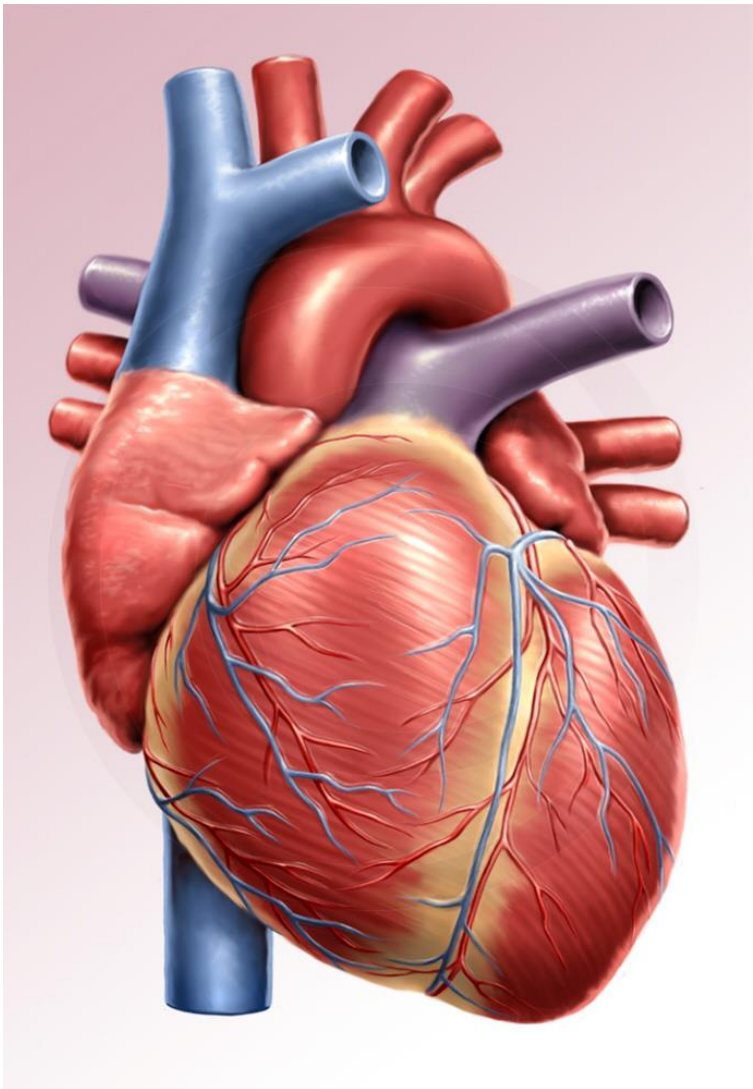
ARCHITECTURE DESIGN

HEART DISEASE ANALYSIS



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HEART DISEASE ANALYSIS – BUSINESS INTELLIGENCE PROJECT

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15-12-2022	1.0	RAVIKUMAR SURAM	ARCHITECTURE DESIGN

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1. Introduction

1.1 What is Architecture design document?

Any software needs the architectural design to represents the design of software. IEEE defines architectural design as “the process of defining a collection of hardware and software components and their interfaces to establish the framework for the development of a computer system.” The software that is built for computer-based systems can exhibit one of these many architectures.

Each style will describe a system category that consists of:

- A set of components (ex: a database, computational modules) that will perform a function required by the system.
- The set of connectors will help in coordination, communication, and cooperation between the components.
- Conditions that how components can be integrated to form the system.
- Semantic models that help the designer to understand the overall properties of the system.

1.2 Scope

Architecture Design Document (ADD) is an architecture 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 design principles may be defined during requirement analysis and then refined during architectural design work.

