

1 Gather and Analyse Requirements

1.1 Project Aim and Objectives

The aim of the FitRideX Connect project is to develop a cutting-edge bicycle riding training application that enhances the cycling experience for users of all skill levels. Additionally, the application aims to ensure seamless transitions between indoor and real-world environments, compatibility with various bike models, and a focus on usability, security, and performance, ultimately helping users achieve their fitness goals efficiently and enjoyably.

The primary objectives of FitRideX Connect are to engage cyclists through interactive features, provide personalised training plans, enable tracking and sharing of cycling activities, and offer a variety of training options while maintaining data accuracy and security. By integrating advanced features such as personalised training programs, interactive plans, diverse training modes, and a feature-rich social platform, the aim and objectives are to provide a comprehensive and engaging training solution.

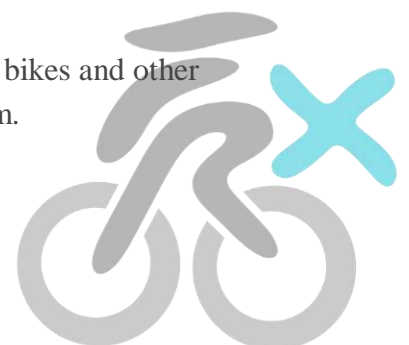
1.2 Project Domain

The domain of the project is the fitness technology industry, health care, fitness and personal training specifically focusing on cycling. It involves the integration of hardware (exercise bikes and physical bike models) with software (the FitRideX Connect application) to provide an enhanced cycling experience.

1.3 Key Stakeholders

The key stakeholders of the FitRideX Connect project are:

1. **Cyclists:** Individuals who use the FitRideX Connect system for training and leisure, both indoors and outdoors.
2. **Fitness Enthusiasts:** Users who are interested in fitness tracking and improving their performance through the system.
3. **FitRideX Developers:** The team responsible for the development, maintenance, and updates of the FitRideX Connect system.
4. **Hardware Manufacturers:** Companies that produce the exercise bikes and other hardware that needs to integrate with the FitRideX Connect system.



5. **Payment Gateway Providers:** Service providers that enable secure processing and authorisation of in-app purchases within the FitRideX Connect system, ensuring seamless transactions between users and the application.
6. **Social Media Platforms:** Companies that provide social media platforms for integration with the FitRideX Connect.
7. **Regulatory Bodies:** Organisations responsible for ensuring the system complies with data protection and privacy laws.

1.4 Constraints and Challenges

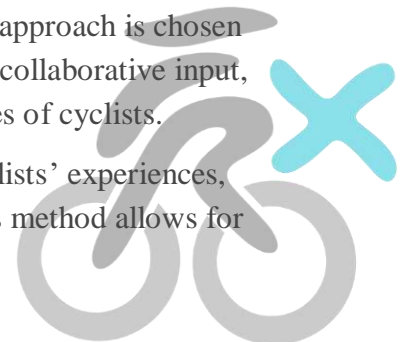
The FitRideX Connect project involves a range of technical challenges, some of which are complex and may require partnering with bicycle and specialist hardware manufacturers. The initial constraints and challenges include:

1. **Integration Complexity:** The system must effectively sync with various exercise bikes and physical bike models, which could involve complex hardware and software integration.
2. **Data Accuracy:** Ensuring the fitness tracking technology provides precise data across different cycling conditions is a challenge.
3. **User Interface Design:** Designing an intuitive interface that meets the needs of both indoor and outdoor cyclists is a significant design challenge.
4. **Outdoor Functionality:** Creating features that enhance the outdoor cycling experience without being intrusive requires careful consideration.
5. **Security and Privacy:** Protecting user data, especially during outdoor tracking, is a critical aspect of the system's development.
6. **Ethical Considerations:** The system must address ethical implications such as data privacy, security measures, bias and fairness, user consent, and transparency.

1.5 Requirements Gathering

Cyclists are at the heart of the FitRideX Connect project. Their involvement in the requirements gathering process is crucial for developing a system that meets their needs and preferences. For the **cyclists stakeholder group**, the most suitable requirements gathering technique would be a combination of interviews and workshops. This approach is chosen because it allows for both individual, in-depth insights and collective, collaborative input, which are essential for understanding the diverse needs and preferences of cyclists.

