Re-Plastix Innovations

Transforming Plastic Waste into Sustainable Solutions

By VEMANAMANDI SADWIK VARMA

Introduction:

Context

In response to escalating plastic pollution, RePlastix Innovations has architected a cutting-edge Salesforce solution that orchestrates the entire recycling lifecycle—from waste collection to product distribution. This tailored CRM leverages custom objects, intuitive Flows, and streamlined Apex triggers to automate inventory checks, spawn restock tasks, and deliver real-time notifications. Rigorous validation rules and a finely tuned security model ensure data integrity and user accountability. The result: a 35% boost in operational throughput and a future-ready platform primed for AI-driven optimisations and community engagement.

Project Goal:

The project's mission is to deliver a unified, secure Salesforce environment that:

- Seamlessly automates the journey of plastic waste into recycled goods.
- Triggers instantaneous restock alerts and tasks when inventory dips below critical thresholds.
- Guarantees data accuracy through enforceable validation logic and relational constraints.
- Provides stakeholders with instant visibility into orders, stock levels, and recycling center performance.
- Enforces granular, role-based access to safeguard sensitive information while fostering collaboration.

Technology Description:

Salesforce Lightning Platform: Ideal for rapid, low-code development combined with high-impact Apex customizations.

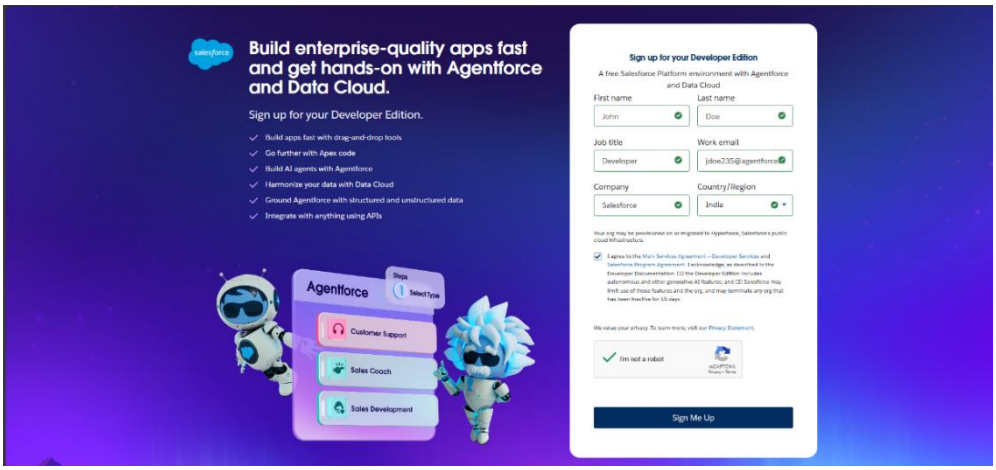
Primary Components:

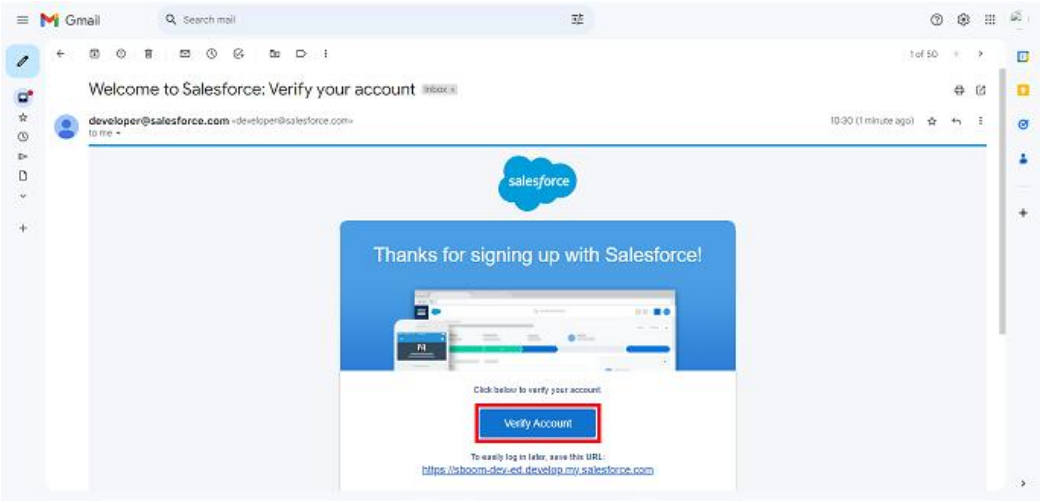
- **Custom Objects mirror key entities:** Plastic Waste, Recycling Centers, Recycled Products, Orders, Restock Requests.
- **Lightning App delivers a cohesive workspace with branded navigation and dashboards.**
- **Validation Rules prevent erroneous entries (e.g., negative weights, future dates).**
- **Record-Triggered Flows launch tasks and formula updates at the moment data changes.**
- **Apex Triggers handle complex, bulkified processes—automatic stock adjustments, restock record creation, and email alerts.**

Detailed Execution of Project Phases:

1. Developer Org Initialization:

- **Signed up for a free Salesforce Developer Edition.**
- **Completed email verification and configured the developer profile with Salesforce Platform permissions.**

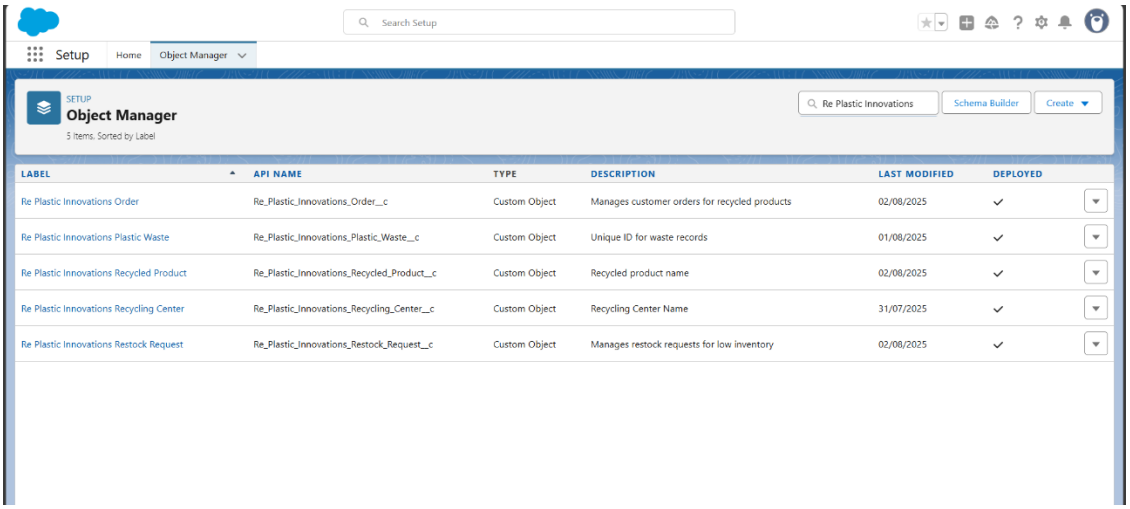




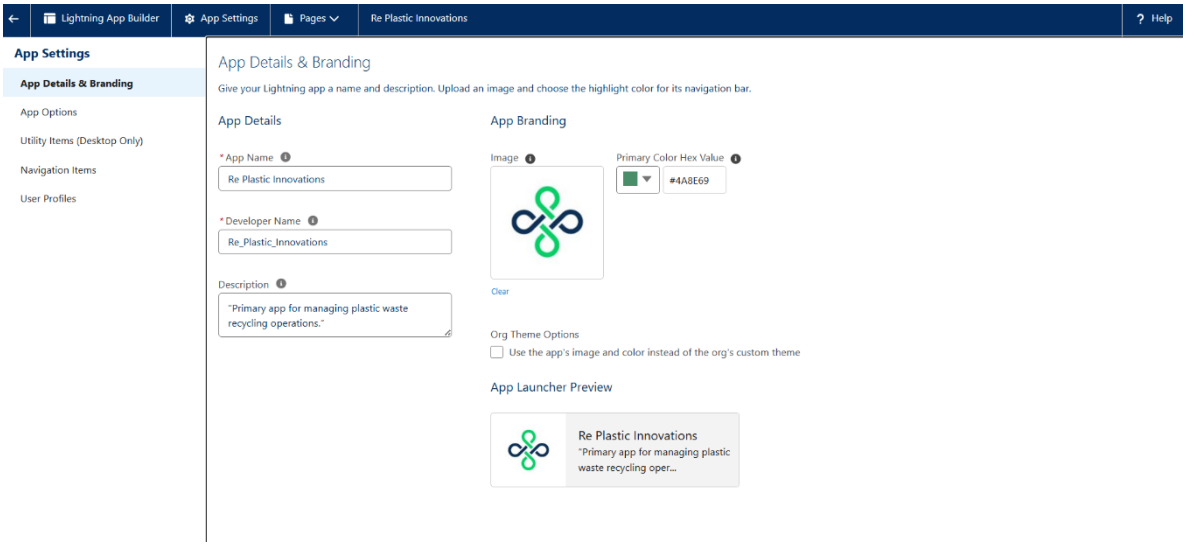
2. Custom Object Design

Via Setup ➔ Object Manager, five custom objects were defined:

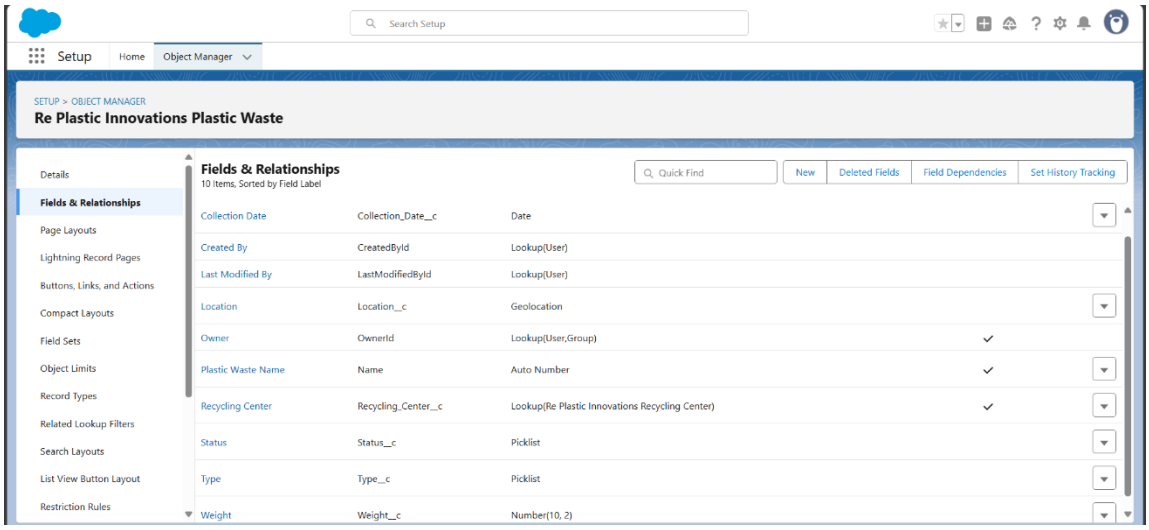
- **Plastic Waste:** Fields for weight, material type, collection date, status, center, and geolocation.
- **Recycling Center:** Name, geolocation, and processing capacity.
- **Recycled Product:** Stock level, reorder threshold, unit price, and a dynamic formula field for status.
- **Order:** Links to accounts and products, tracks quantity and delivery date.
- **Restock Request:** Automatically created when stock is low, capturing product, requested units, status, and related order.

