



# E-commerce

business. technology. society.


*Third Edition*

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# Chapter 12

## **B2B E-commerce: Supply Chain Management and Collaborative Commerce**



# **Volkswagen Builds Its B2B Net Marketplace**

## **Class Discussion**

- Why didn't Volkswagen want to use a more open or public electronic exchange for its parts supply? Why didn't it join the industry consortium Covisint?
- What kinds of services are provided by VWGroupSupply.com?
- What is eCAP and who benefits from its use?
- Do you think suppliers are disadvantaged by this B2B marketplace?



# Defining B2B Commerce

- Before Internet, B2B transactions called just trade or procurement process
- Total inter-firm trade: Total flow of value among firms
- B2B commerce: All types of computer-enabled inter-firm trade
- B2B e-commerce (Internet-based B2B commerce): That portion of B2B commerce that is enabled by the Internet

# The Evolution of B2B Commerce

- B2B commerce has evolved over a 35-year period
- 1970s: Automated order entry systems used telephone modems to send digital orders (e.g., Baxter Healthcare)
  - Seller-side solution (owned by suppliers, seller-biased, show goods only from single seller)
- Late 1970s: Electronic data interchange (EDI): communications standard for sharing business documents and settlement information among a small number of firms
  - Buyer-side solution (owned by buyers, buyer-biased, aim to reduce procurement costs for buyer)
  - Often referred to as hub-and-spoke system
  - Generally serves a vertical market

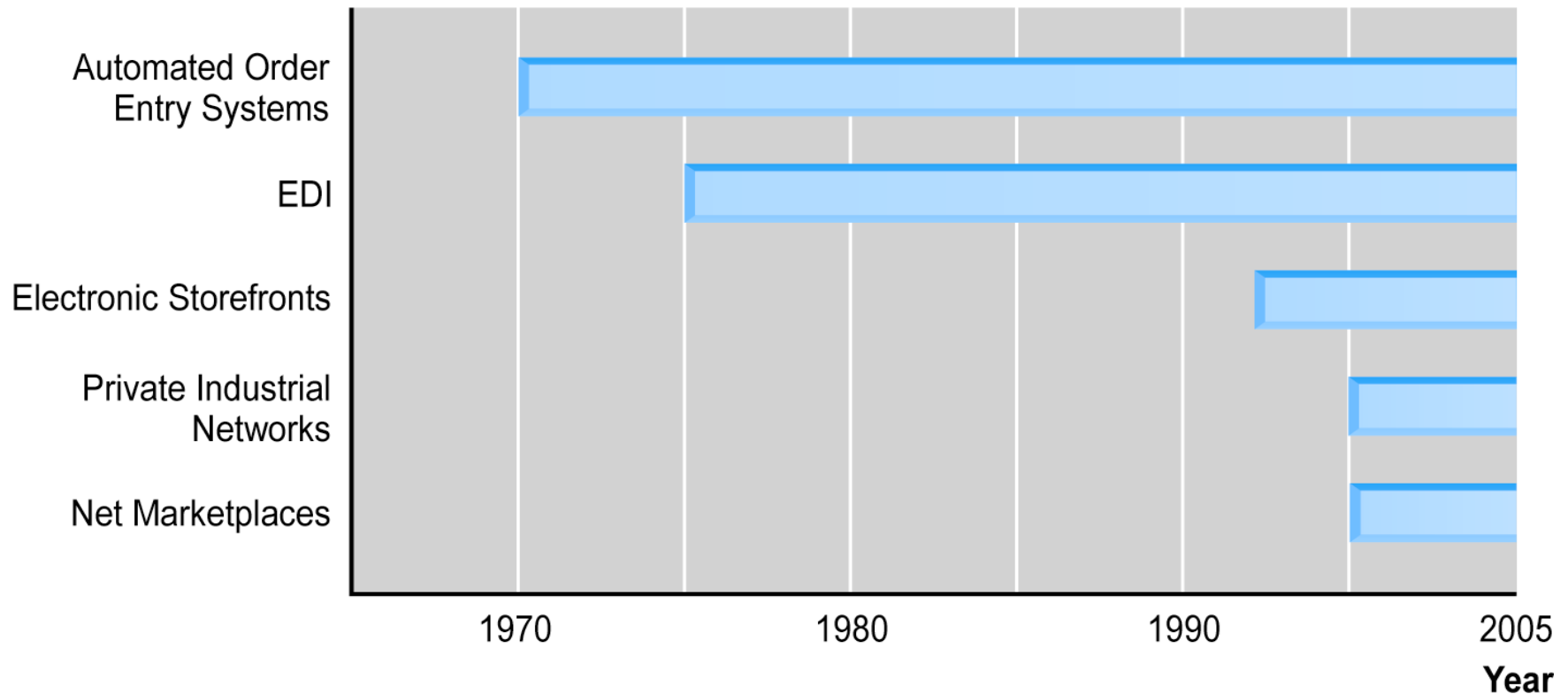


## The Evolution of B2B Commerce (cont'd)

- 1990s: B2B electronic storefronts (online catalogs of products made available to the public marketplace by a single supplier)
- Late 1990s: Net marketplaces (bring hundreds to thousands of suppliers and purchasers into a single Internet-based environment to conduct trade)
- Late 1990s: Private industrial networks (Internet-based communication environments that extend beyond procurement to encompass collaborative commerce)

# The Evolution of the Use of Technology Platforms in B2B Commerce

Figure 12.1, Page 683

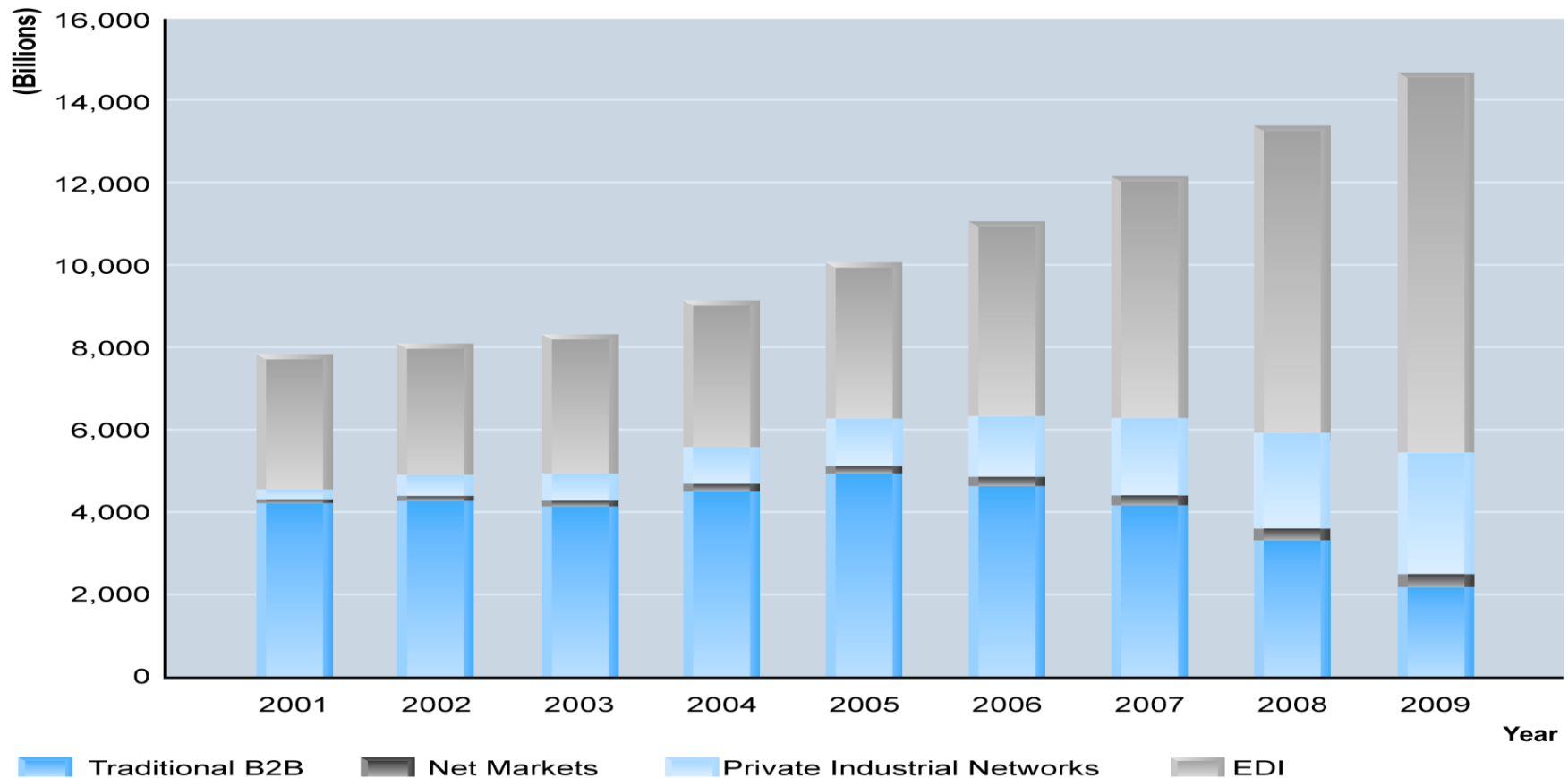


# The Growth of B2B E-commerce 2001–2009

- B2B e-commerce
  - 2005: \$1.5 trillion
  - 2009: \$4.11 trillion
- Net marketplaces growing at faster rate than private industrial networks, but even so, in 2006 private industrial networks still expected to be twice the size of Net marketplaces
- Not all industries will be similarly affected by B2B e-commerce
  - Computer, automotive, aerospace and defense, and industrial equipment industries likely to move first and fastest to B2B utilization

