# Phase 1: Problem Understanding & Industry Analysis

## Project Title: EV Charging Station CRM

## 1. Requirement Gathering

### Functional Requirements

• Real-time Charging Slot Booking – Customers must be able to view and book available slots instantly.  
• Digital Payment Integration – Support for UPI, credit/debit cards, wallets, and automated billing with receipts.  
• Maintenance Scheduling – Automated alerts for preventive maintenance and fault reporting.  
• Charging Session Management – Track session start, duration, energy consumed, and cost.  
• Customer Support Ticketing – Handle complaints, refunds, and technical issues.  
• Loyalty & Rewards – Provide incentives for frequent users and green energy adoption.  
• Mobile & Web Portal – User-friendly access for both customers and operators.  
• Analytics Dashboards – Reports on utilization, revenue, carbon savings, and downtime.

### Non-Functional Requirements

• Data Security – All transactions and customer data must be encrypted with role-based access.  
• Scalability – The system must support thousands of stations and millions of users.  
• Performance – Real-time slot availability and payment confirmation must occur within seconds.  
• Usability – Interfaces should be intuitive for customers and operators with minimal training.  
• Reliability – 99.9% uptime for continuous access to charging services.  
• Integration – Seamless connection with IoT sensors, payment gateways, and government APIs.

## 2. Stakeholder Analysis

|  |  |  |
| --- | --- | --- |
| Stakeholder | Role in the System | Needs/Expectations |
| EV Owners/Customers | Primary users who book slots and charge vehicles. | Need reliable availability, transparent billing, mobile access, and quick support. |
| Charging Station Operators | Manage station uptime, assets, and revenue. | Require monitoring dashboards, slot utilization reports, and customer management tools. |
| Maintenance Teams | Perform preventive and corrective maintenance on stations. | Need automated alerts, task assignment, and service tracking. |
| Government/Regulators | Oversee EV adoption and compliance with policies. | Require compliance reports, sustainability tracking, and energy usage data. |
| Corporate Partners | Offer fleet charging or loyalty partnerships. | Need bulk scheduling, consolidated billing, and integration with CSR initiatives. |

## 3. Business Process Mapping

Step 1: Customer logs into the portal/mobile app and searches for nearby charging stations.  
Step 2: The customer views available slots and books a suitable time.  
Step 3: The system confirms booking, processes payment (if prepaid), and issues confirmation.  
Step 4: Customer arrives at the station and plugs into the charger.  
Step 5: IoT-enabled charger records charging session details (time, kWh, cost).  
Step 6: Session data is sent to the CRM in real time and updated in customer history.  
Step 7: Automated maintenance alerts trigger if faults or anomalies are detected.  
Step 8: Operators and technicians receive tasks for resolution.  
Step 9: Reports and dashboards summarize utilization, revenue, and sustainability impact.

## 4. Industry-Specific Use Case Analysis

• Fast Charging Hubs – High-demand stations require efficient slot booking and quick turnover.  
• Residential Charging – Shared apartment or society-based charging with billing per household.  
• Fleet Charging – Corporates with EV fleets need scheduling, consolidated billing, and analytics.  
• Highway Corridors – Real-time availability and route-based planning for long-distance travelers.  
• Renewable Integration – Solar/wind-powered charging stations tracked for sustainability credits.  
• Smart City Projects – Government-run public stations with citizen access and compliance reporting.

## 5. AppExchange Exploration

Before building a fully custom CRM, existing Salesforce AppExchange solutions were analyzed:  
  
• Energy & Utility Cloud – Provides modules for asset and customer management, suitable for EV station operators.  
• Field Service Lightning – Useful for technician dispatch, preventive maintenance, and fault resolution.  
• Payment Gateway Integrations – Apps for PayPal, Stripe, and Razorpay can streamline secure transactions.  
• IoT Integrations – Enable real-time data capture from charging stations.  
• Sustainability Cloud – Provides carbon footprint tracking, essential for ESG reporting.  
  
While these apps provide strong foundations, the EV Charging Station CRM requires a tailored solution to unify slot booking, customer engagement, payments, and sustainability tracking in one integrated platform.