



Walks

Walks - Outdoors GPS Tracking Software Application

User Manual

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TABLE OF CONTENTS

1. Introduction	4
1.1 About Walks	4
1.2 About User Manual	4
1.3 Intended Users	4
1.4 Requirements	4
2. Getting Started / Getting Connected	5
2.1 Startup	5
2.2 Navigation Features	5
2.2.1 Home Button	5
2.2.2 Navigation Bar	5
3. Page Flow and Functionality	6
3.1 Product Functions and User Interface	6
3.1.1 Landing page	6
3.1.2 Register page	7
3.1.3 Login page	8
3.1.4 Dashboard page	9
3.1.5 Public Trips Page	10
3.1.6 Trip Management page	11
3.1.7 Create a Trip page	15
3.1.8 Add Device page	16
3.1.9 Notifications Page	17
3.1.10 Profile page	18
3.1.10 Edit Profile Popup	19
3.1.11 Need Help Page	20
3.1.12 Setting Permissions	21
3.2 Mobile Tracking Application	22
3.2.1 Launch View	22
3.2.2 Login Screen	23
3.2.3 Control View	24
3.2.4 Mobile Errors	25
3.3 User Class and Characteristics	25
3.4 Operating Environment	26
3.4.1 Support for Multiple Browsers	26
3.4.2 Devices	26
3.6 Operating Environment	26

4. Requirements	27
4.1 Hardware Requirements	27
4.2 Software Requirements	27
4.3 Communications Requirements	27
5. Error Messages/Codes	28
Appendix	30
References	31

1. Introduction

1.1 About Walks

According to the National Park Service, approximately 2000 individuals get lost hiking every year. Additionally, hundreds of people participating in outdoor recreation activities are injured, or deal with complications while outside of the range of cell phone service. This oftentimes means individuals are unable to get help when they need it most. In response to the ever-present dangers that accompany many popular outdoor adventures, the Walks Outdoor GPS Tracking Software Application is a proof-of-concept project that provides users with an additional layer of safety and support primarily through trip planning and continuous GPS tracking. Our application allows users to integrate location data from different compatible GPS tracking devices and cell phones, manage user and trip information, as well as other functions associated with planning and managing an outdoor trip.

1.2 About User Manual

This manual is intended to be used in conjunction with compatible Geoforce GPS device manuals. The GPS hardware setup is not part of this manual. In addition this manual provides detailed instructions on using the Walks website within a compatible browser.

1.3 Intended Users

Anyone organizing an outdoor trip either in or outside of range of cellular service, anyone desiring to monitor travel progress of an individual or group (such as family, friends, or an organization).

1.4 Requirements

The Walks outdoor adventure tracking software requires access to the internet and a compatible internet browser. To access *walkswt.com* it is required that a TLS/SSL connection (https). If a user attempts to use http it will not connect or change to https.

2. Getting Started / Getting Connected

2.1 Startup

To access the walks webpage go to a browser and in the URL go to <https://walkswt.com>. When this webpage has loaded, the user will encounter the landing page which is the main portal to get anywhere within the website and login/register an account with Walks as seen in *Figure 3.1.1*.

2.2 Navigation Features

To navigate the entire website the listed navigation features have been added so that any page can be accessed easily and is simple to use.

2.2.1 Home Button

On every page of the website the Walks logo will be in the top left hand corner (*Figure 3.1.1*). When the logo is clicked, it will always take the User to the landing page of the website.

2.2.2 Navigation Bar

On every page a navigation bar is displayed at the top for easy access to the most used pages of the website. This allows complete navigation throughout the entire application. Within the website and application there are two navigation bars that are displayed, the main navigation bar (*Figure 3.1.1*) and the logged in navigation bar (*Figure 3.1.2*). These features allow the user to navigate throughout the entire application easily and can always return to the landing page if needed with the home button mentioned in section 2.2.1.

3. Page Flow and Functionality

3.1 System front-end and back-end

3.1.1 Landing page

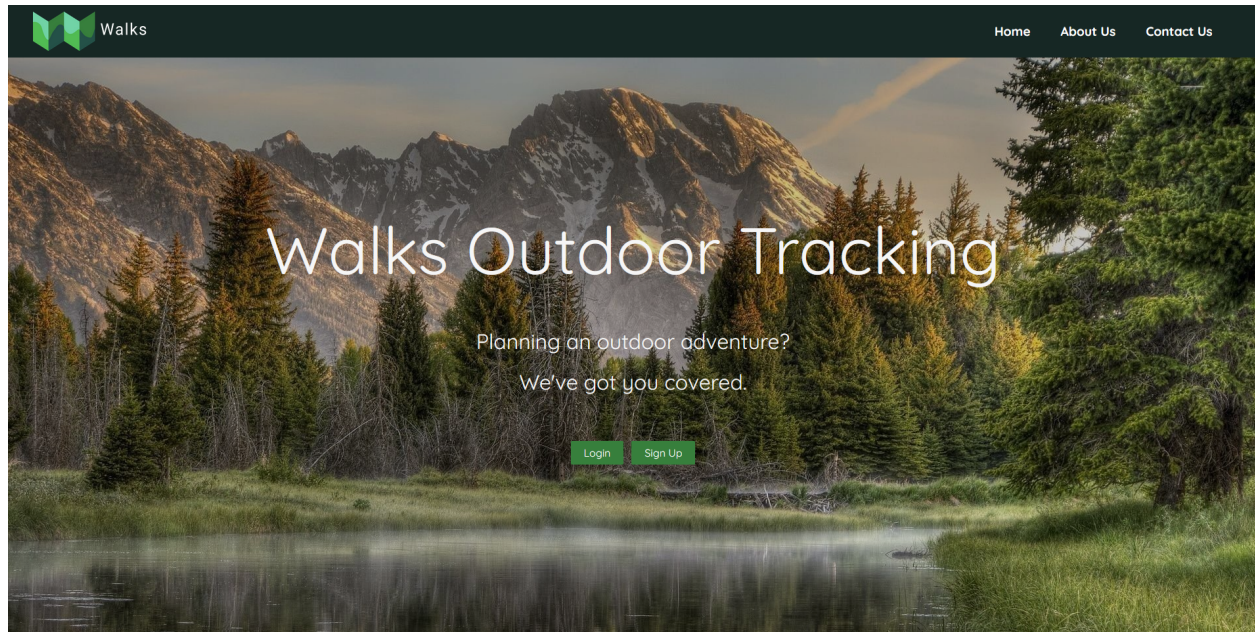
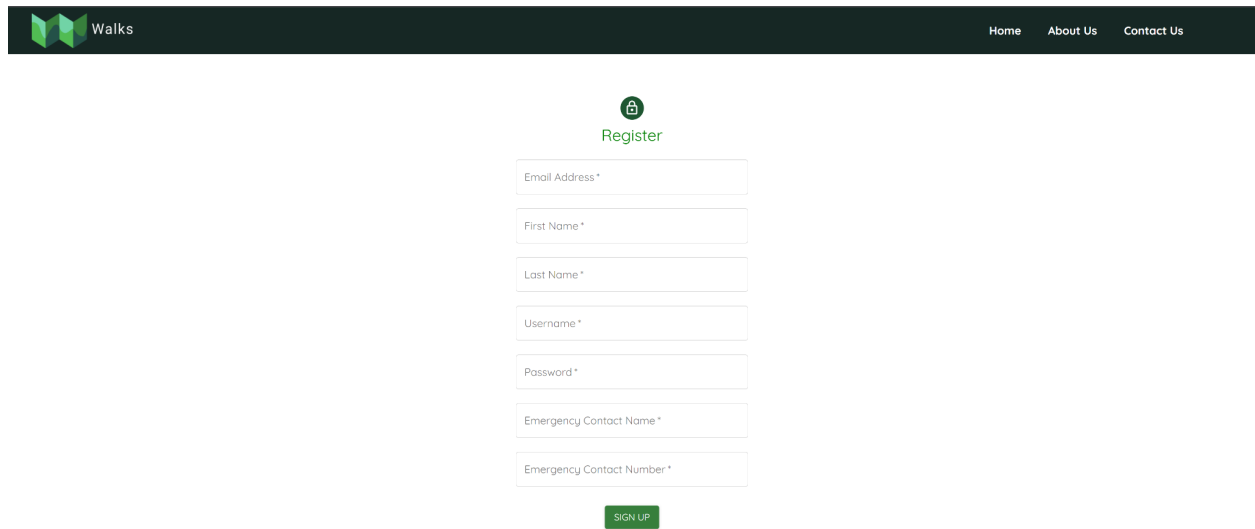