# Growth of B2B Commerce 2001-2009

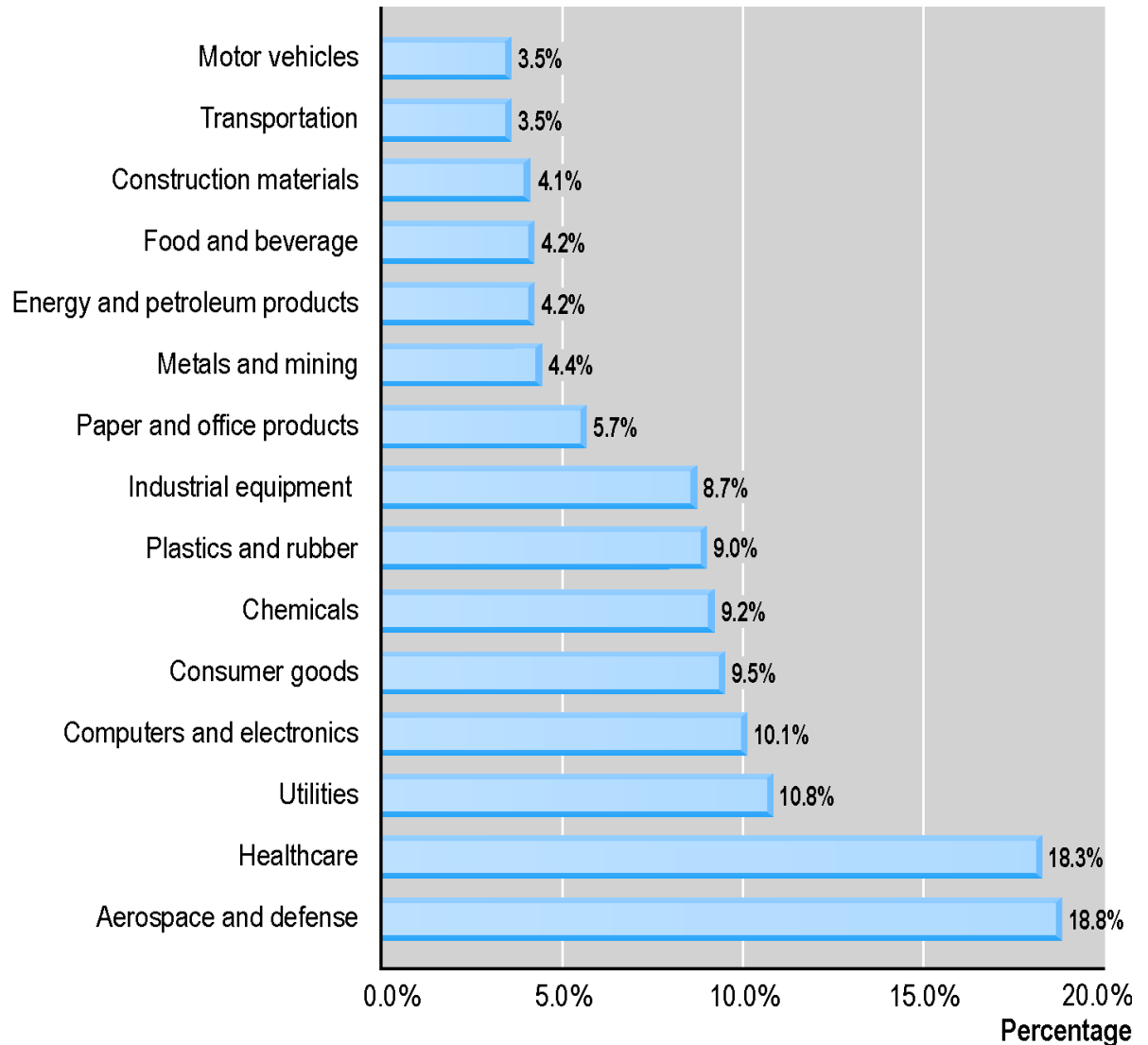
Figure 12.2, Page 686



**SOURCE:** Based on data from U.S. Department of Commerce, 2005; U.S. Census Bureau, 2005, eMarketer, Inc., 2003a, authors' estimates.

# Industry Forecasts for Internet-Based B2B Commerce, 2005

Figure 12.3, Page 687



SOURCE: Based on data from eMarketer, Inc., 2003a.

# Potential Benefits of B2B E-commerce

- Lower administrative costs
- Lower search costs for buyers
- Reduced inventory costs by increasing competition among suppliers and reducing inventory carried
- Lower transaction costs by eliminating paperwork, automation
- Increased production flexibility by ensuring just-in-time parts delivery
- Improved quality of products by increasing cooperation among buyers and sellers
- Decreased product cycle time by sharing of designs and production schedules
- Increased opportunities for collaborating with suppliers and distributors
- Greater price transparency



# The Procurement Process and the Supply Chain

- Procurement process: The way firms purchase the goods they need to produce the goods they sell
- Supply chain: Firms that purchase goods, their suppliers, and their suppliers' suppliers
- Includes not just the firms themselves, but also the relationships among them and the processes that connect them

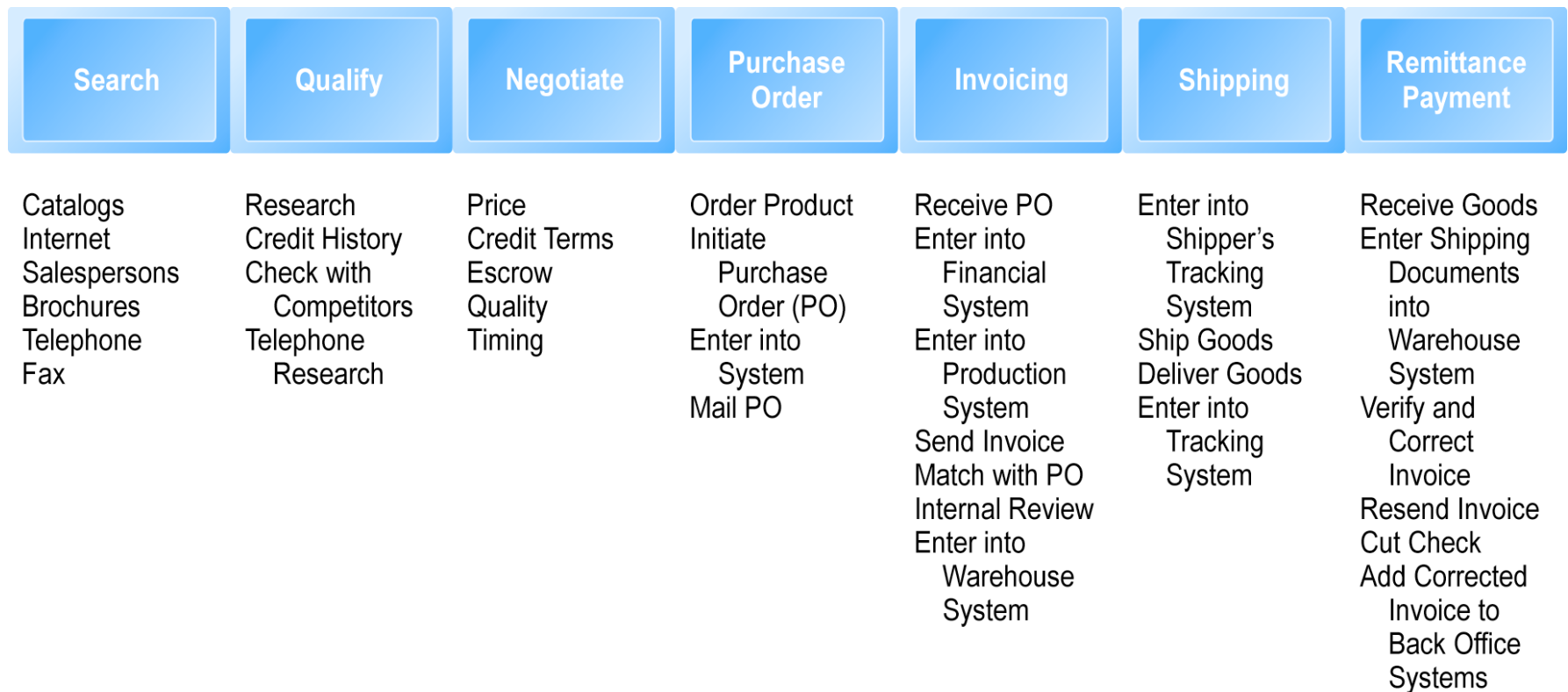


# Steps in the Procurement Process

- Search for suppliers of specific products
- Qualify both seller and products they sell
- Negotiate prices, credit terms, escrow, quality, schedule
- Issue purchase order
- Invoice issued
- Goods shipped
- Payment

# The Procurement Process

Figure 12.4, Page 689



# Types of Procurement

- Types of goods purchased
  - Direct goods: Goods integrally involved in the product process
  - Indirect goods: All other goods not directly involved in production process (sometimes called MRO goods)
- Methods of purchasing
  - Contract purchasing: Involves long-term written agreements to purchase specified products, with agreed upon terms and quality
  - Spot purchasing: Involves purchase of goods based on immediate needs in larger marketplaces that involve many suppliers

