Low-fi Prototyping and Pilot Usability Testing

Assignment 5

CS 147 Winter 2021

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INTRODUCTION

Mission statement and value proposition

Flowspace provides a mindful approach to deep work.

Problem and solution overview

The 21st century workflow is marked by a constant bombardment of notifications, messages, and other distractions. Indeed, this information overflow and constant connectivity perpetuates stress-induced burnout, causing both health and economic ramifications. Further, these conditions make it difficult to get into the right physical and mental environment for deep, productive work. Flowspace uses guided sessions to help users enter their own unique flow state. This enables people to work with more intention, focus, and clarity. Through reflection exercises and long-term planning, flowspace helps users develop long-term flow habits, shifting the mindset and experience around technology usage and productivity.

SKETCHES

Initial sketches

Sketches of potential interfaces, including different mobile, wearable, desktop, and off-desktop application designs.

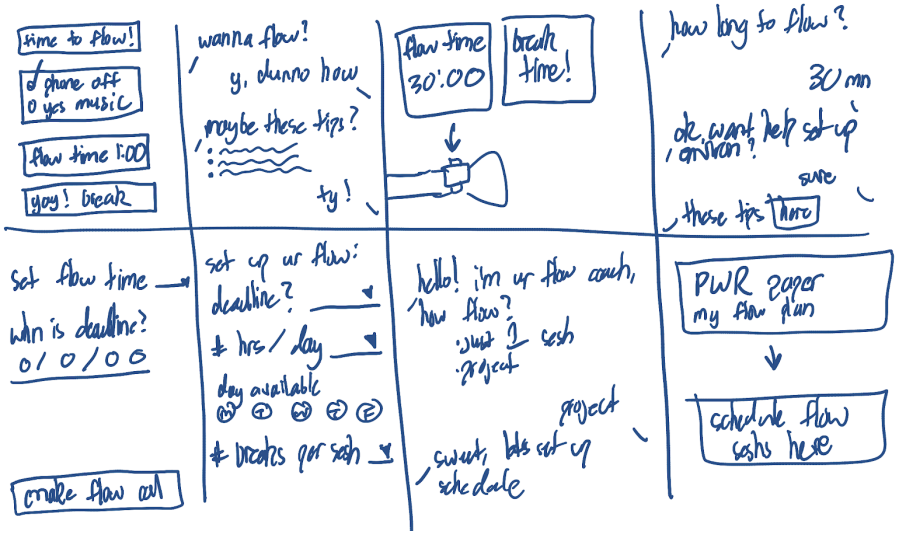

Figure 1a: Sketches of various potential interfaces

Figure 1b: Sketches of various potential interfaces

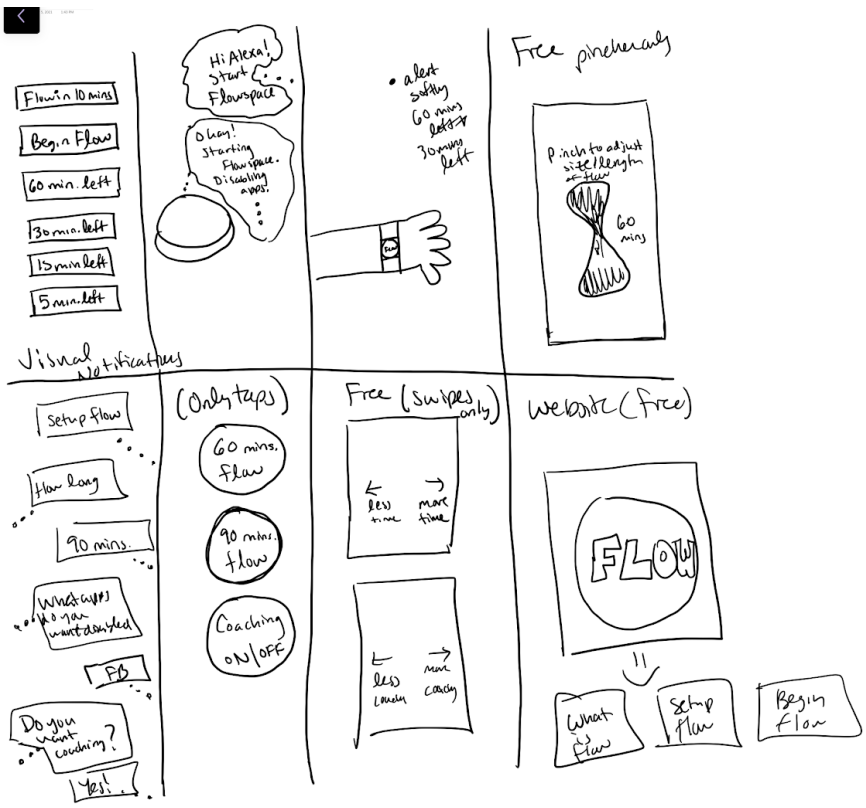

Figure 1c: Sketches of various potential interfaces

Figure 1d: Sketches of various potential interfaces

Storyboards of top two designs

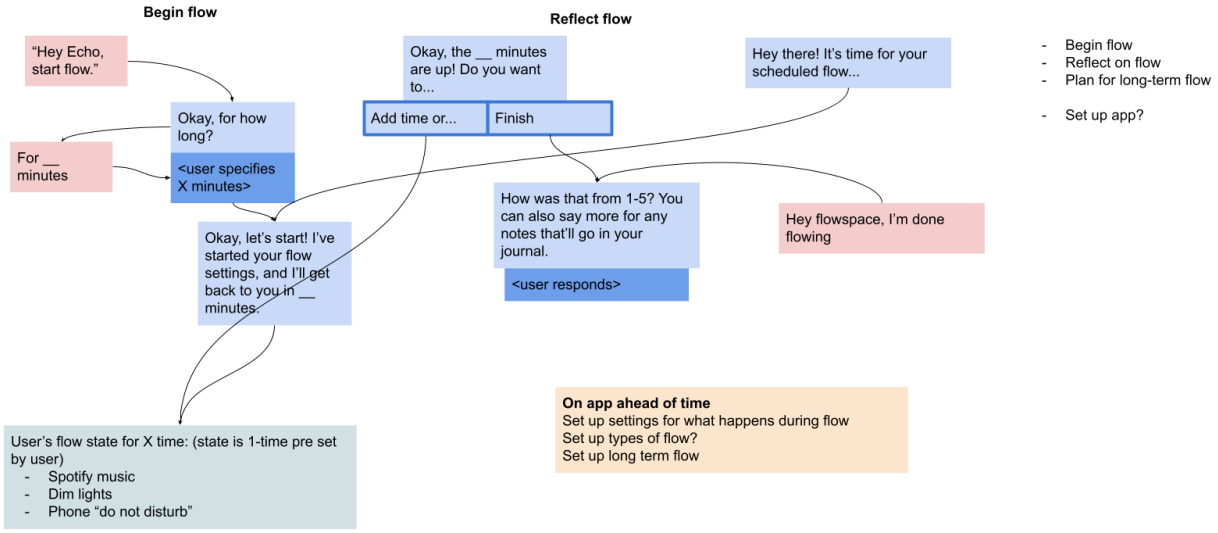

Figure 2a: Potential flow for a voice activated application, where blue is the app, red is the user, and green are the actions taken by the app

