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

Date	26 July 2025
Team ID	PNT2025TMID09700
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	Web-based interactive	Tableau Public / Tableau Server
2.	Application Logic-1	Filter logic, map interactivity, insights generation	Tableau Calculated Fields, Parameters
3.	Application Logic-2	Data cleaning and processing before upload	Python (Pandas, NumPy)
4.	Application Logic-3	Data enrichment (e.g., adding threat level or metadata)	Jupyter Notebook, Python
5.	Database	Data Type, Configurations etc.	MySQL, NoSQL, etc.
6.	Cloud Database	Database Service on Cloud	CSV/Excel Dataset, Pre-processed
7.	File Storage	Raw UNESCO site data	Tableau Cloud / Google Drive

8.	External API-1	Geo-coordinates for map (optional)	Mapbox API / OpenStreetMap
9.	External API-2	(Optional future scope: predict site risk trends)	UNESCO Open Data (CSV/JSON APIs)
10.	Machine Learning Model	Purpose of Machine Learning Model	Sklearn / TensorFlow (for risk prediction models)
11.	Infrastructure (Server / Cloud)	Hosting Tableau dashboards online	Tableau Public / Tableau Cloud.

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Python for data prep, Pandas, Matplotlib (if visualized locally)	Python, Pandas, Jupyter Notebook
2.	Security Implementations	Data is anonymized; dashboard shared as read-only links or embedded views	Tableau Permissions, Google Drive Access
3.	Scalable Architecture	3-tier: UI (Tableau) – Logic (Python/Tableau) – Data (CSV/Cloud)	Tableau Cloud, Google Sheets, Python
4.	Availability	Published on Tableau Public/Cloud — accessible 24/7	Tableau Public / Google Drive / GitHub
5.	Performance	Optimized with extracts, filters, aggregated data; can handle 10K+ records	Tableau Data Extracts, LOD expressions

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