

Patient Health-Centred Social Network
Functional Specification



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1 Introduction

The following document will introduce the HealthSpace application and its intended capabilities. The document will include use case diagrams and detailed use cases, which will summarise the system's users and their interaction with the system. Following that, the FURPS model will be used to collect the complete set of requirements without overlooking essential non-functional needs. Finally, metrics will be used to measure the potential success or failure of the application.

2 Project Description

The aim of this project is to develop a cross-platform mobile application, for both iOS and Android, to connect people with similar mental or physical health concerns. To build a successful social media application, it's important to know what your target audience craves as almost every social networking platform has some defining features in common. The application will contain two sections – User Section and Administrator Section. The following will discuss some of the application's main functionalities under those two headings.

2.1 User Section

Profile management. The first thing a new user creates on a social media platform is their profile. The application will provide the functionality to personalise them.

- **Profile picture.** To begin with, a default profile picture will be used to hide the user's identity. The user will be given the option to upload a profile picture if they wish.
- **Customisable bios.** A bio may be a short paragraph used to inform people of your personal life and interests.
- **Private profile.** The application will provide the option to make your profile private, which means that only people who follow you can view, share, and interact with your content.
- **Health Condition of Interest.** The user may register a health condition of interest, which in turn will open up opportunity to connect with similar users.

Timeline. A timeline is a must-have feature for a social network to be engaging. This is a central space where users can view what's going on in the lives of the individuals and groups they've chosen to follow.

Posts. A functionality will be provided for users to publish health-related posts that will be visible on other user's timelines. A user will be able to post a number of different types of media - including, plain text, photos, videos, and links to other sites. One constraint includes making sure every post is health related and not for other purposes.

Search Bar. A search bar makes it easier for users to find people of interest.

Friending options. Users must have the ability to send friend requests to people they share a health concern with. As a result, they will be able to view their future posts within their own timeline.

Private chatting. Users will be provided with a messaging service that allows users to communicate privately about their health concerns, rather than in a public setting.

Notifications. A way for people to be notified of messages received or interactions to their posts. People can be updated by their mobile phones without the need to be logged into the application.

2.2 Administration section

While the administrator is logged into the application, they will have the ability to view all users currently registered with the application. The administrator will be granted the ability to view a wide array of information along with the ability to delete accounts, disable accounts and reset passwords. This is a necessity as some users may spread false or misleading information.

3 Users

This application is aimed towards the general public and will be accessible for anyone with an Android or iOS mobile device. As Google's Android and Apple's iOS jointly possess over 99 percent of the global market share, the application will be available to as many people as possible [1]. Almost everyone will suffer with their mental or physical health during their lifetime, which is one of the many reasons why this application will prove to be a useful communication tool. A user can benefit from using this application by gaining knowledge on their mental or physical health condition and any possible solutions to improving their condition.

One of the most popular online activities is the use of social media. According to Kepios analysis, there are 4.55 billion social media users around the world as of October 2021 [2]. These figures suggest the current proportion of people using social media is 56.8% of the global population. However, not everyone has access to social media, so when we take a deeper look into areas of eligible audiences, we find that 93.33% of internet users are on social media. This provides the project with a huge opportunity to rapidly grow a community. It is important to note that the age of a user for this application will greatly range with the minimum age being set to 13 as a general requirement. Nearly all social networking sites only allow users aged 13 and over. This age limit has been dictated by US law through the Children's Online Privacy Protection Act (COPPA) and is put in place to protect children by preventing those underage creating profiles [3].

