Requirements Analysis

De Boer, Lucas (k2023556)

Kingston University

1 Introduction

This document outlines the process used to gather the system's requirements and their respective priorities. The requirements were validated through an interview with the project's client upon completion of the analysis.

During the elicitation process, the first step taken was the stakeholder analysis. This helped identify the system's most critical stakeholders and provided a clear understanding of their communication requirements based on their position on the power/interest matrix. This analysis selected a set of potential users, and a persona was created for each user type to understand their needs better. This approach helped lay the foundation for the rest of the document as it allowed for identifying requirements from a user's perspective. It is important to note that while direct discussions with the client at the onset of the project identified some requirements, creating the personas helped uncover additional requirements that were not initially considered but were necessary for the project's success.

A comprehensive list of user stories was created for each user type using detailed personas. These user stories provided a high-level overview of the system requirements. By analysing them, use cases were developed. Use cases specify how each user would interact with the system and enable the project to take a more user-centric approach as the functionality aligns with the users' expectations.

In addition, a use case text was created for each use case to provide a brief understanding of what a requirement should achieve and how it should be accomplished. This document can be easily viewed by any development team member who needs a concise yet informative understanding of any requirement.

The functional requirements were created based on the use cases. Considering the project time constraints, it has been determined that not all functional requirements can be implemented. Therefore, it is crucial to prioritise them based on their criticality to the project's success. To achieve this, the MoSCoW prioritisation technique has been utilised. Once, a list of functional requirements and their priorities were consolidated into a single table. An interview with the project's client was undertaken.

The project will be utilising a combination of agile and Scrum methodologies. Scrum will have time-limited iterations called sprints and brief daily meetings. However, the meetings for this project will only occur once a week. The sprints will last for around four weeks with the objective of having a finished product by the end. This requirements document is a prime example of how the consolidation of many weekly deliverables has produced a finished analytical product

2 Stakeholder Analysis

Stakeholders are individuals or organisations with a legitimate interest in the system and can, therefore, state and influence requirements. There are two types of stakeholders: internal and external. The internal stakeholders are directly involved in a system's operations, objectives, and success. The business owner and staff have been identified as internal stakeholders for this project. The external stakeholders are those who do not directly work for the company but are affected by its decisions and, thus, are interested in the system. All stakeholders must be taken into consideration during development. Stakeholder analysis will help achieve this by identifying and summarising the key stakeholders for this project.

2.1 Key Stakeholders

Internal

Business Owner

The system's highest authorisation level is granted to the business owner. They have complete control over the system and can create, edit, update, and delete entries as needed. The business owner can monitor all aspects of the business, including fleet management, staff, and bookings. It is the business owner's responsibility to create new employee accounts and add new watercraft to the fleet.

Employee/Crew Member

This stakeholder needs to be able to access their work schedule and have limited editing and creation permissions. This will allow them to add items to the inventory, update their profile, and send notifications if they cannot work on a specific day. Employees play a crucial role in the success of the business.

External

Client

The system allows clients to manage their bookings. It is important to note that clients are not employees of the chartering company and are not involved in the development or operation of the system. Clients can create, modify, and cancel their bookings using the system.

Government Authorities

The project is subject to various laws enforced by the government, which can impact the project in several ways. Regulatory bodies or agencies oversee maritime operations to ensure safety and environmental regulations compliance. In addition, regulations such as GDPR require that information be handled in a highly controlled manner. The government is interested in how the chartering company is managed, but they do not directly interact with the system.

2.2 Power/Interest Matrix

Once the key stakeholders were identified, they were mapped onto a power/interest matrix. This tool assesses and categorises their power and interest levels within the system. The matrix, shown in Figure 2.1, helps develop effective communication and management strategies for dealing with different stakeholder groups. A larger version of this figure can be found in Appendix H.

The business owner has the most power and interest in the system. Their level of authority is significant as they possess the highest authorisation for editing, deleting, and adding entries to the system. Moreover, they own the business, making them the most invested. Therefore, it can be concluded that they play a crucial role in the project's success. Frequent communication and close management are essential to keep them satisfied.

Government authorities hold significant power as they can declare a chartering company unsuitable for business. Additionally, suppose the system fails to handle the client's sensitive information, such as credit card details and health data from the waiver, in compliance with GDPR. In that case, the government can prohibit the use of the system. However, the government has a low level of interest; thus, the communication strategy differs from that of the business owner. While ensuring compliance when called upon is imperative, a constant communication channel is unnecessary.

The employees/crew members have both moderate interest and power as they can view and edit some entries in the system, such as inventory items. A competent workforce is crucial for a chartering company to ensure smooth operations. As such, employees are entitled to voice their concerns regarding the system's functionality, which may lead to modifications. Maintaining open communication channels with the group and proactively addressing concerns is essential.

The client's main objective is to manage their bookings, and they have a low interest level in anything beyond that. Since they are not employed by the charter company, their ability to influence the system's operations is minimal, if not non-existent. Therefore, their power level is also low. Although communication with this group may be limited, it is still important to monitor their concerns.

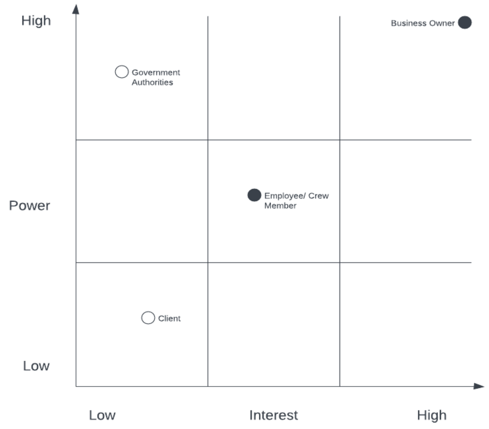


Figure 2.1 Power/Interest Matrix

3 User Stories and Personas

This section aims to extract user stories by analysing personas. The persona creation process involves identifying key user characteristics, such as demographics, behaviours, and motivations, which are then used to create a fictional representation of a typical user. By analysing these personas, a better understanding of a regular user is established, allowing for the creation of stories that accurately reflect their expectations.

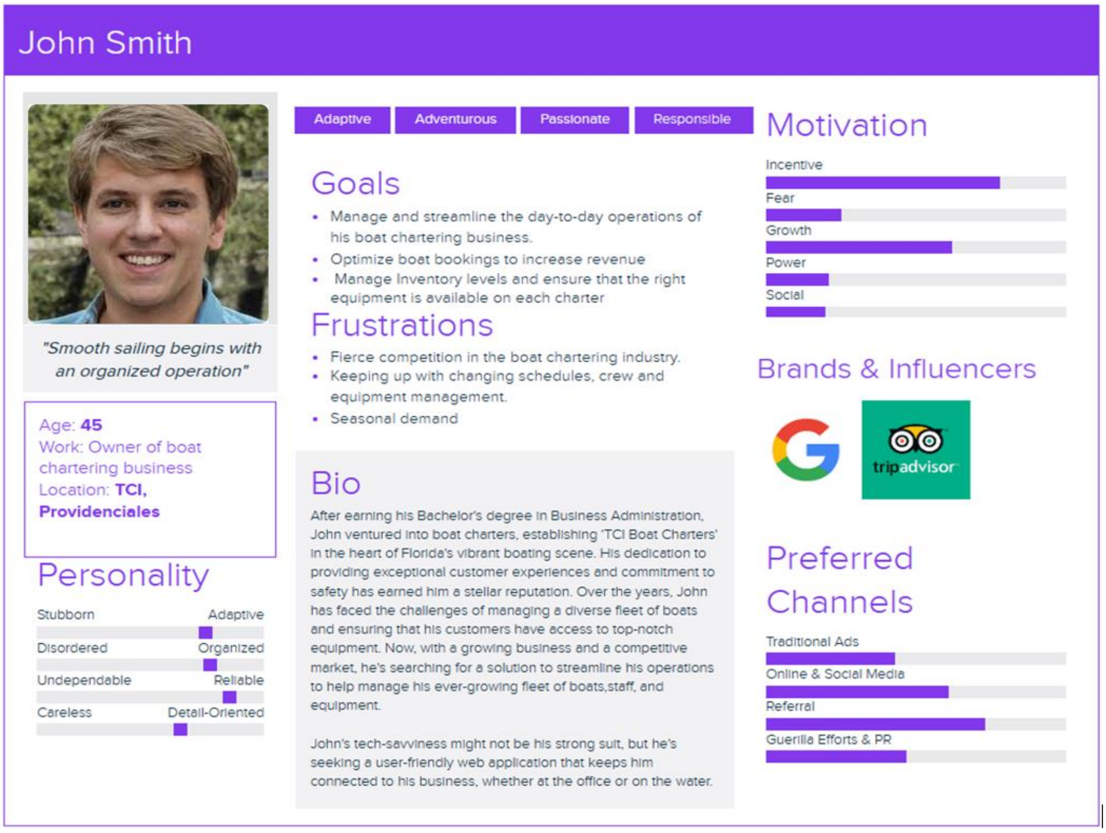
3.1 User Types

Based on the stakeholder analysis in section 2, we have identified three different types of users for the system: the business owner, employee/crew member, and client. Although governmental authorities were also identified, they will not use the system and do not need to be analysed.

3.2 User persona

User personas play a critical role in the software development cycle. Developers can gain deeper insights into users' needs, preferences, behaviours, and frustrations by creating detailed personas. This information can be used to develop a system that better meets end-users needs, resulting in a more successful product. It is important to note that while the project has a client already, creating fictional personas helped uncover additional requirements that were not initially considered but were necessary for the project's success.

A user type has been designed for each user type and can be seen in Figure 3.2.1, Figure 3.2.2 and Figure 3.2.3.



John Smith

"Smooth sailing begins with an organized operation"

Age: **45**
Work: Owner of boat chartering business
Location: **TCI, Providenciales**

Personality

Stubborn — Adaptive
Disordered — Organized
Undependable — Reliable
Careless — Detail-Oriented

Adaptive | Adventurous | Passionate | Responsible

Goals

- Manage and streamline the day-to-day operations of his boat chartering business.
- Optimize boat bookings to increase revenue
- Manage Inventory levels and ensure that the right equipment is available on each charter

Frustrations

- Fierce competition in the boat chartering industry.
- Keeping up with changing schedules, crew and equipment management.
- Seasonal demand

Bio

After earning his Bachelor's degree in Business Administration, John ventured into boat charters, establishing 'TCI Boat Charters' in the heart of Florida's vibrant boating scene. His dedication to providing exceptional customer experiences and commitment to safety has earned him a stellar reputation. Over the years, John has faced the challenges of managing a diverse fleet of boats and ensuring that his customers have access to top-notch equipment. Now, with a growing business and a competitive market, he's searching for a solution to streamline his operations to help manage his ever-growing fleet of boats,staff, and equipment.

John's tech-savviness might not be his strong suit, but he's seeking a user-friendly web application that keeps him connected to his business, whether at the office or on the water.

Motivation

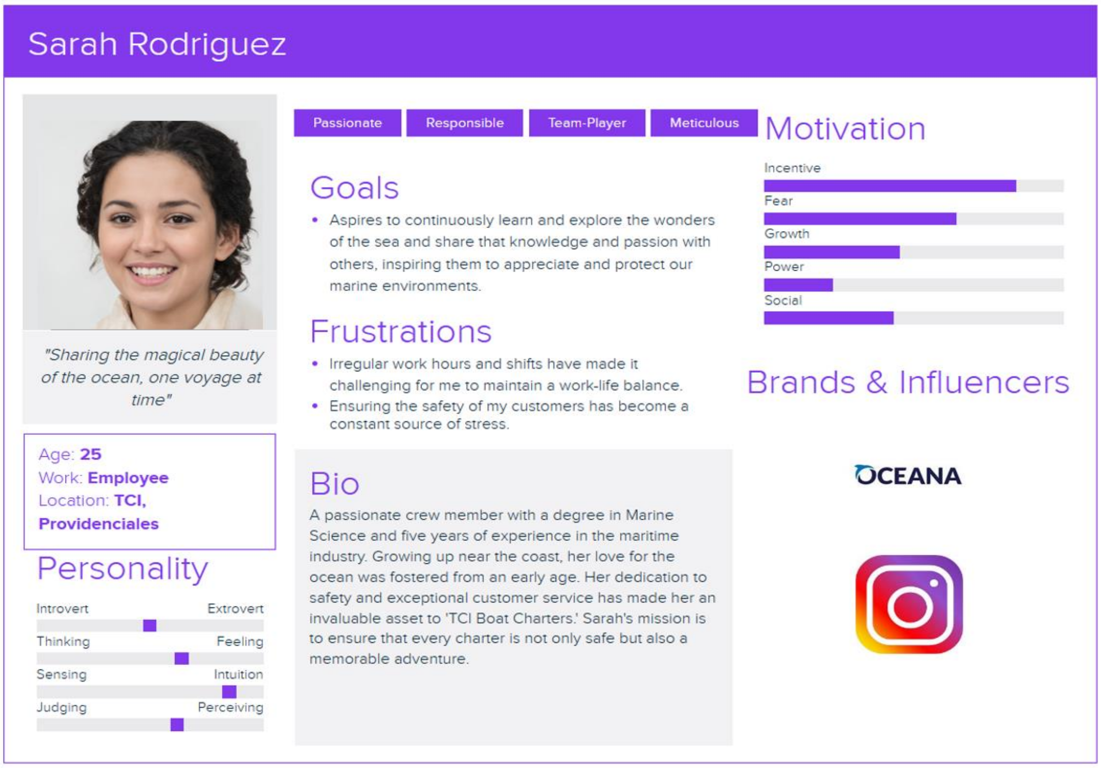
Incentive
Fear
Growth
Power
Social

Brands & Influencers

Preferred Channels

Traditional Ads
Online & Social Media
Referral
Guerilla Efforts & PR

Figure 3.2.1 User Persona for Business Owner Type



Sarah Rodriguez

"Sharing the magical beauty of the ocean, one voyage at time"

Age: **25**
Work: **Employee**
Location: **TCI, Providenciales**

Personality

Introvert — Extrovert
Thinking — Feeling
Sensing — Intuition
Judging — Perceiving

Passionate | Responsible | Team-Player | Meticulous

Goals

- Aspires to continuously learn and explore the wonders of the sea and share that knowledge and passion with others, inspiring them to appreciate and protect our marine environments.

Frustrations

- Irregular work hours and shifts have made it challenging for me to maintain a work-life balance.
- Ensuring the safety of my customers has become a constant source of stress.