Figure 3.1.1

- Login in button - Will route the user to a login page
- Register (Create Account) button - User will be routed to an account creation page
- About information - This will be at the bottom of the webpage and will display information about the purpose of the application and the project team

3.1.2 Register page

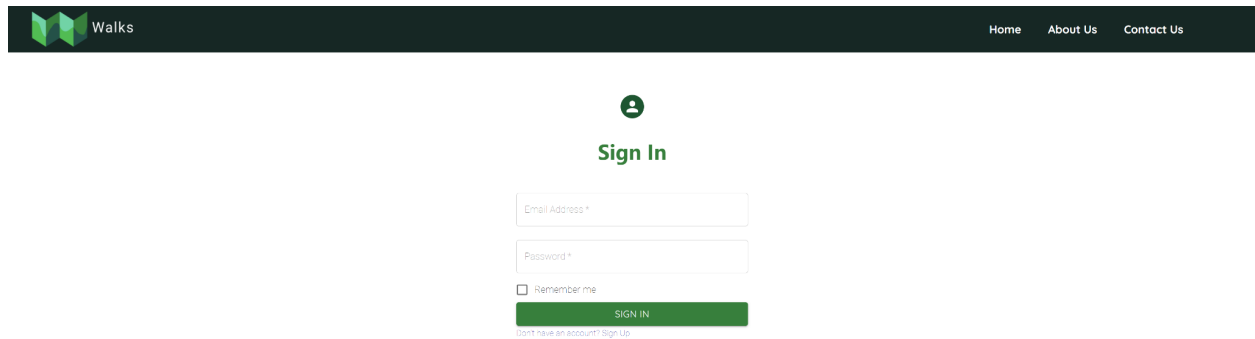


The screenshot shows the 'Register' page of a website called 'Walks'. The header is dark green with the 'Walks' logo on the left and navigation links 'Home', 'About Us', and 'Contact Us' on the right. The main content area is white and features a central registration form. At the top of the form is a green padlock icon and the word 'Register' in green. Below this are seven input fields, each with an asterisk indicating it is required: 'Email Address *', 'First Name *', 'Last Name *', 'Username *', 'Password *', 'Emergency Contact Name *', and 'Emergency Contact Number *'. At the bottom of the form is a green 'SIGN UP' button.

Figure 3.1.2

- Registration box
 - Email (Serves as username for sign in)
 - First name
 - Last name
 - Username
 - Emergency Contact Name
 - Emergency Contact Number
 - Password

3.1.3 Login page



The screenshot shows the 'Sign In' page of the 'Walks' application. At the top, there is a dark green header bar with the 'Walks' logo on the left and navigation links 'Home', 'About Us', and 'Contact Us' on the right. The main content area is white and features a central 'Sign In' section. This section includes a green circular icon with a white person silhouette, the text 'Sign In', and two input fields labeled 'Email Address *' and 'Password *'. Below these fields is a checkbox labeled 'Remember me' and a green 'SIGN IN' button. At the bottom of the sign-in section, there is a link that says 'Don't have an account? Sign Up'.

Figure 3.1.3

- Login box - Will allow users to enter credentials (username [email] and password) to sign in to their Walks account. Successful login takes users to the trip dashboard.

3.1.4 Dashboard page

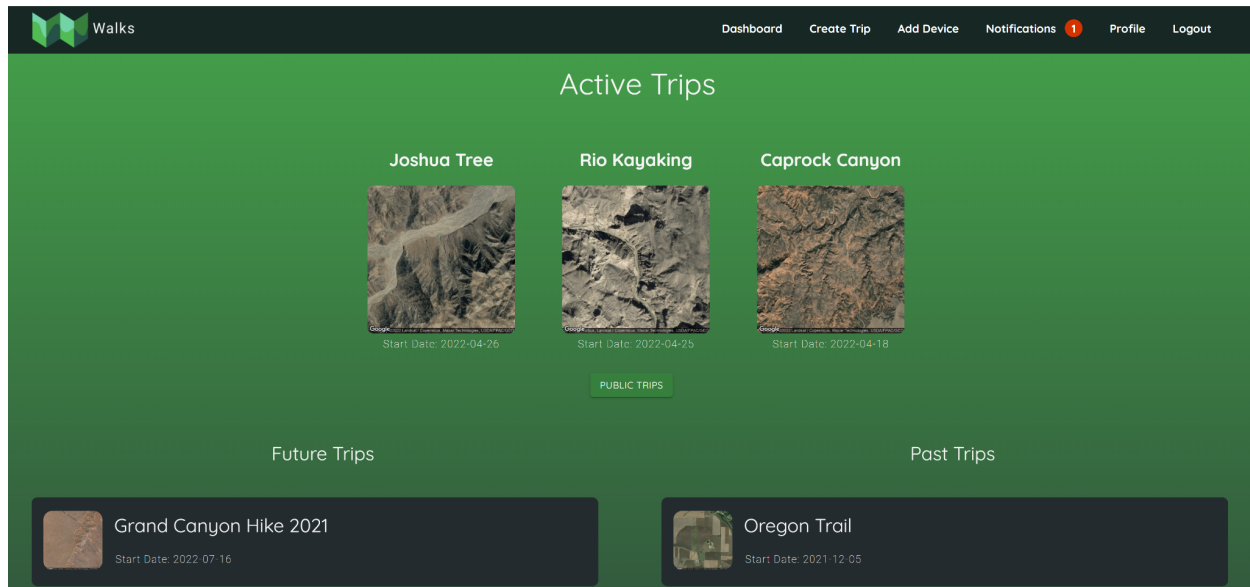
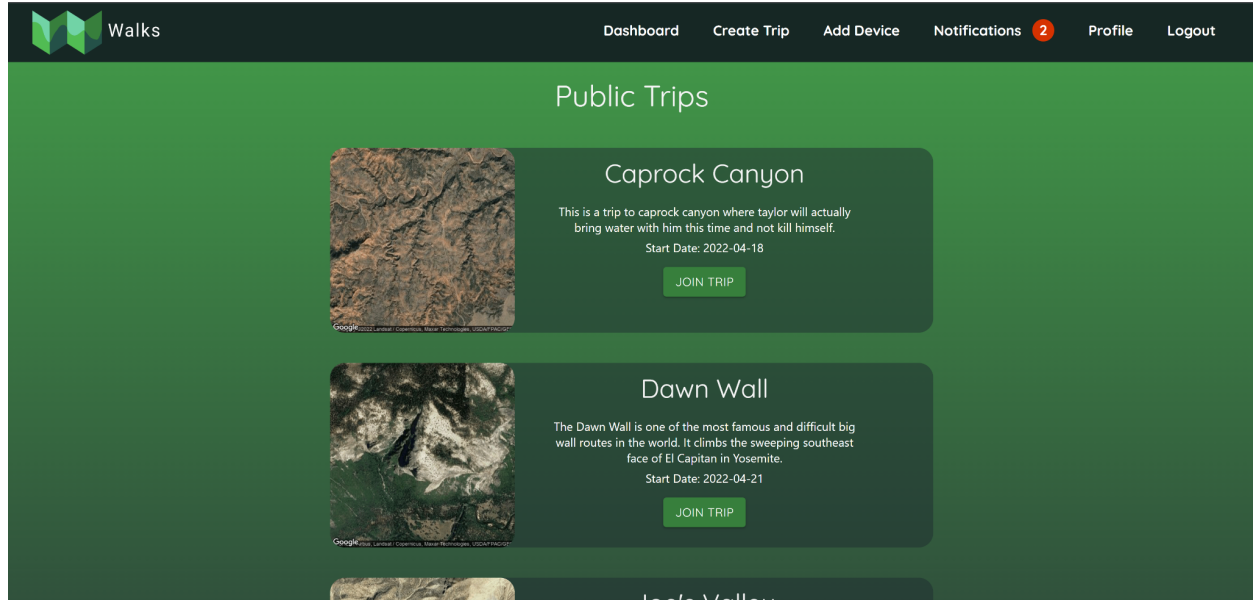


