Lecture 5

B2B E-Commerce:
Selling and Buying
in Private E-Markets

Concepts, Characteristics, and Models of B2B EC

- Basic B2B Concepts

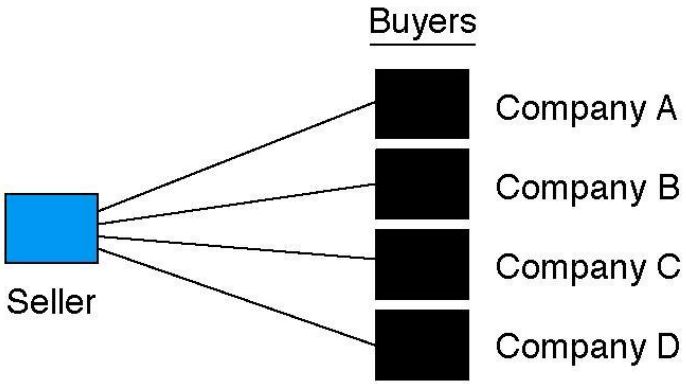
  Business-to-business e-commerce (B2B EC)

  Transactions between businesses conducted electronically over the Internet, extranets, intranets, or private networks; also known as *e-B2B* (*electronic B2B*) or just *B2B*

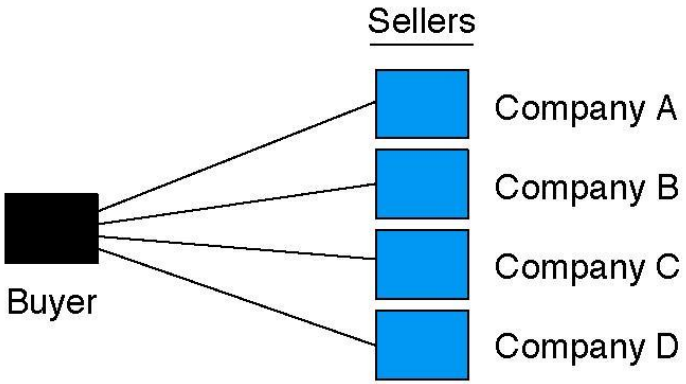
Concepts, Characteristics, and Models of B2B EC

- **Key business drivers for B2B**:
  - The availability of a secure broadband Internet platform and private and public B2B e-marketplaces;
  - The need for close collaborations between suppliers and buyers;
  - The ability to save money, reduce delays, and improve collaboration; and
  - The emergence of effective technologies for intra- and inter- organizational integration.

