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

Date	21 June 2025
Team ID	LTVIP2025TMID48627
Project Name	Measuring the pulse of prosperity: an index of economic freedom
Maximum Marks	4 Marks

Technical Architecture:

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

Reference: https://developer.ibm.com/patterns/ai-powered-backend-system-for-order-processing-during-pandemics/

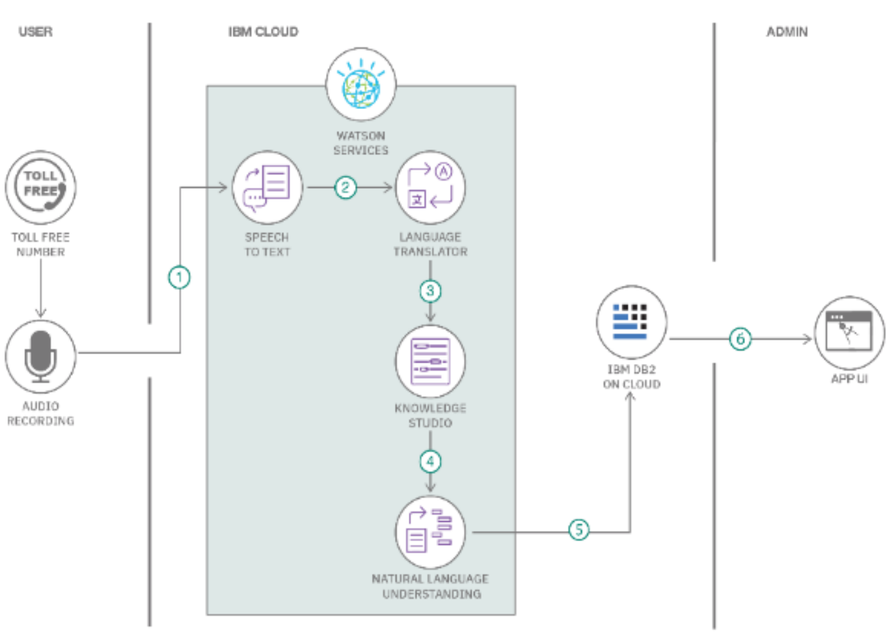

Table-1: Components & Technologies:

S. No	Component	Description	Technology
1.	User Interface	Web interface for data visualization & interaction	HTML, CSS, JavaScript, Plotly.js
2.	Application Logic-1	Data preprocessing and normalization	Python
3.	Application Logic-2	Correlation analysis between economic index and indicators	Python (SciPy, stats models)
4.	Application Logic-3	Interactive dashboard generation	Streamlit / Flask / Dash
5.	Database	Store raw and processed data	MySQL
6.	Cloud Database	Host for shared/real-time access	Firebase
7.	File Storage	Upload and manage datasets (CSV, Excel)	Local Filesystem
8.	External API-1	Pull additional economic data	World Bank API,
9.	External API-2	Geo mapping or visualization services	Google Maps API.

10.	Machine Learning Model	Predict prosperity based on economic indicators	Scikit-learn Regression Model
11.	Infrastructure (Server / Cloud)	Hosting and deployment	Local.

Table-2: Application Characteristics:

S. No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Frameworks used for visualization and app deployment	Streamlit, Plotly, Dash, Pandas
2.	Security Implementations	Basic input validation, role access, and secure upload	SSL, SHA-256 hashing, Firebase Auth
3.	Scalable Architecture	Modular, scalable with cloud hosting & stateless APIs	Microservices architecture on Flask/Streamlit
4.	Availability	Cloud-hosted with minimal downtime	AWS EC2, Firebase Hosting, Streamlit Cloud
5.	Performance	Optimized through caching and minimal payload visualization for fast loading	JSON queries

References:

https://c4model.com/ https://developer.ibm.com/patterns/online-order-processing-system-during-pandemic/ https://www.ibm.com/cloud/architecture https://aws.amazon.com/architecture

https://medium.com/the-internal-startup/how-to-draw-useful-technical-architecture-diagrams-2d20c9fda90d