Figure 3.1.4

- Active trips - Active trips are defined as trips whose date range includes the day that the user is accessing the page. The icons displayed under active trips include a satellite image of the coordinates entered upon trip creation, and the start date of the trip. Users can click into each active trip to be able to see tracking info on the trip manager page.
- Future trips - Displays information about upcoming trips. Upcoming trips are defined as trips whose defined date is after the day the user is accessing the application. The containers displayed under future trips include a small thumbnail satellite image of the coordinates entered upon trip creation, the title of the trip and the start date of the future trip. Clicking the container will navigate the user to the trip manager page for that trip despite the trip not yet being active.
- Past trips - Past trips are defined as trips whose defined date range is before the day the user is accessing the application. The containers displayed under past trips include a small thumbnail satellite image of the coordinates entered upon trip creation, the title of the trip and the start date of the past trip. Clicking the container will navigate the user to the trip manager page for that trip despite the trip no longer being active.
- Clicking on any trip window will open up the trip in the Trip Management Page for that specific trip
- Public Trips button will redirect user the the public trips page

3.1.5 Public Trips Page



- Public Trips List - shows information about trips listed as public by user's friends. The Public trip containers display a thumbnail of the satellite image specific to the coordinates listed upon the public trip's creation, the trip title, a section from the trip description, the start date for the trip, and a button that allows the user to be added to the trip roster as a participant. If the public trip is joined, the container for that trip is removed from the list.

3.1.6 Trip Management page

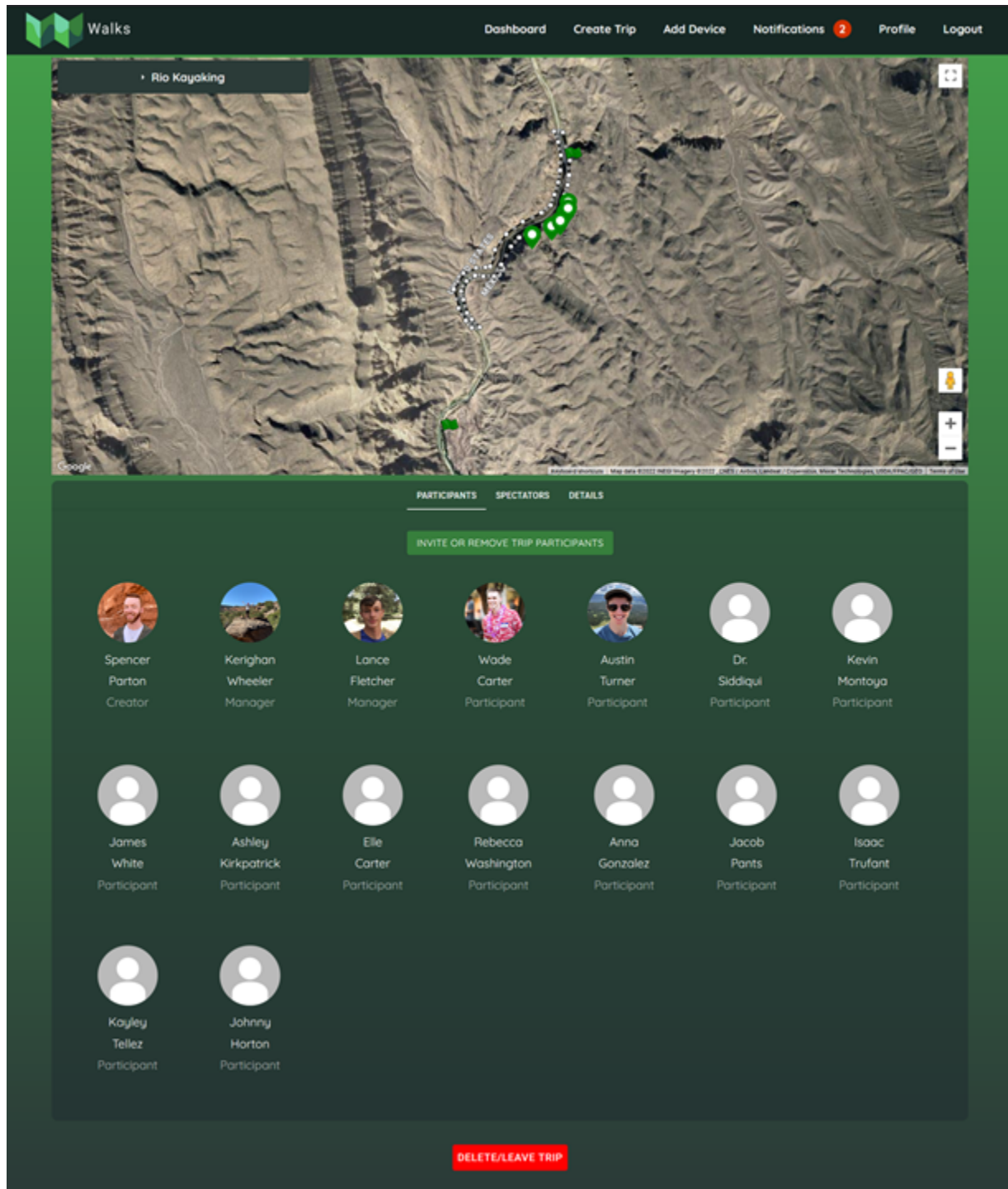
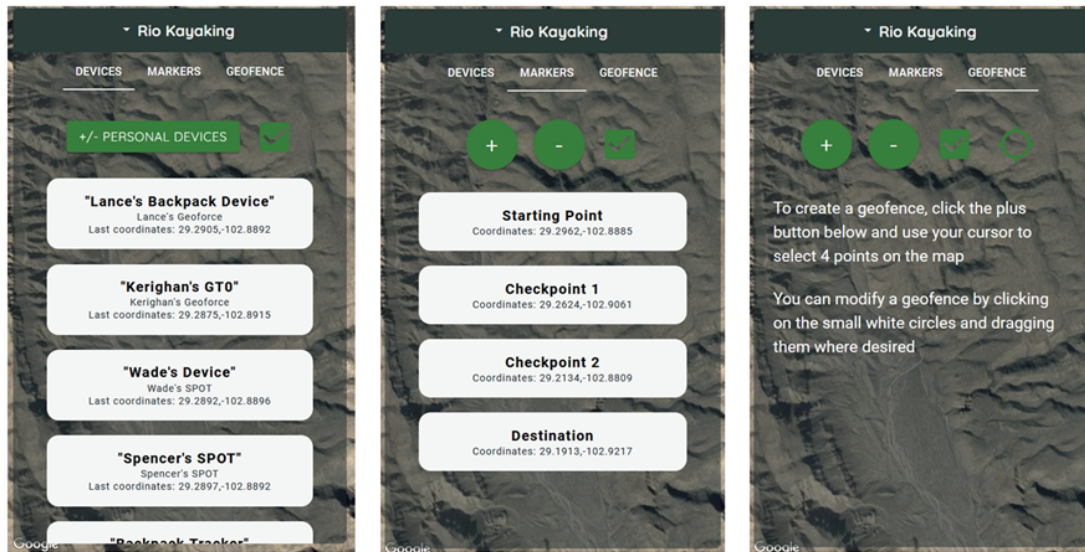
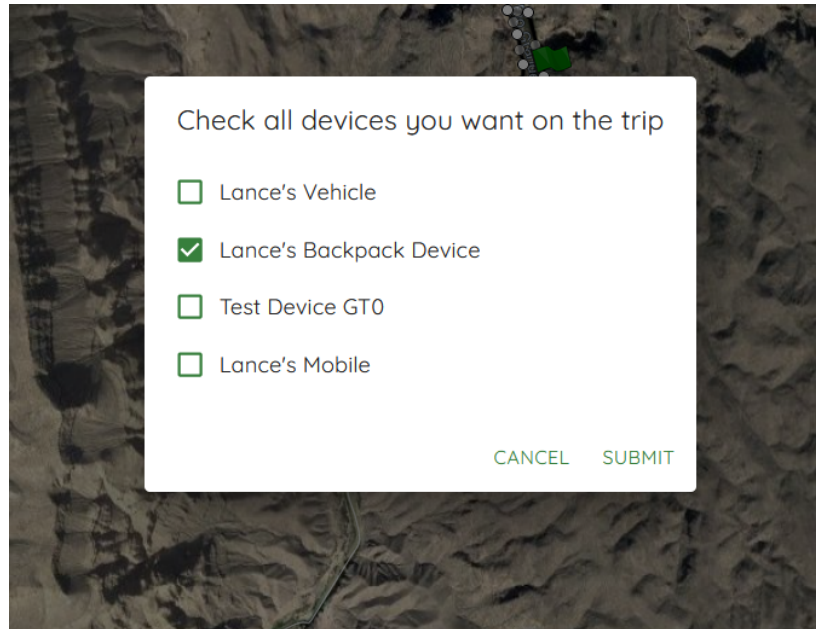


