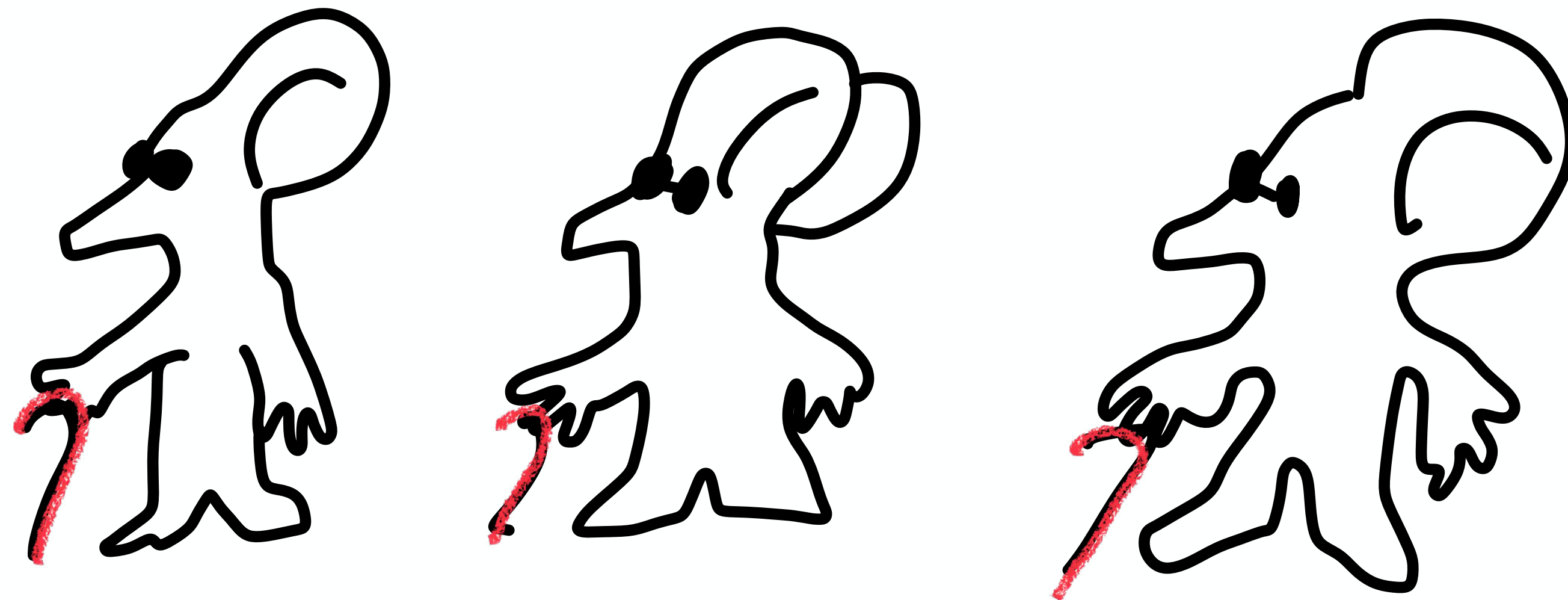
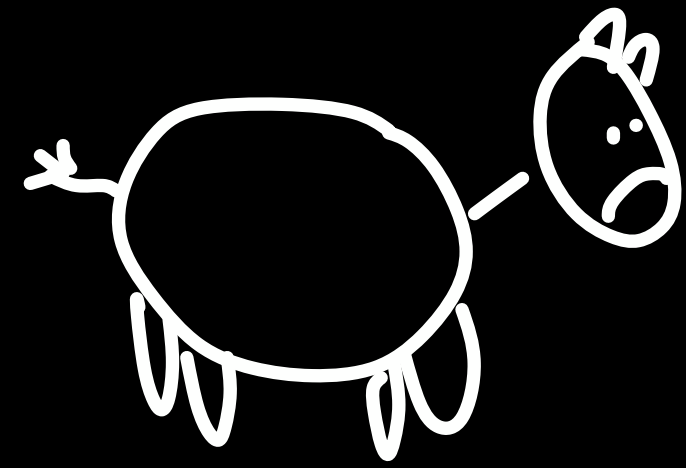


IXD 330 | Design for Social Change

Esther Sherry, Misha Melnitsky, Chris Guercio





Situation

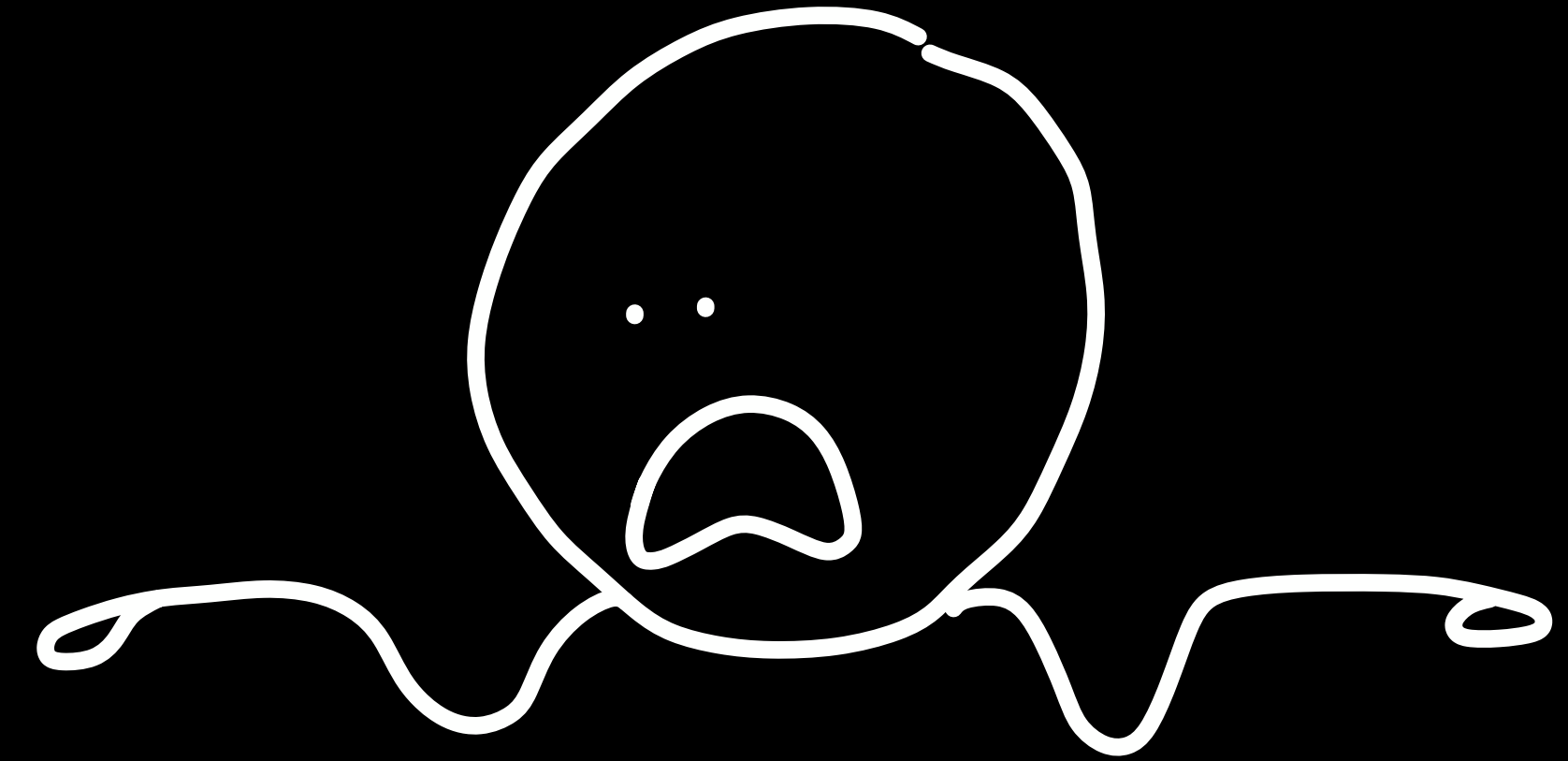


Users with visual disabilities experience difficulty at the farm due to rugged terrain.

We are going to explore creating solutions for blindness or low vision accessibility so visitors can have the full farm experience.



Problem



Who is experiencing the problem?

People with blindness or low vision

What is the problem?

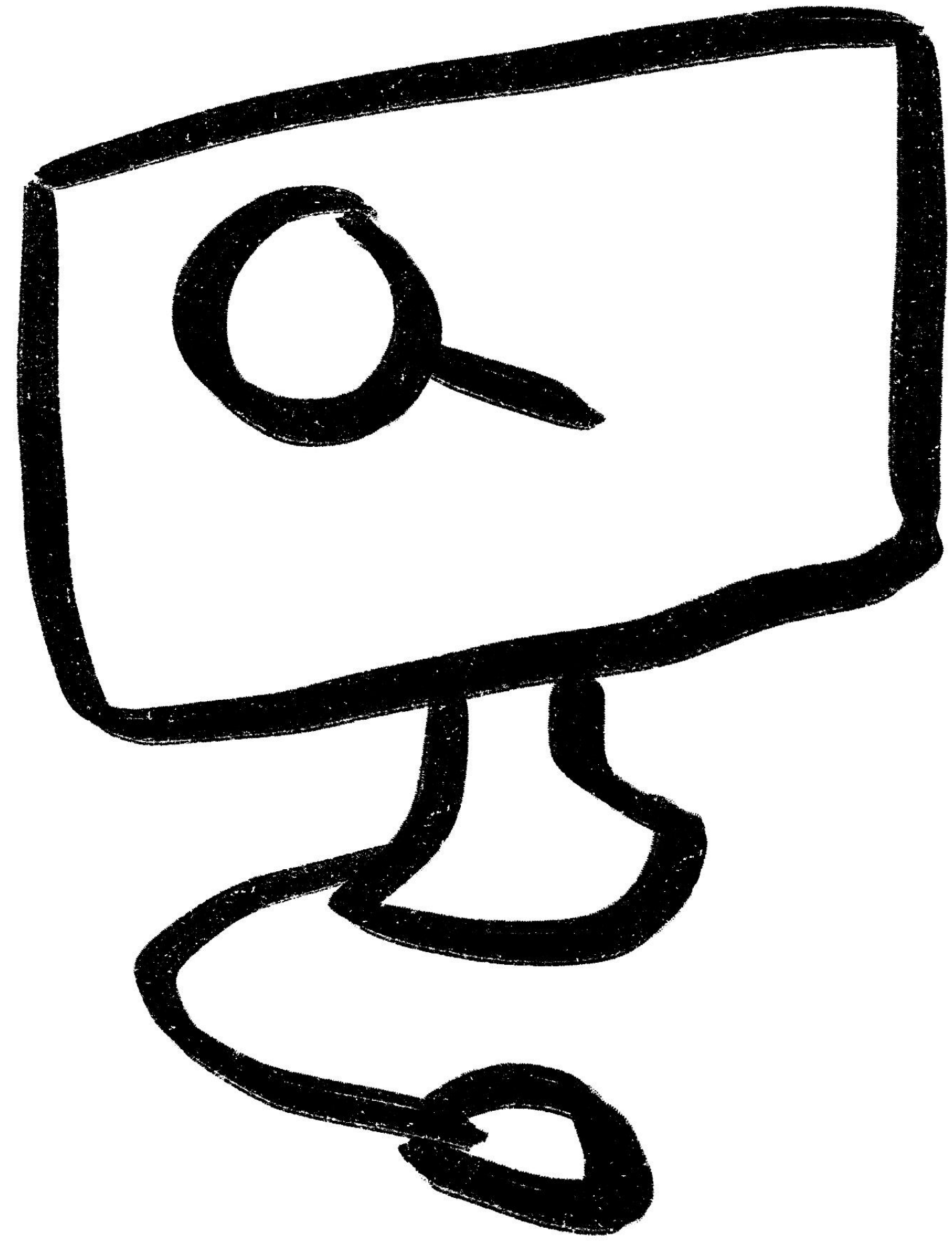
Lack of mobile friendly navigation for accommodating users with visual restrictions

Where is the problem?

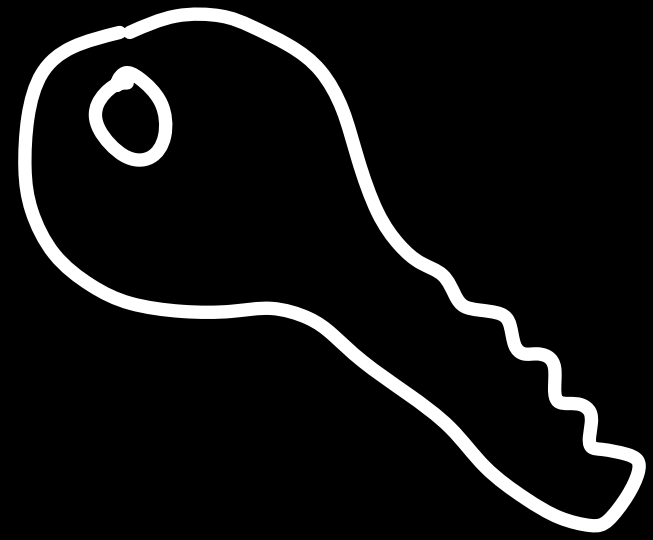
Suffolk County Farm

Why does it matter?

These people are limited in becoming fully involved in the farmland experience



RESEARCH
ABOUT THE
PROBLEM!



Our Problem Constraints



Who are we limited to... The community we are designing for, users we can interview only on internet and immediate vicinity, our mentor, and professor.

What limits... Our knowledge of the situation & no personal experience with having these disabilities.

Location limits... Restrictions of public facilities, our home. Still within community vicinity, digital presence.

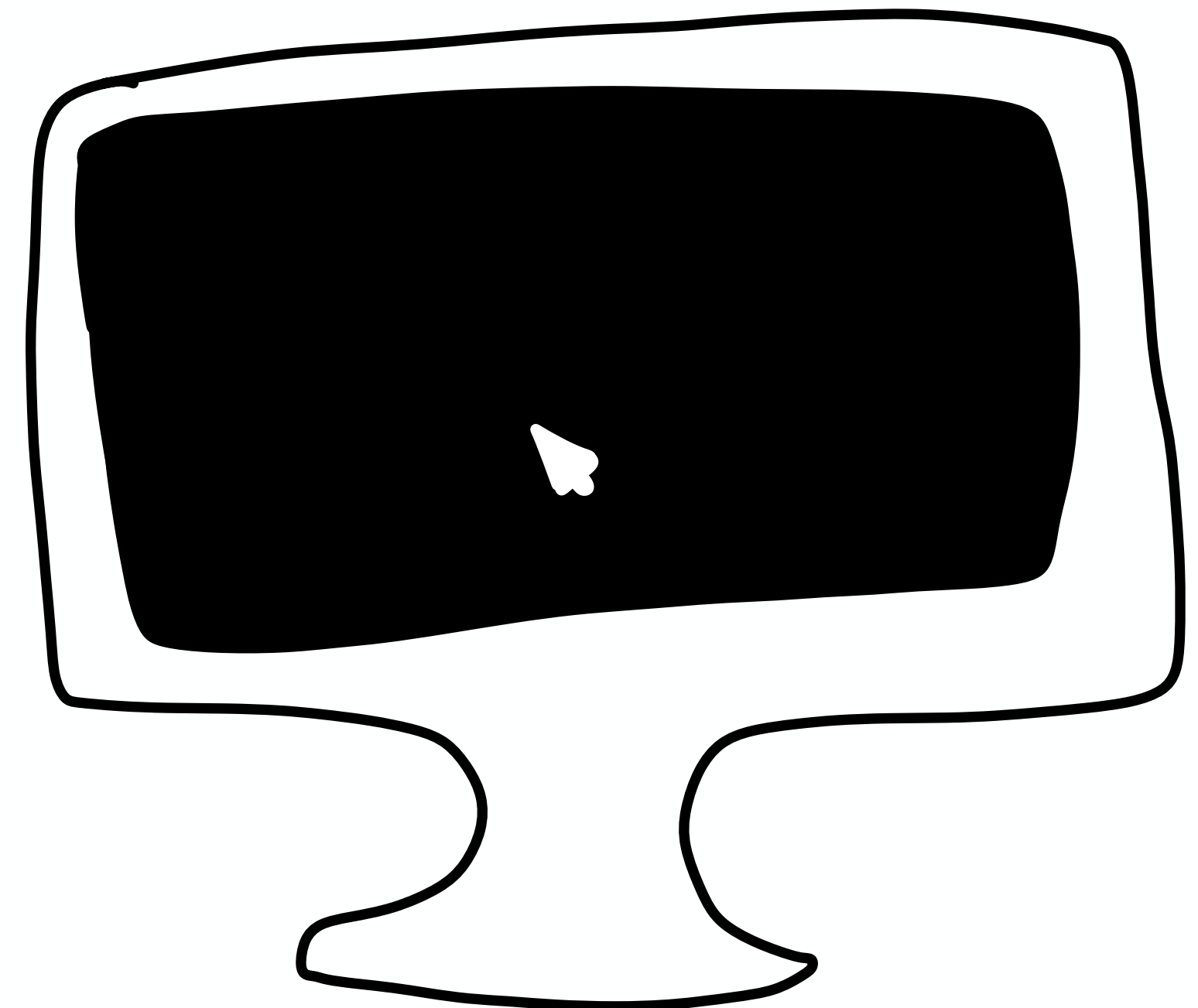
Collected Research

Digital Accessibility

Web Content Accessibility Guidelines (WCAG) 2.1 covers a wide range of recommendations for making web content more accessible.

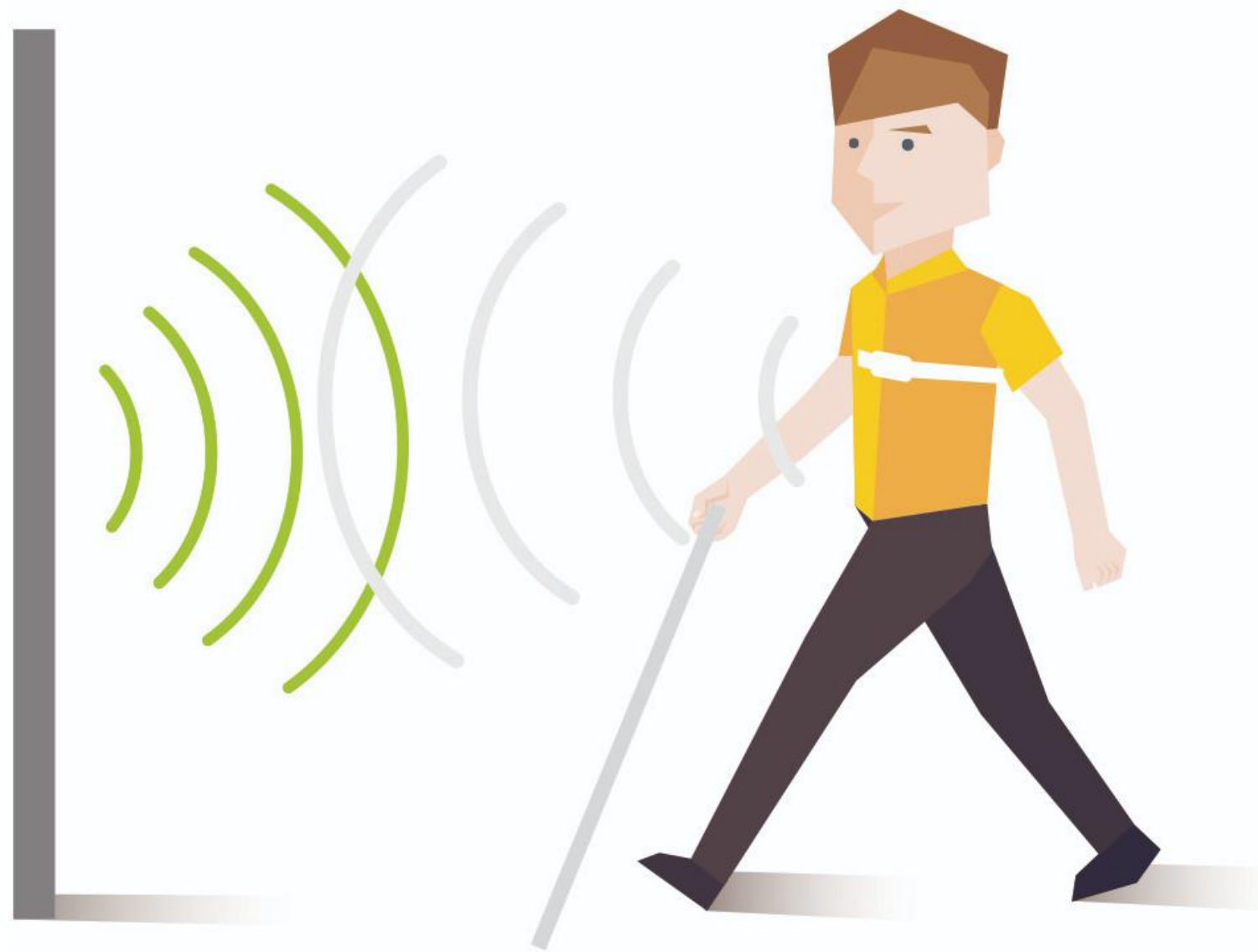
Assistive Technology (AT) is any device or piece of equipment used to maintain or improve a person with a disability's functional capabilities.

With Alexa Show and Tell blind and low vision users can hold up an item to the Echo Show camera and ask Alexa for help identifying the item.

