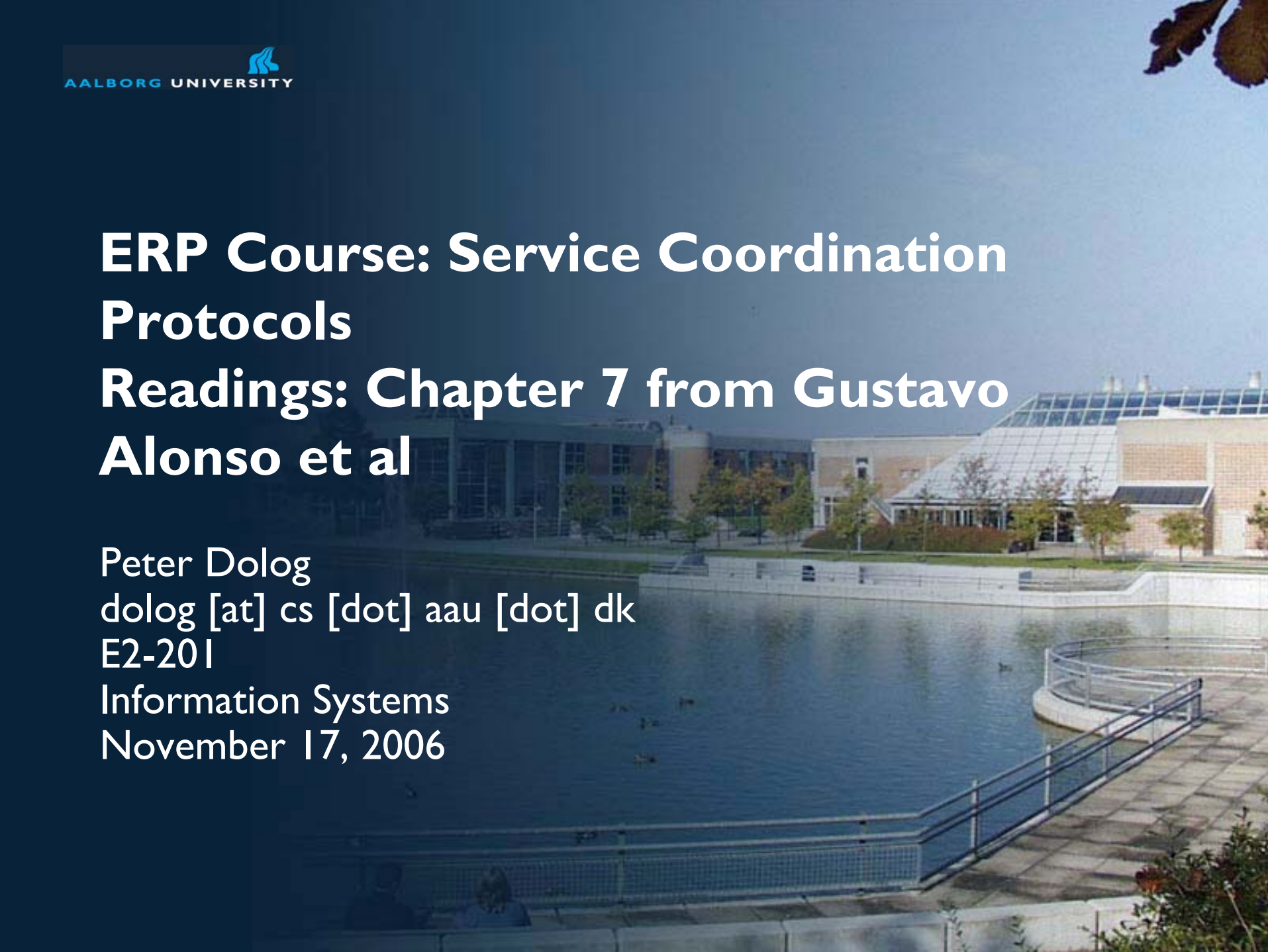


# ERP Course: Service Coordination Protocols

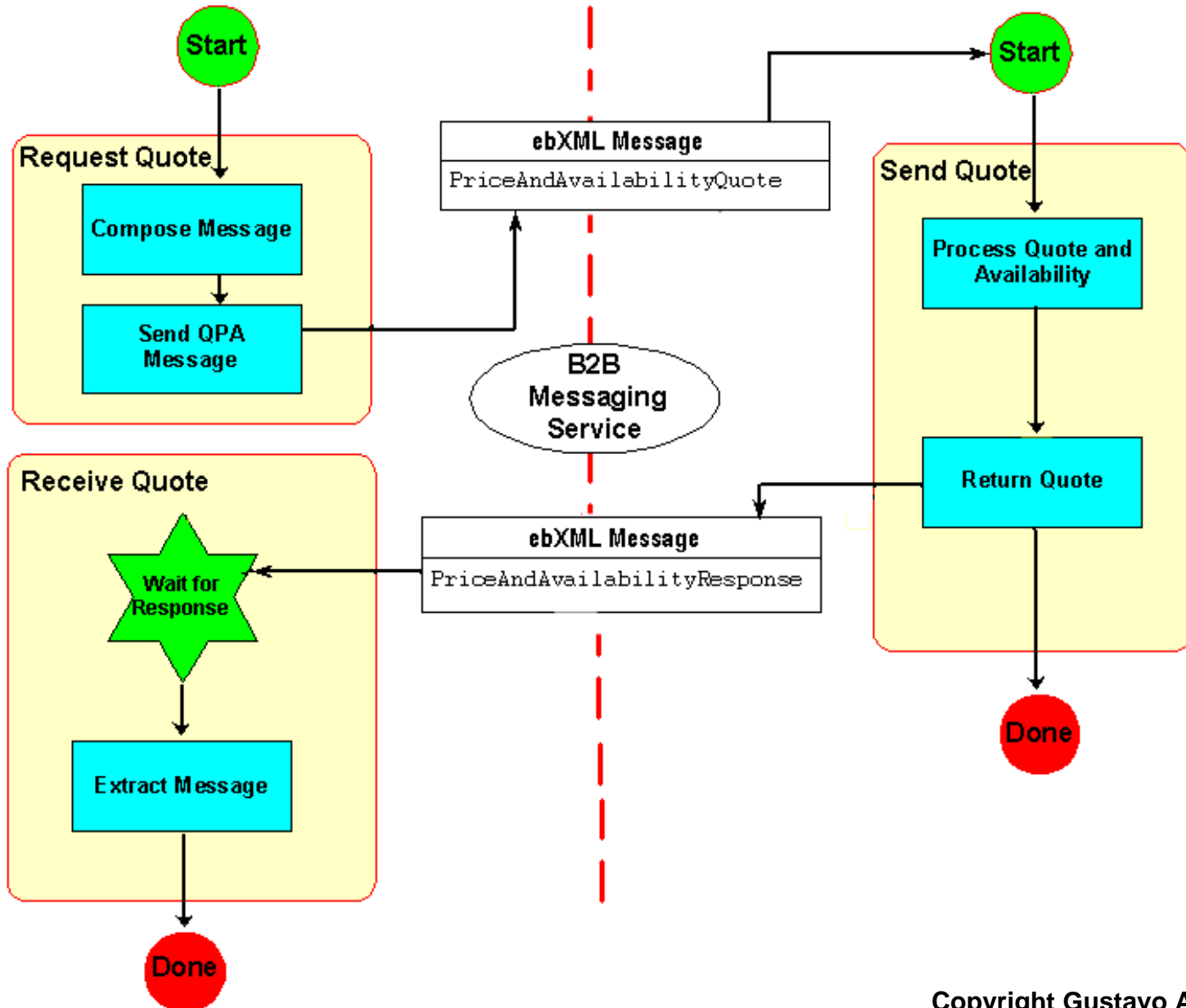
## Readings: Chapter 7 from Gustavo Alonso et al

Peter Dolog  
dolog [at] cs [dot] aau [dot] dk  
E2-201  
Information Systems  
November 17, 2006