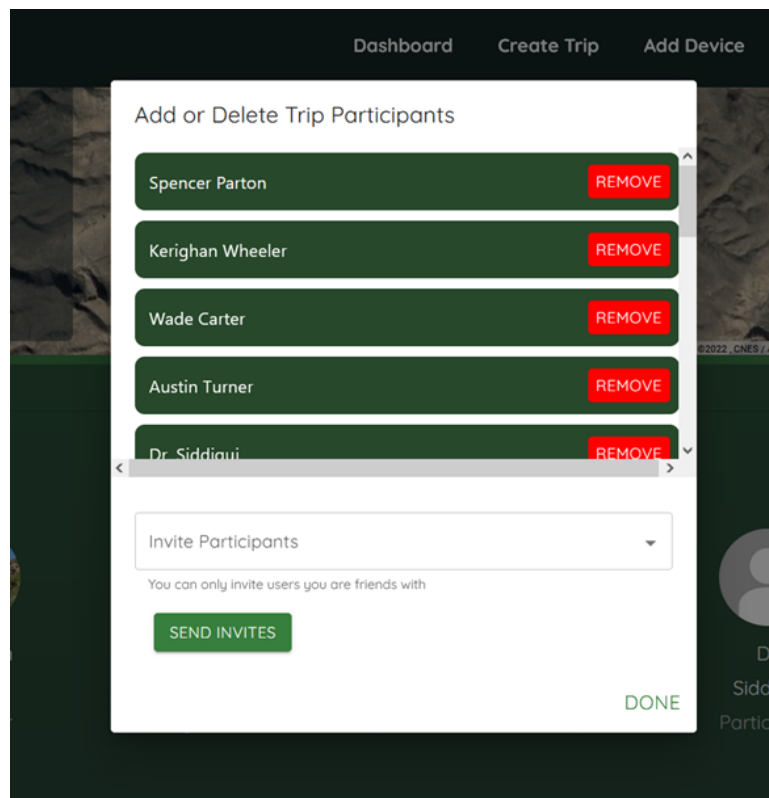
Figure 3.1.5



- Will show all the geofence, devices, and markers associated with the trip. The geofence, devices, and markers will be displayed on the map and are clickable. When a device is clicked it will display the name of the device. The user also has the ability to see which map entities are shown by toggling the checkboxes on each tap within the trip manager.
- To add markers or create a new geofence simply click the circular plus button, then click on the map of the desired location for the map entity. Similarly, to delete a marker or geofence, simply click the circular minus button and then click on the desired map entity that is to be deleted.
- Delete/Leave Trip button will allow a user to no longer be a part of that trip if they are a participant or a spectator. If the user is a creator or manager the trip will be deleted for everyone involved

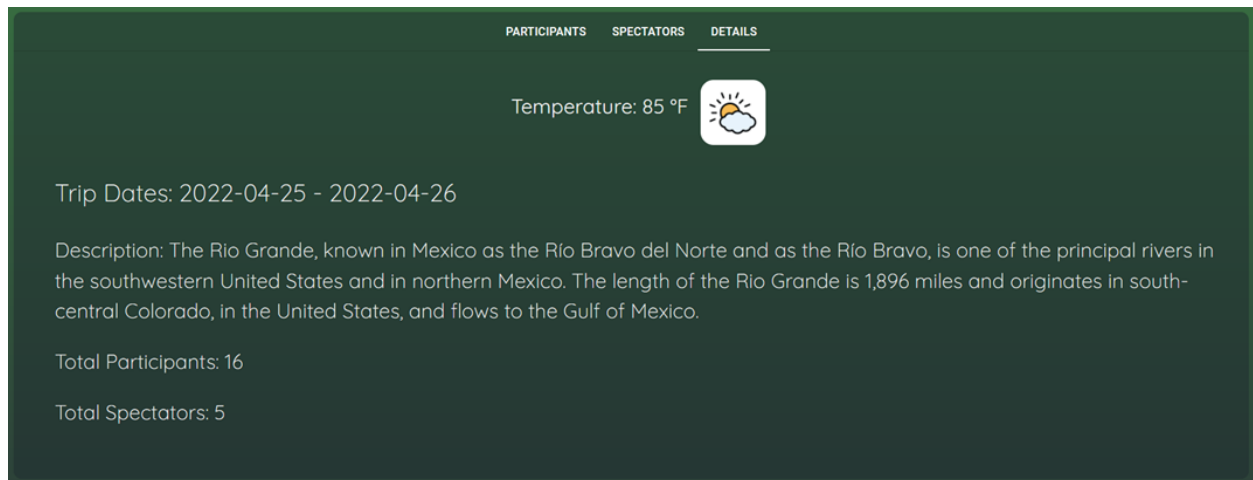


- When a user wishes to add or remove their personal devices from a trip they can do so by clicking the “+/- Personal Devices” button within the Devices tab. Devices checked will be on the trip, devices not checked will not be on the trip.

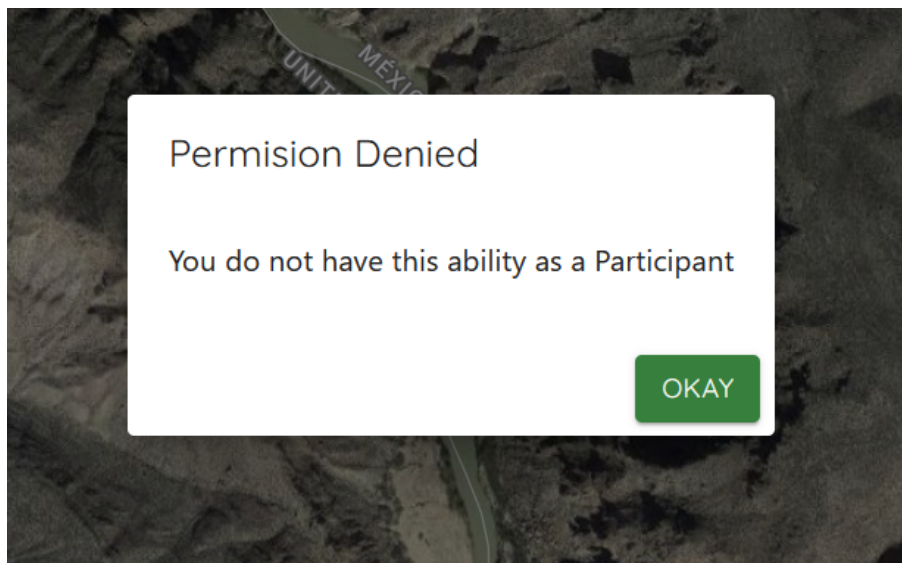


- Participant and Spectator Roster - As shown above, users will see a list of all the participants that will be attending the trip and will have the ability to delete participants

from the trip if needed through the popup add or delete participants button. A similar functionality is also available for adding and deleting spectators.



