

Business Processes and Service Specifications

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Why Focus on Business Processes?

- **Business processes are the mechanisms that provide enterprise value**
 - Consistent execution is vital
 - IT mission is to facilitate business process execution
- **A service provides value when it becomes part of a business process**
 - No use = no value
- **The value of a service depends on its ability to fit one or more business processes**
 - Lack of fit = wasted investment

Services must be designed to fit business processes!

What Must Be Considered to Specify a Service?

□ Basic functional requirements

- What does the business process require?

□ Non-functional requirements

- May differ from process to process

□ Business process delivery channels

- Non-functional requirements may vary

□ Coordination

- How is the service work coordinated with the business process?

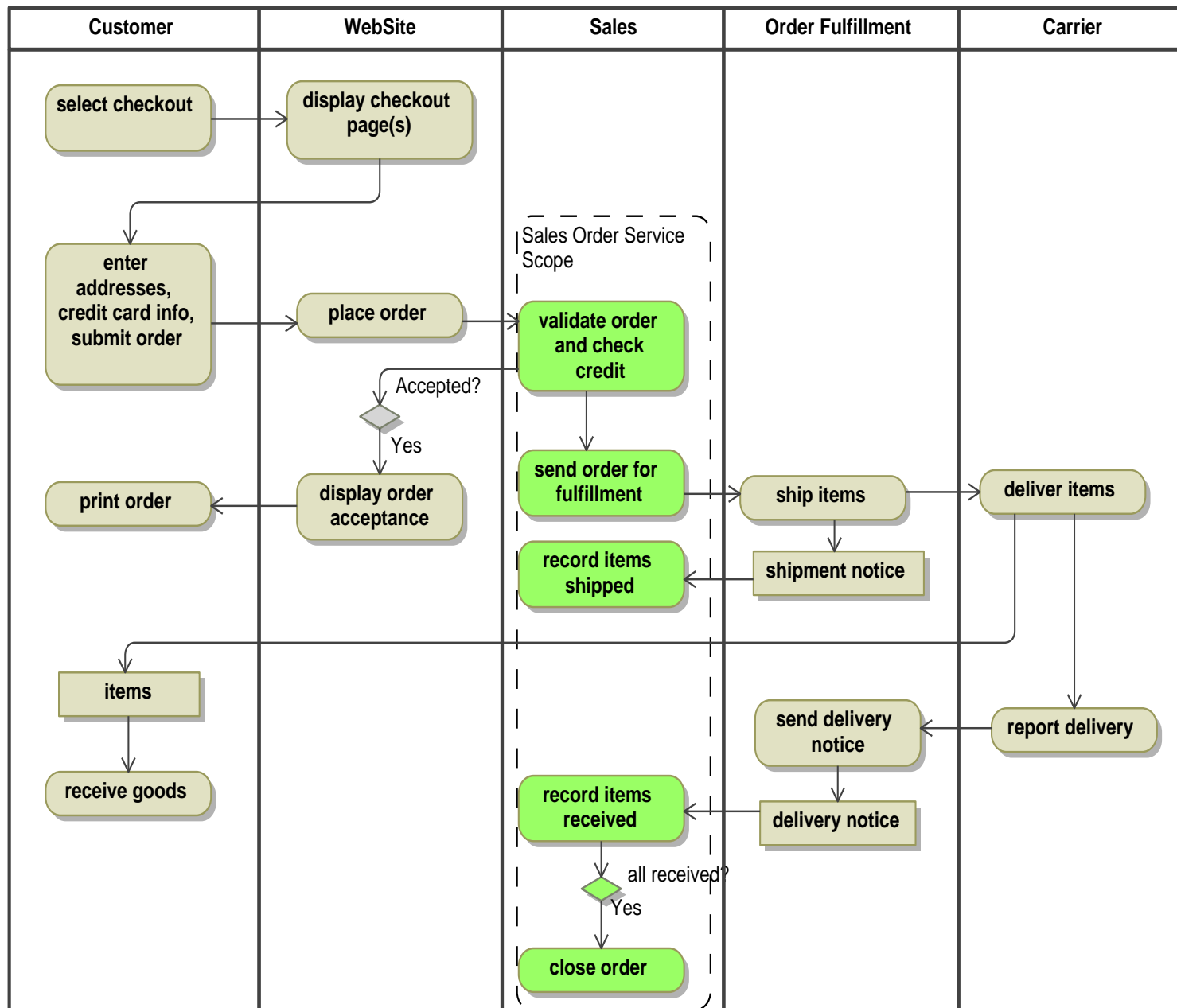
□ Service architecture

- Not entirely a black-box exercise

Basic Functional Requirements

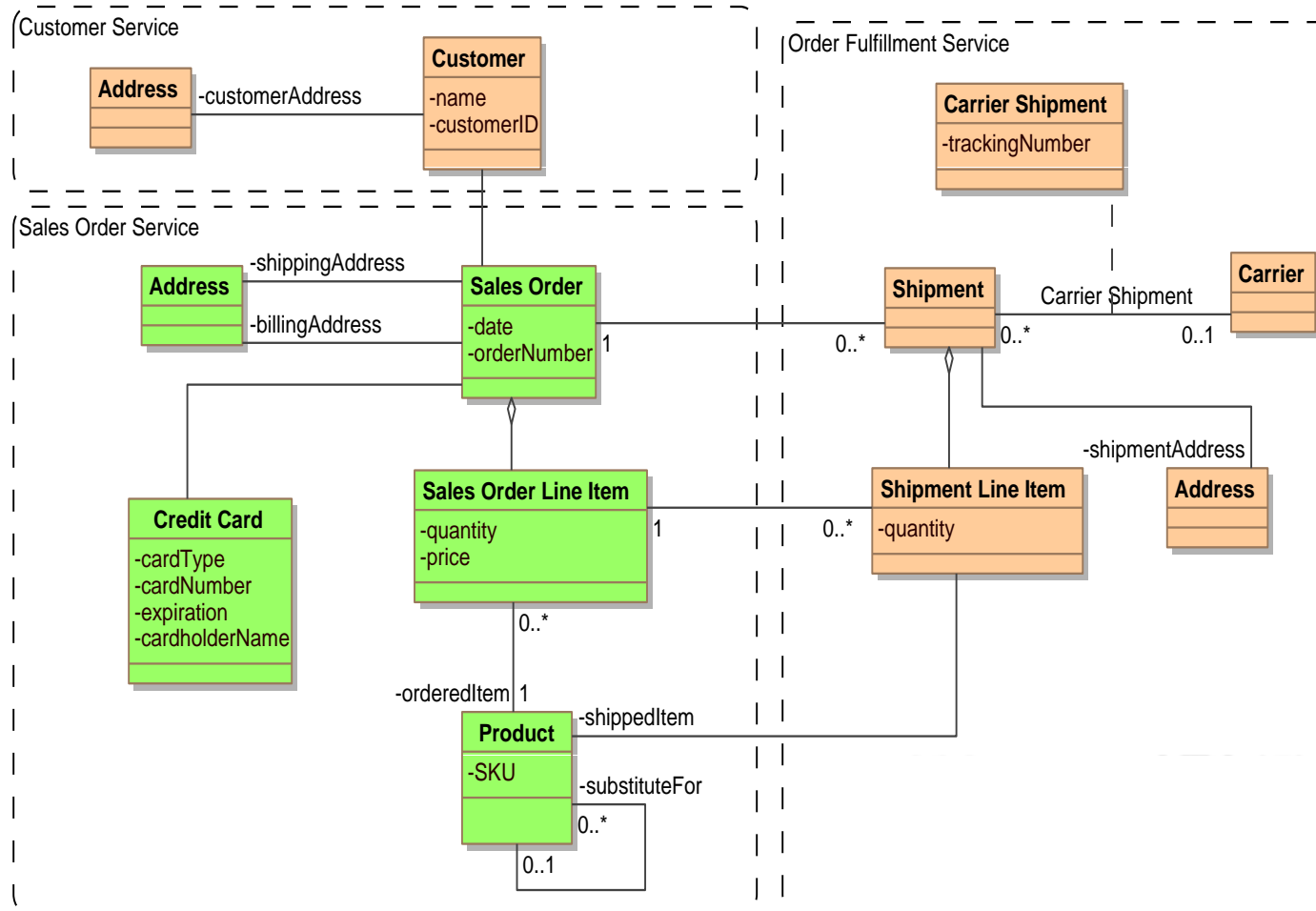


Business Process Context



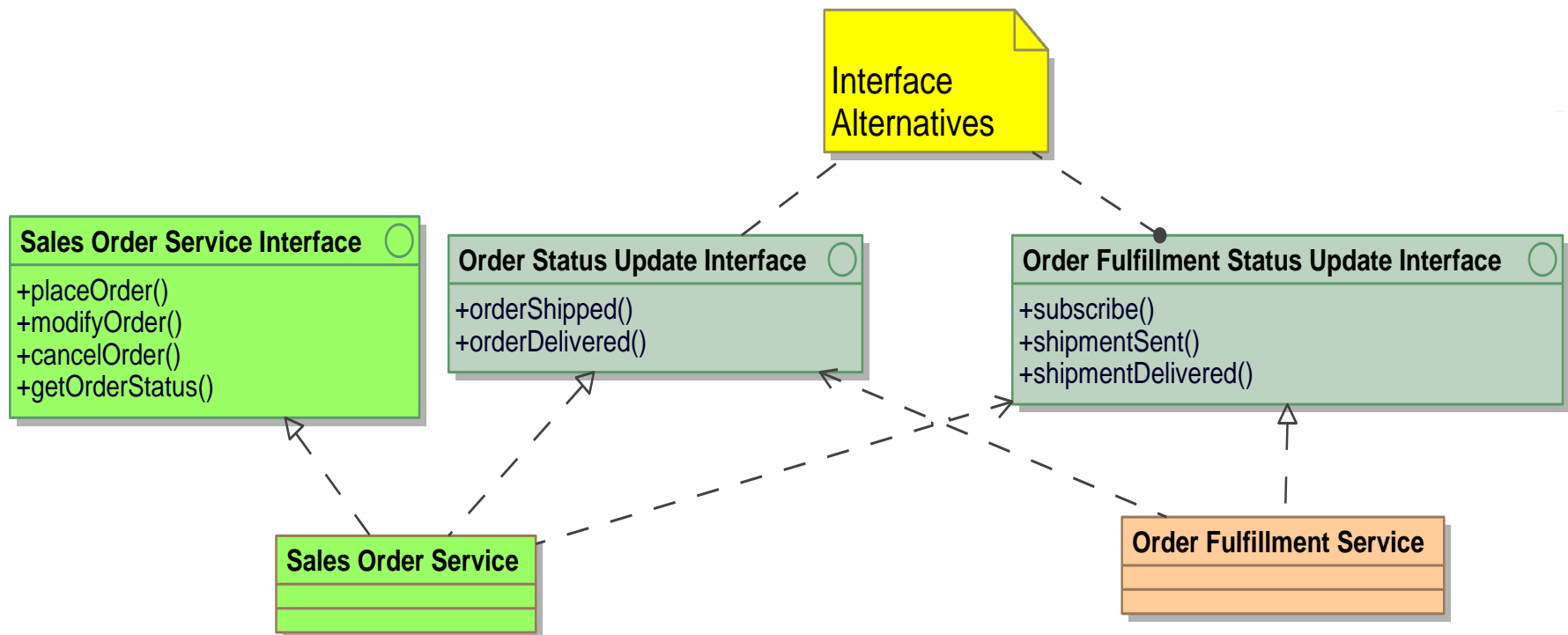
Information Requirements

- ❑ What information does the service manage?
- ❑ What information does it use but not own?
 - Is the information cached? How is the cache maintained?

