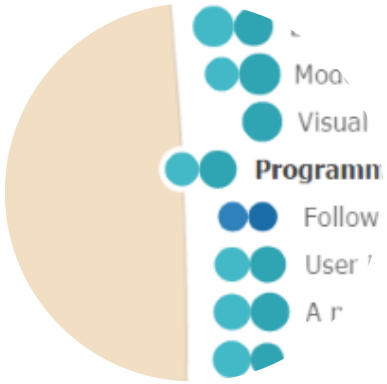
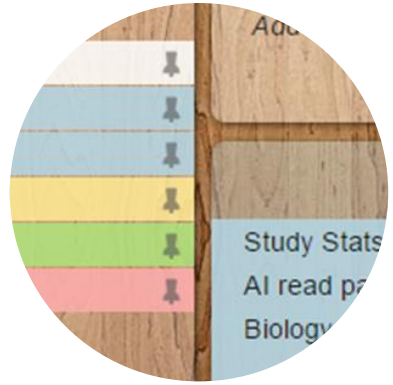
Antoine Ponsard

Interaction Designer

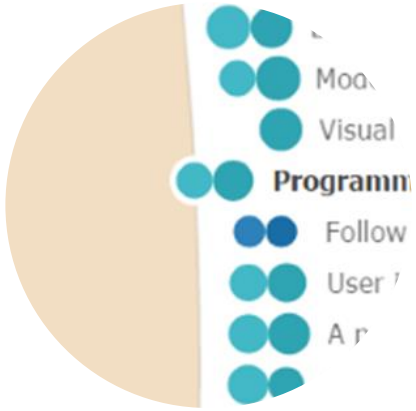


PaperQuest

Anchored Customization

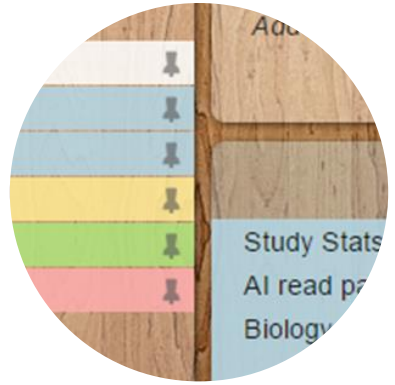


Calendar & To-do lists

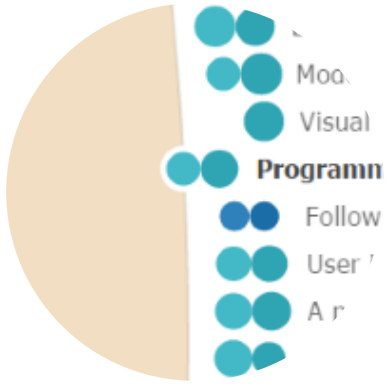


PaperQuest

Anchored Customization



Calendar & To-do lists



PaperQuest

A visualization tool to support literature review

GOAL

Help academics find relevant papers faster

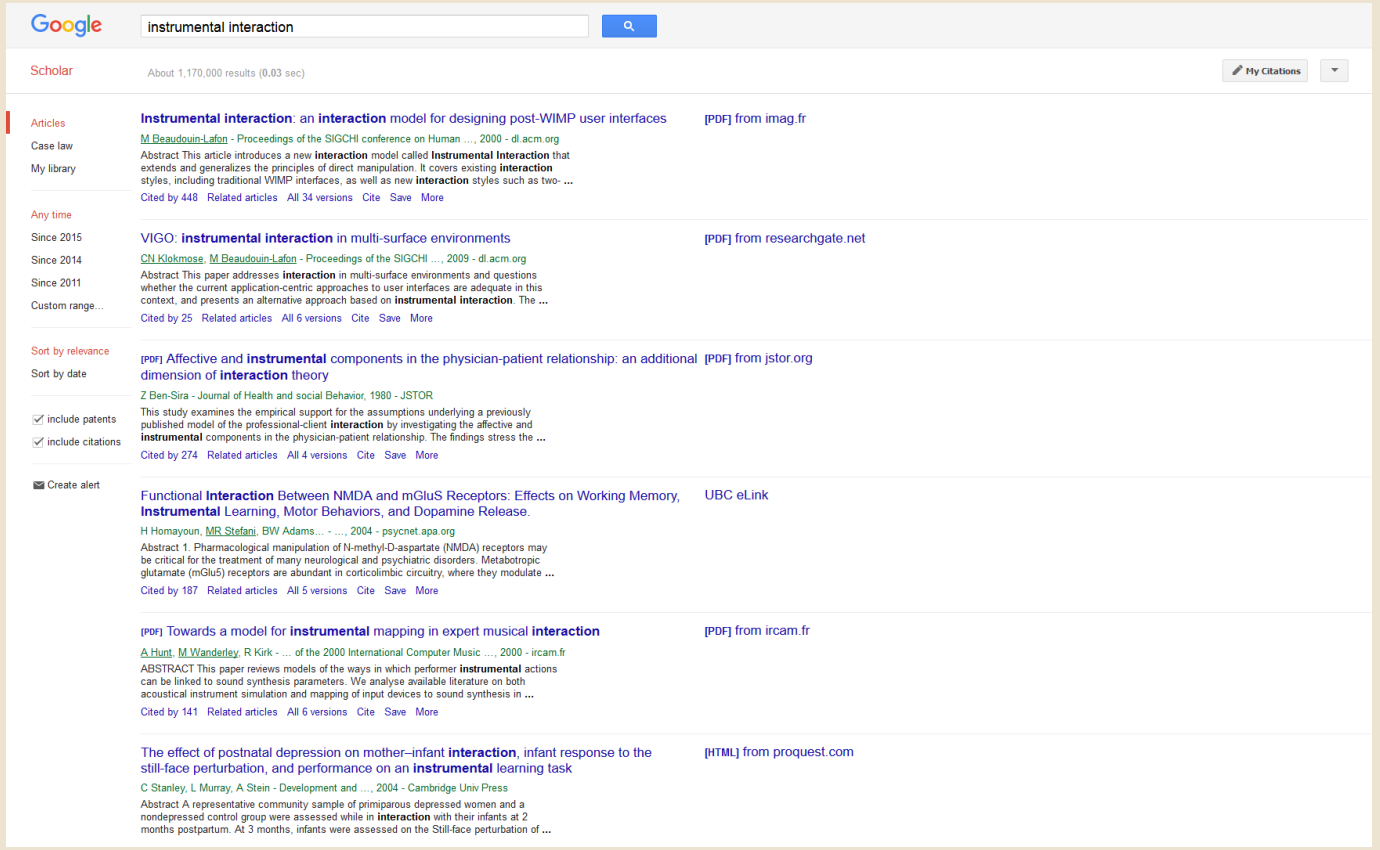
PROBLEM

Thousands of papers
each with dozens of references & citations

→ “exponential explosion”

Google Scholar is great for **retrieving** papers
but does not take into account your research domain

→ lots of irrelevant search results



CONTEXTUAL INQUIRY

How do academics use Google Scholar to find papers?

TASKS

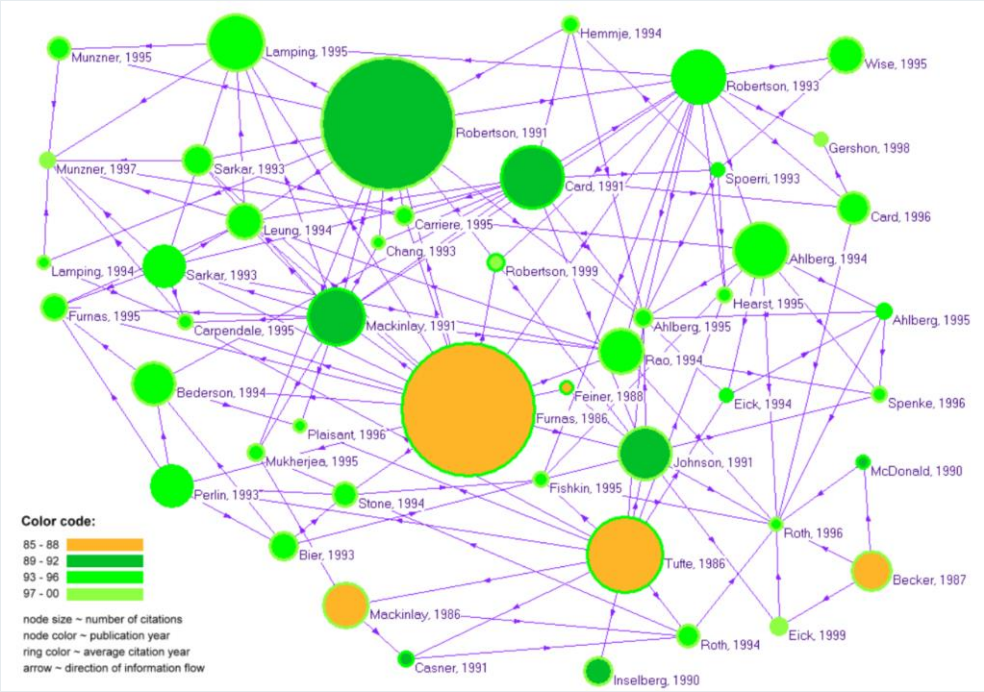
For each paper:

1. Read title
2. If good, read authors and/or metadata
3. If good, read abstract and/or watch video
4. If good, plan to read full paper

