Introduction to Purchase Flow

Presenter's Name
Presenter's Title

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Agenda

- Purchase Process Subsystems
- Commerce Object Model

Learning Objectives

At the end of this lesson you should be able to:

- Understand the interaction between various subsystems in the purchase process
- Learn about the various commerce objects that make up the Order
- Use the relationships objects to represent dependencies between commerce objects

Section 1:
Purchase Process Subsystems

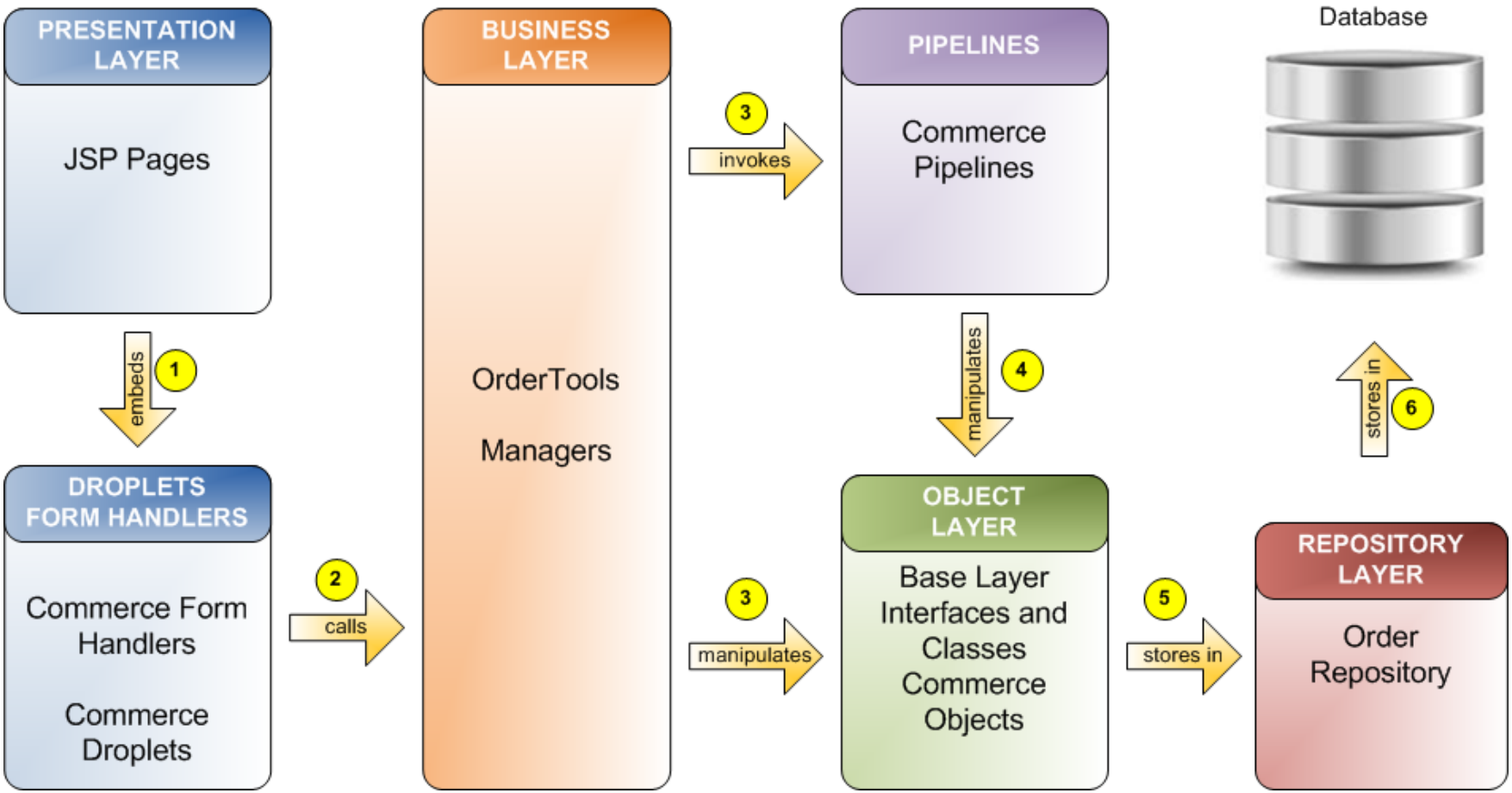
The Purchase Process Subsystems

- The purchase process represents a number of subsystems that facilitate the purchase and checkout of an order by the customer.
- The purchase process is made of the following subsystems:
  - Base commerce classes and interfaces,
  - Commerce form handlers and droplets,
  - Business layer classes,
  - Pipelines,
  - Order repository.
- These subsystems interact with each other to collect information, validate it, and place an order.

Interactions Between Subsystems (1)

- JSP pages embed commerce form handlers and droplets.
- The droplets call the manager classes.
- The manager classes manipulate the commerce objects and also invoke the commerce pipelines.
- The pipeline processors manipulate the commerce objects as well.
- Commerce objects leverage the order repository to store the order information.

