

Re-engineering and ERP Systems Introduction to Supply Chain Management

Lecture Outline

- What is Supply Chain?
- What is Supply Chain Management?
- Information Technology: A Supply Chain Enabler
- Supply Chain Integration
- Supply Chain Management Software
- Measuring Supply Chain Performance

What is Supply Chain?



What is Supply Chain?

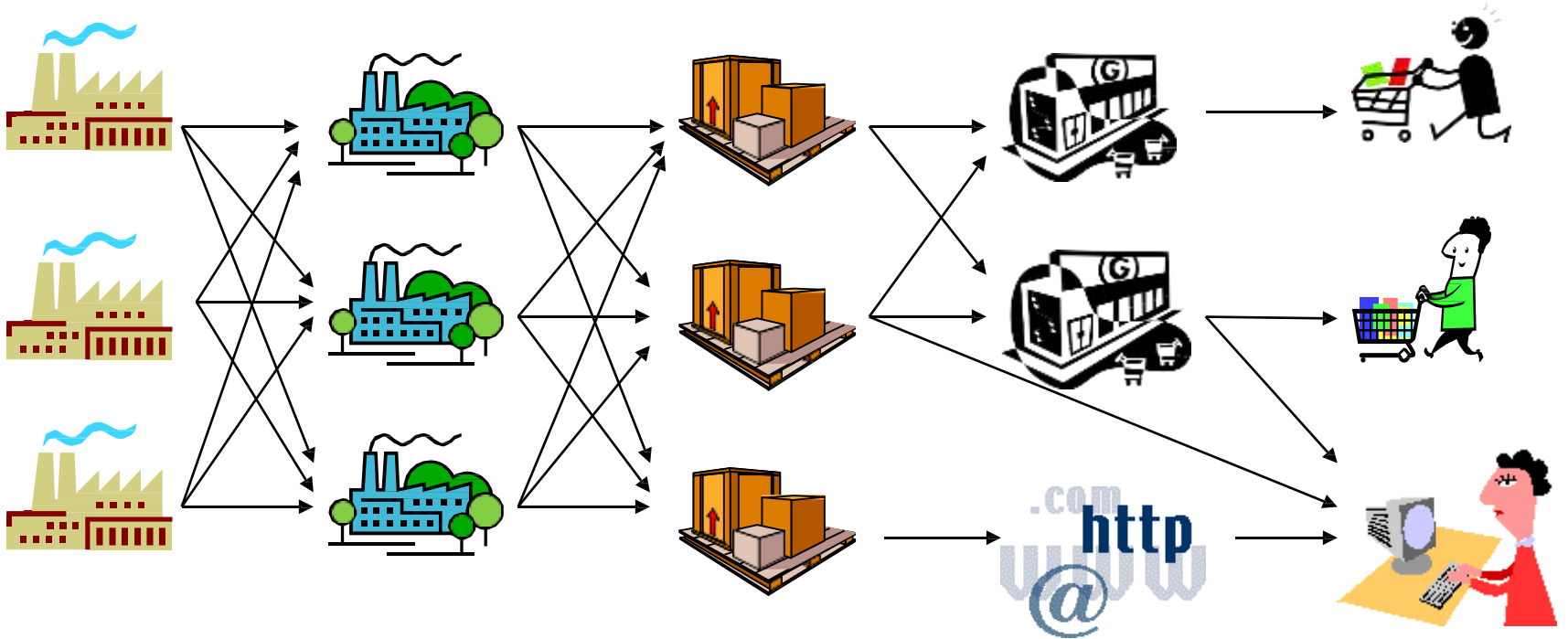
A **Supply Chain** is the *system of organizations, people, activities, information and resources involved in moving a product or service from **supplier** to **customer**.*

Supply chain activities *transform raw materials and components into a finished product that is delivered to the end customer.*

