

Deliverable #1 Template : Software Requirement Specification (SRS)

SE 3A04: Software Design II – Large System Design

Tutorial Number: T03

Group Number: G6

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IMPORTANT NOTES

- Be sure to include all sections of the template in your document regardless whether you have something to write for each or not
 - If you do not have anything to write in a section, indicate this by the *N/A*, *void*, *none*, etc.
- Uniquely number each of your requirements for easy identification and cross-referencing
- Highlight terms that are defined in Section 1.3 (**Definitions, Acronyms, and Abbreviations**) with **bold**, *italic* or underline
- For Deliverable 1, please highlight, in some fashion, all (you may have more than one) creative and innovative features. Your creative and innovative features will generally be described in Section 2.2 (**Product Functions**), but it will depend on the type of creative or innovative features you are including.

1 Introduction

This SRS will provide visibility over software requirements for Gaim, an AI-powered wildlife identification application. This document will discuss the purpose of Gaim, the scope of the application, its objectives, production description, any constraints, user characteristics, product requirements, and use case diagrams.

1.1 Purpose

- Specify the purpose of the SRS.
inform public about wildlife
- Specify the intended audience for the SRS.
Nature enthusiasts
hunters - 1.27 mill Canadians hunted, 1.4 mill sport shooting

1.2 Scope

1.2.1 Software Products

1.2.1.1 Decision-Tree Expert (Mammal, Bird, and Fish domain)

This expert gives guided questions that the user can answer. At the end, based on the answers given by the user, generates and gives to the forum its best guess at what the animal could be based on its domain. It also gives an accuracy score to the forum. If it has no animal in its database which meets the required attributes, it returns no answer.

1.2.1.2 Image Expert

Based on a user-uploaded image, this expert generates and gives to the forum its best guess on what the animal could be. At the same time, it generates an accuracy score. If the accuracy score is too low, it returns nothing to the forum.

1.2.1.3 Freeform Writing Expert

Based on user-given freeform text, this expert generates and returns to the forum its best guess to as what the animal could be. At the same time, it generates an accuracy score. If the accuracy score is too low, it returns nothing to the forum.

1.2.1.4 Animal Characteristics DBMS

This service maintains a list of species in Ontario including their attributes, phylogenetic classification, and their at-risk status. It allows other classes to sort and access this information.

1.2.1.5 Forum

The forum accepts responses from the experts as their guesses of what the animal could be, as well as an accuracy score. Based on these accuracy scores, it selects an answer to present to the user.

1.2.1.6 Animal Report Generator

The animal report generator receives the answer from the Forum and generates a report to show to the user about the animal.

1.2.2 Applications

1.2.2.1 Benefits

This product will allow users to be able to more easily identify animals found in Ontario. It will then give them relevant information such as habitat, circadian rhythms, and at-risk status. It will allow users to make informed decisions about their actions surrounding the identified animal.

1.2.2.2 Objectives

This software will reliably generate a report based on any of the available input methods. It will be secure. This product will efficiently determine what animal the user is asking about based on any of the available input methods.

1.2.2.3 Goals

- This product will generate an answer within 10 seconds of completion of user input
- This product will be complete by
- This product will always generate an answer with an accuracy score greater than 90%
- Identify the software product(s) to be produced, and name each (e.g., Host DBMS, Report Generator, etc.)
- Explain what the software product(s) will do (and, if necessary, also state what they will not do).
- Describe the application of the software being specified, including relevant benefits, objectives, and goals.

1.3 Definitions, Acronyms, and Abbreviations

- Provide the definitions of all terms, acronyms, and abbreviations required to properly interpret the SRS.
- This should be in alphabetical order.

1.4 References

References

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- [11] Government of Canada, "Canada's Anti-Spam Legislation (CASL)," 2023. [Online]. Available: <https://www.fightspam.gc.ca/eic/site/030.nsf/eng/home>. [Accessed: Feb. 13, 2025].
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- [16] Google, "Data Storage and Security Best Practices," 2024. [Online]. Available: <https://developer.android.com/training/articles/security-tips>. [Accessed: Feb. 13, 2025].

1.5 Overview

- Describe what the remainder of the document/SRS contains.
(e.g. "Section 2 discusses...Section 3...")