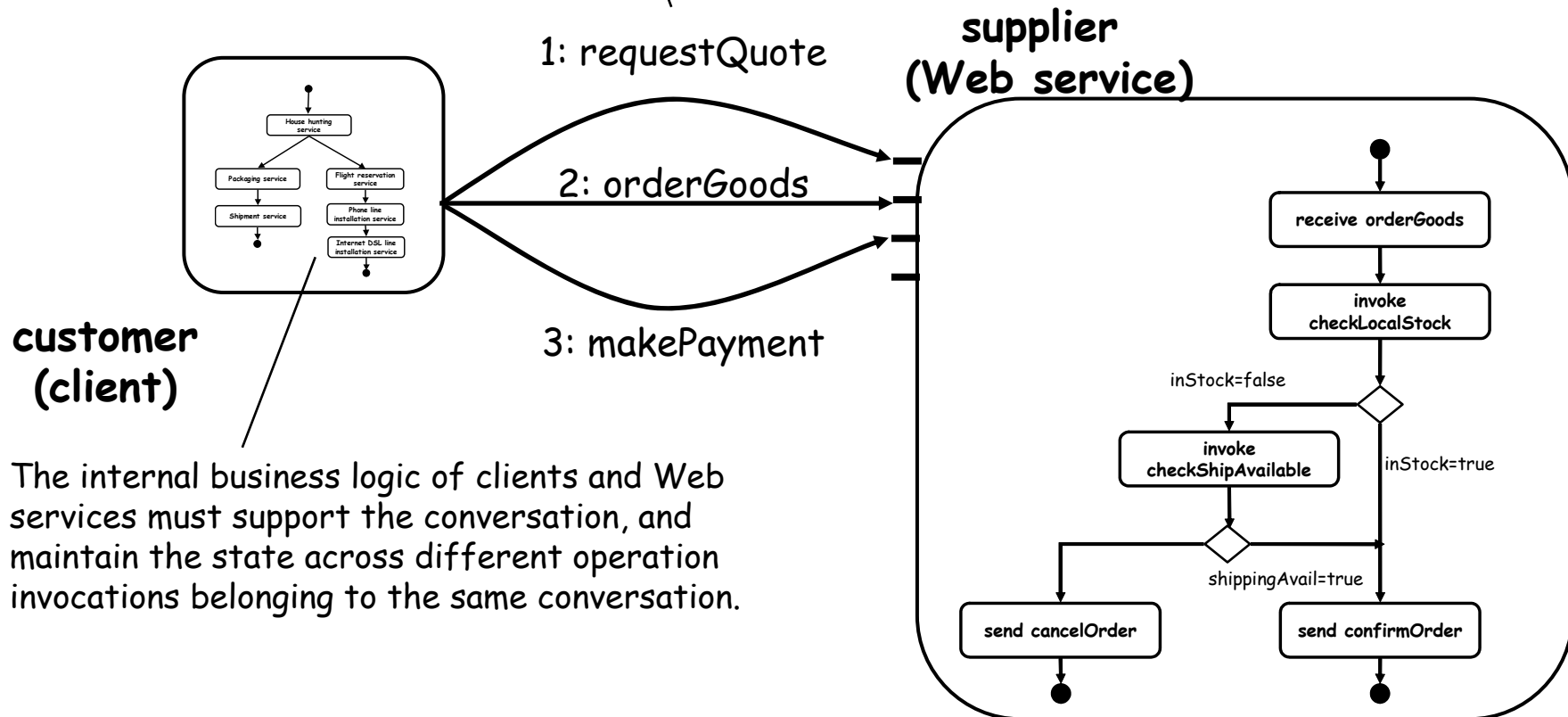


### Workflow for Initiator Role

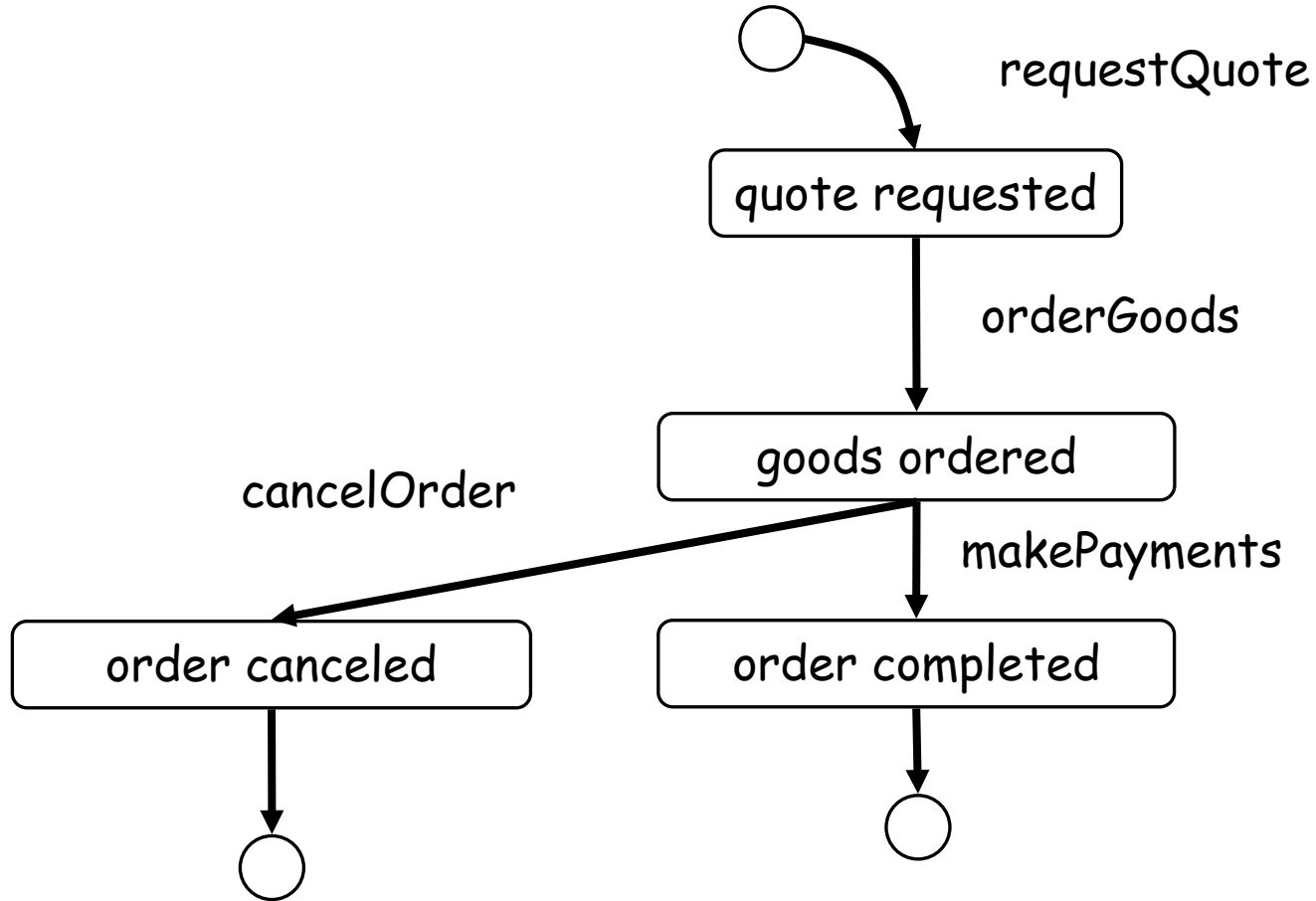
### Workflow for Participant Role



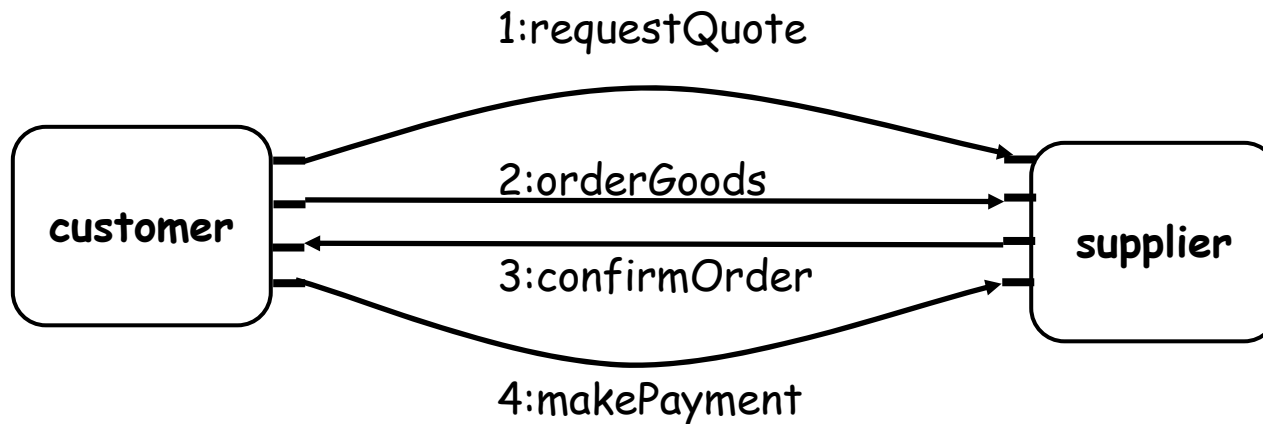
The interaction between clients and services is often formed by a set of operation invocations (i.e., it is a *conversation*).  
A service provider may support some conversations while disallowing others.



