

PROJECT REPORT

Project Name: Heritage Treasures: An In-Depth Analysis of UNESCO World Heritage Sites in Tableau.

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1. INTRODUCTION

1.1 Project Overview

The project "Heritage Treasures: An In-Depth Analysis of UNESCO World Heritage Sites in Tableau" aims to explore and analyze global UNESCO World Heritage Sites using data analytics. Leveraging Tableau's advanced visualization capabilities, the project provides insights into site distributions, regional patterns, and attributes like cultural, natural, and mixed heritage designations, promoting a deeper understanding of these global treasures.

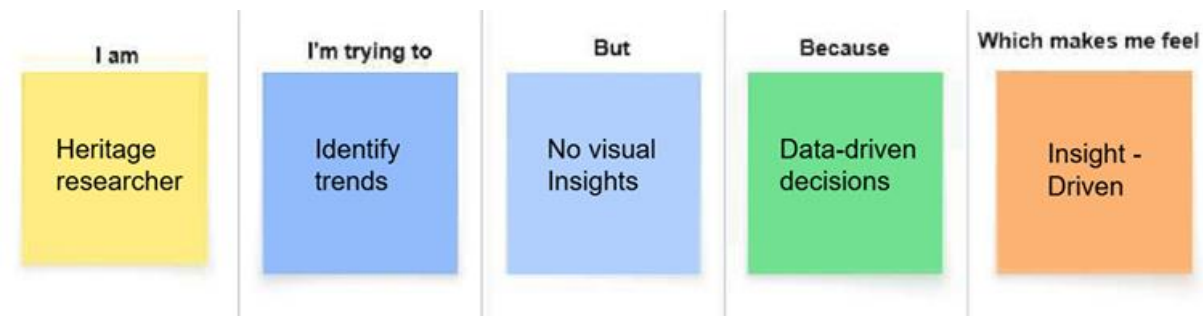
1.2 Purpose

The purpose of this project is to present an informative and engaging analysis of UNESCO World Heritage Sites. The study aims to assist researchers, tourists, and policymakers by offering a visual representation of heritage data, highlighting trends, and identifying areas that may require conservation efforts or promotion.

2. IDEATION PHASE

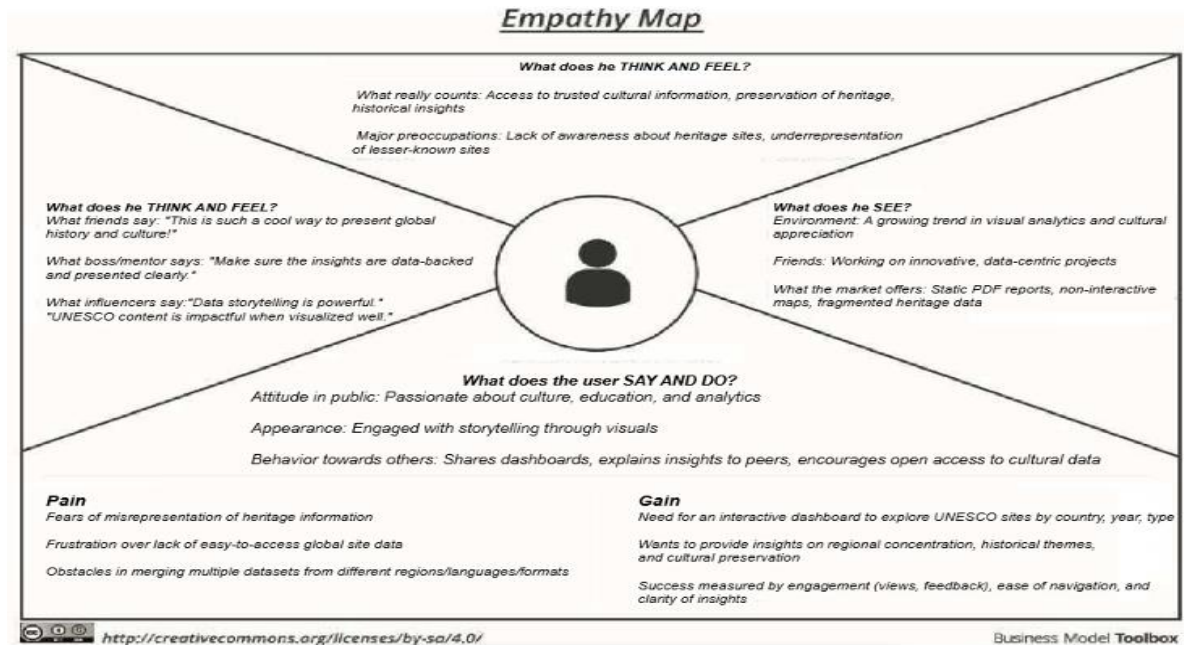
2.1 Problem Statement

UNESCO World Heritage Sites are vital for cultural and natural heritage conservation, yet their significance is often underutilized due to a lack of accessible and engaging data visualization. This project addresses the need for a comprehensive and visually appealing tool to analyze these sites.