Interviews can provide detailed information on individual cyclists' experiences, preferences, and difficulties when using cycling training systems. This method allows for



personalised discussions that can uncover specific requirements that might not emerge in a group setting.

Workshops, on the other hand, enable group discussions and brainstorming sessions where cyclists can share their ideas, discuss common challenges, and provide feedback on proposed system features. This collaborative environment encourages the exchange of views and can lead to innovative solutions that emerge from the collective experience of the group.

The combination of these two techniques ensures that the requirements gathering process is comprehensive, inclusive, and well-suited for gathering requirements from the cyclists stakeholder group. This approach will help in creating a system that is not only functional but also user-friendly and engaging, which is crucial for the success of FitRideX Connect.

This approach is justified based on the following considerations:

1. **Diverse User Needs:** Cyclists have a wide range of skill levels, preferences, and training goals. Interviews allow for a personalised understanding of these nuances, ensuring that the system caters to the diverse needs of the cycling community.
2. **In-Depth Insights:** By conducting interviews, the development team can delve into individual cyclists' experiences and gather detailed information on their interactions with current training systems, identifying specific pain points and areas for improvement.
3. **Collaborative Feedback:** Workshops create a platform for cyclists to share their collective knowledge and experiences. This collaborative environment fosters creativity and can lead to innovative features that resonate with the community.
4. **User Engagement:** The interactive nature of workshops encourages active participation from cyclists, which can enhance their engagement with the development process and increase the likelihood of user adoption of the final product.
5. **Real-World Integration:** The scenario emphasises the need for seamless integration between virtual and real-world cycling experiences. Workshops enable discussions on how to achieve this integration in a way that is practical and meaningful for cyclists.
6. **User-Centred Design:** By involving cyclists directly in the requirements gathering process through interviews and workshops, the development team can ensure that the system's design is user-centred. System development that has been driven by user-centred design will result in a product that is more likely to meet user expectations and be well-received in the market.
7. **Continuous Feedback Loop:** The combined approach of interviews and workshops allows for an on-going dialogue with the cyclists, which can be invaluable for iterative design and refinement of the system throughout its development.



The interviews and workshops technique is justified by the need to gather detailed, personalised insights while also benefiting from the collective wisdom of the cyclist community. This dual approach ensures that the requirements gathering process is comprehensive, inclusive, and tailored to the unique needs of the cycling community.

In summary, this approach will help in creating a system that is not only functional but also user-friendly, engaging, and an effective cycling training system that seamlessly integrates indoor and real-world experiences, which is crucial for the success of the FitRideX Connect project.

1.6 Interview and Workshop Plans

Interview Plan

Objective: To understand the needs, preferences, and challenges faced by cyclists when using cycling training systems, in order to gather detailed requirements for the development of the FitRideX Connect system.

Participant Recruitment: To effectively recruit participants for the FitRideX Connect application system, it is essential to follow a strategic approach that targets a wide range of cyclists and captures diverse experiences and requirements. The following approaches will be used:

- Identify cyclists of various skill levels and training goals.
- Use social media, cycling forums, and local cycling clubs to recruit participants.
- Ensure a diverse group to capture a broad range of experiences and requirements.

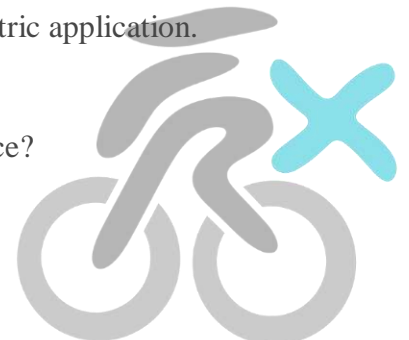
Pre-Interview Preparation: Preparing for interviews involves several key steps to ensure a smooth and effective process, including:

- Develop a consent form to be signed by participants.
- Create a semi-structured interview guide with open-ended questions.
- Set up a quiet and comfortable interview environment.
- Ensure recording devices are ready and consent for recording is obtained.

Interview Questions: As part of the comprehensive plan to gather user requirements for the FitRideX Connect system, the following list of questions are designed to elicit detailed insights and feedback from potential users. These questions will guide our interviews and ensure we capture all necessary information to develop a user-centric application.

