

Innixi

A mental health companion for life transitions

Final Project Report



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Introduction

Life transitions can be stressful. We all go through these changes, whether it's divorce, loss of a loved one, or financial hardship. These changes can lead to stress, worry, and rumination. And, if left unaddressed, these feelings can interfere with daily life. In order to counteract the stress caused by these events, psychologists often recommend interventions based on mindfulness. As a philosophy, mindfulness started in Buddhist traditions and has spread rapidly in Western society, due largely to success of mindfulness-based stress reduction and mindfulness-based cognitive therapy. As an interconnected approach that blends awareness, attention, and acceptance, mindfulness can help people become "less reactive to unpleasant internal phenomena and more reflective, which in turn will lead to positive psychological outcomes"¹. In this paper, we discuss the benefits of mindfulness as a behavioral intervention and foundation for Innixi, an app we created to serve as a mental health companion for life transitions. We also demonstrate the process we used to create Innixi, from user research to product design and testing to implementation.

Problem Space

According to multiple research studies, big changes can evoke feelings of subjective anxiety and physiological symptoms. These effects are well documented, particularly as a result of adverse events that have a lasting effect on people. Some researchers believe this could result from recurring trauma, as some may start to believe that "‘this event now seems more likely to happen’; ‘this event has made me more vulnerable to future adversity’; or ‘I have realised as a result of this event exactly how vulnerable I am’"¹. These lasting effects make it hard for many people to move on after life transitions, especially if they also lack self-awareness to overcome feelings of stress.

Generative Research

Diary Study

Research Design

To explore how people experience stress, we conducted a diary study with a mix of UC Berkeley staff, faculty, and students. To that end, the group of participants represented a range of different lifestyles and responsibilities. A total of 12 participants were recruited and onboarded in two cycles. During each onboarding phase, participants were invited to register for the research study via Paco, a mobile app that is available for iPhone and Android users. This method of data collection was preferable because it limited data entry errors and visibility (and potential influence) of previous entries, as participants had no written record.

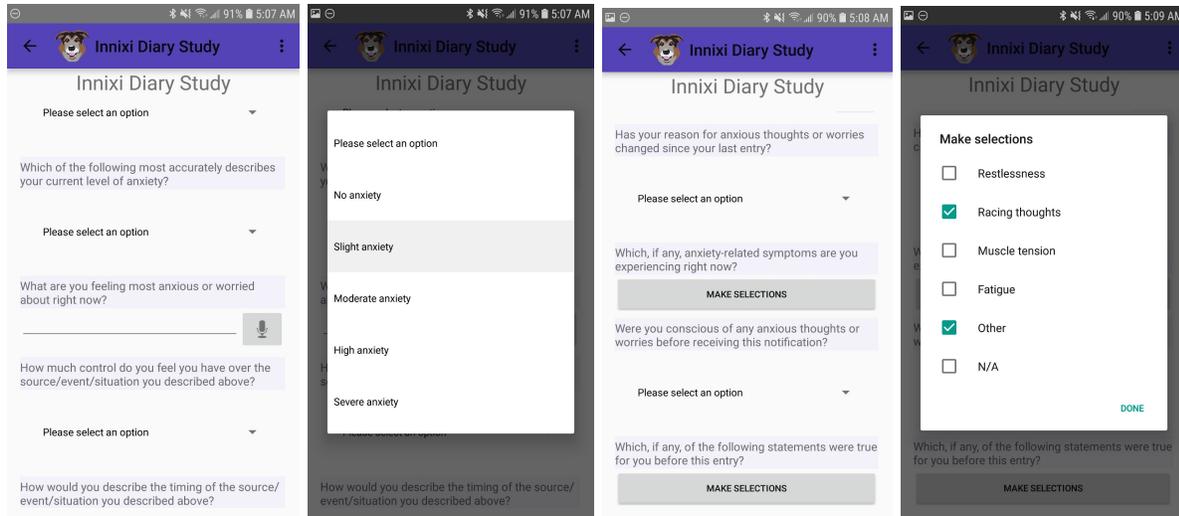


Figure 1: From left to right: (1) Miscellaneous diary study questions; (2) data entry screen for participant’s perceived level of anxiety; (3) Miscellaneous diary study questions; (4) data entry screen for self-reported stress symptoms.

The registration process included informed consent to share “personal information collected” and “use of anonymised data in future research and learning”. During the study, each participant was asked to submit three diary entries per day for seven consecutive days as evidence suggests that participant fatigue and dropout rates are both minimized during diary studies of one week or less. Participants were asked to submit entries during random intervals between 9am and 6pm. Each entry was designed to address topics such as the participant’s current level of anxiety (1 = No anxiety, 2 = Slight anxiety, 3 = Moderate anxiety, 4 = High anxiety, 5 = Severe anxiety), broad assessment of the anxiety source (e.g., timing, open text description), self-awareness of aforementioned anxiety, stress symptoms (e.g., restlessness, racing thoughts, muscle tension, fatigue), coping strategies, and circumstances that may or may not facilitate mindfulness.

Results and Discussion

As mentioned above, all information (e.g., diary study and form responses) was anonymized. To that end, participant responses were automatically coded and stored by ID numbers upon receipt. After data collection, we cleaned and analyzed the data. Key findings from the diary study suggested that participants engage in greater mindfulness during periods of uninterrupted self-reflection. Of all stress-related symptoms, participants reported racing thoughts the most (twice as many as any other symptom). And while we recognize that the dataset is not robust for any statistical significance, logistic regression suggests that participants who experience restlessness are also over three times more likely to experience emotional awareness vs. participants who do not experience restlessness. In addition to these findings, we also learned about stress related to life transitions. We conducted the diary study in March, and given the timing of Covid-19, there was a common source of stress stemming from the shelter-in-place. As a result, coronavirus was the leading source of stress for all participants.

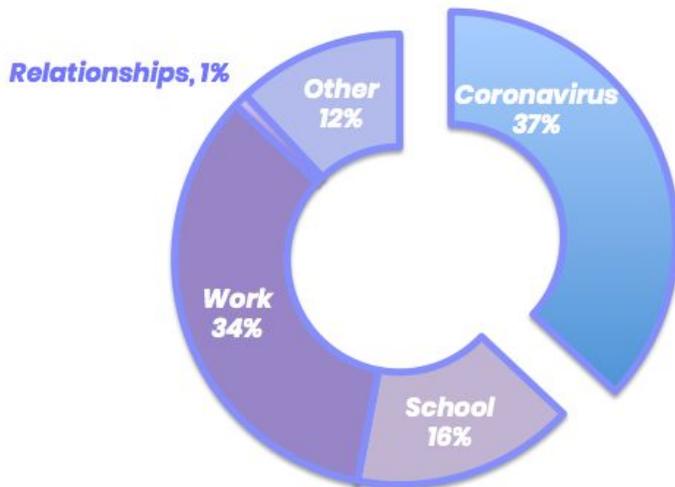


Figure 2: Sources of stress for all participants in the Innixi Diary Study.

These findings confirmed the extent of event-related stress compared to sources that are more consistent (e.g., school, work, and social connection). This sparked our interest and we conducted more research to understand how people experience stress during unexpected life changes.

Interviews

Research Design

To learn more about our findings in the diary study, we conducted semi-structured interviews with five members of the campus community at UC Berkeley. To guide discussion, we drafted a discussion guide (see appendix) to address Covid-19 and other topics in the diary study.

