



GrowLink Deliverable #3: Domain Class Model

I. Domain Classes: Noun Technique Step-by-Step

Step 1: Extract Nouns and Noun Phrases

The table below summarizes the key nouns and noun phrases extracted from the GrowLink System Vision Document and its functional requirements.

Source Noun/Phrase	Source Context
Supplier	Connects suppliers
Agro-Retailers	Connects agro-retailers
Logistics Provider	Connects logistics providers
Financial Institutions	Connects financial institutions
System	Single integrated system
Agri-Input	Simplify agri-input procurement
BNPL (Buy Now Pay Later)	Credit solutions such as BNPL

Mobile App	Responsive web application and a mobile app
APIs	Integration of secure APIs
Users	Centralized database for users
Products	Centralized database for products
Transaction Data (Transaction)	Centralized database for transaction data
Order	Retailers can place, modify, and track orders
Order Status	Automated order status updates
Payment Gateways	Secure digital payments via integrated payment gateways
Analytics	Implementation of analytics and reporting
Sales Trends	Dashboards showing sales trends

Step 2: Filter and Refine Candidate Classes

We filter the list by eliminating implementation details, synonyms, and attributes to arrive at the final set of Domain Classes.

Candidate Class	Rationale (Keep / Reject / Attribute)
Supplier	KEEP: Core entity, distinct attributes (Manage Products).
Retailer	KEEP: Core entity, distinct attributes (Place Orders).
Logistics Provider	KEEP: External entity requiring configuration/tracking data (LogisticsPartner).
Financial Institutions/BNPL	KEEP: External entity requiring configuration/contract details (FinancialPartner).
System / App / APIs	REJECT: Represents the boundary or technology, not domain data.
Users	KEEP: Abstract superclass for Supplier and Retailer (User).

Agri-Input / Products	KEEP: The primary item being bought and sold (Product).
Order	KEEP: The core transactional document.
Transaction Data (Transaction)	KEEP: The financial record associated with an order.
Payment Gateways	KEEP: External entity requiring setup (PaymentGateway).
Order Status	ATTRIBUTE: An attribute of Order .
Sales Trends / Analytics	KEEP: Represents persistent compiled data (Report or AnalyticsData).

Domain Classes for GrowLink

Class Name	Rationale	Key Attributes (Minimum)
User	Abstract superclass for all system accounts (Retailer/Supplier).	userID, email, passwordHash
Retailer	Core buying entity; subclass of User .	businessName, location, creditLimit
Supplier	Core selling entity; subclass of User .	companyName, contactInfo
Product	The central item being sold (agri-input).	productID, name, description, price, stockQuantity
Order	The main transactional document containing items and status.	orderID, orderDate, totalAmount, status
Transaction	The financial record linked to payment/credit processing.	transactionID, amount, type (Digital/BNPL), status

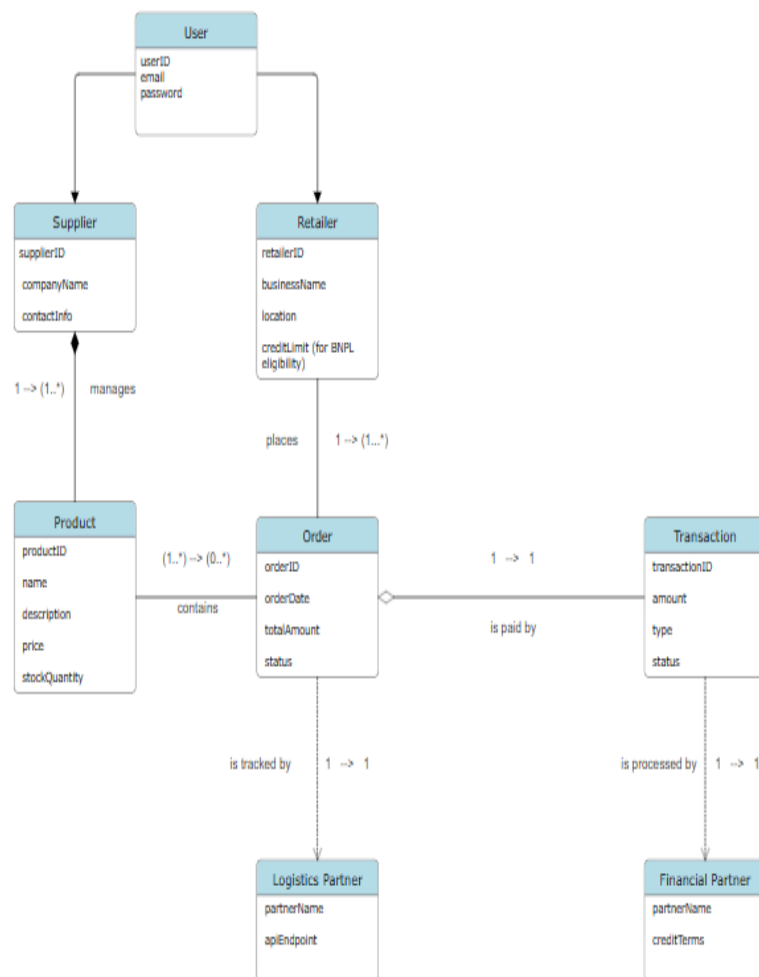
LogisticsPartner	Configuration and tracking details for the integrated external delivery provider.	apiEndpoint, trackingPrefix, partnerName
FinancialPartner	Configuration and terms for the integrated BNPL/Credit services.	bnplContractID, creditTerms, partnerName

