

Phase 1: Problem Understanding & Industry Analysis

RePlastix Innovations

Salesforce-Based Plastic Waste Management & Recycling System

Problem Statement

Plastic waste is one of the most critical environmental challenges in India, with millions of tons generated each year. The lack of efficient collection systems, tracking mechanisms, and coordination between recyclers, waste collectors, and industries leads to inefficiencies and environmental pollution. Current waste management processes rely on manual operations and disconnected systems, resulting in poor transparency, data loss, and limited traceability of recycled materials.

To address these challenges, **RePlastix Innovations** proposes a Salesforce-based CRM solution that centralizes plastic waste data, connects collectors with recyclers, automates waste tracking, and enables sustainability reporting for industries.

Requirement Gathering

- Lack of centralized system to manage waste collection and recycling data.
- Manual coordination between collectors, recyclers, and industries.
- No real-time tracking of waste collection or recycling progress.
- Limited transparency in plastic waste transactions.
- Industries struggle to prove compliance with sustainability regulations.
- Collectors face difficulty connecting with certified recyclers.

Objectives

- Centralize all waste collection, recycling, and reporting data within Salesforce CRM.
- Provide a transparent marketplace connecting collectors and recyclers directly.
- Automate plastic waste tracking with approval workflows for recyclers.
- Offer an Experience Cloud portal for waste collectors and industries to log and monitor activities.
- Integrate IoT or barcode data for real-time waste tracking and recycling validation.
- Generate sustainability and compliance dashboards for government and industry officers.

Stakeholder Analysis

- **Collectors:** Need to register waste, track recycling progress, and receive payments.
- **Recyclers:** Require verified data on collected waste and compliance reports.
- **Industries:** Need sustainability reports and verified recycled plastic data.
- **Government Officers:** Monitor compliance and recycling statistics via dashboards.
- **Admins:** Manage Salesforce configurations, user roles, and integrations.

Business Process Mapping

Current Process:

- Collectors manually record waste data on paper.
- Recyclers contact collectors via phone or intermediaries.
- No digital verification or reporting system for recycled materials.
- Sustainability reports are created manually and often inaccurate.

Proposed Salesforce Process:

- Collectors register and log waste via Experience Cloud.
- Recyclers view available plastic waste listings and connect directly.
- Workflow automation routes recycling approvals to officers.
- Service Cloud handles support requests and issue resolutions.
- Dashboards show waste collection trends and recycling rates.

Industry-Specific Use Case Analysis

The waste management and recycling sector requires digitization to improve sustainability tracking and efficiency. RePlastix enables waste collectors and recyclers to collaborate in real time using Salesforce CRM. With Service Cloud, Experience Cloud, and Flow automation, the system enhances traceability and compliance reporting. Dashboards help industries and government bodies monitor recycling performance and environmental impact effectively.

AppExchange Exploration

- **RecycleSmart:** Helps track recycling data but lacks integration for collectors and industries.
- **EcoTrack:** Offers environmental tracking but not tailored for plastic waste.
- **Decision:** Develop a customized Salesforce solution (RePlastix Innovations) integrating collectors, recyclers, and industry compliance modules.

Conclusion

RePlastix Innovations provides a Salesforce-driven digital platform that connects collectors, recyclers, industries, and government officers within a unified ecosystem. By automating waste tracking, enabling transparency, and supporting sustainability reporting, this system eliminates inefficiencies and promotes a circular plastic economy. The platform empowers all stakeholders to collaborate efficiently and ensures India's plastic waste management goals are achieved through technology and innovation.

Phase 2: Salesforce Org Setup & Configuration

The **Org Setup & Configuration phase** is a critical part of Salesforce implementation. It involves preparing the Salesforce environment to meet the business requirements, setting up the foundation for users, data security, and operational processes. A well-configured org ensures smooth workflows, proper data access, and scalability for future business needs.

1. Salesforce Editions

Salesforce offers different **editions** tailored to business size, requirements, and budget. Choosing the right edition is crucial because it determines available features, storage limits, user licenses, and integration capabilities. Common editions include:

- **Essentials:** Designed for small businesses; limited customization, mainly for basic CRM functions.
- **Professional:** For small to medium businesses; includes standard CRM features and more automation.
- **Enterprise:** Suitable for large organizations; offers advanced automation, extensive customization, API access, and integration options.
- **Unlimited:** Provides maximum flexibility, unlimited customizations, premium support, and full platform capabilities.

2. Company Profile Setup

Setting up the company profile ensures the organization's details are properly configured in Salesforce, which affects processes like reporting, currency management, and compliance. Key components include:

- **Company Information:** Name, address, primary contact details, default locale, default language.
- **Currency Setup:** Single or multiple currencies for global operations.
- **Default Time Zone & Locale:** Ensures accurate scheduling, date, and currency formatting.
- **Fiscal Year Settings:** Determines the organization's financial reporting period.

3. Business Hours & Holidays

Business hours and holidays are critical for case management, automation, and service-level agreements (SLAs).

- **Business Hours:** Define working days and hours for teams; essential for calculating case escalation and automation triggers.
- **Holidays:** Non-working days where business rules like workflow or escalation do not apply.

Proper setup ensures customer support operations and reporting are aligned with real-world business schedules.

4. Fiscal Year Settings

Fiscal year settings define the organization's financial reporting cycle. Salesforce supports:

- **Standard Fiscal Year:** Aligns with calendar months.
- **Custom Fiscal Year:** For organizations with non-standard reporting cycles (e.g., 4-4-5 weeks).

Accurate fiscal year configuration is essential for sales forecasting, reporting, and financial dashboards.

5. User Setup & Licenses

Salesforce users are granted access based on their roles, profiles, and licenses.

- **User Creation:** Add users with necessary personal and organizational details.
- **User Licenses:** Determine the baseline of available features for a user (e.g., Salesforce, Platform, Chatter).
- **Feature Licenses:** Additional features like Marketing Cloud, Service Cloud, or Knowledge Base access.

Correct license allocation optimizes cost and ensures users have the functionality they need.

6. Profiles

Profiles define **what users can see and do** within Salesforce. Each user is assigned a profile that controls:

- **Object Permissions:** Create, Read, Edit, Delete access to objects.
- **Field-Level Security:** Control visibility and editability of fields.
- **Page Layouts:** Determine which fields, related lists, and actions appear on object pages.
- **App Access:** Restrict access to specific apps in Salesforce.

Profiles act as a baseline security model for all users.

7. Roles

Roles determine the **hierarchical visibility of records** in Salesforce. Key points:

- Users at a higher role in the hierarchy can see and report on records owned by users below them.
- Helps enforce **data sharing policies** without giving excessive access.
- Roles work with **OWD (Organization-Wide Defaults)** and sharing rules for flexible data security.

Roles are essential for maintaining proper **data access governance** within an organization.

8. Permission Sets

Permission sets provide **additional permissions** to users without changing their profile.

- Allow users to access extra objects, fields, or apps.
- Enable temporary or project-based access without creating new profiles.
- Can be assigned individually or in bulk.

This flexibility ensures granular control over user capabilities.

9. Organization-Wide Defaults (OWD)

OWD settings define the **baseline level of access** to data for all users in the org.

- Types of OWD settings include: Private, Public Read-Only, Public Read/Write.
- Determines how much visibility users have on records they don't own.
- Works in conjunction with roles and sharing rules to enforce a **security hierarchy**.

OWD is the foundation of Salesforce's **data security model**.

10. Sharing Rules

Sharing rules allow **exceptions to OWD** by providing broader access to specific groups of users.

- Can be defined for **roles, roles and subordinates, or public groups**.
- Applied to objects to allow read/write or read-only access to records.
- Ensures business flexibility while maintaining data security.

Sharing rules are especially useful for cross-department collaboration or project-specific data sharing.

11. Login Access Policies

Login access policies help control **who can log in and under what conditions**.

- **IP Restrictions:** Limit login from specific IP ranges for security.
- **Login Hours:** Restrict users to log in during designated times.
- **Two-Factor Authentication (2FA):** Adds an extra security layer.

These policies protect sensitive data and prevent unauthorized access.

12. Developer Org Setup

A **Developer Org** is a free Salesforce environment for testing, learning, and development.

- Provides access to most Salesforce features.
- Ideal for creating and testing custom objects, apps, workflows, and integrations.
- Does not affect production data, ensuring a safe development environment.

Developer orgs are crucial for experimentation before deploying changes to production.

