Low Level Design

Agricultural Production of India

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Contents

1. Introduction

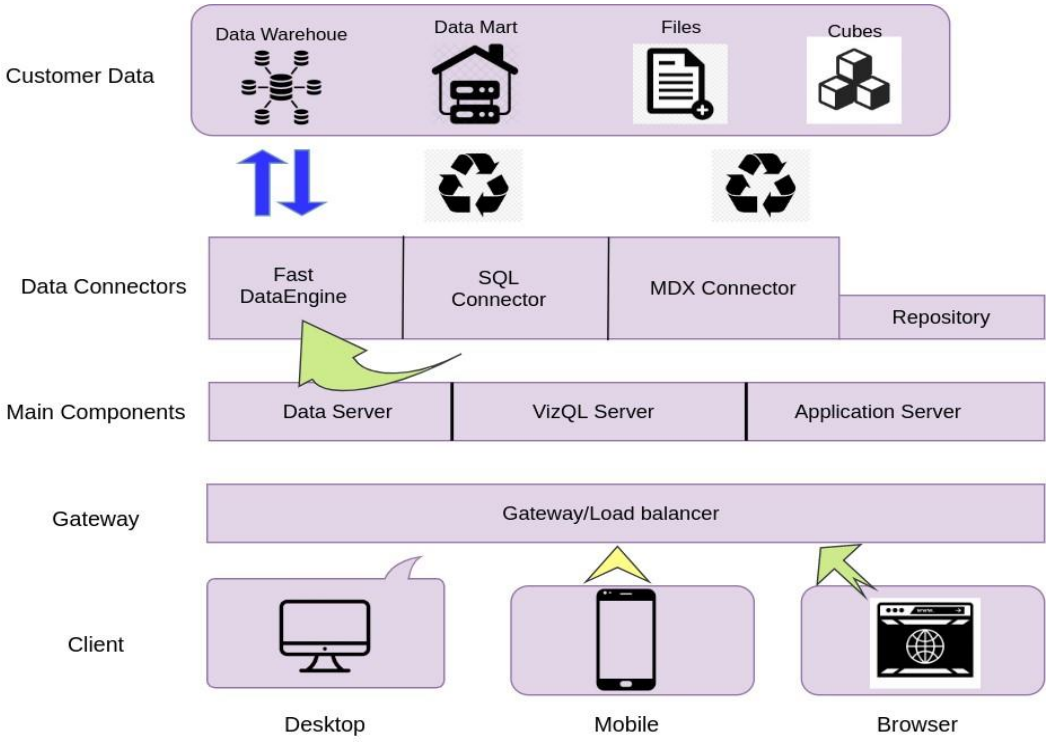
1.1 What is Low-Level design document?

The goal of the LDD or Low-level design document (LLDD) is to give the internal logic design of the actual program code for the House Price Prediction dashboard. LDD describes the class diagrams with the methods and relations between classes and programs specs. It describes the modules so that the programmer can directly code the program from the document.

1.2 Scope

Low-level design (LLD) is a component-level design process that follows a step-by-step refinement process. The process can be used for designing data structures, required software architecture, source code and ultimately, performance algorithms. Overall, the data organization may be defined during requirement analysis and then refined during data design work.