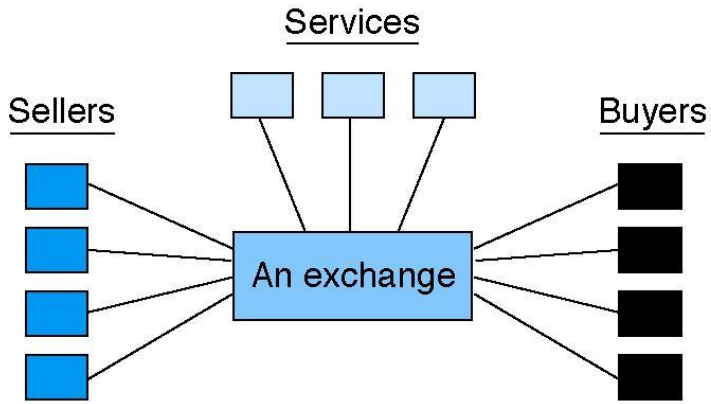
Types of B2B EC



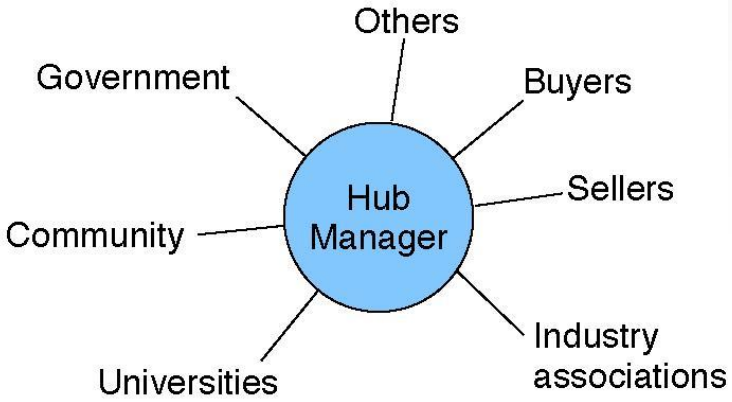
(a) Sell-Side B2B



(b) Buy-Side B2B



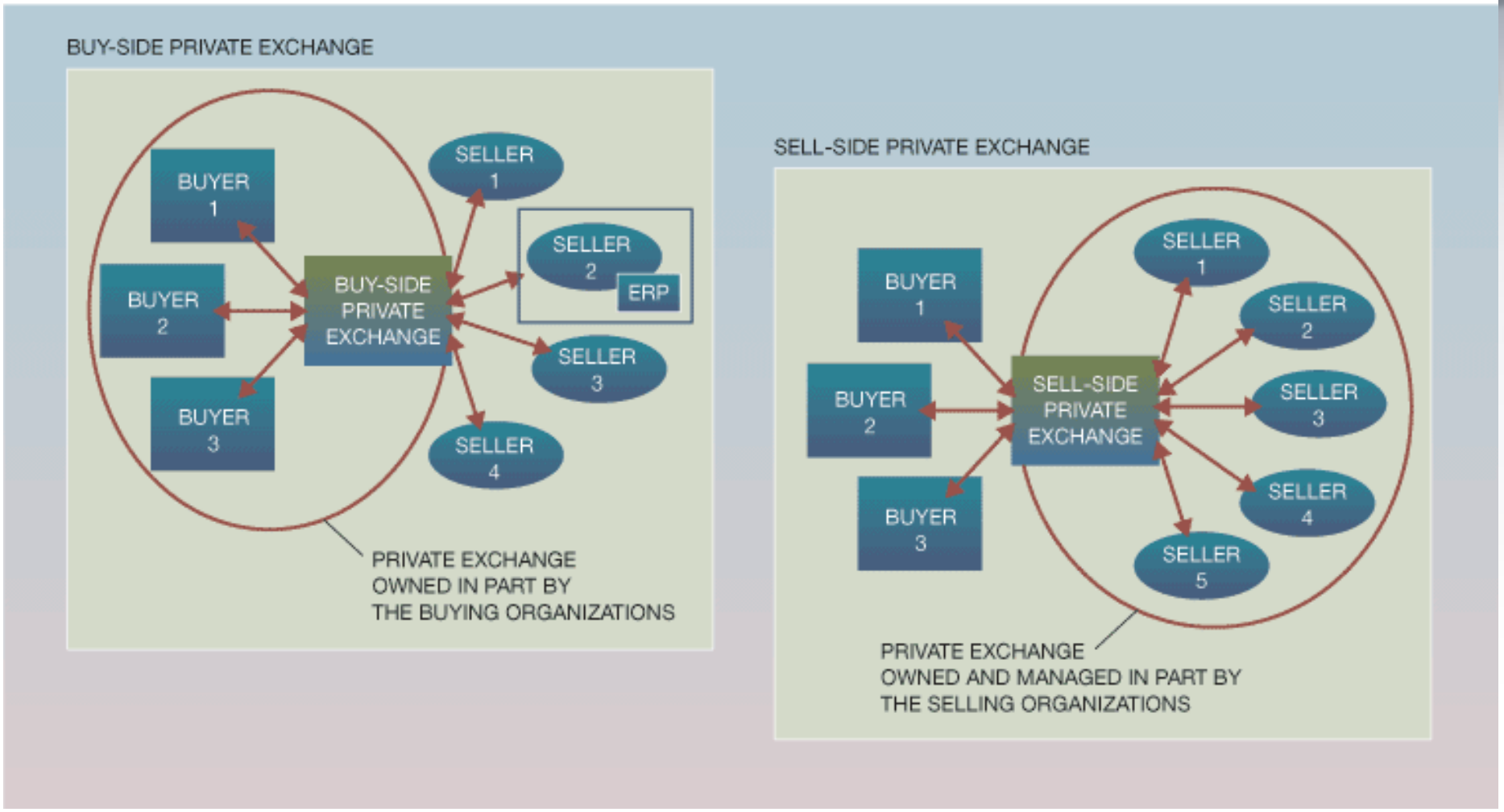
(c) Electronic Exchange



(d) Collaborative Commerce

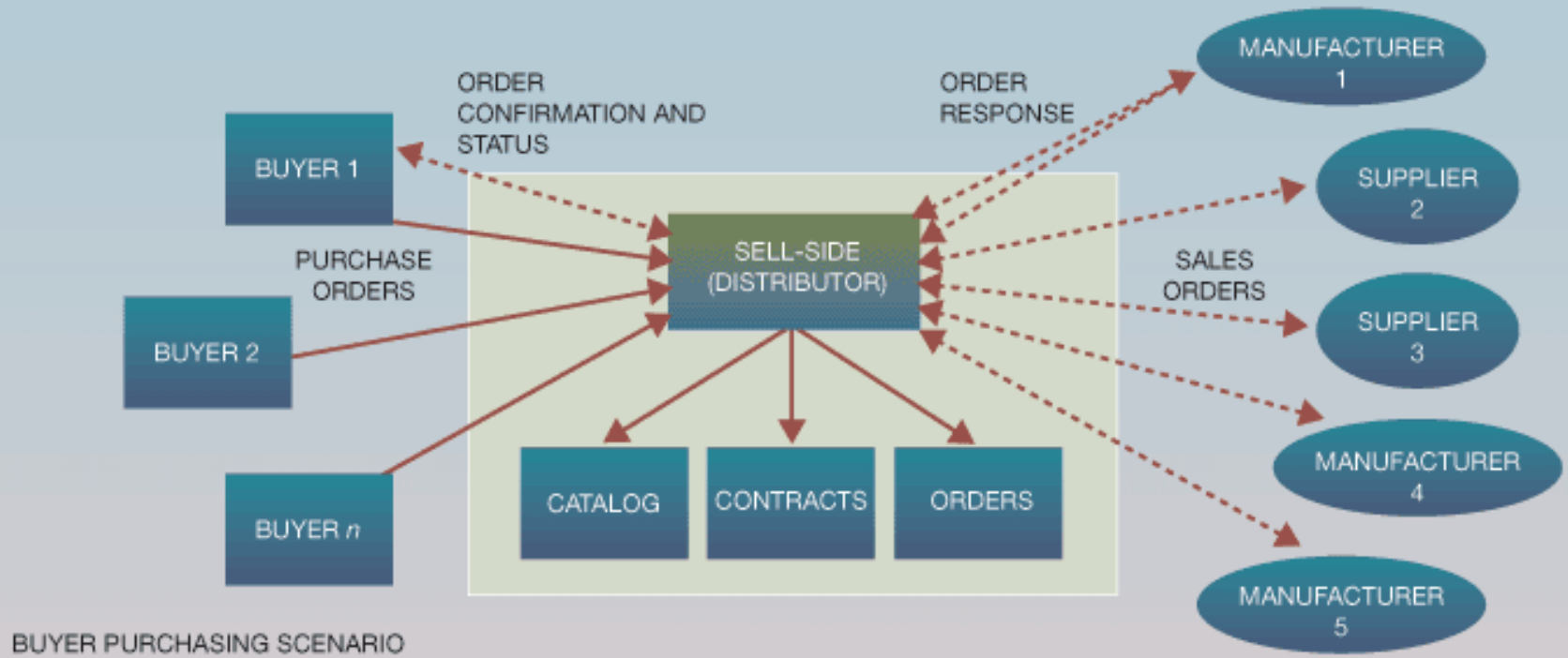
Private Exchange Models

Figure 1 Private exchange models



Distributor Business Model

Figure 2 Distributor business model or sell-side businesses

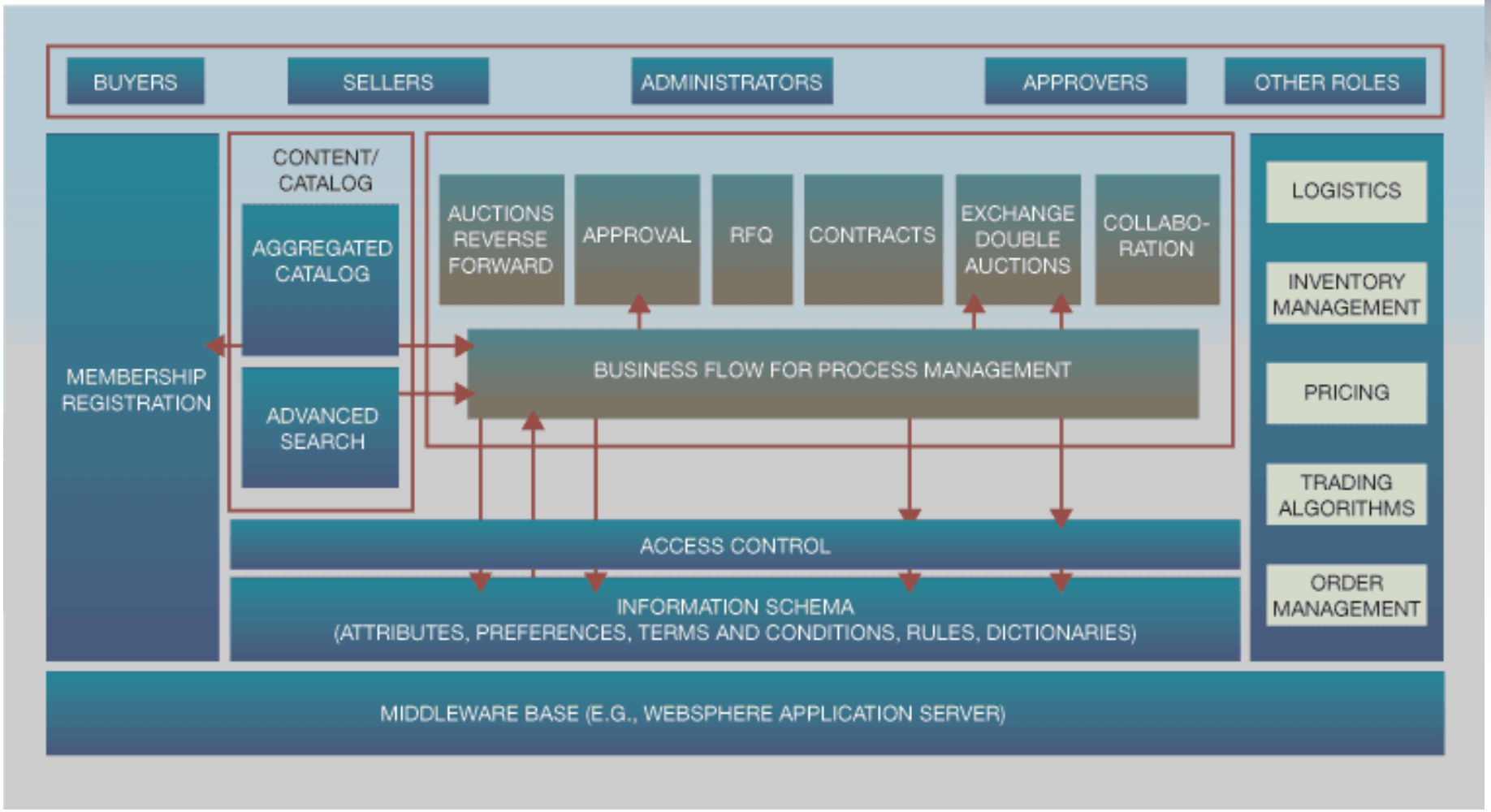


BUYER PURCHASING SCENARIO

1. BUYER VIEWS DISTRIBUTOR CATALOG AND CONTRACT PRICES
2. BUYER PLACES ORDER BASED ON CONTRACTS
3. SUPPLIER RESPONDS TO DISTRIBUTOR ON SALES ORDERS
4. BUYER RECEIVES ORDER CONFIRMATION

Platform Architecture for B2B Private Exchanges

Figure 3 Platform architecture for B2B private exchanges and sell-side sites



Concepts, Characteristics, and Models of B2B EC

- **Basic Types of B2B E-Marketplaces**
  - One-to-Many and Many-to-One: Private E-Marketplaces

company-centric EC

E-commerce that focuses on a single company's buying needs (many-to-one, or buy-side) or selling needs (one-to-many, or sell-side)

private e-marketplaces

Markets in which **the individual sell-side or buy-side company** has complete control over participation in the selling or buying transaction

Concepts, Characteristics, and Models of B2B EC

- Many-to-Many: Exchanges

  public e-marketplaces

  Third-party exchanges that are open to all interested parties (sellers and buyers)

  B2B2C

  A business sells to a business, but delivers small quantities to individuals or business customers

  online intermediary

  An online third party that brokers a transaction online between a buyer and a seller; may be virtual or click-and-mortar

Concepts, Characteristics, and Models of B2B EC

- Types of Transactions

Spot buying

The purchase of goods and services as they are needed, usually at prevailing market prices

Strategic systematic sourcing

