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

Date	31 January 3035
Team ID	PNT2025TMID00596
Project Name	**Power BI Inflation Analysis Journeying Through Global Economic Terrain**
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:

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)

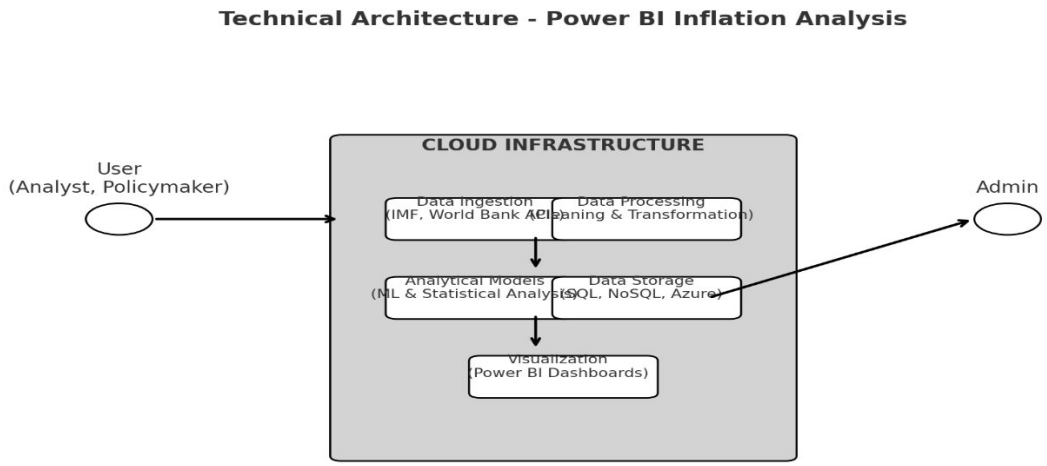

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	Web-based dashboards for inflation insights	HTML, CSS, JavaScript, ReactJS.
2.	Application Logic-1	Data ingestion from external sources (APIs, CSV)	Python, Pandas, Power Query
3.	Application Logic-2	Data cleaning, transformation & storage	SQL, NoSQL, Azure Data Factory
4.	Application Logic-3	Forecasting models for trend analysis	Machine Learning, Python (Scikit-Learn, TensorFlow)

5.	Database	Stores processed inflation data	MySQL, PostgreSQL
6.	Cloud Database	Cloud-hosted database for real-time data	Azure SQL Database, AWS RDS
7.	File Storage	Stores uploaded reports and raw datasets	AWS S3, Azure Blob Storage
8.	External API-1	Fetching inflation data	World Bank API, IMF API
9.	External API-2	Currency exchange rates for normalization	Open Exchange Rates API
10.	Machine Learning Model	Predictive inflation analysis	Scikit-Learn, TensorFlow
11.	Infrastructure (Server / Cloud)	Cloud deployment and data hosting	AWS, Azure, Kubernetes.

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Frameworks used in the application	Python, ReactJS, Flask
2.	Security Implementations	Access control and encryption	OAuth 2.0, SHA-256, IAM
3.	Scalable Architecture	Supports increasing data load	Microservices, Kubernetes
4.	Availability	High uptime with fault tolerance	Load Balancing, Multi-Region Deployment
5.	Performance	Fast dashboard rendering and query optimization	Power BI Optimization, Caching, CDN

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