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

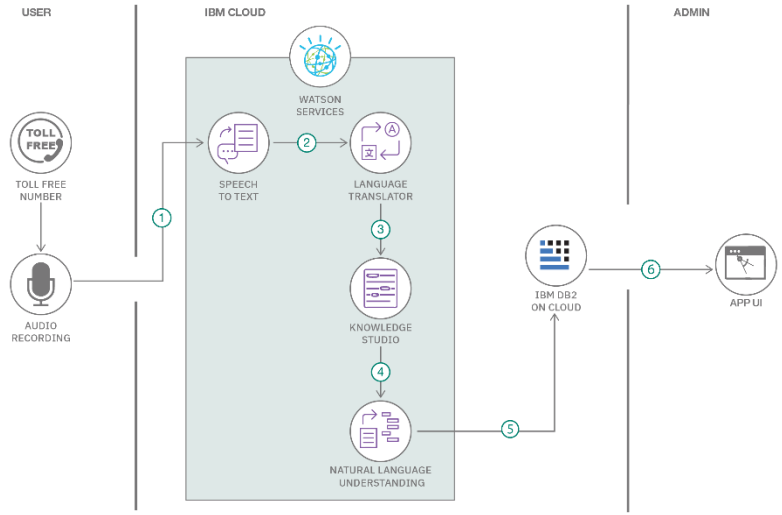
Date	27 June 2025
Team ID	LTVIP2025TMID47602
Project Name	Cosmetic Insights : Navigating Cosmetics Trends and Consumer Insights with Tableau
Maximum Marks	4 Marks

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)

S.No	Component	Description	Technology

1.	User Interface	Web dashboards for visual analytics	Tableau Public, Tableau Server
2.	Application Logic-1	Data pre processing and transformation logic	Python (Pandas, NumPy)
3.	Application Logic-2	Data extraction from Excel/CSV and APIs	Power Query, Python (requests, Beautiful Soup)
4.	Application Logic-3	Data connection & filtering logic in Tableau	Tableau Calculated Fields, Filters, LOD Expressions
5.	Database	Local data sources	Excel, CSV, SQL (if required)
6.	Cloud Database	Cloud-hosted dataset connections	Google Sheets, Amazon RDS
7.	File Storage	Storage of raw data files	Google Drive, Local File System
8.	External API-1	Sentiment Analysis from reviews/social media	Google NLP API, Twitter API
9.	External API-2	Market Trend Data or Product Info APIs	RapidAPI, Shopify Product APIs
10.	Machine Learning Model	Analyze customer sentiment, clustering product preferences	Scikit-learn, spaCy, NLTK (Python)
11.	Infrastructure (Server / Cloud)	Hosting Tableau dashboard / Cloud storage integration	Local Machine, Tableau Cloud, AWS S3

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Use of widely adopted open-source frameworks for data processing, ML, and scraping tasks	Python (Pandas, NumPy, Scikit-learn, spaCy, Beautiful
2.	Security Implementations	Secure access to APIs and data with authentication, encryption, and access controls	API Keys, OAuth2, HTTPS, SHA-256, IAM (for AWS/Tableau Cloud)

S.No	Characteristics	Description	Technology
3.	Scalable Architecture	Modular, loosely-coupled architecture with separate layers for UI, processing, and data handling	3-Tier Architecture (UI, Logic, Data); Tableau Server; AWS (optional)
4.	Availability	Ensures application is always accessible with reliable cloud tools and backup options	Tableau Cloud, AWS S3, Google Drive, Distributed Data Connections
5.	Performance	Optimized using data extracts in Tableau, filters, caching, and minimal data processing overhead	Tableau Extracts, filters, LODs, Google CDN (optional), Local Caching

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