Functional Specification Document

Campus Bird Guide

(Current Document Version 2.0.0)

Document update history:

Version 1.0.0

Create by Ana Monteiro and Ophelia Korontinis on Nov 5, 2022
Description: First draft of Functional Specification Document (FSD)

Version 2.0.0

Modified by Connall Shurey on Nov 11, 2022
Description: Overhaul of FSD Structure and content
Reviewed By Ana Monteiro and Ophelia Korontinis on Nov 17, 2022

1 Introduction

1.1 Project and Scope

Our aim is to develop and sell an educational Android application to provide students of campus-based universities, and local members of the public, a means of identifying and learning about the local avian wildlife. By providing potential future students with information on the wildlife that exists on campus, we are giving them the opportunity to fall in love with the university even prior to beginning their studies. Therefore, our target audience includes students that have interest in studying in a nature-surrounded environment in the UK.

In this project's scope, we will initially focus on supplying information regarding wildlife at The University Of York. This will include images, videos, sounds and text which will act as a template that can be used to expand our application to cover any university in the UK. Users will be able to use the application as a journey of discovery, identifying different species of birds around the campus and learning about their characteristics, diet, location and fun facts. Users that purchase a guide licence will be able to load data from their desktop, allowing student societies and third-party providers to get involved in expanding the database of existing species and information.

Universities would benefit greatly from the application by increasing the likelihood that a potential student will choose the university as their place of study. Students seeking a calm, peaceful and natural environment that gives them the opportunity to release the stress associated with studying a degree will be motivated by the familiarity with local wildlife gained through our application. The application would also increase the university's revenue by attracting more bird watchers and curious members of the community to the campus and therefore income from sources such as parking and on-campus cafes would increase, while also engaging the community in the university, furthering its reputation.

1.2 Risk and Assumptions

ID	Risk Description	Impact	Level of Risk	Mitigation of Risk
1	Media handlers produced by contractors underperforms	Medium	Low	Ensuring contracts thoroughly specifies requirements
2	Contractors are late delivering media handlers	High	Medium	1. Ensure contracts specify a due date with appropriate compensation for failure to deliver on time. 2. To lower impact, avoid planning software work in weeks after delivery date to allow programmers to compensate.
3	Project overruns assigned time period	High	Low	Proper planning to make efficient use of the time available, including making full use of each team members capabilities

2 System Overview

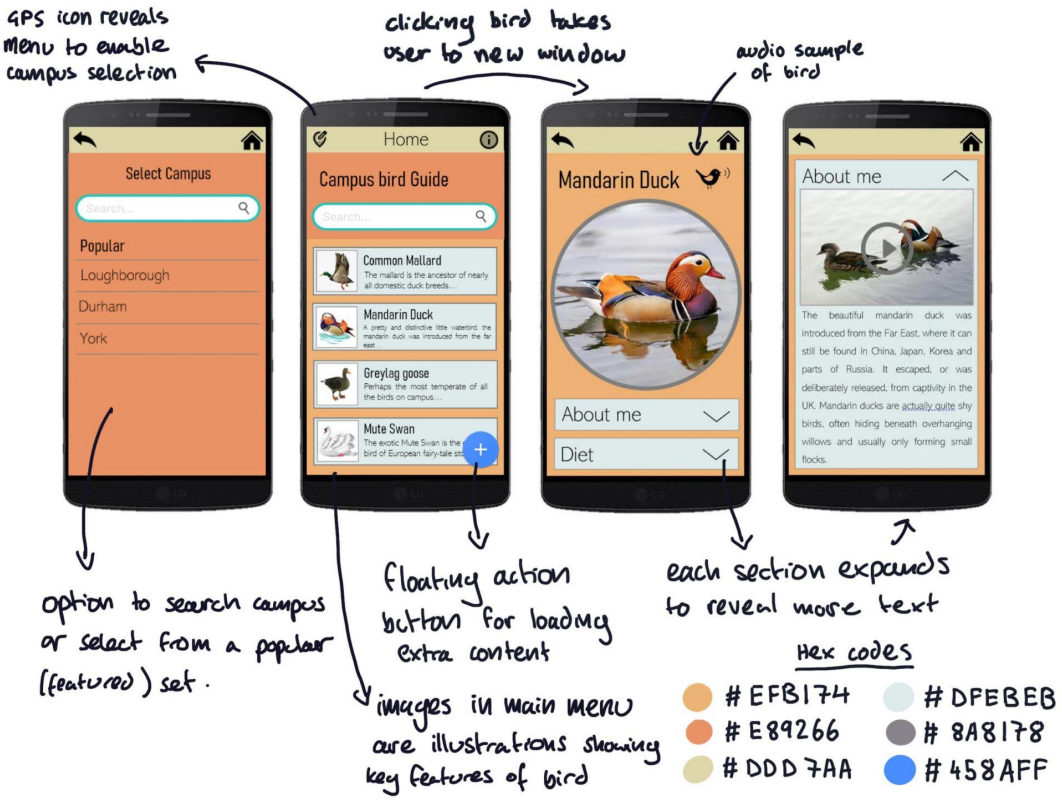
On the main user client, developed for Android, the user is presented with the home page containing a list of local avian wildlife species upon launching the application. From this page the user can change their location or view information about the application. Choosing a bird presents the user with a bird profile page containing the related information. Basing this application on android use allows the user to easily access the application while on the go.