Contextual inquiry findings

An efficient literature review is a **multi-level decision process**

Academics need to maximize the **information gain** at each step



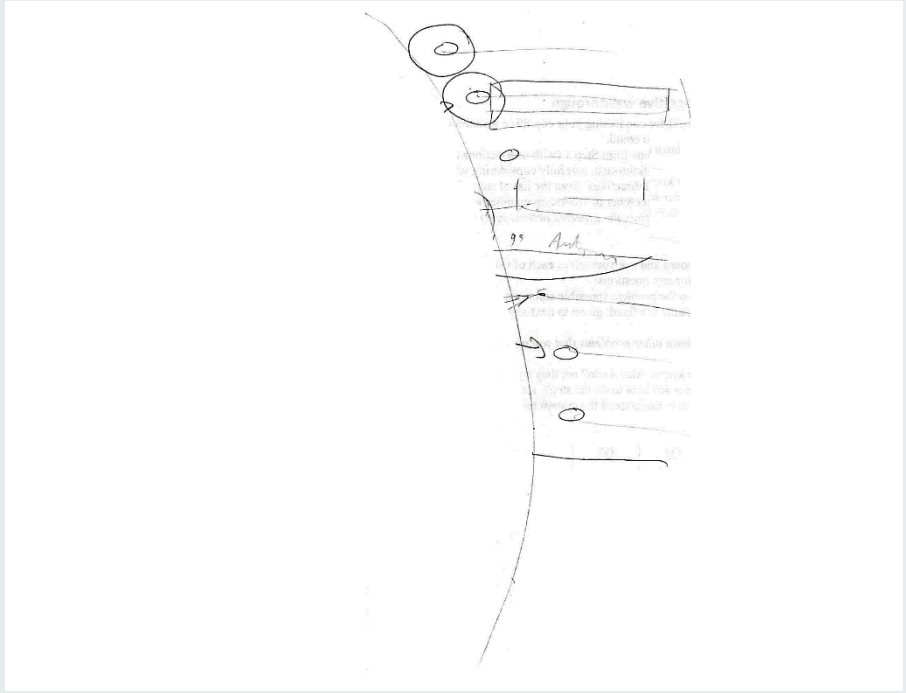
[Ke *et al.*, INFOVIS 2004]

DECISION 1

don't represent papers as a node-link diagram

RATIONALE

reading paper titles >> network topology

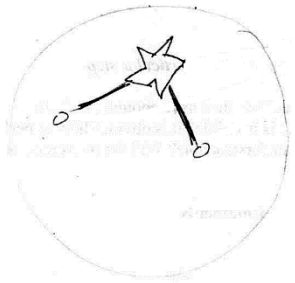


DECISION 1

Instead, show a list of papers with full titles

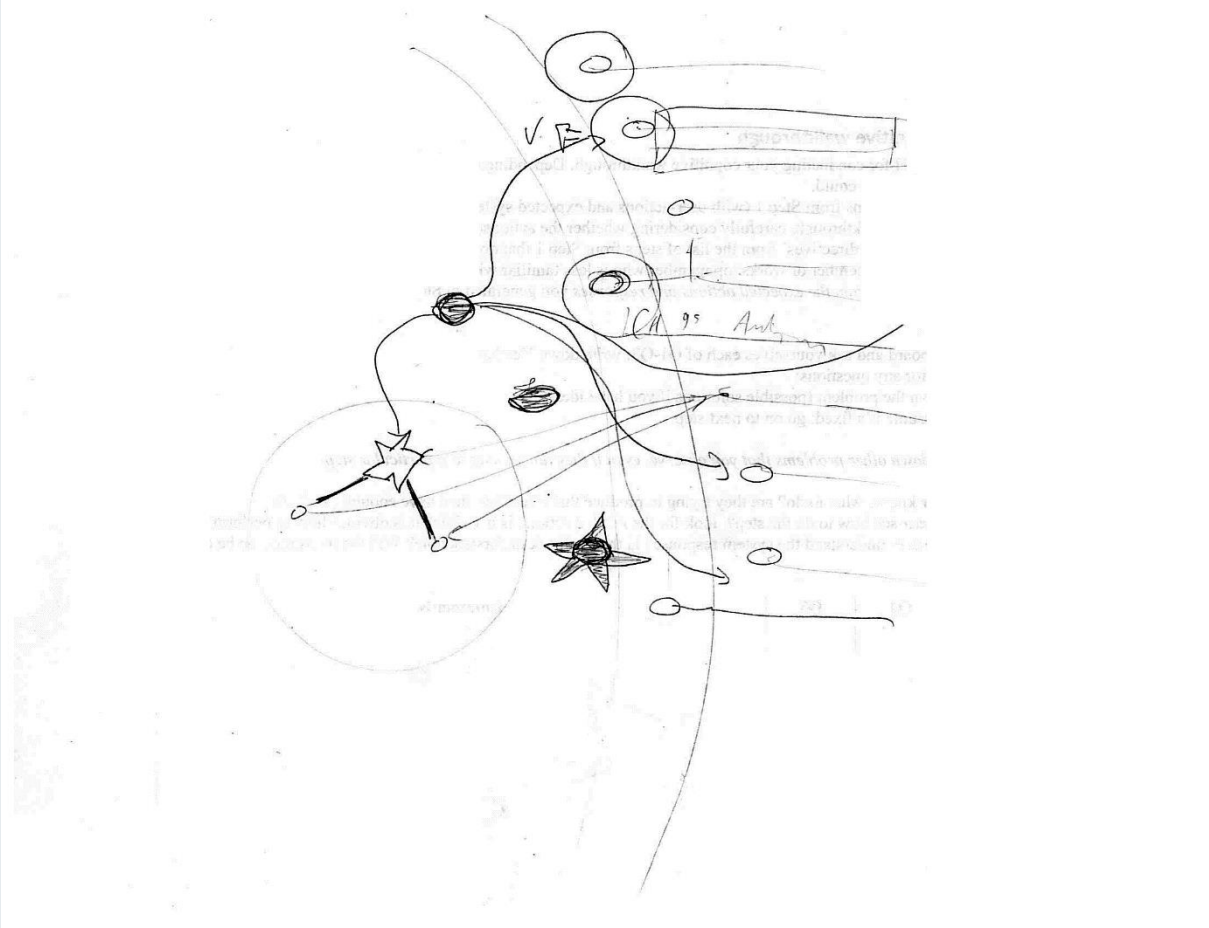
RATIONALE

reading paper titles
>> network topology



CONCEPTUAL MODEL

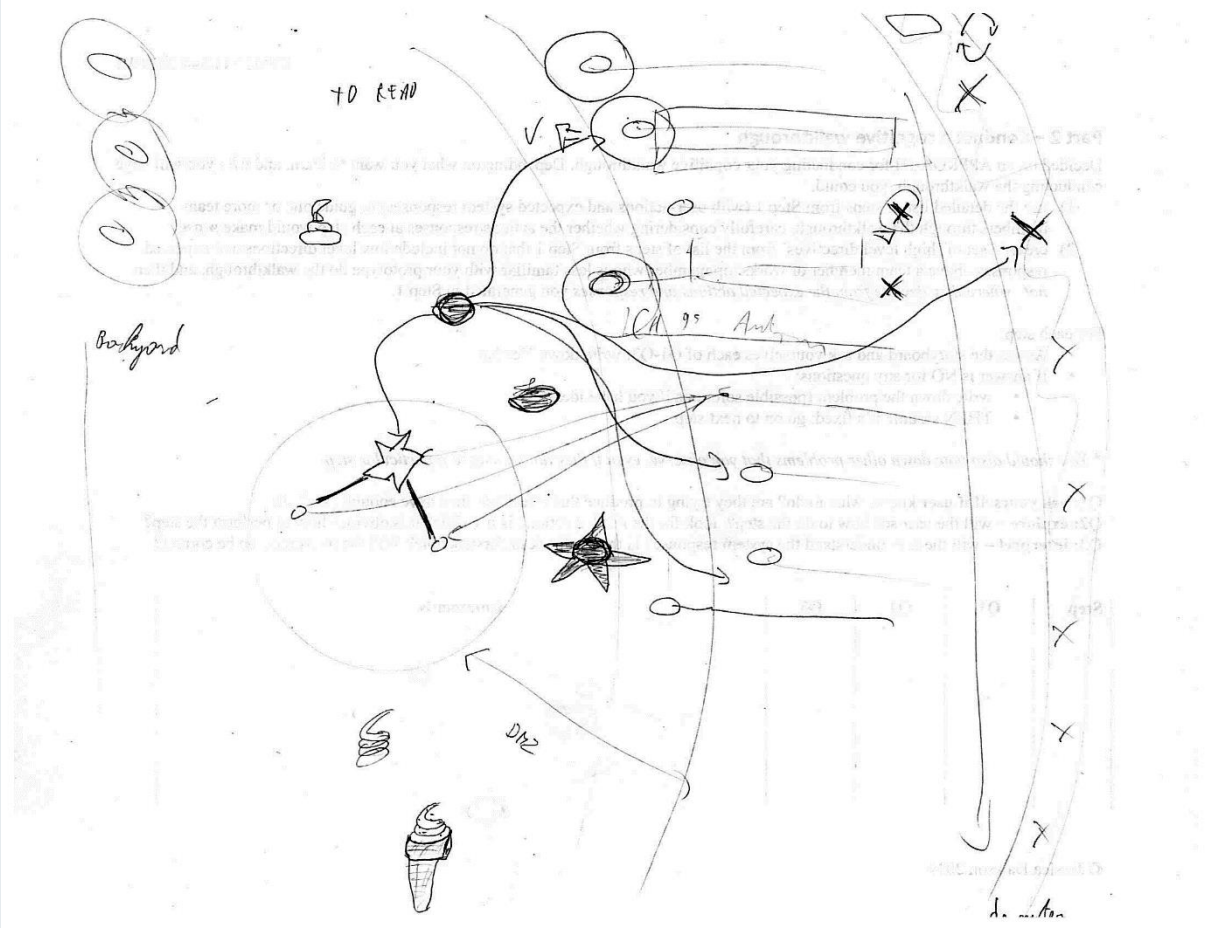
start with a few seed papers...



