Project Design Phase-II
Technology Stack (Architecture & Stack)
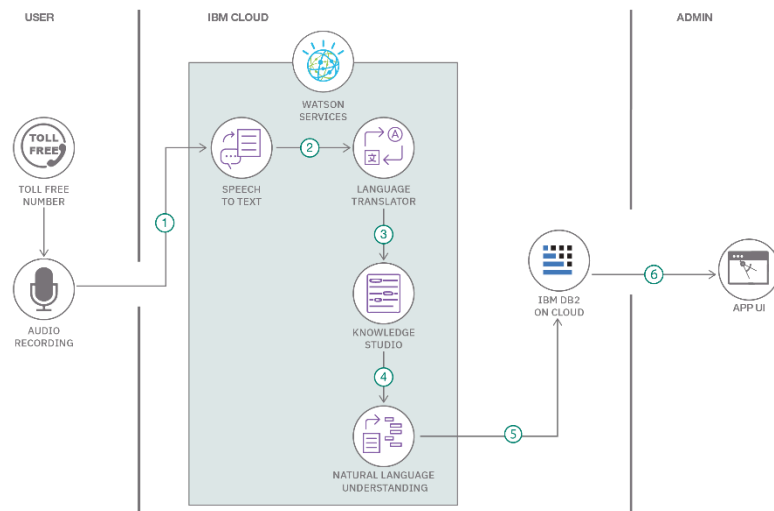
Date	31 January 2026
Team ID	LTVIP2026TMIDS46998
Project Name	Measuring the pulse of prosperity: An Index of economic freedom analysis
Maximum Marks	4 Marks

Technical Architecture:

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

Example: Order processing during pandemics for offline mode

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

Guidelines:

Include all the processes (As an application logic / Technology Block)
Provide infrastructural demarcation (Local / Cloud)
Indicate external interfaces (third party API's etc.)
Indicate Data Storage components / services
Indicate interface to machine learning models (if applicable)

TABLE 1:TECHNICAL STACK

S.No	Component	Description	Technology Used
1	User Interface	How user interacts with the application (data upload, selection, visualization)	HTML, CSS, JavaScript, Bootstrap, Chart.js
2	Application Logic-1	Logic for handling user inputs and workflow control	Python (Flask / Streamlit)
3	Application Logic-2	Logic for data cleaning, normalization, and preprocessing	Python, Pandas, NumPy
4	Application Logic-3	Logic for economic freedom analysis and correlation analysis	Python, SciPy, Scikit-learn
5	Database	Storage of economic freedom data, indicators, and results	MySQL / PostgreSQL
6	Cloud Database	Optional cloud-based data storage for scalability	AWS RDS / Google Cloud SQL

7	File Storage	Storage of datasets and generated reports	Local File System / AWS S3
8	External API-1	Source for economic and development indicators	World Bank Open Data API
9	External API-2	Source for economic freedom index data	Heritage Foundation API / Fraser Institute Data
10	Machine Learning Model	Statistical and correlation analysis model	Regression / Correlation Models (Scikit-learn)
11	Infrastructure (Server / Cloud)	Application deployment and execution environment	Local System / Cloud (AWS / GCP), Docker (optional)

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1	Open-Source Frameworks	Lists the open-source frameworks and libraries used for data analysis, visualization, and application development	Python, Pandas, NumPy, SciPy, Scikit-learn, Flask / Streamlit, Chart.js
2	Security Implementations	Implements data access control, secure file handling, and protection against unauthorized modification	HTTPS, Role-based access control (RBAC), Data validation, Secure file permissions

3	Scalable Architecture	Supports scalability through modular design and layered architecture (3-tier architecture)	Three-Tier Architecture, Modular Python Services, Docker (optional)
4	Availability	Ensures application availability through reliable deployment and local/cloud execution	Local Deployment, Cloud Hosting (AWS / GCP), Backup & Recovery

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