

Stream & Trail App

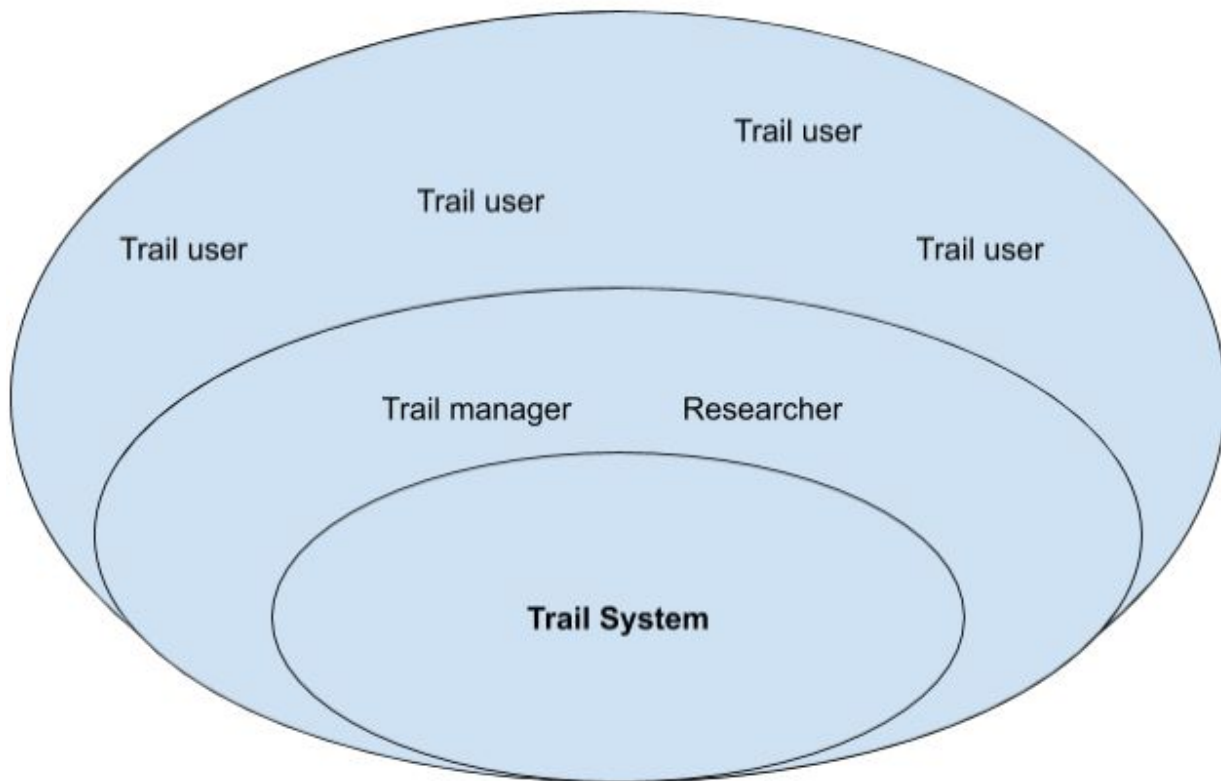
Design Support Document

Team - 1

App Idea:

This app will allow users to report and check trail conditions. For standard users, the data collected from user reports will be used to check if the trail is in good riding condition before actually traveling to the trail. User reports include a ranking of muddiness, which will be processed and shown on the home screen. Eventually it will be used to create a predictive model that integrates water level data of local streams.

Stakeholders Onion Model:



Stakeholders Description:

Kristen Bretz (researcher) - Interested in analyzing the data to find patterns correlating trail usage, trail conditions, and stream levels.

Trail manager - Interested in looking at usage patterns to figure out where to direct funding.

Trail user - Want to see the trail conditions before they travel to use the trails -
Want to provide feedback on the condition of the trails to help other users.

Stakeholders Goal Influencing Table:

Stakeholders	Goals	Contributing Influences	Constraining Influences
Users	Know the trail condition. And give the feedback about the trail condition.	Finding the condition of the trail and contributing their feedback to help other trail users.	Interaction with the application.
Trail Managers	Figure out where the funding is required in the trail to make it more attractive to the user.	Find the condition of the trail by taking the reference to the data in the application and taking necessary action.	Continuously monitoring the data in the application(moisture content, stream flow etc.) and users feedback, to make the users experience better.
Researchers	Set the purpose of the application and provide the guidance and feedback.	Provide the feedback and guidance which make the application more efficient.	Taking the feedback received and trying to fix the issues if there are any.
Developers	Develop and test the application. Collaborate with the team to achieve the target.	Develop the application for the end users.	Developing and fulfilling the requirements.