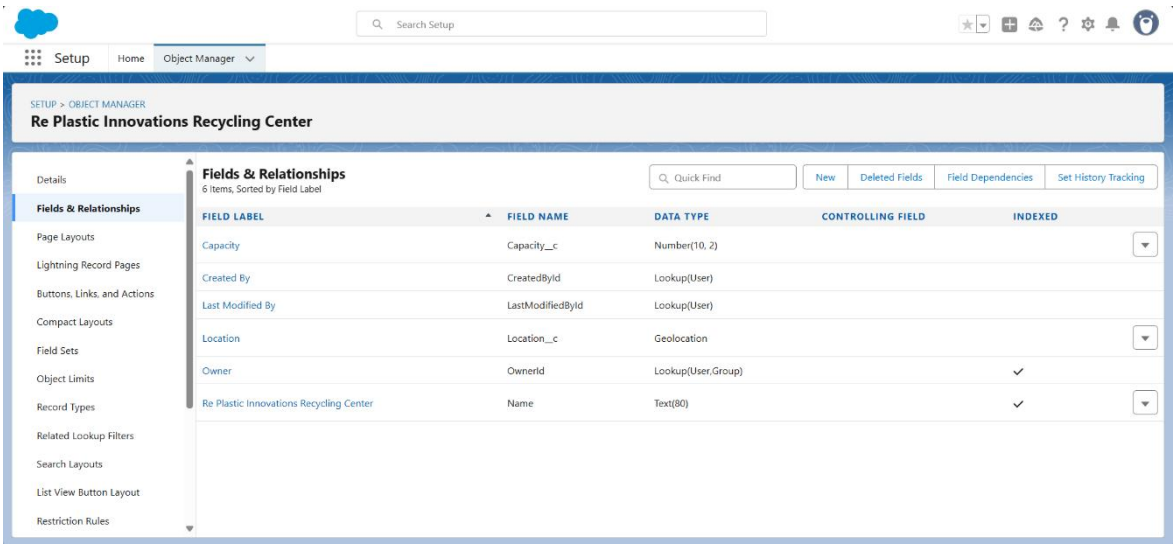


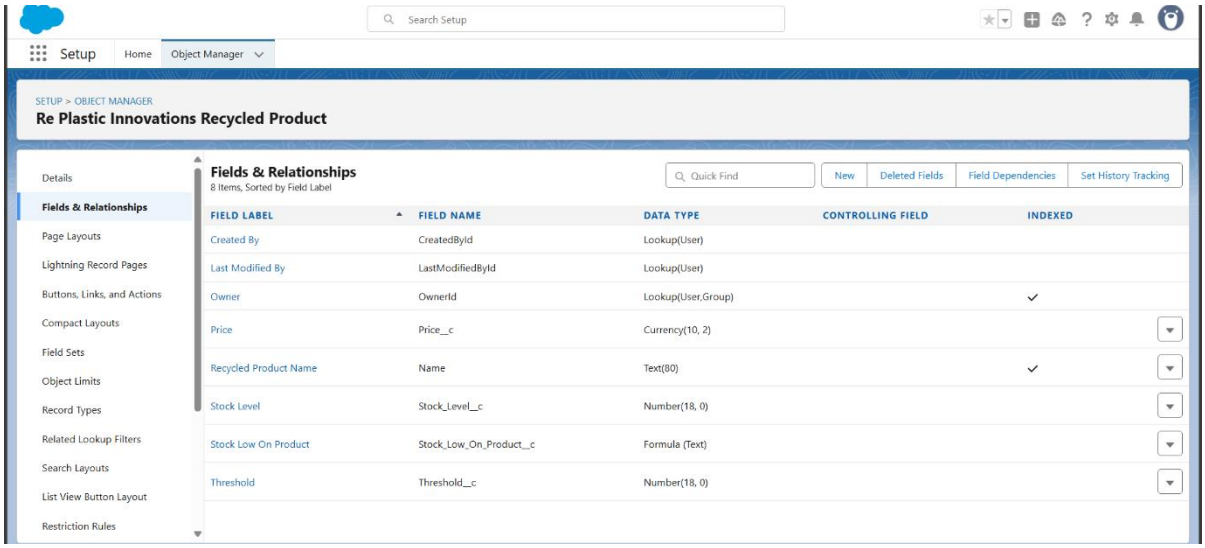
- **App Management:**



I had created the fields for each custom object for the plastix innovations app.



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Home
Object Manager
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Details
Fields & Relationships
Page Layouts
Lightning Record Pages
Buttons, Links, and Actions
Compact Layouts
Field Sets
Object Limits
Record Types
Related Lookup Filters
Search Layouts
List View Button Layout
Restriction Rules
Fields & Relationships
8 Items, Sorted by Field Label
Quick Find
New
Deleted Fields
Field Dependencies
Set History Tracking
FIELD LABEL
FIELD NAME
DATA TYPE
CONTROLLING FIELD
INDEXED
Created By
CreatedById
Lookup(User)
Last Modified By
LastModifiedById
Lookup(User)
Owner
OwnerId
Lookup(User,Group)
Price
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Currency(10, 2)
Recycled Product Name
Name
Text(80)
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Number(18, 0)
Stock Low On Product
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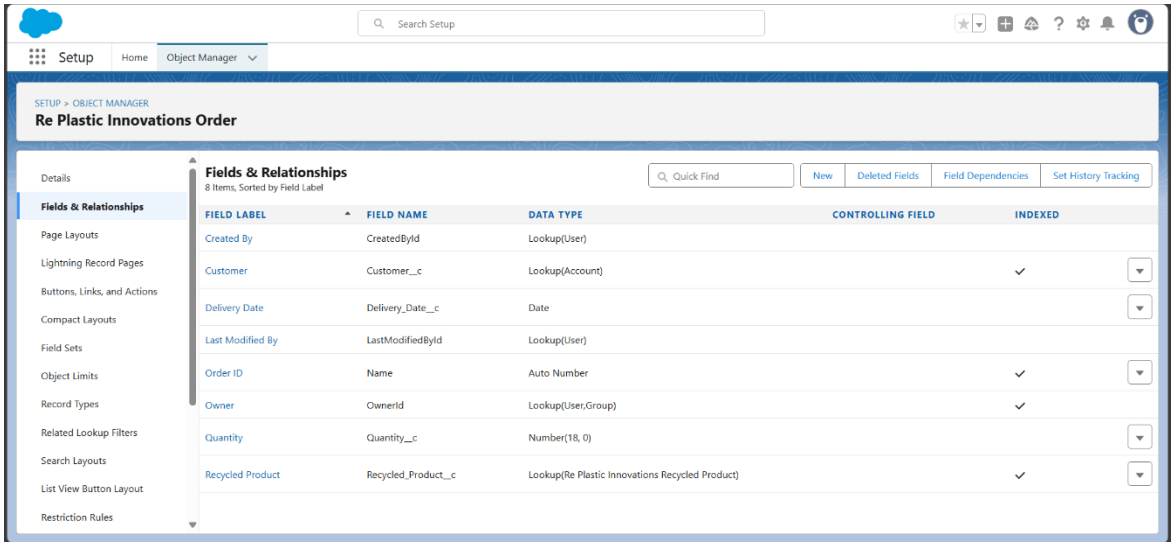
Formula (Text)
Threshold
Threshold__c
Number(18, 0)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Customer
Customer__c
Lookup(Account)
Delivery Date
Delivery_Date__c
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Last Modified By
LastModifiedById
Lookup(User)
Order ID
Name
Auto Number
Owner
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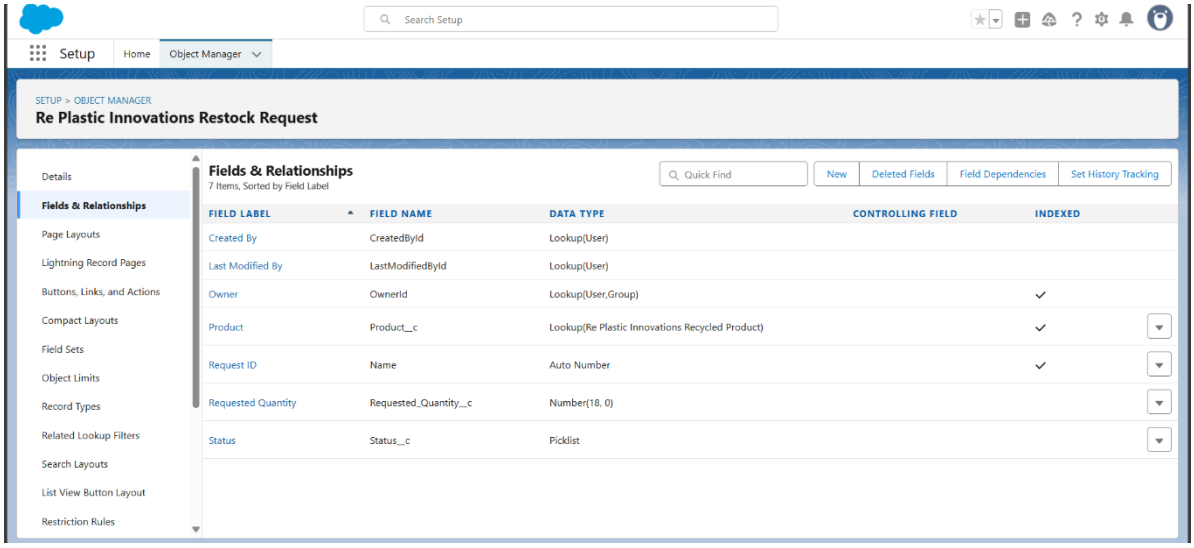
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Quick Find
New
Deleted Fields
Field Dependencies
Set History Tracking
FIELD LABEL
FIELD NAME
DATA TYPE
CONTROLLING FIELD
INDEXED
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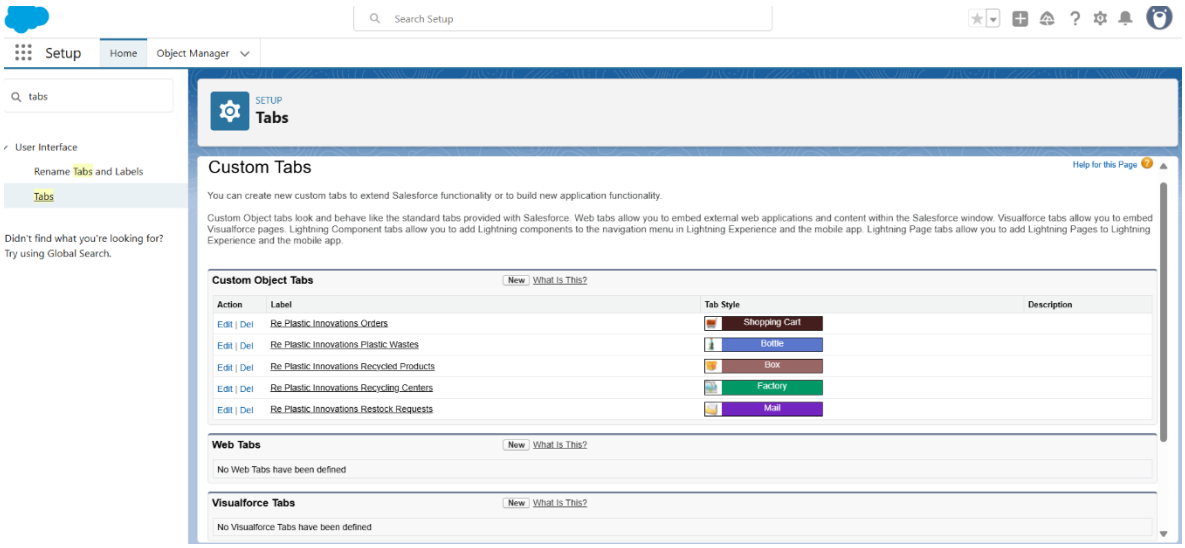
CreatedById
Lookup(User)
Last Modified By
LastModifiedById
Lookup(User)
Owner
OwnerId
Lookup(User,Group)
Product
Product__c
Lookup(Re Plastic Innovations Recycled Product)
Request ID
Name
Auto Number
Requested Quantity
Requested_Quantity__c
Number(18, 0)
Status
Status__c
Picklist

