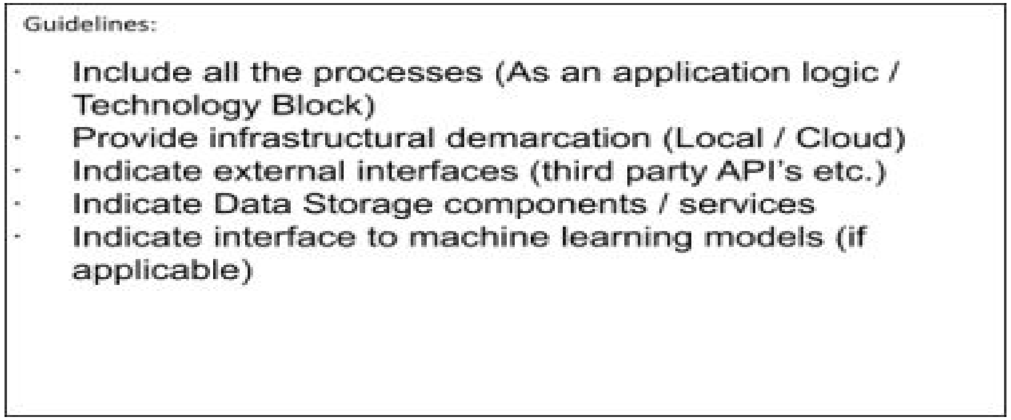
Technology Stack (Architecture & Stack)

Date	16 February 2026
Team ID	LTVIP2026TMIDS89357
Project Name	Explore with Ai: custom itineraries for your next journey
Maximum Marks	4 Marks

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table



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)

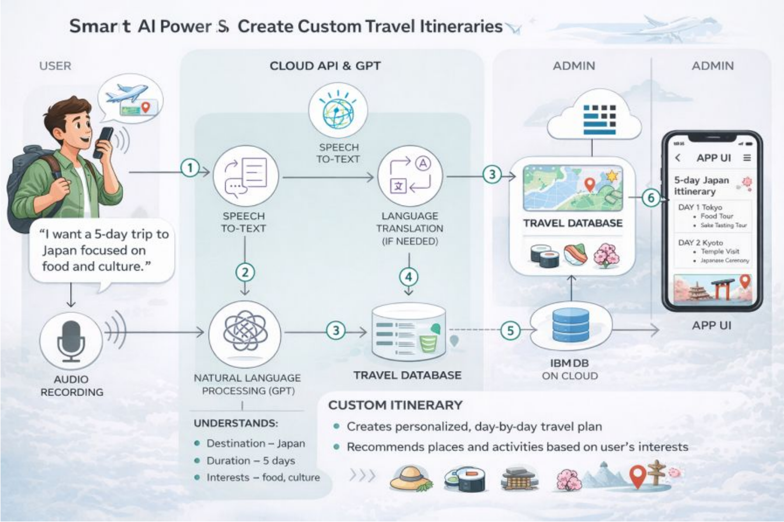

Smar t AI Power S Create Custom Travel Itineraries
USER
CLOUD API & GPT
ADMIN
ADMIN
SPEECH TO-TEXT
1
SPEECH TO-TEXT
LANGUAGE TRANSLATION (IF NEEDED)
3
TRAVEL DATABASE
6
APP UI
5-day Japan ittinerary
DAY 1 Tokyo
Food Tour
Sake Tasting Tour
DAY 2 Kyoto
Temple Visit
Japanese Ceremony
"I want a 5-day trip to Japan focused on food and culture."
2
4
AUDIO RECORDING
NATURAL LANGUAGE PROCESSING (GPT)
3
TRAVEL DATABASE
5
IBM DB ON CLOUD
APP UI
UNDERSTANDS:
Destination – Japan
Duration – 5 days
Interests – food, culture
CUSTOM ITINERARY
Creates personalized, day-by-day travel plan
Recommends places and activities based on user's interests

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1	User Interface	Interface where users interact with the system through Web App, Mobile App, or Voice/Chat interface to request travel itineraries	HTML, CSS, JavaScript, React JS / Angular JS, Mobile App (Flutter / Android / iOS)
2	Application Logic-1	Core backend logic to handle user requests, itinerary generation workflow, API integration, and response management	Python (Flask / Django) or Java (Spring Boot)
3	Application Logic-2	Converts user voice input into text for processing travel requests	IBM Watson Speech-to-Text (STT) Service
4	Application Logic-3	Conversational AI logic to understand user intent, preferences, and generate personalized travel responses	IBM Watson Assistant

S.No	Component	Description	Technology
5	Database	Stores user profiles, preferences, itinerary history, destinations, and travel metadata	MySQL / PostgreSQL / MongoDB (NoSQL)
6	Cloud Database	Cloud-based managed database for scalable storage and fast access	IBM DB2 on Cloud / IBM Cloudant
7	File Storage	Stores audio recordings, travel documents, images, and generated itinerary files	IBM Cloud Object Storage / IBM Block Storage
8	External API-1	Provides travel-related information such as weather forecasts, location details, and travel conditions	IBM Weather API / OpenWeather API / Google Maps API
9	External API-2	Provides user authentication, identity verification, or travel services integration	Aadhar API / Google Places API / Flight & Hotel
10	Machine Learning Model	Processes natural language input, extracts entities (destination, duration, interests), and generates personalized itinerary recommendations	APIs (Amadeus, Skyscanner) IBM Watson Natural Language Understanding / Watson Knowledge Studio / Custom ML Model (Python, TensorFlow, or GPT-based model)
11	Infrastructure	Hosts and deploys the application backend, AI services, database, and storage components	IBM Cloud, Kubernetes, Docker Containers, Cloud Foundry

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1	Open-Source Frameworks	Open-source frameworks are used to build the frontend, backend, and APIs for the travel itinerary system. These frameworks provide flexibility, faster	Frontend: React JS / Angular JSBackend: Python Flask / Django or Java Spring BootAPI Framework: REST APIsContainerization: Docker
2	Security Implementations	The system ensures secure communication, authentication, and data protection. User data and	HTTPS (SSL/TLS Encryption)SHA-256 Password HashingIBM Cloud IAM (Identity and Access Management)OAuth 2.0

S.No	Characteristics	Description	Technology
		travel information are protected using encryption, access control, and secure communication protocols.	AuthenticationFirewall and Network Security (IBM Cloud Security Groups)OWASP Secure Coding Practices
3	Scalable Architecture	The application uses a scalable cloud-based microservices architecture. Each service (Speech-to-Text, Assistant, Backend, Database) can scale independently based on user demand.	Microservices ArchitectureIBM Cloud Kubernetes ServiceDocker ContainersIBM Cloud Auto-ScalingREST API Architecture
4	Availability	High availability is ensured through distributed cloud infrastructure, load balancing, and managed cloud services. The system remains operational even if one component fails.	IBM Cloud Load BalancerDistributed Cloud ServersIBM DB2 High AvailabilityKubernetes Cluster DeploymentMulti-Zone Deployment
5	Performance	The system is optimized for fast response and handling multiple users simultaneously. Caching, optimized database queries, and scalable cloud infrastructure improve performance.	Redis Cache (optional)IBM Cloud CDNOptimized DB2 QueriesREST API OptimizationCloud Auto-ScalingAsynchronous Processing