RASDproj

Sofia Martellozzo - Valeria Detomas

Prof. Elisabetta Di Nitto - Anno 2021/2022

Contents

1 Introduction

1.1 Purpose

The purpose of this document is to thoroughly describe Data-dRiven PrEdictive FArMing in Telengana(DREAM). It presents functional and non functional requirements of the system and its components. Moreover it provides use cases and scenarios for the users involved.
This document is meant as a contractual basis for the customer and the developer.

1.1.1 Goals

- allow policy makers to retrieve information from farmers

- allow farmers to communicate with each other

- allow farmers to insert data, questions, problems

- the impact of meteorological data on farmers activity can be used for further information

- allow farmers to retrieve information relevant for their activity (meteo, humidity..)

1.2 Scope

The aim of the system is to acquire and combine data and information of farmers in Telengana. The system will also provide support both to Telengana's policy makers and farmers thanks to new innovative technologies.
(non so se vogliamo mettere questo : The system consists in a back-end server application and in a web application front-end)

Thanks to the system policy makers are able to get a complete picture of the agriculture status in the whole state. In order to do this, Dreams provides information that makes them able to give incentives to those farmers who are performing well and keep track of those who needs help. The farmers have access to a forum on which they are able to communicate with other farmers, a forum to spread useful suggestions and to request for help to those who are having a harder time. The application provides a personalized page for each farmer in which they can find, based on his location and type of production, specific advice, meteorological forecasts and the condition of the soil. This information are already provided by Telengana's government. In this page they can also find several buttons, one that allows them to specify any problem that they face, another one to update their production trend. There is also another button to let those who are recognized as good farmers send advice to the system, so that everyone can improve their knowledge about the local farming ... Data concerning weather are already provided by Telengana's government,

1.2.1   world phenomena

- farmers decide type of production

- weather conditions influence production

- agronomists visit periodically farmers

- agronomists respond to help requests from farmers

- farmers can be identified as those who are performing well or not.

- farmers receive some type of advantage if they are the best one in their production activity