CONCEPTUAL MODEL

start with a few seed papers...

then every paper you read
expand your fringe of knowledge

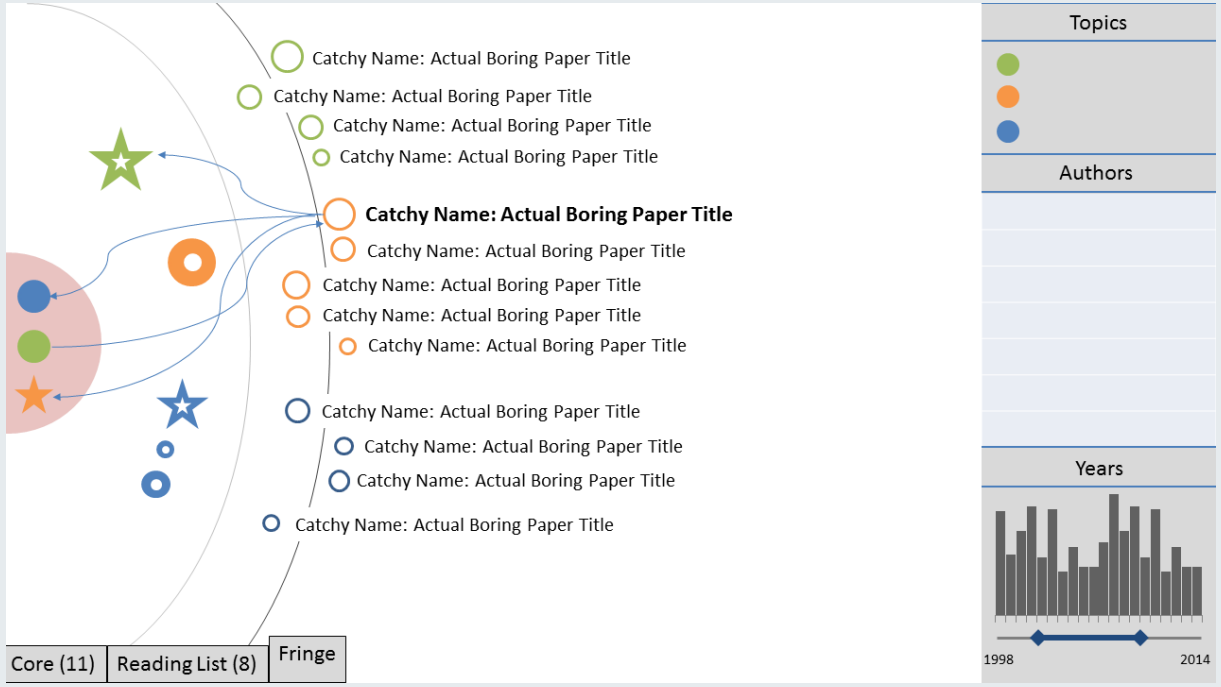


read | to read | fringe | The Unknown

CONCEPTUAL MODEL

start with a few seed papers...

then every paper you read
expand your fringe of knowledge



read | to read | fringe

CONCEPTUAL MODEL

start with a few seed papers...

then every paper you read
expand your fringe of knowledge

read | to read | fringe

CONCEPTUAL MODEL

start with a few seed papers...

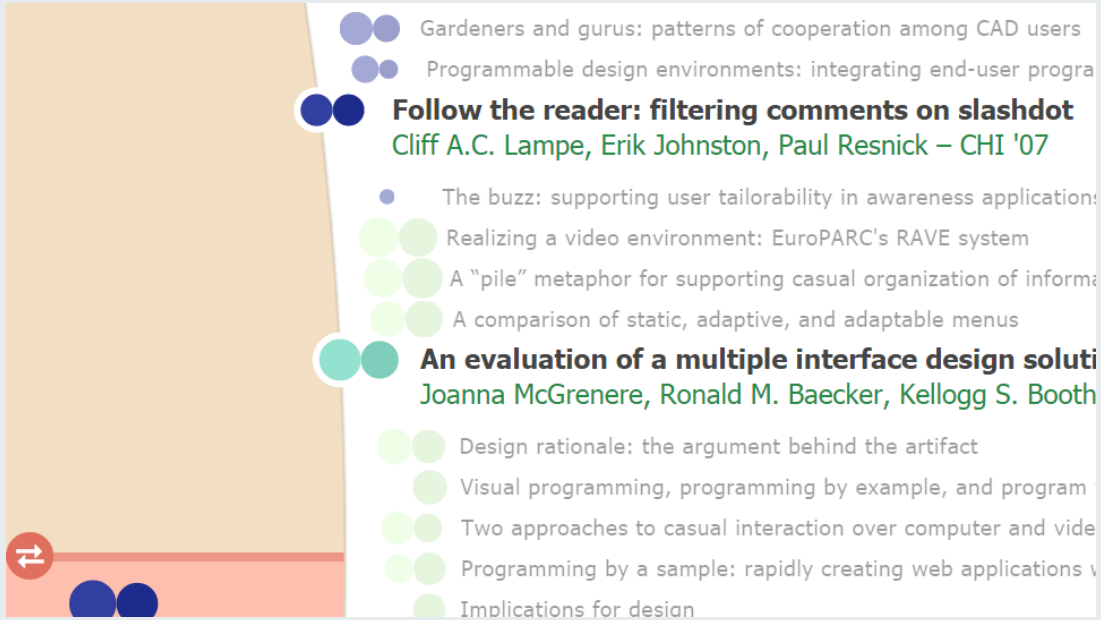
then every paper you read
expand your fringe of knowledge

DECISION 2

Encode citation counts with size
Encode connectedness with color

RATIONALE

Two highly effective and
separable visual channels

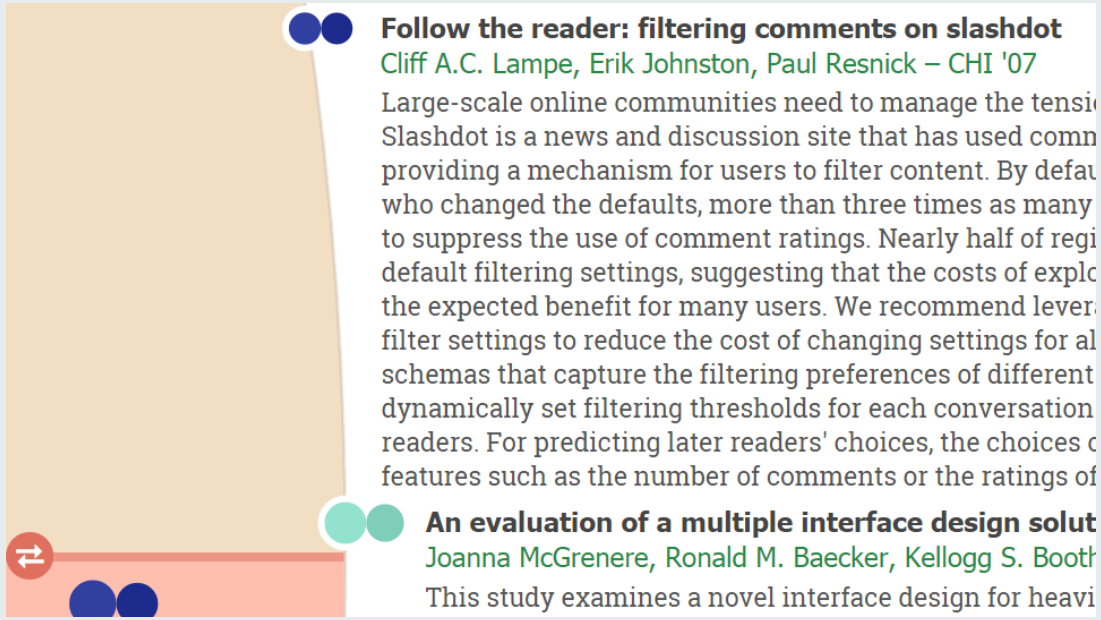


DECISION 4

Semantic zoom to reveal
1. authors, conference & year

RATIONALE

Fluid transition between levels of granularity + batch process

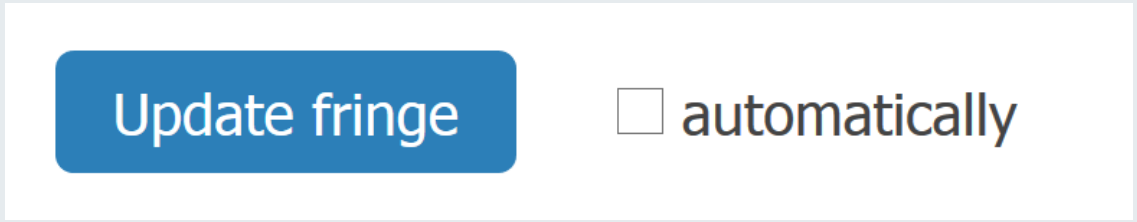


DECISION 4

Semantic zoom to reveal
1. authors, conference & year
2. abstracts

RATIONALE

Fluid transition between levels of granularity + batch process



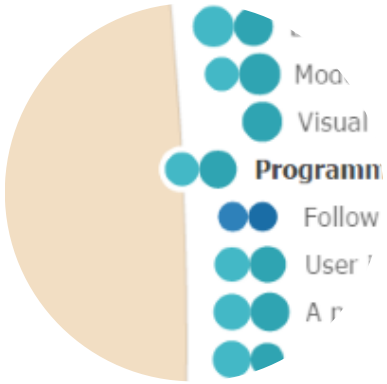
or

DECISION 5

Two modes for updating the fringe
1. manual, by clicking update button
2. automatic, after each user action

