Problem Statement – Solar Energy Management System (Salesforce CRM)

The solar energy sector is rapidly expanding as businesses and households shift to renewable power. However, companies face significant challenges:

- **Tracking customer leads and projects** – from initial inquiry to final installation.
- **Managing site surveys and proposals** – often handled manually, leading to inefficiency.
- **Monitoring installations and energy generation** – ensuring panels deliver expected output.
- **Coordinating service and maintenance** – preventing downtime and ensuring warranty compliance.
- **Billing and subsidies** – handling payments, government incentives, and ROI reports.
- **Customer communication** – lack of timely updates on installation status, energy performance, and service schedules.

The **Solar Energy Management System on Salesforce CRM** solves these problems by offering a centralized platform that:

- Automates the end-to-end customer journey (lead → installation → service).
- Tracks solar panel installations, warranties, and maintenance schedules.
- Integrates with IoT devices to capture **real-time energy generation** data.
- Provides **dashboards and reports** on energy savings, revenue, and performance.
- Enhances customer satisfaction with **self-service portals, notifications, and transparency**.

This project aims to improve **operational efficiency, customer engagement, and sustainability tracking** for solar companies by leveraging Salesforce CRM.

Phase 1: Problem Understanding & Industry Analysis (Elaborated)

Goal: Understand what we are building, who needs it, and why it matters.

1. Requirement Gathering

We interact with key stakeholders to capture pain points and needs:

- **Company Manager:** Wants to see revenue, installations, and energy generation reports.
- **Sales Agents:** Need tools to track leads, convert them into opportunities, and prepare proposals.

- **Installation Team:** Needs scheduling support and real-time task assignments.
- **Service Engineers:** Want a system to log maintenance, complaints, and AMC visits.
- **Customers:** Expect transparent billing, ROI insights, and service reminders.

Example Requirements:

- Track all **solar installations** with status (Pending, In Progress, Completed, Under Maintenance).
- Allow sales team to **book site surveys and generate proposals**.
- Prevent duplicate installations for the same site/customer.
- Generate **revenue, subsidy, and energy performance reports**.
- Notify customers about **maintenance schedules, billing, and panel efficiency**.

2. Stakeholder Analysis

We define user groups in the CRM:

- **Admin** – manages Salesforce setup, roles, permissions.
- **Sales Agents** – create/manage leads, prepare proposals, close deals.
- **Installation Team** – executes panel installations, updates status.
- **Service Engineers** – manage warranty claims, repairs, AMC visits.
- **Manager** – approves discounts, monitors KPIs via dashboards.
- **Customer Service** – handles queries, bills, and service tickets.
- **Customers (Portal Users)** – track installation, bills, energy savings, and request service.

3. Business Process Mapping

The **end-to-end solar business flow** inside Salesforce looks like this:

1. Customer shows interest → Lead created.
2. Site Survey scheduled → Feasibility report prepared.
3. Proposal generated → If approved, move to installation stage.
4. Installation scheduled → Status updated in CRM.
5. Energy Output tracked (via IoT integration).
6. Billing and subsidy claim processed.
7. AMC/Maintenance scheduled automatically.
8. Customer notified via email/SMS/portal updates.

4. Industry-Specific Use Case Analysis

Solar industry challenges:

- **Government regulations & subsidies** vary across regions → CRM must handle approvals.
- **Energy Monitoring** → Customers demand ROI visibility (kWh saved, CO_2 reduction).
- **Maintenance cycles** are essential (panels lose efficiency if not cleaned).
- **Customer engagement** → Without reminders, service requests pile up.
- Installation tracking.
- Automated approvals for subsidies.
- Integration with smart meters.
- Notifications for service schedules.

5. AppExchange Exploration

- Salesforce AppExchange has energy-related apps (like **Salesforce Energy & Utilities Cloud**).
- However, most are **complex and enterprise-level**.
- For this project, we will **build a custom lightweight Solar CRM** to practice Salesforce core concepts (Objects, Flows, Apex, LWC, Reports).