2.2 Empathy Map Canvas

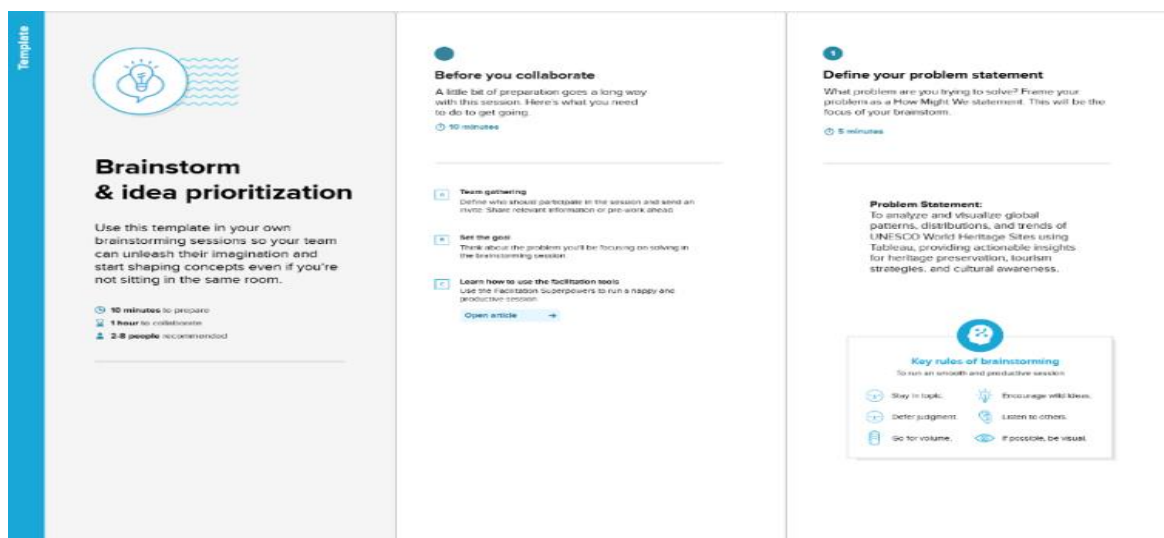
The empathy map considers the perspectives of tourists, researchers, and conservationists. It identifies their needs for accessible information on site locations, historical significance, and conservation status, ensuring the solution aligns with their expectations.