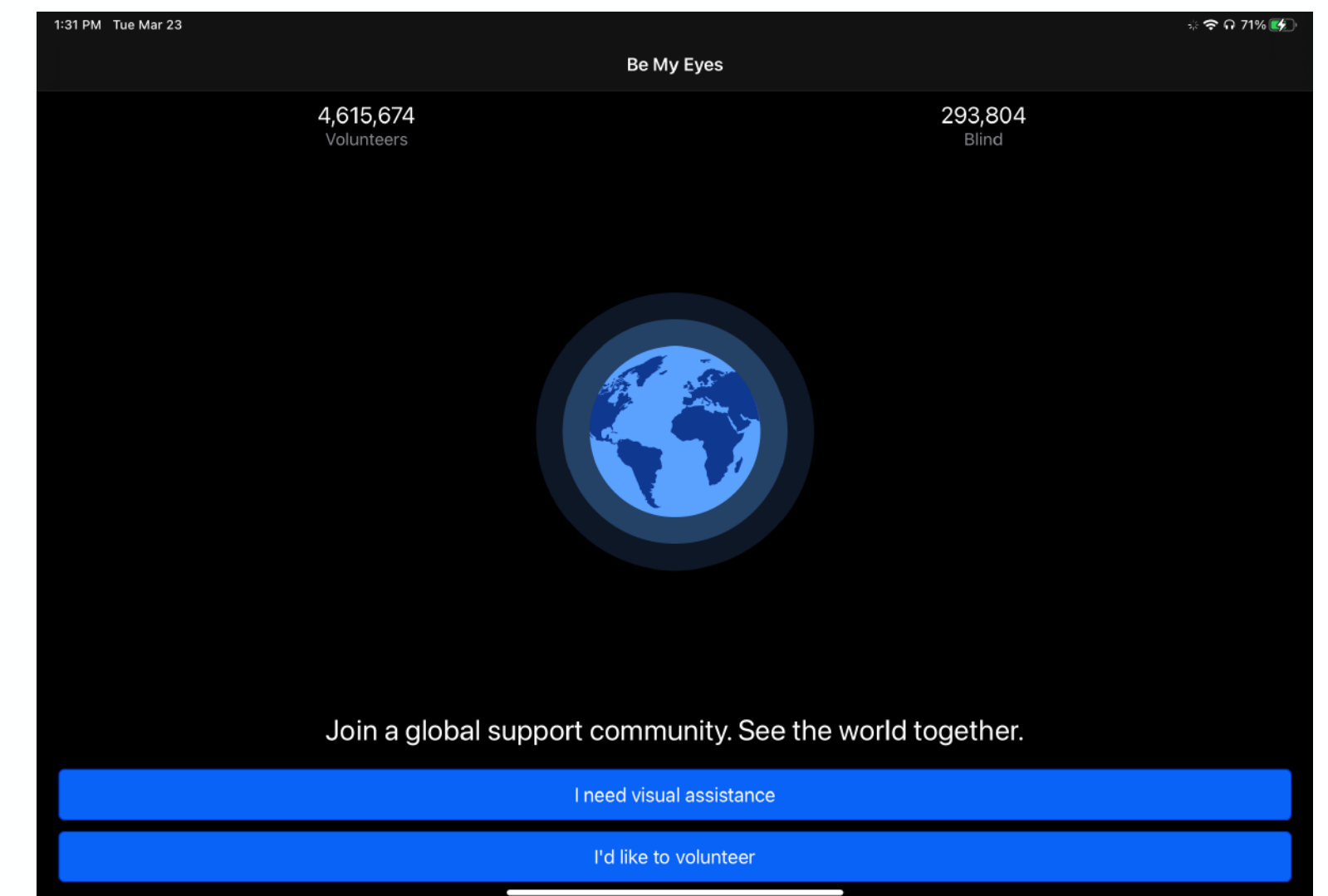


Benchmark Problem Solutions

What others have done



- This device functions on the basis of a radar system
- This The radar conveys information to the user in the form of vibrations or voice feedback.
- Senses most obstacles in the user's surrounding.



- This tech helps blind people receive Visual assistance
- Organization works with blind or low vision users to get help from volunteers

Personas

Faculty Felicia and Blind Billy



Faculty Felicia

Age: 29

Occupation: Farm director



“How can I help more efficiently?”

About:

Felicia has been working in accessibility accommodations for 9 years. She is working to understand the new technology which is being used in her field of work.

Goals:

Give the farmland experience to all people regardless of their situation.

Pain Points:

Has to solve conflicts between location's design and visitors' needs

Has to adapt to changing technology with limited training

Can not always provide the needed assistance

Motivators:

Wants those with disabilities to feel included and engaged

Would feel better prepared in her industry if she knew about up-to-date tools

Wants to make sure the technology she uses is reliable

Opportunities:

With her input, new technology can accurately cover the needs of her work

Behaviors:

Does research outside of work for preparation

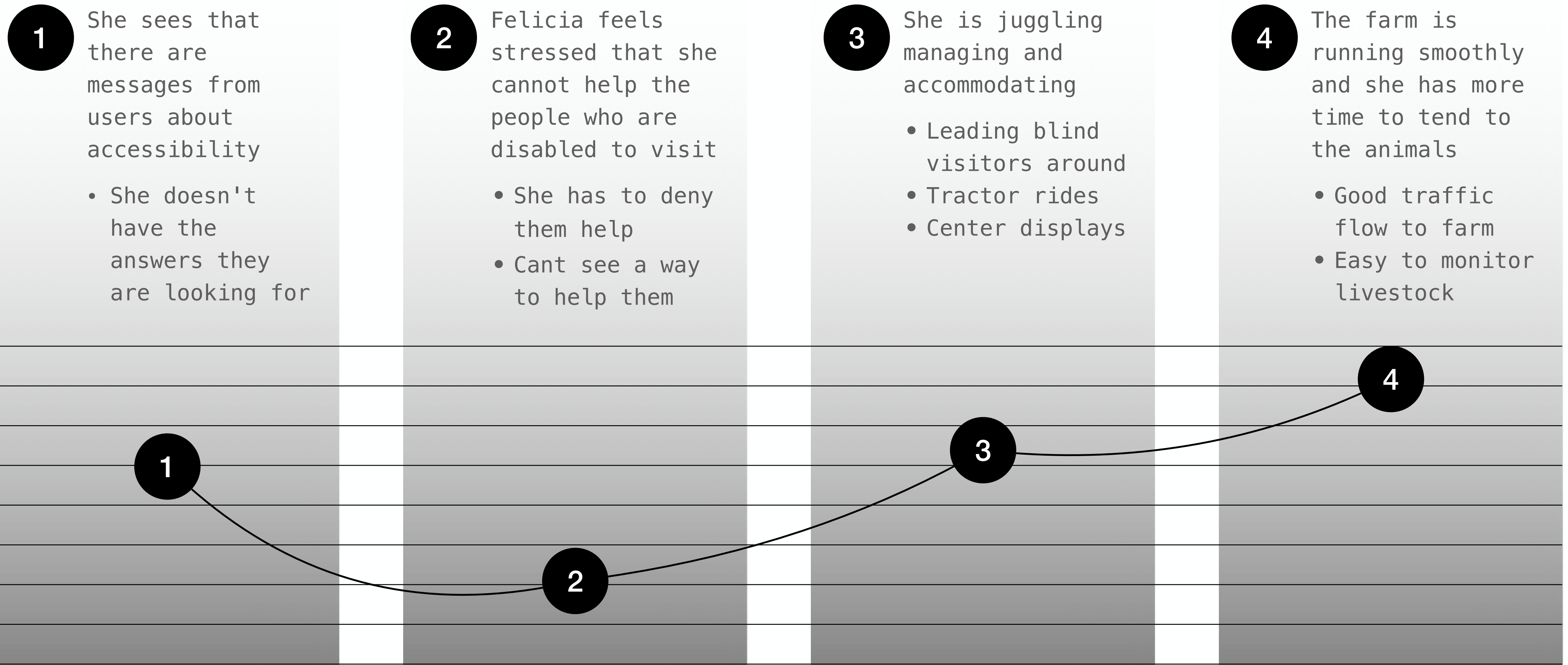
Talks with visitors for feedback



Faculty Felicia

Situation:

Farming is her passion, and making sure everyone is able to explore and experience the farm is her goal.
Her every



Faculty Felicia

How will I determine what is needed to help the visitors?

Felicia thinks that she has consider how the residents of the facilities are best being considered when looking at possible changes.

What is the best way to deliver proper accommodations?

Felicia thinks that their has to be a focus on figuring out what is the best method of accommodating people with disabilities.

What will be required to improve upon the location?

Felicia thinks that examining the how current structures and other assets are being used helps to determine how best to improve upon them.

Can I find new ways of assistive programs/ technologies.

Felicia thinks that she has to be a step ahead and consistently be looking at newer ways of making the farms experience more accessible.

"Are you lost?"

How might I direct traffic smoothly?

"What assistance is required for your farm experience"

How might I know how to assist people who need it?

"Do you want to tour the farm?"

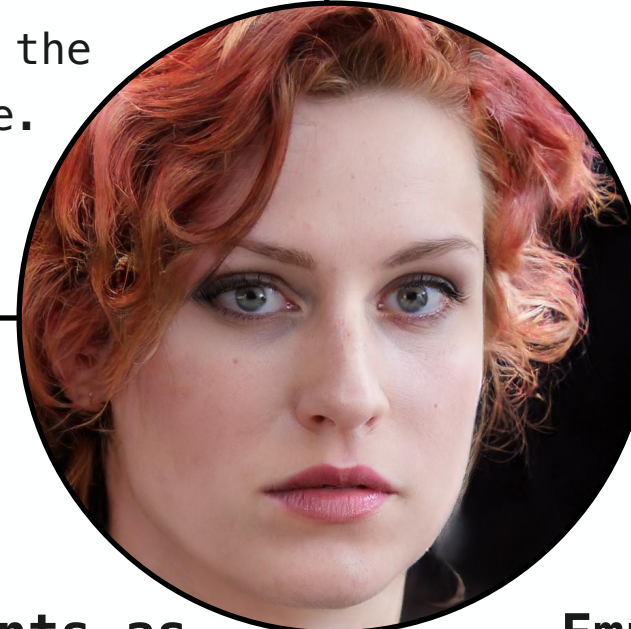
How might I make It easier for people to tour the farm

"The farm is closing soon and you all need to leave"

How might I make it easy to notify people of the farm closing soon?

**Thinks
Does**

**Says
Feels**



Research new methods to assist with peoples disabilities.

Felicia takes it upon herself to look into newer means of accessibility programs and technologies that can be used in thew future.

Being realistic about the people she wants to help.

Felicia has the responsibility of looking at the feasibility of how much they are able to realistically provide for people.

Conversed with the residents as a means of acquiring feedback.

Felicia makes it her goal of asking residents for feedback on the quality of places like the farm.

Sends people asking for assistance in the right direction

Felicia is either able to answer peoples direct questions about accessibility, or leads them to the proper place that will advise them.

Empathetic towards accommodating people with disabilities

How might I accommodate for disabilities?

Feels overwhelmed at all the individual accommodations

How might we know how to accommodate ahead of time?

Frustrated they can't always meet visitors' needs

How will I expand the help I can offer?

Feeling not enough resources to to assist everyone

How might I effectively use current resources?

Blind Billy

Age: 33

Occupation: Voice Actor



“What help will be available to me?”

About:

Billy has been blind since birth and has to rely on his family and caretakers to assist him in his everyday routine. He has a shadow but tries to navigate independently when he can.

Goals:

Get the full farmland experience and feel independent doing so.

Pain Points:

Difficulty navigating uneven ground

Apprehensive of accommodations in new locations.

Trouble finding out beforehand if a new location will be accessible to him.

Motivators:

Feel more connected to the land.

Understand how farmland works and interact.

Feel a part of the community and organizations.

Opportunities:

Create technology that can be Billy's shadow and assist in navigation through the farm land.

Behaviors:

Finding accommodations available to them.

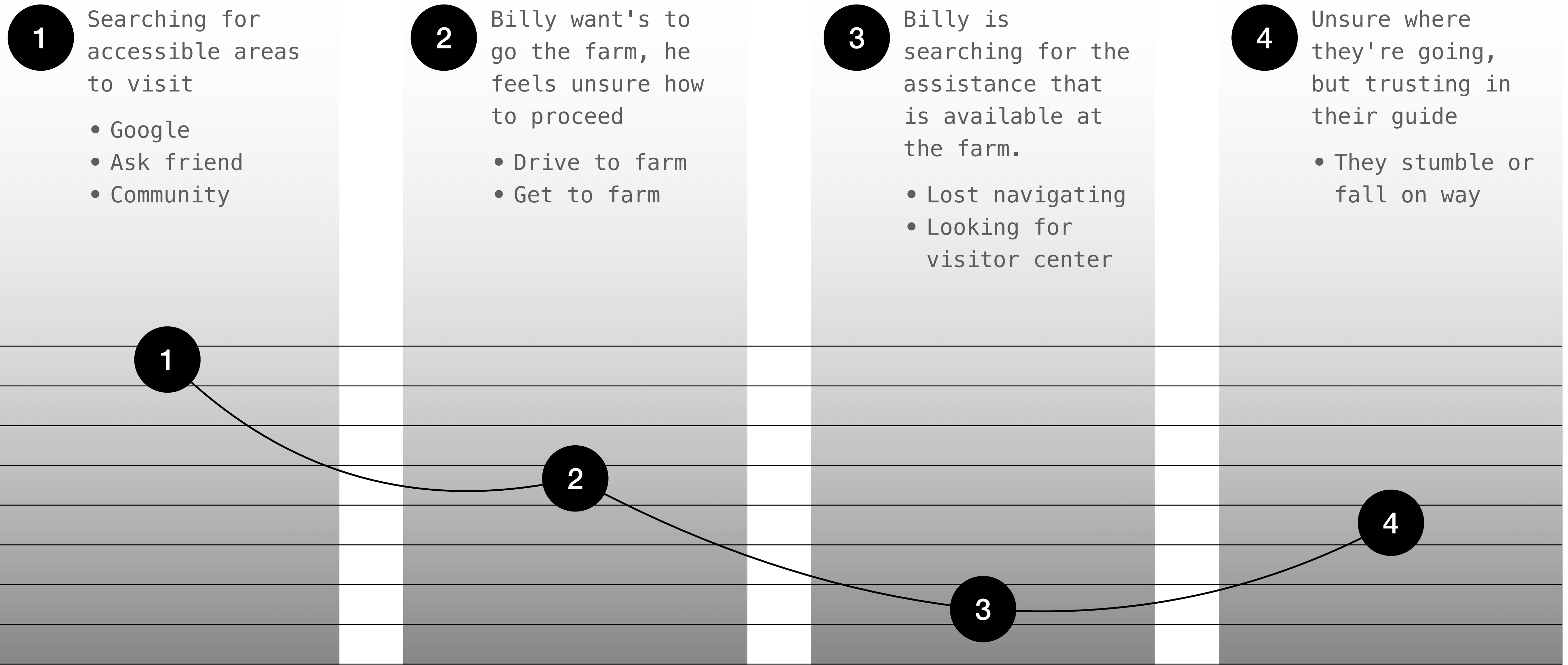
Going in groups.



Blind Billy

Situation:

The farm is a place Billy always wanted to visit but unfortunately he never could. The opportunity to go to the farm is his dream but he feels like it will be difficult to get the full farm experience.



Blind Billy

How will I be able to navigate around on my own?

Billy thinks about the difficulties of navigating around unfamiliar spaces by himself, and wonders how he can attempt to show independence.

Will today be an easy day for getting around?

Billy thinks about the challenges of setting up for traveling to new places, and considers the difficulty of the venture.

I'm can't get around unless I have my shadow with me to help.

Billy thinks that there are situations that he's unable to get around unless he has the assistance of his shadow.

I'll have difficulty determining where on the farm I'm at.

Billy thinks about going to the farm, how difficult it will be to know where he is on the farm.

"I need help getting where I want to be going."

Billy talks about how he has to be direct about asking for assistance when it's needed.

"I want to try and do this on my own today."

Billy talks about how he wants to try and be more independent in these kinds of situations.

"Where can I find the place for help with accommodations?"

Billy talks about the difficulties of finding the right locations or personnel to give him the assistance he needs.

"Do you have a way for me to walk with the others?"

Billy talks about wanting to be able to do the same tasks that the others are able to do by themselves.

Thinks
Does



Says
Feels

Rely's on Their Shadow to assist them when moving

Billy tends to have to rely on his shadow and other forms of tools for the visually impaired to be mobile.

Miss out on experiences when there are no accommodations

Billy will have to miss out on events if they are unable, or unwilling to accommodate his needs.

Has trouble walking on uneven ground, stumbles

Billy has difficulties remaining stable when navigation on ground that is uneven.

Research accommodations, what's available for me to visit.

Billy looks into the places he's going before he travels there to see how well their accommodations are for him upon arrival.

Feels aggravated when having difficulties navigate alone

Billy feels aggravated when there are challenges to him having the ability to navigate by himself.

Feels unsure at how to proceed with little to no assistance

Billy will feel unsure of himself when there is a small amount of assistance that is able to be provided to him at that moment.

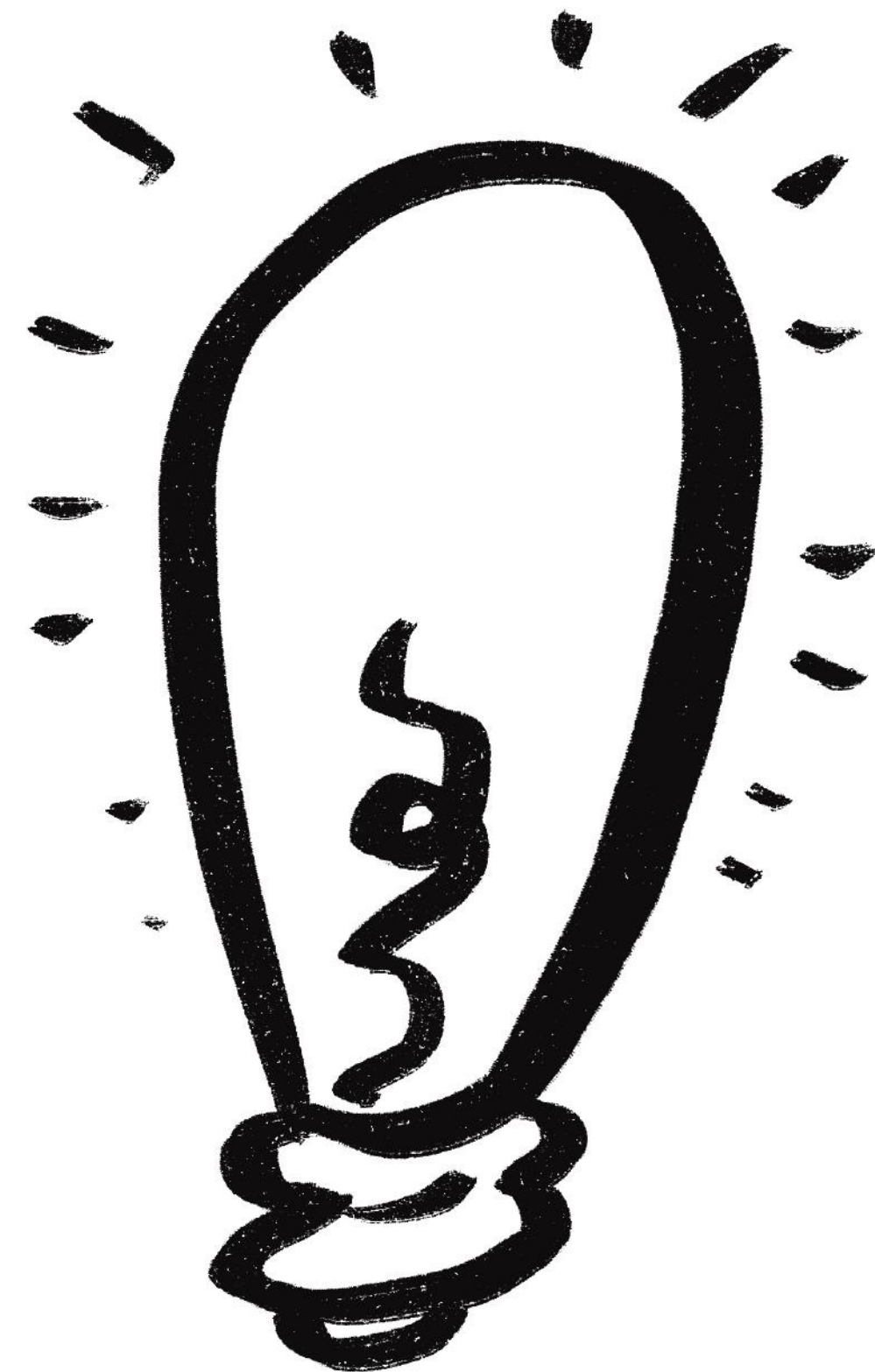
Frustrated they can't have the full farm experience

Billy feels frustrated when he's not able to get the full experience of destinations, like the farm or other places.

Trust in their guide and the faculty that try to help him

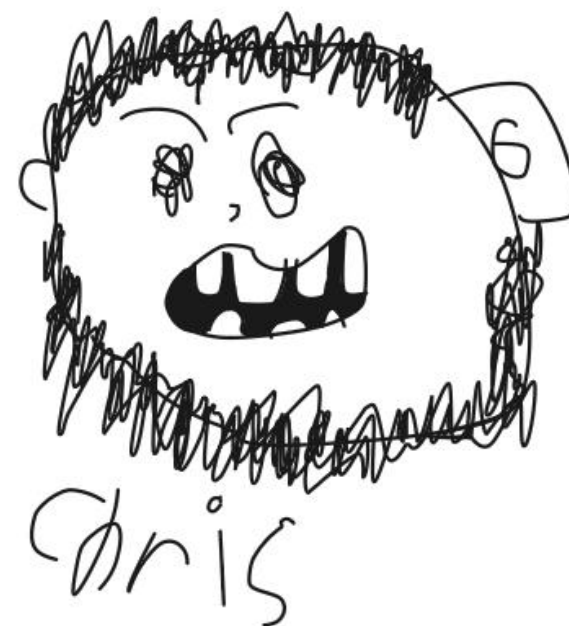
Billy has a trusting relationship with his shadow, and feels very happy about the individuals that are able to assist him when he asks.

