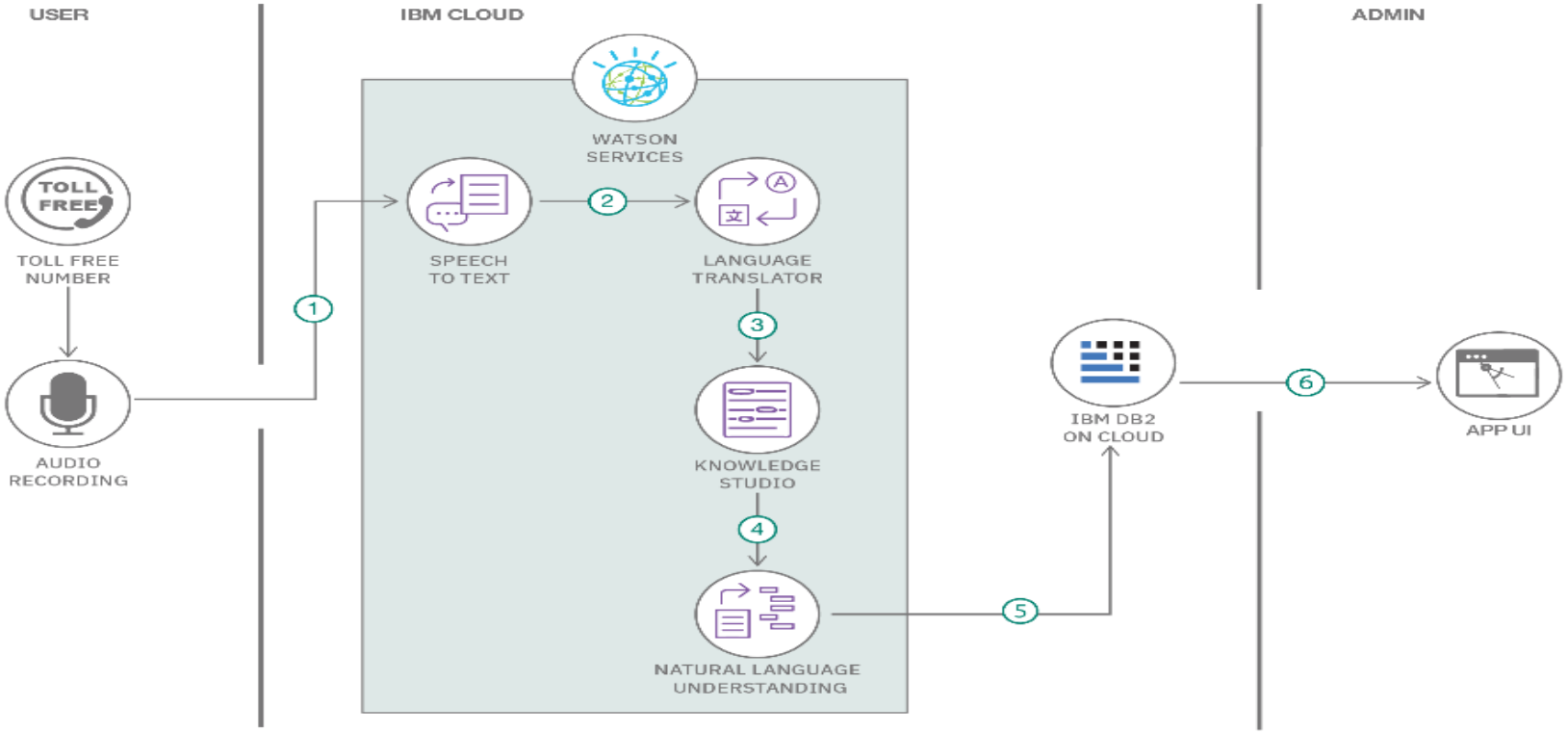
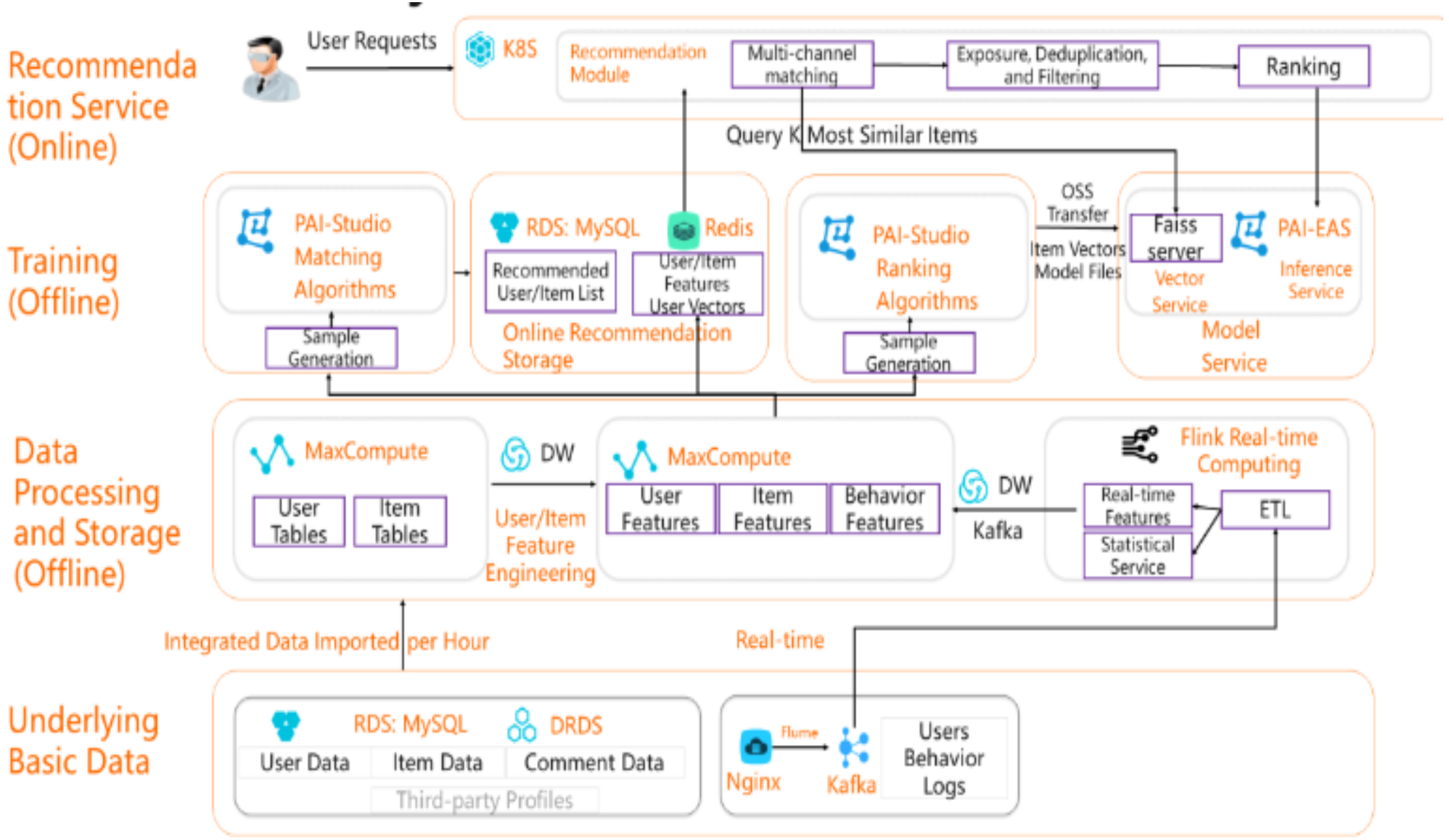
Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	03October 2022
Team ID	PNT2022TMID46789
Project Name	Project –Job and Skill Recommender
Maximum Marks	4 Marks

