Requirements Document
Whale Reporting - A Comprehensive Uplift

Big Dog Corporations™

April 12, 2021

Contents

Revision History

Name	Date	Reason for Changes	Version
Marcus Van	**2/5/2021**	**outlined points in section 1 to include**	**1.1**
Marcus Van	**2/7/2021**	**finished section 1 with current information available**	**1.2**
Evan Woronuk	**2/5/2021**	**Wrote section 3.1 and 3.1.1**	**1.25**
Evan Woronuk	**2/5/2021**	**Wrote section 2.1, 2.2, 2.3, 2.4, 2.5, and half of 2.6**	**1.3**
Marcus Van	**2/7/2021**	**added requirements in section 3.1.2**	**1.35**
Yufei Chen	**2/8/2021**	**filled section 2.6, section 3.1.2, section 4**	**1.4**
Chenghao Liu	**2/9/2021**	**Uploaded section 3.2. add pts in section 4,5**	**1.5**
Marcus Van	**2/9/2021**	**Peer-reviewed and re worded section 4.1 4.2**	**1.55**
Marcus Van	**2/9/2021**	**added several NFR's to sections: 5.1, 5.2**	**1.6**
Evan Woronuk	**2/9/2021**	**Added additional information to sections 5.1 and 5.2**	**1.7**
Marcus Van	**2/9/2021**	**wrote section 6**	**1.75**
Marcus Van	**2/9/2021**	**Wrote Appendix**	**1.8**
Evan Woronuk	**2/9/2021**	**Final revisions and formatting**	**2.0**
Evan Woronuk & Marcus Van	**2/28/2021**	**Created Social media use case model**	**2.1**
Chenghao Liu & Zheng Yin & Yufei Chen	**3/1/2021**	**Created Analytics use case model**	**2.2**
All team members	**3/1/2021**	**Created Use case diagram connecting use case's**	**3.0**
Evan Woronuk	**3/8/2021**	**Created Level 1 DFD for Communications System (3.1.4)**	**3.1**
Marcus Van	**3/8/2021**	**Created Level 1 DFD for Analytic Reference System (3.2.4)**	**3.2**
Zheng Yin	**3/8/2021**	**Created Level 1 DFD for Achievement System (3.3.3)**	**3.3**
Chenghao Liu & Yufei Chen	**3/8/2021**	**Created Level 0 DFD (3.5)**	**4.0**
Evan Woronuk	**3/9/2021**	**Fixed multiple IR issues and wrote inspection report response**	**4.1**
Marcus Van	**3/9/2021**	**Fix multiple IR issues**	**4.2**
Chenghao Liu	**3/23/2021**	**Login page in UI prototype**	**5.0**

Yufei Chen	**3/23/2021**	**User profile page in UI prototype**	**5.1**
Marcus Van	**3/23/2021**	**My Honor page in UI prototype**	**5.2**
Evan Woronuk	**3/23/2021**	**Individual honor page in UI prototype**	**5.3**
Zheng Yin	**3/23/2021**	**Social Media page in UI prototype**	**5.4**
Evan Woronuk	**3/29/2021**	**Rationale and Test Scenario for part of section 3 requirement 1**	**6.0**
Marcus Van	**3/29/2021**	**Helped build matrix and fill in Requirement 1**	**6.1**
Zheng Yin	**3/29/2021**	**Rationale and Test Scenario for part of section 3 requirement 3**	**6.2**
Chenghao Liu	**3/29/2021**	**Rationale and Test Scenario for section2, part 3&5 requirement3**	**6.3**
Yufei Chen	**3/29/2021**	**Editing on requirement 3 for section 3, formatting, and correction.**	**6.4**
Chenghao Liu	**4/9/2021**	**Rationale and Test Scenario for section 4.1 and the first two requirements of 4.2**	**7.0**
Yufei Chen	**4/9/2021**	**Rationale and Test Scenario for section 6 and the last two requirements of 4.2**	**7.1**
Marcus Van	**4/9/2021**	**fixed some formatting issues, grammar errors**	**7.2**
Evan Woronuk	**4/10/2021**	**Final formatting and revisions.**	**10.0**

1 Introduction

1.1 Purpose

This is a Requirements Specification document for a new user interface-based system for the BC Cetacean Sightings Network (CSN). CSN is a collaboration between Ocean Wise's Coastal Ocean Research Institute and Fisheries and Oceans Canada (DFO). The CSN was established to maintain reports of cetaceans and sea turtles in a consistent format that makes it valuable to researchers, NGOs, and the government. The new system will upgrade the current website to provide a user-user communication interface and an achievement-based gamification system that allows users the ability to track their contributions to the CSN. The new system will also enhance the ease of filling in reports with auto-generated observations. This document describes the context, features, and requirements with respect to the objectives and goals of the new System. While describing non-functional requirements, this document also outlines external interface requirements.

1.2 Project Scope

The scope of this project is a web-based system that supports the user-user communication interface as well as an achievement system that tracks and rewards user participation. Account creation and user profiles will not be included in this project.

