DrinkSmart

Drink smarter, not harder.

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Software Requirements Specification

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1. Introduction

The following points will give insight to what DrinkSmart is

1.1. Overview

People today are finding it hard to stay hydrated and drink enough water. DrinkSmart is an application that will help the consumer to keep track of the fluids in their body using the sensors inside our smart bottle, in addition to many features that will help the consumers balance their diet and to stay hydrated.

1.2. Problem Description and Motivation

Many people suffer from difficulty in drinking a sufficient amount of water, which can cause problems with the balance of fluids in the body, which can lead to health issues and unhealthy lifestyle. In addition, searching how many calories one consumes and the nutritional facts from a drink can be a time-taking progress, DrinkSmart saves the consumer that time.

1.3. Goals

Our goals are to provide the consumers a means for a healthier lifestyle, with the consumer's knowledge of the nutritional facts of the fluid and of the amount of fluids that the consumer drank during a specific period of time, the consumer will have an easier time deciding on what's best for their health.In addition, our goals include Increasing sport performance of athletes ,building healthy hydration habits, improving wellness, and promoting sustainability. When athletes are fully hydrated, they're fully charged.

1.4. Scope

DrinkSmart provides user-friendly experience to control and configure a variety of functions that aim to save the consumer time and effort, the program also aims to Increase sports performance and dieting .

1.5. Glossary

Smart Bottle - the bottle that will have all the features described and it is the main product.

Quick look - A section of the program that the consumer chooses what information it will show.

User mode - The program has coaching mode and health care mode to choose from.

Coaching mode - A User administrative role used mostly by coaches to keep track of the teams progress and give various tasks and set different goals for each participant.

Health Care - A User administrative role used mostly by dieticians, where the user can track the patient's health condition.

Connection ID - Mostly used in coaching mode and Health care, used to connect multiple bottles to one user.

2. General description

The following points will go over General description about DrinkSmart.

2.1. User Characteristic

DrinkSmart is designed for people who are seeking a healthier lifestyle, also designed for athletes to track their performance.

2.1.1. Stakeholders: Client Description

Decathlon.

Decathlon is the largest sporting goods retailer in the world.

2.1.2. End-Users Description and Scenarios

Mike - 41 years old - Married and a father of 3 children
Mike has kidney problems accompanied by high blood pressure and he is a dialysis patient, as a dialysis patient his doctor advised him to speak to a dietician to limit his fluid intake. Mike keeps forgetting how much he drank, when he is supposed to drink and which beverages are good for him.

Goal: Mike wants something or someone to keep track of how much fluids he is drinking, and which nutritional components are entering his body through the drink.

Overview: Using DrinkSmart Mike navigates to the Social page and using the Health Care mode there he can see updates from his dietician on the amount that he is supposed to drink daily, he can add different foods to his profile so his dietician can approve if they are appropriate for his health condition.

Karen - 42 years old - Single mother of 2 children - sophisticated
Karen is a track runners coach. Karen's team of runners are participating in the Olympics, Karen wants her team to be 100% ready.

Goal: Karen wants to keep track of her team's progress and make sure they are in their best shape and that they are following her requested diet and training.

Overview: Using DrinkSmart Karen navigates to the Edit user section and activates coaching mode, Karen connects the bottles of her team to the application. Using coaching mode Karen can set goals for her team, schedule training, keep track of their progress individually , and she is able to give them notes concerning their progress.
Using the team dashboard Karen got insight into everything happening with the team's hydration, before, during and after the game.
Which allows Karen to make informed decisions to improve physical performance, and avoid backsliding among her team.

Mark - 27 years old - sophisticated

Mark is a relay race runner, Mark is going to compete in the next Olympics. Mark wants to be in his best shape for the Olympics, he struggles to balance between the distance that he runs outside of the arena and the amount of consumed water and calories.

Goal: Mark wants a device to keep track of his calories and his workout statistics and progress.