Summary of the Stakeholder Goal Influence Table:

Users are the primary stakeholders and they use the application to know the trail condition and also to provide their experience and the trail condition they experienced.

Trail Managers are the secondary stakeholders and they continuously monitor the sensor data in the application like the soil moisture content, stream flow, trail conditions and the climatic conditions and update the information, so that the users will get a picture of the trail condition and the managers will also take the necessary action like developing the trails and allocate the funds in order to improvise the trail condition and also to provide a best user experience.

Researchers and Developers are the tertiary stakeholders they continuously take the feedback and develop the application and make necessary changes in the application if needed.

User Personas:

Ron Smith

Age: 21

Height: 6' 0"

Weight: 180 lbs

Right handed

Ron is a sophomore student at Virginia Tech. He wants to do some undergraduate research. He likes to fish and explore the outdoors while hiking.

Ed Valentine

Age: 37

Height: 6' 0"

Weight: 148 lbs

Right handed

Ed Valentine is an avid mountain biker. He tries to get out on the trails at least twice a week, but doesn't like to ride if trail conditions are poor.

Elinor Major

Age: 61

Height: 6' 2"

Weight: 180 lbs

Right handed

Elinor is on Blacksburg's city council. She doesn't particularly enjoy the outdoors, and often struggles with technology.

Joyce Mcarthur

Age: 47

Height: 5' 7"

Weight: 170 lbs

Right handed

Joyce is a park manager and coordinates upkeep of the trails. She doesn't have a lot of experience with technology and is reluctant to use new things.

Hierarchical Task Analysis:

Submit a trail condition report

- Set Date/Time of submission

- Select Trail the report is for

- Add Coordinates (optional)

- Select Condition of trail

- Add Notes about trail

- Add Danger/Warning tag (optional)

- Submit report

Check general Trail Status

- Open app

- View Data on Home Screen

Check a specific trails status

- Select Trail

- View Data

Check Sensor Data Quick Stats

- Log in to the privileged view

- View Quick Stats

Export Sensor Data

- Log in to the Privileged View

- Select Download Data

- Select Download constraints (time)

- Press Download csv

Submit Stream Data

- Login to Privileged View

- Select Upload Data

- Set

- Date/Time
- pH
- Dissolved oxygen
- Specific conductivity
- Temperature
- Stream gauge
- Days since precipitation

Submit Data

Summary of Hierarchical Task Analysis:

Here the trail users and trail managers will have different login portals. The users can login into the home page and can view the trail condition report. If they want to give any feedback or the condition of the trail they can set the time, data, coordinates and they can give the feedback of the trail, they can also mention the caution signs so that it will alert the other trail users. Similarly managers will login into their portals and get the continuous sensor reports. By analyzing the report they will update the condition of the trail by taking consideration of pH levels, dissolved oxygen levels, moisture content in the soil, temperature, stream gauge etc. So it will be easy for the user to decide to use the trail or not. This application is a predictive model, this shows which is the best day to use the trail and which is not.

Meeting Notes:

App idea: Give trail users an idea about the trail condition.

Trail uses: Biking, riding, walking.

Users: Students, local residents, trail managers.

Sensors used: Stream gauge, Temperature, moisture sensor, pH.

Data storage: Cloud.

App Complexity: User friendly and easy to navigate.

Features: Users are able to give the feedback of trail condition by mentioning the coordinates using GPS. Trail managers should be able to download the report and should update the trail conditions regularly. Have a way to update others on trail conditions - save people from traveling to trails that aren't in riding conditions.

Model Type: It is a predictive model which determines trail condition based on stream gauge data.

Differentiating the users: Publicly available data. Login credentials for students and the government.

How users submit the data: Activity type, data and time, condition of trail, note, GPS tag and the trail they used.

Similar app reference: Rock gym pro application.

Here I'm also attaching the link for the developers notes.

https://www.csl.mtu.edu/classes/cs4760/www/projects/s21/group1/www/assignment-8/interview_1_19_21.pdf

https://www.csl.mtu.edu/classes/cs4760/www/projects/s21/group1/www/assignment-8/interview_1_26_21.pdf