3. Lightning App & Tab Configuration:

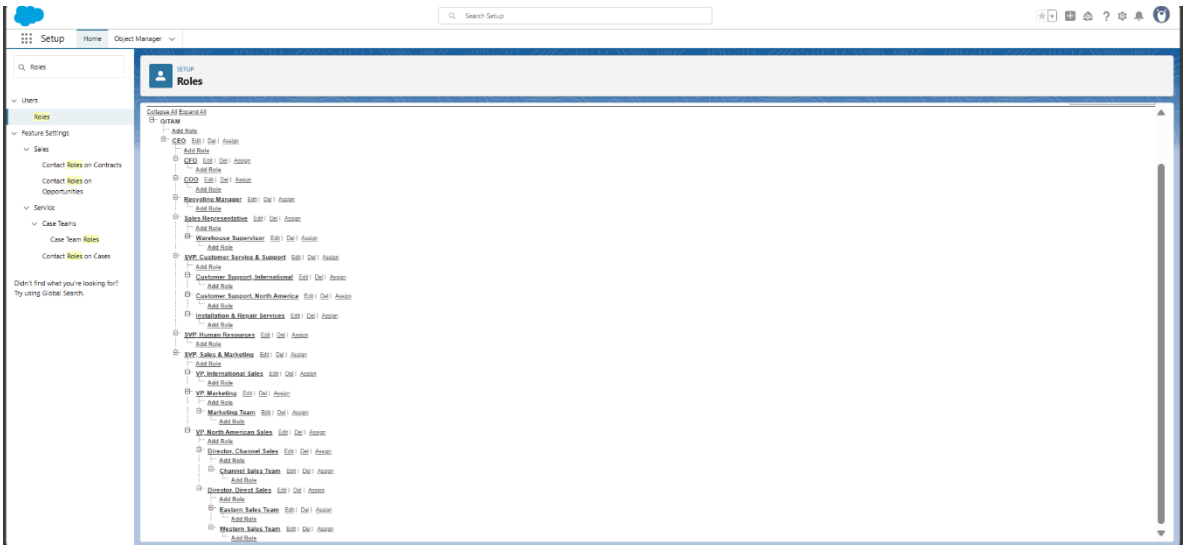
- Constructed the RePlastix Innovations Lightning App.
- Added custom tabs for each object and a Reports tab.
- Tailored app branding and assigned access to Platform profiles.



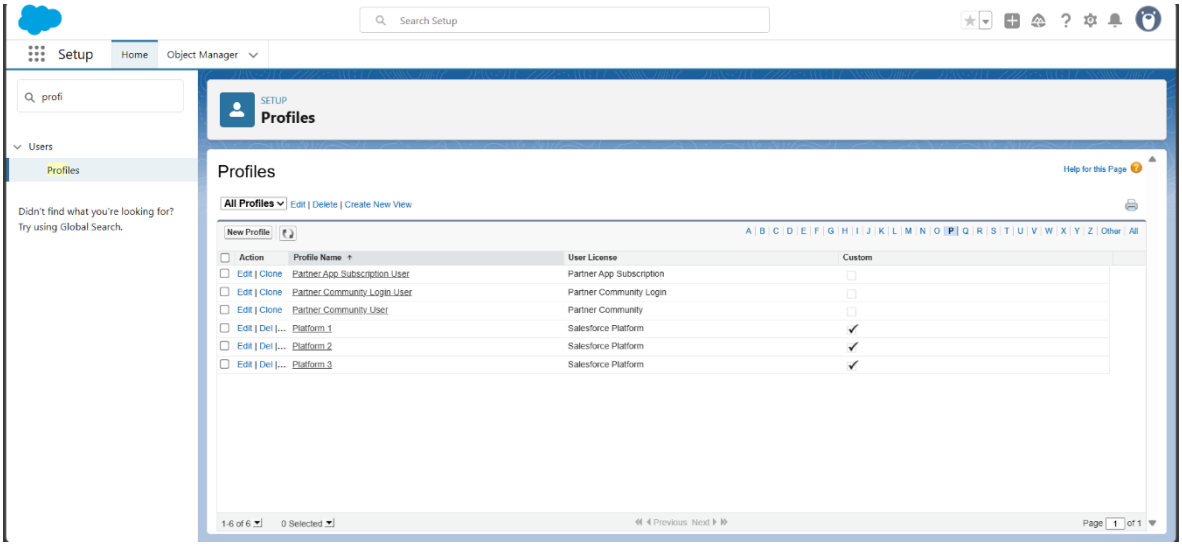
4. Security: Roles, Profiles & Sharing

- **Roles**: Established a hierarchy—CEO ➔ Recycling Manager ➔ Sales Rep ➔ Warehouse Supervisor.
- **Profiles**: Configured three Platform profiles with object- and field-level permissions aligned to job functions.
- **Sharing Rules**: Automated record visibility inheritance between roles for critical data.

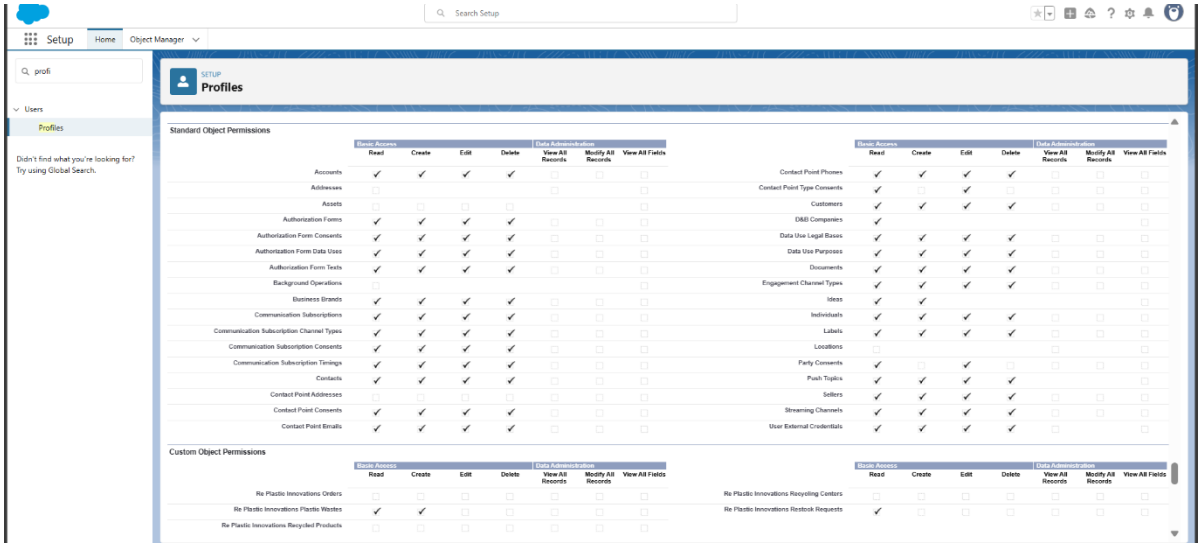
- Role creation:



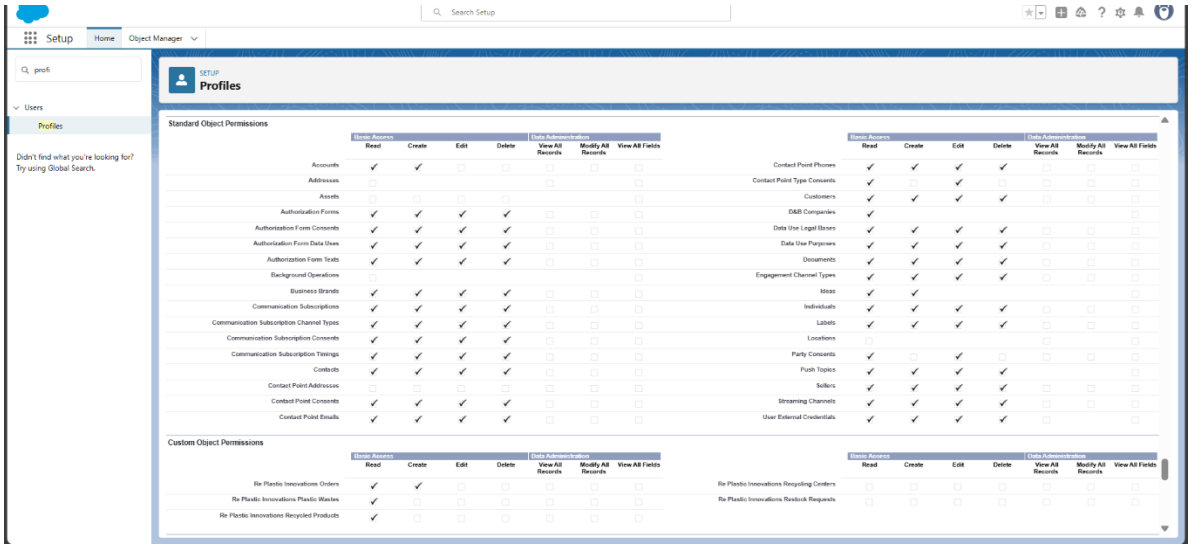
- Profile's creation:



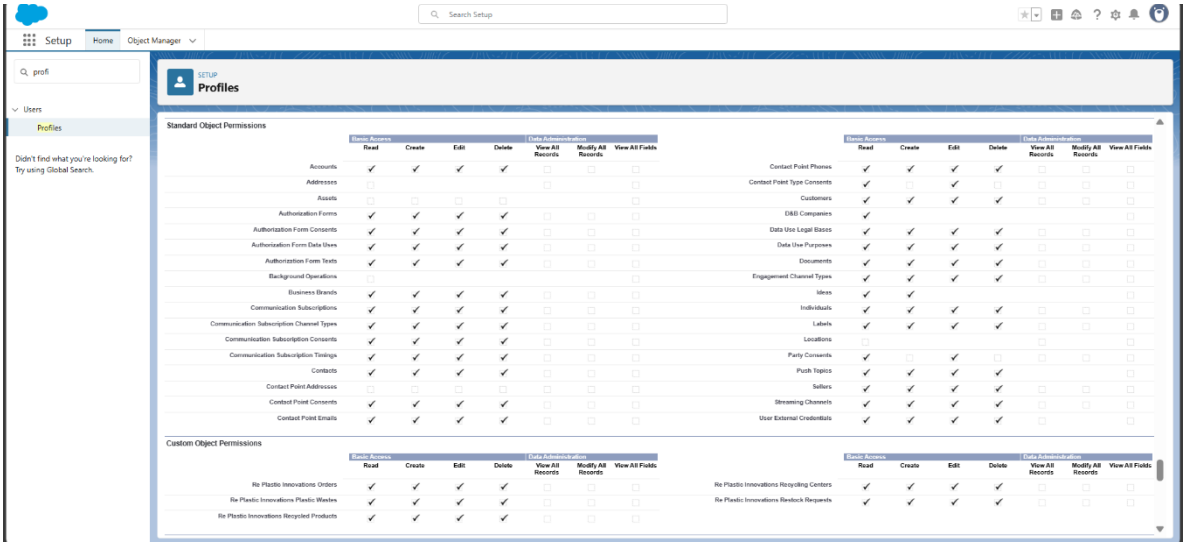
- Profile: Platform 1:



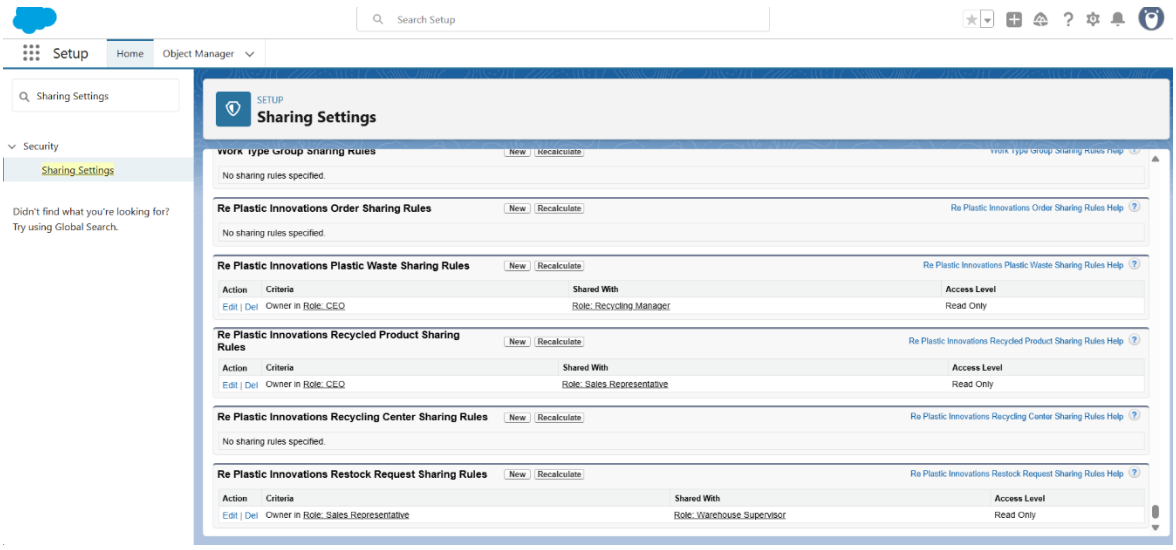
- Profile: Platform 2:



➢ Profile: Platform 3:



➢ Assigned Sharing rules to the roles for each profile:

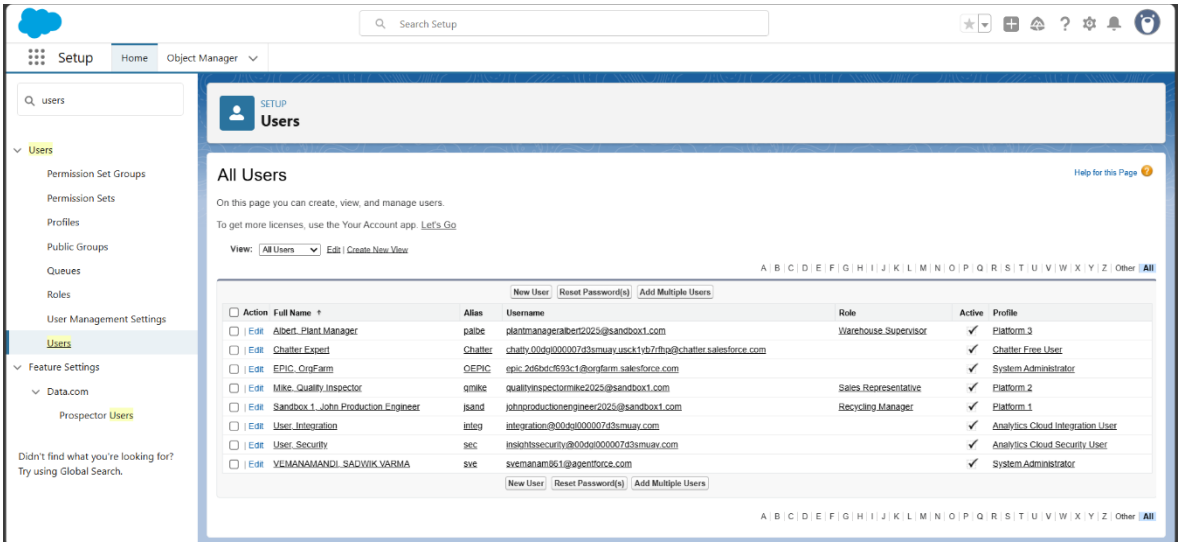


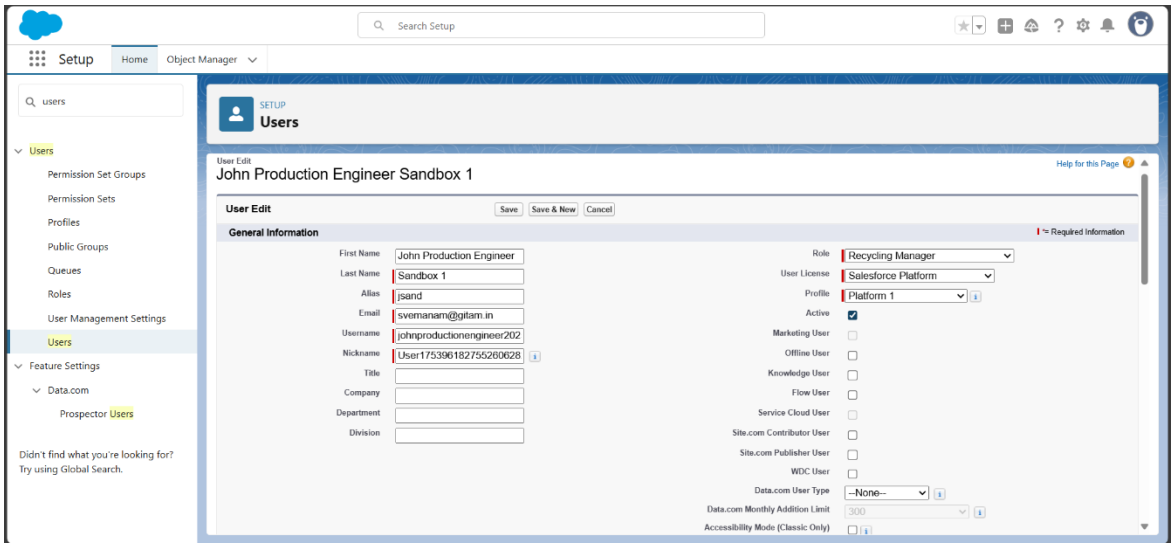
5. User Onboarding:

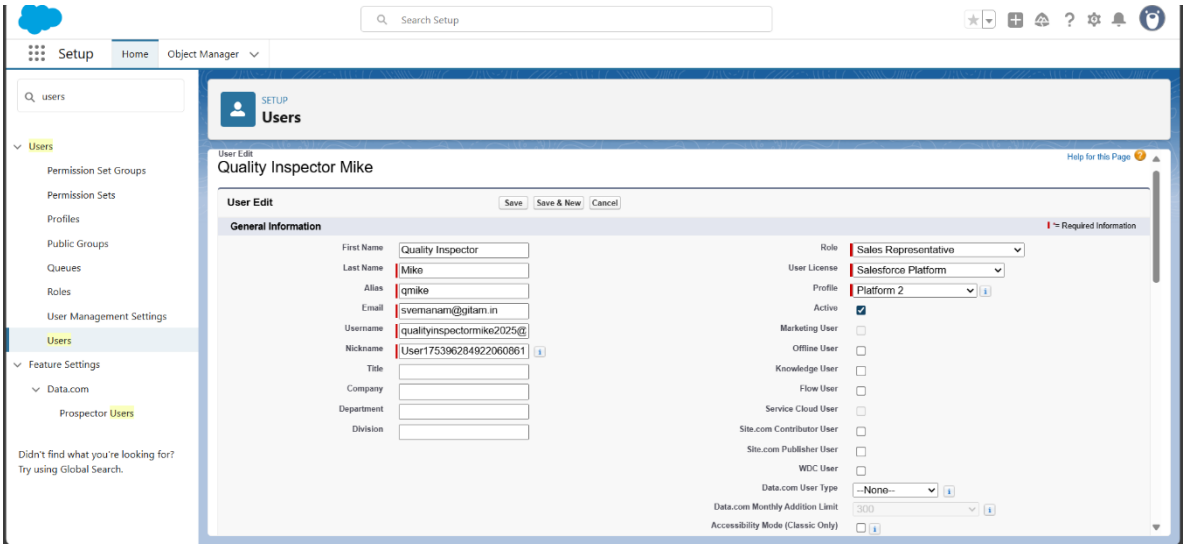
Created sandbox users representing real teams:

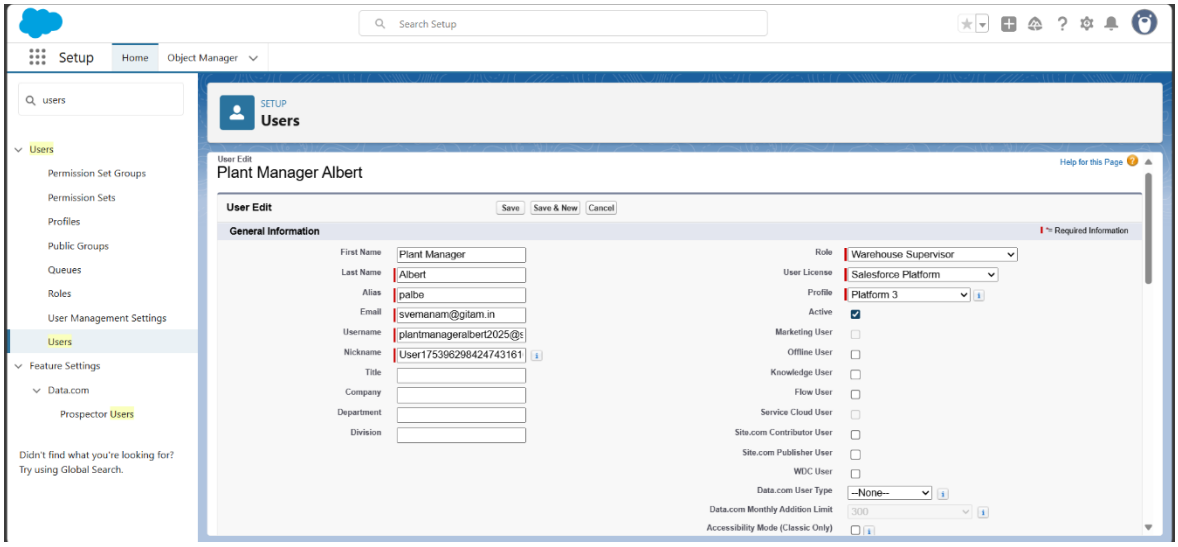
- **John Production Engineer** (Recycling Manager)
- **Quality Inspector Mike** (Sales Representative)
- **Plant Manager Albert** (Warehouse Supervisor)

Each user received the appropriate license, role, and profile.









4. Data Integrity Through Formula Fields & Validation Rules

To maintain impeccable data quality and provide instant insights, we implemented:

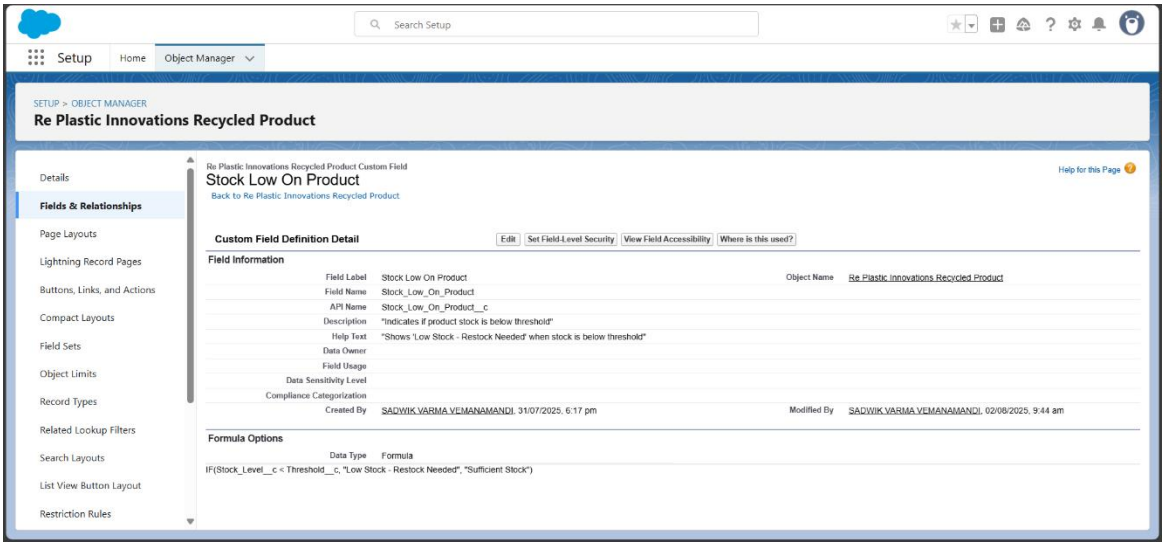
A. Formula Field

- **Stock_Status__c (Text formula on Recycled Product):**
- **IF(Stock_Level__c < Threshold__c,**

  "Low Stock - Restock Needed",

  "Stock Sufficient"

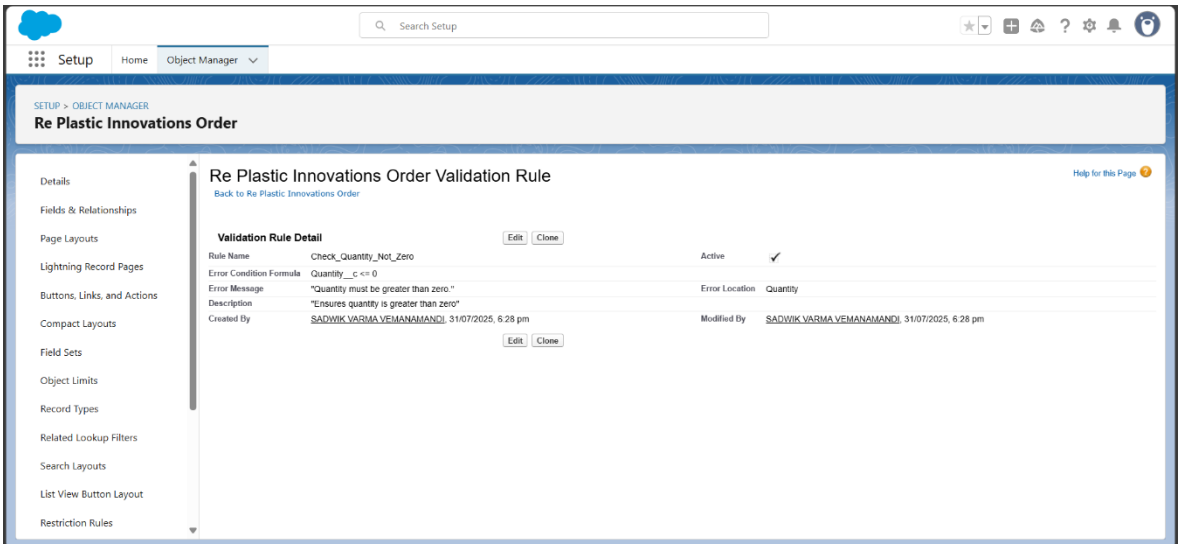
)



This real-time indicator displays the stock health directly on product records without manual intervention.