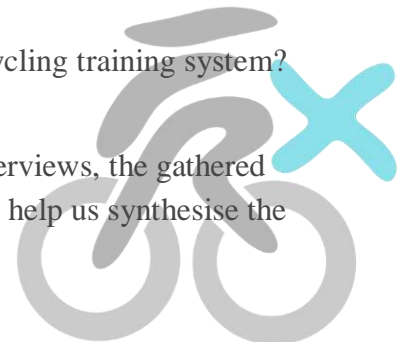
1. Introduction and Warm-Up:

- Can you tell me a bit about yourself and your cycling experience?
- What are your primary goals when cycling?



2. Current Training Practices:
 - How do you currently track your cycling performance?
 - What systems or devices do you use for your training, if any?
 - What do you like and dislike about your current training setup?
3. Features and Functionality:
 - What features would you find most useful in a cycling training system?
 - How important is real-time data tracking to you during a ride?
 - Would you be interested in virtual training options, and if so, what would you expect from such a feature?
4. User Experience and Interface:
 - What are the most important aspects of user experience for you in a cycling training app?
 - How do you prefer to interact with technology during your rides (e.g., voice commands, touch screen, etc.)?
 - Can you describe any frustrations you've had with the user interface of previous systems?
5. Social and Community Aspects:
 - How important is it for you to share your cycling activities with others?
 - Would you be interested in competing in challenges or group rides, and if so, what features would you expect from such a platform?
6. Outdoor Functionality:
 - What challenges do you face when cycling outdoors, and how could a training system assist with these?
 - How do you feel about the integration of technology into your outdoor cycling experience?
7. Data Security and Privacy:
 - How concerned are you about the security of your cycling data?
 - What assurances would you need regarding data privacy to feel comfortable using a cycling training system?
8. Additional Feedback:
 - Is there anything else you would like to add about your ideal cycling training system?
 - Do you have any suggestions or ideas that we haven't covered?

Post-Interview Actions: Following the completion of user interviews, the gathered data is thoroughly analysed and effectively utilised. These actions will help us synthesise the



insights and translate them into actionable requirements for the development of the FitRideX Connect application system.

- Thank participants for their time and contributions.
- Review and transcribe interview recordings.
- Identify common themes and individual requirements.
- Analyse the data to inform the development of the FitRideX Connect system.

Follow-Up: To ensure that we effectively address the insights gathered during the user interviews, these actions will help us validate our findings, refine our requirements, and maintain on-going engagement with our participants as we develop FitRideX Connect.

- If necessary, conduct follow-up interviews to clarify any points or gather additional information.
- Keep participants informed about the progress of the FitRideX Connect project and consider them for future usability testing.

Workshop Plan

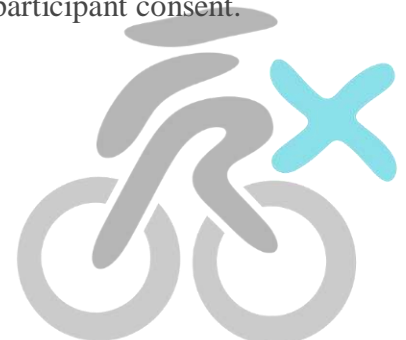
Objective: To facilitate a collaborative environment where cyclists can share their experiences, discuss common challenges, and provide feedback on proposed system features, ultimately contributing to the development of a user-friendly and engaging cycling training system.

Participant Recruitment: To ensure a successful user requirements gathering workshop for FitRideX Connect, the following key recruitment tasks have been outlined to identify and engage suitable participants.

- Identify cyclists with varying skill levels, training goals, and experiences.
- Aim for a diverse group to represent a broad spectrum of the cycling community.
- Recruit participants through cycling clubs, social media, and local cycling events.

Pre-Workshop Preparation: Conducting a user requirements gathering workshop requires careful preparation to ensure a seamless and productive session. Key steps include:

- Secure a suitable venue that can accommodate group discussions and activities.
- Prepare workshop materials, including presentation slides, flipcharts, and pens.
- Design interactive exercises and activities to engage participants.
- Ensure recording equipment is set up for capturing feedback, with participant consent.

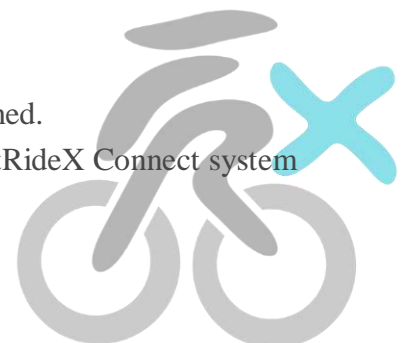


Agenda: The following agenda items are crafted to draw out valuable insights and feedback from potential users. This structured agenda will steer the workshop, ensuring all essential information is collected to create a user-focused application.