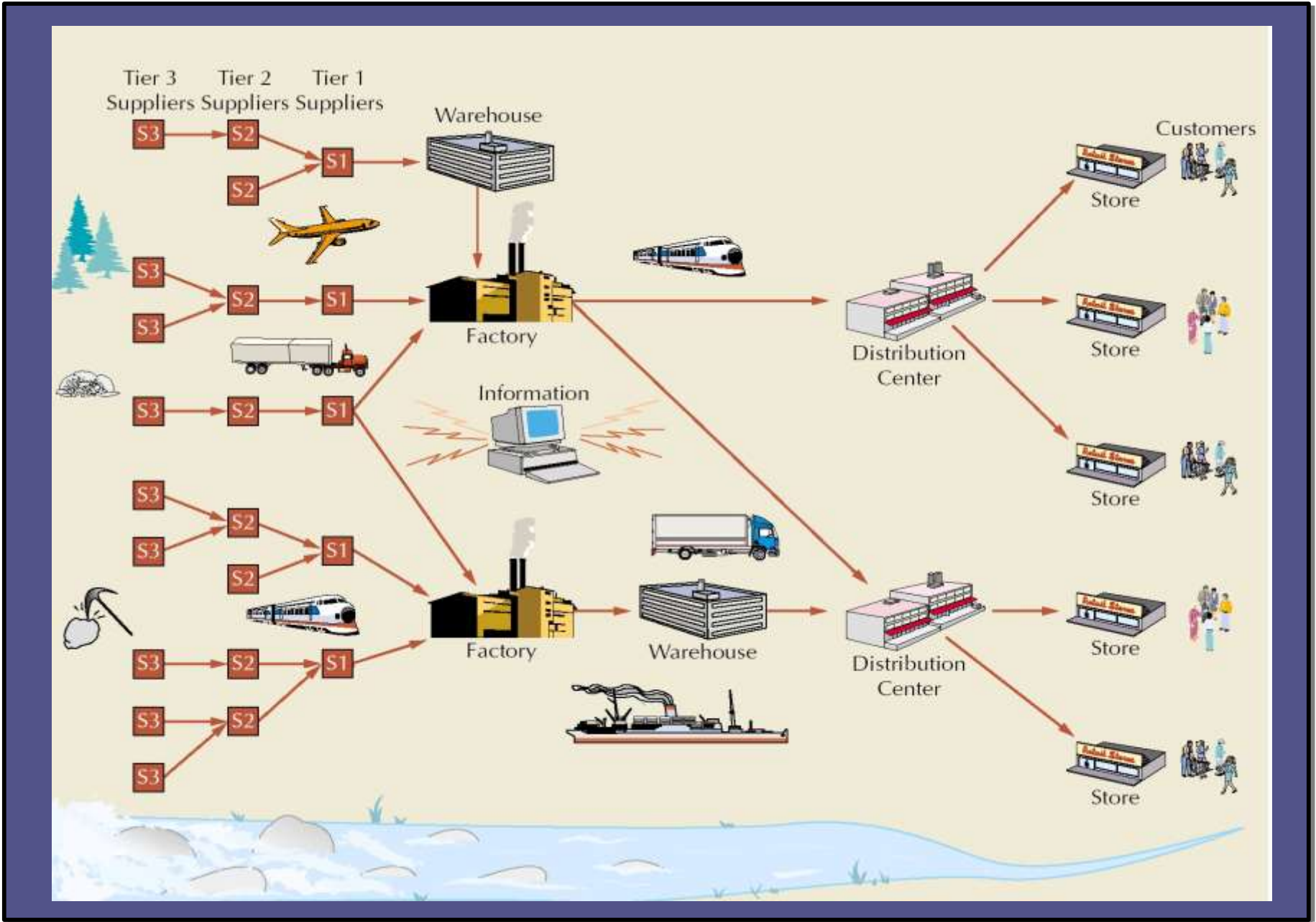
All facilities, functions, activities, associated with flow and transformation of goods and services from raw materials to customer, as well as the associated information flows.