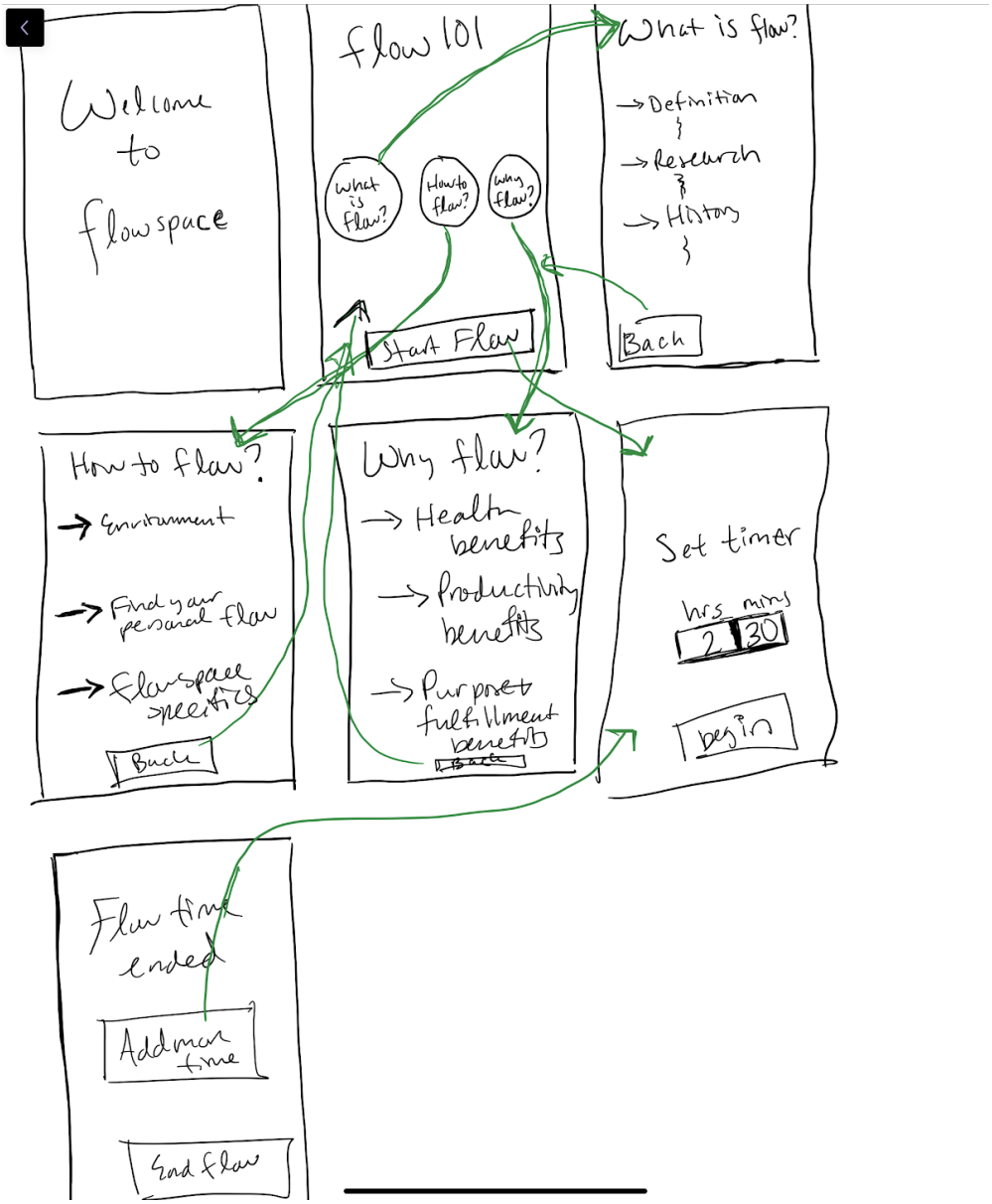

Figure 2b: Sketches for a flow mobile app

SELECTED INTERFACE DESIGN

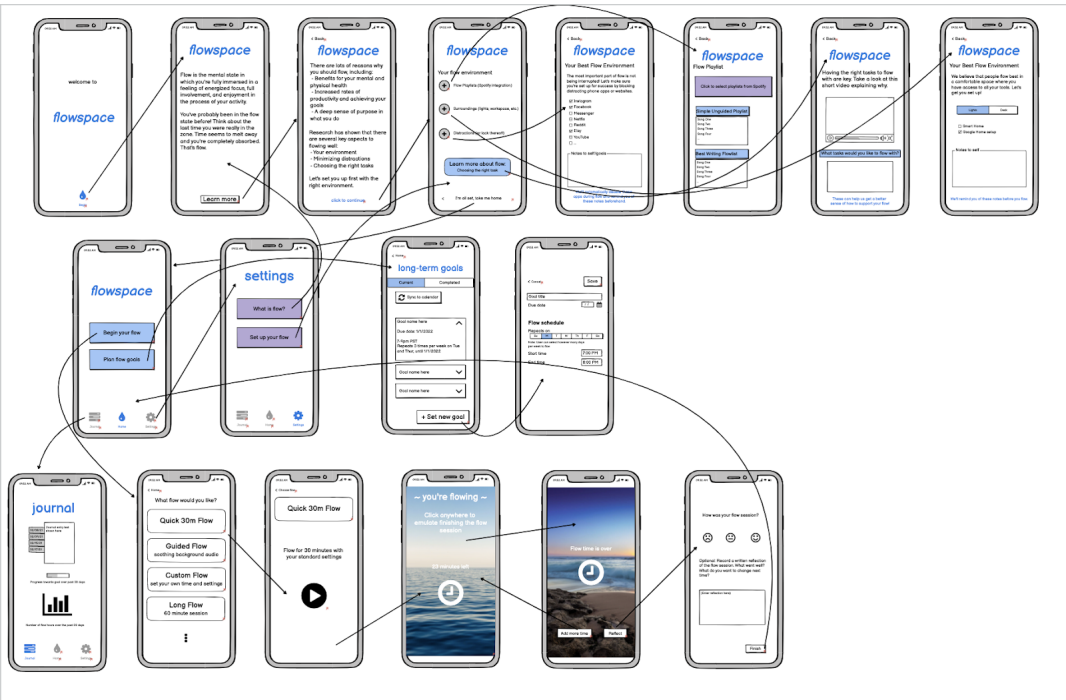

Figure 3: Mobile app low-fi prototype structure

Reasoning for selection

We decided to go with the app UI, due to the following reasons:

- Fits into many users' existing workflows, based on needfinding interviews,
- Smartphones common, everyday use, easy use
- Smartphones large source of stress, using smartphone to be opposite and facilitate flow would be game-changing

UI comparison charts

Voice

Pros	Cons
• Many assistants (Echo, Alexa...) can integrate with smart home systems • Using voice to use tool is more natural, human	• More complex, difficult to use • Not everyone has virtual assistant • Can be buggy or clunky to interact with

App

Pros	Cons
• Easier to use, many people already familiar with using mobile apps • Many people already have smartphones • Excellent integration for blacklisting apps and connecting to PCs	• Slightly more difficult to integrate with smart home systems

