iNeuron

High Level Design

(HLD) Environmental Analysis in Agriculture Domain

Revision Number: 1.0

Last date of revision: 17/12/2021

Bhushan Raut

Sana Tadvi

Document Version Control

Date Issued	Version	Description	Author
17[h] Dec 2021	1	First Version of Complete HLD	Bhushan Raut

17ʰ Dec 2021	2	Second Version of Complete HLD	Sana Tadvi

Contents   Page No.

Abstract:

The Agriculture domain gather huge amounts of information that contain some hidden facts about the crops, that is beneficial for making effective decisions for Farmers. For presenting suitable results and making effective choices on cultivation of crops in particular region, a data analysis is performed on Power Bi. Here we will take a look at, Crop Analysis based on the states and Crop recommendation system according to the zone is created using the datasets provided, the analysis is performed on Power Bi which will show all the insights about the facts hidden in the datasets. The Crop Recommendation system gives results of Variety of crops and its cultivation duration as per the selected crop and region/zone. The Recommendation system helps in deciding the variety of crops in a particular region/zone to stop the crop cultivation and production problems faced by farmers. It enables information about crops. E.g., which crops have high cost of cultivation by states, Yearly crop production area and yield, Crops with their suitable region/zone and Varieties of it.

1. Introduction

1.1 Why this High-Level Design Document?

The purpose of this High-Level Design (HLD) Document is to add the necessary detail to the current project description to represent a suitable model for coding. This document is also intended to help detect contradictions prior to coding, and can be used as a reference manual for how the modules interact at a high level.

The HLD will:

- Present all of the design aspects and define them in detail

- Describe the user interface being implemented

- Describe the hardware and software interfaces

- Describe the performance requirements

- Include design features and the architecture of the project

- List and describe the non-functional attributes like:

　　　　o Security　　　　　　o

Reliability　　　　　o

Maintainability　　　　　o

Portability　　　　o Reusability

o Application compatibility

o Resource utilization   o

Serviceability

1.2 Scope

The HLD documentation presents the structure of the system, such as the database architecture, application architecture (layers), application flow (Navigation), and technology architecture. The HLD uses non-technical to mildly-technical terms which should be understandable to the administrators of the system.

2. General Description:

2.1 Problem Statement

Indian Agriculture domain is filled with several problems; some of them are natural and some manmade. Problems can be anything for example Quality of land holdings for wrong crop that is being cultivated in a zone, Different varieties of crops are being used in its non-suitable regions/zones which can be responsible for failure in production of crops. Some other problems can be Agricultural marketing and the farmers have to depend upon local traders and middlemen for the disposal of their farm produce which is sold at throw-away price.

2.2 Objectives:

• Provides new approach to concealed patterns in the data.

• Helps avoid crop production and cultivation problems.

• To create a recommendation system which can help recommending varieties of the crops by region.

• Reduce the Agriculture problems. The main purpose of **Crop Recommendation system** is:

The system can recommend the crop variety as per the selected region/zone or crop. It helps the user to decide which crop variety can be used in which region with its growing duration.
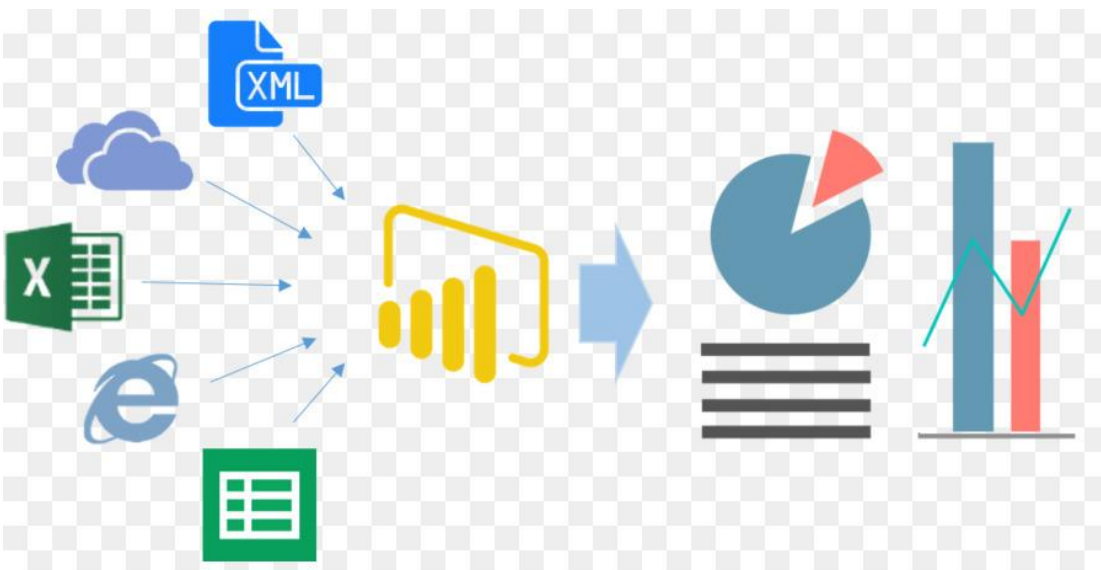
2.3 Tools used

Data Analytical tool Power Bi was used.

3. Design Details

3.1 Functional Architecture:

4.Performance

The Crop recommendation system is used to identify that which type of crop varieties can be grown in which region or zone with its seasonal duration of growth. The system is based on 4 features that is Crops, Regions, Seasonal duration, and Variety. When the user selects its region and type of crop they want to grow the system it recommends the Variety which is best for the region according to its environment and duration it will take.

4.1 Reusability

The Analysis and the dataset used should have the ability to be reused without any problem, as new data is added and refreshed new insights can be viewed.

4.2 System Compatibility

For analysis and bringing out insights Power Bi was used. Power Bi and it is the job of Power Bi to ensure proper transformation of information.

4.3 Resource Utilization

When any task is performed, it will likely use all the processing power available until that function is finished Make groups with calculations. Like include filters, calculated groups load only named members of the domain, whereas Power Bi's group function loads the entire domain.

5. Dashboards

Dashboards will be implemented to display and indicate certain KPIs and relevant indicators for the Recommendation.

As and when, the system starts to capture the historical/periodic data for a user, the dashboards will be included to display charts over time with progress on various indicators or factors.

Conclusion

The proposed system is GUI-based, easy to use, awesome, reliable and an expandable system. The proposed operating Crop Recommendation System can also help reduce Crop loss and Agriculture problems by providing Initial timely diagnosis. The Crop Recommendation System can also work for the purpose of a tool for farmers or anyone from agriculture domain. User from non-Agriculture background can use this tool for knowledge of growing crops. As we have made a standard plan, in the future we can use this program for analysis different data sets. Therefore identification and selection of key indicators for a better analysis of most Agricultural challenging tasks for future research.