The current website will adopt this system and its features without having to be replaced. Changes in the current website interface are expected to account for the new features. A data mining algorithm to auto-fill sections of sighting reports will be obtained as purchased components for the new system. The internal details of how the data is mined are not part of this project. Software security involving the protection of user information and data is not in the scope of this project.

1.3 Glossary of Terms

CSN: The BC Cetacean Sightings Network (Removed BC for simplicity).

DFO: Department Fisheries and Oceans

Data Mining: a process used to turn raw data into useful information, software that finds patterns in data

NGO: Non-Governmental Organization

Gamification System: Technique which designers use to insert gameplay elements into non-gaming settings, to enhance user engagement with a product or service

Platform: A system in which the user interacts.

1.4 References

- https://wildwhales.org/ A reference to the current system for the CSN
- https://apps.apple.com/ca/app/whalereport/id982066469#?platform=iphone A reference for the current mobile implementation of the current system

1.5 Overview

- **Section 2: Overall Description**
  Gives a Perspective on the products and their features. Includes details on user classes, operating environment, design constraints, and assumptions/dependencies.
- **Section 3: System Features**
  Goes into detail about each feature and the functional requirements that come along with them.
- **Section 4: External Interface Requirements**
  Describes characteristics and functions of the user, hardware, software, and communications interfaces.
- **Section 5: Other Non-Functional Requirements**
  Each objective states a requirement or constraint on the system as a whole.
- **Section 6: Other Requirements**
  Includes any other requirements and objectives that were not already covered in sections 4 and 5.

2 Overall Description

2.1 Product Perspective

In order to achieve the objectives of increasing traffic and reportings while remaining financially conscious, our approach involves enhancing existing systems offered by the BC Cetacean Sightings Network, rather than building new products from scratch. Enhancements need to be carefully curated as to not intrude on the overall existing experiences but still be made clearly available. The primary enhancements include the ability to share whale sightings to other social media platforms, adding personalization in the form of an optional account to game-if the experience, and streamlining the reporting process. These enhancements can be thought of as optional subsystems, that when utilized will help increase reporting and keep existing users engaged long-term.

2.2 Product Features

As previously discussed, there are three substantial enhancements being proposed to increase traffic to the platform. A brief summary of each will be provided here, with the intent of giving a brief introduction to the concepts and ideas.

Our first enhancement involves the promotion of the BC Cetacean Sightings Network by including the ability to share sighting information across various social media platforms. Upon successfully reporting a sighting on any of the three main platforms, users will be prompted to share publicly if they would like. If a user chooses to do so, a well-designed text block or picture will be ready to post. This will include information and/or pictures of the whale, as well as branding for the CSN.

Our second enhancement revolves around the game-ification of the CSN platform. Users will have the ability to create an account on the platform that seamlessly can be accessed across all platforms. Having an account that tracks individual statistics and contains unlockable achievements will serve to keep users engaged so that there is a higher incentive to report more whales.

Finally, we plan on enhancing the existing experience by incorporating the ability to utilize a phone's GPS and clock to automatically fill out information regarding sightings. If a user wants to allow the platform access to those mechanisms, reportings can essentially be filled out immediately upon sight of the whale, as the application will immediately have access to the GPS location of the phone, the weather, and the time of the sightings. This quality of life enhancement works to make the process simpler and more inviting for users.

2.3 User Classes and Characteristics

User classes can firstly be separated based on the platform they use to report sightings. Most individuals do not bring their laptops everywhere, so a reasonable assumption is that if a report comes in from the website, it is likely being reported after the fact. User classes can additionally be separated into the subset of product functions used. Users who opt to utilize the accounting system are more likely to be returning users and are very valuable as long-term users. Users who decide to avoid the accounting system may potentially be one-time reporters.

2.4 Operating Environment

The enhancements will be available and consistent across all three of the primary platforms that the BC Cetacean Sighting Network currently offers. This includes their webpage, their iOS application, and their Android application. The two phone applications will require existing users to update their applications to receive the changes.

2.5 Design and Implementation Constraints

In relation to the ability to post whale sightings to other social media platforms, developers need the ability to link directly to these social media pages to post the content.

Storing information regarding individual accounts requires some form of the database system. Additionally, keeping individual account data secure is extremely important. The design of the account information and achievement system must be in line with the platform's current design.

2.6 Assumptions and dependencies

In order to allow users to directly share their posts on other social media platforms, the system needs to be linked to other social media platforms such as Facebook, Twitter, etc.

An internet connection is required to have the platform's database update your information.

3 System Features

3.1 User Community/Communications System

The ability to easily and conveniently share individual whale sightings to various social media platforms as well as on CSN WildWhales.org.

3.1.1 Description and Priority

Upon successfully reporting a whale sighting, users should have the ability to share their sighting with other social media platforms. If a picture of the sighting was taken, that can optionally be included as well. As the primary objective of the project is to increase the number of annual reports, publicizing the platform to increase the user base and community engagement is essential. Thus, the ability to share sightings and advertise the platform is a high priority.

