

Project Design Phase

Solution Architecture

Date	15 February 2025
Team ID	LTVIP2025TMID48457
Project Name	"Plugging into the Future: An Exploration of Electricity Consumption Patterns Using Tableau"
Maximum Marks	4 Marks

Okay, I will make the "Solution Architecture" section much smaller and more concise, focusing on the core elements for documentation.

Here's the condensed version:

Solution Architecture:

The solution architecture bridges business problems with technology solutions, focusing on optimal tech choices, clear stakeholder communication, and structured delivery.

Goals for this Project:

- **Best Tech Solution:** Utilize Tableau for advanced data visualization and Flask for web integration to transform complex electricity consumption data into actionable insights for utility companies, policymakers, and consumers.
- **Structure & Characteristics:**
 - **Data Flow:** Raw Consumption.csv data ¹is preprocessed using SQL, stored in a database ², connected to Tableau³, and then displayed via interactive dashboards.
 - **User Interface:** Dashboards are embedded in a Flask-based web UI for accessibility⁴.
 - **Key Features:** Interactive dashboards with filters (time, region, sector), KPIs, and a narrative Tableau Story⁵.
- **Features, Phases & Requirements:**
 - **Key Features:** Interactive dashboards, visualizations by time/region/sector, Flask web integration⁶.
 - **Phases:** Problem understanding, data preparation, visualization, dashboard/story creation, web integration, testing, documentation⁷.
 - **Requirements:** Analyze time-of-day, seasonal, and sector-wise usage; provide a GUI for monitoring⁸.
- **Specifications:**

- **Data:** 24 months of Indian electricity usage data (2019-2020)⁹.
- **Tools:** Tableau, Flask, SQL¹⁰.
- **Deliverables:** Video walkthrough, phase-wise documentation¹¹.

Example - Solution Architecture Diagram:

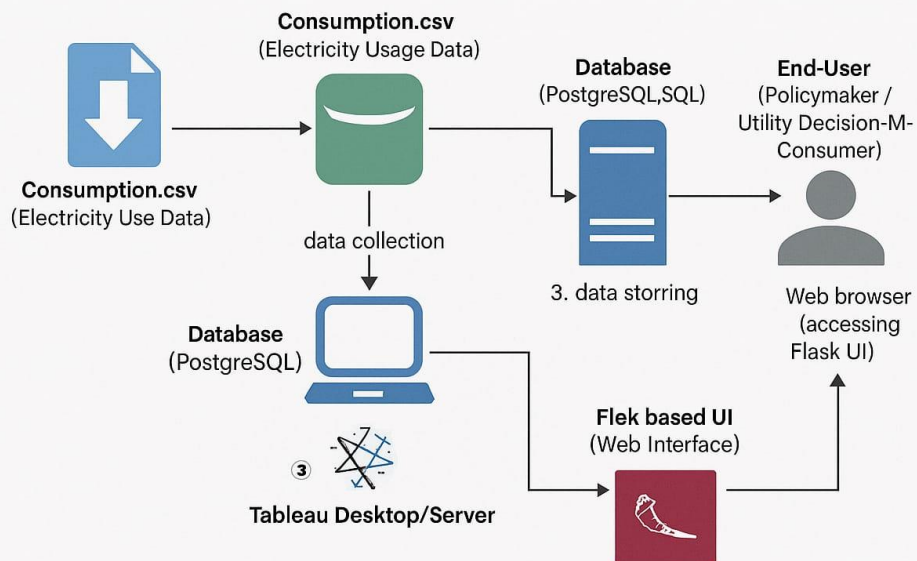


Figure 1: Architecture and data flow of the Plugging into the Future project