The screenshot shows a web browser window with three tabs open:

- Inbox (21) - katigandlasowmya
- Greeting exchange
- Developer Edition with Agentforce

The active tab is salesforce.com/form/developer-signup/?d=pb.

The page content is as follows:

Build enterprise-quality apps fast and get hands-on with Agentforce and Data Cloud.

Sign up for your Developer Edition.

- ✓ Build apps fast with drag-and-drop tools
- ✓ Go further with Apex code
- ✓ Build AI agents with Agentforce
- ✓ Harmonize your data with Data Cloud
- ✓ Ground Agentforce with structured and unstructured data
- ✓ Integrate with anything using APIs

Sign up for your Developer Edition

A free Salesforce Platform environment with Agentforce and Data Cloud

First name: Katigandla Last name: Sowmya

Job title: Developer Work email: katigandlasowmya

Company: KSRMCE Country/Region: India

Your org may be provisioned on or migrated to Hyperforce, Salesforce's public cloud infrastructure.

I agree to the Main Services Agreement – Developer Services and Salesforce Program Agreement. I acknowledge, as described in the Developer Documentation: (1) the Developer Edition includes autonomous and other generative AI features;

19:46 ENG IN 16-10-2025

The screenshot shows a web browser window with three tabs open:

- Replaxt Innovations.pdf
- Greeting exchange
- Welcome to Salesforce: Reset y

The active tab is mail.google.com/mail/u/0/?tab=rm&ogbl#inbox/FMfcg2QcqQrVVDZfmbfkFPbbvwHMgrS.

The Gmail inbox sidebar shows:

- Inbox (21)
- Starred
- Snoozed
- Sent
- Drafts
- Purchases
- More

The main inbox area displays an email from Salesforce:

Hi Katigandla,

Thanks for signing up for a Developer Edition. Now you can start building on Salesforce for free and get hands-on with Agentforce and Data Cloud.

There's just one more step. Use the following link to reset the password for your Developer Edition. This link expires in 24 hours.

Reset Password

To easily log in later, save this URL:
<https://orgfarm-b458d0e11a-dev-ed.develop.my.salesforce.com>

Here's the username for your Developer Edition:
katigandlasowmya2004215@agentforce.com

Your Developer Edition, now enabled with Agentforce and Data Cloud, remains active as long as you continue to use it. It expires after 45 days of non-use.

Again, welcome to Salesforce!

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Phase:3 Data Modeling & Relationships

Custom Objects for RePlastix Innovations

Custom objects are designed to store **business-specific data** that is not captured by Salesforce standard objects. Each custom object represents a real-world entity in the organization.

1. Plastic Waste (Plastic_Waste__c)

Purpose:

- To track and manage all plastic waste collected from various sources.
- Helps monitor types, quantity, contamination, and origin of plastic.

Key Fields:

| Field Name | Type | Description |
|---------------------|------------------------------|---|
| Waste ID | Auto Number | Unique identifier for each waste record |
| Type of Plastic | Picklist | PET, HDPE, LDPE, PVC, PP, PS, Others |
| Weight (kg) | Number | Weight of collected plastic |
| Source | Lookup (Account/Contact) | Who supplied the waste |
| Contamination Level | Picklist | Low, Medium, High |
| Collection Date | Date | When the waste was collected |
| Recycling Center | Lookup (Recycling_Center__c) | Assigned center to process this waste |

Use Cases:

- Track total plastic collected for reporting.
- Identify contamination trends.
- Allocate waste to recycling centers efficiently.

Relationships:

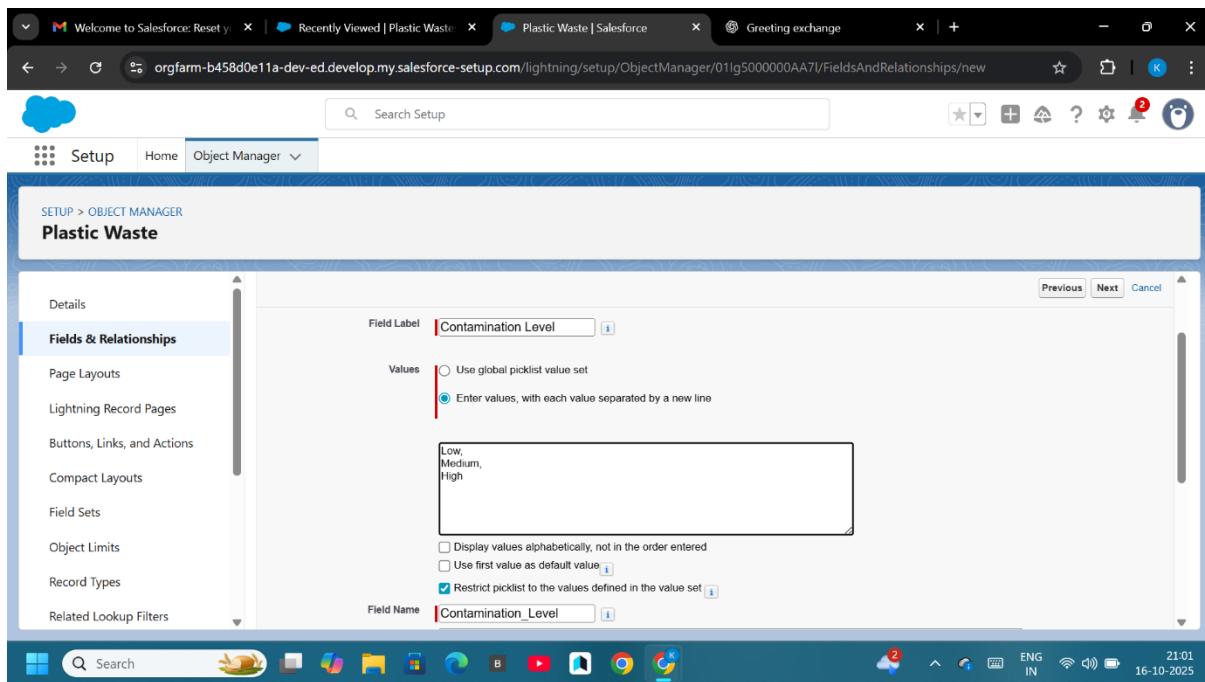
- Lookup → Recycling Center
- Lookup → Account/Contact (Source)

The screenshot shows the Salesforce Object Manager interface. The left sidebar is titled "Plastic Waste" under "SETUP > OBJECT MANAGER". The "Fields & Relationships" tab is selected. The main area displays a table of fields:

| | Field Label | Type |
|---------------------|------------------------|--------------------------|
| Collection Date | Collection_Date__c | Date |
| Contamination Level | Contamination_Level__c | Picklist |
| Created By | CreatedById | Lookup(User) |
| Last Modified By | LastModifiedById | Lookup(User) |
| Owner | OwnerId | Lookup(User,Group) |
| Recycling Center | Recycling_Center__c | Lookup(Recycling Center) |
| Source | Source__c | Picklist |
| Status | Status__c | Picklist |
| Type | Type__c | Picklist |
| Waste ID | Name | Text(80) |
| Weight (kg) | Weight_kg__c | Number(1, 2) |

At the bottom of the page, there are standard browser controls (Search, Back, Forward, Stop, Refresh) and a status bar showing the date and time.

The screenshot shows the Salesforce Object Manager interface, similar to the first one but with a different URL. The "Fields & Relationships" tab is selected in the left sidebar. A new field is being created, indicated by the "New" button at the top right of the table. The table structure is identical to the first screenshot, showing the same fields and their types.



2. Recycled Product (Recycled_Product__c)

Purpose:

- To manage details of products made from recycled plastic.
- Helps in production tracking, inventory management, and sales.

Key Fields:

| Field Name | Type | Description |
|-------------------|---------------------------|--|
| Product ID | Auto Number | Unique product identifier |
| Product Name | Text | Name of the product (e.g., Bench, Board) |
| Type | Picklist | Bench, Bin, Board, Others |
| Material Used | Lookup (Plastic_Waste__c) | Links to plastic used |
| Quantity Produced | Number | Number of units produced |
| Production Date | Date | Date of production |
| Product Status | Picklist | In Production, Ready, Distributed |

Use Cases:

- Track which waste batches were used in production.
- Monitor production quantity and product status.
- Facilitate inventory management and order fulfillment.