Storyboards for 3 or more tasks

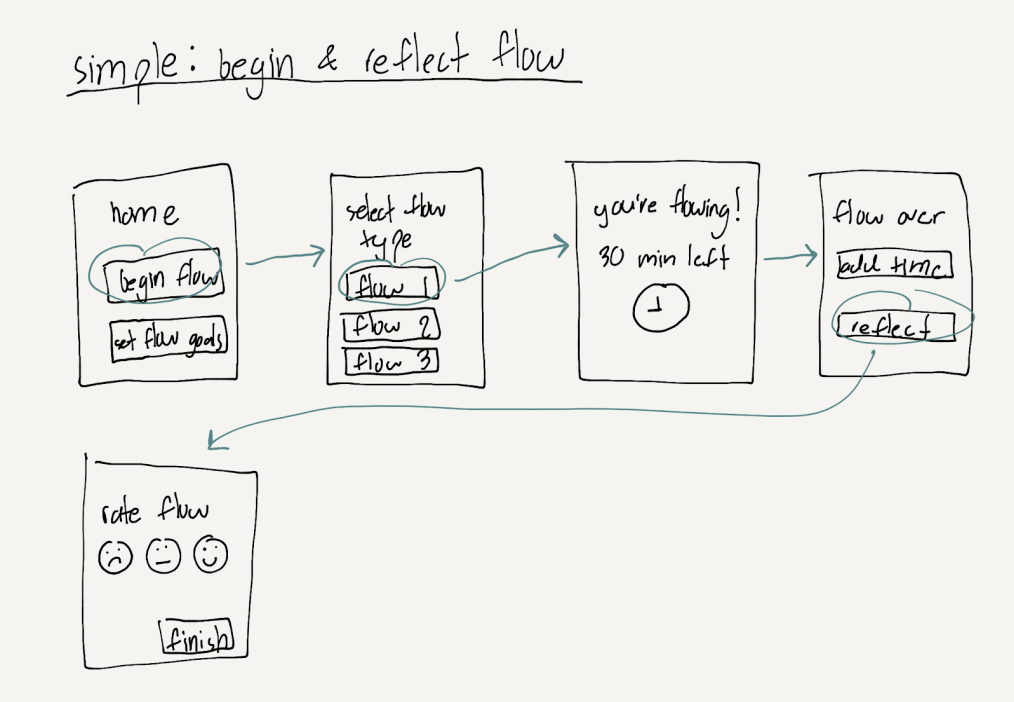

Figure 3a: Simple task storyboard - begin and reflect on a flow session

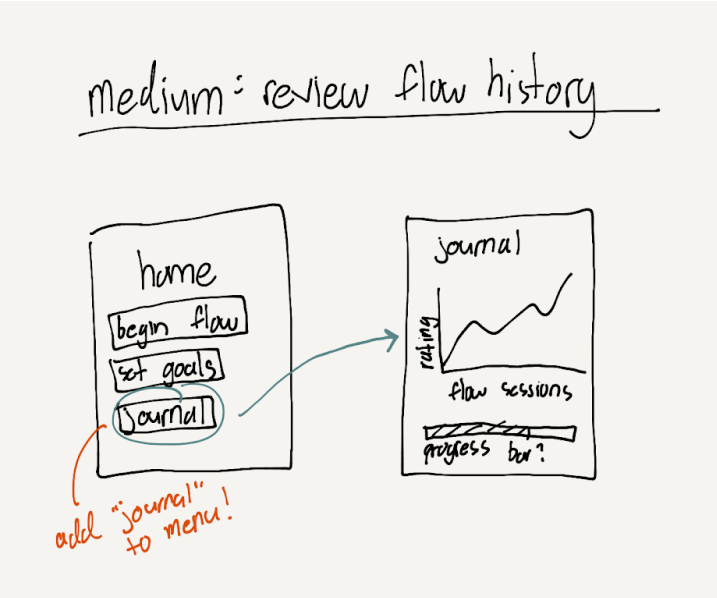

Figure 3b: Medium task storyboard - review flow history

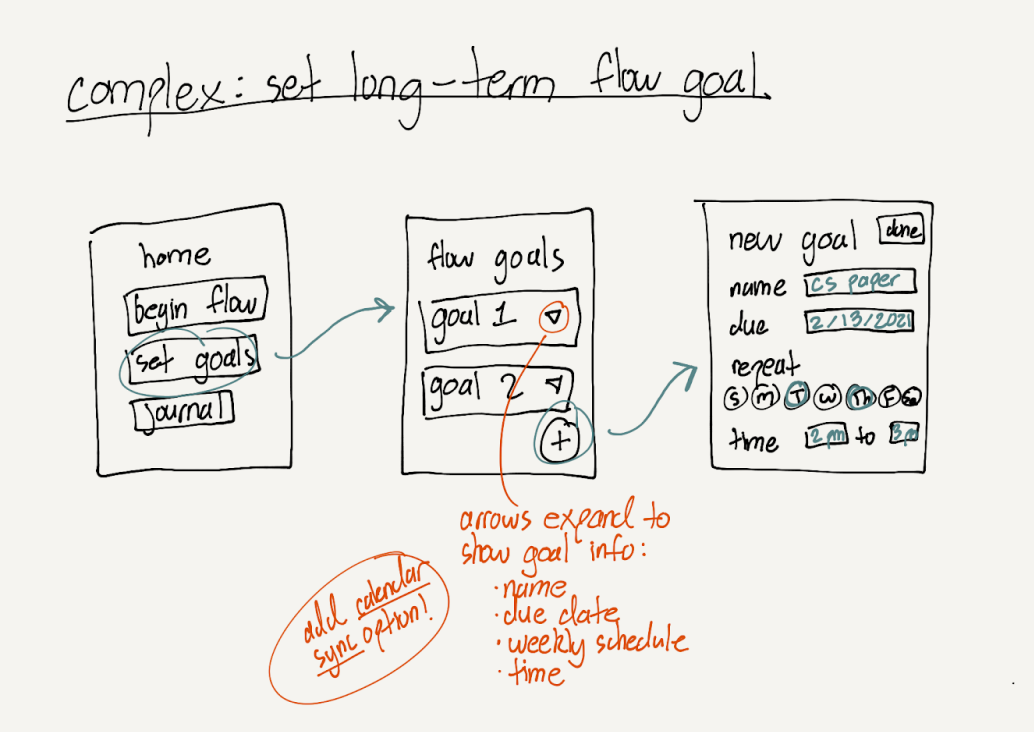

Figure 3c: Complex task storyboard - set long-term flow schedule for goal

PROTOTYPE DESCRIPTION

We created our low fidelity prototype by sketching collaboratively in Balsamiq. As listed in Table 1 below, the main pieces of functionality for this prototype are the workflow for working through a flow session (figure 7a), as well as menus that will later be integrated to work together with other apps on the user's device to streamline their workflow. The key interaction ideas are touch-based input to move through visual screens, as well as content delivery through the learning about flow and set-up pages (see figure 7d). The novelty of this app is centered around its mindful design and approach to deep work; flowspace gives users the tools and structures to plan their life (as in figure figures 7c and 7d) and work meaningfully and to guide them toward achieving their goals.