1.2.2   shared phenomena

- humidity of soil is measured by sensors

- amount of water used by each farmer is retrieved by water irrigation system

- Telengana's governments collects data concerning weather forecast

- farmers insert data about their production in the system

- farmers can insert problems they face into the system

- farmers can answer to requests for help from other farmers

- farmers can discuss with each other through the system

- the system identifies the farmers who are performing well

1.3 Glossary

1.3.1 Definitions

1.3.2 Acronyms

1.3.3 Abbreviations

2 Section 2

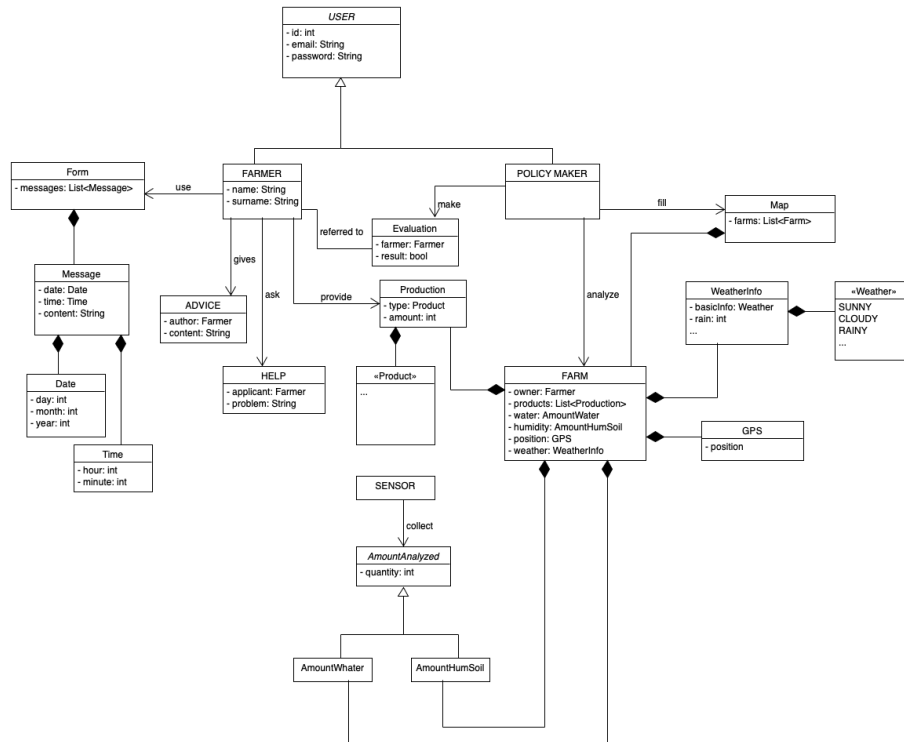## 2.1 Product Perspective

2.1.1 Class Diagram

Figure 1: UML diagram.
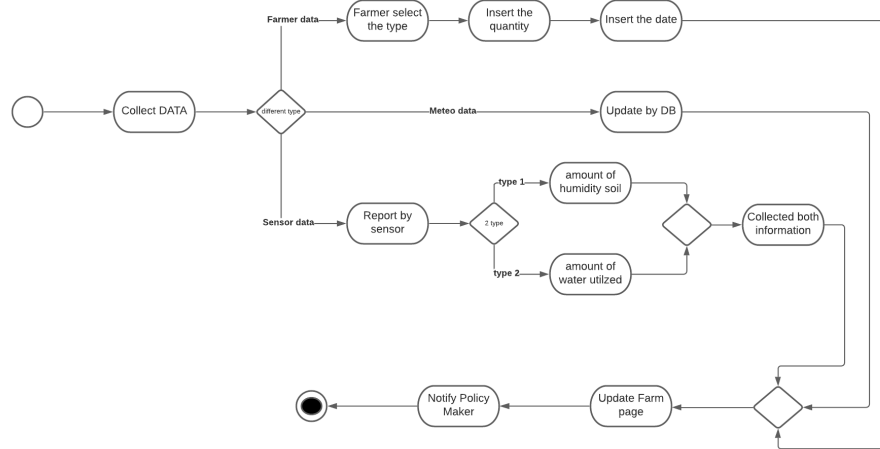
2.1.2 State Diagram
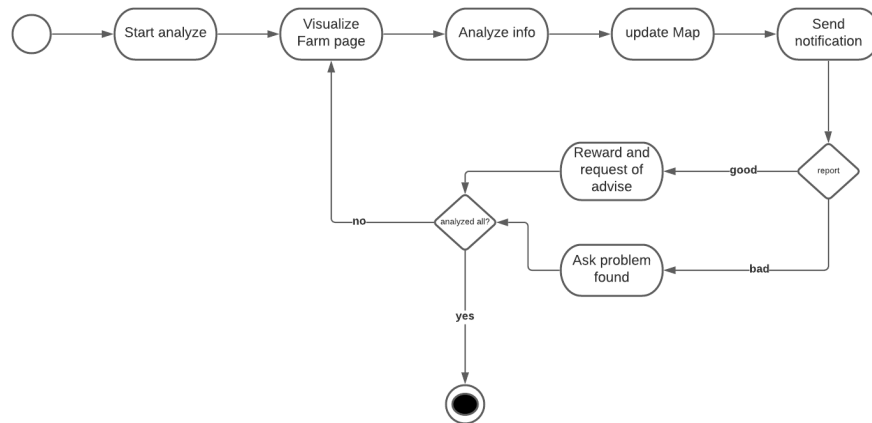

Figure 2: Update Farmer page.
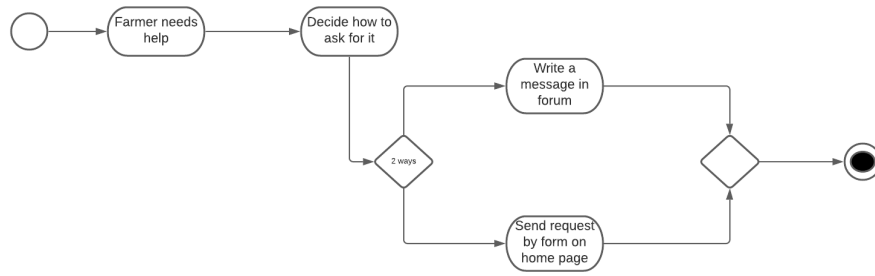

Figure 3: Analysis of farmers.

Figure 4: Request of help.

2.2 Product Functions

This section provides a summary of the main features and functions offered by the software regarding the goals already described in section 1.1.1

In the followiing description it is important to highlight that both the policy makers and the farmers must be logged in.

2.2.1 Farmers insert data

This functionality is accesible to all farmers. The application provides a form in which the farmer can easily insert data of his/her production. The form is easy to fill in, in order to complete it the farmer need to indicate:

- the **type of product**

- the **amount** producted of the selected type

- the **date** relative to the date of the production

If the farmer needs to add more than one type of product, he/she can fill in the form multiple times. After completing the form the user is redirected to the homepage and the policy makers can see the updated data. This functionality can be done more than once a day since the farmer can select the date, so it is possible for him to insert data of past days too.

2.2.2 Farmers visualize data

This functionality lets the farmer visualize all the data acquired from the system. The farmer can visualize all data on his homepage.
The application shows:

- meteorological short-term and long-term forecast

- amount of water used by the farmer

- humidity of soil

- personalized suggestions concerning specific crops to plant or specific fertilizers to use – based on their location and type of production

should I say why he needs to visualize this data or how he uses it

This functionality is always up to date, and does not need any input from the farmer. It is used by the farmer only to have a genaral view of his farm and on how could improve the productivity of his farm.

2.2.3 Identify how farmers are performing

The main features of the policy makers is to evaluate the work of each Farmer. In order to do that, they periodically analyse each farm page: the system allows them to visualize all the data in those pages (but not to modify it). The analysis takes place twice a month. With this analysis they classify the workers in two different way:

- GOOD farmer : those how have been able to produce a significant amount of product with low resources (weather), despite bad weather in that period

- BAD farmer : those who did not produce much.

Policy makers inform each farmer the result they have achieved with a notification:

- to the GOOD farmer in the message is specified a special incentive (an amount of money) they will receive as an award and also a request to submit from their personal web page some advices they have that could be useful to the others.

- To the BAD farmers is asked to submit (also by their personal web page) an explicitly request of help specifying the problems they had.

The system has a specific web page that allows all the users to look at a map of the area in which are specified all the farms. It is also shown if the farm's owner has performed a good job in that period. At the end of each analysis the policy makers update the map (they are the only ones that are able to modify it).

2.2.4 Interaction between farmers

This functionality permits the farmers to comunicate with each other. The application has a specific web page were the farmers can send messages whenever they want. If a farmer has an issue, before submitting a formal request of help to the policy makers by their home page, he can ask informally an advice by sending a message in the Forum. It is not necessary to be a good farmer in order to answer someone elses message.

  and all the messages are visible to everyone and 24h. It is an online application so in order to read or write on this page is necessary an internet connection.

2.2.5 Scenario