

3A04 Group 3: FIA

Software Requirements Specification

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Table 1: **Revision History**

Version	Date	Notes
1.0	24/01/2018	Created document
1.1	31/01/2018	Updated document, section 1 and 4
1.2	05/02/2018	Updated document, section 3
1.3	06/02/2018	Updated document, all sections
1.4	07/02/2018	Finalized Rev.1

1 Introduction

1.1 Purpose

The purpose of this specifications requirement document is to group and analyze the requirements with respect to the system to be of “Flag Identifier Application“ (**FIA**). This document serves to provide all **stakeholders** with a detailed overview of the system including its functional and non-functional behaviours. The document also outlines the software development cycle anticipated to implement the system.

1.2 Scope

The “Flag Identifier Application“ (**FIA**) is an Android based application which helps **users** to identify a flag by providing the name of the flag and which geographical area it belongs to.

Users can upload a picture of a flag that they have either taken themselves or found on the internet. The information will be handled by three system experts; colour expert, graph expert and **GPS** expert. With the help of the three experts, the system will be able to present the user with six flags that best match the flag uploaded. **Users** can choose the correct flag and learn the proper name and origin.

1.3 Definitions, Acronyms, Abbreviations

Note: All references to the terms within this table will be highlighted blue throughout this document.

Table 2: Definitions, Acronyms and Abbreviations

Term	Explanation
FIA	Flag Identifier Application (system-to-be)
GUI	Graphical User Interface
GPS	Global Positioning System
OpenCV	Open Source Computer Vision
SDK	Software Development Kit
Smartphone	A mobile phone that has an operating-system capable of running applications and accessing the internet
Stakeholder	Any non-developer who is related to the project
User	Any person who may use the program

1.4 References

- 1 Opencv.org. (2018). License - OpenCV library. [online] Available at: <https://opencv.org/license.html> [Accessed 5 Feb. 2018].

2 flagid.org. (2018). Flag Identifier: FlagId - Identify a Flag. [online] Available at: <http://www.flagid.org/> [Accessed 4 Feb. 2018].

1.5 Overview

This document includes four sections. The above sections cover the Purpose, Scope, and Definitions of the project.

The second section provides an overall description of the project and the general function of the system. It also introduces the [user](#) characteristics and constraints. Moreover, what kinds of devices and platforms the system depends on is mentioned as well.

The third section contains all the functional software requirements in detail. These requirements contain the description of every input into the system and output to the [users](#). This section is organized first by business events, then by viewpoints.

The fourth section provides the non-functional requirements of the project. It includes information on the usability, performance, and the look of the system. It also describes to what extent the maintenance and security must be designed and which laws the application needs to obey.

Throughout the document anything that is highlighted in the colour yellow represents information pertaining to an innovative feature.

2 Overall Description

2.1 Product Perspective

The inspiration for FIA, Flag Identifier, is an in-browser application found at www.flagid.org. This application functions by asking the [user](#) to describe the flag they wish to identify through the use of consecutive questions pertaining to the flags color, shapes, and patterns. Answers are used to narrow a search query, and eventually reach a result. [FIA](#) is similar in its purpose, but differs greatly in its implementation, as [FIA](#) only requires the [user](#) to provide an image of the flag, which is then analyzed together with the [users](#) [GPS](#) location by the system, to generate a resultant answer. The technology utilized within [FIA](#) allows the application to function independently of other systems, and will use a local database allowing it to run self contained.

2.2 Product Function

The main functions of the [FIA](#) System are as follows:

The [FIA](#) system will launch and run on an Android [Smartphone](#) device, allow [users](#) to upload photos from the memory on their Android [Smartphone](#), and crop down the uploaded image to only contain the flag they wish to identify.

The [FIA](#) system will then analyze the image with the three experts of the system which are color expert, graph expert and [GPS](#) expert. The system will decide the best 6 results, then return them to the [user](#) and allow the [user](#) to either select a flag or select "None Of The Above". The [FIA](#) System will save the results ("Correct" or "None Of The Above") and the flag selected by the [user](#). The [FIA](#) System will also be able to display a [users](#) previous results

("Correct" or "None Of The Above"), and the most commonly searched for flags to the user. The FIA System will allow the user to exit the application on the Android Smartphone.

2.3 User Characteristics

Users are people who wish to identify a flag in an image. These users must understand how to navigate a mobile application. Beyond the basic operation of the Smartphone, FIA is designed for all users regardless of their level of education or technological expertise.

2.4 Constraints

FIA will be built with accordance to the following two constraints:

Time Constraints: The FIA system must be ready to use by April 6th, 2018.

Environmental Constraints: The FIA system must run on Android Smartphones.

2.5 Assumptions and Dependencies

The requirements for the FIA system described in this SRS are based on the following assumptions: The system will be developed on the Android SDK, the Android SDK will be able to run java applications, the Android SDK is able to utilize OpenCV, and GPS. Test Users will be able to understand English.