Brainstorm



Brainstorm Notes

- Use of proximity detection
- cart tracking
- Rent a Guide dog/pig
- horsey rides/ supervised
- Child That Screams When You Go Of Path
- Wearables that give off vibrations the further away the user gets from other members of the group with the same device
- Guided Farm Experience
- 
- Scheduled tractor rides
- Geo fences around specific areas of farmland and animals to narrate the location and specimen you are within vicinity of
- Leash(?) that goes around farm
- At Home Live Audio Tour
- Farm Feel Box
 - Feel items and guess what they are
- Ankle Bracelet that alerts you of livestock and farm vicinity
- Ankle Vission, Audio tour
- Phone Audio tour through geofencing
- People cable cars

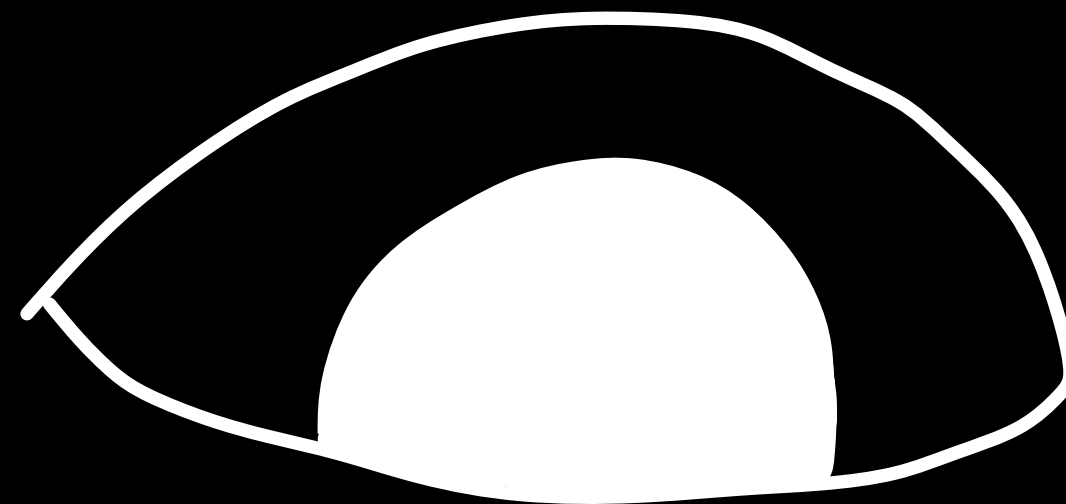




Top 5

Proposals

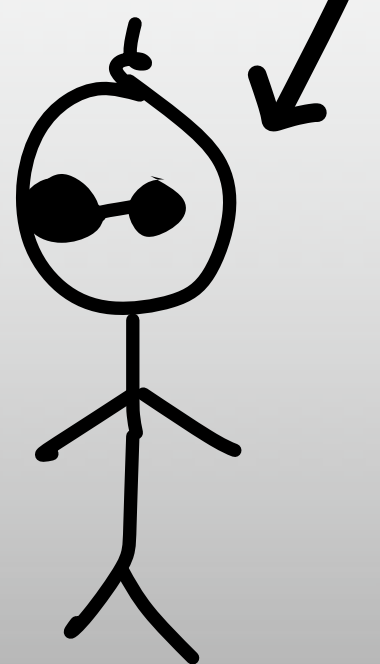
1. **Geo fences** around specific areas of farmland and animal stalls to narrate the location and specimen you are within vicinity of
2. **Wearables** that give off vibrations the further away the user gets from other members of the group with the same device
3. **Farm Feel Box**– Samples of objects from farm to display
4. **Centralized location** for a variety of community garden programs
5. **Bracelet Haptics** from users also wearing bracelet to track and direct traffic that **alert user of livestock vicinity**



POV

User

Blind Billy



Need

To **visit the farm**
and get the full
farmland experience



Insight

For Billy to get to
the farm...

He needs **assistance**

- Transporting
- Navigating
- Identifying farm



Experience Journey

Before

Looking for a farm to see what it's about



During

Confused as to where the farm center is and how to get there



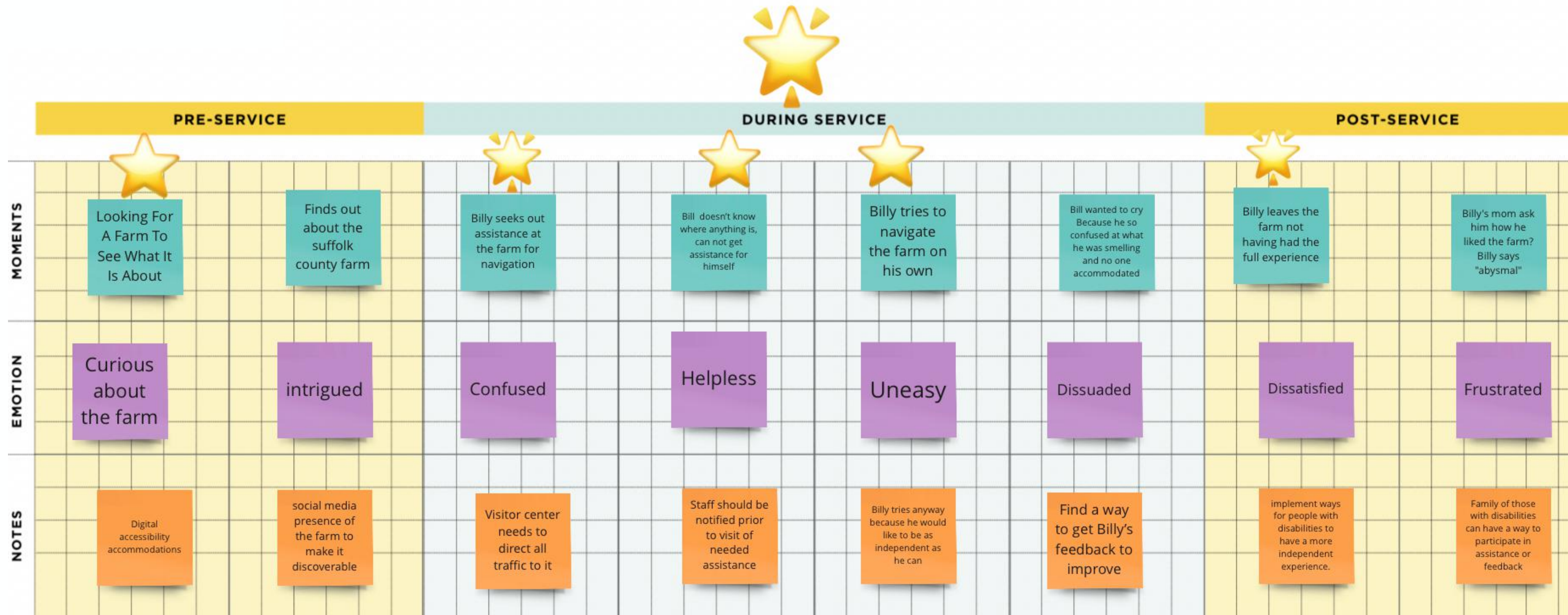
After

Billy wanted to cry because he so confused at what was going on and no one assisted.

Billy's mom asks how he liked the trip, and he said "abysmal."



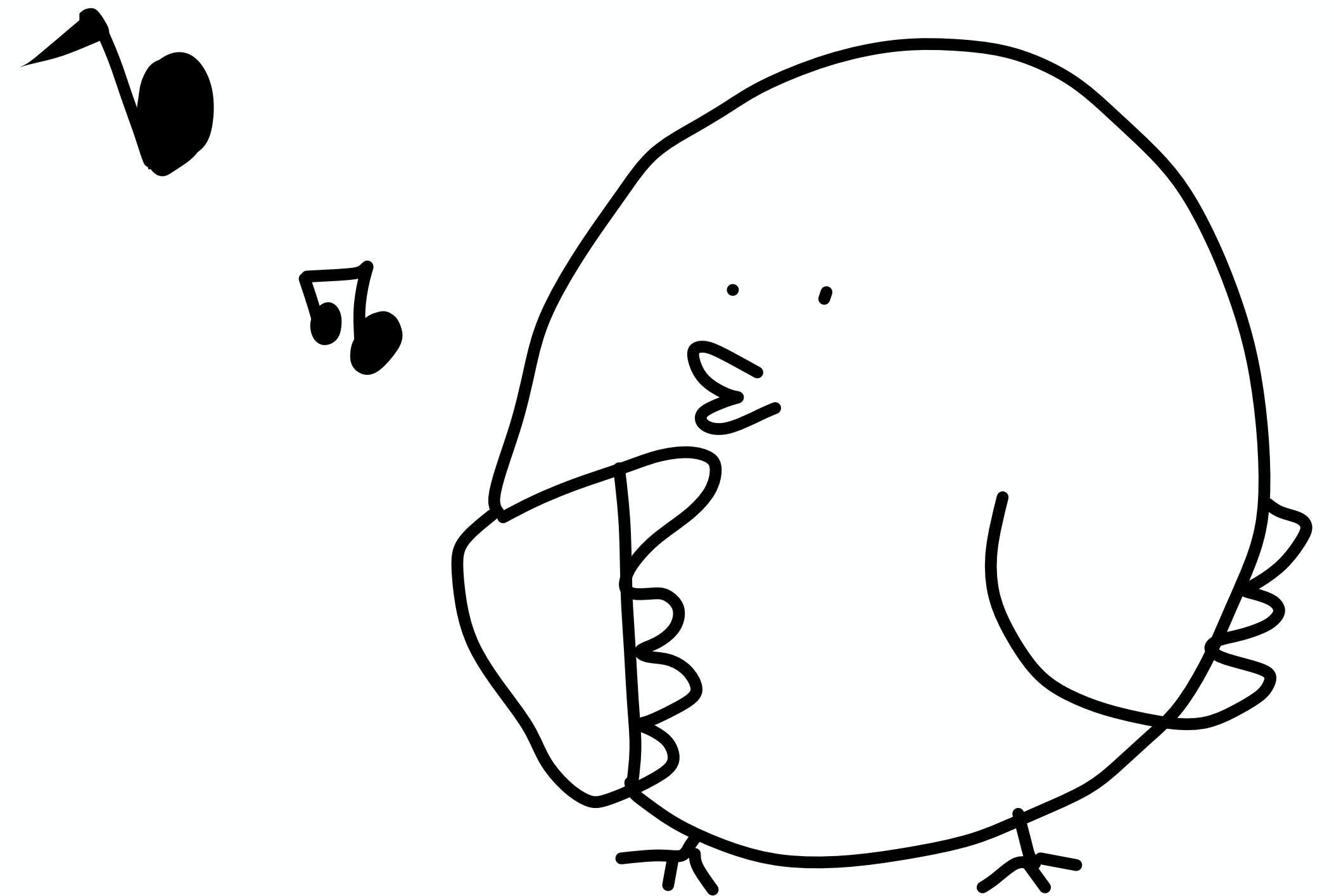
Insight Map



How Might We...

How might we (HMW) create a solution from the data we have access to?

- HMW use existing resources to make the farm experience more accessible?
- HMW notify the staff of disabled accommodations beforehand to assist?
- HMW show the user what accommodations are available for navigation and access to the farm experience?





Moments that Matter

MOMENT THAT MATTERS # 1

CATCHY TITLE: Start of the Search

WHO'S INVOLVED? Billy

WHAT NEEDS ARE SERVED? The internet helps Billy as a resource to find somewhere to go

WHAT DOES IT FEEL LIKE? Billy is curious to see what type of places he can find

WHY THIS MOMENT MATTERS: The location he chooses to visit will determine how good his experience is

WHAT DO YOU WANT TO CHANGE? Digital accessibility accommodations would help Billy and others with disabilities at this stage

MOMENT THAT MATTERS # 2

CATCHY TITLE: Seeking farm assistance

WHO'S INVOLVED? Billy and the staff he asks for help

WHAT NEEDS ARE SERVED? Assistance

WHAT DOES IT FEEL LIKE? Intimidated because he has never been there before

WHY THIS MOMENT MATTERS: Billy wants to be independent but he needs assistance

WHAT DO YOU WANT TO CHANGE? Change where and how people who need accommodations can find it first thing once there

MOMENT THAT MATTERS # 3

CATCHY TITLE: Lost and not found

WHO'S INVOLVED? Billy

WHAT NEEDS ARE SERVED? The need for accessibility accommodations is **not** served

WHAT DOES IT FEEL LIKE? Billy feels helpless and doesn't know how he will get the full farm experience

WHY THIS MOMENT MATTERS: The lack of help really discourages leaves a bad impression to disabled visitors

WHAT DO YOU WANT TO CHANGE? Visitors with disabilities need clear communication on how their needs will be met

MOMENT THAT MATTERS # 4

CATCHY TITLE: Independent navigating

WHO'S INVOLVED? Billy and the staff

WHAT NEEDS ARE SERVED? Billy is trying to serve his desire to be independent and get the farm experience

WHAT DOES IT FEEL LIKE? He feels uneasy but will still try because he couldn't get proper assistance

WHY THIS MOMENT MATTERS: The lack of accommodations are putting extra work on Billy

WHAT DO YOU WANT TO CHANGE? Implement technology that can compensate for his disability and create-a feeling of independence

MOMENT THAT MATTERS # 5

CATCHY TITLE: Upset and gone

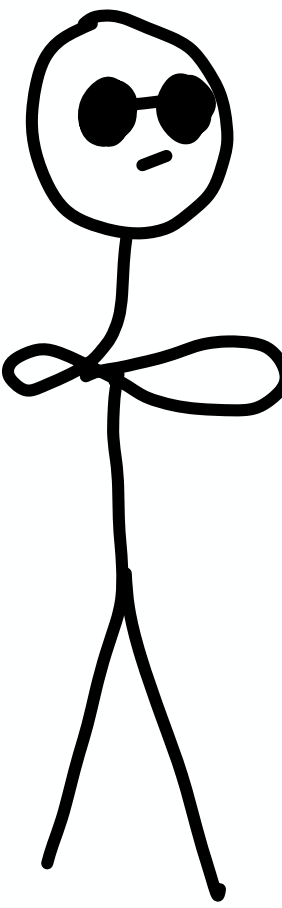
WHO'S INVOLVED? Billy and his parents

WHAT NEEDS ARE SERVED? After experiencing insight and feedback

WHAT DOES IT FEEL LIKE? Billy feels dissatisfied his needs were unable to be met, while trying to explore the farm

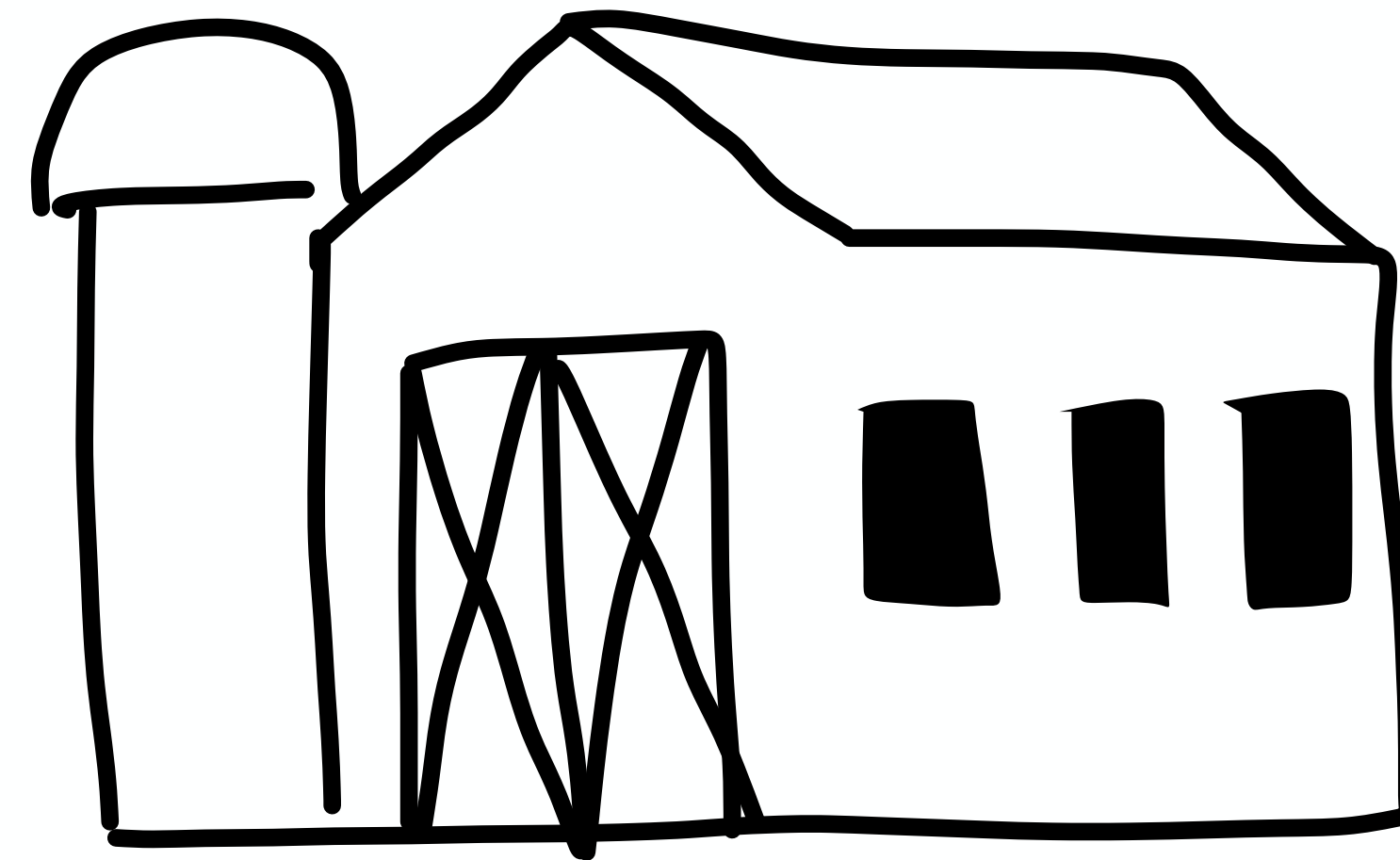
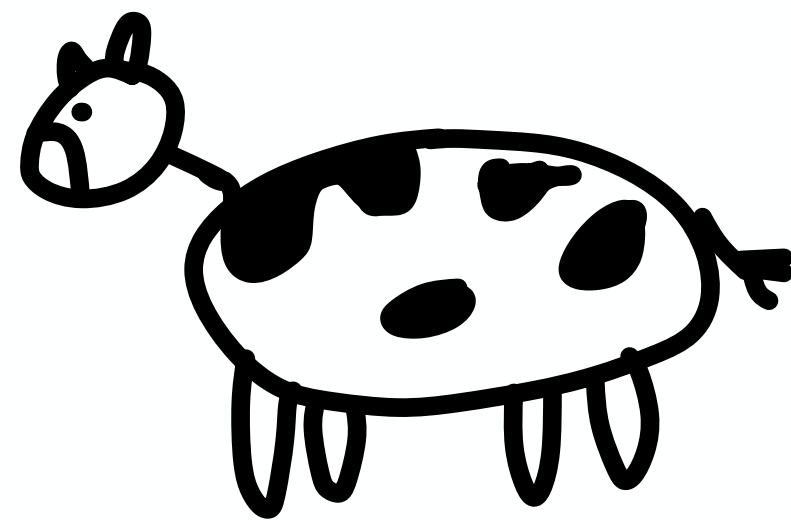
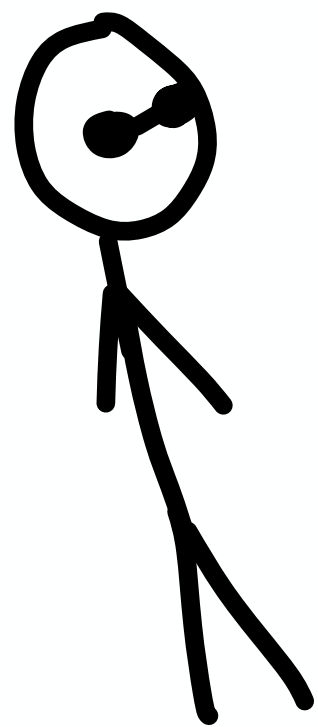
WHY THIS MOMENT MATTERS: Billy leaves the farm not having the full experience that another individual would.

WHAT DO YOU WANT TO CHANGE? He should be able to share his insight on how to further improve the accessibility of the farmland Experience



Storyboard

"Billy's trip to the farm."