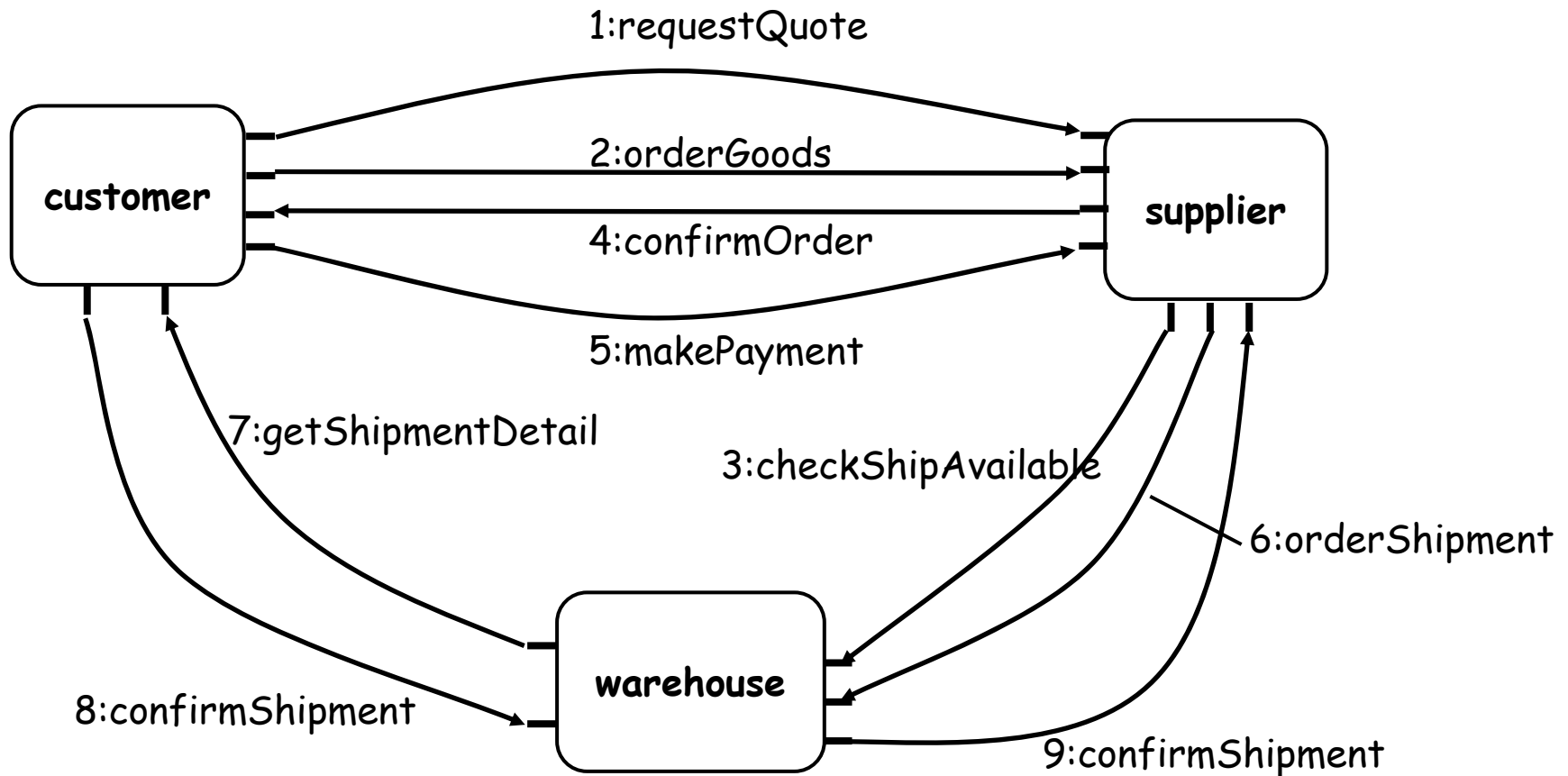
# Valid States and Messages



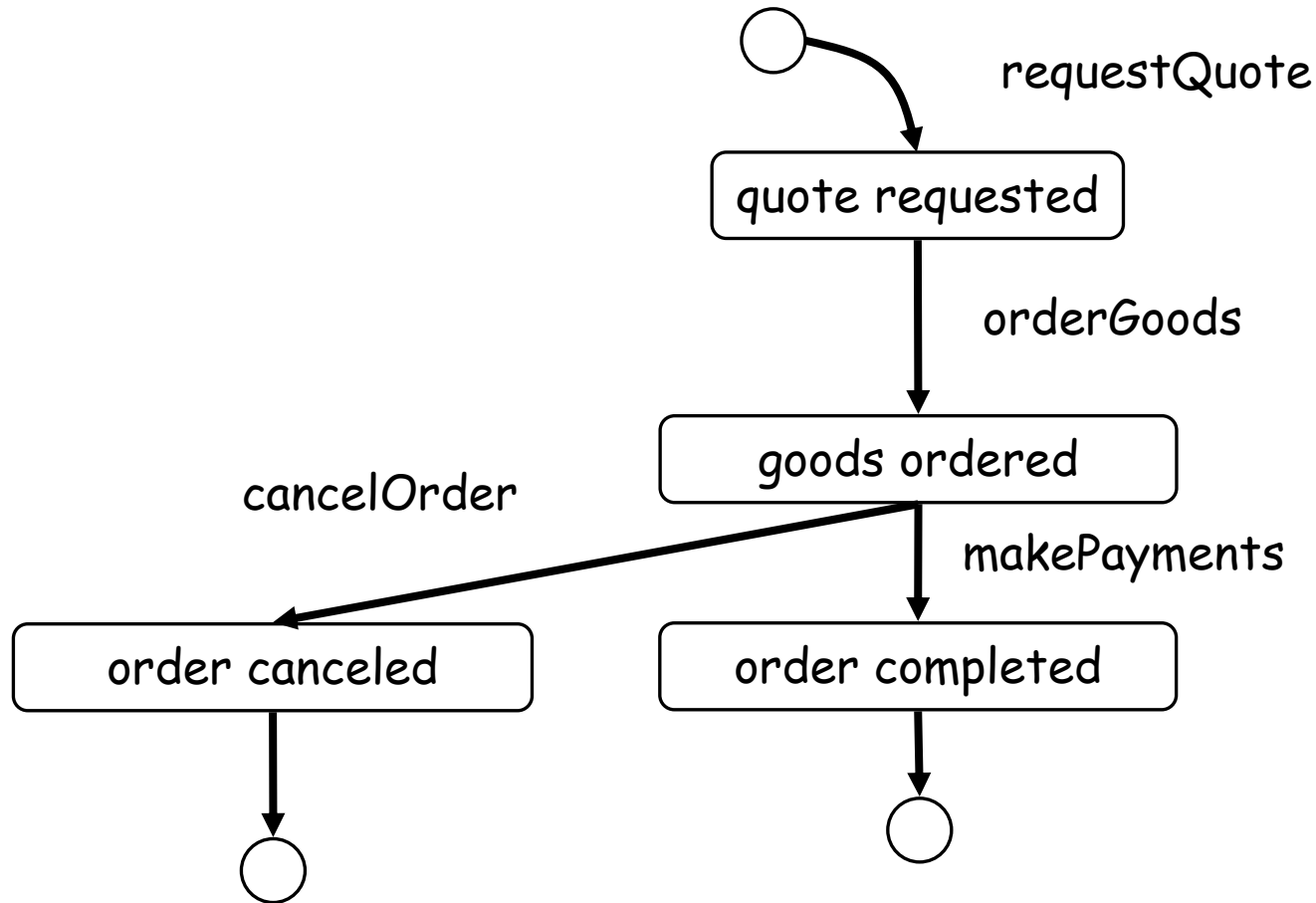
# Service Identification (Source and Target)



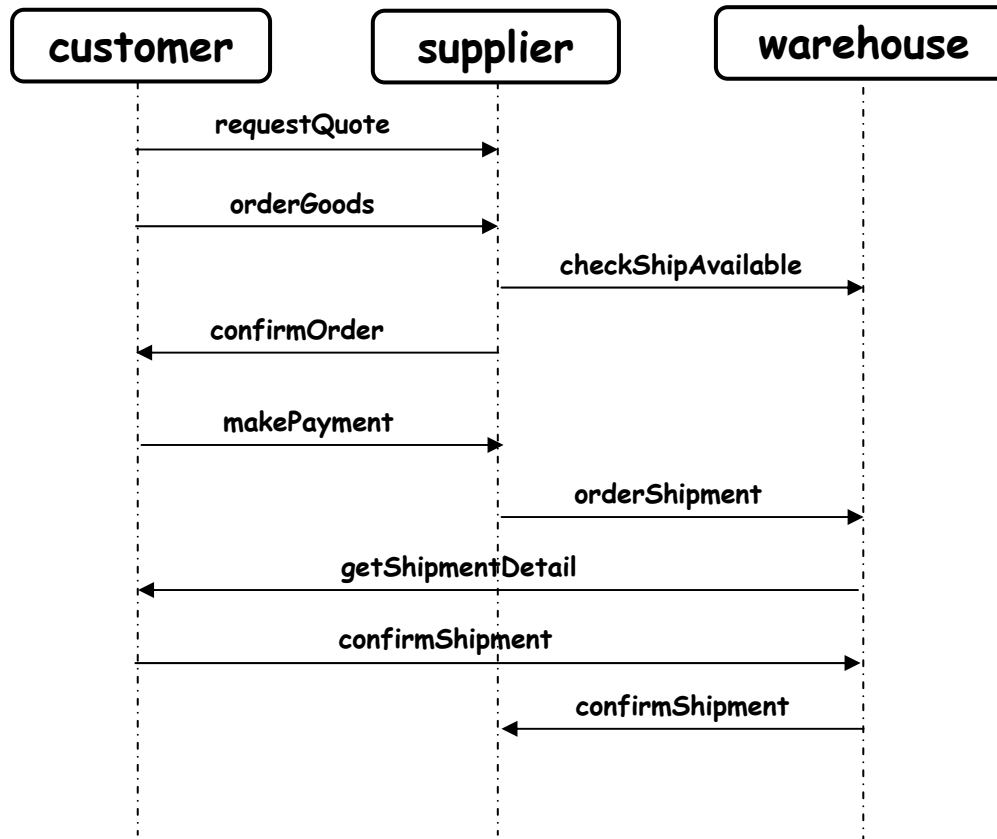
# Various Roles and Conversation Participants