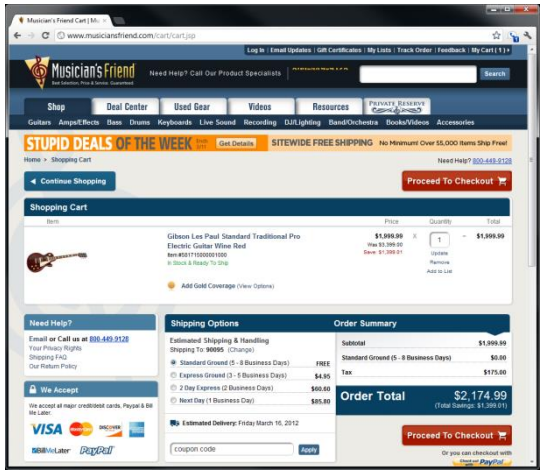
Interactions Between Subsystems (2)



Example of Purchase Process

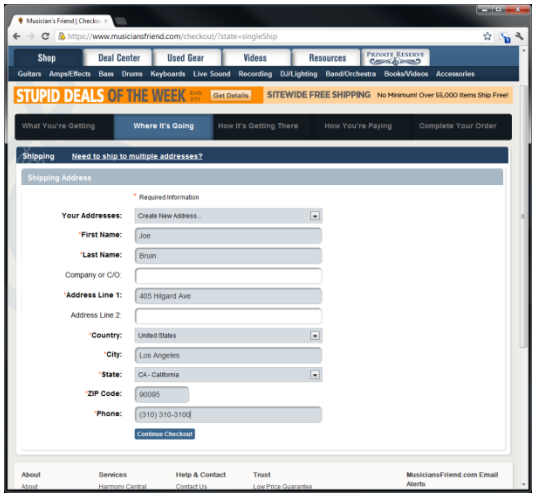
- Tommy Trojan decides to purchase guitar picks from musiciansfriend.com.
- He places guitar picks in the cart.
- He proceeds to specify where the items should be shipped (shipping address).
- He then picks from available shipping method options.
- Tommy specifies the payment method and payment address to pay for the order.
- He then proceeds to the order confirmation page.

