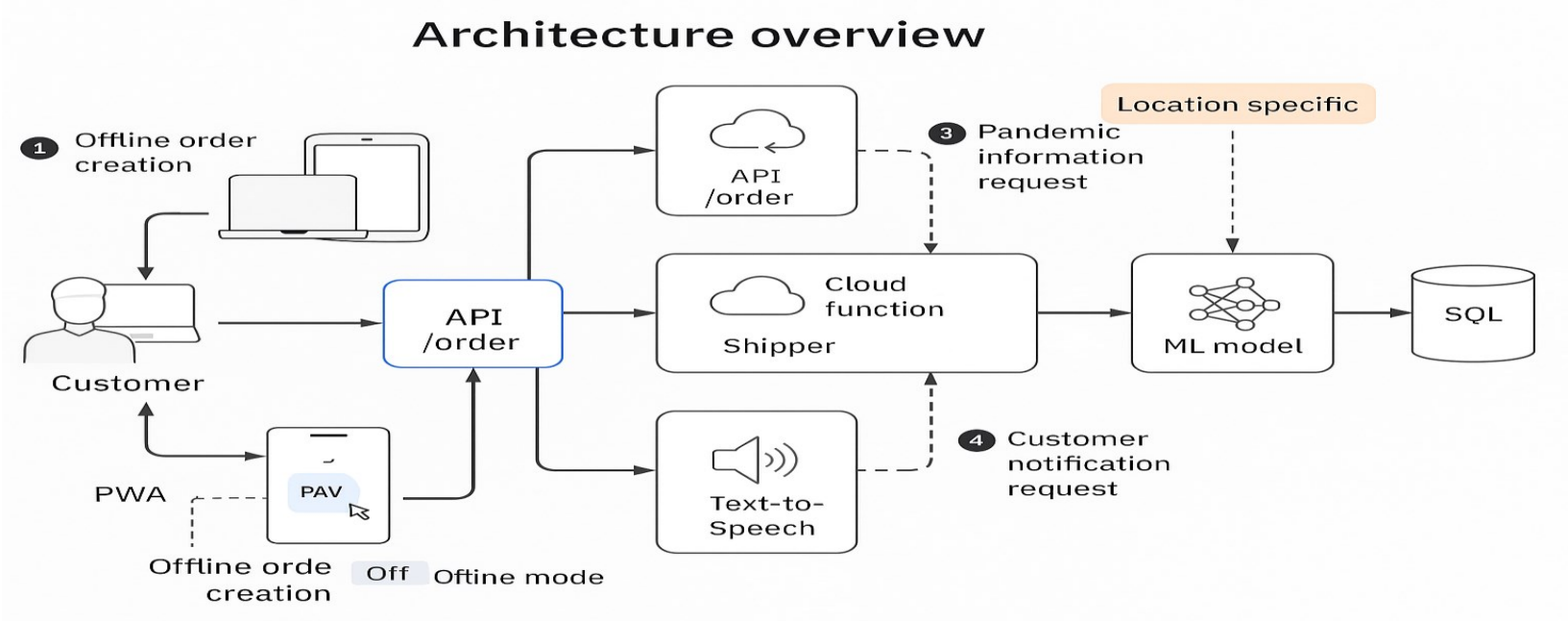
Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	25 JUNE 2025
Team ID	LTVIP2025TMID31275
Project Name	Garage Management System
Maximum Marks	4 Marks

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2



Technology Stack & Application Characteristics - Garage Management System (GMS)

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	How users interact with the application (Customer Portal, Staff Dashboard, Mobile App).	Salesforce Experience Cloud (Customer Portal) Salesforce Lightning Experience (Staff Dashboard) Lightning Web Components (LWC), Aura Components, SLDS Salesforce Mobile SDK / React Native (for optional mobile app)
2.	Application Logic-1	Core business logic and automation within the Salesforce platform.	Salesforce Apex (server-side programming) Salesforce Flow (declarative automation)
3.	Application Logic-2	Declarative process automation and data validation.	Salesforce Process Builder (for existing/simpler automations) Salesforce Validation Rules Salesforce Workflow Rules (for basic tasks)
4.	Application Logic-3	Advanced analytics, predictions, and AI-driven insights.	Salesforce Einstein Platform (Einstein Prediction Builder, Einstein Discovery, Einstein Language)

