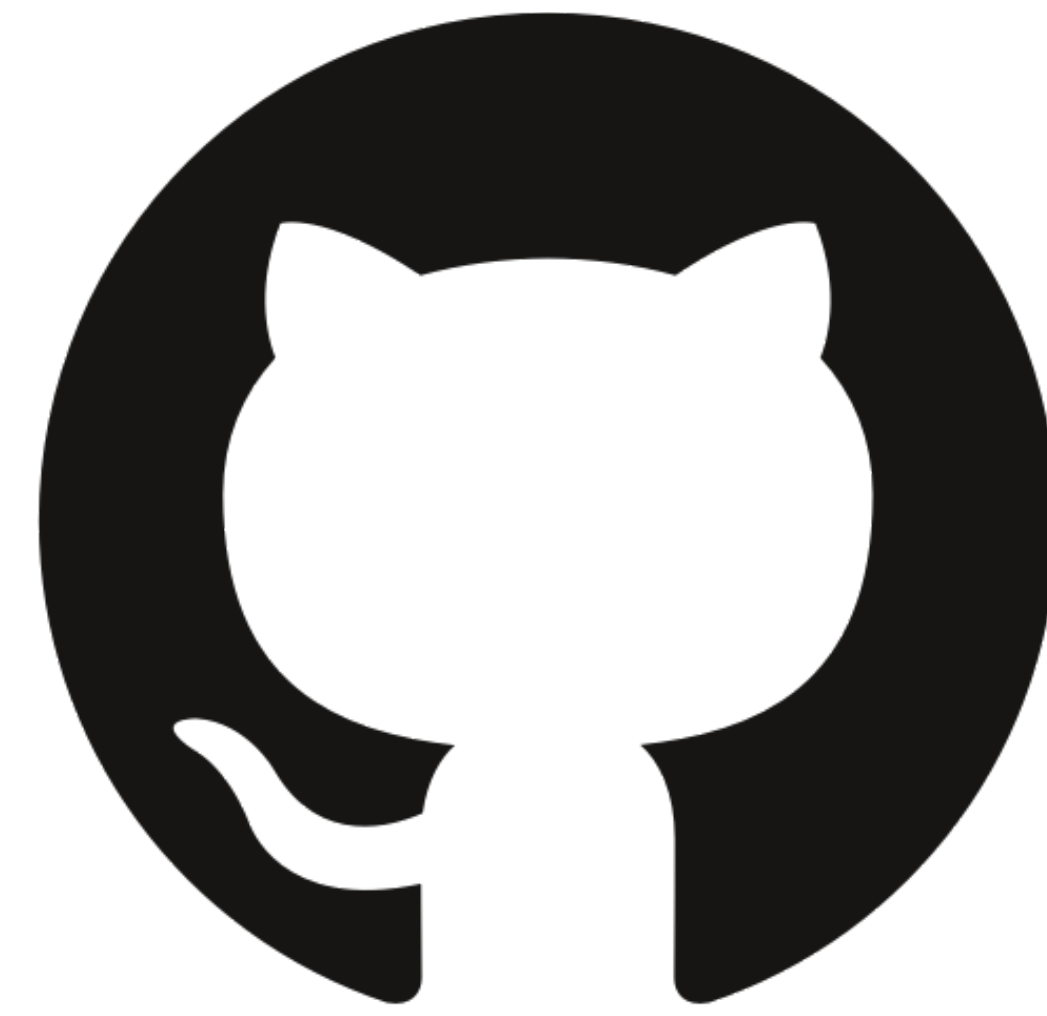# GitHub PR Feature Design Project

Michelle Venetucci Harvey

michelle.ann.harvey@gmail.com
November 2017

Product Choice: GitHub

Improving Developer <> Designer Workflows

GitHub has the potential to improve cross-functional collaboration throughout the product development process.

Product Opportunity & Research
Conduct basic foundational user research and competitive analysis to provide context and opportunities.
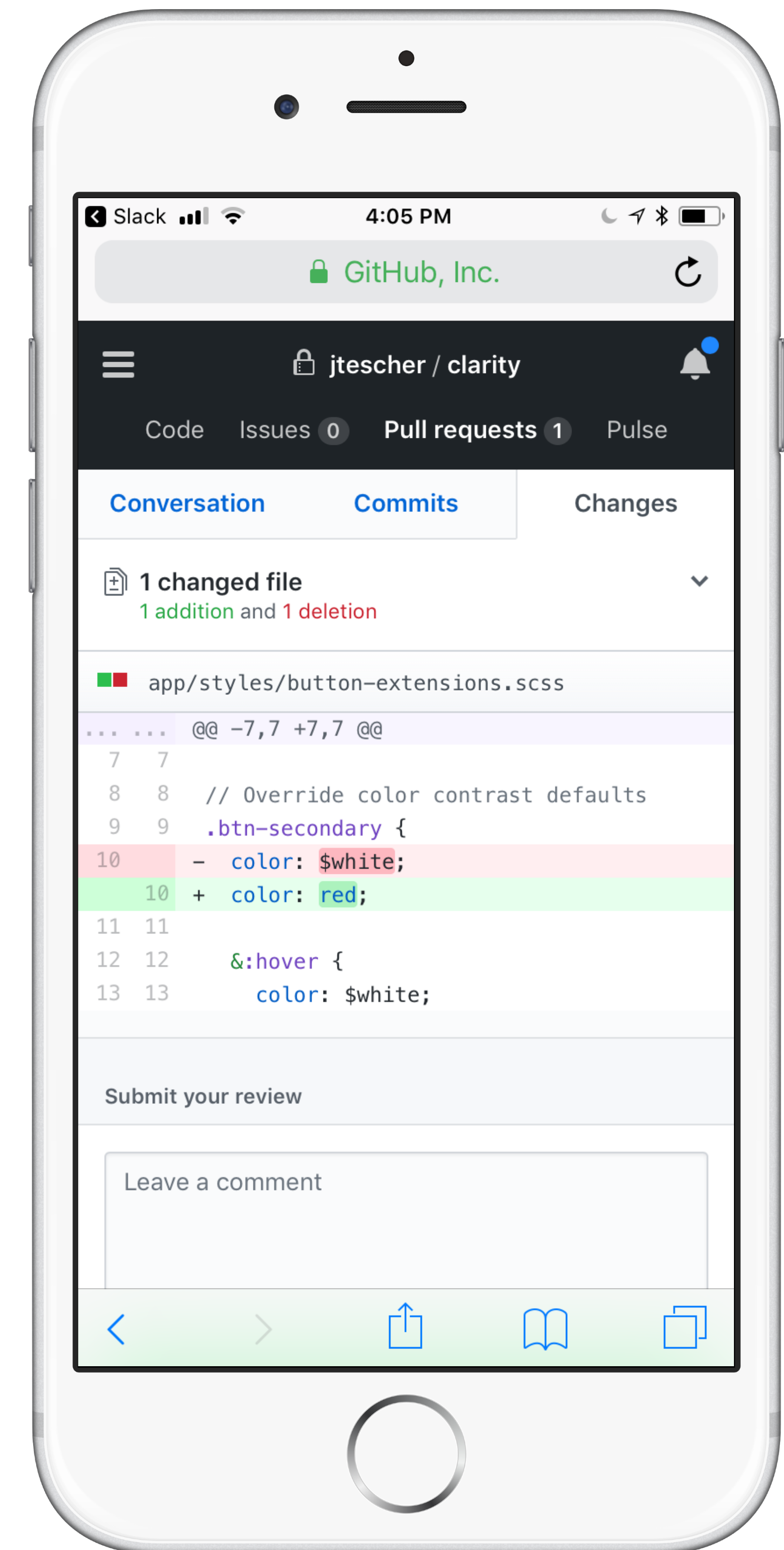
Existing GitHub Product Audit
Audit the product to contextualize problems and identify areas of opportunity or improvement.

Brainstorming & Prototyping
Generate ideas and direction through rapid brainstorming activities, prototyping, and wireframing.

Final Design
Walk through the final solution from a user experience design perspective.

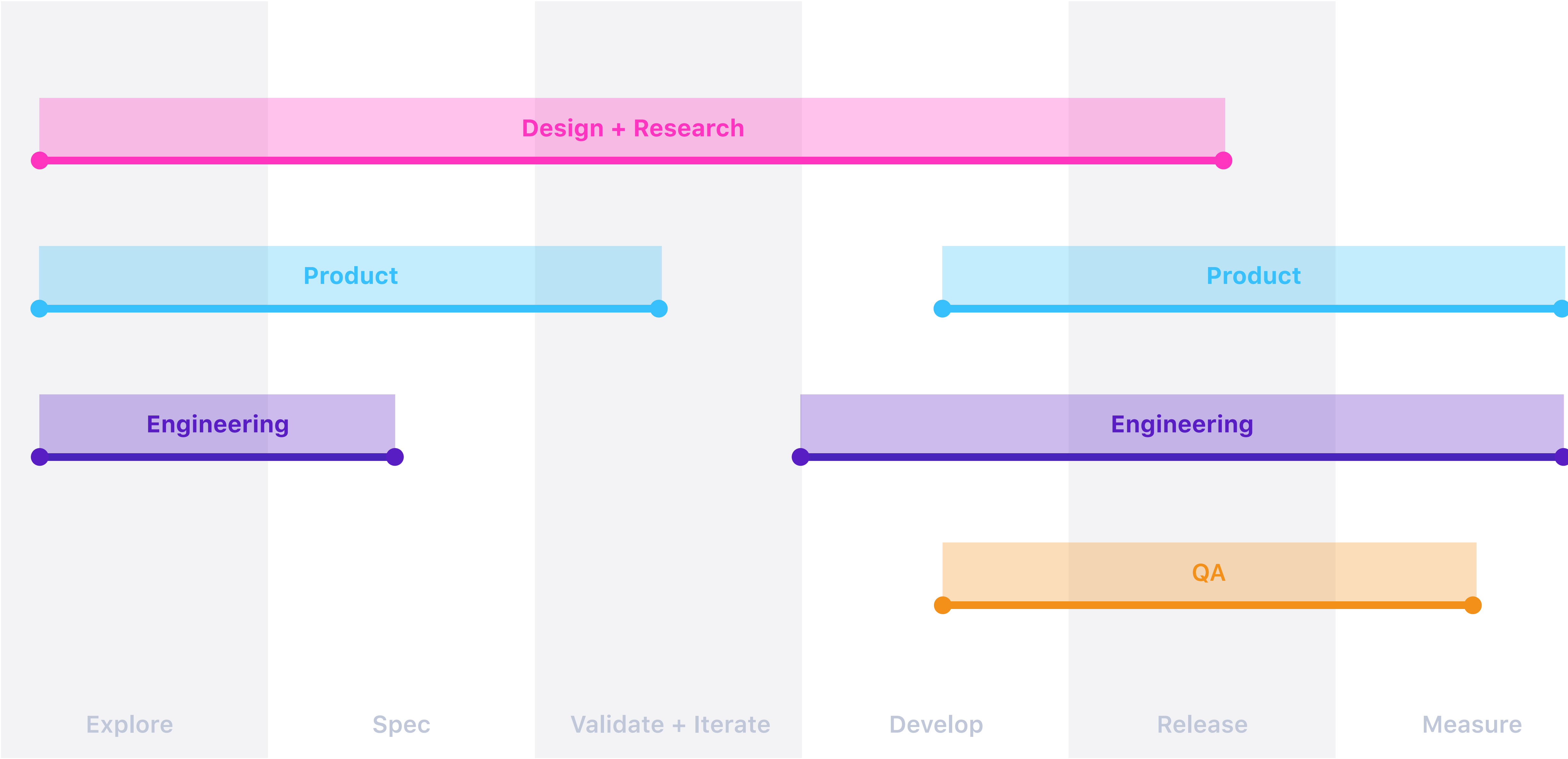*GitHub's existing mobile experience*

Product Opportunity

Research & Competitive Analysis

I conducted time-constrained foundational user research and looked over the competitive landscape in order to better understand the industry and start identifying the most compelling problem spaces.

There are many cross-functional touchpoints throughout a typical digital project lifecycle.

Design + Research

Product

Product

Engineering

Engineering

QA

Explore | Spec | Validate + Iterate | Develop | Release | Measure

While there are currently many tools that project participants use, there aren't many that are targeted specifically towards cross-functional collaboration and treat cross-functional partners equally.

"
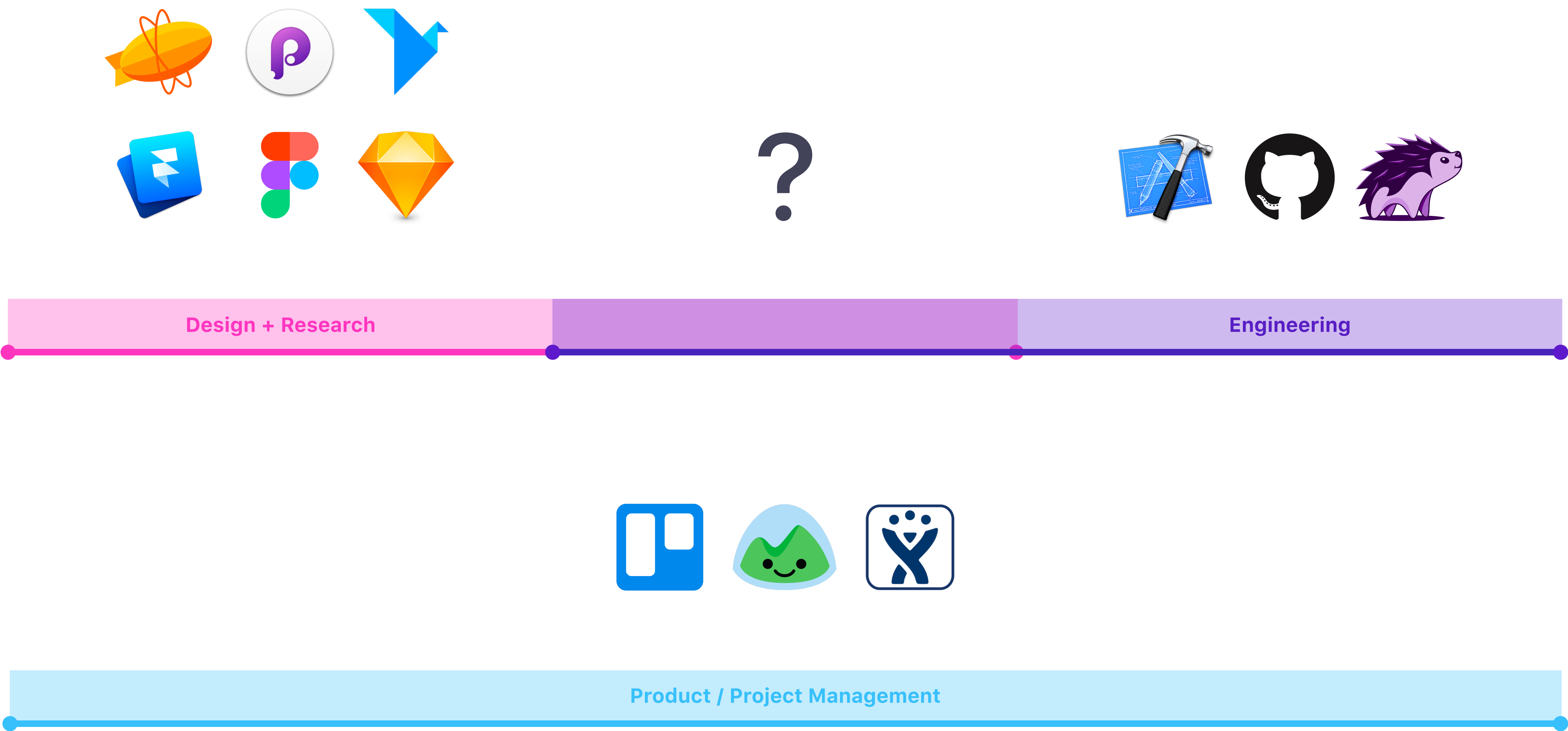
When handing off work to engineers, I always think the videos and mocks communicate the design perfectly. But what I get back often looks nothing like my intention, which ends up being an awful experience.

- Harrison, Product Designer

Many design tools have popped up recently with a main goal of improving communication between designers and developers.

These are generally seen as helpful, but remain somewhat separated from the engineering workflow, which can cause communication breakdowns.

"
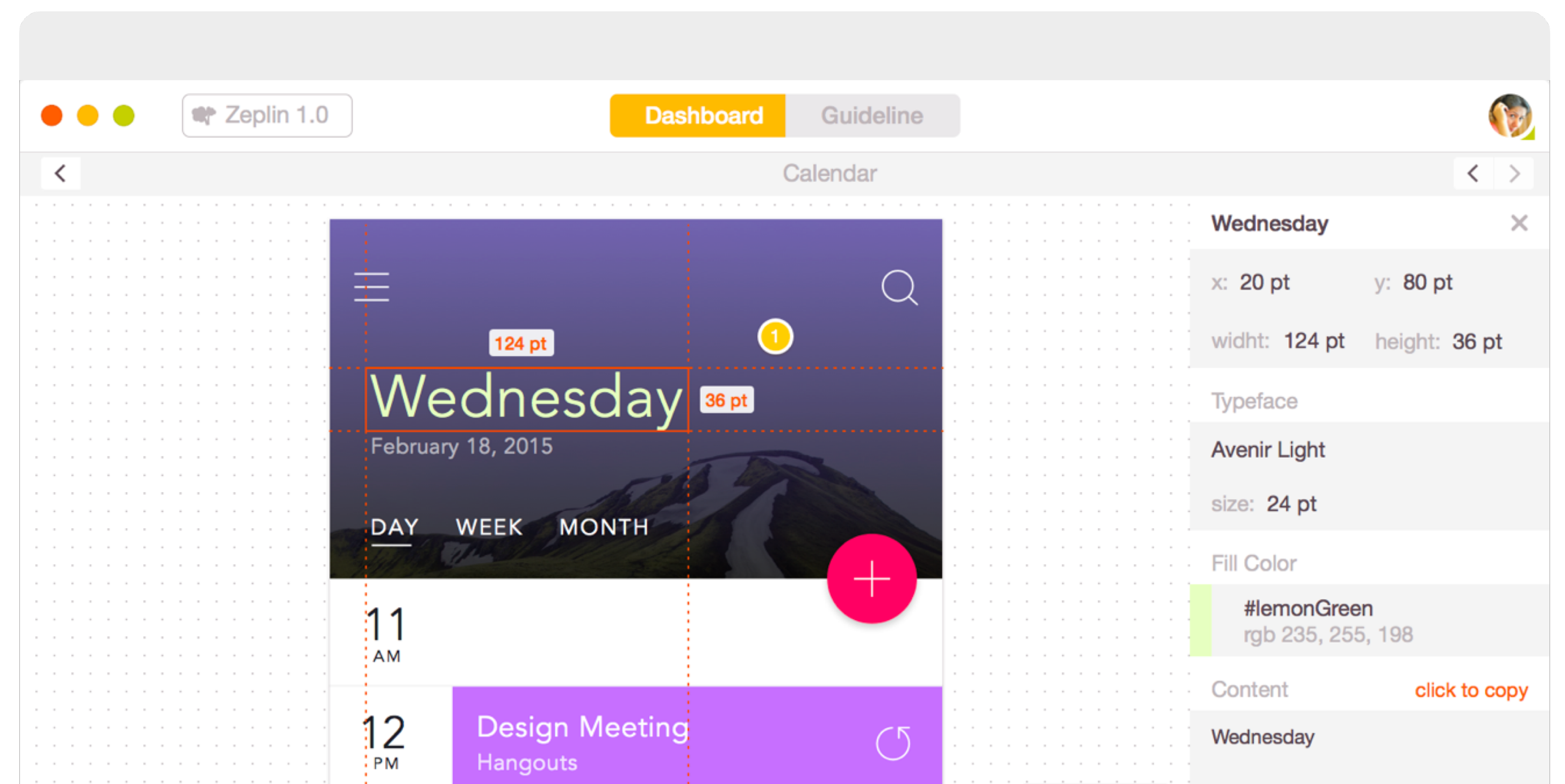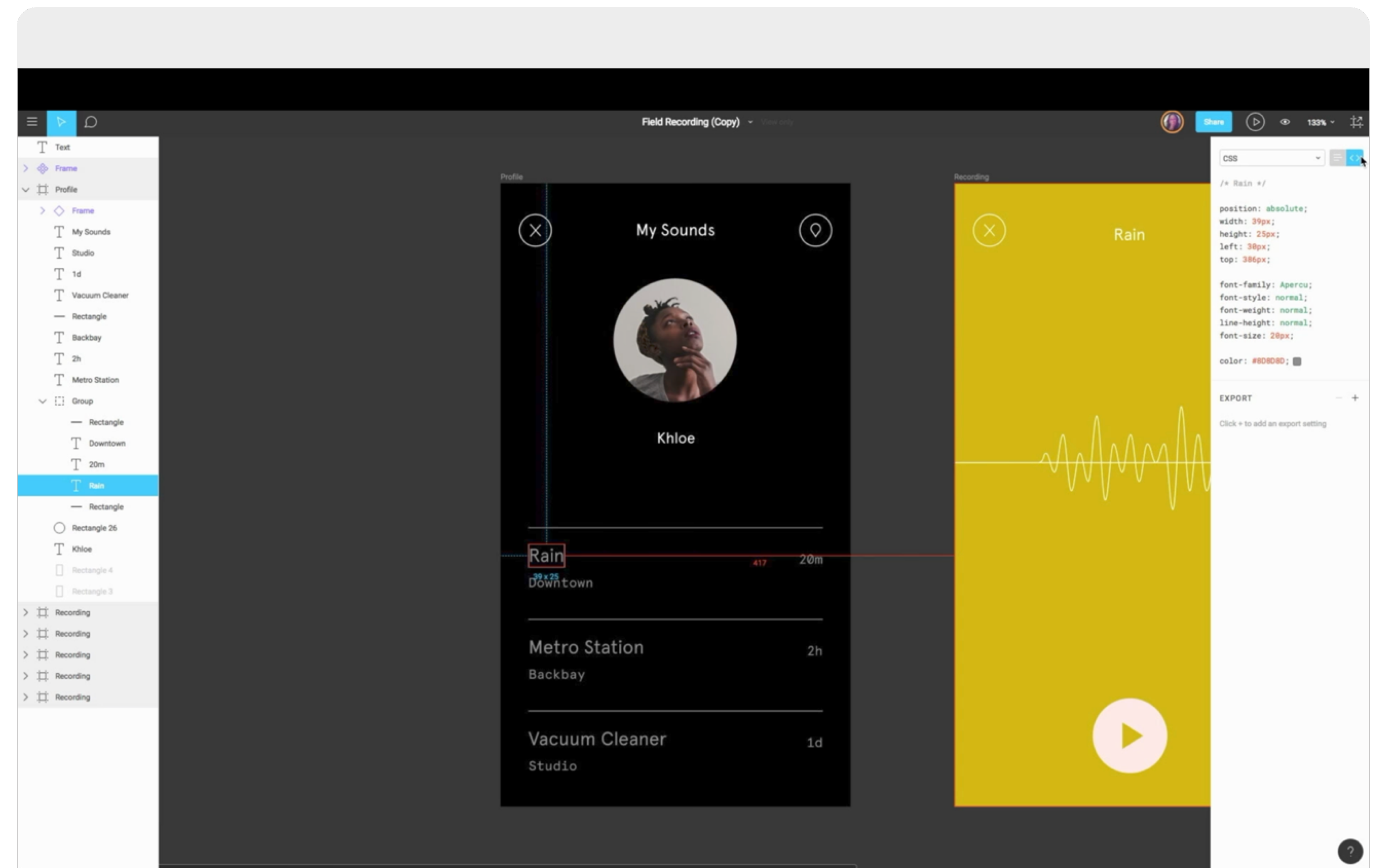
I Use Zeplin for redlines, but it's not very efficient. I also use Dropbox, and it's okay. It gets the job done for sharing files, but it's hard to keep track of things. Google docs and Paper could be useful for comments but overall things are hard to track.

