Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	01 July 2025
Team ID	LTVIP2025TMID49538
Project Name	Heritage Treasures: An In-Depth Analysis Of UNESCO World Heritage Sites In Tableau
Maximum Marks	4 Marks

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2

Example: Order processing during pandemics for offline mode

Reference: https://developer.ibm.com/patterns/ai-powered-backend-system-for-order-processing-during-pandemics/

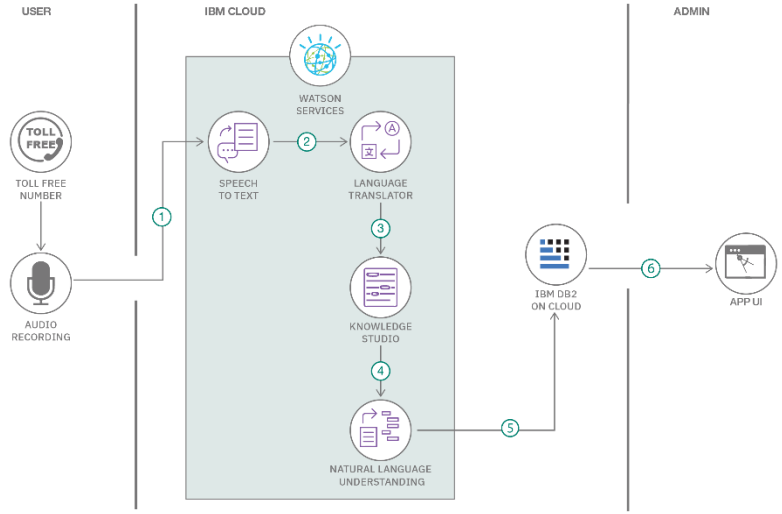

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	How users interact with the dashboard/visualizations. Accessible via web browsers and interactive Tableau dashboards.	Tableau Public / Tableau Desktop, HTML, CSS (for embedding in web), JavaScript (optional for web embedding)
2.	Application Logic-1	Data preprocessing and cleaning logic before visualization.	Python (Pandas, NumPy)
3.	Application Logic-2	Data transformation and statistical analysis for insights	Python (Matplotlib, Seaborn), Tableau Calculated Fields
4.	Application Logic-3	Interactive filtering, parameter controls, and dashboard actions in Tableau.	Tableau Dashboard Actions, Tableau Parameters
5.	Database	Data storage for UNESCO sites dataset and related metadata.	MySQL / PostgreSQL
6.	Cloud Database	Database hosting on cloud for accessibility.	Google Cloud SQL / AWS RDS
7.	File Storage	Storage for CSV, Excel, or JSON datasets used in analysis.	Google Drive / AWS S3
8.	External API-1	Fetching live UNESCO data.	UNESCO API
9.	External API-2	Integrating geographical data for mapping.	Mapbox API / OpenStreetMap
10.	Machine Learning Model	Predicting site popularity or risk assessment.	Scikit-learn (Regression/Classification Models)
11.	Infrastructure (Server / Cloud)	Hosting Tableau dashboards and data pipelines.	Tableau Public / Tableau Server / Google Cloud Platform

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Python libraries and mapping frameworks used for preprocessing and visualization enhancement.	Pandas, NumPy, Matplotlib, Seaborn, Folium
2.	Security Implementations	Data access control and protection for any private datasets.	SSL, OAuth 2.0 (if APIs require authentication)
3.	Scalable Architecture	Scalable architecture to handle additional datasets or future expansion to more heritage categories.	Cloud-hosted database + Tableau Server
4.	Availability	High availability via cloud-hosted Tableau dashboards accessible 24/7.	Google Cloud, AWS Hosting
5.	Performance	Optimized dashboards using Tableau extract files (.hyper), indexing in database, and caching.	Tableau Extract API, Database Indexing

References:

https://c4model.com/

https://developer.ibm.com/patterns/online-order-processing-system-during-pandemic/

https://www.ibm.com/cloud/architecture

https://aws.amazon.com/architecture

https://medium.com/the-internal-startup/how-to-draw-useful-technical-architecture-diagrams-2d20c9fda90d