2 Overall Product Description

- This section should describe the general factors that affect the product and its requirements.
- It does not state specific requirements.
- It provides a *background* for those requirements and makes them easier to understand.

2.1 Product Perspective

- Put the product into perspective with other related products, i.e., context
- If the product is independent and totally self-contained, it should be stated here
- If the SRS defines a product that is a component of a larger system, then this subsection should relate the requirements of that larger system to the functionality of the software being developed. Identify interfaces between that larger system and the software to be developed.
- A block diagram showing the major components of the larger system, interconnections, and external interfaces can be helpful

2.2 Product Functions

- Provide a *summary* of the major functions that the software will perform.
 - **Example:** An SRS for an accounting program may use this part to address customer account maintenance, customer statement, and invoice preparation without mentioning the vast amount of detail that each of those functions requires.
- Functions should be organized in a way that makes the list of functions understandable to the customer or to anyone else reading the document for the first time
- Present the functions in a list format - each item should be one function, with a brief description of it
- Textual or graphical methods can be used to show the different functions and their relationships
 - Such a diagram is not intended to show a design of a product, but simply shows the logical relationships among variables

The goal of the system is to identify endangered and out of season species for 3 main domains: aerial, aquatic, and land. There will be 3 main methods for identifying specifics and a backend decision tree to determine accuracy and provide a result. The methods will be: description, survey and image. The main modules of this app will be the following: Identifying species (submitting photo, writing a description, filling a questionnaire, getting result, viewing accuracy score), Account Services (creating an account, viewing past inquiries, updating information, logging in), Community Discussion (asking questions, posting pictures, liking other users posts in the hunting community).

Modules	Functions
Identify Species: Image	Write Description: Allows the user to submit a description of the animal they have seen View Result: Allows user to see the identified species and corresponding accuracy score Save Result: Allows user to store output
Identify Species: Description	Submit Image: Allows the user to upload an image of animals they see View Result: Allows user to see the identified species and corresponding accuracy score Save Result: Allows user to store output
Identify Species: Survey	Fill out Questionnaire: Allows user to submit inquiry based on predesigned questions View Result: Allows user to see the identified species and corresponding accuracy score Save Result: Allows user to store output
Account Services	Create Account: Allows the user to create an account Update Account: Allows the user to update their account information Login: Allows user to login/logout of their account Search History: Allows user to view past searches

2.2StateDiagram.png

2.3 User Characteristics

2.3.1 Hunters

Hunters primarily live in rural areas, sometimes with limited access to educational resources and diverse perspectives. For this reason, they have a majority lower education level as those who leave behind their provincial life to gain education in the city may decide to stay there and live behind their rural life of hunting. They have much experience with wildlife and its behaviours, many having learned hunting from their parents who in turn learned it from their parents before them. They have, in general, a deep respect for wildlife and a vast knowledge of species and their behaviours. However, they may be limited in their knowledge of which species are currently designated to be at risk.

2.3.2 Nature Enthusiasts

Nature enthusiasts cover a broad spectrum of people from casual national park-goers to experienced portagers. Their education level varies from those who have not graduated high school to those with PhDs and MDs. However, in Canada it tends towards those with undergraduate degrees as that is the most common education level. Their experience level varies greatly, however it would tend towards those who camp once or twice a year. Potentially, they have attended a seminar run by the national parks and are able to identify a small subset of species. In majority, our user can identify broad spectrums of species (such as moose, deer, squirrel, bird), but is unable to tell the different nuances between species.

- Describe those general characteristics of the intended users of the product including educational level, experience, and technical expertise
- Since there will be many users, you may wish to divide into different user types or personas

2.4 Constraints

1. **Data Availability:** The accuracy of Gaim depends on an up-to-date and comprehensive database of wildlife species, including their characteristics and at-risk status. Obtaining and maintaining such a database may require collaboration with wildlife organizations and adherence to licensing restrictions. Especially since this is supposed to be Ontario-specific, it will be difficult to obtain such a database.
2. **Internet Dependency:** Even though some features can be used locally, features such as cloud-based image processing, AI model updates, and community discussions require an active internet connection. Users in remote locations with limited to no internet connectivity may experience reduced to no functionality.
3. **Regulatory and Ethical Constraints:** Since the application deals with wildlife identification, it must comply with Canadian environmental laws and conservation policies. The app must ensure that it does not inadvertently promote illegal activities such as hunting endangered species. Even though the app will provide endangerment status, the list will need to be up-to-date and may require regular checks to stay updated.
4. **AI Model Accuracy and Bias:** The AI models used for species identification must be trained with diverse datasets to avoid misclassifications. Ensuring high accuracy while maintaining real-time performance is a key challenge, as incorrect identifications may mislead users. This can be especially critical with endangered species and protected species.
5. **Scalability:** As Gaim gains more users, the system must be capable of handling increased data processing demands and community interactions. Future versions may require cloud infrastructure scaling, which could introduce additional costs.