- Lin, Product Designer

There are a host of visual regression testing tools made for engineering workflows.

Most compare proposed CSS to previous CSS visually, and focus on engineers as the end user.
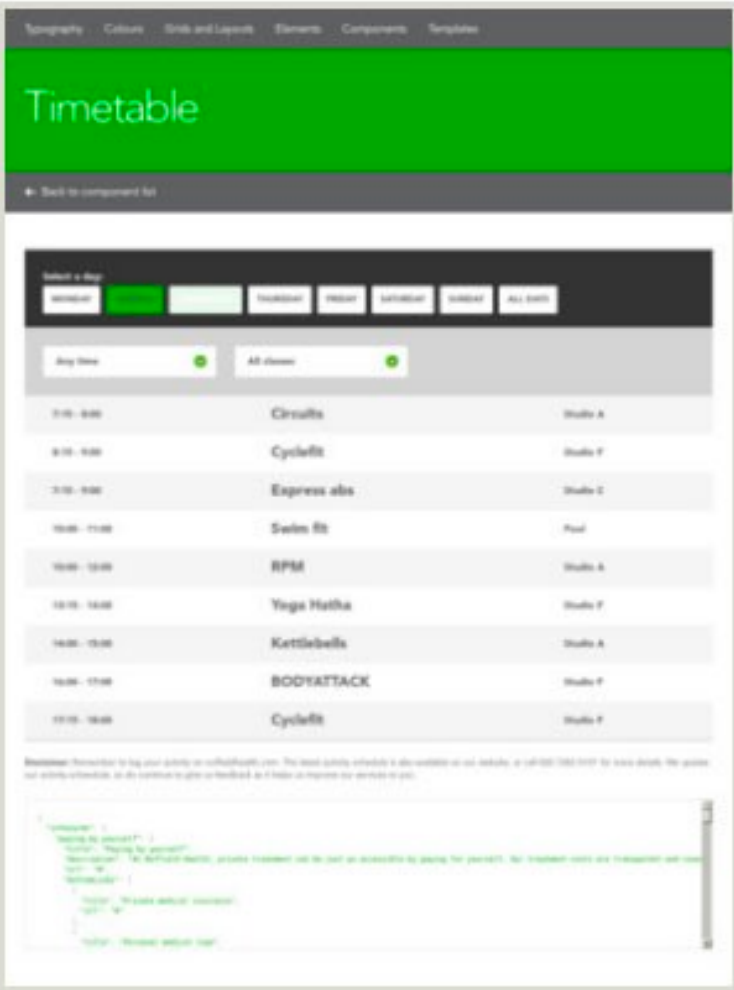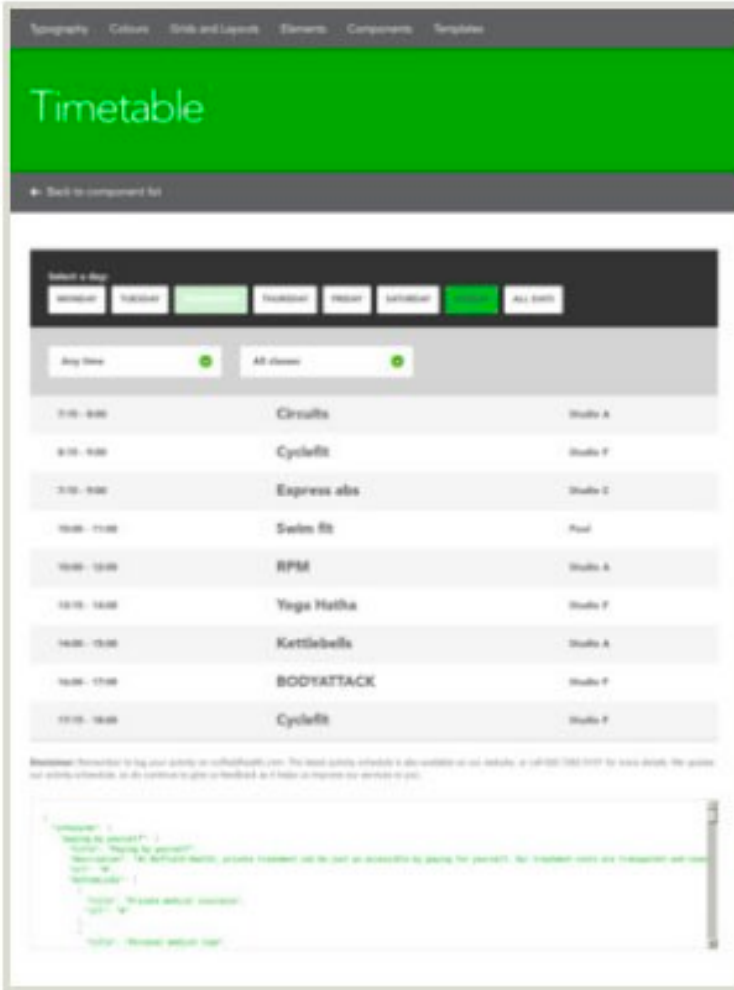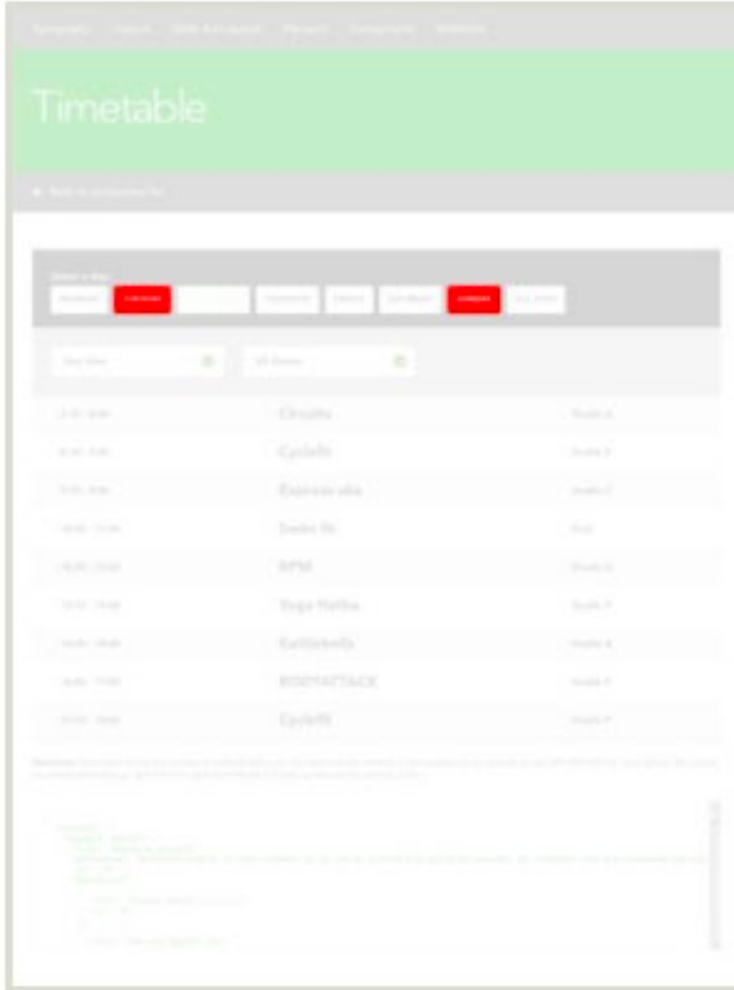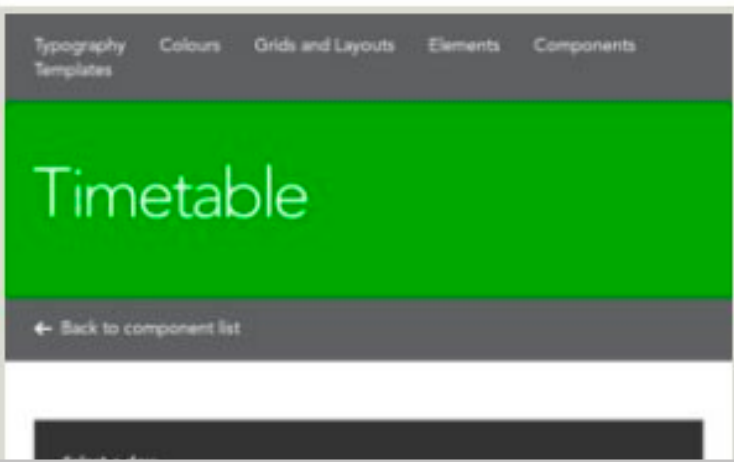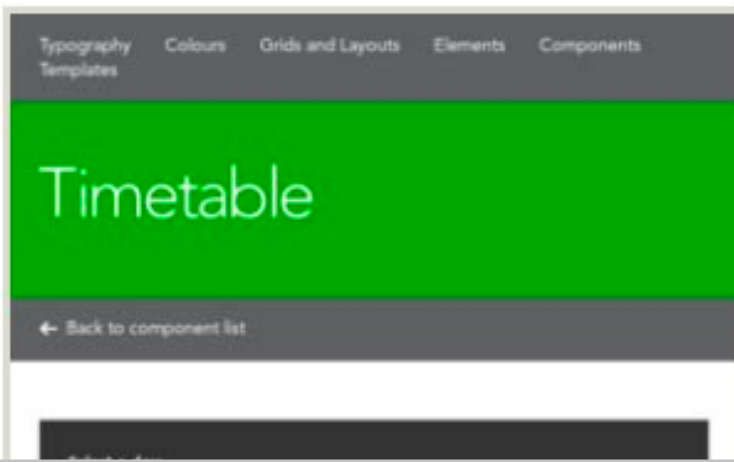
One example is <u>percy.io</u>, a continuous visual review tool for engineers building web apps.

> "Percy integrates directly into your development workflow to provide iterative and fast feedback about visual changes. This is what we mean by automated visual reviews."

The fact that so many of these tools exist shows a growing need from users within this problem space, but fragmentation leads to low adoption.

"
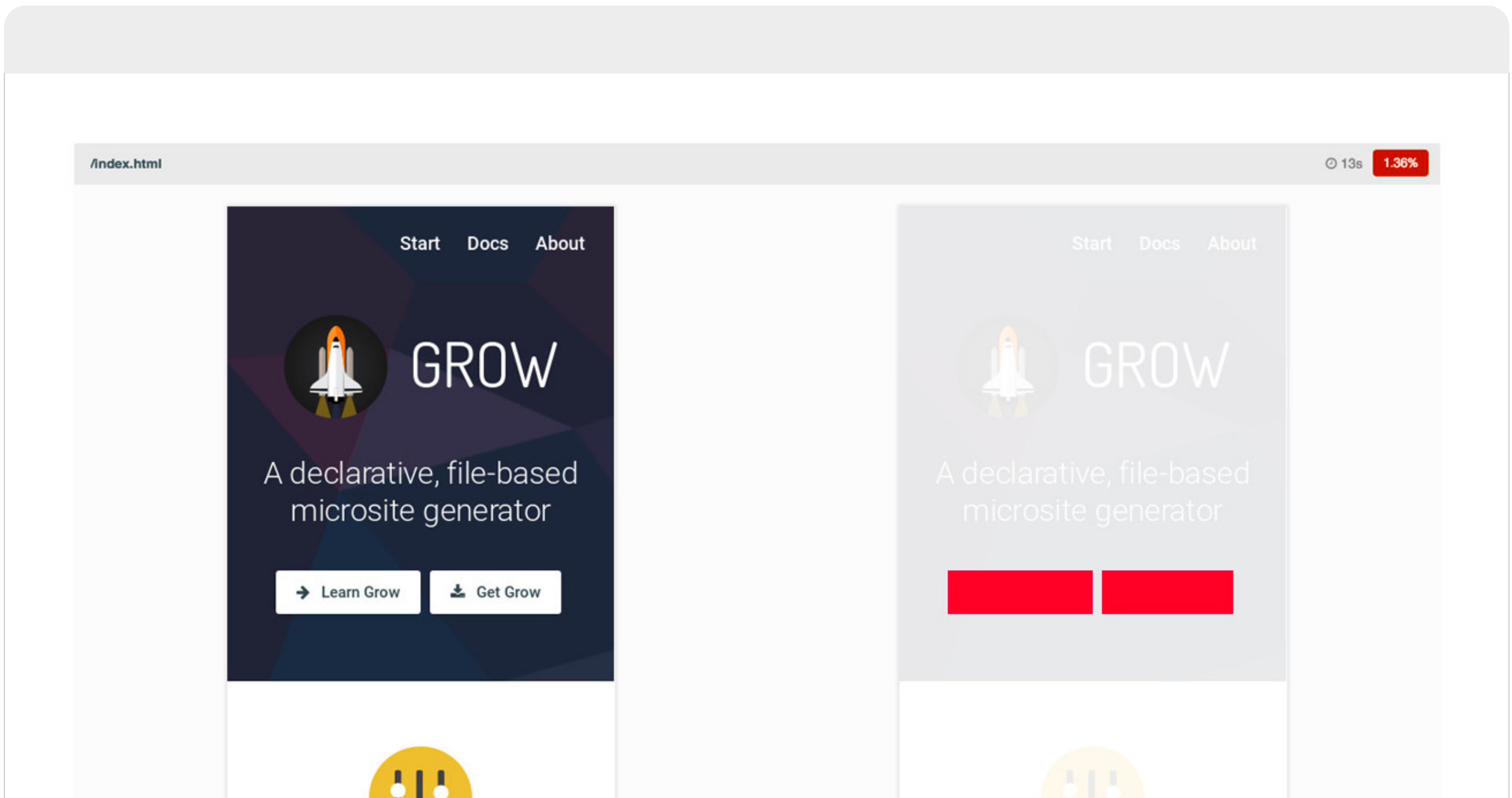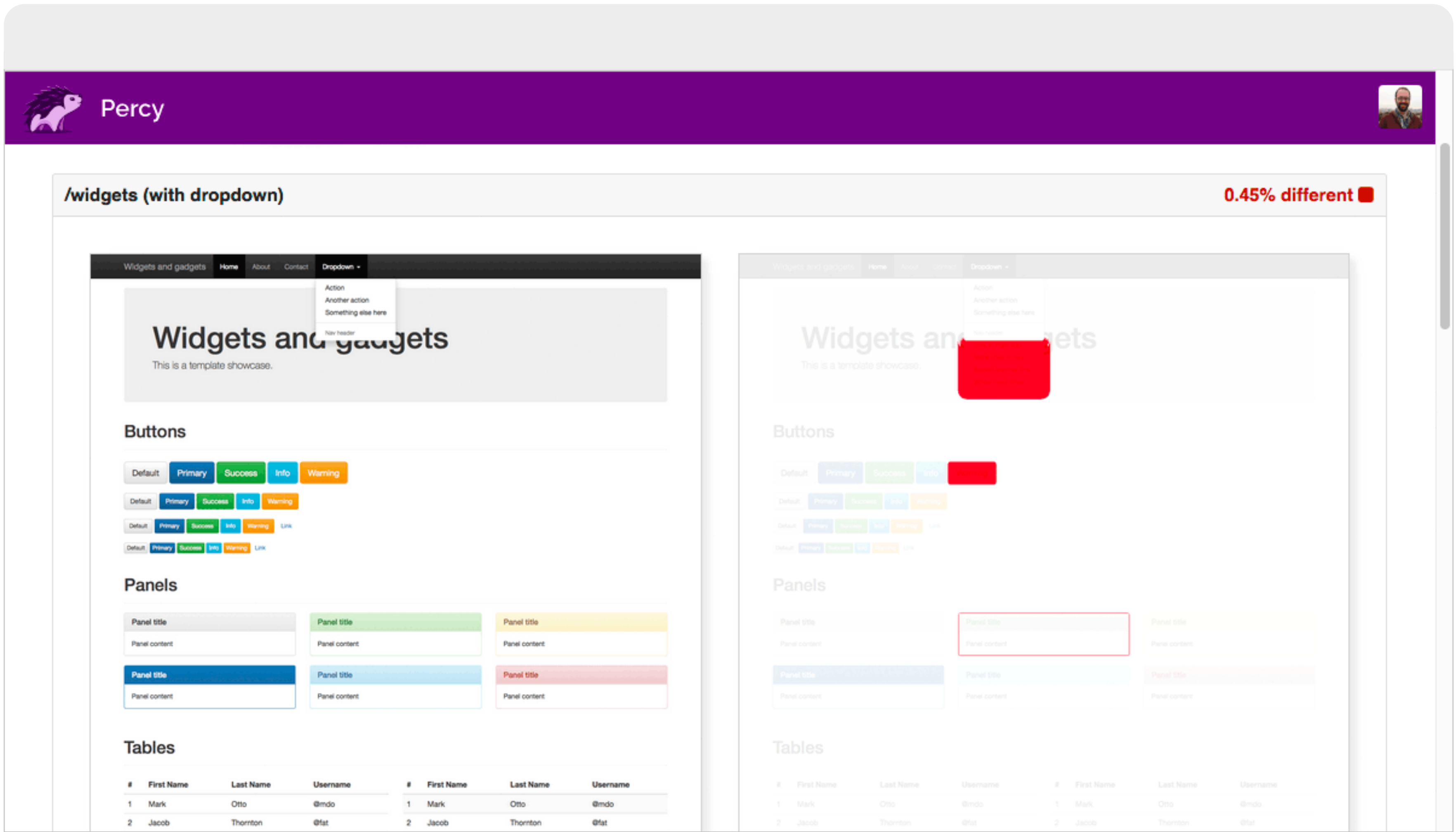
There's always a lot of miscommunication in the designer / developer handoff period. It's really challenging to keep track across all the different tools we're trying to piece together.

- Alex, Engineer

Keeping track of updates

Designers and engineers often struggle to keep track of cross-functional work.

Polish

Zeplin has improved polish for static mocks, but it's still challenging to communicate animation values.

Communication is a barrier

Designers and engineers feel like they communicate clearly to their cross-functional partners, but often the results don't reflect the original intention.

Too many tools

Designers and engineers are using too many tools to communicate with each other.