Ordering Steps



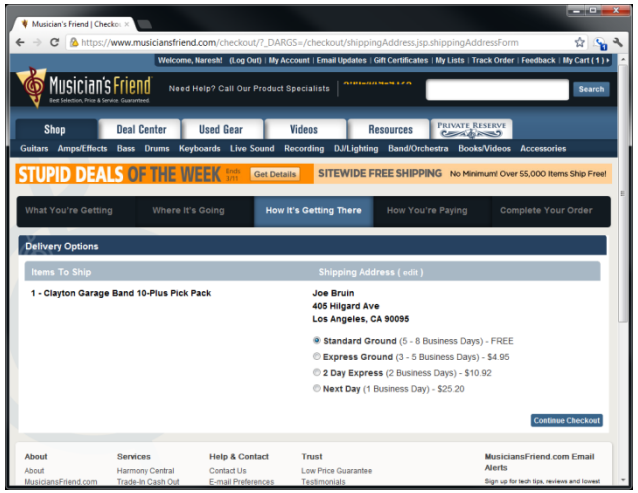
Cart Page

1



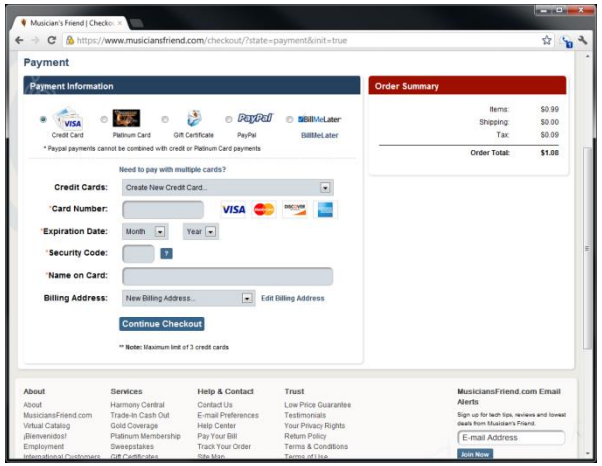
Shipping Address

2



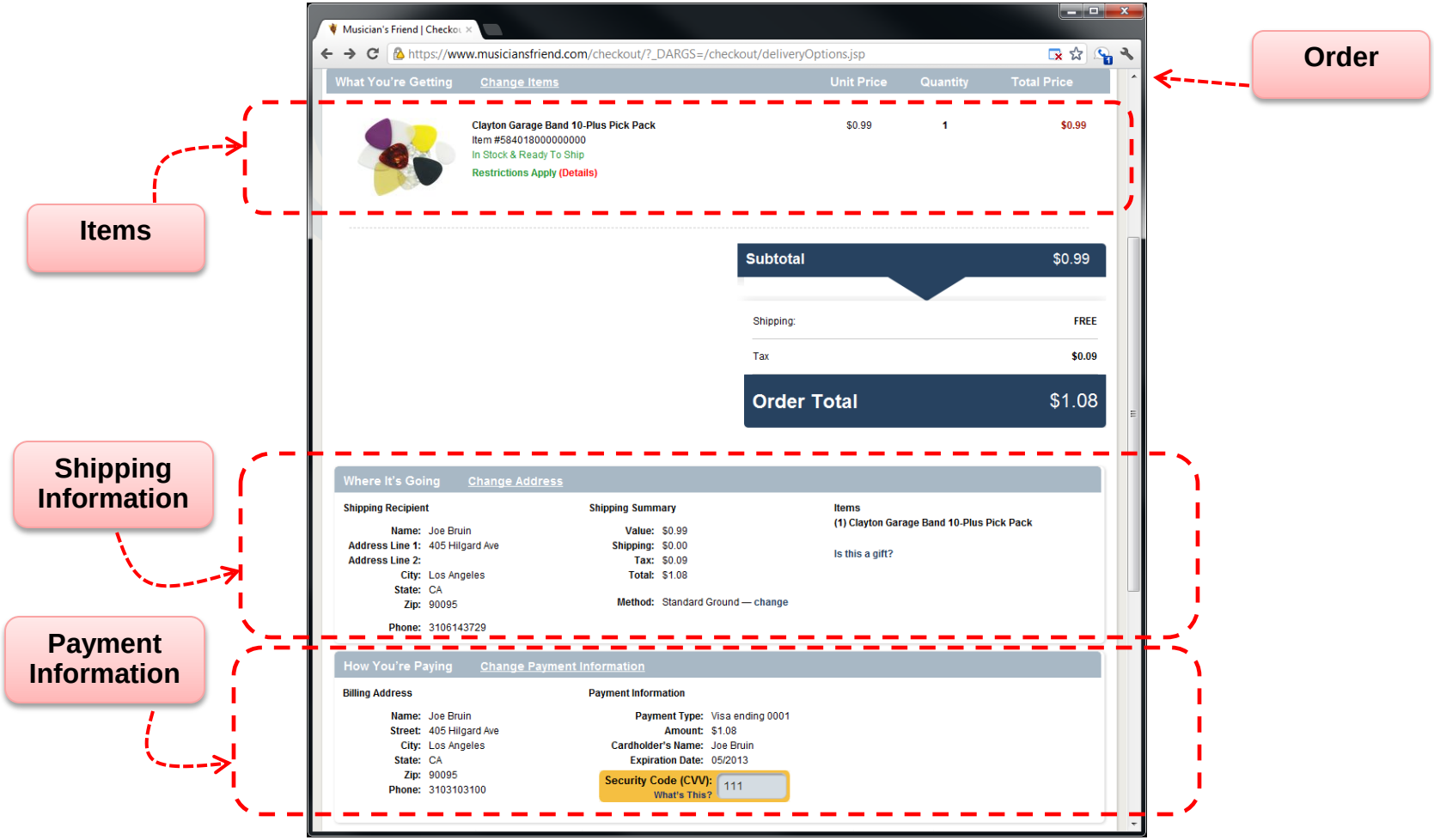
Shipping Method

3



Payment Method

Order Confirmation Page



Purchase Process Subsystem

- During the purchase process that Tommy went through, several form handlers and droplets were invoked including the cart modifier form handler, shipping form handler, etc.
- These form handlers invoke several managers such as OrderManager, ShippingManager, etc.
- These managers worked with the order object.
- They then invoke the pipeline processors such as processOrder chain and validateShippingInfo chain, etc.
- The order object eventually stored the information to the order repository in the order repository item which got written to the dcs_order table in the database.

Section 1
Check Your Understanding

What are key pieces of information captured by an order confirmation page?

Answer:

The items that are sold, the cost, shipping and billing info.

Section 1 ✔
Check Your Understanding

What purchase process subsystems work with the commerce objects?

Answer:

The pipeline components and business layer classes.

Section 1 ✔
Check Your Understanding

Which one purchase process subsystem deals directly with the order repository?

Answer:

The commerce objects.

Section 1
Check Your Understanding

What is the purchase process subsystem that manages user interaction from the JSP?

Answer:

Form handlers and droplets.

Section 1
Check Your Understanding

Name a few form handlers used in the purchase process.

Answer:

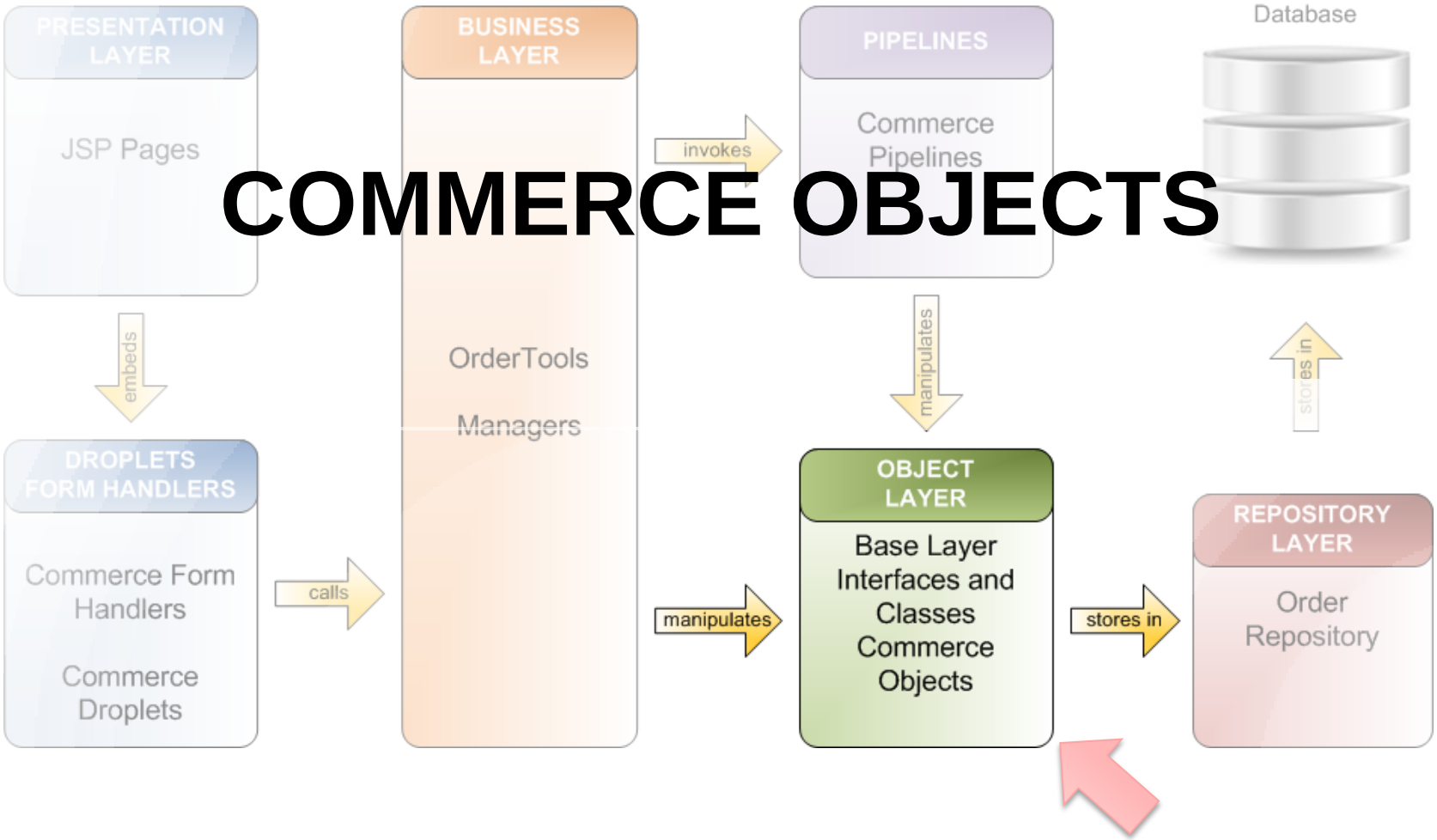
Cart modifier form handler, shipping form handler.