Bio

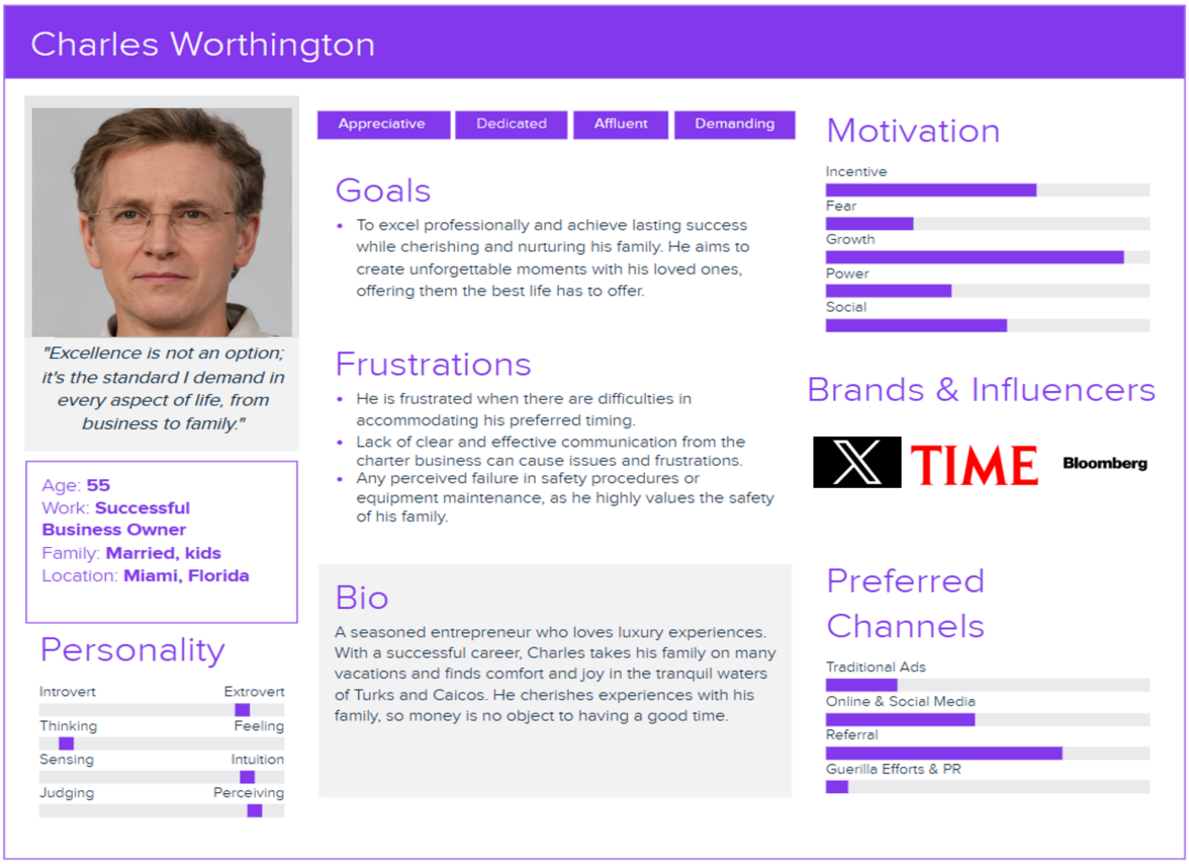
A passionate crew member with a degree in Marine Science and five years of experience in the maritime industry. Growing up near the coast, her love for the ocean was fostered from an early age. Her dedication to safety and exceptional customer service has made her an invaluable asset to 'TCI Boat Charters.' Sarah's mission is to ensure that every charter is not only safe but also a memorable adventure.

Motivation

Incentive
Fear
Growth
Power
Social

Brands & Influencers

Figure 3.2.2 User Persona for Employee/Crew Type



Charles Worthington

"Excellence is not an option; it's the standard I demand in every aspect of life, from business to family."

Age: **55**
Work: **Successful Business Owner**
Family: **Married, kids**
Location: **Miami, Florida**

Appreciative | Dedicated | Affluent | Demanding

Goals

- To excel professionally and achieve lasting success while cherishing and nurturing his family. He aims to create unforgettable moments with his loved ones, offering them the best life has to offer.

Frustrations

- He is frustrated when there are difficulties in accommodating his preferred timing.
- Lack of clear and effective communication from the charter business can cause issues and frustrations.
- Any perceived failure in safety procedures or equipment maintenance, as he highly values the safety of his family.

Bio

A seasoned entrepreneur who loves luxury experiences. With a successful career, Charles takes his family on many vacations and finds comfort and joy in the tranquil waters of Turks and Caicos. He cherishes experiences with his family, so money is no object to having a good time.

Figure 3.2.3 User Persona for Client Type

3.3 User Stories

User stories are created based on the detailed user personas. These stories are a valuable tool to identify the specific functionalities each user type requires from the system and the underlying reasons for these requirements. User stories can guide the development process, ensuring that the system meets the needs of all users. The stories are written from the perspective of a particular user type, as shown in Figure 3.3.1. A comprehensive set of these user stories are listed in Appendix B.

Business Owner

- As a business owner, I want to have an easy way of viewing the availability of each of my watercraft. So that I can stay up to date with how my business is running.
- As a business owner, I want to add new watercraft to my fleet to manage my new craft.
- As a business owner, I want to remove a watercraft from my fleet. So that if a watercraft, for whatever reason, is no longer in my possession, I can easily change the system to reflect this.

Employee/crew member

- As a crew member, I want to view my daily schedule easily so that I can plan my work efficiently.
- As a crew member, I want to view my profile details so I can make sure it is correct.

Client

- As a client, I want to view all bookings so that I can keep track of what I booked.

- As a client, I want to cancel a booking in case I can no longer go out on the charter.
- As a client, I want to immediately be given any paperwork that needs to be signed to get it out of the way and enjoy my trip.

Figure 3.3.1 User stories

4 Use Case Analysis

Use cases were derived from an analysis of user stories. Identifying key actors who would interact with the system was carried out first. The business owners, employees, and clients have been identified as the primary actors for this project. These individuals possess varying degrees of power within the system and, thus, require differing functionalities. Use cases define how each user would interact with the system. They will allow the project to adopt a more user-centric design approach, as the system's functionality can be designed around the identified user interactions.

4.1 Use Case Diagrams

The use case diagram offers a comprehensive approach to capture the distinct requirements expected by each actor. Figure 4.1.1, Figure 4.1.2, and Figure 4.1.3 clearly and concisely visualise the crucial functionalities each actor expects in the system.

4.2 Use Case Description

A use case description or text is an artefact that provides a clear understanding of a use case's primary goal and purpose. It includes a summary or high-level definition of what the use case should achieve. Additionally, a post-condition is stated, which defines the expected outcome after the successful completion of the use case. Furthermore, a pre-condition is identified, which must be met for the use case to be triggered. The trigger event defines how the actor or actors initiate the use case scenario. After that, a detailed bulleted list of the workflow is presented between the primary actor or actors and the system. This workflow outlines the steps to accomplish the scenario and any alternative paths to account for exceptions or variations in the flow. A use case description is made for each use case, such as Figure 4.2.1.

A comprehensive set of use case descriptions are listed in Appendix D.

