

LOW LEVEL DESIGN

WORLD BANK DEBT ANALYSIS

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DOCUMENT CONTROL

Changed Record:

VERSION	DATE	AUTHOR	COMMENTS
0.1	03/11/2022	Swapnil Pawshe	Introduction and architecture defined
0.2	04/11/2022	Swapnil Pawshe	Architecture and Architecture description appended and updated

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0.2	05/11/20022		Unit test cases to be added

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1. Introduction

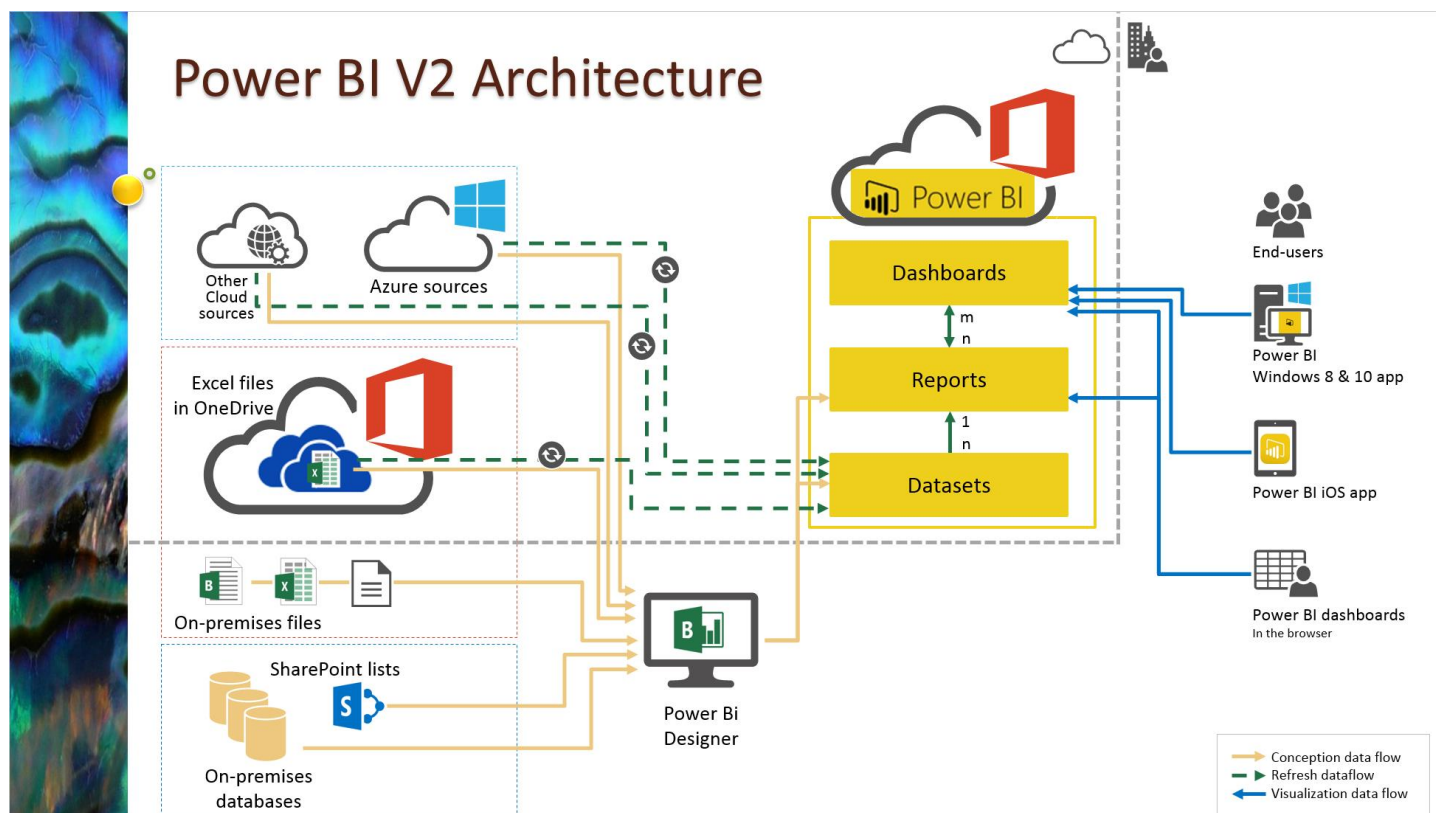
1.1 What is Low-Level design document?