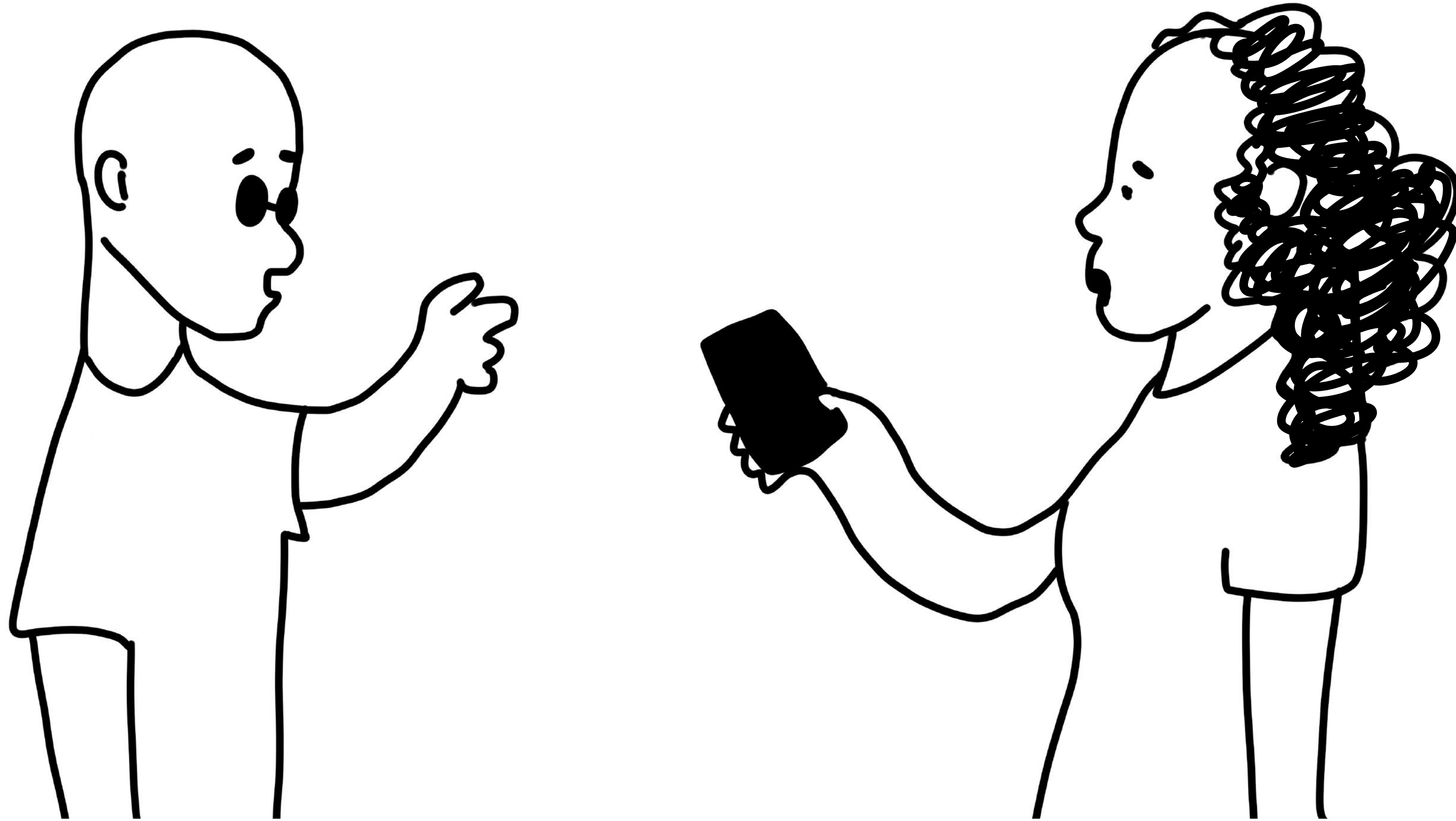


Billy at home



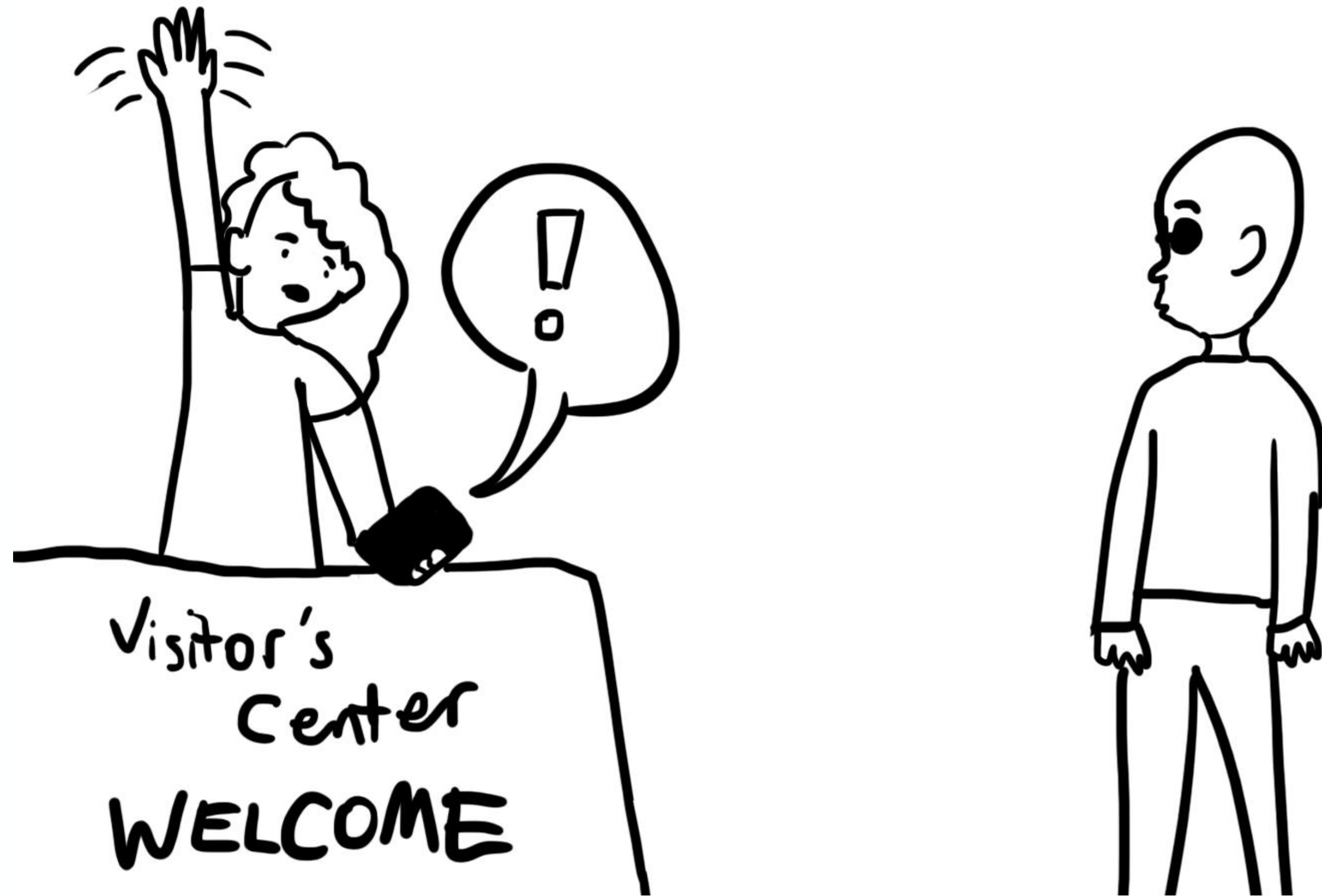
Billy sits at home, tired of being inside. He wants to go somewhere outdoors so he uses his mobile device with visual accommodations to find the farm.

Billy gets set up



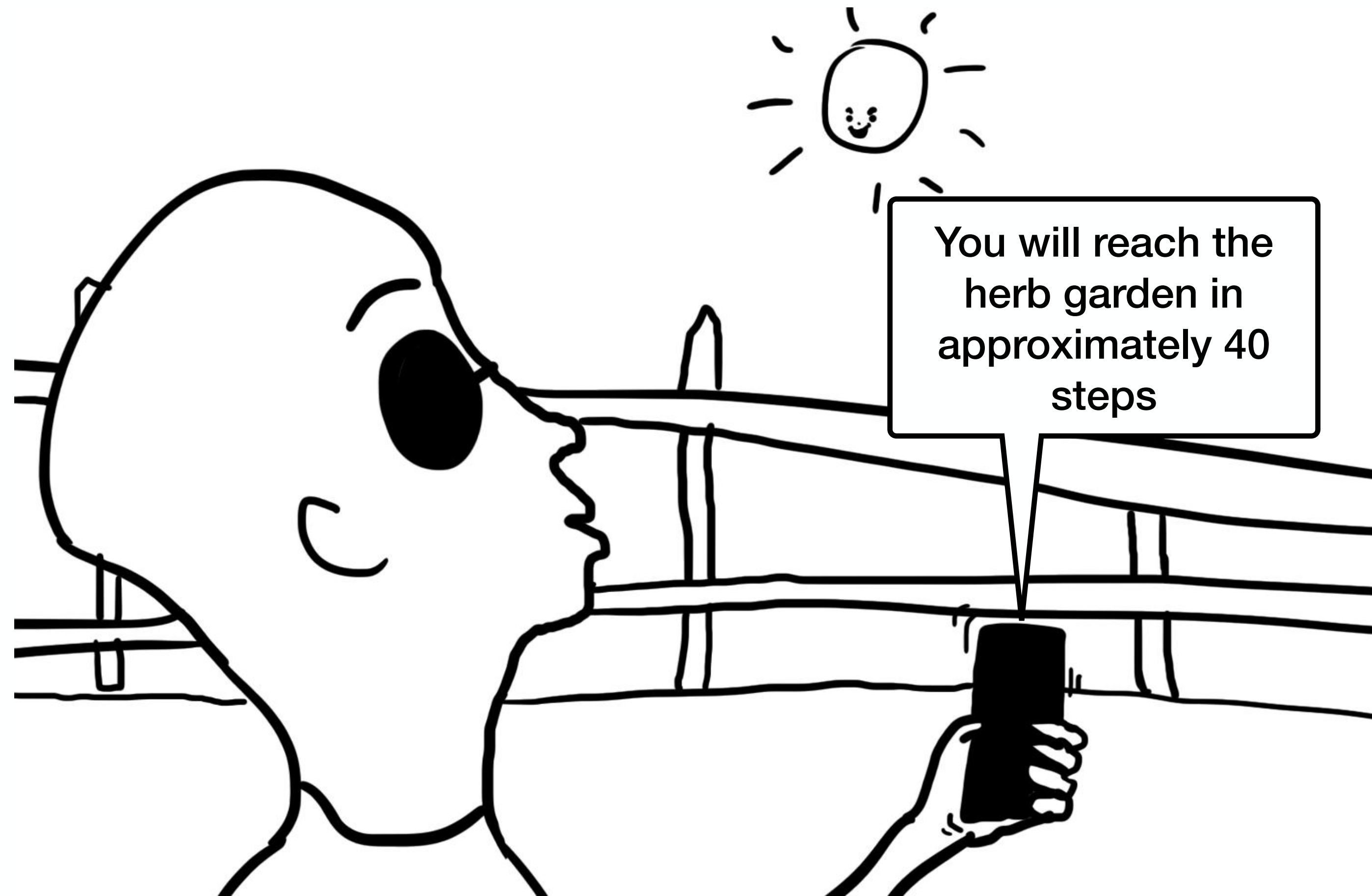
Billy finds his caretaker to share his intention to go to the farm and they plan it out. They download the farm's app.

Billy at the farm



Faculty Felicia is notified of Billy's arrival and can meet him as soon as he enters the visitor center to go over the accommodations he will need.

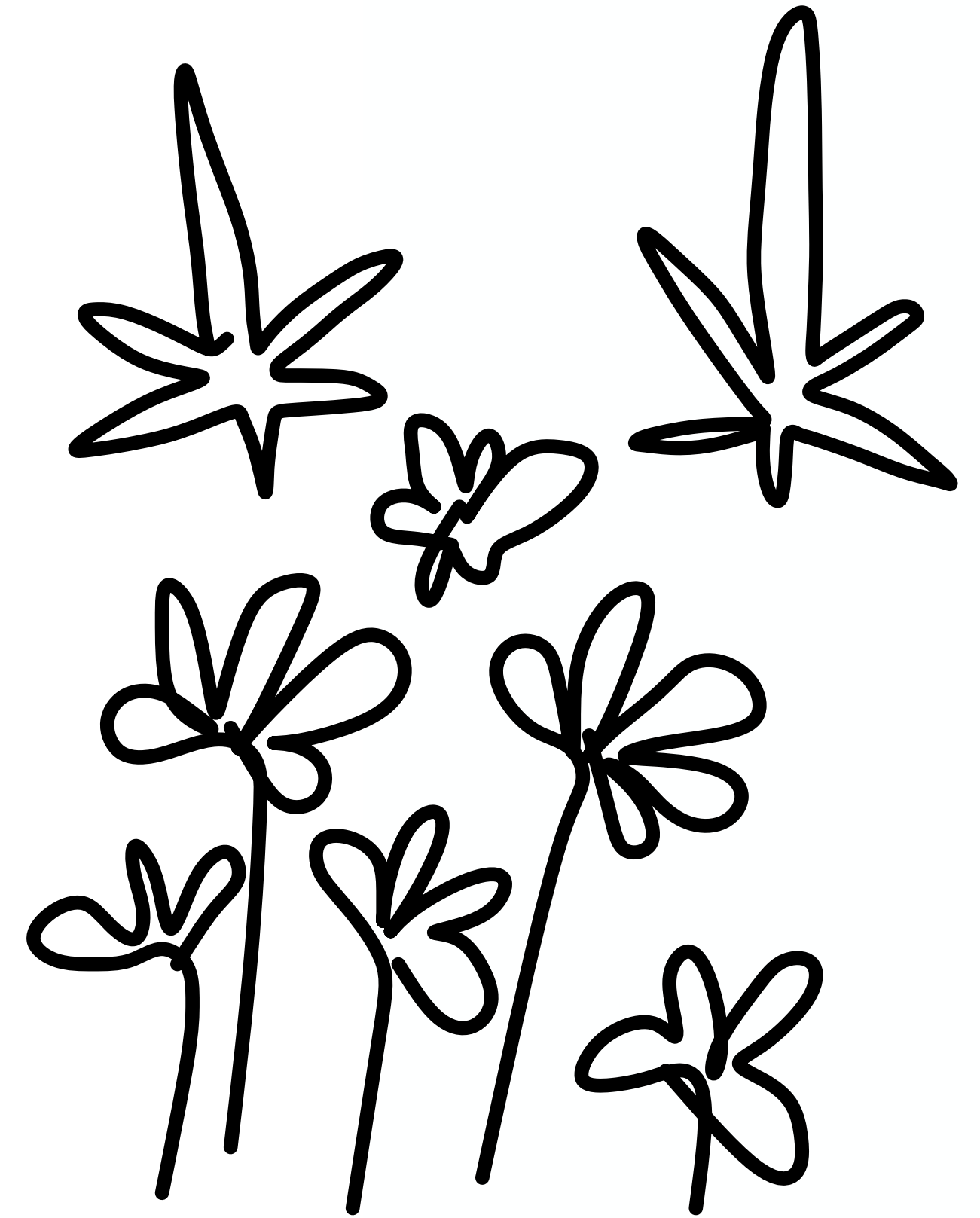
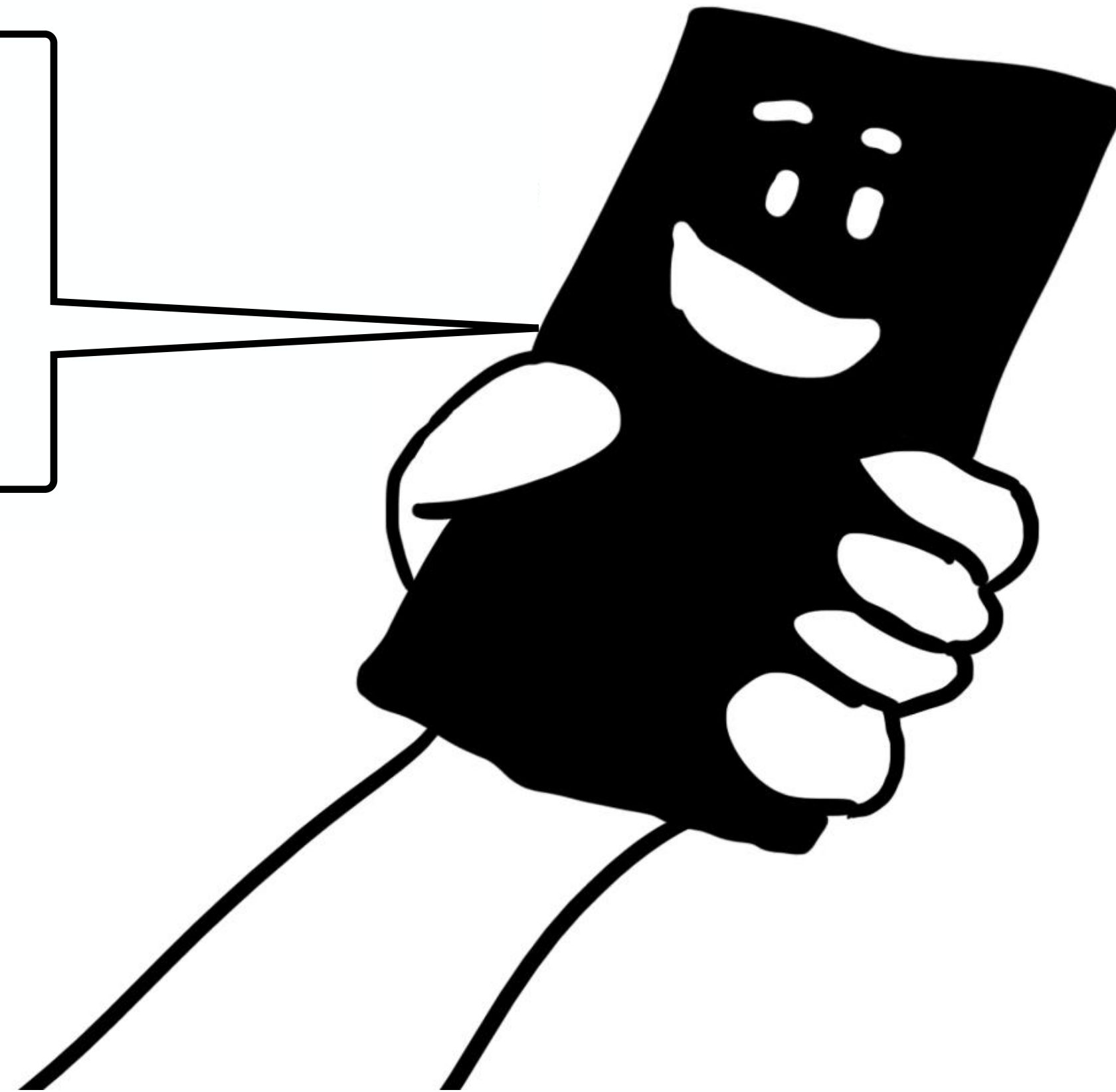
Billy on the roam



He feels safe knowing that he is accommodated for and begins to roam around the designated farm areas with the farm's app on hand. He is able to feel independent, aware, and in control.

Billy experiences the farm

You have reached the herb garden. Here are 5 fun facts about the herbs grown here...



Billy gets to the herb garden. As he passes by, his phone vibrates and begins sharing a narration of information about the plants.

Felicia finds Billy



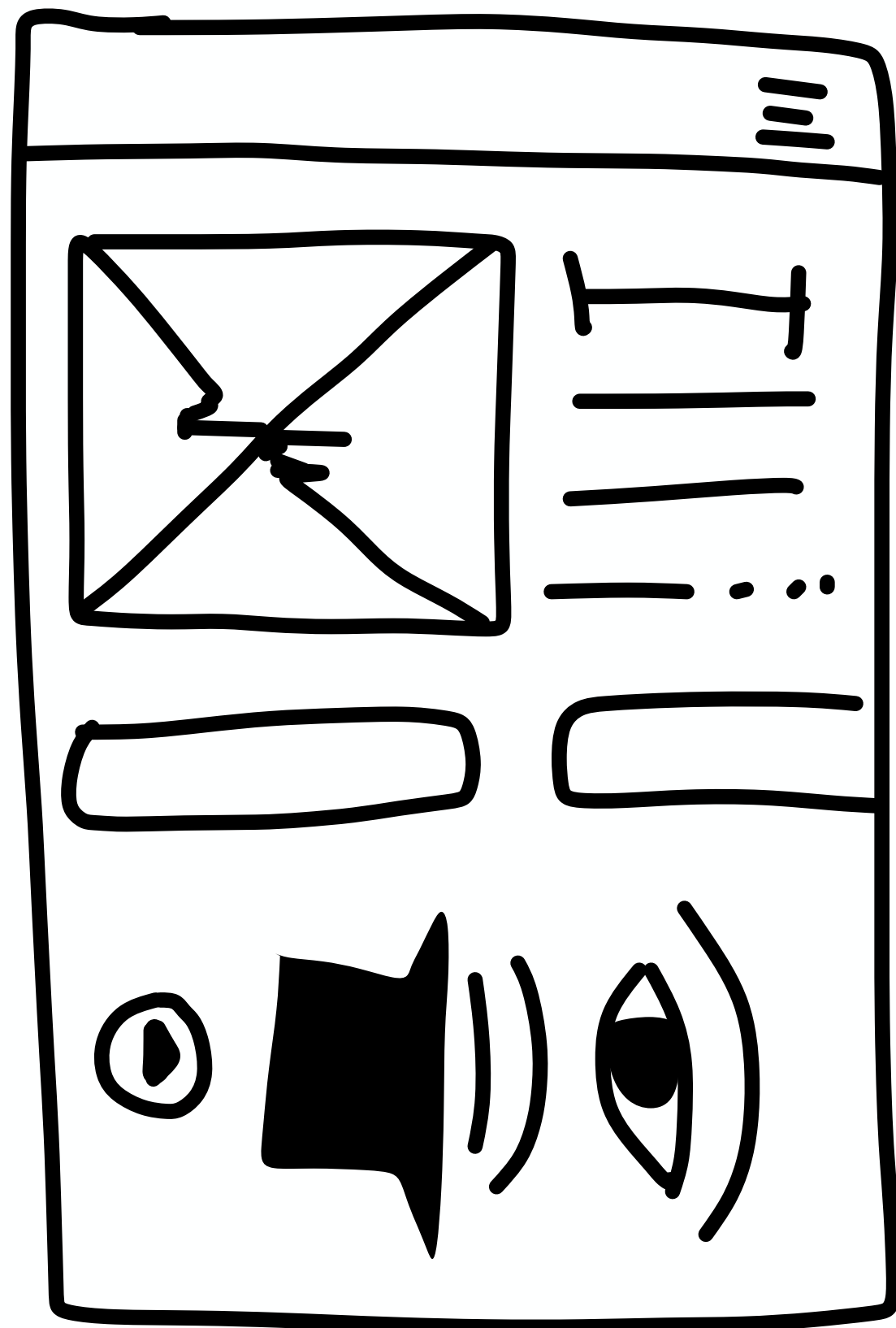
Faculty Felicia can monitor Billy and all of the geofences he encounters along the way. She notifies him when it is time to go.

Billy's better feedback

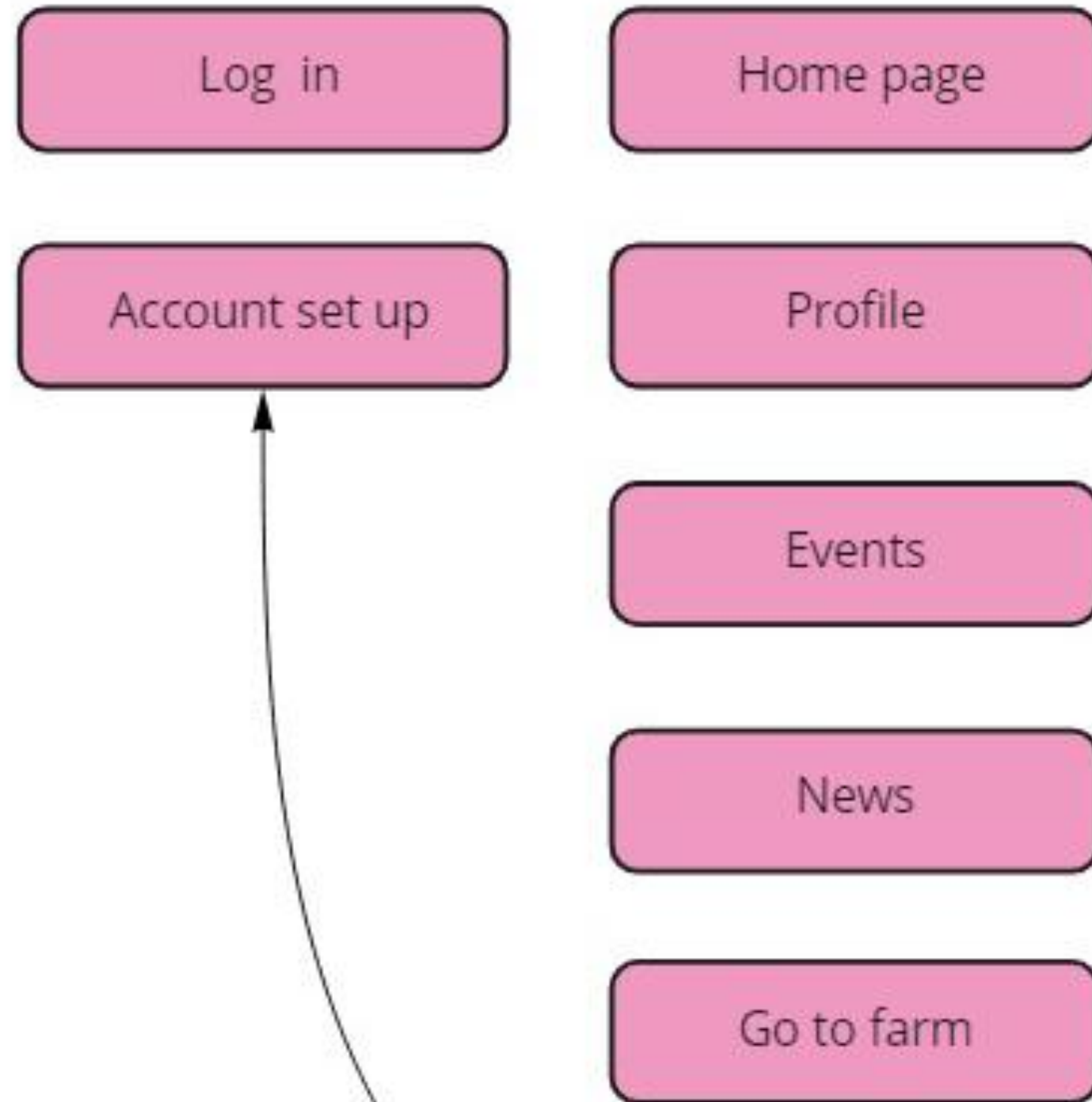


Billy is prompted with questions so he can rate his experience with the farm and share any feedback that Felicia can directly see afterwards.

