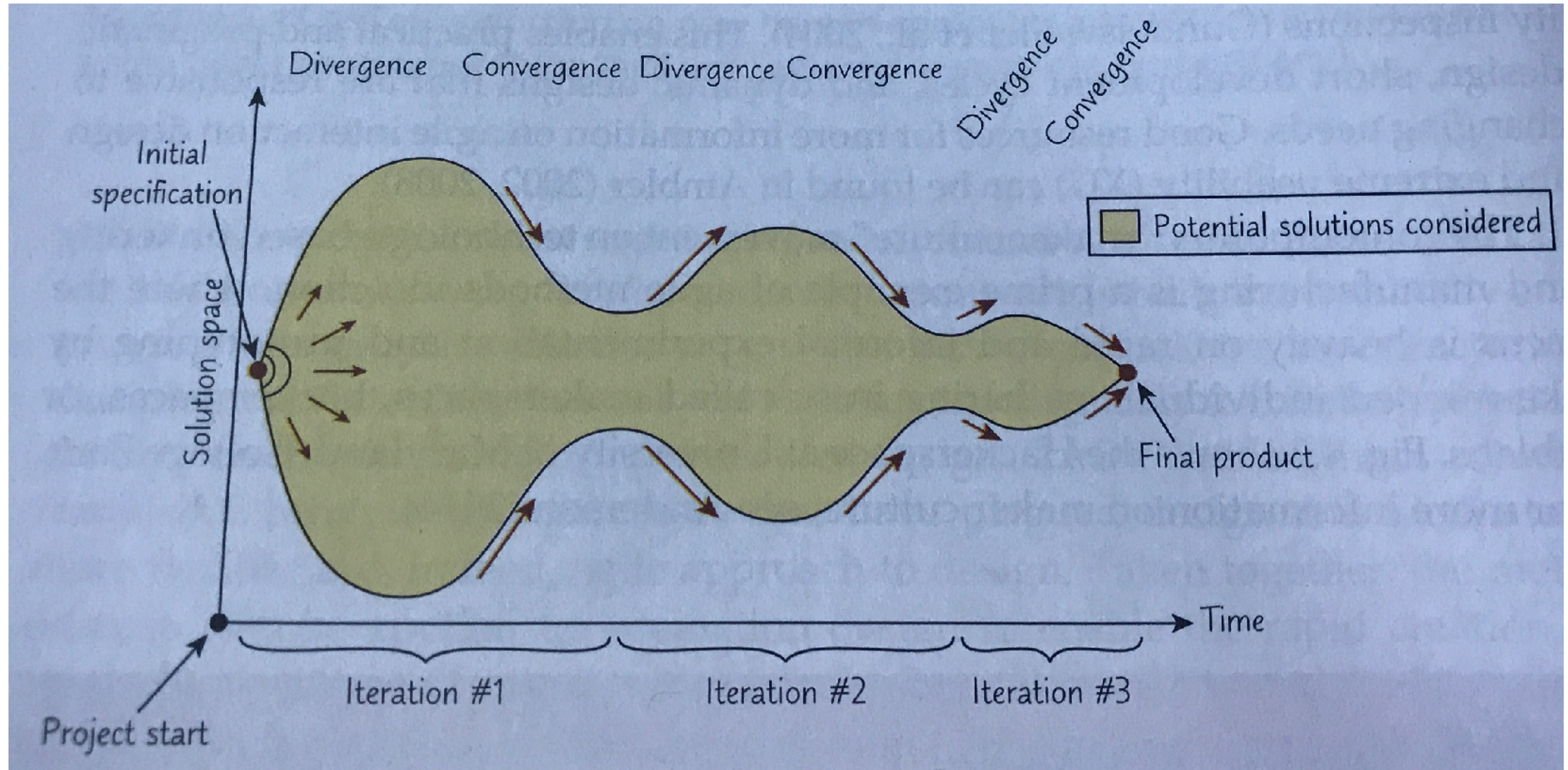
"We have tried for years to persuade Netflix to



