Software Engineering Group Projects
Reserve Plant Species Recording
Requirements Specification

Author: N.W.Hardy
Config Ref: SE.QA.RS
Date: 2014-10-06
Version: 1.0
Status: Release

Department of Computer Science
Aberystwyth University
Aberystwyth
Ceredigion
SY23 3DB

CONTENTS

1. INTRODUCTION

1.1 Purpose of this Document

This document describes the requirements for the Software Engineering Group Project 2014-15 for students studying in Aberystwyth University on module CS22120 & CC22120 Software Engineering Life Cycle. It should be read in the context of the Group Project, taking into account the details of the group project assignment and the group project Quality Assurance (QA) Plan [1].

1.2 Scope

This requirements specification describes the functions of software to record plant observations in association with nature reserves of a Naturalists' Trust, and the attributes that are expected from the finished product. It also describes the requirements for the process of constructing the system.

1.3 Objectives

The objectives of this document are:

- To describe the background to the group project application for 2014-15 (Reserve Plant Species Recording)
- To provide details of the criteria that the group project product must meet
- To describe the types of interaction with the system which must be supported

2. GENERAL DESCRIPTION

2.1 Product Perspective

Reserve Plant Species Recording (RPSR) is a computer-based system to compile observations of plant species occurrence on the nature reserves of a regional Naturalists' Trust (conservation organisation). A database will hold details of the reserves and a mobile application will support field recording of species at those sites during visits by botanists. A web site will provide access to the database, providing for maintenance of reserve details and viewing of plant records.

2.2 Product Functions

The product will provide the following features:

- A mobile Android application (RPSRrec) to make plant records in the field, when potentially out of any network communication.
  - This visit recording will include:
    - the recorders details;
    - the date;
    - a list of species and their details.
  - A facility to output (transmit) the full recording to a server when communication is available.
- A server (RPSRsrv) which receives plant records and adds them to the database.
- A web site (RPSRview) which allows:
  - addition and maintenance of records of reserves;
  - Viewing of species records for reserves.

2.3 User Characteristics

The system will be used by naturalists who are familiar with standard computer interfaces. They are concerned with accuracy of recording and they may have to operate in difficult weather conditions and in remote locations.

3. SPECIFIC REQUIREMENTS

3.1 Functional Requirements

3.1.1 RPSRrec

FR1 Startup of software on Android device
When the RPSRrec software starts on an Android device, the user will be given the opportunity to start a new visit recording. The user will then be prompted for details (see FR2) and species recording may the start. When recording is complete, it should be possible to record at a different site.

FR2 Providing information about the visit
The user should be able to identify the site and will be prompted for their name, phone number and e-mail address. The date and time of the recording should be obtained from the device.

FR3 Adding a species to the recording
The user should be able to select a species. A list of species is provided by the Botanical Society of Britain and Ireland as "BSBI List 2007" [2]. If the species is not on that list, the option to provide a name should exist.

FR4 Adding species details
For each species in the recording, it should be possible to add:

- a typical location for it, within the site, recorded using the GPS receiver of the Android device;
- an abundance using the "DAFOR" scale (see Appendix A)
- an optional free text comment
- an optional photo of the general scene at the typical location
- an optional photo of a specimen

Photos will be taken using the Android device. Addition of a photo to the record for a species may be by acquiring a new image or by selecting one from the device's photo library.

FR5 Editing the recording
It must be possible to edit the recording in the following ways:

- deletion of the whole recording;
- deletion of the record for one species;
- changing any of the species details in an existing species record.

FR6 Sending recordings to the server
Recordings should be sent to the server (RPSRsrv), when possible, for addition to the database. The message should be formatted as a Multipurpose Internet Mail Extensions (MIME) message and sent to the server via an HTTP POST to a predefined URL. The sent data should include the following information:

- the information about the visit (FR2)
- the information about each species recorded (FR3, FR4).

3.1.2 RPSRsrv

FR7 Receiving recordings on the server
The server (RPSRsrv) should receive transmissions of recordings (FR6) and store then in the database. Authentication and authorisation for this service is an optional feature.

3.1.3 RPSRview

FR8 Addition and maintenance of reserves data
The site should provide for creation, update and deletion of reserve records. For each reserve, the following information should be stored:

- name;
- location, as the OS grid reference of its principle access point;
- a textual description.

Authentication and authorisation of users for this access is an optional feature.

FR9 Browsing species records
It should be possible to select a reserve to view a complete list of species recorded at that site. The list should be in alphabetical order of latin name and include the earliest and latest recordings. From such a list, it should be possible to drill down to a date ordered list of all records, including the recorder's name, the date, and the abundance, with access to any associated general scene photographs.

3.2 External Interface Requirements

EIR1 Appearance of Interface

The program should be intuitive to regular computer users.

3.3 Performance Requirements

PR1 Response of program to user input

Any user input should be appropriately reflected on the screen within one second.

PR2 Target computer for system

All software produced should run correctly on the appropriate platform – Android for the client application (RPSRrec) and as a web application for the server (RPSRsrv) and web site (RPSRview).

3.4 Design Constraints

DC1 Use of Java and Eclipse/Android Studio

It is corporate policy to use Java for all Android development, and the software should be built under Eclipse or Android Studio. The server side can be developed in any web technology/platform that you are comfortable with and is available within the department of Computer Science.

DC2 Production of Test Data

The functionality of the software will be shown by the exploration of at least two reserves, each with at least two recording visits with overlapping species records.

3.5 Other Requirements

The project will be developed in line with the group project QA plan, detailed in [1].

Appendix A

The DAFOR scale is a subjective estimate of abundance with the following 5 levels:

D - Dominant
A - Abundant
F - Frequent
O - Occasional
R - Rare

REFERENCES

[1] QA Document SE.QA.01 - Quality Assurance Plan.
[2] Botanical Society of Britain and Ireland, http://www.bsbi.org.uk/resources.html Accessed 2014/10/05

DOCUMENT HISTORY

Version	*CCF No.*	*Date*	*Changes made to document*	*Changed by*
0.1	N/A	2014/09/23	Initial outline	NWH
1.0	N/A	2014/10/06	Full details of required data.	NWH
1.1	N/A	2014/10/07	Terminology made more consistent. For Release	NWH