Relationships:

- Master-Detail → Plastic Waste (Product cannot exist without waste)

| FIELD LABEL | FIELD NAME | DATA TYPE | CONTROLLING FIELD | INDEXED |
|------------------|-------------------|--------------------|-------------------|---------|
| Capacity | Capacity__c | Number(8, 2) | | |
| Center Name | Center_Name__c | Text(60) | | |
| Contact Person | Contact_Person__c | Text(60) | | |
| Created By | CreatedBy | Lookup(User) | | |
| Email | Email__c | Email | | |
| Last Modified By | LastModifiedBy | Lookup(User) | | |
| Location | Location__c | Text(60) | | |
| Owner | OwnerId | Lookup(User,Group) | | |
| Phone | Phone__c | Phone | | |
| Product ID | Name | Auto Number | | |

3. Recycling Center (Recycling_Center__c)

Purpose:

- To maintain information about recycling plants or centers.
- Enables allocation of waste and tracking of processing capacity.

Key Fields:

| Field Name | Type | Description |
|--------------------|---------------|---|
| Center ID | Auto Number | Unique identifier for each center |
| Center Name | Text | Name of the recycling center |
| Location | Text/Address | Physical address of the center |
| Capacity (kg) | Number | Maximum plastic weight the center can process |
| Manager | Lookup (User) | Person responsible for the center |
| Operational Status | Picklist | Active, Inactive, Under Maintenance |

Use Cases:

- Assign collected plastic waste to centers.
- Track operational status and capacity utilization.
- Monitor performance of recycling centers.

Relationships:

- Lookup → User (Manager)

- Lookup → Plastic Waste (Waste assigned to this center)

4. Order (Order__c)

Purpose:

- To manage orders for recycled products from customers.
- Tracks order details, delivery dates, and statuses.

Key Fields:

| Field Name | Type | Description |
|-------------------|---------------------------------|--|
| Order Number | Auto Number | Unique identifier for the order |
| Customer Name | Lookup (Account/Contact) | Customer placing the order |
| Product Ordered | Lookup (Recycled_Product__c) | Product being ordered |
| Order Quantity | Number | Quantity requested |
| Order Date | Date | When the order was placed |
| Delivery Date | Date | Expected delivery date |
| Order Status | Picklist | Pending, In Progress, Completed, Cancelled |

Use Cases:

- Track all customer orders and order fulfillment.
- Link orders to recycled products for production planning.
- Generate reports on sales and delivery.

Relationships:

- Lookup → Account/Contact (Customer)
- Lookup → Recycled Product

The screenshot shows the Salesforce Object Manager interface for the 'Order' object. The 'Fields & Relationships' tab is selected. The page displays a table of 37 items, sorted by Field Label. The columns show the field name, type, and description. Key fields include Order Start Date (Date), Order Type (Picklist), Original Order (Lookup(Order)), PO Date (Date), PO Number (Text(80)), Price Book (Pricebook2Id), Quantity (Quantity_c), Reduction Order (IsReductionOrder), Ship To Contact (ShipToContactId), Shipping Address (ShippingAddress), Status (Status_c), and Status (Status). The interface includes a search bar, navigation tabs (Setup, Home, Object Manager), and a toolbar with various icons.

Customer (Customer__c)

Purpose:

- To manage customer-specific information that may not be fully captured by the standard **Account** or **Contact** objects.
- Centralizes customer data for orders, communication, and reporting.
- Useful if your organization wants **custom attributes** for customers or separate tracking from standard Salesforce Accounts.

| Field Name | Type | Description |
|-----------------|--------------|--|
| Customer ID | Auto Number | Unique identifier for each customer |
| Customer Name | Text | Full name of the customer or organization |
| Customer Type | Picklist | Individual, Business, NGO, Government |
| Contact Person | Text | Main contact person for the customer |
| Email | Email | Email address of the customer |
| Phone Number | Phone | Contact number |
| Address | Text/Address | Physical address of the customer |
| Industry | Picklist | Industry type (e.g., Manufacturing, Retail, Recycling) |
| Customer Rating | Picklist | Excellent, Good, Average, Poor |

Preferred Products Multi-Select Picklist Products the customer usually orders

| Field Name | Type | Description |
|------------|----------------|--|
| Notes | Long Text Area | Additional information or remarks about the customer |

Use Cases

1. Centralized Customer Information:

- Maintain a single record for each customer with all relevant details.

2. Order Management:

- Link customer records to Orders (Order_c) for tracking purchases.

3. Reporting & Analytics:

- Analyze order trends, customer segmentation, and product preferences.

4. Communication:

- Use email or phone fields for campaigns, updates, or notifications.

5. Customer Segmentation:

- Use Customer Type, Industry, and Rating to categorize customers for targeted marketing or priority handling.

The screenshot shows the Salesforce Setup page under the Object Manager for the 'Customer' object. The left sidebar lists various configuration options like Details, Fields & Relationships, Page Layouts, etc. The main content area is titled 'Fields & Relationships' and displays 13 items sorted by Field Label. Each item shows the field name, its type, and a dropdown menu. The fields listed include Address, Created By, Created Date, Customer Name, Customer Status Type, Email, Last Modified By, Last Modified Date, Name, Owner Name, Party, and Phone. At the top of the main area, there are buttons for Quick Find, New, Deleted Fields, Field Dependencies, and Set History Tracking. The bottom of the screen shows the standard Windows taskbar with icons for search, file explorer, and other applications.

2.Fields

Fields define the **data points captured in each object**. Proper field setup ensures accurate reporting, automation, and user experience.

Types of Fields:

- Text:** Names, descriptions, addresses.
- Number:** Quantitative values (e.g., weight, quantity).

- **Picklist:** Predefined set of options (e.g., Product Status: Ready, In Production).
- **Checkbox:** True/False values.
- **Date / DateTime:** Track specific dates or timestamps.
- **Formula:** Calculate values dynamically (e.g., Total Weight = Weight1 + Weight2).
- **Lookup / Master-Detail:** Define relationships between objects.
- **Long Text Area:** For notes, descriptions, or comments.

Use Cases:

- Track attributes like product type, order quantity, and waste contamination.
- Enable validation rules and automation (e.g., workflows triggered when a field reaches a certain value).

3. Record Types

Record Types allow **different business processes, picklist values, and page layouts** within the same object.

Purpose:

- Customize user experience based on business needs.
- Support multiple processes within a single object.

Use Cases:

- Plastic Waste object can have **Industrial Waste** vs **Household Waste** record types.
- Recycled Products may have record types like **Furniture** vs **Construction Material** to track production workflows differently.

Benefits:

- Control picklist values per record type.
- Assign specific page layouts per record type.

4. Page Layouts

Page layouts define **how fields, sections, related lists, and buttons appear** on a record page.

Purpose:

- Enhance user experience by showing relevant fields only.
- Control which fields are read-only or editable for specific profiles.

Use Cases:

- Show operational fields for internal users (e.g., Recycling Center staff) and hide technical fields for sales users.
- Customize layouts per record type (e.g., Household vs Industrial Waste).

5. Compact Layouts

Compact layouts define **key fields displayed in the highlights panel** on record pages, especially in Salesforce mobile.

Purpose:

- Quickly provide essential information to users without scrolling.

Use Cases:

- On an Order record, display **Order Number, Customer, Status, and Delivery Date** in the highlights panel.
- On Plastic Waste, display **Waste ID, Type, Weight, and Center** for quick reference.

