Functional Requirements for the SAMBUG project

COS301

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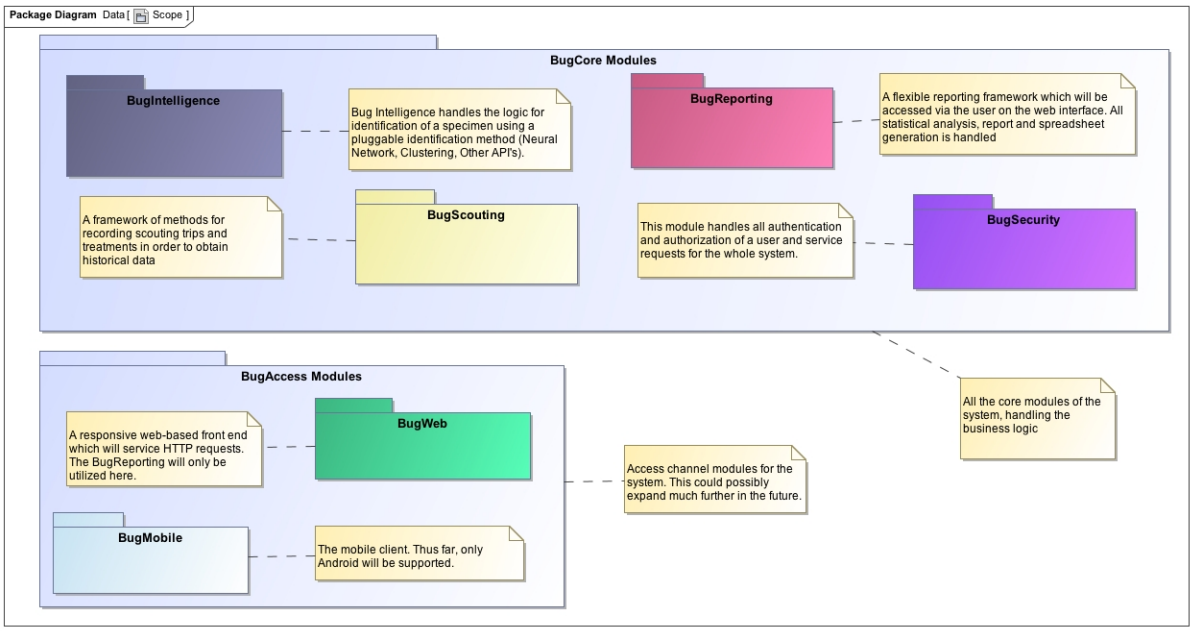
1 Background

South Africa is currently the largest producer of macadamia nuts in the world. One of the main production and quality limiting factors is the incidence of stink bug damage.
Accurate timing of chemical sprays rely on accurate scout data and economic threshold levels of the insect pests in an orchard. However, scouting for these pests has a major shortfall, namely the accurate identification of pests, despite efforts to train growers and scouts by various means. Area wide control of pests and diseases is a concept that has been considered, but with the lack of scout data from across and within growing regions it is impossible to make such recommendations.

2 Vision

An innovative approach to handling the management and acquisition of scout data is to develop a smartphone application that is able to identify specific hemipteran species by making use of the built-in camera of the smartphone. This application should ideally be able to make use of the smartphones built-in GPS to perform geotagging and uploading information to a central database.

3 Scope



4 Functional Requirements and Application Design

4.1 Domain Model

4.2 BugScouting

The BugScouting module has the following functionality:

1. It provides the functionality for a user to be able to enter data related to a scouting trip - entering data such as the number of trees scouted, the average number of bugs per tree and the different kind of bugs specified. After which a summary should be displayed.