Purchases involving long-term contracts that usually are based on private negotiations between sellers and buyers

Concepts, Characteristics, and Models of B2B EC

- Types of Materials Traded

Direct materials

Materials **used in** the production of a product (e.g., steel in a car or paper in a book)

Indirect materials

Materials used to **support** production (e.g., office supplies or light bulbs)

MRO (maintenance, repair, and operation)

Indirect materials and services used in activities that support production

Concepts, Characteristics, and Models of B2B EC

- Direction of Trade

Vertical marketplaces

Markets that deal with one industry or industry segment (e.g., steel, chemicals)

Horizontal marketplaces

Markets that concentrate on a service, materials, or a product that is used in all types of industries (e.g., office supplies, PCs)

Classification of Exchanges

Exhibit 7.2 Classification of B2B Exchanges

Types of Materials Traded →

Types of Transactions ↓

	Direct	Indirect (MRO)
Systematic Sourcing	(1) Vertical Distributors *plastics.com* *epapertrade.com* Methods: Aggregation, fixed/negotiated prices	(2) Horizontal Distributors *mro.com* Methods: Aggregation, fixed/negotiated prices
Spot Sourcing	(3) Vertical Exchanges *isteelasia.com* *chemconnect.com* Methods: Matching, dynamic pricing	(4) Horizontal Exchanges *employease.com* Methods: Matching, dynamic pricing

Concepts, Characteristics, and Models of B2B EC

- **Benefits of B2B**
  - * Creates new sales (purchase) opportunities
  - Eliminates paper and reduces administrative costs
  - Expedites processing and reduces cycle time
  - * Lowers search costs and time for buyers to find products and vendors
  - Increases productivity of employees dealing with buying and/or selling
  - Reduces errors and improves quality of services
  - Makes product configuration easier

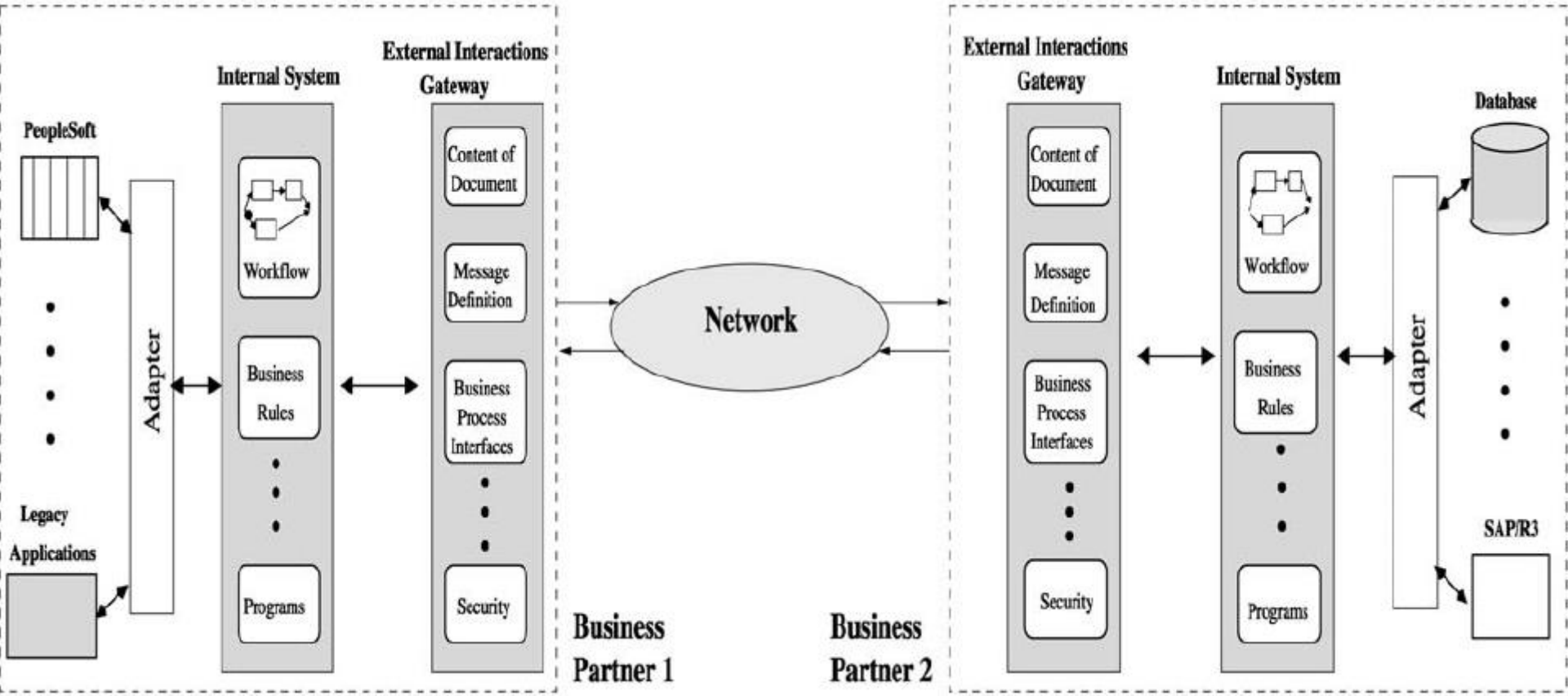
Concepts, Characteristics, and Models of B2B EC