3.1.2 Functional Requirements

REQ-1: the system needs to build a more complete user database. Every user needs to create his own account and fill in his own relevant information such as telephone number, date of birth, occupation, etc.
Rationale: user accounts are needed to keep track of their own reports and individual achievements

Test Scenario 1: create an account, make a report, log off, log back in and check for previous reports

REQ-2: if users want to jump directly from this platform to other social media platforms to share posts, users need to authorize the system to obtain the account of their other social media. Otherwise, the posts cannot be shared.
Rationale: This is the most convenient way a user could post to a social media account. Without authorization, users would no longer be able to directly transition to posting on the desired social media platform from the CSN platform.
Test Scenario 2: Create an account, make a report, opt to share to social media, grant the CSN platform permission to navigate to the desired social media platform, post to social media.

REQ-3: Cross-system compatibility: If a user creates an account through a mobile app in the current system, data and personal information should be linked to all platforms the CSN provides for the user.
Rationale: If users access CSN through multiple platforms ex.) IOS application or website via a personal computer, we want the user's reports and account information to transfer over.
Test Scenario 3: create an account, make a report, log off, log in using a different platform, check to see if the report is still there and previous account information is still there.

REQ-4: User and non-account users must be able to see public posts from other users without revealing the poster's personal information.
Rationale: We want to keep the integrity and availability of users information, so public posts cannot reveal personal info of the poster to views with and without accounts
Test Scenario 3: make an account, make a post, log off, enter the application without logging in, view the post, make sure no personal info is able to be seen or taken from the post.

3.1.3 Use Case

Use Case Name

Sharing Whale Report to Social Media

Description

This use case describes how a user of the BC Cetacean Sighting Network would utilize the service to share whale report information and/or pictures to various social media platforms.

Actors

- User with CSN account.
- User without CSN account.
- Whale reporting and observation system.

Pre-Conditions

- The user must have an internet connection.
- The user must have access to the CSN system in some manner, either through the CSN webpage or the mobile application.
- The user must have an account created on the social media platform in which they would like to post.
- If the user would like to share a previously reported whale sighting, they must be signed into their CSN account.

Main Flow

1. The use case begins when a user/customer completes and submits a whale sighting report on the CSN website or application.
2. The system reads information from the report.
3. **<Share>** prompt is displayed. The system prompts the user to allow sharing to other social media platforms.
4. The user accepts the request.
5. **<Share options>** prompt. The system prompts the user to select a social media application to share by displaying a list of applications.
6. The user selects the preferred application to share the report with.
7. The system formats the user's report into a shareable image that can be uploaded or sent
8. The system opens a portal to preferred social media webpage
9. The user shares the formatted image to their preferred social media application
10. **<Continue Sharing prompt>** The system prompts if the user would like to share to another social media application
11. The user selects no
12. The system records a shared log for the report
13. The use case ends

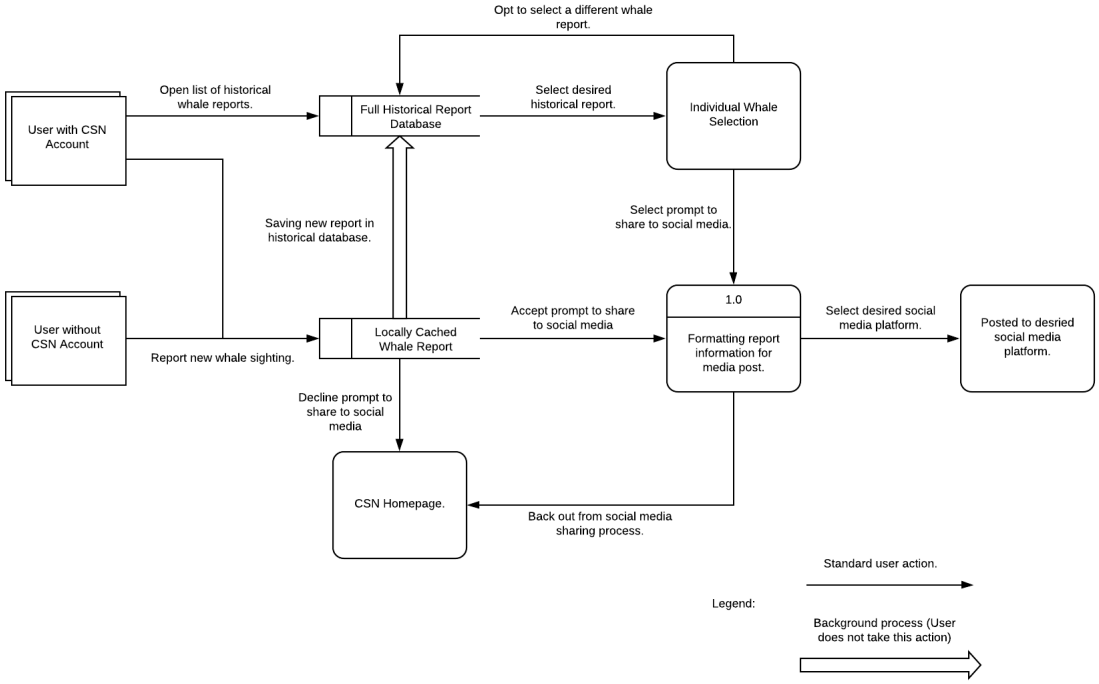
Post-Conditions

- If this is the first instance in which a user has shared a whale sighting to social media, they will be rewarded with achievement to their account.