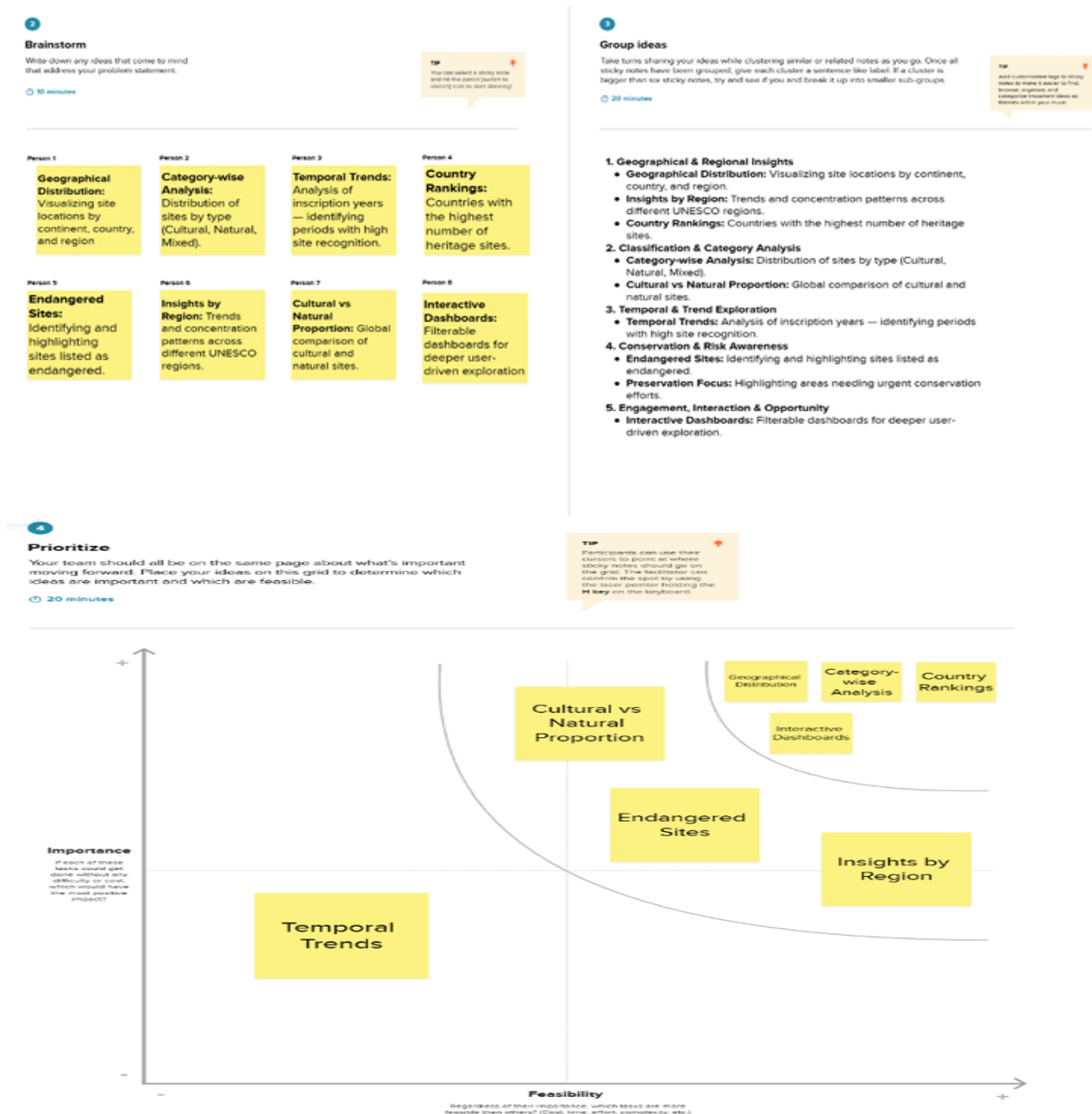


2.3 Brainstorming

Brainstorming sessions focused on:

- Categorizing sites by type (cultural, natural, mixed).
- Analyzing regional and country-wise distributions.
- Visualizing site attributes, such as the year of inscription and endangered status.





3. REQUIREMENT ANALYSIS

3.1 Customer Journey Map

The customer journey map captures the flow from users discovering the platform to exploring interactive visualizations and deriving actionable insights for research or travel planning.

Scenario [Existing experience through a product or service]	Entice How does someone become aware of this service?	Enter What do people experience as they begin the process?	Engage In the core moments in the process, what happens?	Exit What do people typically experience as the process finishes?	Extend What happens after the experience is over?
Experience steps What does the person (or people) at the center of this scenario typically experience in each step?	Watch travel documentaries, Instagram Reels, or YouTube vlogs Read about UNESCO sites in newspapers or official sites Read about famous sites like Machu Picchu, Pyramids of Giza, etc.	Search for the site location, accessibility, history Understand new site, nearby cities	Arrive, explore the site Join tours, learn history (justification_en) Take photos, interact with locals	Share experiences online Recommend sites to friends	Donate to heritage preservation Visit more UNESCO sites Advocate for new site nominations
Interactions What interactions do they have at each step along the way? • People: Who do they see or talk to? • Places: Where are they? • Things: What digital touchpoints or physical objects do they use?	UNESCO website Travel influencers and media	UNESCO website, tourist guides, Google Maps Travel agencies and guides	Site management, guides, locals, interpretive signage, museums	Social media, travel review sites, UNESCO newsletters or apps	UNESCO initiatives, volunteer programs
Goals & motivations At each step, what is a person's primary goal or motivation? ("Help me..." or "Help me avoid...")	"I want to experience world-class culture at least once!" "Learn history or culture!" "Tick off sites from my travel bucket list!"	"Plan a safe, enjoyable trip!" "Understand heritage significance before going."	"Deeply understand the heritage value!" "Enjoy an immersive, memorable experience!"	"Preserve my memories!" "Inspire others to visit responsibly!"	"Support cultural and natural preservation globally!"
Positive moments What steps does a typical person find enjoyable, productive, fun, motivating, delightful, or exciting?	Beautiful, well-maintained scenic sites (e.g., Taj Mahal, Angkor Wat) Access to rich history or culture (e.g., see short_UnescoList_en)	Heritage safety (no danger, no exit) and GPS coordinates (no maps needed) for easy mapping	Authentic preservation efforts Knowledgeable guides	Sharing photos and stories boosts personal pride	Feeling connected to global heritage Educational impact for future generations
Negative moments What steps does a typical person find frustrating, confusing, engaging, costly, or time-consuming?	Perception that only distant or expensive sites qualify Limited promotion of lesser-known sites (e.g., Roman Bank, Gizeh) (see short_UnescoList_en)	Unclear design or details (no exit) and Lack of visitor information for remote sites	Overcrowding at popular sites Poor signage or preservation in lesser-known areas	If site condition disappoints expectations	Limited public knowledge of how to contribute
Areas of opportunity What might we make each step better? What ideas do we have? What ideas others suggested?	Highlight under-valued sites with rich history Promote regional clusters of sites for travel planning	Visual maps connecting sites by region_en Mobile-friendly travel guides	Limit daily visitors for preservation AR/VR experiences for education	Provide UNESCO heritage moments Encourage responsible travel pledges	Create "UNESCO Explorer" programs for travelers Digital badges for visiting multiple sites

3.2 Solution Requirements

- Data sources: UNESCO datasets, tourism statistics.
- Tools: Tableau for visualization, Python for data processing.
- Key metrics: Number of sites by category, endangered site status, regional distributions.