6. Schema Builder

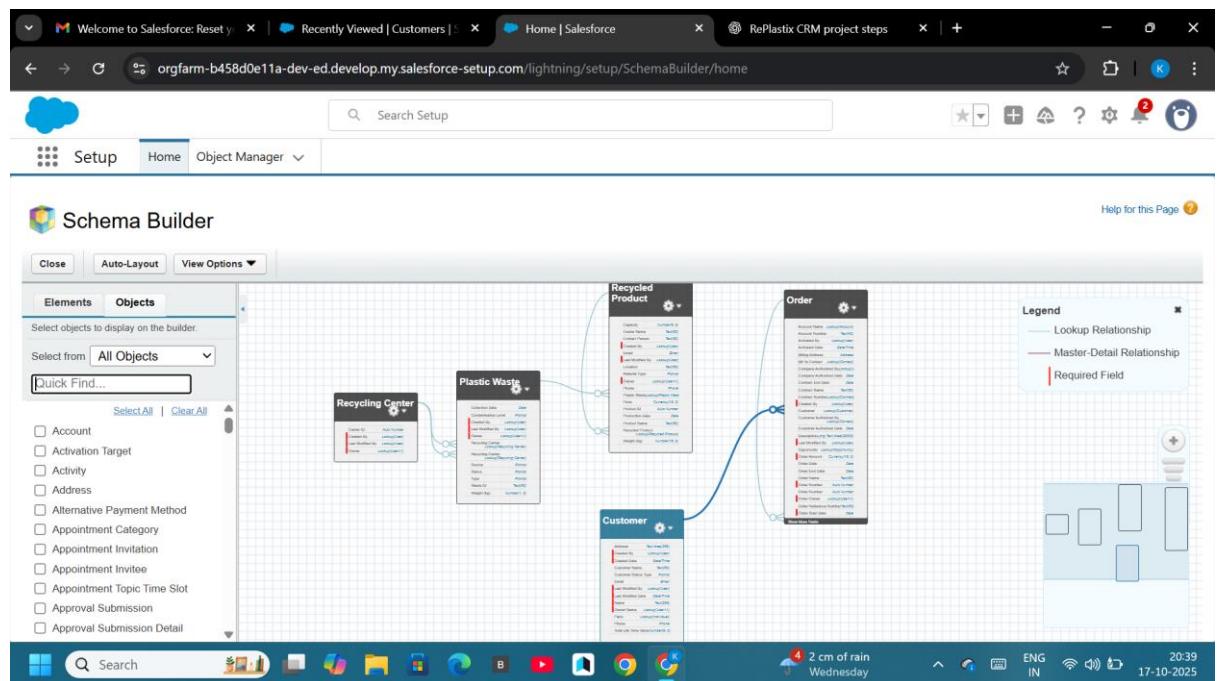
Schema Builder is a visual tool to **create, view, and manage objects, fields, and relationships**.

Purpose:

- Visualize complex relationships in a drag-and-drop interface.
- Easily add fields, lookup relationships, or master-detail relationships.
- Identify dependencies and avoid errors during setup.

Use Cases:

- View all objects (Plastic Waste, Recycled Products, Orders, Customers) and their relationships.
- Plan data model changes without affecting production.



7. Relationships

Relationships define **how objects connect to each other**, enabling data visibility and process automation.

Types of Relationships:

| Type | Purpose | Example |
|-----------------|---|----------------------------------|
| Lookup | Loose connection; records can exist independently | Plastic Waste → Recycling Center |
| Master-Detail | Strong dependency; child inherits parent's ownership | Recycled Product → Plastic Waste |
| Hierarchical | Special lookup on User object for reporting structure | User → Manager |
| Junction Object | Many-to-many relationships between objects | Orders ↔ Recycled Products |
| External Object | Access data stored outside Salesforce | ERP inventory → Recycled Product |

Use Cases:

- Enable sharing rules and security via roles and OWD.
- Link orders to products, products to waste, and customers to orders.

8. Junction Objects

Purpose:

- Allow **many-to-many relationships** between two objects.
- Store additional information about the relationship (e.g., quantity, date).

Use Case:

- An **Order-Product junction object** tracks multiple products per order with quantity and status.

Fields in Junction Object:

- Lookup to Order
- Lookup to Product
- Quantity Ordered
- Price or Status (optional)

9. External Objects

External objects allow Salesforce to **access data stored outside of Salesforce** in real-time.

Purpose:

- Work with external systems without importing data.
- Useful for ERP, Inventory, or large legacy datasets.

Use Cases:

- Access external ERP inventory levels to decide production quantities.
- Display external data in reports or dashboards without duplicating storage.

Phase 4: Process Automation (Admin)

Process Automation in Salesforce allows admins to **automate repetitive tasks, approvals, notifications, and workflows** to improve efficiency and accuracy. This phase ensures your org operates smoothly with **minimal manual intervention**.

1. Validation Rules

Purpose:

- Ensure data entered by users meets business criteria.
- Prevent incorrect or incomplete records from being saved.

Use Cases:

- Ensure Plastic Waste weight is >0.
- Prevent orders from being submitted without selecting a product.

Example Formula:

ISBLANK(Product_Ordered__c)

- Displays an error if a product is not selected.

2. Workflow Rules

Purpose:

- Automate actions based on specific criteria when a record is created or edited.

Actions Include:

- Email alerts
- Field updates
- Task creation
- Outbound messages

Use Cases:

- Send email to Recycling Center manager when new plastic waste is assigned.
- Update Order Status automatically when shipment is created.

3. Process Builder

Purpose:

- A visual tool to automate **more complex processes** than workflow rules.
- Can update multiple objects, create records, or trigger flows.

Use Cases:

- Automatically create a shipment record when an order is approved.
- Update the product inventory after recycling production is complete.

4. Approval Process

Purpose:

- Automate **record approvals** within Salesforce.

Use Cases:

- Approve large or high-priority orders.
- Require manager approval for releasing recycled products to VIP customers.

Steps Include:

- Define entry criteria for approval (e.g., Order > 500 kg).
- Assign approvers.
- Set up actions for approved, rejected, or recalled records.

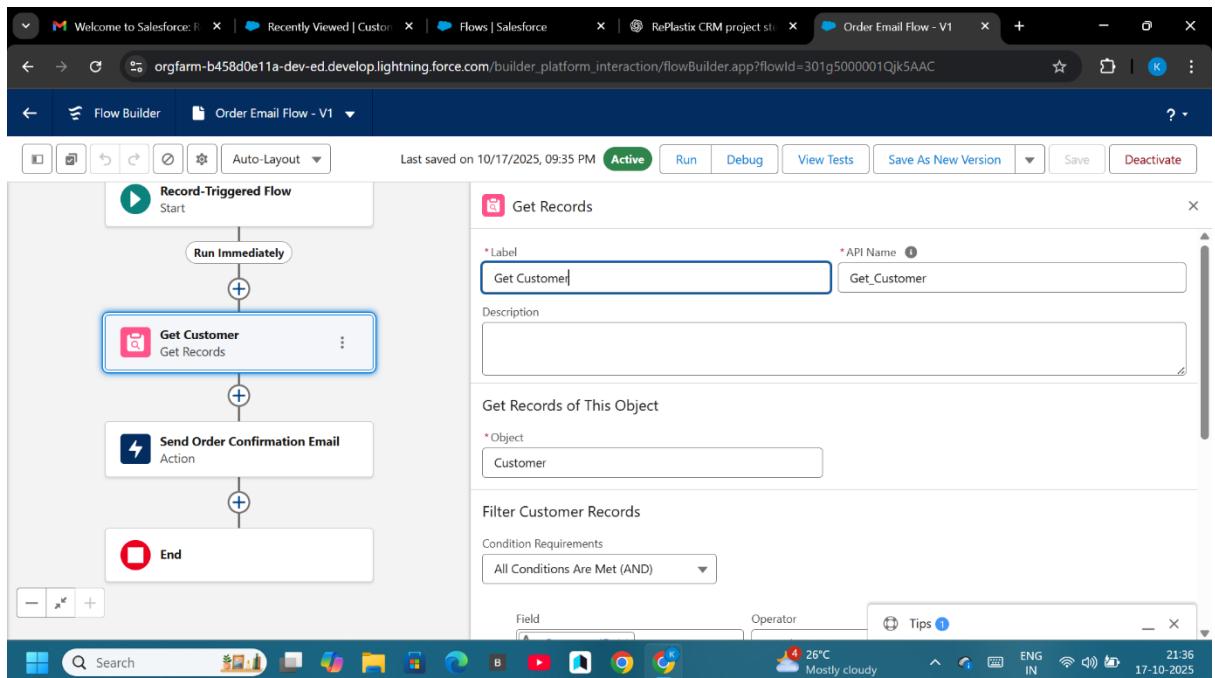
5. Flow Builder

Purpose:

- Salesforce's most powerful automation tool for **complex, multi-step processes**.