Alternative Flow

1. If the user declines the prompt to share to social media.
   1.1. The prompt will be removed from the screen.
   1.2. The user will be redirected back to the main “home” screen for the website and/or application.
2. If the user would like to post a sighting they recorded previously.
   2.1. The user must first log in to their CSN account.
   2.2. The user can open a list containing all their previous whale sightings.
   2.3. The user can select a sighting, and the **<Share>** prompt will be available again.
   2.4. Upon clicking the <**Share>** prompt, the user follows the same steps as the main flow.

3.1.4 Data Flow Diagram (Level 1)



3.2 Analytic Reference System

Based on the data collections from the platform we provide reliable analytic guidance for users to increase the probabilities of observing sightings.

3.2.1 Description and Priority

Based on the datasets we have collected from all users. Our platform is intended to provide a statistical reference for each species indicating under which circumstances the user can have a good chance to spot the creature. This page lists all the factors (temperature, wind speed, location) analyzed from the database providing to users as a reference to lookup.

The system is classified as a medium priority.

3.2.2 Functional Requirements

REQ-1: The system should be firmly supported by a large and various species observation database. And the system should deliver analytic results of all the selected whales for the user to lookup.

Rationale: The database does not have any data of the selected species or not does not have sufficient data to analyze the report. Lacks of the database result in a failed report generation.

Test Scenario 5: 1.User goes to the system analysis page. 2. Enters the name of species that he wants to know but is not shown in the system. 3. Clicks on the button and requests for a system report.

3.2.3 Use Case

Use Case Name

System Analysis

Description

This system is to provide the user a consulting result that under what factors a reporter has a better chance to observe a sighting.

Actors

- Reporters/Users
- Platform database

Pre-Conditions

- The database in the product is supposed to be large enough to provide consulting advice for any of the species that the reporter hopes to observe.
- The reporter needs to ensure his device can measure the real-time location and receive the weather forecast.
- The user should have an activated account from the platform.
- Users should allow the platform to have access to their real-time location.
- The platform should record every successful sighting to increase the database.

Main Flow

1. The User logs in to the system page and clicks on the System Analysis feature
2. The system shall verify and load his identification information.
3. The <Species Selection> section pops out for the user to choose what species he looks for and asks him to select the religion that he is planning to go to or wants to know about.
4. Then, the user needs to select the date and the observation place.
5. <Species Selection> pops out the whale species that may be observed nearby for users to choose from.
6. Then, the next step is to fill in the form that the system asks for. The system asks the user to upload the raw data required< Input Data> (temperature, wind speed, weather, etc) to the system to enable system analysis functionalities.

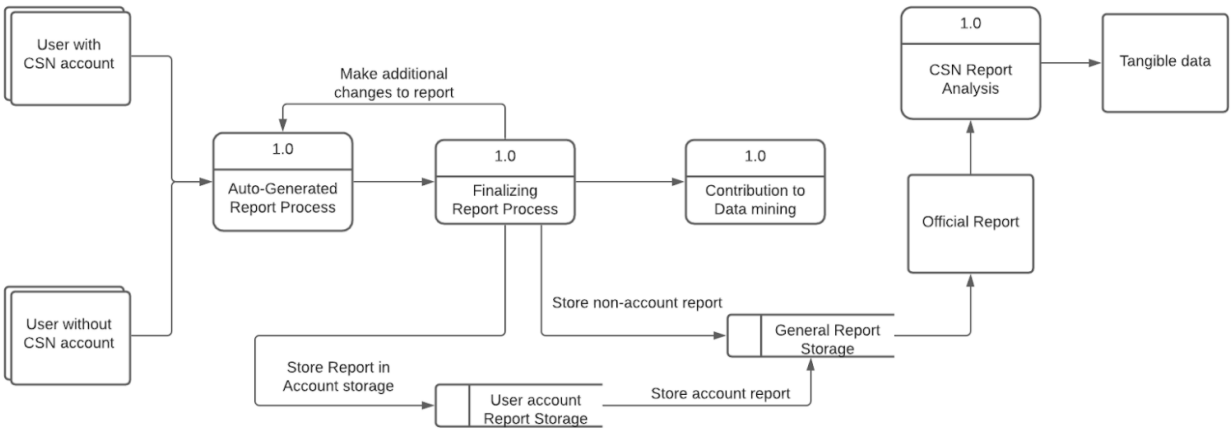
Post-Conditions

- The system shall display the probability that the user can observe the species and give him the optimal advice that he can have a sighting in the future.