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Data Acquisition	Collecting WHC data from UNESCO and CSV repositories. category, year, etc.)
FR-2	Data Cleaning and Preprocessing	Removing duplicates, handling null values (e.g., justification_en, danger_list), formatting for Tableau
FR-3	Tableau Dashboard Development	Creating dashboards with filters (by region, category, year). Maps showing geolocations (lat/long) of sites
FR-4	Insight Generation	Dynamic visuals highlighting endangered sites, regional/categorical comparisons, and year-wise trends in inscription

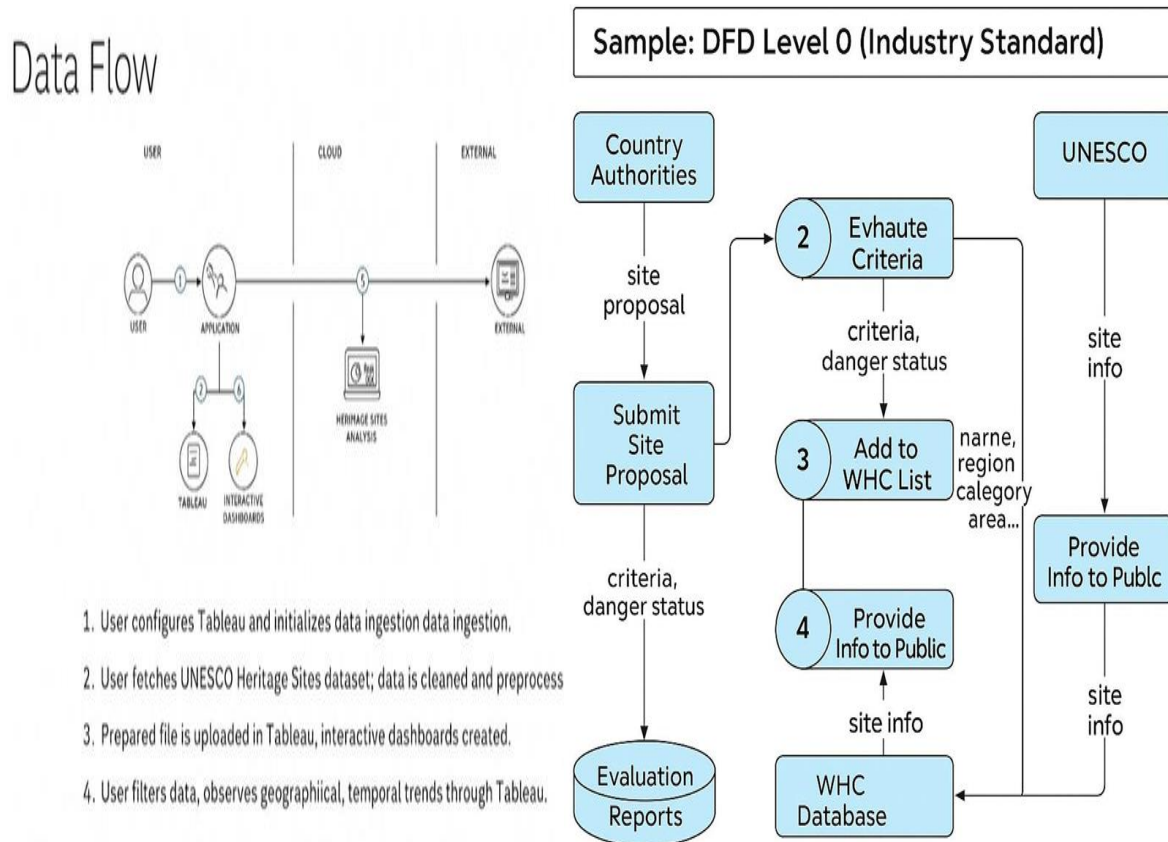
Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	Usability	Simple and intuitive Tableau interface with interactive filters and maps
NFR-2	Security	Restricted sharing on Tableau Public; no personally identifiable information used
NFR-3	Reliability	Ensures correct and consistent representation of WHC site data
NFR-4	Performance	Optimized dashboards for fast load times and smooth filter interactions
NFR-5	Availability	Hosted publicly and accessible to evaluators 24/7 via Tableau Public link
NFR-6	Scalability	Easily extendable to include future WHC data or other heritage datasets