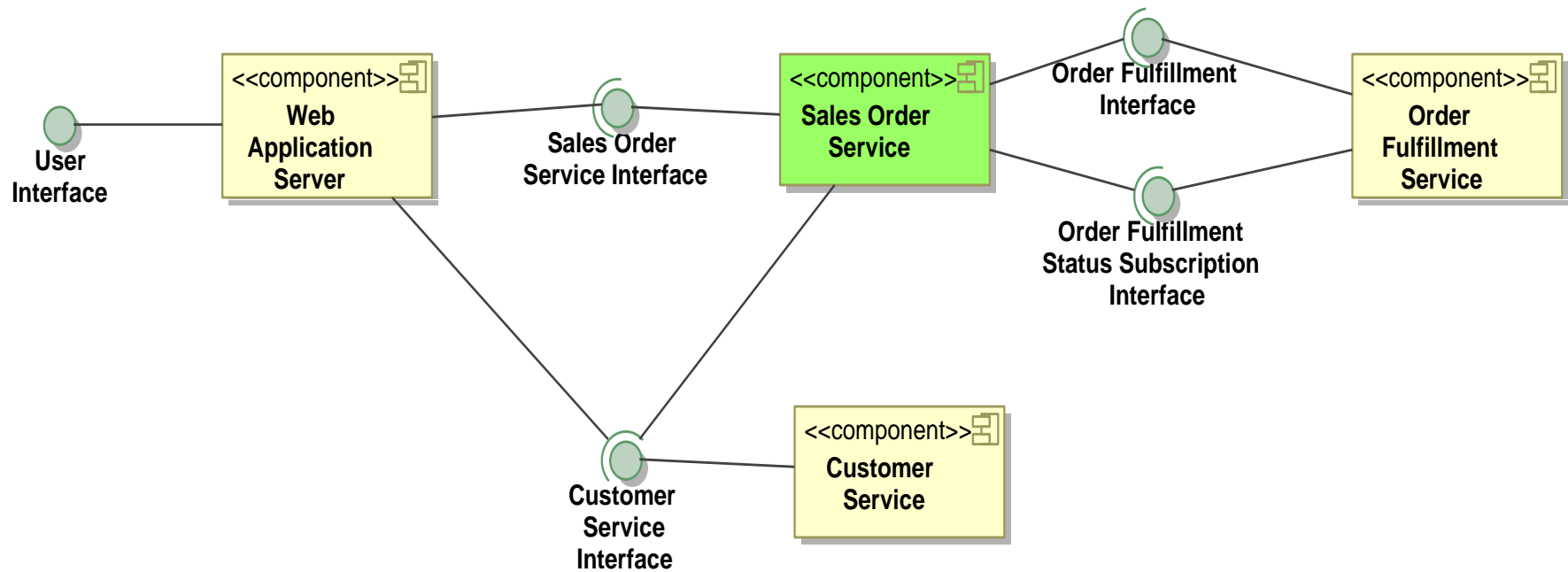


Capability Requirements

- Provided operations
- Don't forget about multi-step processes

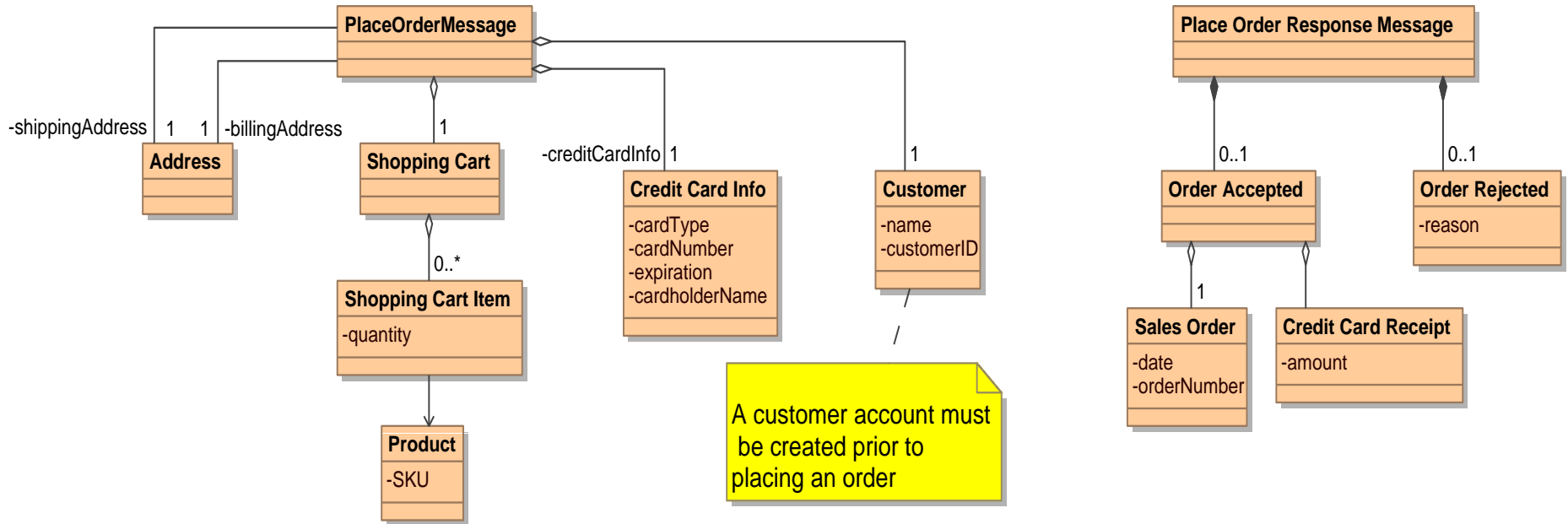


Partial Solution Architecture

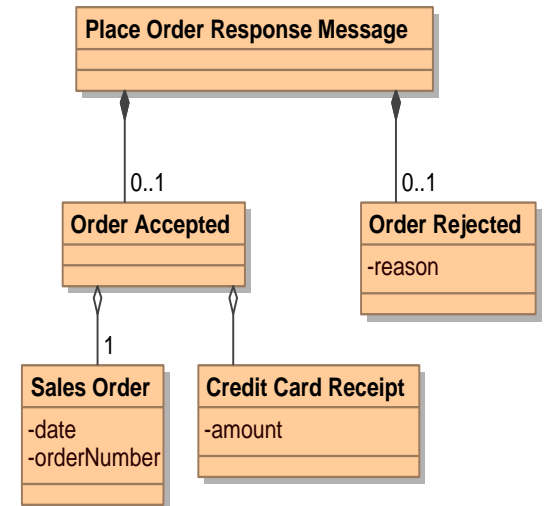


Message Data Structures

- Information required
- Information returned
- Common data models
 - Whole messages?
 - Common sub-structures



A customer account must be created prior to placing an order



Granularity

- ❑ **One or many items per order?**
- ❑ **One or many orders at a time?**
 - Multiple shopping carts
 - Common shipping address?
 - Common billing information?
 - Common customer?
- ❑ **One or many shipments per order?**
 - Affects interfaces between Customer Order Service and Order Fulfillment Service