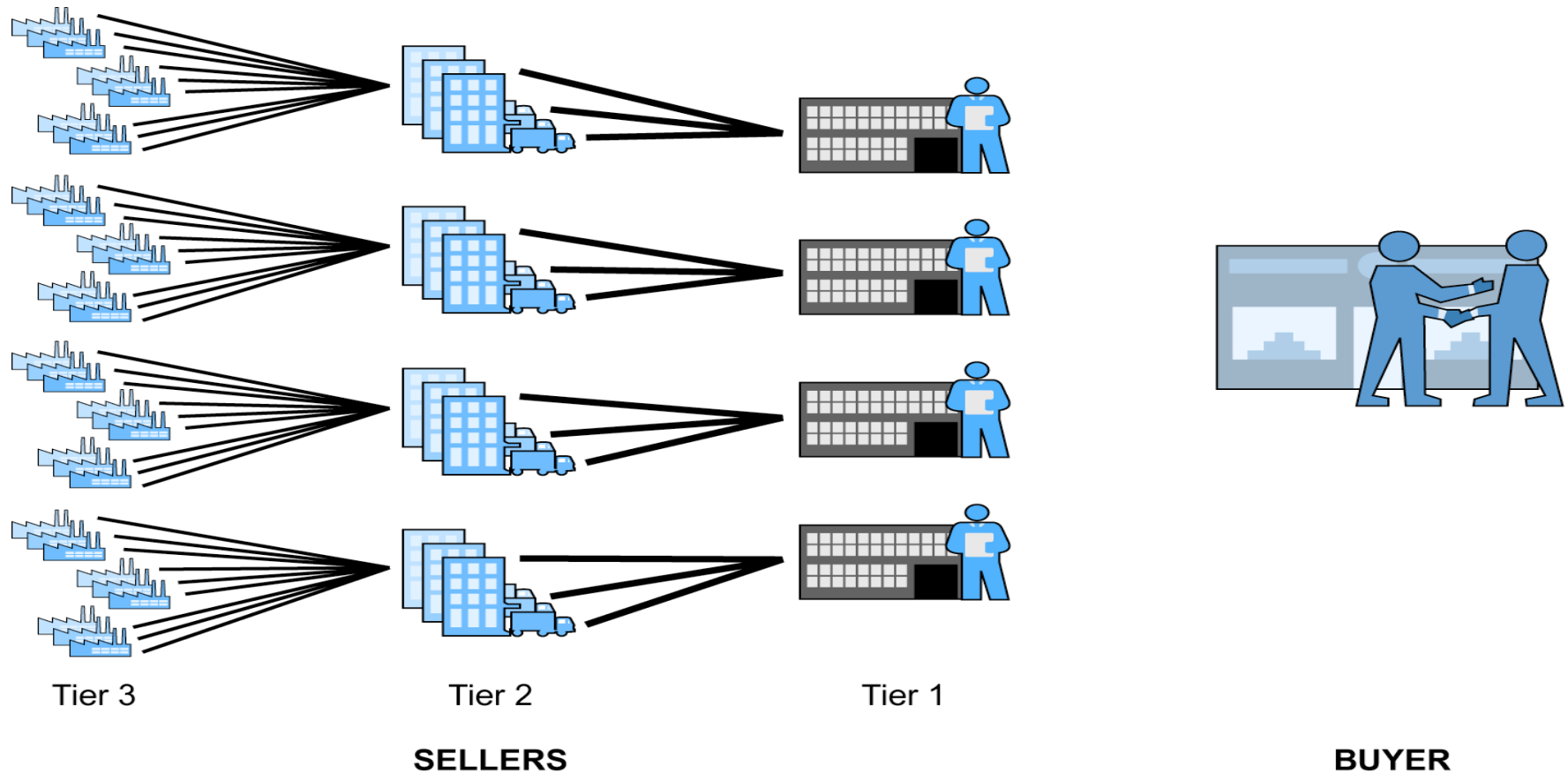


# Multi-tier Supply Chains

- Involves a complex series of transactions that exists between a single firm with multiple primary suppliers, the second suppliers who do business with those primary suppliers, and the tertiary suppliers who do business with the secondary suppliers

# The Multi-Tier Supply Chain

Figure 12.5, Page 691





# The Role of Existing Legacy Computer Systems

- Legacy computer systems: Generally older mainframe and minicomputer systems used to manage key business processes within a firm
- Typical examples include:
  - Materials requirements planning (MRP) systems – enable firms to predict, track, and manage the parts of complex manufactured goods
  - Enterprise resource planning (ERP) systems – more sophisticated MRP systems that include human resources and financial components



# Trends in Supply Chain Management and Collaborative Commerce

- To understand B2B e-commerce, you must also understand developments in supply chain management
- Supply chain management (SCM): Refers to a wide variety of activities that firms and industries use to coordinate the key players in their procurement process
- Major developments in supply chain management
  - Supply chain simplification
  - Electronic data interchange
  - Supply chain management systems
  - Collaborative commerce



# Supply Chain Simplification

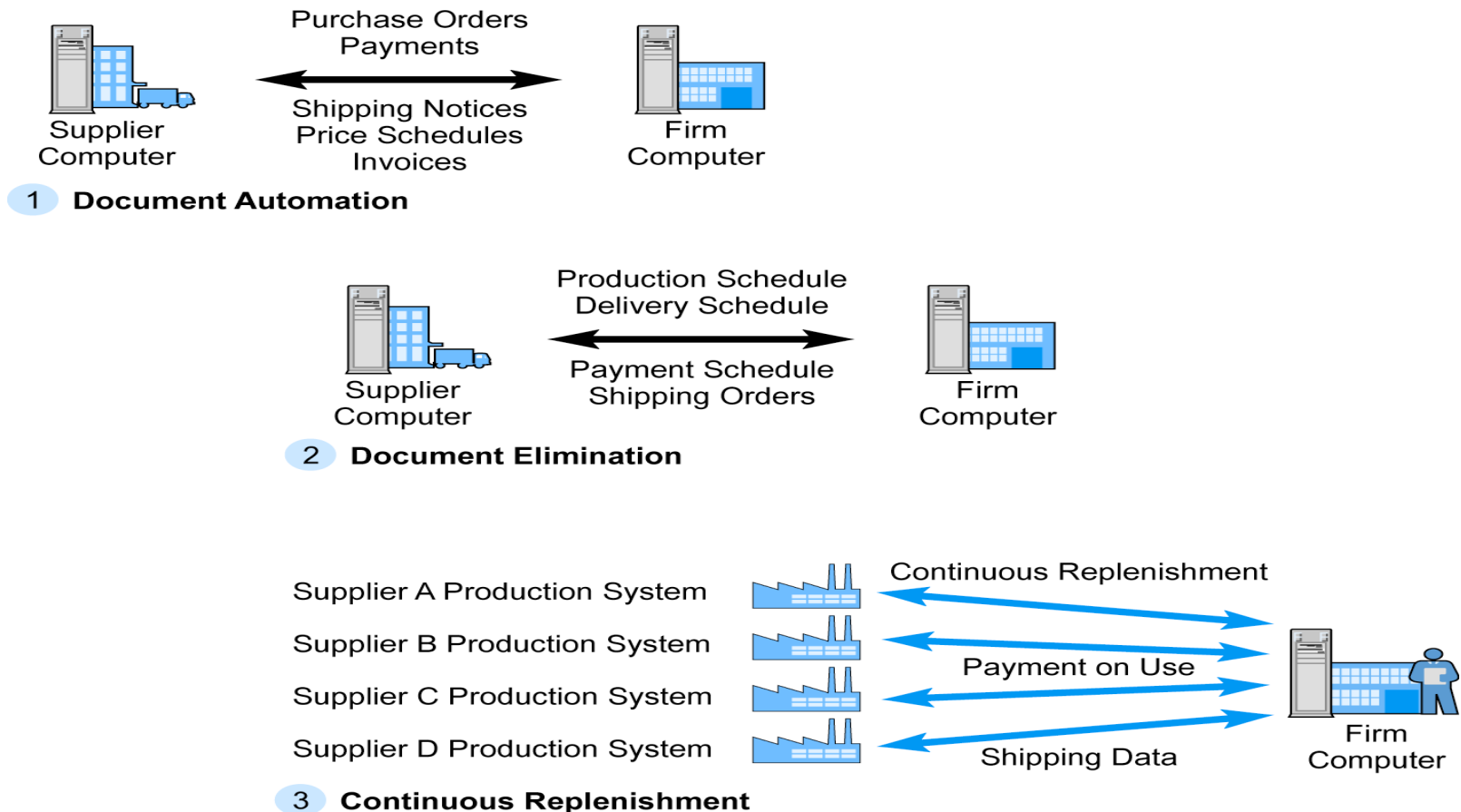
- Firms work closely with a strategic group of suppliers to reduce product and administrative costs, while improving quality
- Typically involves purchasing under long-term contracts that contain pre-specified product quality requirements and pre-specified timing goals
- Often involve tight coupling (method of ensuring that suppliers precisely deliver ordered parts at specific time and to particular location, to ensure production process is not interrupted)

# Electronic Data Interchange (EDI)

- EDI: broadly defined communications protocol for exchanging documents among computers
- Has evolved significantly
- 1970s-1980s: Originally focused on document automation (Stage 1)
- Early 1990s: Began to focus on document elimination (Stage 2)
- Mid 1990s: Movement toward a continuous replenishment/access model
- Today: should be viewed as a general enabling technology that provides for the exchange of critical business information between computer applications supporting a wide variety of business processes