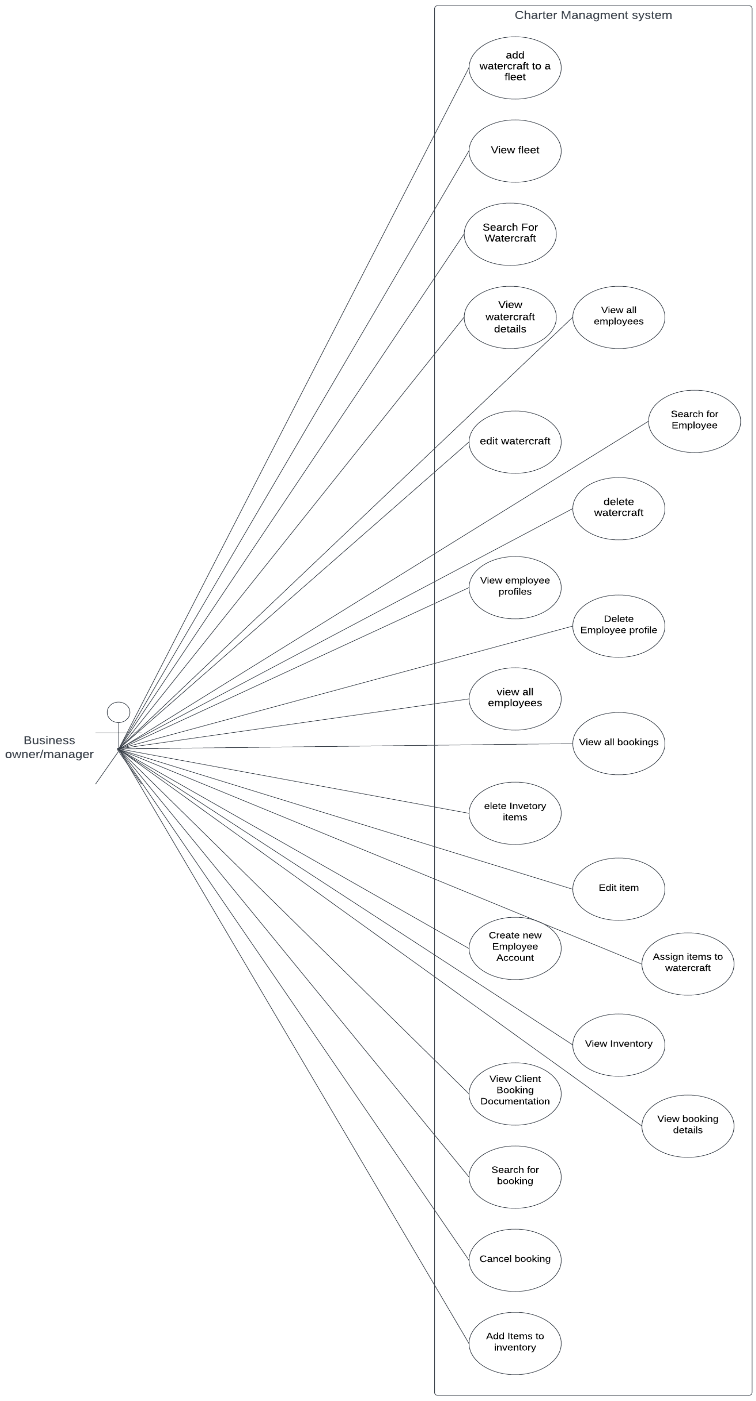


Figure 4.1.1 Use Case Diagram for Business Owner User Type

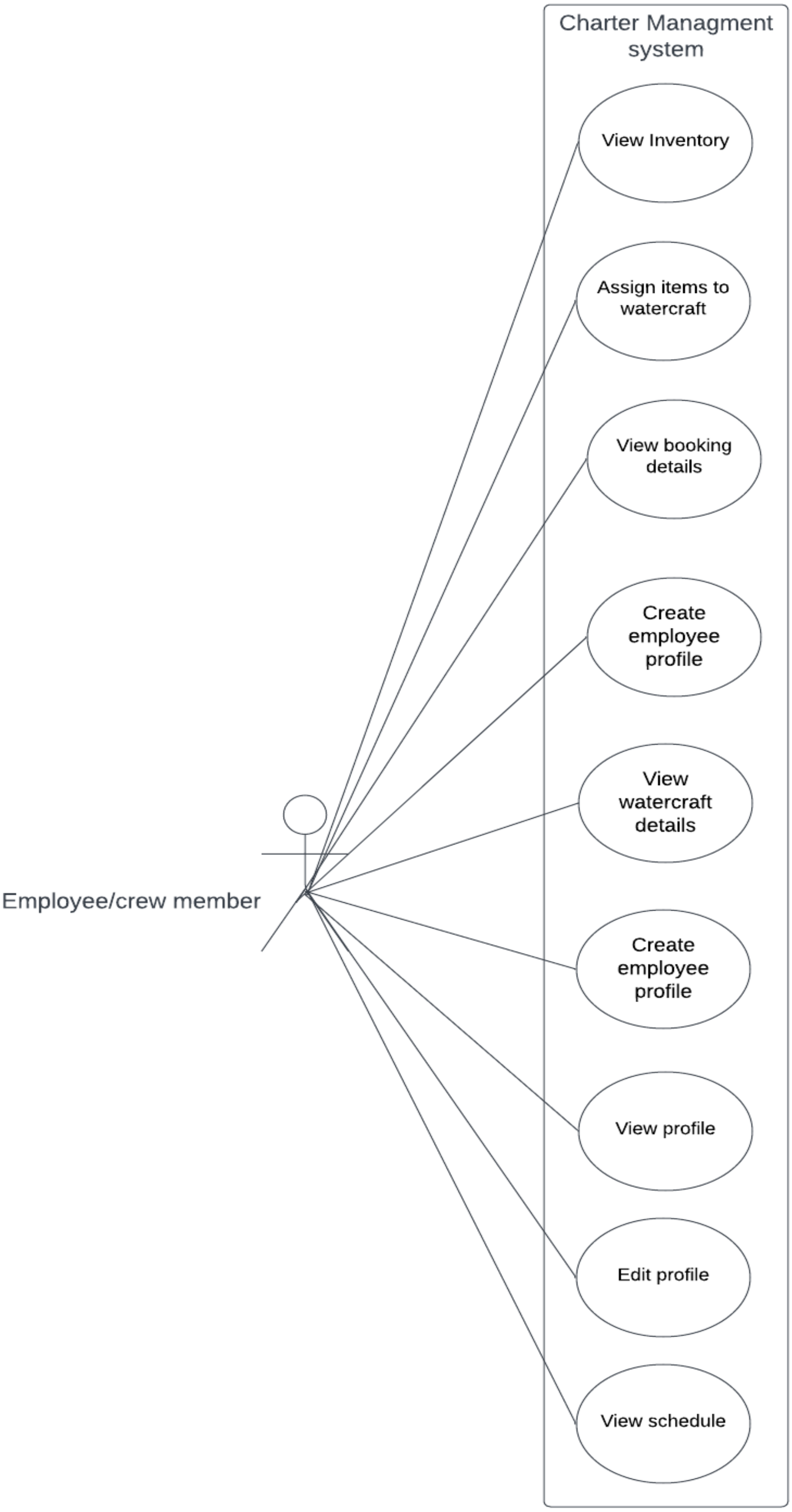


Figure 4.1.2 Use Case Diagram for Employee/Crew Member User Type

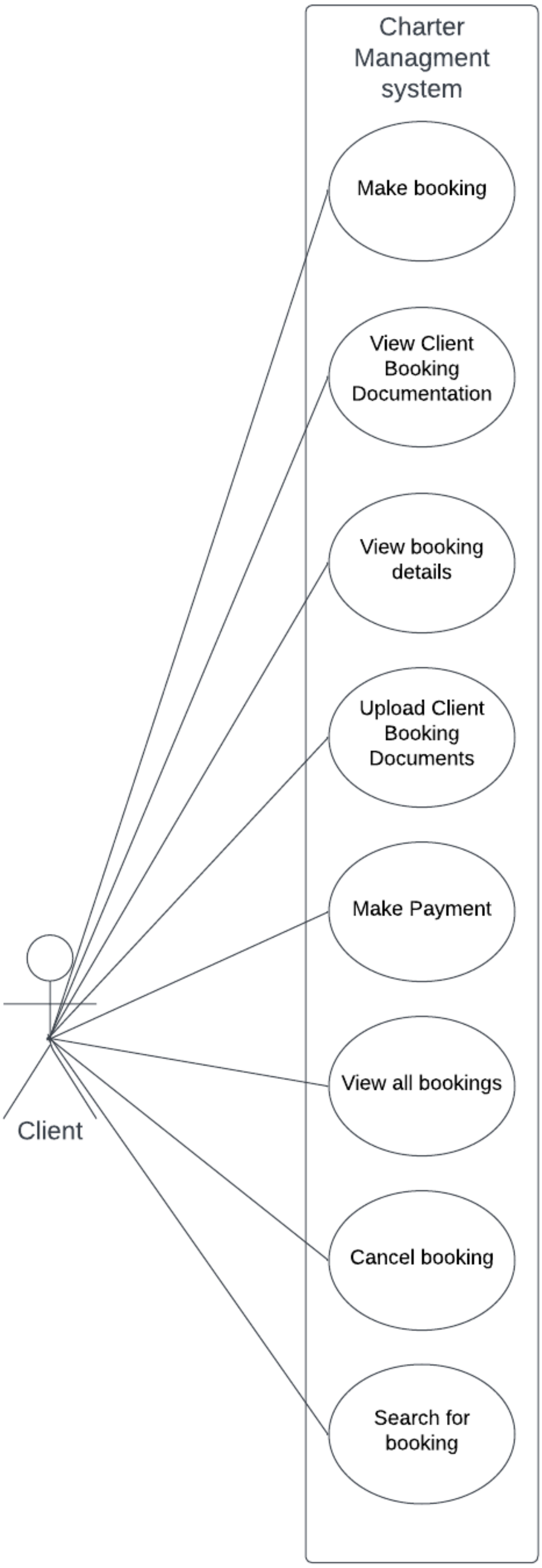


Figure 4.1.3 Use Case Diagram for Client User Type

Use Case Number:	1
Name:	Add watercraft to the fleet.
Description:	The user should be able to create a new watercraft with relevant information, such as registration number, model details, and possibly a familiar name for the craft.
Actor(s):	Business owner/manager
Triggers:	The user clicks the 'Add Watercraft' button on the fleet management page.
Frequency:	Depending on how fast the business is growing
Pre-Condition(s):	• User is logged in • User is of type owner/manager/admin. • There is a craft which needs to be added.
Post-Condition(s):	The newly created watercraft is added to the fleet and is displayed on the screen. It has also successfully been added to the database.
Basic Path:	1. Navigate to the fleet management page 2. Click on the 'Add Watercraft' button 3. Input watercraft information 4. Select the model of the watercraft from the list to autofill model details 5. Click the 'Save' button 6. Created watercraft is displayed on the fleet management page
Alternative Path:	3a. If the model is not in the list, the user must manually fill out the model information before clicking 'save'. 5a. If watercraft cannot be created, display an appropriate error message
Extensions:	None
Success End Condition:	The newly created watercraft is added to the fleet and is displayed on the screen. It has also successfully been added to the database.
Failure End Condition:	The error occurs, and the user cannot add the new watercraft.
Performance:	Watercraft details should be saved within 5 seconds.
Priority:	Must

Figure 4.2.1 Use Case Description for "Add Watercraft to Fleet".

5 System Requirements

Identifying system requirements plays a critical role in the overall software development lifecycle. It ensures that the system being developed will meet the needs of its users. A detailed examination of use cases is essential to elicit the system's functional and non-functional requirements. The former outlines what the user should be able to do using the system, while the latter identifies constraints on the services or functions offered by the system, such as those related to performance, usability, and security.

5.1 Functional Requirements and MoSCoW Prioritization

Functional requirements concisely state what the user can do with the system. The list of functional requirements serves as a guide to breaking down the project into smaller developmental goals and helps define weekly implementation deliverables. However, implementing all functional requirements may not be feasible within project time constraints. Therefore, it is imperative to prioritise the needs and focus on those deemed most critical to the project's success. This was done using the MoSCoW prioritisation technique.

MoSCoW prioritisation puts the functional requirements into four categories: must-haves, should-haves, could-haves, and won't-haves. The must-haves are the requirements that are fundamental to the system’s functionality and, thus, pivotal to the success of the project. The should-have requirements are important and should be included in the project if resources and time allow, but the project’s success does not rely on them. The could-haves are desirable features which could be nice to have; however, they can be left out without impacting the project’s core functionality. Wont-haves are requirements deemed out of the project's scope and will not be implemented. (Agile Business Consortium, 2014, ch.10). Figure 5.1.1 presents a list of prioritised functional requirements using the MoSCoW analysis technique. The project’s development will concentrate on delivering the must-have requirements before any other features and functionalities to ensure the core functionality is met.

A comprehensive set of prioritised functional requirements are listed in Appendix E.

ID	Functional Requirement	Priority	User Type
1	Users can add watercraft to the fleet.	MUST	Business owner
2	Users can view watercraft in the fleet.	MUST	Business owner
3	Users can view watercraft details	MUST	Business owner
4	Users can edit watercraft	MUST	Business owner
5	Users can delete watercraft	MUST	Business owner
6	Users can create employee profile	MUST	Employee/Crew member
7	Users can view employee profiles	MUST	Business owner
8	Users can view their account profile	MUST	Employee/Crew member
9	Users can edit their account profile	MUST	Employee/Crew member
10	Users can view all employees	MUST	Business owner
11	Users can delete employee profile	MUST	Business owner
12	Users can make booking	MUST	Client
13	Users can view their bookings	MUST	Client
39	Users can search for booking	SHOULD	Business owner, Client
40	Users can edit crew schedules	SHOULD	Business owner
57	The system automatically assigns schedules to staff for each booking	COULD	System
59	The system will automatically pay employees	WON'T	System

Figure 5.1.1 Functional Requirements and their Priority

5.2 Non-functional Requirements

A list of non-functional requirements was created to outline the constraints on the functions offered by the system; this can be found in Figure 5.2.1.

ID	Category	Non-Functional Requirement Description
1	Performance	The user interface must display within 5 seconds of the page loading
2	Performance	All payment processing should take no longer than 15
3	Security	All passwords should be encrypted when stored
4	Security	All passwords must meet a minimum strength standard
5	Security	Only authenticated users can access the management aspect of the system
6	Security	Users can only access the parts of the system which their user type permits.
7	Security	The web app must be protected against SQL Injection and cross-site scripting.

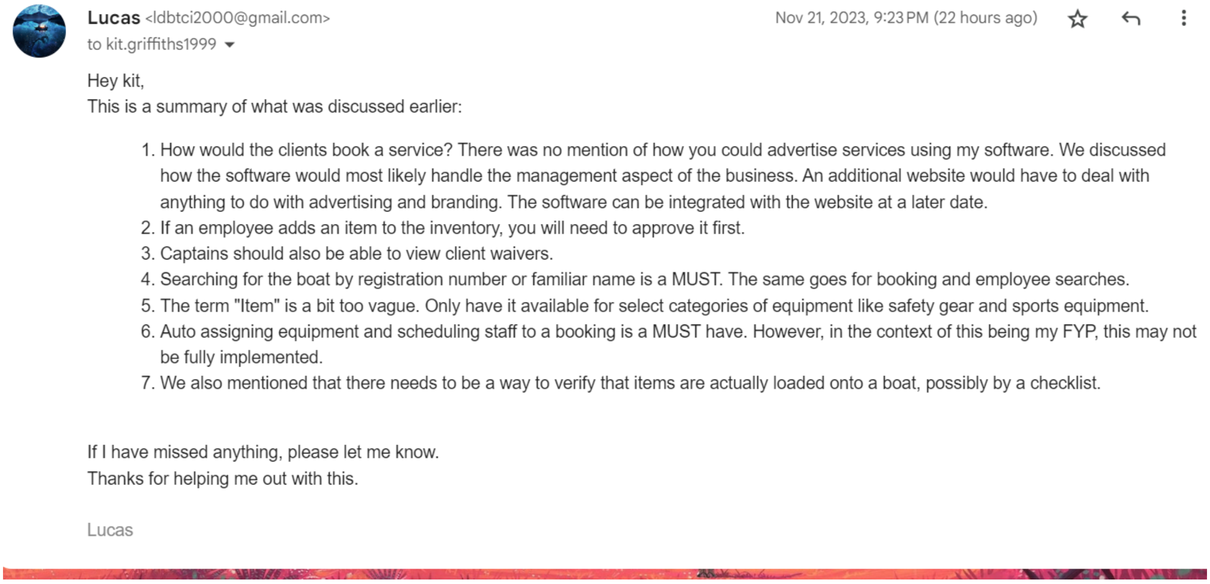
8	Security	The database must be able to maintain a user’s confidentiality and privacy.
9	Security	Users can be locked out for multiple failed login attempts
10	Security	Users can be logged out if inactive for too long
11	Maintainability	The project is version-controlled using GitHub
12	Maintainability	The code will be refactored throughout the project to make it easier to read and maintain later.
13	Compliance	Adhere to legal and regulatory requirements related to user data privacy and security. This includes the GDPR
14	Usability	Ensure accessibility standards are met to accommodate users with disabilities.
15	Compatibility	The application should be compatible with major web browsers (Chrome, Firefox, Safari, Edge)
16	Reliability	The application should have a high uptime percentage
17	Scalability	The application should be able to scale up to accommodate a growth in users.

Table 5.2.1 Non-Functional Requirements

6 Requirements Validation

Validating requirements is a crucial step in the software development process. At this stage, a thorough discussion with the client was conducted regarding the system requirements to confirm that they aligned with their needs and expectations. Consequently, it was imperative to review and clarify the decisions made regarding the priority of requirements due to time constraints on the project, which necessitated trade-offs between meeting all their needs and delivering a viable product. This process guarantees the client has a clear and mutual understanding of the project's objectives and goals, thus laying a solid foundation for a successful project outcome.

Following the meeting, a summary of the key discussion points was shared with the client to ensure agreement on the topics covered. This can be seen in Figure 6.1. Later, the client confirmed that the key points were captured accurately, as shown in Figure 6.2.



Lucas <ldbtci2000@gmail.com>
to kit.griffiths1999

Nov 21, 2023, 9:23 PM (22 hours ago)

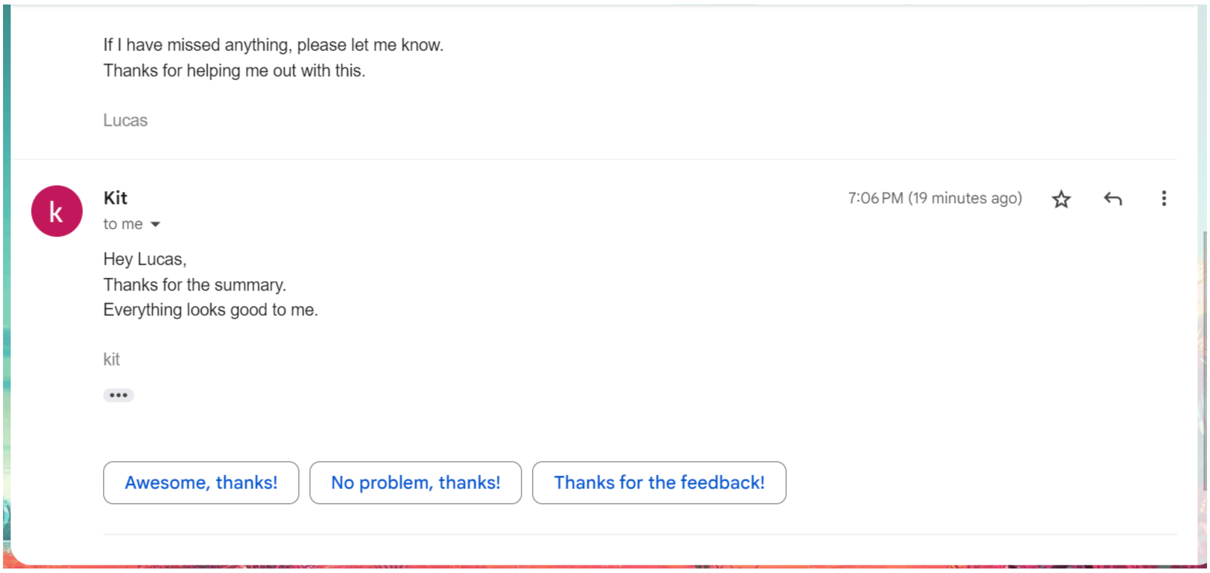
Hey kit,
This is a summary of what was discussed earlier:

1. How would the clients book a service? There was no mention of how you could advertise services using my software. We discussed how the software would most likely handle the management aspect of the business. An additional website would have to deal with anything to do with advertising and branding. The software can be integrated with the website at a later date.
2. If an employee adds an item to the inventory, you will need to approve it first.
3. Captains should also be able to view client waivers.
4. Searching for the boat by registration number or familiar name is a MUST. The same goes for booking and employee searches.
5. The term "Item" is a bit too vague. Only have it available for select categories of equipment like safety gear and sports equipment.
6. Auto assigning equipment and scheduling staff to a booking is a MUST have. However, in the context of this being my FYP, this may not be fully implemented.
7. We also mentioned that there needs to be a way to verify that items are actually loaded onto a boat, possibly by a checklist.

If I have missed anything, please let me know.
Thanks for helping me out with this.

Lucas

Figure .1 Email Screenshot of Validation Meeting Summary



If I have missed anything, please let me know.
Thanks for helping me out with this.