GitHub as a collaboration tool

GitHub feels very intimidating to everyone except engineers.
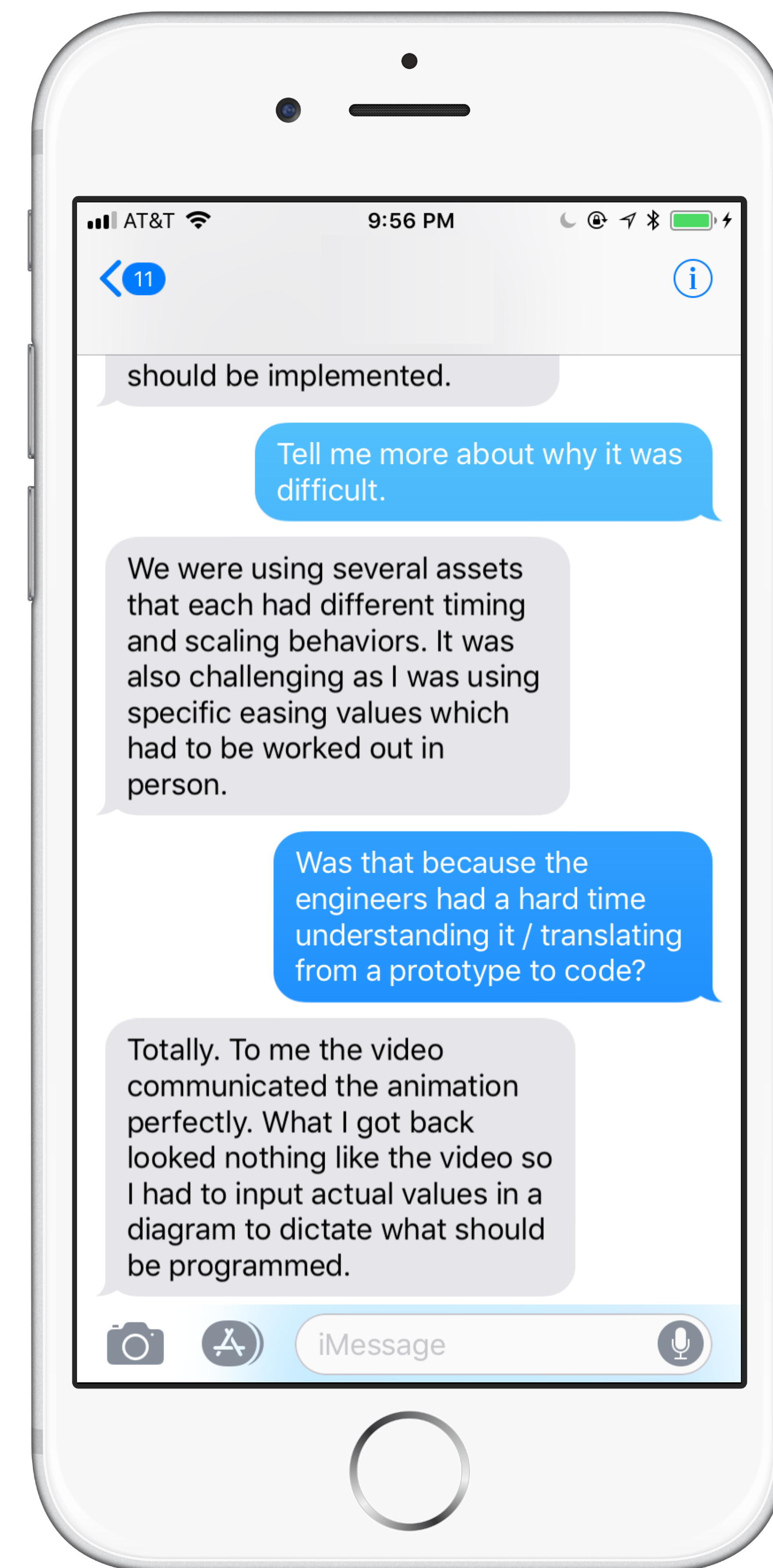
Screenshot of SMS-based user interview
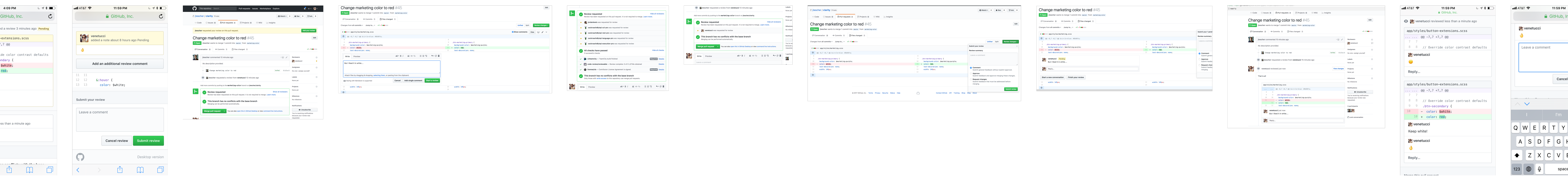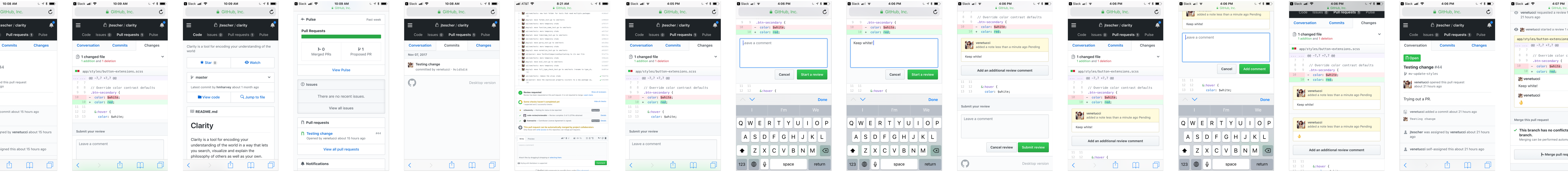
Product Audit

GitHub's Existing Experience

Looking over the existing desktop and mobile user experience helped give me context into existing problem spaces and opportunities for strategic improvement.

GitHub is a great tool for developer collaboration, but doesn't currently support much cross-functional collaboration. Some examples:

- Pull Requests (PRs) only include code reviews, even when there are visual updates that need reviewing.

- The UI is intimidating and there is no user experience geared towards designers, who may want to be involved in the review process.
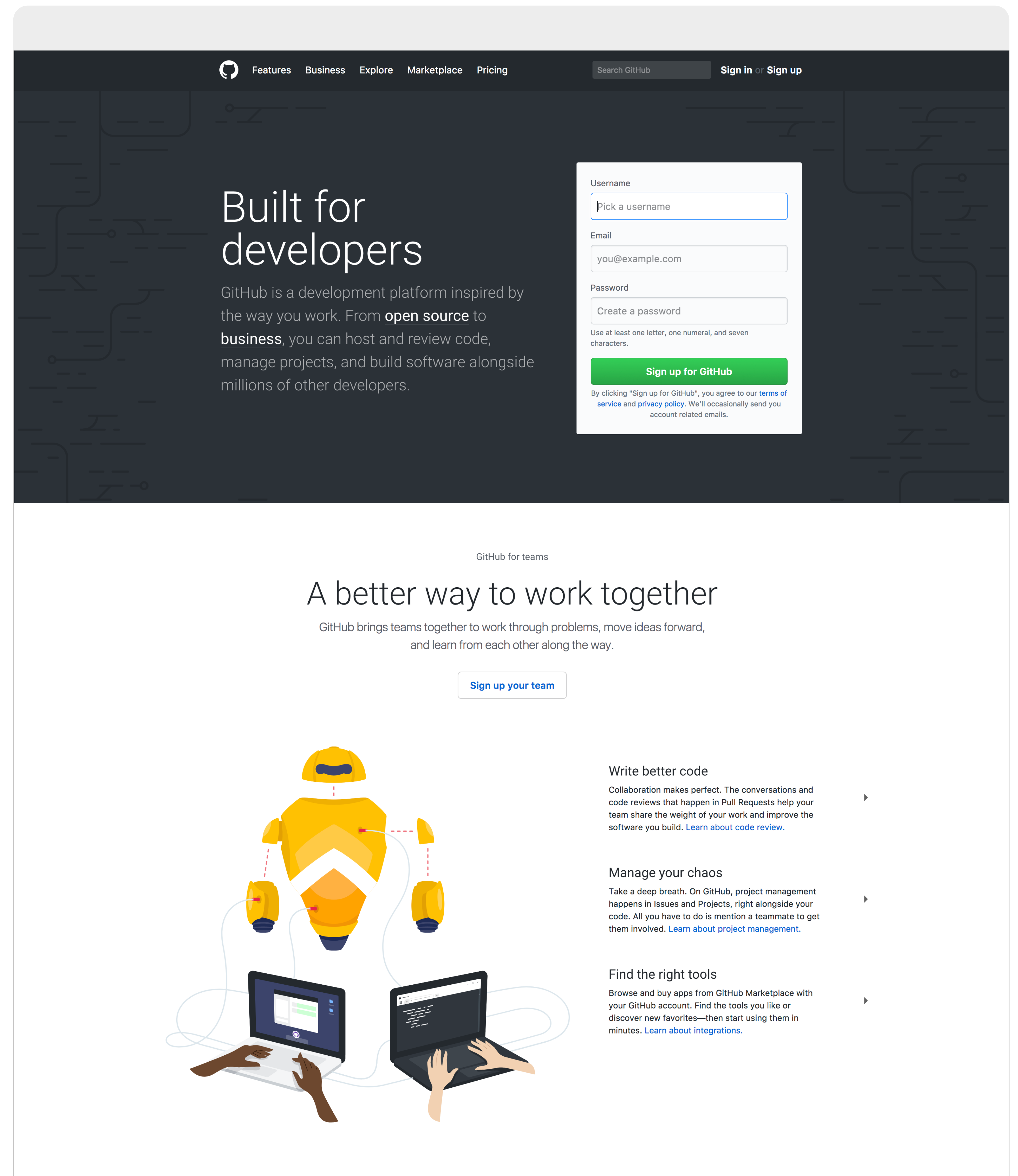
Pull Requests (PRs) are a great opportunity for design QA or as a tool for visual comparisons, but the current view doesn't include useful features for visual reviews.
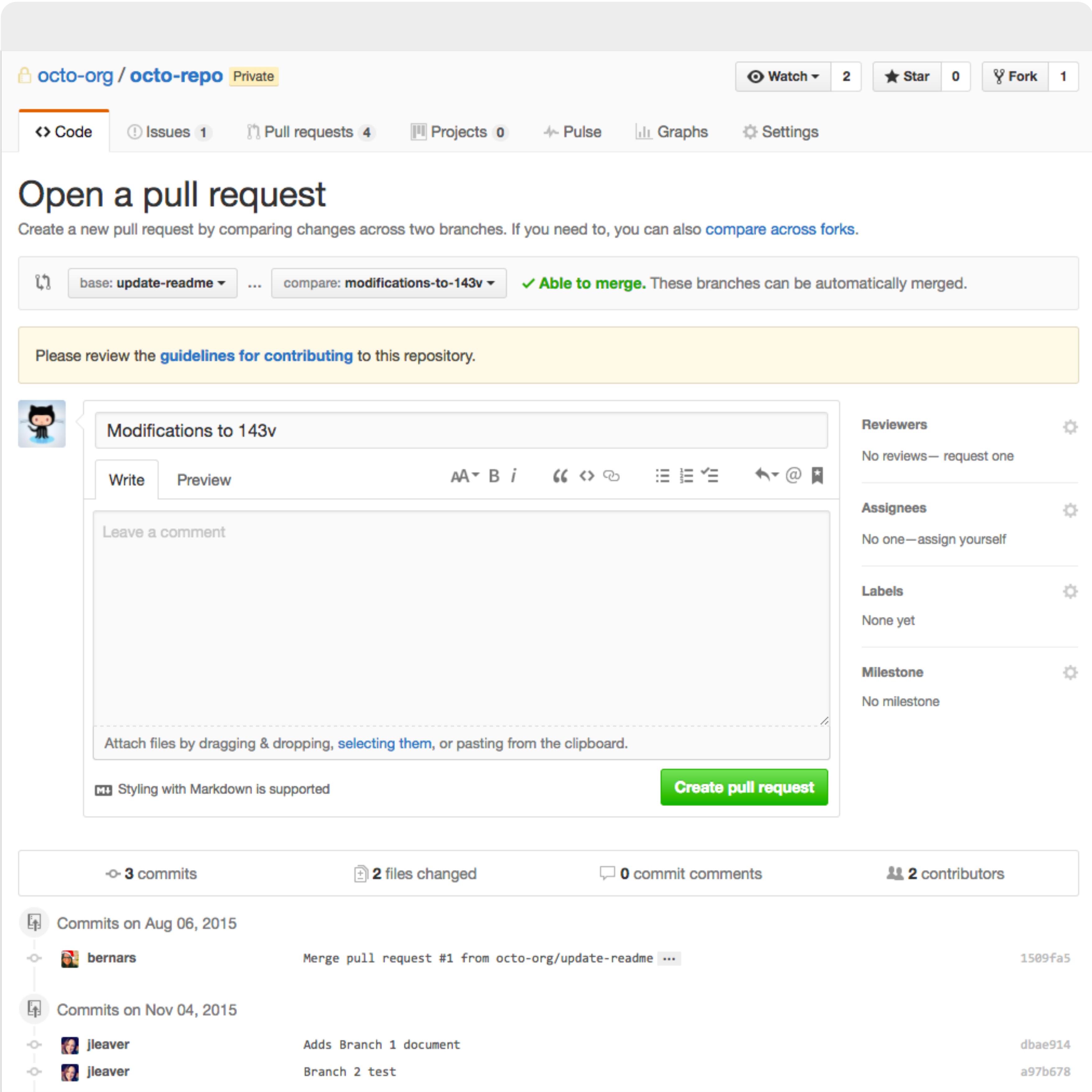
GitHub has started rolling out project management tools, but they are still very developer focused and don't provide collaboration features for designers.
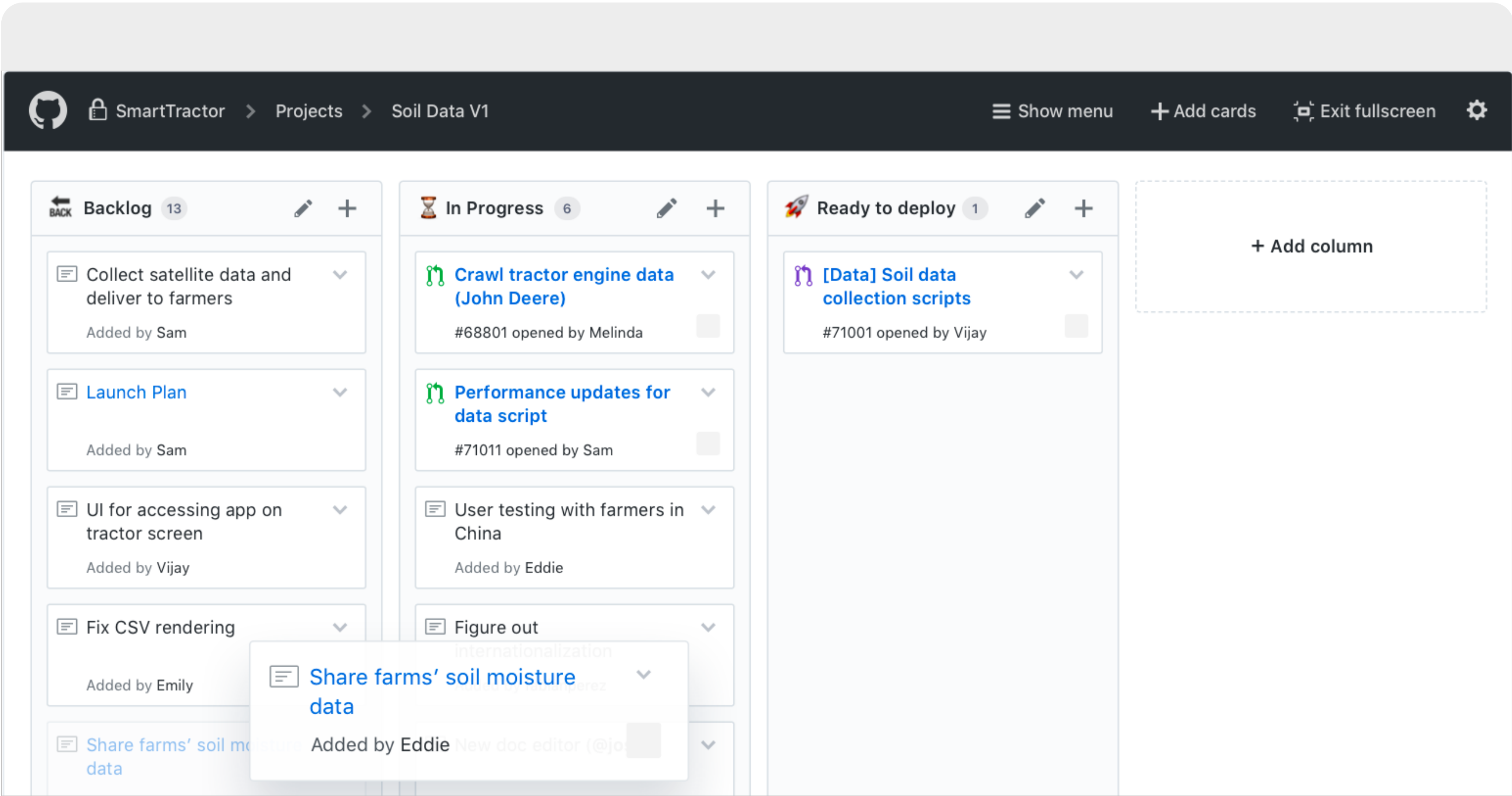
GitHub already has features to show differences in images between different code commits, which many developers find helpful.

This creates the potential to apply similar concepts to full product screenshots, or to compare against mocks instead of previously committed code.
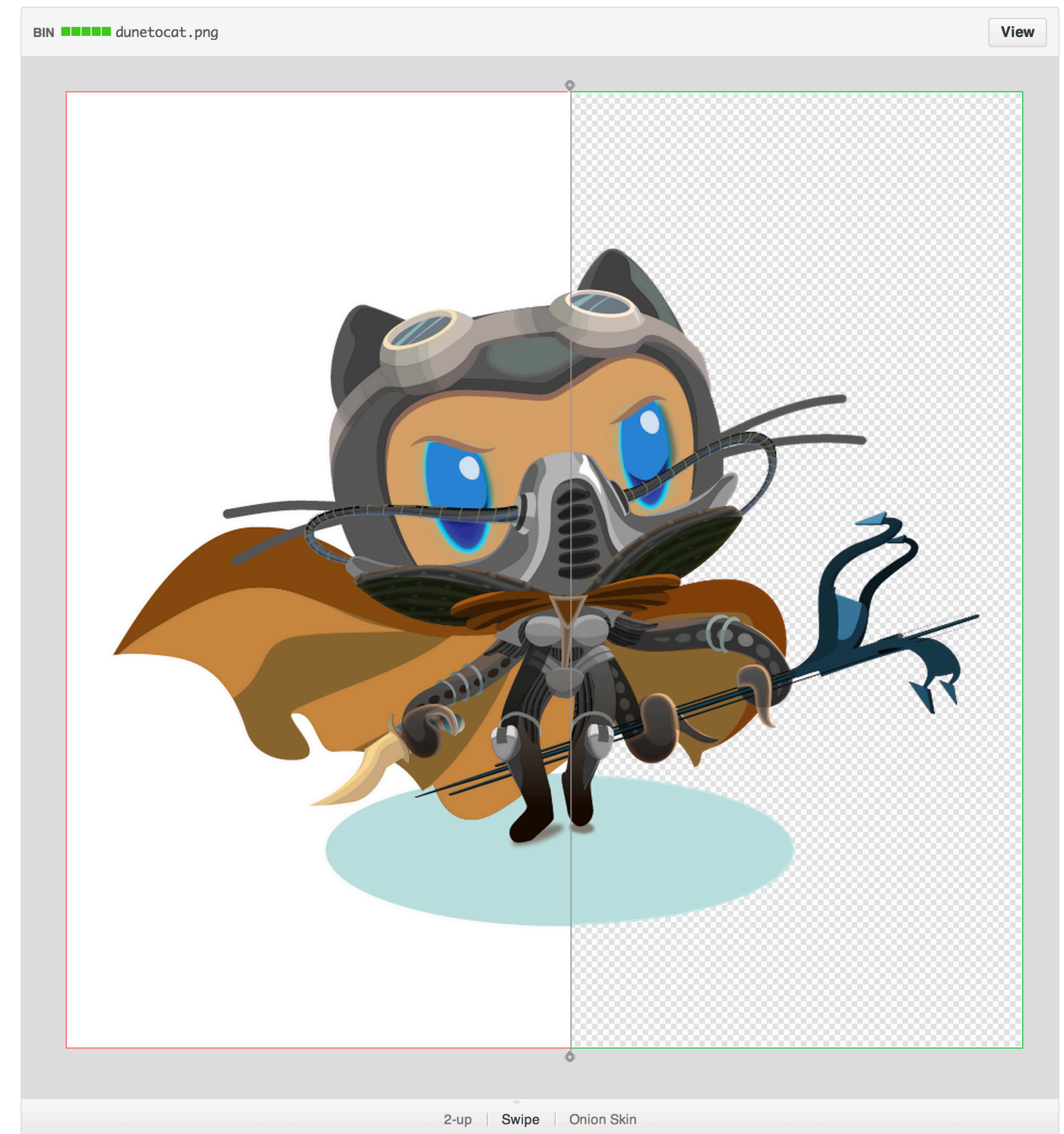
Read about image diffs on GitHub here

"

I don't see any value in GitHub for me. I would love to get a GitHub link that I could open and actually gather some utility from, but I just don't see a use right now.

