

Revolutionizing Agriculture with AgriEdge Or-Mange Ltd: A Salesforce-Driven Order Management Solution

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Abstract:

The **AgriEdge Order Management System** is a Salesforce-based application developed to streamline and automate the management of agricultural product orders, associated order items, and shipment tracking. This solution leverages custom Salesforce objects and Apex programming to ensure seamless data integrity and operational efficiency across core entities, including `AgriEdge_Order__c`, `AgriEdge_OrderItem__c`, and `AgriEdge_Shipment__c`.

Key functionalities include automated calculation of total order prices upon the creation or update of order items and dynamic adjustment of payment statuses based on these totals. Through the use of Apex triggers and modular helper classes, such as `OrderTotalUpdater` and `OrderStatusUpdater`, the system enforces consistency and minimizes manual intervention.

By integrating declarative and programmatic capabilities within the Salesforce ecosystem, this solution enhances real-time visibility into the order lifecycle, reduces administrative effort, and improves overall business operations for agricultural enterprises. This project exemplifies how Salesforce can be tailored to address industry-specific challenges through robust and scalable automation.

Objective:

The primary objective of this project is to develop a robust and efficient **Order Management System** within the Salesforce platform tailored for the agricultural domain. The system aims to automate and manage the lifecycle of orders, order items, and shipments through custom objects and Apex logic.

Specific objectives include:

- To design and implement custom Salesforce objects:
 - AgriEdge_Order__c for capturing order details
 - AgriEdge_OrderItem__c for managing individual product entries in orders
 - AgriEdge_Shipment__c for tracking the shipment process
- To automate the calculation of total order amounts based on associated order items.
- To dynamically update the **Order Status** and **Payment Status** based on business rules.
- To handle shipment creation and status updates in accordance with the order lifecycle.
- To improve data integrity and minimize manual intervention using Apex triggers and helper classes.
- To provide a scalable and user-friendly interface for managing orders, products, and shipments in agricultural supply chains.

Technology Description :

The **AgriEdge Order Management System** is developed on the Salesforce Platform, harnessing its robust cloud-based architecture to deliver a comprehensive solution for agricultural businesses. By integrating Salesforce's declarative tools—such as custom objects, process automation, and user interface configurations—with programmatic capabilities including Apex classes, triggers, and Lightning components, the system ensures scalability, reliability, and flexibility.

Technologies Used:

Technology	Description
Salesforce CRM	Cloud-based CRM platform used to build and manage the entire application.
Custom Objects	AgriEdge_Order__c, AgriEdge_OrderItem__c, and AgriEdge_Shipment__c created to represent and store order-related data.
Apex Classes	Implements business logic for automated order total calculations, payment processing, and real-time shipment status updates.
Apex Triggers	Invoked automatically after data changes (insert/update) to process related records and ensure data consistency.
SOQL (Salesforce Object Query Language)	Used to programmatically retrieve and manipulate Salesforce data within Apex for reporting, validation, and processing.
Lightning UI	Provides an interactive, user-friendly Salesforce interface allowing users to view, manage, and customize record layouts for improved usability.

Workflow Automation Tools:

- **Invocable Apex** – Enables automation like Flow to call Apex methods.
- **Validation Rules** – Ensure data accuracy and enforce business rules.
- **Lookup Relationships** – Used to associate orders with order items and shipments.

The screenshot shows the Salesforce Object Manager interface. The top navigation bar includes tabs for 'Setup', 'Home', and 'Object Manager'. The main content area is titled 'AgriEdge Order' under 'SETUP > OBJECT MANAGER'. On the left, a sidebar lists various configuration options: Details, Fields & Relationships (which is currently selected), 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, Scoping Rules, Object Access, and Triggers. The main panel displays a table titled 'Fields & Relationships' with 12 items, sorted by Field Label. The table columns are 'Name', 'Type', and 'Description'. The fields listed are: AgriEdge Order Name (Auto Number), Created By (Lookup(User)), Customer (Lookup(Account)), Discounted Total (Formula (Currency)), Last Modified By (Lookup(User)), Order Date (Date/Time), Order Number (Auto Number), Order Status (Picklist), Owner (Lookup(User,Group)), Payment Status (Picklist), Shipping Address (Text Area(255)), and Total Amount (Currency). A 'File Explorer' button is located at the bottom right of the table. The status bar at the bottom of the screen shows a weather forecast for Tuesday ('1 cm of rain'), system icons, and the date/time ('21-07-2025 19:30').