2. Architecture

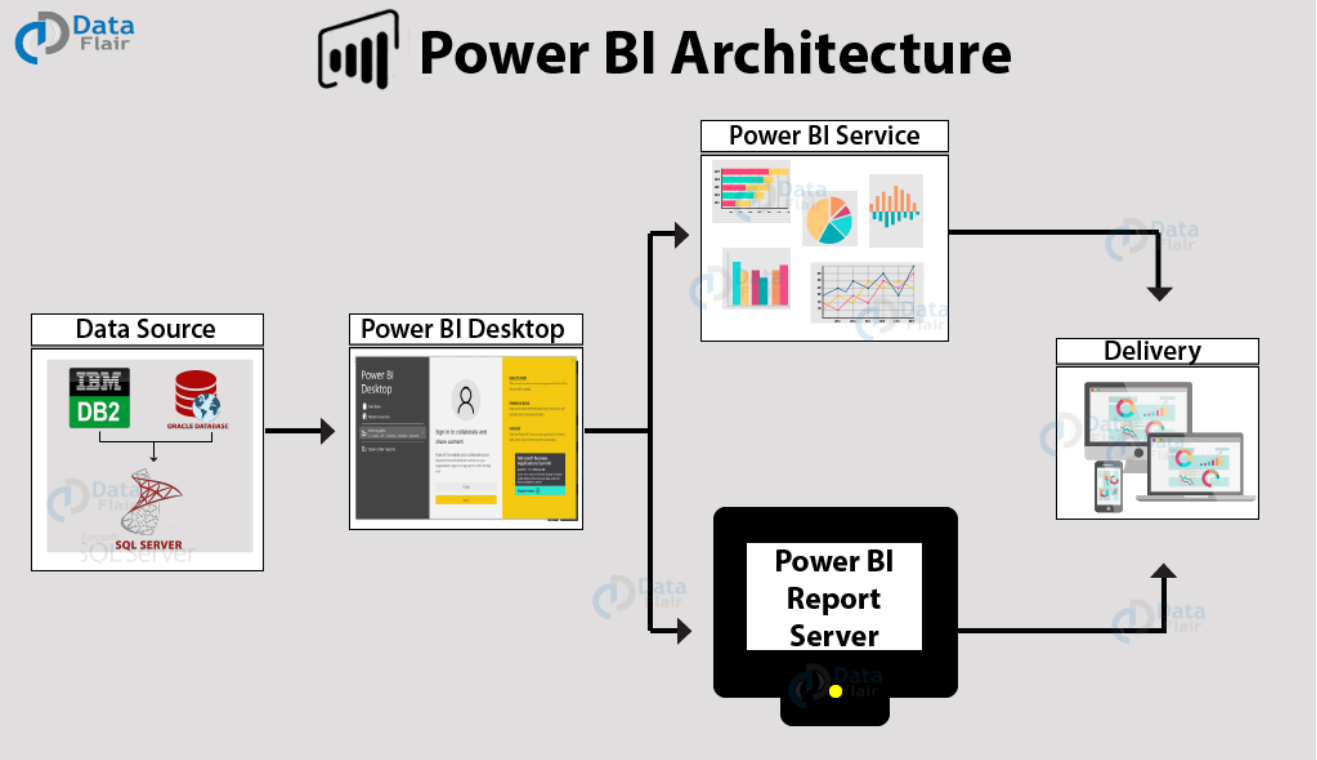


Power Bi Server Architecture

Power BI is a business suite that includes several technologies that work together. To deliver outstanding business intelligence solutions, Microsoft Power BI technology consists of a group of components such as:

- Power Query (for data mash-up and transformation)
- Power BI Desktop (a companion development tool)
- Power BI Mobile (for Android, iOS, Windows phones)
- Power Pivot (for in-memory tabular data modeling)
- Power View (for viewing data visualizations)
- Power Map (for visualizing 3D geo-spatial data)
- Power Q&A (for natural language Q&A)

In simple terms, a Power BI user takes data from various data sources such as **files, Azure source, online services, Direct Query or gateway sources.**



1. Data Sources

An important component of Power BI is its vast range of data sources. You can import data from files in your system, cloud-based online data sources or connect directly to live connections. If you import from data on-premise or online services there is a limit of 1 GB. Some commonly used data sources in Power BI are:

- Excel
- Text/CSV
- XML
- JSON
- Oracle Database
- IBM DB2 Database
- MySQL Database
- PostgreSQL Database

- Sybase Database
- Teradata Database
- SAP HANA Database
- SAP Business Warehouse server
- Amazon Redshift
- Impala
- Google Big Query (Beta)
- Azure SQL Database
- Salesforce Reports
- Google Analytics
- Facebook
- GitHub

2. Power BI Desktop

Power BI Desktop is a client-side tool known as a companion development and authoring tool.