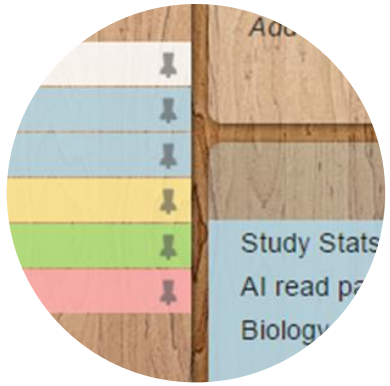
RATIONALE

Keep user in control
More efficiency for advanced users



PaperQuest

Anchored Customization



Calendar & To-do lists

Anchored Customization

Anchoring settings to the application interface

GOAL

Improve the standard customization mechanism: settings panels

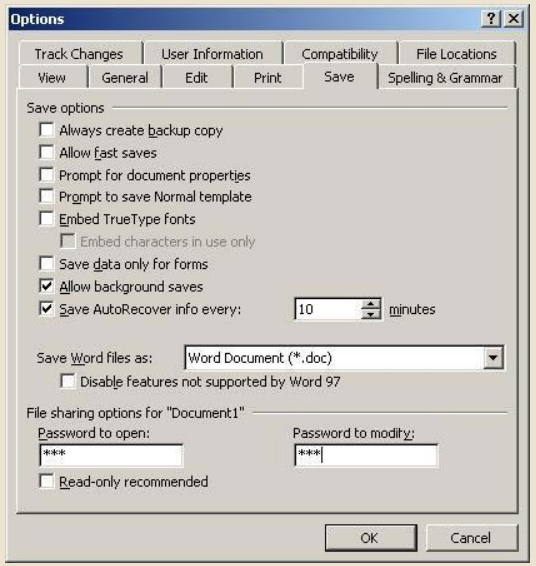
TASK

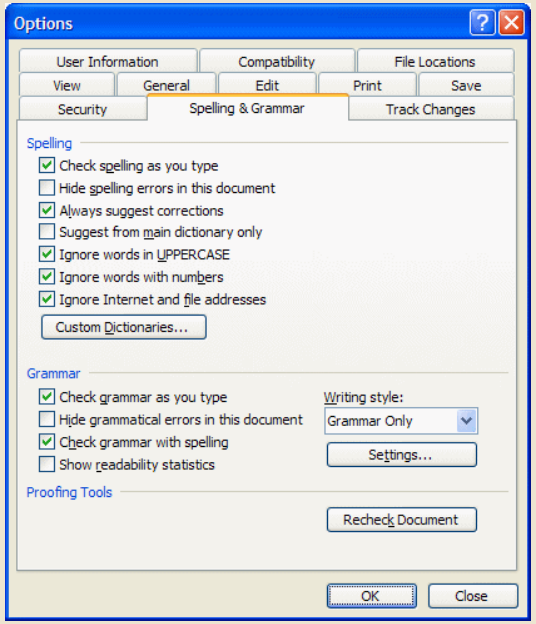
Customize an application by changing settings

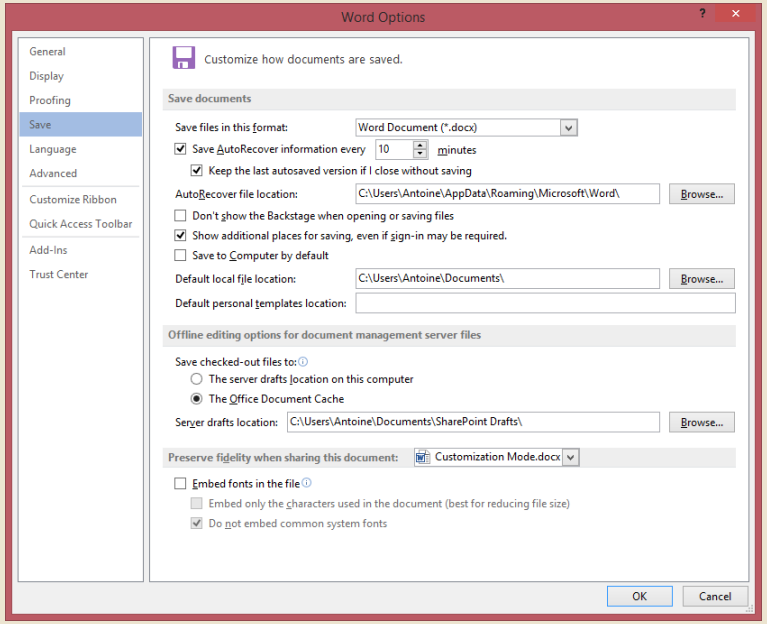
PROBLEM

Settings panels are everywhere, but have serious **usability issues**:

- disconnected from what users are familiar with = the app interface
- vocabulary problem: rely on (often cryptic) text labels
- no affordance in the app: *“Can I customize this?”*
- deep gulfs of execution and interpretation