(AgriEdge Order Fields)

SETUP > OBJECT MANAGER
AgriEdge OrderItem

Fields & Relationships
9 items. Sorted by Field Label

FIELD LABEL	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED
AgriEdge Order	AgriEdge_Order_c	Lookup(AgriEdge Order)		✓
AgriEdge Orderitem	Name	Text(80)		✓
Created By	CreatedById	Lookup(User)		✓
Last Modified By	LastModifiedById	Lookup(User)		✓
Owner	OwnerId	Lookup(User/Group)		✓
Product	Product_c	Lookup(Product)		✓
Quantity	Quantity__c	Number(18, 0)		✓
Total Price	Total_Price__c	Formula (Currency)		✓
Unit Price	Unit_Price__c	Currency(18, 0)		✓

(AgriEdge OrderItem Fields)

Click to go back, hold to see history
SETUP > OBJECT MANAGER
AgriEdge Shipment

Fields & Relationships
9 items. Sorted by Field Label

FIELD LABEL	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED
AgriEdge Order	AgriEdge_Order_c	Lookup(AgriEdge Order)		✓
AgriEdge Shipment Name	Name	Text(80)		✓
Carrier	Carrier_c	Picklist		✓
Created By	CreatedById	Lookup(User)		✓
Last Modified By	LastModifiedById	Lookup(User)		✓
Order	Order__c	Lookup(AgriEdge Order)		✓
Owner	OwnerId	Lookup(User/Group)		✓
Status	Status__c	Picklist		✓
Tracking Number	Tracking_Number__c	Text(30)		✓

(AgriEdge Shipment Fields)

AgriEdge Inventory

Fields & Relationships

FIELD LABEL	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED
AgriEdge Inventory Name	Name	Text(80)		✓
Created By	CreatedById	Lookup(User)		
Last Modified By	LastModifiedById	Lookup(User)		
Owner	OwnerId	Lookup(User,Group)		✓
Product	Product_c	Lookup(Product)		✓
Reorder Level	Reorder_Level__c	Number(18, 0)		
Stock Quantity	Stock_Quantity__c	Number(18, 0)		
Stock Status	Stock_Status__c	Formula (Text)		
Warehouse Location	Warehouse_Location__c	Text(18)		

(AgriEdge Inventory Fields)

AgriEdge OrderItem
rice seeds

Related **Details**

AgriEdge OrderItem rice seeds	Owner Ram Charan disamcharla
AgriEdge Order AO-0006	
Product rice seeds	
Quantity 1,000	
Unit Price \$100	
Total Price \$100,000.00	
Created By Ram Charan disamcharla , 7/27/2025, 10:08 PM	

Activity

New Contact | Edit | New Opportunity

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.

