

Project Report

on

DATA ANALYTICS WITH TABLEAU

1. Introduction:

- **Project Title:** Heritage Treasures: An In-Depth Analysis of UNESCO World Heritage Sites in Tableau
- **Team ID:** LTVIP2026TMIDS38015
- **Team Members:**
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1.1 Project Overview:

“Heritage Treasures: An In-Depth Analysis of UNESCO World Heritage Sites (2019)” is a comprehensive data visualization project aimed at analyzing UNESCO World Heritage Sites using Tableau. The project focuses on understanding the global distribution, trends, categories, and risk status of heritage sites.

The system integrates Tableau dashboards with a Flask-based web application to provide an interactive and user-friendly interface. The project enables stakeholders to explore heritage site data visually and gain meaningful insights.

1.2 Purpose:

The main purpose of this project is:

- To analyze UNESCO World Heritage Sites dataset (2019).
- To visualize heritage distribution across countries and regions.
- To identify endangered heritage sites.
- To study regional inscription trends over time.
- To integrate Tableau dashboards with a Flask web interface.
- To support data-driven heritage preservation decisions.

2.Ideation Phase:

2.1 Problem Statement:

Although UNESCO provides detailed heritage data, it is difficult for users to analyze large datasets in raw CSV format. There is a need for an interactive visualization system that clearly presents:

- Country-wise heritage distribution
- Danger status of sites
- Regional trends over time
- Category-based classification

The problem is to design a system that transforms raw heritage data into meaningful visual insights.

2.2 Empathy Map Canvas:

Users:

- Students
- Researchers
- Cultural Analysts
- Tourism Planners

User Needs:

- Easy understanding of heritage data
- Clear visual dashboards
- Identification of endangered sites
- Regional growth insights

User Challenges:

- Large dataset complexity
- Lack of centralized interactive platform

2.3 Brain Storming:

During brainstorming, the following ideas were considered:

- Static informational website
- Dashboard-based visualization system
- Forecasting of heritage growth
- Risk analysis dashboard
- Interactive storytelling

Final decision:

Develop Tableau dashboards and integrate them into a Flask web application.

3. REQUIREMENT ANALYSIS

3.1 Customer Journey Map

1. User opens the Flask web application.
2. Navigates through Home and About pages.
3. Opens Dashboard section.
4. Interacts with Tableau visualizations.
5. Uses filters (Region, Country, Category).
6. Views Story for narrative insights.

3.2 Solution Requirements

Functional Requirements

- Load UNESCO dataset (CSV).
- Create multiple visualizations.
- Build interactive dashboards.
- Use calculated fields.
- Implement forecasting.
- Embed dashboard in Flask UI.

Non-Functional Requirements

- Responsive design.
- Fast data loading.
- Interactive filters.
- Cross-browser compatibility.

3.3 Data Flow Diagram (DFD)

Level 0:

User → Flask Web Application → Tableau Dashboard → Output to User

Level 1:

Dataset → Tableau → Visualization Worksheets → Dashboard → Flask Embed → User

3.4 Technology Stack

Component	Technology Used
Dataset	Kaggle UNESCO Dataset (2019)
Visualization Tool	Tableau
Backend	Python Flask
Frontend	HTML, CSS, Bootstrap
IDE	VS Code
Version Control	GitHub

4. PROJECT DESIGN

4.1 Problem Solution Fit

The solution converts raw UNESCO data into interactive dashboards. It simplifies complex information into clear visuals, helping users identify patterns and trends effectively.

4.2 Proposed Solution

The proposed system:

- Imports UNESCO dataset.
- Cleans and prepares data.
- Creates multiple visualizations.
- Builds two dashboards.
- Develops a Story in Tableau.
- Embeds dashboards into Flask UI.

4.3 Solution Architecture

Architecture Flow:

1. Data Source (CSV file)
2. Tableau Data Processing
3. Visualization Worksheets
4. Dashboard & Story Creation
5. Tableau Public Publishing
6. Flask Web Integration
7. End User Interaction

Architecture Type:

Technical Architecture:



fig: Client-Server Architecture

5. PROJECT PLANNING & SCHEDULING

Phase	Duration
Data Collection	1 Week
Data Preparation	1 Week
Visualization Creation	2 Weeks
Dashboard & Story	1 Week
Flask Integration	1 Week
Testing & Documentation	1 Week

Total Duration: 6–7 Weeks

6. FUNCTIONAL AND PERFORMANCE TESTING

6.1 Performance Testing

Amount of Data Loaded

- Dataset: whc-sites-2019.csv
- Records: 1000+ entries
- Columns: 20+ attributes

Utilization of Filters

- Region
- Country
- Category
- Danger Status
- Year

Number of Calculated Fields

- Danger Sites
- Year Forecast
- Area Hectares (Bin)
- Category Short

- Number of Visualizations
- 8+ Worksheets
- 2 Dashboards
- 1 Story (Multiple Scenes)

Performance was stable with smooth interactivity.

7. RESULTS

7.1 Visualizations Created

- Countries per Region
- Top 10 Regions by Area
- Regions by Heritage Ended
- Top 10 Danger Sites
- Year Forecasting
- Categories by Site Count
- Site Count per Region
- Danger Sites vs Area Analysis

8. ADVANTAGES & DISADVANTAGES

Advantages

- Interactive visual insights
- Easy to understand dashboard
- Forecasting capability
- Clear regional comparison
- Web integration using Flask

Disadvantages

- Requires internet for Tableau Public
- Static dataset (2019)
- No real-time data update

9. CONCLUSION

The project successfully demonstrates the integration of data visualization and web development technologies. By using Tableau and Flask, the system transforms raw UNESCO heritage data into meaningful insights.

The application supports heritage analysis, risk identification, and regional trend monitoring, contributing to improved awareness and preservation planning.

10. FUTURE SCOPE

- Integration with live UNESCO API
- Real-time data updates
- Cloud deployment
- Advanced predictive modeling
- GIS-based interactive world map
- User authentication system

11. APPENDIX

Dataset Link

<https://www.kaggle.com/datasets/ujwalkandi/unesco-world-heritage-sites/data?select=whc-sites-2019.csv>

Flask code:

```
from flask import Flask, render_template
app = Flask(__name__)
@app.route("/")
def home():
    return render_template("home.html")

@app.route("/about")
def about():
    return render_template("about.html")
@app.route("/dashboard")
def dashboard():
    return render_template("dashboard.html")
@app.route("/contact")
```

```
def contact():
    return render_template("contact.html")
if __name__ == "__main__":
    app.run(debug=True)
```

GitHub Repository:

<https://github.com/bhaagi24/Hertiage-Treasures-An-In-depth-Analysis-of-UNESCO-World-Heritage-Sites-in-Tableau>

Project Demo: <https://drive.google.com/file/d/12e-16VlpsCU8MMW3tgLVwwmmprBnEQkH/view?usp=sharing>

Tableau Public or deployed link

[Book1 | Tableau Public](#)