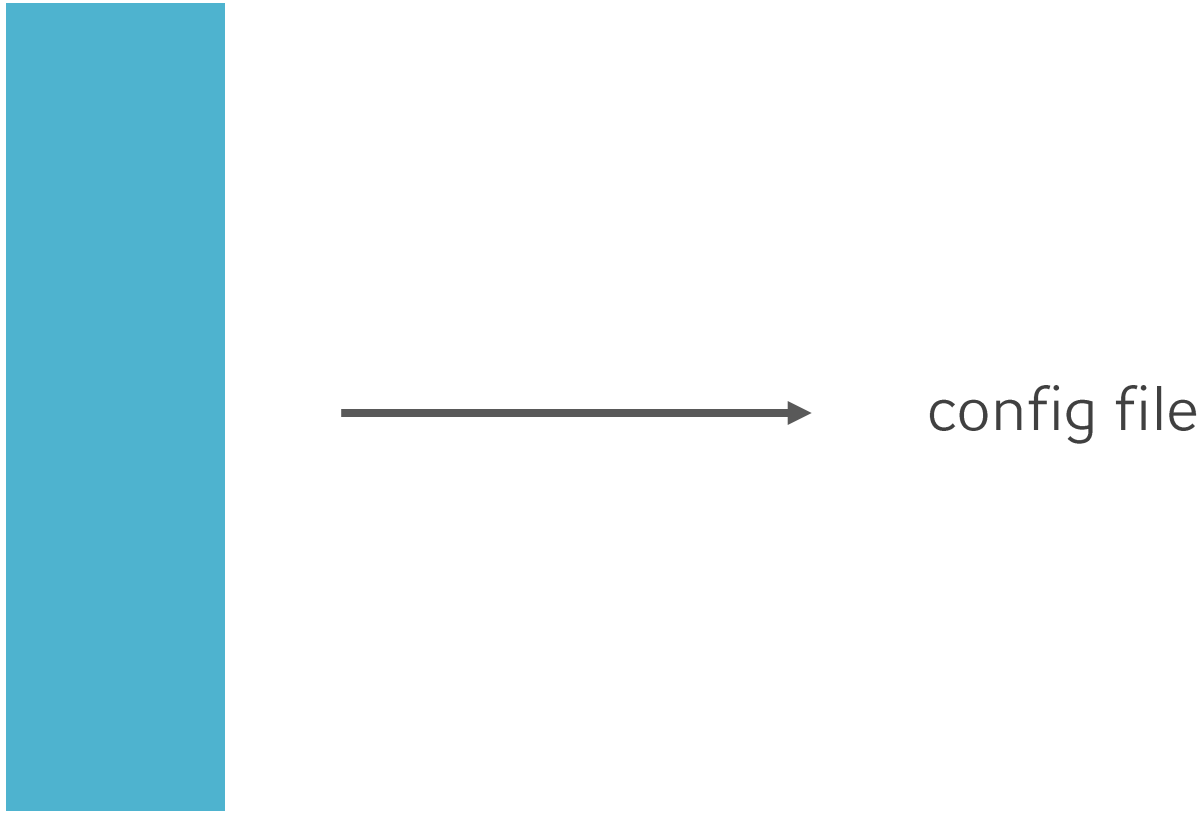




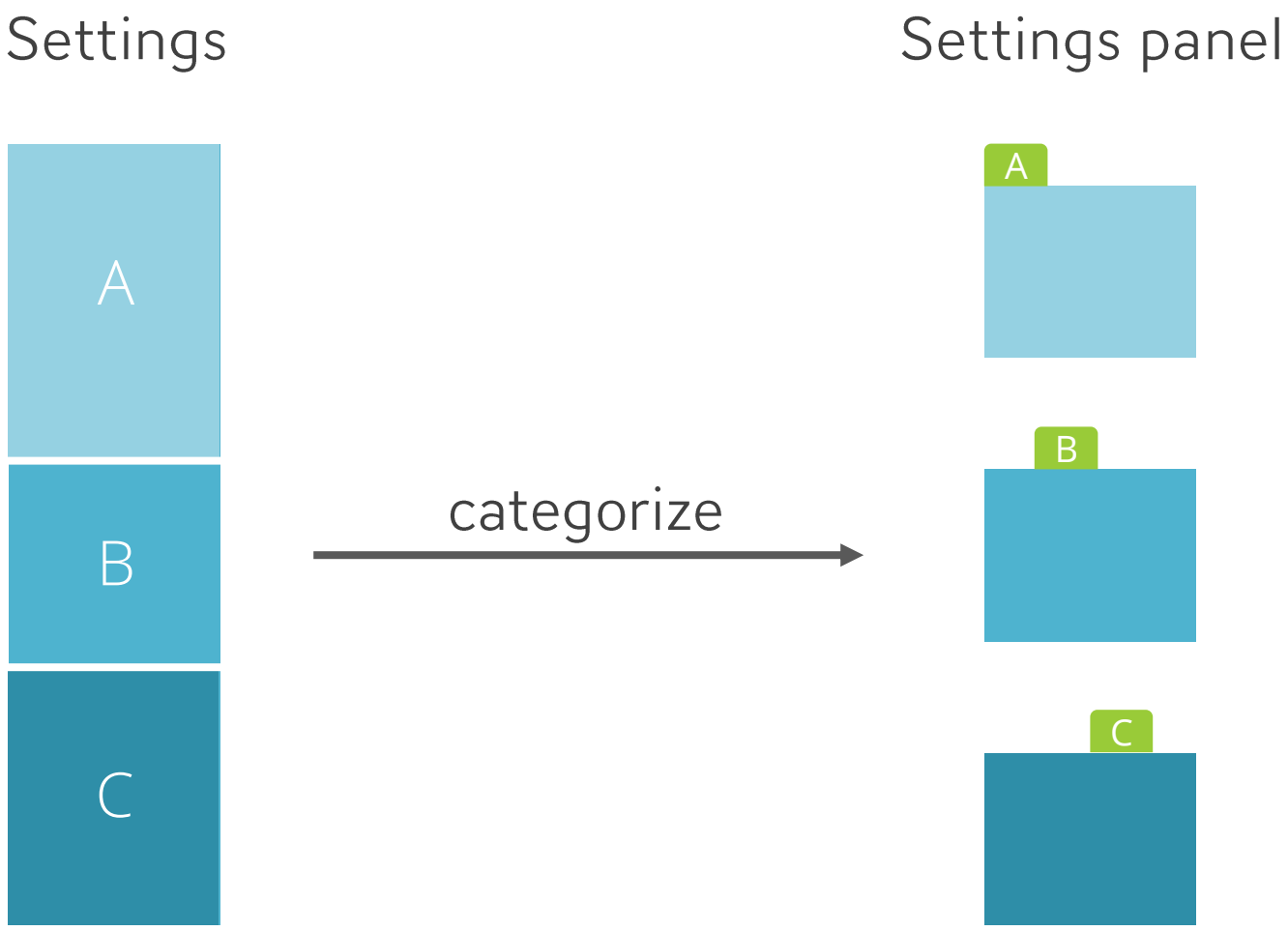


Minimal improvements over time

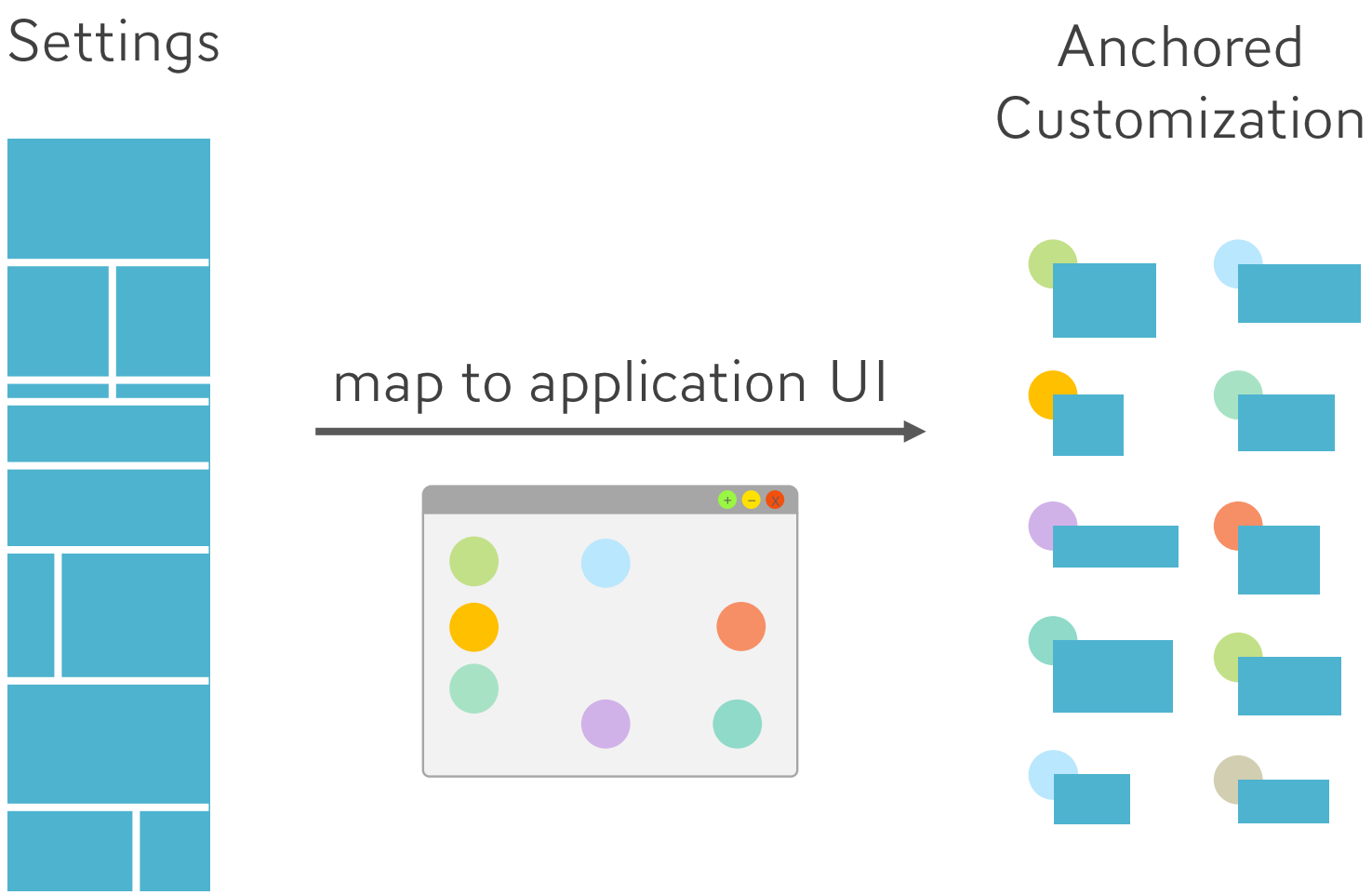
Settings



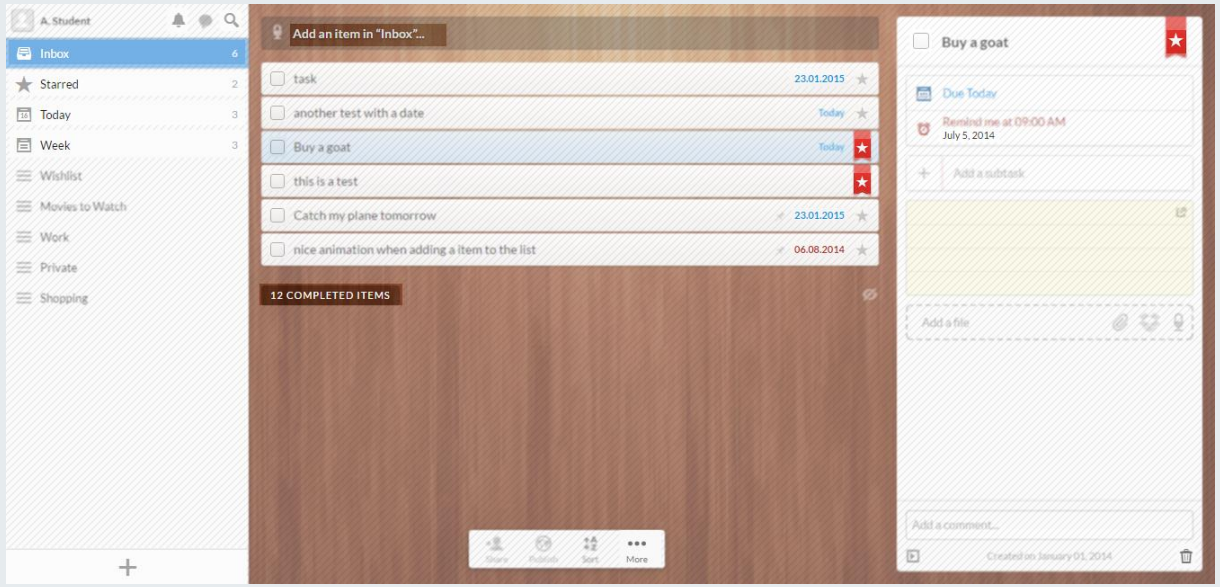
Config files = most barebone representation of settings



Settings panels = static **partition** of settings, based on abstract categories



Anchored Customization = many-to-many **mapping** of settings to UI elements



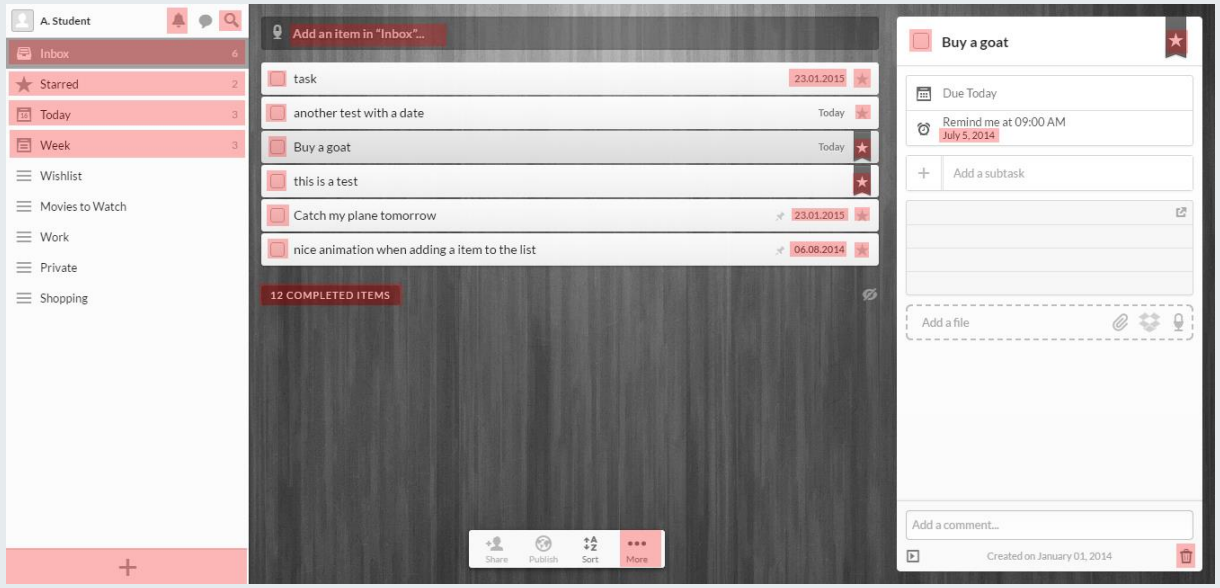
here, displayed on top of Wunderlist (version 1)