- **Benefits of B2B (continued)**
  - Reduces marketing and sales costs (for sellers)
  - Reduces inventory levels and costs
  - * Enables customized online catalogs with different prices for different customers
  - * Increases production flexibility, permitting just-in-time delivery
  - Reduces procurement costs (for buyers)
  - Provides for efficient customer service
  - Increases opportunities for collaboration

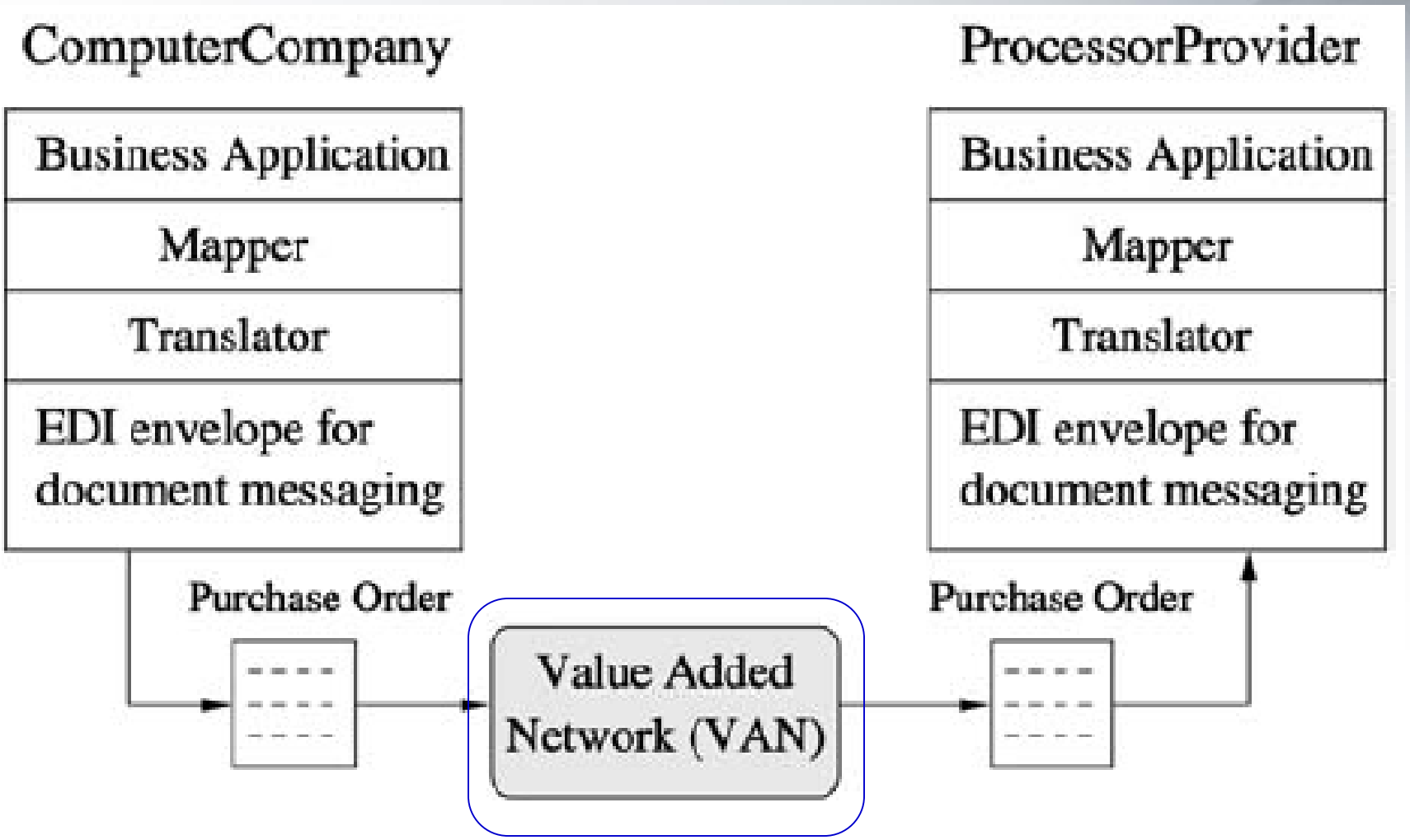
Concepts, Characteristics, and Models of B2B EC

- **Limitations of B2B**
  - Channel conflict
  - Operation of public exchanges
  - Elimination the distributor or the retailer

Architecture of B2B Framework



B2B interactions in EDI (Electronic Data Interchange)



EDI (Electronic Data Interchange)

- **Electronic Data Interchange** (**EDI**) is an electronic communication method that provides standards for exchanging data via any electronic means.
- By adhering to the same standard, two different companies or organizations, even in two different countries, can electronically exchange documents, such as purchase orders, invoices, shipping notices, and others.
- EDI can be transmitted using any methodology agreed to by the sender and recipient. This includes a variety of technologies, including modem (asynchronous and synchronous), FTP, e-mail, HTTP, AS1, AS2, (ASx) etc.

Transfer Protocols

- **S/MIME** - Secure Multi-Purpose Internet Mail Extensions. It is the set of standards used for encryption and signing of a message/document. This governs not only the functions of signing and encryption, but also provides standards for the formatting of the final message so that a compliant reader will be able to easily identify the structure of the message.
- **HTTP** - HyperText Transfer Protocol. It is a very flexible client-server protocol. It is the backbone of the world wide web.
- **SMTP** - Simple Mail Transfer Protocol. It is used to send email messages from one party to another.
- **FTP** - File Transfer Protocol. It is a protocol governing file transfer and file management.