- The user also can see some general information about the trip as shown in the picture above. Where the temperature is shown is a button which will send the user to the national weather service website with more information based on the trip coordinates.



- A trip creator or manager have all access to all features within a trip manager page, including adding/deleting, markers, geofences, participants, and spectators. All users have the ability to add or remove personal devices from a trip. When a user tries to access a functionality they do not have permission to access, they will be shown the above popup.

3.1.7 Create a Trip page

Walks

Dashboard Create Trip Add Device Notifications Profile Logout

Create a New Trip

Trip Name *

Trip Description *

Trip Start Date * 04/28/2022 Trip End Date * 04/28/2022

Latitude * Longitude *

Invite Users
Invite users

Add Device
Add Device

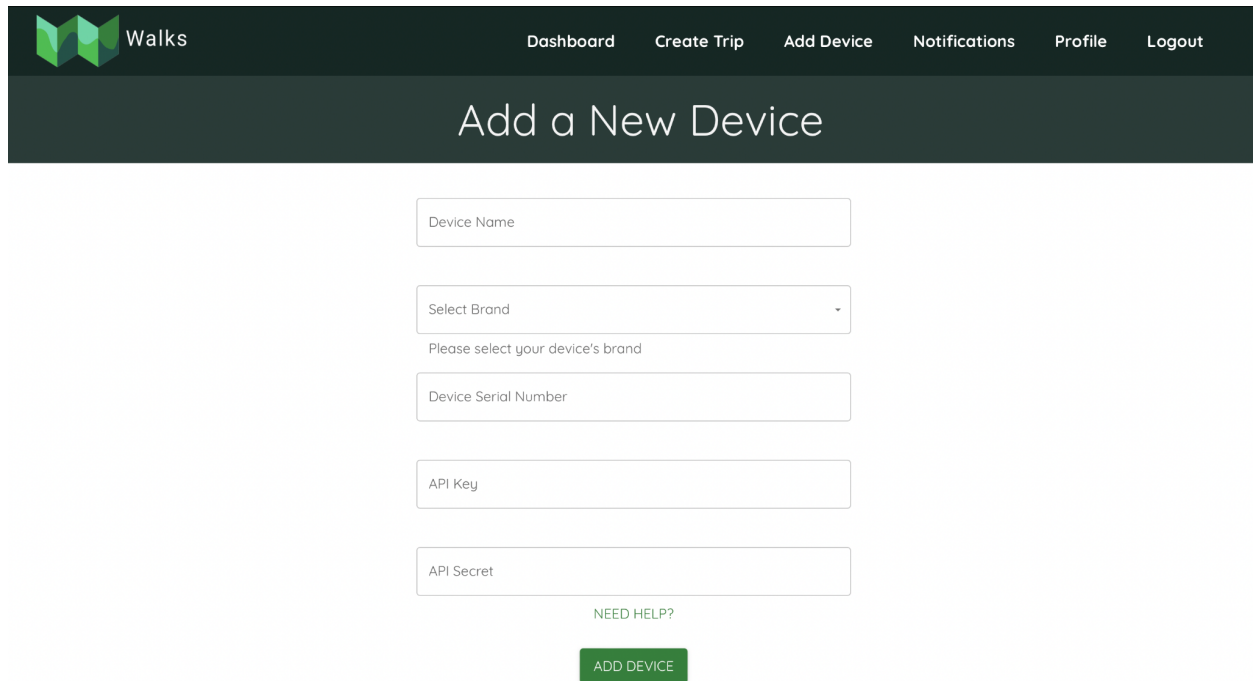
☐ Do you want to make this trip public to friends?

SUBMIT

Figure 3.1.6

- Name - This will be the name of the trip
- Description - This will allow for detailed trip information
- Date - What is the date range that this trip will take place. This will be used to sort where the trip shows up in the Dashboard as well as when tracking information is displayable.
- Latitude/Longitude - Trip members are required to input the Latitude and Longitude of their trip's destination. Users may find these coordinates from google maps. These coordinates will be used to center the focus of the map in the Trip Manager Page
- Add Members - The user has the ability to invite other users to join a trip. Both users must be friends first before being able to be added to a trip.
- Add Devices - The user can add a previously registered device to the creation of this trip.
- Public Trip - If user checks the “Do you want to make this trip public to friends” checkbox their trip will be displayed on the Public Trip Page

3.1.8 Add Device page



Walks

Dashboard Create Trip Add Device Notifications Profile Logout

Add a New Device

Device Name

Select Brand

Please select your device's brand

Device Serial Number

API Key

API Secret

[NEED HELP?](#)

ADD DEVICE

Figure 3.1.7

- GPS Nickname - User can specify GPS Nickname that will be the default name displayed when being tracked
- GPS Brand - User will specify GPS brand
- API Key - From the GPS brand an API key is given to input here
- API Secret - Along with the API Key and API Secret is given to input here.
- Need Help? - If the user is unsure how to find the required values this button will open a new tab in their browser to help them find what they need.

3.1.9 Notifications Page

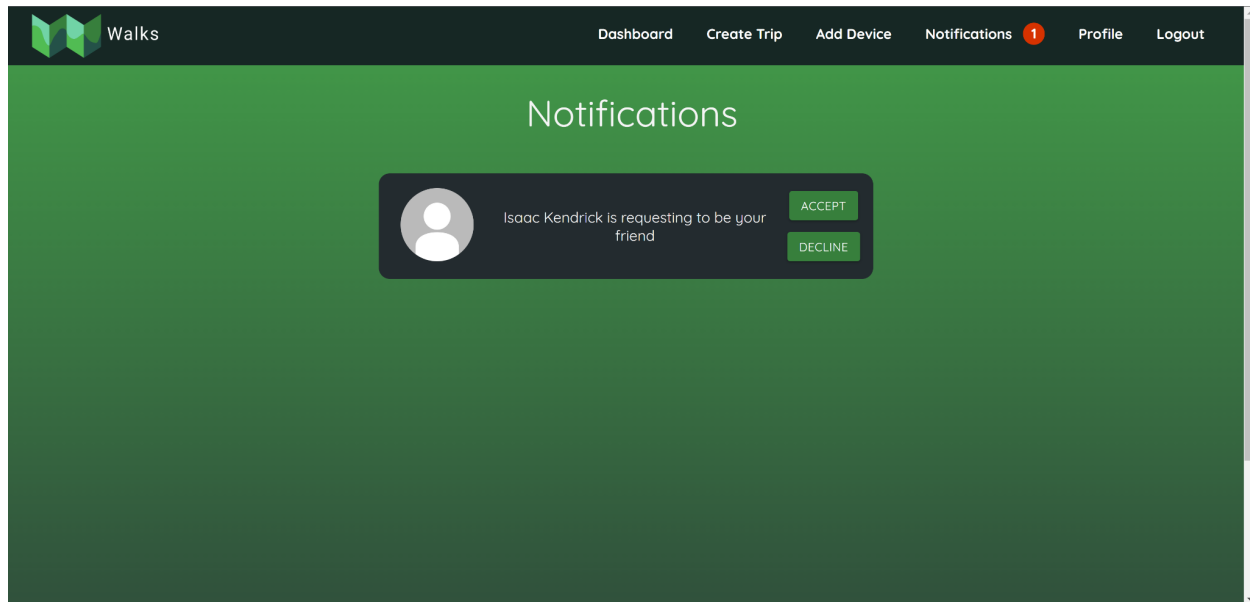


Figure 3.1.8

- The notifications page currently receives two categories of notifications: friend requests, and trip invitation requests.
- The user who sent the invitation will have their profile picture displayed within the notification.
- Accept/Decline button - Two buttons will be shown at the bottom of the invitation box with options to either accept or decline the trip invitation. If accepted, the user receiving the notification will then be added to either the trip roster or the sending user's friend list.