Overview: Using DrinkSmart Mark sets a new goal to run 5km in less time, Mark navigates to Set goals section and sets his desired time for a 5km run, Mark gets feedback from the application if he is making progress, if he needs to run more, get more sleep or eat less calories. Using the Track progress section Mark can see how much calories he burned during his workout, he runs holding the bottle just like in a relay race stick, the bottle using sensors measures his heart rate and can calculate how much calories Mark is burning, in addition Mark can see the nutritional facts of the energy drink that he consumed before a workout. For his training with the team using the coaching mode Mark reads comments from his coach concerning his progress outside the arena.

2.2. System Perspective

Here's our design in mind for DrinkSmart :

2.2.1. Software

code.

2.2.2. Hardware

The application runs on the computers, tablets, smartphones and smartwatches.

The bottle is connected and controlled wirelessly.

Data and configurations are saved locally and on servers.

2.2.3. Data and Information

- Personal Information: Gender,weight,height,age.
- Location and location temperature.
- Average amount of fluids that the user drank.
- Average amount of calories consumed/burned by the user.

2.2.4. Processes

1. Registration and Set-Up

   All actors

   - Download the DrinkSmart application from AppStore/Google Play.
   - Register by providing personal information (name, age, sex ,weight, hight, physical activity level) and choose password.
   - Navigate to the "Bottles" page and select "Add bottle" using bluetooth/Scan QR".
   - Once the bottle is connected choose bottle size(500ml,750ml,1L).
   - To calibrate the bottle, place it on a flat surface and wait for a few seconds and press next.
   - Fill the bottle with desired beverage, wait for a few seconds to calculate then press next.

2. Configuring User mode for coaching

   Coaching mode actors

   - Navigate to user settings.
   - Navigate to user roles and choose “Administrative Coaching Mode”.
   - Enter details about the Team(Team name, Team sport, Team ID) and press next.
   - Navigate to Add Participants and choose Add using Contacts/Email or Get Team code.
   - Participants added with Team code must be approved by navigating to Team Requests and clicking on Approve.
   - On the Dashboard page click on Show Progress to show the data of the participants.

3. Configuring User mode for Health Care

   Health Care actors

   - Navigate to User Settings
   - Navigate to User Roles and choose “Administrative Health Care user”.
   - Navigate to Add Participants.
   - Enter email/phone number of the wanted participant and wait for the participant’s approval of the request.
   - In order to enter details about a participant navigate to Participants and choose the wanted participant.
   - Click on ManageParticipant and set Health condition,Daily Intake.
   - Send notifications to participants by Navigating to Dashboard, select All Participants or Enter Participant’s Name, type the notification and click on Send.

2.2.5. People

Doctors,Nurses,Athletes,Coaches,Dieticians,People with health issues and people trying to get in shape.

2.3. Market Survey

Problem survey:

In the market there exist many smart bottle devices, but they lack a variety of features that work together, like counting calories and putting liquids other than water in the bottle.

Solution Survey:

Water.io has presented a solution for the current problem by reminding the user when to drink ,and keeps track of the drinking progress.

Discussions and Conclusion:

Advantages:

- water.io makes it convenient to set up the bottle and stay hydrated with the application's reminders.

Disadvantages:

- water.io allows water to be the only liquid poured into the bottle.
- water.io doesn't have the option to control the temperature of the liquid.
- Lacks a variety of features that DrinkSmart possesses like counting calories,coaching mode, Health care mode.

Conclusion: Our approach is very similar to water.io's but with an addition of a variety of features that makes DrinkSmart more unique and practical for almost everyone.

2.4. The approach

The Application runs on computers,smartphones, tablets and smartwatches. The application is similar on all of the devices by adjusting the interface to match accordingly.

also we have a screen on the bottle which shows the quick look section that is configured by the user.

The bottle comes with a sensor stick inside.When you drink out of the bottle, the sensor measures how much you drank and transfers this data to the hydration app, so it can track your progress throughout the day, week and month.

2.5. Constraints

Our project relies on the existence of smart devices with bluetooth connection.