# The Evolution of EDI as a B2B Medium

Figure 12.6, Page 694



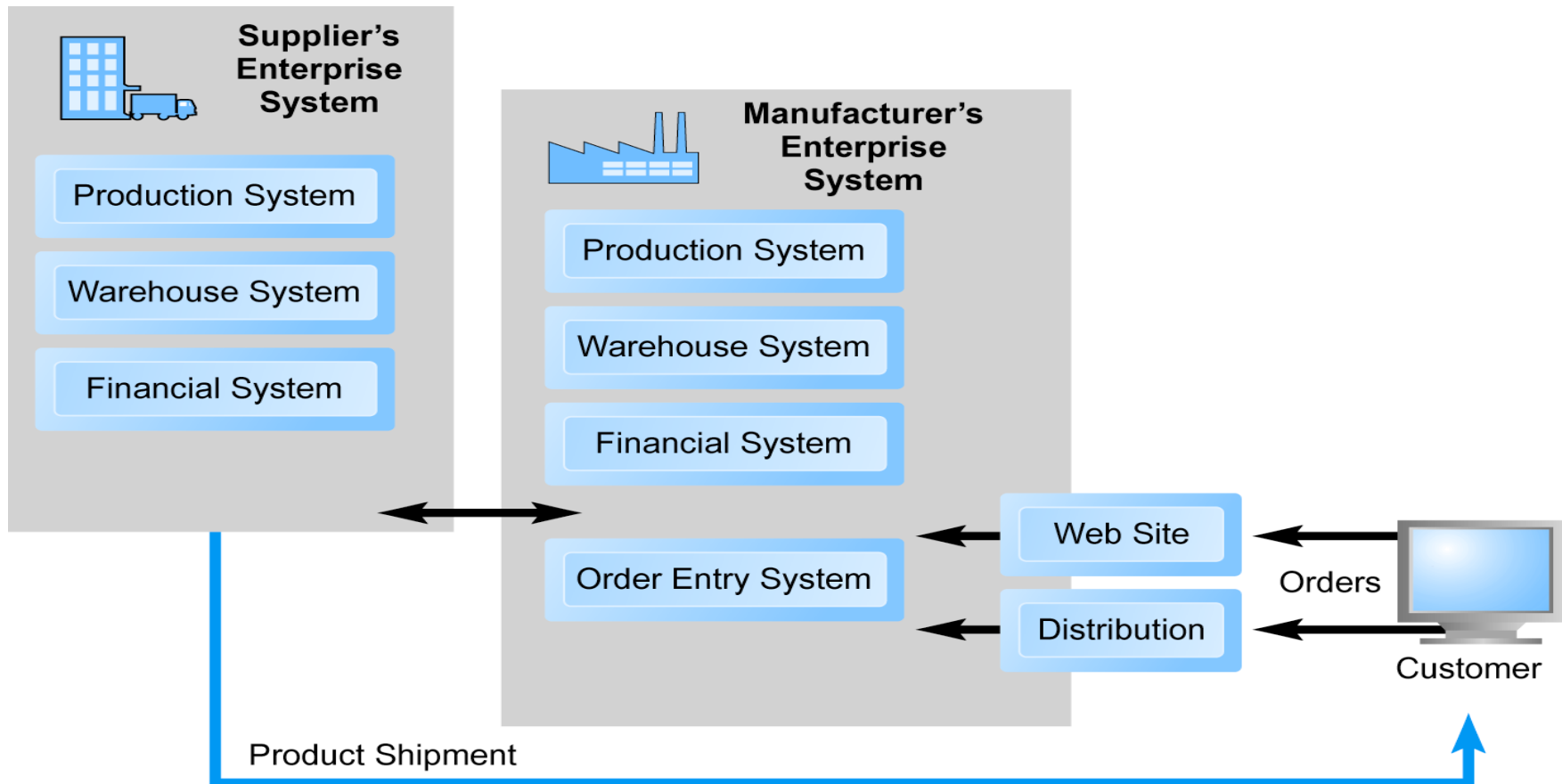


# Supply Chain Management Systems

- Continuously link the activities of buying, making, and moving products from suppliers to purchasing firms, as well as integrating the demand side of the business equation by including the order entry system in the process
- Example: Hewlett Packard

# Supply Chain Management Systems

Figure 12.7, Page 696





# **Insight on Technology: RFID Autoidentification: Making Your Supply Chain Visible Class Discussion**

- Why is RFID an improvement over bar codes?
- How does RFID work?
- Why would Wal-Mart support RFID?
- What impact will widespread adoption of RFID have on Internet B2B commerce?

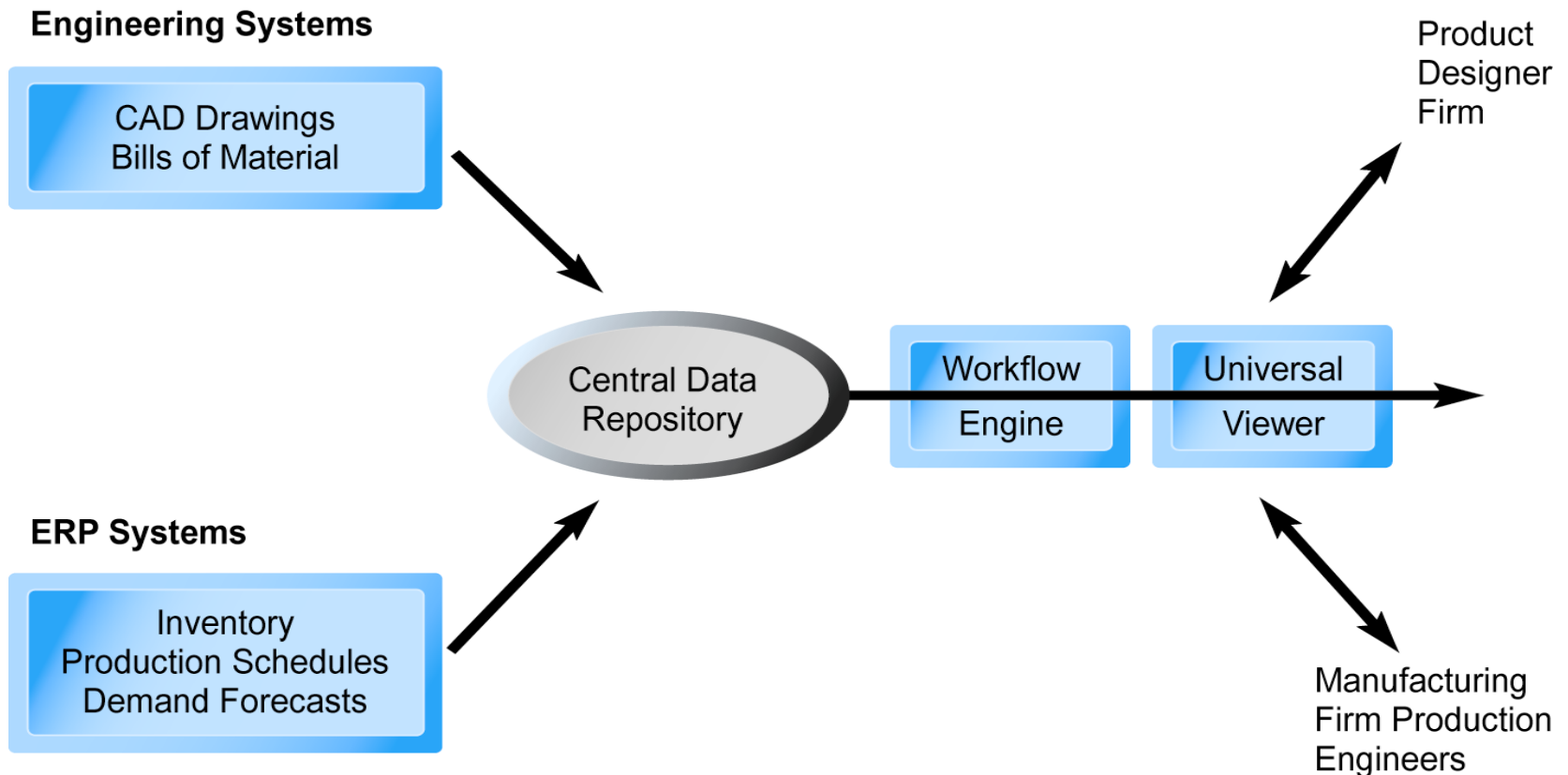


# Collaborative Commerce

- An extension of supply chain management systems and supply chain simplification
- Involves the use of digital technologies to permit organizations to collaboratively design, develop, build, and manage products through their life cycles
- Involves a move from a transaction focus to a relationship focus
- Example: Group Dekko

# Elements of a Collaborative Commerce System

Figure 12.8, Page 700



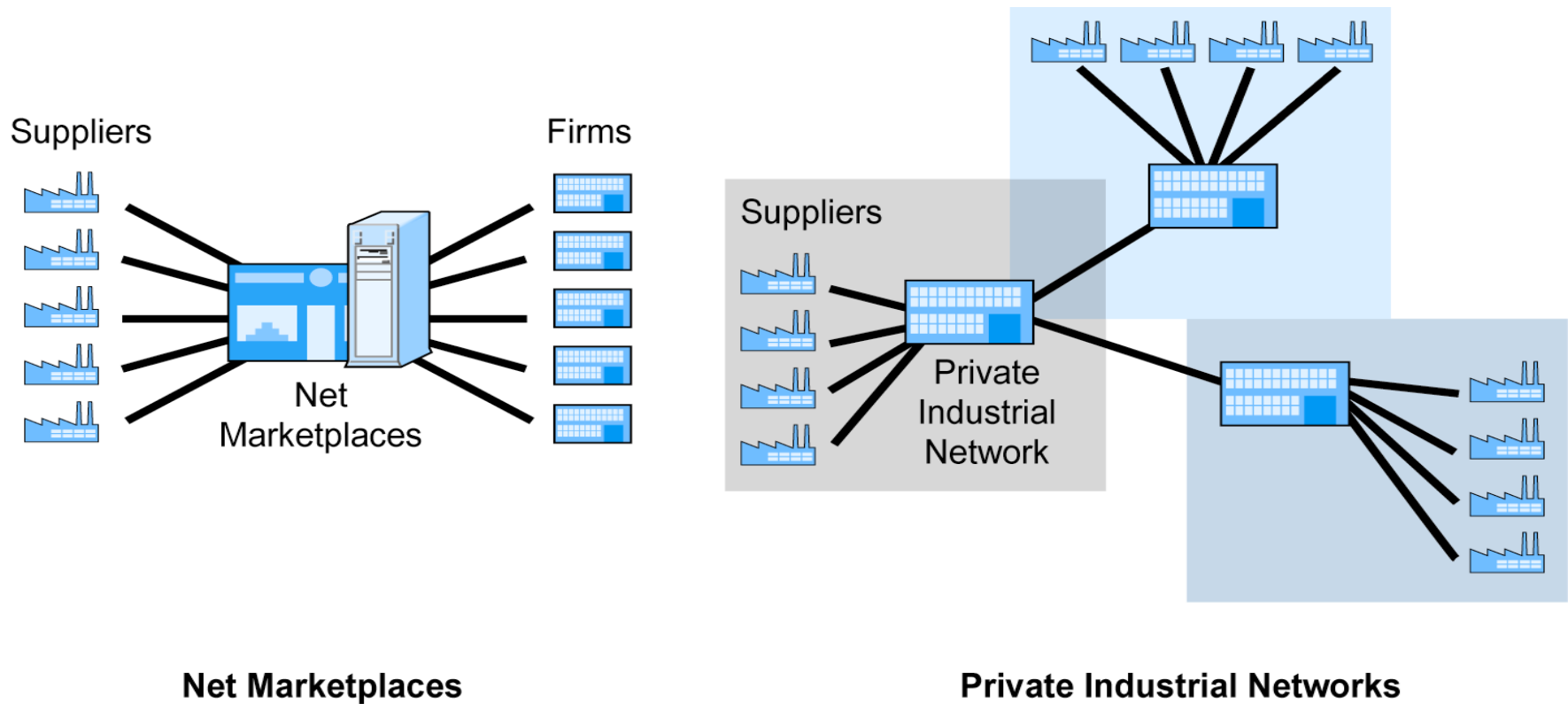


# Main Types of Internet-Based B2B Commerce

- Net marketplaces: Bring together potentially thousands of sellers and buyers in a single digital marketplace operated over the Internet
  - Transaction-based
  - Supports many-to-many as well as one-to-many relationships
- Private industrial networks: Bring together a small number of strategic business partner firms that collaborate to develop highly efficient supply chains
  - Relationship-based
  - Support many-to-one and many-to-few relationships
  - Largest form of B2B e-commerce