Results and Discussion

After the analysis, we found that people tend to struggle most when adjusting to new circumstances and/or getting over uncertainty. Participants reported feelings of stress about the global pandemic and social isolation. One participant shared that he gets “more lonely than [he] was before when [he] could see the same group of people every day and interact with strangers”. Other pain points included lack of control, motivation, and daily routine. A different participant reported that even a “weekly routine normally helps [her] mark time and keep me grounded” and hopes to “get back to basics” and regain control over her diet, exercise, and sleep schedule. To address these pain points, participants expressed a need for greater transparency, accountability, understanding of personal progress, understanding of self, and reminders to engage in mindfulness. With this insight, we gained valuable insight into user priorities and potential solutions. In order to take these findings and inform product design, we created a persona (see appendix). This persona served as a fundamental guideline for the Innixi value proposition, product design, and development.

Product Design and Testing

Product Ideation

Competitive Analysis

To immerse ourselves in the landscape of mental health and information technology, [we conducted a competitive analysis](#). The goal of our analysis was to better understand existing products in the market and features offered and to define how Innixi can differentiate itself. Additionally, we wanted to explore what other apps are doing well (and not so well) to glean insights and design inspiration from them.

Innixi positions itself at the intersection of mood and sleep tracking, meditation, and mindfulness. Therefore, we looked into six different apps in the field of Mood Tracking, Meditation/Emotion control, and Physical/Wearable Activity Tracking:

1. Mood Tracking: Reflectly, Stoic, Moodnotes
2. Meditation/Emotion control: Stop, Breathe & Think, Headspace
3. Physical/Wearable Activity Tracking: Garmin (Advanced Sleep Monitoring feature)

We found that several apps have fun and intuitive mood tracking features (e.g. Moodnotes, Stoic). Stoic and Reflectly in particular allow the user to track a combination of emotions and activities and how they relate to each other (e.g. Reflectly), allowing the user to derive insights from this connection. Popular meditation apps (e.g. Headspace) offer useful mindfulness exercises and even make recommendations based on mood check-ins (e.g. Stop, Breathe & Think). Finally, Garmin offers advanced sleep monitoring and detailed and intuitive data visualizations.

These products gave us a great starting point for brainstorming our own design, but there are several areas where we wanted to improve on what is already on the market. First, some of the mood tracking features we saw restrict users to a few choices, often indicated by emoticons, ranging from sad to happy. Furthermore, few apps offer insightful connections between mood and activities, and when they do, the insights seem limited. Finally, we were not able to identify a product that integrates physical health (e.g. sleep and exercise) into the mental health experience for overall wellness.

Feature Prioritization

After conducting user research and competitor analysis, we began to brainstorm features for our solution. We began with conducting online brainstorming sessions on Mural as well as conducting “crazy 8” ideation activities. After several sessions we came up with our feature set. We decided to prioritize features that are most relevant to our core value for low-fi prototype, including onboarding feature, homepage, mood tracking feature, and dashboard. Then we aim

to incorporate features, including goal setting, account set up, and activities, into our high-fi prototype.

Low-Fidelity Prototype Design

Design Principles

We aim to design a user-friendly and trustworthy app by utilizing the knowledge we learned at iSchool about information privacy, social issues, and user experience.

Our design principles includes:

- **User-friendly**
Making the flow smooth, minimal, delightful is our goal throughout the interaction design. In this way, we want to make our product as easy to use as possible while bringing up joy when users are under stress.
- **Trustworthy**
Privacy is the forefront of our design. Being transparent with data and privacy, building up a safe space for everyone is our core value for design.
- **Deliverable**
Design is never finished without implementation. We take technical limitations into consideration when designing to make sure our product is deliverable in a limited amount of time.
- **Welcoming**
Through UX writing, we want to make sure the app is welcoming and has a personal touch with users.

User Flow

After defining features and design principles, we created interactive low-fidelity mockups that are ready to be tested with real users.

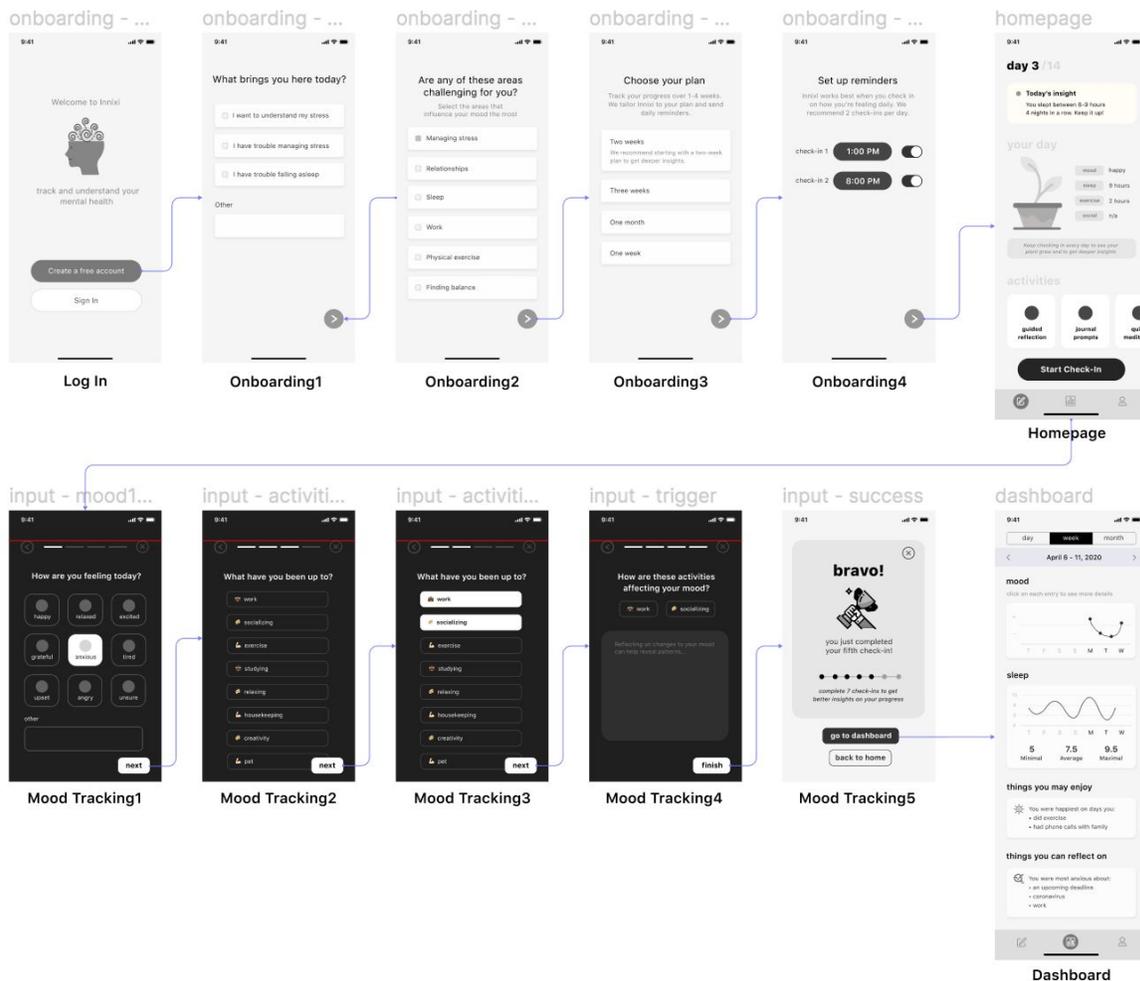


Figure 3: Low-fidelity prototype user flow

Low-Fidelity Prototype Usability Testing

Research Design

We performed usability testing on a low-fidelity prototype to get early insights into users' preferences of the different user-flows and mock-ups being designed. For the first round of testing, we showed participants low-fidelity mockups and feature prototypes, and we asked them to walk us through our early-stage product as they experienced it for the first time. Using the Think-Aloud Protocol, we presented participants with a series of tasks and asked them to say out loud what was on their minds, including things that felt confusing or unexpected, as they navigated through the prototype. [The full testing protocol](#) can be found in the appendix of this report.