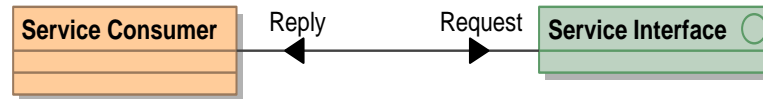
Coordination



Message Exchange Patterns

□ In-Out

- Request reply



□ In-Only

- Fire-and-forget



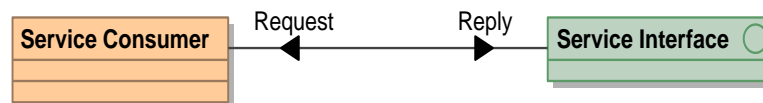
□ Out-Only

- Subscription



□ Out-In

- Warranty recall

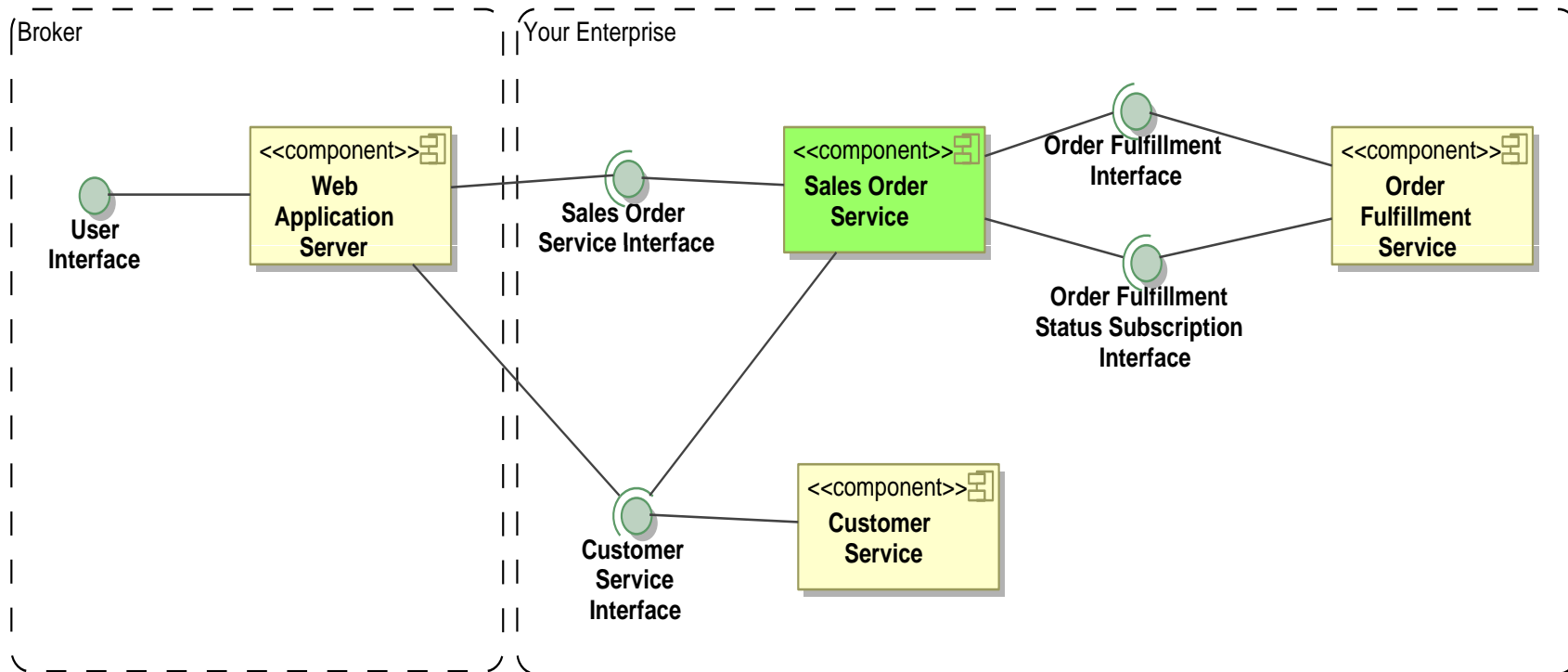


□ In-* and Out-* patterns differ in which party specifies the interface

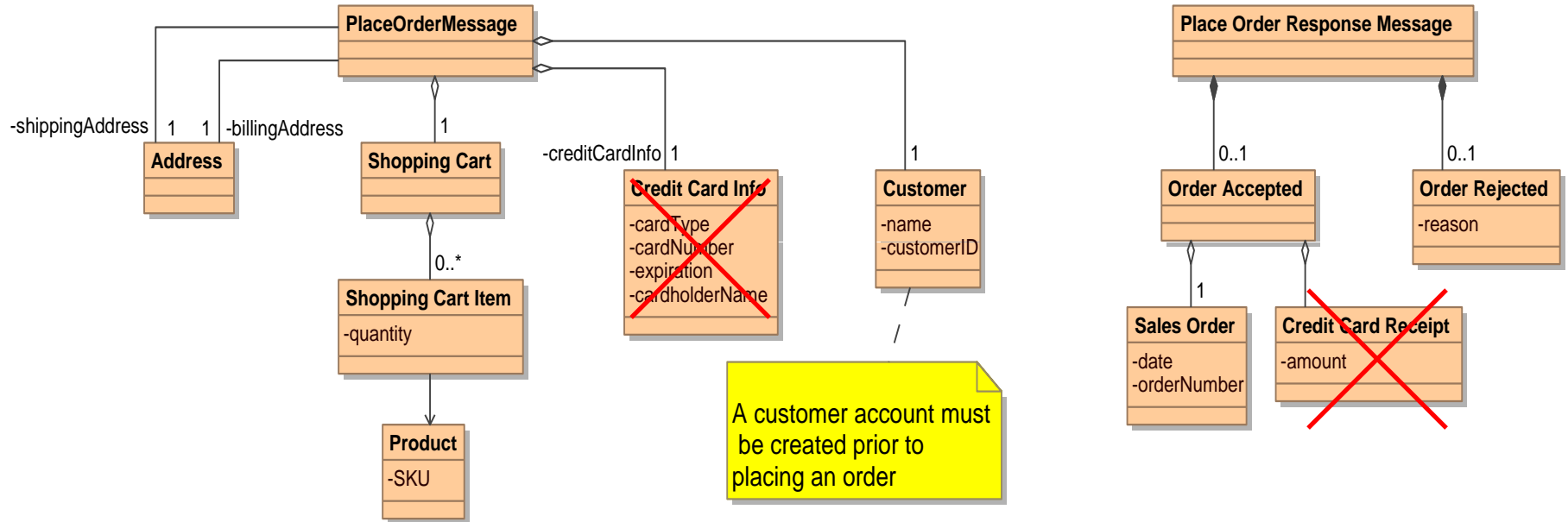
Different Channels Alter the Business Process