Design Processes and Patterns

Useful

design is a process



design is a process, early steps

define users, abilities, and other factors

identify major tasks

choose interaction style:

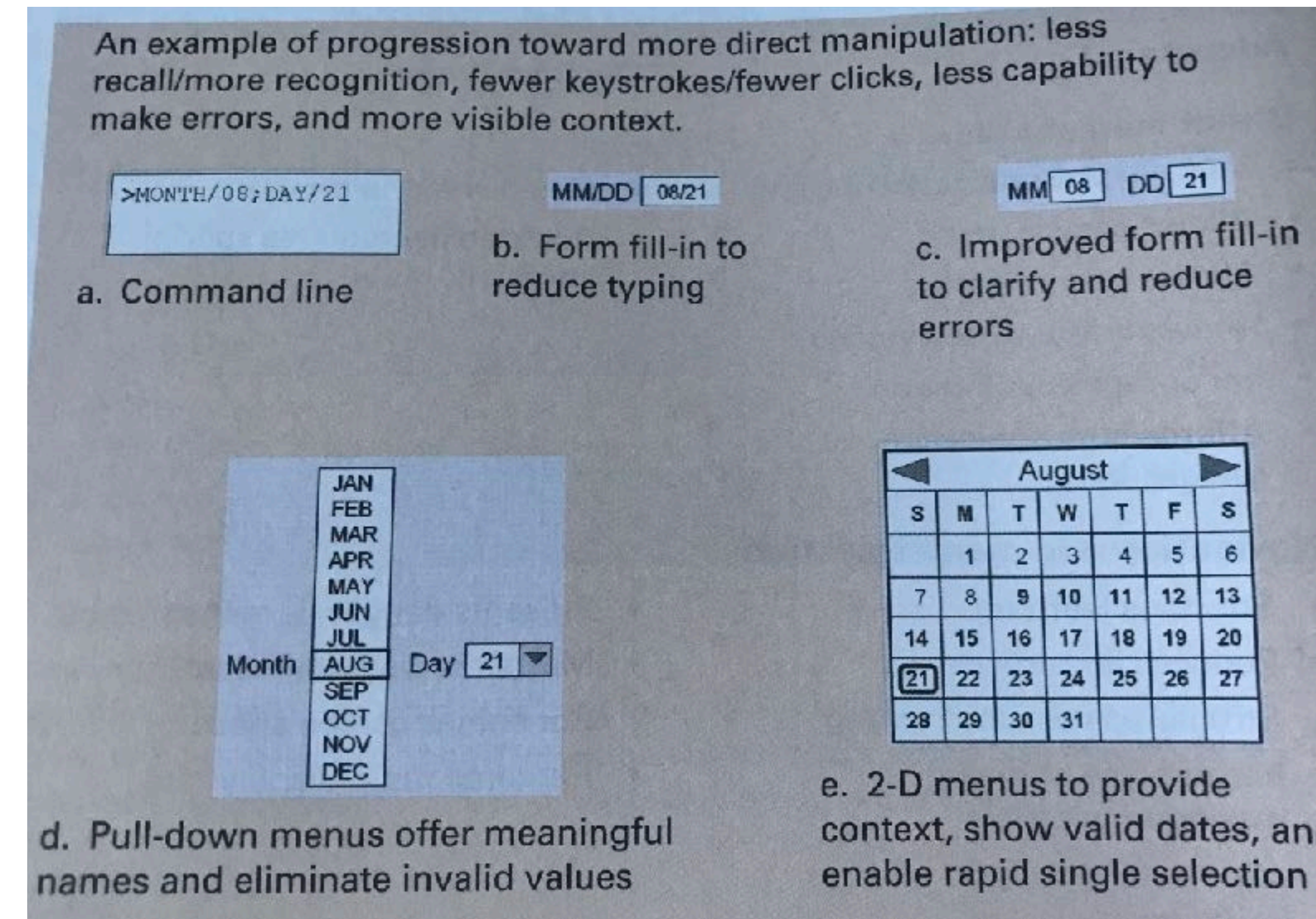
form fill-in

direct manipulation

command language

nav & menu

natural language



Designing the User Interface, 5th ed

towards tasks: requirements analysis

functional requirements

use cases, things the website should *enable* users to do

non-functional requirements

hardware / software / platform constraints; related to the form or overall architecture of the app