Alternative Flow

1. At <Species Selection>, if the system does not hold enough data to give user advice
   1.1. The system displays “Sorry, our system does not have enough information to give helpful advice”.
   1.2. the system should display whale species that live near this sea.
   1.3. After clicking on the exit button the system reminds the user of reporting the species if he captured a sighting.
2. < Input Data>, if the data is invalid
   2.1. The system displays “This is an illegal input! ”
   2.2. The system asks the user to enter the input for a second time or exit the page.

3.2.4 Data Flow Diagram (Level 1)



3.3 achievement system

3.3.1 Description and Priority

There should be an achievement system to give people a sense of accomplishment which can lead more people to use this system. It should include some relations with the personal profile and commutation system. This system can attract more users using our product.

The system is classified as a medium priority.

3.3.2 Functional Requirements

REQ-1: An achievement interface in a personal profile system.

Users can know how many achievements they get when they are using the whale report system.

Rationale: First-time users may not have an account which they do not have a personal profile interface that can not relate to achievement. New users need to sign up for an account that can get the achievement and have access to the achievement interface.

Test Scenario 6: 1. click the personal profile icon.
2. click the achievement entrance

3. see their achievements

REQ-2: The achievement system is related to the whale report system, users can update new whale reports to get more achievement in their personal profile.

Rationale: if users upload a whale report but do not get the achievement they should get. There should be two personal profile data which both store online and use local devices. Every time a user uploads a report, the system should compare two personal data, and users are allowed to appeal to the customer service.

Test Scenario 7: 1. upload a whale report
2. click the personal profile icon.
3. check the new achievement

REQ-3: Users can share the achievement with other people on social media when they just got it. It needs some connections to social media that users on social media can see the information of the achievement.

Rationale: In the case of the selected social media does not allow the third-party application to access. The user has to change the permission of the social media to perform this task. This action poses threats to the security of the selected social media.

Test Scenario 8: 1.User clicks on the "share" button. 2. The selected social media is opened. 3.Verifies the account information and jumps in the social media page. 4. clicks on post the share and sees the sharing post from the social media.

REQ-4: Achievement can be seen in the commutation system on personal information in the whale report system, other users can know what kind of user they are.

Rationale: If the user did not see the new achievement badge that they just got on personal information, then the user might need to refresh the commutation system or re-login their account.

Test Scenario 9: 1.Click the communication system icon in the whale report app
2. Check the personal information in the forum
3. Click the achievement to see the detail

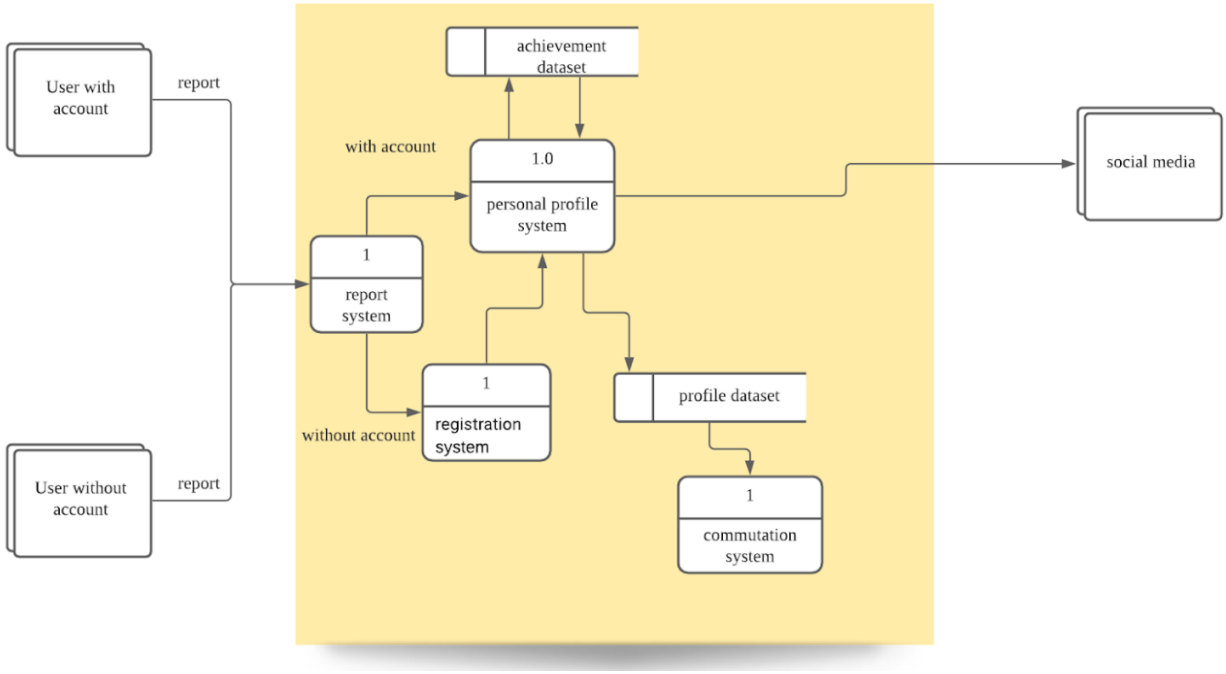
REQ-5: Users should be able to log back into their account on the same device without having to re-enter their credentials.