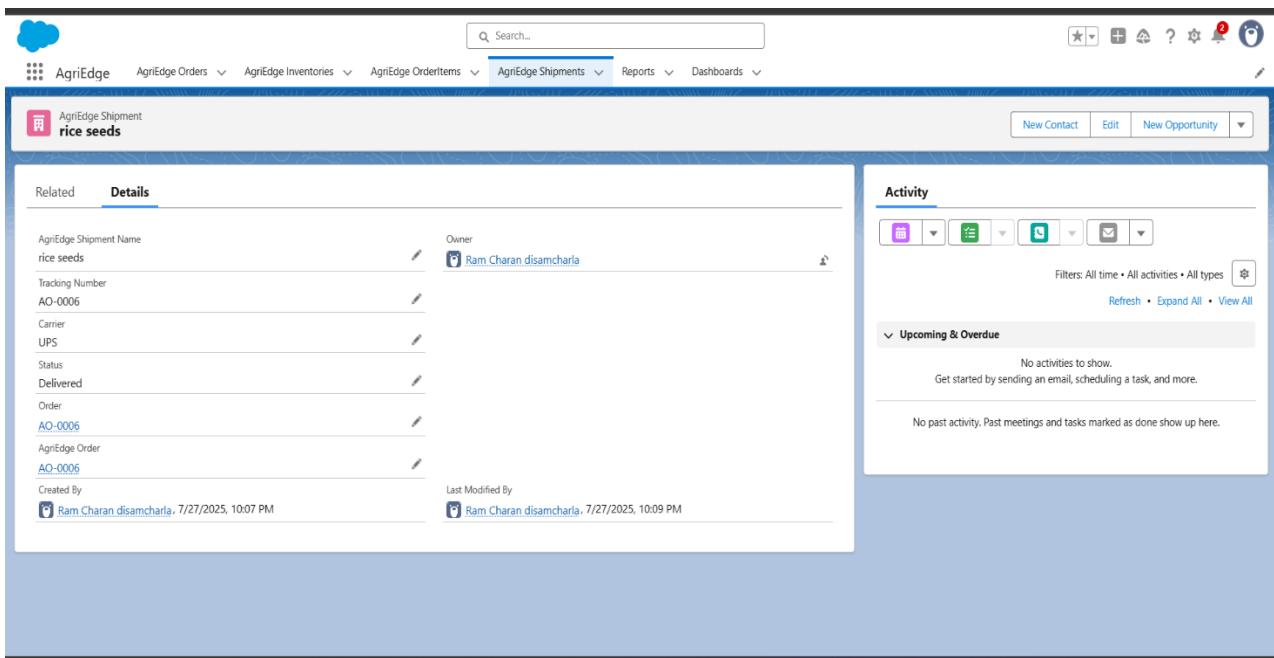
(New AgriEdge OrderItem)

The screenshot shows the AgriEdge Order detail page for order AO-0006. The top navigation bar includes links for AgriEdge Orders, AgriEdge Inventories, AgriEdge OrderItems, AgriEdge Shipments, Reports, and Dashboards. The main content area is divided into two sections: 'Related' and 'Details'. The 'Details' section contains fields for Order Name (AO-0006), Order Number (ORD-0006), Customer (Ram Charan disamcharla), Order Status (Delivered), Order Date (7/27/2025, 12:00 PM), Total Amount (\$100,000), Payment Status (Paid), Shipping Address, Discounted Total (\$90,000.00), and Created By (Ram Charan disamcharla). The 'Activity' section on the right shows no upcoming or overdue activities.

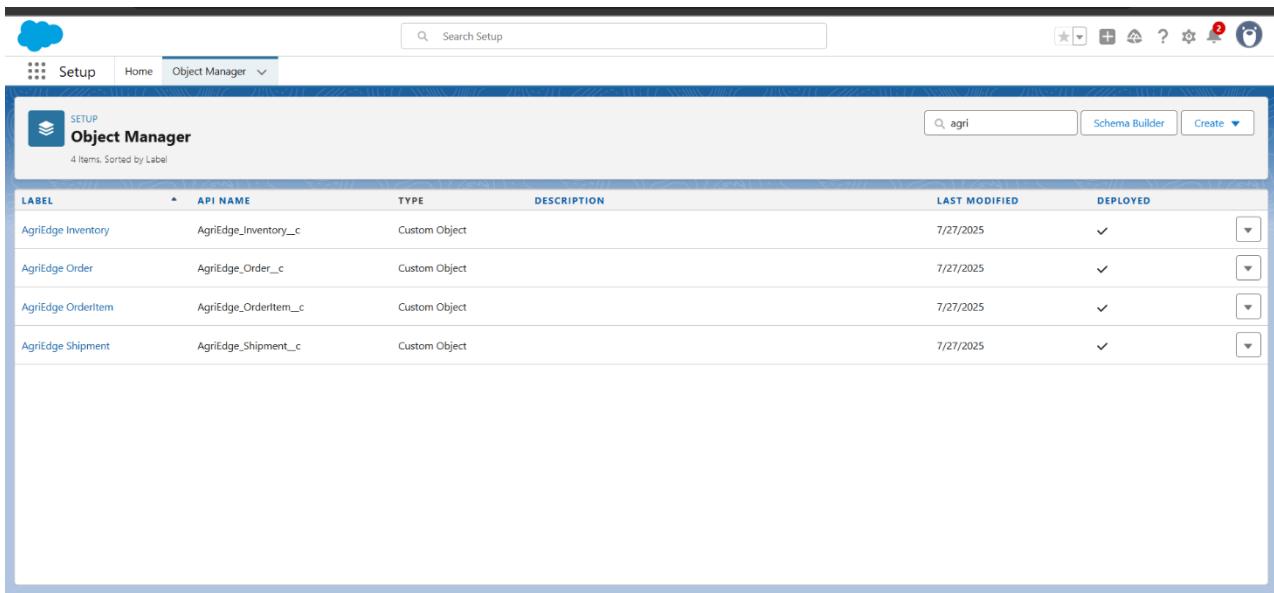
(AriEdge Order)