DECISION 1

Highlight UI elements mapped to a setting in a Customization Layer

RATIONALE

Provide a global overview of customization opportunities



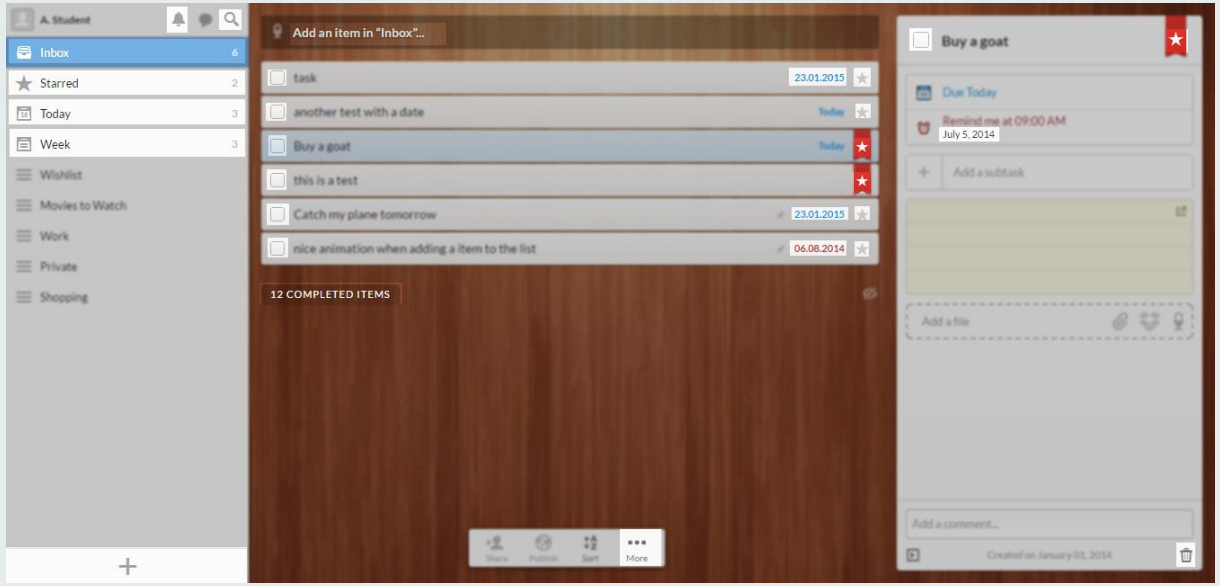
version 2: red markers over black & white app

DECISION 1

Highlight UI elements mapped to a setting in a Customization Layer

RATIONALE

Provide a global overview of customization opportunities



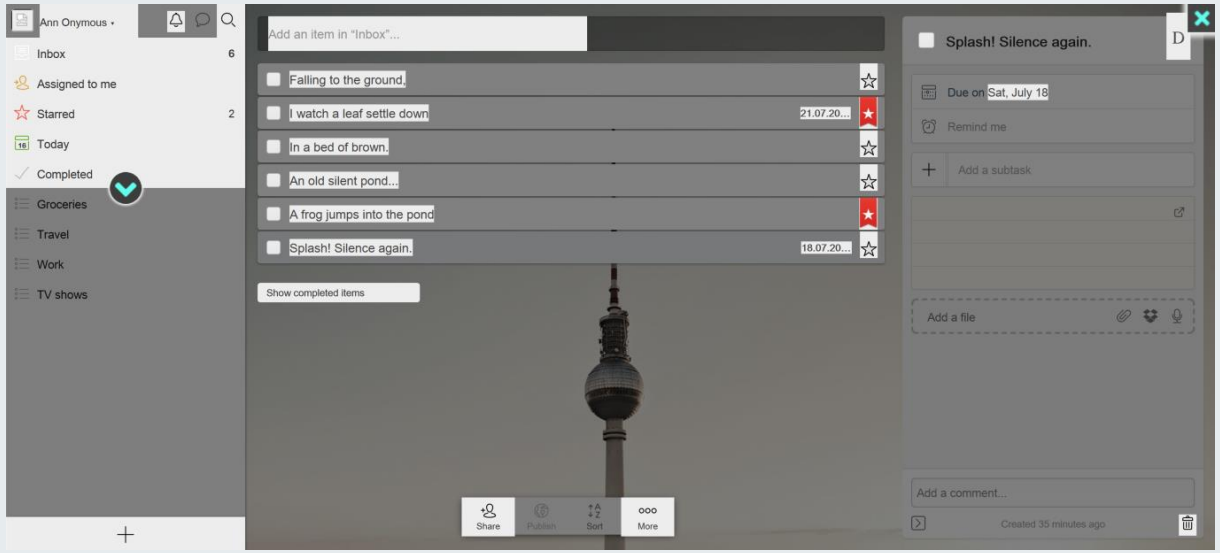
version 3: Gaussian blur and slightly darker

DECISION 1

Highlight UI elements mapped to a setting in a Customization Layer

RATIONALE

Provide a global overview of customization opportunities



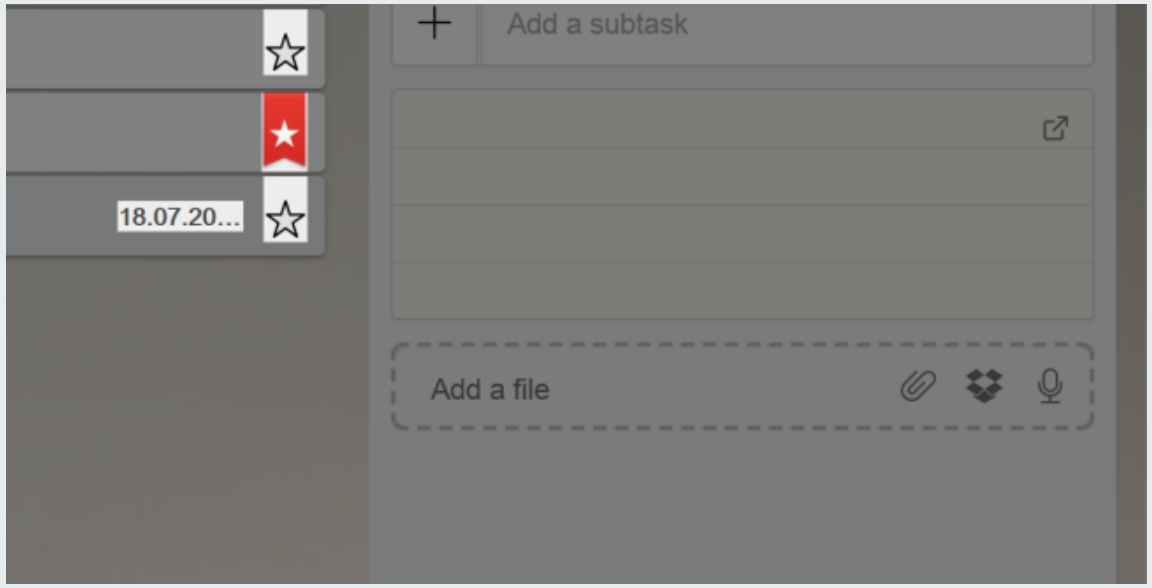
final design: dark overlay, white elements backgrounds

DECISION 1

Highlight UI elements mapped to a setting in a Customization Layer

RATIONALE

Provide a global overview of customization opportunities



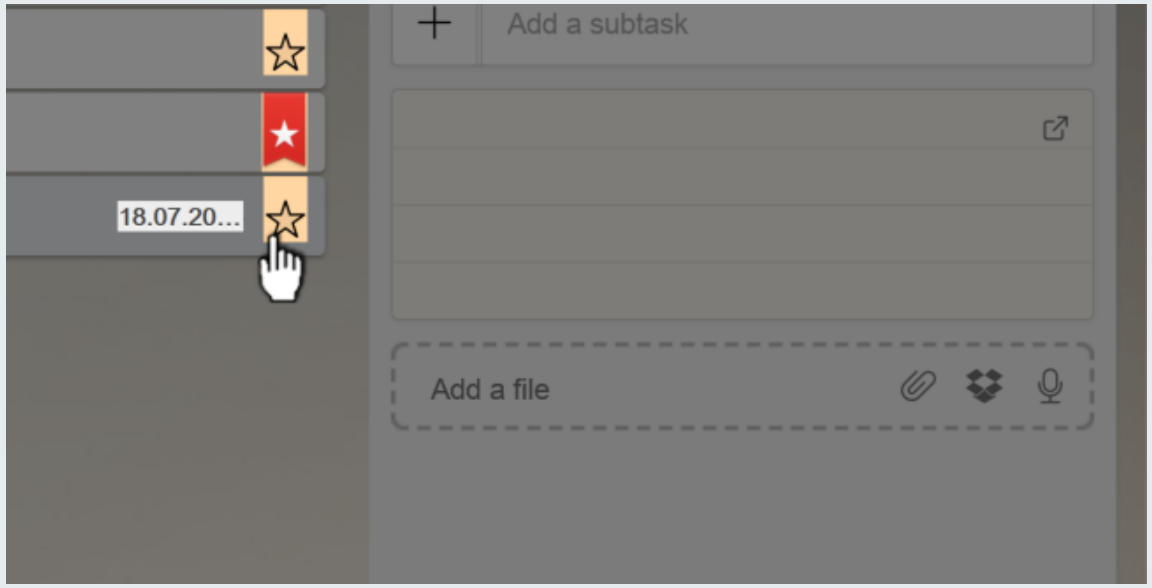
the 3 stars icons are “anchors” for the same settings