Summary

- The purchase process represents a number of sub systems that facilitate the purchase and checkout of an order by the customer.
- The **commerce form handler**s are embedded on the JSP page and manage user interaction.
- They interact with the **business layer classes**.
- The business layer classes invoke **pipelines**.
- Both the business layer and pipelines manipulate the **commerce objects**.
- The commerce objects store the information using the **order repository,** which gets saved to a database.

Section 2:
Commerce Object Model

COMMERCE OBJECTS



Elements of an Order

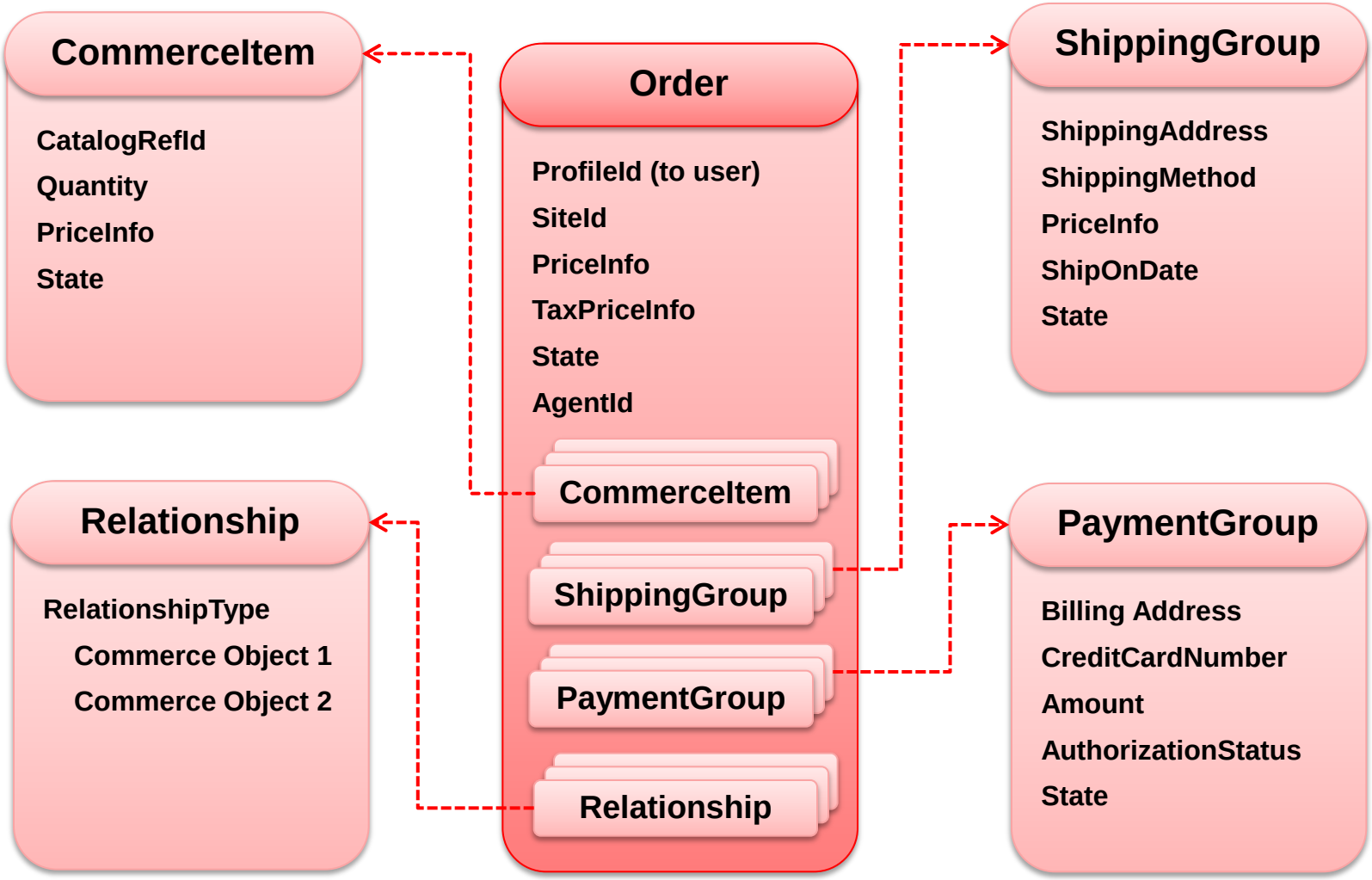
- To accurately capture information contained in a commerce order, an order object should answer the following questions:
  - What are the items being purchased?
  - What is the shipping information such as shipping method, items in that shipment, and shipping address?
  - What is the payment information such as payment method, items that this method pays for?
  - What is the cost of the items, shipping, tax, and entire order?