# A Need For Extension

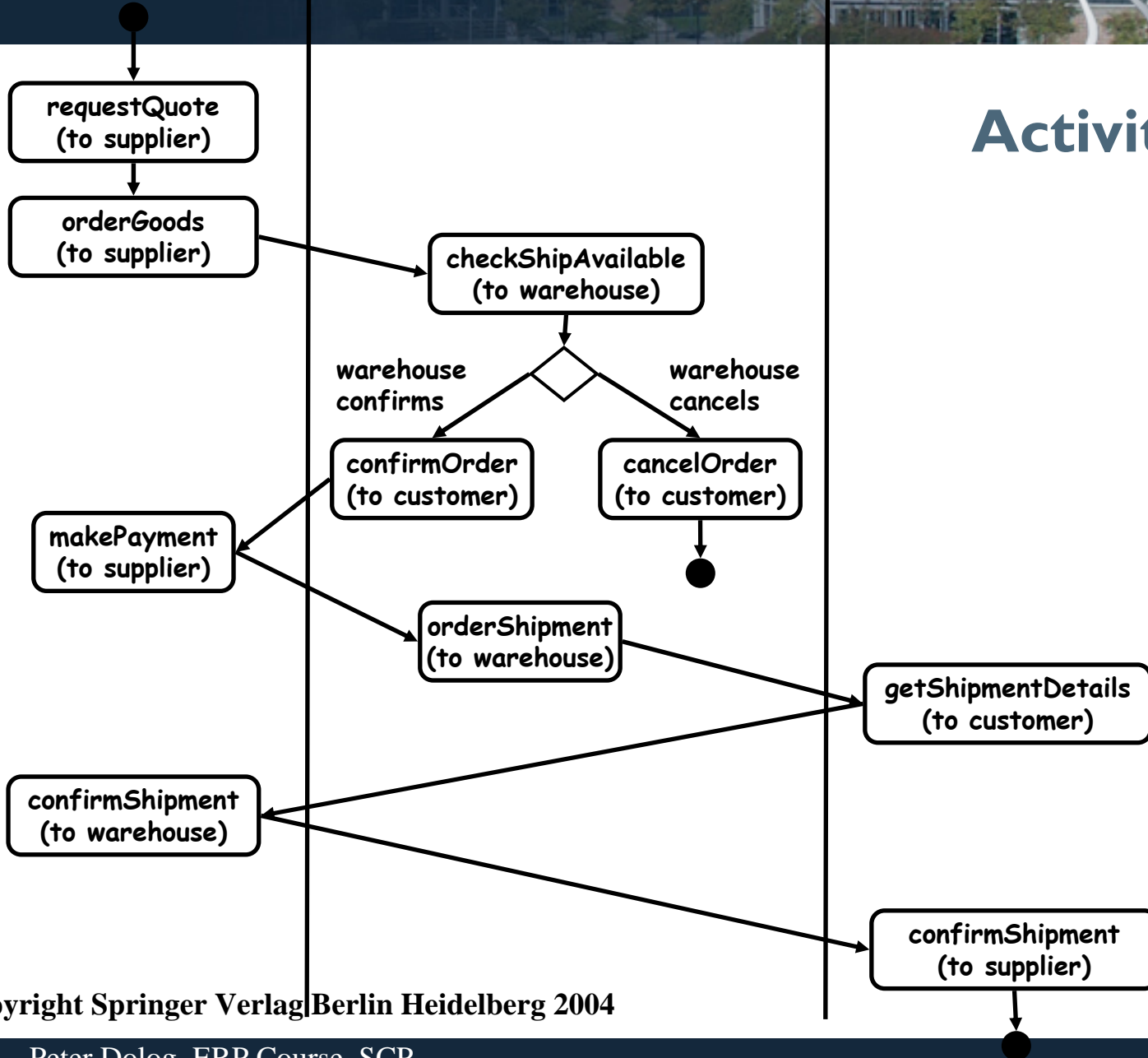


# Interaction Modeling

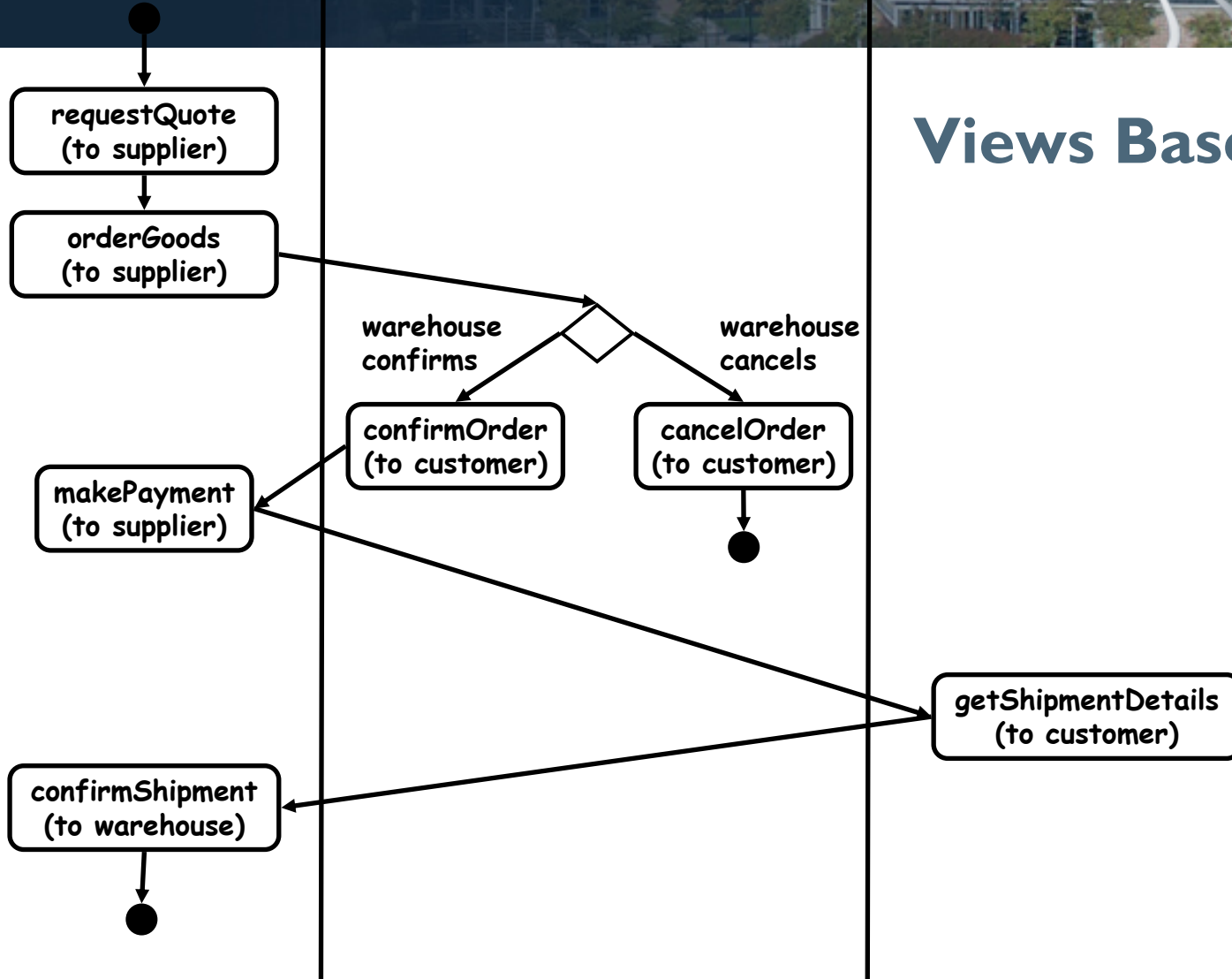




# Activity Graphs

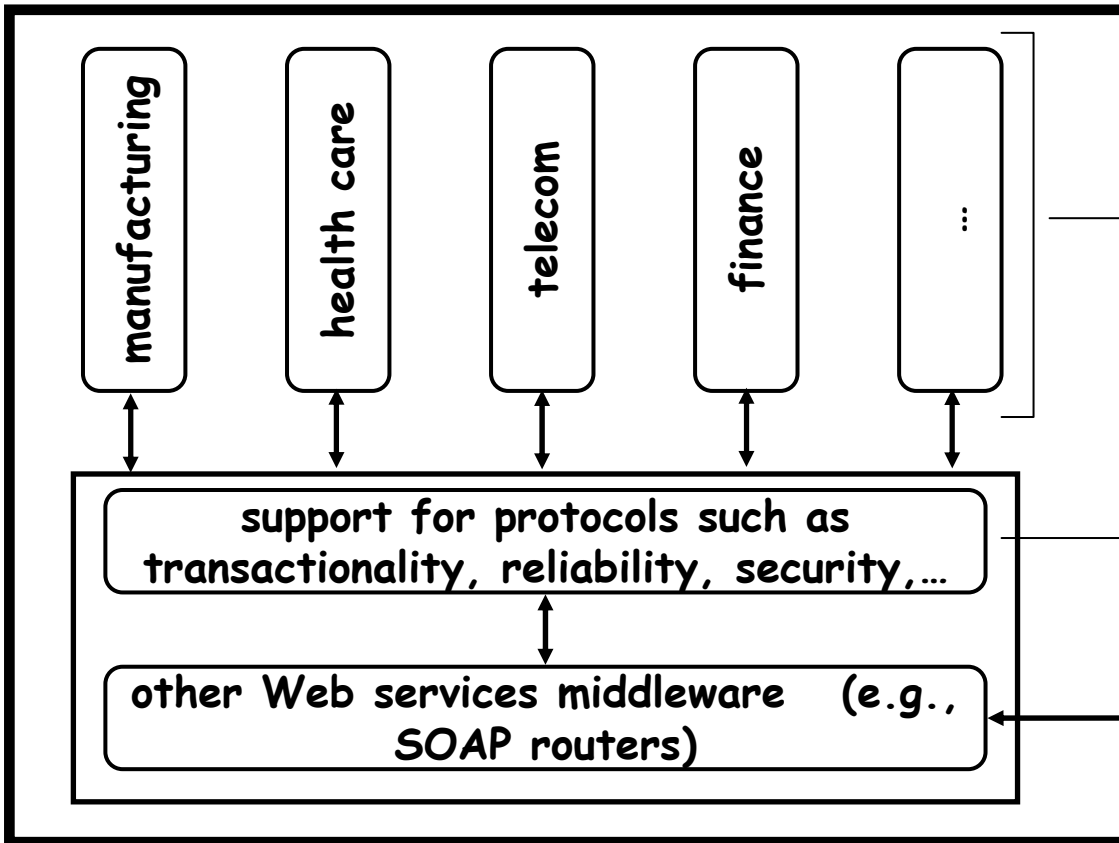


## Views Based on Roles



# Horizontal vs. Vertical Protocols

service provider

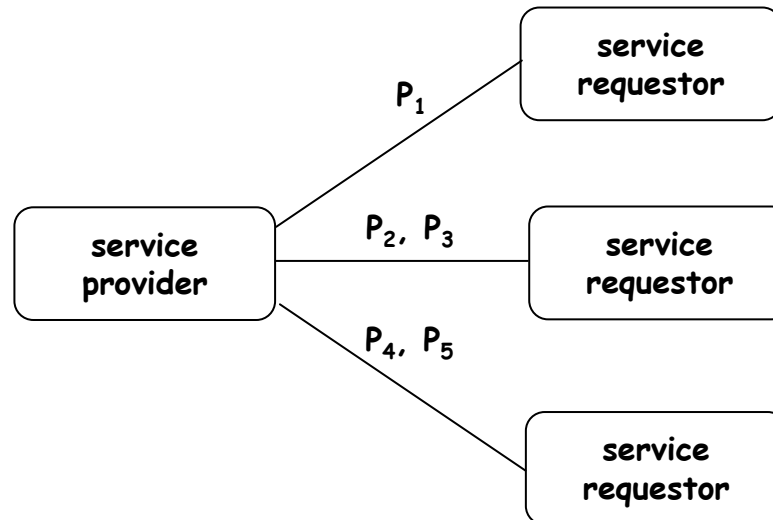


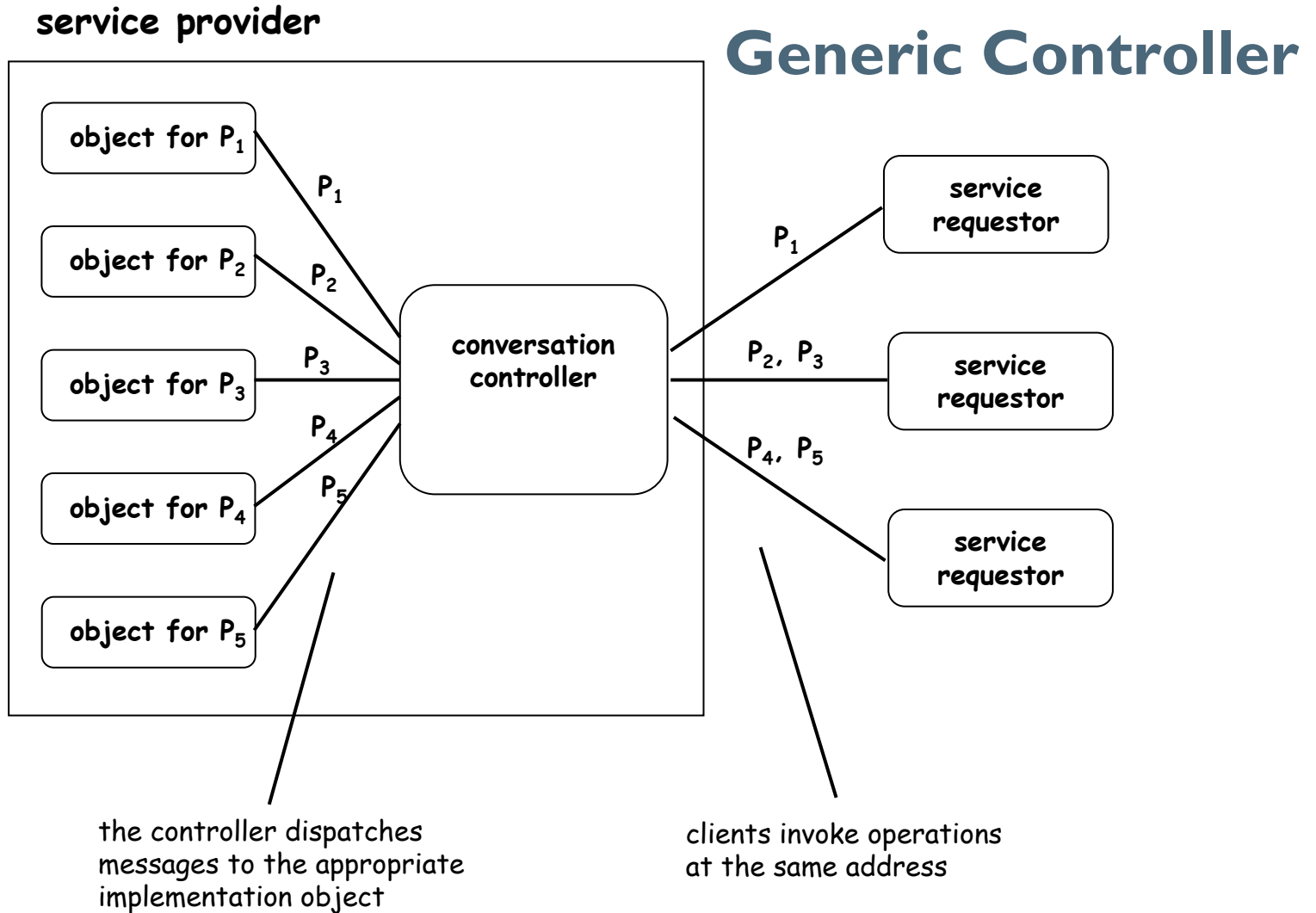
Web services executing vertical protocols. The main focus of standards such