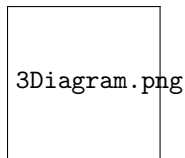
2.5 Assumptions and Dependencies

- Audio recordings are clear and free of excessive background noise.
- Images and videos are of sufficient resolution, clarity, and lighting for accurate identification.
- The app will only be used in Canada (no need to consider species from other regions).
- We have access to cloud or local computational resources to handle image and sound processing.
- Assume APIs are secure and functional
- Assume user has internet connection

2.6 Apportioning of Requirements

- The first version of the app will not take into consideration animals whose appearances change by season.
- The first version of the app will be developed in English.
- Verify with wildlife experts to check accuracy of our results.
- Expand database to take into account species from other regions as the app grows.

3 Use Case Diagram



- Provide the use case diagram for the system being developed.
- You do not need to provide the textual description of any of the use cases here (these will be specified under "Highlights of Functional Requirements").

4 Highlights of Functional Requirements

- Specify all use cases (or other scenarios triggered by other events), organized by Business Event.
- For each Business Event, show the scenario from every Viewpoint. You should have the same set of Viewpoints across all Business Events. If a Viewpoint doesn't participate, write N/A so we know you considered it still. You can choose how to present this - keep in mind it should be easy to follow.
- At the end, combine them all into a Global Scenario.
- Your focus should be on what the system needs to do, not how to do it. Specify it in enough detail that it clearly specifies what needs to be accomplished, but not so detailed that you start programming or making design decisions.
- Keep the length of each use case (Global Scenario) manageable. If it's getting too long, split into sub-cases.
- You are *not* specifying a complete and consistent set of functional requirements here. (i.e. you are providing them in the form of use cases/global scenarios, not a refined list). For the purpose of this project, you do not need to reduce them to a list; the global scenarios format is all you need.
- Red text below is just to highlight where you need to insert a scenario - don't actually write it all in red.

Main Business Events: List out all the main business events you are presenting. If you sub-divided into smaller ones, you don't need to include the smaller ones in this list.

Viewpoints: List out all the viewpoints you will be considering.

Interpretation: Specify any liberties you took in interpreting business events, if necessary.

BE1. Business Event Name #1

VP1. Viewpoint Name #1
Insert Scenario Here

VP2. Viewpoint Name #2
Insert Scenario Here

Global Scenario:
Insert Scenario Here

BE2. Business Event Name #2

VP1. Viewpoint Name #1
Insert Scenario Here

VP2. Viewpoint Name #2
Insert Scenario Here

Global Scenario:
Insert Scenario Here

BE3. Submitting a photo #3

Precondition: The user has an account and is logged into the system. The user has captured or selected an image of an animal to be analyzed.

VP1. User #1

Main Success Scenario:

- 1 User opens the application on their mobile device.
- 2 System requires the user to log in and displays the login fields.
- 3 User enters their account credentials.
- 4 System authenticates the user.
- 5 User selects the "Identify Species" option.
- 6 System prompts the user to upload an image from their gallery or take a new photo.
- 7 User selects or captures an image.
- 8 System uploads the image and begins processing using the Image Recognition Expert.
- 9 Image Recognition Expert generates a prediction of the species along with an accuracy score.
- 10 The system forwards the prediction and accuracy score to the central forum.
- 11 The forum waits for inputs from the other experts before finalizing a decision.
- 12 System displays a "Processing Submission" status to the user.
- 13 Once all expert opinions are collected, the forum finalizes the species identification.
- 14 System displays the identified species, confidence level, and additional relevant details to the user.