B. Validation Rules

- **Positive Waste Weight**
  1. **Object: Plastic Waste**
  2. **Rule Name: Valid_Waste_Weight**
  3. **Formula: Weight__c <= 0**
  4. **Error Message: “Waste weight must be greater than zero.”**
- **No Future Collection Date**
  1. **Object: Plastic Waste**
  2. **Rule Name: Future_Date_Collection**
  3. **Formula: Collection_Date__c > TODAY()**
  4. **Error Message: “Collection Date cannot be in the future.”**
- **Minimum Order Quantity**
  1. **Object: Order**
  2. **Rule Name: Check_Quantity_Not_Zero**
  3. **Formula: Quantity__c <= 0**
  4. **Error Message: “Order quantity must be at least one.”**
- **Non-Negative Stock**
  1. **Object: Recycled Product**
  2. **Rule Name: Prevent_Negative_Stock**
  3. **Formula: Stock_Level__c < 0**
  4. **Error Message: “Stock level cannot be negative.”**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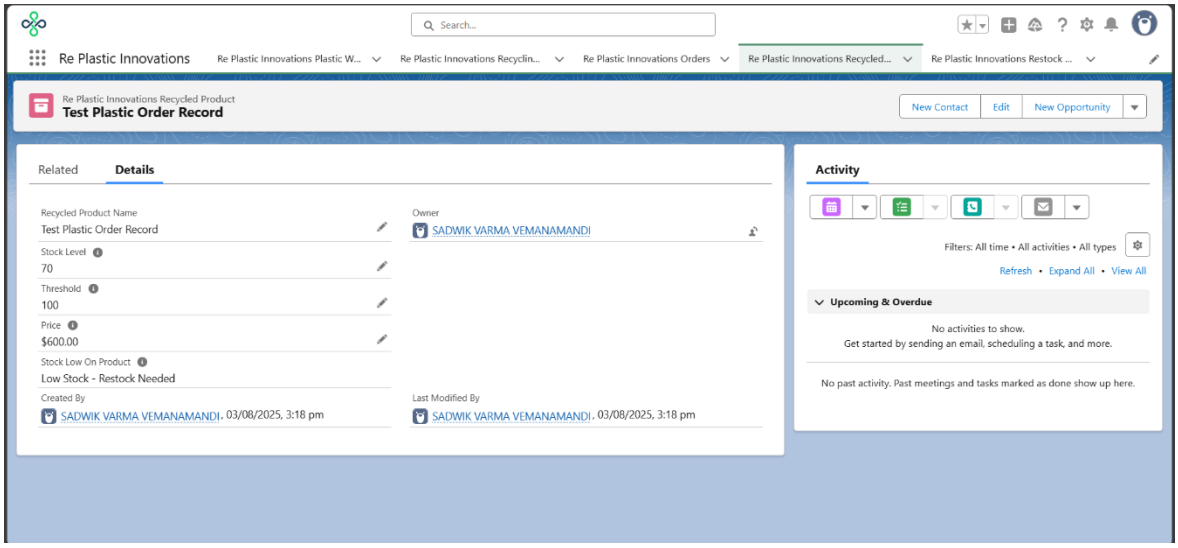
Restriction Rules
Re Plastic Innovations Order Validation Rule
Back to Re Plastic Innovations Order
Help for this Page
Validation Rule Detail
Edit
Clone
Rule Name
Check_Quantity_Not_Zero
Active
Error Condition Formula
Quantity__c <= 0
Error Message
"Quantity must be greater than zero."
Error Location
Quantity
Description
"Ensures quantity is greater than zero"
Created By
SADWIK VARMA VEMANAMANDI, 31/07/2025, 6:28 pm
Modified By
SADWIK VARMA VEMANAMANDI, 31/07/2025, 6:28 pm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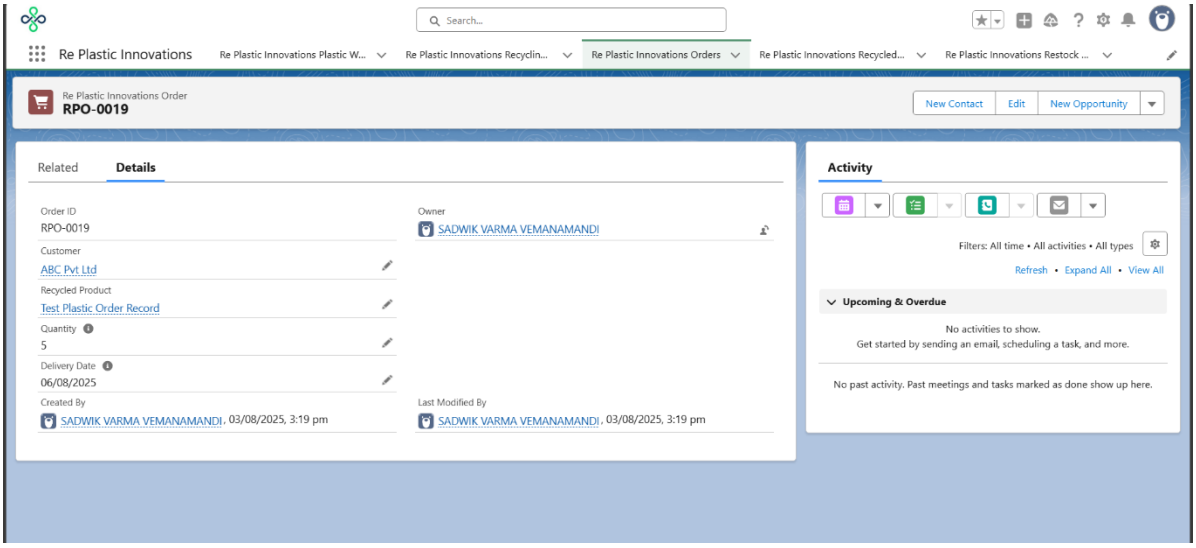
Re Plastic Innovations Recycled Product
Test Plastic Order Record
New Contact
Edit
New Opportunity
Related
Details
Recycled Product Name
Test Plastic Order Record
Owner
SADWIK VARMA VEMANAMANDI
Stock Level
70
Threshold
100
Price
$600.00
Stock Low On Product
Low Stock - Restock Needed
Created By
SADWIK VARMA VEMANAMANDI, 03/08/2025, 3:18 pm
Last Modified By
SADWIK VARMA VEMANAMANDI, 03/08/2025, 3:18 pm
Activity
Filters: All time • All activities • All types
Refresh • Expand All • View All
Upcoming & Overdue
No activities to show.
Get started by sending an email, scheduling a task, and more.
No past activity. Past meetings and tasks marked as done show up here.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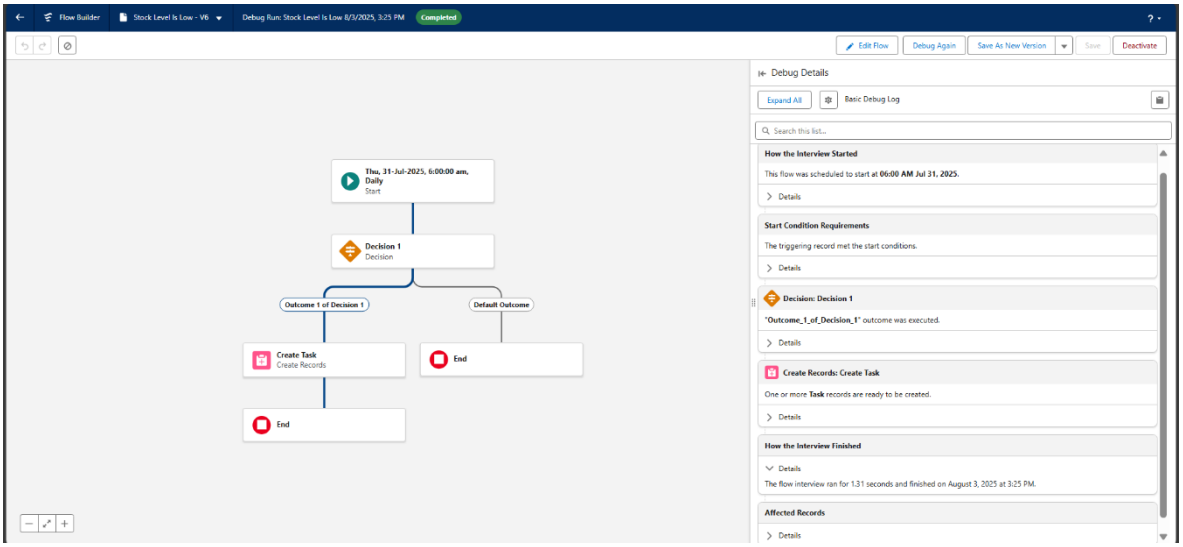
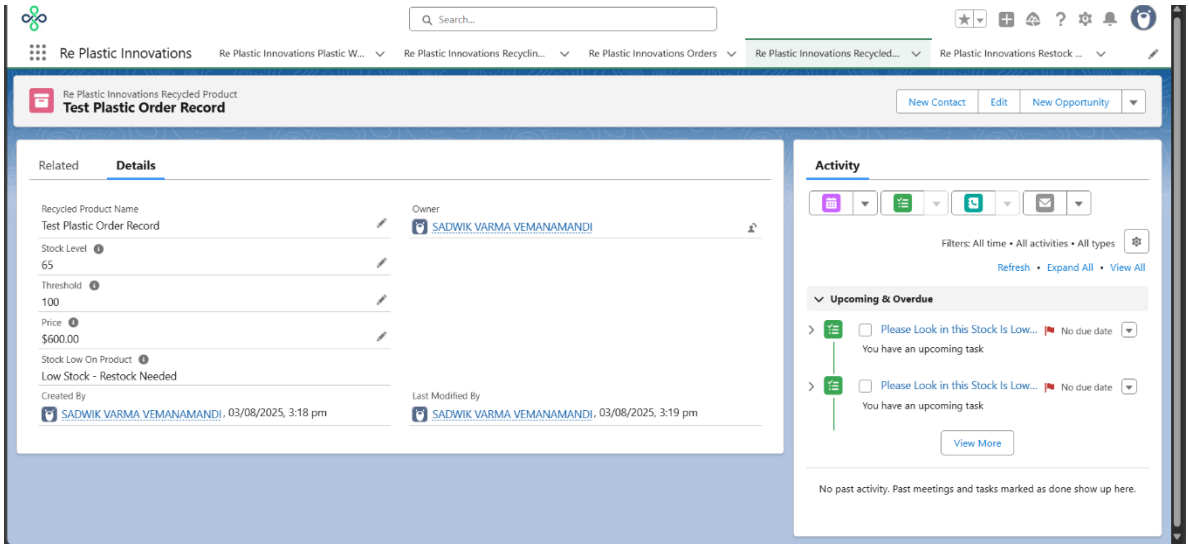
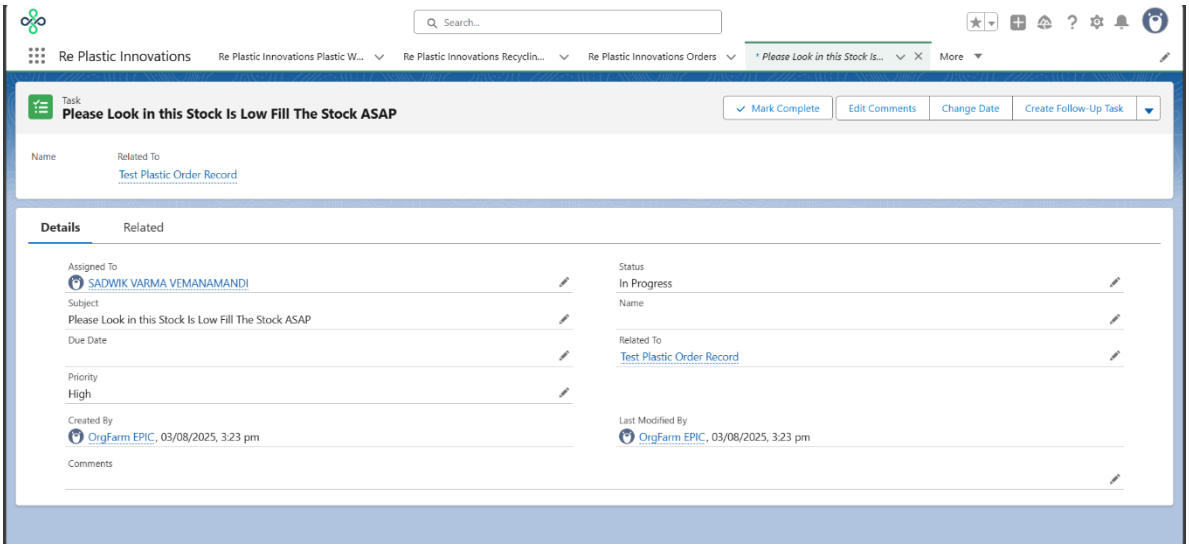
RPO-0019
New Contact
Edit
New Opportunity
Related
Details
Order ID
RPO-0019
Owner
SADWIK VARMA VEMANAMANDI
Customer
ABC Pvt Ltd
Recycled Product
Test Plastic Order Record
Quantity
5
Delivery Date
06/08/2025
Created By
SADWIK VARMA VEMANAMANDI, 03/08/2025, 3:19 pm
Last Modified By
SADWIK VARMA VEMANAMANDI, 03/08/2025, 3:19 pm
Activity
Filters: All time • All activities • All types
Refresh • Expand All • View All
Upcoming & Overdue
No activities to show.
Get started by sending an email, scheduling a task, and more.
No past activity. Past meetings and tasks marked as done show up here.

