High Level Design Document

Introduction

This High Level Design (HLD) document outlines the architecture and core components for the **PulseCare - Healthcare KPI Dashboard** project. The purpose of this project is to deliver an interactive Tableau dashboard that visualizes key healthcare metrics—such as patient admissions, average length of stay, and readmission rates—using a sample hospital dataset. The dashboard will support interactive filters and present summary KPIs for educational and business insights.

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1. System Architecture Overview

Architecture Description:
The system consists of three main layers: Data Source, Data Preparation, and Visualization. Data is ingested from a sample hospital dataset, processed for analysis, and visualized in Tableau.

Module/Component	Role/Responsibility
Data Source	Stores raw hospital data (CSV/Excel/Database)
Data Preparation	Cleans, transforms, and aggregates data for Tableau
Tableau Dashboard	Visualizes KPIs, provides interactive filters & summaries

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2. Component Interactions

Sequence Step	Interaction Description
1	Data Source provides raw data to Data Preparation module
2	Data Preparation processes and outputs data extracts or live connections for Tableau
3	Tableau Dashboard connects to prepared data, renders visualizations, and handles user input

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3. Data Flow Overview

Data Flow Step	Source	Destination	Description
Data Ingestion	Data Source	Data Preparation	Import raw hospital dataset
Data Transformation	Data Preparation	Tableau Dashboard	Output cleaned/aggregated data for analysis
Visualization & Filter	Tableau Dashboard	End User	Display KPIs, respond to interactive filters

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4. Technology Stack

Layer/Component	Technology/Framework
Data Source	CSV, Excel, or SQL Database
Data Preparation	Tableau Prep, Excel, or SQL
Visualization	Tableau Desktop/Public

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5. Scalability & Reliability

- **Scalability:** Designed for small to medium datasets; can be extended to larger datasets by optimizing data preparation and leveraging Tableau's data engine.
- **Reliability:** Relies on Tableau's built-in reliability for data refresh and visualization. Data integrity is ensured through preprocessing.
- **Security:** Sensitive data should be anonymized in the sample dataset. Access to dashboards can be controlled via Tableau's sharing permissions.

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