- ❑ **On-line direct ordering**
 - Immediate synchronous response
- ❑ **Email ordering**
 - Delayed asynchronous response
- ❑ **Phone ordering**
 - Operator requires immediate synchronous response
 - Secondary feedback channel may be required (e.g. email)
- ❑ **B2B ordering**
 - Batch – asynchronous response
 - Interactive – synchronous response
- ❑ **Agent ordering**
 - Passes customer payments through
 - Separate accounting for agent fees
- ❑ **Broker (reseller) ordering**
 - Broker handles customer payments
 - Broker pays for products at a discount

Partial Architecture with Broker



Place Order Message Structures with Broker



❑ An alternate mechanism for payments is required!

Request-Reply Considerations

□ Synchronous interaction

- In-Out pattern
- Allowed completion time must be specified

□ Asynchronous interaction

- In-Out with WS-Addressing for response
- In-Only and Out-Only with WS-Addressing for response

□ Can the same operation support both?

- Use presence of WS-Addressing reply-to destination to indicate asynchronous response is required? (untried!)

□ How to handle large data sets in reply

- WS-Enumeration?

Different business processes and channels may require different coordination patterns!

Subscription Services

□ Managing the subscription

- WS-Eventing and associated interfaces

□ Interaction patterns for delivering the subscription

- Out-Only (typical)
- Out-In
 - Price list updates to agents and brokers
 - Product recalls to customers

Exception Handling

□ Don't use SOAP faults for expected conditions

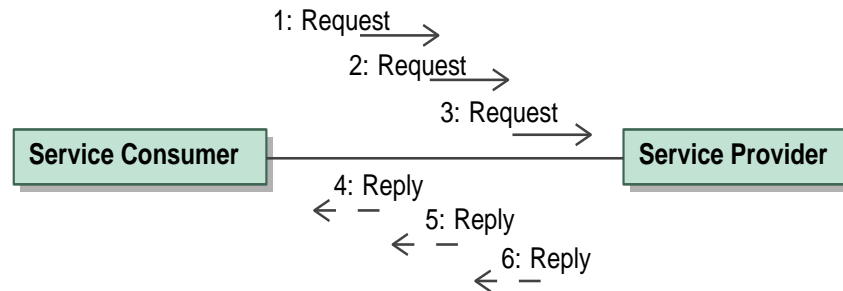
- May be difficult to continue business process flow with SOAP faults
- Expected conditions should return expected results
 - e.g. Bad credit card number on placeOrder() operation

□ Anticipate business process requirements for responding to exceptions

- Information required in expected results
 - e.g. primary keys, problem details
- Additional service operations
 - e.g. query, edit, delete, hold, and resume operations
- Options for resuming business process
 - e.g. engage customer service representative
 - Support must be provided for these activities

High Throughput Considerations

- ❑ Focus on true peak rate at which response time must be met
- ❑ Consider back-end limitations!
- ❑ High throughput does not necessarily require short response time
 - Asynchronous responses allow multiple requests to be in progress



- ❑ Do requests need to be serialized?

- E.g. create, delete, and update operations on the same order must be processed in the order received

Other Non-Functional Requirements to Consider

□ Response time

- Synchronous and asynchronous

□ Availability

- Required availability during normal working hours
 - Maximum time to recover
- Allowed outage periods

□ Security

- Authentication and authorization
 - Variations for different business processes
- In-transit data encryption
- At-rest data encryption