Results and Discussion

Through usability testing on our low-fidelity designs, we found that users had a positive reaction to our holistic, compartmentalized approach to mental health, saying for example “I like the idea of correlating my mood to what I’ve been doing,” and “It gives me peace of mind to understand that sometimes there are worse days.” But given the nature of the topic, they felt the experience was lacking a personal touch and imagery, and they wanted to be able to say not just how they’re feeling but also the relative magnitude of different feelings.

High-Fidelity Prototype Design

Visual Language

We understand when users are going through stress, every color and tone of the app can influence their mental health, and we design the app with the goal to make it look calming, relaxing, refreshing, and soothing. We choose lavender color as our main color as it’s proven to be a soothing color through research. For typography, we use a combination of “SF Pro Tex” and “Apercu”, as they can convey the feeling of being soothing and trustworthy. To help users quickly understand the goal of the app, we designed a logo to convey our core value.



Figure 4: Innixi Logo conveying the app’s core value

UX Writing

Based on user feedback, for the next design iteration we focused on giving Innixi an empathetic and conversational tone through UX writing. Testing showed that this resonated with users. For example, one person said “I appreciated that onboarding was quick but still had a personal touch.”

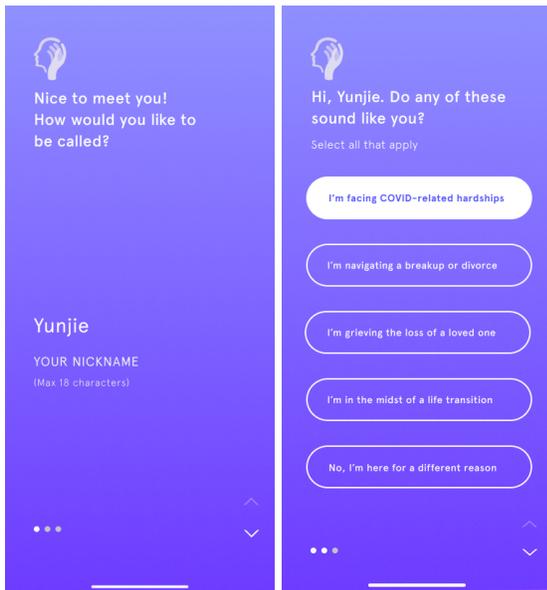


Figure 5: UX writing for Innixi’s onboarding experience

Final Design

After going through several iterations, we came up with our final design prototype. Below are its key features (see full prototype in Appendix #):

- **Onboarding:** We enable users to choose the transitions that happened in their life as well as challenging areas, then we encourage users to set up goals and reminders to engage in mood tracking and mindfulness activities.

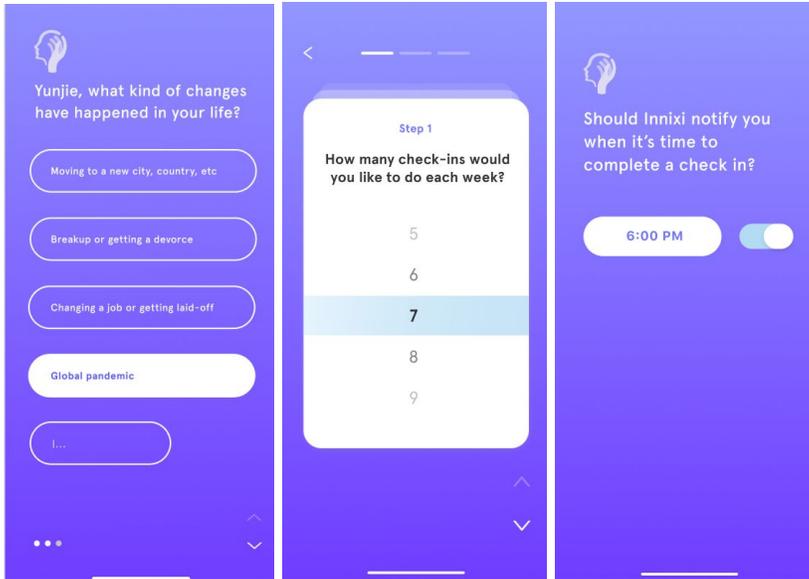


Figure 6: Onboarding screen

- Mood tracking:** To track users' feelings and activities, we designed a delightful mood tracking feature. Users can simply fill up the bottle to choose different moods and record the intensity. Then users are encouraged to build connections between their moods and activities to seek room for improvement in their daily routine.

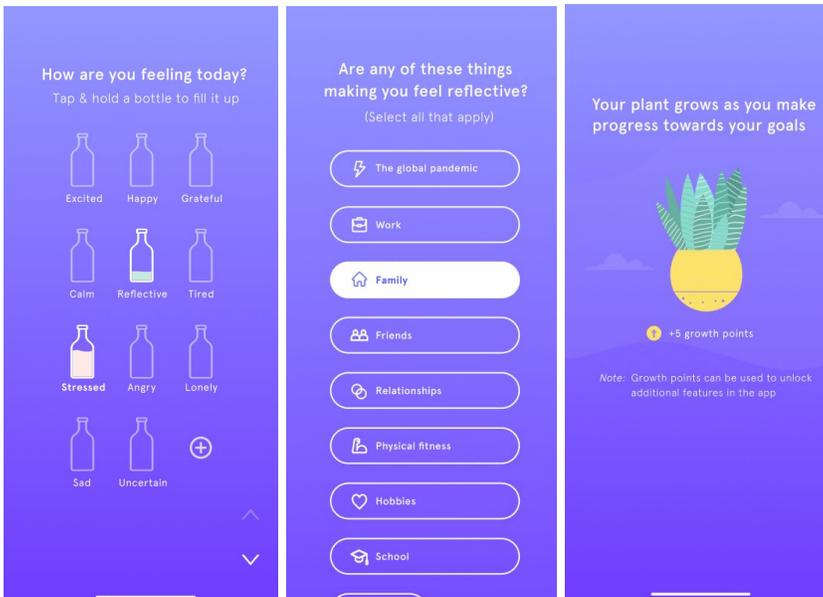


Figure 7: Mood tracking screen

- Dashboard:** In the dashboard, users can view their data about feelings, sleep and exercise, track their personal progress, and find out which activity is influencing their mental health to achieve a greater understanding of self.