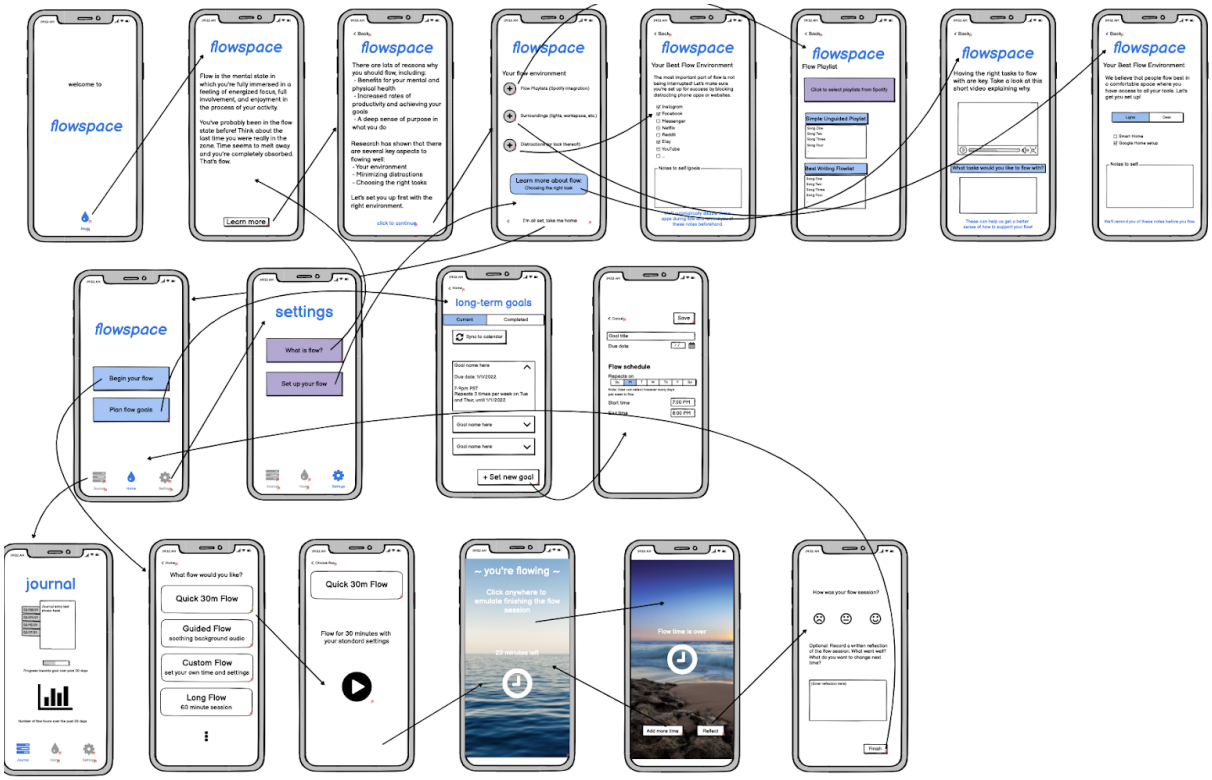

Figure 7: Low-fi prototype used for testing

Prototype tasks

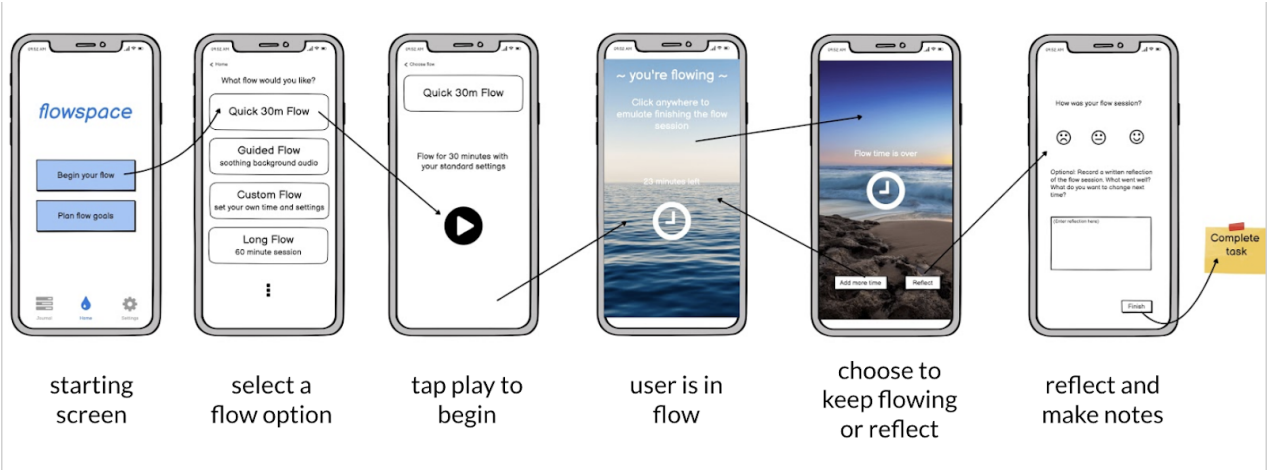

Figure 7a: Simple task - begin and reflect on a flow session

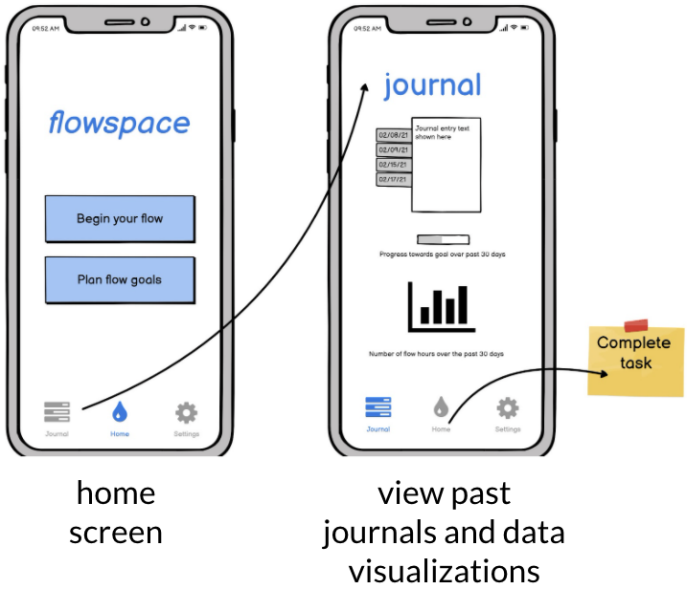