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 **World Bank Debt Analysis** 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.

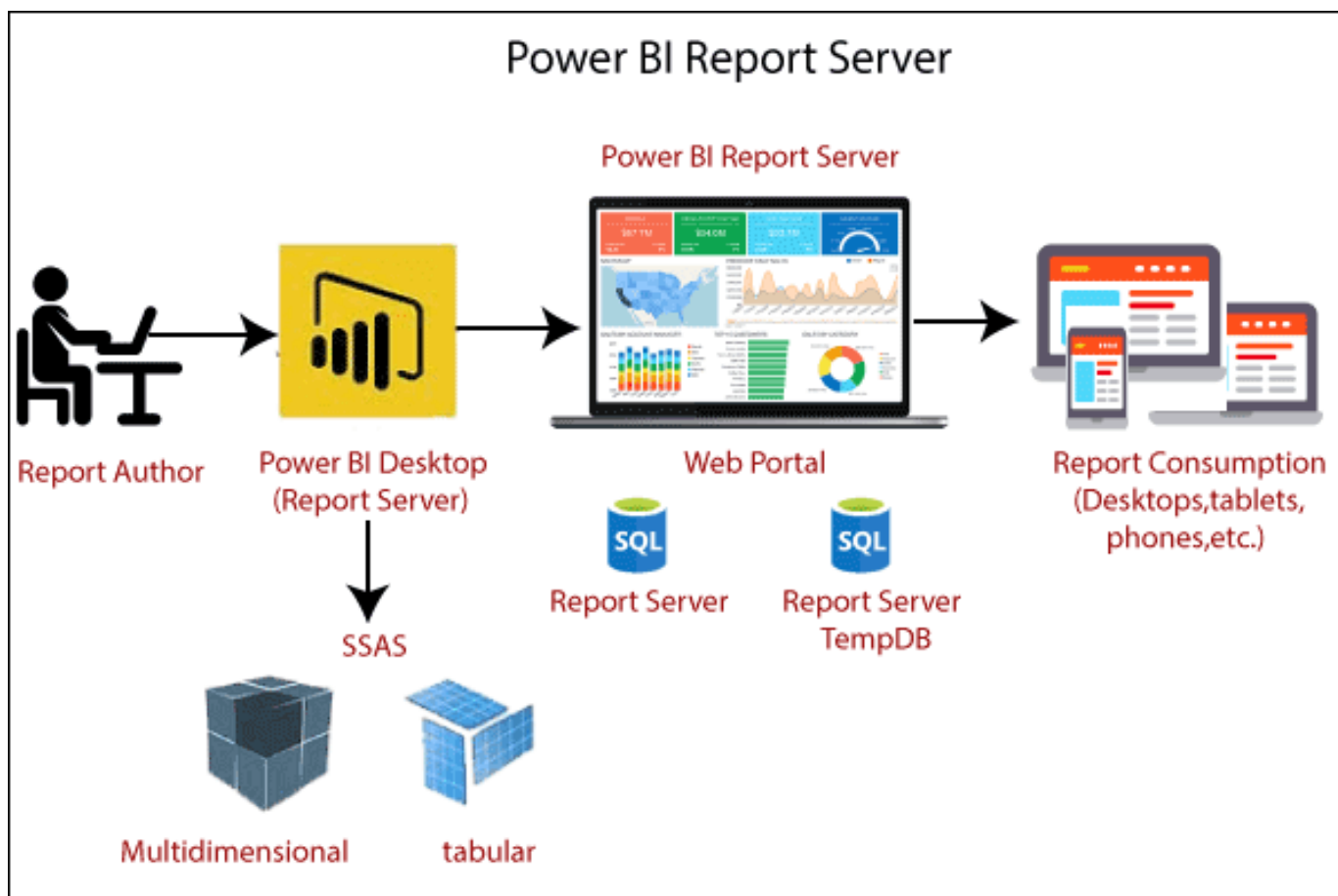
2.ARCHITECTURE



POWER BI SERVER ARCHITECTURE

Power BI can supply information from different online sources and file types. Import the information into the Power BI or establish a live service to receive the information. If you import the file into the Power BI, it compresses the data sets up to 1GB and, uses a direct query if the compressed data sets exceed more than 1GB. Here is the list of Data Sources supported in Power BI.