Final Domain Class Relationship Table for GrowLink

Source Class	Multiplicity	Relationship Type	Target Class	Multiplicity	Notes for Diagram
User		Generalization	Retailer		<i>Hollow Arrowhead:</i> User is the superclass.
User		Generalization	Supplier		<i>Hollow Arrowhead:</i> User is the superclass.
Retailer	1	Association	Order	\$0..*\$	<i>Simple Line:</i> One Retailer can place zero or many Orders.

Supplier	1	Composition	Product	\$1..*\$	<i>Filled Diamond:</i> Supplier owns/manages its Products (Products cannot exist without a Supplier).
Order	1	Aggregation	Transaction	1	<i>Hollow Diamond:</i> Order aggregates one financial Transaction.
Product	\$1..*\$	Association	Order	\$0..*\$	<i>Simple Line:</i> Products are referenced by Orders (Line Items).
Order	1	Dependency	LogisticsPartner	1	<i>Dashed Arrow:</i> Order relies on the Partner for tracking data.
Transaction	1	Dependency	FinancialPartner	1	<i>Dashed Arrow:</i> Transaction relies on the Partner for payment/credit processing.

Domain Class Diagram



1. CRUD Validation Matrix

The table below maps the 27 original Use Cases (UC-R for Retailer flow, UC-S for Supplier flow) against the core Domain Classes to identify any gaps in Create (C), Read (R), Update (U), or Delete (D) capabilities.

Domain Class	C (Create)	R (Read)	U (Update)	D (Delete)
Retailer	GAP (Requires Registration UC)	UC-R01, UC-R08 (Implicit Read for order/profile)	GAP (Requires Profile Management UC)	GAP (Requires Profile Management UC)
Supplier	GAP (Requires Registration UC)	UC-R09, UC-S05 (Implicit Read for order/products)	GAP (Requires Profile Management UC)	GAP (Requires Profile Management UC)
Product	UC-S02 (Input Product Details)	UC-R01 (Browse Products), UC-S04	UC-S05/UC-S06 (Modify Price/Stock)	GAP (Requires Deactivate Product UC)
Order	UC-R02 (Initiate Checkout)	UC-R08 (Review Order), UC-R12, UC-R13	UC-R12 (Updates status), UC-R14	UC-R15 (Decline/Cancel Order)

Transaction	UC-R07 (Payment Confirmed)	UC-R14 (Finalize Transaction)	UC-R15 (Status update to Failed/Refund)	N/A (Transactions are archived)
LogisticsPartner	N/A (External entity)	UC-R13, UC-R11 (Read tracking data)	N/A	N/A
FinancialPartner	N/A (External entity)	UC-R05, UC-R06 (Read credit status)	N/A	N/A