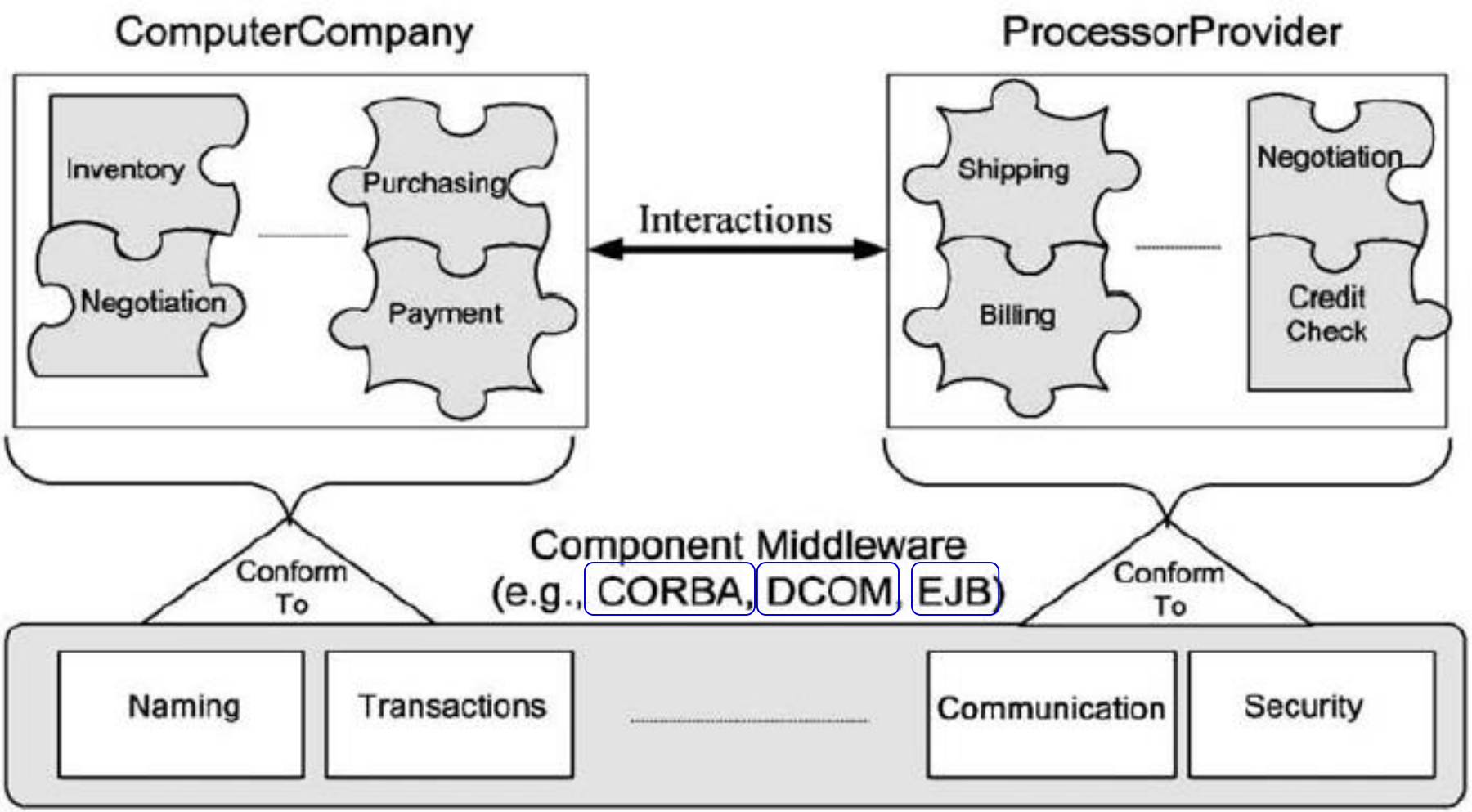
Transfer Protocols (Cont.)

- **AS1** - Applicability Statement 1. Secure transportation protocol for EDI over **SMTPS**.
- **AS2** - Applicability Statement 2. A specific secure transportation standard for EDI over **HTTPS**.
- **AS3** - Applicability Statement 3. Secure transportation protocol for EDI over **FTPS**.
- **AS4** - a conformance profile of the OASIS (Organization for the Advancement of Structured Information Standards) ebMS (Electronic Business using eXtensible Markup Language) 3.0 specification, and represents an open standard for the secure and payload-agnostic exchange of B2B documents using **Web services**. AS4 became a standard in 2013.

Value-added Network (VAN)

- A value-added network (VAN) is a private network provider that is hired by a company to facilitate EDI or provide other network services.
- Before the arrival of the World Wide Web, some companies hired VAN to move data from their company to other companies.
- With the arrival of the WWW, many companies found it more cost-efficient to move their data over the Internet instead of paying the minimum monthly fees and per-character charges found in typical VAN contracts.
- In response, contemporary VAN providers now focus on offering EDI translation, encryption, secure e-mail, management reporting, and other extra services for their customers.

Components-based B2B EC



Common Object Request Broker Architecture (CORBA)

- **Common Object Request Broker Architecture (CORBA)** is a standard designed to facilitate the communication of systems that are deployed on diverse platforms.
- CORBA enables collaboration between systems on different operating systems, programming languages, and computing hardware.
- CORBA uses an object-oriented model although the systems that use CORBA do not have to be object-oriented.

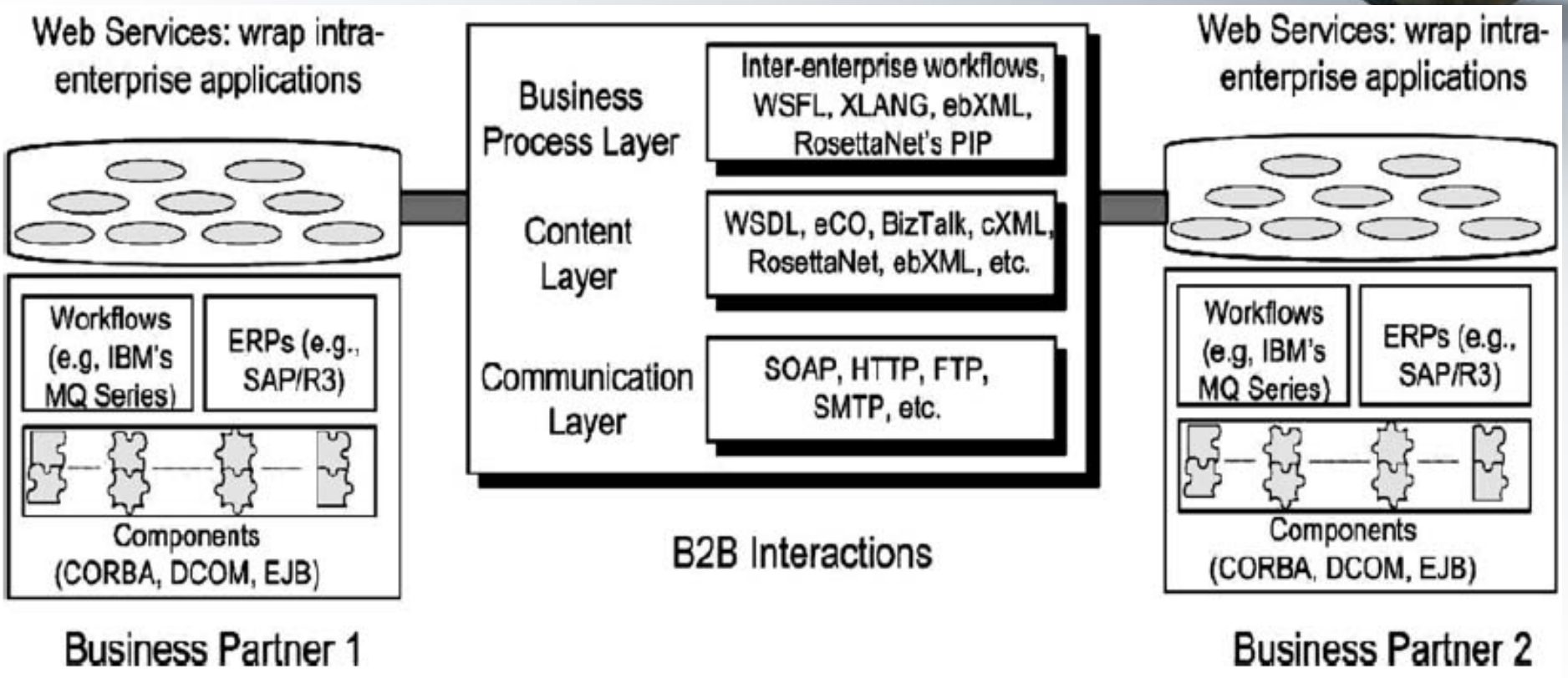
Distributed Component Object Model (DCOM)