4 Use Case Diagrams

4.1 Mobile Application

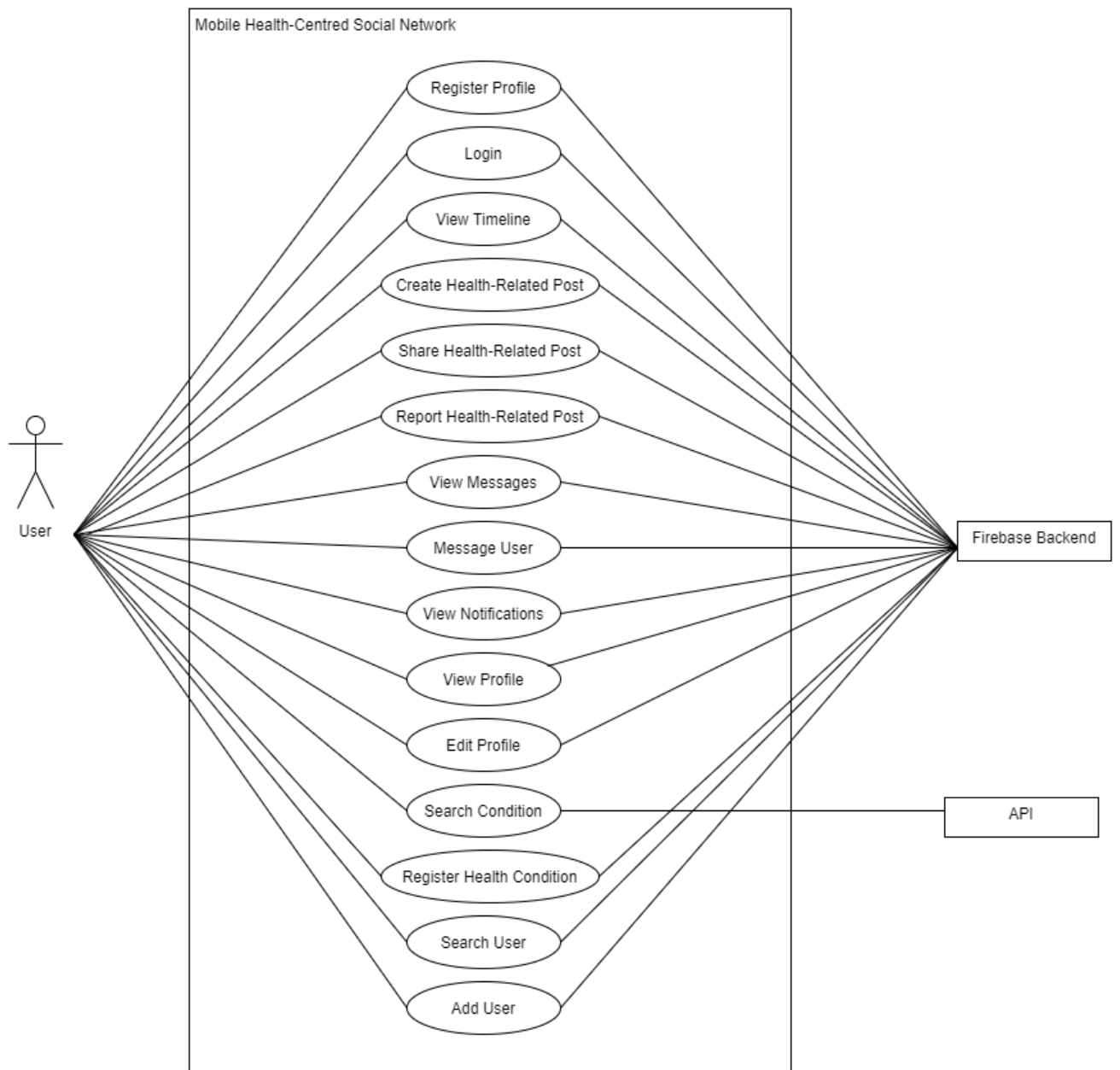


Figure 1. Mobile Application Use Case.