After Refining

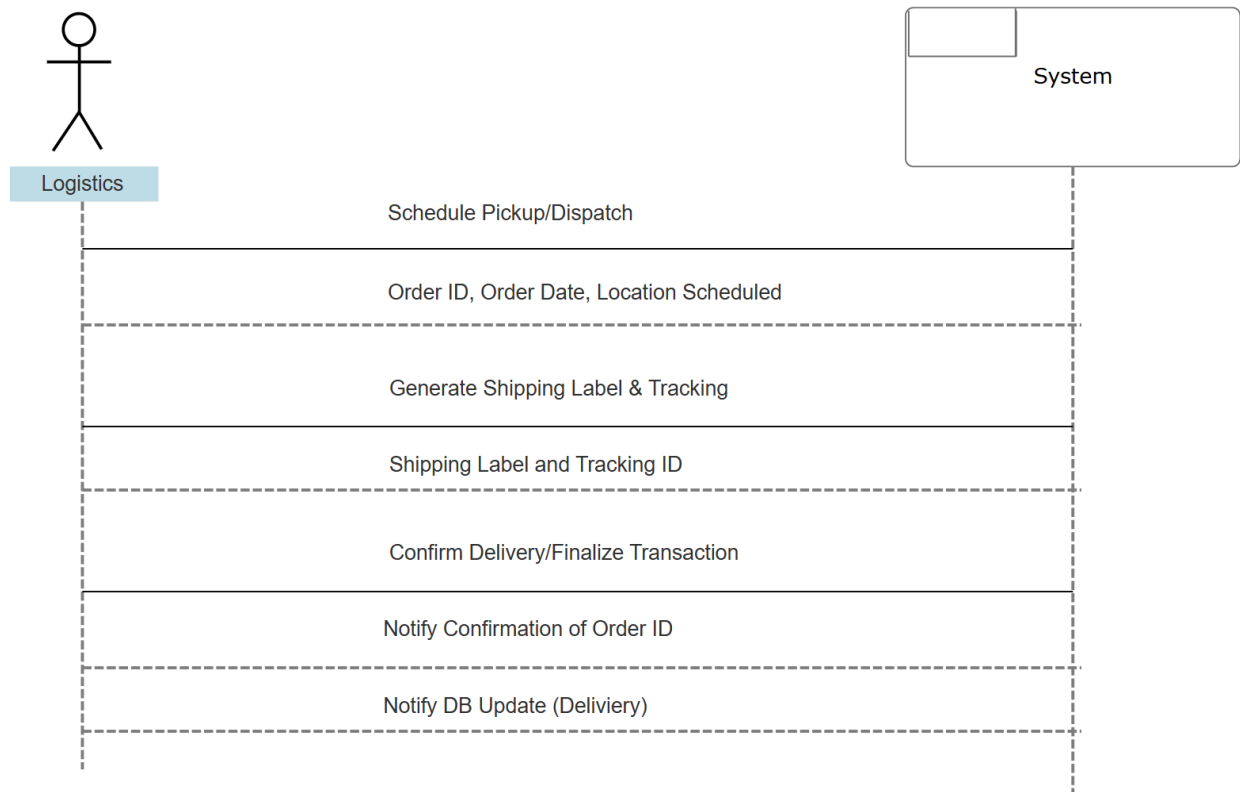
Domain Class	C (Create)	R (Read)	U (Update)	D (Delete)
Retailer	UC-H01: Register User	UC-H02: Manage User Profile	UC-H02: Manage User Profile	UC-H02 (Deactivate/Close Account)
Supplier	UC-H01: Register User	UC-H02: Manage User Profile	UC-H02: Manage User Profile	UC-H02 (Deactivate/Close Account)
Product	UC-S02: Input Product Details	UC-R01: Browse Products, UC-S04	UC-S05/UC-S0 6 (Modify Price/Stock)	UC-H03: Deactivate Product
Order	UC-R02: Initiate Checkout	UC-R08: Review Order, UC-R12, UC-R13	UC-R12 (Status Update), UC-R14 (Finalization)	UC-R15 (Decline/Cancel Order)
Transaction	UC-R07: Payment Confirmed	UC-R14: Finalize Transaction	UC-R15 (Status Update to Failed/Refund)	N/A (Archived, not deleted)