1. Welcome and Introduction (15 minutes)
 - Introduce the FitRideX Connect project and its objectives.
 - Outline the workshop agenda and explain the importance of their contributions.
 - Distribute consent forms for data collection and recording.
2. Icebreaker Activity (10 minutes)
 - Engage participants in a short activity to encourage interaction and familiarity.
3. Group Discussion on Current Cycling Experiences (30 minutes)
 - Divide participants into smaller groups.
 - Ask each group to discuss and list their experiences with current cycling training systems, including what they like, dislike, and what they wish could be improved.
4. Brainstorming Session on Ideal Features (45 minutes)
 - Present a set of proposed FitRideX Connect features.
 - Facilitate a brainstorming session where participants can suggest additional features or improvements to the proposed ones.
 - Use flipcharts to capture ideas and feedback.
5. Interactive Exercises (30 minutes)
 - Conduct interactive exercises to simulate user interactions with FitRideX Connect.
 - Observe participants and note any difficulties or areas of confusion.
6. Feedback on Prototypes/Mock-ups (30 minutes)
 - Show participants prototypes or mock-ups of the FitRideX Connect user interface.
 - Gather feedback on the design, usability, and potential improvements.
7. Group Feedback and Discussion (20 minutes)
 - Bring all participants together to share insights from the smaller group discussions.
 - Discuss the key findings and reach a consensus on the most important features and improvements.
8. Wrap-Up and Next Steps (10 minutes)
 - Summarise the key outcomes of the workshop.
 - Thank participants for their contributions and inform them about the next steps in the development process.

Post-Workshop Actions: After wrapping up the workshop, key insights are obtained from the data. The actions involved are:

- Transcribe and analyse workshop recordings and notes.
- Create a detailed report summarising the feedback and insights gained.
- Prioritise the identified requirements and integrate them into the FitRideX Connect system development plan.



Workshop Questions: Sample workshop questions include:

1. What are the most important features you look for in a cycling training system?
2. How do you currently track your cycling activities, and what improvements would you like to see?
3. What are the challenges you face when using existing cycling training systems?
4. How would you like to interact with the FitRideX Connect system during your rides?
5. What are your expectations for data accuracy and security in a cycling training system?
6. How do you envision the integration of virtual and real-world cycling experiences?
7. What social features would you find most beneficial in a cycling training system?

1.7 Functional Requirements

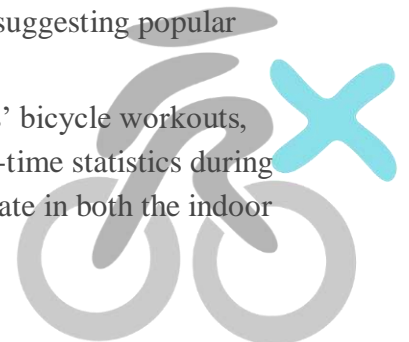
The following list of functional requirements has been collated from the project description and system goals. After further requirements gathering with key stakeholders has been undertaken, additional functional requirements may be added to the project. It is anticipated the additional requirements will be more detailed and reflect the unique perspectives of the end users.

- FR1. **User Registration:** The system must allow users to register using email, social media accounts (e.g., Facebook, Google), or phone number, and enforce the use of strong passwords (e.g., minimum length, inclusion of special characters)..
- FR2. **Login:** The system must allow users to log in using their registered email and password, or using their social media accounts.
- FR3. **Account Deactivation and Deletion:** The system should allow users to deactivate or delete their accounts, and shall confirm the user's identity before processing account deactivation or deletion requests.
- FR4. **Profile Management:** Users will be able to create and manage their profiles, including personal information such as name, age, gender, upload a profile picture, display their fitness goals and progress, and bicycle details.
- FR5. **Privacy Settings:** The system will allow users to manage their privacy by setting their profile to public, private or friends-only, including who can view their workout data and achievements.
- FR6. **Social Interaction Settings:** Users can manage their social interactions, including friend requests, group memberships, and activity sharing, and can enable or disable social features and control who can interact with them.
- FR7. **Reminders and Notification Settings:** The system should offer users the ability to customise notification settings, including enabling or disabling notifications for

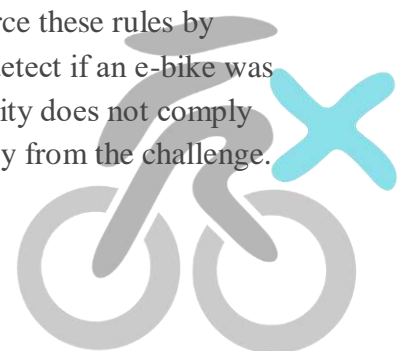


scheduled workout reminders, online group training sessions and in-app events, achievement milestones, social interactions and motivational messages and training tips. The user can set the preferred time for receiving notifications.