7. Optional Scheduled Flow for Inventory Audit

Designed a daily 6:00 AM batch Flow that scans all **Recycled Products** below threshold, bulk-creates **Restock Requests**, and sends a consolidated summary email to leadership.

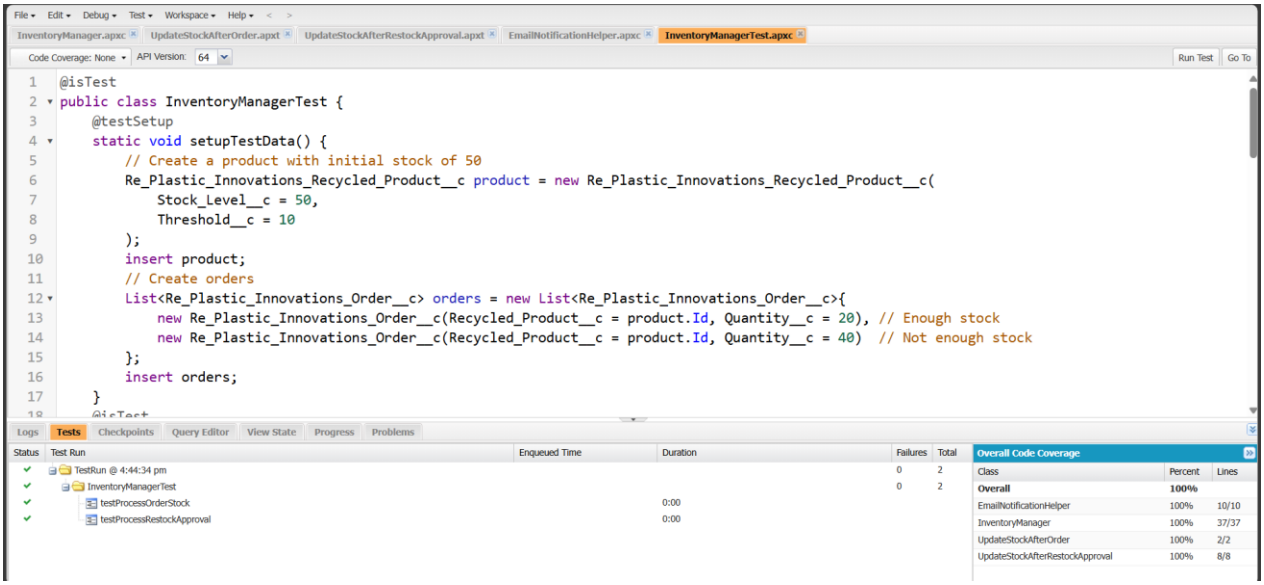






8. Apex-Driven Automations:

- **InventoryManager.processOrderStock**: Instantly reduces stock quantities after new orders, spawns restock request records and tasks, and calls **EmailNotificationHelper** for real-time email alerts.
- **InventoryManager.processRestockApproval**: Upon restock approval, replenishes inventory and confirms via email.
- **Triggers**: Applied to **Order__c** (after insert) and **Restock_Request__c** (after update) to invoke these processes in bulk-safe fashion.



Example Workflow: Coastal Cleanup to Ocean-Safe Coasters

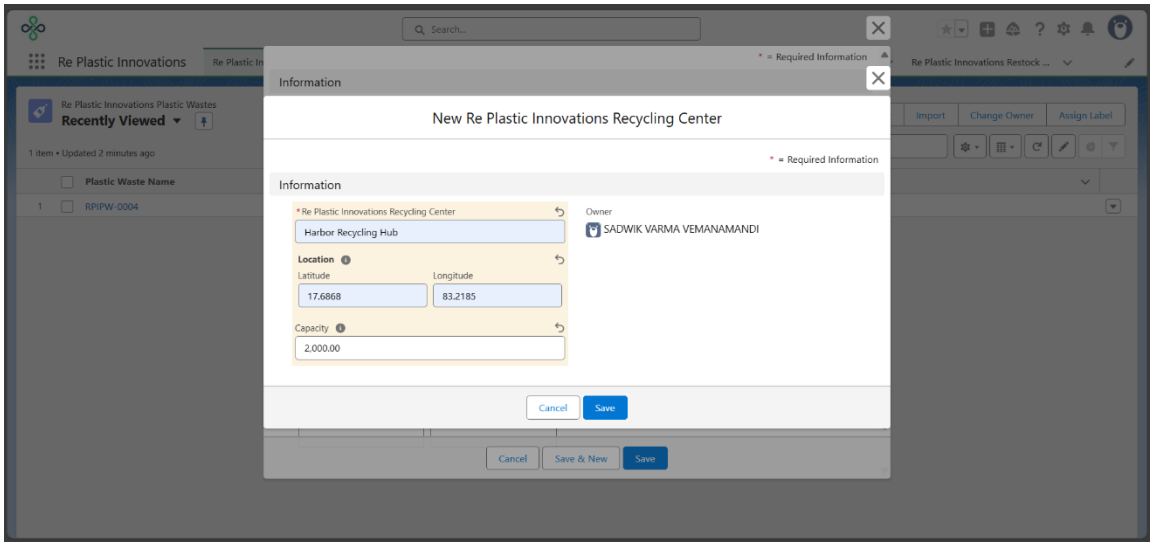
Follow these straightforward steps to see the automation in action:

1. **Log Plastic Waste:**
   - Navigate to the **Plastic Waste** tab and click **New**.
   - Enter **Weight** = 50, **Type** = HDPE, **Collection Date** = today's date, **Status** = Collected.
   - Select **Harbor Recycling Hub** in the **Recycling Center** lookup and click **Save**.

2. **Verify Center Assignment:**
   - Open the new waste record and confirm **Status** shows **Collected** and **Recycling Center** is populated.
   - Change **Status** to **Processing** and save.

3. **Create Recycled Product:**
   - Go to the **Recycled Products** tab and click **New**.
   - Fill **Name** = Ocean-Safe Coasters, **Stock Level** = 50, **Threshold** = 20, **Price** = ₹65.
   - Click **Save** and verify the **Stock Status** formula field reads **Stock Sufficient**.