This screenshot shows the same AgriEdge Order detail page for order AO-0006, but with a focus on related entities. The 'Related' section lists three entities: 'AgriEdge OrderItems (1)' (rice seeds), 'AgriEdge Shipments (1)' (rice seeds), and 'AgriEdge Shipments (AgriEdge Order) (1)' (rice seeds). Each entity has a 'View All' link and a 'New' button. The rest of the page structure is identical to the first screenshot, including the top navigation bar and the 'Activity' section.

(AgriEdge Order)



(AgriEdge Shipments)



(Object Manager)

Project Explanation with Real-World Example

Overview

This project represents a comprehensive simulation of a real-world **agricultural supply chain management system** developed on the Salesforce platform. Designed for a fictional agri-business, **AgriEdge**, the system streamlines and automates key operations, including order processing, order item management, and shipment tracking.

AgriEdge specializes in delivering agricultural products such as fertilizers, seeds, and farming equipment to farmers and retailers. By leveraging Salesforce's cloud-based infrastructure, the system provides an integrated, scalable, and user-friendly solution that minimizes manual effort, enhances data accuracy, and offers real-time visibility into the order lifecycle.

Real-World Example Scenario

Let's say **AgriEdge Pvt. Ltd.**, an agriculture products supplier, receives an order from a farmer named **Ramesh** for:

- 10 bags of fertilizer
- 5 litres of organic pesticide

The company uses Salesforce to manage this order end-to-end. Here's how your system helps:

Step 1: Order Creation (AgriEdge_Order__c)

A sales executive creates a new **AgriEdge Order** record:

- Customer: Ramesh
- Status: Pending
- Payment Status: Not Paid

AgriEdge Order AO-0007

Related Details

- AgriEdge Order Name: AO-0007
- Order Number: ORD-0007
- Customer: Ramesh
- Order Status: Processing
- Order Date: 7/28/2025, 12:00 PM
- Total Amount: \$3,000
- Payment Status: Pending
- Shipping Address:
- Discounted Total: \$2,700.00

Owner: Ram Charan disamcharla

Last Modified By: Ram Charan disamcharla, 7/28/2025, 8:32 AM

Activity

Filters: All time • All activities • All types

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.

Step 2: Adding Items (AgriEdge_OrderItem__c)

They add individual items to the order:

- Item 1: 10x Fertilizer @ ₹300 each
- Item 2: 5L Organic Pesticide @ ₹500/L

As soon as items are added:

- The system calculates the **total amount** using Apex (OrderTotalUpdater).
- If needed, order status is updated using trigger logic.

AgriEdge Orderitem Fertilizer

Related Details

- AgriEdge Orderitem: Fertilizer
- AgriEdge Order: AO-0007
- Product: Fertilizer
- Quantity: 10
- Unit Price: \$300
- Total Price: \$3,000.00

Owner: Ram Charan disamcharla

Last Modified By: Ram Charan disamcharla, 7/28/2025, 8:32 AM

Activity

Filters: All time • All activities • All types

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.