- The order object needs to contain objects to answer the questions above.

The Order Interface (1)

- The **order** interface is central to the entire purchase process.
- It acts as a container to all the data associated with that order, such as:
  - **CommerceItem** represents the information about a product and SKU that is being purchased.
  - **ShippingGroup** represents the information about the delivery of a collection of CommerceItem objects.
  - **PaymentGroup** represents the payment method and information for items, shipping, tax, and the entire order.
- In addition, it holds associations between the different commerce objects called **relationships**.

The Order Interface (2)



Implementation of Commerce Interfaces

- **OrderImpl** is an implementation of the order interface.
- **CommerceItemImpl** is an implementation of CommerceItem interface.
- **ShippingGroupImpl** implements ShippingGroup. Further extensions to this class add:
  - **HardgoodShippingGroup** adds address, carrier, etc.
  - **ElectronicShippingGroup** adds delivery instructions such as email.
- **PaymentGroupImpl** implements PaymentGroup.
  - **CreditCard** adds credit card info.
  - **GiftCertificate** adds gift certificate info used to pay for the order.
  - **StoreCredit** adds store credit if used to pay for the order.
- Each class has B2B extensions that add B2B features and cost center support.

HandlingInstruction

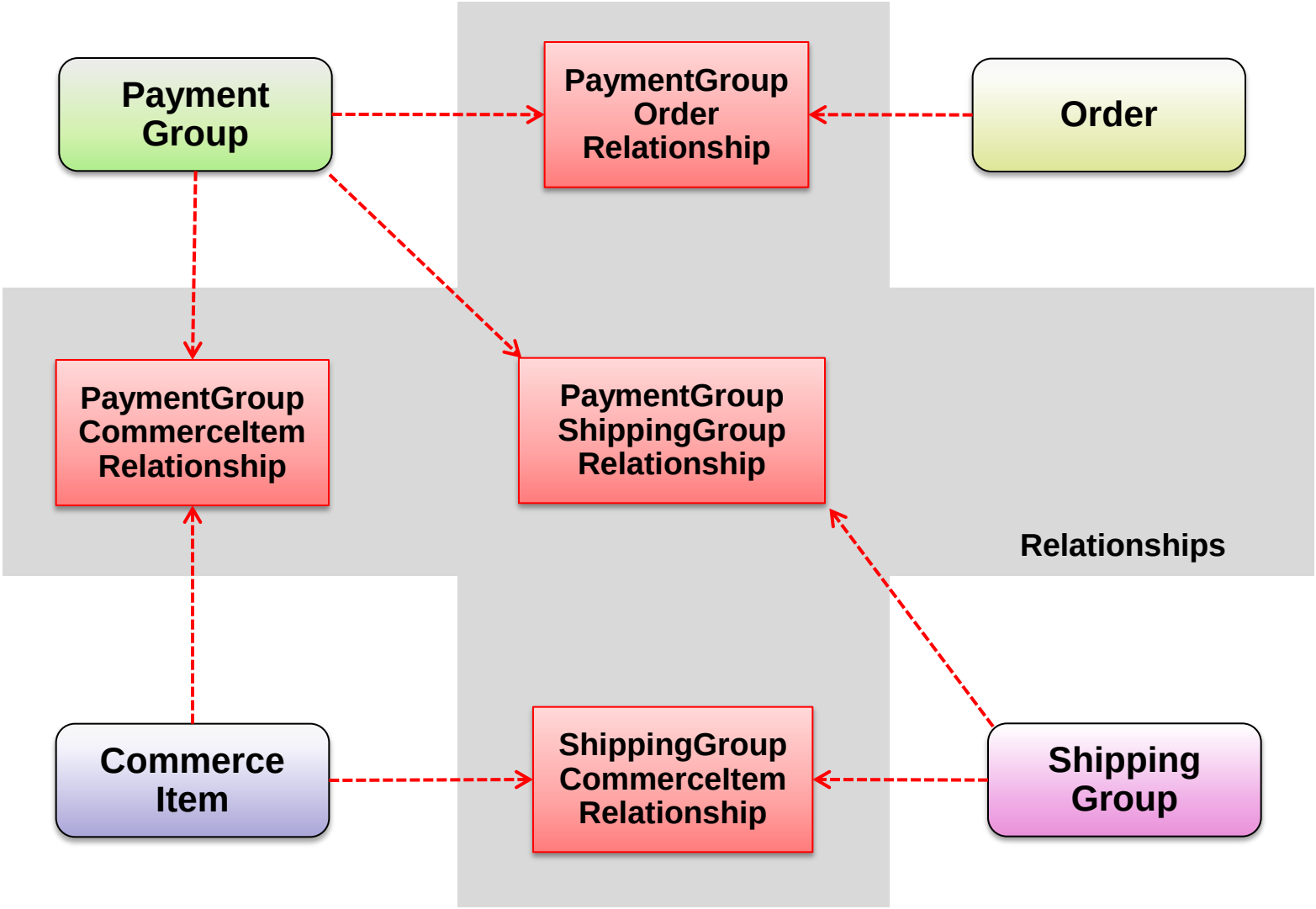
- **HandlingInstruction** interface describes special handling for a CommerceItem within a given ShippingGroup.
- **HandlingInstructionImpl** implements the interface.
- It contains ShippingGroup ID, CommerceItem ID, and quantity to indicate which CommerceItems in the ShippingGroup require special handling.
- **GiftListHandlingInstruction** extends HandlingInstructionImpl. It maintains data about which CommerceItems in the order were added from a gift list.
- HandlingInstruction objects can be found in the ShippingGroup.
- An example of special handling instructions is gift wrapping.