Types of Flows:

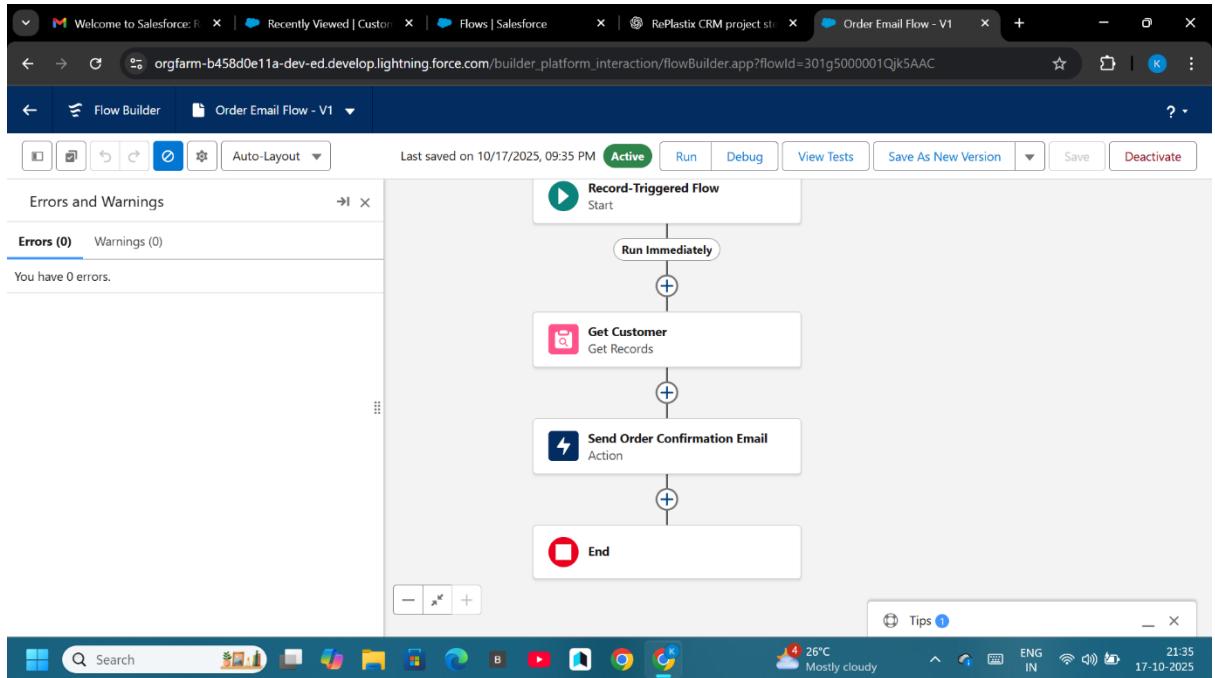
- Screen Flow:** User-interactive flows (forms, surveys).
- Record-Triggered Flow:** Triggered automatically when a record is created or updated.
- Scheduled Flow:** Runs at a scheduled date/time.
- Auto-Launched Flow:** Runs in the background, no user interaction.



Use Cases:

- Send automated notifications to customers when order status changes.

- Update multiple related records after production completion.
- Calculate and update inventory levels automatically.



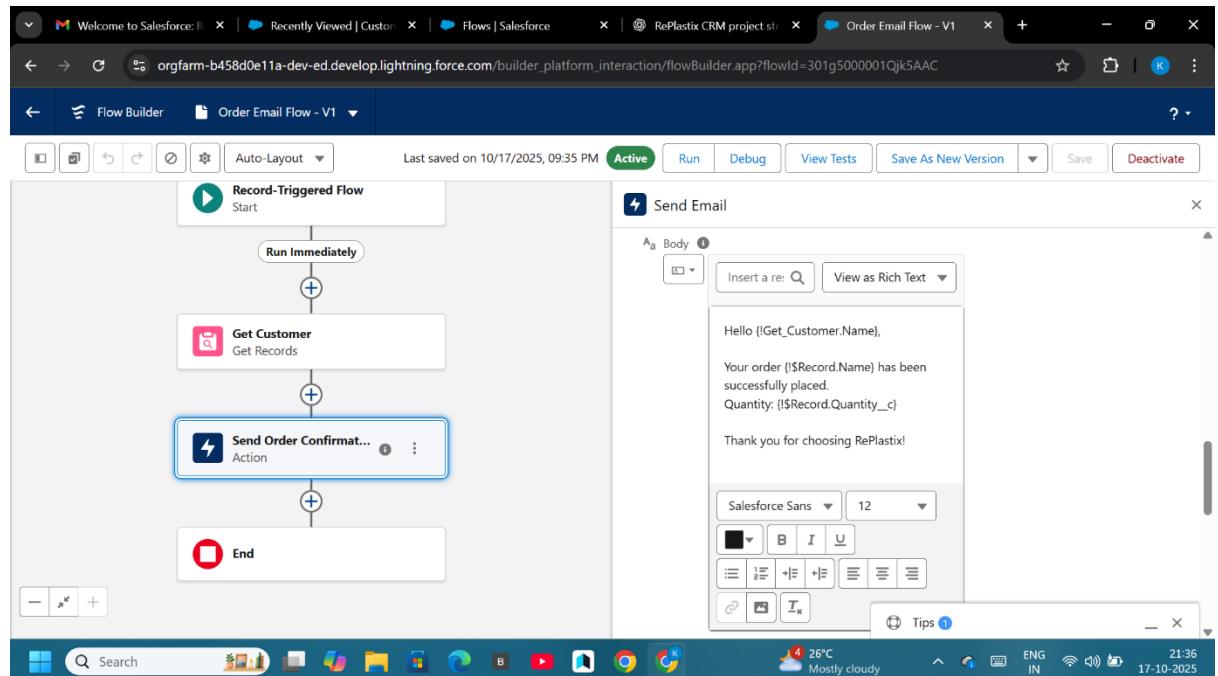
6. Email Alerts

Purpose:

- Automatically send email notifications based on workflows, processes, or flows.

Use Cases:

- Notify customers when orders are shipped.
- Alert recycling center managers when waste collection exceeds a threshold.



7. Field Updates

Purpose:

- Automatically change field values based on specific conditions.

Use Cases:

- Update Order Status from **Pending** to **In Progress** when production starts.
- Change Plastic Waste status to **Processed** after recycling.

8. Tasks

Purpose:

- Automatically create tasks for users as part of a workflow or process.

Use Cases:

- Assign follow-up calls to sales staff after an order is placed.
- Create maintenance tasks for recycling center equipment.

9. Custom Notifications

Purpose:

- Send **in-app notifications** to users to alert them about specific events.

Use Cases:

- Notify managers when orders require approval.
- Alert users about overdue tasks or pending shipments.
- Complement email alerts for faster response.

Conclusion of Phase 4

Process Automation ensures that Salesforce operates efficiently and reduces **manual work**. Key benefits include:

- Faster response times for approvals, notifications, and record updates.
- Consistency in business processes.
- Increased user productivity and reduced errors.

Phase 5: Apex Programming (Developer)

Apex is Salesforce's **object-oriented programming language** that allows developers to write complex business logic and automate processes that go beyond declarative tools (like Flows or Process Builder). It runs on the Salesforce platform and helps implement **customized, scalable, and efficient solutions**.

1. Classes & Objects

Purpose:

- Apex classes define reusable blocks of code that contain methods and variables.
- Objects are instances of classes used to execute logic and store temporary or permanent data.

Use Cases:

- Create a utility class to calculate recycled product cost.
- Build classes for automated notifications or custom business logic.

2. Apex Triggers (Before/After Insert, Update, Delete)

Purpose:

- Triggers execute Apex code automatically when records are created, updated, deleted, or undeleted.

Trigger Types:

- **Before Insert/Update:** Validate or modify records before saving.
- **After Insert/Update/Delete:** Execute logic after records are saved.

Use Cases:

- Update total waste collected after each record insertion.
- Notify recycling center when an order status changes.

The screenshot shows the Salesforce Developer Console interface. The top bar displays the URL: orgfarm-b458d0e11a-dev-ed.develop.my.salesforce.com/_ui/common/apex/debug/ApexCSPage. Below the URL is a menu bar with File, Edit, Debug, Test, Workspace, Help, and a search bar. The main area contains the code for EmailNotificationHelper.apxc:

```

1  public class EmailNotificationHelper {
2
3      // Method to send a single email
4      public static void sendOrderEmail(String recipientEmail, String subject, String body) {
5          Messaging.SingleEmailMessage email = new Messaging.SingleEmailMessage();
6          email.setToAddresses(new String[] { recipientEmail });
7          email.setSubject(subject);
8          email.setPlainTextBody(body);
9          Messaging.sendEmail(new Messaging.SingleEmailMessage[] { email });
10     }
11 }

```

Below the code editor is a log viewer window titled "Logs". The tabs include Logs, Tests, Checkpoints, Query Editor, View State, Progress, and Problems. The Logs tab is selected. The log table has columns for User, Application, Operation, Time, Status, Read, and Size. A filter bar at the bottom of the log viewer says "Click here to filter the log list". At the very bottom of the screen is a Windows taskbar with icons for Start, Search, File Explorer, File, Task View, Edge, Microsoft Store, and Google Chrome. It also shows system status like battery level (26°C Mostly cloudy), network (ENG IN), and date/time (17-10-2025).

