High Level Design Document

Introduction

This High Level Design (HLD) document outlines the architecture and core components for the **RoomRate - Hospitality Occupancy Dashboard** project. The purpose of this project is to deliver a Power BI dashboard that enables monitoring of hotel occupancy rates, average daily rates, and revenue per available room, with interactive filtering by date and location.

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1. System Architecture Overview

Architecture Description:
The system consists of a data source (hotel occupancy data), a data processing layer, and a Power BI dashboard for visualization and user interaction.

Component	Role
Data Source	Stores raw hotel occupancy, rate, and revenue data
Data Processing	Extracts, transforms, and loads (ETL) data for dashboard consumption
Power BI Dashboard	Visualizes metrics and provides interactive filtering
User Interface	Allows users to interact with dashboard via slicers

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2. Component Interactions

Step	Interaction Description
1	Data Source provides raw data to Data Processing layer
2	Data Processing performs ETL and prepares data model for Power BI
3	Power BI Dashboard connects to processed data and renders visualizations
4	Users interact with dashboard (e.g., select date/location), triggering dynamic updates in visualizations

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3. Data Flow Overview

Source	Destination	Data Transferred
Data Source	Data Processing	Raw occupancy, rate, and revenue data
Data Processing	Power BI	Cleaned, aggregated, and modeled data
Power BI	User Interface	Visualized metrics, interactive filters/slicers

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4. Technology Stack

Layer/Component	Technology/Framework
Data Source	Excel, CSV, or SQL Database
Data Processing	Power Query (Power BI ETL)
Visualization	Power BI Desktop/Service
User Interface	Power BI Slicers/Filters

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5. Scalability & Reliability

- **Scalability:**
  The solution can scale by connecting Power BI to larger or cloud-based data sources (e.g., Azure SQL, cloud storage) as data volume grows.
- **Reliability:**
  Power BI provides robust data refresh and error handling. Data integrity is maintained via scheduled refreshes and validation in the ETL process.
- **Security:**
  Access to the dashboard and data is managed through Power BI's built-in authentication and role-based access controls.

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