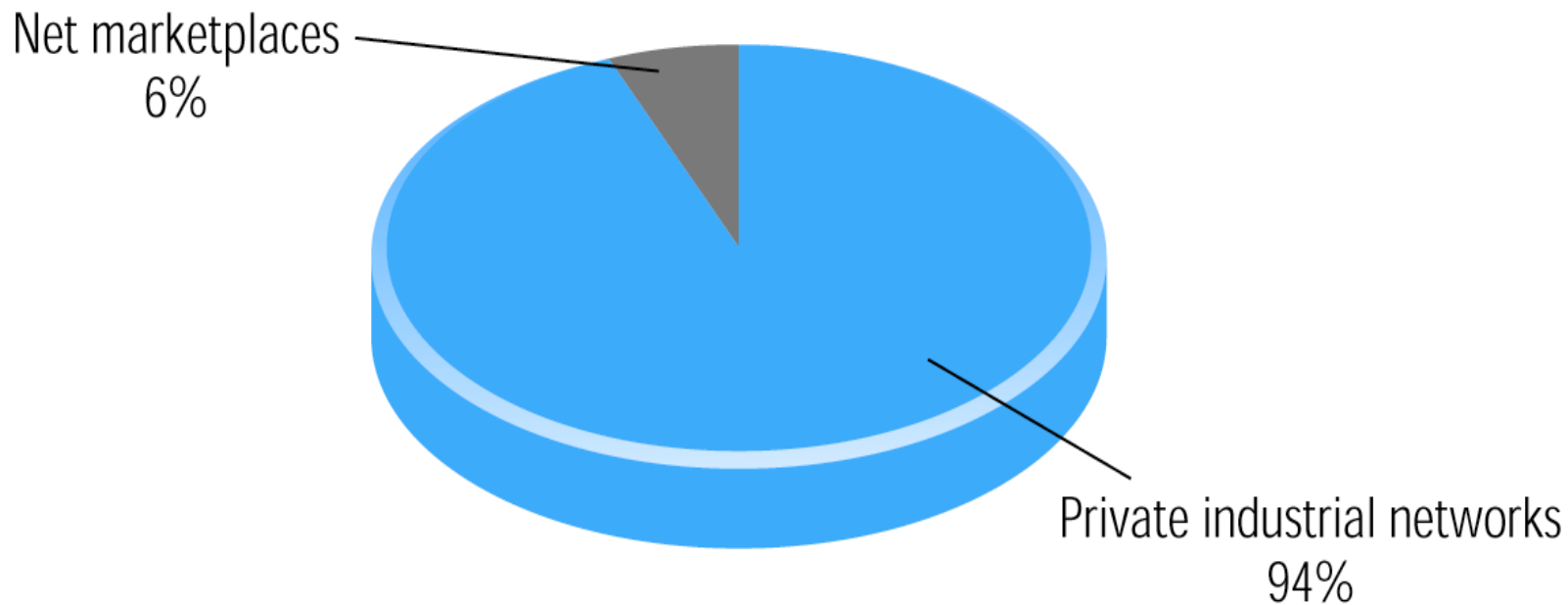
# Two Main Types of Internet-Based B2B Commerce

Figure 12.9, Page 701



# The Projected Relative Size of Net Marketplaces and Private Industrial Networks in 2006

**Figure 12.10, Page 701**



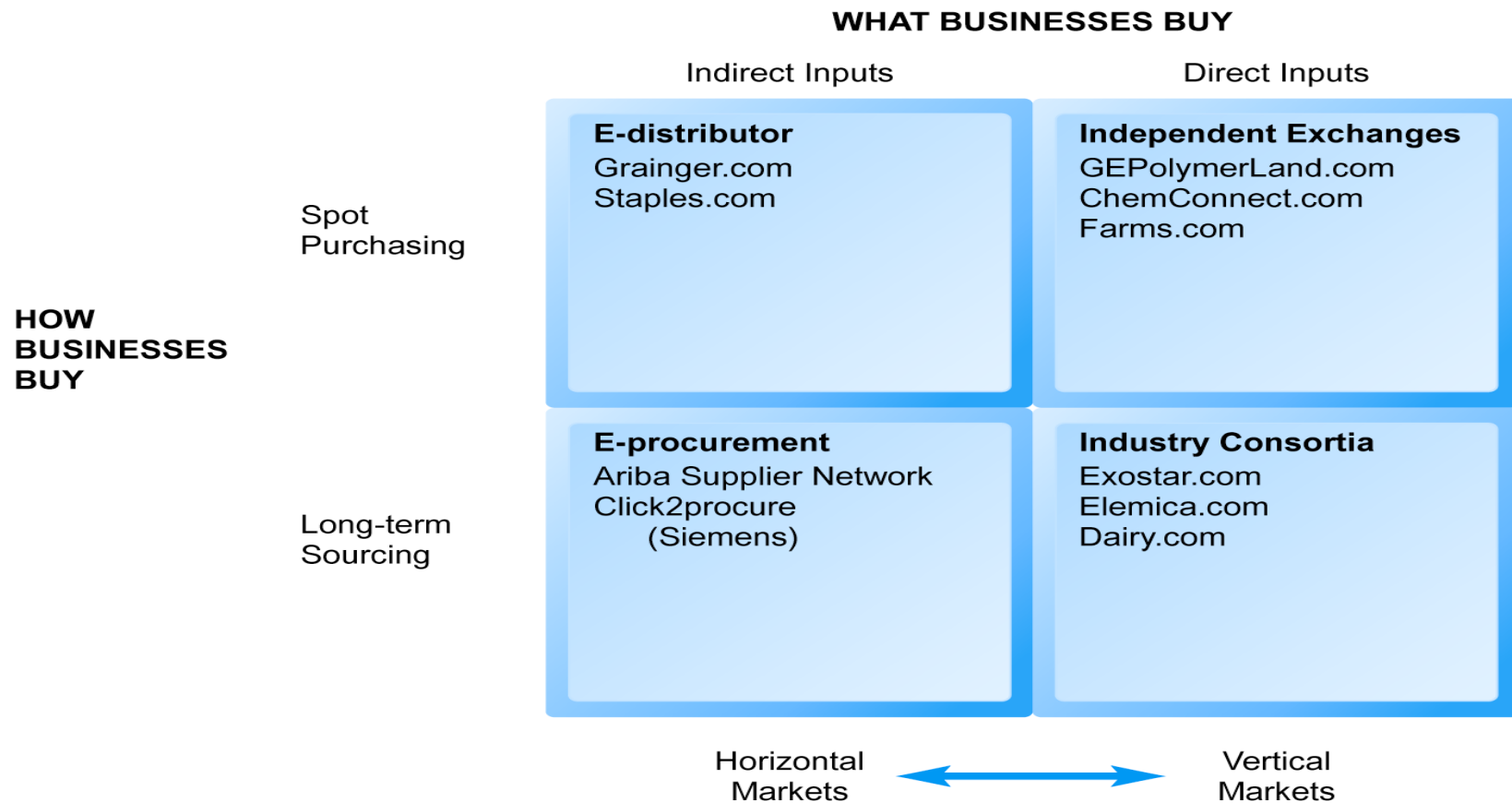
**SOURCE:** Based on data from U.S. Department of Commerce, 2005; eMarketer, Inc., 2003a; authors' estimates.

# Net Marketplaces

- 2000—over 1500 Net marketplaces; 2005—an estimated 200
- Many different ways to classify Net marketplaces such as based on:
  - Pricing mechanism
  - Nature of market served
  - Ownership
- Another method: Classify Net marketplaces based on their business functionality
  - What businesses by (direct vs. indirect goods)
  - How business by (spot purchasing vs. long-term sourcing)