DECISION 2

Linked highlighting on hover

RATIONALE

Indicate if multiple anchors are mapped to the same setting



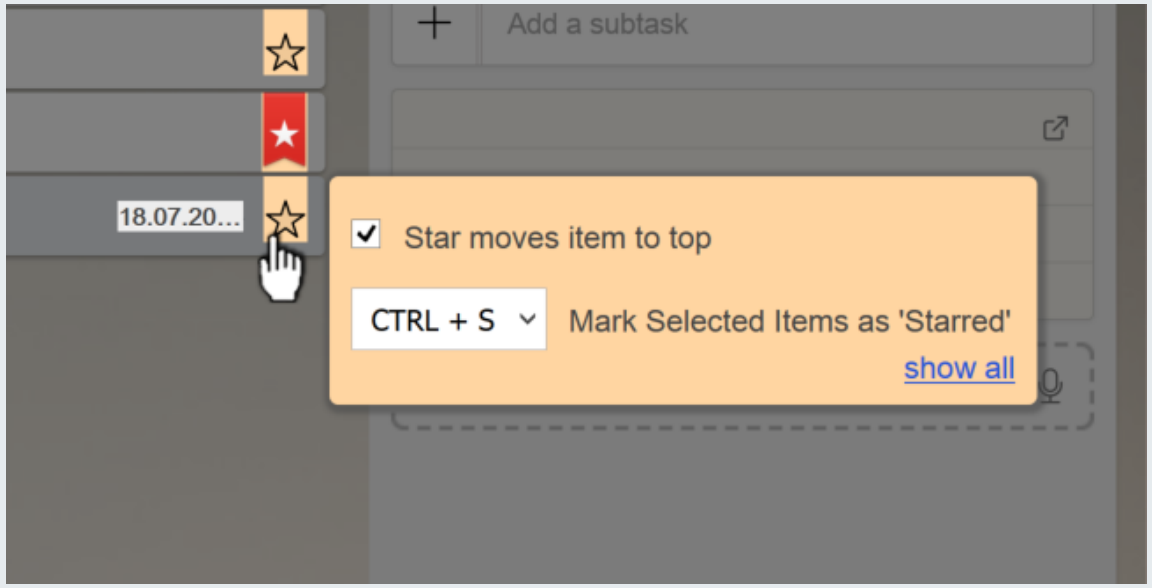
when one anchor is hovered, all three are highlighted

DECISION 2

Linked highlighting on hover

RATIONALE

Indicate if multiple anchors are mapped to the same setting



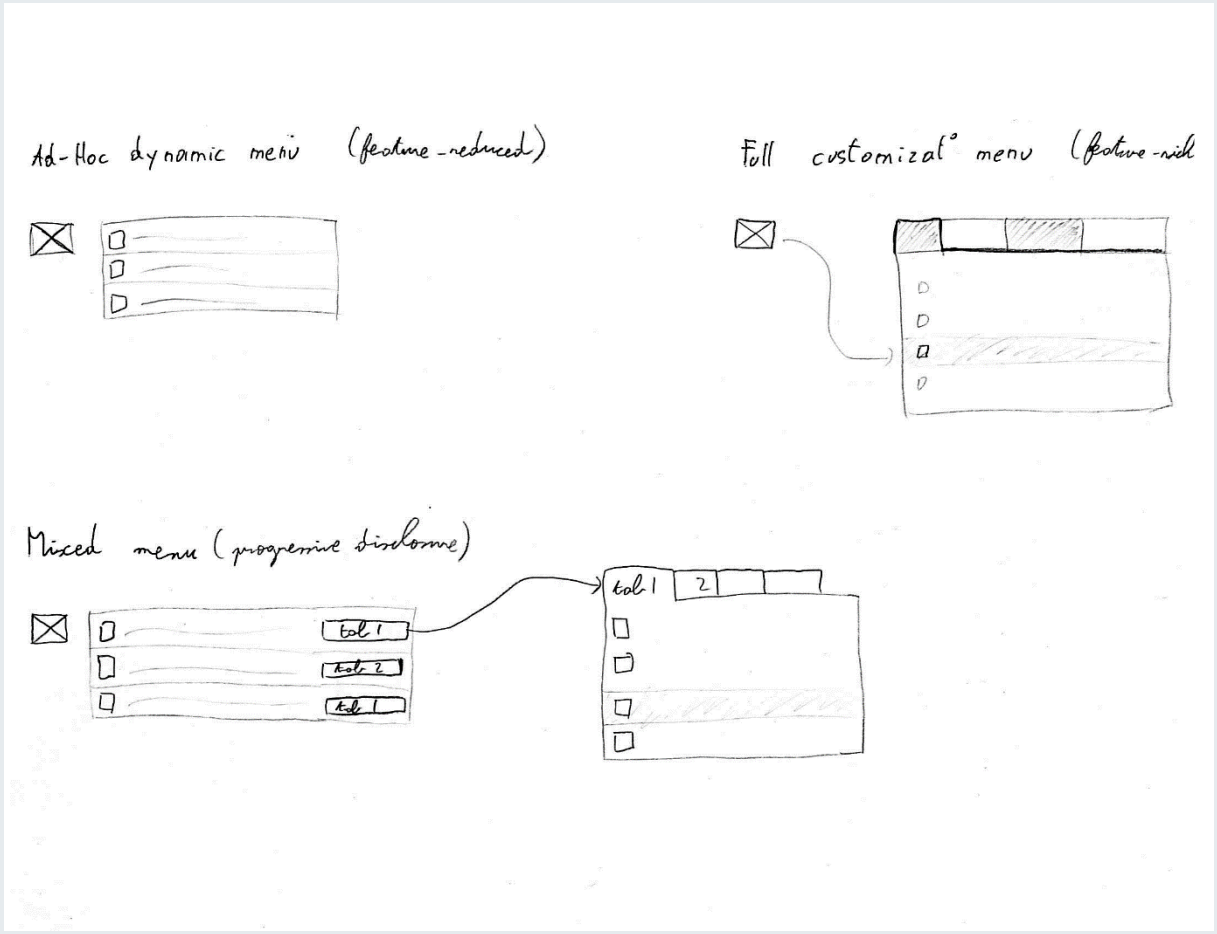
on click, show the settings mapped to these anchors

DECISION 2

Linked highlighting on hover

RATIONALE

Indicate if multiple anchors are mapped to the same setting



first description of the 3 variants

DECISION 3

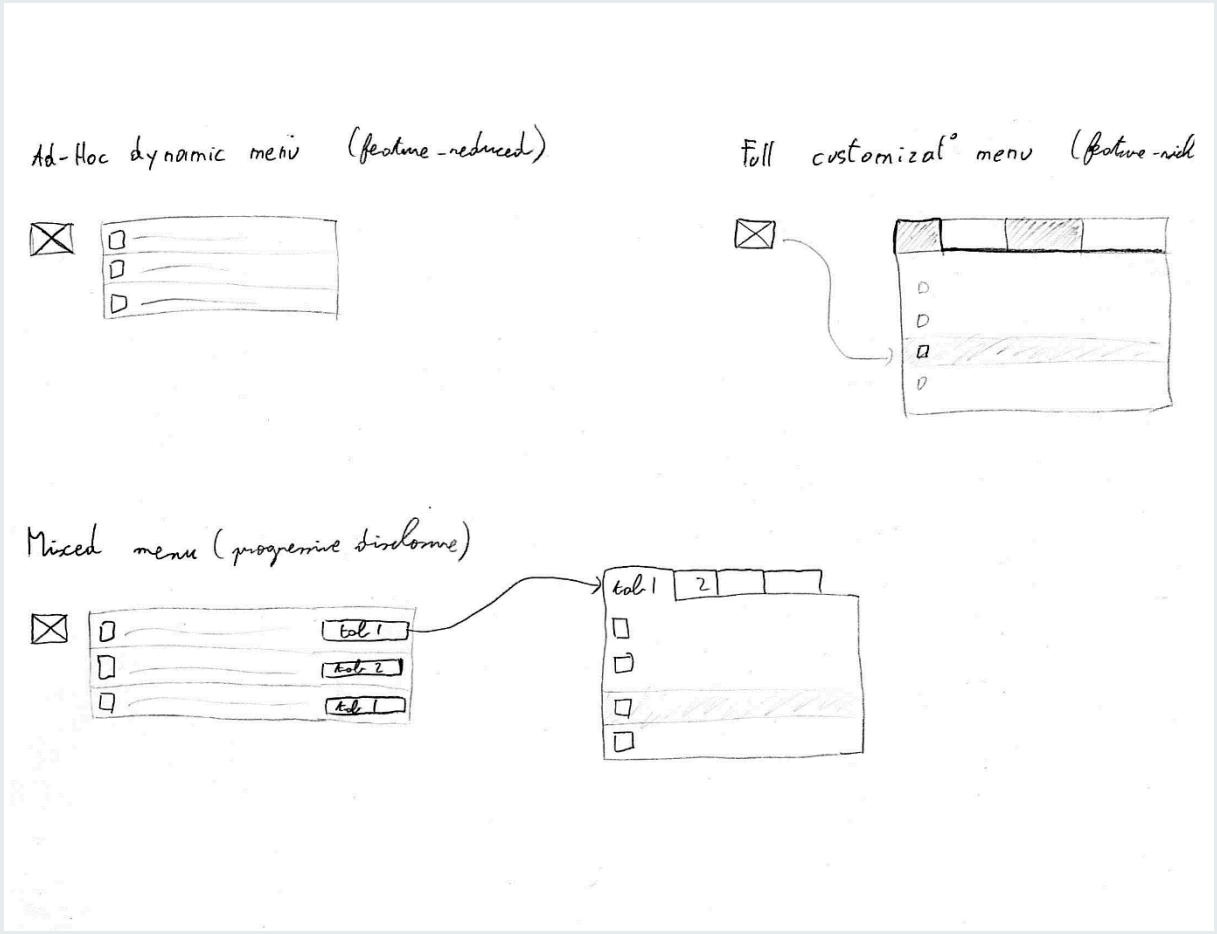
Promote the subset of settings mapped to the anchor clicked;

but the full settings panel must always be accessible.