3.1.10 Profile page

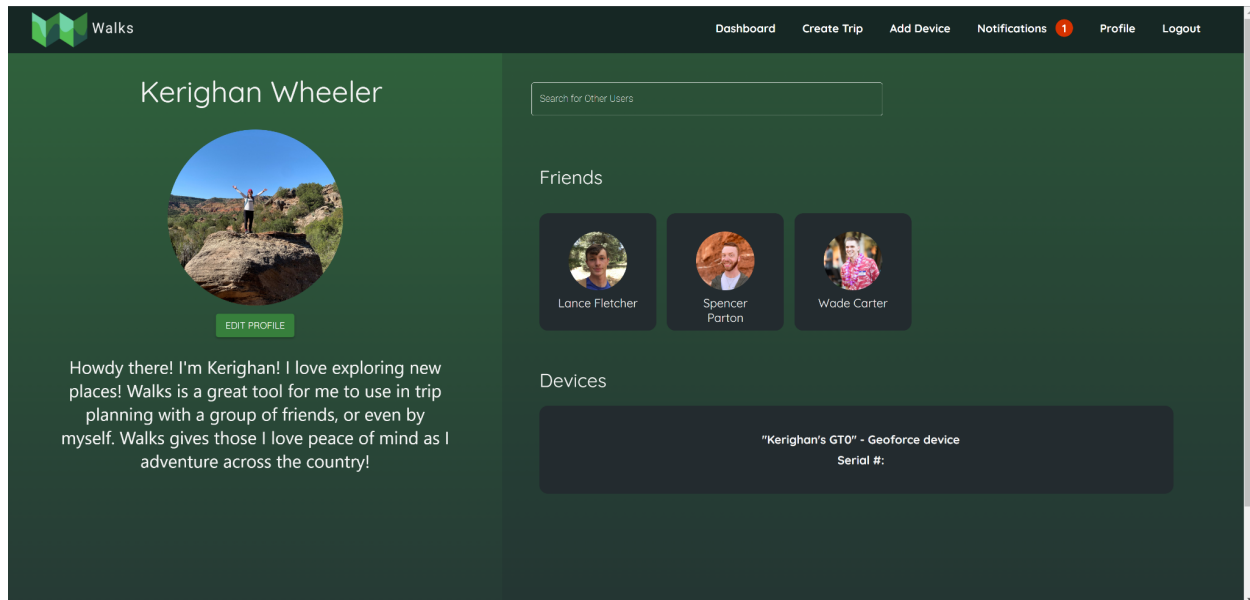


Figure 3.1.9

- Personal account info - User's bio will be shown with a short personalized message about themselves. Users can edit their bio information from this page.
- Search bar - allows users to search for other existing users within the walks application. Once searched, users can send friend requests to other users.
- Friends list - Users will be able to see all friends who accepted their friend request. Users can remove friends from this page.
- Device list - Users will be able to see all devices currently registered with their account. Devices can be renamed and removed from this profile.
- Edit Profile - Users can edit their First Name, Last Name, and Bio by clicking on this button. A popup **Figure 3.1.10** will open to allow alterations to their profile information.
- Edit or delete devices - Users can edit their own device's names through the profile page along with delete them.

3.1.10 Edit Profile Popup

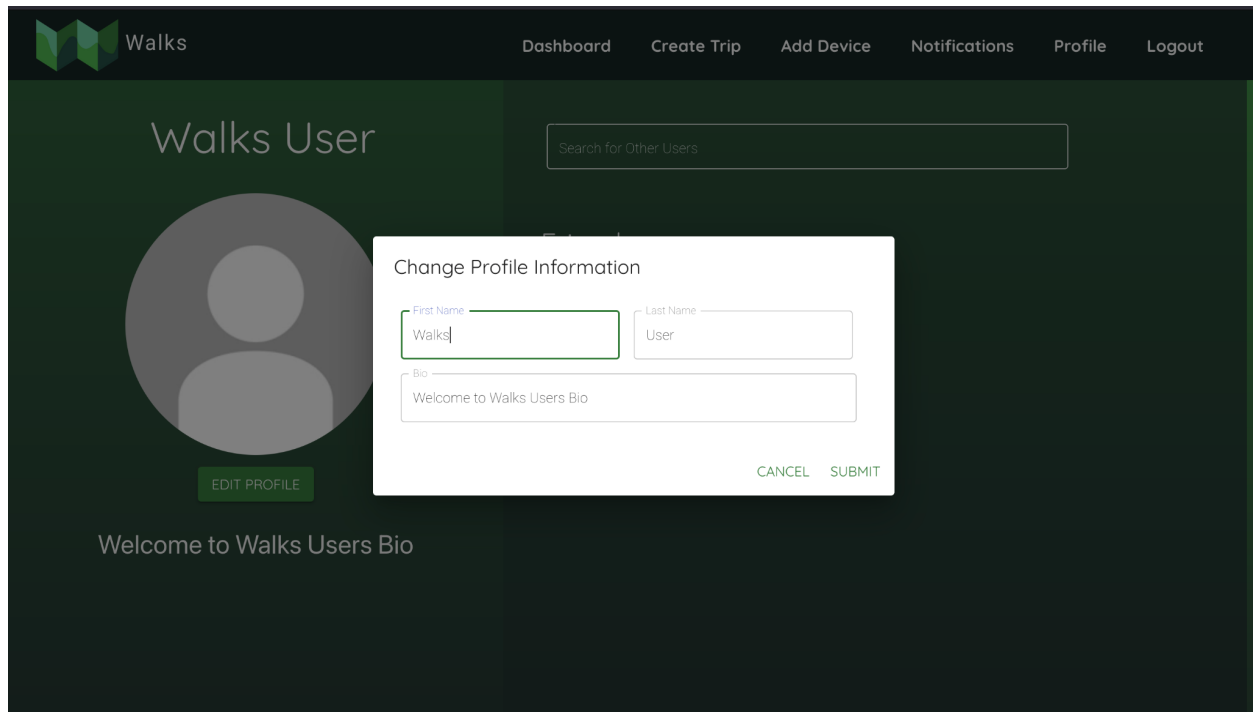


Figure 3.1.10

- First Name - Users can alter their First Name here. This field cannot be empty.
- Last Name - Users can alter their Last Name here. This field cannot be empty
- Bio - Users can alter their Bio here. This field cannot be empty
- Submit Button - If all input fields are correct then clicking submit will update the users profile information.
- Cancel Button - If this button is clicked then the users profile information is not updated and will stay as it was before.

3.1.11 Need Help Page

Walks

DashboardCreate TripAdd DeviceNotificationsProfileLogout

Select Which Device You Want To Add

Geoforce Device

If you have a Geoforce device set up at Trackopolis contact support@trakopolis.com to request device credentials. Once set up you can find credentials at api.trakopolis.com. See the picture below for where you can find api secrete/key.