Technical Architecture:

Example:




Recommendation Service (Online)
User Requests
K8S
Recommendation Module
Multi-channel matching
Exposure, Deduplication, and Filtering
Ranking
Query K Most Similar Items
Training (Offline)
PAI-Studio Matching Algorithms
Sample Generation
RDS: MySQL
Redis
Recommended User/Item List
User/Item Features User Vectors
Online Recommendation Storage
PAI-Studio Ranking Algorithms
Sample Generation
OSS Transfer
Item Vectors Model Files
Faiss server
Vector Service
PAI-EAS
Inference Service
Model Service
Data Processing and Storage (Offline)
MaxCompute
User Tables
Item Tables
DW
User/Item Feature Engineering
MaxCompute
User Features
Item Features
Behavior Features
DW
Kafka
Flink Real-time Computing
Real-time Features
Statistical Service
ETL
Integrated Data Imported per Hour
Real-time
Underlying Basic Data
RDS: MySQL
DRDS
User Data
Item Data
Comment Data
Third-party Profiles
Flume
Nginx
Kafka
Users Behavior Logs

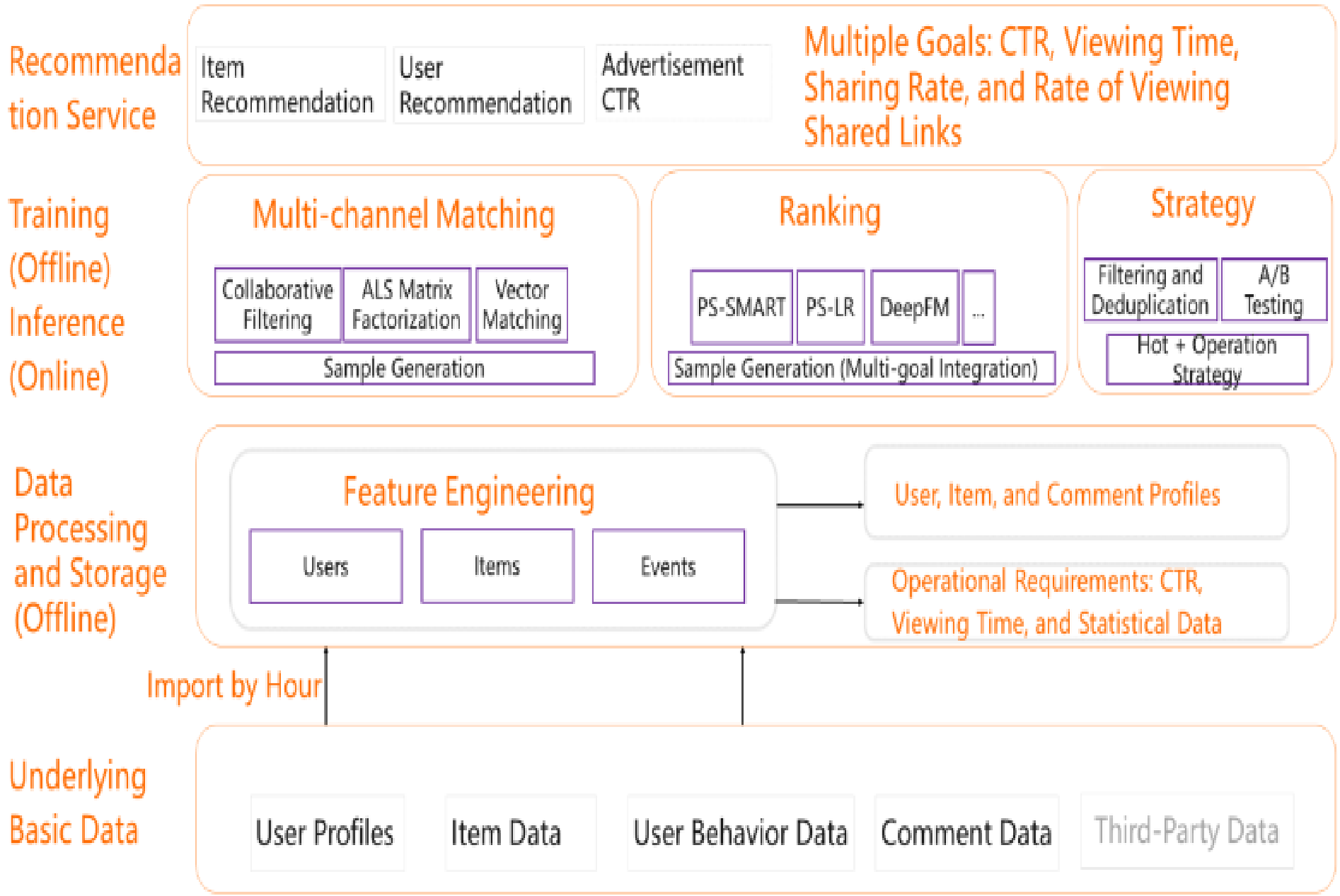

Recommendation Service
Item Recommendation
User Recommendation
Advertisement CTR
Multiple Goals: CTR, Viewing Time, Sharing Rate, and Rate of Viewing Shared Links
Training (Offline) Inference (Online)
Multi-channel Matching
Collaborative Filtering
ALS Matrix Factorization
Vector Matching
Sample Generation
Ranking
PS-SMART
PS-LR
DeepFM
...
Sample Generation (Multi-goal Integration)
Strategy
Filtering and Deduplication
A/B Testing
Hot + Operation Strategy
Data Processing and Storage (Offline)
Feature Engineering
Users
Items
Events
User, Item, and Comment Profiles
Operational Requirements: CTR, Viewing Time, and Statistical Data
Import by Hour
Underlying Basic Data
User Profiles
Item Data
User Behavior Data
Comment Data
Third-Party Data

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	How user interacts with application e.g. Web UI, Mobile App, Chatbot etc.	HTML, CSS, JavaScript / Angular Js / React Js etc.
2.	Application Logic-1	Logic for a process in the application	Java / Python
3.	Application Logic-2	Logic for a process in the application	IBM Watson STT service
4.	Application Logic-3	Logic for a process in the application	IBM Watson Assistant
5.	Database	Data Type, Configurations etc.	MySQL, NoSQL, etc.
6.	Cloud Database	Database Service on Cloud	IBM DB2, IBM Cloudant etc.
7.	File Storage	File storage requirements	IBM Block Storage or Other Storage Service or Local Filesystem
8.	External API-1	Purpose of External API used in the application	IBM Weather API, etc.
9.	External API-2	Purpose of External API used in the application	Aadhar API, etc.
10.	Machine Learning Model	Purpose of Machine Learning Model	Object Recognition Model, etc.
11.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration: Cloud Server Configuration :	Local, Cloud Foundry, Kubernetes, etc.

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	List the open-source frameworks used	Technology of Opensource framework
2.	Security Implementations	List all the security / access controls implemented, use of firewalls etc.	e.g. SHA-256, Encryptions, IAM Controls, OWASP etc.
3.	Scalable Architecture	Justify the scalability of architecture (3 – tier, Micro-services)	Technology used

S.No	Characteristics	Description	Technology
4.	Availability	Justify the availability of application (e.g. use of load balancers, distributed servers etc.)	Technology used
5.	Performance	Design consideration for the performance of the application (number of requests per sec, use of Cache, use of CDN's) etc.	Technology used

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