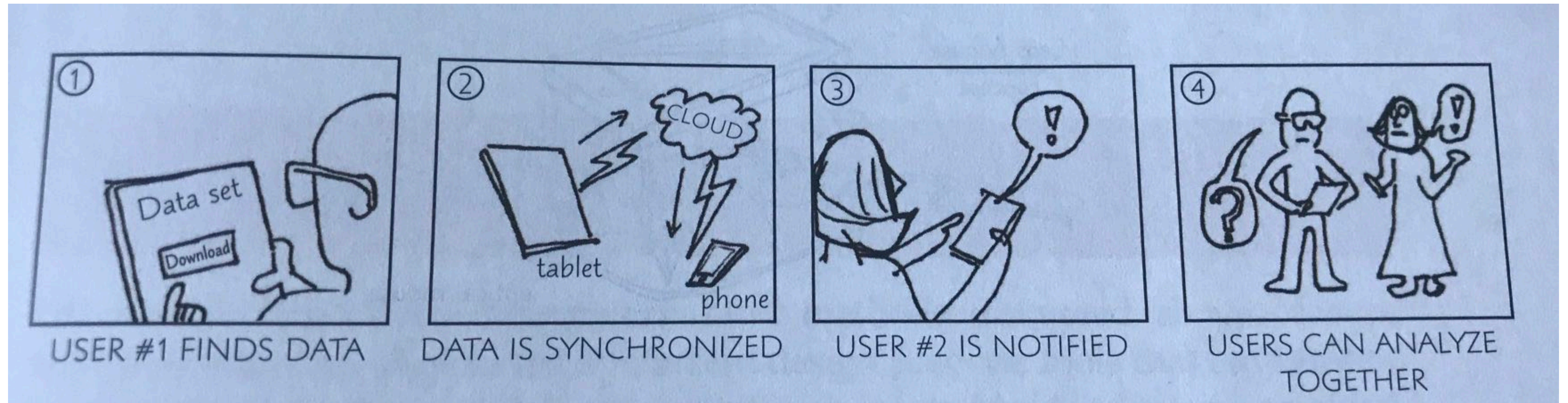
user experience requirements

what the user should be thinking or feeling at different points in the app;
ways of accomplishing these goals (e.g. animation, aesthetic design)



Grades, by Jeremy Olson, became a best-selling app by balancing and focusing on different types of requirements, like user experience

towards scenarios: storyboarding



Designing the User Interface, 5th ed

used to reason about common or rare scenarios
pairs well with persona analysis
(ie fake users with backgrounds, goals, etc)