POWER BI COMMUNICATION FLOW



Power BI Report Server Processes

1. Data Integration:

Data is extracted from different sources which can be different servers or databases. The data from various sources can be in different types and formats. If you import the file into the Power BI, it compresses the data sets up to 1GB, and it uses a direct query if the compressed data sets exceed more than 1GB. Then the data is integrated into a standard format and stored at a place called a staging area. There are two choices for big data sets. They are as follows.

- Azure Analytics Services
- Power BI premium

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2. Data Transforming:

Integrated data is not ready to visualize data because the data should be transformed. To transform the data, it should be cleaned or pre-processed. For example, redundant or missing values are removed from the data sets. After data is pre-processed or cleaned, business rules are applied to transform the data. After processing the data, it is loaded into the data warehouse.

3. Report & Publish:

After sourcing and cleaning the data, you can create the reports. Reports are the visualization of the data in the form of slicers, graphs, and charts. Power BI offers a lot of custom visualization to create the reports. After creating reports, you can publish them to power bi services and also publish them to an on-premise power bi server.

4. Creating Dashboards:

You can create dashboards after publishing reports to Power BI services, by holding the individual elements. The visual retains the filter when the report is holding the individual elements to save the report. Pinning the live report page allows the dashboard users to interact with the visual by selecting slicers and filters.

These all are basics steps in Power BI Report server

3. ARCHITECTURE DESCRIPTION

3.1 Data Description

1. Impact of financial health of countries after world bank debt relief

The financial health of countries after world bank debt relief can vary. Some countries may see an improvement in their financial situation, while others may find that their debt levels increase.

2. Debt reduction programs of world bank

The World Bank Group offers multiple programs aimed at reducing the amount of debt owed by developing countries. These programs include the Heavily Indebted Poor Countries Initiative (HIPC) and the Multilateral Debt Relief Initiative (MDRI).

3. Different countries debt management strategies after debt from world bank

There is no one-size-fits-all answer to this question, as each country's debt management strategy will be tailored to its specific needs and circumstances. However, some common elements of successful debt management strategies include fiscal consolidation (i.e. reducing government spending and/or increasing revenue), improving public financial management, and developing a well-functioning debt market.

4. Revenue growth of country after debt from world bank

The effect of debt from the World Bank on a country's revenue growth is difficult to determine. World Bank loans are typically used for development projects, which can have a positive impact on economic growth and government revenue. However, the World Bank also imposes conditions on its loans, which can sometimes limit a government's ability to generate revenue. In addition, the World Bank's lending practices have been criticized for benefiting developed countries more than developing countries.

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3.2. Web Scrapping

Web scraping is a technique to automatically extract content and data from websites using bots. It is also known as web data extraction or web harvesting. Web scrapping is made simple now days, many tools are used for web scrapping. Some of python libraries used for web scrapping are BeautifulSoup, Scrappy, Selenium, etc.

3.3. Data Transformation

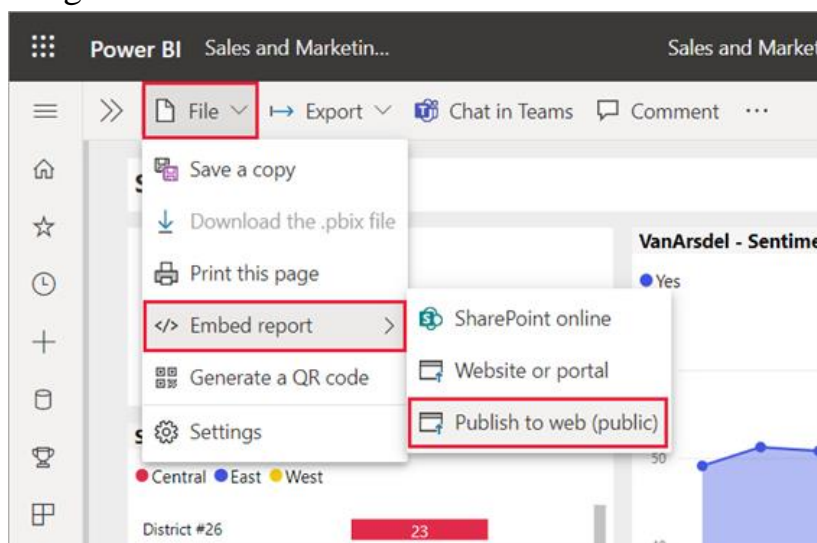
In the Transformation Process, we will convert our original datasets with other necessary attributes format. And will merge it with the Scrapped dataset.