2.6. Assumptions and Dependencies

DrinkSmart comes to provide a healthy habit of staying hydrated, and it can accomplish that using the DrinkSmart bottle.

3. Functional requirements

1. User log-in and bottle set up.
    - Users are obligated to be registered.
    - If the User is new and chose to register they will be asked to enter basic information to set up the user profile
    - The user must connect the bottle to the application using bluetooth.

2. The User can set hydration goals manually or automatically.
    - **Manually:** Choose daily amount in (ml,oz).
    - **Automatically:** The application calculates the amount of water needed to stay hydrated using information like weight,height,age and location's temperature.

3. The User can control the liquid's temperature.
    - **Auto Heating/Cooling:** The User can set the bottle to heat/cool when the liquid reaches a certain degree.
    - **Manual Heating/Cooling:** The user can set the desired temperature for the liquid.

4. The User can set warning alerts for specific components, or limit their amount.
    - Setting a warning for a specific component will make the bottle glow with red color and send a notification to the user's phone.
    - Limiting the amount would make the bottle glow and send a warning notification when the component reaches a specific amount that the user set.

5. Users can select Coaching mode.
    - Coaching mode provides the coach with a team dashboard. coaches, trainers, and nutritional staff can make informed decisions to improve physical performance, and avoid injury among athletes
    - Using Coaching mode the coach can set different tasks to each participant and give feedback on their performance.

6. Users can select Health Care mode.
    - Using Health Care mode is similar to coaching mode in terms of the dashboard,progress tracking and providing feedback.
    - Health Care mode users are required to set Health Conditions for each participant and set their goals accordingly.
    - Health Care mode users can set warnings for specific components or limit them for their participants.
    - Health Care users are always provided feedback from the application on their participant's progress.

7. Users can control and configure various bottle functions.
    - Users can choose what statistics to show in the Quick-look section.
    - Users can set what color the bottle will glow for reminders or warnings.

8. Users can view data from different time periods.
    - Amount of water drank in the last month.
    - Calories burned/consumed in the last two months.
    - Hydration level in the last week.