This desktop-based software is loaded with tools and functionalities to *connect to data sources, transform data, data modeling and creating reports.*
You can download and install Power BI Desktop in your system for free. Using Power BI Desktop features, one can do *data cleansing, create business metrics and data models, define the relationship between data, define hierarchies, create visuals and publish reports.*

3. Power BI Service

Power BI Service is a web-based platform from where you can *share reports made on Power BI Desktop, collaborate with other users, and create dashboards.*
It is available in three versions:

- Free version
- Pro version
- Premium version

Power BI Service is also known as, **“Power BI.com”**, **“Power BI Workspace”, “Power BI Site”** and **“Power BI Web Portal”**. This component also offers advanced features like *natural language Q&A* and *alerts*.

4. Power BI Report Server

The Power BI Report Server is similar to the Power BI Service. The only difference between these two is that Power BI Report Server is an on-premise platform. It is

used by organizations who do not want to publish their reports on the cloud and are concerned about the security of their data.

Power BI Report Server enables you to create dashboards and share your reports with other users following proper security protocols. To use this service, you need to have a Power BI Premium license.

5. Power BI Gateway

This component is used to connect and access on-premise data in secured networks. Power BI Gateways are generally used in organizations where data is kept in security and watch. Gateways help to extract out such data through secure channels to Power BI platforms for analysis and reporting.

6. Power BI Mobile

Power BI Mobile is a native Power BI application that runs on iOS, Android, and Windows mobile devices. For viewing reports and dashboards, these applications are used.

7. Power BI Embedded

Power BI Embedded offers APIs which are used to embed visuals into custom applications.

3. Architecture Description

3.1. Data Description

Agricultural data contains mainly Area, production and yield and financial year of different crops and other columns as like cost, recommended zone and variety

1. Crops: Different types of crops.

Production: Agricultural production is the use of crops and animal products to enhance human life sustainably

2. Area: Crops are cultivated at this area.

3. Yield: It is also called Production per unit area.

4. Year of Financial year: Crops grown or produce in that specific time.
5. Cost of Cultivation (A2+FL): The A2 + FL cost includes all cash transactions and payments made by the farmer, including the cost of family labour It also includes the rental value of the leased land.
6. Cost of Cultivation (C2): C2 includes A2 + FL cost as well as the rent of owned land and interest on owned capital. Hence, the MSP calculated on the basis of C2 cost is much higher as compared to A2 + FL.
7. Cost of Production (C2): It is C2 type production cost.
8. Variety: It includes the variety of Crops.
9. Recommended zone: Suitable region for a better production for the crops.

3.2. Data Insertion in Microsoft Power Bi

I have imported all the files of Agricultural data In Microsoft Power Bi.

3.4. Data Transformation in Power Query Editor

I have Transformed the data according to the requirement. I have extracted many small files from the Agricultural data (Produce file mainly). And after the extraction I have transformed it.

3.5 Deployment.

Once you've completed your dashboard, click on Publish.

You may be prompted to log into your Microsoft Power Bi profile first if this is your first time publishing.

After the login your data and report will be publish on Microsoft Power Bi Server.

4. Unit Test Cases

TEST CASE DESCRIPTION	EXPECTED RESULTS
Food grain slicer	When clicked on the slicer, a dropdown should occur which has various parameters of the food grain.
Oilseeds Slicer	When clicked on the slicer, a dropdown should occur which describes the parameters of the Oilseeds.
Crop Slicer	When clicked on the slicer, a dropdown should occur which describes the parameters of the Crops.
Area, production and Yield	Crops Area, Production and Yield are shown by their state and financial year.