RePlastix Innovations: Transforming Plastic Waste into Sustainable Solutions

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1. Abstract

RePlastix Innovations is a sustainability-driven enterprise committed to reducing environmental impact through the recycling of plastic waste into reusable products. As part of the Salesforce Virtual Internship, this project aimed to modernize and automate the company's operations using Salesforce CRM.

The key focus areas included managing plastic waste collection, tracking recycled product inventory, automating order fulfillment, and ensuring timely restocking. The project replaced manual workflows with intelligent, real-time automation using Record-Triggered Flows, Apex triggers, and email alerts — ensuring that inventory never falls below critical levels and that warehouse teams are promptly informed for action.

Through the use of custom objects, validation rules, and formula fields, the system guarantees data accuracy and eliminates redundancy. The platform was also designed to enforce strict role-based data access to ensure secure information sharing across departments like recycling, sales, and warehouse management.

This implementation not only showcases the use of low-code and pro-code Salesforce tools but also demonstrates how enterprise technology can directly support sustainability efforts. The final solution helps RePlastix Innovations scale their impact while improving efficiency, traceability, and responsiveness across their value chain.

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2. Objectives of the Project

- Track plastic waste collection, type, and processing status
- Monitor inventory of recycled products with threshold alerts
- Automate creation and approval of restock requests
- Update stock levels automatically after orders and restocking
- Notify warehouse managers via email upon approval
- Restrict data visibility using roles and profiles
- Provide insights via reports and dashboards for informed decision-making

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3. Technology Stack Used

- **Lightning App Builder** – Custom app and page layout configuration
- **Flow Builder** – Record-triggered flow for inventory alerts
- **Scheduled Automation** – For daily inventory checks
- **Apex Triggers & Classes** – For logic like adjusting stock and sending emails

- **Custom Objects & Fields** – To structure business data

- **Validation Rules & Formula Fields** – To ensure clean data and highlight low stock

- **Profiles, Roles & Sharing Rules** – For secure access control

- **Email Templates** – To send approval notifications

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4. Project Architecture & Configuration

a) Custom Objects

Object API Name	Purpose
Re_Plastic_Innovations_Plastic_Waste__c	Records waste collection details like weight, type, and center
Re_Plastic_Innovations_Recycling_Center__c	Stores data about recycling locations
Re_Plastic_Innovations_Recycled_Product__c	Tracks finished goods, including price and stock
Re_Plastic_Innovations_Order__c	Manages product orders and delivery dates
Re_Plastic_Innovations_Restock_Request__c	Handles stock replenishment workflows

b) Key Fields

- **Plastic Waste:** Weight__c, Type__c, Collection_Date__c, Status__c, Recycling_Center__c, Location__c

- **Recycling Center:** Location__c, Capacity__c

- **Recycled Product:** Stock_Level__c, Threshold__c, Price__c

- **Order:** Customer__c, Recycled_Product__c, Quantity__c, Delivery_Date__c

- **Restock Request:** Product__c, Requested_Quantity__c, Status__c

c) Lightning App & Tabs

- App Name: **Re Plastic Innovations**
- Tabs Included:
    - **Re_Plastic_Innovations_Plastic_Waste**
    - **Re_Plastic_Innovations_Recycling_Center**
    - **Re_Plastic_Innovations_Recycled_Product**
    - **Re_Plastic_Innovations_Order**
    - **Re_Plastic_Innovations_Restock_Request**

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5. User Roles, Profiles & Sharing Rules

a) Roles

- **CEO** – Full access to all data
- **Recycling Manager** – Oversees plastic waste and recycling centers
- **Sales Representative** – Manages product orders
- **Warehouse Supervisor** – Handles restocking and inventory

b) Profiles

- **Platform 1:** Assigned to Recycling Manager
- **Platform 2:** Assigned to Sales Representative
- **Platform 3:** Assigned to Warehouse Supervisor

c) Users

- **John – Production Engineer Sandbox 1**, Recycling Manager
- **Quality Inspector** – Sales Representative
- **Plant Manager Albert** – Warehouse Supervisor

d) Sharing Rules

- **Recycling Manager has read access to Plastic_Waste__c** (via CEO → Recycling Manager)
- **Sales Representative has read access to Recycled_Product__c** (via CEO → Sales Rep)
- **Warehouse Supervisor has read access to Restock_Request__c** (via Sales Rep → Warehouse Supervisor)

6. Automation & Custom Logic

a) Flows

- **Stock Level Is Low**
  Trigger: When Stock_Level__c ≤ Threshold__c
  Action:

    o Create a Restock_Request__c record

    o Assign a task to the product owner

    o Send email if approval granted

b) Apex Triggers & Classes

- **Trigger: UpdateStockAfterOrder** – Decreases stock after order creation

- **Trigger: UpdateStockAfterRestockApproval** – Increases stock after approval

- **Class: InventoryManager** – Handles business logic

- **Class: EmailNotificationHelper** – Sends notification to warehouse

- **Test Class: InventoryManagerTest** – Ensures test coverage

c) Formula Field

- **Stock_Low_On_Product:** Returns true if Stock_Level__c ≤ Threshold__c

d) Validation Rules

- **Check_Quantity_Not_Zero:** Ensures orders cannot have quantity = 0

- **Future_Date_Collection:** Blocks future dates for waste collection

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7. Testing & Deployment

- Unit testing conducted for Apex classes

- Flow tested using real-time and edge case triggers

- Profile-based testing for user access (CEO, Sales, Warehouse)

- Deployed in Developer Org

- Demo video recorded for submission

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8. Results

- Restock workflows became automatic and fast

- Inventory levels remained accurate and transparent

- Order and stock data synced without manual updates

- Users received appropriate access based on role

- Communication between departments improved via email alerts

9. Challenges & Solutions

Challenge	Solution
Preventing duplicate restock requests	Used flow condition to check for existing open requests
Ensuring secure role-based access	Configured custom profiles + role hierarchy + sharing rules
Avoiding stock mismatches	Used Apex triggers to control inventory logic

10. Skills & Learnings

- Salesforce Object Modeling and Schema Design

- Declarative Automation using Flows

- Apex Trigger Development and Testing

- Lightning App UI Design

- Secure Data Access with Roles/Profiles

- Flow Debugging and Deployment

- Effective Documentation and Demo Delivery

11. Conclusion

This Salesforce project for RePlastix Innovations successfully streamlined the plastic recycling lifecycle, from waste tracking to product orders and inventory control. It not only automated operations but enforced clean data practices and enabled real-time insights. The project reflects both technical excellence and sustainability-driven design — key to the future of scalable waste management.