# Measuring the Pulse of Prosperity:
# An Index of Economic Freedom Analysis – Technology Stack

## Overview

The Technology Stack for the Index of Economic Freedom Analysis System is designed to collect, process, analyze, and visualize large-scale economic data efficiently and securely. The system integrates data engineering, analytics, visualization, and cybersecurity components to ensure accurate measurement of prosperity indicators.

## Frontend Layer (Presentation Layer)

Technologies: HTML5, CSS3, JavaScript, React.js / Angular / Vue.js, Bootstrap / Tailwind CSS, Power BI / Tableau, D3.js / Chart.js.

Purpose: Display economic freedom scores, show comparative country analysis, visualize GDP trends and correlations, and provide downloadable reports.

## Backend Layer (Application Layer)

Technologies: Python (Django / Flask / FastAPI), Node.js (Express.js), Java (Spring Boot), RESTful APIs, GraphQL.

Purpose: Process index calculations, handle authentication, manage data requests, and perform statistical computations.

## Data Layer (Database & Storage)

Technologies: PostgreSQL / MySQL, MongoDB, Amazon S3 / Azure Blob Storage, Snowflake / Amazon Redshift / Google BigQuery.

Purpose: Store country-level economic indicators, maintain historical datasets, and enable large-scale comparative analysis.

## Data Integration & ETL Layer

Technologies: Apache Airflow, Talend / Informatica, Apache Kafka,
APIs (World Bank, IMF, WTO), BeautifulSoup / Scrapy.

Purpose: Extract global economic data, clean and standardize datasets,
and automate periodic updates.

## Analytics & Modeling Layer

Technologies: Python (Pandas, NumPy, SciPy), R, Scikit-learn,
TensorFlow / PyTorch, SPSS / SAS.

Purpose: Calculate index scores, perform correlation analysis, trend forecasting,
and scenario simulations.

## Cloud & Infrastructure Layer

Technologies: AWS / Azure / Google Cloud, Docker, Kubernetes,
NGINX, Jenkins / GitHub Actions.

Purpose: Scalable deployment, load balancing, CI/CD, and infrastructure monitoring.

## Security Layer

Technologies: SSL/TLS, OAuth 2.0 / JWT, RBAC, Firewalls,
Intrusion Detection Systems.

Purpose: Secure datasets, protect credentials, and ensure compliance with
data protection standards.

## Reporting & Export Layer

Technologies: PDF Generation APIs, Excel Export Tools,
Automated Email Reporting, REST APIs.

Purpose: Generate reports, share dashboards, and provide exportable datasets.

## Summary

The technology stack integrates modern data engineering, analytics, cloud computing, and security frameworks to build a scalable and reliable system for measuring the pulse of prosperity. This layered architecture ensures accurate index calculation, real-time updates, and actionable insights for economic policy development.