3. Trigger Design Pattern

Purpose:

To maintain clean, reusable, and scalable trigger logic.

Best Practices:

- Only **one trigger per object**.
- Delegate logic to **handler classes**.
- Ensure triggers are **bulkified** (handle multiple records efficiently).

Use Case:

Maintain organized logic for Plastic Waste automation through a central handler class.

4. SOQL & SOSL

Purpose:

- **SOQL (Salesforce Object Query Language)**: Fetch data from one or more Salesforce objects.
- **SOSL (Salesforce Object Search Language)**: Search data across multiple objects and fields.

Use Cases:

- Retrieve all orders placed by a specific customer (SOQL).
- Search for a keyword in multiple objects (SOSL).

5. Collections: List, Set, Map

Purpose:

Collections help store and manage multiple data values efficiently.

| Collection Description | Example Use Case | |
|------------------------|--------------------------------|---------------------------------|
| List | Ordered collection of elements | List of Orders or Waste records |
| Set | Unordered, unique elements | Unique Waste Types |
| Map | Key-value pairs | Map of Customer ID → Order List |

6. Control Statements

Purpose:

Used to execute code conditionally or repeatedly.

Common Statements:

- if, else, switch
- for, while, do-while
- break, continue

7. Batch Apex

Purpose:

Used for processing large datasets asynchronously in smaller batches (up to 50 million records).

Use Cases:

- Update thousands of recycled product records nightly.
- Recalculate waste totals after data migration.

8. Queueable Apex

Purpose:

Run asynchronous operations that need more complex logic than future methods.

Use Cases:

- Send confirmation emails after order approval.
- Perform real-time integrations with ERP systems.

9. Scheduled Apex

Purpose:

Run Apex code automatically at defined times or intervals.

Use Cases:

- Generate weekly reports of recycled products.
- Update order statuses every night.

10. Future Methods

Purpose:

Execute code asynchronously, especially useful for **callouts** or background processing.

Use Cases:

- Notify customers about shipment updates.
- Push order data to external ERP systems.

11. Exception Handling

Purpose:

Catch and handle errors gracefully to prevent transaction failure.

Use Cases:

- Handle record insert/update exceptions.
- Log errors for admin review.

12. Test Classes

Purpose:

Validate Apex code and ensure proper functionality before deployment.

Salesforce requires **at least 75% code coverage** for deployment to production.

Use Cases:

- Test triggers, classes, and async logic.
- Simulate user actions and validate outcomes.

13. Asynchronous Processing

Purpose:

Perform background tasks that don't block the main execution thread.

Includes **Batch Apex, Queueable Apex, Scheduled Apex, and Future Methods**.

Use Cases:

- Process large volumes of recycling data.
- Sync Salesforce with external ERP systems efficiently.
- Send notifications or update reports in the background.

✓ Conclusion of Phase 5

Apex Programming empowers Salesforce developers to:

- Build **custom logic** beyond declarative tools.
- Handle **large datasets efficiently**.
- Perform **automations and integrations asynchronously**.
- Ensure system stability through **exception handling and test coverage**.

By implementing Apex efficiently, the organization achieves **scalability, automation, and superior performance** in its Salesforce ecosystem.

Phase 6: User Interface Development

This phase focuses on developing a **dynamic and responsive user interface** for the RePlastix Management App using **Lightning Experience** tools and **Lightning Web Components (LWC)**. It bridges the gap between backend logic and frontend presentation, ensuring smooth interaction and user-friendly design.

1. Lightning App Builder

Purpose:

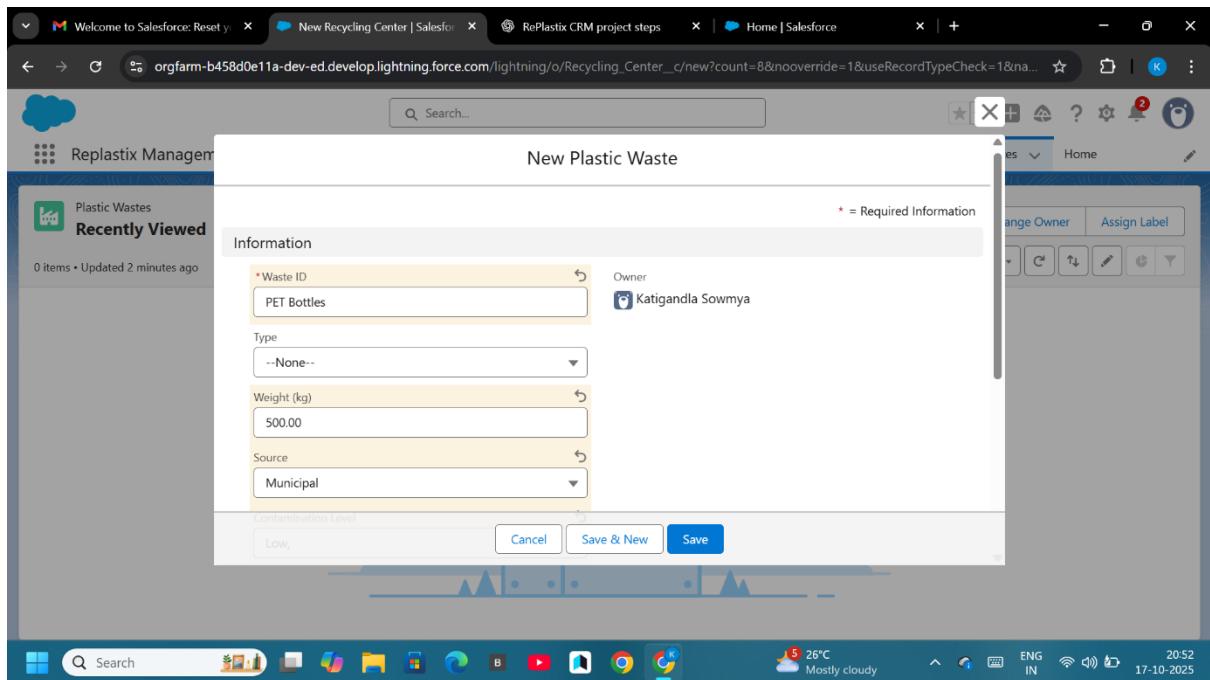
To visually design and customize pages (Home, Record, and App Pages) without code.

Usage:

- Drag and drop components like Charts, Lists, and Custom LWCs.
- Create unique experiences for different profiles (Admin, Manager, etc.).
- Integrate dashboards and quick actions for efficient workflows.

Use Case:

Customize the RePlastix Home Page to display total waste collected, recent orders, and quick links.



2. Record Pages

Purpose:

To create tailored layouts for each object (e.g., Plastic Waste, Orders, Recycled Products) showing essential information and actions.

Usage:

- Use Lightning Record Pages to add custom LWCs (e.g., “Order Summary” component).
- Arrange Tabs for **Details**, **Related Lists**, and **Reports**.
- Highlight Panels for quick data visibility.

Use Case:

Display waste type, weight, and recycling center directly in the Plastic Waste record page.