- **Distributed Component Object Model (DCOM)** is a proprietary Microsoft technology for communication among software components distributed across networked computers.
- DCOM provides the communication substrate under Microsoft's COM+ application server infrastructure.
- DCOM was a major competitor to CORBA.
- DCOM is supported natively in *Windows NT 4.0*, *Windows 2000*, *Windows XP*, and *Windows Server 2003*, as well as *Windows 7*, *Windows 8*, *Windows 10*, *Windows Server 2008*, *Windows Server 2008 R2, Windows Server 2012, Windows Server 2012 R2* and the *Windows Server 2016 Technical Preview*.

Enterprise JavaBeans (EJB)

- **Enterprise JavaBeans (EJB)** is a managed, server software for modular construction of enterprise software.
- EJB is one of several Java APIs.
- EJB is a server-side software component that encapsulates the business logic of an application.
- The EJB specification is a subset of the Java EE specification.
- An EJB web container provides a runtime environment for web related software components, including *computer security*, *Java servlet lifecycle management*, *transaction processing*, and other web services.

Technologies in a B2B interactions framework



WSFL, XLANG, BPEL

- **Web Services Flow Language 1.0 (WSFL)** was an XML programming language proposed by IBM in *2001* for describing Web services compositions.
- **XLANG** by Microsoft.
- In *2003* IBM and Microsoft combined **WSFL** and **Xlang**, for standardization. OASIS named it as **Web Services Business Process Execution Language (WS-BPEL)**, commonly known as **BPEL**.

WSDL, BizTalk

- **Web Services Description Language (WSDL)** is an XML-based interface definition language that is used for describing the functionality offered by a web service. Currently, WSDL 2.0.
- **Microsoft BizTalk Server (BizTalk)** enables companies to automate business processes, through the use of adapters which are tailored to communicate with different software systems used in an enterprise.
    - Development for BizTalk Server is done through Microsoft Visual Studio.
    - Currently, BizTalk 2013 R2 (work with Visual Studio 2013 and Microsoft .NET 4.5.1)

cXML, emXML, RosettaNet

- **commerce eXtensible Markup Language (cXML)** is a protocol, intended for communication of business documents between *procurement applications*, *e-commerce hubs* and *suppliers*.
- **E-Business using eXtensible Markup Language (emXML)** is a family of XML based standards sponsored by OASIS and UN/CEFACT whose mission is to provide an open, XML-based infrastructure that enables the global use of electronic business information in an interoperable, secure, and consistent manner by all trading partners.
- **RosettaNet** standard is based on XML and defines *message guidelines*, *interfaces for business processes*, and *implementation frameworks for interactions between companies*.

