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

Date	11 February 2026
Team ID	**LTVIP2026TMID89214**
Project Name	Heritage treasures: an in-depth analysis of UNESCO world heritage
Maximum Marks	4 Marks

Table-1: Components & Technologies:

S.No	Component	Description	Technology
1	User Interface	Web-based dashboards for data visualization and interaction	Tableau Public / Tableau Desktop
2	Application Logic-1	Logic for preparing and cleaning the UNESCO dataset	Python (Pandas, NumPy)
3	Application Logic-2	Logic to automate data import and transformation	Python Scripts or Tableau Prep
4	Application Logic-3	Logic to export and embed dashboards	Tableau JavaScript API / Tableau Public Links
5	Database	Stores UNESCO heritage site data (static or dynamic)	CSV, Excel files (processed offline), or MySQL if backend is used
6	Cloud Database	Cloud-hosted version of the dataset for collaborative access	Google Drive (Sheets) / Amazon RDS / IBM Cloudant
7	File Storage	For storing raw datasets, configuration files	Local filesystem or Google Drive / Dropbox
8	External API-1	Optional use of APIs to enrich data (e.g., weather, maps)	Mapbox API / Google Maps API (for mapping sites)
9	External API-2	Optional — future integration for tourism data or government datasets	UNESCO Official API or Tourism APIs
10	Machine Learning Model	Not directly applicable — optional for future risk prediction	N/A (not used in current Tableau scope)
11	Infrastructure (Server / Cloud)	Project hosted via Tableau Public or embedded in website	Tableau Public (Cloud), Local (Tableau Desktop)

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1	Open-Source Frameworks	The project primarily uses Tableau Public for data visualization (not open-source). For data preparation, open-source tools like Python (Pandas, NumPy) or Google Sheets can be used.	Python (Pandas, NumPy), Tableau Public
2	Security Implementations	Access to dashboards is controlled using Tableau Public sharing permissions. If hosted on a web app, HTTPS and role-based access control (RBAC) can be implemented.	HTTPS, RBAC (if embedded in a website), Tableau Permissions
3	Scalable Architecture	The solution uses a **2-tier architecture** (Data layer + Visualization layer). It can scale by connecting Tableau dashboards to cloud-hosted databases (e.g., Google BigQuery).	Tableau Server / Tableau Public, Cloud DB (Optional)
4	Availability	Tableau Public ensures 24/7 availability. Dashboards can also be embedded on websites with high uptime.	Tableau Public Cloud, Embedding APIs
5	Performance	Optimized dashboards through **data extracts, filters**, and **pre-aggregated datasets** to ensure fast loading times.	Tableau Extracts, Hyper Engine

References:

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https://whc.unesco.org/en/danger/ https://en.wikipedia.org/wiki/World_Heritage_Sites_by_country

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