

Project Design Phase-II

Technology Stack (Architecture & Stack)

Date:	17 June 2025
Team ID:	LTVIP2025TMID48274
Project Name:	Measuring the Pulse of Prosperity: An Index of Economic Freedom Analysis
Maximum Marks:	4 Marks

Technical Architecture

The architecture of the Economic Freedom Index App is based on a cloud-native, scalable, and secure system design that supports mobile and web access. Below is a description of each major component and technology used.

Table-1: Components & Technologies

S.No	Component Description	Technology
1 User Interface -	Web & Mobile App access	ReactJS (Web), Flutter (Mobile)
2 Application Logic-1 -	Registration and Authentication	Node.js
3 Application Logic-2 -	Data Aggregation & API Layer	Python (FastAPI)
4 Application Logic-3 -	Index Calculation Engine	Python (Pandas, NumPy)
5 Database -	Structured data storage	PostgreSQL
6 Cloud Database-	Cloud hosted structured DB	AWS RDS (PostgreSQL)
7 File Storage -	Documents and media	AWS S3
8 External API-1 -	Global economic data	World Bank Open API
9 External API-2 -	Authentication Services	Google OAuth / Firebase Auth
10 Machine Learning Model	Recommendation Engine	Scikit-learn
11	Infrastructure (Server / Cloud)	AWS EC2, Docker, Kubernetes

Table-2: Application Characteristics

S.No	Characteristics Description	Technology
1 Open-Source Frameworks	- Base development frameworks	ReactJS, Flutter, Node.js, FastAPI
2 Security Implementations	User data and access security	OAuth 2.0, HTTPS, JWT, OWASP, SHA-256
3 Scalable Architecture -	Micro services and container orchestration	Docker, Kubernetes, AWS ECS

4 Availability -	Ensures uptime and load management	AWS Load Balancer, Multi-AZ RDS
5 Performance -	Fast user interaction and data access	Redis Cache, AWS CloudFront CDN