— Harrison, Product Designer

Brainstorming
Strategy & Prototyping

For this project, I did a variety of brainstorming activities to make sure I explored divergent options, and then narrowed down on a solution using sketching and prototyping.

I mapped a critical path to start thinking about pain points throughout the user journey.

Design Ideation & Mock Creation

Designer: How should I communicate with developers?

Developer: Why won't the designer loop me in?

Hand Off

Designer: I'm really busy and am not sure how much to communicate.

Developer: I'm not totally sure what the designer wants.

Implementation

Designer: I feel like I have to micro-manage, or else I don't know what's going on.

Developer: I'm not sure if I'm catching all the details, and I'm not sure how to loop in design.

Review & QA

Designer: There are a lot of design bugs and no one is looping me in.

Developer: We don't have time to fix everything now, and I don't know when to loop in the designer.

Ship

Designer: This isn't as high quality as I had hoped and I feel frustrated.

Developer: This isn't as high quality as I had hoped and I feel frustrated.

I did a series of rapid timed sketching activities to produce a lot of ideas in a short amount of time.

I noted which ideas seemed the most interesting to me, and **chose three concepts to sketch out in more detail.**
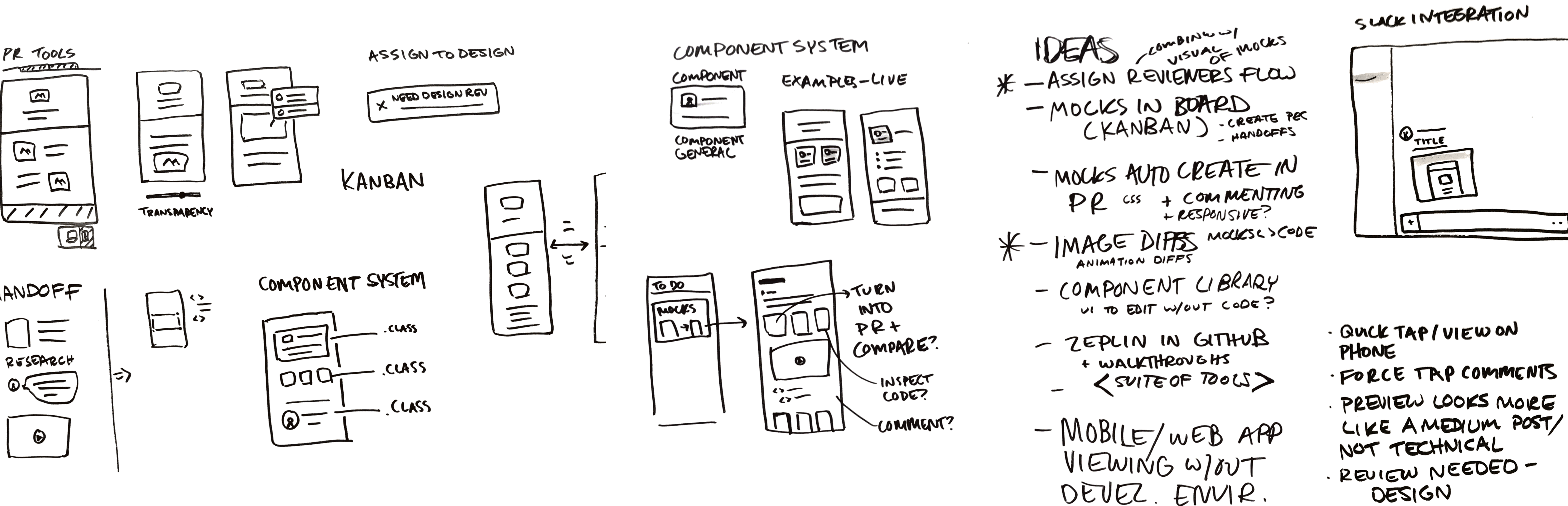
Ideation / **Concept 1: Design Tools in Kanban Boards**

Since GitHub recently introduced kanban-style project boards, I thought it would be interesting to incorporate design into the process. Some ideas include:

- Create a "design spec" card for the project board.

- Design specs can provide redlining features, as well as show the full intention of the design through diagramming and research.

- Mocks can be pulled from design specs and attached to other cards.

- Cards that get converted into Pull Requests could attach the mocks as a reference.
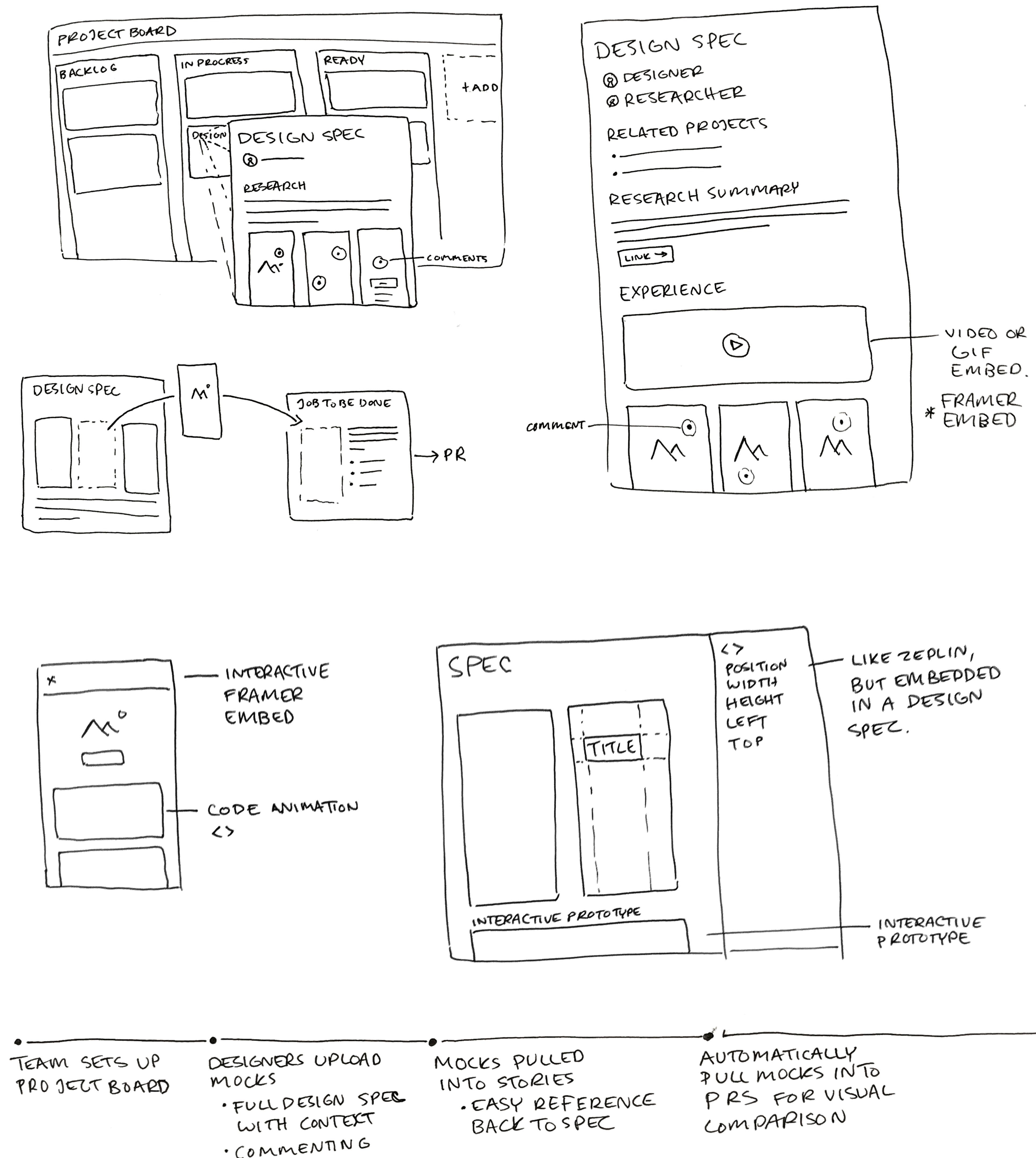
Ideation / **Concept 2: Integrated Component Library**

Creating component systems is always a challenge, often because designers and developers have a hard time keeping everything updated.

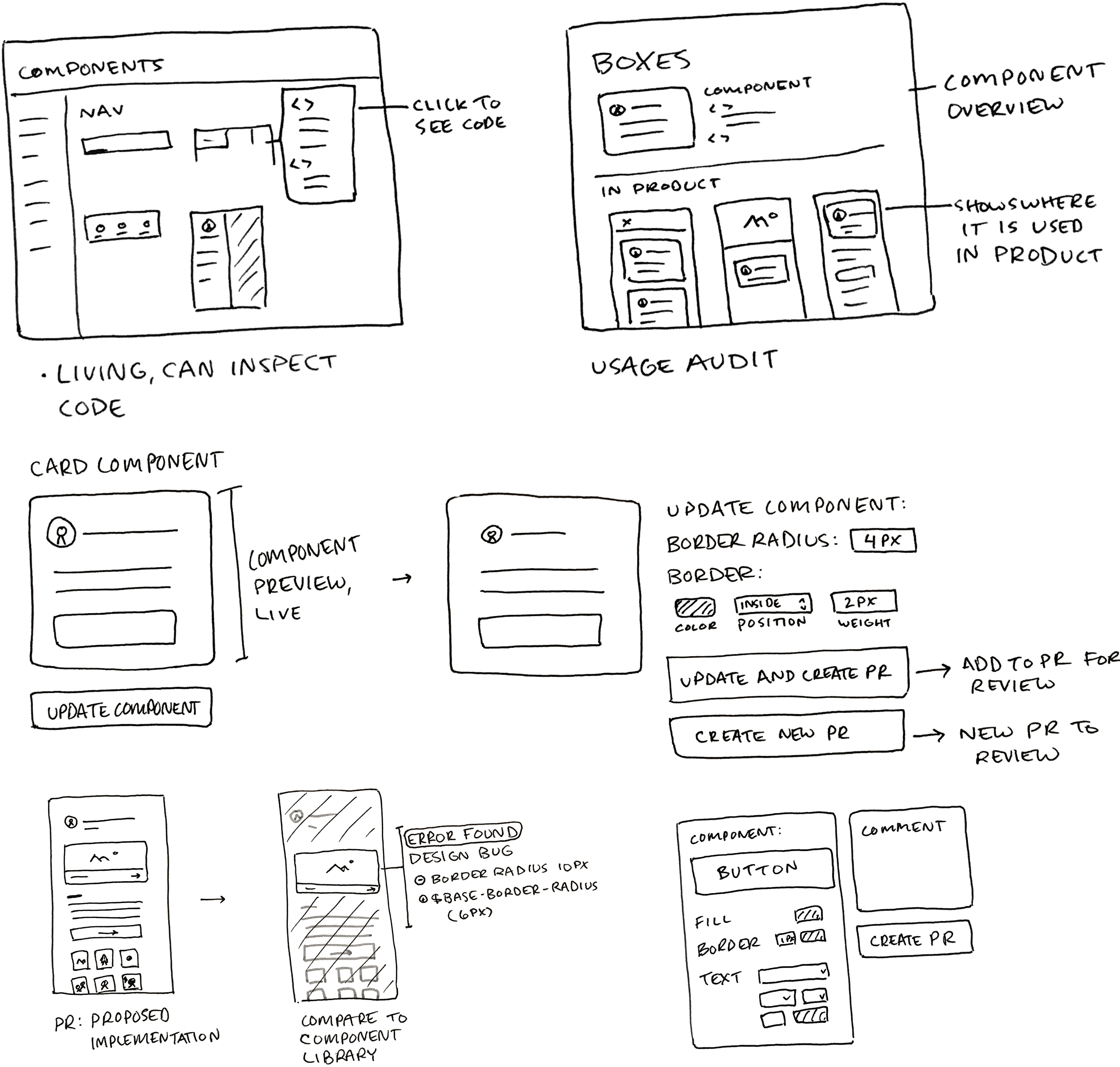This concept was an exploration around creating a living component library. Designers could update components through a user-friendly UI that automatically submits code for review.
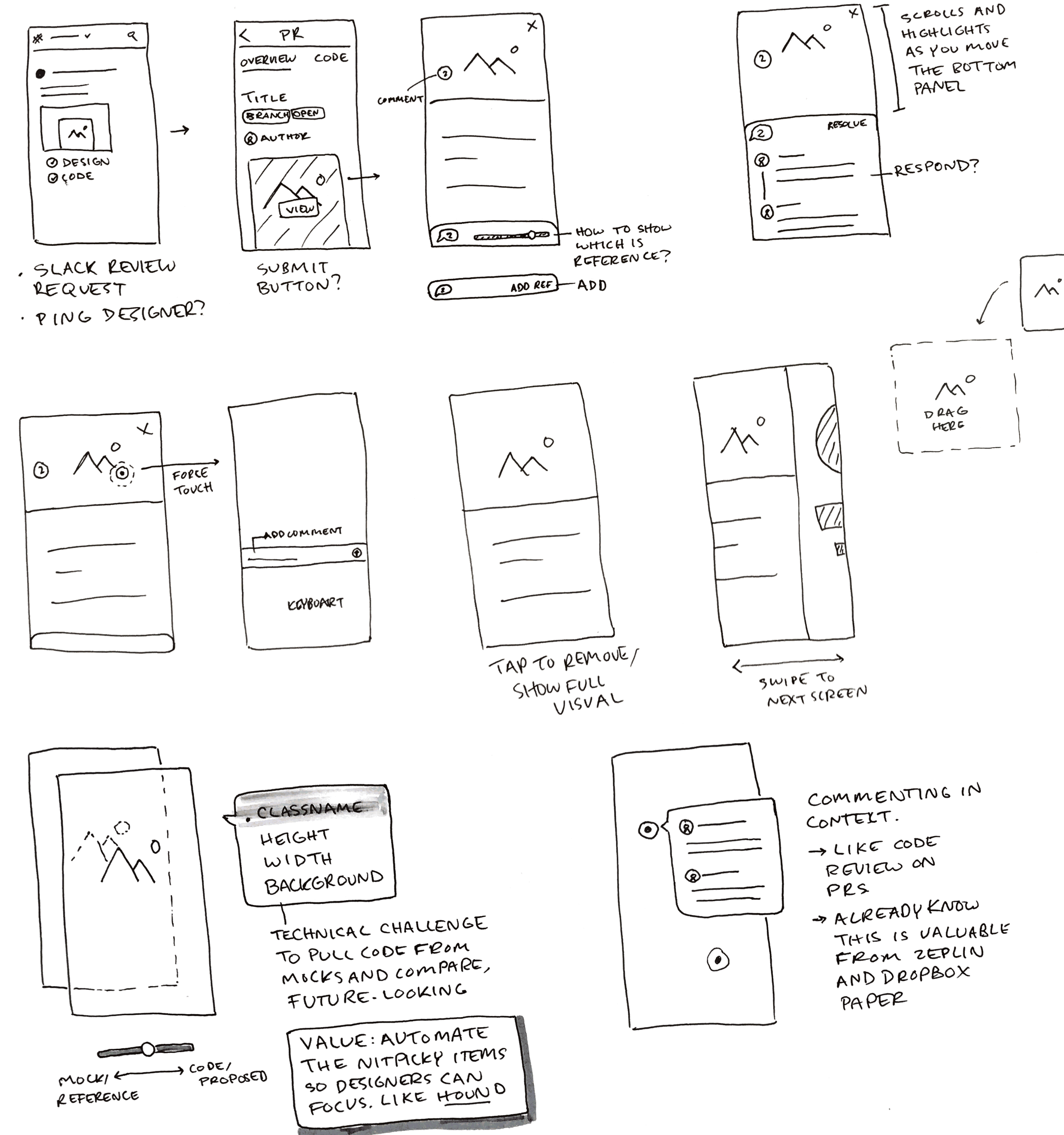

COMPONENTS

NAV

CLICK TO SEE CODE

- LIVING, CAN INSPECT CODE

BOXES

COMPONENT

IN PRODUCT

COMPONENT OVERVIEW

SHOWS WHERE IT IS USED IN PRODUCT

USAGE AUDIT

CARD COMPONENT

COMPONENT PREVIEW, LIVE →

UPDATE COMPONENT

UPDATE COMPONENT:
BORDER RADIUS: [4PX]
BORDER:
[COLOR] [INSIDE ↕ POSITION] [2PX WEIGHT]

[UPDATE AND CREATE PR] → ADD TO PR FOR REVIEW

[CREATE NEW PR] → NEW PR TO REVIEW

PR: PROPOSED IMPLEMENTATION →

COMPARE TO COMPONENT LIBRARY

ERROR FOUND
DESIGN BUG
⊖ BORDER RADIUS 10PX
⊕ $BASE-BORDER-RADIUS (6PX)

COMPONENT:
[BUTTON]
FILL
BORDER
TEXT

COMMENT

[CREATE PR]

LIVE COMPONENT LIBRARY

DESIGNERS + ENGINEERS CAN TRIGGER SITE AUDITS THAT WILL AUTOMATICALLY SHOW (VISUALLY) WHERE THE COMPONENTS ARE USED.

DESIGNERS CAN UPDATE COMPONENTS VIA A SKETCH-LIKE INTERFACE AND CREATE A PR BY CLICKING A BUTTON

ENGINEERS + DESIGNERS CAN USE A LIVE COMPARISON TOOL TO SEE DESIGN BUGS IN IMPLEMENTED SCREENS

Code review processes currently do not include design checks, even when the code is changing the design.

This concept explores updating the Pull Request flow to include automated and manual visual checks. Some of the value includes:

- Automatically tagging designers for visual reviews.

- Including visual changes alongside code changes.

- Collaboration tools for better communication.

- A potential focus on mobile to improve the quality of feedback. Viewing mobile work on an actual device is closer to the real thing and will improve feedback.

SCROLLS AND HIGHLIGHTS AS YOU MOVE THE BOTTOM PANEL

RESOLVE

RESPOND?

OVERVIEW   CODE
TITLE
BRANCH OPEN
AUTHOR

COMMENT

HOW TO SHOW WHICH IS REFERENCE?

ADD REF — ADD

- SLACK REVIEW REQUEST
- PING DESIGNER?

SUBMIT BUTTON?