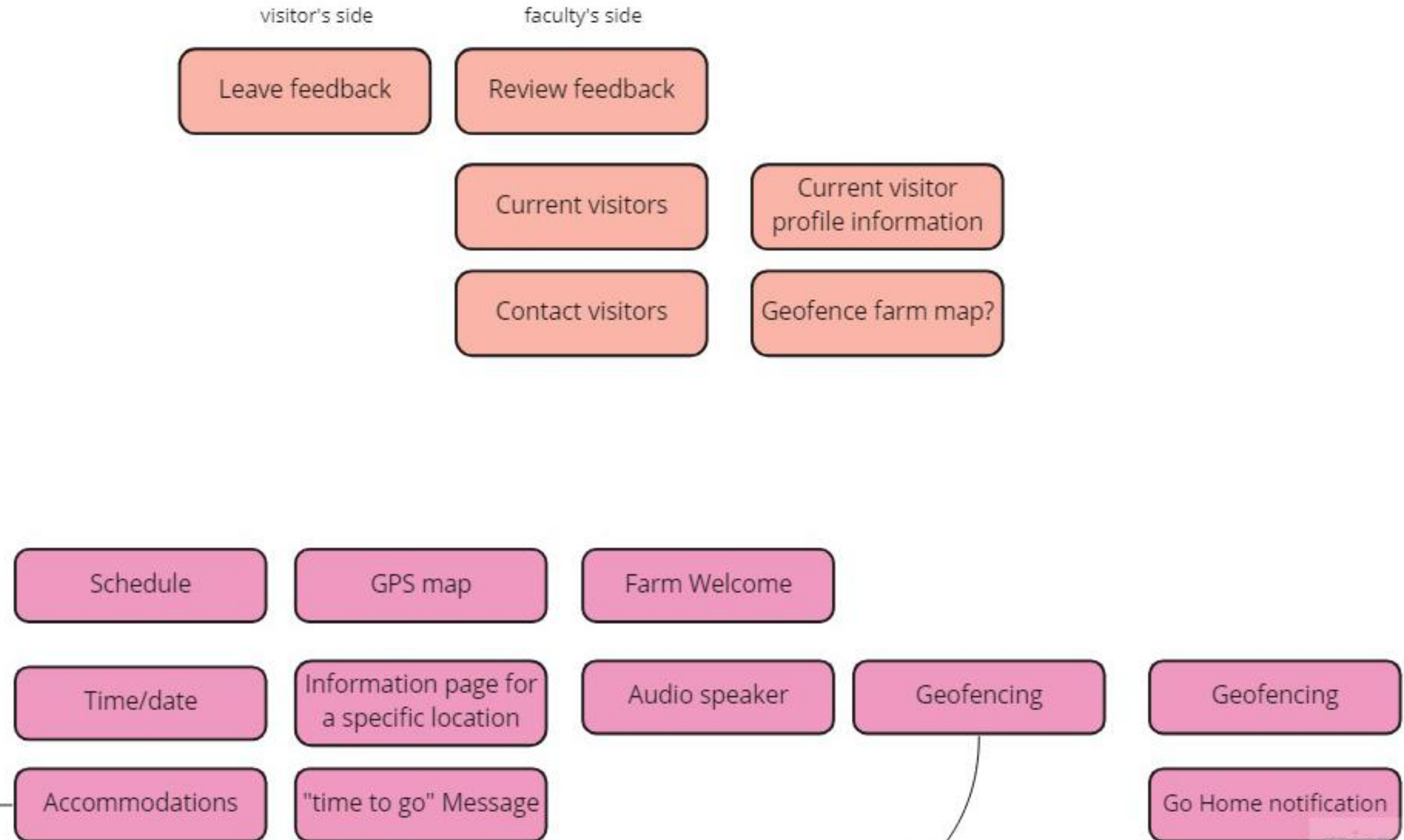
Wireframe Flow



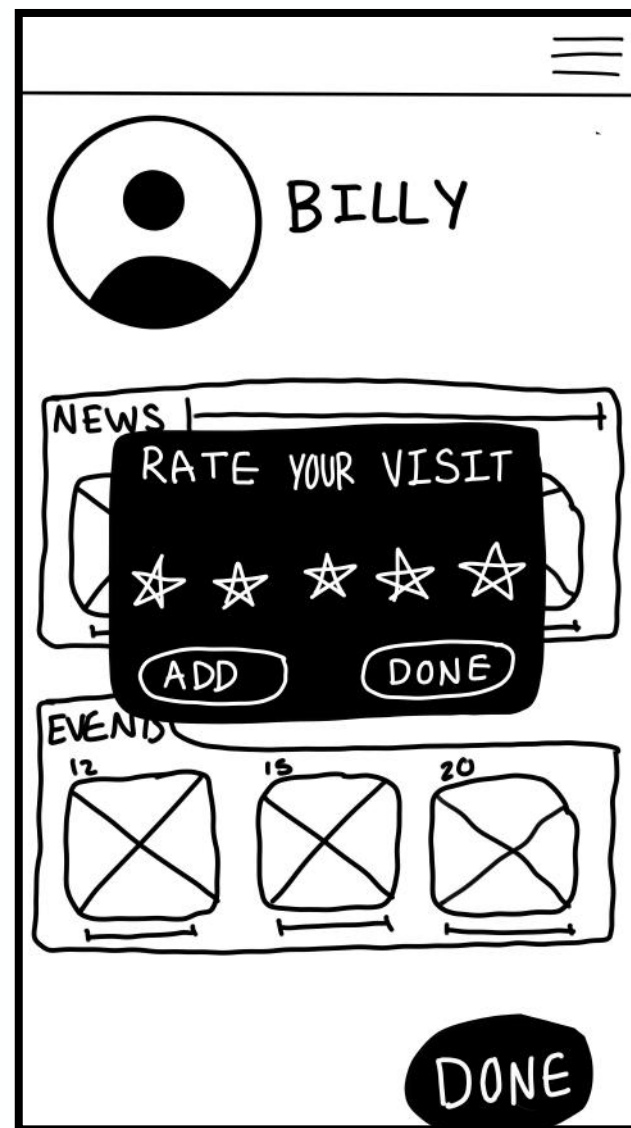
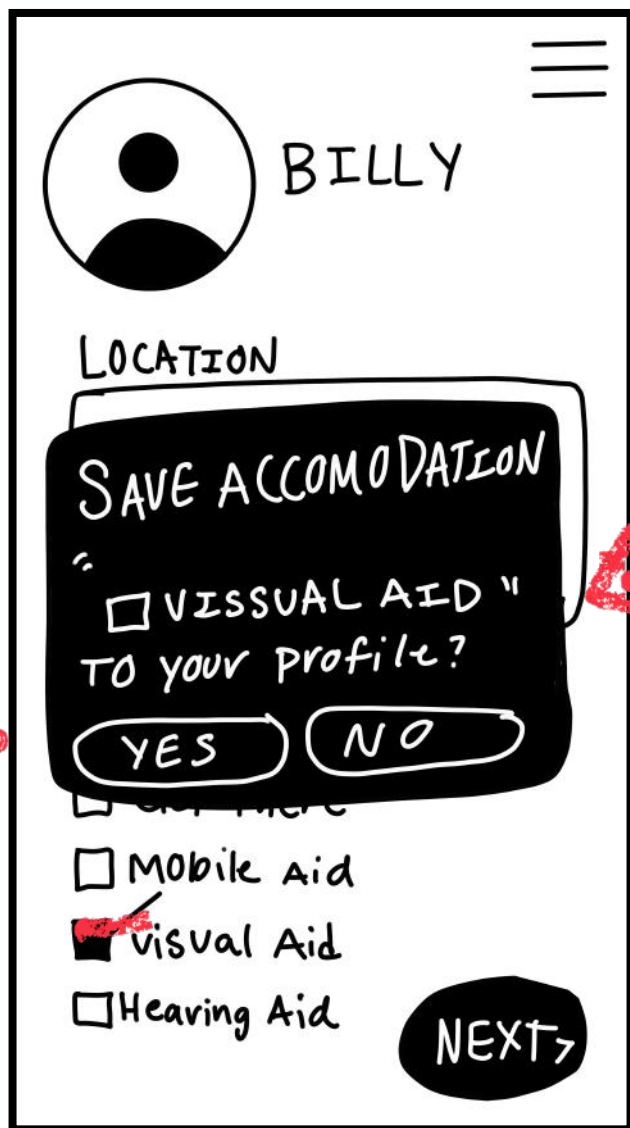
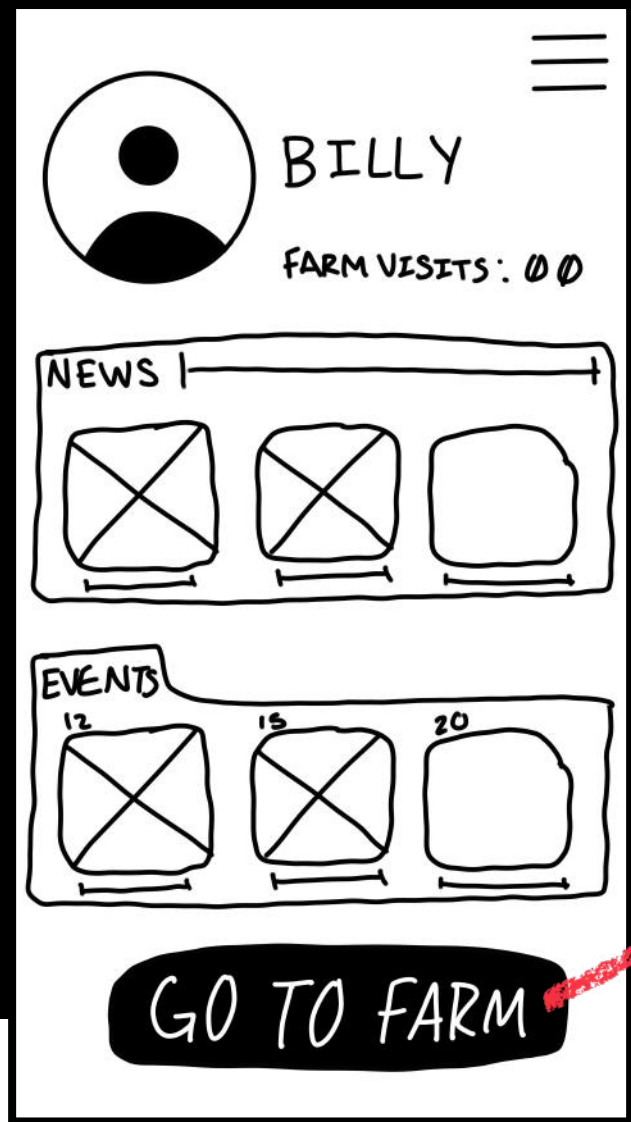
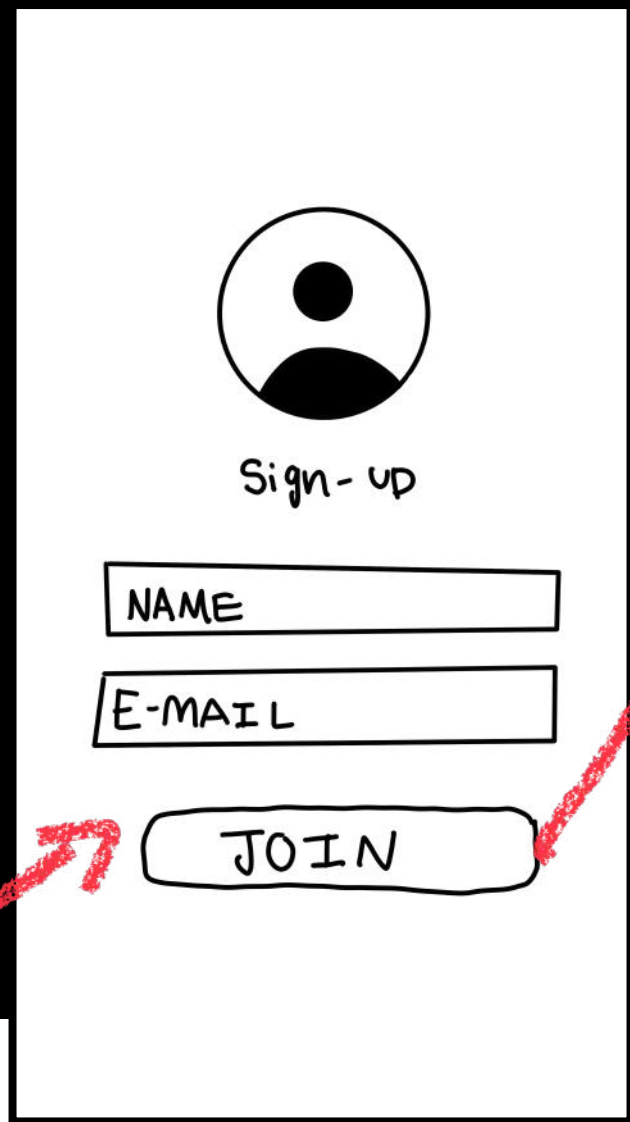
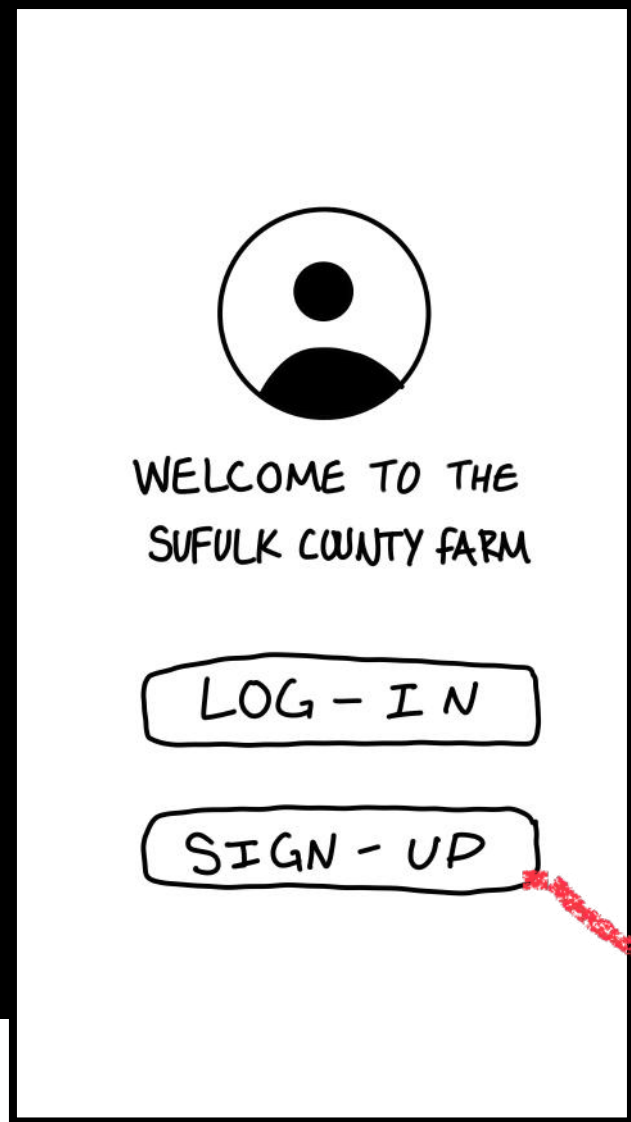
FARM APP



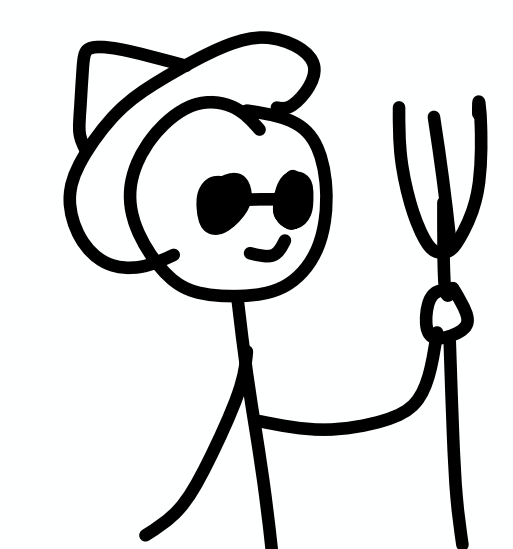
PC DESKTOP



to Geofence tutorial








Sketches





Current Visitors



Required Accommodations

| | | |
|-----------------------------------------------------------------------------------------------------|-----------------------|-------------------------|
|  Billy | Navigation mobile app | CONTACT |
|  James | N/A | CONTACT |
|  Mary | Wheelchair or walker | CONTACT |
|  John | N/A | CONTACT |
|  Elizabeth | Navigation mobile app | CONTACT |

Desktop Prototype



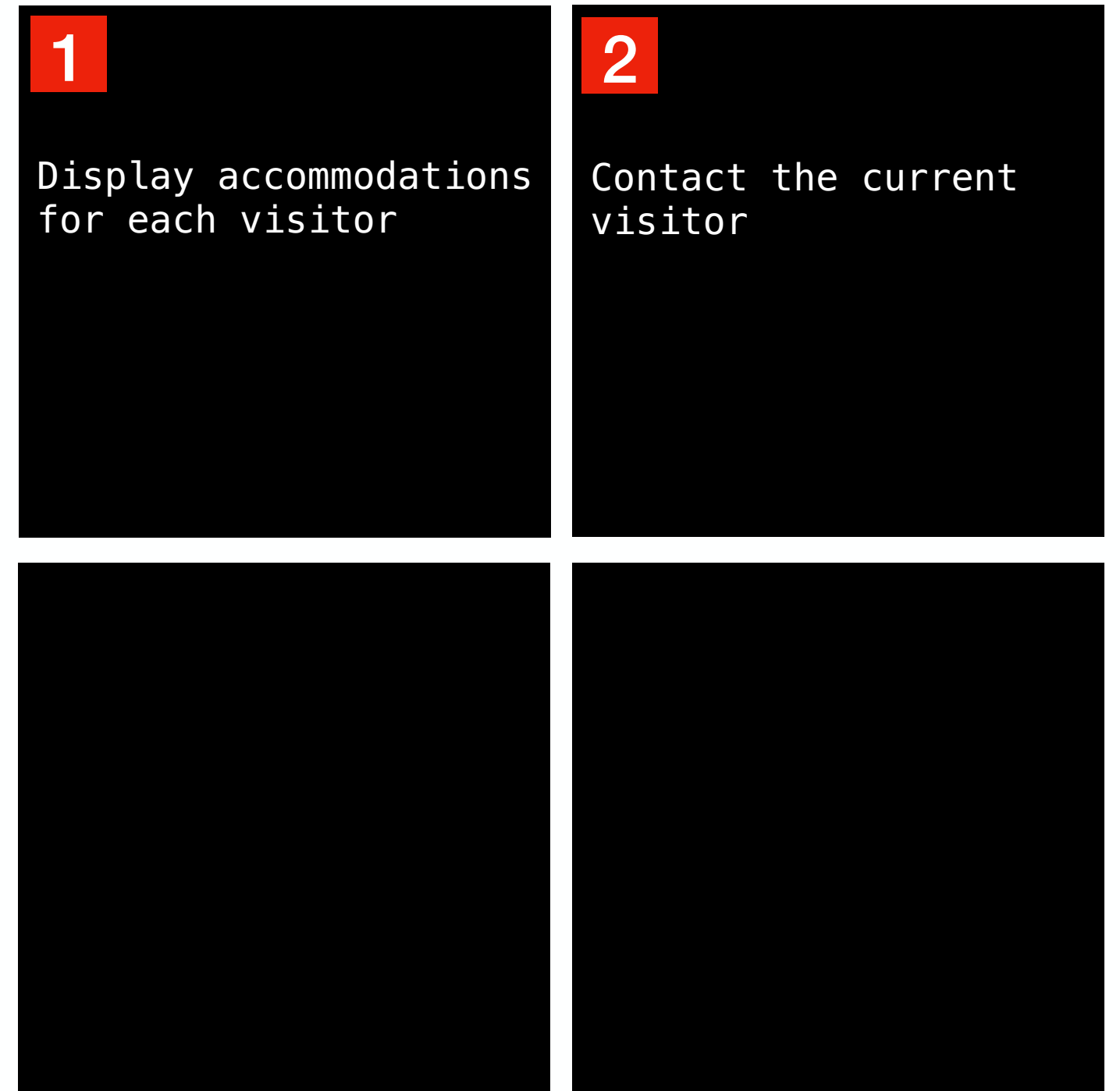
Current Visitors

| | |
|-------------------------------------------------------------------------------------|------------------|
|  | Billy |
|  | James |
|  | Mary |
|  | John |
|  | Elizabeth |

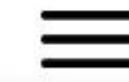
Required Accommodations

| | | |
|-----------------------|----------|-------------------------|
| Navigation mobile app | 1 | CONTACT 2 |
| N/A | | CONTACT |
| Wheelchair or walker | | CONTACT |
| N/A | | CONTACT |
| Navigation mobile app | | CONTACT |

On The Way



Suffolk County Farm - Geofence Map



Map

1

2

Locations 3

| | | |
|--------------|------------|---------------------------------|
| Herb Garden | 2 visitors | ... 4 |
| Entrance | 1 visitor | ... |
| Horse Stable | 1 visitor | ... |






Farm Map

- 1 Visual display map of geofences and visitors
- 2 Zoom in and out of map
- 3 Faculty can view how many visitors are currently within each location geofence
- 4 Show details for this group of visitors

Visitor Hours Over



Current Visitors

-  **Billy** **1**
-  **James**
-  **Mary**
-  **John**
-  **Elizabeth**

Notification Options

- Weather Warning
 - Time to go **2**
 - Come to Visitor's Center
 - Other Messages
- SEND** **3**

1
Visitor selection

2
Select what type of notification to send

3
Send notification

Suffolk County Farm - Leave a Review



Billy - visited on April 5th, 2021



Leave a review

The app was helpful for navigating the farm so I could have the full farm experience.



