ARCHITECTURE DESIGN

**Expenditure Data Analysis**

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  1. **Introduction**

**1.1 What is an Architecture Design Document?**

The Architecture Design Document describes the overall structure and workflow of the project. It outlines how the various components—data sources, transformation logic, BI tools, and deployment platforms—interact with each other. This serves as a blueprint for designing a scalable and modular business intelligence solution.

**1.2 Scope**

The document focuses on the architecture of the **Expenditure Analysis Dashboard** created in **Power BI**, describing how raw data is transformed, calculated, and visualized for financial decision-making. It includes data flow, tool usage, and deployment options.

* 1. **Architecture**

**Power BI System Architecture**

The solution consists of:

1. **Data Source Layer**
   * .csv file with sales, MSRP, dates, countries, customers, and product lines
2. **ETL Layer (Power Query)**
   * Cleans mixed-format dates
   * Creates derived columns: Profit, YearMonth
   * Filters and transforms data
3. **Data Model Layer**
   * Relationships between tables (if more than one)
   * DAX calculations: Total Sales, Total Profit, Profit Margin
4. **Visualization Layer**
   * KPI Cards, Bar Charts, Line Charts, and Tables
5. **Publishing Layer**
   * Reports exported to Power BI Service (optional) or shared as .pbix
   1. **Power BI Communication Flow**
6. **Data Load:**  
   Power BI Desktop imports .csv file from local system.
7. **Transformation:**  
   Power Query Editor cleans and formats the data.
8. **Data Modeling:**  
   Fields and measures are calculated using DAX.
9. **Visualization:**  
   Charts and KPIs are created on report canvas.
10. **Export/Share:**  
    The .pbix file is shared via GitHub or Power BI service.
    1. **Deployment Options in Power BI**

| **Deployment Option** | **Description** |
| --- | --- |
| Power BI Desktop | Local development and analysis using .pbix files |
| Power BI Service | Cloud-based sharing and collaboration (optional) |
| GitHub | Used for version control, documentation, and public code sharing |

* 1. **Architecture Diagrams**

**[CSV Data File]**

**↓**

**[Power BI Desktop]**

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**[Power Query - ETL]**

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**[DAX Measures & Model]**

**↓**

**[Dashboard Visuals]**

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**[Export to PDF / Upload to GitHub / PBIX Share]**