Figure 7b: Medium task - review flow history

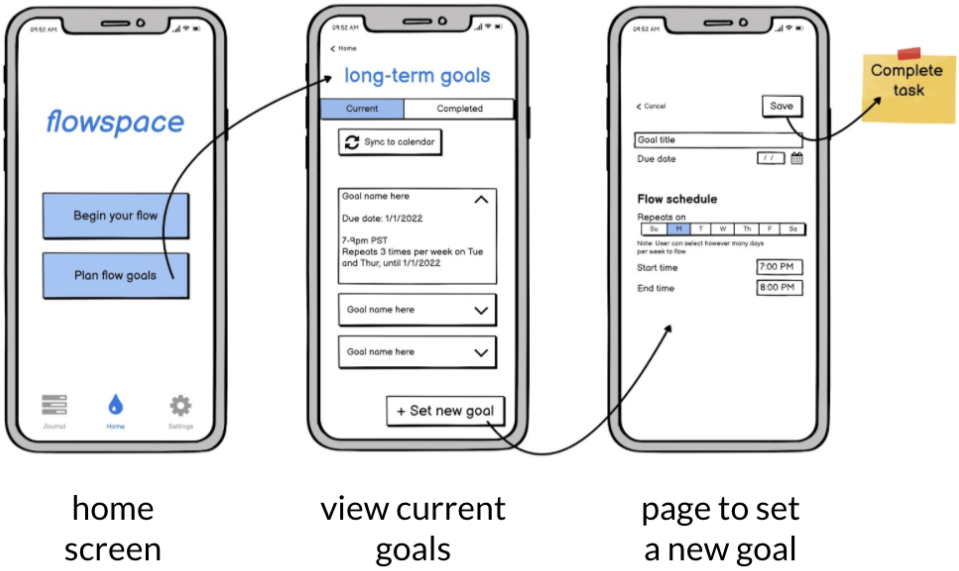

Figure 7c: Complex task - set long-term flow schedule for goal

There were also 2 additional task flows that we discovered were necessary:

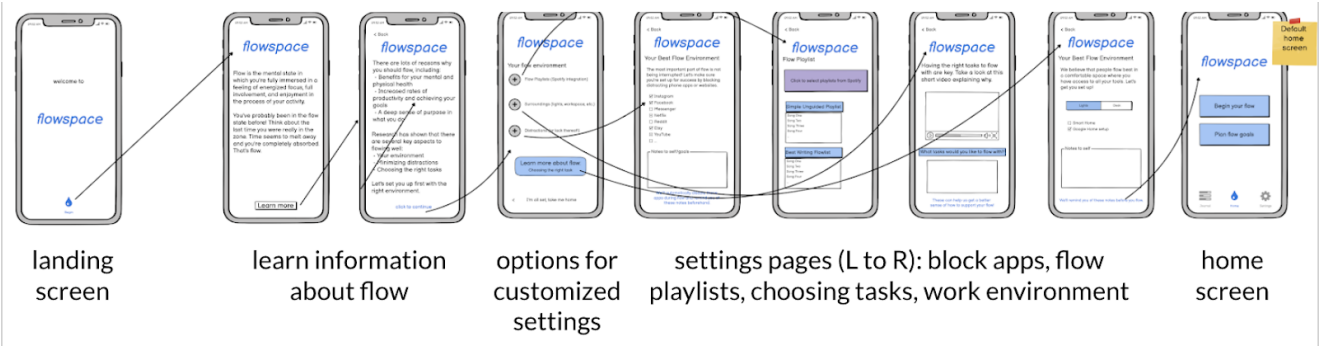

Figure 7d: First-time onboarding, where users learn about flow and complete setup

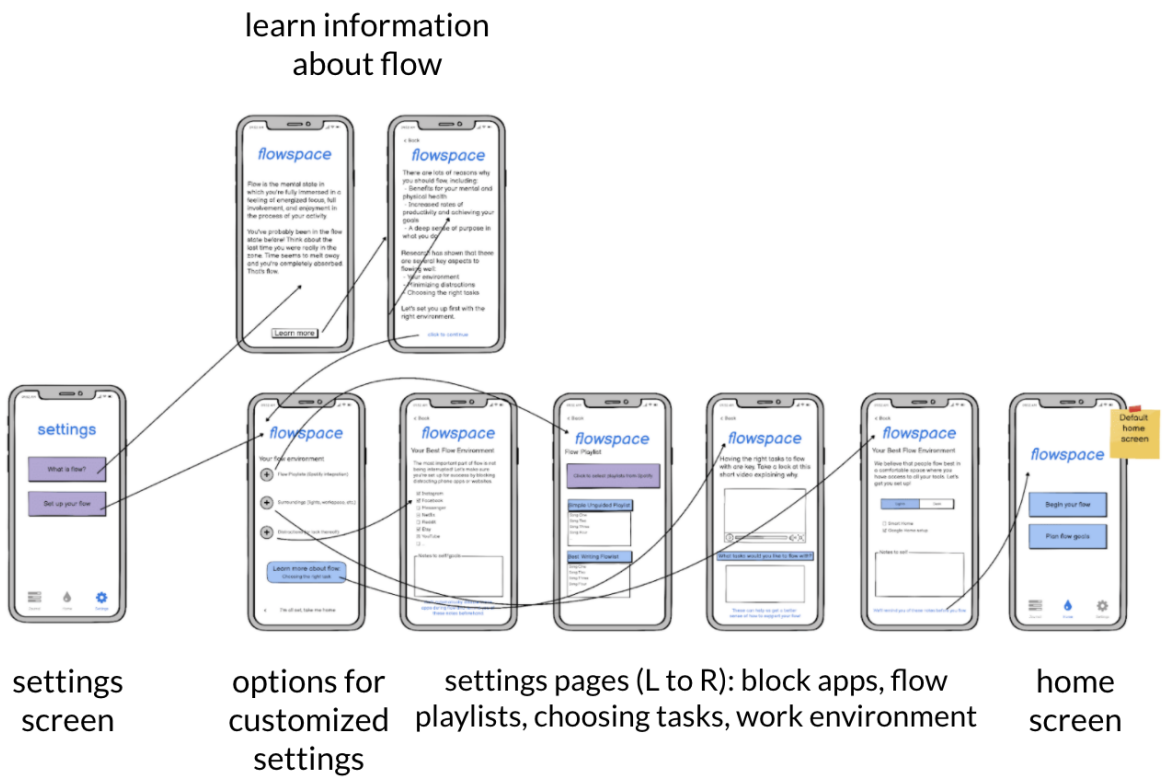

Figure 7e: Option to revisit learning about flow and change flow environment setup

Table 1: Overview of interface elements and functionality for the low-fi mobile interface

Interface Element	Functionality
Flow Playlist	Spotify integration where users can add playlists for certain types of work or certain work sessions.
Select Distractions	Enables users to select apps or certain technologies to put on silent or block for a specified period of time.
Surroundings & Environment	Allows users to learn about how surroundings and environment can affect ability to focus and then to set up their own flow environment.
Begin Your Flow	Select type and length of flow session (either pre-set or customized) and begin the flow session.