2

CANCEL

SUBMIT

3

Leave a Review

1

1-5 star rating

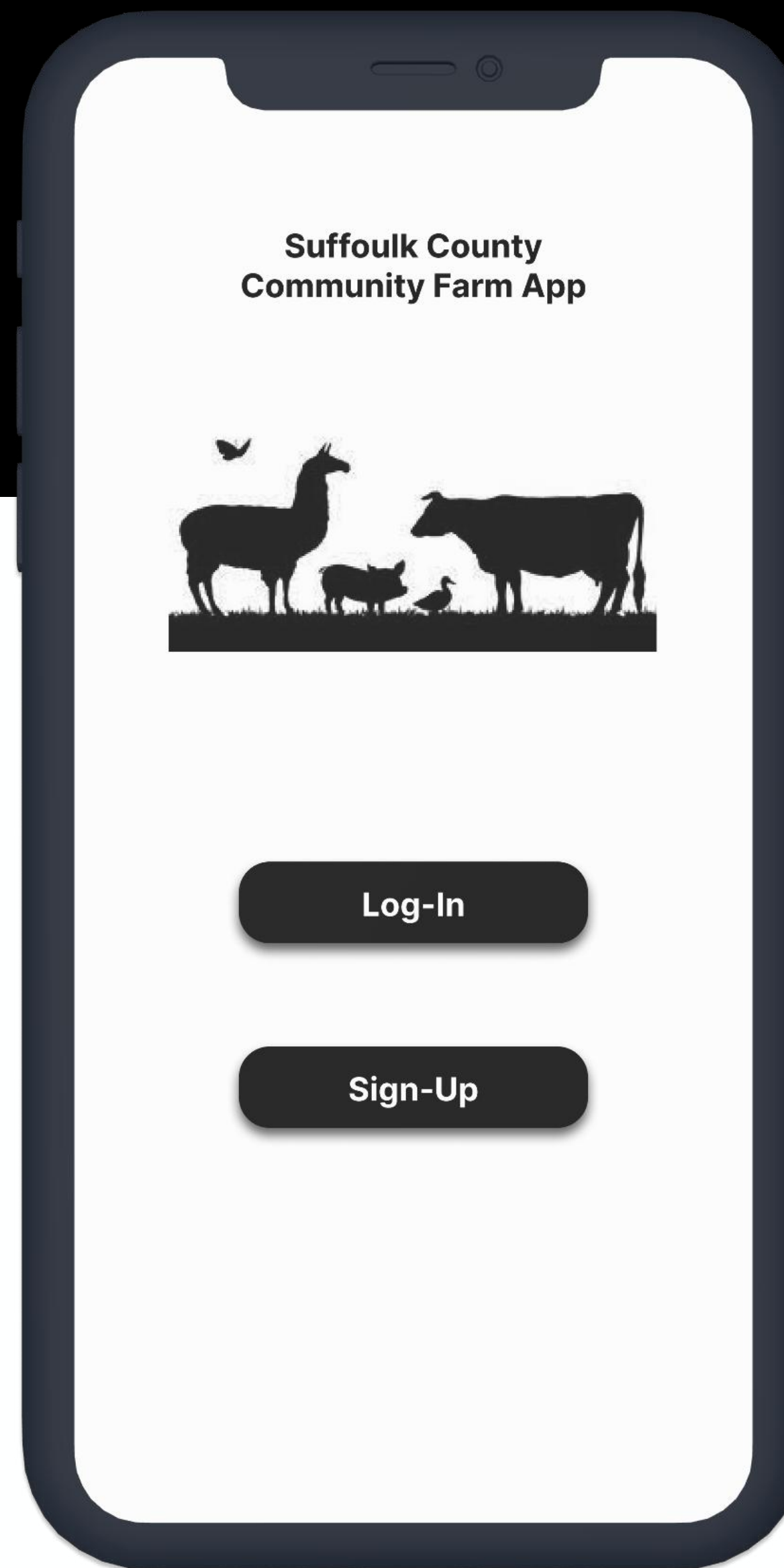
2

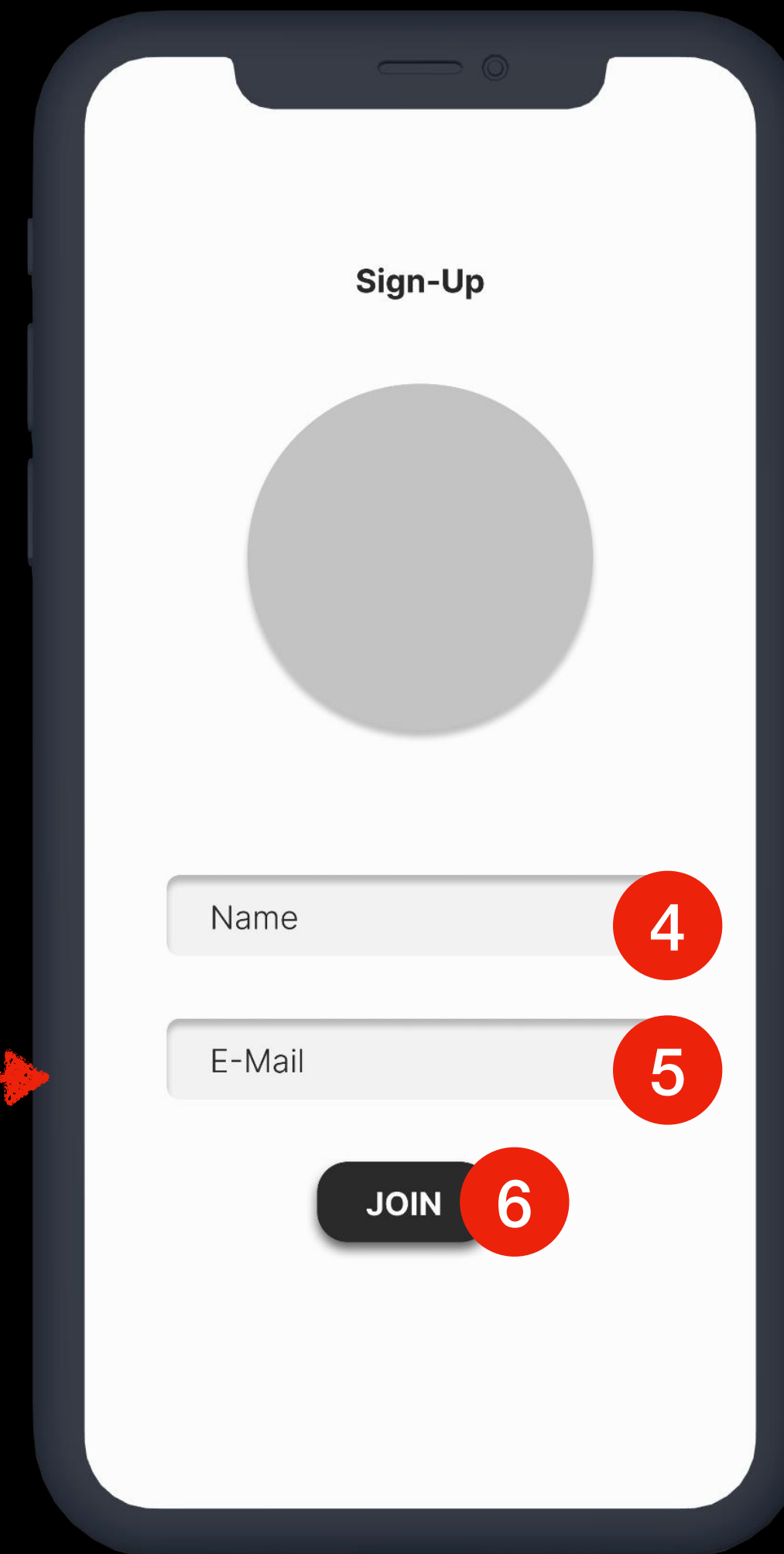
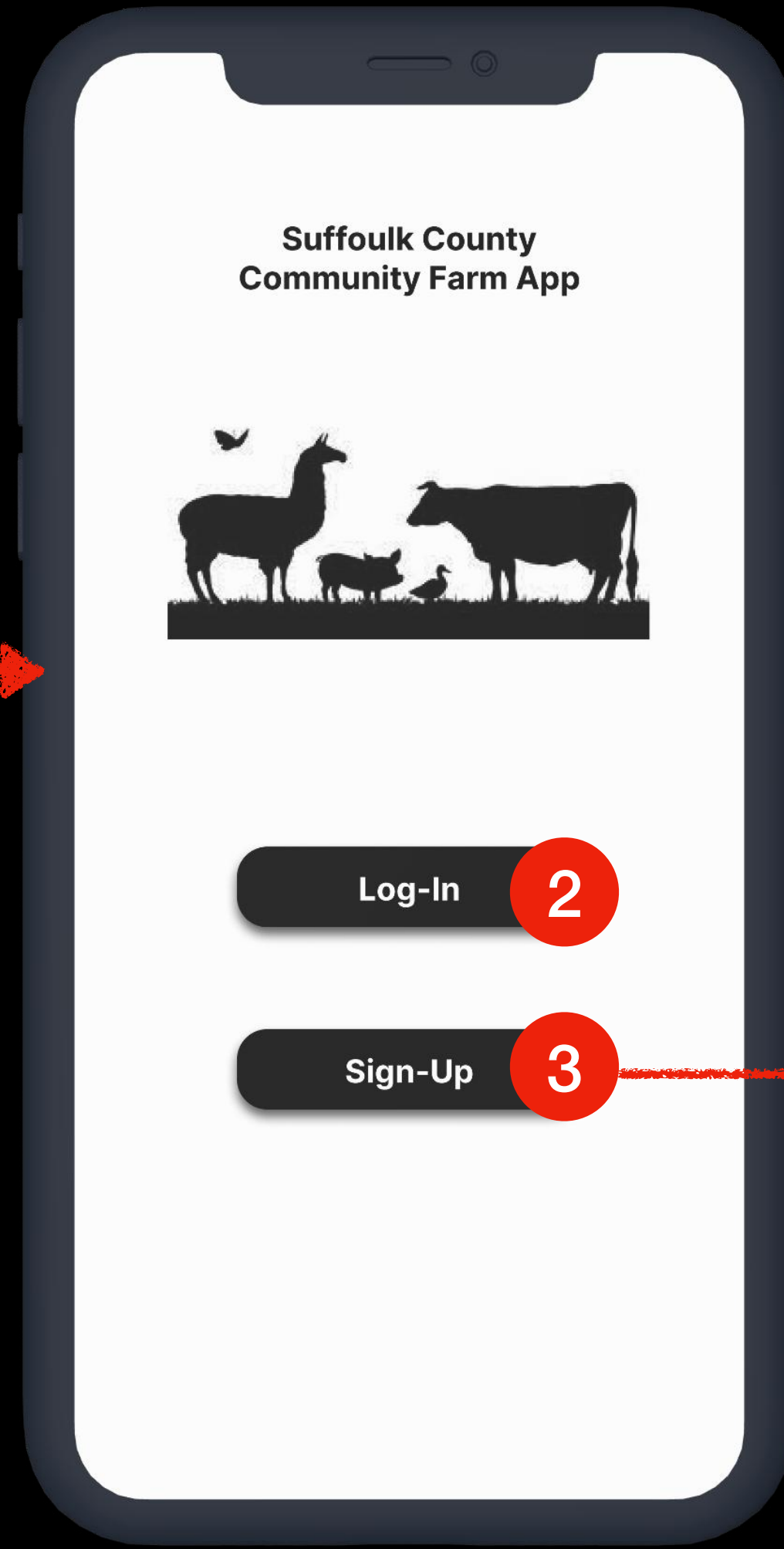
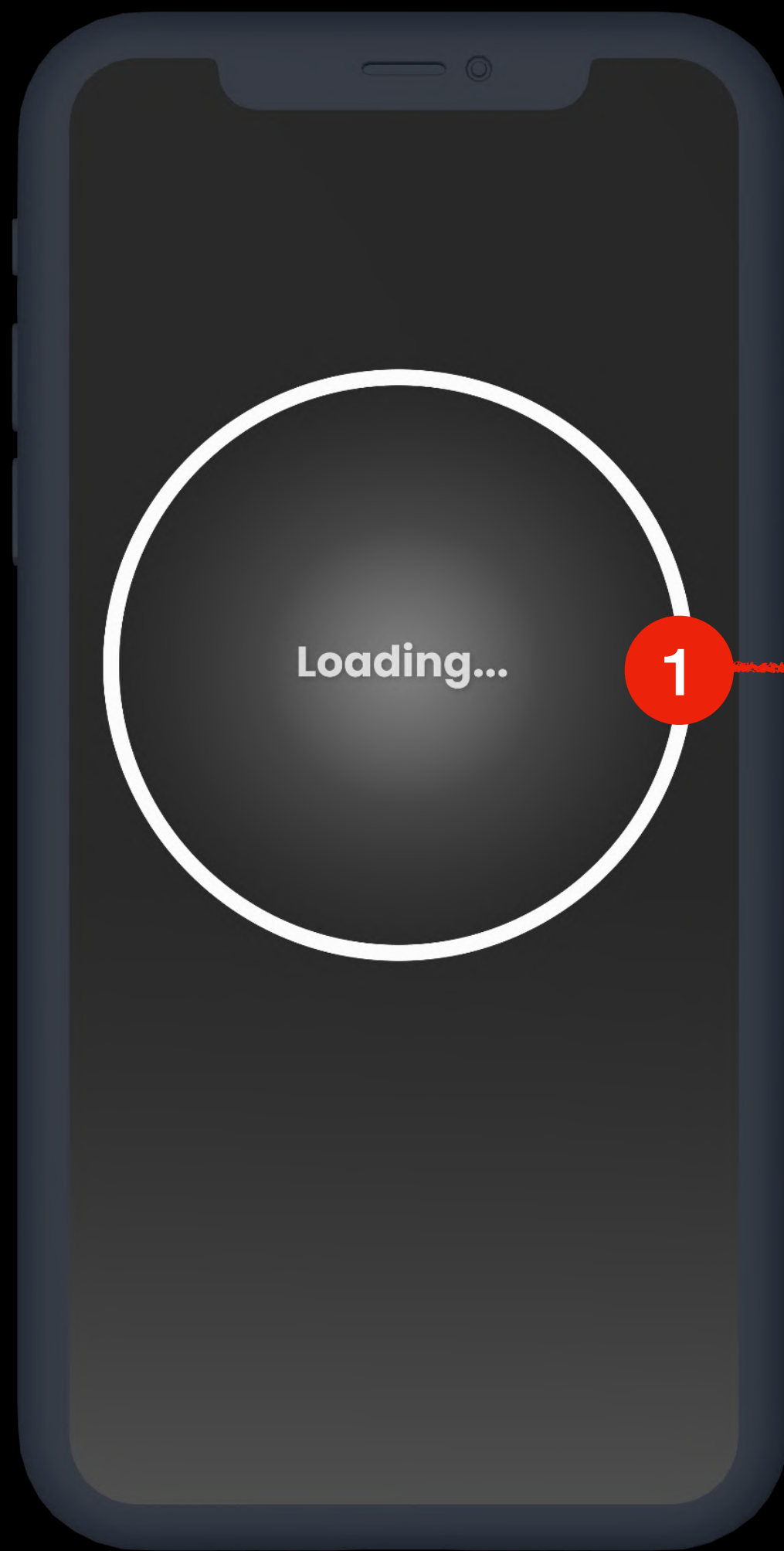
Review can written via speech-to-text

3

Submit review

Farm App Prototype





Sign in

1

Loading screen on display while app launches up

2

Log-in to existing account

3

Sign-up page for new users

4

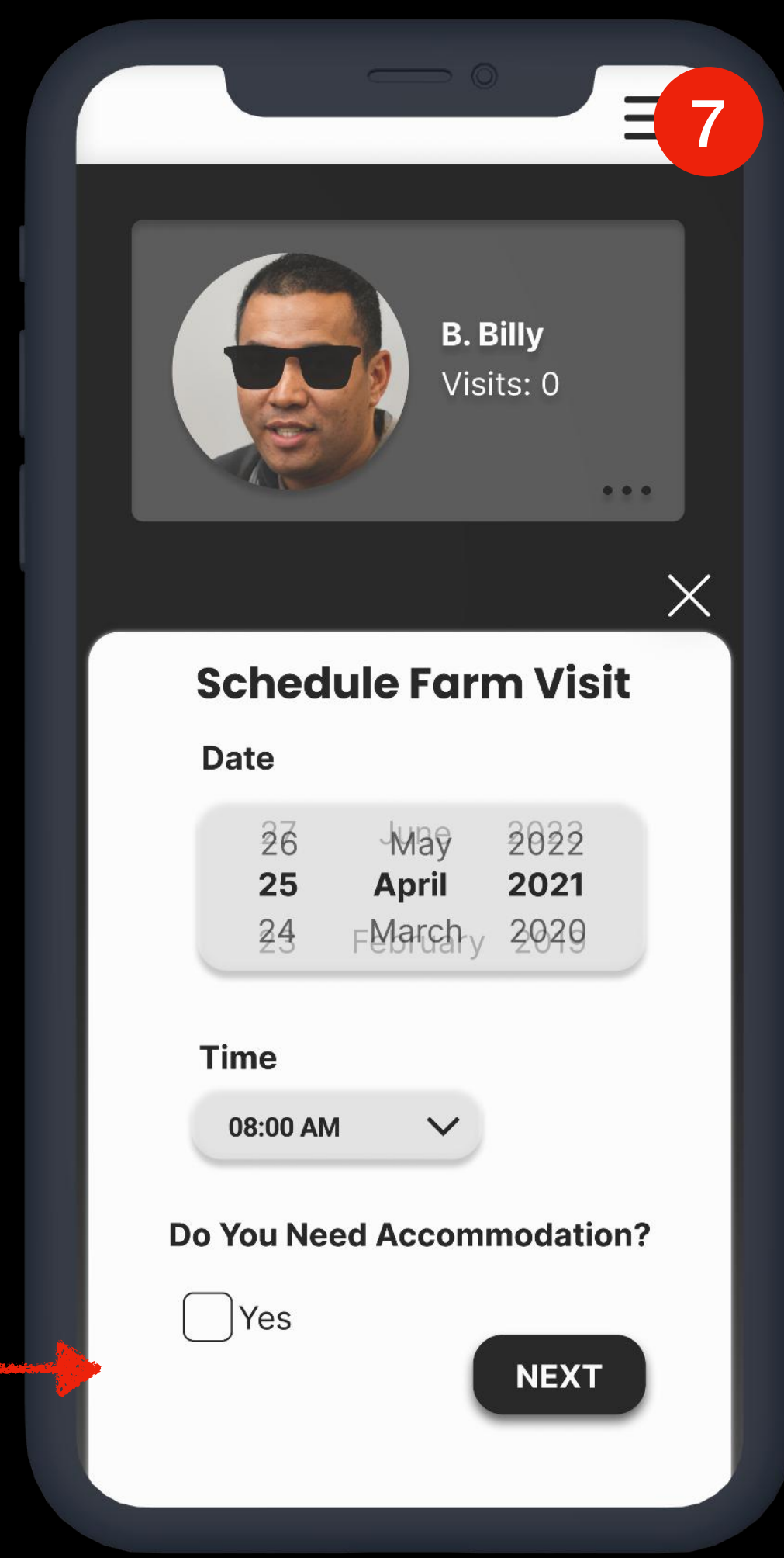
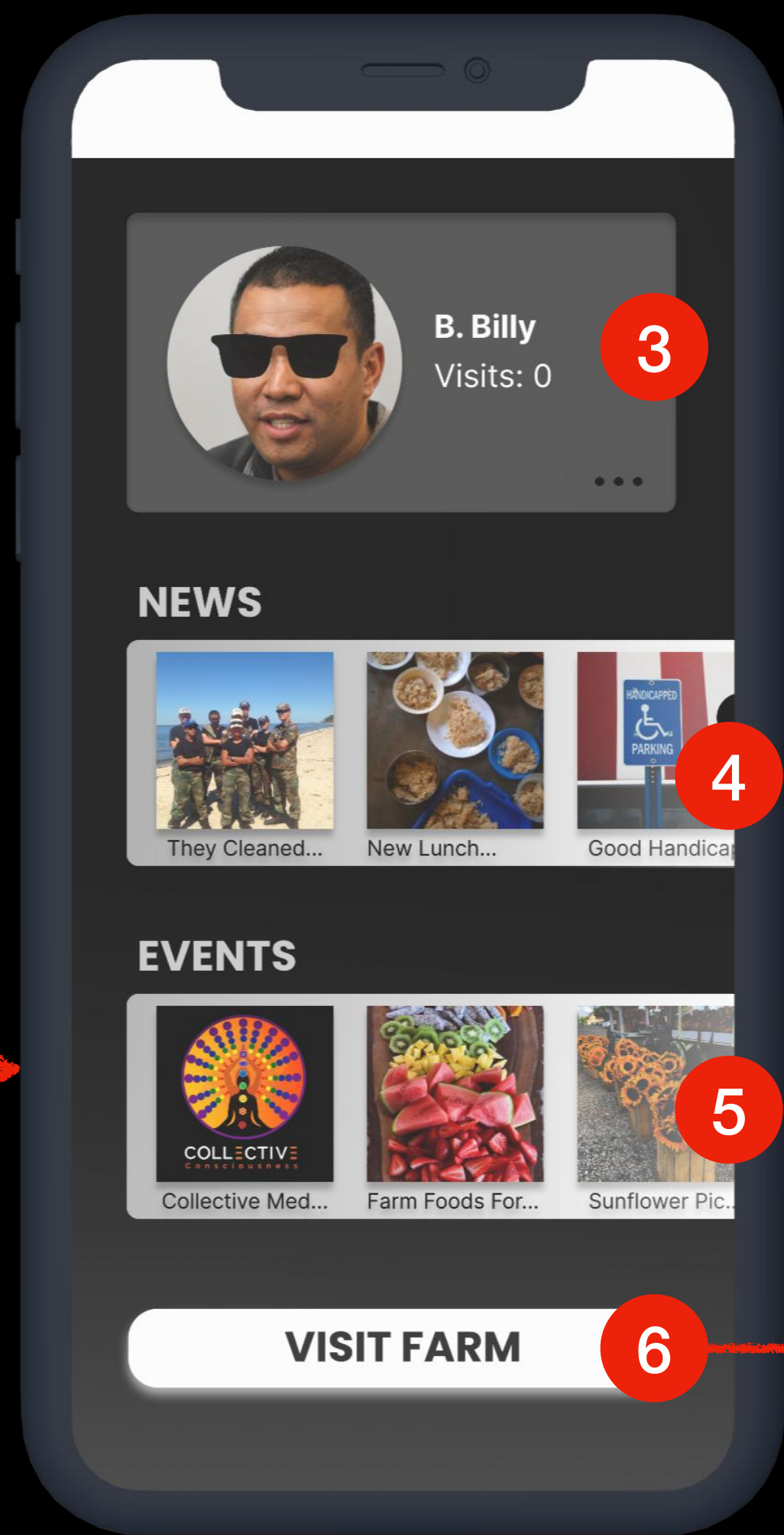
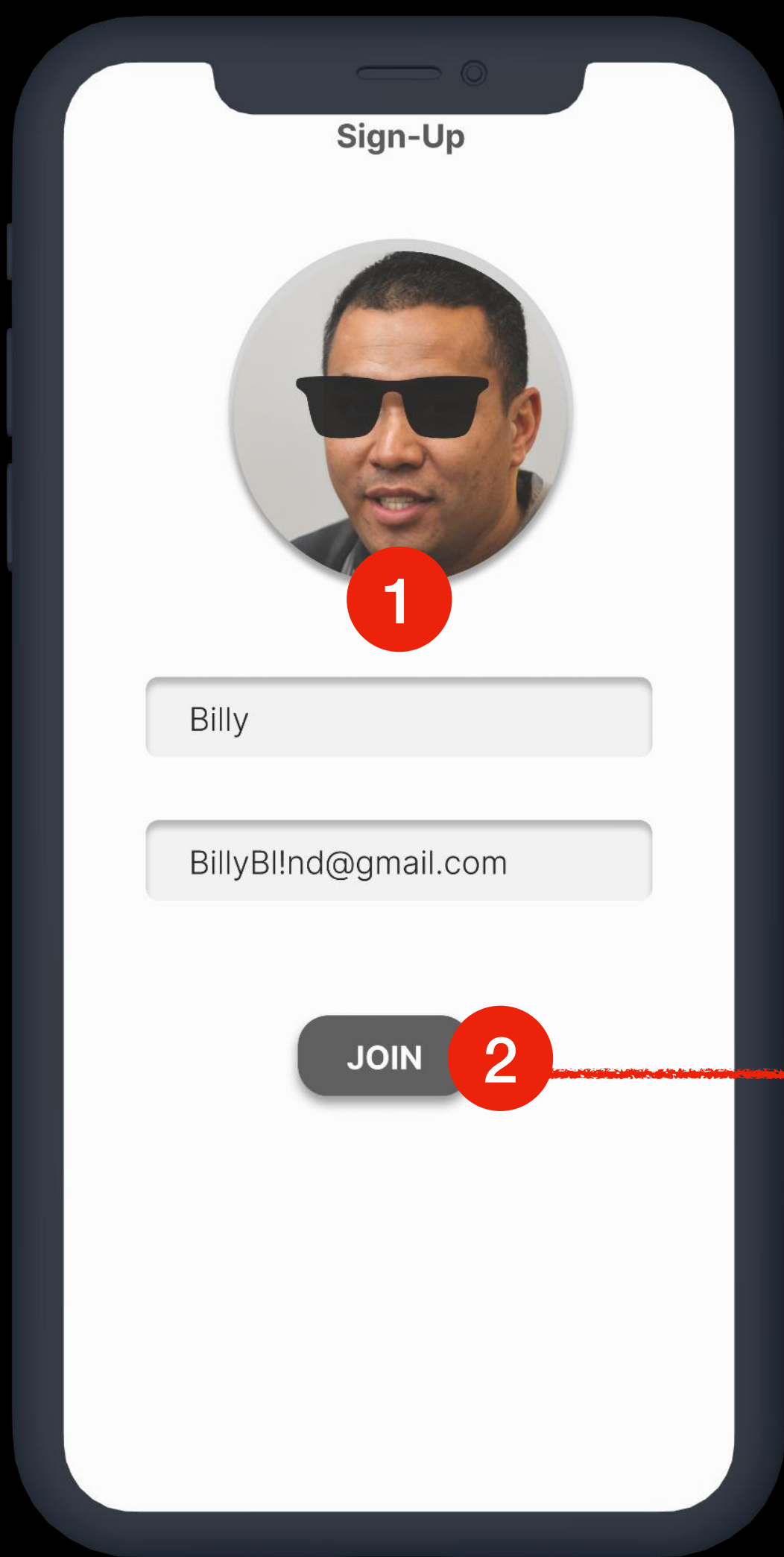
Sign-up name input