2.6 Apportioning of Requirements

Non-applicable

3 Functional Requirements

BE1 A user would like to identify a flag.

VP1.1 User

R1.1 The system shall prompt the user to upload an image.

R1.2 The system shall allow the user to crop an uploaded image so that the image will only contain a flag.

R1.3 The system shall allow the user to confirm the submission of an image.

R1.4 The system shall analyze an uploaded image and return the top flag matches by returning the flags name, image, and additional information.

BE2 User wants to confirm whether or not a returned identification is correct.

VP2.1 User

R2.1 The system shall prompt the user to select whether any of the returned flags are correct and match the users uploaded flag.

R2.2 The system shall save the name and result.

BE3 User wants to view report of previously searched flags.

VP3.1 User

R3.1 The system shall display all previously searched flags in order of most recent searches. The system shall do this by displaying the name of the flag, and whether or not it was correctly identified.

R3.2 The system shall allow the user to select a previously searched flag to see additional information about the flag.

BE4 User wants to view the most searched for flags.

VP4.1 User

R4.1 The system shall display the most searched for flags in order of frequency.

R4.2 The system shall allow the user to select a most searched for flag to see additional information about the flag.

BE5 User wants to exit application.

VP5.1 User

R5.1 The system shall allow the user to safely exit the application.

R5.2 The system shall save all critical data before exiting.

4 Non-Functional Requirements

4.1 Look and Feel Requirements

4.1.1 Appearance

LF1 The application should maintain the FIA company's logo and colour scheme.

LF2 The GUI will be how the user interacts with the application. The GUI will be minimal and aesthetically pleasing to the user.

4.1.2 Style

LF3 The styling used will be consistent throughout the application.

4.2 Usability and Humanity Requirements

4.2.1 Ease of Use

UR1 The system should be easy to use on the first attempt by those aged 12 and up with the ability to use a mobile device.

4.2.2 Personalization and Internationalization

UR2 The [user](#) will be able to select and switch between a dark or light theme for the application.

4.2.3 Learning

UR3 The application will have a Frequently Asked Questions section in order to instruct [users](#).

4.2.4 Understandability and Politeness

UR4 The application will not contain any offensive language.

4.2.5 Accessibility Requirements

UR5 The application will be available in English.

4.3 Performance

4.3.1 Speed and Latency

PR1 The application shall identify the name of the flag uploaded within 3 seconds of [user](#) confirmation.

PR2 The statistics portion of the application will update as soon as the [user](#) opens the application or manually refreshes the page.

4.3.2 Safety-Critical

Non-applicable

4.3.3 Precision and Accuracy

PR3 The application will deliver the best 6 flag results to the [user](#).

4.3.4 Reliability and Availability

PR4 The application shall be available wherever there exists an internet connection.

4.3.5 Robustness

PR5 The application will contain error messages to deal with unknown input.

4.3.6 Capacity

Non-applicable

4.3.7 Scalability and Extensibility

Non-applicable

4.3.8 Longevity

PR6 The application shall be relevant for the lifespan of the [OpenCV](#) libraries utilized.

4.4 Operations and Environmental Requirements

4.4.1 Expected Physical Environment

OE1 The application is to be used in any dry physical environment where a mobile device has access to a cellular signal.

4.4.2 Requirements of Interfacing with Adjacent Systems

Non-applicable

4.4.3 Productization

Non-applicable

4.4.4 Release

OE2 The application will be ready to be released to [users](#) as of April 6, 2018.

4.5 Maintainability and Support Requirements

4.5.1 Maintenance

MS1 Changes to the styling may be made with future updates without changing the functionality of the application itself.

MS2 The application will maintain an updated flag database up until April 6, 2018.

4.5.2 Supportability

MS3 The product shall be available to use on a [Smartphone](#) with Android operating system.

4.5.3 Adaptability

Non-applicable

4.6 Security Requirements

4.6.1 Access

Non-applicable

4.6.2 Integrity

SR1 The application should not request or gather the personal information of the [users](#).

4.6.3 Privacy

SR2 The application shall protect the [GPS](#) location of the [users](#).

4.6.4 Audit

Non-applicable

4.6.5 Immunity

Non-applicable

4.7 Cultural and Political

4.7.1 Cultural

CP1 There will not be any offensive language or symbols displayed on the application.

4.7.2 Political

CP2 The flags displayed on the application will be accurate as of the date of the last version released.

CP3 The application will use British spelling.

4.8 Legal

4.8.1 Compliance

LR1 The application shall adhere to all laws, specifically the Canadian Privacy Act and Canadian Personal Information Protection and Electronic Documents Act.

4.8.2 Standards

LR2 The application will adhere to the [OpenCV](#) licensing terms.

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