Figure 8: Dashboard Screen

High-Fidelity Prototype Usability Testing

Research Design

After designing the high-fidelity prototype, we conducted another round of testing to get more detailed feedback on specific features, designs, visualizations, and overall usability. We led participants through semi-structured interviews as they interacted with the prototype, asking for impressions of and reactions to specific components as participants interacted with them for the first time. Just as we did for the low-fidelity usability testing, we brought in the Think-Aloud Protocol to gather insight into areas that felt confusing or unexpected. [The full testing protocol](#) can be found in the appendix of this report.

Results and Discussion

Overall, participants had very positive reactions to the mood tracking with bottles feature, with every participant citing this feature as the one they are most likely to use in real life. Participants found the interaction with the bottles fun and intuitive to use. Some of the participants also had positive reactions to the plant imagery in the prototype. One person said, “[The plant] a nice analogy [because] a person also wants to grow. At the same time, it bears an element of surprise, as one doesn’t know what’s going to happen to the plant.” Reactions to the plant were mixed, however, as one participant didn’t notice the symbolism, and another mentioned they felt indifferent towards the plant. These findings suggest that while users seem to enjoy creative touches, interactions, and images, the things that resonate with different people may vary a lot.

Implementation

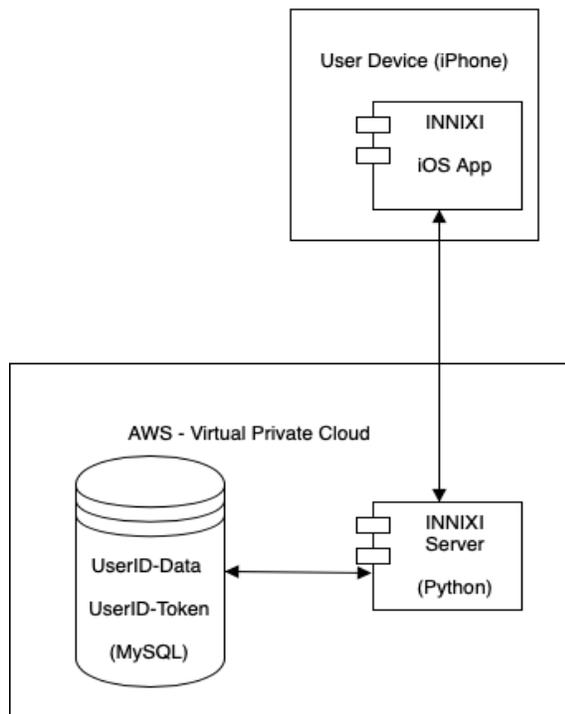


Figure 9: Innixi System Architecture Diagram

GitHub Link: <https://github.com/rahulnangia/innixi>

As a part of our prototype we designed and implemented the following components:

- Innixi iOS App
- Innixi Server
- Innixi MySQL Database

Innixi App

The app built using Swift and Objective C is a native app for IOS devices such as iPhones. The following flows and pages are implemented within the app:

- Low-fidelity prototype flow (Discarded)
- User Onboarding Flow
- User Signup and Login
- User check-in flow (Mood Tracking)
- Home Page View
- Dashboard View
- Notification Rendering Flow

- Detecting and Connecting Empatica E4 Wearable

Currently, the app stores a majority of data within itself and mocks some of the data

Innixi Server

This is a Python-based backend server that would power the app. The Innixi App would interact with this server to store real data, perform data analysis and retrieve results from the data. The server contains endpoints for storing onboarding and tracking data. It can also provide metrics such as, most frequently encountered emotions for a user, most frequent activity corresponding to a user's emotional state, and also contains stubs for metrics such as average sleep, exercise time.

Innixi MySQL Database

This is the data storage engine of the app. The app interacts with the database via the Innixi Server, All user data would be stored in MySQL database. So far it consists of 9 tables including the table required for managing user authentication. The database schema and table descriptions are given below.

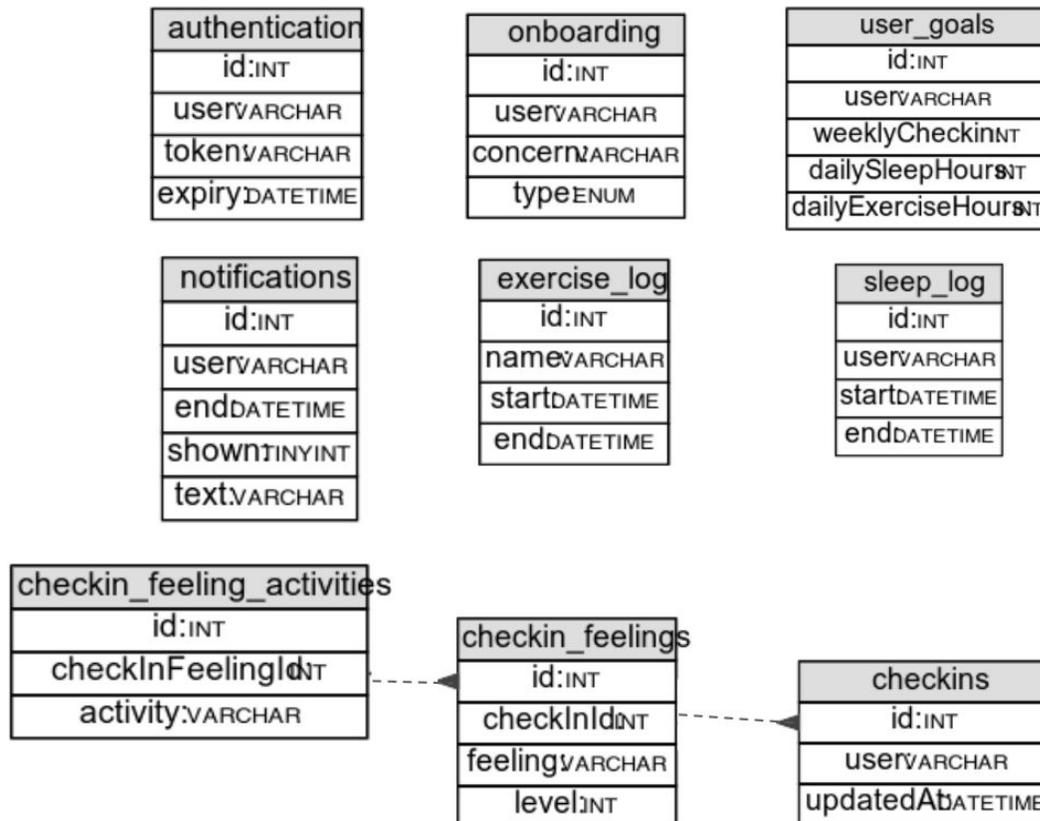


Figure 10: Innixi Database Schema

Authentication

It contains authentication tokens for every user. Ideally, this would be stored in a separate database for better privacy and security.

Onboarding

It contains onboarding information about every user comprising what brought them to the platform.

UserGoals

It contains the goals as set by the user in terms of number of weekly check-ins, etc.

Notifications

It contains pending notifications that need to be sent to a user.

Exercise/Sleep Logs

It contains exercise and sleep duration data from user check-ins.

CheckIns

It contains data from user's periodic check-ins detailing their emotional states and activities corresponding to leading to/arising from those states.

