

## **Project Overview**

The crowdsourced species identification project will improve and expand on an existing website for analysing and tagging the Alberta Biodiversity Monitoring Institute's camera trap data. This will save the organization time and money by making it easier for specialists to identify and tag animals in their dataset. This will be accomplished by creating a smoother interface to allow species identification to be crowdsourced. The intended users for this project include anybody interested in the biodiversity of Alberta. This site will have opportunities for both novice and expert users to help with the identification of species. To achieve this, Scala will be used to extend the current API of the website and PostgreSQL will be used to store and access the camera trap information. The deployment of this project will be on Linode, and is being supplied by the client.

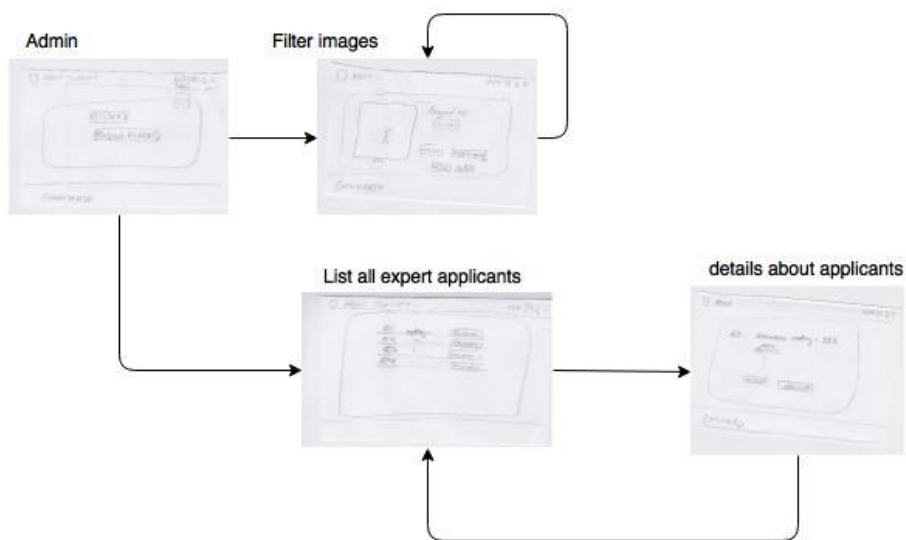
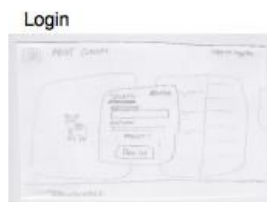
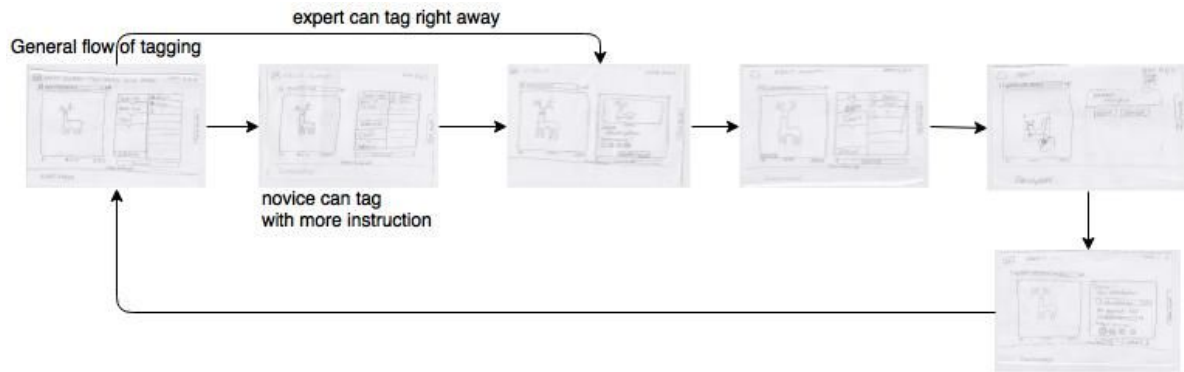
## **Project Glossary**

Definition of any words that may not be familiar to all involved in the project.

- Camera trap (CamTrap) - a motion activated camera used to take pictures of animals in certain locations
- Expert user - an approved user who has lots of experiences tagging images
- Novice user - a new user to the system that may need more guidance in tagging images
- ABMI - Alberta Biodiversity Monitoring Institute

## **Storyboarding**

Prototype screens of major workflow patterns through the system.