4.2 Admin Site

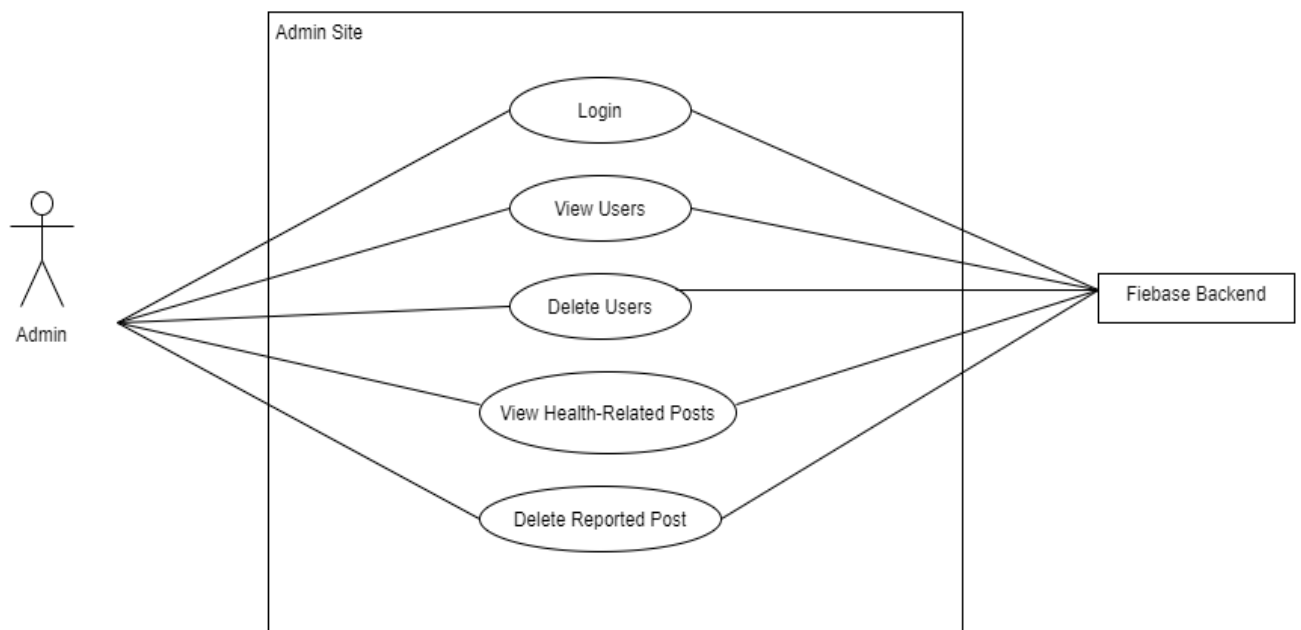


Figure 2. Admin Site Use Case.

5 Brief Use Cases

5.1 Mobile Application

5.1.1 Register Profile

Name	Register Profile
Actors	User
Preconditions	The user has loaded the application on their device.
Activity	This use case begins when the user loads up the application and is prompted to sign in or sign up. The user will select to sign up if they have not done so previously and upon doing so will be asked to enter relevant information i.e., name, email, password etc. The user will then confirm their password and submit the information which will be stored securely in a database as so to recognize the user in future.
Consequences	The user is registered with the application.
Alternative(s)	The user enters an invalid email address, date of birth or password that does not meet the requirements. The user's password confirmation does not match the original password.

Table 1. Register Profile.

5.1.2 Login

Name	Login
Actors	User, Admin

Preconditions	The user has loaded the application on their device.
Activity	This use case begins when the actor loads up the application and is prompted to sign in or sign up. The actor will select to sign in option as they already have a registered account. The actor will then enter their email and password. If their login credentials are correct, the user gains access to the application.
Consequences	The user is signed into the application and is directed to the home screen.
Alternative(s)	The email and password combination does not match a registered user. The user enters incorrect information three times and is locked out of the application.

Table 2. Login.

5.1.3 Edit Profile

Name	Edit Profile
Actors	User
Preconditions	The user has navigated to their profile screen.
Activity	This use case begins when the user wishes to change their profile information. Once on their profile screen, a user can edit their account details, including their name, email address, password, interests, profile bio and profile picture. The use case ends when the changes are saved.
Consequences	The user has updated their profile information.
Alternative(s)	The user enters invalid information and must re-enter new information.

Table 3. Edit Profile..

5.1.4 View Timeline

Name	View Timeline
Actors	User
Preconditions	The user has signed into the application.
Activity	This use case begins when the user wishes to view their timeline. The user selects the home screen, and the system displays the screen. The timeline consists of health-related posts containing text, photos and videos from people or communities the user follows. The use case ends when the user exits the timeline screen.
Consequences	The user is successfully brought to the home screen and the timeline is loaded.
Alternative(s)	No alternatives.