Ensuring Privacy and Protecting User

Given the highly sensitive nature of the data that Innixi is expected to deal with utmost importance has been given to privacy. One of the key principles of privacy tells us that Privacy should be embedded in the design from the beginning and not built as an add-on feature. Hence, due consideration has been given to the privacy aspects of the app.

We identify the following two major privacy threats as per our use case.

- Identity Disclosure: It is the ability of an attacker to associate a given record (or a data point) with a particular person. In this case, the attacker can be we ourselves as there is potential for data to be misused. So we need to protect the user from us as well.
- Impersonation: A scenario where an attacker can tamper with another user's data or is able to retrieve another user's data.

In order to gain user's trust, our design provides the following privacy features.

- No personal information such as email that can help identify a user is stored.
- An option of a local storage mode allows the user to store entire data on device while limiting the capability to offer insights or provide analysis on their data.
- The capability to permanently delete data.

The above features prevent the user's data from being misused by us since we cannot associate a record to a given person. But they are not enough to protect against third-party attacks. In order to protect from impersonation attacks, we add the simplified OAuth 2

framework to our design.

OAuth 2

OAuth 2 is an industry-standard to obtain limited access to user accounts using an authentication token. Following is the abstract flow diagram of the framework.

Abstract Protocol Flow

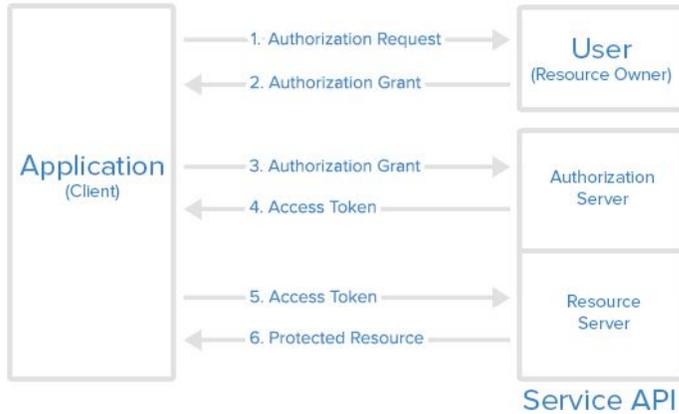


Figure 11: OAuth 2 Flow Diagram¹

In order to accommodate the framework, we altered our architecture to carve out a separate Authentication Server from Innixi Server.

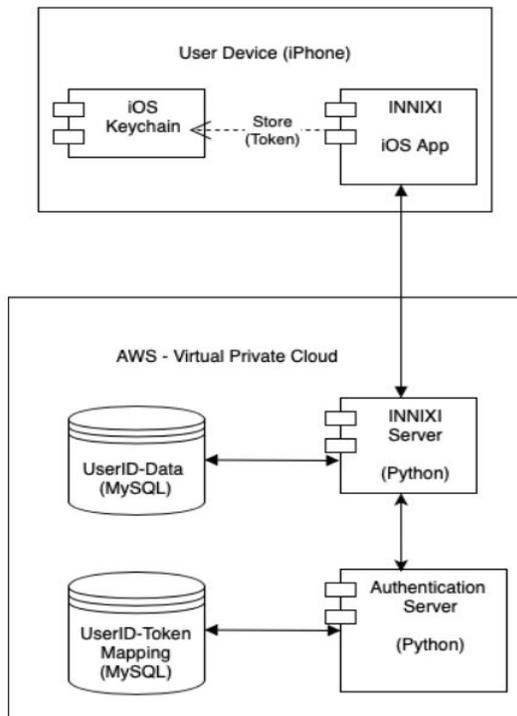


Figure 12: Proposed privacy architecture

¹ <https://www.digitalocean.com/community/tutorials/an-introduction-to-oauth-2>

In the newly proposed architecture, the new Authentication Server would be responsible for authorizing user requests via a separate database for authentication.

As per the protocol, we propose the following flow. A new user would first be registered using the authentication server and issued an authentication token which would be stored by the App on the device. The app would then use this stored token in every subsequent communication with the server. The server will provide data access to the app only after validating the token. As a result, only the user with the correct authentication token can access its data. We plan to store the token as a part of iOS Keychain in our iOS app implementation. The diagram below describes the authentication flow.

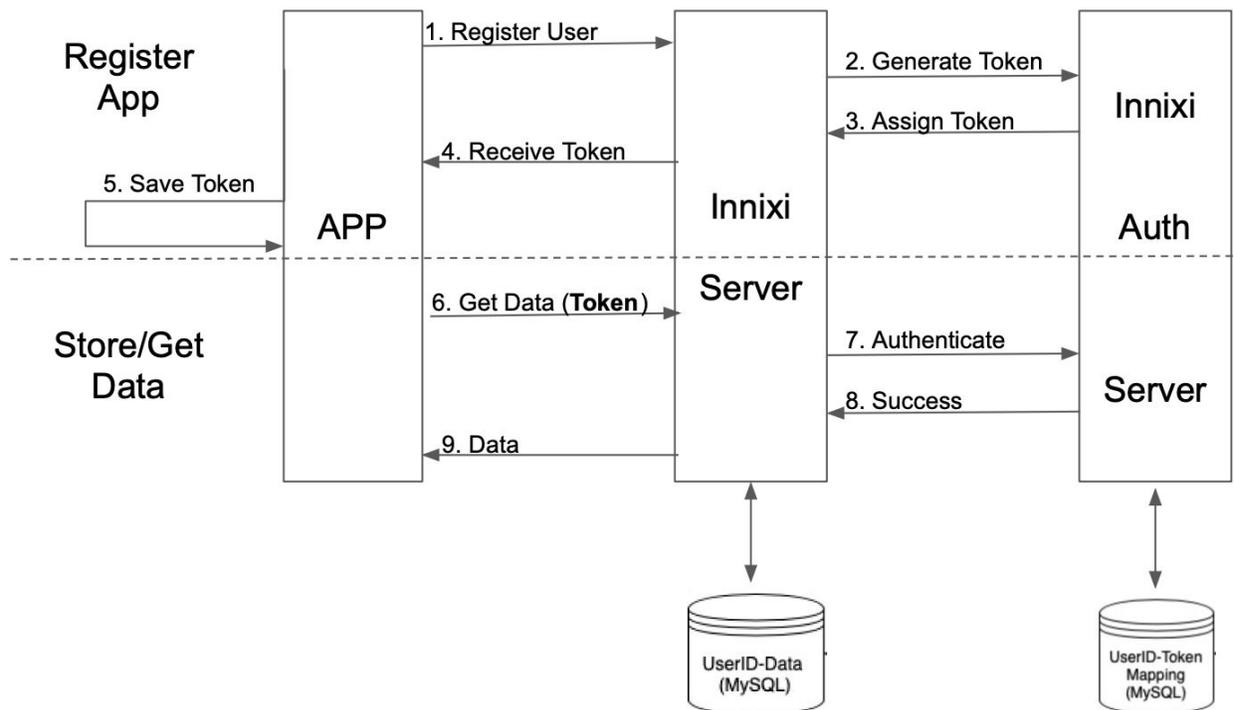


Figure 13: Proposed authentication flow diagram

Sample Use Case

Consider two users Alice and Bob each having their sleep log data on the server and their tokens on their respective devices (figure given below). Since the sleep log table has no information about the user, it is impossible for the attacker to identify the person to whom a record in the sleep log belongs to just by looking at the user id. Also, since Bob cannot have access to Alice's token he cannot access Alice's data and vice-versa. Similarly, Bob cannot attempt to alter Alice's data as he would not be having Alice's token. Hence, we have protected against identity disclosure and impersonation.