RATIONALE

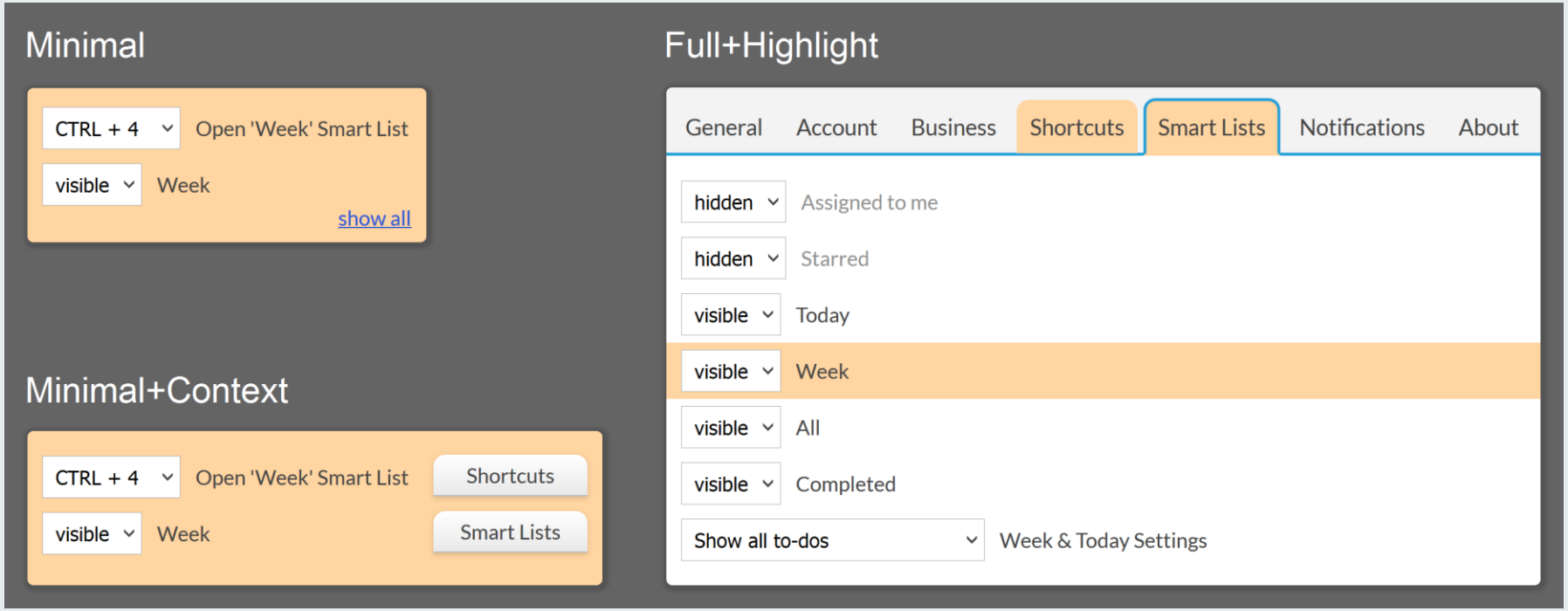
Not all settings can be anchored

+ some users might prefer the familiarity of settings panels

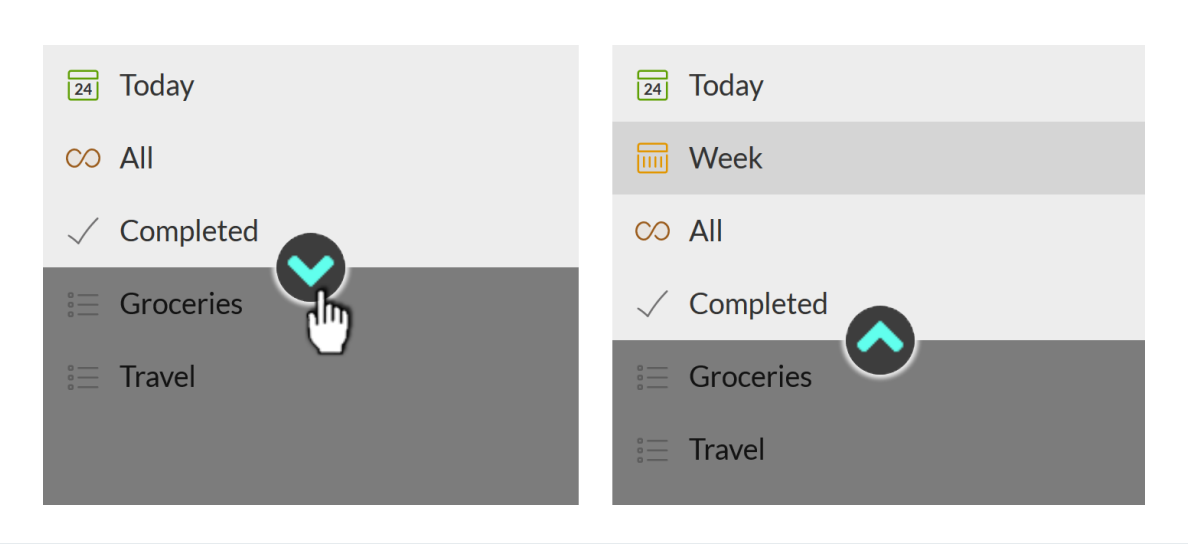


Minimal, Minimal+Context, Full+Highlight

Exploring 3 variants of a **multi-layer interface** for displaying settings



3 variants of a **multi-layer interface** for displaying settings



clicking on the chevron icon reveals a ghost anchor

DECISION 4

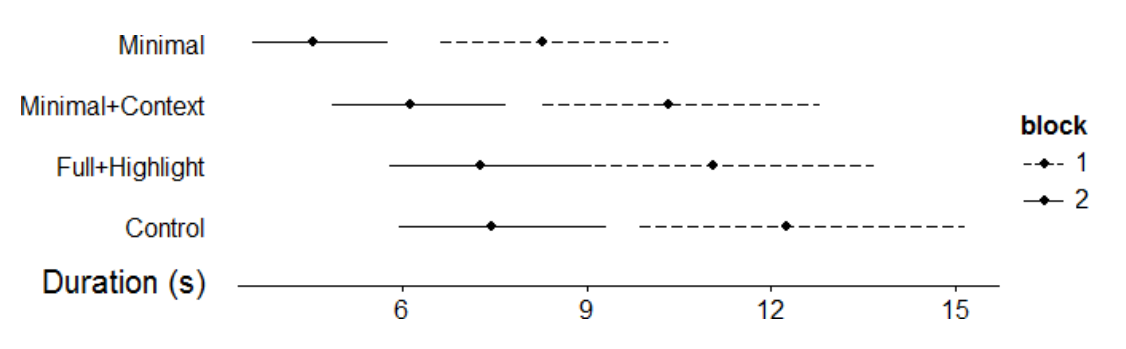
Represent hidden UI elements with collapsible ghost anchors

RATIONALE

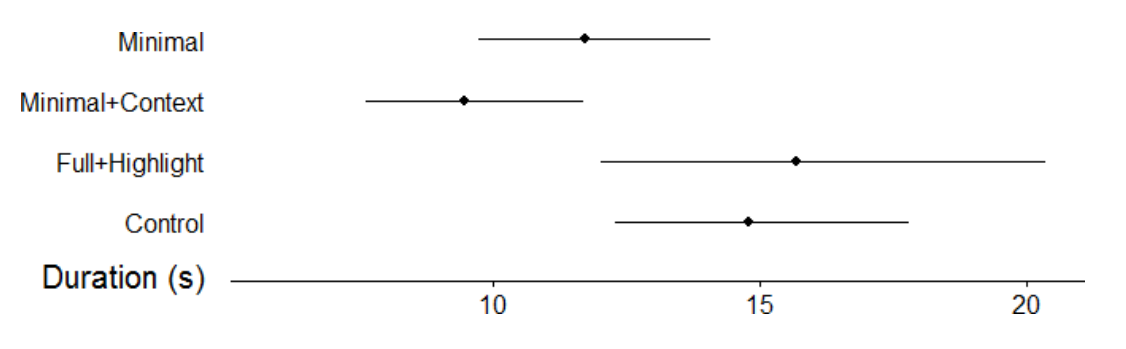
Provide access to the settings associated with these elements while minimizing clutter

Mechanical Turk
48 participants
between-subjects

Lab
12 participants
within-subjects

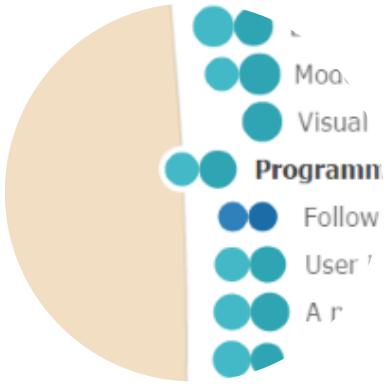


95% confidence intervals for MTurk



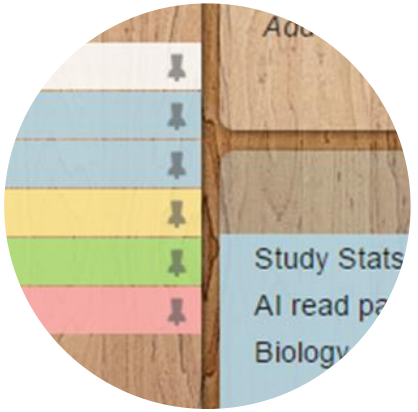
95% confidence intervals for Lab

Minimal, Minimal+Context were **35% faster** than the traditional settings panel

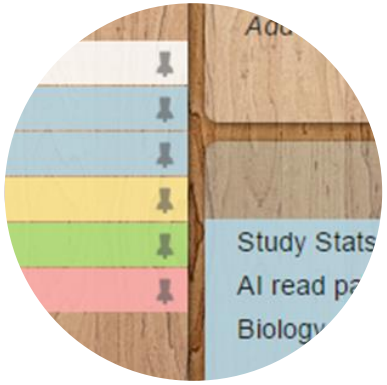


PaperQuest

Anchored Customization



Calendar & To-do lists



Calendars & To-do lists

Combining both to support time-sensitive tasks

To do :)