Table 4. View Timeline.

5.1.5 Create Health-Related Post

Name	Create Health-Related Post
Actors	User
Preconditions	The user has navigated to the home screen.
Activity	This use case begins when the user wishes to add a post to their timeline. The user can create a health-related post using text, images, and videos of their choice. The use case ends once the user is satisfied with their post and clicks submit. The database stores the post to share with the user's friends.
Consequences	The user has successfully created a health-related post.
Alternative(s)	No alternatives.

Table 5. CRUD Health-Related Post.

5.1.6 Share Health-Related Post

Name	Share Health-Related Post
Actors	User
Preconditions	The user has navigated to the home screen.
Activity	This use case begins when a user wishes to share a friends or communities health-related post to their own timeline. The user can view posts from people or communities they follow. The user finds a post they wish to share and clicks the share button. The shared post now appears on the user’s timeline for their own friends to see.
Consequences	The user has successfully shared a health-related post.
Alternative(s)	No alternatives.

Table 6. Share Health-Related Post.

5.1.7 Report Health-Related Post

Name	Report Health-Related Post
Actors	User
Preconditions	The user has comes across a post is not health-related or is spreading misleading information.
Activity	This use case begins when a user wishes to report a post that does not follow the application’s guidelines. The user user selects three dots icon visible on each post and taps the report button.
Consequences	The user is notified that the post has been reported and the reported post is sent to the admin site.
Alternative(s)	No alternatives.

Table 7. Report Health-Related Post.

5.1.8 View Messages

Name	View Messages
Actors	User
Preconditions	The user has signed into the application.
Activity	This use case begins a user wishes to view their messages. The user navigates to the messages screen and the system displays the user's messages in order of the most recent first. Unread messages are displayed in a darker tone to make them stand out.
Consequences	The user is successfully brought to the messages screen and their messages are loaded.
Alternative(s)	No alternatives.

Table 8. View Messages.

5.1.9 Message User

Name	Message User
Actors	User
Preconditions	The user has navigated to the messages screen.
Activity	This use case begins when a user wishes to message another user. Once on the messages screen, the system displays the user's messages in order of the most recent first. From here, a user can start a new conversation or reply to a message.
Consequences	The user has successfully messaged another user.
Alternative(s)	No alternatives.

Table 9. Message User.

5.1.10 View Notifications

Name	View Notifications
Actors	User
Preconditions	The user has signed into the application.
Activity	This use case begins when a user wishes to view their notifications. The user navigates to the notifications screen and the system displays notifications in order of the most recent first. These notifications can be from both friends and communities.
Consequences	The user is successfully brought to the notifications screen and their notifications are loaded.
Alternative(s)	No alternatives.

Table 10. View Notifications.

5.1.11 Search Condition

Name	Search Condition
Actors	User
Preconditions	The user has navigated to the “learn more” screen.
Activity	This use case begins when a user wishes to learn more about a specific health condition. The user can use the search bar to search for an existing condition. If the condition exists, the system will return a brief description of the condition, the symptoms that you may experience as a result of having the condition and a list of ways to treat the condition.
Consequences	The user has successfully learned about a health-related interest.
Alternative(s)	The condition the user entered does not exist.

Table 11. Search Condition.

5.1.12 Register Health Condition

Name	Register Health Condition
Actors	User
Preconditions	The user has navigated to the home screen.
Activity	This use case begins when a user wishes to register a health-condition of interest. The user searches for a health condition from a drop-down list of all common health concerns. A user can select multiple health concerns that may be of interest to them. As a result, users and communities and posts for each health interest registered.
Consequences	The user has successfully registered a health-related interest.
Alternative(s)	No alternatives.

Table 12. Register Health Condition.

5.1.13 Search User

Name	Search User
Actors	User
Preconditions	The user has signed into the application.
Activity	This use case begins when a user wishes to search for a user. The ability to search for a user is available in the home screen. Once a user navigates to the home screen, the search icon is represented by a magnifying glass. The user taps the icon and enters another user's name. The system displays users found that match the entered name.
Consequences	The user is successfully brought to the home screen and the timeline is loaded.
Alternative(s)	No alternatives.