Figure 14: Sample privacy use case

Limitations

Though this will protect against identity disclosure and impersonation, the system would still be vulnerable to other forms of attacks such as inference attack², membership disclosure attack, etc. To prevent brute force attacks, a full version of OAuth 2 would be implemented which would entail refreshing the token periodically. Also, since an authentication token is used to validate a user, losing the authentication token would mean losing access to data. Also, if the user shares their authentication token with someone their privacy would automatically be compromised.

Future: Biosensing and Smart Wearables

With the advent of smart wearable devices and their rising popularity among the masses there has been a lot of research on their usability in tracking emotional well being apart from physical health. A study concludes that ECG based wearable devices could be used to continuously monitor the mental conditions of a large spectrum of users³. Another study shows that electrodermal activity discriminated between diagnostic groups of patients with DSM-III-R anxiety disorders, more specifically between patients with and without panic attacks⁴. Sleep

² https://en.wikipedia.org/wiki/Inference_attack

³ Elgendi, M., & Menon, C. (2019). Assessing Anxiety Disorders Using Wearable Devices: Challenges and Future Directions. *Brain sciences*, 9(3), 50. <https://doi.org/10.3390/brainsci9030050>

⁴ Birket-Smith, M & Hasle, N & Jensen, Hans Henrik. (1993). Electrodermal activity in anxiety disorders. *Acta Psychiatrica Scandinavica*. 88. 350-5. <https://doi.org/10.1111/j.1600-0447.1993.tb03471.x>.

quality is also an indicator of certain emotional experiences. A study reported that individuals with social anxiety disorder experience poorer sleep quality compared to healthy individuals⁵.

This drives our desire to integrate industry grade smart wearable devices with our App that could provide precise physiological signals and aid in tracking and managing emotional well being of our users.

Empatica E4

We tried integrating with Empatica E4, an industry grade device that can provide precise physiological data such as Heart Rate, Electrodermal activity, etc⁶. We chose this device as the quality of data measure by the device has been previously validated⁷.

We have been successfully able to integrate this device with our app. However, we will have to build models around interpreting and analyzing this data. Data from this device could be used as potential signals which could then be used to prompt the user for a check-in(log their emotional state) when an anomaly occurs.

Other commercially available wearables such as Apple Watch⁸ and Fitbit⁹ could also be integrated.

⁵ Horenstein, Arielle, Amanda S. Morrison, Philippe Goldin, Maia ten Brink, James J. Gross, and Richard G. Heimberg. 2019. "Sleep Quality and Treatment of Social Anxiety Disorder." *Anxiety, Stress & Coping* 32, no. 4: 387-398. <https://doi.org/10.1080/10615806.2019.1617854>.

⁶ <https://www.empatica.com/research/e4/>

⁷ C. McCarthy, N. Pradhan, C. Redpath, and A. Adler, "Validation of the Empatica E4 wristband," 2016 IEEE EMBS International Student Conference (ISC), Ottawa, ON, 2016, pp. 1-4

⁸

https://www.apple.com/watch/?afid=p238%7CsNZgeoZeS-dc_mtid_1870765e38482_pcrd_434085140764_pgrid_99322576784_&cid=aos-us-kwgo-watch--slid---product-

⁹ <https://www.fitbit.com/us/>

Conclusion and future work

We hope this work will inspire designers and engineers to approach mental health information technology mindfully, with the user's needs (including privacy and useful solutions) always at the forefront of conversations.

Regarding future work, there are a lot of technical details to continue working on, including integrating a smart wearable if users indeed want access to sleep and exercise data, but we decided to focus on the privacy aspects first because we believe it's the foundation for Innixi. Bringing in a wearable will pose even more, and very important, technical, privacy, and UX questions and challenges for us.

Furthermore, throughout our user research, people consistently cited social connection as being one of the most important aspects of wellbeing. Therefore, whether and how to facilitate social wellbeing through Innixi is another area of interest for us. There are also vast differences between people in terms of experiences, hardships, and coping strategies, so how we might expand or change features within Innixi to be more inclusive is a crucial consideration for this project.

Acknowledgments

We would like to express our deepest gratitude to our faculty advisor Dr. Coye Cheshire for being our constant source of motivation and guiding us through this exciting journey of capstone project. His involvement in our project played a pivotal role in bringing it to completion.

We would like to extend a special thanks to Dr. Daniel Aranki for his valuable feedback and ideas that helped us deal with the privacy concerns associated with our project. Thank you to Lisa Neu, Madhav Soni, Pascale Schmidt, Meng Lin, Vivienne Lee, Bria Bailey, and Ames Ma for their invaluable support and insights throughout the project. Lastly, thank you to countless others who offered their generous feedback and support throughout our project.

Appendices

Diary Study Questionnaire

- On a scale from 1-5, how would you rate your current level of anxiety? 1-2 = no anxiety or slight anxiety; 3 moderate anxiety; 4-5 = severe anxiety
- What, if anything, are you feeling most anxious or worried about right now?
- How much control do you feel you have over the source/event/situation you described above?
 - It is completely within my control
 - It is partially within my control
 - It is out of my control
 - I'm not sure
 - N/A
- How would you describe the timing of the source/event/situation you described above?
 - It's in the past
 - It's current and ongoing
 - It's imminent i.e. occurring within the next 24 hours
 - It's on the horizon i.e. occurring within the next week
 - It's on the horizon, i.e. occurring within the next month
 - Other
 - N/A
- Which, if any, anxiety-related symptoms are you experiencing right now?
 - Restlessness
 - Racing thoughts
 - Muscle tension
 - Fatigue
 - Other
 - N/A
- Were you aware of the anxiety or concern you described above before receiving this notification?
 - Yes
 - No
 - Not sure
 - N/A

- If yes: Can you please describe what prompted your awareness of your anxiety or concern since your last notification? (Examples include specific indicators, environments, or people that prompt more self-reflection or awareness)
- If not: Can you please describe what might be preventing awareness and/or reflection about these feelings?

- Since your last notification, have you tried any of the following to relieve your anxiety?
 - Meditation
 - Workout
 - Talk with friends, families, partners, etc
 - Other

- If not, is there anything that is preventing you from taking actions to relieve anxiety?

Interview Discussion Guide

INTRODUCTION & INFORMED CONSENT [:00 - :05]

Thanks again for taking the time to participate in our research study. As part of our capstone project, we're investigating ways to promote self-awareness during feelings of anxiety. Before we develop new services and solutions, we believe it is important to spend time speaking directly with people, such as yourself, to better understand how stress is experienced, typical symptoms, and coping strategies.

We want this to be informal and we are here to listen to your opinions. We encourage you to be as honest and straightforward as possible.

That being said, if there is anything you don't feel comfortable speaking about, just let me know and we will move on.

The information provided will remain strictly confidential and you will not be identified by your answers. Your name will not be disclosed in any way. Data will be compiled as a whole with no individual responses tied to your name or any identifying information about you. All information disclosed during the interview and diary study will be kept in a secure location. Does this sound fine to you?