Lucas

Kit
to me
7:06 PM (19 minutes ago)

Hey Lucas,
Thanks for the summary.
Everything looks good to me.

kit

Figure 6.2 Email Screenshot of Validation Meeting Summary Client Reply

7 Conclusion

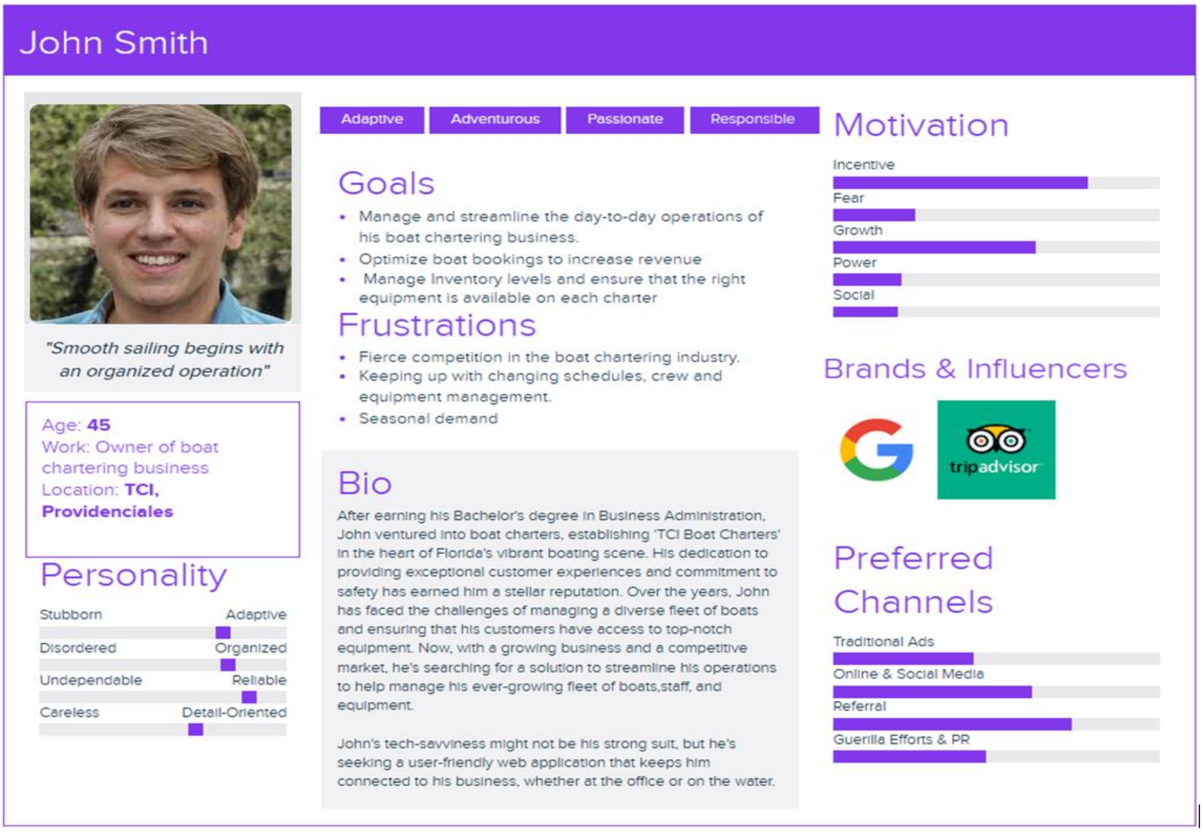
In conclusion, after conducting a thorough analysis of the stakeholders and users involved in the project, the system’s requirements were successfully elicited. A range of tools and methods, including a power/interest matrix, user personas, user stories, use cases, and use case text diagrams, was used to conduct the analysis. The functional requirements were prioritised using the MoSCoW method, ensuring that primary functionalities were given precedence and adequately addressed. Following a comprehensive discussion, the client approved the project requirements. This document is a valuable reference during project development, ensuring the project team remains focused on meeting the client's needs and producing the minimal viable product.

8 References

Agile Business Consortium. (2014) *The DSDM Agile Project Framework*. Available at: https://www.agilebusiness.org/dsdm-project-framework.html (Accessed: 06 December 2023)

Appendix

Appendix A- User Personas



John Smith

Adaptive | Adventurous | Passionate | Responsible

"Smooth sailing begins with an organized operation"

Age: **45**
Work: Owner of boat chartering business
Location: **TCI, Providenciales**

Goals

- Manage and streamline the day-to-day operations of his boat chartering business.
- Optimize boat bookings to increase revenue
- Manage inventory levels and ensure that the right equipment is available on each charter

Frustrations

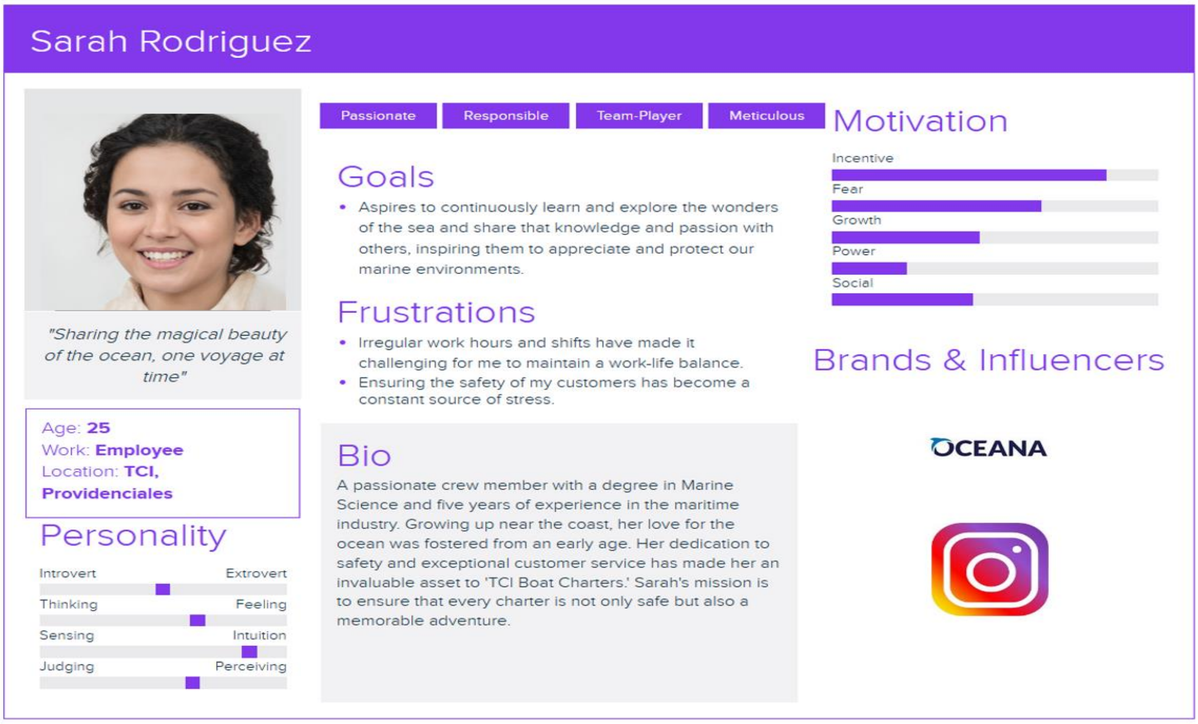
- Fierce competition in the boat chartering industry.
- Keeping up with changing schedules, crew and equipment management.
- Seasonal demand

Bio

After earning his Bachelor's degree in Business Administration, John ventured into boat charters, establishing 'TCI Boat Charters' in the heart of Florida's vibrant boating scene. His dedication to providing exceptional customer experiences and commitment to safety has earned him a stellar reputation. Over the years, John has faced the challenges of managing a diverse fleet of boats and ensuring that his customers have access to top-notch equipment. Now, with a growing business and a competitive market, he's searching for a solution to streamline his operations to help manage his ever-growing fleet of boats,staff, and equipment.

John's tech-savviness might not be his strong suit, but he's seeking a user-friendly web application that keeps him connected to his business, whether at the office or on the water.

Figure A.1 User Persona for Business Owner Type



Sarah Rodriguez

Passionate | Responsible | Team-Player | Meticulous

"Sharing the magical beauty of the ocean, one voyage at time"

Age: **25**
Work: **Employee**
Location: **TCI, Providenciales**

Goals

- Aspires to continuously learn and explore the wonders of the sea and share that knowledge and passion with others, inspiring them to appreciate and protect our marine environments.

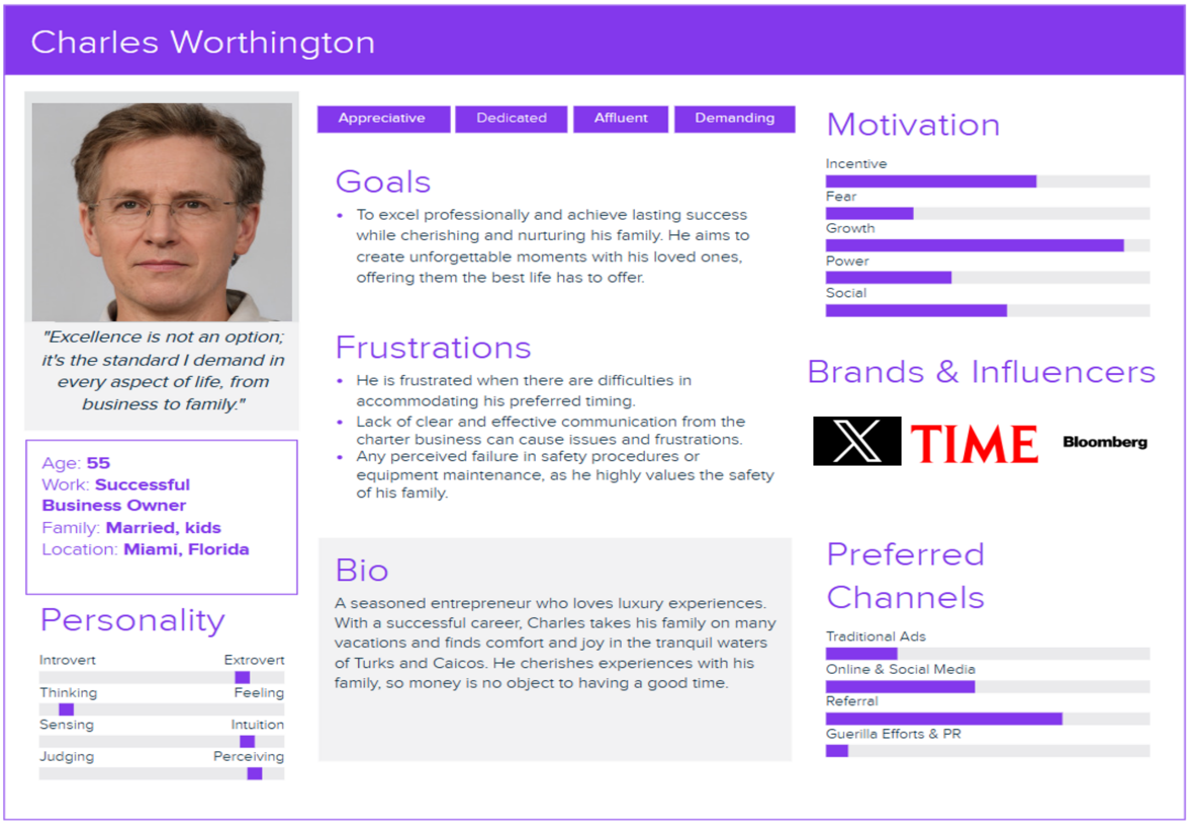
Frustrations

- Irregular work hours and shifts have made it challenging for me to maintain a work-life balance.
- Ensuring the safety of my customers has become a constant source of stress.

Bio

A passionate crew member with a degree in Marine Science and five years of experience in the maritime industry. Growing up near the coast, her love for the ocean was fostered from an early age. Her dedication to safety and exceptional customer service has made her an invaluable asset to 'TCI Boat Charters.' Sarah's mission is to ensure that every charter is not only safe but also a memorable adventure.

Figure A.2 User Persona for Employee/Crew Type



Charles Worthington

"Excellence is not an option; it's the standard I demand in every aspect of life, from business to family."

Age: **55**
Work: **Successful Business Owner**
Family: **Married, kids**
Location: **Miami, Florida**

Personality

Appreciative | Dedicated | Affluent | Demanding

Goals

- To excel professionally and achieve lasting success while cherishing and nurturing his family. He aims to create unforgettable moments with his loved ones, offering them the best life has to offer.

Frustrations

- He is frustrated when there are difficulties in accommodating his preferred timing.
- Lack of clear and effective communication from the charter business can cause issues and frustrations.
- Any perceived failure in safety procedures or equipment maintenance, as he highly values the safety of his family.

Bio

A seasoned entrepreneur who loves luxury experiences. With a successful career, Charles takes his family on many vacations and finds comfort and joy in the tranquil waters of Turks and Caicos. He cherishes experiences with his family, so money is no object to having a good time.

Motivation

Brands & Influencers

Preferred Channels

Figure A.3 User Persona for Client Type

Appendix B- User Stories

1. *Business Owner*

Watercraft management

- As a business owner, I want to have an easy way of viewing the availability of each of my watercraft. So that I can stay up to date with how my business is running.
- As a business owner, I want to add new watercraft to my fleet to manage my new craft.
- As a business owner, I want to remove a watercraft from my fleet. So that if a watercraft, for whatever reason, is no longer in my possession, I can easily change the system to reflect this.
- As a business owner, I want to search for a watercraft by registration number or familiar name so that I can easily find a specific craft.
- As a business owner, I want to group watercraft by type or status so I can look through my list more quickly.
- As a business owner, I want to edit existing watercraft in case I made a mistake when adding them.
- As a business owner, I want to view relevant information about a watercraft, such as maintenance logs, engine hours, last known location, and the current booking (if any).
- As a business owner, I want to quickly view how much a boat has brought in for a given week to analyse and make relevant changes if necessary.

Figure B.1.1 Watercraft Management User stories for Business owner User Type

Staff management

- As a business owner, I want to add new staff member's account so that a new employee can access the system.
- As a business owner, I want to remove a staff member.
- As a business owner, I want to view all staff members.
- As a business owner, I want to search for a staff member.
- As a business owner, I want to view employee profiles. Showing their qualifications to ensure they are up-to-date and legally allowed to take passengers.

Figure B.1.2 Staff Management User stories for Business owner User Type

Inventory management

- As a business owner, I want to add, delete, or edit logged equipment so that the system best reflects my current inventory.
- As a business owner, I want to keep track of where all my equipment is at any moment. This can save time as we don’t have to run around trying to find something every time.
- As a business owner, I want to ensure the safety equipment on any given vessel is up to date and available to ensure every boat is safe and ready to handle a problem.
- As a business owner, I want to see when and who carried out maintenance on any given piece of equipment to ensure the equipment is safe to use for charters.