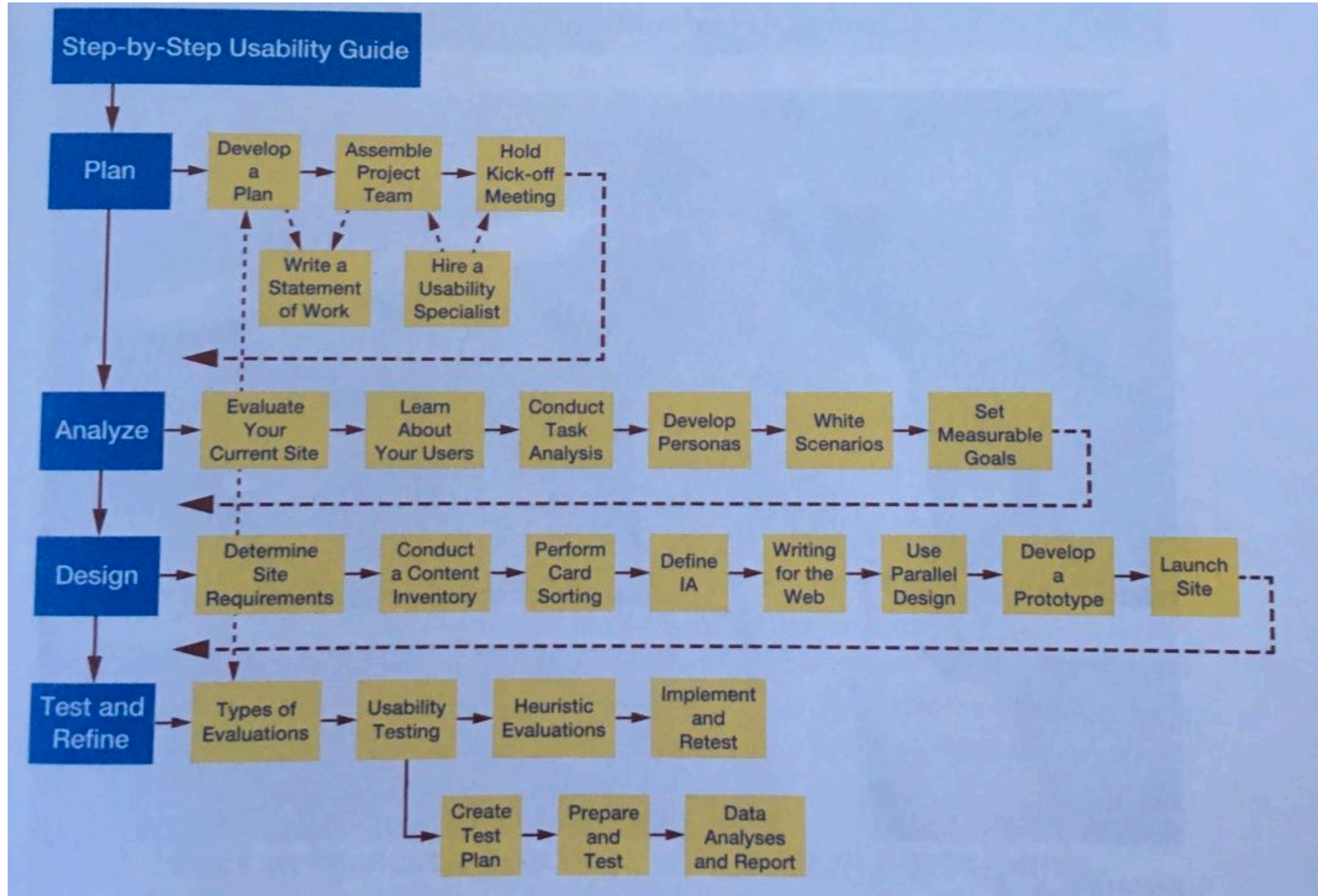
towards products: prototyping

lo-fi sketching, storyboarding, glue/paper

med-fi wire framing (sketch, balsalmiq are good tools)

hi-fi hacked-together implementations to compare;
buggy; fake data

remember: it's a process





Evaluation & Validation

Usable

evaluation factors to consider

what is the stage of design?

how novel is my design (vs common)?