# Pure Types of Net Marketplaces

Figure 12.11, Page 703



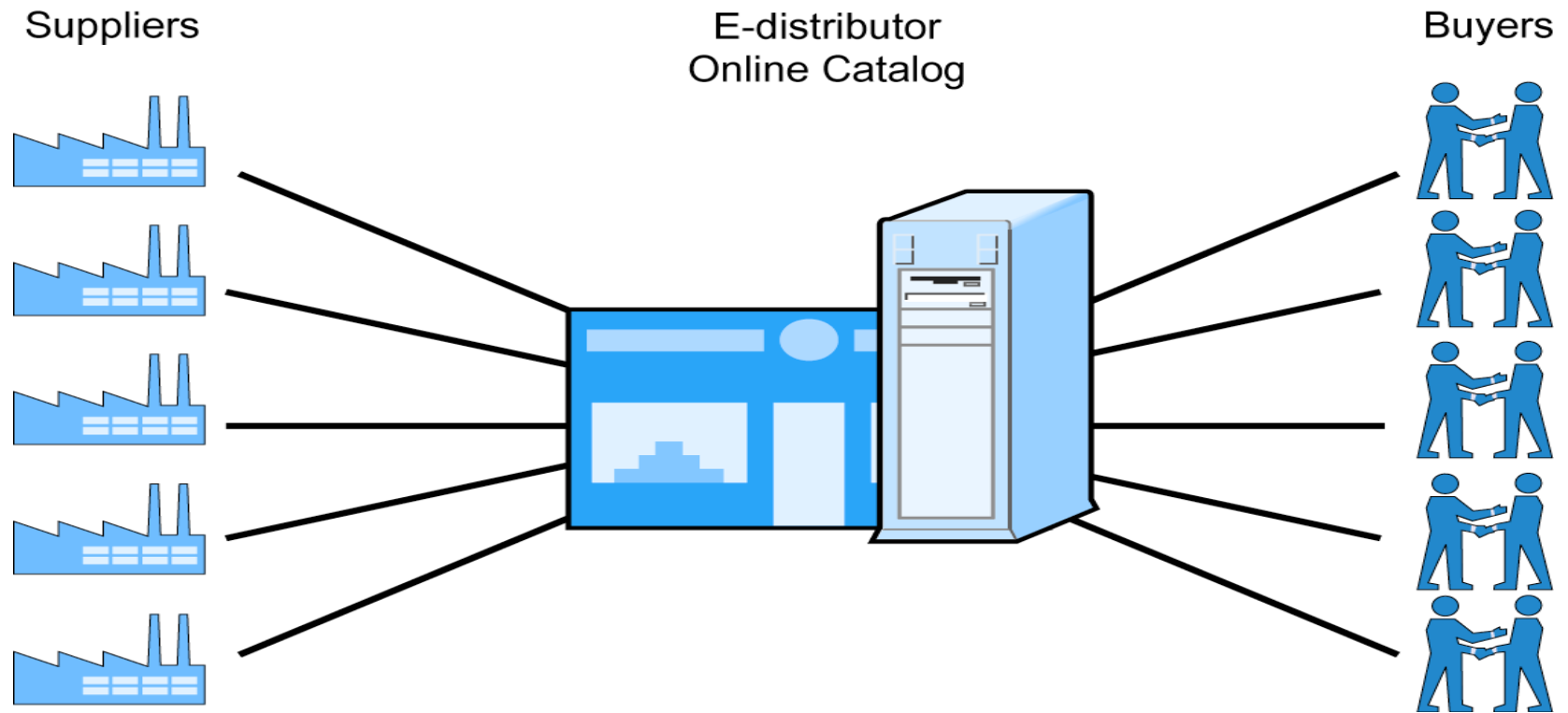


# E-distributors

- Most common type of Net marketplace
- Provide electronic catalogs that represent the products of thousands of direct manufacturers
- Typically independently owned intermediaries that offer industrial customers a single source from which to order indirect goods on a spot basis
- Typically operate in horizontal markets because they serve many different industries with products from many different suppliers
- Example: W.W. Grainger

# E-distributors

Figure 12.12, Page 704

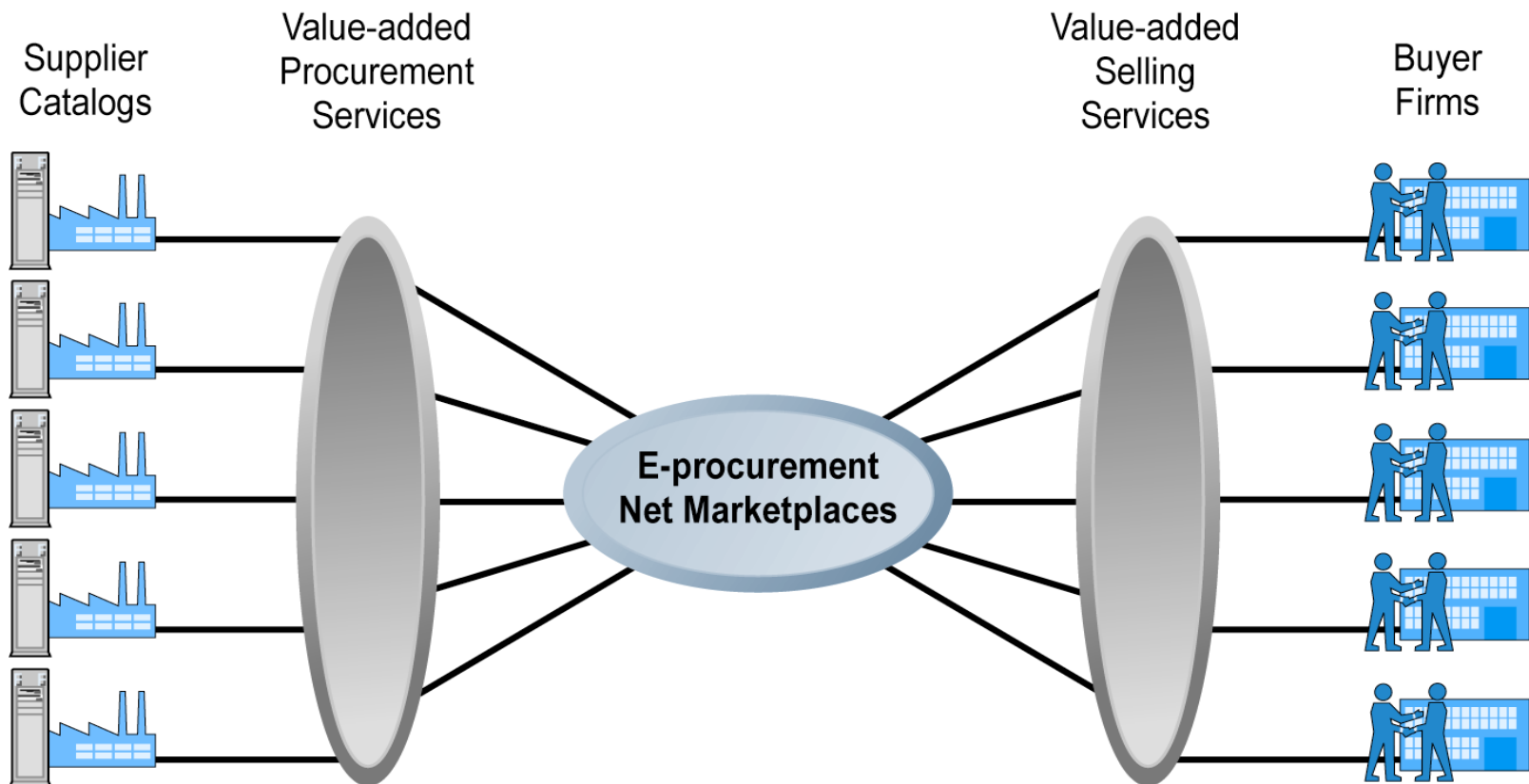


# E-procurement

- Independently owned intermediaries connecting hundreds of online suppliers offering millions of indirect goods to business firms who pay fees to join the market
- Typically used for long-term contractual purchasing of indirect goods
- Expand on business model of e-distributors
- Typically offer value chain management (VCM) services, such as automation of a firm's entire procurement process on buyer side, automation of selling business processes on seller side
- Sometimes referred to as a many-to-many market
- Example: Ariba

# E-Procurement Net Marketplaces

Figure 12.13, Page 706





## **E-commerce in Action: Ariba**

- Ariba Supplier Network: Internet-based network that connects suppliers to customers and their partners
- Also offers Enterprise Spend Management (ESM) solutions to manage all of a company's non-payroll expenses
- Ariba's original vision was to revolutionize the procurement and supply process in large corporations

## E-commerce in Action: Ariba (cont'd)

- Has faced many difficulties in bringing this vision to fruition
  - Implementation of its software by large companies is a complex, time consuming and expensive
  - Failed to understand power of existing and Web-based EDI systems
  - Competitive response from other major technology players
  - Difficulties getting suppliers to join Ariba Supplier Network
- Currently operating at significant net loss; future prospects not great