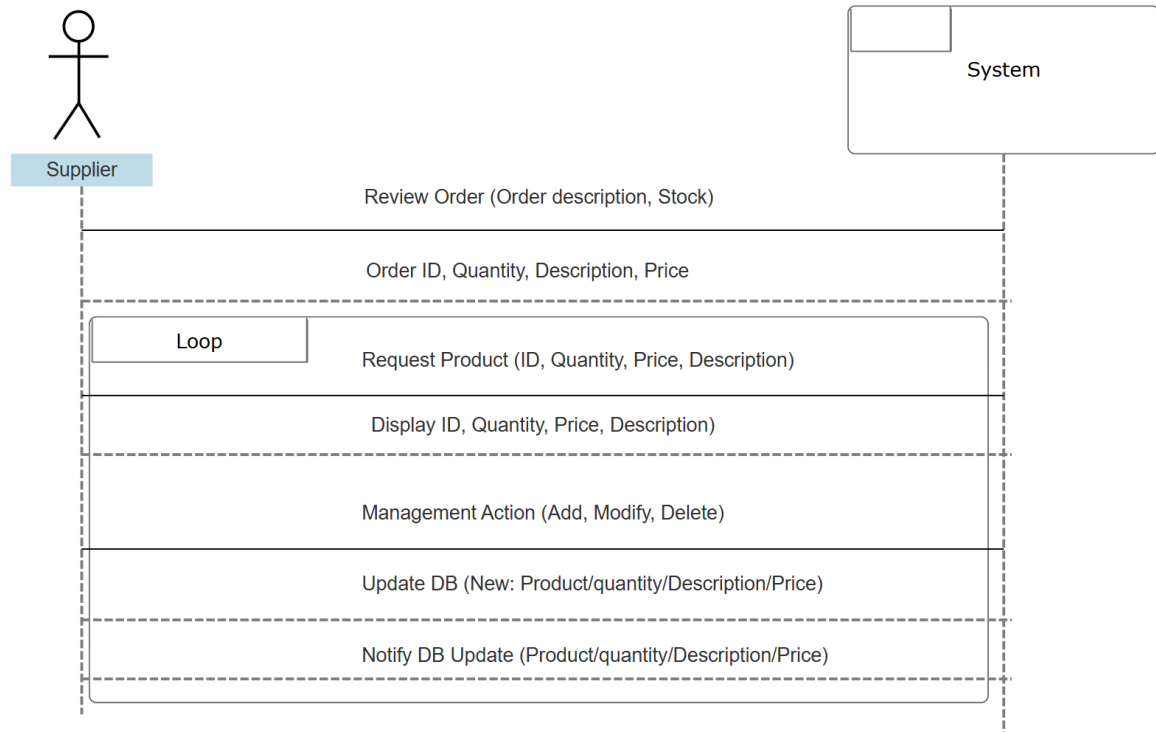
LogisticsPartner	N/A (External)	UC-R13, UC-R11 (Read tracking data)	N/A	N/A
FinancialPartner	N/A (External)	UC-R05, UC-R06 (Read credit status)	N/A	N/A