□ Most requirements derive from business processes

Service Architecture Alternatives

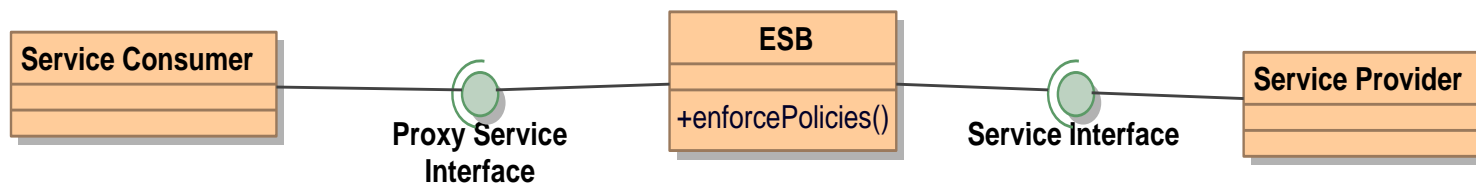
□ Back-end system wrapper

- How will scaling work?



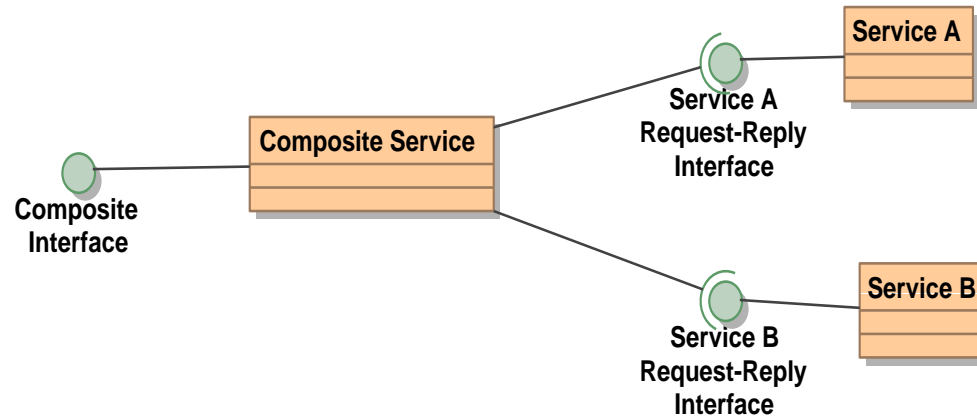
□ Policy-based access

- Security
- Results filtering

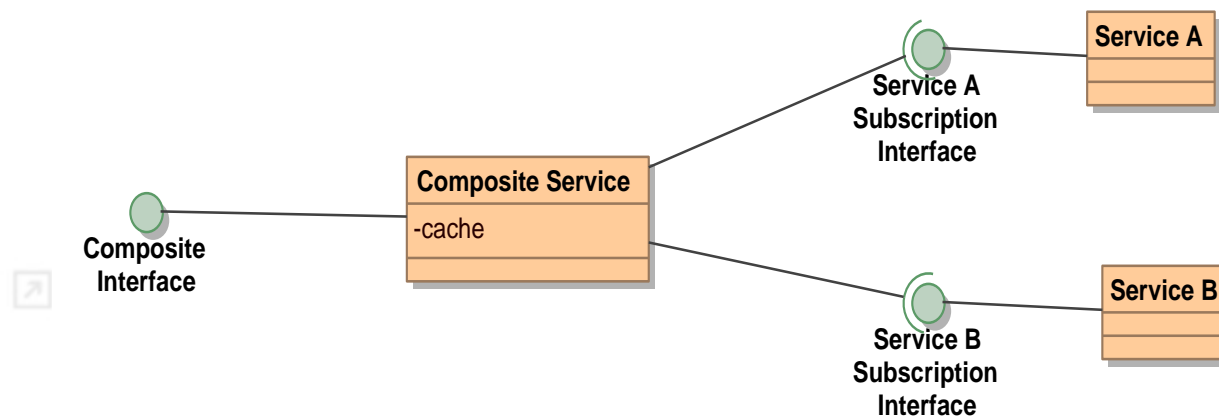


Composite Services

□ Traditional architecture



□ Cache-based architecture



Summary

- ❑ **Business process needs drive most service requirements**
- ❑ **Reuse depends on satisfying the requirements of more than one business process**
 - Granularity and interaction patterns may be different
- ❑ **Most services manage information**
 - References to another service's information require additional interfaces to maintain consistency
- ❑ **Channels have a huge impact on requirements**
 - Changing enterprise boundaries always changes interfaces!
- ❑ **The internal architecture of the service is important**

Questions?