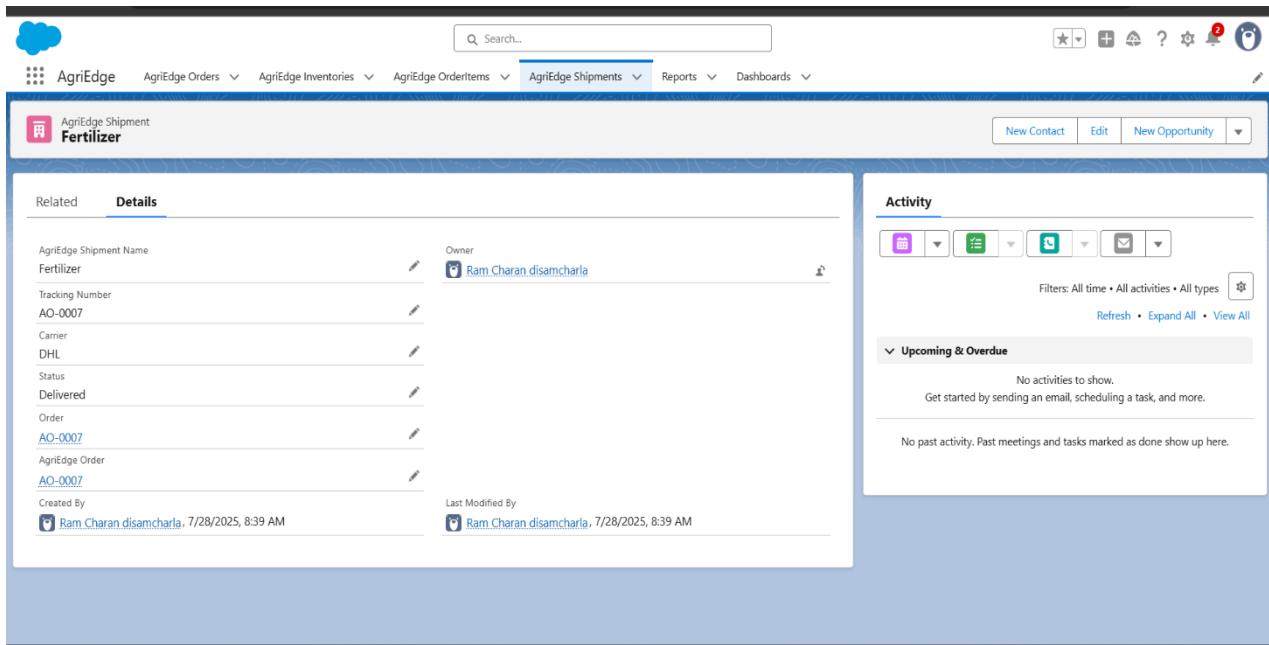
(AgriEdge OrderItem)

Step 3: Shipment Creation (AgriEdge_Shipment__c)

Once payment is received:

- A shipment record is created with:
 - Tracking Number (auto-populated or manually added)
 - Carrier (e.g., FedEx)
 - Shipment Status: "In Transit" or "Delivered"

If no tracking number is added, validation logic prevents saving incomplete data.



The screenshot shows the AgriEdge Shipment creation page. The top navigation bar includes links for AgriEdge Orders, AgriEdge Inventories, AgriEdge OrderItems, AgriEdge Shipments, Reports, and Dashboards. The main content area has tabs for 'Related' and 'Details'. Under 'Details', there are fields for AgriEdge Shipment Name (Fertilizer), Owner (Ram Charan disamcharla), Tracking Number (AO-0007), Carrier (DHL), Status (Delivered), Order (AO-0007), and Created By (Ram Charan disamcharla). Below the details, an 'Activity' section displays a grid of icons for different actions like Email, Call, and Task. It also shows filters for 'All time • All activities • All types' and buttons for 'Refresh', 'Expand All', and 'View All'. A note says 'No activities to show. Get started by sending an email, scheduling a task, and more.' Another note says 'No past activity. Past meetings and tasks marked as done show up here.'

(shipment form with tracking and carrier fields.)

Automation Using Triggers and Apex

- **Trigger** on AgriEdge_OrderItem__c: Automatically updates order total and order status whenever items are added/updated.
- **Helper Class**: Handles creation or update of shipment when order status changes to "Delivered".
- **Validation**: Ensures data integrity (e.g., tracking number is required for completed orders).