A secondary guide admin client, developed for desktops, allows guides to create, read, update and delete information from the database. Due to this client giving access to the application's database, appropriate security measures need to be taken to ensure the validity of the user's intentions. This includes requiring an API key to access the client. Basing this application on desktop use allows for ease when editing information and adding content from file browsers.

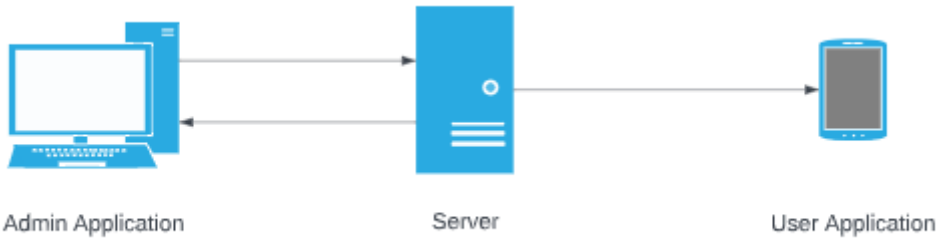
An internal system admin client will be responsible for creating API keys and creating/updating locations. While this can be done through the terminal, adding another client simplifies the process.

2.1 Application Diagrams

2.1.1 Interface Diagram



2.1.2 Data Flow Diagram



2.2 User Roles and Responsibilities / Authority Requirements

User / Role	Example	Frequency of Use	Security/Access, Features used	Additional Notes
User	Students, Bird watchers	Frequent	Can view duck information.	
Admin	Groundskeepers, Bird Experts	Occasional	Can edit/create duck content. Requires API Key	
System Admin	Developers	Rare	Can create API keys and edit/add locations. Requires system access	

2.3 Dependencies

The functionality of the live application will depend on:

1. The media handlers written by a contracted third party
2. The server host

3 Functional Specifications

3.1 User Client Application

Purpose / Description	Specifications related to the android client used by regular users. This includes the following pages: ● Loading Page o This is the page the user will see before the content of the app is loaded ● Landing Page/ Home Screen o Includes the list of birds o Includes a button that enables the user to load additional content (additional birds) ● Individual Bird Page o Includes all the information about the specific bird chosen by the user as well as some images and videos of the bird seen on campus ● Campus Selection Page o Allows user to switch location/campus
Use Case	This client will be used to identify birds and view related information
Functional Requirements / User Stories	● As a User, I can see a list of birds by location ● As a User, I can change location ● As a User, I can search for my location ● As a User, I can see details about a particular bird in the list ● As a User, I can load a third-party provided bird presentation file ● As a User, I can see instructions on how to use the application

3.2 Admin Client Application

Purpose / Description	Specifications related to the desktop client used by guide users.
Use Case	This client will be used to create, read, update and delete information about birds in the database.
Functional Requirements / User Stories	● As an admin, I can create, read, update and delete a bird entry in the database ● As an admin, I can create, read, update and delete a bird's assets

3.3 System Admin Client Application

Purpose / Description	Specifications relate to the desktop client used by system admins
Use Case	To create API keys and new locations
Functional Requirements / User Stories	● As a System Admin, I can create, read, update and delete a location ● As a System Admin, I can create, read, update and delete API keys

4 System Configurations

To configure application:

User Client:	No configuration necessary. Download the app and launch to browse
Guide Client:	Requires input of an API key
System Admin Client:	Requires System Admin Key which can only be generated by System Admin Clients.

5 Non-Functional Requirements

On the bird page of the user client, the following media is required:

Media Type	Media Description
Text	● Names of birds ● Description of birds ● Preferred location ● Diet ● Fun facts
Sound	● Characteristic sound of each bird
Images & Video	● Appealing images and videos capturing each bird in its natural element

6 Deployment

Applications will be deployed on Amazon Web Services (AWS) as they can deliver a reliable service while adhering to suitable sustainability standards (see sustainability bill [1]). AWS allows for Infrastructure as Code (IaC) deployments, giving more DevOps, less ClickOps for increased productivity.

Possible minimum requirements:

- Ec2 instance for computing (running springboot) and database
- S3 bucket for media storage
- Domain name record
- Load balancing through elastic load balancing [2]

Whole stack can be implemented on AWS (or GCP if there is a price advantage)

7 Integration Requirements

Structure of application XML follows the XML Schema Standards specified by agreement between related businesses. Application is able to load XML files from other applications to load their related data.

References

1. Amazon, “Sustainability in the Cloud”, Amazon Web Services, [Online]. Available: https://sustainability.aboutamazon.co.uk/environment/the-cloud?energyType=true

2. Amazon, “Elastic Load Balancing”, Amazon Web Services, [Online]. Available: https://aws.amazon.com/elasticloadbalancing/