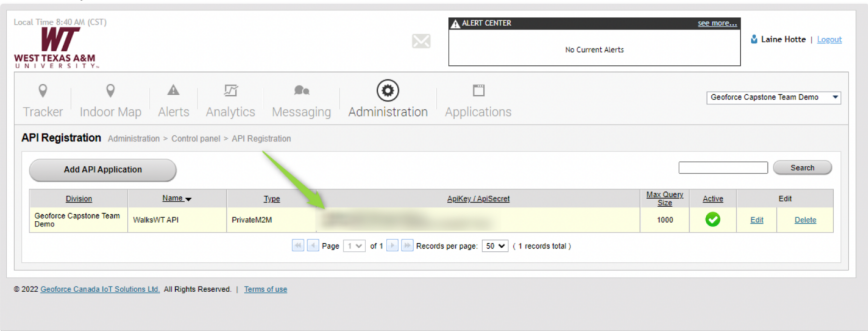
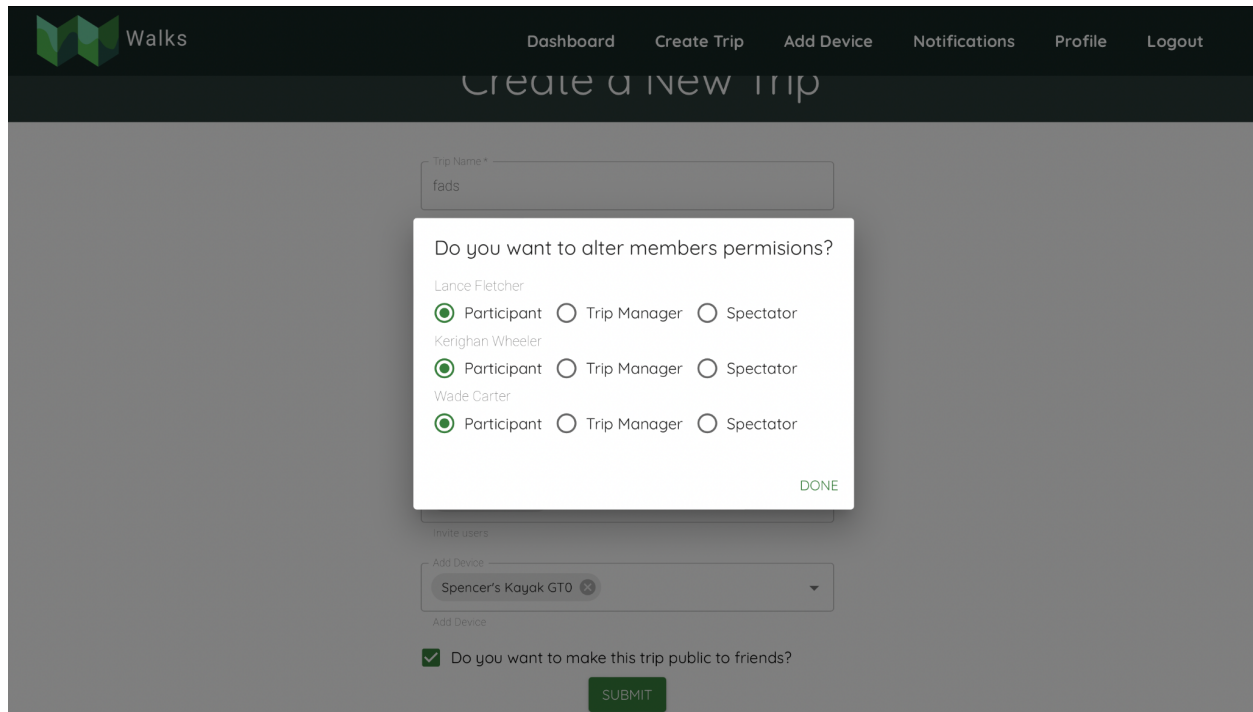


Figure 3.1.11

- Geoforce Device - Clicking on the Geoforce accordion section will open up to display information (as seen in **Figure 3.1.11**) to guide the user though finding the API Key/API Secret for a Geoforce device.
- Spot Device - Clicking on the Spot accordion section will open up to display information to guide the user though finding their Spot Devices API Key/API Secret.

3.1.12 Setting Permissions



The screenshot shows the 'Create a new trip' page in the 'Walks' application. The page has a dark header with navigation links: Dashboard, Create Trip, Add Device, Notifications, Profile, and Logout. The main form area is light gray and contains several input fields: 'Trip Name' (with 'fads' entered), 'Invite users', 'Add Device' (with 'Spencer's Kayak GT0' selected), and a checkbox for 'Do you want to make this trip public to friends?' which is checked. A green 'SUBMIT' button is at the bottom. A white pop-up dialog is centered on the screen, titled 'Do you want to alter members permissions?'. It lists three users: Lance Fletcher, Kerighan Wheeler, and Wade Carter. For each user, there are three radio button options: 'Participant' (which is selected for all three), 'Trip Manager', and 'Spectator'. A green 'DONE' button is in the bottom right corner of the pop-up.

Figure 3.1.11

Permissions are set when a user submits the trip data on the Create Trip Page. A user must have added their friends in the “Invite Users” input field in the Create Trip Page for this pop up to be displayed. Users are then able to select which Permission they wish to set for their added friends.

3.2 Mobile Tracking Application

As described in section 3.1.8 adding tracking devices is a key element in being able to track hikes on our website. Because of this Walks has created a custom mobile application on iOS that allows a cell phone to be used as a tracker. The Mobile Application can be downloaded and installed by request but in the future might be on the Apple App Store or Beta Testflight.

3.2.1 Launch View



Figure 3.2.1

- Launch View - This view is a loading page for our application. Depending if this is your first time this loading screen can take up to 30 seconds.

3.2.2 Login Screen

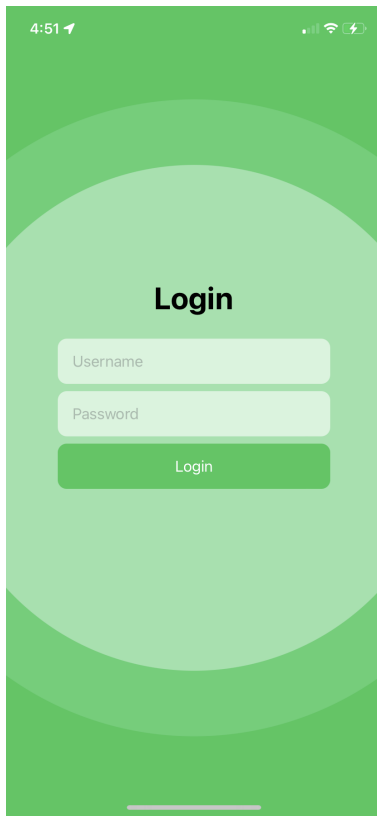


Figure 3.2.2.1

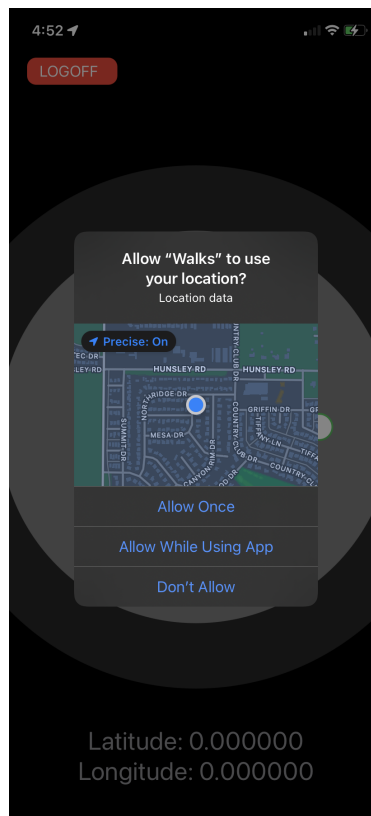


Figure 3.2.2.2

- Login View - When a user first launches the application they will be prompted to login as seen in Figure 3.2.2.1 with an existing Walks user account. Fill in valid information to login and start tracking.
- Allow Location - After a valid Walks user is logged they will be prompted to Allow location data to be accessed by Walks as seen in Figure 3.2.2.2. Allow location to be able to be received and sent by our application for tracking.

3.2.3 Control View



Figure 3.2.3.1



Figure 3.2.3.2

- Control Data - After login and allowed location. The user will be able to toggle updated locations by selecting the toggle switch next to “Control Data” as seen in Figure 3.2.3.1 and Figure 3.2.3.2.
- Logout - In the top left hand corner the user has the ability to Logout of the App, removing all stored data on the iPhone and Server. By selecting Logout the phone will not be updating location data and will remove the device from the users account.

3.2.4 Mobile Errors

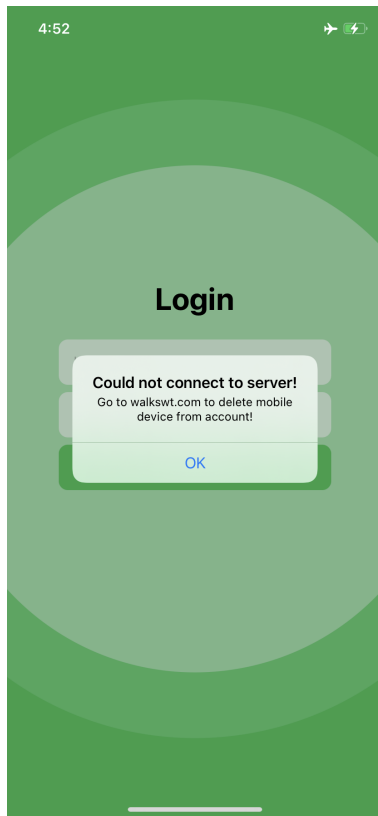


Figure 3.2.4

- Logout Failed - If the user encounters the error “Could not connect to server!” after attempting to logout. The user attempted to log out without a web connection. Our Application still removed all stored data locally but on our servers this device is still associated with an account. To fix this issue, login to your account and navigate to the profile page as seen in Figure 3.1.9. Click on the Mobile Device and delete it. This then will remove its stored locations and the Logout will have been successful.