Rationale: If the user does not permit the whale app to keep the cookies then this user has to re-enter the application and log in to the account.

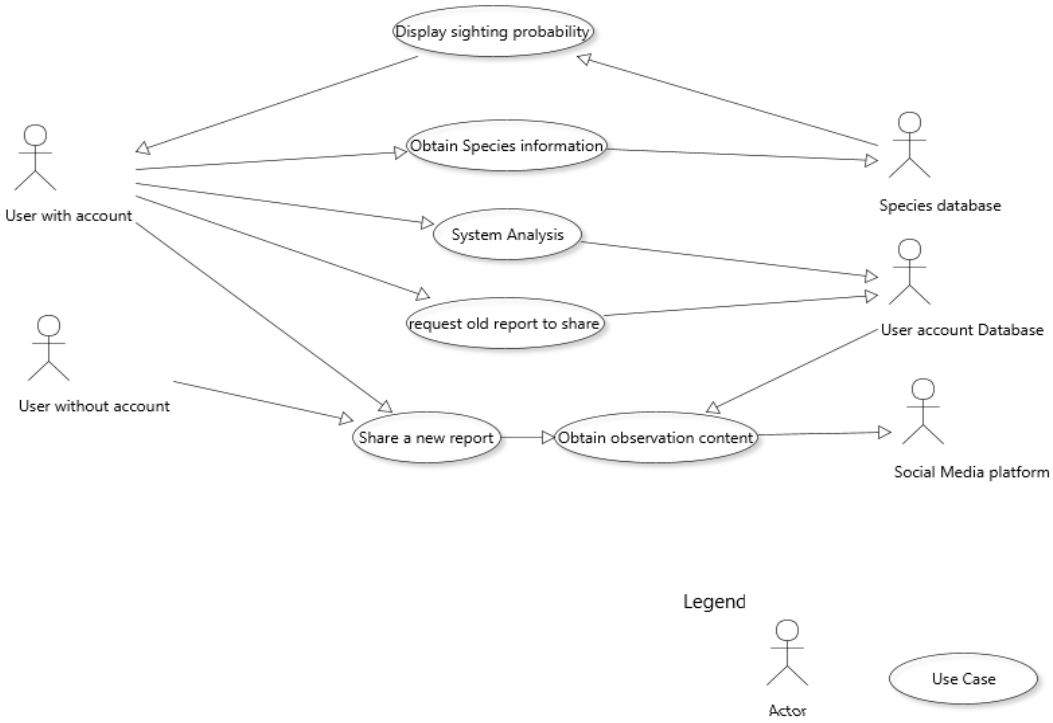
Test Scenario 10:

1. Users clicks on the top-left icon "back to whale app"
2. Back to the whale app account verification page
3. continue the user account or log in again

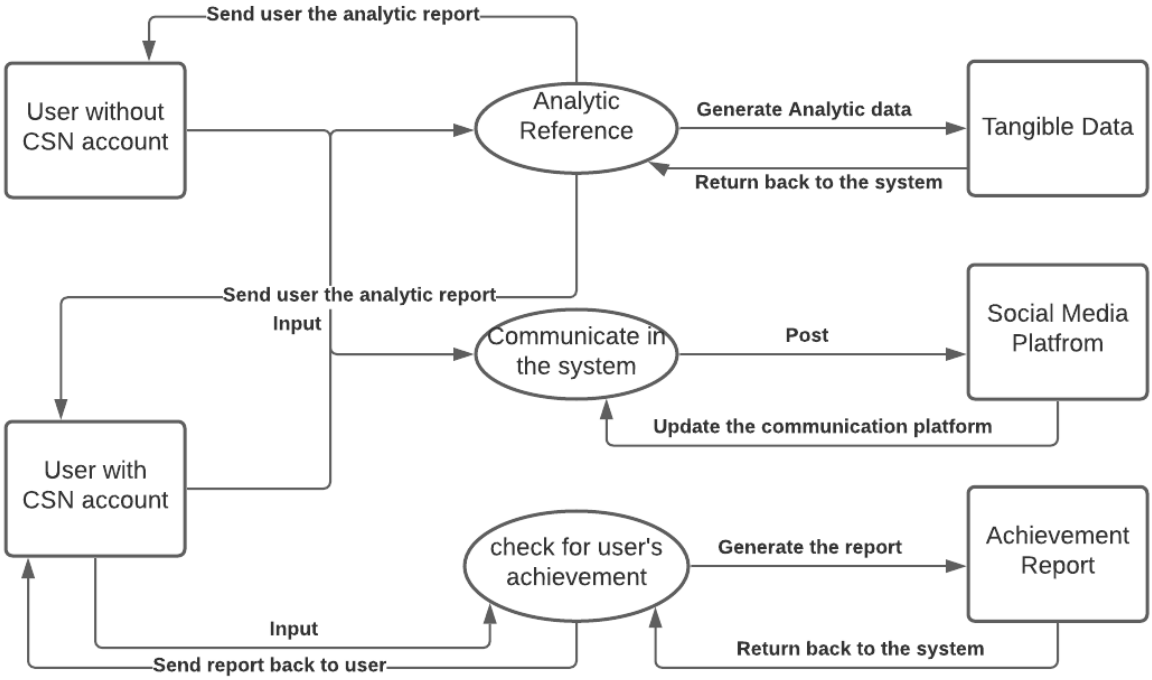
3.3.3 Data Flow Diagram (Level 1)