Figure B.1.3 Inventory Management User stories for Business owner User Type

Booking management

- As a business owner, I want to view all my bookings so that I am always up to date.
- As a business owner, I want to cancel/delete a booking in a worst-case scenario.
- As a business owner, I want to change the time of a booking in a worst-case scenario.
- As a business owner, I want to search for booking by ID.
- As a business owner, I want to search for booking by date.
- As a business owner, I want to be able to group bookings by date.
- As a business owner, I want to view client details such as contact information and name so that I can contact them if an issue arises before or after.
- As a business owner, I want to quickly view if booked clients have fully completed(signed) any waivers(paperwork). So that I can be sure I am legally safe before sending them out.
- As a business owner, I want to view the completed waivers for a booking.
- As a business owner, I want to quickly view who is scheduled to work on a specific charter so that I know where everybody is.
- As a business owner, I want to edit crew assignments for any charter so that I can have more control over the automated assignments.
    - Add to the crew.
    - Remove from crew.
- As a business owner, I want to view the watercraft(s) used for a particular booking.

Figure B.1.4 Booking Management User stories for Business owner User Type

2. *Employee/crew member*

- As a crew member, I want to view my daily schedule easily to plan my work efficiently.
- As a crew member, I want to view my details to ensure they are correct.
- As a crew member, I want to update my employee profile with up-to-date information.
- As a crew member, I want to add any relevant qualifications to my profile.
- As a crew member, I want to see what equipment needs to be loaded onto which boat to more easily prepare for a given charter.
- As a crew member, I want to see how many guests will be on my scheduled charter to ascertain how much food, drink and other equipment will be needed.
- As a crew member, I want to easily log safety equipment expiry dates (such as fire extinguishers) so that we can be notified when they need to be replaced later. Ensuring a safe charter.

Figure B.2.1 User stories for Employee/Crew member User Type

3. *Client*

- As a client, I want to view all bookings to track what I booked.
- As a client, I want to browse a catalogue of available services to choose what I want to book.
- As a client, I want to book my trip online, so I don’t have to call.
- As a client, I want to have the option to customise my charter to tailor the experience to what I want to do.
- As a client, I want to have the option to change my booking times so that I can enjoy the charter at a time that best fits my changing schedule.
- As a client, I want to cancel a booking in case I can no longer go out on the charter.

- As a client, I want to immediately be given any paperwork that needs to be signed to get it out of the way and enjoy my trip.

Figure B.3.1 User Stories for Client User Type

Appendix C- Use Case Diagrams

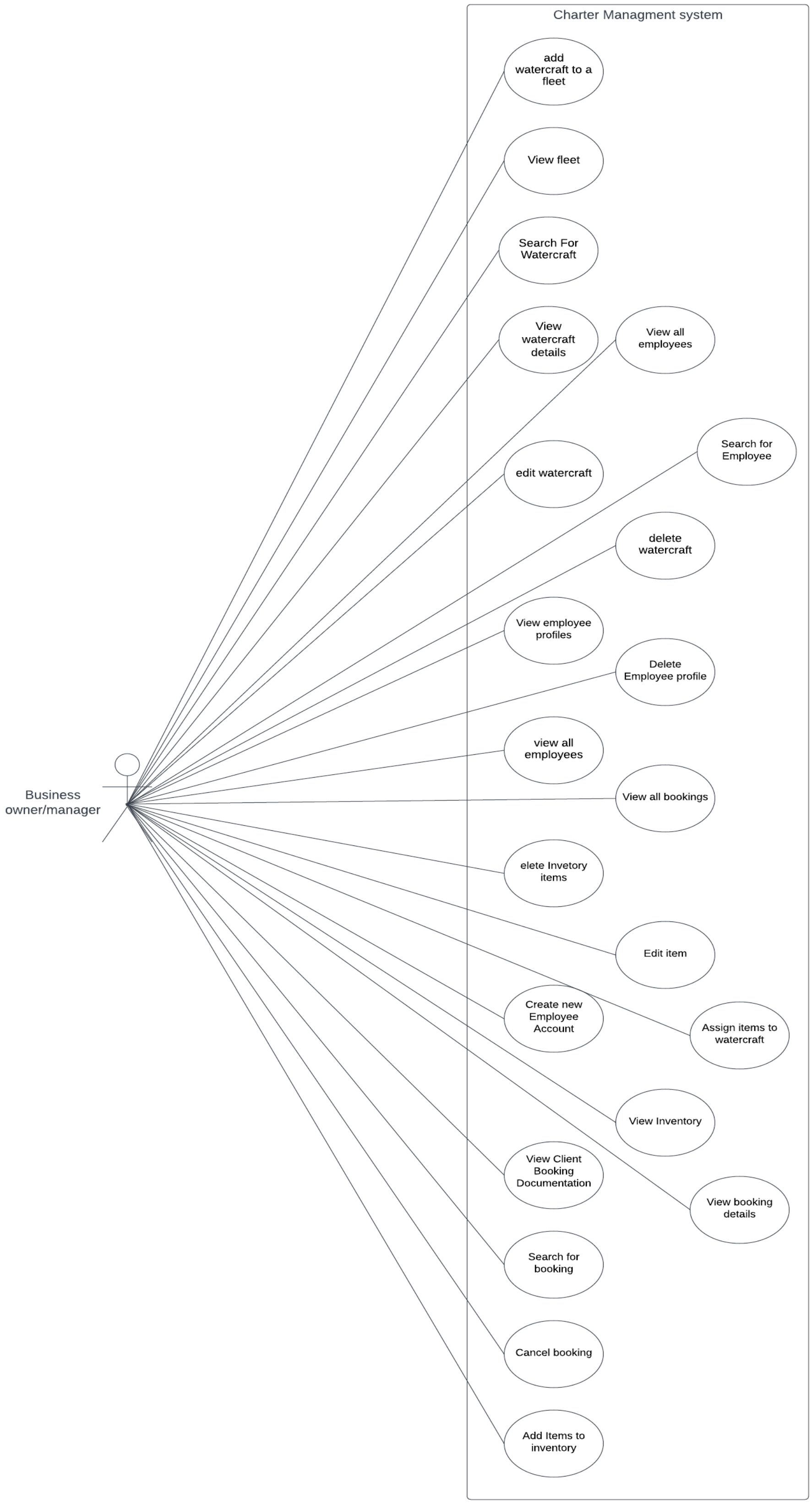


Figure C.1 Use Case Diagram for Business Owner User Type

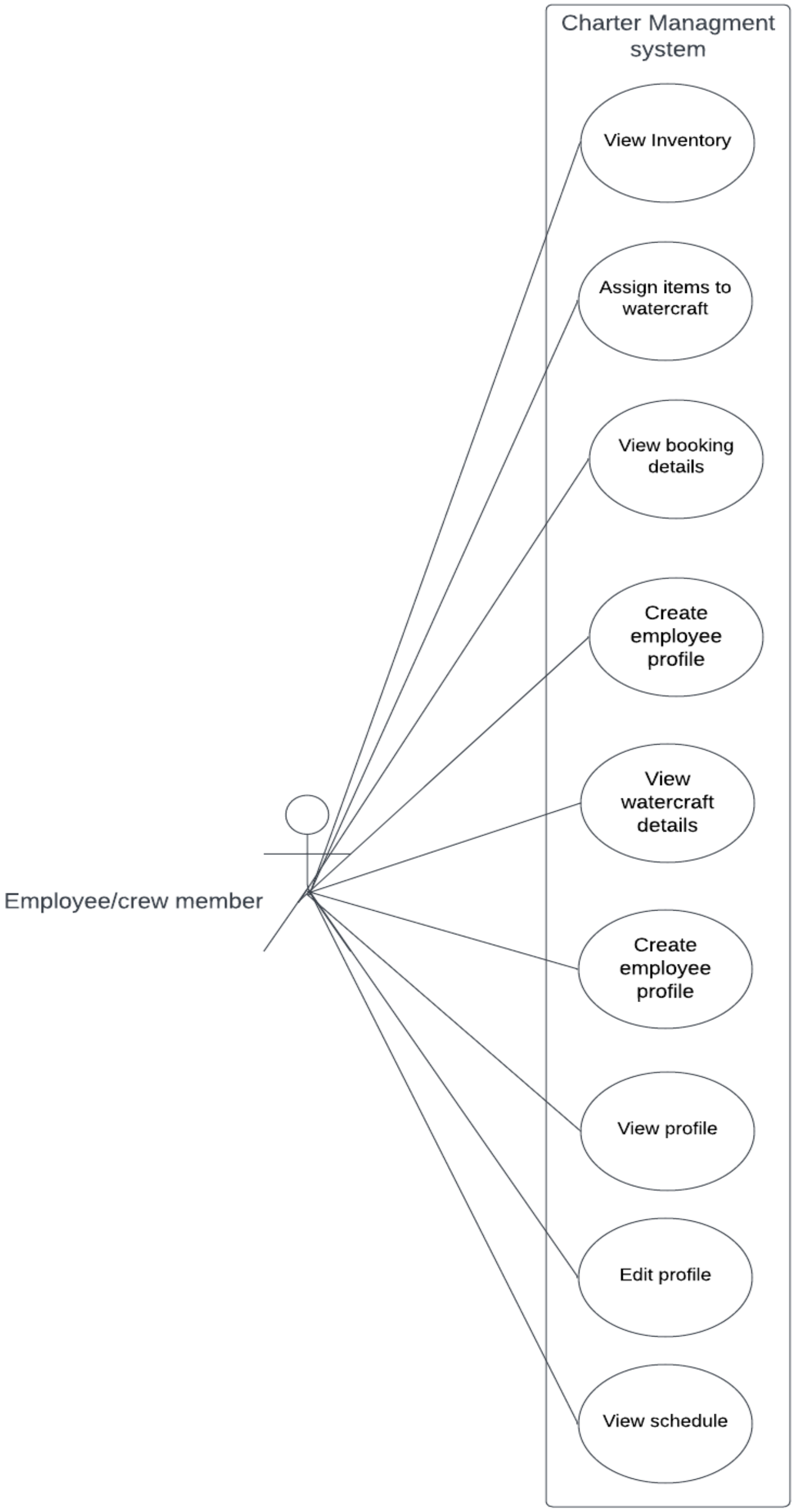


Figure C.2 Use Case Diagram for Employee/Crew Member User Type

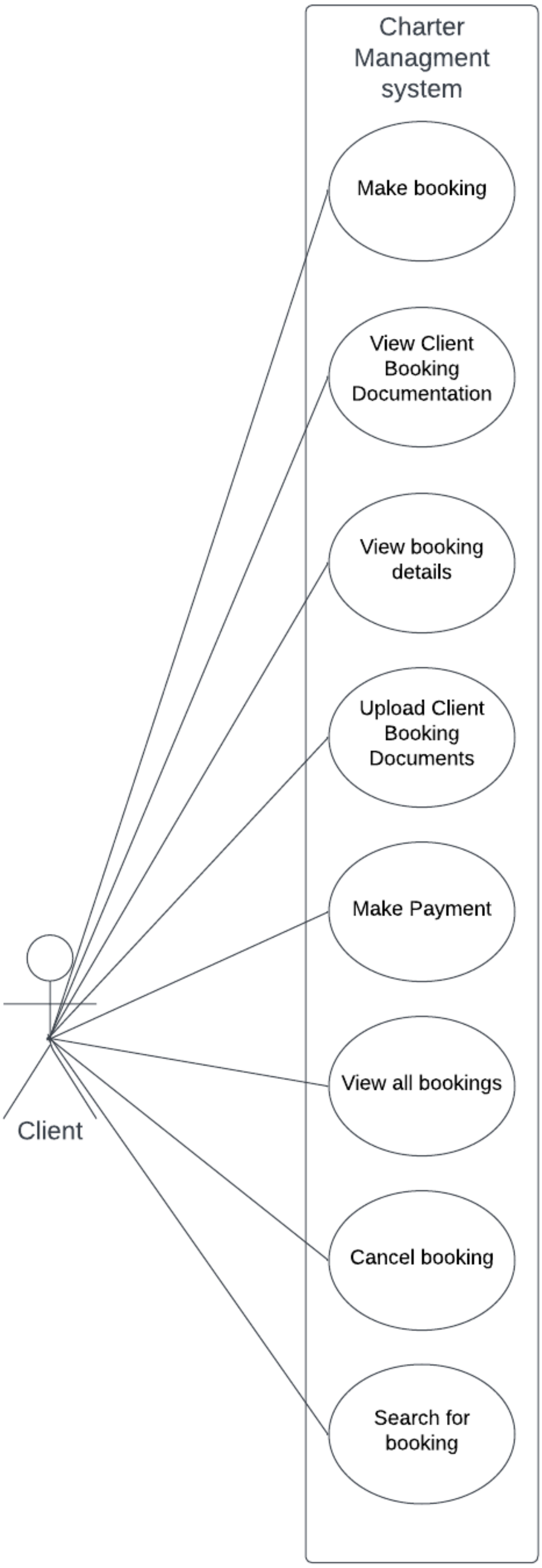


Figure C.3 Use Case Diagram for Client User Type

Appendix D- Use Case Descriptions

1. Watercraft Management

Use Case Number:	1
Name:	Add watercraft to the fleet.
Description:	The user should be able to create a new watercraft with its relevant information, such as registration number, model details, and possibly a familiar name for the craft.
Actor(s):	Business owner/manager
Triggers:	The user clicks the 'Add Watercraft' button on the fleet management page.
Frequency:	Depending on how fast the business is growing
Pre-Condition(s):	• User is logged in • User is of type owner/manager/admin. • There is a craft which needs to be added.
Post-Condition(s):	The newly created watercraft is added to the fleet and is displayed on the screen. It has also successfully been added to the database.
Basic Path:	7. Navigate to the fleet management page 8. Click on the 'Add Watercraft' button 9. Input watercraft information 10. Select the model of the watercraft from the list to autofill model details 11. Click the 'Save' button 12. Created watercraft is displayed on the fleet management page
Alternative Path:	3a. If the model does not already exist in the list, the user must fill out model information manually before clicking 'save'. 5a. If watercraft cannot be created, display an appropriate error message
Extensions:	None
Success End Condition:	The newly created watercraft is added to the fleet and is displayed on the screen. It has also successfully been added to the database.
Failure End Condition:	The error occurs, and the user cannot add the new watercraft.
Performance:	Watercraft details should be saved within 5 seconds.
Priority:	Must

Figure D.1.1 Use Case Description for "Add Watercraft to Fleet".