Quick 30 Minute Flow	Allows users to begin a pre-set 30 minute flow session.
Guided Flow Session	Allows users to begin guided flow session, which has a soothing auditory track to guide the work session.
Custom Flow	Allows users to select their own custom flow length and type.
Long Flow	Allows users to begin a 60 minute, pre-set flow session.
Add more time	Add more time to the current flow session.
Reflect	Go to guided reflection prompts. Rate the effectiveness of the flow session and prepare for your next flow session.
How Was Your Flow Session?	Select a rating for the past flow session.
Settings	Adjust the distractions that are blocked, environment setup, and playlists that were set up during the onboarding process.
Home	Return to the home page at any time.
Journals	See all past journal entries and reflections, past ratings and metrics, and all notes.

TESTING METHODOLOGY

Participants

We had three participants for our low-fidelity prototype testing (#50 #51, and #52). #50 is a middle-aged woman, married with two children, and is a software developer at IBM. #51 is a 19-year old male student from Lithuania who is taking a gap year and working as a software engineer at Nord Security. And finally, #52 is a 24 year old male from Kansas City, currently living in New York City who works as an equity researcher for the hedge fund Bridgewater. Our three participants had no prior connection to any team members, and came into the prototype experiment blind to the conditions of the test as well as our purposes. They were recruited through mutual connections.

Environment

All three participants were interviewed over Zoom in their own homes. There were two team members on the Zoom call, one who read aloud the script and managed the interpersonal dynamics, and one who took notes on pain points, surprises, etc.

Tasks

The tasks we asked users to complete are as follows: onboarding, begin and reflect on a flow, review past flows, and plan their long-term flow goals. Complete script is in the appendix.

Procedure

Following the script in the appendix, we began by asking participants about where they came from and what kinds of work they did in order to see what kinds of use cases they would be most familiar with. We then gave participants an overview of our background and the idea for flowspace. We asked participants to complete four tasks, and recorded their behavior, shown in the incident log found in the appendix. Between each task, we asked task-specific questions to probe for their current pain points or desired features.

Afterwards, we thanked our participants, asked for any final comments, and answered any remaining questions they had.

Test measures

We observed and took notes on the users' levels of frustration or enjoyment, critical incidents (see Tables 2-5), and the amount of confusion they had. Afterwards, also reviewed the transcripts of the recorded Zoom calls to see if there were salient quotes that could help frame our analysis of how they felt or thought.

Team member roles

There were two team members in the following roles in each testing interview: someone who was following the script, and notetaker.

RESULTS

During our interviews, we logged every time an interviewee showed emotion towards any part of the prototype. We decided to include all of these incidents embedded in our discussion, to allow us to reference them. Here is each task, along with its corresponding incidents and discussion. Each incident is rated from very negative (-4) to very positive (+4) reaction.

Onboarding: Learn about flow and set up the flow environment

We received an outsized amount of feedback for the onboarding process. This part of the prototype, while not one of our three tasks, does have a big impact on the user: introducing the user to the overall concept of flow and setting up what the app does during flow. From this feedback, we realized how important it is to get these screens right, which define the rest of the app.

Improvements, based on incidents in Table 2 below

- **Note to self:** Many users were confused about this section on several screens. We need to either make the purpose of it more explicit (by moving it to a separate screen), or remove it altogether.
- **Research:** We need concrete research papers to link to our intro to flow page.
- **Distracting apps checklist:** the checkboxes on this screen are a bit confusing and might need to be improved slightly.
- **Move distracting apps to the top of the list:** Participant #51 had a really good point that blocking distracting apps is a much more important feature to him than music and should be first.
- **Push notification reminders for when to flow:** Participant #52 wants this feature, which makes sense.
- **Smart home integration:** Participants seemed to have a positive response to this feature, which confirms the need for it in the app.

Table 2: List of incidents during onboarding

Participant #	Incident	Rating (-4 to +4)	Description
52	Note to self	**-3**	Uncertain how to approach "notes to self" feature during onboarding. Further, wants ways to track this quantitatively.
51	Research	**-2**	Wants link to research to back up claims
51	Minus sign in the checklist	**-2**	Confused on how to use the checklist in the setup page for which apps to block during flow session
51	Note to self	**-2**	Unsure what the "note to self" feature when setting up
51	Listening to music while flowing	**-1**	Doesn't think listening to music is as important as eliminating distractions, which should be first in the list of flow actions
52	Settings	**-1**	No push to set notification/reminder for flow session. Wants this feature.
52	Smart home integration	**-1**	However, there was not an explicit icon for Alexa, which worries him because he only uses Alexa.
51	Google Home/Alexa integration	**+1**	Likes the idea of being able to connect the app to a IoT device
52	Google Home integration	**+1**	Uses lots of smart devices and likes this idea.
51	Blocking distractions while flowing	**+3**	Loves the idea of being able to block apps while flowing

Flow and reflect

Participants didn't have any comments on the actual flow section, which makes sense, since it was emulated, and users didn't actually spend the time they said they did. However, they did all react to the reflection section, which means it's a valuable section that needs improvement.

Improvements, based on incidents in Table 3 below

- Add more metrics to reflecting on a flow session

Table 3: List of incidents during the flow and reflect task

Participant #	Incident	Rating (-4 to +4)	Description
52	Reflecting	**-3**	Wants more metrics and a more intensive reflection section. Especially wants more data-oriented reflection and tracking. "As many stats as I can get I usually love."
51	Begin flow	**-2**	Accidentally went to journal and set long-term goals when trying to begin flowing. Interviewee wasn't sure how to start a flow session. This may mean the UI is not intuitive.
51	Reflect on a flow session	**0**	Would love to be able to reflect on a flow session by taking a picture or video!
50	Reflect	**+1**	Liked the question "What went well?"

Review past flows in journal

Two of our participants reacted very positively to the prototype for this task, and wanted as many statistics as they could get. This reveals the need to expand on this section with more data than initially planned.