as RosettaNet, xCBL, and part of ebXML is to describe protocols at this level.

middleware for horizontal protocols provides properties and guarantees to the execution vertical protocols. Standards such as WS-Coordination, WS-Transaction, and part of ebXML fit here.

SOAP messages

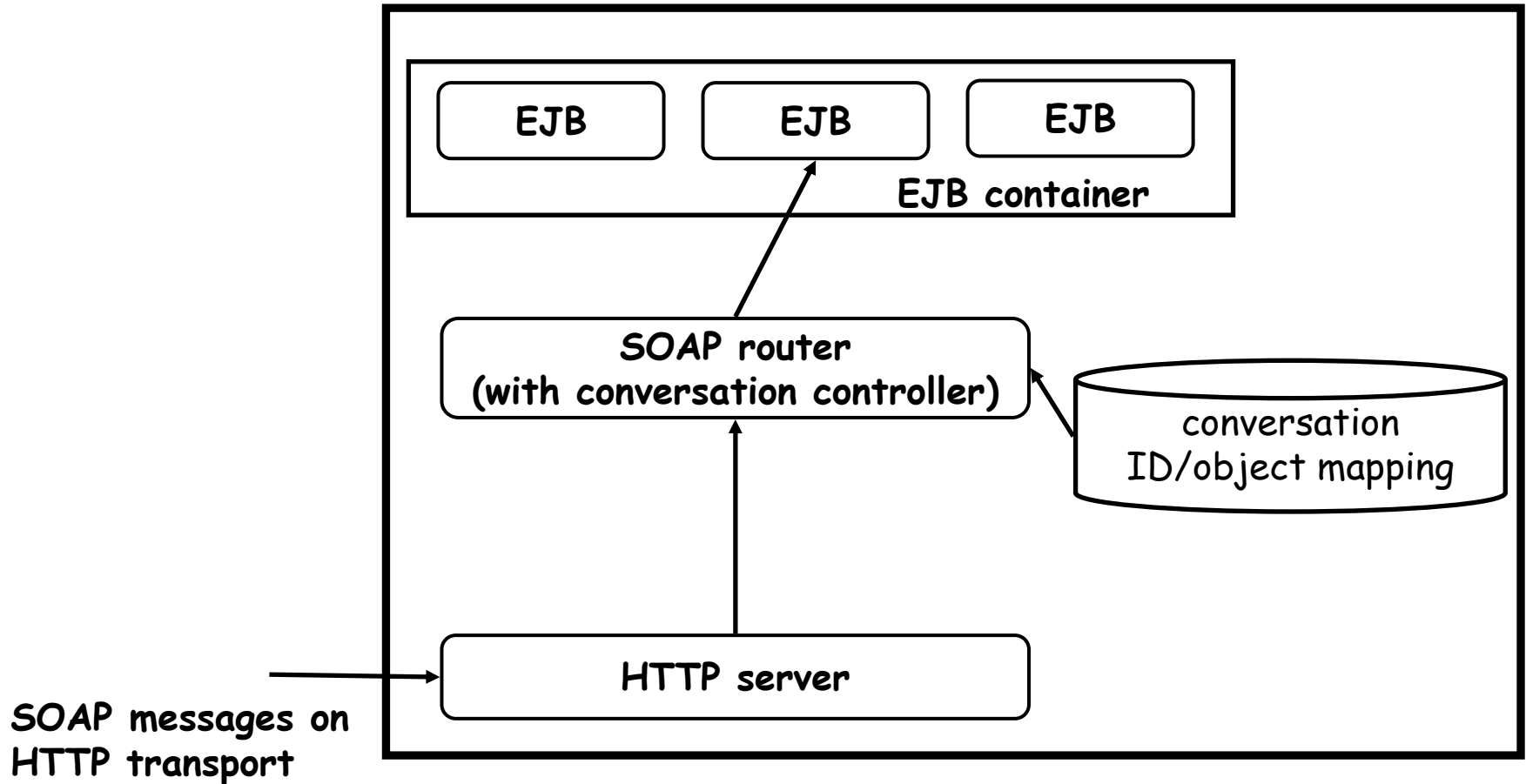
# Generic Conversation





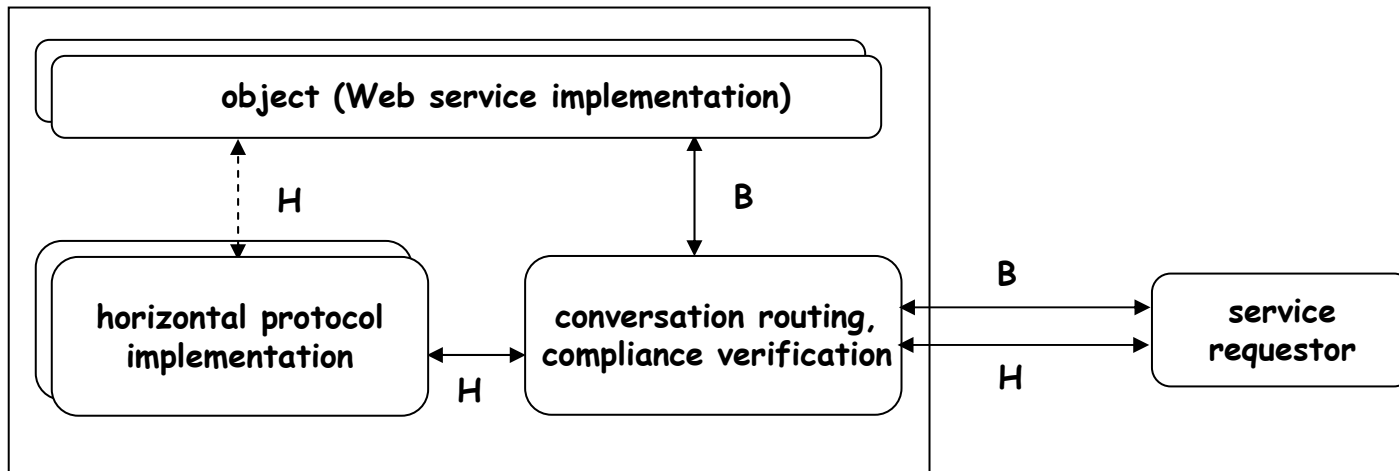
# Conversation Ids in the Message Headers