Use Case Number:	2
Name:	View fleet
Description:	A list of all watercraft is displayed with relevant descriptive information. This information includes the registration number, familiar name, model, type, and status.
Actor(s):	Business owner/manager
Triggers:	The user clicks the 'Fleet Management' button in the navbar.
Frequency:	Very often, the user may want to quickly assess the business's operational state in order to keep up to date.
Pre-Condition(s):	• User is logged in • User is of type owner/manager/admin • Watercraft have already been added to the fleet
Post-Condition(s):	All watercraft in the fleet are displayed on-screen
Basic Path:	1. Navigate to 'Fleet Management' page

	2. Watercraft in the fleet are displayed on-screen
Alternative Path:	2a. If there are no watercraft in the fleet, an appropriate message is displayed 2b. Watercraft can be grouped by type, model and status
Extensions:	Use case 3 Use case 4 Use case 5
Success End Condition:	A list of all watercraft in the fleet is displayed on-screen.
Failure End Condition:	The user is unable to view all watercraft in the fleet.
Performance:	A list of all watercraft should be displayed within 5 seconds.
Priority:	Must

Figure D.1.2 Use Case Description for "View Fleet".

Use Case Number:	3
Name:	Search For Watercraft
Description:	The user may wish to search for a specific watercraft by registration number or familiar name.
Actor(s):	Business owner/manager
Triggers:	User types in the search bar
Frequency:	Daily
Pre-Condition(s):	• User is logged in • User is of type owner/manager/admin • User is on the 'Fleet management' page • Watercraft have already been added to the fleet
Post-Condition(s):	The search for watercraft is displayed on-screen
Basic Path:	1. Navigate to 'Fleet Management' page 2. Watercraft in the fleet are displayed on-screen 3. The user types in the registration number or familiar name into the search bar 4. Press enter or 'search' button 5. The search for watercraft is displayed on-screen
Alternative Path:	2a. If there are no watercraft in the fleet, an appropriate message is displayed. 5a. If the watercraft is not found, the appropriate message is displayed
Extensions:	None
Success End Condition:	The searched for watercraft is displayed on-screen.
Failure End Condition:	The searched for watercraft is unable to be displayed on-screen.
Performance:	The search should be completed within 5 seconds.
Priority:	Must

Figure D.1.3 Use Case Description for "Search For Watercraft".

Use Case Number:	4
Name:	View watercraft details
Description:	The user should be able to view an extensive list of information about each watercraft. This information includes Familiar name, current and future booking dates, Registration number, model, type, manufacturer, weight limit, personnel limit, fuel capacity and what inventory is currently assigned to the craft.

Actor(s):	a) Business owner/manager
Triggers:	The user clicks on the displayed watercraft card.
Frequency:	Daily for an owner and possibly every time a boat needs to be set up for an employee
Pre-Condition(s):	• User is logged in • User is of type owner/manager/admin or of type employee/crew member • A watercraft card is displayed on-screen
Post-Condition(s):	Redirected to a page which displays the select watercraft's details
Basic Path for Business owner or manager:	1. Navigate to the fleet management page 2. Watercraft in the fleet are displayed on-screen 3. The user clicks on a watercraft card 4. Redirected to a page which displays the selected watercraft's details
Alternative Path for Business owner or manager:	2a. If there are no watercraft in the fleet, an appropriate message is displayed. 4a. If the page fails to load information, an appropriate message is displayed
Basic Path for Employee or Crew Member:	1. Navigate to 'My Schedule' page 2. The watercraft the user was assigned will be displayed 3. The user clicks on a watercraft card 4. Redirected to a page which displays the selected watercraft's details
Alternative Path for Employee or Crew Member:	2a. If the user was not assigned to any bookings, an appropriate message is displayed. 4a. If the page fails to load information, an appropriate message is displayed
Extensions:	Use case 5
Success End Condition:	Redirected to a page which displays the select watercraft's details
Failure End Condition:	Unable to load the watercraft information page
Performance:	Watercraft details should be displayed within 10 seconds.
Priority:	Must

Figure D.1.4 Use Case Description for "View Watercraft Details".

Use Case Number:	5
Name:	Edit Watercraft
Description:	The user should be able to edit an existing watercraft with relevant descriptive information. This information includes the registration number, familiar name, model, type, and status.
Actor(s):	Business owner/manager
Triggers:	The user clicks the 'Edit' button.
Frequency:	Varies
Pre-Condition(s):	• User is logged in • User is of type owner/manager/admin • A watercraft has already been added to the fleet

Post-Condition(s):	The updated watercraft is displayed on-screen and is updated in the database.
Basic Path:	1. Navigate to the fleet management page 2. Watercraft in the fleet are displayed on-screen 3. The user clicks on the watercraft card to view details 4. The user clicks the 'Edit' button 5. User Inputs updated watercraft information 6. Click the 'Save' button 7. Updated watercraft is displayed on the fleet management page
Alternative Path:	2a. If there are no watercraft in the fleet, an appropriate message is displayed. 5a. If the watercraft cannot be updated, display an appropriate error message
Extensions:	None
Success End Condition:	The updated watercraft is displayed on-screen and has been updated in the database.
Failure End Condition:	The updated watercraft is unable to be displayed on-screen and/or has not been updated in the database.
Performance:	Updated watercraft details should be saved within 5 seconds.
Priority:	Must

Figure D.1.5 Use Case Description for "Edit Watercraft".

Use Case Number:	6
Name:	Delete watercraft
Description:	The user should be able to delete an existing watercraft from the fleet.
Actor(s):	Business owner/manager
Triggers:	The user clicks 'delete button.'
Frequency:	Not very often
Pre-Condition(s):	• User is logged in • User is of type owner/manager/admin • A watercraft has already been added to the fleet
Post-Condition(s):	The watercraft is removed from the fleet's list on screen and has been removed from the database.
Basic Path:	1. Navigate to the fleet management page 2. Watercraft in the fleet are displayed on-screen 3. The user clicks the 'Edit Fleet' button 4. Watercraft cards now display a delete option 5. The user clicks 'delete' button 6. User confirms deletion by pressing 'ok' on the popup dialogue box 7. The watercraft is removed from the list
Alternative Path:	2a. If there are no watercraft in the fleet, an appropriate message is displayed. 6a. if the user presses 'cancel', then the operation is aborted 6b. If the boat is booked, display a warning 7a. If deletion is unsuccessful, display an appropriate error message
Extensions:	None
Success End Condition:	The watercraft is removed from both the on-screen list and the database.

Failure End Condition:	The watercraft can be removed from either the on-screen list or the database.
Performance:	The watercraft should be deleted within 5 seconds.
Priority:	Must

Figure D.1.6 Use Case Description for "Delete Watercraft".

2. *Staff Management*

Use Case Number:	7
Name:	Create a New Employee Account
Description:	As a user, I should be able to create an account for my new employees to use to access the system. The new account has a set password and username.
Actor(s):	Business owner/manager
Triggers:	The user clicks the "Add" button.
Frequency:	Often
Pre-Condition(s):	• User is logged in • User is of type owner/manager/admin
Post-Condition(s):	The new account is added and can be used by a new employee
Basic Path:	1. The user navigates to the 'Staff Management' page from the navbar. 2. Employees are displayed on-screen 3. The user clicks the "Add" button 4. Redirected to the new account page 5. User fills out the required information to set up an account 6. User clicks the "save" button 7. The new account is shown in the list
Alternative Path:	2a. If there are no employees, display an appropriate message 6a. The user can click cancel, which would redirect them back to the staff list 6b. If an error occurs, display an appropriate error message
Extensions:	None
Success End Condition:	The new account is added both to the list and to the database. The account can be used by a new employee.
Failure End Condition:	The new account cannot be added to the list and can not be inserted into the database. The account can thus not be used by a new employee.
Performance:	A new account should be added within 5 seconds.
Priority:	Must

Figure D.2.1 Use Case Description for "Create New Employee Account".

Use Case Number:	8
Name:	Create employee profile
Description:	A user should be able to create a profile detailing their contact details, insurance number, address, and qualifications.
Actor(s):	Employee/crew member
Triggers:	Clicks 'My profile' button
Frequency:	Once at the beginning
Pre-Condition(s):	• User is logged in • User is of type Employee/crew member

Post-Condition(s):	A new employee is displayed and added to the database
Basic Path:	1. Navigate to ‘My profile. 2. User fills in information. 3. User clicks the ‘Save’ button 4. A small message is displayed saying the profile has been saved
Alternative Path:	3a. If an error occurs, display an appropriate error message
Extensions:	None
Success End Condition:	Profile information can be viewed and saved on the database.
Failure End Condition:	Profile information cannot be saved and is not inserted into the database.
Performance:	Employee profile should be saved within 5 seconds.
Priority:	Must

Figure D.2.2 Use Case Description for “Create Employee Profile”.

Use Case Number:	9
Name:	View profile
Description:	A user should be able to view their profile details.
Actor(s):	Employee/ crew member
Triggers:	Clicks ‘My profile’ button
Frequency:	Not often
Pre-Condition(s):	• User is logged in • User is of type Employee/crew member
Post-Condition(s):	Profile information is displayed to the user
Basic Path:	1. Navigate to ‘My profile. 2. Profile information is displayed on screen
Alternative Path:	2a. If information fails to be displayed, display an appropriate error message
Extensions:	None
Success End Condition:	The user can view their profile information.
Failure End Condition:	If the profile information is unable to be fetched and displayed on screen
Performance:	Profile information should be displayed within 5 seconds.
Priority:	Must

Figure D.2.3 Use Case Description for “View Profile”.

Use Case Number:	10
Name:	Edit Profile
Description:	A user should be able to update their profile with up-to-date information.
Actor(s):	Employee/ crew member
Triggers:	User makes a change to a field in their profile.
Frequency:	At least once a year
Pre-Condition(s):	• User is logged in • User is of type Employee/crew member
Post-Condition(s):	Updated user information is displayed on the profile. It is also updated in the database.
Basic Path:	1. Navigate to ‘My profile. 2. Profile information is displayed on screen 3. User makes changes to a field 4. User clicks the ‘Save’ button

	5. A small message is displayed indicating the profile was saved
Alternative Path:	5a. if the save was unsuccessful, display an appropriate message
Extensions:	None
Success End Condition:	Updated user information is displayed on the profile. It is also updated in the database.
Failure End Condition:	Updated user information is unable to be displayed on the profile, or the database fails to update.
Performance:	Updated information should be saved within 5 seconds.
Priority:	Must

Figure D.2.4 Use Case Description for "Edit Profile".

Use Case Number:	11
Name:	View all employees
Description:	A list of all employees is displayed along with relevant descriptive information. This information includes their name, contact info and status.
Actor(s):	Business owner/manager
Triggers:	The user clicks 'Staff Management' button in the navbar.
Frequency:	Often
Pre-Condition(s):	• User is logged in • User is of type owner/manager/admin • At least one employee exits
Post-Condition(s):	A list of all employees is displayed on-screen
Basic Path:	8. The user navigates to the 'Staff Management' page from the navbar. 9. Employees are displayed on-screen
Alternative Path:	2a. If there are no employees, display an appropriate message
Extensions:	None
Success End Condition:	A list of all employees is displayed on-screen.
Failure End Condition:	The list of employees cannot be displayed.
Performance:	A list of all employees should be displayed within 5 seconds.
Priority:	Must

Figure D.2.5 Use Case Description for "View All Employees".

Use Case Number:	12
Name:	Search for employee
Description:	The user may wish to search for a specific employee by name or ID.
Actor(s):	Business owner/manager
Triggers:	User types in the search bar
Frequency:	At least once a month
Pre-Condition(s):	• User is logged in • User is of type owner/manager/admin
Post-Condition(s):	The searched-for employee is displayed
Basic Path:	1. Navigate to the 'Staff Management' page 2. Employees are displayed on-screen 3. The user types in their name or ID into the search bar 4. The user hits enter or clicks 'Search' 5. The searched-for employee is displayed on screen
Alternative Path:	2a. if there are no employees, display an appropriate message 5a. if the employee was not found, display an appropriate message

	5b. if an error occurs with displaying the employee, an appropriate error is displayed
Extensions:	None
Success End Condition:	The searched-for employee is displayed on the screen.
Failure End Condition:	The searched-for employee is unable to be displayed on the screen.
Performance:	Employees should be displayed within 5 seconds.
Priority:	Must

Figure D.2.6 Use Case Description for "Search for Employee".

Use Case Number:	13
Name:	View employee profiles
Description:	The user wants to view an employee's details. This information includes employee ID, name, status, schedule, Job description, Qualifications, salary, and NIB information.
Actor(s):	Business owner/manager
Triggers:	The user clicks on the employee card.
Frequency:	At least once a month
Pre-Condition(s):	• User is logged in • User is of type owner/manager/admin
Post-Condition(s):	The employee's relevant information is displayed on-screen
Basic Path:	1. The user navigates to the 'Staff Management' page from the navbar. 2. Employees are displayed on-screen 3. User clicks on the employee card 4. User gets redirected to another page 5. The selected employee's information is displayed on-screen
Alternative Path:	2a. if there are no employees, display an appropriate message 5a. if an error occurs with displaying the employee, an appropriate error is displayed
Extensions:	None
Success End Condition:	The employee's relevant information is displayed on-screen.
Failure End Condition:	Employee information cannot be displayed on-screen.
Performance:	Employee information should be displayed within 10 seconds.
Priority:	Must

Figure D.2.7 Use Case Description for "View Employee Profiles".

Use Case Number:	14
Name:	Delete employee profile
Description:	The user should be able to delete employee profiles.
Actor(s):	Business owner/manager
Triggers:	The user clicks 'delete button.'
Frequency:	Not often
Pre-Condition(s):	• User is logged in • User is of type owner/manager/admin • An employee profile is already present
Post-Condition(s):	The employee is deleted from the on-screen list as well as from the database.
Basic Path:	1. The user navigates to the 'Staff Management' page from the navbar. 2. Employees are displayed on-screen

	3. The user clicks the 'Edit Staff' button 4. Employee cards now display a delete option 5. The user clicks 'delete' button 6. User confirms deletion by pressing 'ok' on the popup dialogue box 7. The Employee is removed from the list
Alternative Path:	2a. If there are no employees, an appropriate message is displayed. 6a. if the user presses 'cancel', then the operation is aborted 7a. If deletion is unsuccessful, display an appropriate error message
Extensions:	None
Success End Condition:	The employee is deleted from the on-screen list as well as from the database.
Failure End Condition:	The employee cannot be deleted from the on-screen list or from the database.
Performance:	The employee should be deleted within 5 seconds.
Priority:	Must

Figure D.2.8 Use Case Description for "Delete Employee Profile".