- FR8. **Language and Units:** Users are able to select their preferred language from a list of supported languages, and choose their preferred units of measurement (e.g., kilometres/miles, kilograms/pounds).
- FR9. **Accessibility Settings:** Accessibility options, such as voice commands, screen reader support, and adjustable text sizes can be set by the user. These features can be enabled or disabled based on the user's needs.
- FR10. **Data Sync and Backup:** The system will allow users to enable or disable automatic data sync with cloud storage or connected devices, and also allow users to manually back up their data and restore it when needed.
- FR11. **Workout Preferences:** Users are able to set their preferred workout types (e.g., endurance, interval training, hill climbing), and to specify their preferred workout duration, intensity level, and frequency.
- FR12. **Training Program Preferences:** The system allows users to select their preferred training programs and customise them according to their fitness levels and goals. Users can select/deselect the option to receive training program recommendations based on their preferences and performance data
- FR13. **Goal Setting:** Allow users to set and update their fitness goals, such as target distance, duration, or calories burned. The system will graphically display users' progress towards these goals enabling them to track and monitor their fitness objectives. The system can send notifications when milestones are reached.
- FR14. **Training Programs:** The system will offer predefined training programs for different fitness levels and goals, and allow users to customise the predefined training programs to suit their individual needs.
- FR15. **Personalised Training Plans:** Users will have access to tailored training plans based on their fitness level, training preferences, and cycling goals. The training plans should be interactive and adapt to the user's performance and goals.
- FR16. **Diverse Training Options:** The system will offer a range of training modes, including online social group rides and outdoor personalised workouts.
- FR17. **Route Planning:** The system will provide a route planning feature that allows users to create and save custom routes for outdoor training, while also suggesting popular cycling routes based on user location.
- FR18. **Workout Tracking:** The system should track and record users' bicycle workouts, including distance, speed, duration, and route, and display real-time statistics during the workout. The tracking of cycling activities should be accurate in both the indoor and outdoor environments.



- FR19. **Performance Analysis:** The system will analyse workout data and provide insights on performance, such as average speed, calories burned, and progress over time. The user will be able to generate weekly and monthly performance reports and view the analysed data in table or graph formats.
- FR20. **Streaks:** The system should track consecutive days of activity and reward users for maintaining streaks, and provide motivational notifications to encourage users to keep their streaks going.
- FR21. **Achievements and Badges:** Users will be awarded badges for reaching milestones such as distance cycled, number of workouts completed, or personal bests. The system will display a user's collection of badges on their profile.
- FR22. **Challenges and Missions:** The system will offer various challenges, such as "Cycle 100 km in a week" or "Complete 10 workouts in a month." Missions with specific objectives, such as "Explore 5 new routes", will be provided by the. Users will be able to create custom challenges and missions and invite friends to participate. The system will award badges for completed challenges and missions.
- FR23. **Virtual Races:** Virtual races will be automatically organised by the system allowing users to compete against each other in real-time or asynchronously. The system will award medals (bronze, silver, gold) based on user ranking in the social virtual race events.
- FR24. **Create Custom Challenges:** The system will allow users to create custom challenges by specifying the challenge name, description, duration, and goals (e.g., distance to cycle, number of workouts). Users can set the challenge to be private (invite-only) or public (open to all app users).
- FR25. **Invite Friends:** Users can invite friends to join their custom challenges via in-app notifications, email, or social media, and friends can accept or decline the invitation to participate in the challenge.
- FR26. **Leaderboards:** The system will feature leaderboards where users can compare their performance with friends and other cyclists. The leaderboards will be updated daily.
- FR27. **Custom Rules Setup:** User are able to define specific rules when creating a custom challenge, such as "No e-bikes allowed," "Minimum speed requirement," or "Only outdoor rides." Users can add multiple rules and provide descriptions for each rule to ensure clarity.
- FR28. **Custom Challenge Rule Enforcement:** The system will enforce these rules by validating the data from users' workouts. For example, it can detect if an e-bike was used based on speed and power metrics. If a participant's activity does not comply with the rules, the app shall notify them and exclude the activity from the challenge.



