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

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| Date | 26 March 2025 |
| Team ID | PNT2025TMID07057 |
| Project Name |  Power BI Inflation Analysis: A Global Economic Overview |
| Maximum Marks | 4 Marks |

**Technical Architecture:**

| SR NO | Component | Description | Technology |
|---|---|---|---|
| 1 | **User Interface** | Interactive dashboards for inflation trend analysis | Power BI, DAX, Power Query |
| 2 | **Data Ingestion** | Extracting inflation data from various sources | Python (Pandas), SQL, API Integrations |
| 3 | **Data Processing** | Cleaning, transforming, and structuring data for analysis | Power Query, Python, SQL |

| 4 | **Machine Learning Model** | Predicting inflation trends based on historical data | Python (Scikit-learn), Power BI AI Insights |
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| 5 | **Database** | Storage of historical and real-time inflation data | SQL Server, Azure Data Lake |
|---|---|---|---|
| 6 | **Cloud Integration** | Hosting datasets and enabling scalable analytics | Azure, Google Cloud, AWS |
| 7 | **External API** | Fetching live inflation data from financial sources | World Bank API, IMF API |
| 8 | **Security Measures** | Ensuring data integrity and access control | Data Encryption, Role-Based Access Control (RBAC) |

**Table-2: Application Characteristics:**

| S.No | Characteristics | Description | Technology |
|---|---|---|---|
| 1. | **Security Implementations** | Protecting financial data from unauthorized access | Role-based authentication, Data Encryption |
| 2. | **Scalable** | Handling large-scale inflation datasets across multiple economies | Cloud-based architecture (Azure, AWS) |
| 3. | **Availability** | Ensuring continuous access to real-time insights | Load Balancing, Distributed Computing |

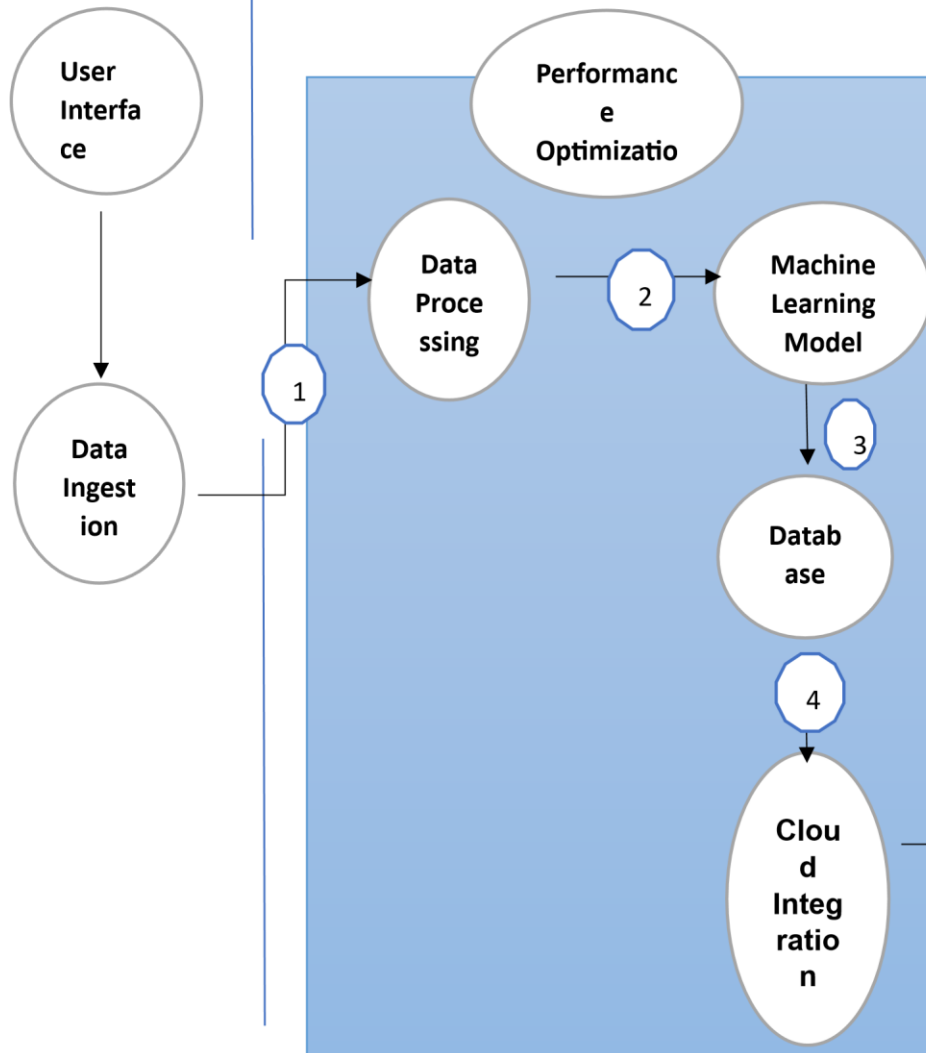| 4. | **Performance Optimization** | Optimizing queries and reports for fast processing | Caching, Indexing, Power BI Aggregations |
|---|---|---|---|
| 5 | **Open-Source Frameworks** | Use of open-source tools for analytics and visualization | Python, Pandas, Scikit-learn |

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 **Reference:**This technology stack enables comprehensive inflation analysis through Power BI, providing policymakers, economists, and
analysts with interactive and data-driven insights. With real-time data updates, predictive modeling, and a scalable cloud architecture,
the project ensures reliable and impactful decision-making for understanding global economic trends.

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**GUIDELINE=**The project focuses on analyzing inflation trends across different economies using Power BI, providing visual insights into inflationary patterns, key influencing factors, and comparative global trends. The architecture consists of multiple components, from data ingestion to visualization, ensuring a seamless analytical experience.

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User Interface

Performance Optimizatio

Data Processing

Machine Learning Model

2

Database

Data Ingestion

1

3

External API

Security Measures

6

5

4

Cloud Integration