DRAG HERE

FORCE TOUCH

ADD COMMENT

KEYBOARD

TAP TO REMOVE/ SHOW FULL VISUAL

SWIPE TO NEXT SCREEN

CLASSNAME
HEIGHT
WIDTH
BACKGROUND

TECHNICAL CHALLENGE TO PULL CODE FROM MOCKS AND COMPARE, FUTURE-LOOKING

COMMENTING IN CONTEXT.
→ LIKE CODE REVIEW ON PRS
→ ALREADY KNOW THIS IS VALUABLE FROM ZEPLIN AND DROPBOX PAPER

MOCK/ REFERENCE ← → CODE/ PROPOSED

VALUE: AUTOMATE THE NITPICKY ITEMS SO DESIGNERS CAN FOCUS. LIKE HOUND

ENGINEER IMPLEMENTS
- NEEDS TO CHECK VISUAL BUGS AS WELL AS CODE
- COMPARES MOCKS TO IMPLEMENTATION

SUBMITS REVIEW
- INCORPORATE VISUAL CHECKS
- PREVIEW VISUALS, INCLUDING MOBILE
- MAKE DESIGN REVIEW AN INTEGRATED PART OF PROCESS
- PINGS DESIGNER AUTOMATICALLY

DESIGNER REVIEWS
- ADD COMMENTS DIRECTLY TO PREVIEWS
- VIEW VISUALS ON PHONE FOR REALISTIC FEEL
- THUMBS UP OR DOWN

I ultimately chose the third concept: Visual Reviews in PRs

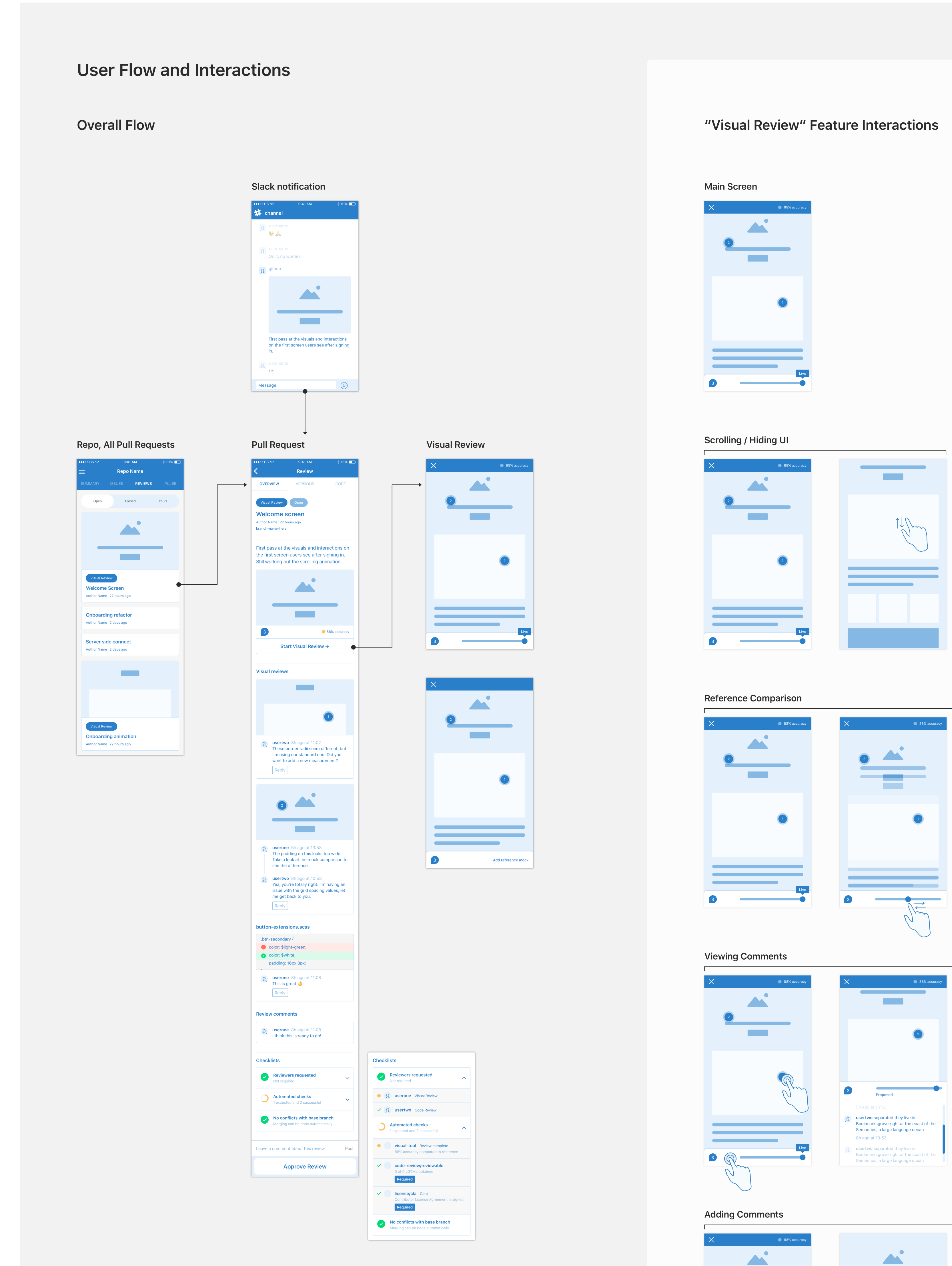I decided to do a native version to show how it could optimize
feedback for mobile work.
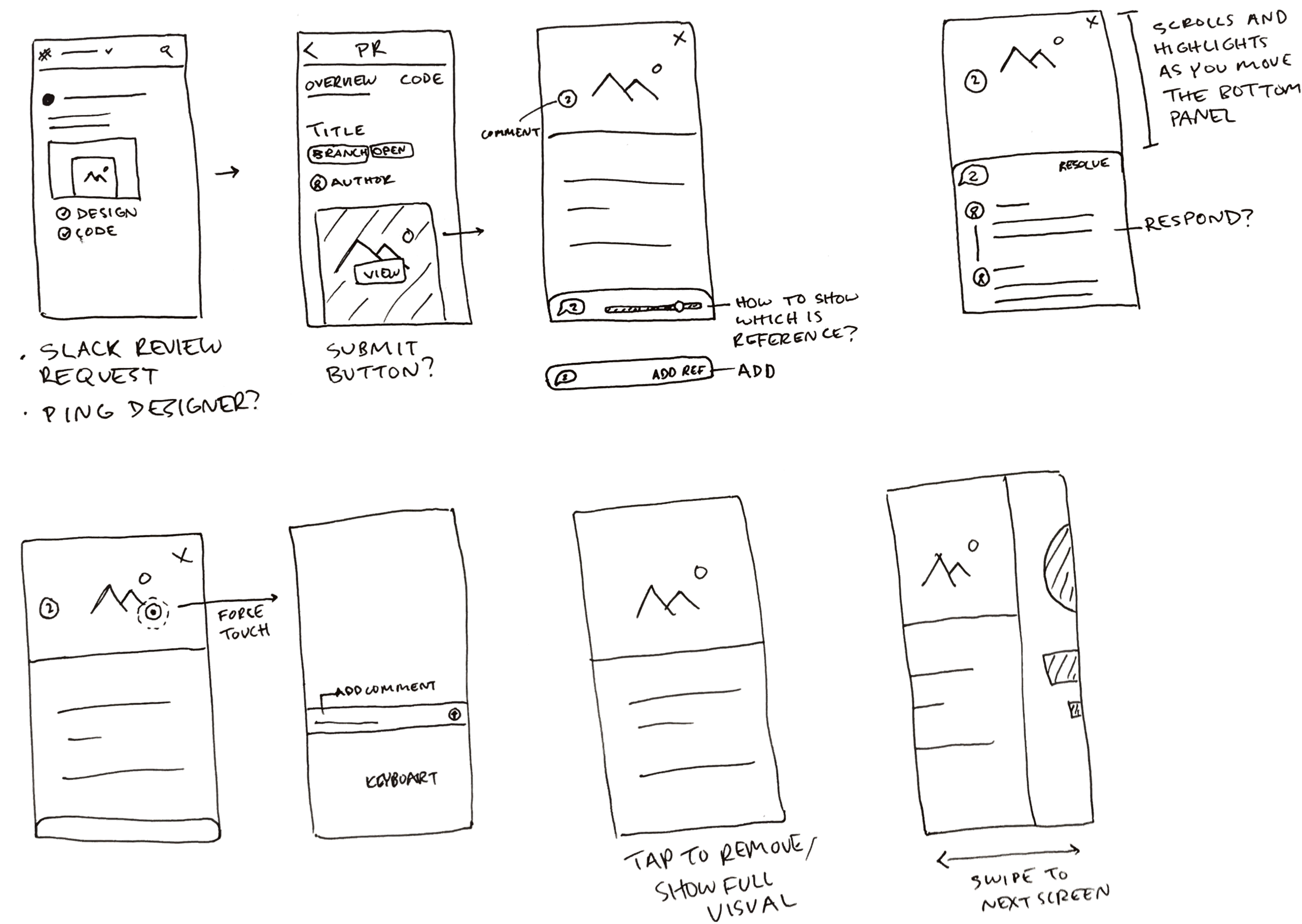
Wires and Flows / **Full Diagram**

For a first pass at this feature, I scoped the experience to the designer's perspective and established three main points in the user experience:

1. A "hook" to alert the designer that a review needs attention.
2. A redesigned Pull Request flow that includes checks for visuals.
3. A feature that allows designers and developers to check the accuracy of the visuals by comparing the implemented version to the reference mocks.

As an add-on, I decided to redesign the list of PRs in the main repository to apply the new visual styles to the entire flow.

View full wireframe mocks here →

User Flow and Interactions

Overall Flow

Slack notification

Repo, All Pull Requests

Pull Request

Visual Review

"Visual Review" Feature Interactions

Main Screen

Scrolling / Hiding UI

Reference Comparison

Viewing Comments

Adding Comments

I decided to prototype the interactions for the "Visual Review" feature before moving on to visual design. Since this feature would rely heavily on interactions, it felt important to work out some of the issues before moving forward.

One improvement I made after prototyping was that I realized that the navigation bar on this screen was too heavy and obscured the view.

I also realized how future-facing the automated "best guess" code feature was when playing around with an actual prototype. I decided to make sure the final design would hold up without this feature and use it to establish future direction.
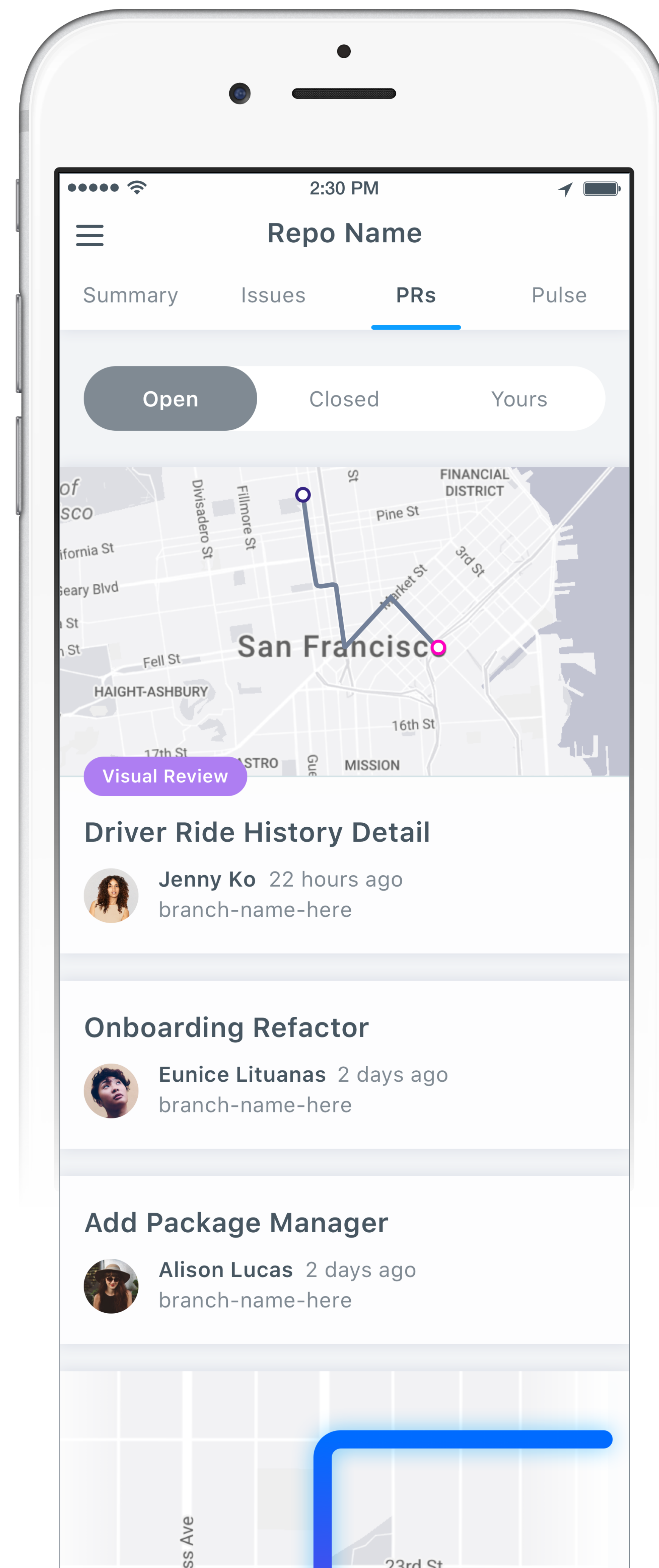
View prototype with interactions here →
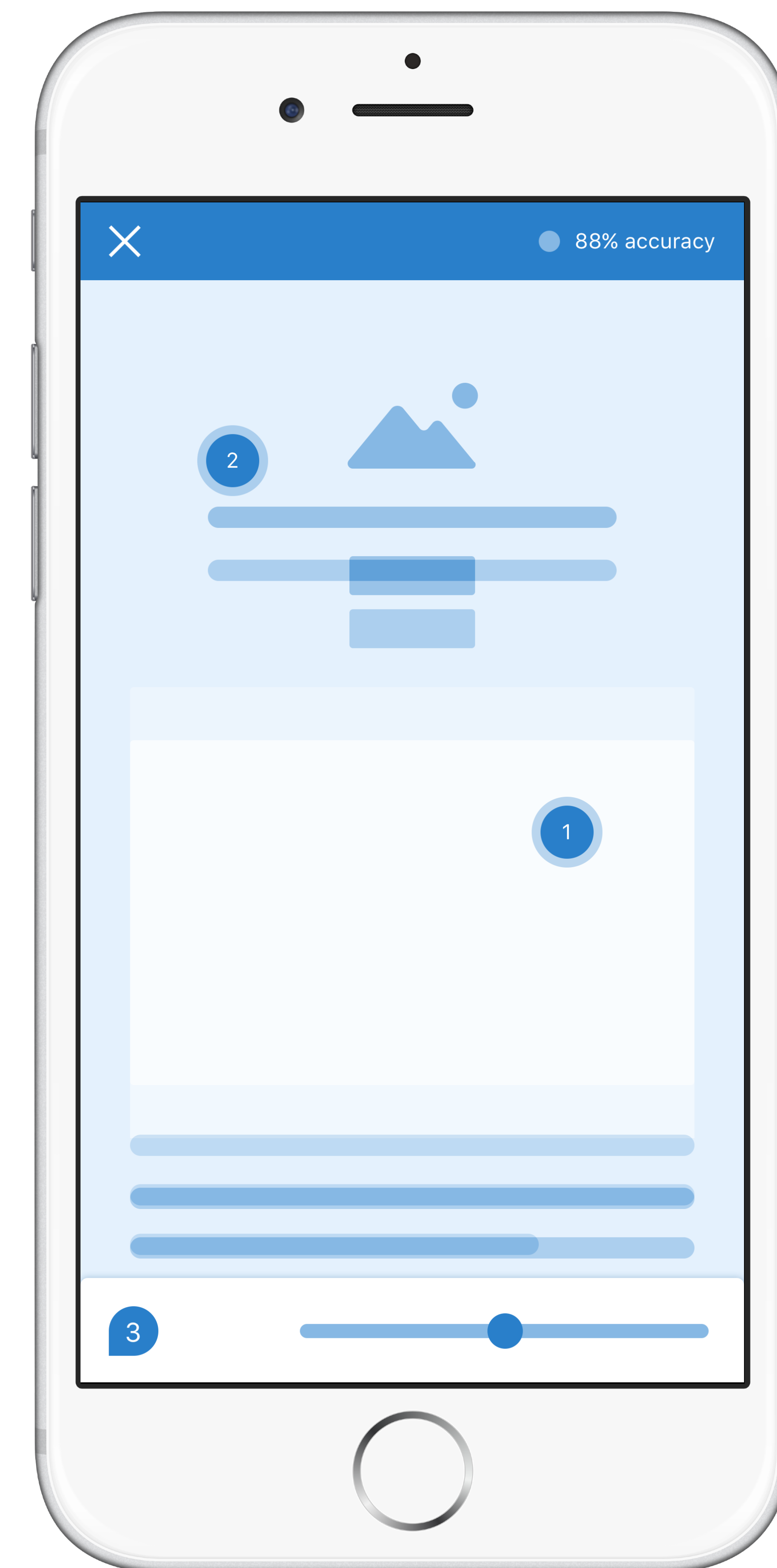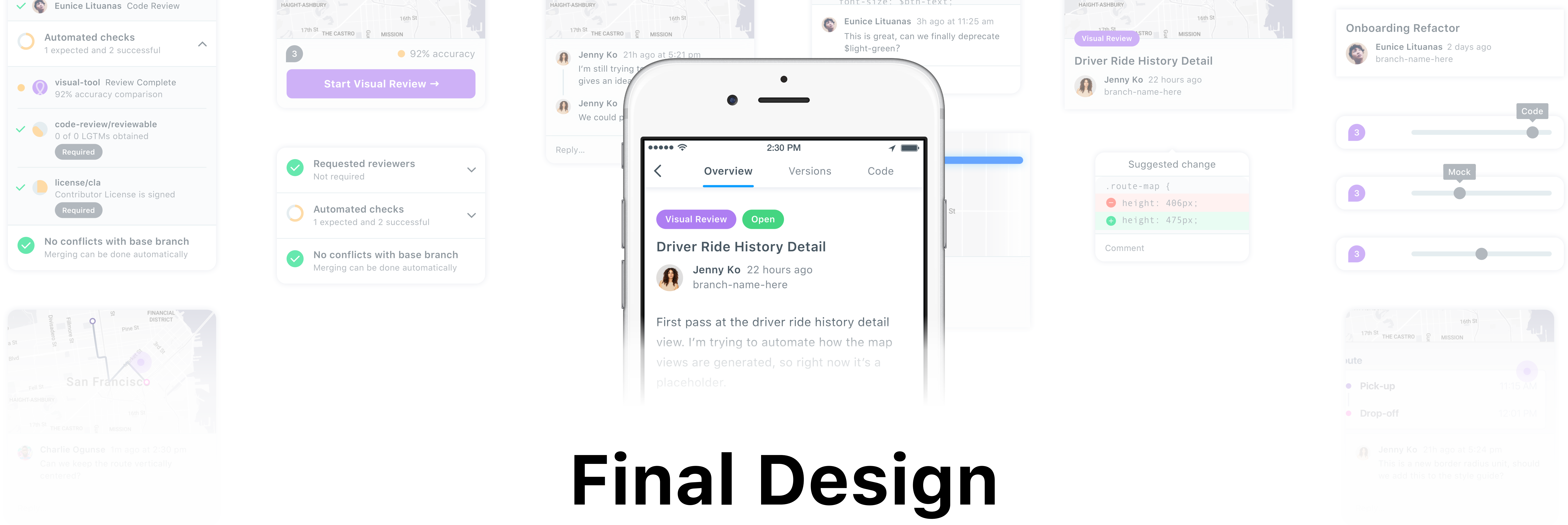
Final Design

Visual Reviews for PRs

The following is a walkthrough of the final design for the Visual Review feature.
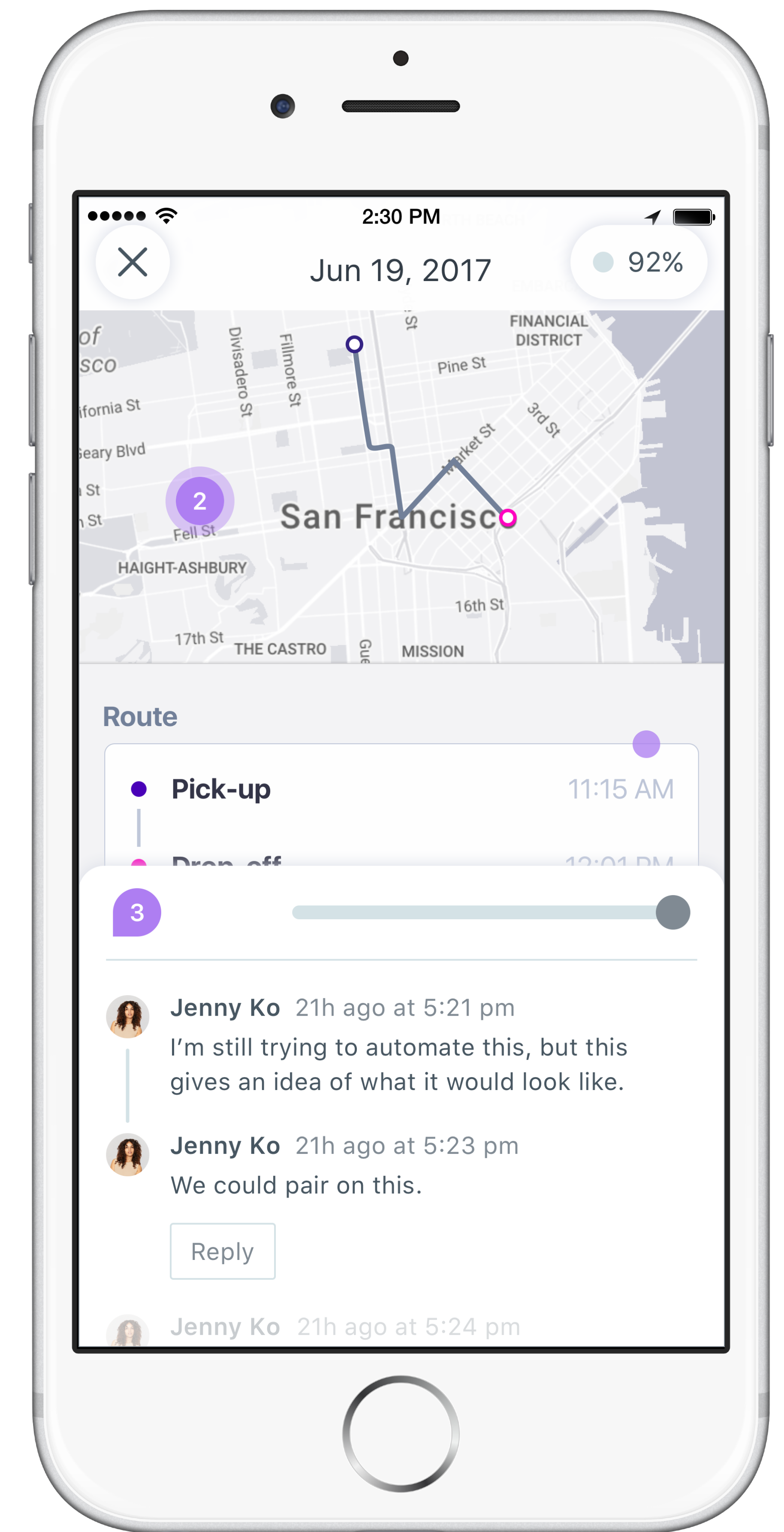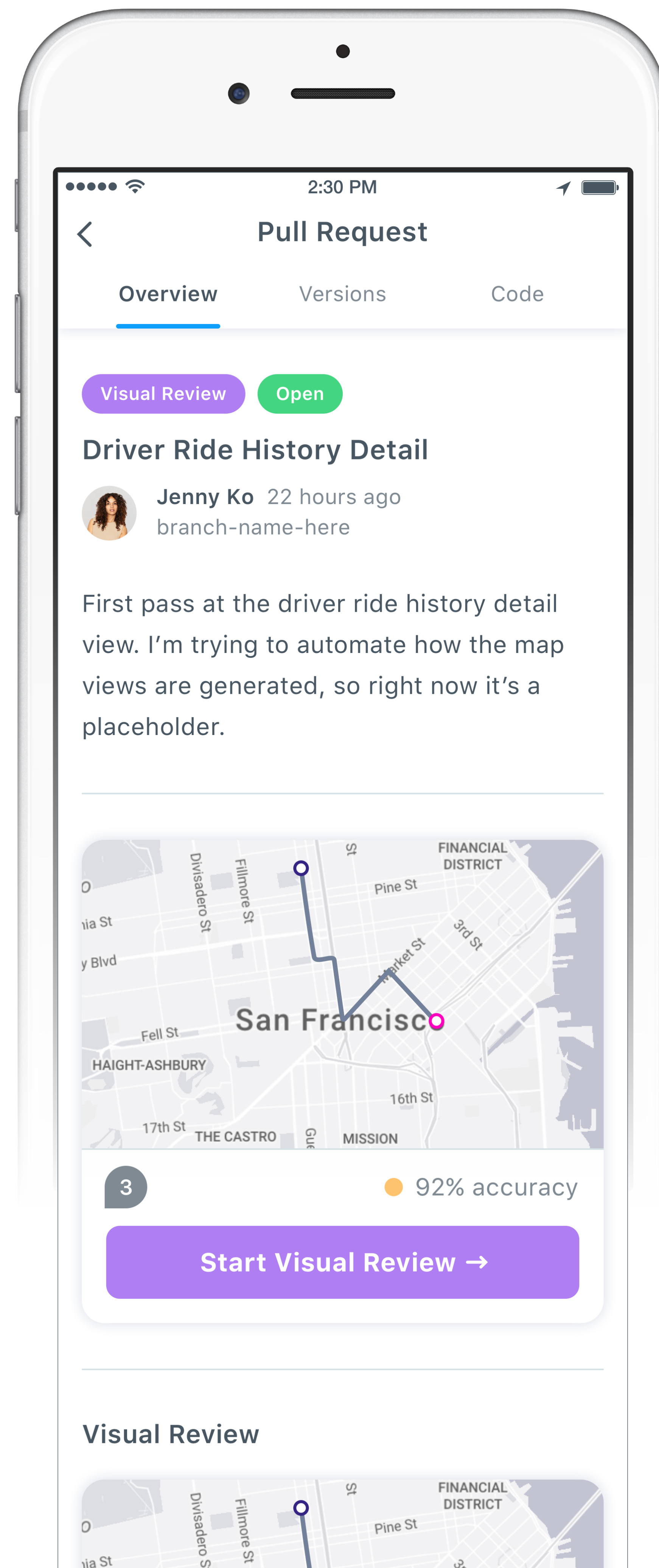
Visual Review feature

Scenario: An engineer just submitted a PR for a feature that includes design work. The designer was included in the list of reviewers as a "visual reviewer".