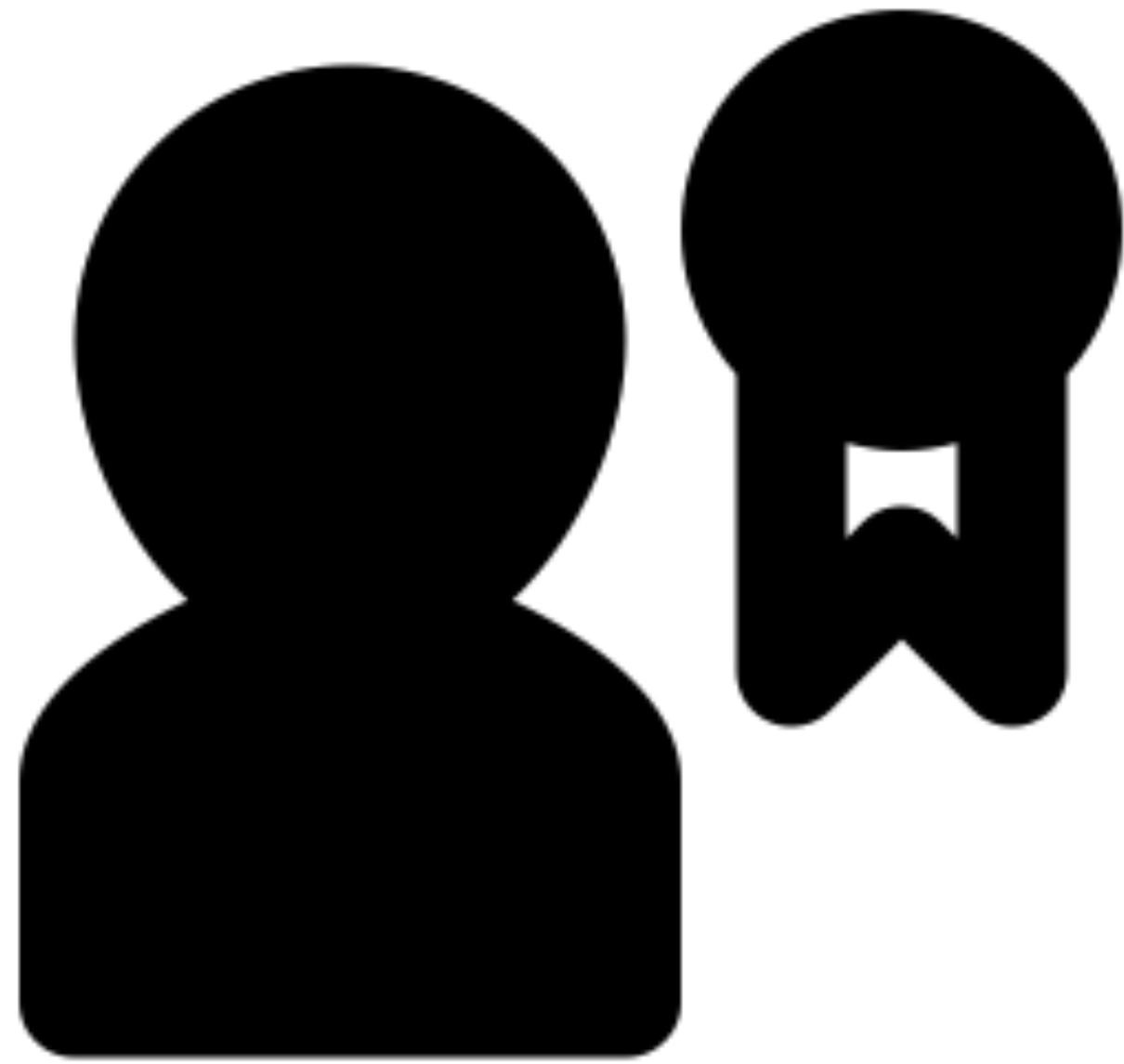
how many users? what type?

is my app considered "critical"?