One-to-Many: Sell-Side E-Marketplaces

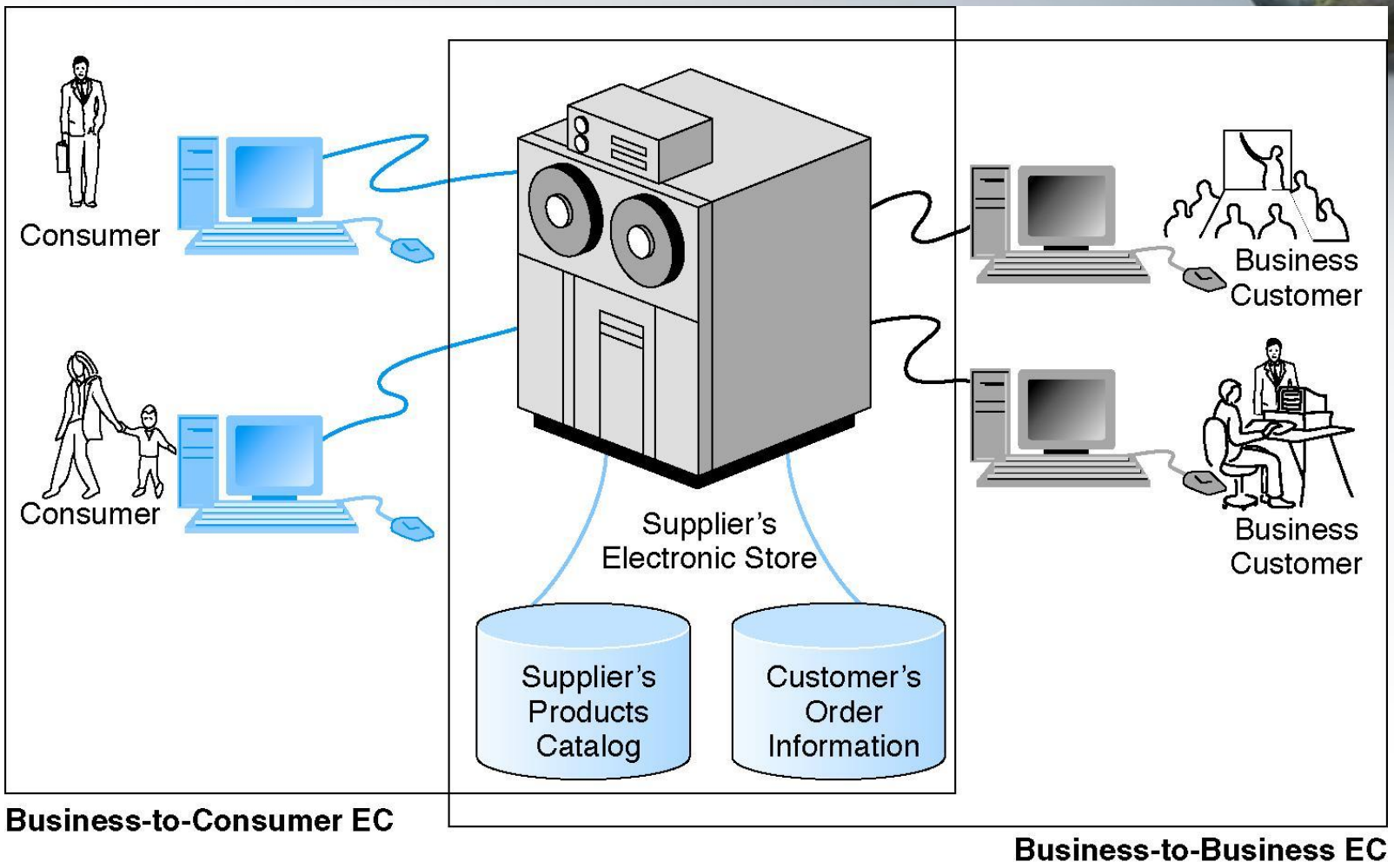
- **Sell-Side Models and Activities**

  sell-side e-marketplace

  A **Web-based** marketplace in which one company sells to many business buyers from **e-catalogs** or **auctions**, frequently over an extranet

  – Three major pricing methods:
    1. Selling from *electronic catalogs*;
    2. Selling via *forward auctions;* and
    3. *One-to-one* selling, usually under a *negotiated* long-term contract.

Sell-Side B2B E-Marketplace Architecture



One-from-Many: Buy-Side E-Marketplaces and E-Procurement

Buy-side e-marketplace

A **corporate-based acquisition** site that uses **reverse auctions**, **negotiations**, **group purchasing**, or any other e-procurement method

One-from-Many: Buy-Side E-Marketplaces and E-Procurement

- Procurement Methods
  - Conduct bidding or tendering (a reverse auction) in a system in which suppliers compete against each other
  - Buy directly from manufacturers, wholesalers, or retailers from their catalogs and possibly by negotiation
  - Buy from the catalog of an intermediary (e-distributor) that aggregates sellers' catalogs
  - Buy from an internal buyer's catalog, in which company-approved vendors' catalogs, including agreed-upon prices, are aggregated

One-from-Many: Buy-Side E-Marketplaces and E-Procurement

- Inefficiencies in Traditional Procurement Management

Procurement management

The coordination of all the activities relating to purchasing goods and services needed to accomplish the mission of an organization

Maverick buying

Unplanned purchases of items needed quickly, often at non-pre-negotiated higher prices

One-from-Many: Buy-Side E-Marketplaces and E-Procurement

- Implementing E-Procurement

  - ***Strategic sourcing*** is the process of:
    - Identifying opportunities
    - Evaluating potential sources
    - Negotiating contracts
    - Managing supplier relationships

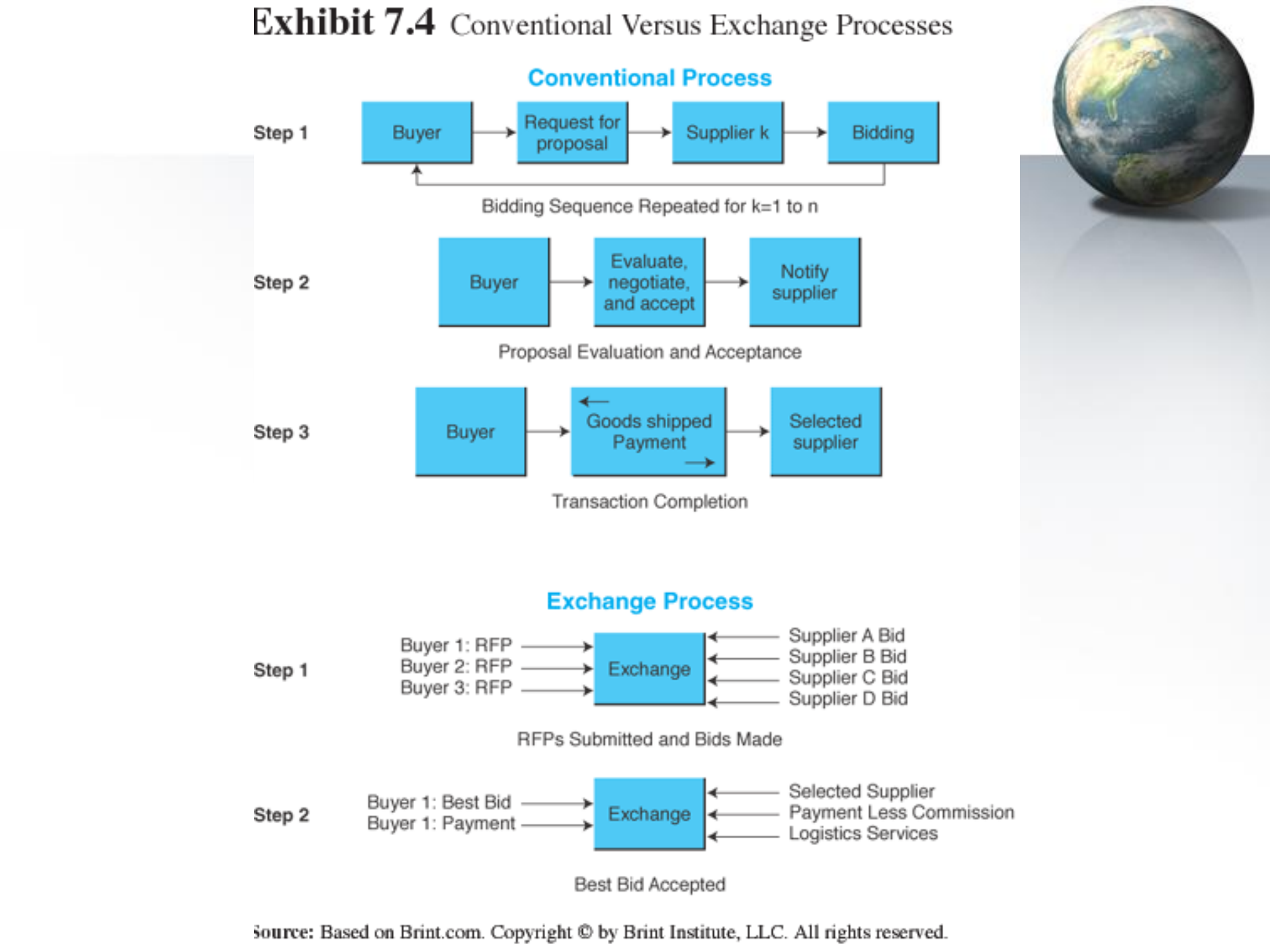
    - *Used to achieve corporate goals including*:
      - *Cost reductions*
      - *Increased quality and service*