3. Bookings Management

Use Case Number:	15
Name:	Make booking
Description:	The user should be able to make a booking for a service.
Actor(s):	Client
Triggers:	The user clicks the 'confirm booking' button.
Frequency:	Often
Pre-Condition(s):	• User is logged in • User is of type client • The chartering company has a website that advertises its available services.
Post-Condition(s):	Booking has been added to the list, and the database has been updated Email sent to client with waivers which need to be filled out
Basic Path:	1. User chooses from a list of available services 2. User chooses a date and time for booking 3. User fills out contact details 4. User selects' Confirm Booking'
Alternative Path:	2a. If the date is no longer available, display an appropriate message 4a. If an error occurred while confirming the booking, display an appropriate error message
Extensions:	Email is sent to the client. The business owner is notified.
Success End Condition:	Booking has been added to the list, and the database has been updated Email sent to client with waivers which need to be filled out
Failure End Condition:	Booking was unable to be made and thus not added to the database or list. An email is not sent to the client.
Performance:	Booking should be made within 5 seconds.
Priority:	Must

Figure D.3.1 Use Case Description for "Make Booking".

Use Case Number:	16
Name:	Make payment
Description:	Users must be able to enter their payment details and make a payment.
Actor(s):	Client
Triggers:	The user clicks the ’Pay now’ button.
Frequency:	Every booking
Pre-Condition(s):	• User is logged in • User is of type client • The user has confirmed a booking and a confirmation message is displayed
Post-Condition(s):	Payment confirmation is displayed, and the amount is deducted from an account.
Basic Path:	1. Once confirmation is sent, a payment portal is displayed 2. User enters credit card information 3. User clicks ‘make payment’ 4. Payment confirmation is displayed 5. The user is redirected back to the payment confirmation page
Alternative Path:	3a. If payment is unsuccessful, display the appropriate error message and prompt to try again; otherwise, cancel the booking.
Extensions:	None
Success End Condition:	Payment confirmation is displayed, and the amount is deducted from the account.
Failure End Condition:	Payment has been declined, and the amount has not been deducted from the account.
Performance:	Payment is completed within 15 seconds.
Priority:	Must

Figure D.3.2 Use Case Description for “Make Payment”.

Use Case Number:	17
Name:	View all bookings
Description:	The user wishes to see a list of all current and future bookings with relevant information. This information includes the date and time, the watercraft booked, the confirmation status of the booking and a button to view any client booking documentation.
Actor(s):	Business owner/manager Client
Triggers:	The user clicks’ Bookings’ from the navbar.
Frequency:	Daily
Pre-Condition(s):	• User is logged in • User is of type owner/manager/admin
Post-Condition(s):	A list of all bookings is displayed on-screen
Basic Path:	1. Navigate to ‘Bookings’ 2. A list of bookings is displayed on-screen
Alternative Path:	2a. IF no bookings are present, display an appropriate message 2b. If bookings are unable to be loaded, display an appropriate error message 2c. Bookings can be grouped by date and charter type
Extensions:	None
Success End Condition:	A list of bookings is displayed with the relevant information showing.

Failure End Condition:	A list of bookings cannot be displayed.
Performance:	A list of all bookings should be displayed within 5 seconds.
Priority:	Must

Figure D.3.3 Use Case Description for "View All bookings".

Use Case Number:	18
Name:	cancel booking
Description:	Users should be able to cancel a booking.
Actor(s):	Business owner/manager Client
Triggers:	The user clicks 'cancel booking.'
Frequency:	Not often
Pre-Condition(s):	• User is logged in • User is of type owner/manager/admin or client • A booking is currently displayed in the bookings list
Post-Condition(s):	The booking is removed from the bookings list, and the watercraft becomes available once again along with the crew.
Basic Path:	1. Navigate to 'Bookings' 2. A list of bookings is displayed on-screen 3. The user clicks the 'Edit bookings' button 4. A, 'cancel booking' option becomes available 5. User clicks 'cancel booking.' 6. The user confirms the cancellation by accepting a prompt 7. The booking is no longer displayed in the list
Alternative Path:	2a. IF no bookings are present, display an appropriate message 2b. If bookings are unable to be loaded, display an appropriate error message
Extensions:	The crew assigned are notified of the change in schedule.
Success End Condition:	The booking is removed from the bookings list, and the watercraft becomes available once again along with the crew. The database has almost been updated appropriately.
Failure End Condition:	The booking failed to be removed from the bookings list, and/ or the database failed to update appropriately.
Performance:	A booking should be cancelled within 5 seconds.
Priority:	Must

Figure D.3.4 Use Case Description for "Cancel Booking".

Use Case Number:	19
Name:	View Schedule
Description:	A user should be able to view the bookings that they have been assigned for the day.
Actor(s):	Employee/ crew member
Triggers:	Clicks, 'View schedule' button on navbar
Frequency:	Everyday
Pre-Condition(s):	• User is logged in • User is an employee/crew member
Post-Condition(s):	Users can see a list of bookings which they are assigned to
Basic Path:	1. Navigate to the 'view schedule' page 2. The user's schedule is displayed on the screen

Alternative Path:	2a if no bookings or other tasks were found, display the appropriate message
Extensions:	None
Success End Condition:	A list of tasks and bookings is shown on the screen.
Failure End Condition:	A list of tasks and bookings is unable to be shown on the screen.
Performance:	The schedule should be displayed within 5 seconds.
Priority:	Must

Figure D.3.5 Use Case Description for "View Schedule".

Use Case Number:	20
Name:	Search for booking
Description:	The user should be able to search for a specific booking using a booking ID.
Actor(s):	Business owner/manager Client
Triggers:	The user types into the search bar
Frequency:	Often throughout the day
Pre-Condition(s):	• User is logged in • User is of type owner/manager/admin
Post-Condition(s):	The searched for booking is displayed on the screen
Basic Path:	1. Navigate to 'Bookings' 2. A list of bookings is displayed on-screen 3. The user types in the booking ID 4. The user hits enter or clicks 'Search' 5. The searched for booking is displayed on-screen
Alternative Path:	2a. if there are no bookings, display an appropriate message 5a. if the booking was not found, display an appropriate message 5b. if an error occurs with displaying the booking, an appropriate error is displayed
Extensions:	None
Success End Condition:	The searched for booking is displayed on the screen.
Failure End Condition:	The searched for booking is unable to be displayed.
Performance:	The booking should be displayed within 5 seconds.
Priority:	Should

Figure D.3.6 Use Case Description for "Search for Booking".

Use Case Number:	21
Name:	View booking details
Description:	The user should be able to view all information for a booking. This information includes the date and time, charter type, any notes for the charter, guest amount, and which staff members have been assigned (This is only available for business owner/admin user types)
Actor(s):	Business owner/manager Client Employee/client
Triggers:	The user clicks on the booking card.
Frequency:	Often for business owners and less often for client
Pre-Condition(s):	• User is logged in • User is of type owner/manager/admin or client or employee • A booking exists

Post-Condition(s):	Redirected to a page which displays the selected booking details
Basic Path:	1. Navigate to 'Bookings' 2. A list of bookings is displayed on-screen 3. User clicks on a booking card 4. Redirected to a page which displays the selected booking's details
Alternative Path:	2a. If there are no bookings, display an appropriate message. 4a. If an error occurred with displaying the booking, an appropriate error is displayed
Extensions:	None
Success End Condition:	Redirected to a page which displays the selected booking details
Failure End Condition:	The user is unable to view the details for a selected booking.
Performance:	The selected booking should be displayed within 10 seconds.
Priority:	Must

Figure D.3.7 Use Case Description for "View Booking Details".

Use Case Number:	22
Name:	Upload client booking documents.
Description:	Users should be able to upload or fill out waivers necessary to partake in the charter.
Actor(s):	Client
Triggers:	The user clicks and uploads documents.
Frequency:	often
Pre-Condition(s):	• User is logged in • User is of type client
Post-Condition(s):	The waivers necessary are listed and can be viewed
Basic Path:	1. Navigate to 'Bookings' 2. A list of bookings is displayed on-screen 3. User clicks on a booking card 4. User clicks on 'Upload documentation' 5. The user is met with an upload dialogue 6. The user chooses the file to upload 7. The uploaded file is listed on the screen and can be viewed
Alternative Path:	2a. If there are no bookings, display an appropriate message 6a. If the upload fails, display the appropriate message, and allow the user to attempt again 6b. The user cancels the upload and is sent back to the booking information screen
Extensions:	None
Success End Condition:	The form is uploaded and can be reviewed.
Failure End Condition:	The form cannot be uploaded or viewed.
Performance:	The upload will depend on the user's connection speed
Priority:	Must

Figure D.3.8 Use Case Description for "Upload Client Booking Documents".

Use Case Number:	23
Name:	View client booking documentation
Description:	As a user, I would like to view whether the required legal waivers for a charter have been completed

Actor(s):	Business owner / manager Client
Triggers:	User clicks 'View Documentation'
Frequency:	Before every charter
Pre-Condition(s):	• User is logged in • User is of type owner/manager/admin or client
Post-Condition(s):	The legal forms are displayed if they have been completed
Basic Path:	1. Navigate to 'Bookings' 2. List of bookings is displayed on-screen 3. User clicks on, 'view documents' button located on an individual booking card component 4. Redirected to page which displays form information
Alternative Path:	2a. If there are no bookings, display an appropriate message 3a. This button is only visible if a completed document has been submitted. 4a. If the form cannot be displayed, display an appropriate error message
Extensions:	None
Success End Condition:	The form can be viewed clearly
Failure End Condition:	The form is unable to be displayed on screen
Performance:	Display form information within 5 seconds
Priority:	Must

Figure D.3.9 Use Case Description for "View Client Booking Documentation".

4. Inventory Management

Use Case Number:	24
Name:	View inventory
Description:	A user should be able to view a list of all inventory items along with any relevant information such as their last known location and the current booked assigned to them
Actor(s):	Business owner/manager Employee/crew
Triggers:	User elects, 'Inventory Management' from navbar
Frequency:	Crew will use this more often than the owner
Pre-Condition(s):	• User is logged in • User is of type owner/manager/admin or employee/crew
Post-Condition(s):	A list of items is displayed
Basic Path:	1. Navigate to 'Inventory Management' 2. A list of items is displayed on screen
Alternative Path:	2a. If there are no items, display an appropriate message 2b. The items can be grouped by type, location or booking
Extensions:	None
Success End Condition:	A list of items is displayed
Failure End Condition:	A list of items is unable to be displayed
Performance:	Inventory list should be displayed within 5 seconds
Priority:	Must

Figure D.4.1 Use Case Description for "View Inventory".

Use Case Number:	25

Name:	Add items to inventory
Description:	A user should be able to add an item to inventory. The information which can be logged include: the item name, item type (tool, wakeboard, Lifejacket), and a description of the item
Actor(s):	Business owner / manager
Triggers:	User clicks,' Add' button
Frequency:	Depends on how often new items are bought
Pre-Condition(s):	• User is logged in • User is of type owner/manager/admin
Post-Condition(s):	The new item is displayed on screen and has also been successfully added to the database
Basic Path:	1. Navigate to, 'Inventory Management' 2. A list of items is displayed on screen 3. User clicks, 'Add Item' 4. Input Item information 5. Click 'Save' button 6. Created item is displayed on Item management page
Alternative Path:	2a. If there are no items, display an appropriate message 5a. If item cannot be created, display appropriate error message
Extensions:	None
Success End Condition:	The new item is displayed on screen and has also been successfully added to the database
Failure End Condition:	The new item is unable to be displayed on screen and/or has unsuccessfully been added to the database
Performance:	Item should be save within 5 seconds
Priority:	Must

Figure D.4.2 Use Case Description for "Add Items to Inventory".

Use Case Number:	26
Name:	Delete inventory items
Description:	A user should be able to delete items from the inventory
Actor(s):	Business owner / manager
Triggers:	User clicks, 'delete' button
Frequency:	Not often
Pre-Condition(s):	• User is logged in • User is of type owner/manager/admin • An item already exists in the inventory
Post-Condition(s):	The watercraft is removed from the fleet's list on screen and has been removed from the database
Basic Path:	1. Navigate to 'Item Management' page 2. A list of items is displayed on screen 3. User clicks 'Edit Inventory' button 4. Inventory cards now display a delete option 5. User clicks 'delete' button 6. User confirms deletion by pressing, 'ok' on popup dialog box 7. The item is removed from the list
Alternative Path:	2a. If there are no items in the inventory, appropriate message is displayed. 6a. if user presses 'cancel' then the operation is aborted 7a. If deletion is unsuccessful display an appropriate error message

Extensions:	None
Success End Condition:	The item is removed from both the on-screen list and database
Failure End Condition:	The Item is unable to be removed from either the on-screen list or database
Performance:	Item should be deleted within 5 seconds
Priority:	Must

Figure D.4.3 Use Case Description for "Delete Inventory Items".

Use Case Number:	27
Name:	Edit item
Description:	The user should be able to edit an existing item with relevant descriptive information. The information which can be edited include: the item name, item type (tool, wakeboard, Lifejacket), and a description of the item
Actor(s):	Business owner/manager
Triggers:	User clicks 'Edit' button
Frequency:	Varies
Pre-Condition(s):	• User is logged in • User is of type owner/manager/admin • An item already exists in the inventory
Post-Condition(s):	The updated item is displayed on-screen and is updated in database
Basic Path:	8. Navigate to 'Item management' page 9. Items are displayed on-screen 10. User clicks 'Edit' button on a item card 11. User Inputs updated item information 12. Click 'Save' button 13. The Updated item is displayed
Alternative Path:	2a. If there are no items in the inventory, an appropriate message is displayed. 5a. If the item cannot be updated, display an appropriate error message
Extensions:	None
Success End Condition:	The updated item is displayed on-screen and has been updated in the database.
Failure End Condition:	The updated item is unable to be displayed on-screen and/or has not been update in the database
Performance:	Updated item details should be saved within 5 seconds
Priority:	Must

Figure D.4.4 Use Case Description for "Edit Item".

