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

Date	26 june 2025
Team ID	LTVIP2025TMID49207
Project Name	Measuring the Pulse of Prosperity: An Index of Economic Freedom Analysis
Maximum Marks	4 Marks

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2

Guideliness:

- Use tools like Apache Airflow, Talend, or custom Python scripts**.**
- Use secure, rate-limited REST APIs for external data (e.g., World Bank, UN).
- Normalize tables for efficient joins and queries

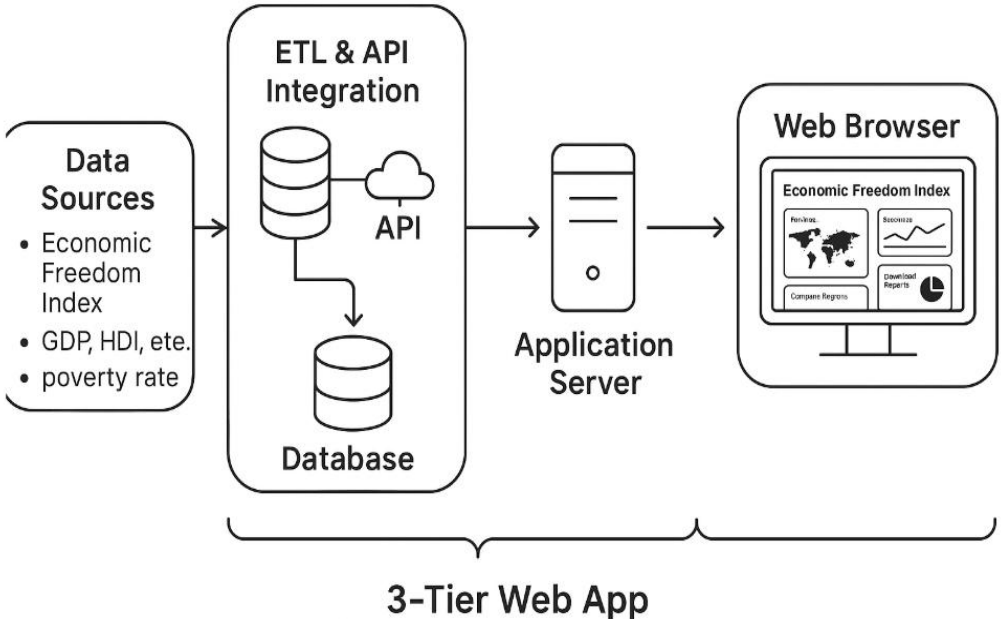

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	Web dashboard interface for analysts and policymakers	HTML, CSS, JavaScript, **React.js**, Bootstrap
2.	Application Logic-1	Data processing and index calculation logic	**Python** (Pandas, NumPy, SciPy)
3.	Application Logic-2	Data visualization engine	**Tableau Public**, Plotly, Matplotlib
4.	Application Logic-3	Filtering, downloading, interaction logic	JavaScript, Tableau Filters
5.	Database	Stores cleaned and structured data	**MySQL**, SQLite
6.	Cloud Database	Host processed data and dashboards in cloud	**AWS RDS**, Google Cloud SQL
7.	File Storage	Store uploaded CSVs, report exports, datasets	**Amazon S3**, Google Drive API
8.	External API-1	Pull GDP, HDI, Poverty Rate from global data sources	**World Bank API**, UNDP Data API
9.	External API-2	(Optional) Governance / corruption perception index	Transparency International API
10.	Machine Learning Model	Forecast economic freedom changes (Optional advanced feature)	Scikit-learn, Regression Models
11.	Infrastructure	Hosting dashboard, backend, and scheduled jobs	**AWS EC2**, Heroku, Docker (optional)

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Data analysis and backend frameworks	Python, React, Flask, Pandas
2.	Security Implementations	Login-based dashboard access, secure APIs, HTTPS, token-based access	SHA-256, HTTPS, JWT Tokens
3.	Scalable Architecture	Designed using scalable 3-tier architecture, modular data ingestion, and cloud-based storage	3-Tier Web App, Docker, REST APIs
4.	Availability	Hosted on reliable cloud infra with backup datasets and uptime monitoring	AWS EC2, Uptime Robot, Google Cloud Backup
5.	Performance	Preprocessing data caching, use of Tableau extracts (.hyper), async API calls	Tableau Hyper Engine, Redis (optional)