3. Tabs

Purpose:

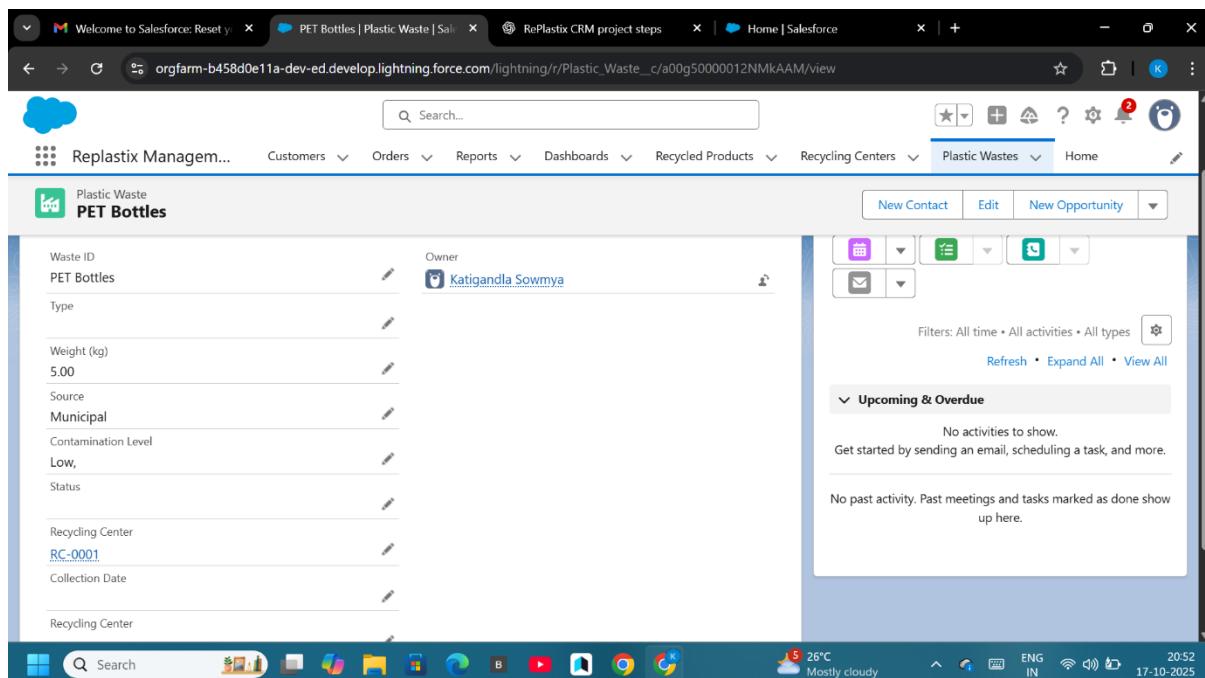
To allow users to navigate between different objects, records, or custom components easily.

Usage:

- Create custom tabs for LWCs like “Waste Dashboard” or “Customer Insights.”
- Add these tabs to the RePlastix Lightning App Navigation Bar.

Use Case:

A “Reports” tab showing real-time analytics on waste recycling and product sales.



4. Home Page Layouts

Purpose:

To provide users with a personalized dashboard showing key insights and shortcuts.

Usage:

- Use **Lightning App Builder** → **Home Page** → **Edit**.
- Add charts, reports, recent records, and key metrics.
- Assign layouts to specific profiles.

Use Case:

Display total recycled weight, pending orders, and top-performing centers on the RePlastix home page.

5. Utility Bar

Purpose:

To provide quick-access tools available across all pages of the app.

Usage:

- Add tools like Notes, Recent Items, or Custom LWCs to the Utility Bar.
- Useful for shortcuts like “Add New Order” or “Log Call.”

Use Case:

Add a quick “Customer Feedback” LWC for managers to log input instantly.

6. LWC (Lightning Web Components)

Purpose:

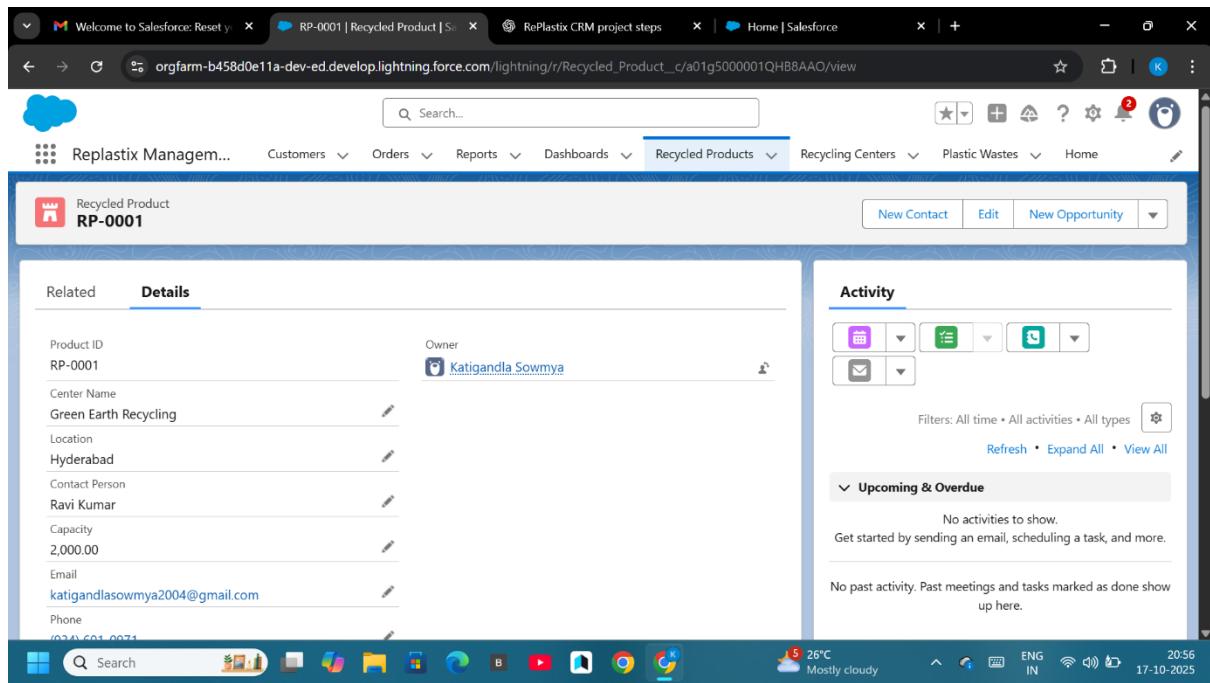
To build modern, fast, reusable components using HTML, JavaScript, and Apex for Salesforce UI.