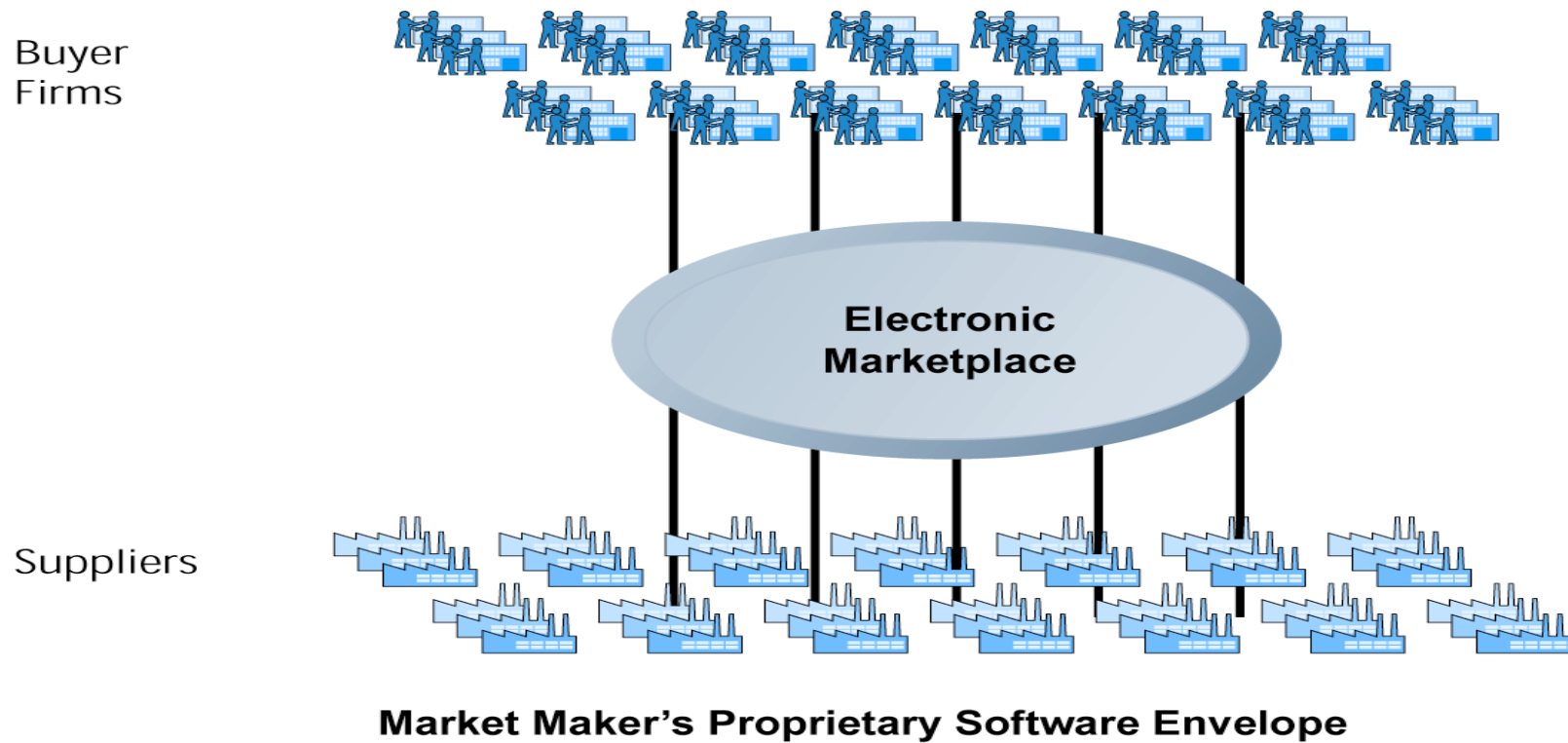


# Exchanges

- Independently owned online marketplaces that connect hundreds to potentially thousands of suppliers and buyers in a dynamic, real-time environment
- Typically vertical markets focusing on spot purchasing requirements of large firms in a single industry
- Make money by charging a commission on transaction
- Variety of pricing models used
- Tend to be buyer-biased
- Many have failed due to low liquidity (typically measured by number of buyers and sellers in a market, the volume of transactions and size of transactions)

# Exchanges

Figure 12.14, Page 714

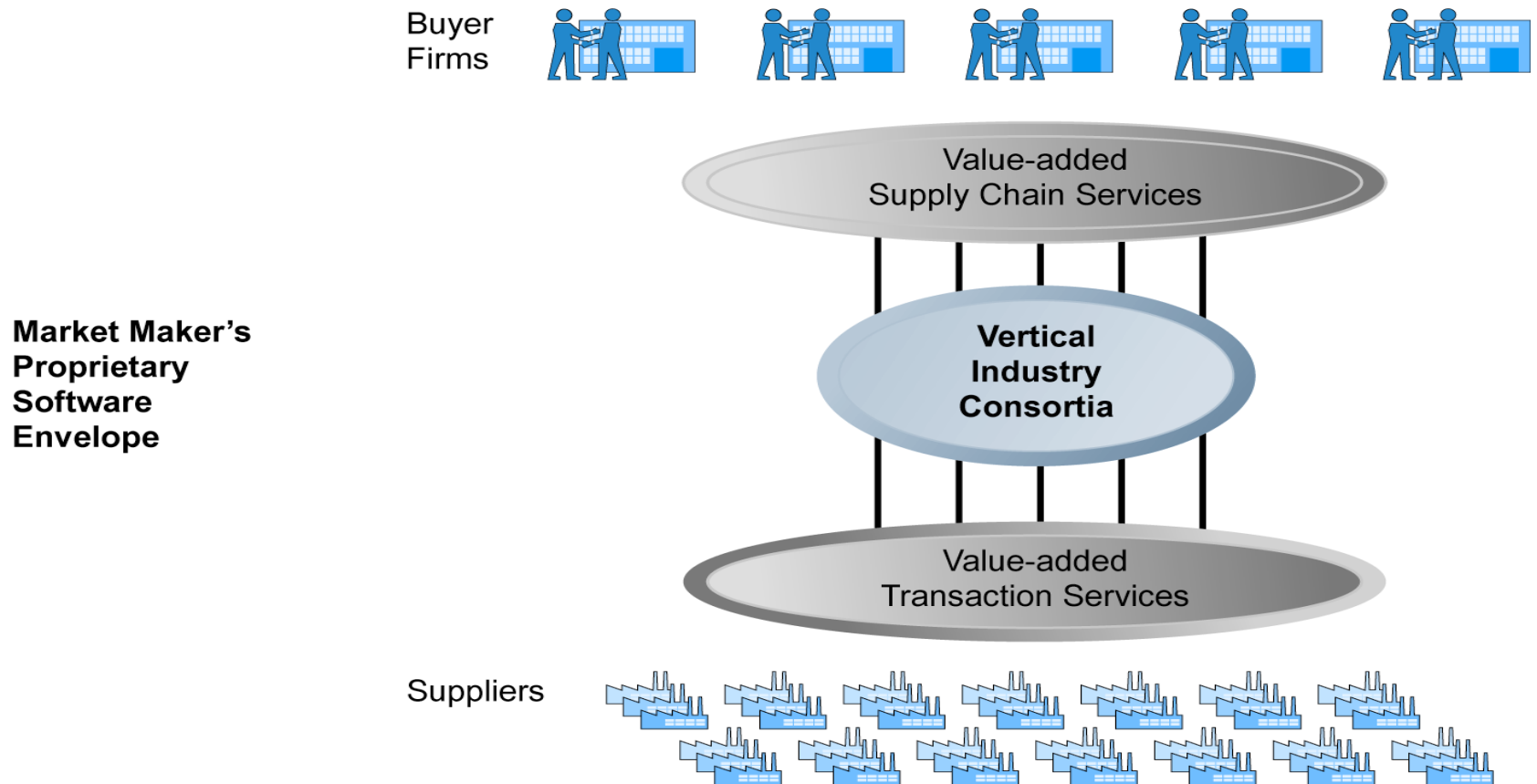


# Industry Consortia

- Industry-owned vertical markets that enable buyers to purchase direct inputs from a limited set of invited participants
- Emphasize long-term contractual purchasing and development of stable relationships
- Ultimate objective: Unification of supply chains within entire industries through a common network and computing platform
- More than 60 industry consortia now exist, with many industries having more than one
- Make money from transaction and subscription fees
- Offer many different pricing mechanisms

# Industry Consortia

Figure 12.15, Page 717



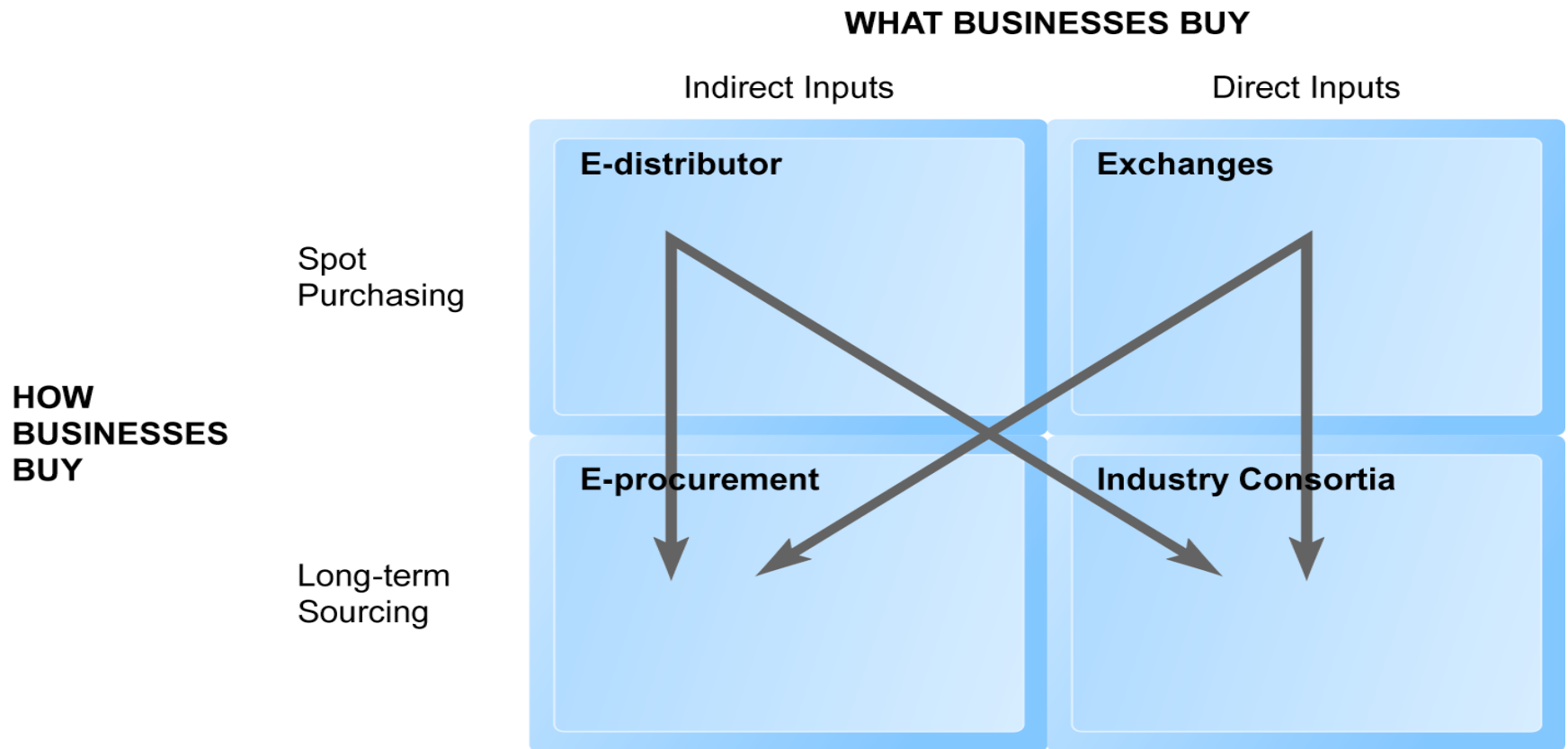


# The Long-Term Dynamics of Net Marketplaces

- Pure Net marketplaces are moving away from simple “electronic marketplace” vision and toward playing a more central role in changing the procurement process
- Consortia and exchanges beginning to work together in selected markets; e-distributors joining large e-procurement systems and also industry consortia as suppliers
- Movement from simple transactions involving spot purchasing to longer-term contractual relationships involving both direct and indirect goods

# Net Marketplace Trends

Figure 12.16, Page 721





# **Insight on Society: Are Net Marketplaces Anti-Competitive Cartels**

## **Class Discussion**

- How can Net marketplaces and private industrial networks reduce competition in the marketplace, drive up prices, and reduce variety in markets?
- What is a monopsony, and how do Net marketplaces encourage the development of monopsonies?
- How can Net marketplaces be used to exclude competitors from low priced markets?
- Why do Net marketplaces inevitably lead to a single marketplace owner or provider?

