High Level Design Document

Introduction

This High Level Design (HLD) document outlines the architecture and core components for the **PulseKPI - Sales Region Performance Dashboard** project. The purpose of this project is to deliver a Power BI dashboard that visualizes sales KPIs by region, leveraging SQL-extracted data to provide actionable insights into regional sales performance and trends.

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1. System Architecture Overview

Architecture Description:
The system consists of three main layers: Data Source (SQL Database), Data Integration (ETL/Direct Query), and Visualization (Power BI Dashboard).

Component	Role
SQL Database	Stores raw sales data, including regional sales transactions
Data Integration	Extracts and transforms data for reporting (ETL or Direct Query)
Power BI Dashboard	Visualizes KPIs, trends, and top-performing regions

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2. Component Interactions

Step	Source Component	Target Component	Interaction Description
1	SQL Database	Data Integration	Data is queried/extracted (scheduled or live)
2	Data Integration	Power BI	Transformed data is loaded into Power BI datasets
3	Power BI	End Users	Users interact with dashboard visuals and reports

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3. Data Flow Overview

Data Source	Transformation/Processing	Visualization Output
Sales tables	Aggregation, filtering, joins	Bar, line, and KPI visuals in Power BI

- Data flows from the SQL database, is processed (aggregated by region and time), and is visualized in Power BI.

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4. Technology Stack

Layer	Technology/Framework

Data Storage	SQL Database (e.g., MS SQL Server, Azure SQL)
Data Integration	Power BI ETL (Power Query) or Direct Query
Visualization	Power BI Desktop/Service

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5. Scalability & Reliability

- **Scalability:**
  - SQL database and Power BI can handle increased data volumes by scaling compute resources or using cloud-based solutions.
  - Power BI supports incremental data refresh for large datasets.
- **Reliability:**
  - Scheduled data refreshes ensure up-to-date reporting.
  - Power BI and SQL offer built-in security and access controls.
- **Security:**
  - Data access is managed via role-based permissions in SQL and Power BI.
  - Sensitive data is protected through encryption and secure connections.

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