- FR29. **In-App Events:** Special in-app events, such as themed challenges or seasonal competitions, will be hosted by the system which will provide users with exclusive rewards for participating in these events.
- FR30. **Social Sharing:** Users can share their workouts, achievements, badges, and challenge completions on social media, and "like" and comment on friends' shared activities.
- FR31. **Safety Features:** The system will provide an emergency contact feature that allows users to send their location to a designated contact in case of an emergency. The user can select to receive safety tips and guidelines for cycling.
- FR32. **User Feedback and Support:** The system will include a feedback feature for users to report issues and suggest improvements, and provide access to customer support through chat, email, or phone.

1.8 Non-Functional Requirements

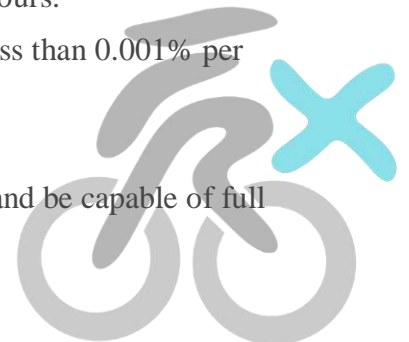
The non-functional requirements have been collated from the project description and system goals. After requirements gathering with key stakeholders has been undertaken, additional requirements may be added to the project. It is anticipated the extra requirements will be more detailed and reflect the unique perspectives of the end users.

Usability

- NFR1. Design an intuitive and user-friendly interface for both indoor and outdoor cyclists, and maintain a consistent appearance across a range of popular devices, such as mobile phones, tablets, laptops and pcs, and internet-enabled televisions..
- NFR2. Ensure ease of use for all system features, including navigation and data analysis.
- NFR3. The user interface will feature the FitRideX Connect branding and provide easy access to company contact channels (e.g., email, phone support, etc.).
- NFR4. The system should allow users to track workouts and access essential features without an internet connection.

Reliability

- NFR5. Ensure the system maintains an average operational uptime of 95% over a 12-month period.
- NFR6. The Mean Time to Repair (MTTR) must be no more than 2 hours.
- NFR7. The system must ensure data integrity with a failure rate of less than 0.001% per transaction.
- NFR8. Implement redundancy measures to minimise downtime.
- NFR9. The system will perform automated backups every 24 hours and be capable of full recovery within 4 hours.



NFR10. The system will handle and log errors within 1 second of occurrence.

NFR11. Regularly perform system health checks and maintenance.

Performance

NFR12. The system must provide real-time data processing and a responsive user interface without lag.

NFR13. The system will initialise and be ready for use within 30 seconds of start-up and ensure quick load times for all application features, including training plans and live sessions.

NFR14. Optimise the system for handling a large volume of concurrent users, including peak loads of up to 10,000 concurrent users without performance degradation.

NFR15. The system will have a response time to user inputs within 2 seconds under normal operating conditions.

NFR16. The system must have a throughput capacity of a minimum of 1,000 transactions per second.

NFR17. The system will maintain a network latency of less than 100 milliseconds for 95% of transactions.

Scalability

NFR18. Design the system to handle an increasing number (up to 100,000) of concurrent users and devices without performance degradation.

NFR19. Implement a scalable architecture that can grow with the user base and feature expansion.

NFR20. The system should utilise no more than 75% of CPU and memory resources under peak load conditions.

NFR21. Plan for future enhancements and integration with new technologies.

Security

NFR22. Implement robust security measures, (e.g., data encryption using AES, RSA or Blowfish), to protect user data, especially during outdoor tracking.

NFR23. The system will maintain user sessions securely and automatically log out users after a period of inactivity.

NFR24. After a specified number of failed login attempts, the system must lock a user's account to prevent unauthorised access, and notify the user via email and provide instructions for unlocking it.

NFR25. Use secure data transmission protocols such as IPsec, SSL/TLS and Kerberos to safeguard sensitive information.



NFR26. Regularly update security measures to protect against emerging threats.

Privacy

NFR27. Comply with data protection laws and regulations, such as GDPR, to ensure user privacy.