The designer gets pinged when the GitHub integration posts the PR in Slack. This is the quick entry point to the PR.
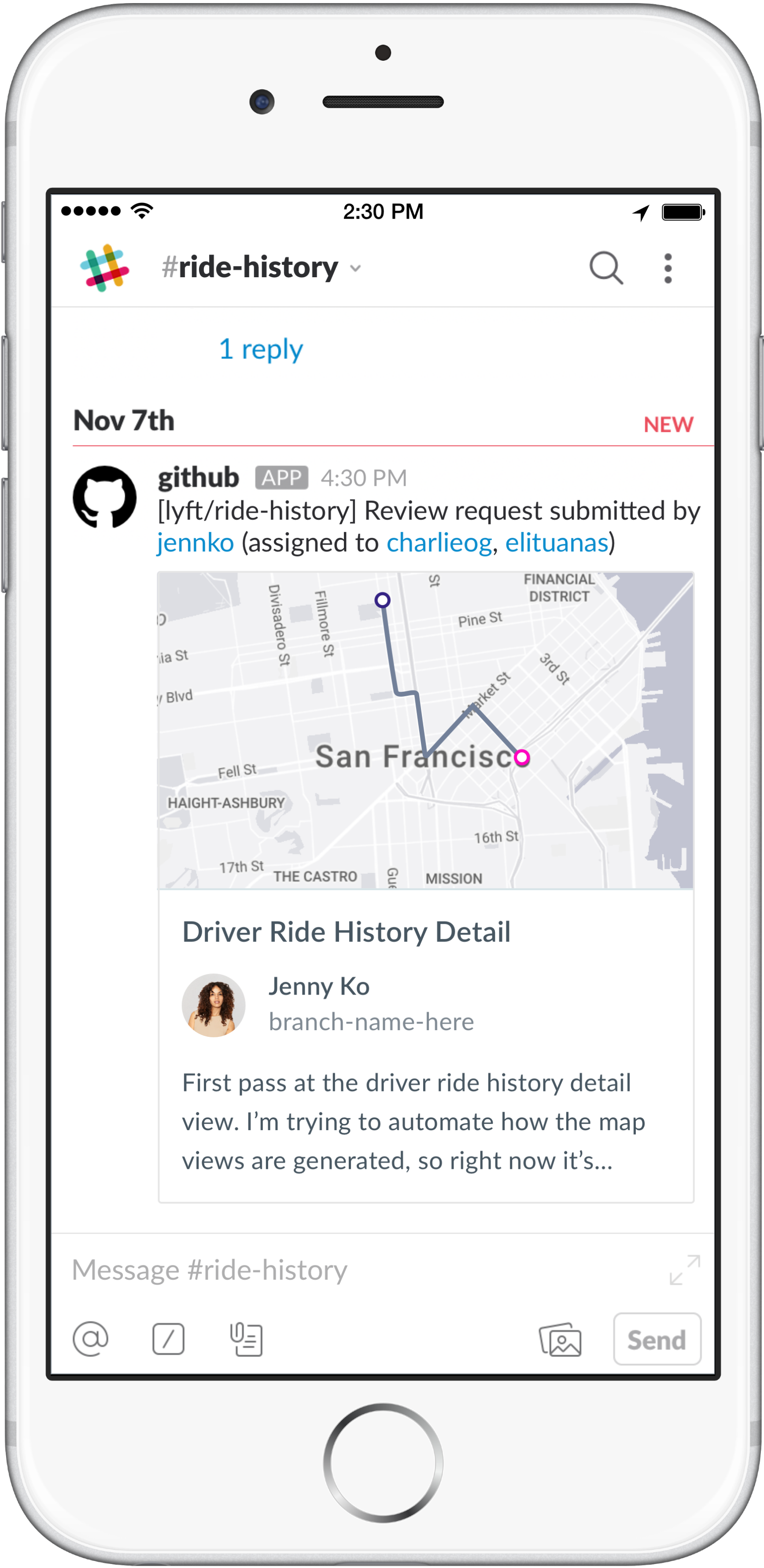
The "users" are:

Jenny Ko, PR author
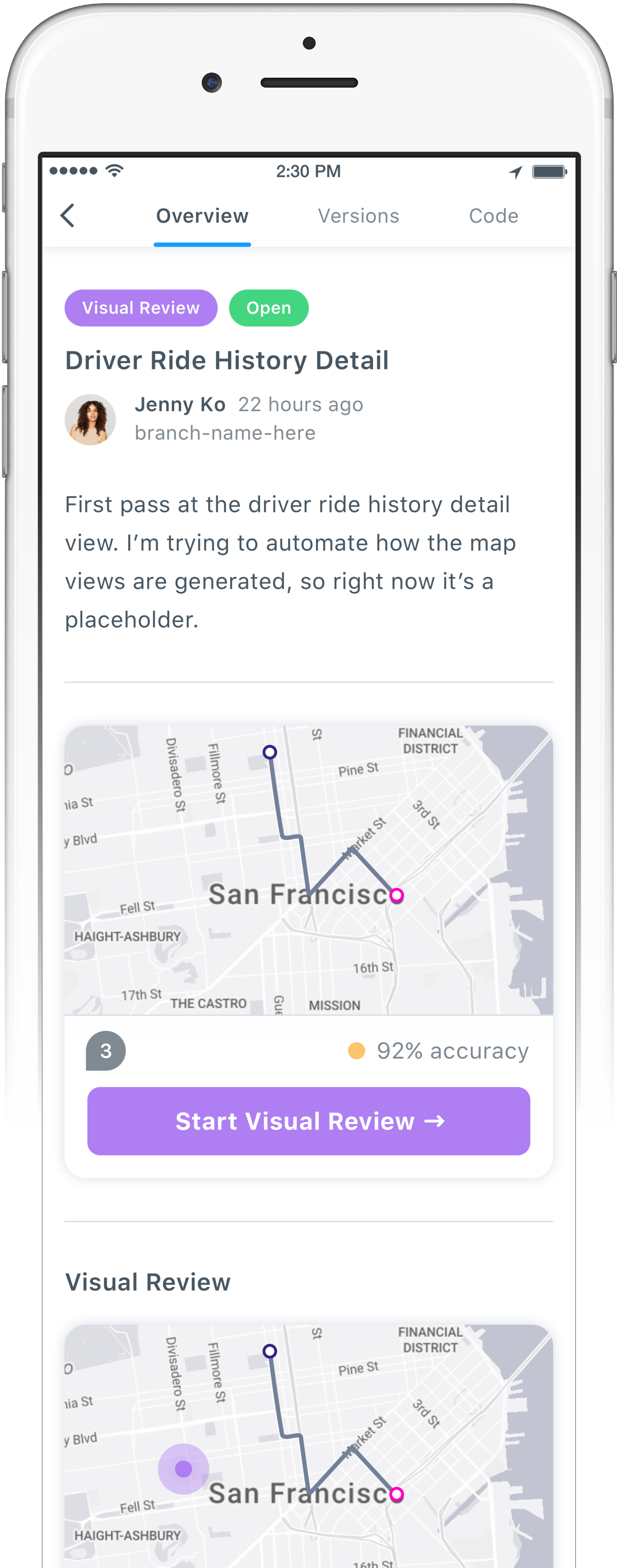
Charlie Ogunse, Designer

Eunice Lituanas, Developer

This is the redesigned PR screen that the designer sees. It includes:

- An up-front summary section with an overview.

- A Visual Review feature incorporated into the main experience with a clear call-to-action, increasing its integration into the development process.

- Updated comment blocks for code and visual feedback.

- An updated checklist module that includes visual review checks.

View a detailed PR anatomy here →

2:30 PM

< **Overview**   Versions   Code

Visual Review   Open

Driver Ride History Detail

Jenny Ko 22 hours ago
branch-name-here

First pass at the driver ride history detail view. I'm trying to automate how the map views are generated, so right now it's a placeholder.

3   ● 92% accuracy

Start Visual Review →

Visual Review

---

ute

● **Pick-up**   11:15 AM
● **Drop-off**   12:01 PM

Jenny Ko 21h ago at 5:24 pm
This is a new border radius unit, should we add this to the style guide?

Reply...

Code Review

button-extensions.scss

```
.btn-secondary {
  background-color: $light-green;
  background-color: $white;
  color: $charcoal;
  font-size: $btn-text;
```

Eunice Lituanas 3h ago at 11:25 am
This is great, can we finally deprecate $light-green?

Reply...

Checklists

✓ **Requested reviewers**
Not required   ∨

○ **Automated checks**
1 expected and 2 successful   ∨

✓ **No conflicts with base branch**
Merging can be done automatically
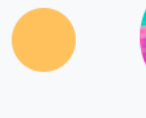
Leave a comment about this review   ↑

This is a closer look at the updated checklist module, which includes visual review features.

✓ **Requested reviewers** Not required ⌄	

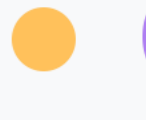|	
✓ **Requested reviewers** Not required ⌃	
● Charlie Ogunse Visual Review	**Visual Review Request** Assign designers to review visuals
✓ Eunice Lituanas Code Review	

○ **Automated checks**
1 expected and 2 successful ⌄

○ **Automated checks**
1 expected and 2 successful ⌃

● **visual-tool** Review Complete
92% accuracy comparison — **Automated Visual Comparison** Future facing idea

✓ **code-review/reviewable**
0 of 0 LGTMs obtained
Required

✓ **license/cla**
Contributor License is signed
Required

✓ **No conflicts with base branch**
Merging can be done automatically

✓ **No conflicts with base branch**
Merging can be done automatically

The designer can start a visual review by tapping the module on the PR screen. This launches the Visual Review feature.

View a detailed Visual Review anatomy here →
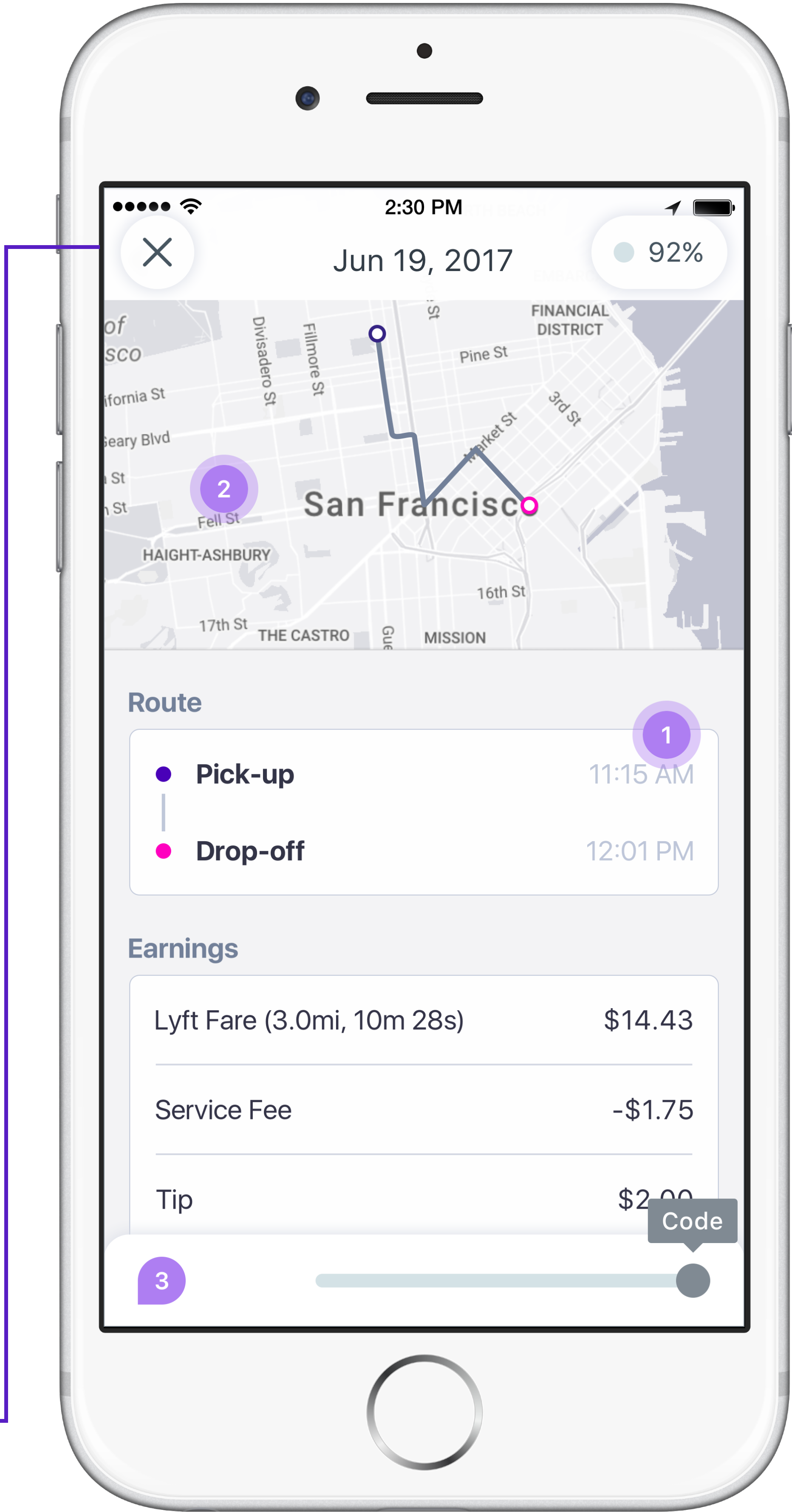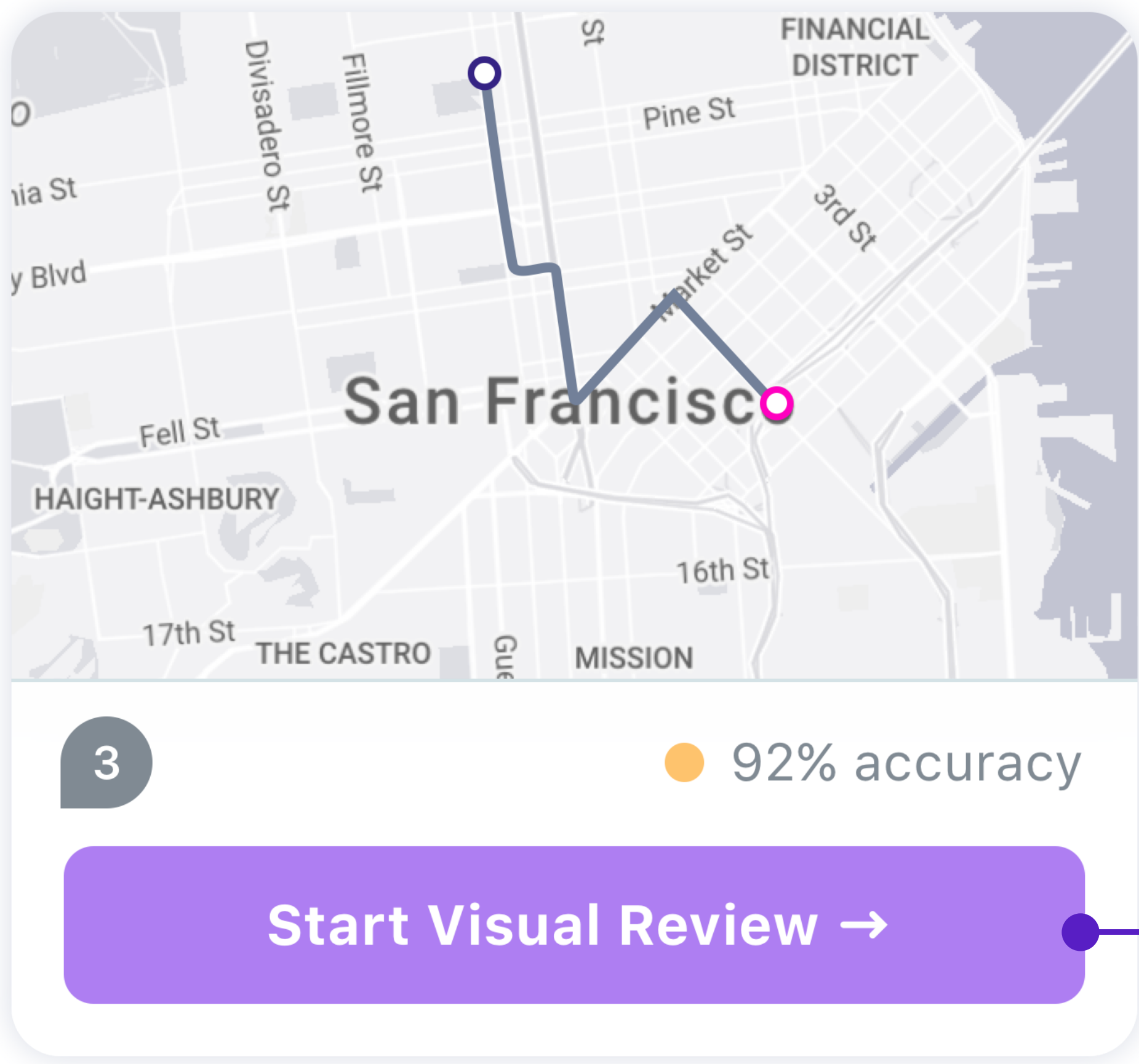
The Visual Review feature includes:

- An "onion skin" comparison between the screenshot and reference mocks.

- Commenting in context.

- The ability to swipe to see more screens.