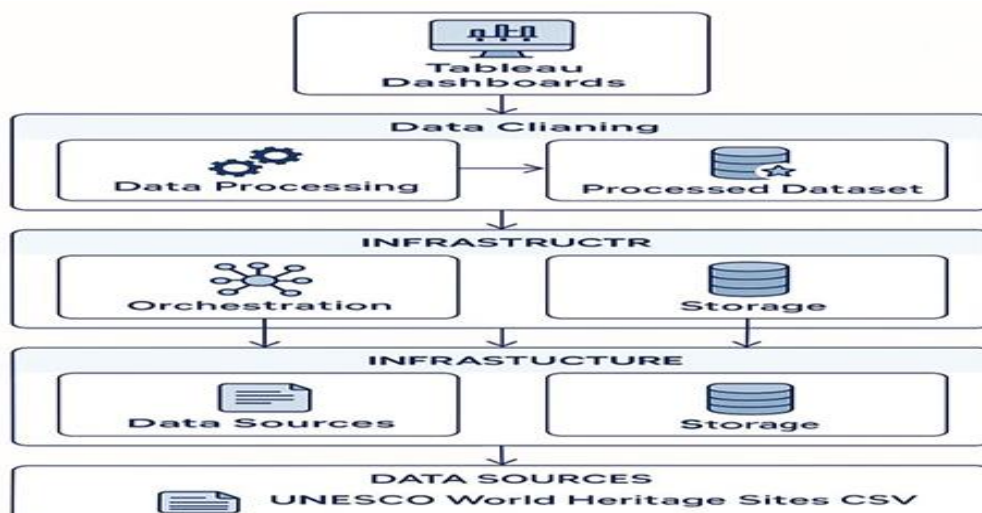
3.3 Data Flow Diagram

The data flow diagram showcases the journey from data collection to final visualization, encompassing steps like preprocessing, categorization, and Tableau integration.



3.4 Technology Stack

- Data Analytics: Tableau, Python (for ETL processes).
- Data Sources: UNESCO database, tourism reports.
- Storage: Cloud solutions for scalability and collaborative access.



4. PROJECT DESIGN

4.1 Problem-Solution Fit

This solution bridges the gap between raw data on UNESCO sites and actionable insights by delivering intuitive visualizations that cater to diverse stakeholder needs.

