

Project Design Phase

Solution Architecture

Date	24/06/2025
Team ID	LTVIP2025TMID48315
Project Name	Heritage Treasures: An In-Depth Analysis of UNESCO World Heritage Sites in Tableau
Maximum Marks	4 Marks

Solution Architecture:

1. Data Sources

- UNESCO Dataset: CSVs or APIs providing site name, year, location, category, country, etc.
- Geospatial Data: Coordinates (GeoJSON or Shapefiles) for mapping.
- Supplementary Data: Tourism numbers, preservation status, economic indicators.

2. Data Ingestion Layer

- **ETL Process:** Automated using Python scripts (e.g., using pandas, requests, schedule).
- **Data Cleaning:** Handling nulls, fixing geocodes, harmonizing country names.

3. Data Storage Layer

- Use a **relational database** (like PostgreSQL with PostGIS) for structured data.
- Optionally, use **cloud storage** (Google Sheets, AWS S3, or Azure Blob) for backups or raw files.

4. Data Preparation Layer

- Tableau Prep Builder: To transform and join tables.
- Python scripts (Pandas + GeoPandas): To enrich and pre-process geospatial features.

5. Visualization Layer (Tableau)

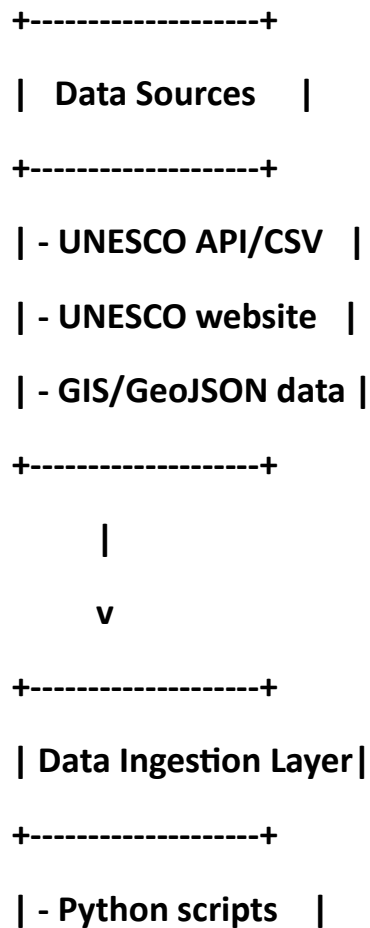
- **Interactive Dashboards with:**
 - Filters by region, country, year, and type (Cultural/Natural/Mixed)

- Maps showing distribution
- Time series on inscription trends
- Preservation status highlights
- Storyboards explaining key patterns (e.g., rise in Asia-Pacific sites)

6. End Users

- **Tourism Boards:** Plan heritage routes
- **Conservationists:** Identify endangered sites
- **Students/Researchers:** Academic insights
- **Policy Makers:** Understand regional heritage gaps

Solution Architecture Diagram:



| - Scheduled ETL |

| - Data cleaning |

+-----+

|

v

+-----+

| Data Storage Layer |

+-----+

| - PostgreSQL/MySQL |

| - Cloud Storage |

| (Google Drive, |

| Azure Blob, etc.)|

+-----+

|

v

+-----+

| Data Preparation Layer |

+-----+

| - Tableau Prep |

| - Python (Pandas) |

| - Geo data enrichment |

+-----+

|

v

+-----+

| **Tableau Server** |

+-----+

| - **Dashboards** |

| - **Story Points** |

| - **Geospatial maps** |

+-----+

|

v

+-----+

| **End Users** |

+-----+

| - **Historians** |

| - **Tour Planners** |

| - **Policy Makers** |

| - **Researchers** |

+-----+