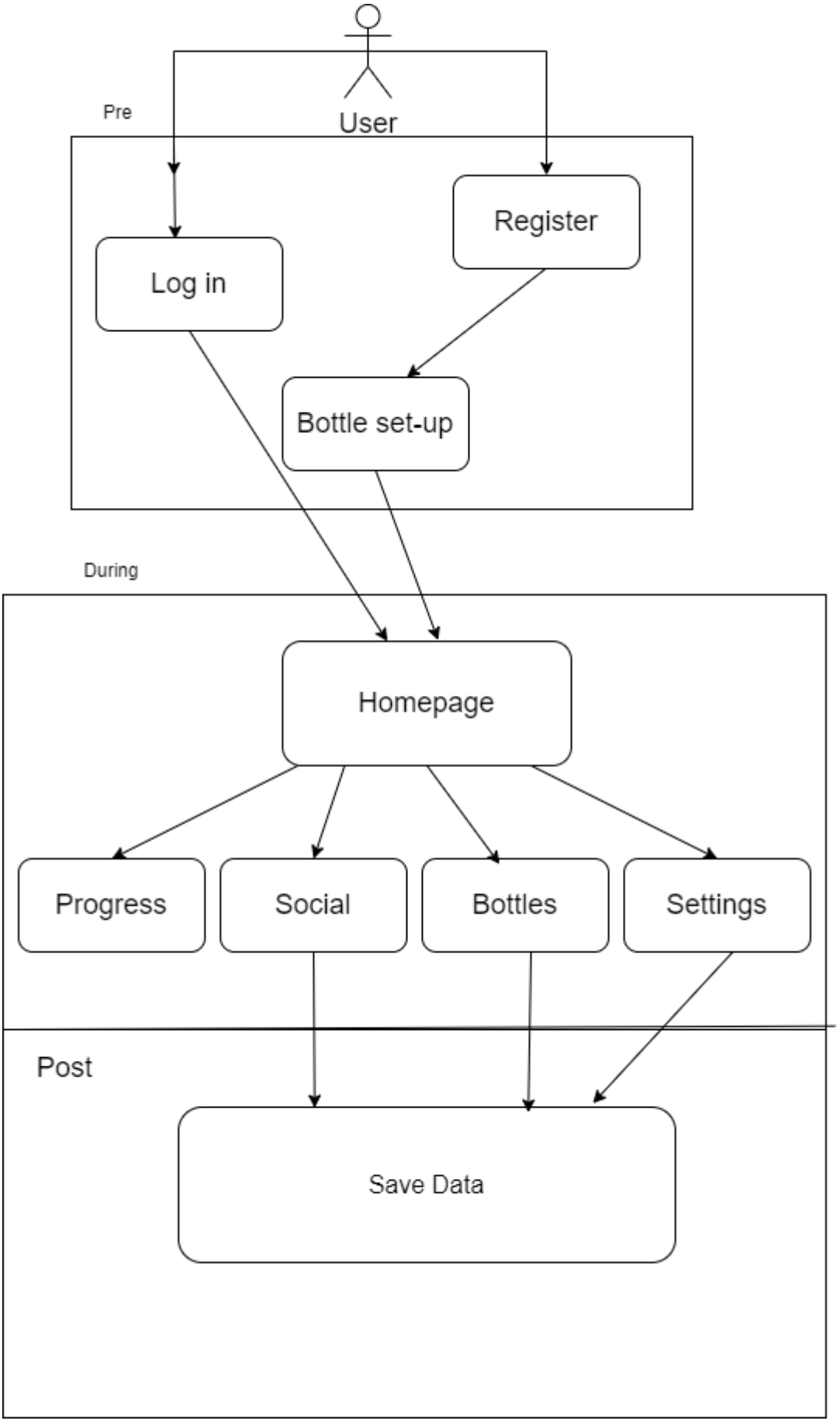
4. Non-Functional requirements

Non-functional requirements that must be established.

1. Data accuracy and authenticity - Saving the data of the users accurately and at the same time keeping the data private.
2. Safety and Security of data - Identify bugs and malfunctions in the sensors of the bottle, and keep the user's data in a secure separate cloud so other users can not see confidential data of other users without their permission.
3. Maintainability - Provide updates and improvements while keeping the progress before the update.
4. Usability and Accessibility - Having a user-friendly interface, and allowing the user to make manual changes to the application when it is not connected(offline) due to external issues, like updating the amount of water in the bottle.

5. System flows

The diagram below will go over the User's steps while connecting to the application.


User
Pre
Register
Log in
Bottle set-up
During
Homepage
Progress
Social
Bottles
Settings
Post
Save Data

6. Risk management

- User device sending wrong information about usage of application.

  Risk: Receiving misinformed data from the application.

  Risk level: Low risk.

  Occurrence anticipation: Depends on the quality and type of the device.

  Consequences: Wrong information which can disturb progress tracking of the application.

- User inputting wrong personal information.

  Risk: Receiving an inaccurate amount of drinking goal.

  Risk level: Moderate risk.

  Occurrence anticipation: Low, mostly depends on the users.

  Consequences: The application will provide certain goals that do not match the user's true information which can cause drinking too little or too much.

- User's account getting hacked.

  Risk: Hackers gaining access to the user's personal information or controlling different functions of the bottle.

  Risk level: High risk.

  Occurrence anticipation: Moderate.

  Consequences: Gaining access to control the bottle and access to classified information.

7. System main screen specifications

DrinkSmart is designed to run on smartphones,tablets,smartwatches and Desktops.

8. Non-goals

- Promoting/advertising different beverages.

9. Open issues

- How to save manually added data of the user if the servers are down.
- What is the best way to wash and clean the bottle and sensors without causing damage.
- How to keep sensors from taking damage if the temperature of the liquid is too high.

10. References

- Water.io- https://water.io/