service provider



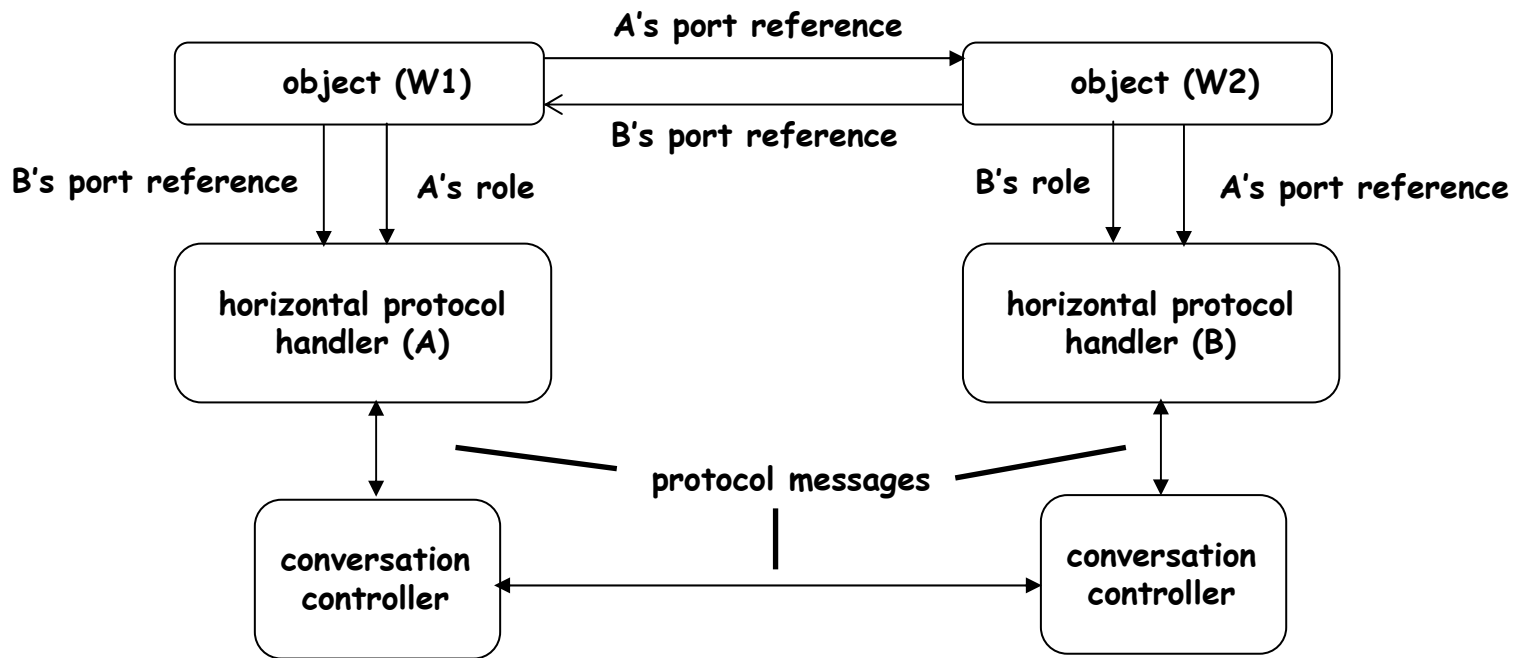
# Horizontal and Vertical Protocol Coordination