Define CS, fit into CC	1. CUSTOMER SEGMENT(S) CS <ul style="list-style-type: none">• Researchers & Academics:<ul style="list-style-type: none">• History, archaeology, and cultural studies researchers• Use data-driven visuals to study global patterns, danger statuses, and trends in heritage conservation• Policy Makers & Government Bodies:<ul style="list-style-type: none">• UNESCO affiliates, cultural ministries, tourism boards• Need summarized, visual insights for policy design and funding allocation• Tourism Planners:<ul style="list-style-type: none">• Travel agencies, eco-tourism firms, and NGOs• Use region-wise and category-wise data to design cultural tourism circuits	6. CUSTOMER CONSTRAINTS CC <ul style="list-style-type: none">• Common Constraints Faced by Users:<ul style="list-style-type: none">• Lack of Technical Expertise• Many users are not skilled in coding or data analysis and find it difficult to explore large datasets.• Time Constraints• Researchers and policymakers need fast, ready-to-use insights without manually processing data.• Limited Access to Analytical Tools<ul style="list-style-type: none">• Some users do not have access to paid or complex analytical tools like Excel Pro or SPSS.• Overwhelming Raw Data• Raw CSVs with 20+ columns (as in the UNESCO dataset) are hard to interpret without proper tools.	5. AVAILABLE SOLUTIONS AS <ul style="list-style-type: none">• Used UNESCO Official Website• Offers site listings and static maps but lacks interactive filtering and deep visual analytics.• Wikipedia / Cultural Databases• Provide textual summaries or lists but lack spatial or data-driven insights.• Academic Research Papers• Present detailed analysis, but typically non-interactive and inaccessible to general users.• Basic CSV Downloads• Allow access to raw data, but require technical knowledge for analysis (e.g., coding or Excel formulas).	Explore AS, differentiate
	2. JOBS-TO-BE-DONE / PROBLEMS J&P <ul style="list-style-type: none">• Jobs to be Done:<ul style="list-style-type: none">• Explore and compare UNESCO World Heritage Sites based on geography, type, and year.• Identify endangered or delisted sites using dynamic, interactive filters.• Analyze historical trends in heritage site inscription over time.• Discover insights without the need for complex data processing or coding.• Access a centralized dashboard for educational, planning, or awareness purposes.• Problems Faced by Users:<ul style="list-style-type: none">• Raw CSV datasets (like the UNESCO list) are difficult to interpret without data skills.• Lack of centralized, user-friendly visualization tools for cultural site analysis.• Difficulty in identifying high-risk or endangered heritage zones quickly.• Manual efforts required to compare sites across countries or regions.• Absence of dynamic tools that help users extract insights interactively and visually.	9. PROBLEM ROOT CAUSE RC <ul style="list-style-type: none">• Raw Data Complexity• The UNESCO dataset is provided in large tabular format (CSV) with over 20 columns, making it hard to interpret without technical knowledge.• Lack of Visualization Tools• No centralized, interactive platform exists to visualize or explore heritage site data with filtering capabilities (region, category, danger status, etc.).• Low Data Accessibility for Non-Experts• Non-technical users like tourists, educators, or general public cannot easily extract insights from raw datasets without coding or analysis tools.• Scattered Information Sources• Users must refer to multiple websites (UNESCO portal, Wikipedia, academic sources) to get a complete picture, which is time-consuming.• No Real-Time Interaction• Static sources or reports don't support dynamic interaction like filtering by region, visualizing on a map, or viewing trends over time.	7. BEHAVIOUR BE <ul style="list-style-type: none">• Users typically search for information on heritage sites through search engines, Wikipedia, or the UNESCO website.• Data-savvy users may download CSVs and use Excel or coding tools (Python, R) to analyze.• Researchers manually scan multiple sources to compare countries, regions, or years.• Non-technical users avoid working with datasets due to complexity.• Users are increasingly drawn to visual content and dashboards.• Tableau dashboards provide a drag-and-drop interface and interactive filters – matching users' preference for simplicity.• Maps, charts, and KPIs align with how users like to consume insights quickly.• Making the dashboard publicly available ensures users can explore freely without installation or setup.	Focus on J&P, tap into BE, understand RC
Identify strong TR & EM	3. TRIGGERS TR <ul style="list-style-type: none">• Academic Research Projects: Students or scholars need visual summaries of cultural heritage data for papers, theses, or presentations.• Travel & Tourism Planning: Travel firms or tourists want insights into heritage-rich regions or identify UNESCO sites by country or category.• Endangerment Alerts: Cultural organizations want to monitor trends in endangered or threatened heritage sites.• Policy Analysis & Funding Decisions: Government officials use regional and temporal data trends for cultural preservation planning.	10. YOUR SOLUTION SL <ul style="list-style-type: none">• An Interactive Filtering<ul style="list-style-type: none">• Users can filter by region, country, site category (Cultural/Natural/Mixed), year of inscription, and danger status.• Map-Based Visualization<ul style="list-style-type: none">• Sites are plotted on a geographic map using latitude and longitude, helping users visualize the global distribution of heritage sites.• Trend Analysis<ul style="list-style-type: none">• Year-wise charts show how many sites were added or endangered over time.• Category & Region Insights<ul style="list-style-type: none">• Pie charts and bar graphs reveal patterns by continent or site type.• No Coding Required• Built on Tableau Public for open access and easy usability by non-technical users	8. CHANNELS of BEHAVIOUR CH <p>8.1 ONLINE</p> <ol style="list-style-type: none">1. Tailored, Public Dashboard2. Hosted online through a link, users can filter, explore, interact with visual insights directly in a browser3. Google Drive / Cloud Sharing4. Cleaned datasets & documentation can be shared with collaborators, educators, or evaluators for review5. Final output is submitted digitally for evaluation, feedback, and demonstration.6. Web Embeds & Presentation Links7. Dashboard can be embedded in blogs, portfolios, or SmartSlide reports for public or academic use. <p>8.2 OFFLINE</p> <ol style="list-style-type: none">1. Downloadable Visual Reports2. Dashboards and charts can be exported to PDF or images for offline presentations, handouts, or reports.3. Local Data Access4. Users can access .csv or .xlsx files locally in Excel or Python without needing an internet connection.5. Offline Presentations6. Dashboards and visual findings can be shown in PowerPoint or PDF formats during in-person seminars or reviews.7. Documentation & Insights Sheets8. Insights summary and KPIs can be printed or stored locally for academic or institutional reporting.	Extract online & offline CH of BE
	4. EMOTIONS: BEFORE / AFTER EM <p>Before (When Facing the Problem):</p> <ul style="list-style-type: none">• Confused: Overwhelmed by raw, unstructured CSV files with too many fields and no visuals• Frustrated: Unable to filter or search sites by region, danger status, or category easily <p>After (Post-Solution or Job Completion):</p> <ul style="list-style-type: none">• Empowered: Able to interactively explore global heritage data without needing technical skills• Informed: Gained insights on endangered sites, regional trends, and historical patterns			

4.2 Proposed Solution

A Tableau dashboard that includes:

- Global maps of site distributions.
- Time series showing the growth of inscriptions.
- Analysis of sites under threat.

S.No.	Parameter	Description
	Problem Statement (Problem to be solved)	UNESCO's World Heritage Site data is available in raw tabular format, making it difficult for researchers, tourists, educators, and policymakers to derive actionable insights. The lack of accessible, interactive, and region-wise analytics limits data-driven understanding and awareness of cultural and natural heritage globally.
	Idea / Solution description	<p>This project builds a Tableau-based interactive dashboard using the official UNESCO World Heritage Sites dataset. It enables:</p> <ul style="list-style-type: none">• Region, category, and year-based filtering of heritage sites• Map visualizations with lat-long plots• Trend analysis of inscription and endangered sites• Comparative charts by country, region, or category <p>The dashboard makes complex cultural data easy to understand for technical and non-technical users alike.</p>
	Novelty / Uniqueness	<p>Unlike traditional reports or static portals, the solution is:</p> <ul style="list-style-type: none">• Fully interactive and filterable via Tableau• Designed for open access (Tableau Public)• Focused on storytelling with data• Visual-first, allowing users to quickly identify heritage patterns globally.