Secondary Scenarios:

- 4i. System fails to authenticate the user.
 - 4i.1 System fails to authenticate the user.
 - 4i.2 System prompts the user to reset their password or contact support.
- 8i. User submits an invalid or blurry image.
 - 8i.1 System detects that the image is too blurry or invalid.
 - 8i.2 System prompts the user to submit a clearer image.
- 9i. Image Recognition Expert fails to generate a prediction.
 - 9i.1 System fails to generate a prediction due to insufficient data.

9i.2 System notifies the user and suggests using another identification method (e.g., text description or survey).

- 13i. Other experts fail to provide input to the forum.

13i.1 The forum detects missing inputs from other experts.

13i.2 The system returns a partial result based on available data and notifies the user.

VP2. Ads Team #2

12i.1 System logs the user's engagement with the image submission feature.

12i.2 If applicable, the system selects wildlife-related advertisements based on the submission context.

12i.3 The system ensures that advertisements do not disrupt the user experience.

VP3. Marketing Team #3

12i.4 System tracks user engagement data related to photo submissions.

12i.5 System collects data for analytics to improve user experience and optimize future marketing strategies.

VP4. Accounting Team #4

NA

VP5. Environment Canada #5

8ii.1 System flags any identified endangered or protected species.

8ii.2 System flagged submissions for regulatory tracking.

8ii.3 If applicable, the system notifies the appropriate authorities about the flagged species.

VP6. National Parks/Hunting Organization (Ontario Federation of Anglers and Hunters) #6

8iii.1 System logs identified species data for conservation efforts and hunting regulations.

8iii.2 If the species is considered *unhunnable* due to conservation laws, the system notifies the user.

8iii.3 System provides relevant legal hunting information based on the identified species.

Global Scenario:

Pre-condition: User is logged in and submits a photo for species identification.

Main Success Scenario:

- i. User uploads or captures an image.
- ii. System processes the image using AI models.
- iii. System submits results to the forum.
- iv. Forum consolidates data from all identification experts.
- v. Final species prediction is displayed to the user.
- vi. User can choose to submit the identification result to the community.

Secondary Scenarios:

- If the system fails to authenticate the user, it prompts for login recovery.
- If the image is invalid, the user is asked to submit another one.
- If the Image Recognition Expert fails, the user is advised to use another input method.
- If some experts fail to respond, the forum provides an answer based on available data.

BE4. Submitting a survey #4

Precondition: The user has an account and is logged into the system. The user has chosen to identify an animal using the survey-based method.

VP1. User #1

Main Success Scenario:

- 1 User opens the application on their mobile device.
- 2 System requires the user to log in and displays the login fields.
- 3 User enters their account credentials.
- 4 System authenticates the user.
- 5 User selects the "Identify Species" option.
- 6 System prompts the user to choose a method: Image-based or Survey-based identification.
- 7 User selects the Survey-based identification.
- 8 System initiates the Decision-Tree Expert and starts the questionnaire.
- 9 System presents the first question, prompting the user with a yes/no or multiple-choice format.
- 10 User responds to each question, and based on the responses, the Decision-Tree Expert dynamically adjusts the next question.
- 11 The Decision-Tree Expert continues until it determines a probable species or exhausts all questions.
- 12 System generates a prediction of the species along with an accuracy score.
- 13 The system forwards the prediction and accuracy score to the central forum.
- 14 The forum waits for inputs from the other experts before finalizing a decision.
- 15 System displays a "Processing Submission" status to the user.
- 16 Once all expert opinions are collected, the forum finalizes the species identification.
- 17 System displays the identified species, confidence level, and additional relevant details to the user.

Secondary Scenarios:

- 4i. System fails to authenticate the user.
 - 4i.1 System fails to authenticate the user.
 - 4i.2 System prompts the user to reset their password or contact support.
- 8i. User provides inconsistent or conflicting answers in the survey.
 - 8i.1 System detects logical inconsistencies in the user's responses.
 - 8i.2 System prompts the user to review their answers or restart the survey.
- 12i. Decision-Tree Expert fails to generate a prediction.
 - 12i.1 System fails to determine a probable species due to insufficient matching data.
 - 12i.2 System notifies the user and suggests using another identification method (e.g., image-based or freeform text description).
- 13i. Other experts fail to provide input to the forum.
 - 13i.1 The forum detects missing inputs from other experts.
 - 13i.2 The system returns a partial result based on available data and notifies the user.