Table 13. Search User.

5.1.14 Add User

Name	Add User
Actors	User
Preconditions	The user has signed into the application.
Activity	This use case begins when a user wishes to add another user. The user navigates to the home screen. From here, they can search for a user using the magnifying glass icon. The system displays users found that match the entered name. The user taps on the user of interest and is presented with the option to “Add Friend” if they are not friends already.
Consequences	The user is successfully brought to the home screen and the timeline is loaded.
Alternative(s)	No alternatives.

Table 14. Add User.

5.2 Admin Site

5.2.1 Login

Name	Login
Actors	Admin
Preconditions	The admin has loaded the website.
Activity	This use case begins when the admin loads up the application and is prompted to sign in. The admin will enter their email and password. If their login credentials are correct, the admin gains access to the application.
Consequences	The admin has successfully signed in.
Alternative(s)	The email and password combination does not match the admin’s details. The admin re-enters the correct details.

Table 15. Login.

5.2.2 View Users

Name	View Users
Actors	Admin
Preconditions	The admin has successfully signed into the application
Activity	This use case begins when the admin has signed in and wishes to view all users registered with the application. The admin clicks on the users tab and the system displays all the users and their unique user id.
Consequences	The admin has successfully viewed all registered users.
Alternative(s)	No alternatives.

Table 16. View Users.

5.2.3 Delete User

Name	Delete User
Actors	Admin
Preconditions	The admin has successfully signed into the application
Activity	This use case begins when the admin has signed in and wishes to delete a user who may be spreading misleading information. The admin finds the user of interest and clicks the delete button. The system removes the user from the database.
Consequences	The admin has successfully removed the user.
Alternative(s)	No alternatives.

Table 17. Delete User.

5.2.4 View Health-Related Posts

Name	View Health-Related Posts
Actors	Admin
Preconditions	The admin has successfully signed into the application
Activity	This use case begins when the admin has signed in and wishes to view all health-related posts. The admin clicks on the posts tab and the system displays every post.
Consequences	The admin has successfully viewed all health-related posts.
Alternative(s)	No alternatives.

Table 18. View Health-Related Posts.

5.2.5 Delete Reported Post

Name	Delete Reported Post
Actors	Admin
Preconditions	The admin has loaded the website.
Activity	This use case begins when the admin has signed in and wishes to view and potentially remove a reported post. The admin clicks on the posts tab and the system displays all the application's health-related posts. The admin may sort the posts by the number of reports. The admin removes the post that may be spreading misleading health information.
Consequences	The post is successfully removed from the database.
Alternative(s)	No alternatives.

Table 19. Delete Reported Post.

6 FURPS+

FURPS is a model used to validate the project's requirements and is an acronym for Functionality, Usability, Reliability, Performance and Supportability. The '+' was appended to the original FURPS model to highlight additional quality aspects and constraints, including design, implementation, interface, and physical constraints.

6.1 Functionality

The functionality of a mobile application alludes to its features and their capabilities. The core functionality of the health-centred social network application has been listed and described above across many different use cases. These functionalities can be broken down into two further categories, main functionality and secondary functionality.

6.1.2 Main Functionality

The main functionalities of the HealthSpace application include View Timeline, Create Health-Related Post and Message User. These three functionalities are not only the main features but also a necessity to the application.

- **View Timeline.** The timeline is a central space where users can view all of the health-related content and it is the basis of all social networking sites. For this reason, the View Timeline use case is considered a main functionality.
- **Create Health-Related Post.** Allows the user to create a health-related post using plain text, an image or a combination of post. The health-related posts are integral to the application as they invite conversation, share information and make calls to action.
- **Message User.** Allows the user to interact with other individuals by communicating their thoughts and sharing knowledge in a private preserving manner.

6.1.3 Secondary Functionality

The secondary functionalities are also crucial to the overall application, even if they are deemed secondary. These features include View Profile, Search Condition and Report Health-Related Post.

