

Project Design Phase

Solution Architecture

Date	13 March 2025
Team ID	PNT2025TMID02756
Project Name	Power BI Inflation Analysis: Journeying Through Global Economic Terrain.
Maximum Marks	4 Marks

Solution Architecture:

- Solution architecture is a complex process that bridges the gap between business problems and technology solutions. The goal of this architecture is to create an efficient, scalable, and interactive system that enables users to analyze global inflation trends using Power BI.

1. Goals of the Solution Architecture

- Find the best tech solution to solve inflation analysis challenges.
 - Describe the structure and behavior of the software for stakeholders.
 - Define features, development phases, and solution requirements for implementation.
 - Provide clear specifications for managing and delivering the solution.
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2. Solution Overview

The Power BI Inflation Analysis project provides a structured, automated, and interactive way to analyze global inflation trends. It enables economists, policymakers, and businesses to make data-driven decisions through interactive dashboards, real-time filtering, and dynamic reports.

3. System Components & Workflow

- ✓ Users – Economists, Analysts, Policymakers interact with the dashboard.
- ✓ Data Sources – Kaggle dataset (CSV/Excel) containing inflation rates.
- ✓ Processing Layer – Power Query (cleans, transforms, and structures data).
- ✓ Storage Layer – Power BI Data Model (stores processed data).
- ✓ Visualization Layer – Power BI Desktop (provides interactive charts & reports).

Workflow Process:

- 1 Users import the Kaggle dataset into Power BI.
- 2 Power Query cleans & structures the data (handling missing values, unpivoting, etc.).
- 3 The cleaned data is stored in the Power BI Data Model.

4 Users create visualizations (bar charts, line graphs, maps) for analysis.

5 Filters & slicers enable interactive exploration of inflation trends.

6 Reports are exported in PDF/PPT formats for stakeholders.

4. Solution Requirements

- Functional Requirements:

- Import inflation datasets from CSV/Excel (Kaggle).
- Provide real-time filtering & slicing for data exploration.
- Generate interactive visualizations (charts, graphs, and maps).
- Allow report exporting in multiple formats (PDF, PPT).

- Non-Functional Requirements:

- Security: Role-Based Access Control (RBAC) for restricting dashboard edits.
 - Scalability: Can integrate live data APIs (IMF, World Bank) in the future.
 - Performance: Optimized Power Query transformations for efficient data handling.
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5. Solution Architecture Diagram

The system follows a structured flow from data ingestion to visualization.

Users → Interact with Power BI Dashboard

Data Sources → Kaggle dataset (CSV/Excel)

Processing Layer → Power Query (cleans & structures data)

Storage Layer → Power BI Data Model (structured storage)

Visualization Layer → Power BI Desktop (interactive reports)

- Architecture Diagram (*Refer to the System Architecture Diagram created earlier.*)
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6. Features & Development Phases

- ✓ Phase 1: Data Cleaning & Transformation (Power Query).
 - ✓ Phase 2: Data Modeling (Power BI Data Model).
 - ✓ Phase 3: Visualization & Dashboard Development (Charts, Graphs, Maps).
 - ✓ Phase 4: Interactive Features (Filters, Slicers, Custom Reports).
 - ✓ Phase 5: Exporting & Report Generation (PDF, PPT, Excel).
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7. Expected Outcomes & Business Value

- ✓ Automated Data Analysis – Reduces manual effort in inflation tracking.
- ✓ User-Friendly Dashboards – No technical expertise required for usage.
- ✓ Real-Time Insights – Users can compare inflation trends dynamically.
- ✓ Scalable for Future Use – Can integrate more economic indicators (GDP, Interest Rates etc.).

Solution Architecture Diagram:

Solution Architecture - Power BI Inflation Analysis