service provider

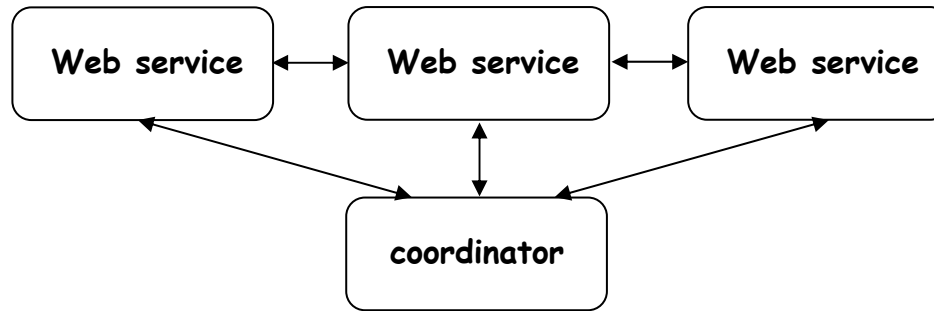


**B:** conversation compliant with a business protocol  
**H:** conversation compliant with an horizontal protocol

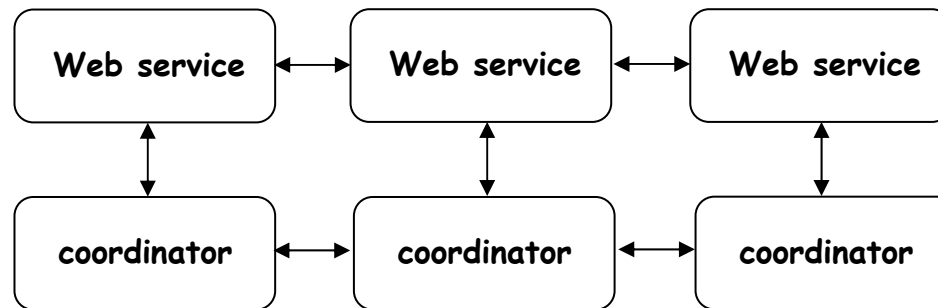
# Example





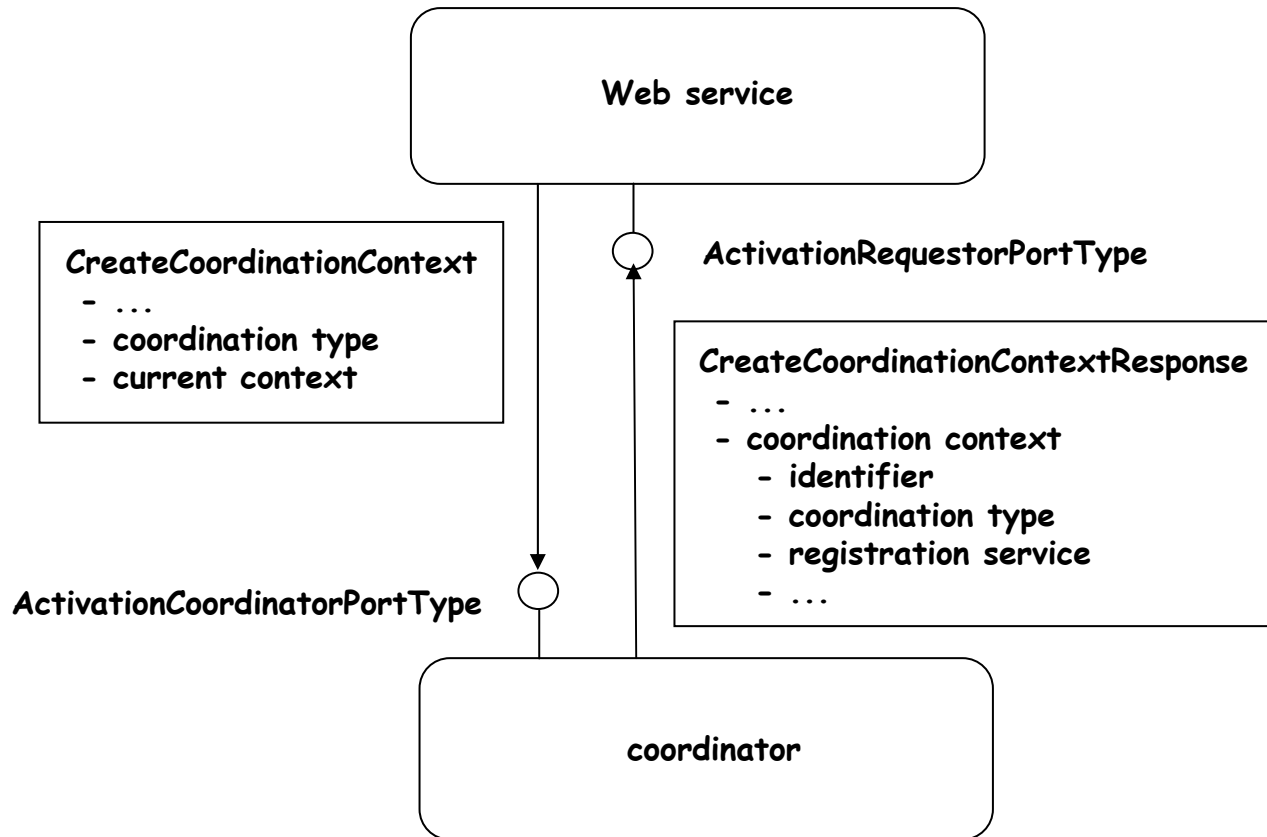


(a) central coordination

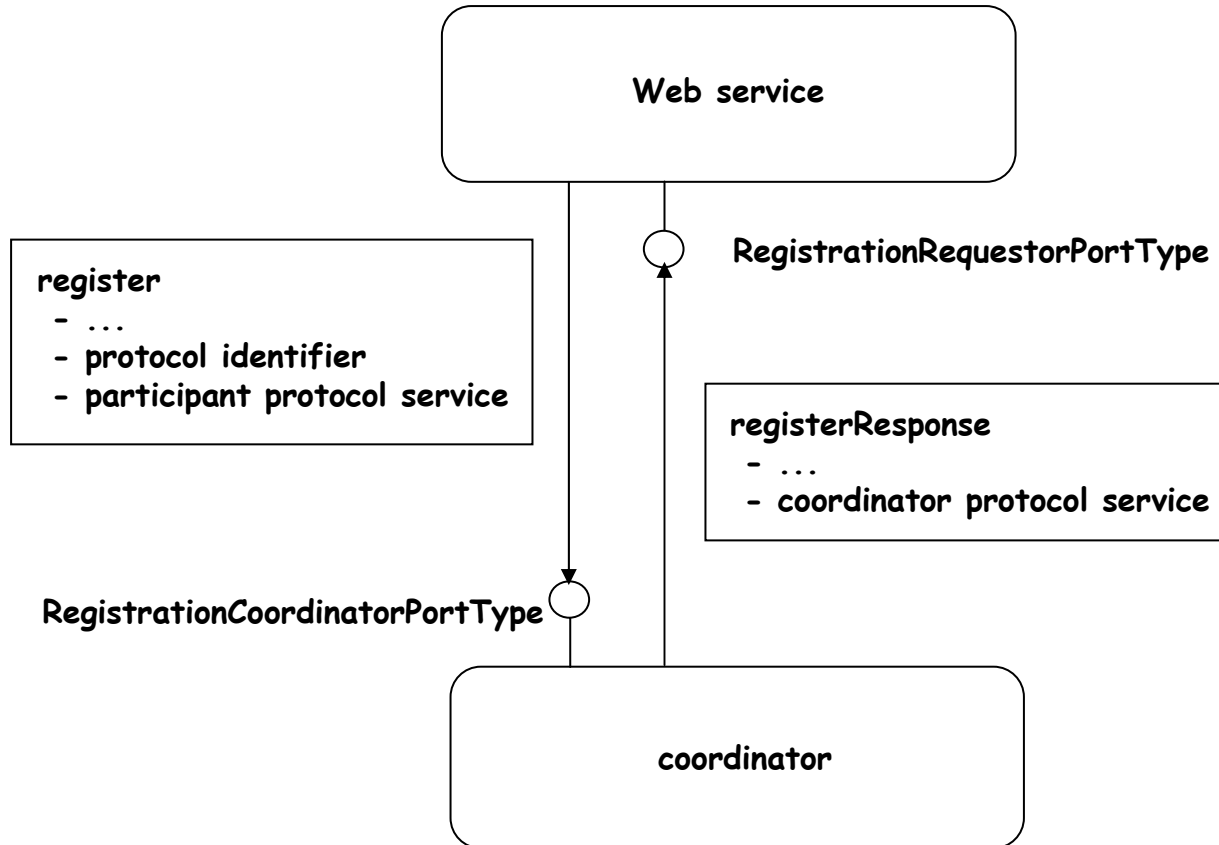


(b) distributed coordination

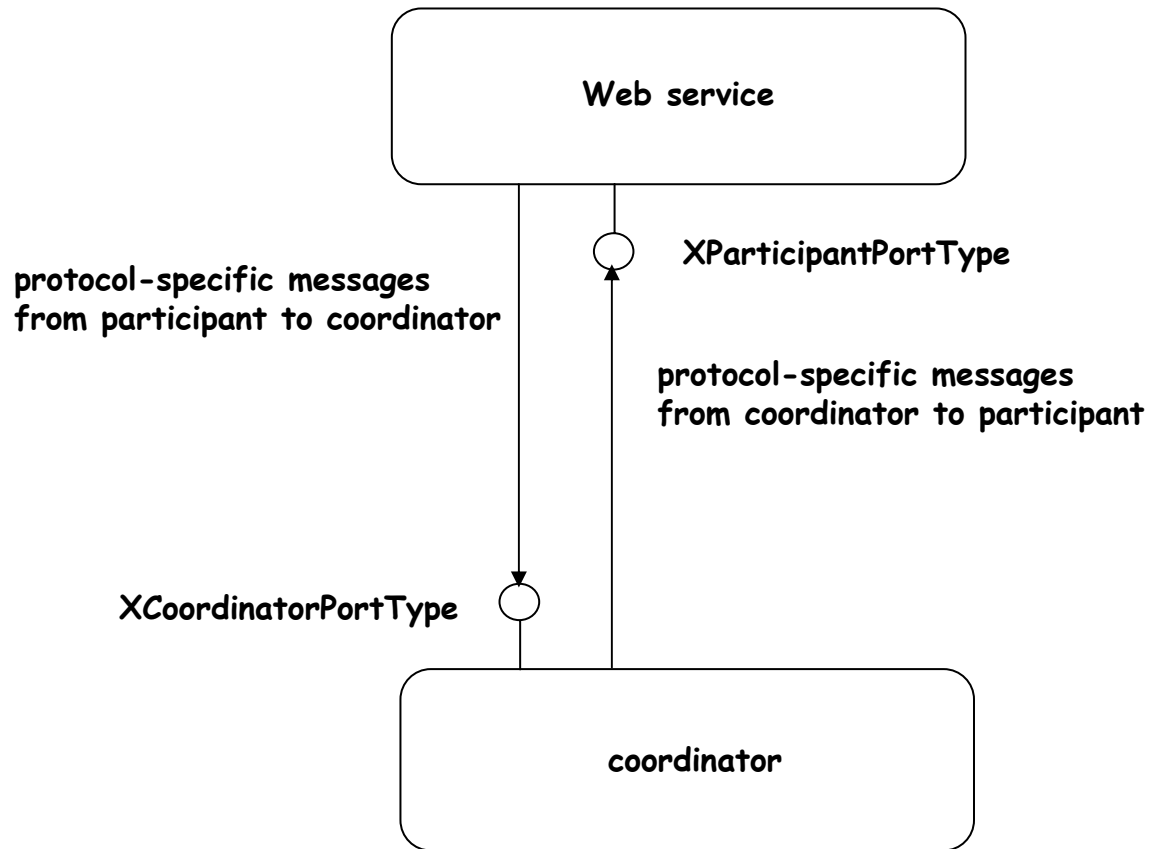
# Coordination Activation



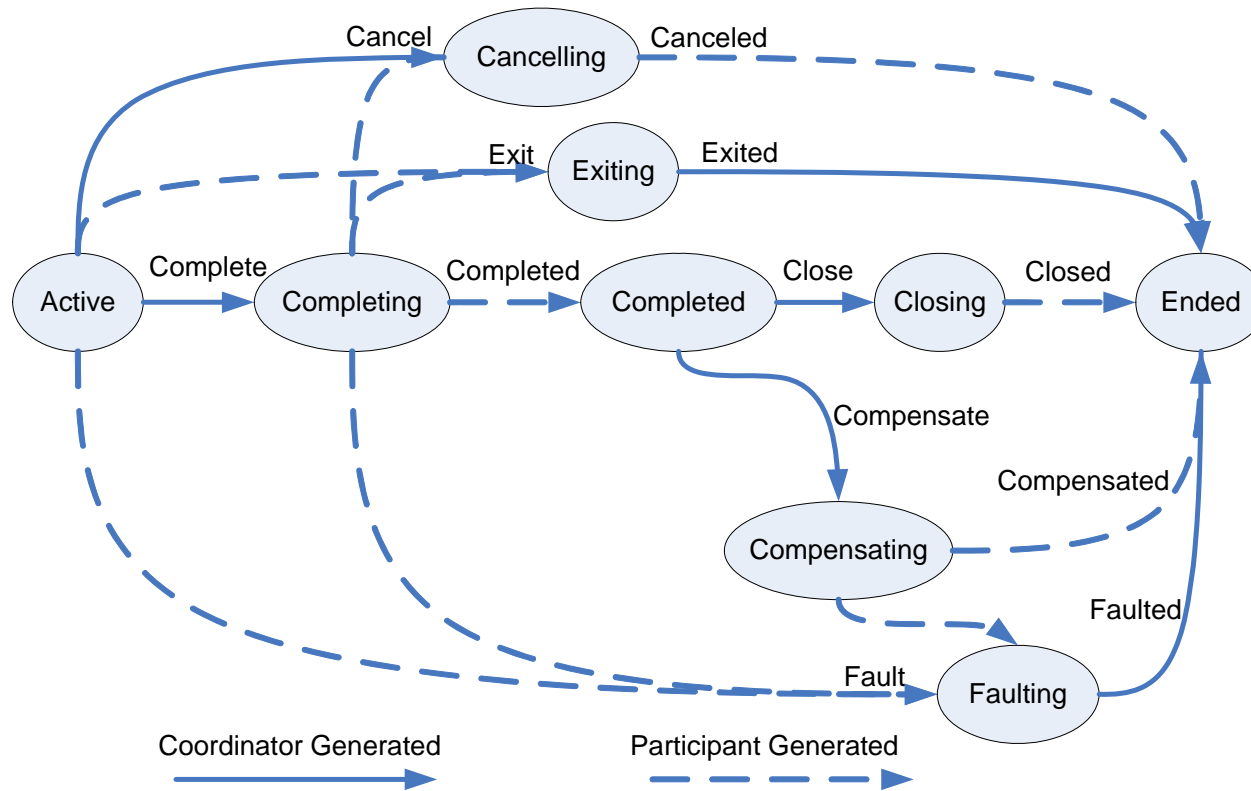
# Participant Registration

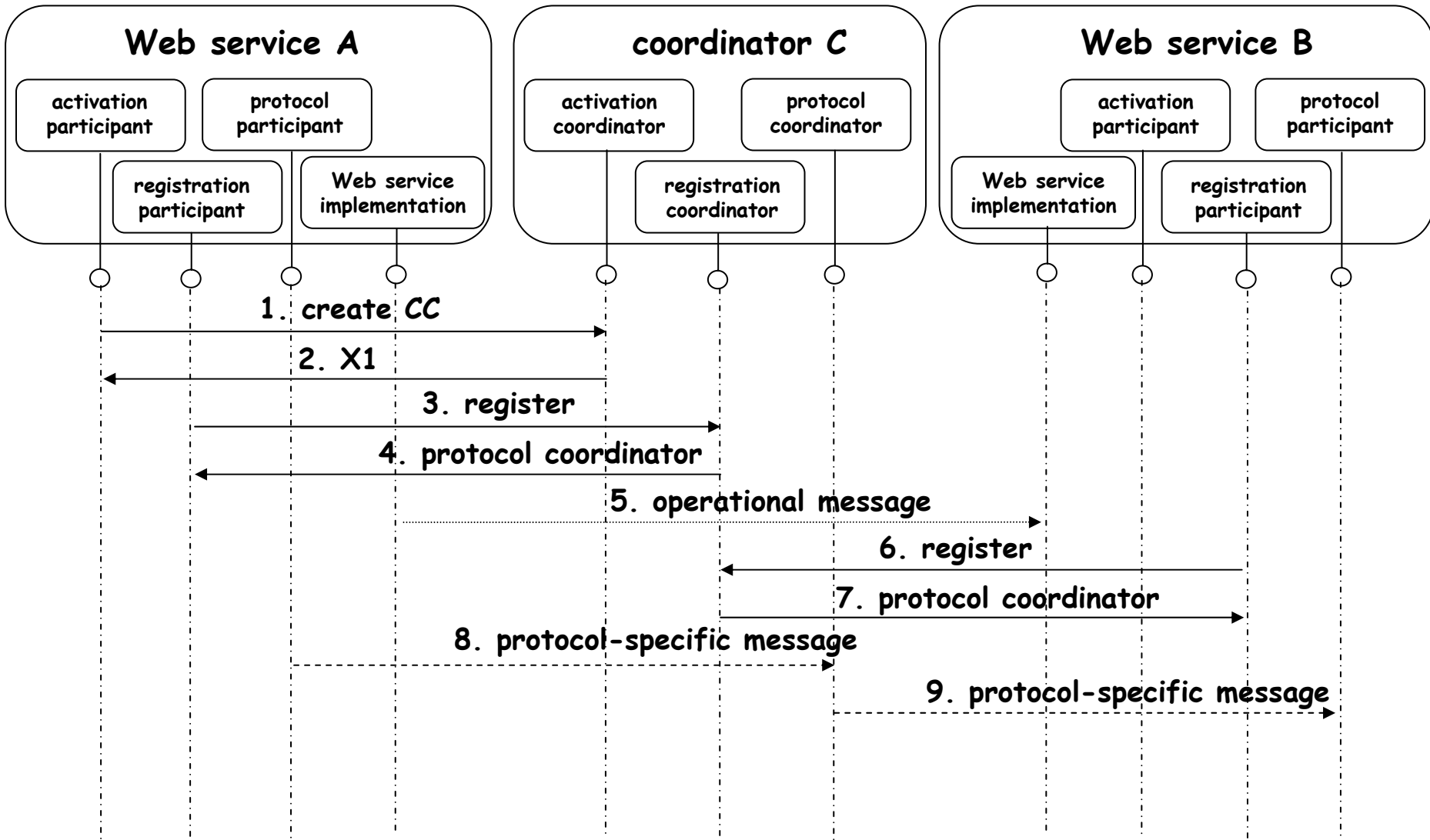


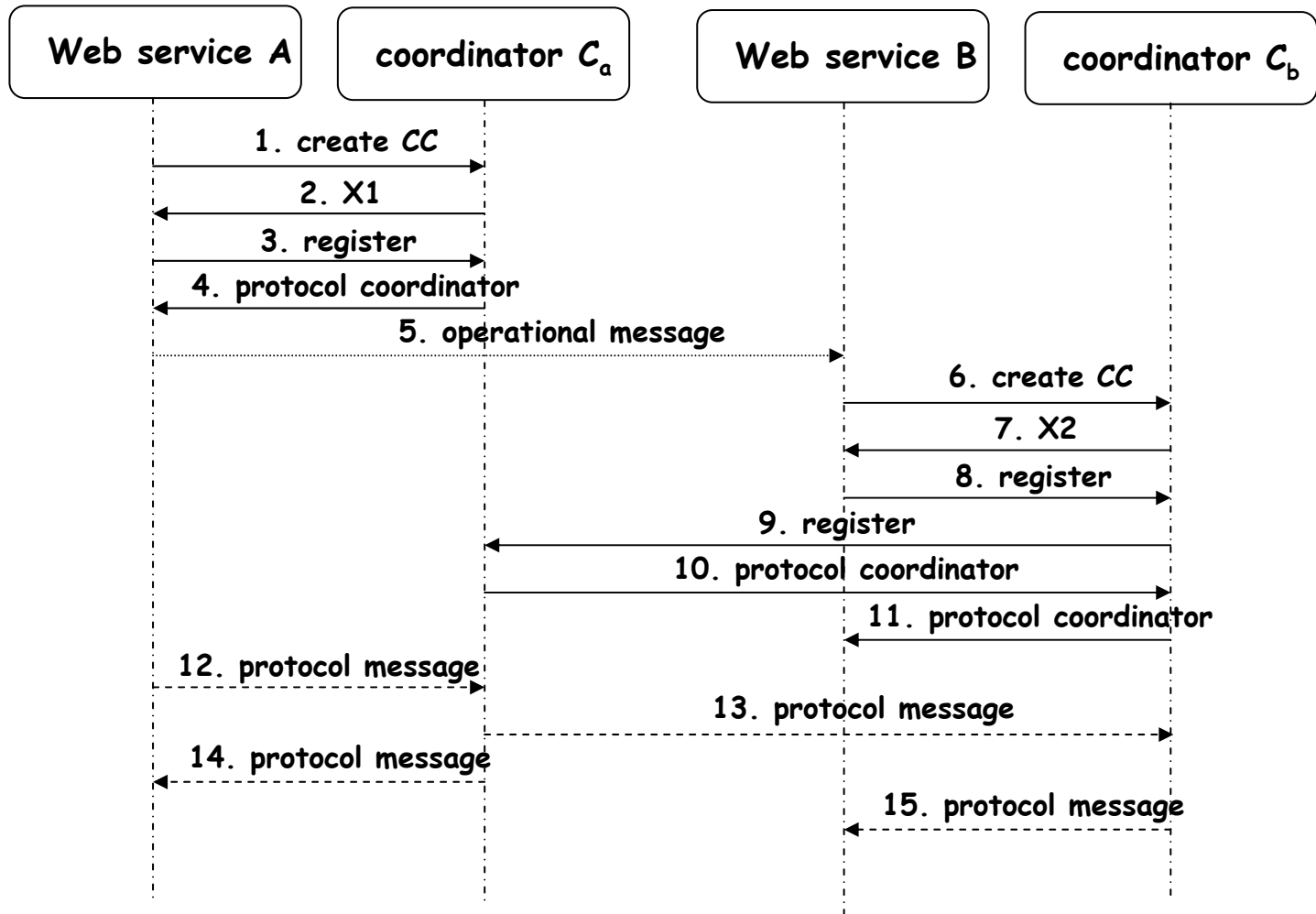
# Protocol Specific Message Exchange

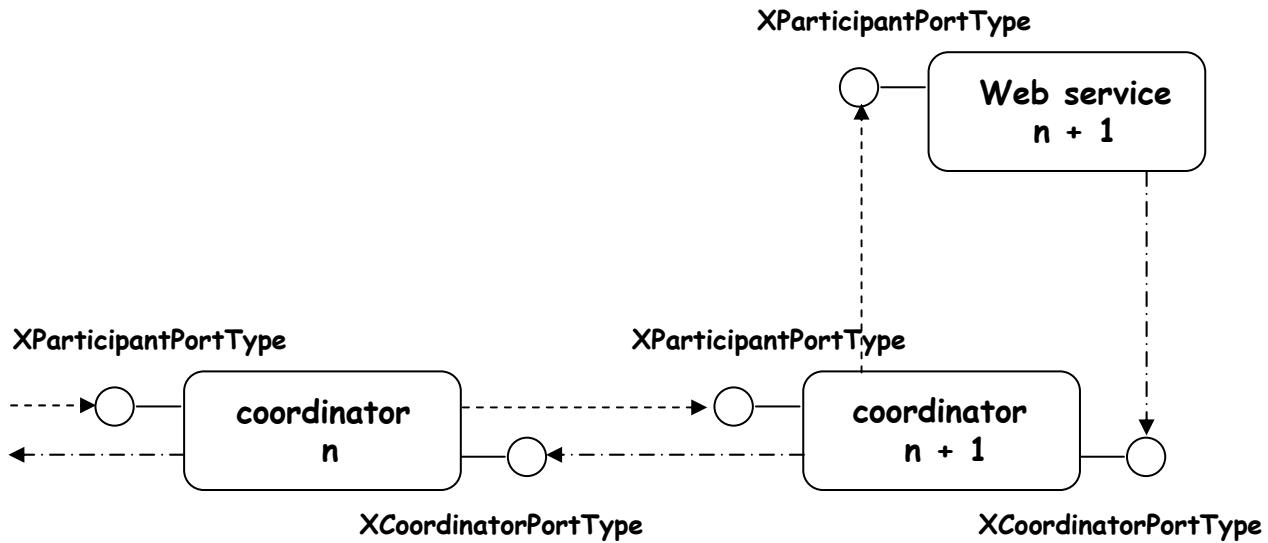


# Protocol Specific Messages/ WS Transaction











### WS-Coordination interfaces

ActivationCoordinatorPortType

RegistrationCoordinatorPortType

### WS-Transaction interfaces

CompletionParticipantPortType

CompletionCoordinatorPortType

CompletionWithAckParticipantPortType

CompletionWithAckCoordinatorPortType

PhaseZeroParticipantPortType

PhaseZeroCoordinatorPortType

2PCParticipantPortType

2PCCoordinatorPortType

OutcomeNotificationParticipantPortType

OutcomeNotificationCoordinatorPortType

atomic transaction coordinator

RegistrationParticipantPortType

WS-Transaction interfaces needed for chaining

WS-Coordination interfaces needed for chaining

# ERP Course Summary



# Themes

ERP Functions and Basic Processes (Lecture 2-6)

Selected Conceptual Models for ERP Domains (Lecture 8-9)

ERP Implementation, Re-Engineering and its Management  
(Lecture 11-14)

Enterprise Application Integration (Lecture 14-15)

Technologies for Organizational Learning (Lecture 7)