- **View Profile.** The View Profile use case allows the user to view another user's profile page. This allows the user to decide on whether or not the selected user is someone you could potentially gain information from or build a connection with.
- **Search Condition.** Allows the user to search for information on a specific health condition. Once a condition is selected, the system will display the condition's name, a short description, the symptoms you may be experiencing and the possible treatment. The reason for the search may be for personal gain, however, it also gives you an understanding of what other users might also be experiencing.
- **Report Health-Related Post.** Allows the user to report a post that is either non-health-related or is spreading misleading health information. For individuals who are in genuine need of information and advice, this use case enhances the user experience.

6.2 Usability

The user experience with a given application and the time in which it takes to complete certain tasks is referred to as the usability. For this mobile application to provide a good user experience, the content must be quickly accessible and easily read by means of clear and simple navigation. During the development process, the following usability principles will be considered.

- The user should be able to register an account within 3 minutes, 90 percent of the time.
- The user should be able to login to the application in less than 5 seconds, 90 percent of the time.
- The first time a user registers with the application, it should not take longer than two minutes to accomplish all of the application's basic tasks.
- The navigation links should switch screens within 1 second of selecting one, 99 percent of the time.
- The user should be able to create a health-related post within 30 seconds, 90 percent of the time.
- Searching for another user should not take more than 5 seconds, 90 percent of the time.
- Searching for a health condition should not take more than 5 seconds, 90% of the time.

6.3 Reliability

The term "reliability" refers to the application's ability to remain stable and dependable at any given moment. It is important that the software performs at a consistent level and is trustworthy for all of its users. During the development phase, the following should be taken into consideration to increase reliability.

- The application should load without failure 99% of the time.
- The application must have 99% up-time.
- When the app is uninstalled and reinstalled the user should keep all their data.

6.4 Performance

Performance refers to how fast the application responds, processes, and retrieves data. This application should be able to handle multiple users simultaneously and can scale for new users at any given moment. The response time of any piece of software is important to keep a customer satisfied and to ensure continued use of the software. The following should be taken into account throughout the development process to improve performance.

- The application should have an average response time of 0.99 seconds.
- Transferring and retrieving data should take approximately 2 seconds maximum, 95% of the time.
- 1000 users should be able to create a health-related post at the exact same time.

6.5 Supportability

The ability to sustain a software system across its entire product life cycle is known as software supportability. Well-structured code and comments are necessary to allow the code base to be easily modified and maintained. The application will be cross-platform meaning it will be supported on both iOS and Android with both operating systems containing the same functionalities. Going forward, both operating systems should be able to accept updates without suffering crashes.

6.6 '+'

As previously stated, the '+' was appended to the original FURPS model to highlight additional quality aspects and constraints. In the case of this project, the most important additional requirement is security. With Firebase being used on the backend, the project is provided with enough tools to ensure a secure application. Firebase Authentication employs handles the hashing and storing of passwords. On top of that, Firebase provides a user interface where you can write your own security rules and fully restrict read / write access for authenticated users only.

7 Metrics

In the context of this project, metrics refer to how the application's success and failures will be measured. The following are the essential metrics in which I plan to use to measure the success of my project.

- ✓ The user's ability to register.
- ✓ The user's ability to login.
- ✓ The user should be able to smoothly navigate through the application.
- ✓ The user should be able to create a health-related post using text, images, or videos.
- ✓ The user should be able to add another user.
- ✓ The user should be able to create a health-related community or join one that already exists.
- ✓ The user should receive a notification when another user messages them or interacts with their posts.

- ✓ The user should be able search for another user with similar health concerns.
- ✓ The user should be able to register a mental or physical health interest.
- ✓ The user should be recommended friends and posts based on their interests.
- ✓ The application should run on both iOS and Android.
- ✓ A user's mental health should benefit from using this application by connecting with like-minded people.
- ✓ A user's physical health should benefit from using this application after gaining information on ways to improve their condition.

8 Conclusion

The aim of the application is to bring individuals together who have similar health interests. This functional specification documented the users that are intended to use the software and outlined all of the functional and non-functional required for this application to work as intended. Use cases were presented that demonstrates the application's features from the user's perspective, highlighting both the main and secondary functionalities.

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