5

Sign-up email input

6

Join button launches farm homepage after user input



Profile to farm

1
Profile Picture of Log In Screen

2
Join into the Farm App

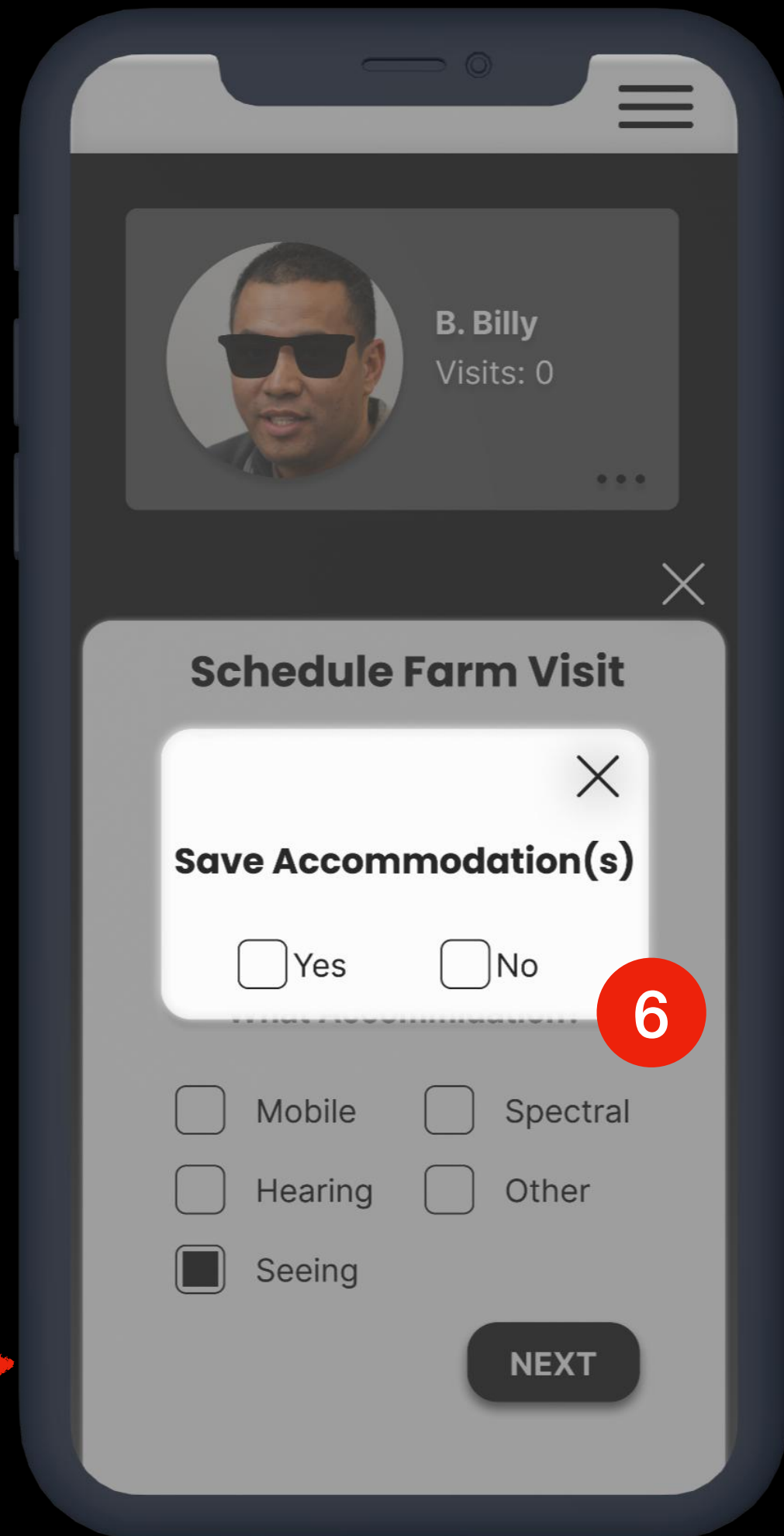
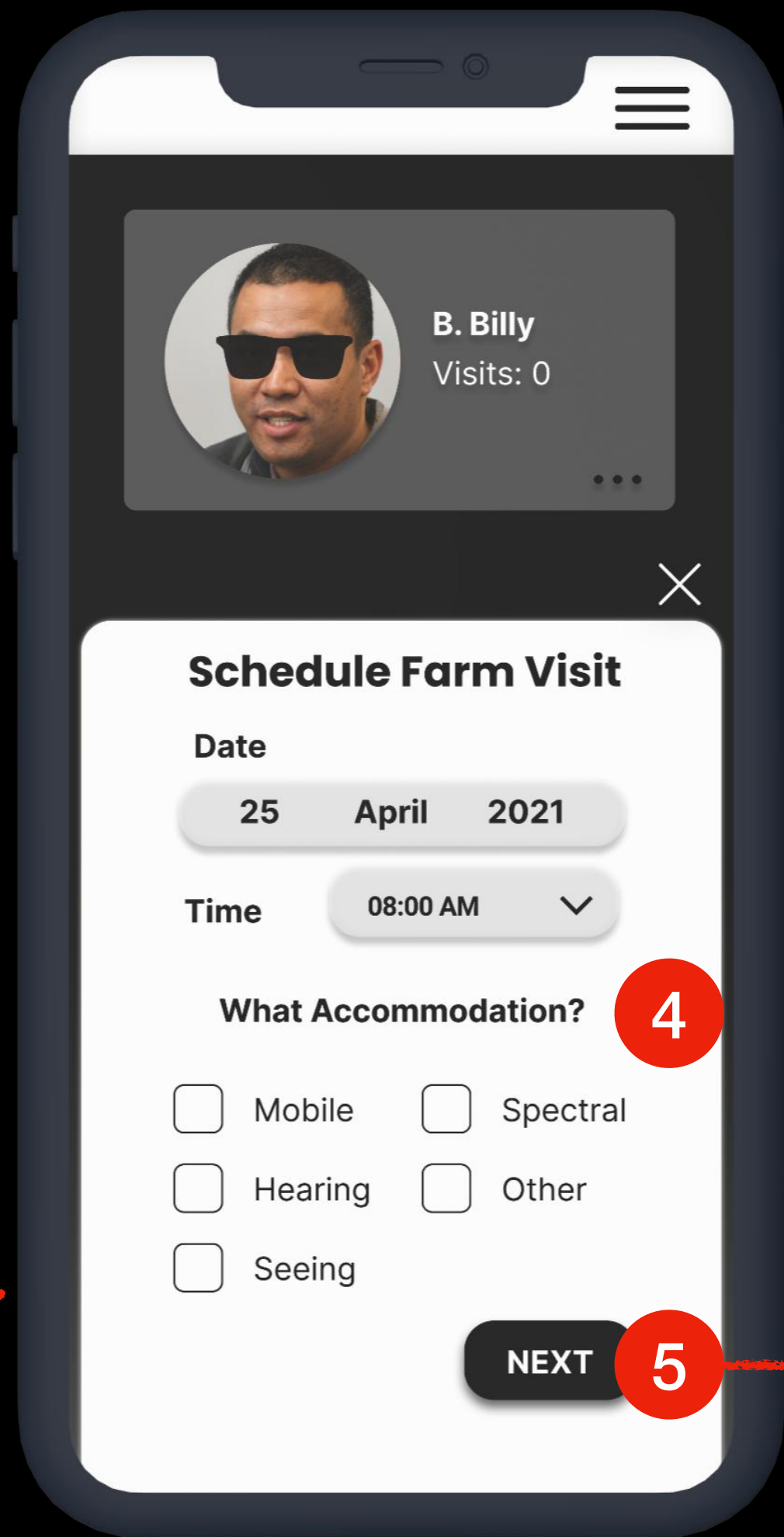
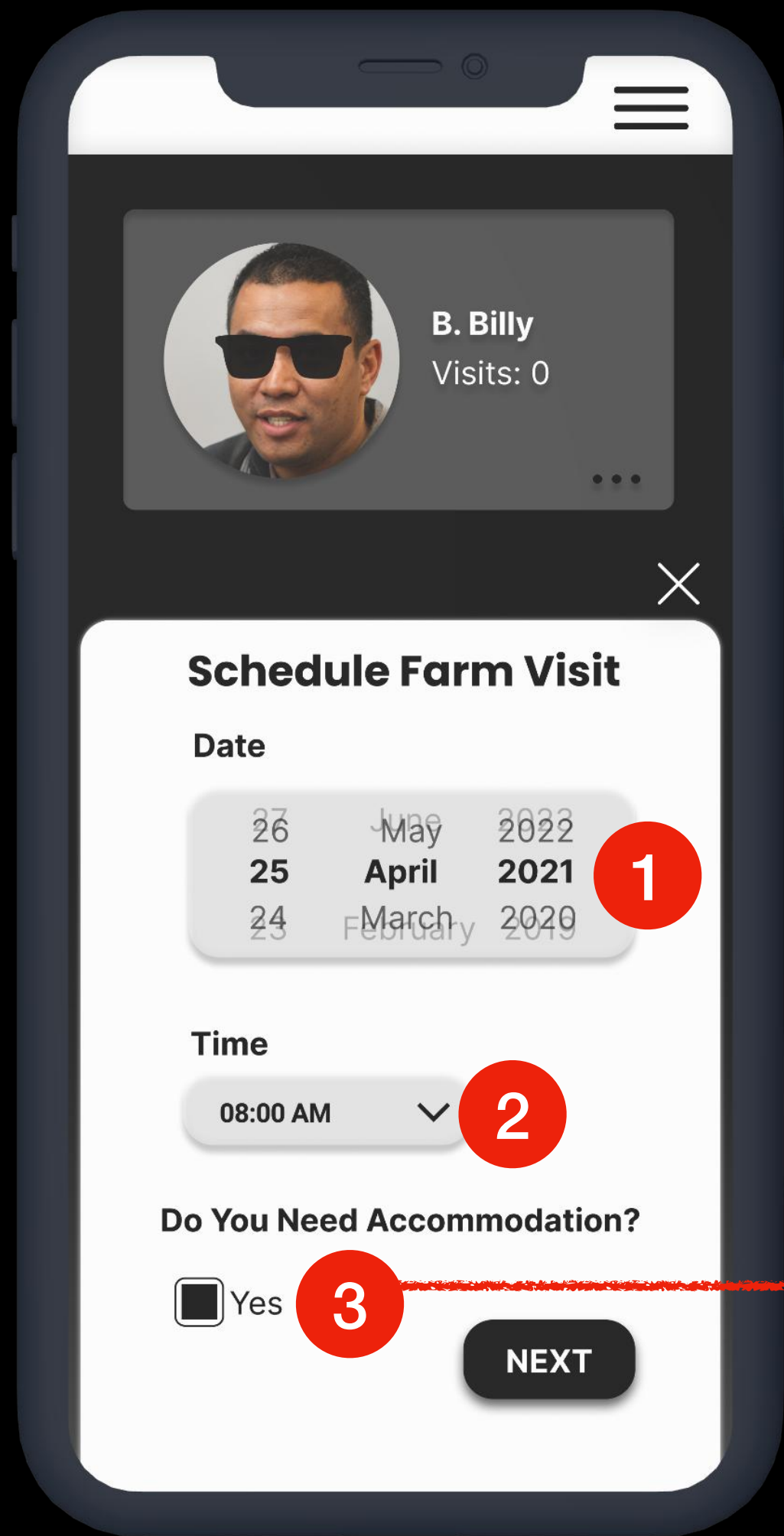
3
Profile home main screen

4
News That is currently going on in the farm

5
Events That is currently going on in the farm

6
Visit farm button

7
Hamburger Menu



Signify
Assistance

1
Calendar display for user to select day

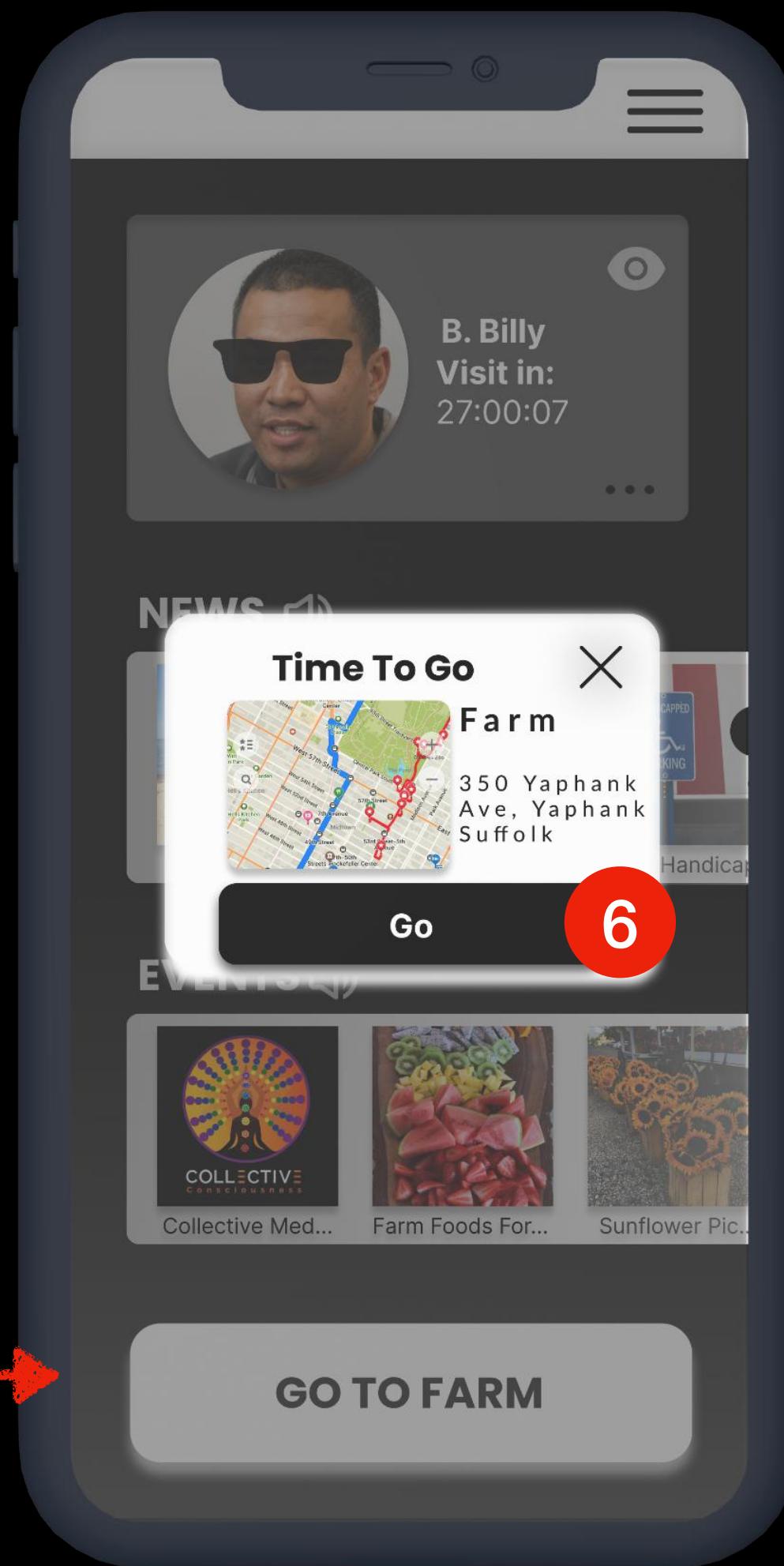
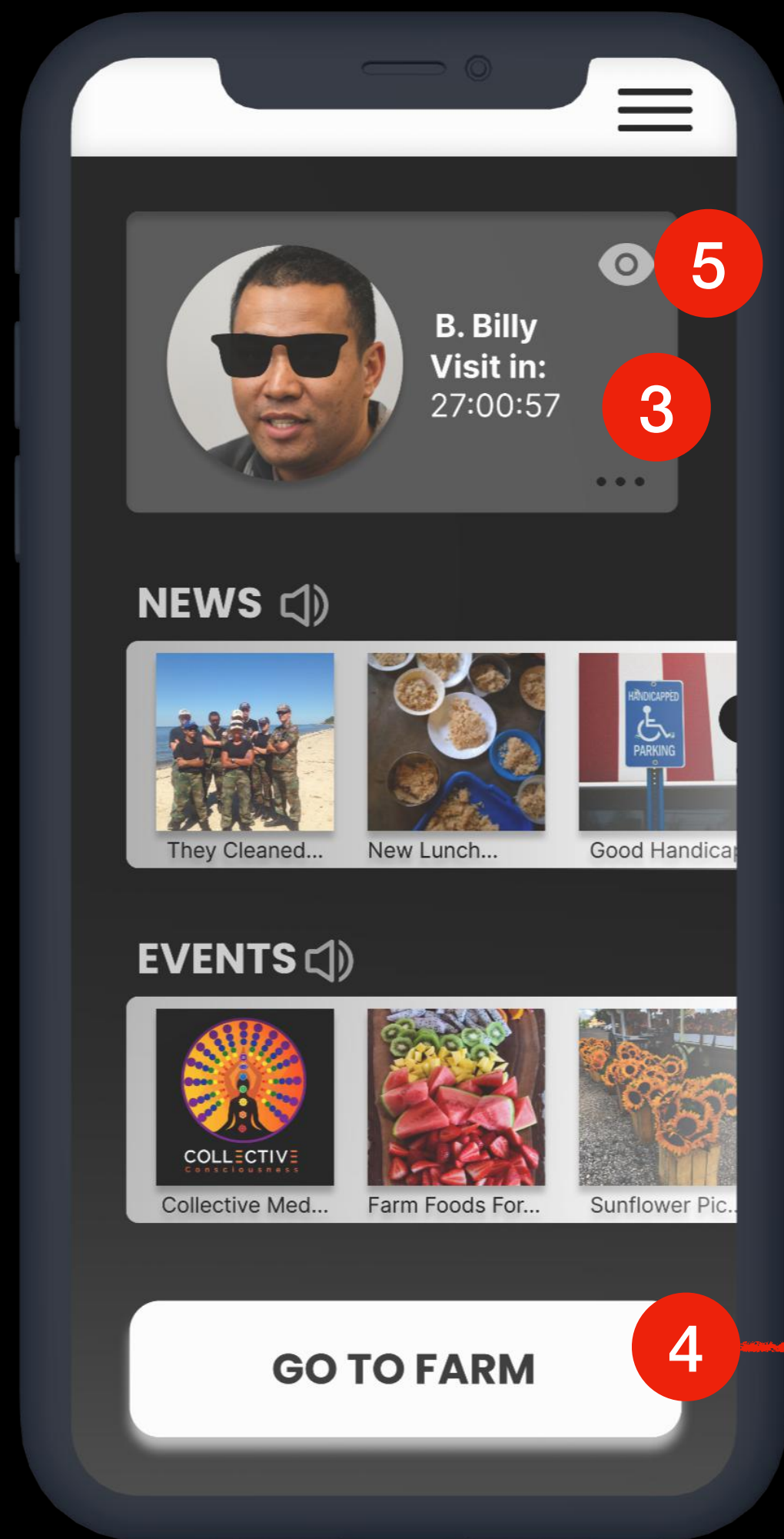
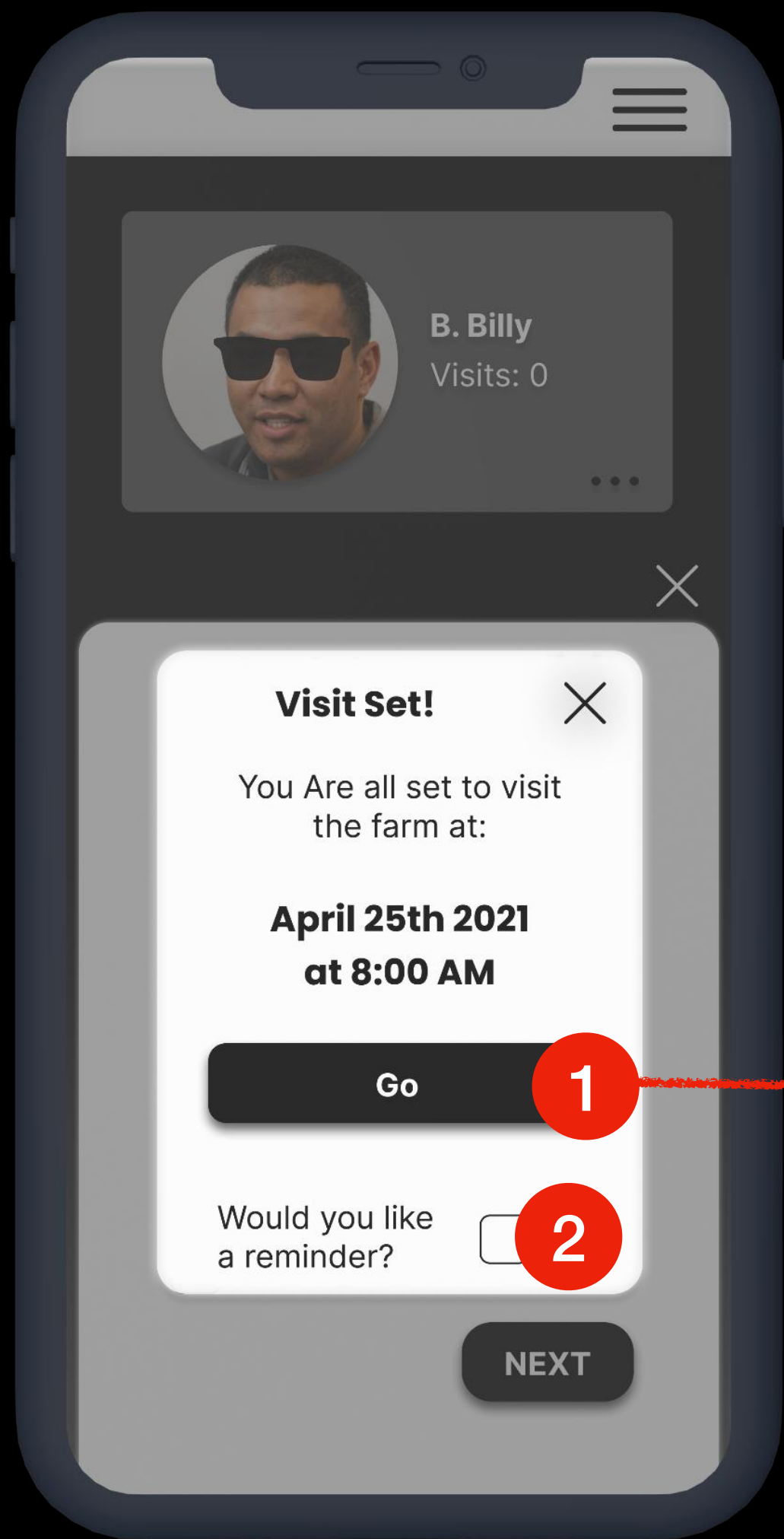
2
User Selects Time input for visit