Improvements, based on incidents in Table 4 below

- Add more graphs and statistics

Table 4: List of incidents during the journal task

Review past flows in journal			
Participant #	Incident	Rating (-4 to +4)	Description
52	Journal	**+2**	"as many stats as I can get, I want them" enjoyed that there were ways to see metrics. Would love more.

51	Journal	**+3**	Loved being able to see stats about himself, wants more graphs and data about screen time, how many times used phone, etc

Schedule flow for long-term goals

We didn't get much positive feedback about the existence or structure of this task, which means we need to work on reformulating the prototype in a simpler or more useful way.

Improvements, based on incidents in Table 5 below

- Add more ways to schedule flows
- Automatically schedule flows based on calendar availability

Table 5: List of incidents during the scheduling task

Schedule flow for long-term goals			
Participant #	Incident	Rating (-4 to +4)	Description
52	Long term goals	**-2**	Right now, goals are only possible on a recurring schedule. Instead wants to be able to set goals like daily focus time or periods of limited distractions. User's schedule varies so much day-to-day that the long term goals current setup is not useful for him.
52	Long term goals	**-1**	Wants smart calendar integration, like "looks like you've had lots of meetings this week, should we schedule a flow session?"
50	See long-term goals	**-1**	Confused on how goals were ordered
50	See long-term goals	**+1**	Liked to see "Completed Goals" section
50	Create long term goal	**+3**	Saw "Calendar Sync", reaction was "Fabulous!"

DISCUSSION

This round of user testing was valuable to get reactions to all parts of our app. Several sections, like “Onboarding,” originally weren’t expected to present as many areas of improvement and ambiguity for potential users.

Our biggest realization, from creating the prototype and testing it, was how complex the onboarding process can be. It involved 8 different screens and has an outweighed effect on how the user later interacts with the app. Since we received the most feedback about “Onboarding,” we have a clear direction towards improving that. We will rethink the “Note to self” section in the “Block distracting apps” step, add research to back up our claims, and remove some ambiguity in a couple screens. Also, having push notifications and smart home integration seemed important to users.

The journal received some positive feedback, which confirms that we’re on the right track to providing data to users about their usage of the app. We will boil down which data is shown there in the next prototype, and try to use this to encourage and/or gamify in order to make the app more fun.

The flow and reflect task didn’t generate much emotion from our users, which means we need to continue iterating on it. We might need to adjust the framing of what flowing means, and adjust the layout somewhat. Asking the user what they want to get done might help as well.

We also received some good feedback and direction from our users about the option to set long-term flow tasks.

(1486 words)

APPENDIX

Blank consent form

All interviewees filled this out, and filled out copies are in the assignment Google Drive folder.

Consent Form

Flowspace's prototype is being produced as part of the coursework for Computer Science course CS 147 at Stanford University. Participants in the experimental evaluation of this prototype provide data that is used to evaluate and modify the interface of Flowspace. Data may be collected by interview, observation and questionnaire.

Participation in this experiment is voluntary. Participants may withdraw themselves and their data at any time without fear of consequences. Concerns about the experiment may be discussed with the researchers (Erin Smith, Helen He, Karen Ge, Roy Nehoran) or with Professor James Landay, the instructor of CS 147:

James A. Landay
CS Department
Stanford University
650-498-8215
landay at cs.stanford.edu

Participant anonymity will be provided by the separate storage of names from data. Data will only be identified by participant number. No identifying information about the participants will be available to anyone except the student researchers and their supervisors/teaching staff.

I hereby acknowledge that I have been given an opportunity to ask questions about the nature of the experiment and my participation in it. I give my consent to have data collected on my behavior and opinions in relation to Flowspaces's experiment. I also give permission for images/audio records/video of me using the prototype to be used in presentations or publications as long as I am not personally identifiable in the images/audio records/video. I understand I may withdraw my permission at any time.

Name _____

Participant Number _____

Date _____

Signature_____

Witness name _____

Witness signature_____

Critical incident logs

Tables with all incidents are in the “Results” section of the paper.

Script for testing

Hello, _____ . Could you tell us your name and where you’re from and what kind of work you do?

Thanks! We are working on flowscape, a productivity app. We’d like to see how usable, how understandable it is to a first-time user, that’s why we won’t give you much detail

- Please remember:
    - This is a user test, so please say your thoughts out loud.
    - There are no right or wrong answers
    - Whatever you have on your mind, you’re totally allowed to say it, praise or critique, you’ll be helping to improve our product
- We’ll ask you to complete 4 tasks with the app.
- Now we will share our screen to let you see the prototype
- Please accept remote access so you can control the app.
- Before we begin, would it be OK to record this session?

Task 1: Onboarding

Goal: Learn about flow and get introduced to the app

Sub-task 1: Learn about flow

User starts on Landing page

Tester: Your first task is to learn about flow and get familiar with the app.

Subtask 2: Set up your flow

User starts on Home page

Tester: Next, your task is to set up customized flow settings.

Task 2: Begin flow and reflect

User starts on Home page

Goal: Start a flow session!

Tester: Now, let's say you want to start your flow. Your next task is to begin your flow session.

User starts on End of Flow page

Goal: reflect on how the flow session went, and on improvements for the future

Tester: Now, let's say you have completed your flow. Your next task is to reflect on flow.

Questions:

- What customized flows would be helpful?
- What tasks do you do repeatedly where you find it hard to focus?

Task 3: Review past flows in journal

Tester: Now, let's say you want to see all of your journal entries from the past. How would you do this?

Questions:

- What questions would be most helpful for reflection?

- Do you reflect and/or journal in daily life? If so, what does that process look like for you?

Task 4: Plan long-term flow

User starts on Home page

Goal: plan flow sessions for long-term projects

Tester: Now let's say you have a long-term goal (could be anything) that you want to achieve by setting a flow routine. Your next task, create a long-term goal with a flow routine.

Questions:

- When was the last time you had a goal/deadline in real life? Any tools or methods you used to achieve it?
- If you had a goal with a deadline in real life, could you see yourself using a weekly flow routine to achieve it?