Buy-Side E-Marketplaces: Reverse Auctions

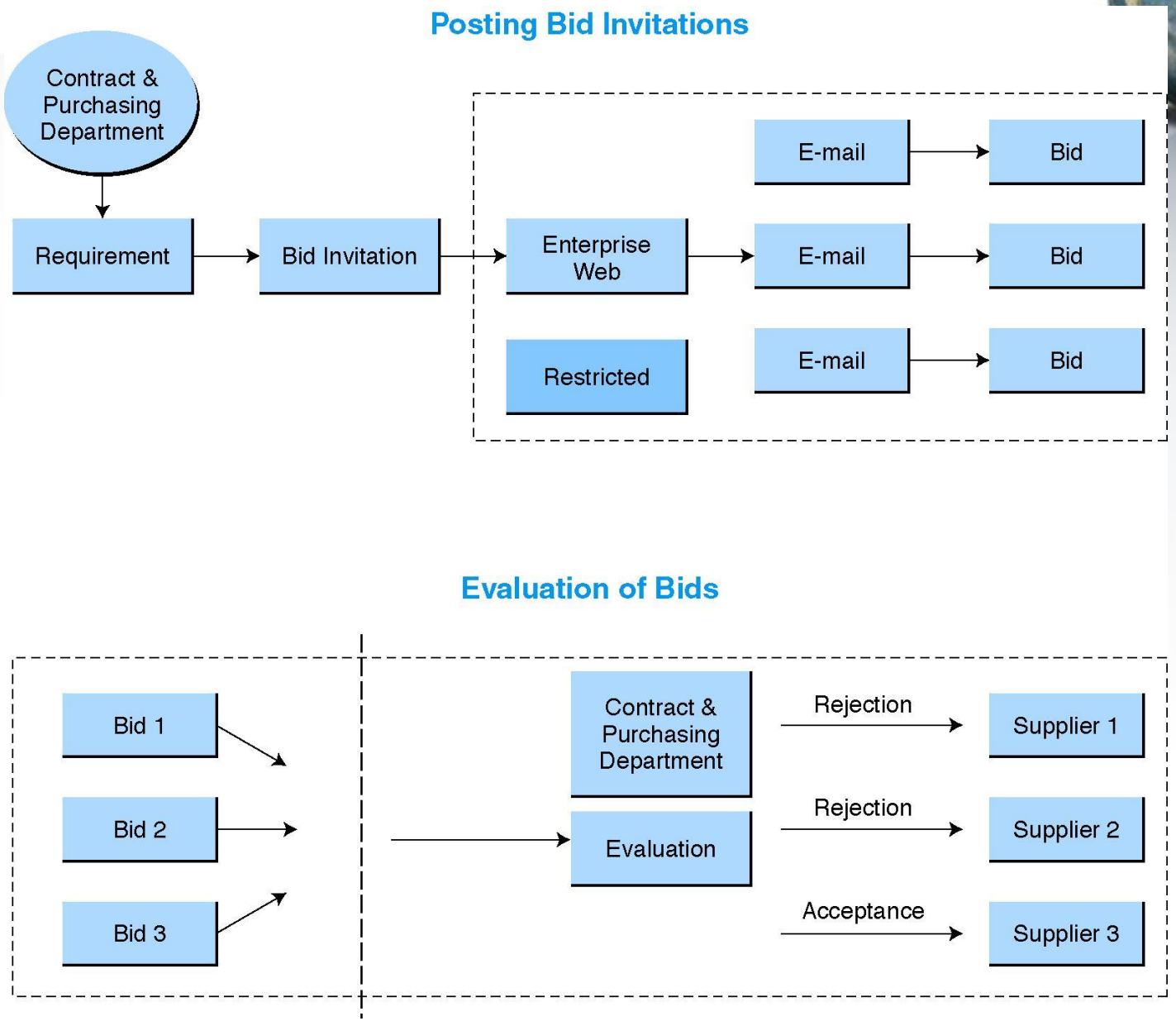
Request for quote (RFQ)

The “invitation” to participate in a tendering (bidding) system

Exhibit 7.4 Conventional Versus Exchange Processes



Reverse Auction Process



Other E-Procurement Methods

Internal procurement marketplace

The aggregated catalogs of all approved suppliers combined into a single *internal* electronic catalog

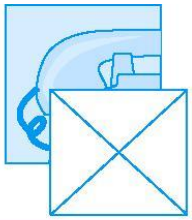
Desktop purchasing

Direct purchasing from internal marketplaces without the approval of supervisors and without the intervention of a procurement department

Group purchasing

The aggregation of orders from several buyers into volume purchases so that better prices can be negotiated

The Group Purchasing Process



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1

Small businesses sign up for the free service.

2

The SME specifies what it needs—office supplies, long-distance telephone, etc.

3

The buyers name the price they are willing to pay.

4

The aggregator groups all requests by category and price.

5

For each item, the aggregator either negotiates with suppliers or uses an e-reverse auction, hoping to meet or beat the requested price.

6

In addition, the suppliers pay a negotiated commission to the aggregator.

Other E-Procurement Methods (cont.)

- Internal Aggregation
- External Aggregation
- Buying from e-Distributors
- Purchasing Direct Goods
- Electronic Bartering
- Buying in Exchanges and Industrial Malls

Automating B2B Tasks

- **e-Procurement Management**
  - e-procurement systems are used for *making online purchases*, *connecting companies and their business processes directly with suppliers*, and *managing the interactions between them* including:
    - Correspondence
    - Bids
    - Questions and answers
    - Previous pricing
    - E-mails sent to multiple participants

Infrastructure, Integration, and Software Agents in B2B EC

- Infrastructure for B2B

  Electronic data interchange (EDI)

  The electronic transfer of specially-formatted standard business documents, such as bills, orders, and confirmations, sent between business partners

  Value-added networks (VANs)

  Private, third-party managed networks that add communications services and security to existing common carriers; used to implement traditional EDI systems

  Internet-based (Web) EDI

  EDI that runs on the Internet and is widely accessible to most companies, including SMEs

Infrastructure, Integration, and Software Agents in B2B EC

- Integration for B2B
  - Integration with the existing internal infrastructure and applications
  - Integration with business partners

Infrastructure, Integration, and Software Agents in B2B EC

- The Role of Standards in B2B Integration

  XML (eXtensible Markup Language)

  Standard (and its variants) used to improve compatibility between the disparate systems of business partners by defining the meaning of data in business documents

  Web Services

  An architecture enabling assembly of distributed applications from software services and tying them together

Infrastructure, Integration, and Software Agents in B2B EC

- The Role of Software Agents in B2B
  - The major role of software agents in B2B is collecting data from multiple sellers' sites
  - Software agents also collect information from business sellers' sites for the benefit of business buyers

Managerial Issues

1. Can we justify the cost of B2B applications?
2. Which vendor(s) should we select?
3. Which B2B model(s) should we use?
4. Should we restructure our procurement system?
5. What are the ethical issues in B2B?
6. Will there be *massive* disintermediation?
7. How can trust and loyalty be cultivated in B2B?

Summary

1. The B2B field.
2. The major B2B models.
3. The characteristics of sell-side marketplaces.
4. The characteristics of buy-side marketplaces and e-procurement.
5. B2B reverse auctions.
6. B2B aggregation and group purchasing.
7. Other purchasing methods.
8. Infrastructure and standards in B2B.
9. Web-based EDI, XML, and Web Services