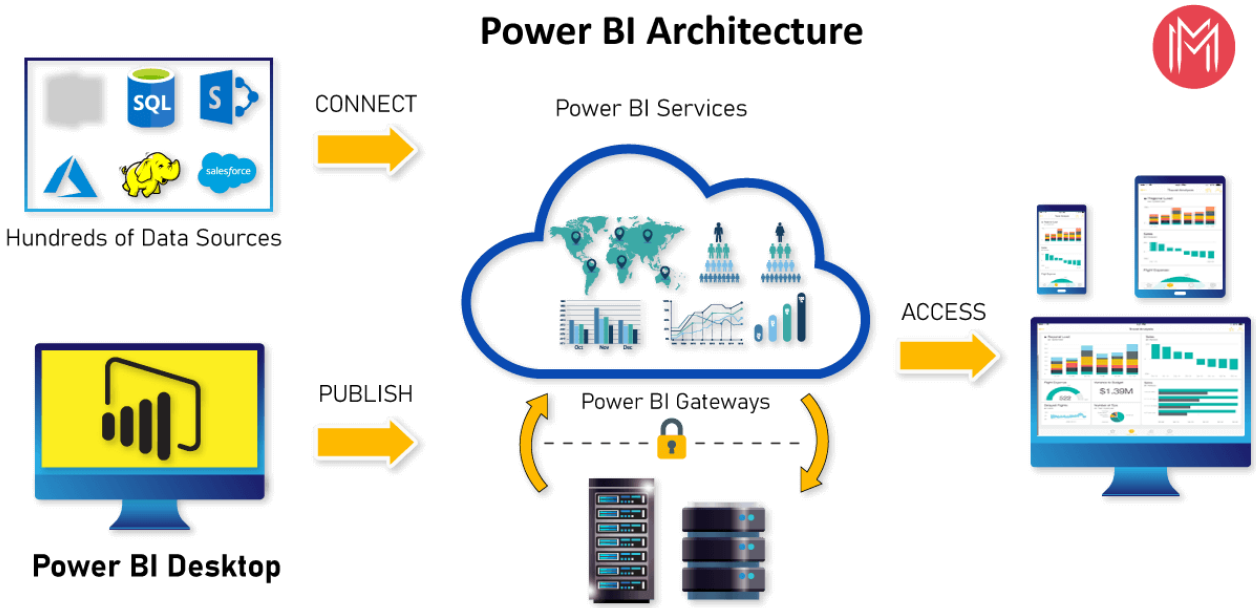
2. Architecture

2.1 Power BI Architecture

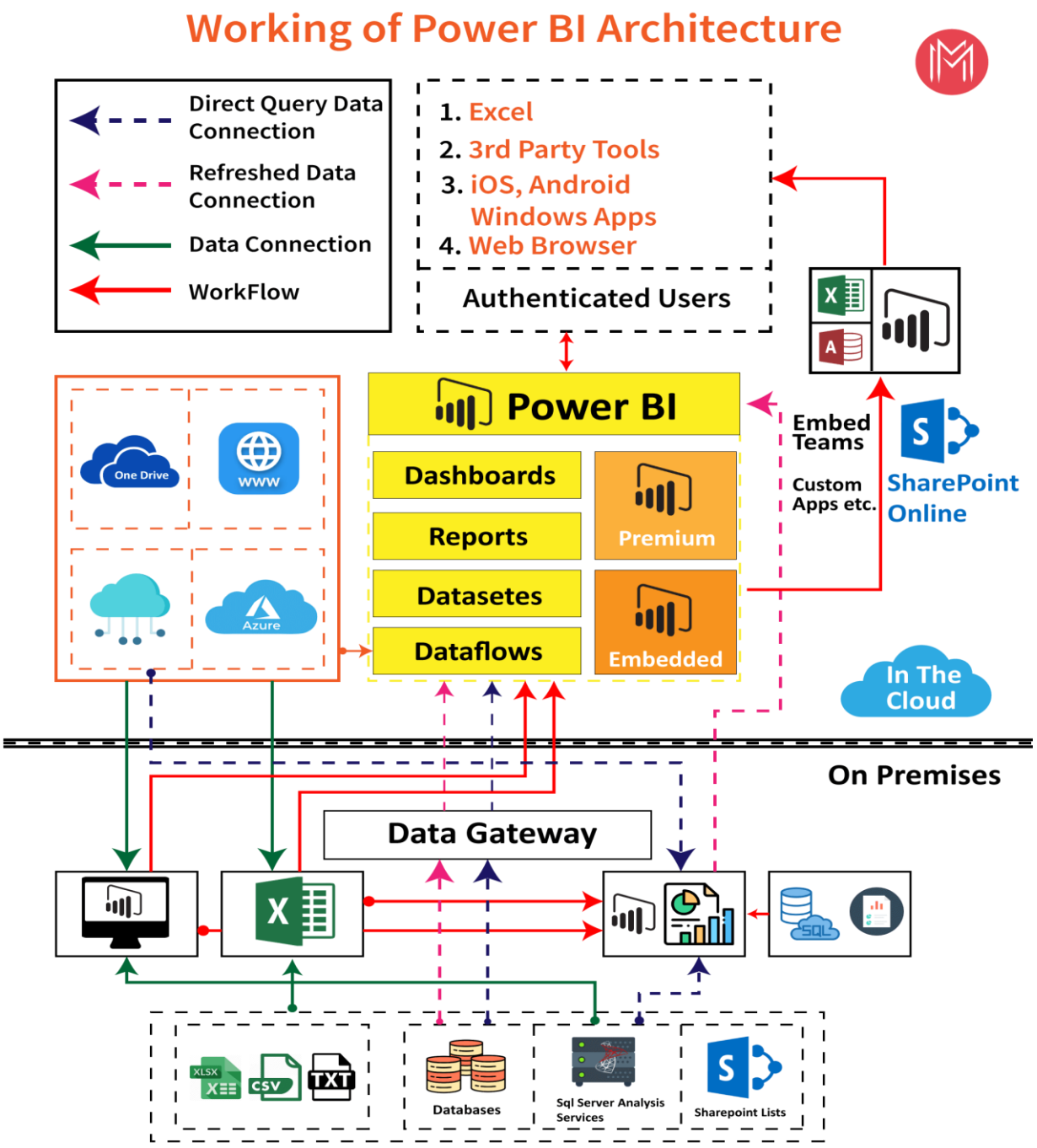
Power BI is a business suite that includes several technologies that work together. To deliver outstanding business intelligence solutions. Microsoft Power BI technology consists of a group of components such as:

1. Power Query (for data mash-up and transformation)
2. Power BI Desktop (a companion development tool)
3. Power BI Mobile (for Android, iOS, Windows phones)
4. Power Pivot (for in-memory tabular data modelling)
5. Power View (for viewing data visualizations)
6. Power Map (for visualizing 3D geo-spatial data)
7. 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. Then, they work with that data on a client development tool such as Power BI Desktop. Here, the imported data is cleaned and transformed according to the user's needs. Once the data is transformed and formatted, it is ready to use in making visualizations in a report. A report is a collection of visualizations like graphs, charts, tables, filters, and slicers.



2.2 Power BI Architecture – Working



2.3 Components of Power BI Architecture

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

Here is the list of Data Sources supported in Power BI.

- **File Types:** Power BI supports XML, txt/CSV, Excel, JSON, and Share point folder type files.
- **Database:** It supports SQL Server Analysis Services Database, SAP HANA Database, SQL Server Database, SAP Business Warehouse server, Access Database, Google BigQuery (Beta), Amazon Redshift, Snowflake, Impala, Oracle Database, IBM Informix database (Beta), Teradata Database, MySQL Database, IBM Netezza (Beta), Sybase Database, PostgreSQL Database.
- **Azure:** Azure SQL Data Warehouse, Azure Blob Storage, Azure Analysis Services database (Beta), Azure SQL Database, Azure Data Lake Store, Azure Table Storage, Azure HDInsight (HDFS), Azure Cosmos DB (Beta), Azure HDInsight Spark (Beta).
- **Online Services:** Power BI service, Dynamics 365 (online), Microsoft Exchange Online, Common Data Service (Beta), SharePoint Online List, Visual Studio Team Services (Beta), Dynamics 365 for Financials (Beta), Microsoft Azure Consumption Insights (Beta), Salesforce Objects, Salesforce Reports, Google Analytics, Dynamics 365 for Customer Insights (Beta), GitHub (Beta), appFigures (Beta), comScore Digital Analytix (Beta), Facebook, Kusto (Beta), Planview Enterprise (Beta), MailChimp (Beta), Mixpanel (Beta), QuickBooks Online, Projectplace (Beta).
- **Other Services:** Hadoop File (HDFS), Vertica (Beta), Web, OData Feed, SharePoint List, Microsoft Exchange, Active Directory, R Script, ODBC, Spark (Beta), Blank Query, OLE DB.

2. Power BI Desktop

It is free software that enables you to connect, transform and visualize the data on your desktop. You can connect to various data sources with the help of Power BI Desktop and combine the data into a data model. This data model allows you to create a collection of images and graphics that make you share the information within the organization as records. The majority of the users who work on Business Intelligence projects use Power BI Desktop to create and share their reports with others.

3. Power BI Service

Power BI Service is an On-Cloud service with a web-based platform and used to share and publish the reports made on Power BI Desktop. It collaborates the data with other users and creates dashboards. Power BI Service is also called “Power BI Workspace”, “Power BI Web Portal”, and “Power BI Site”. Power BI Service offers wonderful features like alerts and natural language Q&A.

It is available in three versions. They are as follows:

- Premium version
- Pro version
- Free version

4. Power BI Report Server

Power BI Report Server is similar to the Power BI Service. It is an On-Premises server platform. Using Power BI Report Server, organizations can secure their data. It enables the users to create reports and dashboards and allows you to share the reports with other users or organizations with proper security protocols. To use this service, you need to have a Power BI premium license.

5. Power BI Gateway

Power BI Gateway is used to maintain fresh information by connecting to your on-site data sources without transferring the data. It provides secure data and allows you to transfer the data between Microsoft cloud services and on-premise services. Microsoft cloud services include PowerApps, Power BI, Azure Analysis Services, Microsoft Flow, and Azure logic apps. By using a gateway, organizations can maintain the databases and other data sources securely in cloud services.

6. Power BI Mobile Apps

Using Power BI Mobile Apps, you can stay connected with on-premises data from anywhere. Power BI apps are available for iOS, Windows, and Android platforms.

3. Deployment

3.1 Power BI Deployment

The deployment process lets you clone content from one stage in the pipeline to another, typically from development to test, and from test to production. During deployment, Power BI copies the content from the current stage, into the target one. The connections between the copied items are kept during the copy process. Power BI also applies the configured deployment rules to the updated content in the target stage. Deploying content may take a while, depending on the number of items being deployed. During this time, you can navigate to other pages in the Power BI portal, but you cannot use the content in the target stage.

3.2 Publish datasets and reports from Power BI Desktop

When you publish a Power BI Desktop file to the Power BI service, you publish the data in the model to your Power BI workspace. The same is true for any reports you created in Report view. You'll see a new dataset with the same name, and any reports in your Workspace navigator.

Publishing from Power BI Desktop has the same effect as using Get Data in Power BI to connect to and upload a Power BI Desktop file