## User Stories

### Administrator

- As an administrator I can filter out pictures of people or identifying vehicles
  - Try it with a picture with a vehicle
  - Try it with a picture of a person
  - Try it with a blurred distant person
  - Try it with a blurred distant vehicle

- Try it with multiple people close together
- As an administrator I can filter out false positives or bad pictures
  - Try it with an empty picture
  - Try it with a blurry picture
- As an administrator I can accept people as experts
  - Try adding an expert
  - Try upgrading a novice user to an expert

#### Novice User

- As a Novice user I can draw boxes around the animals in the pictures so that we can train the program to find the animals
  - Try it with a small animal
  - Try it with a large animal (eg. moose)
  - Try it when there is no animal
  - Try it with a blurry distant animal
- As a Novice User I can be shown three consecutive pictures of the same animal so I can identify it better
  - Try it with good pictures of animals
  - Try it with a small animal
  - Try it with a big animal
  - Try it with blurry distant pictures
- As a Novice User I can be shown a list of animals the animal looks like
  - Try it with all the different animals
  - Try not selecting an animal
- As a Novice User I can be shown a list of animals I can compare the animal's body size to
  - Try it with all the different animals
  - Try not selecting animals
- As a Novice User I can be shown a list of animals I can compare the animal's coat
  - Try it with all the different animals
  - Try not selecting an animal
- As a Novice User I can be shown a tutorial so I can learn the system
  - Try doing the tutorial right
  - Try doing the tutorial wrong
  - Try quitting halfway through
- As a Novice User I can be shown pictures of the animal I think it is to confirm my choice

- Try it with all the different animals
- As a Novice user I can be shown different variations of the animal to choose from (ex. Young, adult male, adult female)
  - Try it with all the different animals and all the selections for all the animals
- As a Novice user I can identify the behaviour of the animal from a list of suggestions
  - Try all the different animals and all the different behaviours
- As a Novice user I can choose to be shown another picture set after identifying the first one
  - Try after completing one
  - Try exiting out and coming back into the system halfway through
- As a Novice User I can sign in as a user
  - Try signing in right
  - Try signing in wrong
  - Try creating an account
- As a Novice User I can gain experience points and badges
  - Try gaining experience points
  - Try getting all the badges
- As a Novice User I can have a user profile
  - Try looking at the profile
  - Try viewing the picture from another account
  - Try editing the profile
- As a Novice User I can have a profile picture
  - Try viewing the picture
  - Try changing the picture
  - Try viewing the picture from another account

#### Expert User

- As an Expert User I have the Novice User Functionality
  - Try the Novice User functions as an expert
- As an Expert User I can be given less guidance and have quicker flow through the program
  - Try going through faster as an expert

#### **Technical Resources:**

- Play framework - Used in the existing website
  - Download, documentation, and tutorials <https://www.playframework.com/>
- Scala - Will be used to extend the current APIs of the current website

- Coursera lesson on functional programming using Scala  
<https://www.coursera.org/learn/progfun1>
  - Download page with documentation, tutorials, and other information -  
<http://www.scala-lang.org/documentation/>
- PostgreSQL - Database
  - Download, documentation, and tutorials <https://www.postgresql.org/>
- React - Front end
  - Starter kit with what you need to get started, including examples -  
<https://facebook.github.io/react/docs/getting-started.html>
- Linode - Hosting provider for production
  - General information - <https://www.linode.com/>
  - We can setup a Cybera server that is the same as the production server for our testing environment
- Cybera - Hosting provider for test environments
  - Tutorial by Diego Serrano -  
[https://eclass.srv.ualberta.ca/pluginfile.php/3054389/mod\\_resource/content/1/cybera.pdf](https://eclass.srv.ualberta.ca/pluginfile.php/3054389/mod_resource/content/1/cybera.pdf)
- Zooniverse - Front end tool that aids in the categorization of photos
  - Documentation with how to: <https://www.zooniverse.org/lab-how-to>
- Zoonivers APIs - APIs that already exist in the Zooniverse front-end and may need to be created in the back-end as well -  
<http://docs.panoptes.apiary.io/#reference/0/group-panoptes-api-root>
- NodeJS - Used for front end development
  - Reference documents, FAQ, and features: <https://nodejs.org/en/docs/>
- Bootstrap - Framework used for building responsive web projects
  - Getting started guide with examples and other useful resources:  
<http://getbootstrap.com/getting-started/>

### **Similar Products:**

- Snapshot Wisconsin - This project uses the same open source Zooniverse project that we will be utilizing and uses it to classify photos from various camera traps located in the state of Wisconsin. It will serve as the main source of inspiration and reference and has been mentioned in the project specifications as an example of the ideal end product. When this document was created there were 47 projects currently using Zooniverse to help with different types of image classification and identification. We may draw on these projects for ideas and reference points throughout the project.