NFR28. Provide clear privacy policies and obtain user consent for data usage.

Accessibility

NFR29. Make the application accessible to users with disabilities, following accessibility standards.

NFR30. Provide features that accommodate users with different physical abilities.

NFR31. Ensure compatibility with assistive technologies.

Maintainability

NFR32. Create a system that is modular and easy to maintain.

NFR33. Ensure easy access for developers to update and fix the application.

NFR34. Develop a comprehensive maintenance plan for the system.

Compliance

NFR35. Adhere to legal and industry standards, including data protection and fitness technology guidelines.

NFR36. Regularly review and update compliance measures to align with changing policies and regulations.

Ethical Considerations

NFR37. Address ethical implications such as data privacy, security measures, bias and fairness, user consent, and transparency.

NFR38. Ensure ethical use of user data and promote responsible AI practices.

These non-functional requirements are essential to ensure that FitRideX Connect not only meets the functional needs of its users but also operates efficiently, securely, and ethically within the broader technological and regulatory landscape.



1.9 User Stories

Title: User Registration, Login, and Account Management

As a bicycle riding enthusiast,

I want to register, log in, and manage my account on the training application,
so that I can securely access and use the app's features.

Acceptance Criteria:

- The system must allow users to register using their email, social media accounts (e.g., Facebook, Google), or phone number.
- The system must enforce the use of strong passwords, requiring a minimum length and the inclusion of special characters.
- The system must allow users to log in using their registered email and password.
- The system must also support login via social media accounts.
- The system should provide users with the option to deactivate or delete their accounts.
- The system must confirm the user's identity before processing account deactivation or deletion requests to ensure security.

Title: Workout Preferences

As a bicycle riding enthusiast,

I want to set my preferred workout types, duration, intensity level, and frequency,
so that I can tailor my training sessions to meet my fitness goals and preferences.

Acceptance Criteria:

- The system must allow users to select their preferred workout types, such as endurance, interval training, and hill climbing.
- The system must allow users to specify their preferred workout duration (e.g., 30 minutes, 1 hour).
- The system must allow users to set their preferred intensity level (e.g., low, med, high).
- The system must allow users to specify how often they want to work out (e.g., daily, 3 times a week).
- The system provides options for users to customise their workout preferences at any time.
- The system must validate the entered preferences to ensure they are within acceptable ranges and formats.
- The system must confirm the user's preferences have been successfully saved and applied to their training plan.

Title: Training Programs

As a bicycle riding enthusiast,

I want to access predefined training programs for different fitness levels and goals,
so that I can follow a structured training plan and customise it to suit my individual needs.



Acceptance Criteria:

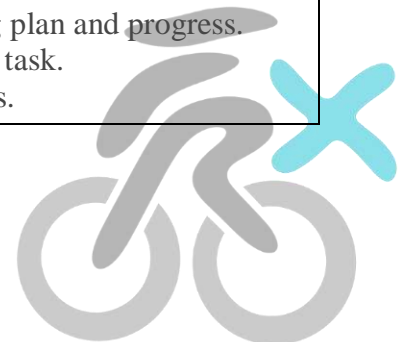
- The system must offer a variety of predefined training programs tailored to different fitness levels (e.g., beginner, intermediate, advanced) and goals (e.g., weight loss, endurance, strength).
- The system must allow users to customise these predefined training programs to better suit their individual needs and preferences.
- Each training program should include detailed information such as workout types, duration, intensity, and frequency.
- The system should provide an intuitive interface for users to browse, select, and customise training programs.
- The system must track the user's progress within the training program and provide feedback and adjustments as needed.
- The system must validate any customisations to ensure they are within acceptable ranges and formats.
- The system must confirm that the user's selected and customised training program has been successfully saved and applied.