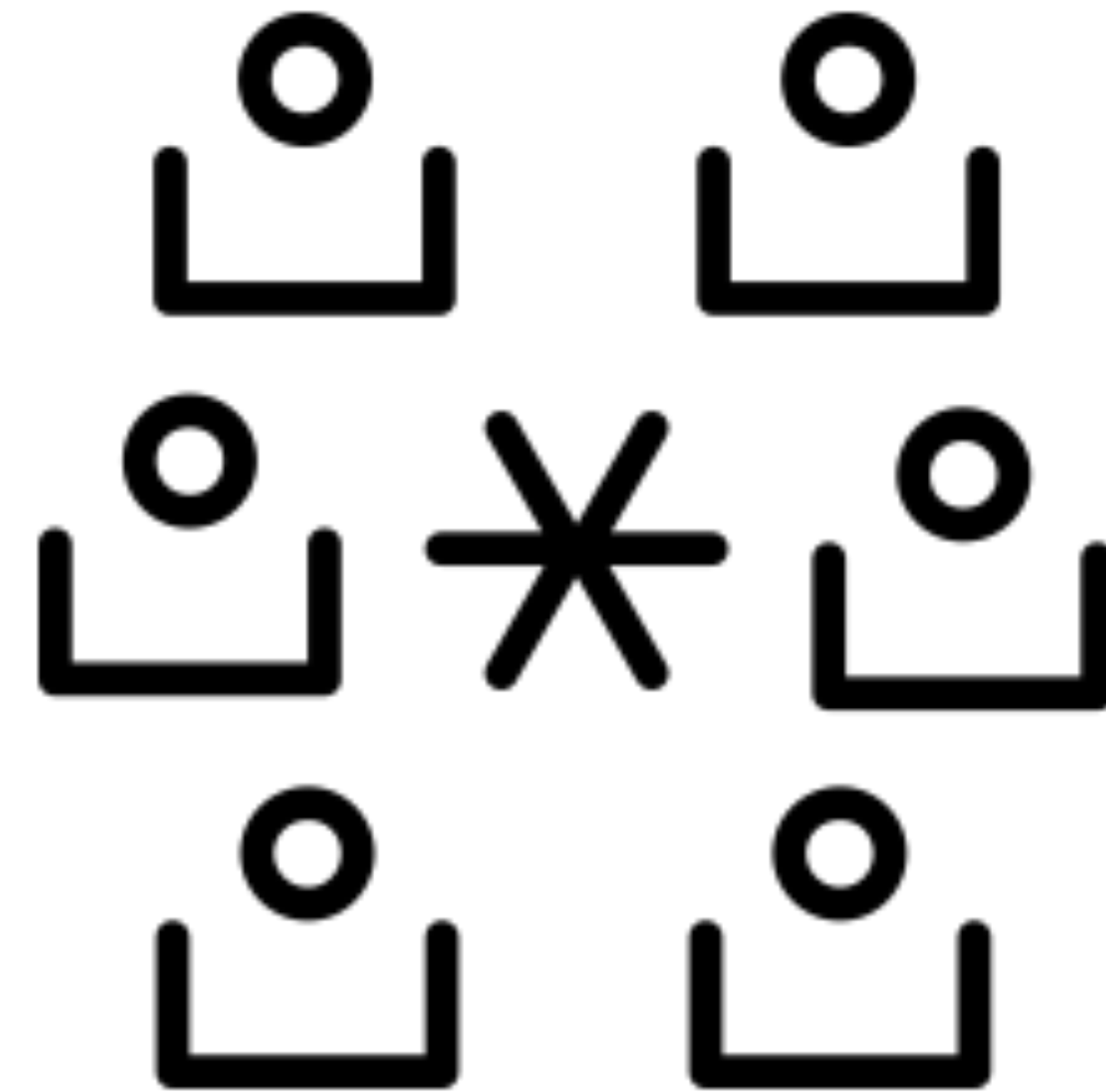
what is the cost of evaluation? how much time do I have?



evaluation types



expert review



human participants*

never "subjects"