3.4 EXPORTING DATA FROM DATA BASE

Data Export from Database - The data in a stored database is exported as a CSV file to be used for Data Pre-processing.

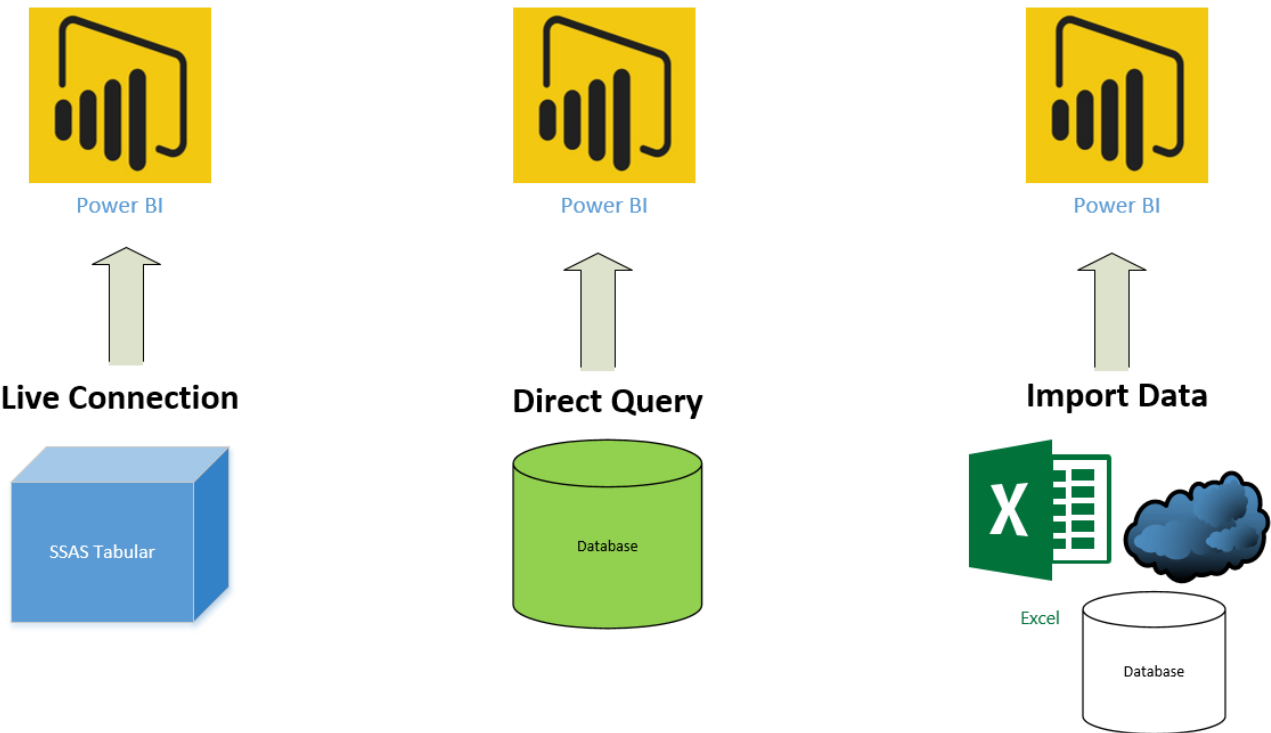
3.5 Deployment

Once you've completed your dashboard, follow these steps: - Server, Power BI Public, Save to Power BI Public as You may be prompted to log into your Power BI Public profile first if this is your first-time publishing.