RELATIONSHIPS

Implementation of Relationship

- Relationship objects have associated type which determine who is participating in the relationship and how to interpret it.
- There are four relationship objects:
  - ShippingGroupCommerceItemRelationship,
  - PaymentGroupOrderRelationship,
  - PaymentGroupCommerceItemRelationship,
  - PaymentGroupShippingGroupRelationship.
- Each of the above objects have multiple **types of relationships** associated with them.
- In ATG commerce, developers never add a relationship to an order. It is done implicitly by calling the related business layer classes such as commerce object managers.

Relationship Objects



Relationship Objects with Properties

ShippingGroup CommerceItem Relationship

- Amount
- Quantity
- Range
- RelationshipType
- State
- Commerce Item
- Shipping Group

PaymentGroup CommerceItem Relationship

- Amount
- Quantity
- Range
- RelationshipType
- Commerce Item
- Payment Group

PaymentGroup Order Relationship

- Amount
- RelationshipType
- Order
- Payment Group

PaymentGroup ShippingGroup Relationship

- Amount
- RelationshipType
- Shipping Group
- Payment Group

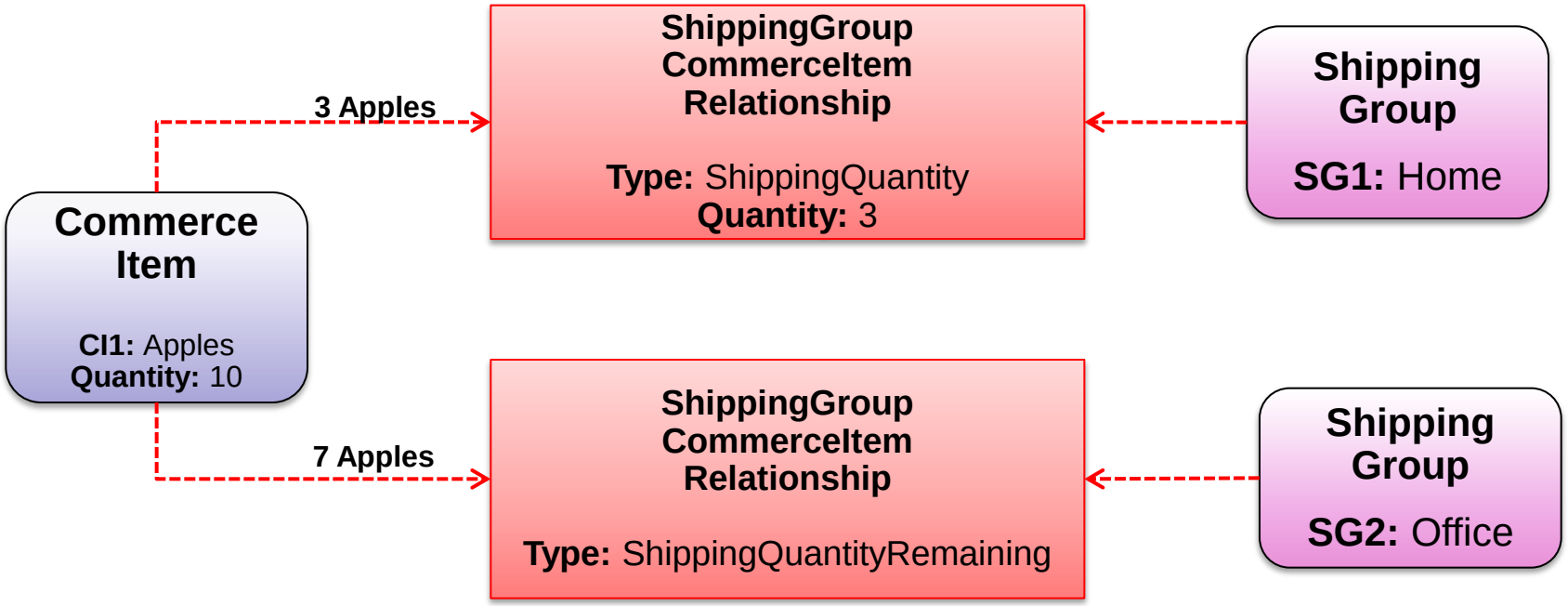
ShippingGroup CommerceItem Relationship

- ShippingGroupCommerceItemRelationship represents the relationship between CommerceItems and ShippingGroups indicating the specific quantity of items that will be shipped using this particular group.
- The two types of this relationship are:
  - **ShippingQuantity** indicates that the specific quantity of the item will be shipped using the information in the ShippingGroup. Quantity to be shipped is stored in the relationship.
  - **ShippingQuantityRemaining** indicates that the remaining quantity of the item unaccounted for by other ShippingGroupCommerceItemRelationship objects will be shipped using information in the attached Shipping Group.
- A commerce item can have only one relationship of type ShippingQuantityRemaining.