Use Case Number:	28
Name:	Assign items to watercraft
Description:	User should be able to assign equipment to a watercraft
Actor(s):	Business owner / manager Employee
Triggers:	Clicks, 'Assign to' button
Frequency:	Often
Pre-Condition(s):	• User is logged in • User is of type owner/manager/admin or employee
Post-Condition(s):	The item gets added to the watercraft's inventory list

Basic Path:	1. Navigate to 'Item management' 2. Items are displayed on-screen 3. User clicks,' Assign to' button 4. User is met with list of available watercraft to assign it to 5. User selects a watercraft and clicks, 'Add' 6. User is then redirected back to inventory page
Alternative Path:	2a. If there are no items in the inventory, an appropriate message is displayed. 4a. If no watercraft are available, display an appropriate message 5a. If an error occurs when adding item to watercraft, display an appropriate error
Extensions:	None
Success End Condition:	The item gets added to the watercraft's inventory list
Failure End Condition:	The item is unable to be added to the watercraft's inventory list
Performance:	Item should be added to watercraft within 5 seconds
Priority:	Must

Figure D.4.5 Use Case Description for "Assign items to Watercraft".

Appendix E- Functional Requirements Prioritized using MoSCoW

ID	Functional Requirement	Priority	User Type
1	Users can add watercraft to fleet.	MUST	Business owner
2	Users can view watercraft in fleet.	MUST	Business owner
3	Users can view watercraft details	MUST	Business owner
4	Users can edit watercraft	MUST	Business owner
5	Users can delete watercraft	MUST	Business owner
6	Users can create employee profile	MUST	Employee/Crew member
7	Users can view employee profiles	MUST	Business owner
8	Users can view their account profile	MUST	Employee/Crew member
9	Users can edit their account profile	MUST	Employee/Crew member
10	Users can view all employees	MUST	Business owner
11	Users can delete employee profile	MUST	Business owner
12	Users can make booking	MUST	Client
13	Users can view their bookings	MUST	Client
14	Users can view their work schedule/bookings	MUST	Employee/Crew member
15	Users can view all charter bookings	MUST	Business owner
16	Users can cancel booking	MUST	Business owner, Client
17	Users can view booking details	MUST	Business owner, Client, Employee/Crew member
18	Users can upload waiver documentation	MUST	Client
19	Users can view all waiver documentation	MUST	Business owner, Employee/Crew
20	Users can view their waiver documentation	MUST	Client
21	Users can add qualifications	MUST	Employee/Crew member
22	Users can view the qualifications of crew	MUST	Business owner, Employee/Crew member
23	Users can view client details	MUST	Business owner, Client
24	Users can view who is working on a particular charter	MUST	Business owner, Employee/Crew member
25	Users can view items in the inventory	MUST	Business owner, Employee/Crew member
26	Users can add new items to the inventory	MUST	Business owner
27	Users can delete items from inventory	MUST	Business owner
28	Users can manually log where an item is	MUST	Business owner, Employee/Crew member
29	Users can view last logged location of an item	MUST	Business owner, Employee/Crew member
30	Users can make new Employee accounts	MUST	Business owner
31	Users can group view watercraft in fleet by type	SHOULD	Business owner
32	Users can group view watercraft in fleet by status	SHOULD	Business owner
33	Users can search for watercraft by registration number	SHOULD	Business owner
34	Users can search for watercraft by familiar name	SHOULD	Business owner
35	Users can search for an employee	SHOULD	Business owner
36	Users can make payment for booking	SHOULD	Client
37	Users can group view bookings by date	SHOULD	Business owner, Client, Employee/Crew member

38	Users can group view bookings by charter type	SHOULD	Business owner, Employee/Crew member
39	Users can search for booking	SHOULD	Business owner, Client
40	Users can edit crew schedules	SHOULD	Business owner
41	Users can edit existing item in inventory	SHOULD	Business owner
42	Users can view what equipment needs to be loaded for a selected charter	SHOULD	Employee/Crew member
43	Users can assign items to a charter	SHOULD	Business owner, Employee/Crew member
44	Users can log equipment issues	SHOULD	Business owner, Employee/Crew member
45	User can offer personal preferences for how they want their charter to be. Like, specific location requests	SHOULD	Client
46	Users can change a booking's time	SHOULD	Business owner, Client
47	User can fill out waivers online	SHOULD	Client
48	Users can have a booking with multiple watercraft	SHOULD	Client
49	Users can filter out watercraft by type	COULD	Business owner
50	Users can filter out watercraft by status	COULD	Business owner
51	Users can view the expiration date of safety equipment	COULD	Business owner, Employee/Crew member
52	Users get notified when safety equipment on a vessel is nearing its expiration date and needs changing	COULD	Business owner, Employee/Crew member
53	Users can view who last carried out maintenance on any given piece of equipment	COULD	Business owner
54	Users can log issues or complaints for a booking	COULD	Employee/Crew member, Client
55	Users can view how many hours they worked for a given week or month	COULD	Employee/Crew member
56	System automatically assigns each watercraft with the necessary equipment for each booking	COULD	System
57	System automatically assigns schedules to staff for each booking	COULD	System
58	User can manage multiple fleets	WONT	Business owner
59	System will automatically pay employees	WONT	System
60	User can view how much profit a boat has brought in each month	WONT	Business owner

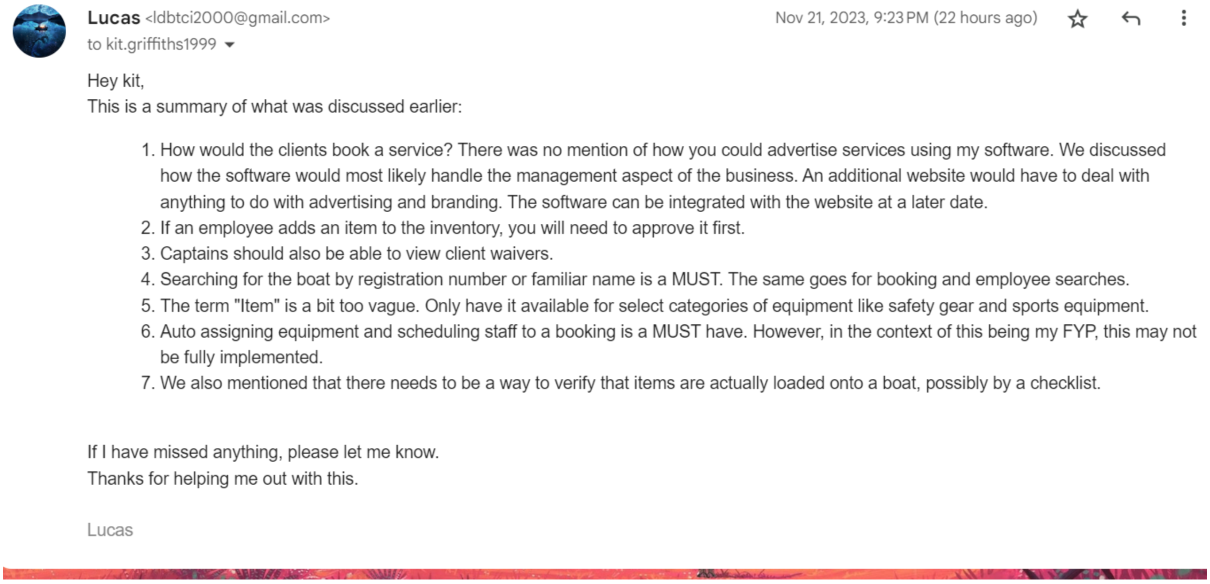
Table E.1 MoSCoW Prioritised Functional Requirements

Appendix F- Non-Functional Requirements

ID	Category	Non-Functional Requirement Description
1	Performance	The user interface must display with 5 seconds of the page loading
2	Performance	All payment processing should take no longer than 15
3	Security	All passwords should be encrypted when stored
4	Security	All passwords must meet a minimum strength standard
5	Security	Only authenticated users can access the management aspect of the system
6	Security	Users can only access the parts of the system which their user type permits
7	Security	The web app must be protected against SQL Injection and cross-site scripting
8	Security	Database must be able to maintain a user's confidentiality and privacy
9	Security	Users can be locked out for multiple failed login attempts
10	Security	Users can be logged out if inactive for too long
11	Maintainability	Project is version controlled using GitHub
12	Maintainability	The code will be refactored thought the project to make it easier to read and maintain later
13	Compliance	Adhere to legal and regulatory requirements related to user data privacy and security. This includes the GDPR
14	Usability	Ensure accessibility standards are met to accommodate users with disabilities
15	Compatibility	The application should be compatible with major web browsers (Chrome, Firefox, Safari, Edge)
16	Reliability	The application should have a high uptime percentage
17	Scalability	The application should be able to scale up to accommodate a growth in users.

Table F.1 Non-Functional Requirements

Appendix G- User Requirements Validation



Lucas <ldbtci2000@gmail.com>
to kit.griffiths1999

Nov 21, 2023, 9:23 PM (22 hours ago)

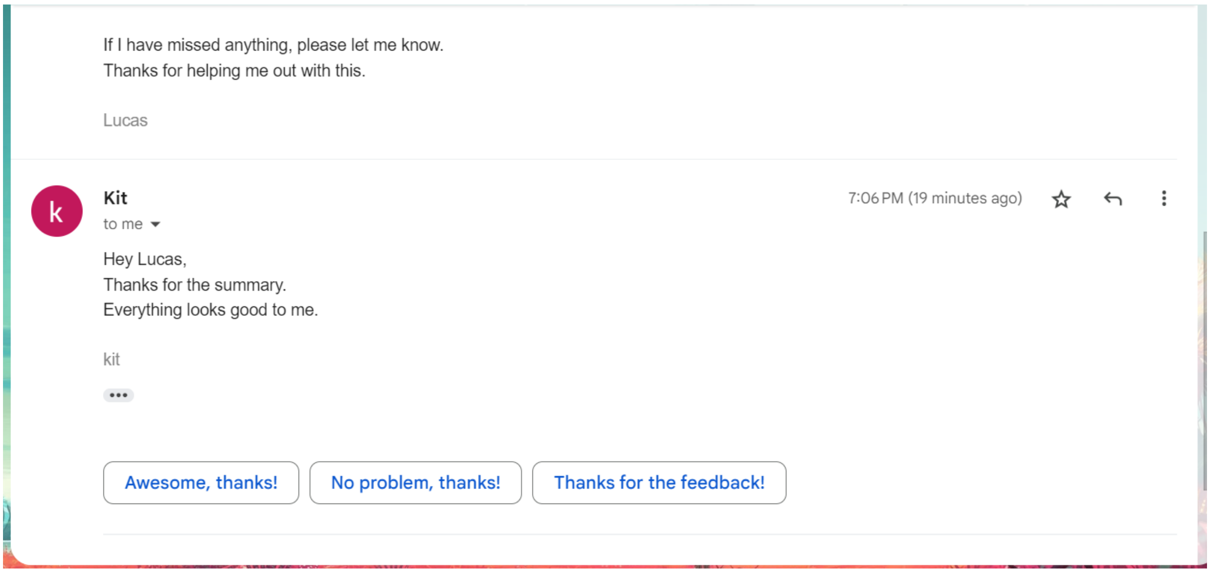
Hey kit,
This is a summary of what was discussed earlier:

1. How would the clients book a service? There was no mention of how you could advertise services using my software. We discussed how the software would most likely handle the management aspect of the business. An additional website would have to deal with anything to do with advertising and branding. The software can be integrated with the website at a later date.
2. If an employee adds an item to the inventory, you will need to approve it first.
3. Captains should also be able to view client waivers.
4. Searching for the boat by registration number or familiar name is a MUST. The same goes for booking and employee searches.
5. The term "Item" is a bit too vague. Only have it available for select categories of equipment like safety gear and sports equipment.
6. Auto assigning equipment and scheduling staff to a booking is a MUST have. However, in the context of this being my FYP, this may not be fully implemented.
7. We also mentioned that there needs to be a way to verify that items are actually loaded onto a boat, possibly by a checklist.

If I have missed anything, please let me know.
Thanks for helping me out with this.

Lucas

Figure G.1 Email Screenshot of Validation Meeting Summary



If I have missed anything, please let me know.
Thanks for helping me out with this.

Lucas

Kit
to me

7:06 PM (19 minutes ago)

Hey Lucas,
Thanks for the summary.
Everything looks good to me.

kit

Figure G.2 Email Screenshot of Validation Meeting Summary Client Reply

Appendix H – Stakeholder Analysis

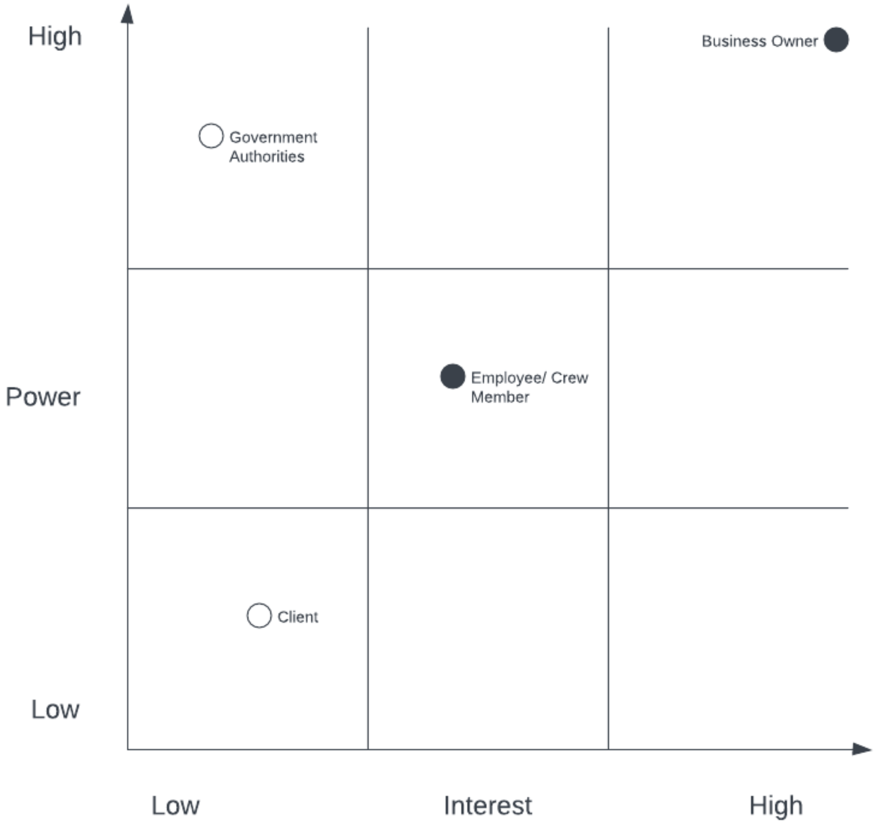


Figure H.1 Power/Interest Matrix