1.10 Use Cases

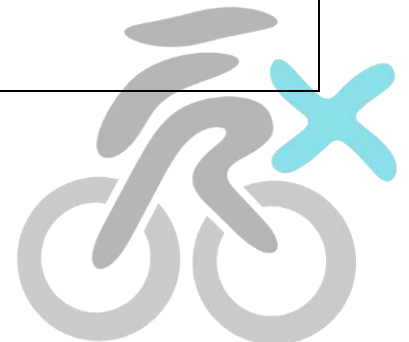
Use Case Name	Manage Profile	
Use Case Id	UC-01	
Description	User wants to create or manage their profile to personalise their experience and track their fitness goals and progress.	
Actors	Registered User	
Stakeholders	Registered Users, System Administrator	
Related Use Cases	Register Account, Login	
Preconditions	The user must be registered and logged into the system.	
Post Conditions	The user's profile is created or updated with the provided information.	
Flow of Activities	User	System
	<ol style="list-style-type: none">1. Navigates to Profile Management section of the application.2. Enters or updates personal information, inc. name, age, gender, and bicycle details.3. Uploads a profile picture.4. Enters or updates fitness goals and progress.	<ol style="list-style-type: none">1.1 Displays the user's current profile information.

	5. Saves the changes.	5.1 Validates entered information and updates the user's profile. 5.2 Confirms profile has been successfully updated.
Extensions	2a. IF the user enters invalid information (e.g., incorrect format for age): 2a1. The system displays an error message indicating the issue. 2b. User corrects the information and resubmits. <hr/> 3a. IF the user uploads an unsupported file type for their profile picture: 3a1. System shows an error message listing the supported file types. 3b. User uploads a supported file type and resubmits. <hr/> 5.2a. IF the system fails to update the profile due to a technical issue: 5.2b. System displays an error message and prompts the user to try again later.	
Special Requirements	<ul style="list-style-type: none"> The system must ensure that all personal information is securely stored and complies with relevant data protection regulations. The profile picture upload should support common image formats (e.g., JPEG, PNG). 	
Frequency of Use	<ul style="list-style-type: none"> Once or as often as the user chooses to update their profile. 	

Use Case Name	Do Planned Training
Use Case Id	UC-02
Description	User logs in, views their training plan and progress, and selects the next training task. After finishing the training, they view their performance analysis.
Actors	Registered User
Stakeholders	Register User, System Administrator, Fitness Trainer
Related Use Cases	Create Training Plan, Update Training Plan, View Training Statistics
Preconditions	The user must have a registered account. The user must have an active internet connection.
Post Conditions	The user has successfully logged in. The user has viewed their personalised training plan and progress. The user has selected and completed a training task. The user has viewed their performance analysis.



Flow of Activities	User	System
	Login: <ol style="list-style-type: none"> 1. Opens the bicycle riding training application. 2. Enters registered email and password or selects a social media account to log in. 	<ol style="list-style-type: none"> 1.1 Displays the login screen. 2.1 Verifies the login credentials. 2.2 Grants access and displays home screen.
	View Training Plan and Progress: <ol style="list-style-type: none"> 3. Navigates to the "Training Plan" section. 4. The user reviews their training plan and progress. 	<ol style="list-style-type: none"> 3.1 Displays the user's personalised training plan, including upcoming tasks and progress.
	Select and Complete Training Task: <ol style="list-style-type: none"> 5. Selects the next training task from the training plan. 6. Starts the training task. 7. Completes the training task. 	<ol style="list-style-type: none"> 5.1 Displays the details of the selected training task. 6.1 Tracks and records the user's workout, including distance, speed, duration, and route. 6.2 Displays real-time statistics during the workout.
	View Performance Analysis: <ol style="list-style-type: none"> 8. Navigates to the "Performance Analysis" section. 9. Selects weekly or monthly performance reports, and table or graph format. 10. Reviews their performance analysis. 	<ol style="list-style-type: none"> 8.1 Analyses the workout data and provides insights on performance, such as average speed, calories burned, and progress over time. 9.1 Displays the analysed data in table or graph formats.



Extensions	<p>1a. IF the user enters invalid login credentials:</p> <p>1a1. The system displays an error message and prompts the user to re-enter their credentials.</p> <p>1b. User corrects the information and resubmits.</p> <p>7a. IF the user does not complete the training task:</p> <p>7a1. The system saves the partial workout data and allows the user to resume later.</p> <ul style="list-style-type: none"> • IF there are network issues, • The system displays an error message and prompts the user to check their internet connection.
Special Requirements	<ul style="list-style-type: none"> • The system must ensure the security and privacy of user data. • The system must provide accurate tracking of cycling activities in both indoor and outdoor environments.
Frequency of Use	<ul style="list-style-type: none"> • Daily or as often as the user engages in training activities.
Assumptions	<ul style="list-style-type: none"> • The user has the necessary equipment for tracking workouts, e.g., GPS-enabled device, IoT enabled cycle, etc.