	Social Impact / Customer Satisfaction	<p>This project supports:</p> <ul style="list-style-type: none"> Increases awareness of endangered heritage sites Aids students, educators, and heritage planners with accessible analytics Enhances data literacy using a globally recognized dataset Promotes cultural education through interactive tools
	Business Model (Revenue Model)	<p>While primarily an academic project, future potential includes:</p> <ul style="list-style-type: none"> Licensing dashboards to educational or cultural institutions Monetizing custom reports for tourism departments or NGOs Offering dashboard templates for Tableau learners or trainers
	Scalability of the Solution	<ul style="list-style-type: none"> Easily extendable to include future UNESCO data updates Can be adapted to visualize other heritage datasets (national/state-level) Scalable to include machine learning models for prediction (e.g., risk analysis) Expandable to mobile-friendly interfaces or embedded educational modules

4.3 Solution Architecture

The architecture integrates datasets into a streamlined pipeline for preprocessing, analysis, and interactive visual representation using Tableau.



5. PROJECT PLANNING & SCHEDULING

5.1 Project Planning

The project utilized an iterative methodology:

- Week 1: Data gathering and initial exploration.
- Week 2: Dashboard design and development.
- Week 3: Refinement and testing for deployment.

6. FUNCTIONAL AND PERFORMANCE TESTING

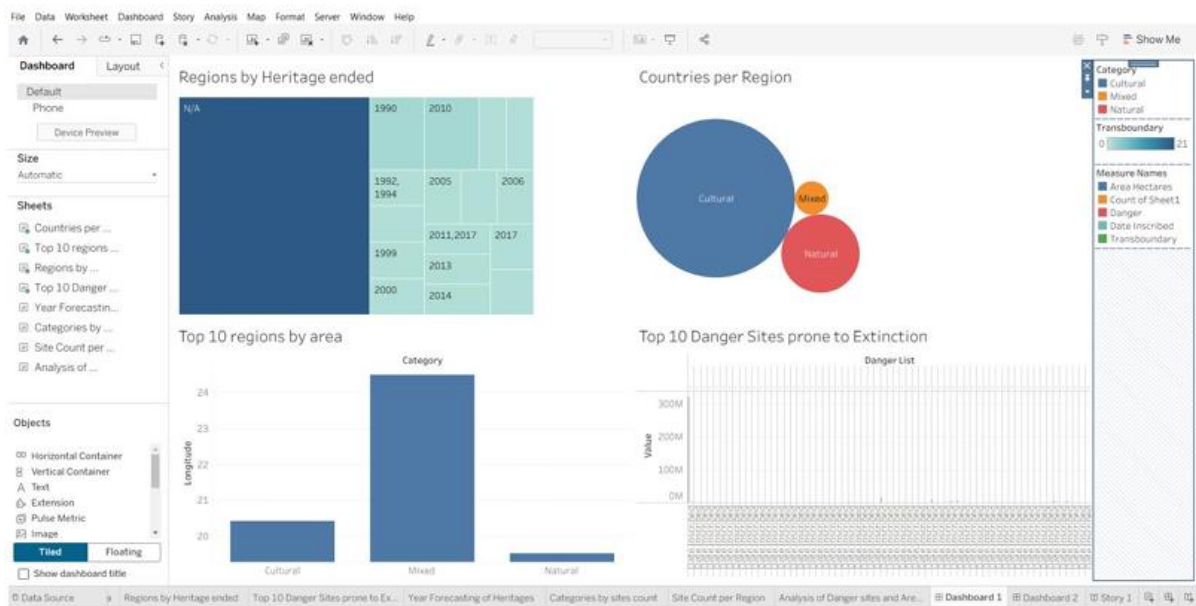
6.1 Performance Testing

Tests ensured the dashboards loaded efficiently, rendered accurate visualizations, and provided seamless interactivity even with large datasets.