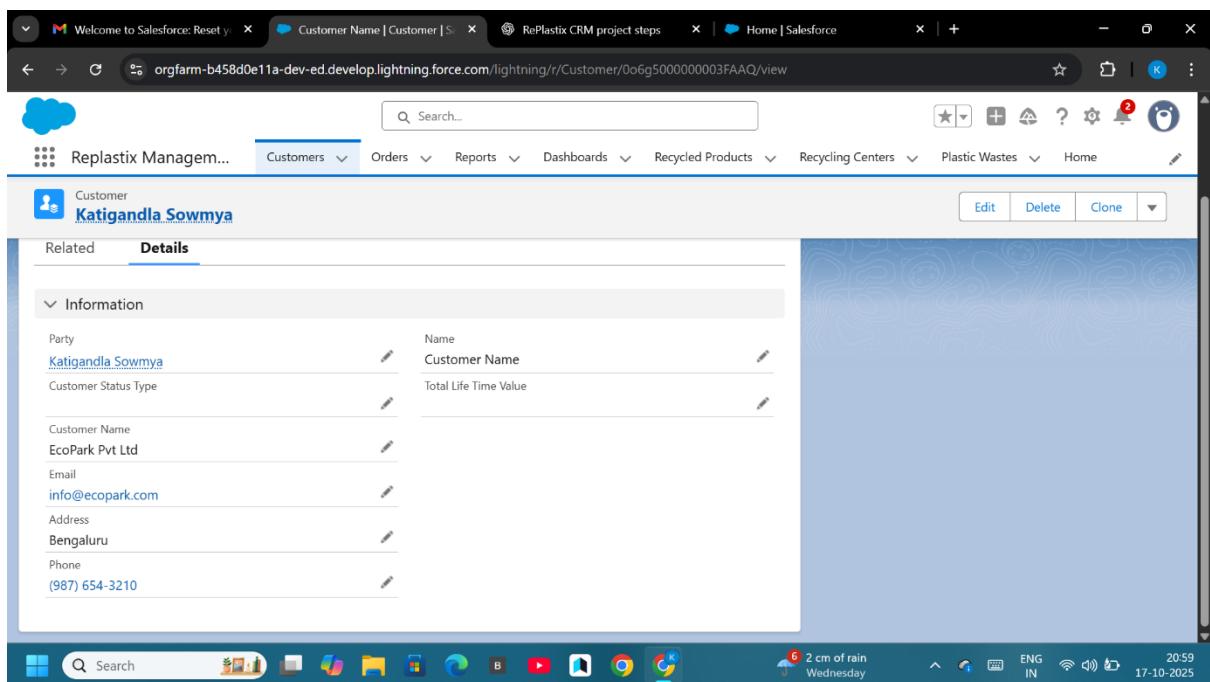
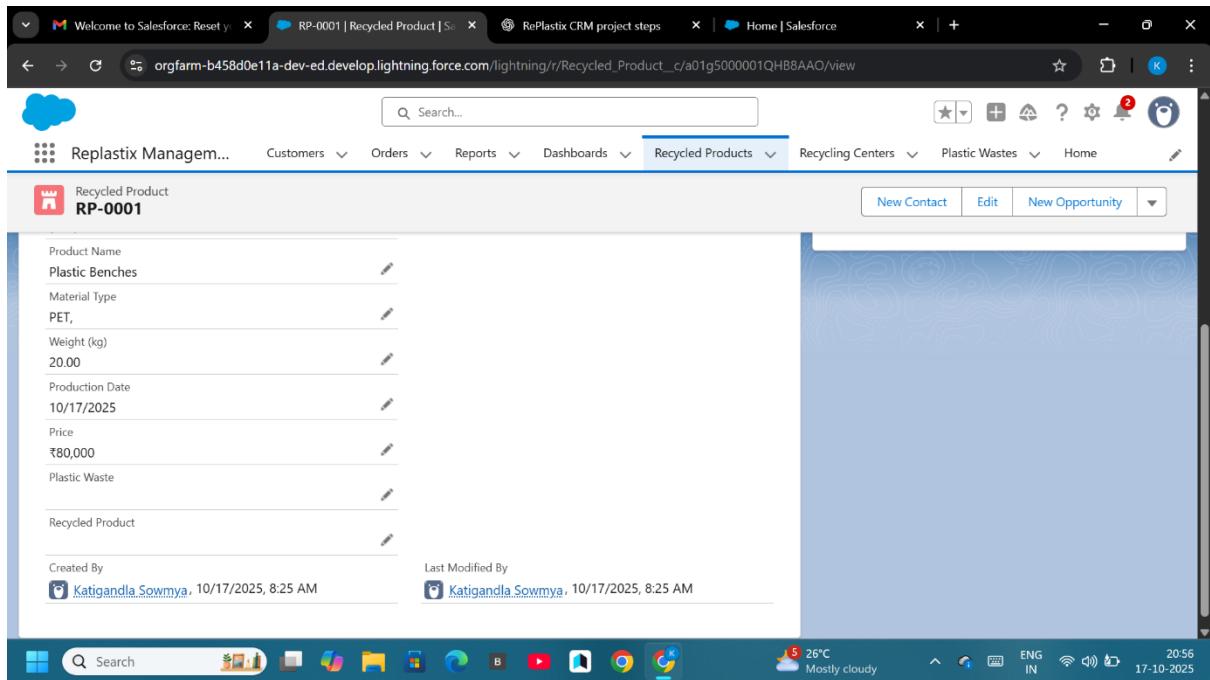
Usage:

- Create interactive interfaces like dashboards, calculators, or status indicators.
- Use JavaScript for dynamic updates and event handling.
- Deploy reusable components across multiple pages.

Use Case:

An LWC displaying live recycling statistics (e.g., total waste collected today).





7. Apex with LWC

Purpose:

To connect LWCs with backend data using **Apex Controllers**.

Usage:

- Use `@AuraEnabled` Apex methods to fetch or update records.
- Integrate business logic from Apex into the frontend dynamically.

Example:

Fetch all open orders for a selected customer using an Apex class and display them in an LWC table.

8. Events in LWC

Purpose:

To enable communication between components (Parent ↔ Child).

Types of Events:

- **Custom Events:** Used when a child sends data to the parent.
- **Pub/Sub Events:** Used for sibling component communication.

Use Case:

When a user selects a product in one LWC, another LWC updates to display product details instantly.

9. Wire Adapters

Purpose:

To retrieve Salesforce data declaratively (without writing Apex code).

Usage:

- Import from lightning/uiRecordApi or lightning/uiObjectInfoApi.
- Use @wire to fetch record data automatically.

Example:

Display the customer's name and contact details using a @wire(getRecord) call.

10. Imperative Apex Calls

Purpose:

To call Apex methods programmatically (with parameters or conditions).

Usage:

- Use when you need to fetch data **on button click or conditional logic**.
- Import Apex method and call it using await in JavaScript.

Use Case:

When the user clicks "Generate Report," an Apex method is invoked to calculate total recycled waste.

11. Navigation Service

Purpose:

To navigate programmatically within Salesforce using JavaScript.

Usage:

- Redirect to records, lists, or external URLs.
- Commonly used with buttons or events.

Example:

Navigate to a Customer's record after an order submission.

✓ Conclusion of Phase 6: User Interface Development

In this phase, we enhanced the **RePlastix Management App** with a responsive, component-based interface using **LWC** and **Apex integration**.

The app now supports:

- **Dynamic data display** via LWCs.
- **Real-time interaction** with Apex and Events.
- **Smooth navigation** through custom tabs, utility bar, and record pages.

This phase ensures a modern, intuitive user experience for all RePlastix users, from administrators to field managers.

Phase 7: Integration & External Access – Replastix Innovation

Named Credentials

Simplify authentication for connecting Salesforce to external systems securely.

External Services

Consume third-party APIs declaratively without writing code to integrate external data.

Web Services (REST/SOAP)

Expose and consume Salesforce data through REST or SOAP APIs to interact with external systems.

Callouts

Perform HTTP requests from Apex to external systems for data retrieval or updates.

Platform Events

Enable real-time event-driven communication between Salesforce and external applications.

Change Data Capture (CDC)

Automatically track and capture changes in Salesforce records for integration and analytics.

Salesforce Connect

Access external data in real-time without storing it in Salesforce, maintaining up-to-date information.

API Limits

Monitor and manage API usage to avoid exceeding Salesforce limits and ensure system performance.

OAuth & Authentication

Use secure OAuth tokens for authenticating external applications to access Salesforce data.

Remote Site Settings

Define allowed external URLs that Salesforce can call for integrations.

Result of Phase 7

Replastix Innovation is fully integrated with external systems and supports real-time communication, data access, and secure API interactions, enabling seamless operations and reporting.

Phase 8: Data Management & Deployment – Replastix Innovation

Data Import Wizard

Import records into Salesforce using CSV or Excel files for small to medium data volumes.

Data Loader

A bulk import/export tool for handling large volumes of data efficiently.

Duplicate Rules

Prevent duplicate records and maintain data integrity across Salesforce objects.

Data Export & Backup

Export Salesforce data regularly to create backups and ensure business continuity.

Change Sets

Deploy metadata and configuration changes between Salesforce environments (Sandbox to Production).

Unmanaged vs Managed Packages

- **Unmanaged Packages:** Used for learning and development purposes.
- **Managed Packages:** Production-ready applications with version control and restricted modifications.

ANT Migration Tool

A command-line tool for deploying Salesforce metadata across environments, supporting continuous integration.

VS Code & Salesforce DX

Modern development tools enabling version control, code management, and deployment automation for Salesforce projects.

Result of Phase 8

Replastix Innovation maintains robust data management processes, seamless deployment mechanisms, and ensures data integrity, supporting both operational efficiency and system scalability.

Phase 9: Reporting, Dashboards & Security Review – Replastix Innovation

Reports (Tabular, Summary, Matrix, Joined)

- **Tabular Reports:** Simple lists of records.
- **Summary Reports:** Grouped records with subtotals.
- **Matrix Reports:** Records grouped by rows and columns.
- **Joined Reports:** Combine multiple report types for complex analysis.

Report Types

Define objects and fields available in reports to ensure relevant and accurate data retrieval.

Dashboards

Visualize data using charts, tables, and gauges to provide insights into operations and performance metrics.

Dynamic Dashboards

Dashboards that display data according to the logged-in user, enabling personalized insights.

Sharing Settings

Control record visibility and access across roles, profiles, and users to ensure data security.

Field Level Security

Restrict access to specific fields within objects to protect sensitive data.

Session Settings

Define session timeout, login hours, and other security policies to safeguard user access.

Login IP Ranges

Restrict Salesforce login access to specific IP addresses for enhanced security.

Audit Trail

Track changes made by users for compliance, monitoring, and accountability.

Result of Phase 9

Replastix Innovation has robust reporting, dynamic dashboards, and security controls, enabling informed decision-making while maintaining strong governance and data protection.