The screenshot shows the Salesforce Apex class editor interface. The top navigation bar includes File, Edit, Debug, Test, Workspace, Help, and a dropdown for Code Coverage (None) and API Version (64). The main area displays the code for `AgriEdgeOrderTests.apc`:

```

8     insert testAccount;
9     // Create the User for testing purposes (this is unrelated to Customer__c)
10    User testUser = new User(
11        Username = 'testuser@example3454.com',
12        FirstName = 'Test1',
13        LastName = 'john',
14        Email = 'testuser@example.com',
15        Alias = 'testuser',
16        ProfileId = [SELECT Id FROM Profile WHERE Name = 'Standard User'],
17        TimeZoneSidKey = 'America/New_York'
    )

```

The status bar at the bottom shows Status: Test Run, with two green checkmarks indicating successful tests.

A modal window titled "Dependencies" is open, showing the relationships between entities:

Entity Type	Entities	Related
Classes	OrderTaskCreator, OrderStatusUpdater, OrderEmailSender, AgriEdgeOrderShipmentHelper, AgriEdgeOrderTrigger, AgriEdgeOrderTests	← AgrisEdgeOr... ApexClass Referenced By Task Creator Interaction ... Referenced By
Triggers		
Pages		
Page Components		
Objects		
Static Resources		
Packages		

Below the dependencies, there are buttons for Open, Filter, and Refresh, along with a search bar: "Filter the repository (* = any string)" and a checkbox for "Hide Managed Packages".

To the right of the dependencies window, a "Overall Code Coverage" table is displayed:

Failures	Total	Class	Percent	Lines
0	7	Overall	87%	46/58
0	7	AgriEdgeOrderShipmentHelper	79%	46/58
		AgriEdgeOrderTrigger	94%	33/35
		AgriEdgeOrderTriggerHelper	100%	1/1
		OrderEmailSender	97%	34/35
		OrderItemTrigger	100%	7/7
		OrderPaymentStatusTriggers	71%	5/7
		OrderStatusUpdater	55%	5/9
		OrderTaskCreator	89%	17/19
		OrderTotalUpdater	94%	16/17

(trigger code and class snippet in Salesforce Apex class editor.)

Result :

Ramesh can now receive timely deliveries, track shipments, and AgriEdge's internal team can manage all orders, items, and logistics efficiently in one platform.

Conclusion

The **AgriEdge Order and Shipment Management System** showcases how Salesforce can be effectively leveraged to optimize agricultural product ordering, order item management, and shipment tracking in a structured, automated environment. Built using custom objects such as AgriEdge_Order__c, AgriEdge_OrderItem__c, and AgriEdge_Shipment__c, the system integrates automation through Apex Triggers and Classes to streamline key operations.

Key functionalities of the system include:

- **Automated calculation of order totals** based on associated order items.
- **Dynamic updates to order statuses** driven by order item changes and payment activity.
- **Validated shipment creation**, ensuring accurate tracking details and essential data integrity.
- **Enforcement of data accuracy** through validation rules and field-level checks to prevent inconsistencies.

By delivering real-time visibility into the sales and delivery lifecycle, this solution minimizes manual intervention, improves data reliability, and enhances operational efficiency—critical advantages for organizations engaged in agricultural product distribution and logistics.

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-  **Future Scope**
 - The current project lays the foundation for a robust agri-business order management system. There are several possibilities to enhance and scale the system in the future:

1. Real-Time Inventory Integration

- Integrate with AgriEdge_Inventory__c to automatically adjust stock levels as orders are placed. Show real-time product availability to avoid over-selling.
- Display live product availability to prevent over-selling and improve order accuracy.

2. Customer Self-Service Portal

- Display live product availability to prevent over-selling and improve order accuracy..
- Leverage Salesforce Experience Cloud to deliver a seamless, branded portal experience.

3. Mobile-Optimized Interface

- Use **Salesforce Mobile App** or **custom Lightning Web Components (LWC)** for on-the-go access to order and shipment data.

4. Advanced Reporting and Dashboards

- Build **dynamic dashboards** for admin users to monitor total orders, pending shipments, total revenue, etc.
- Add charts showing top-selling products and regional order patterns.

5. AI-Powered Recommendations

- Use **Salesforce Einstein** to suggest frequently ordered items or delivery time estimates based on historical data.

6. Third-Party Carrier Integration

- Integrate with APIs from logistics companies (e.g., FedEx, DHL) to auto-fetch tracking updates and display shipment progress inside Salesforce.

7. Enhanced Role-Based Security

- Fine-tune **profile and permission sets** for different users: admin, sales rep, warehouse staff, etc.