3.4 Use Case Diagram

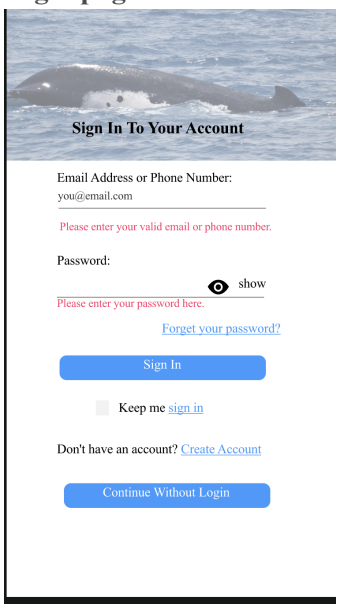


3.5 Level 0 Data Flow Diagram



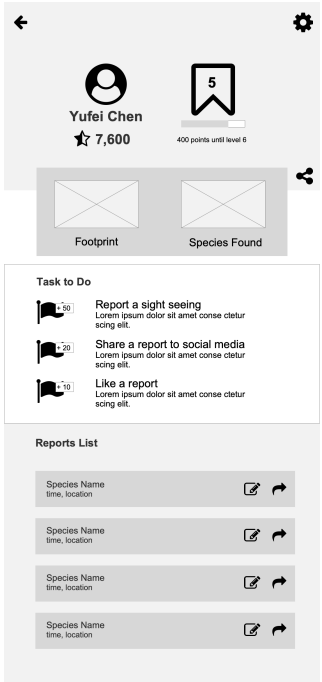
3.6 UI Prototype

Login page



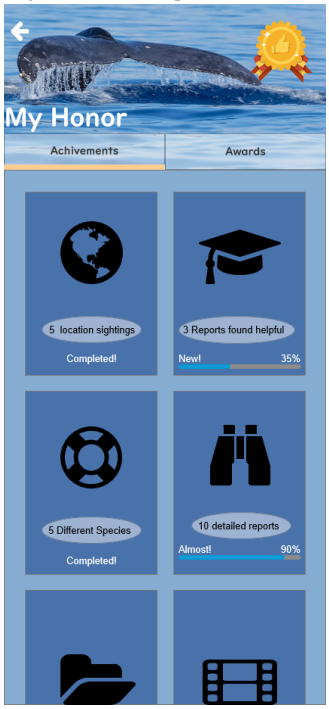
This is the first page of the achievement feature. Users can choose either to log in or continue exploring the content without entering the account. However, Only the users who are using the account are able to use the achievement feature. After the user logs in to the system, the page will jump to the User Profile Page.

User profile page



After logging into their account, users can navigate to their personal page which includes their report history and achievement information. Selecting the achievements total or tasks to complete will redirect the user to the honor page

My Honor Page

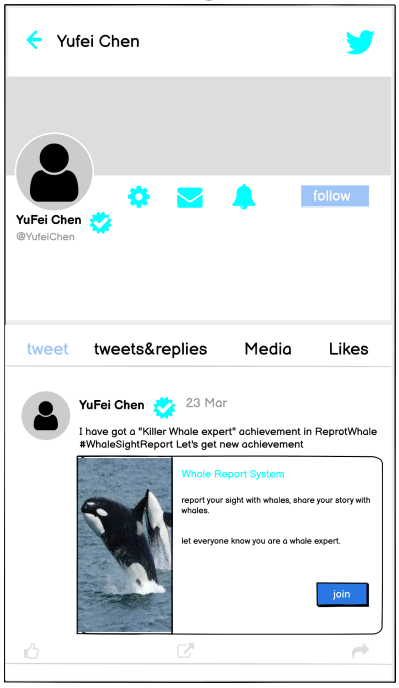


Users can check their list of achievements and awards by scrolling through and viewing completed and in-progress achievements. Users will also have the ability to select specific achievements and be brought to another page that includes more details.

Individual Honor Page

Here a user is looking at their status of individual achievement, in this case, the “Killer Whale Expert” achievement. A fun fact is provided at the bottom, and users have the ability to share their achievement completion to various social media platforms.

Social Media Page



When users share their achievements on social media (for example Twitter), they can have a message mentioning the achievement they got and the whale report system to attract more people to use the whale report system.

4 External Interface Requirements

4.1 User Interfaces

REQ-1: Users can engage with several interfaces like personal profile interfaces and whale report interfaces. Users can share reports through a social media interface.

REQ-2: Users can interact with a data interface that lists recent reports with relevant search fields as a means of information to base their own observations.

REQ-3: After making a report, a user should be redirected to an achievements interface that maps the progress of the reporter and shows what achievement the user is moving towards next

4.2 Hardware Interfaces

REQ-1: The system should be able to be integrated into the current system while still having the same supported device types

REQ-2: The data should be formatted so when sharing across platforms, the images and observations are still accessible and usable.

REQ-3: The system can be downloaded as an app on phones featured with both iOS and Android systems. When users want to take photos and post directly through the app, users need to allow the app to obtain the camera permission on the phone.

REQ-4: Users need to allow the app to obtain the GPS positioning system on the phone to automatically locate.

4.3 Software Interfaces

The system builds a more complete user database to facilitate users to share the whales they found on the website. The scoring system improves users' creditworthiness and makes the data more accurate. As users have more free and diversified communication platforms, the database of whale sighting reports will be increased, and more users will be attracted to use the system.
There should be a personal profile database to store their achievements, and when users achieve an achievement in the database, it will be visible in their personal profile.

4.4 Communications Interfaces

The system should include a sharing function which allow User to share the whale information and achievement they just got to social media, and it is like the youtube link in a discord channel. This whale report sharing should include the instruction for users to share, post or report a whale sighting, as well as the explanation of the scoring system and communication system.
The system should outline the support team contact information

4.5 Traceability Matrix

Feature #	Feature Name	Requirement #	Requirements Name	Test Case									
				1	2	3	4	5	6	7	8	9	10
1	User Community/Communications System	1	User Account	x									
		2	Social Media Platform Support		x								
		3	Cross Device Compatibility			x							
		4	Personal info abstraction				x						
2	Analytic Reference System	1	System Analysis Report					x					
3	Achievement System	1	Achievement Score						x				
		2	Getting achievement							x			
		3	Post Sharing								x		

		4	Badge in forum									x	
		5	Back to Whale App										x

5 Other Non-Functional Requirements

5.1 Performance Requirements

When users complete an achievement, there should be a personal in-app (or website) notification to let users know they have a new achievement within 5 seconds.
When utilizing the ability to autofill report data using the phones GPS and clock, the autofill process needs to be near immediate, ideally under 2 seconds, and certainly faster than filling in the information manually.
When users share a report to another social media app, it should redirect the user to the social media app (granted that they have already made an account and have the app downloaded) within 4 seconds.
When users create a report, their account history of reports should be updated to all applications of the system within 10 seconds.

5.2 Safety Requirements

It must be made clear that users are not to disturb wildlife or put themselves in danger for the pursuit of finding a whale to report.
When weather conditions and tides are unfavourable, a warning should be displayed to users accessing the map or data from those areas.
When users make their first report, the system should display a short message outline how to safely watch whales, in regards to the observer and the specimen.

5.3 Security Requirements

When sharing the achievement on another social media, the push of achievement cannot leak the personal information to others.
There is a concern regarding the leak of personal data. In order to protect the safety of this system, any personal data must be transmitted in encrypted form.

The system shall provide password-protected access to the web page so that the system can eliminate the probability of the user's account being hacked.

5.4 Software Quality Attributes

This product requires good reliability. The system should be able to work under different environments (operating system, devices, hardware, etc) and different conditions.

The product should be user-friendly or has good usability. It should be designed for an open group who may not be familiar with the system or has little knowledge of how to use the web or mobile application. Also, the functions (uploading, chatting, verification, etc) operations and interpretation for species are easy to use.

In terms of *maintainability,* as for the developer, it should be easy to add code to the existing system, and should be easy to upgrade for new features and new technologies from time to time.

In terms of flexibility, the product should be flexible enough to modify and adaptable to other products with which it needs interaction. It also should be easy to interface with other standard 3rd party components.

6 Other Requirements

REQ-1: Getting permission from the users to access their reports,data and findings in order to be used for research for the CSN and marine biologists that they support.
REQ-2: Ability to turn off notifications and achievements for individuals who don't prefer the feature

Appendix: Issues List

Pending decisions:

- How a user profile is displayed
- How users can find other users in the system
- Differences in Use Cases between account users and non-account users
- How to integrate system interacts differently between mobile and web

Inspection Report Response:

In order to make the necessary changes based off of group 14's inspection report, we began by first reading over all of the annotated comments to get a sense of the issues that would be present. Many of the issues were simple syntax or typo errors which were trivial fixes. The remaining issues typically revolved around clarification of terminology and perhaps information not being in the correct location. When the feedback provided was constructive and clear as to what specifically needs to be fixed, we changed or re-worded those sections. That being said, a large amount of the feedback was not specific on an issue, and would simply say something along the lines of "This whole section is unclear". This is not useful feedback and does not indicate where the problem lies. In cases like this, we would re-read the section and make adjustments or corrections as we saw fit. Additional comments such as "You don't need to defend yourself so much" are anything but helpful and provide no tangible feedback. Additionally, some of the annotations would require entire re-working of the structure of our document which seems out of scope of this portion of this assignment. There were however instances of feedback that were correct and helpful in improving our document.