High Level Design Document (HLD)

Crop Production Analysis in INDIA

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Version: 1.0

Last Revised Date: 16-Jan-2023

Document Version Control:

Date Issued	Version	Description	Author
16-Jan-2023	1.0	First Version of Complete HLD	Dibyendu Biswas

Contents:

Introduction:

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:

(1) Present all of the design aspects and define them in detail
(2) Describe the user interface being implemented
(3) Describe the hardware and software interfaces
(4) Describe the performance requirements
(5) Include design features and the architecture of the project
(6) List and describe the non-functional attributes like:
    (a) Security
    (b) Reliability
    (c) Maintainability
    (d) Portability
    (e) Reusability
    (f) Application compatibility
    (g) Resource utilization
    (h) Serviceability

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.

General Descriptions:

Product Perspective:

Crop production is one of the fundamental branches of agriculture. Crop production is the basis for providing the livestock industry with feed, and the population with food. Also, crop products are used in many industries as raw materials of plant origin, such as food, textile, pharmaceutical, fuel and others.

Crop production is a branch of agriculture, which includes the cultivation of crops in field cultivation, vegetable growing, fruit growing, etc. This industry gives necessary food. Consumer goods manufacturing and food industries gets raw materials. Livestock industry, in turn, uses by-products such as straw, silage, and food industry waste.

Agricultural enterprises have a powerful production potential, despite the difficult conditions of production, caused by high prices for production resources, low attractiveness of rural areas, and difficulties in obtaining loans.

This is mainly explained by the fact that domestic producers produce environmentally friendly products, while the production of products uses a minimum number of preservatives. These circumstances create a demand for agricultural products. Moreover, now the demand for farm agricultural products, as products produced in natural conditions, is growing.

Thus, the transition to sustainable economic growth and further improvement of the organization of crop production is impossible without promoting the use of science, technology and innovations. For an individual choice of the necessary implementations, an in-depth study of the actual processes of production of the product, its nature, orientation and dynamics, is necessary.

This analysis helps you understand the overall crop production State/UT wise in several seasons, average annual growth of major crops, year wise damage crop, import-export of crop and pattern of land utilization; and this analysis helps you to take future business decision.

Problem Statements:

- This dataset provides a huge amount of information on crop production in India ranging from several years. Based on the Information the ultimate goal would be to predict crop production and find important insights highlighting key indicators and metrics that influence the crop production.
- Make Reports and dashboards first.
- Make a story out of it.

Data Collection Strategy:

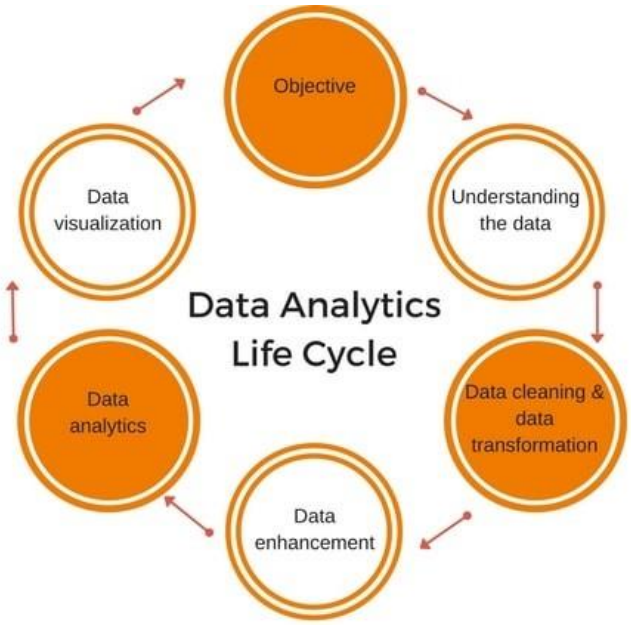
In this **"Crop Production Analysis in INDIA"** project, I collect data from Indian Gov. data (data.gov.in) and year wise production data that was provided by iNeuron.

Tool Used:

- I have used Business Intelligence tool i.e., MS Excel and Power BI.
- MS Excel & MySQL DB is used for data.
- Jupyter Notebook helps to load and find missing data, etc.

Design Details:

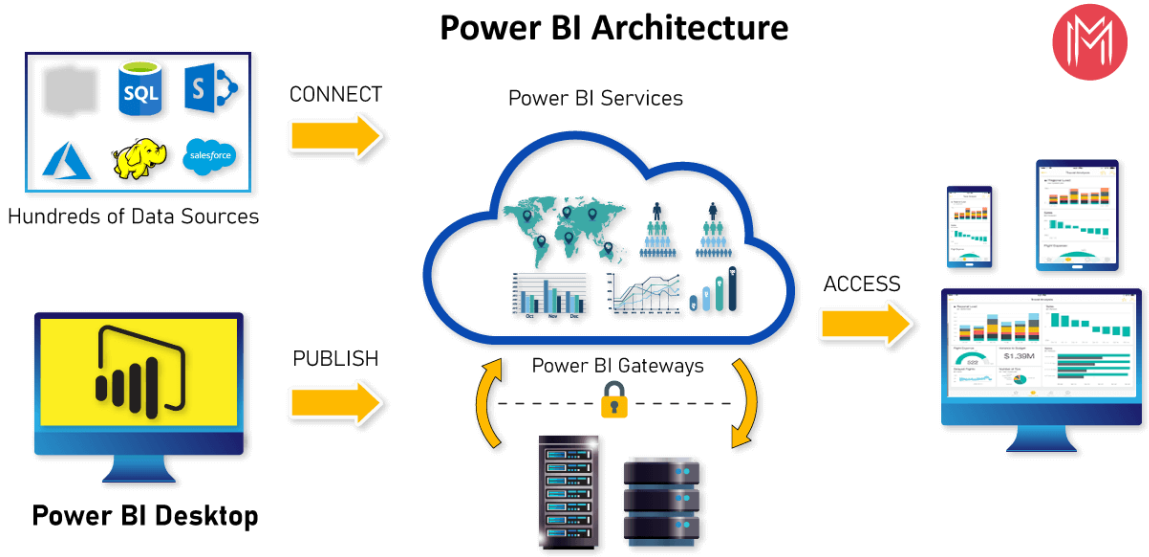
Life Cycle of this Project:



- **Objective:** Understanding the Business is most important think, in this phase Business Analyst can help to provide the detail key factors of this project and then you can decide your main objective. Here the main objective of the **"Crop Production Analysis"** project is to creating Reports and Dashboard.
- **Collecting Data:** Based on Business requirements you need to collect the data from various APIs, Open-Source Datasets, Internal Databases etc.
- **Understanding Data:** Understanding of Data is one of the most of important think before start to create the Reports & Dashboard.
- **Data Cleaning & Transformation:** Data cleaning is the process that removes data that does not belong in your dataset. Data transformation is the process of converting data from one format or structure into another.
- **Data Enhancement:** "Data Enhancement" is a process that involves adding new data elements to an existing Dataset.
- **Data Visualization:** Data visualization is **the graphical representation of information and data**. By using visual elements like charts, graphs, and maps, data visualization tools provide an accessible way to see and understand trends, outliers, and patterns in data.
- **Data Analytics:** After visualization data, we create the multiple Reports for analysis the data.

Detailed Architecture:

Detailed Architecture means, Architecture of Power BI.

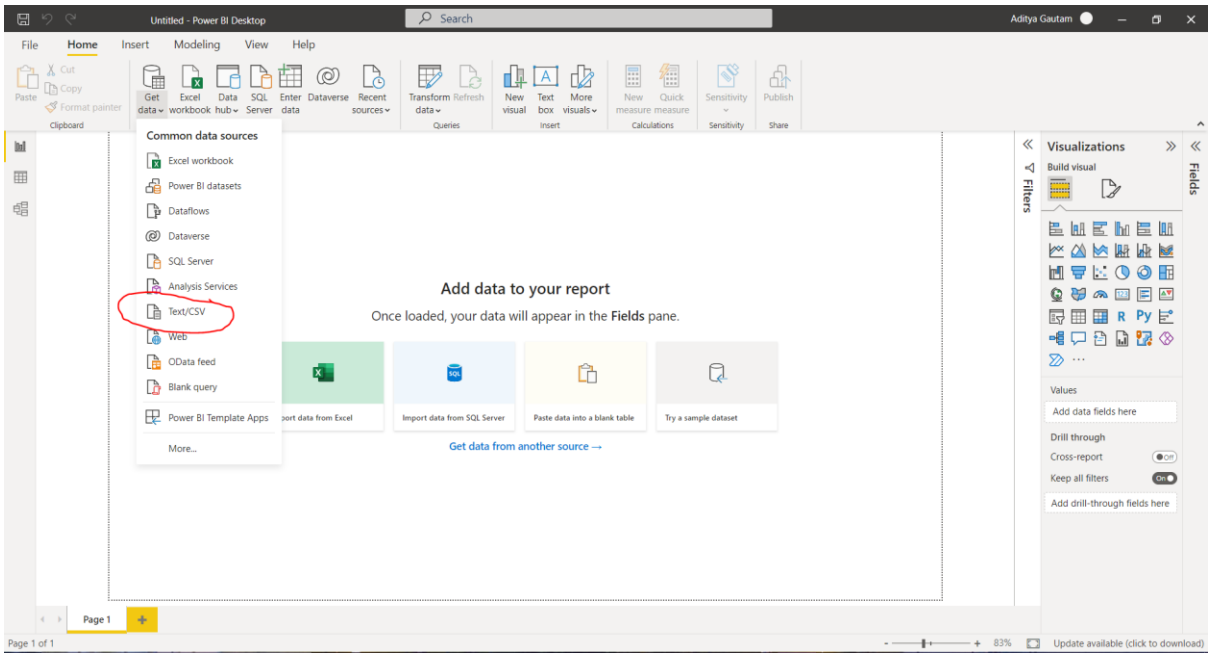


Function Design:

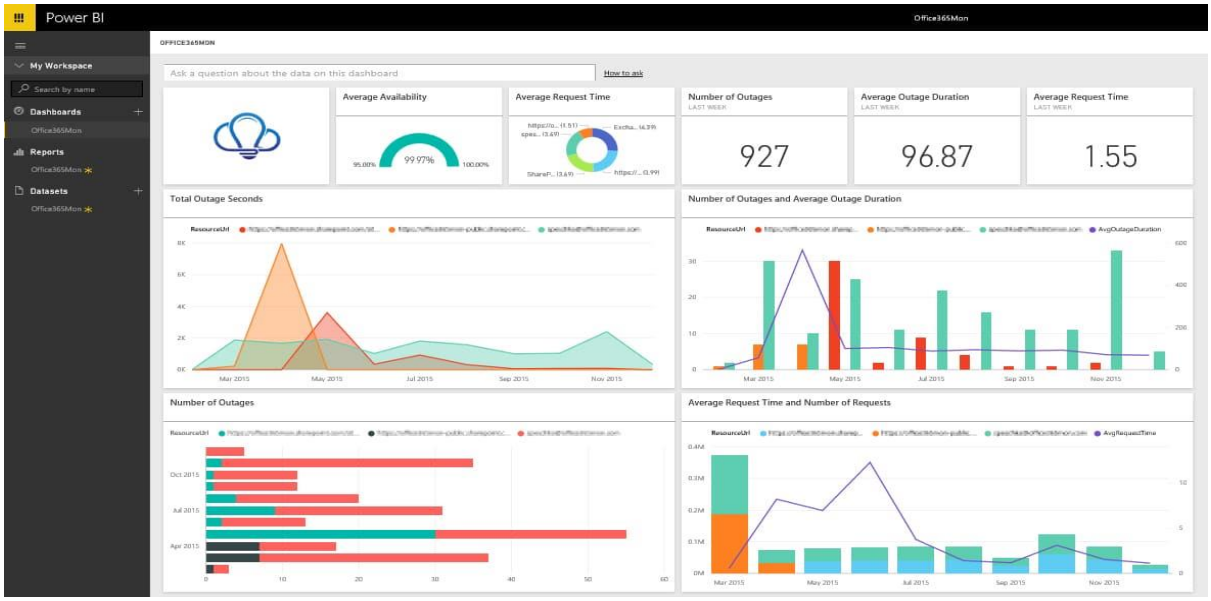
Organizational Memory	Information Integration	Insight Creation	Presentation
• Data Warehouse • ERP • Knowledge Repository • CMS • DMS	• Business Analytics Tool • Data Mining • Real-time Decision	• Text mining tools • Web mining tools • Environmental Scanning • RFID	• OLAP Tools • Visualization tools • Digital Dashboards • Score Card

Deployment:

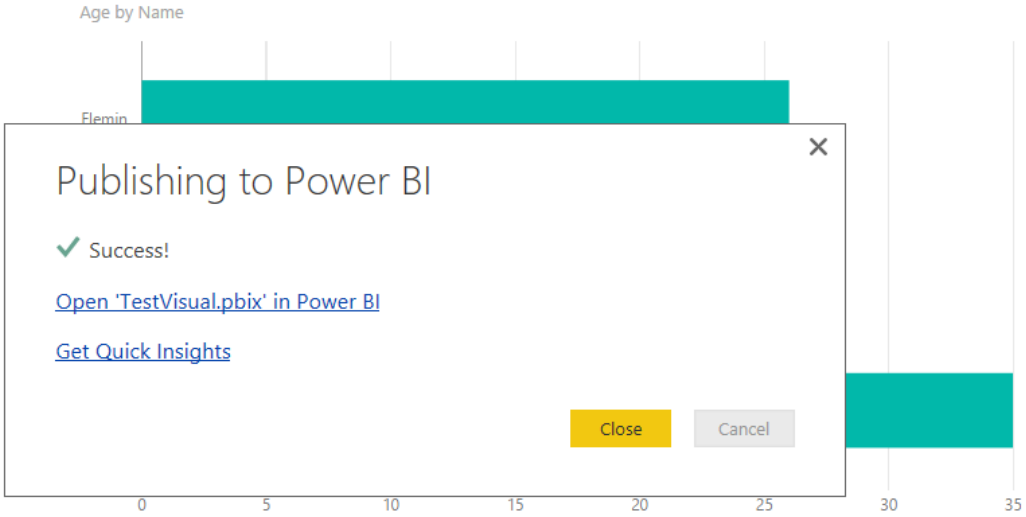
Load Dataset in Power BI:



Create an Interactive Dashboard:



Publish to Power BI Account:



Create the Embedded Code:

pass.

Share the Public link to Client:

pass.

---------- Thank You ----------