

Project Design Phase

Solution Architecture

Date	22-06-2025
Team ID	LTVIP2025TMID20802
Project Name	Plugging Into the Future: An Exploration of Electricity Consumption Patterns Using Tableau
Maximum Marks	4 Marks

Solution Architecture:

Solution architecture is a structured process that bridges the gap between real-world energy consumption challenges and advanced data analytics using Tableau. It ensures the design and delivery of a scalable and insightful solution tailored for analysing electricity usage patterns.

Its goals in the context of this project are to:

- **Find the best tech solution** to collect, process, and visualize electricity consumption data for better decision-making and resource optimization.
- **Describe the structure, flow, and components** of the Tableau-based dashboard solution to stakeholders, including how data flows from sources to insights.
- **Define the key features** (such as peak consumption detection, time-based usage trends, location-wise patterns), the project's development phases (data gathering, processing, visualization), and system requirements (storage, processing, access control).
- **Provide clear technical specifications** for how the solution should be defined, developed, and deployed—ensuring performance, scalability, and usability.



How It's Applied in This Project:

- **Business Problem:** Inefficient energy use and lack of data-driven visibility in consumption patterns.
- **Technology Solution:** A Tableau-powered dashboard connected to processed electricity data from smart meters, weather APIs, and utility records.
- **Structure & Behavior:** ETL pipelines feed cleaned and structured data into a central database, which Tableau uses to generate interactive and dynamic visualizations.
- **Development Phases:**

1. Data Collection & Integration
 2. Data Cleaning & Transformation
 3. Dashboard Design in Tableau
 4. User Testing & Feedback
 5. Final Deployment & Training
- **Specifications:** Includes data schema, visualization types, update frequency, access levels, and backup strategies.

Solution Architecture Diagram:

Example - Plugging Into the Future - An Exploration of Electricity Consumption Patterns Using Tableau

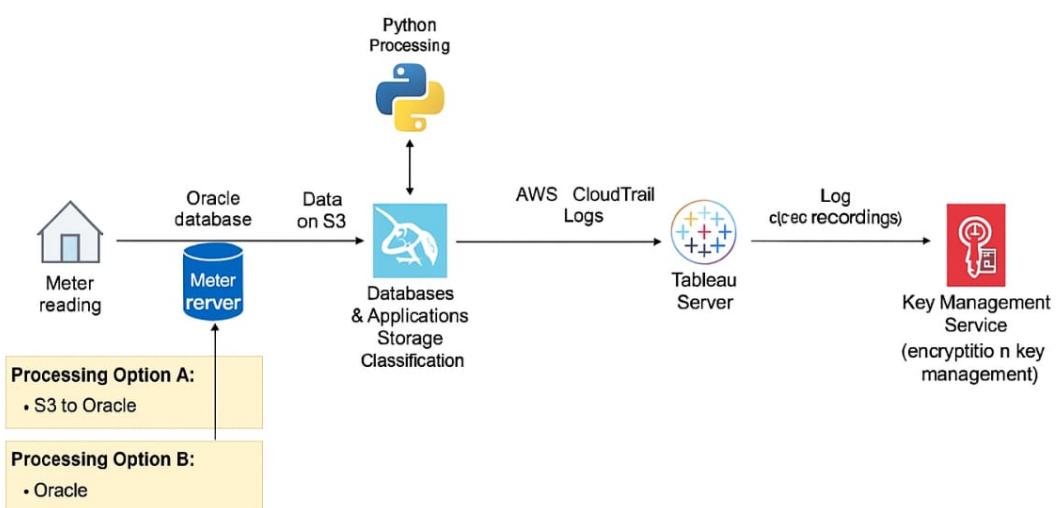


Figure 1: Architecture and data flow of the electricity consumption app using Tableau

Reference: <https://www.tableau.com/blog/plumbing-future-exploration-electricity-con-usng-tableau>

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