3
User selected Yes for Accommodations Question

4
Accommodations that user can multiple select options

5
Next Button to finish scheduling visit

6
Save accommodations pop up box



Ready Set Go

1

User can tap the "Go" Button in visit confirmation pop-up

2

User can tap the reminder box for a text reminder.

3

Main Page countdown until farm visit (Will turn red when visit is past due)

4

User can tap Go to farm when ready to visit farm

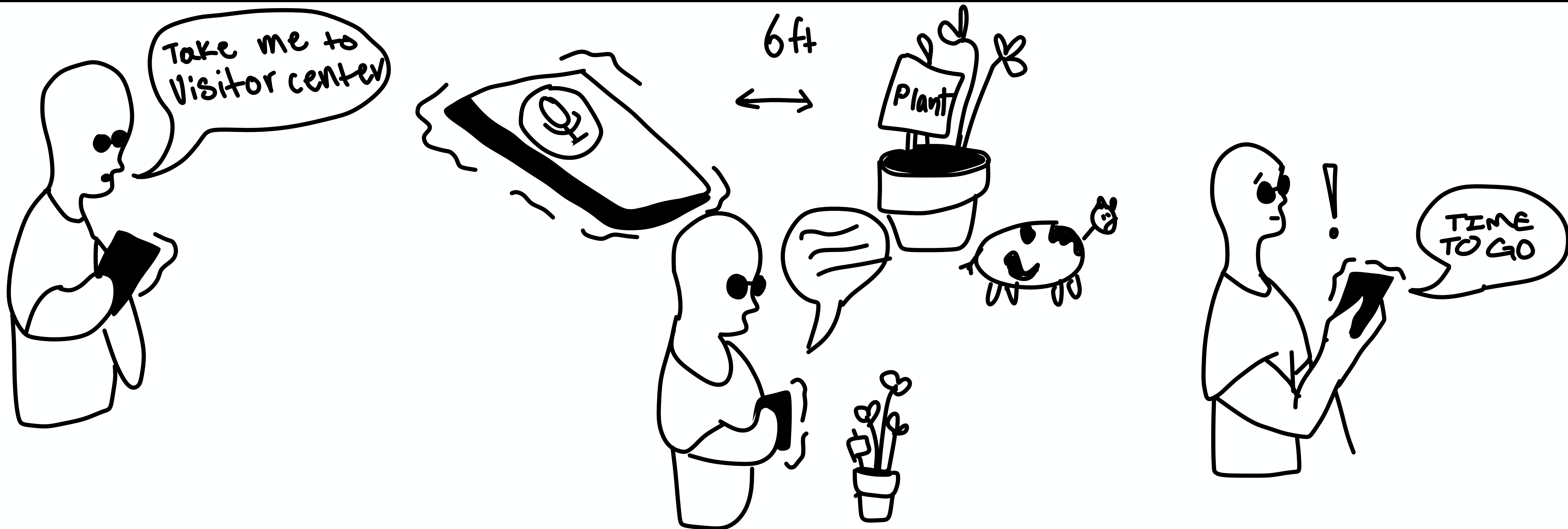
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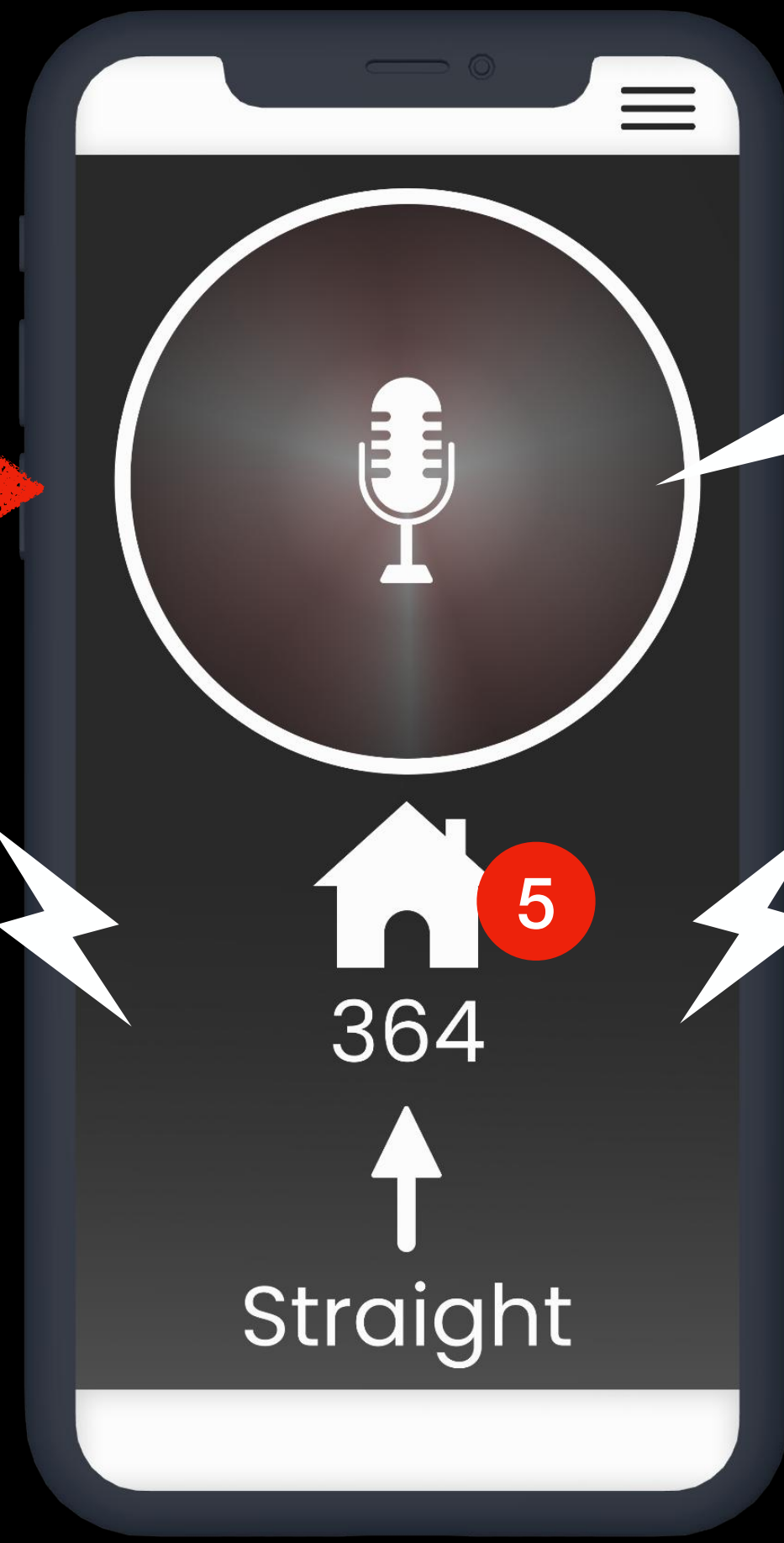
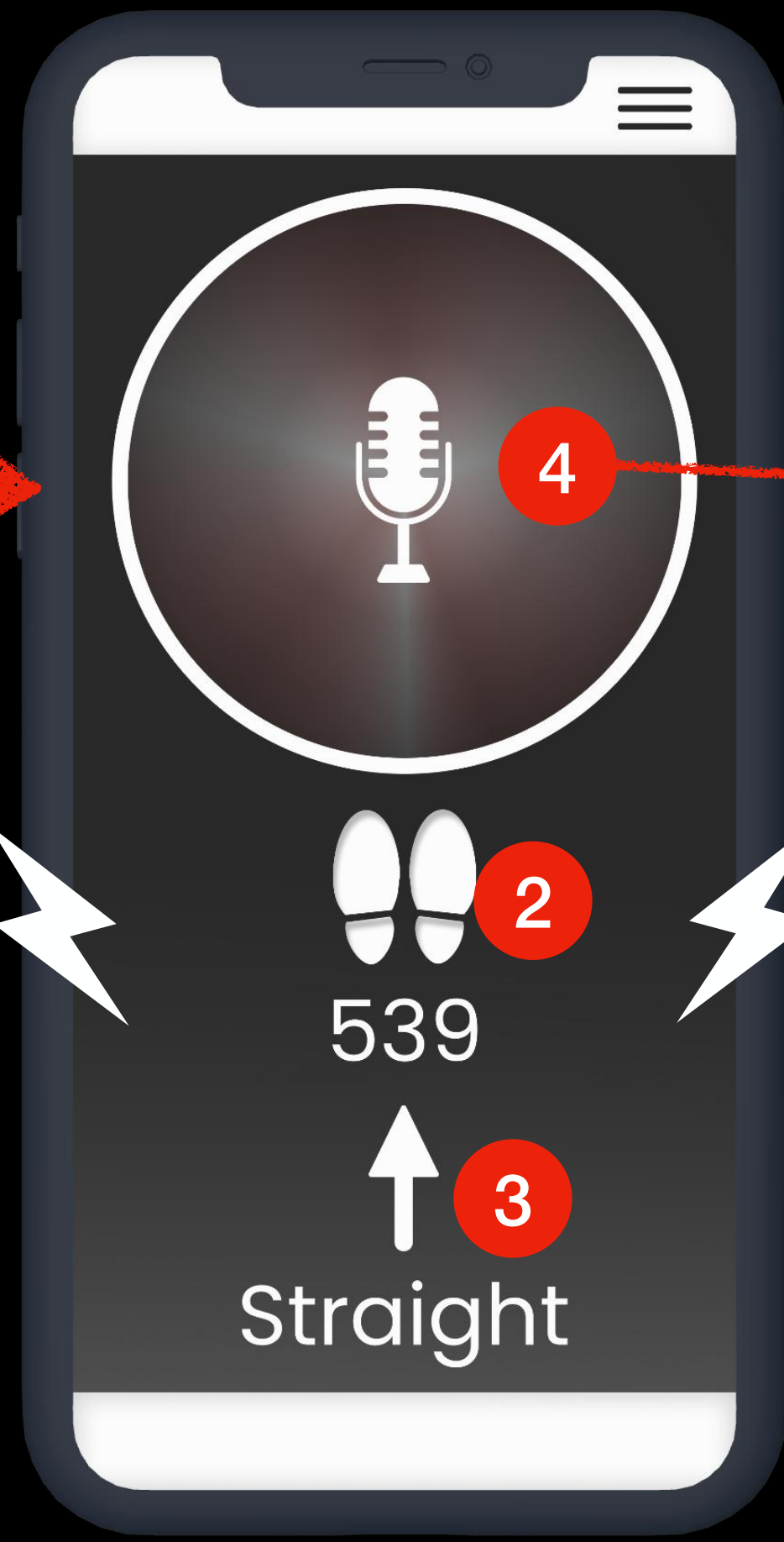
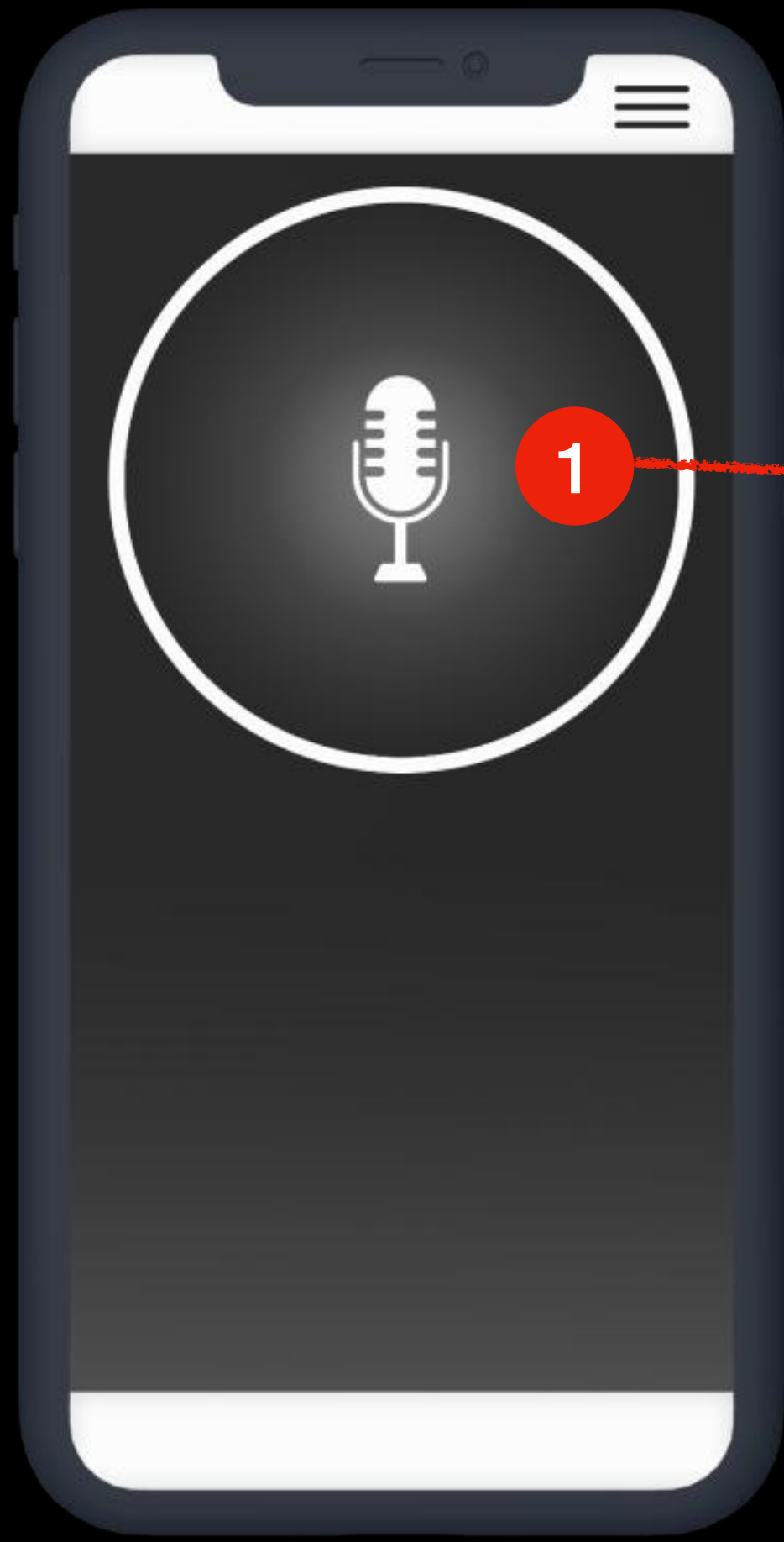
User has new icon display of accommodations added to their profile

6

User can tap GO button to launch GPS and notify staff of ETA

The Idea Of Geofencing





The farm is about to close for the day, your transportation is 364 steps, straight ahead of you.

Text to Speech

1
Text to speech button, idle state

2
Steps icon, shows/speaks the number of steps required to reach destination

3
Directional icon, displays / speaks the direction the user must walk to reach destination.

4
Text to speech button, active state, shown while user is asking for input, or receiving directions

5
home icon, shows/speaks the number of steps required to return to your arrival destination.

IS

THIS

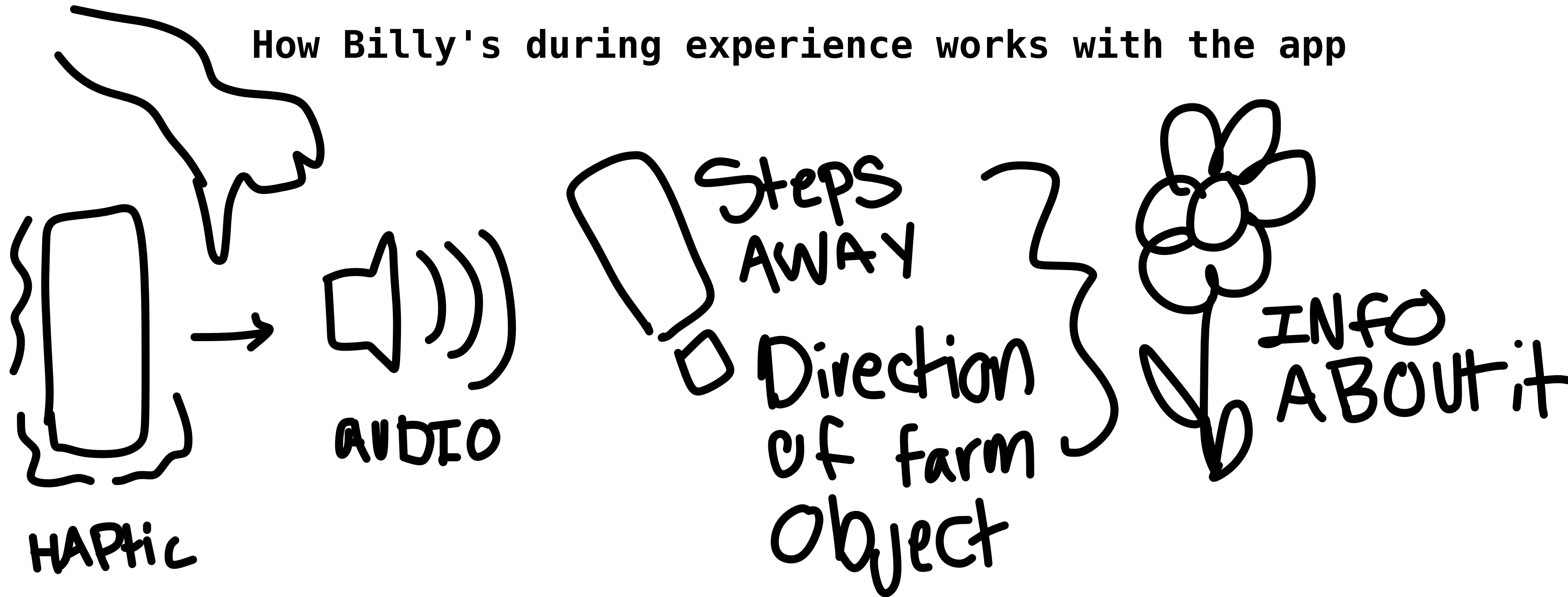
GOOD?

ASK PEERS
& MENTORS
FOR FEEDBACK

How do they interact?

TAP

How Billy's during experience works with the app



Future Work

**Think about the experience design of the farm's
new visitor's center**

Sources

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Thank You