- A future-facing idea for automatically catching design bugs and suggested CSS updates. This would be out-of-scope for the near term.
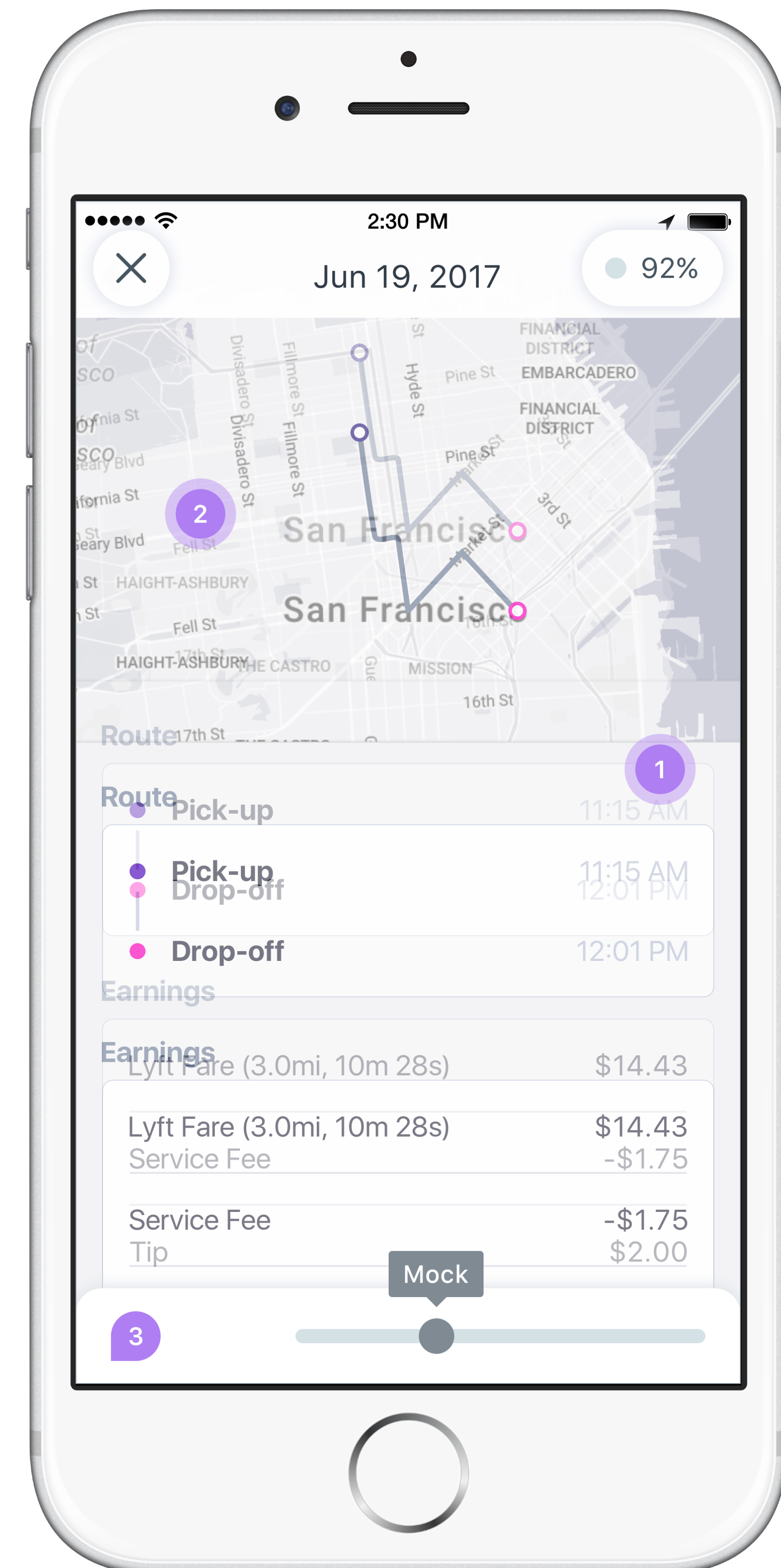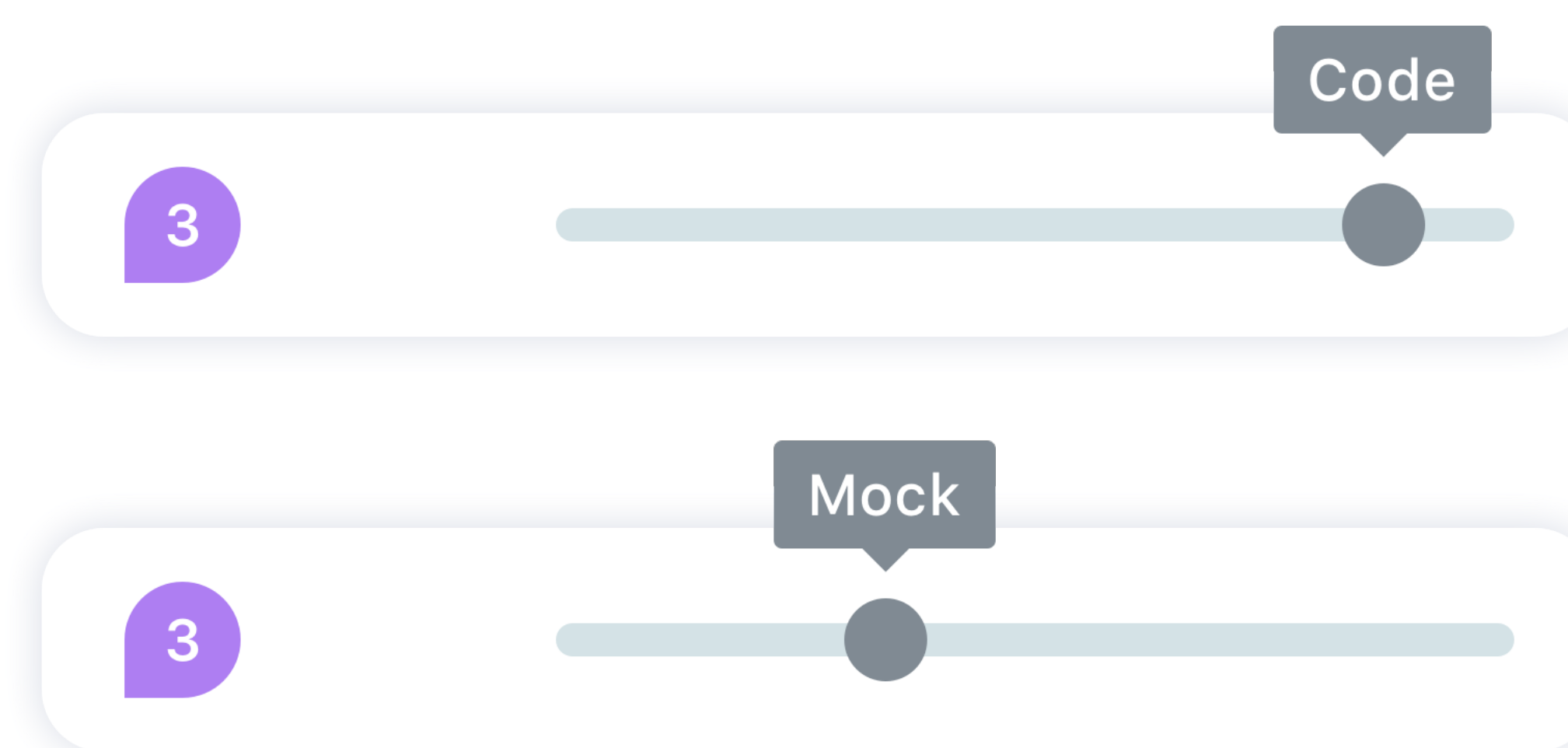
Final Design / **Visual Review Interactions**

Route

| Pick-up | 11:15 AM |
| Drop-off | 12:01 PM |

3

Jenny Ko 21h ago at 5:21 pm
I'm still trying to automate this, but this gives an idea of what it would look like.

Jenny Ko 21h ago at 5:23 pm
We could pair on this.

Reply

Jenny Ko 21h ago at 5:24 pm

(Left screen 1)

2:30 PM
Jun 19, 2017
92%

Route

Route
Pick-up 11:15 AM
Drop-off 12:01 PM

Earnings

Earnings
Lyft Fare (3.0mi, 10m 28s) $14.43
Service Fee -$1.75
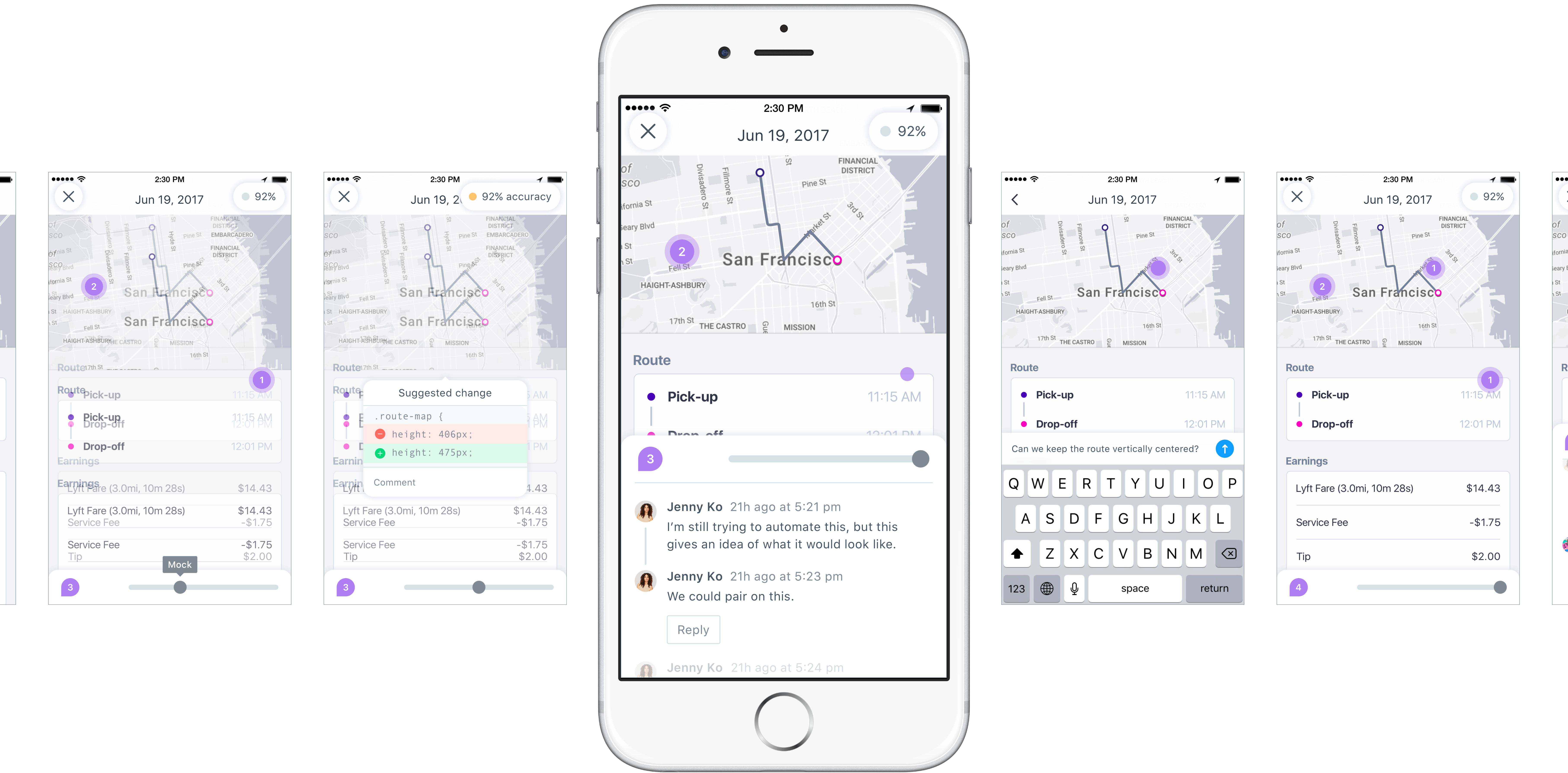Tip $2.00

Mock

3

(Left screen 2)

2:30 PM
Jun 19, 2
92% accuracy

Route

Suggested change

.route-map {
  height: 406px;
  height: 475px;
}

Comment

Lyft Fare (3.0mi, 10m 28s) $14.43
Service Fee -$1.75
Tip $2.00

3

(Right screen 1)

2:30 PM
Jun 19, 2017
92%

Route
Pick-up 11:15 AM
Drop-off 12:01 PM

Can we keep the route vertically centered?

Q W E R T Y U I O P
A S D F G H J K L
Z X C V B N M
123 space return

(Right screen 2)

2:30 PM
Jun 19, 2017
92%

Route
Pick-up 11:15 AM
Drop-off 12:01 PM

Earnings
Lyft Fare (3.0mi, 10m 28s) $14.43
Service Fee -$1.75
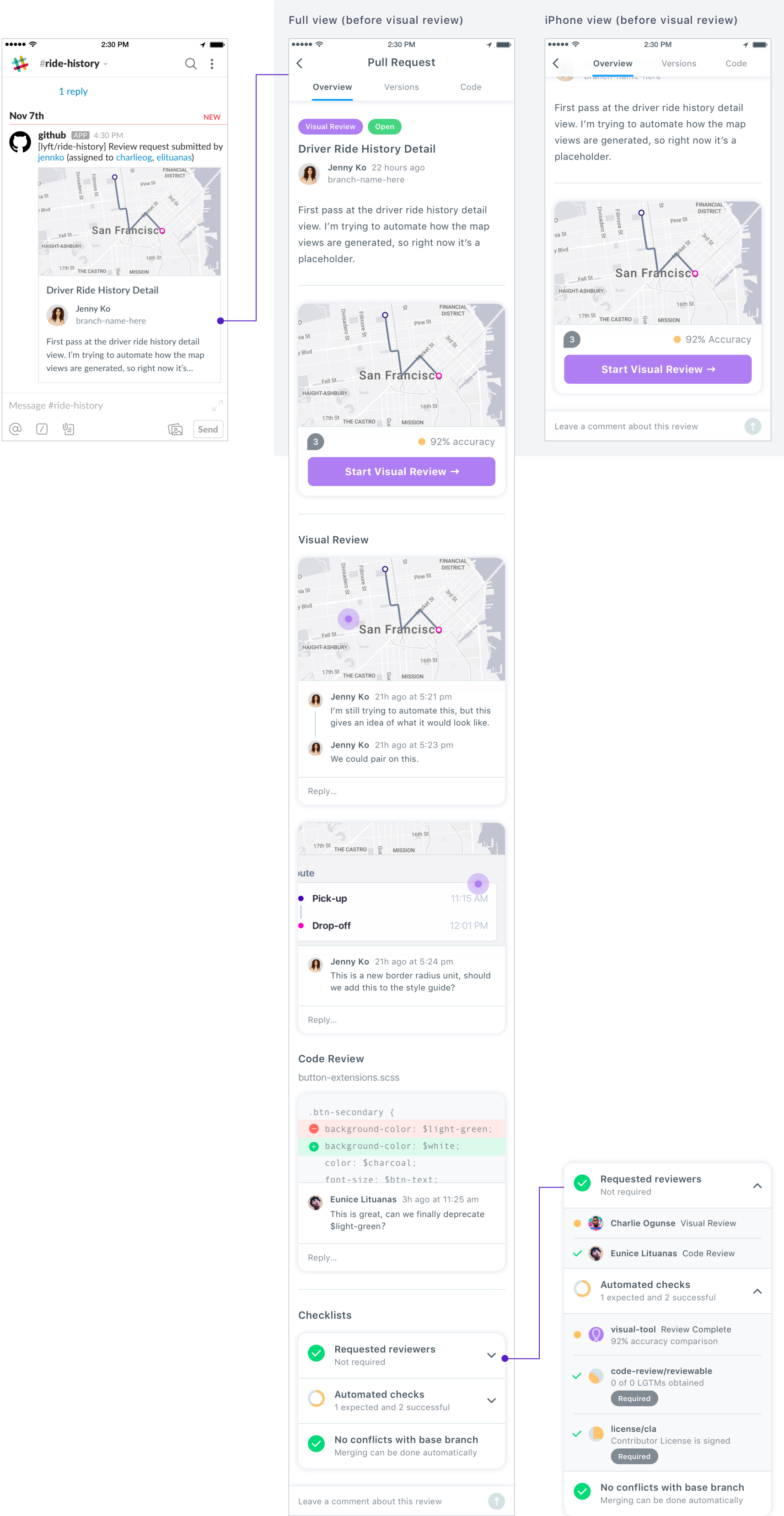Tip $2.00