Usage of Shipping Relationship (1)

- A customer places an order for CommerceItem apple (CI1) with quantity 10. He wants 3 to ship to home (SG1) and the remaining to be shipped to office (SG2).
- Two relationships would be created between CommerceItem (CI1) and ShippingGroups SG1 and SG2:
  - One of type ShippingQuantity between CI1 and home (SG1) with quantity to ship is 3.
  - Another of type ShippingQuantityRemaining between CI1 and office (SG2).

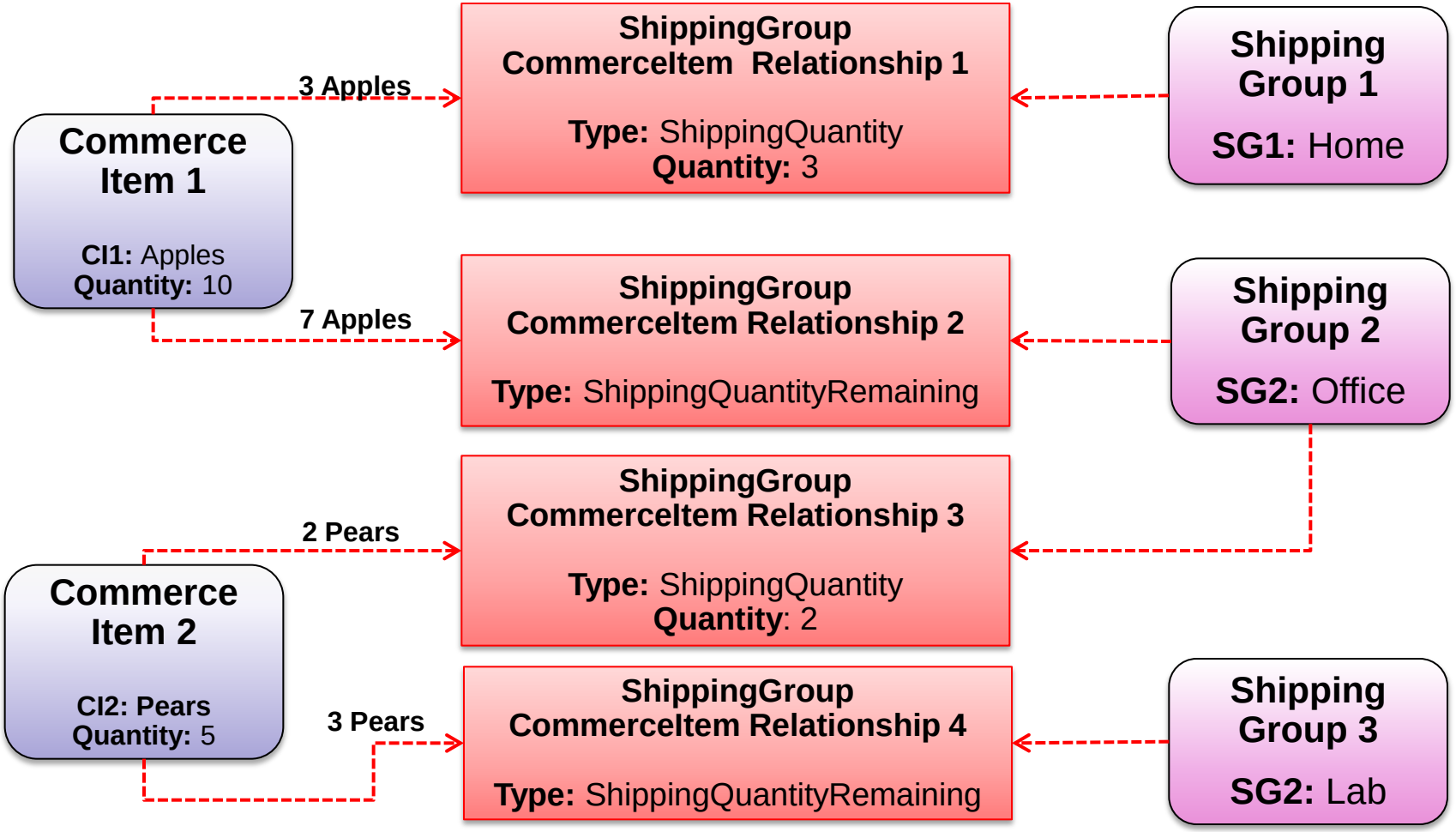
Usage of Shipping Relationship (2)



- If while ordering, the customer increases the quantity, the ShippingQuantityRemaining object type would dynamically adjust to include the additional items.

Usage of Shipping Relationship (3)

- The following complicated relationships are also possible:



PaymentGroupOrderRelationship Object

- Represents a relationship between an order and a payment group indicating how the order will be paid.
- There are two ways to split the cost of the order across payment groups:
  - Split the entire order by using PaymentGroupOrderRelationship.
  - Assign different types of costs (item vs. tax) to separate PaymentGroups.
- Consequently there are four relationship types for PaymentGroupOrderRelationships.