VP2. Ads Team #2

- 12i.3 System logs the user's engagement with the survey submission feature.
- 12i.4 If applicable, the system selects wildlife-related advertisements based on the submission context.
- 12i.5 The system ensures that advertisements do not disrupt the user experience.

VP3. Marketing Team #3

- 12i.6 System tracks user engagement data related to survey submissions.

12i.7 System collects data for analytics to improve user experience and optimize future marketing strategies.

VP4. Accounting Team #4

NA

VP5. Environment Canada #5

8ii.1 System flags any identified endangered or protected species.

8ii.2 System logs flagged submissions for regulatory tracking.

8ii.3 If applicable, the system notifies the appropriate authorities about the flagged species.

VP6. National Parks/Hunting Organization (Ontario Federation of Anglers and Hunters) #6

8iii.1 System logs identified species data for conservation efforts and hunting regulations.

8iii.2 If the species is considered *unhunnable* due to conservation laws, the system notifies the user.

8iii.3 System provides relevant legal hunting information based on the identified species.

Global Scenario:

Precondition: The user has an account and is logged into the system.

Main Success Scenario:

- (a) User selects survey-based species identification.
- (b) System presents a series of questions dynamically based on the Decision-Tree Expert.
- (c) User completes the survey.
- (d) System generates a species prediction and accuracy score.
- (e) System submits results to the forum.
- (f) Forum consolidates data from all identification experts.
- (g) Final species prediction is displayed to the user.
- (h) User can choose to submit the identification result to the community.

Secondary Scenarios:

- If the system fails to authenticate the user, it prompts for login recovery.
- If the survey responses are inconsistent, the user is asked to review or restart the survey.
- If the Decision-Tree Expert fails to generate a prediction, the user is advised to use another input method.
- If some experts fail to respond, the forum provides an answer based on available data.

BE5. Viewing a Report #7

Precondition: The user has already taken a picture of an animal and the forum has generated a report.

VP1. User #1

Main Success Scenario:

- 1 The user opens the app and logs in.
- 2 The system authenticates the user and displays the dashboard.
- 3 The user selects "View Report" from the options.
- 4 The system displays a list of available reports.

- 5 The user selects a specific report from the list.
- 6 The system retrieves the report details and displays them to the user, including the animal's name, species, habitat, diet, and conservation status.

Secondary Scenario:

- 4i System fails to retrieve the list of reports.
 - 4i.1 The system displays an error message.
 - 4i.2 The user is prompted to try again or contact customer support.
- 5i System fails to display the report content.
 - 5i.1 System displays a "Report Unavailable" message.
 - 5i.2 The user is prompted to reload the report or connect with customer support.

VP2. Ads Team
N/A

VP3. Marketing Team
N/A

VP4. Accounting Team
N/A

VP5. Environment Canada
N/A

VP6. National Parks/Hunting Organization
N/A

Global Scenario:

Precondition: The user has an account and is logged into the system. A report has already been generated for the image taken by the user.

Main Success Scenario:

- (a) User selects "View Report" from the dashboard.
- (b) The system retrieves and displays the report information, including the animal's details such as species, habitat, and diet.
- (c) User reviews the report.
- (d) User may choose to share the report with the community.

Secondary Scenarios:

- If the system fails to authenticate the user, it prompts for login recovery.
- If the report fails to load, the user is prompted to refresh or contact customer support.
- If the report data is incomplete, the system displays a warning and suggests a re-scan.

BE6. Saving a Report #8

Precondition: The user is viewing a generated report and wants to save it for offline access or future reference.

VP1. User #1

Main Success Scenario:

- 1 The user opens the app and logs in.
- 2 The system authenticates the user.

- 3 The user views the generated report.
- 4 The user selects the Save Report option
- 5 The system prompts the user to choose a format (e.g., PDF, Image) and confirm the save.
- 6 The user confirms the action.
- 7 The system saves the report to the user's device and provides a success message.

Secondary Scenario:

- 3i User selects an unsupported format.
 - 3i.1 System displays an "Unsupported Format" message and prompts the user to select a valid format.
- 4i System fails to save the report.
 - 4i.1 System displays a "Save Failed" error message.
 - 4i.2 User is prompted to try saving again or contact customer support.