expert review

heuristics review

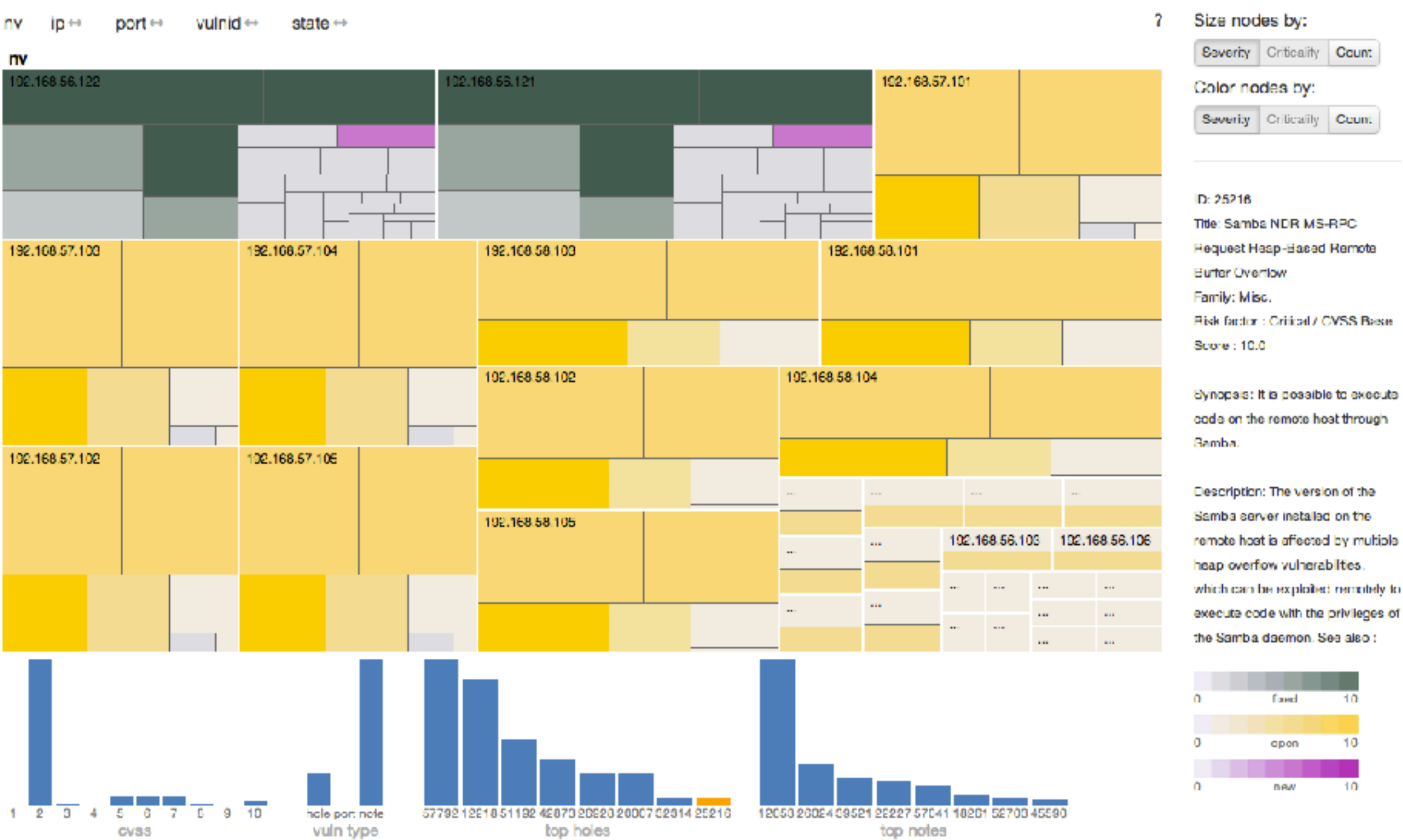
design principles like "low working memory load", "low error rate", as determined by expert use

guidelines review

experts use published guidelines (by you or other orgs) and produce a report

cognitive walkthrough

experts use your site, record themselves thinking aloud while doing it (very common and useful)



For example, me! Show me a vis and I can critique it

human participants evaluation

ethics considerations

- ALL studies should be reviewed and approved by an institutional review board (IRB);
- training required / available at WPI

think-aloud

- DONT JUMP IN
- retrospective coding: record and ask more Qs after
- combines with eye-tracking, interaction logging

A/B testing

- bucket users into bins which get diff sites/features
- heavily instrumented website (logging lots of things)
- statistical analyses decide outcome



a/b testing is typically low level; who signs up more given a welcome message A vs. B?