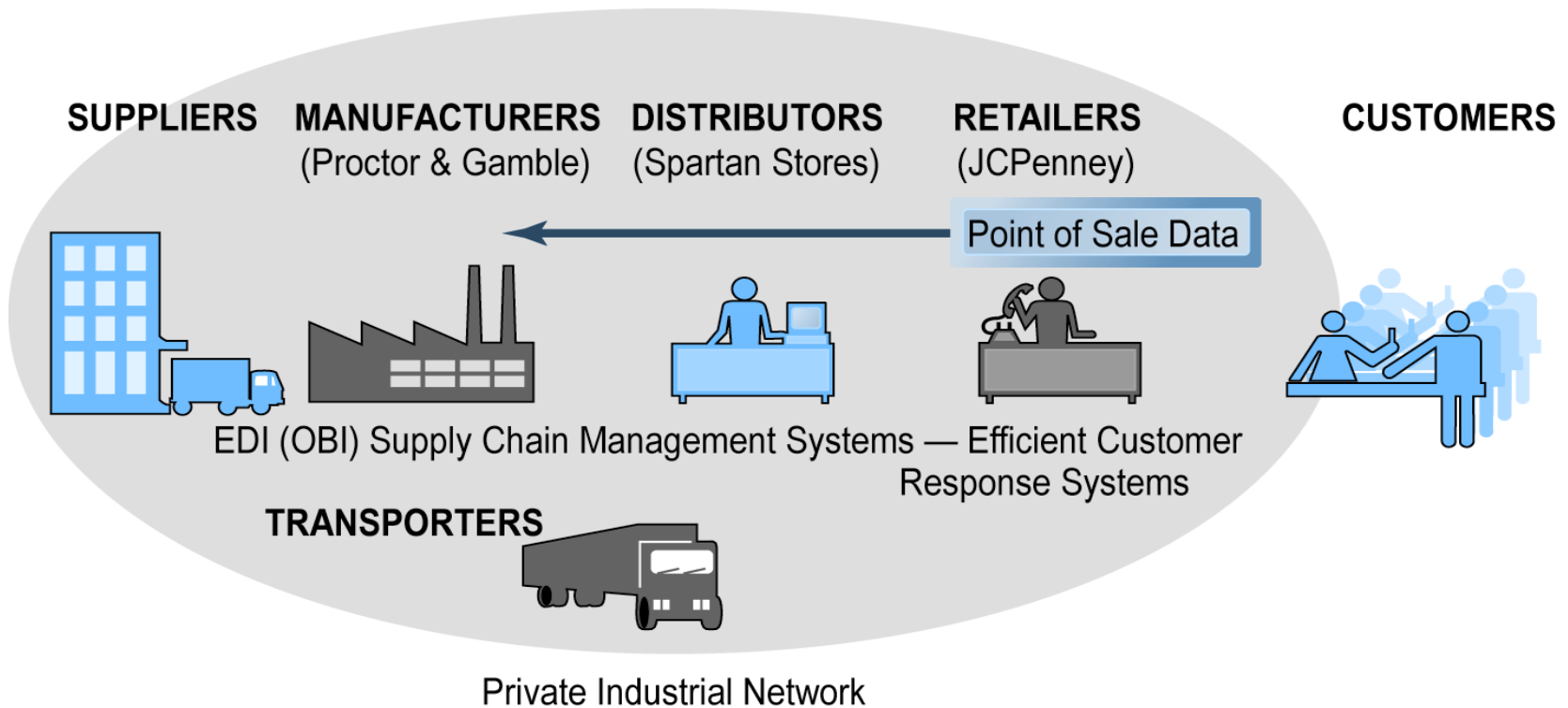


# What Are Private Industrial Networks?

- Web-enabled networks for the coordination of trans-organizational business processes (collaborative commerce)
- Range in scope from a single firm to an entire industry
- Example: Proctor & Gamble

# Proctor & Gamble's Private Industrial Network

Figure 12.17, Page 724





# Characteristics of Private Industrial Networks

- Objectives of private industrial networks include:
  - Developing efficient purchasing and selling business processes industry-wide
  - Developing industry-wide resource planning to supplement enterprise-wide resource planning
  - Creating increasing supply chain visibility
  - Achieving closer buyer-supplier relationships
  - Operating on a global scale
  - Reducing industry risk by preventing imbalances of supply and demand
- Typically focus on a single sponsoring company that “owns” the network



# **Insight on Business: Wal-Mart Develops a Private Industrial Network Class Discussion**

- What is Wal-Mart's Retail Link system and how has it changed since the early 90s?
- What is a “collaborative forecasting, planning and replenishment” system?
- Why is Wal-Mart still using EDI-based systems?
- Why won't Wal-Mart join in the industry-backed Global NetXchange system?

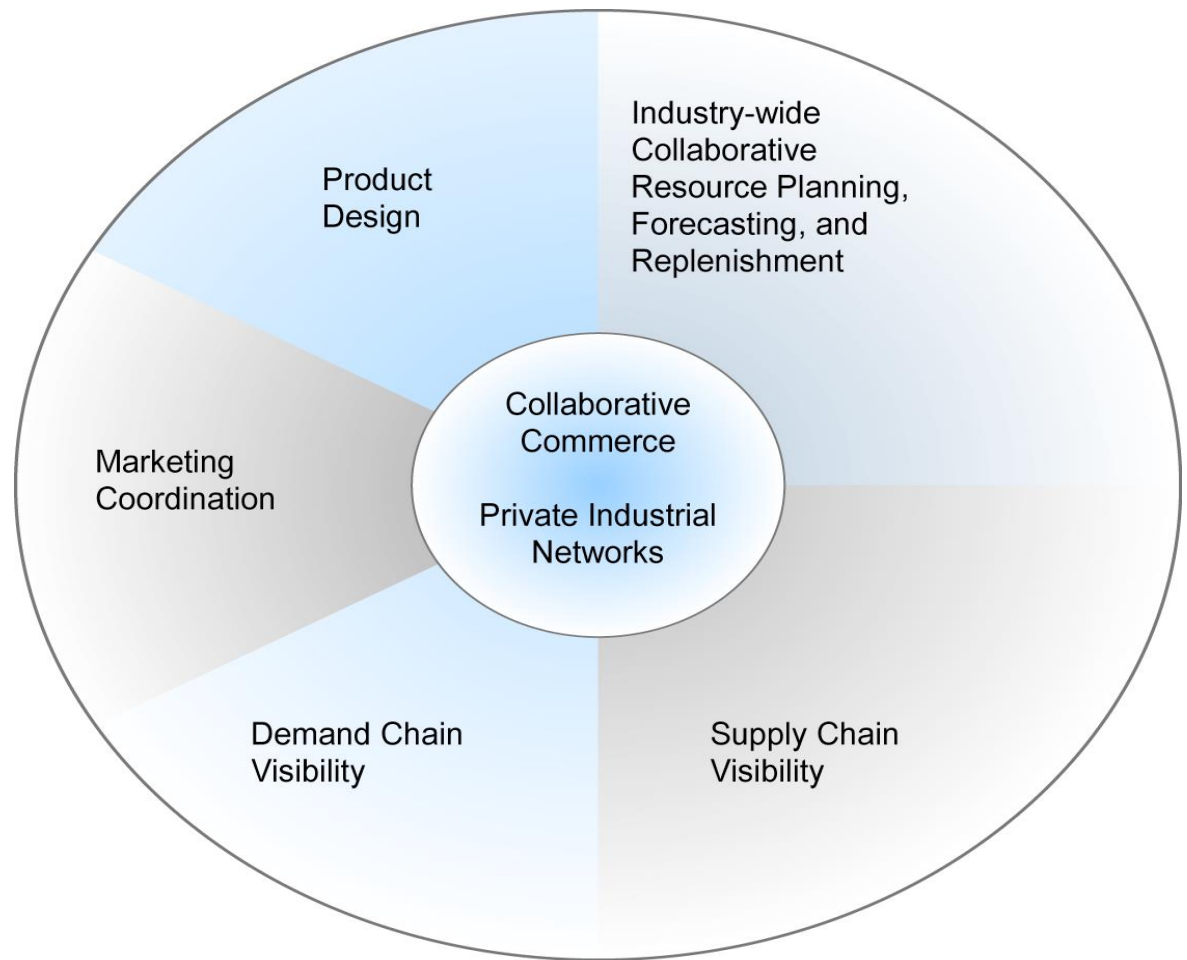


# Private Industrial Networks and Collaborative Commerce

- Collaboration among businesses can take following forms:
  - Collaborative resource planning, forecasting, and replenishment (CPFR): Involves working with network members to forecast demand, develop production plans, and coordinate shipping, warehousing and stocking activities to ensure that retail and wholesale shelf space is replenished with just the right amount of goods
  - Demand chain visibility
  - Marketing coordination and product design—closed loop marketing

# Pieces of the Collaborative Commerce Puzzle

**Figure 12.18, Page 728**





# Implementation Barriers

- Concerns about sharing of proprietary data
- Integration into existing ERP systems and EDI networks; expensive
- Requires change in mindset and behavior of employees

# An Industry-Wide Private Industrial Network

Figure 12.19, Page 731