4

View prototyped interactions here →

The user can also go up a level in the navigation to see the full list of PRs in the current repository.
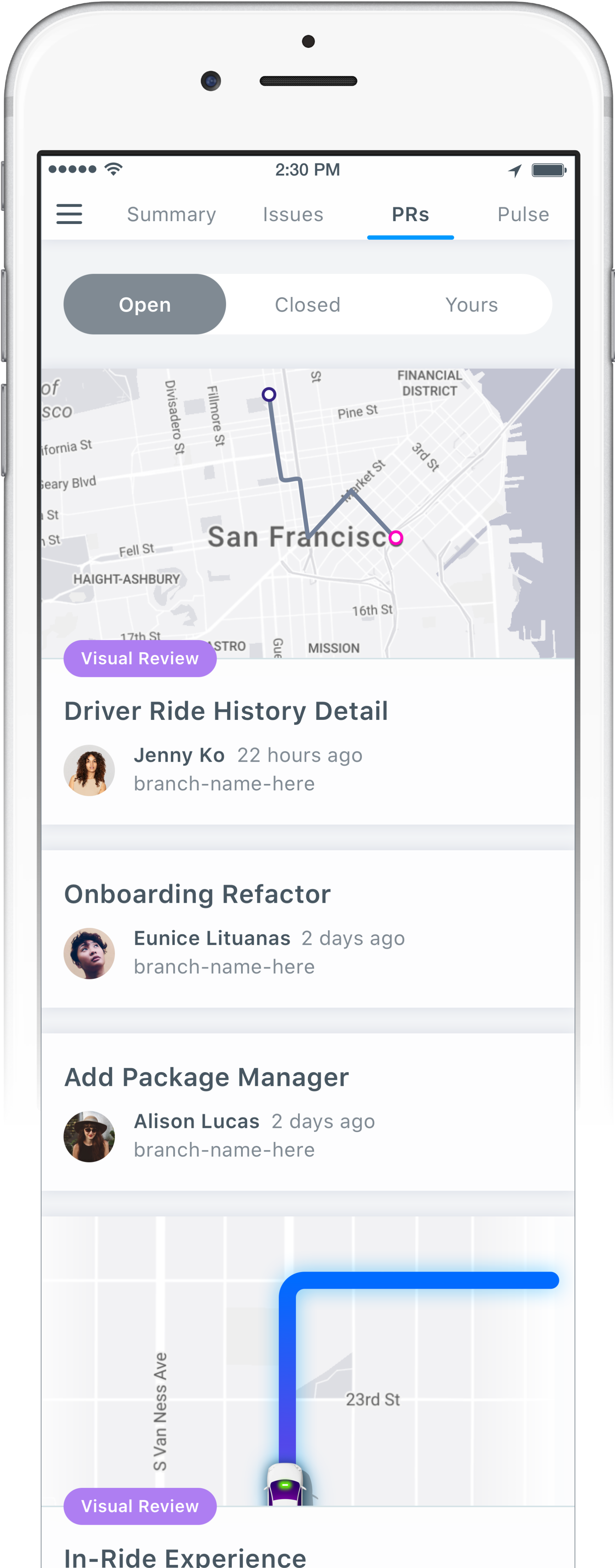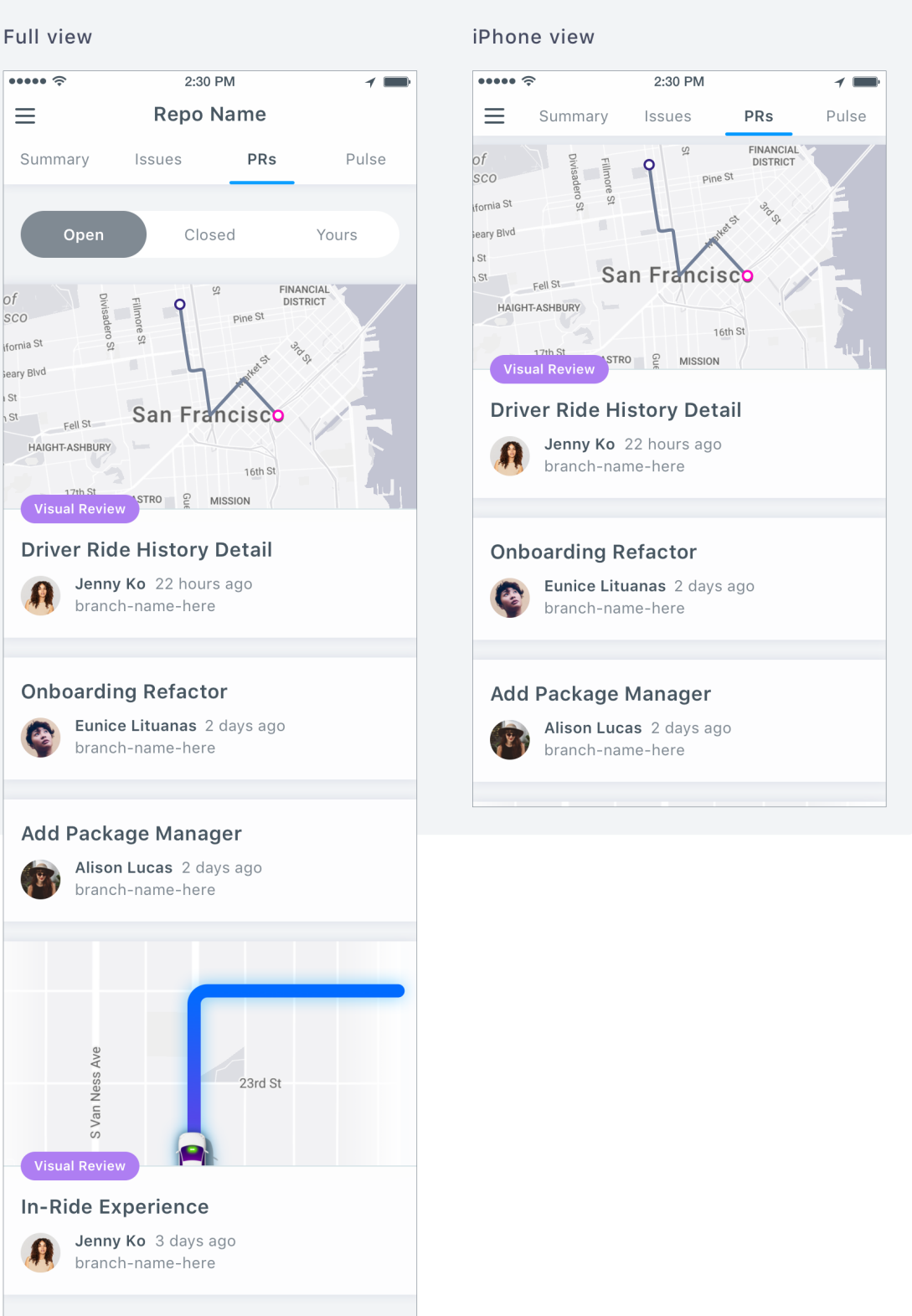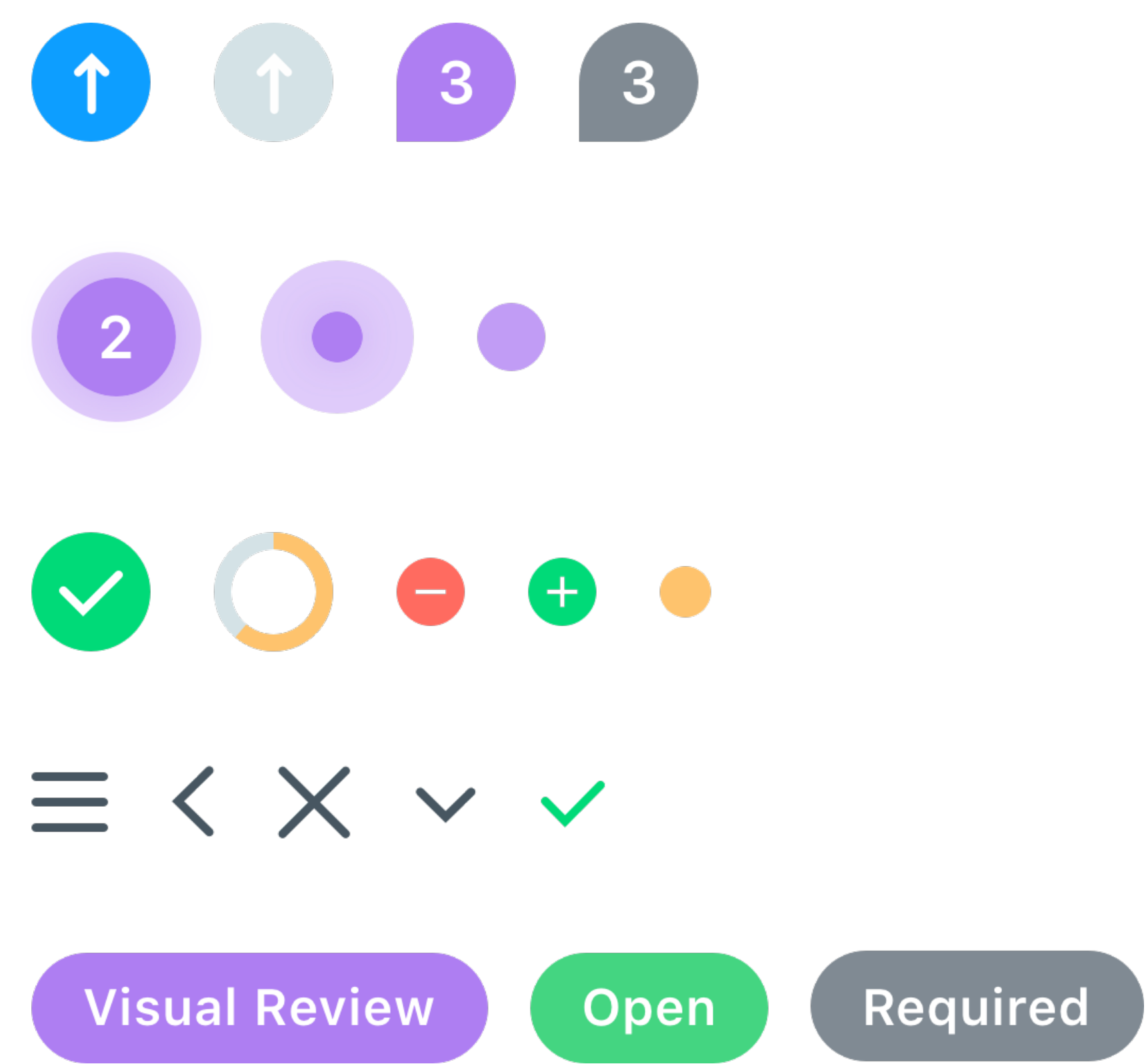
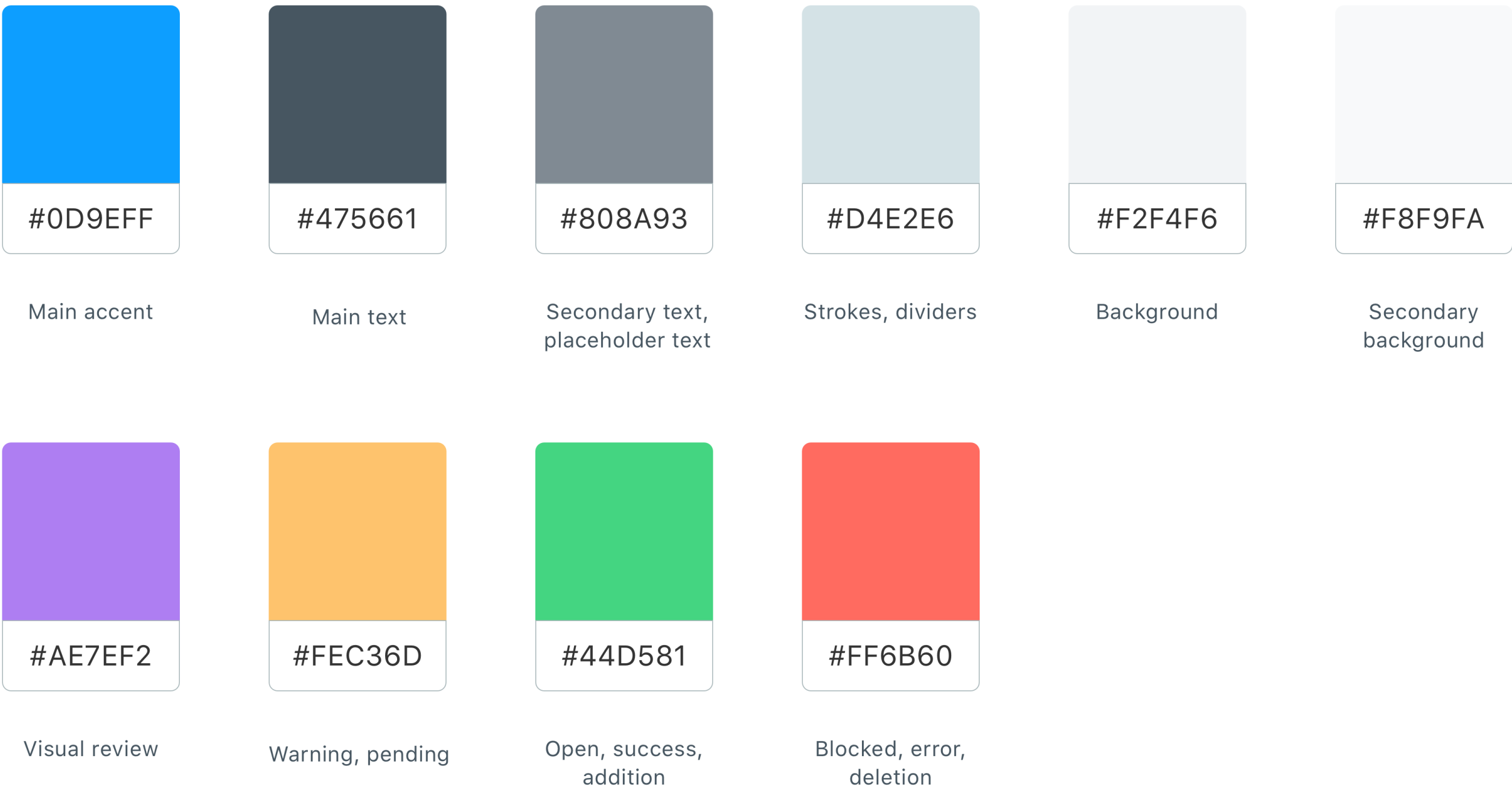# Final Design / **Overall Experience**

View all mocks and interactions here →

The final design includes an updated color palette, typography, and iconography.

Style Guide
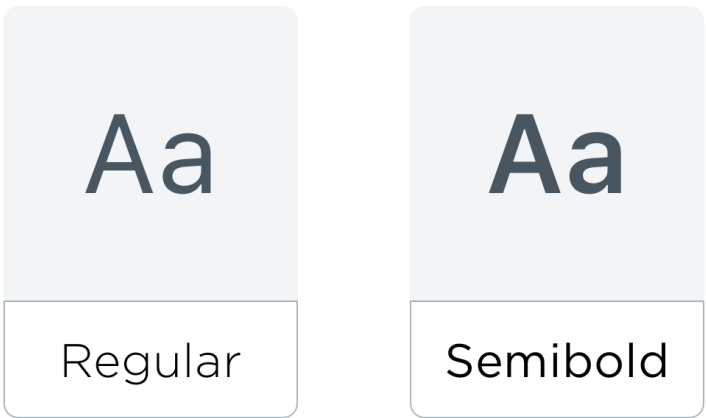
Color Palette

#0D9EFF	#475661	#808A93	#D4E2E6	#F2F4F6	#F8F9FA
Main accent	Main text	Secondary text, placeholder text	Strokes, dividers	Background	Secondary background

#AE7EF2	#FEC36D	#44D581	#FF6B60
Visual review	Warning, pending	Open, success, addition	Blocked, error, deletion

Typography

SF UI Text

Aa	Aa
Regular	Semibold

Sizes @ 2x

Main headline
36pt (Semibold, 0.4)

Secondary headline
34pt (Semibold, 0.39)

Body copy body copy body copy body copy body copy body copy
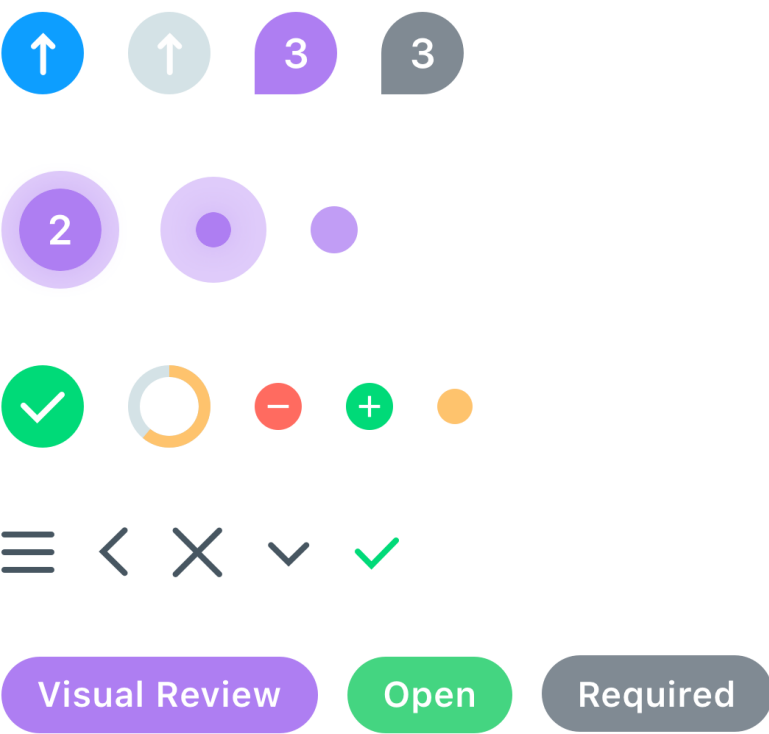32pt (Regular & Semibold, 0.38)

Subhead
28pt (Regular & Semibold, 0.36)

Minimum
24pt, (Semibold, 0.36)

Iconography and Labels

The final Visual Review feature and updated PR flow improve product development work in the following ways:

• Normalizes design reviews later in project lifecycles by integrating design into the code review process.

• Provides better tools for communication between designers and developers.

• Makes it easy to preview mobile work on a device as well as provide feedback directly on the visuals.

• Increases the ability to catch design bugs by providing a visual comparison tool.

• Proposes a direction for future improvements that can automate the design QA process. Automated tools have the potential to reduce overhead for teams and increase the quality of design in final products.
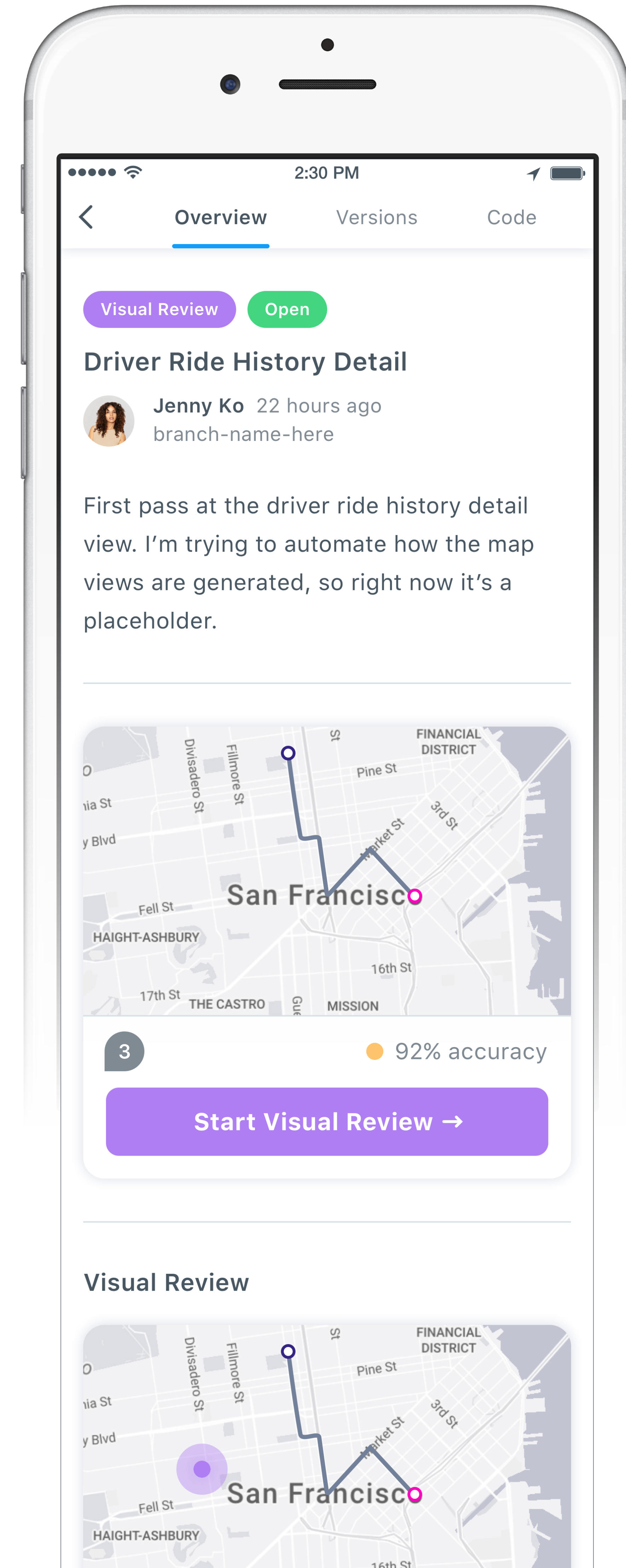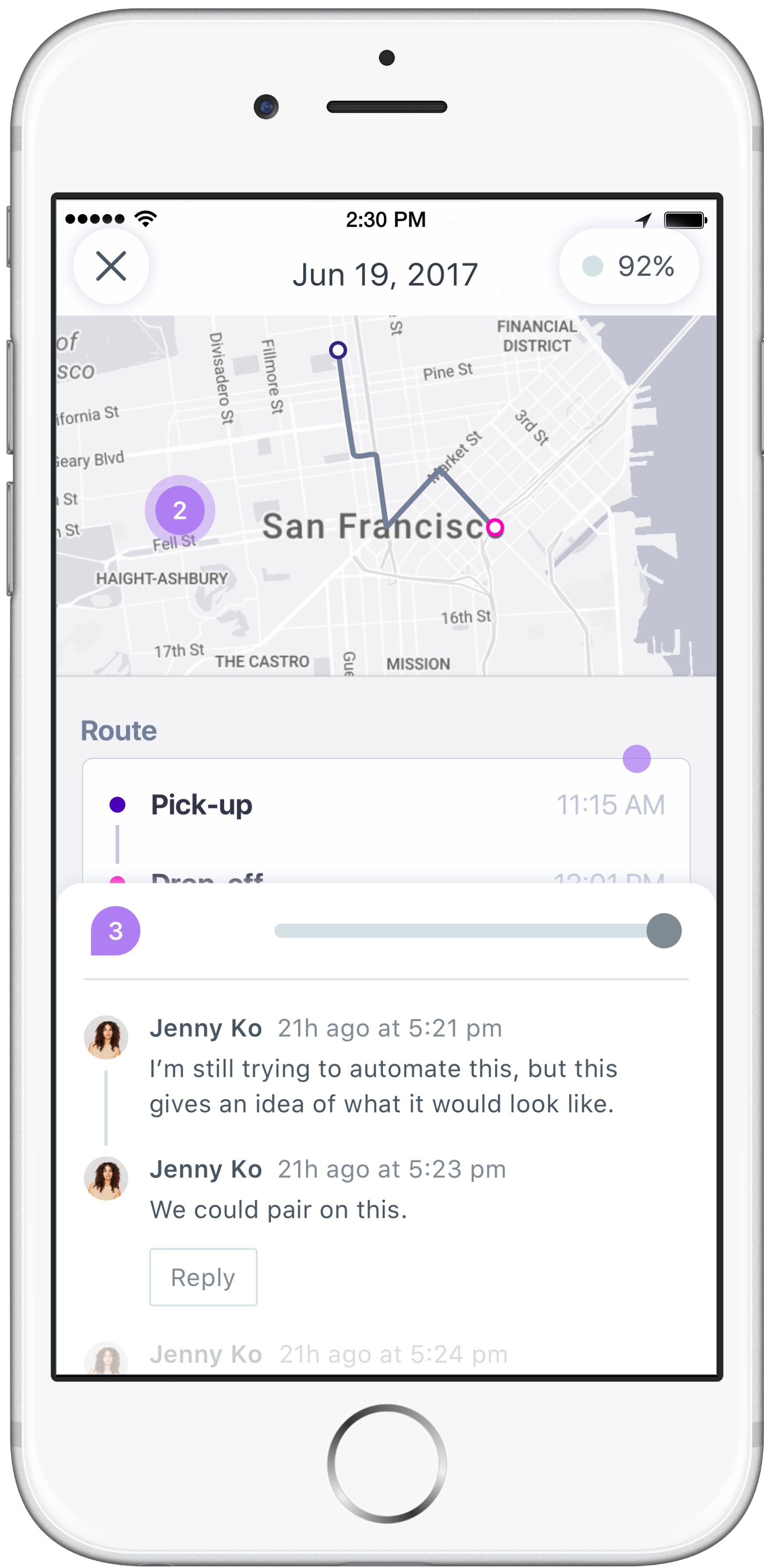
All mocks and interactions →

User research overview →

Supplemental materials →

Eunice Lituanas Code Review

Automated checks
1 expected and 2 successful

visual-tool Review Complete
92% accuracy comparison

code-review/reviewable
0 of 0 LGTMs obtained
Required

license/cla
Contributor License is signed
Required

No conflicts with base branch
Merging can be done automatically

3   92% accuracy

Start Visual Review →

Requested reviewers
Not required

Automated checks
1 expected and 2 successful

No conflicts with base branch
Merging can be done automatically

Jenny Ko 21h ago at 5:21 pm
I'm still trying to automate this, but this gives an idea of what it would look like.

Jenny Ko 21h ago at 5:23 pm
We could pair on this.

Reply...

font-size: $btn-text;

Eunice Lituanas 3h ago at 11:25 am
This is great, can we finally deprecate $light-green?

Reply...

Visual Review
In-Ride Experience
Jenny Ko 3 days ago
branch-name-here

Visual Review
Driver Ride History Detail
Jenny Ko 22 hours ago
branch-name-here

Suggested change
.route-map {
   height: 406px;
   height: 475px;

Comment

Onboarding Refactor
Eunice Lituanas 2 days ago
branch-name-here

Code
3

Mock
3

3

Route
Pick-up
Drop-off

Charlie Ogunse 1m ago at 2:30 pm
Can we keep the route vertically centered?

Thank you