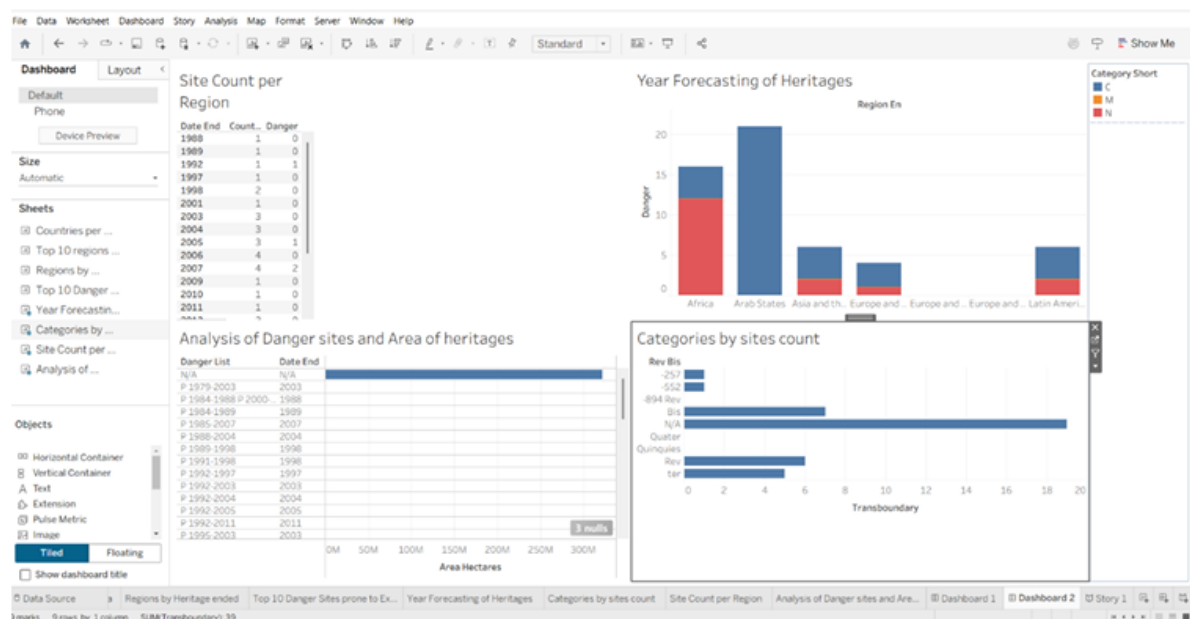
7. RESULTS

7.1 Output Screenshots

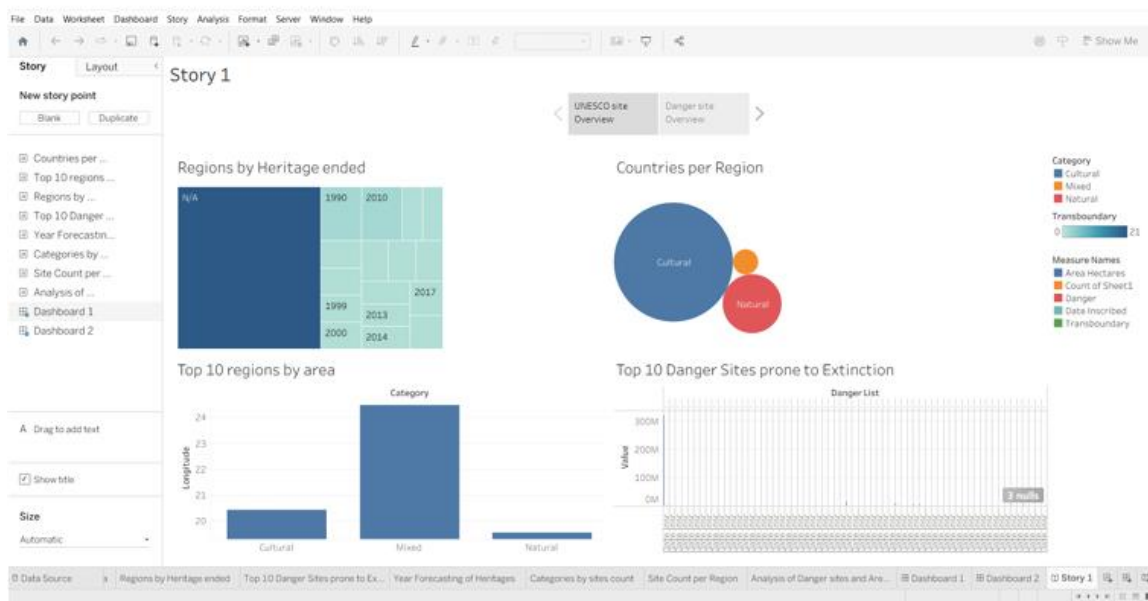
Screenshot of Dashboard – 1:



Screenshot of Dashboard – 2:



Screenshot of Story-1:



8. ADVANTAGES & DISADVANTAGES

- **Advantages:** Enhanced accessibility to UNESCO data, user-friendly visualizations, and insights into heritage site conservation needs.
- **Disadvantages:** Limited access to proprietary data, reliance on dataset accuracy.

9. CONCLUSION

The project effectively demonstrates how Tableau can visualize UNESCO World Heritage data, making it more accessible and impactful. The insights can assist in promoting and preserving these global treasures.

10. FUTURE SCOPE

Future enhancements include incorporating real-time updates, expanding datasets to include visitor statistics, and integrating predictive analytics for site conservation efforts.

11. APPENDIX

- **Source Code:** No Source Code.

- **Dataset Link:** <https://www.kaggle.com/datasets/ujwalkandi/unesco-world-heritage-sites/data?select=whc-sites-2019.csv>.
- **GitHub & Project Demo Link:**

➤ **GitHub Link:**

<https://github.com/naveenkumar974/naveenkumar974-Heritage-Treasures-An-In-Depth-Analysis-of-UNESCO-World-Heritage-Sites-in-Tableau>

➤ **Project Demo Link:**

https://drive.google.com/file/d/1Pmfta09_gx5B2LicwteMal2Sf8tEDrA-/view?usp=sharing