*Because it is **important to capture your perspectives** in detail, _____ is here to take notes. Just to make sure we capture everything, we are also hoping to record the conversation -- would that be alright? (What you say won't be shared with anyone outside of the project).*

Great, so unless you have any questions . . . let's get started.

CORONAVIRUS / SHELTER-IN-PLACE [:05 - :20]

- How is the shelter-in-place order going for you?
- What does a typical day look like for you during this time?
- In what ways has your daily life changed?
- Is there anything that you're finding particularly challenging about this situation?
- Is there anything that you're doing to cope with challenges related to shelter in place?
- Is there anything that is helping you feel better during this time?
- Is there anything that you wish you were doing more of/less of?
- Is there anything that has improved compared to your normal life during this time?

DIARY STUDY FOLLOW UP (IF APPLICABLE) [:20 - :30]

- How did the diary study go for you?
- Did you notice anything interesting while participating?
 - Did you learn anything about yourself or your habits by participating?
 - Did you notice any changes in your behavior during the study?
- Was there anything challenging about the diary study for you?

EXPERIENCE WITH ANXIETY (REMINDER: SKIP ANY QUESTION AT ANY TIME) [:30 - :40]

- *DISCLAIMER: The questions I am about to ask may bring up topics like medication, therapy, etc. I want you to feel empowered to answer with as little or as much detail as you feel comfortable sharing. Please feel free to speak generically. You don't need to talk about specifics.*
- Do you have moments when you notice that you're feeling stressed or anxious?
 - [If yes] Can you describe what that is like for you? How can you tell?
- Generally speaking, do you consider yourself an anxious person?
 - Why or why not?
 - [If yes] Have you sought out any treatments or interventions for anxiety?
 - [If yes] How/why did you decide to do so?
 - [If yes] Did you have any doubts or hesitations?
 - [If no] Why not?
- Do you think others consider you an anxious person?
 - Why or why not?
- What do you think it means to be an anxious person?

TECHNOLOGY USE AND NOTIFICATION PREFERENCES [:40 - :55]

- Do you currently use any wearable devices?
 - [If yes] do you feel that they have helped or benefited you somehow?
 - [If no] have you used any wearable devices in the past?
 - Why did you stop?

- [If no] why not?
- Do you currently use any mobile/watch/desktop apps for meditation, mood tracking, activity tracking, or journaling?
 - [If yes] do you feel that they have helped or benefited you somehow?
 - [If yes] how do you feel about a wearable device aiding in these activities?
 - [If no] have you used any such apps in the past?
 - Why did you stop?
 - [If no] why not?
- How do you feel about apps sending you notifications or reminders?
 - Are there times that you feel notifications or reminders are helpful?
 - Are there times that you feel notifications or reminders are not helpful, disruptive, or annoying?

WRAP UP [:55 - :59]

- Any questions for us?
- Contact us if something comes up

User Persona

Hans Zimmerman



“ It is difficult to maintain my daily routine during COVID-19 ”

AGE	27
OCCUPATION	Accountant
LOCATION	San Francisco

BIO

Hans is usually a calm person with a predictable work schedule. However, during the coronavirus pandemic, he worries about his health and struggles to maintain daily routine.

NEEDS

- A way to track personal progress
- Greater understanding of self
- Reminders to engage in mindfulness activities

PAIN POINTS

- Feeling of uncertainty
- Lack of daily routine
- Unable to afford therapy

Feature Prioritization Table

In our lo-fi prototype, we designed all P0 features. Then in our hi-fi prototype, we included P1 features and part of P2 features. We haven't designed P3 features but plan to include them in our next iteration.

Features	Goal	Priority
Onboarding <ul style="list-style-type: none"> • Landing page • Nickname set up • Two-question survey 	<ul style="list-style-type: none"> • Introduce the goal of the app • Understand user's specific needs to provide personalized user experience 	P0
Account set up <ul style="list-style-type: none"> • Privacy policy • Registration / Sign in • Goal setting • Reminder set up 	<ul style="list-style-type: none"> • Build trust with users • Motivate users to maintain check-in routine and become a regular user 	P1
Homepage <ul style="list-style-type: none"> • Progress tracking • Tools/activities • Mood check-in 	<ul style="list-style-type: none"> • Show progress • Provide easy access to mook tracking • Provide tools to reflect 	P0
Mood tracking <ul style="list-style-type: none"> • Mood selection • Activities selection • Growth progress visualization 	<ul style="list-style-type: none"> • Enable multiple mood selection with nuances scale • Track well-being holistly by connecting mood with activities • Show gratitude and growth to motivate users 	P0
Dashboard <ul style="list-style-type: none"> • Mood data visualization • Insights about what influences mood • Sleep data visualization • Exercise data visualization 	<ul style="list-style-type: none"> • Visualize data about mood and activities to bring insights • Provide summary to facilitate introspection 	P0
Tools/Activities <ul style="list-style-type: none"> • Guided reflection • Journaling • Meditation 	<ul style="list-style-type: none"> • Use psychology theories to help users understand more about their mental health • Provide intervention methods to alleviate stress 	P2
Motivation/Goals <ul style="list-style-type: none"> • Milestone check-in • Dynamic reminder • Dynamic plant 	<ul style="list-style-type: none"> • Motivate users stick with the plan • Help users maintain a habit 	P3

<p>My profile</p> <ul style="list-style-type: none"> ● Data storage ● Change goals ● View achievement ● Account setting ● Customize visualization 	<ul style="list-style-type: none"> ● Provide methods to protect privacy ● Provide more customized experience 	<p>P3</p>
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Innixi Low-Fi Prototype Usability Testing Guide

[Click here to access the Figma prototype](#)

Introduction

Hello! Thank you for accepting our invitation to this research study. Today, I'd like to talk to you to help us improve a product. I'll ask you to navigate around a prototype of the product and ask you some questions about it. Please keep in mind that we're not testing your knowledge, and there are no wrong answers. I'm here to learn from you.

Do I have permission to record this session? It won't be shared publicly, only with the internal team working on the product.

While you're looking at the prototype I'll ask you some questions and give you some tasks. I'd like you to think out loud while you're doing the tasks – just tell me what you're thinking, what you're expecting, your impressions, and if anything is confusing. Please be honest – nothing you say will hurt my feelings, and it's important to get your honest feedback to help us improve the product.

Note that this is a prototype, not a fully functioning app, so some of the features may not work as expected.

Pre-test questions

- What is your name? Age? Gender?
- Are you currently experiencing any problems related to stress or anxiety?
- Do you use any mood tracking/meditation/sleep tracking apps at the moment? If so, which one(s)?

Onboarding Tasks

Scenario

A friend tells you about a mobile app, called Innixi, that can be used with a smartwatch to track physical and mental health and wellbeing. You decide to download the app and try it yourself.

Task 1

Set up an account and complete the 2-question onboarding survey. After you answer the 2 questions but before going to the next screen, answer these questions out loud:

Questions

Feel free to return to previous screens to answer these questions.

- How do you feel about the questions being asked?
 - Why do you think you're being asked those questions?
- How do you feel about the answer options provided?
 - Do you want to change or add any options?

Task 2

Choose a plan from the list of options and set up your reminders. After you've set up reminders but before going to the next screen, answer these questions out loud:

Questions

Feel free to return to previous screens to answer these questions.

- Describe in your own words what you think the purpose of the plan and reminders is.
- How do you feel about setting up a plan and reminders this way?
 - Is there anything you want to change about the plan or reminders?