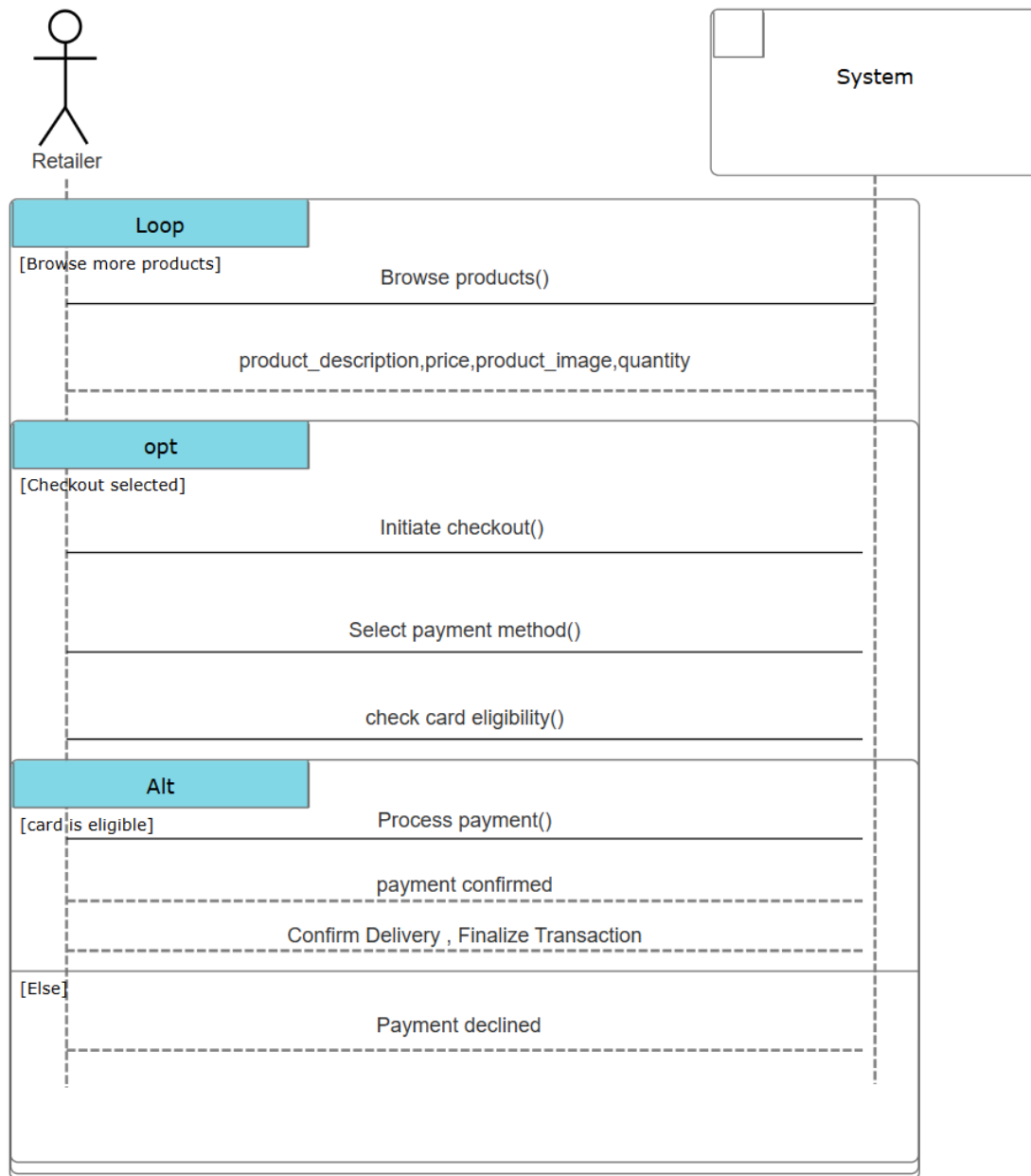
The additions are:

New Use Case ID	Use Case Name	CRUD Action Covered	Actor(s)	Rationale for Addition
UC-H 01	Register User	Create (C)	Retailer, Supplier	Provides the necessary function to create accounts for new Retailers and Suppliers, covering the 'C' for both User subclasses in the CRUD matrix.
UC-H 02	Manage User Profile	Read (R), Update (U), Delete (D)	Retailer, Supplier	Covers all profile modifications (U) like changing contact info, reading profile details (R), and account deactivation (D) for both user types.
UC-H 03	Deactivate Product	Delete (D)	Supplier	Provides the necessary function for a Supplier to remove a product from the marketplace (soft delete/deactivation), covering the 'D' for the Product Domain Class.