S.No	Component	Description	Technology
			(Optional) External ML Models via REST APIs (e.g., Python on AWS SageMaker)
5.	Database	Primary structured data storage for all GMS records.	Salesforce Database (Multi-tenant, cloud-native relational database)
6.	Cloud Database	(Primarily covered by Salesforce Database, but if additional cloud DB is used for specific needs)	N/A (Salesforce Database is the primary managed cloud database) Optional: AWS S3 / Azure Blob Storage (for large unstructured data, linked to Salesforce)
7.	File Storage	Storage for unstructured files like invoices, service reports, images.	Salesforce Files / Content Documents Optional: External Cloud Storage (e.g., AWS S3 for bulk media)
8.	External API-1	Integration for sending automated notifications.	Twilio API (for SMS) Salesforce Email Services (for email) SendGrid / Mailgun API (optional, for high-volume email)
9.	External API-2	Integration for processing payments.	Stripe API Razorpay API PayPal API

S.No	Component	Description	Technology
10.	Machine Learning Model	Purpose: Predict service delays, forecast part usage, optimize mechanic assignments, analyze customer feedback sentiment.	Salesforce Einstein Prediction Builder Salesforce Einstein Discovery Salesforce Einstein Language Custom ML Models (e.g., Random Forest, Gradient Boosting)
11.	Infrastructure (Server / Cloud)	Application deployment environment.	Salesforce Lightning Platform (PaaS) Managed Cloud Infrastructure (provided by Salesforce) DevOps Tools: Git (GitHub/GitLab), Salesforce DX, CI/CD Pipelines (Jenkins/Azure DevOps)

Table-2: Application Characteristics

S.No	Characteristic	Description
1	User Registration	The system must allow users to register via various methods including email, Gmail, and Facebook.
2	Security	The system shall protect all sensitive customer and business data from unauthorized access. Measures include: - Salesforce Platform Encryption (at rest and in transit) - OAuth 2.0 (for API access) - Profiles, Permission Sets, Sharing Rules - OWASP Top 10 Mitigation (secure coding practices) - Compliance with GDPR/Local Privacy Laws
3	Reliability	The system shall be consistently available and perform its functions correctly under normal operating conditions. Critical features like booking and payment processing must have an error rate of less than 0.1%.

S.No	Characteristic	Description
		Features: - Multi-Tenant Architecture - Automated Backups & Disaster Recovery - Robust Error Handling (Apex try-catch, Platform Events) - Asynchronous Processing (Queueable/Batched Apex)
4	Performance	The system shall respond quickly. Page load time ≤ 3 sec; search queries ≤ 2 sec. Enhancements: - Optimized LWCs - Efficient Apex/SOQL - Platform Cache - API Round-Trip Reduction - CDN for static assets
5	Availability	The system shall be accessible 24/7 with a target uptime of 99.5%. Scheduled downtimes must be minimal and communicated in advance. Managed by: - Salesforce Cloud Infrastructure - Global Data Centers - Load Balancing
6	Scalability	The system shall support 10,000+ customers and 100,000+ service records/year. Approaches: - Multi-Tenant Architecture - Governor Limits Management - Efficient Data Modeling - Asynchronous Processing - Database Indexing
7	Maintainability	The system must be modular, easy to update, and well-documented. Practices: - Modular Apex Classes, LWCs, Flows - Salesforce DX - Best Practice Documentation
8	Portability	Mobile app should work with iOS and Android; web app must support all major modern browsers. Tools: - Salesforce Mobile SDK - SLDS & Responsive Design - Cross-Browser Testing
9	Data Integrity	The system shall ensure data accuracy and consistency. Measures: - Validation Rules - Apex Triggers - Platform-Enforced Constraints - Transaction Management
10	Interoperability	The system shall integrate with third-party services like SMS/payment gateways. Integrations: - Apex Callouts - REST/SOAP APIs - Salesforce Connect - Middleware (e.g., Mulesoft)
11	Open-Source Frameworks	List the open-source tools/frameworks used (e.g., Chart.js, Moment.js, Bootstrap if integrated).
12	Usability	The system should be intuitive with a 3-click access to key features. UX Design: - SLDS - User-Centered Design - Usability Testing - Simplified Navigation