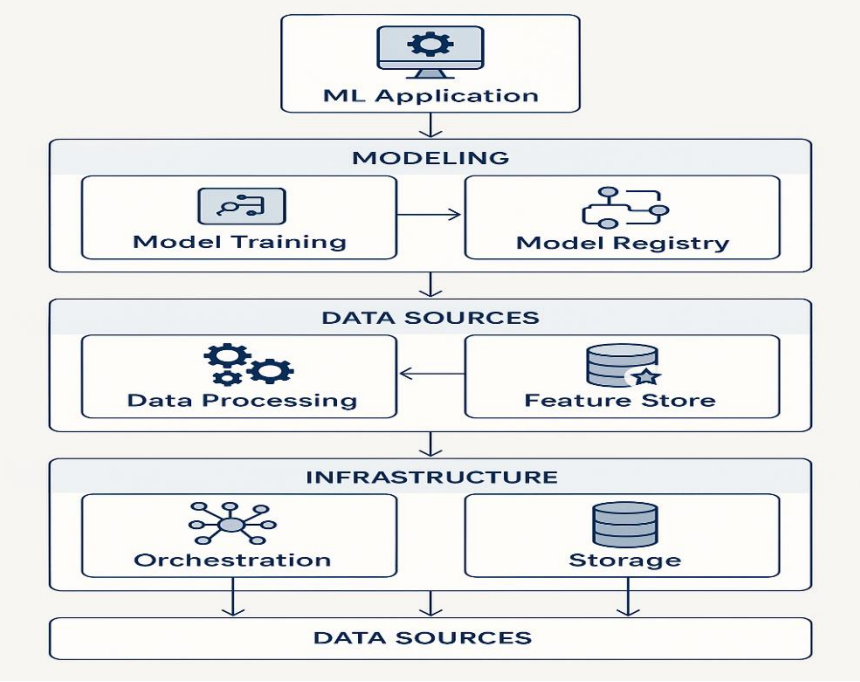
Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	27 June 2025
Team ID	LTVIP2025TMID49167
Project Name	iRevolution_ A Data-driven Exploration of Apple's iPhone Impact in India
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: iRevolution_ A Data-driven Exploration of Apple's iPhone Impact in India



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	Interactive dashboards for visual analytics	Tableau Public / Tableau Server
2.	Application Logic-1	Data ingestion and transformation processes	Python (Pandas, NumPy)
3.	Application Logic-2	NLP for analyzing customer sentiment from reviews	Python (NLTK, TextBlob)
4.	Application Logic-3	Voice-based interaction to query dashboards	IBM Watson Assistant + STT
5.	Database	Structured data storage (sales, pricing, demographics)	MySQL
6.	Cloud Database	Scalable cloud-native database services	IBM Cloudant
7.	File Storage	Storage of CSV files, reports, visualizations	IBM Block Storage / Local Filesystem
8.	External API-1	Real-time market trend analysis	Alpha Vantage / Quandl API
9.	External API-2	Demographic data and device registration	IndiaStack / Aadhar API
10.	Machine Learning Model	Trend prediction & sentiment classificatio	Random Forest / LSTM
11.	Infrastructure (Server / Cloud)	Tableau + Python stack on cloud	IBM Cloud (Kubernetes + CF)

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Used for data manipulation, visualizations, and AI	Pandas, Scikit-learn, Flask
2.	Security Implementations	Data encryption, API security, IAM control	OAuth2.0, AES-256, IAM Controls
3.	Scalable Architecture	Layered + service-based, can scale using containerization	Docker, Kubernetes
4.	Availability	Load-balanced container-based services across cloud zones	NGINX, IBM Cloud Load Balancer
5.	Performance	Cached API calls, optimized SQL queries, CDN for dashboards	Redis, MySQL indexing, Tableau CDN