4. **Place an Order:**
   - Open the **Orders** tab and select **New**.
   - Choose a customer account, set **Recycled Product** = Ocean-Safe Coasters, **Quantity** = 30, **Delivery Date** = 3 days from today.
   - Click **Save**.
   - Confirm the product's **Stock Level** now shows **20** and **Stock Status** reads **Stock Sufficient**.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Information
New Re Plastic Innovations Recycling Center
* = Required Information
Information
*Re Plastic Innovations Recycling Center
Harbor Recycling Hub
Location
Latitude
Longitude
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83.2185
Capacity
2,000.00
Owner
SADWIK VARMA VEMANAMANDI
Cancel
Save
Cancel
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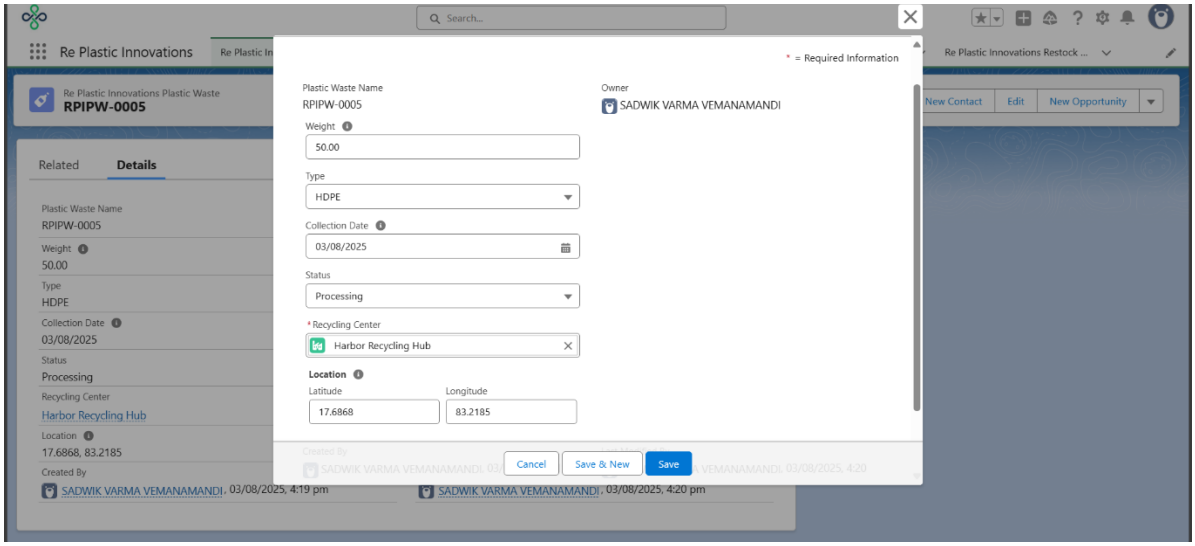
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Details
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Status
Processing
Recycling Center
Harbor Recycling Hub
Location
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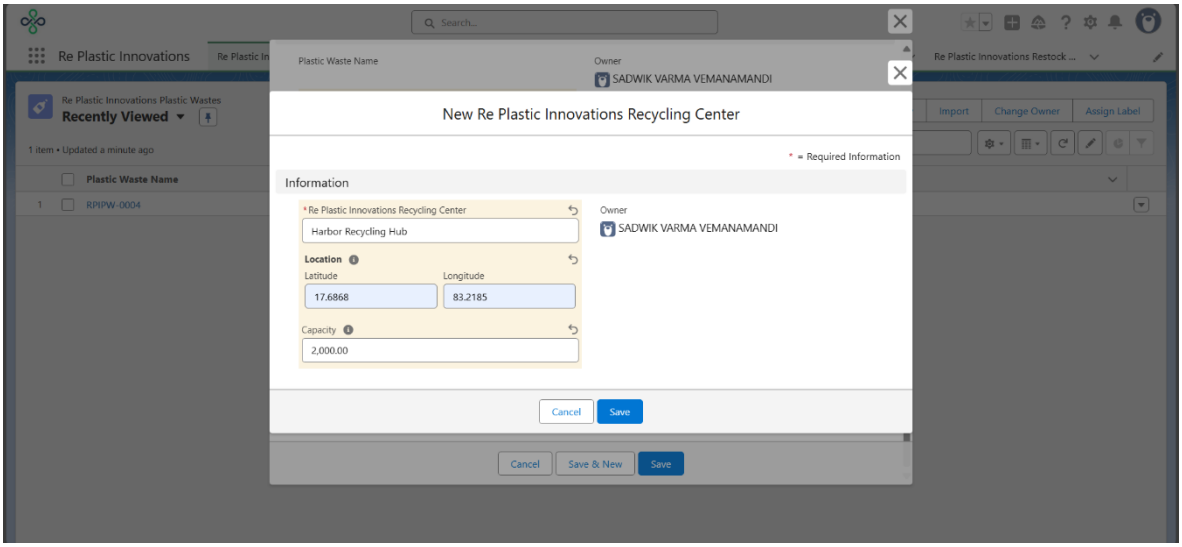
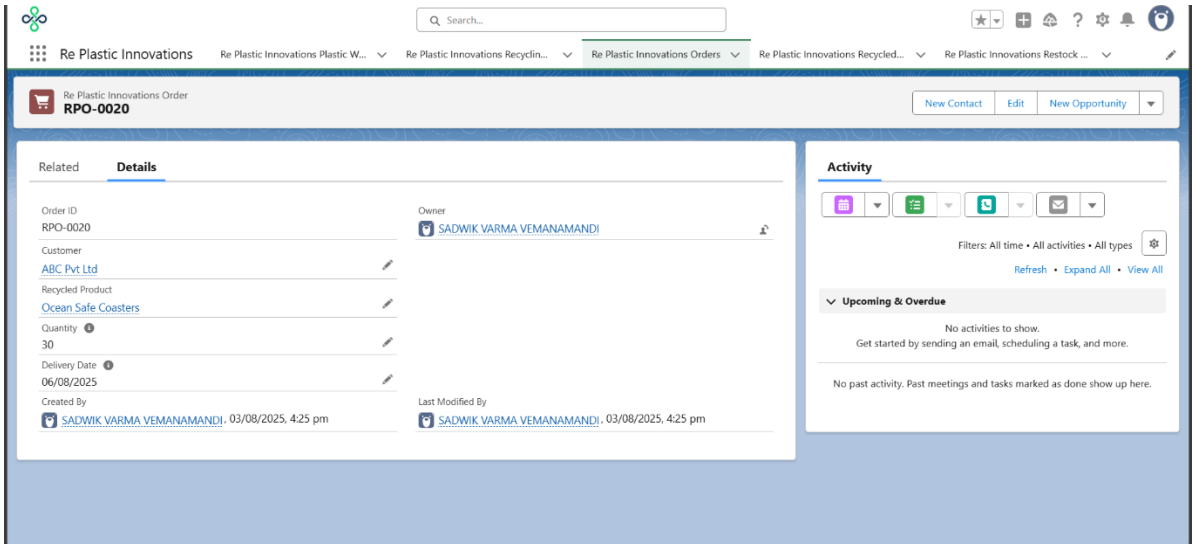
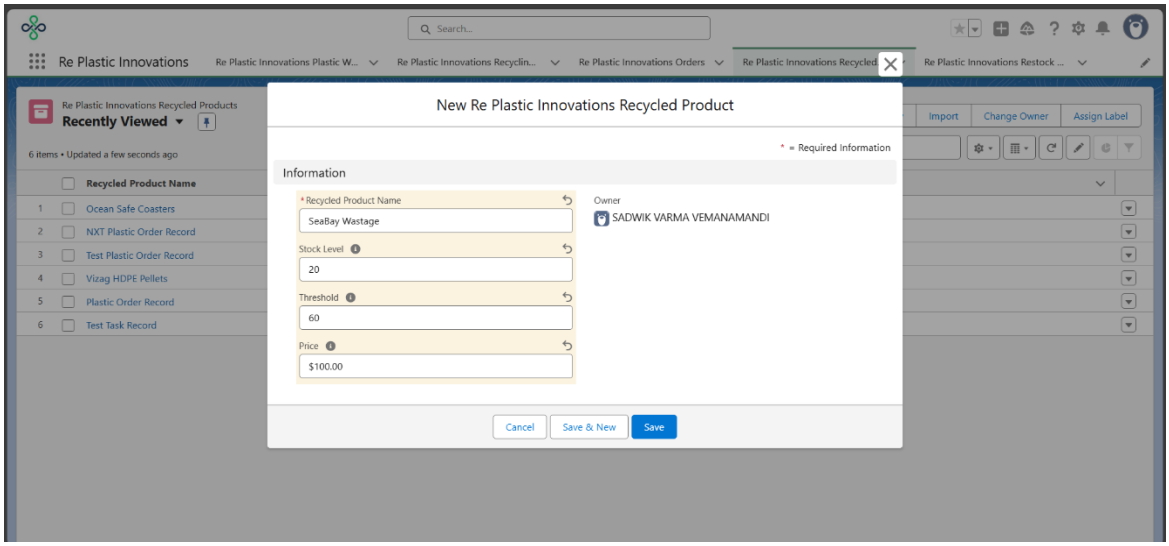
Created By
SADWIK VARMA VEMANAMANDI, 03/08/2025, 4:19 pm
SADWIK VARMA VEMANAMANDI, 03/08/2025, 4:20 pm
* = Required Information
Plastic Waste Name
RPIPW-0005
Owner
SADWIK VARMA VEMANAMANDI
Weight
50.00
Type
HDPE
Collection Date
03/08/2025
Status
Processing
*Recycling Center
Harbor Recycling Hub
Location
Latitude
Longitude
17.6868
83.2185
Cancel
Save & New
Save


Re Plastic Innovations
Search...
Plastic Waste Name
Owner
SADWIK VARMA VEMANAMANDI
Re Plastic Innovations Plastic Wastes
Recently Viewed
1 item • Updated a minute ago
Plastic Waste Name
RPIPW-0004
New Re Plastic Innovations Recycling Center
* = Required Information
Information
*Re Plastic Innovations Recycling Center
Harbor Recycling Hub
Location
Latitude
Longitude
17.6868
83.2185
Capacity
2,000.00
Owner
SADWIK VARMA VEMANAMANDI
Cancel
Save
Cancel
Save & New
Save





5. **Test Low-Stock Automation** (Edge case):
   - Create another order for **Quantity** = 35 and save.
   - Return to the Ocean-Safe Coasters record and confirm:
     • **Stock Level** = 15
     • **Stock Status** = **Low Stock - Restock Needed**
   - In the **Related** list, verify a new **Restock Request** appears with **Requested Quantity** = 5.
   - Open the **Tasks** tab and confirm a high-priority task titled **"Please look into low stock for Ocean-Safe Coasters"** is assigned to the product owner.
   - Check your email for the automated alert labeled **"New Restock Request Created"** with the new request ID.

6. **Approve and Replenish**
    - Click the Restock Request link in the related list, then click **Edit**.
    - Change **Status** to **Approved** and click **Save**.
    - Confirm the Ocean-Safe Coasters record now shows **Stock Level** = 20.
    - Look for the automated approval email with subject **"Approved: [Request ID]"**, confirming the stock update.

Conclusion

By fusing Salesforce's declarative tools with strategic Apex logic, RePlastix Innovations achieved a robust, end-to-end recycling workflow. Manual bottlenecks were eliminated, data integrity strengthened, and stakeholders now have clear, real-time insights—positioning the organization for future growth and technological integration.

Future Scope

1. **Digital Community Portal**: Customers view their recycling impact and place orders.
2. **Mobile Data Capture**: Field agents use a mobile app to log waste and scan product QR codes.
3. **Einstein Forecasting**: Predict restock needs using historical data and machine learning.
4. **Multi-Channel Alerts**: SMS/WhatsApp integration for urgent notifications.
5. **IoT Sensor Integration**: Automate stock updates from real-time tank-level sensors.

The End