VP2. Ads Team
N/A

VP3. Marketing Team
N/A

VP4. Accounting Team
N/A

VP5. Environment Canada
N/A

VP6. National Parks/Hunting Organization
N/A

Global Scenario:

Precondition: The user has an account and is logged into the system, and a report has already been generated.

Main Success Scenario:

- 1 The user opens the app and logs in.
- 2 The system authenticates the user.
- 3 The user views the generated report.
- 4 The user selects the Save Report option
- 5 The system prompts the user to choose a format (e.g., PDF, Image) and confirm the save.
- 6 The user confirms the action.
- 7 The system saves the report to the user's device and provides a success message.

Secondary Scenario:

- 3i User selects an unsupported format.
 - 3i.1 System displays an "Unsupported Format" message and prompts the user to select a valid format.
- 4i System fails to save the report.
 - 4i.1 System displays a "Save Failed" error message.
 - 4i.2 User is prompted to try saving again or contact customer support.

5 Non-Functional Requirements

- For each non-functional requirement, provide a justification/rationale for it.

Example:

SC1. *The device should not explode in a customer's pocket.*

Rationale: Other companies have had issues with the batteries they used in their phones randomly exploding [insert citation]. This causes a safety issue, as the phone is often carried in a person's hand or pocket.

- If you need to make a guess because you couldn't really talk to stakeholders, you can say "We imagined stakeholders would want...because..."
- Each requirement should have a unique label/number for it.
- In the list below, if a particular section doesn't apply, just write N/A so we know you considered it.

5.1 Look and Feel Requirements

5.1.1 Appearance Requirements

LF-A1.

5.1.2 Style Requirements

LF-S1.

5.2 Usability and Humanity Requirements

5.2.1 Ease of Use Requirements

UH-EOU1.

5.2.2 Personalization and Internationalization Requirements

UH-PI1.

5.2.3 Learning Requirements

UH-L1.

5.2.4 Understandability and Politeness Requirements

UH-UP1.

5.2.5 Accessibility Requirements

UH-A1.

5.3 Performance Requirements

5.3.1 Speed and Latency Requirements

PR-SL1.

5.3.2 Safety-Critical Requirements

PR-SC1.

5.3.3 Precision or Accuracy Requirements

PR-PA1.

5.3.4 Reliability and Availability Requirements

PR-RA1.

5.3.5 Robustness or Fault-Tolerance Requirements

PR-RFT1.

5.3.6 Capacity Requirements

PR-C1.

5.3.7 Scalability or Extensibility Requirements

PR-SE1.

5.3.8 Longevity Requirements

PR-L1.

5.4 Operational and Environmental Requirements

5.4.1 Expected Physical Environment

OE-EPE1.

5.4.2 Requirements for Interfacing with Adjacent Systems

OE-IA1.

5.4.3 Productization Requirements

OE-P1.

5.4.4 Release Requirements

OE-R1.

5.5 Maintainability and Support Requirements

5.5.1 Maintenance Requirements

MS-M1.

5.5.2 Supportability Requirements

MS-S1.

5.5.3 Adaptability Requirements

MS-A1.

5.6 Security Requirements

5.6.1 Access Requirements

SR-AC1.

5.6.2 Integrity Requirements

SR-INT1.

5.6.3 Privacy Requirements

SR-P1.

5.6.4 Audit Requirements

SR-AU1.

5.6.5 Immunity Requirements

SR-IM1.

5.7 Cultural and Political Requirements

5.7.1 Cultural Requirements

CP-C1. The system should integrated Indigenous and Local Knowledge (ILK).

Rationale: The system shall incorporate Indigenous and local knowledge in its wildlife identification processes, ensuring that traditional ecological knowledge is respected and utilized appropriately. Integrating ILK enhances accuracy and cultural relevance in wildlife identification while recognizing the contributions of traditional knowledge systems in conservation efforts [1].

CP-C2. The system should have at minimum bilingual support of English and French for Cultural Accessibility.

Rationale: The system shall provide multilingual support, to accommodate users from diverse cultural backgrounds and as well as include Canada's two national languages. Offering multilingual access ensures inclusivity and allows users from different linguistic groups to engage effectively with the system, fostering broader participation in conservation initiatives [2].