PaymentGroupOrderRelationship Types

- **OrderAmount** relationship type indicates that a specific amount of the total cost of the order will be paid using the information in the PaymentGroup.
- **OrderAmountRemaining** relationship type indicates that the remaining cost of the order unaccounted for by other PaymentGroupOrderRelationship objects will be paid using the information in the PaymentGroup.
- **TaxAmount** relationship type indicates that a specific amount of the tax charged for the order will be paid using the information in the PaymentGroup.
- **TaxAmountRemaining** relationship type indicates that a tax cost unaccounted for by other PaymentGroupRelationship objects will be paid using the information in the referenced payment group.

PaymentGroup CommerceItem Relationship Object

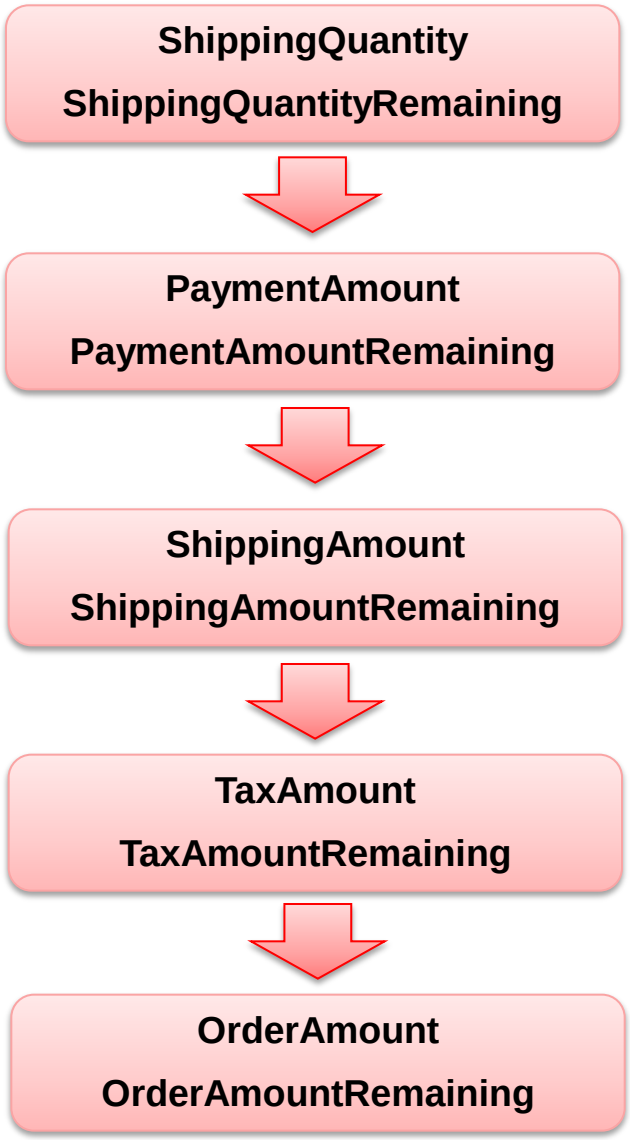
- Represents a relationship between a CommerceItem and a PaymentGroup.
- It is used for split payment for a single CommerceItem between multiple payment groups.
- There are two relationship types:
  - **PaymentAmount** indicates that a specific amount of the item's cost will be paid using the information in the PaymentGroup.
  - **PaymentAmountRemaining** indicates that any remaining payment amount unaccounted for by other PaymentGroupCommerceItemRelationship objects will be paid using the information in the referenced PaymentGroup.
- A CommerceItem can have only one relationship of type PaymentAmoutRemaining.

PaymentGroup ShippingGroup Relationship Object

- Represents a relationship between a ShippingGroup and a PaymentGroup.
- This type of relationship is used to assign shipping costs in a ShippingGroup to PaymentGroups.
- There are two relationship types:
  - **ShippingAmount**: This relationship type indicates that a specific amount of the shipping cost will be paid using the information in the PaymentGroup.
  - **ShippingAmountRemaining**: This relationship type indicates that any remaining shipping cost amount unaccounted for by other PaymentGroupShippingGroupRelationship objects will be paid using the information in the PaymentGroup.

Relationship Priority

- Priority determines the order in which relationships are processed or fulfilled during order processing.
- A relationship's priority is determined by its relationship type.
- If relationship type is the same, the priority is determined by the order in which the relationships were created.



Section 2 ✔
Check Your Understanding

How would gift wrapping be representing in the commerce objects?

Answer:

HandlingInstruction interface.

Section 2
Check Your Understanding

What is the type ShippingQuantityRemaining in the ShippingGroup CommerceItem relationship?

Answer:

ShippingQuantityRemaining indicates that the remaining quantity of the item unaccounted for by other ShippingGroupCommerceItemRelationship objects will be shipped using information in the attached shipping group.

Section 2 ✔
Check Your Understanding

What are the types of PaymentGroupOrderRelationship?

Answer:

Four: OrderAmount, OrderAmountRemaining, TaxAmount, TaxAmountRemaining.

Section 2
Check Your Understanding

What does the PaymentGroup ShippingGroup relationship signify?

Answer:

This type of relationship is used to assign shipping costs in a ShippingGroup to PaymentGroups.

Section 2 ✔
Check Your Understanding

What is the PaymentGroupCommerceItem relationship used for?

Answer:

It is used for split payment for a single CommerceItem between multiple payment groups.

Summary

- The **order** interface is central to the entire purchase process.
- **CommerceItem** represents the information about a product and SKU that is being purchased.
- **ShippingGroup** represents the information about the delivery of a collection of CommerceItem objects.
- **PaymentGroup** represents the payment method and information for items, shipping, tax, and the entire order.
- **Relationship** objects have associated type which determine who is participating in the relationship and how to interpret it.

Q&A

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