Navigating the Home Screen

Task

Navigate to the home screen and describe what you see there. What do you notice? What do you think the goal of this screen is? What do you want to interact with first?

Questions

- Describe in your own words what you think the purpose of each of the following features on the home screen is:
 - "Today's insight"
 - "Your day"
 - "Activities"
- How do you feel about having an image, such as the plant, appear on the home screen next to "Your day"?

- Imagine you have the ability to customize the visual that appears here. What would it be, if anything?
- Are there any images/visual concepts that you associate with relaxation?

Mood Tracking

Task

Navigate to and complete your daily check in.

Questions

Feel free to return to previous screens to answer these questions.

- How do you feel about the questions being asked?
 - Why do you think you're being asked those questions?
- How do you feel about the answer options provided?
 - Do you want to change or add any options on the "how are you feeling" screen?
 - What are your top 3 choices for mood right now?
 - Do you want to change or add any options on the "what have you been up to" screen?
 - What are your top 3 choices for activities for today?
- What do you think will happen when you click "go to dashboard"? What do you expect to see there?
- What do you think will happen when you click "back to home"?

Using the dashboard

Task

Navigate to the dashboard and describe what you see there.

Questions

- Describe in your own words what you think the purpose of each of the following features on the dashboard is:
 - "Mood"
 - "Sleep"
 - "Things you may enjoy"
 - "Things you can reflect on"
- How do you feel about the features on the dashboard?
 - What kind of details/data, if any, do you want to see?
 - Is there anything that's missing that you're interested in seeing?

Post-Test Questions

Qualitative Concept Testing Questions

- Overall which feature, if any, are you likely to use in real life? Why? Does this feature solve a real problem for you?
- Which feature(s) are you unlikely to use? Why?
- What did you like about the app?
- What aspect of the app confused you?
- How much would you be willing to pay for this app?
- How would you describe this tool to a friend?
- If you had a magic wand, what features would you add to this app?

Quantitative Concept Testing Survey

Lastly, have the participant complete [this Google Forms survey](#) at the end of the session (should take ~5 minutes or less)

Innixi High-Fi Prototype Usability Testing Guide

Goals

- Understand the concrete needs people have when going through life's transitions and whether our app addresses those needs
- Assess the functionality and aesthetics of the app and identify areas for improvement
- Evaluate the value of all the features to help further prioritize their significance
- Get suggestions on potential new features

Participants

Ideally people who have been through life transitions, like a career change, breakup/divorce, etc. so we can learn more about their needs by asking pre-test questions.

[Click here to access the Figma prototype](#)

Introduction

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While you're looking at the prototype I'll ask you some questions and give you some tasks. I'd like you to think out loud while you're doing the tasks – just tell me what you're thinking, what you're expecting, your impressions, and if anything is confusing. Please be honest – nothing you say will hurt my feelings, and it's important to get your honest feedback to help us improve the product.

Note that this is a prototype, not a fully functioning app, so some of the features may not work as expected.

Pre-test questions

- What is your name? Age? Gender?
- Have you been through any major life transitions in the past?
 - What is/was the most difficult or challenging aspect about navigating those transitions for you?
 - Imagine you have a magic wand - what tool do you wish had to help you get through the hardships during the transition you mentioned?
- Are you currently experiencing any problems related to stress or anxiety?
- Do you use any mood tracking/meditation/sleep tracking apps at the moment? If so, which one(s)?

Tasks

Scenario

Think about any COVID-related hardships you're facing these days. Imagine a friend tells you about a mobile app, called Innixi, that can help you go through those hardships by providing a space for mood tracking and self-reflection . You decide to download the app and try it yourself.

Task 1 - Onboarding

Go through the onboarding screens. After you answer the 2 questions but before going to the next screen, answer these questions out loud:

Questions

Feel free to return to previous screens to answer these questions.

- How do you feel about the questions being asked?
 - Why do you think you're being asked those questions?
- How do you feel about the answer options provided?
 - Do you want to change or add any options?
- Which option would you choose for each question?
- Is anything about these screens confusing?

Task 2 - Mood tracking

Click on “Start First Check-In” to try out the mood tracking feature.

Questions

Feel free to return to previous screens to answer these questions.

- How do you feel about the entire mood tracking flow?
- Do you want to change or add any options on the “how are you feeling today” screen?
- How do you feel about the visual design of the feelings?
- Do you know what to do to make the bottles full?
- How do you feel about “filling up bottles” as a representation of an intense feeling?
- How do you feel when you see the plant?
 - Does the watering screen and the complete screen motivate you to do more check-ins?
 - How do you feel about sharing this with your friends?
- How do you feel about the question regarding your activities?
 - Why do you think you’re being asked this question?
 - How do you feel about the answer options provided for activities?
 - Do you want to change or add any activity options?
 - What are your top 3 choices for activities for today?

Task 3 - Account Setting

Click “Create My Account” and set your account up. Click on Data and Privacy Policy to review the policy.

- Does the privacy policy build trust with you?
- Is the goal setting making sense to you?
 - Is there any step that you feel is missing?
 - Would you feel more motivated to do check-ins after setting up goals?
- How do you feel about setting up a reminder this way?

Task 4 - Homepage

Navigate to the home screen and describe what you see there. What do you notice? What do you think the goal of this screen is? What do you want to interact with first?

Questions

- Describe in your own words what you think the purpose of each of the following features on the home screen is:
 - Check-ins, sleep, exercise
 - “Today’s insight”
 - “Activities”
- How do you feel about having the image of the plant appear on the home screen?
 - How do you feel about having an image of a plant represent your physical and mental health?

- Do the plant and/or the check-ins progress bar motivate you to do more check-ins?
- What do you think is the purpose of activities?

Task 5 - Using the dashboard

Navigate to the dashboard and describe what you see there.

Questions

- How do you feel about the three feelings at the top? Is this information helpful? What do you think that information means?
- Describe in your own words what information you get from each of the following features:
 - “Things you were most anxious about”
 - “Things you may enjoy”
 - “Sleep”
 - “Exercise”
- How do you feel about the features on the dashboard?
 - What kind of details/data, if any, do you want to see?
 - Is there anything that’s missing that you’re interested in seeing?

Task 6 - Go back to homepage and use the guided reflection and journaling feature

- How do you feel about the questions being asked? Do you feel that they help you reflect on your mood?
 - Question about talking to friends
 - Question about worrying what others think
 - Journal prompts
- How helpful do you think this feature is in helping you go through hardships in a mindful way?

Post-Test Questions

Rate the following statements on a scale of 1-5 (1=strongly disagree, 5=strongly agree)

It is easy to navigate the app.	
The naming and labeling of different components was easy to understand.	
The information is relevant to my needs.	
Screens have the right amount of information.	

The app's functionality would keep me coming back.	
The app is designed with me in mind.	
It is clear how screen elements (e.g., pop-ups, scrolling lists, menu options, etc.) work.	
The overall look and feel of the app were pleasing.	

Qualitative Concept Questions

- Overall which feature, if any, are you likely to use in real life? Why?
- Which feature(s) are you unlikely to use? Why?
- What did you like about the app?
- What aspect of the app confused you?
- How much would you be willing to pay for this app?
- How would you describe this tool to a friend?
- If you had a magic wand, what features would you add to this app?