CP-C3. The system shall avoid the use of imagery, terminology, or content that could be considered culturally insensitive or offensive to any user group.

Rationale: Ensuring cultural sensitivity helps prevent alienation of user communities and promotes a respectful and inclusive environment for conservation efforts [3].

5.7.2 Political Requirements

CP-P1. The system shall adhere to all federal and provincial regulations concerning species protection.

Rationale: This includes restrictions on hunting, tracking, and photographing endangered animals. Ensuring compliance with these laws supports conservation efforts and mitigates potential legal risks [4].

CP-P2. The system shall facilitate secure data sharing with governmental and non-governmental environmental agencies.

Rationale: Some of these are the Environment Canada and the Ontario Ministry of Natural Resources. This data-sharing process ensures that conservation efforts are well-informed and that wildlife populations are effectively monitored [5].

5.8 Legal Requirements

5.8.1 Compliance Requirements

- LR-COMP1. All personal information collected, including data shared with third parties for processing, must be securely stored and protected.
Rationale: This is in compliance with PIPEDA (Personal Information Protection and Electronic Documents Act) Fair Information Principle 1 - Accountability [6].
- LR-COMP2. The purpose for collecting personal information, including information shared with third parties, must be clearly identified before or at the time of collection.
Rationale: This aligns with PIPEDA Fair Information Principle 2 - Identifying Purposes, ensuring transparency in data collection [7].
- LR-COMP3. The system shall obtain explicit user consent for collecting, processing, or sharing personal data.
Rationale: This follows PIPEDA Fair Information Principle 3 - Consent, ensuring users are aware and agree to how their data is being used [8].
- LR-COMP4. The system shall only collect data necessary to fulfill its core functions and services.
Rationale: This complies with PIPEDA Fair Information Principle 4 - Limiting Collection, preventing unnecessary data accumulation [9].
- LR-COMP5. Personal data must only be used or disclosed for the purpose for which it was collected, unless the user consents otherwise or under legal obligations.
Rationale: This aligns with PIPEDA Fair Information Principle 5 - Limiting Use, Disclosure, and Retention, ensuring responsible data management [10].
- LR-COMP6. The system must comply with the Canadian Anti-Spam Legislation (CASL), ensuring that users do not receive unsolicited messages without prior consent.
Rationale: CASL prohibits sending commercial messages without user consent, protecting users from spam and unwanted communications [11].
- LR-COMP7. The system shall comply with the Species at Risk Act (SARA), ensuring that data related to endangered species is handled in a manner that does not violate conservation laws.
Rationale: SARA prohibits activities that may negatively impact endangered species and their habitats [12].

5.8.2 Standards Requirements

- LR-STD1. The system shall not use notifications for promotional or advertising purposes unless explicitly enabled by the user.
Rationale: This follows Google's Play Store guidelines for app quality and user experience [13].
- LR-STD2. The system shall ensure that all touch targets within the mobile application are at least 48dp in size to ensure accessibility for users with motor impairments.
Rationale: This is a standard usability requirement recommended by Google for accessibility compliance [14].
- LR-STD3. Any personal or sensitive user data shall not be logged in system logs or application-specific logs.
Rationale: This standard ensures compliance with security and privacy best practices outlined by Google and OWASP [15].
- LR-STD4. The system shall store all sensitive user data in encrypted internal storage rather than external or publicly accessible storage.
Rationale: This follows Google's recommended security practices to protect user privacy and prevent data leaks [16].

6 Innovative Feature

The chosen innovative feature to implement is a comprehensive report generation system. When a user takes a picture of an animal, the app would not only identify the species but also provide in-depth information on the animal's habitat, diet, behavior, and conservation status. This will be especially useful for the app's target demographic, hunting enthusiasts and wildlife professionals who would benefit greatly from having a convenient and centralized source of information. Additionally, this transforms the app from just simple a tool for identification into a powerful resource for wildlife education and exploration. This enables the general public to take advantage of our informative reports, resulting in an interactive learning tool for everyone. This is heightened by the the ability to save and share the reports, allowing users to contribute show their cool reports to friends, or even simply just log their wildlife encounters.

Some alternative features are as follows:

- Chatbot
- Add more later

A Division of Labour

Include a Division of Labour sheet which indicates the contributions of each team member. This sheet must be signed by all team members.