3.3 User Class and Characteristics

User classes and characteristics are specific to a user within each trip they are added to. A Walks user can be listed as a Trip creator on one trip, a Trip Manager on another trip, a participant on a third trip, and a spectator on a fourth.

- Trip Creator - Defines the user who initially creates the trip. This user will by default have all available privileges and will have the ability to grant other users privileges.

- Trip Manager - Defines as a user who has full permission to edit trip details. Trip Managers can be assigned by Trip Creator. Trip Managers have equal permissions with the Trip Creator. A Trip Creator and a Trip Manager could be different users.
- Spectator - Defines a user limited to observing a trip's progress. A Spectator will have no inherently granted permissions. Additionally, GPS Devices cannot be assigned to this member on the trip they are listed as a spectator for.
- Participant - Defines a regular trip member. No permissions will be automatically granted to participants.
- The permissions for all of User classes mentioned above can be altered by the Trip Manager/Creator. Trip Creator, Manager, Observer, and Participant are only default user roles to define default user permissions.

3.4 Operating Environment

3.4.1 Support for Multiple Browsers

The user will be able to use the webpage on multiple platforms: Firefox, Internet Explorer, Chrome, and Safari.

3.4.2 Devices

The user shall be able to use the webpage on their mobile devices, using their browsers on the mobile device, although many pages are not optimized for mobile sized screens.

3.6 Operating Environment

User's Should:

- Be familiar with the use of digital maps.
- Establish and maintain an internet connection.
- Use a compatible web browser.
- Have or be in a group with someone who has an active GPS device.

4. Requirements

4.1 Hardware Requirements

To be able to track an individual or group of people on a trip, it is necessary for at least one person on the trip to have a fully functioning GPS device. The device should be upright and facing towards the sky and must not be obstructed by any objects or materials.

4.2 Software Requirements

Walks requires the user to have access to an up-to-date internet browser such as Firefox, Safari, Chrome, etc. If a user is wanting to use a GPS location device such as a Spot Device they will need to obtain the proper subscription to allow Walks to register the device with the application. Many devices require paid subscription plans for the user to be able to retrieve GPS data.

4.3 Communications Requirements

Walks will require a fair internet connection for the user who is spectating the trip. The individuals on the trip must have GPS devices which are capable of satellite connection to properly triangulate the devices position.

5. Error Messages/Codes

- 404 Page not found - The error message will display the warning “error code 404” if the page is unavailable.

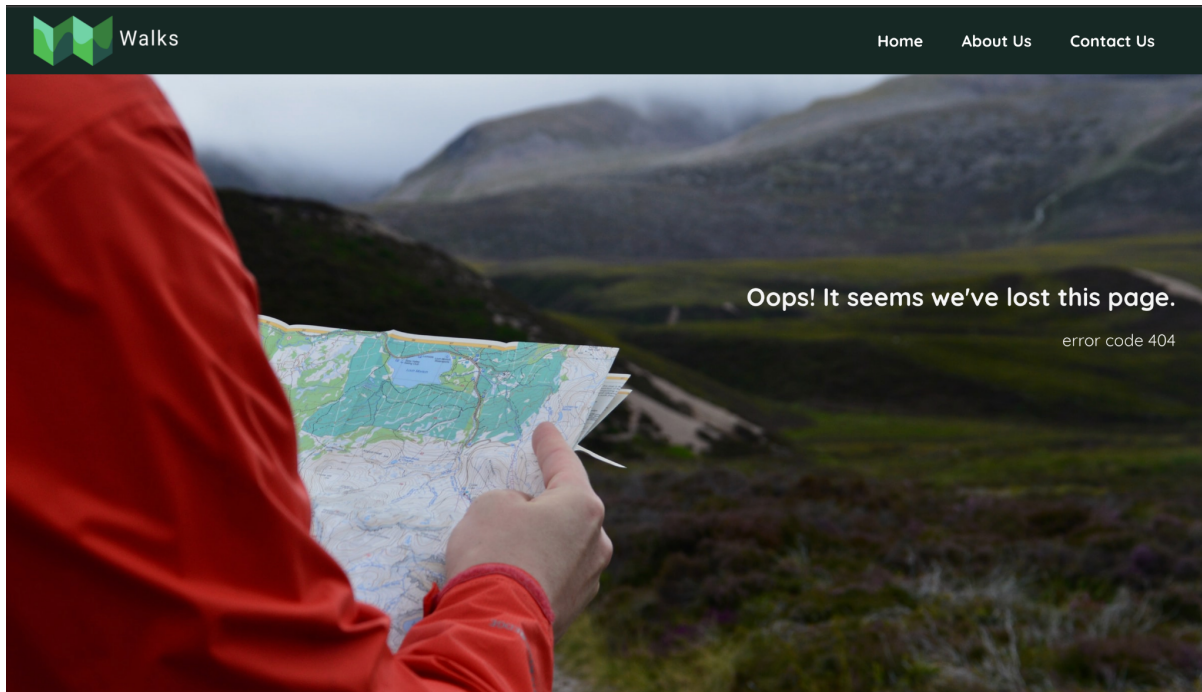


Figure A

- CORES error - Either our backend is not running or there is an issue validating the user to access that webpage. The error will display in a pop up window that says “A server/network error occurred. Looks like CORS might be the problem. Sorry about this - we will get it fixed shortly.”

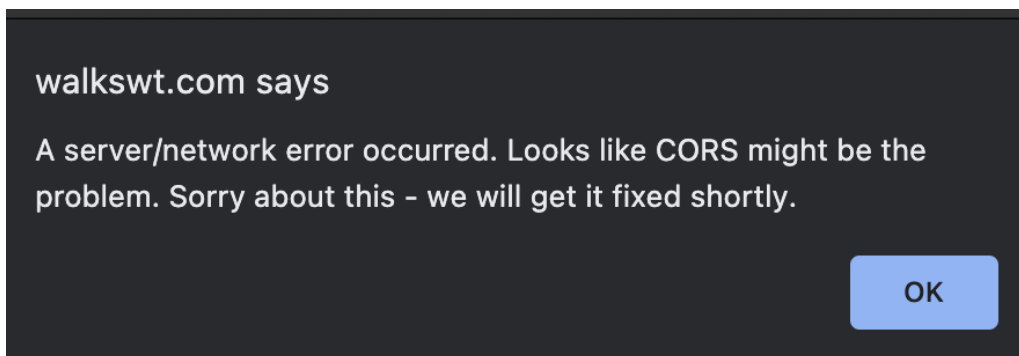


Figure B

- Maintenance - Our webpage is down and currently receiving maintenance. If this issue is found it should resolve shortly. The error message will display “Welcome to WALKS! Maintenance is currently in progress...”



Figure C

Appendix

- User - Anyone with a Walks account
- Assets - Device attached to an object or equipment
- Device holder - A trip participant handling the GPS device, automatically has spectator privileges
- Participant - User listed under a specific trip, automatically has spectator privileges
- Spectator - User with viewing privileges of a trip
- Trip - Defined by a range of dates, group members, and at least one GPS device. Trips are managed by a defined trip manager, and can be viewed by any users added to the trip.
- Trip Manager - User and spectator of a trip, also has administrative privileges for trip (ie can rename, add/edit members, geo-fencing etc) Trip managers could also be participants and device holders, but not necessarily.

References

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- "IEEE Guide for Software Requirements Specifications," in IEEE Std 830-1984 , vol., no., pp.1-26, 10 Feb. 1984, doi: 10.1109/IEEESTD.1984.119205.