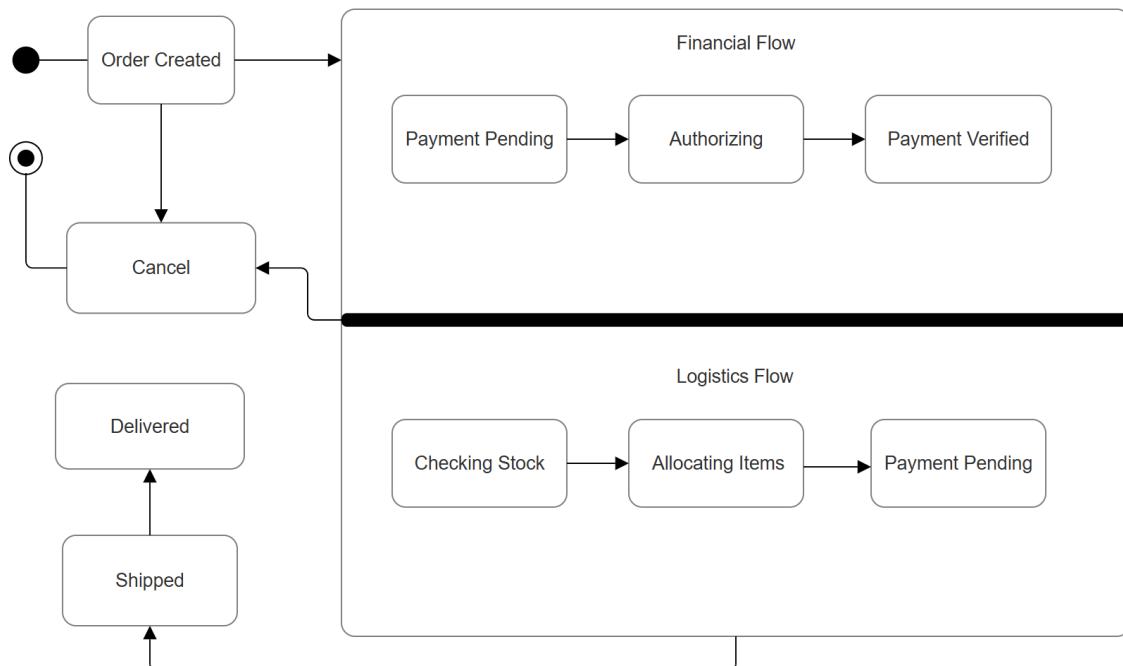
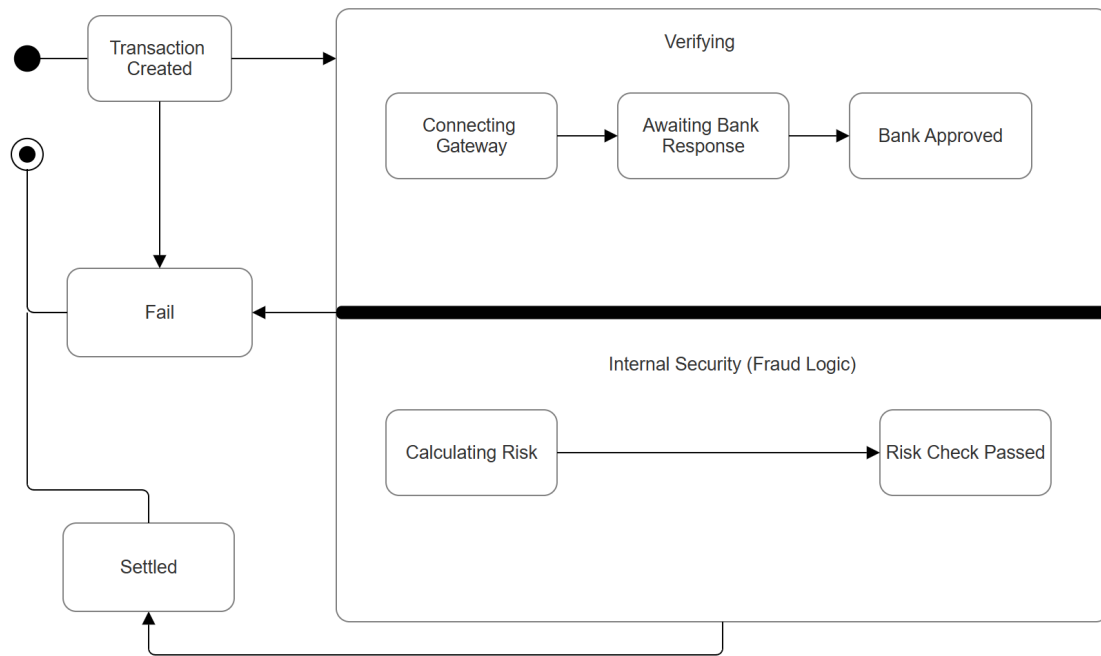
Sequence Diagrams:







State Machine Diagrams:



WorkFlow Diagrams:

