

## **Evaluation Assignment 1:**

Stakeholders, Goals and Task Analysis

### **Evaluator:**

Avinash Subramanian (avsubram@mtu.edu)

### **Development team:**

Coffee

### **Application:**

Roya Survey

### **Scientist:**

Robert Manson – Professor of Ecology

## **Development Team :**

Bill Doyle

Brad Johns

Greg Johnson

Robin McNally

Kirsti Wall

## **Application Idea:**

The Roya Survey App seeks to provide feedback to scientists working with long-term climate data to generate models predicting levels of risk for infection of coffee farms by the coffee rust fungus in Mexico. The app will allow coffee farmers to register and then provide several photos and a personal estimation of the degree of coffee rust infection in their farms that will then be compared to existing model predictions to help refine them. In exchange, farms will be able to send additional photos of other pests and diseases in their farms and a request for help in identifying them and obtaining suitable control measures.

## **Scientist :**

**Robert Manson,**

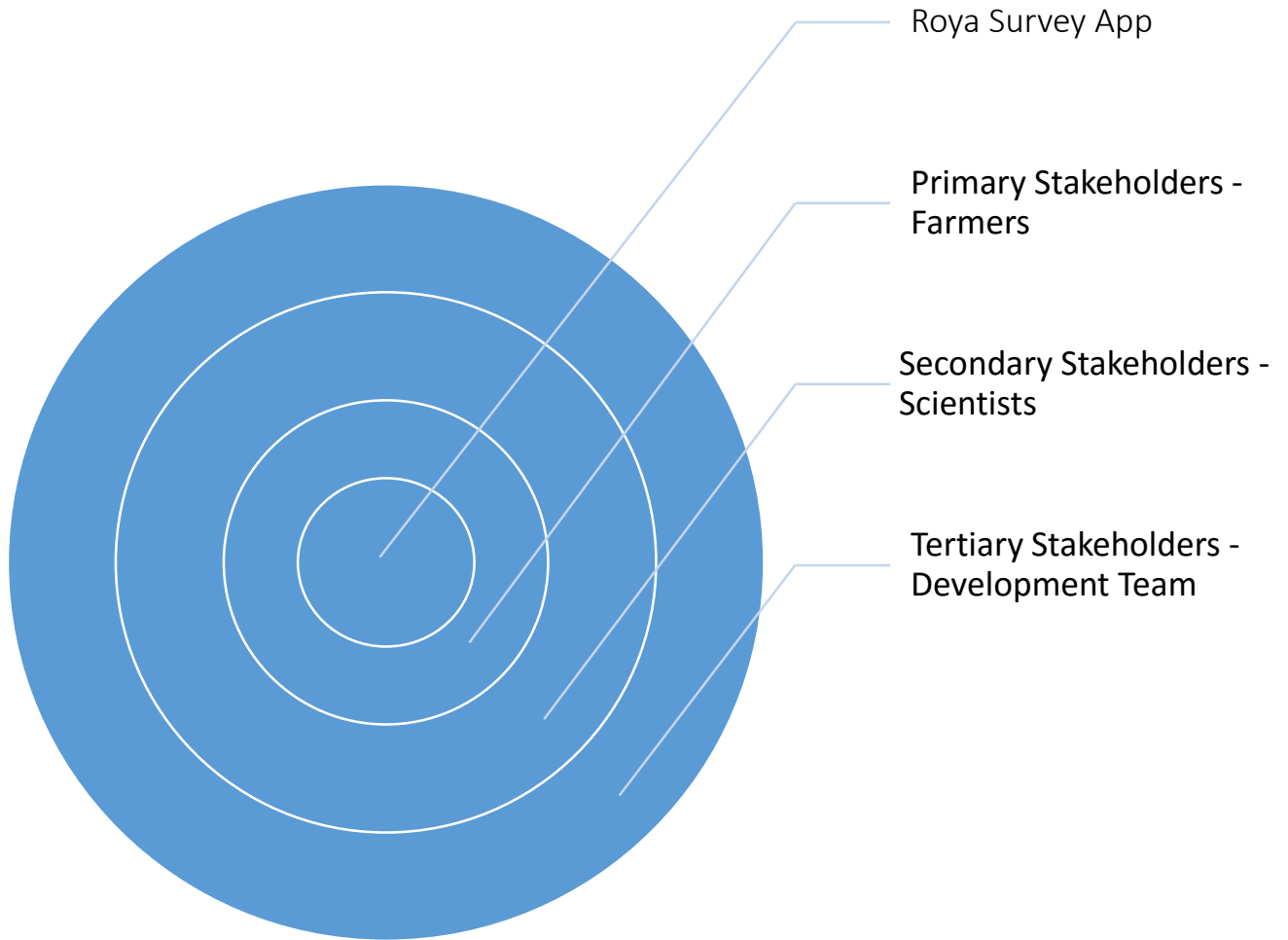
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# 1. STAKEHOLDER ANALYSIS:

## a. Onion Model of Stakeholders:



## **b. Descriptions of each Stakeholders:**

Primary Stakeholders – In this application, the primary stakeholders would be the farmers who work in the coffee farms in Mexico. They register to the application, traverse to the location of the farm through risk map and record pictures and send them to through the application to the scientists for aiding their research. They take the pictures of the pests, infections and leaves of the infected plants and help the scientists to research on the collected data.

Secondary Stakeholders – In this application, the scientists form the secondary stakeholders. They would receive the pictures and the information uploaded by the farmers and make use of them to conduct research to analyze the actual and predicted behaviors of the plants and to obtain suitable control measures based on these information.

Tertiary Stakeholders – In this application, the tertiary stakeholders include the Coffee Roya Survey Development team members. They are responsible for the design and development of the application and they interact with the scientists to gather all the necessary requirements and design the application to satisfy all these needs. The developers must consider the efficiency of the primary stakeholders (farmers) in using applications and their familiarity in technologies while constructing their application. The application must be made to be used in a very simple manner.

### c. Stakeholders' Goal Influence Table:

STAKEHOLDER GOAL INFLUENCE TABLE			
Stakeholder	Goals	Influences	
		Contributions	Constraints
Farmers	Locating their farm	Use of roya risk map to locate their farms	Might not be familiar with using the risk map and may not be accurate
	Registering to the application	Create username and password to register to the app	May not be choosing a proper username and may forget the password after registration – need a system to make them remember the password easily
	Clicking pictures	Overall picture and a detailed picture of the infected leaf needs to be taken by the farmers	They may not be well versed in photography and might take blurred images.
	Using the application to upload information	To send the taken images of the infected plants to the scientists for further action	Farmers might not be tech savvy to understand the flow of the application and hence the design must be very simple and user friendly
Scientists	Receive the data they actually require	The instructions made to the farmers should be absolutely clear and hence the farmers must upload the right images through the application	The scientists may not receive the data they require due to various reasons like the images could be blurred, it could be a wrong plant, the farmers might have estimated wrongly or the location of the farm could be wrongly picked by the farmer.

	Communicate with the developers clearly	Requirements, and the actual functionalities of the application should be well stated clearly to the developers	Miscommunication could lead to erroneous application in the end
Developers	Deliver all the functionalities	Careful design of all the needs of the application and provide a working model	Unable to implement one or more features in the final output of the application.
	Deliver on time	Work with a well-defined schedule to complete the project on time before the deadline	May not be able to deliver the product on time due to unexpected delays in implementation or testing
	Work in teams	Split up work equally and work in teams to contribute equally to the final output of the application	All the team members may not settle into the team and the team may have few internal disputes during the project implementation stages.

## **Summary of Stakeholders' Analysis:**

The primary stakeholders in this application play the most important role and they determine a huge portion of the developers concern while developing this application. Since the farmers are the ones who are going to use this application, the app must be very user friendly and the instructions must be made clearly and with proper visual representation so as to make the farmers understand what and how they need to proceed through the application.

The scientists must ensure that they provide the right requirements to the developers and mention clearly what they want for the developers to include them all in the functionalities of the application. If this process is not made perfectly the final output of the application might not be as intended.

The tertiary stakeholders, the developers must ensure that they work efficiently in teams and work together in building the application effectively and within the deadline. They must consider all the influences the primary stakeholders of the application will have and must ensure that the design can cope with all these influences.

## 2. PERSONAS:

### Primary Stakeholders :



- Name : John
- Occupation : Farmer
- Age : 35
- Experience : 12 years

### Description:

John is a middle aged coffee farmer working in XXX coffee farm in Mexico and he has an experience of about 12 years in farming. He is a smart worker and is open to the recent technologies of using applications. He also has a hobby of clicking pictures through a basic digital camera gifted by his brother to him. John would be a perfect example of a primary stakeholder for this application and he could be used to test the application for an ideal situation

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- Name : Peter
- Occupation : Farmer



- Age : 60
- Experience : 36 years

**Description:**

Peter is an old and experienced farmer who has spent most of his life in coffee farming. He knows in and out of the rusting of the coffee leaves and can mostly identify whenever a section of the coffee leaves are infected. But Peter is not a tech savvy person and does not use smartphones or tablets. He is not acclimated to the use of applications. So, though Peter has all the requirements to identify the right data for the scientists, the app must be user friendly and should make Peter understand how to proceed with uploading of the data to the scientists.

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**Secondary Stakeholders:**



- Name: Oliver
- Occupation: Plant Researcher PHD
- Age: 32
- Experience: 8 years

**Description:**

Oliver is a Phd researcher at ABC University and he researches on coffee leaves rusting. He has been involved in this research for over 8 years now and has made several important observations regarding the location of the rusting and has documented the different types of infection with appropriate images. Oliver would be a very useful person to aid the developers with required information on what image to be taken by the farmers and also would be the perfect person to request for the data inputs in the required formats for further processing.

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- Name: Dianna
- Specialty: Image processing
- Age: 29
- Experience: 7 years

**Description:**

Dianna is an energetic young image processing specialist working in XYZ University. She has experience in working on image processing of plant cells data and in plant DNA processing. She has designed several patterns to recognize special effects seen in plant leaves during infections. Dianna would be an apt person to provide a clear tool to analyze the submitted data by the farmers and to find out the exact spots of the infection and the rusting in coffee leaves.

### 3. Simplified Hierarchical Task Analysis:

#### \*Start the application

- **Register**
  - Create username
    - Verify if username does not exist already
  - Create password
  - Check for internet connection
  - Submit farmer user details to the server
- **Select location**
  - Use risk map to fix location
  - Send location to the server using GIS
- **Infected coffee leaves pictures**
  - Click an overall picture of the infected plant
  - Click a detailed view picture of the close up view of the infected leaves
  - Upload both images to the server
- **Submitting data**
  - Check for internet connection
  - Store user information
  - Save the uploaded images in the server
  - Convert the obtained data to CSV format as needed by the scientists
- **Further processing**
  - Use data to predict patterns from previous models
  - Use image processing to find correctness of the obtained inputs
- **Close application**
  - Flush the data which is not needed anymore to be stored
  - Exit the application

#### Summary of simplified Hierarchical Task Analysis:

The Hierarchical Task Analysis diagram insists the general work flow of the application and it makes clear to the developers of what are the basic steps involved in every view of the application. In a simplified version of the HTA, the list is made as a tree like structure where step by step process is shown including all the possible functionalities involved in the application system. In the Roya Coffee Application, the main steps involved are registering, selecting location of the farm, clicking pictures of the infected coffee leaves, submitting the data, processing of the received data by the scientists and closing the application. The above tree consists of all the sub tasks involved in these tasks.

## 4. Meeting Notes:

- Summary from him
  - **Building off prev app from last semester. Takes advantage of risk map for roya for coffee growers to locate their farm and locate and learn to mitigate the risk. Working on recommendations. Looking to get feedback, model needs to be constantly defined to get better feedback.**
  - **Allow growers to send pictures of the farm and plants and qualify the infestation on some scale. Have scientists check how predictions come out compared to reality - give incentive by allowing them to take pictures of other diseases/pests get them analyzed by scientists as well.**
  - **There IS a well-established procedure involving complex to measure a specific number of leaves on various parts of the plant for a certain number of plans to assess the actual level of infestation.**
  - **Coffee plant could be representative**
- How would you, as the scientist man, like to view the data?
  - List of unviewed/unclaimed pairs in app?
  - CSV dumps?
  - **Something easy to get into excel - CSV's work pretty well**
- Other than just pictures and guestimated ratings, what kind of data would you like to see?
  - Possibly GPS?
  - **Wants it confirmed with GPS - wants to compare geographical location with map predictions**
  - **pictures/scale**
  - **Personal information - contact info (phone, email, name, etc.)**
- How many pictures to you expect to be taken per entry?
  - **Multiple - maybe a close up and an an overall? 2 is a good goal**
    - **1 for overall plant**
    - **1 for individual leaves - check % that's affected by orang-y spots (don't do image processing, that'd be silly)**
    - **Maybe some photo instructions**
- Do you expect farmers to want to review/update their own entries?
  - Limited Time to update (24 - 48 hours)?
  - **Maybe tie reports with time**
  - **Maybe not necessarily updates - give them a solid reference on analyzing how high the level of the infestation is**
  - **We can probably get some images or references**
  - **Probably a 1-10 scale - might want to change to 1 - 5**
- Do you want registration or anonymity?
  - If registration what kind of info?
  - **Registration would definitely be useful - warning for future issues via text, email, etc?**
- How should we categorize non-rust submissions?

- **Reward AFTER rust submission**
- **Doesn't really sound like he really wants strict categorization**
- **Wants detailed picture to identify - can ask for additional information later**
- **Do you have pre-existing data you want to import?**
  - **Read about roya**
  - **Link to scientists**
- **Add an "About Us"?**
  - **Could probably provide email - maybe a new email address for the app**
  - **Can probably get links to scientist webpages to get information on the app**

**Try to send him a kind of chronogram for the project schedule**

**Get documents from Pastel**