2. It provides the ability for a user to record the details related to spraying.

4.2.1 Module Scope

4.2.2 Use Cases

4.2.2.1 getBugInfo ..... **[Priority - Medium]**

4.2.2.2 updateInfo ..... **[Priority - Medium]**

4.2.2.3 showTripSummary ..... **[Priority - High]**

4.2.2.4 enterTreatmentData ..... **[Priority - Critical]**

4.2.2.5 enterScoutingData ..... **[Priority - Critical]**

4.3 BugIntelligence

The BugIntelligence module has the following functionality:

1. It provides a pluggable method to classify a specimen according to species and life stage.
2. It provides an interface which can be used to obtain information related to any specific specimen which is identifiable by the system
3. It provides CRUD(Create Read Update Delete) functionality for bug information for specimens identifiable by the identification method

4.3.1 Module Scope

4.3.2 Use Cases

4.3.2.1 classifyBug ..... **[Priority - Critical]**

4.3.2.2 updateBugKnowledgeBase ..... **[Priority - Low]**

4.3.2.3 readBugKnowledgeBase ..... **[Priority - Critical]**

4.4 BugSecurity

The BugSecurity module allows the following functionality:

1. It provides functionality related to user accounts and user roles in order to login, register and recover your account within the capacity of a user role.
2. It provides functionality to determine whether a specific service request should be allowed.

4.4.1 Module Scope

4.4.2 Use Cases

4.4.2.1 login ..... **[Priority - Critical]**

4.4.2.2 register ..... **[Priority - Critical]**

4.4.2.3 logout ..... **[Priority - Medium]**

4.4.2.4 recoverAccount ..... **[Priority - Low]**

4.4.2.5 isAuthorised ..... **[Priority - High]**

4.4.2.6 authoriseUser ..... **[Priority - Medium]**

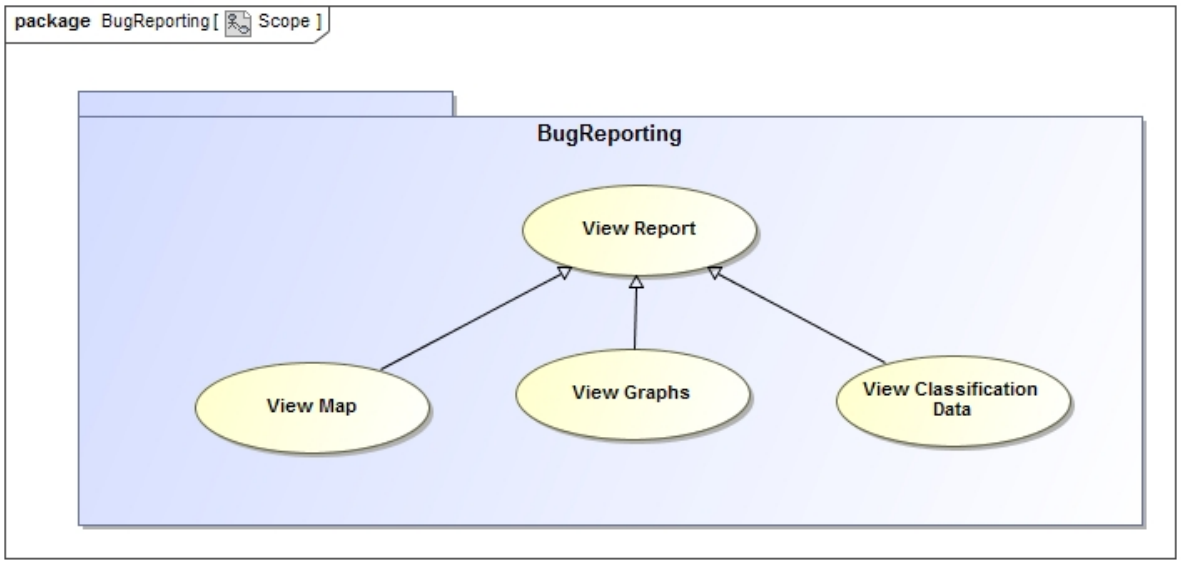
4.4.2.7 deauthoriseUser ..... **[Priority - Medium]**

4.5 BugReporting

The BugReporting module allows the following functionality:

1. It provides functionality to generate historical data in a usable, tabular - as used by Microsoft Excel and similar software, format.
2. It provides functionality to generate a visual representation of historical data in the form of a dynamically chosen set of graphs.
3. It provides functionality to generate a heat map of the farm with regards to the population of stink bugs identified.

4.5.1 Module Scope



4.5.2 Use Cases

4.5.2.1 viewMap ..... **[Priority - Medium]**

4.5.2.2 viewGraph ..... **[Priority - Medium]**

4.5.2.3 viewHistoricalData ..... **[Priority - Medium]**