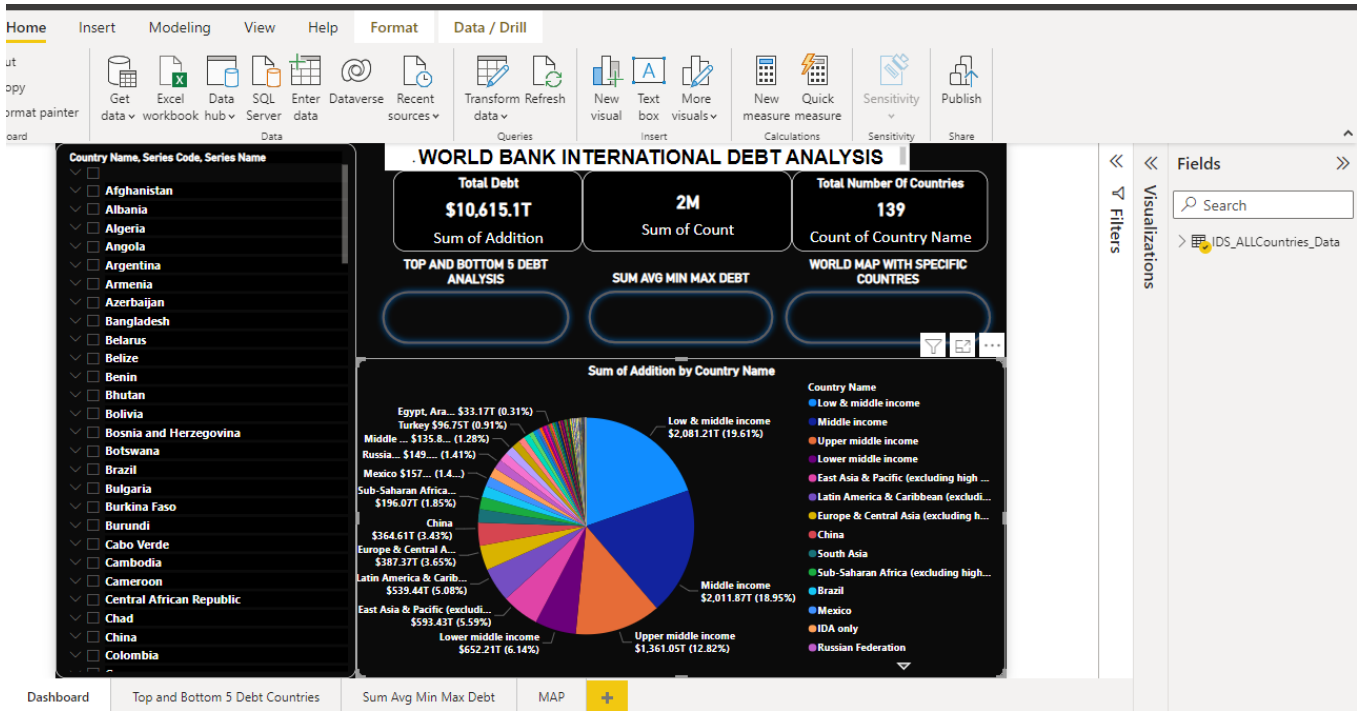


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There is a live connection icon in the upper right-hand corner of the Power BI window. If the icon is green, that means the dataset is live. If the icon is grey, that means the dataset is not live.



STORY LINE OF DEBT ANALYSIS



4.UNIT TEST CASES

TEST CASE DESCRIPTION	EXPECTED RESULT
Country Name Slicer	When click on slicer we will get details of any one country total debt throughout all years.
Series Code and name in Slicer with countries	When click on slice of series code we will get to know total debt in particular series code and series name
Cards with all debt addition	We can see addition off total debt on card with sum of addition
Cards with number of countries	We can see total number of countries who took debt from world bank.
Pie chart with Countries name	In Pie chart we can see countries debt in percentage
Column chart with 5 columns	In column chart we can see highest and lowest debt top 5 and bottom 5 countries .
Table with sum of debt , country name , country code.	In Table we will get to know highest and lowest debt countries with ascending and descending order
Table with average of debt , country name , country code.	In Table we will get to know highest and lowest debt average countries with ascending and descending order
Click on MAP	We can check Total sum of debt of particular country with geography of the country.