An integrated group of processes to “**source**”, “**make**”, and “**deliver**” products

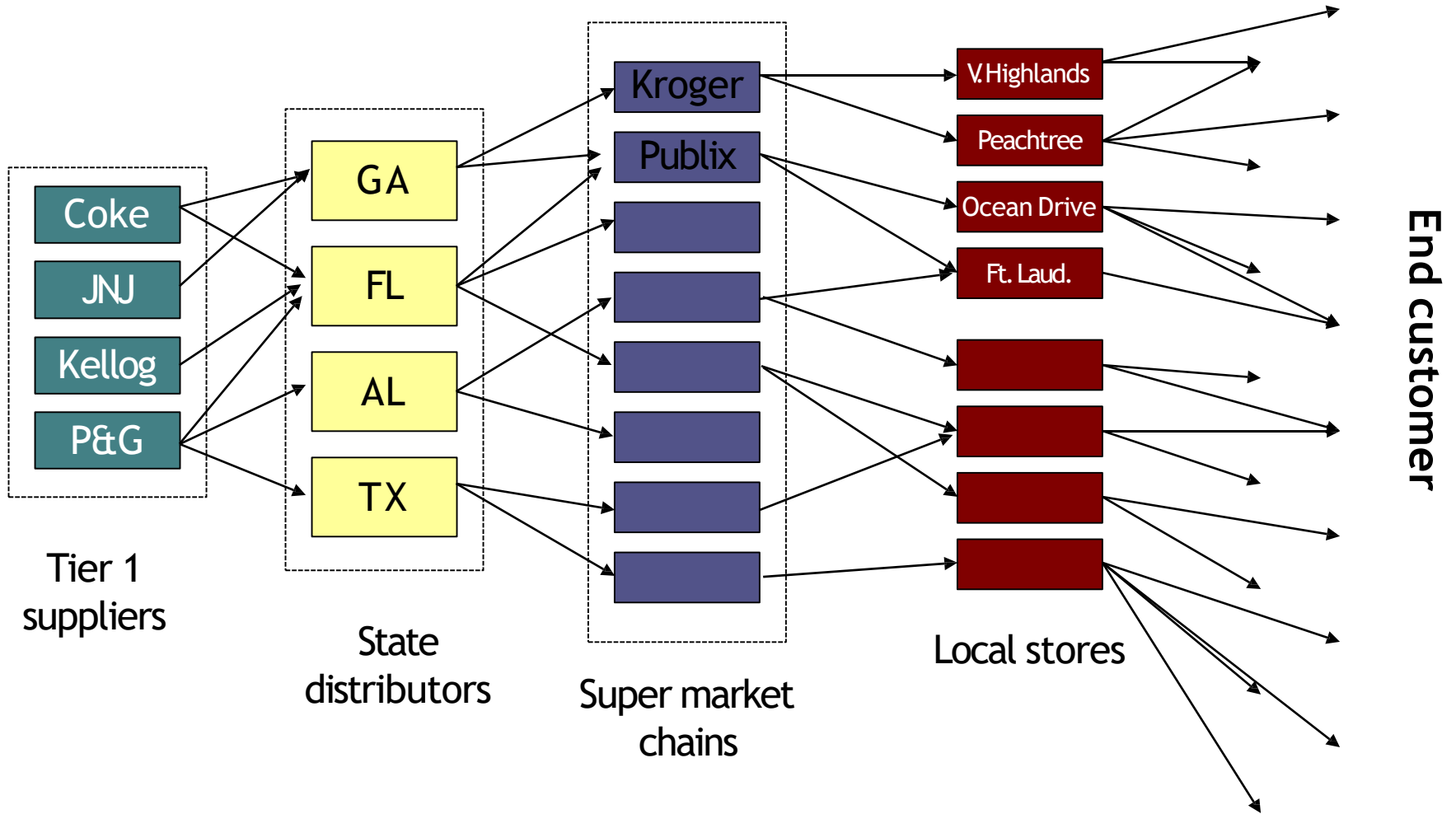
Supply Chain Illustration



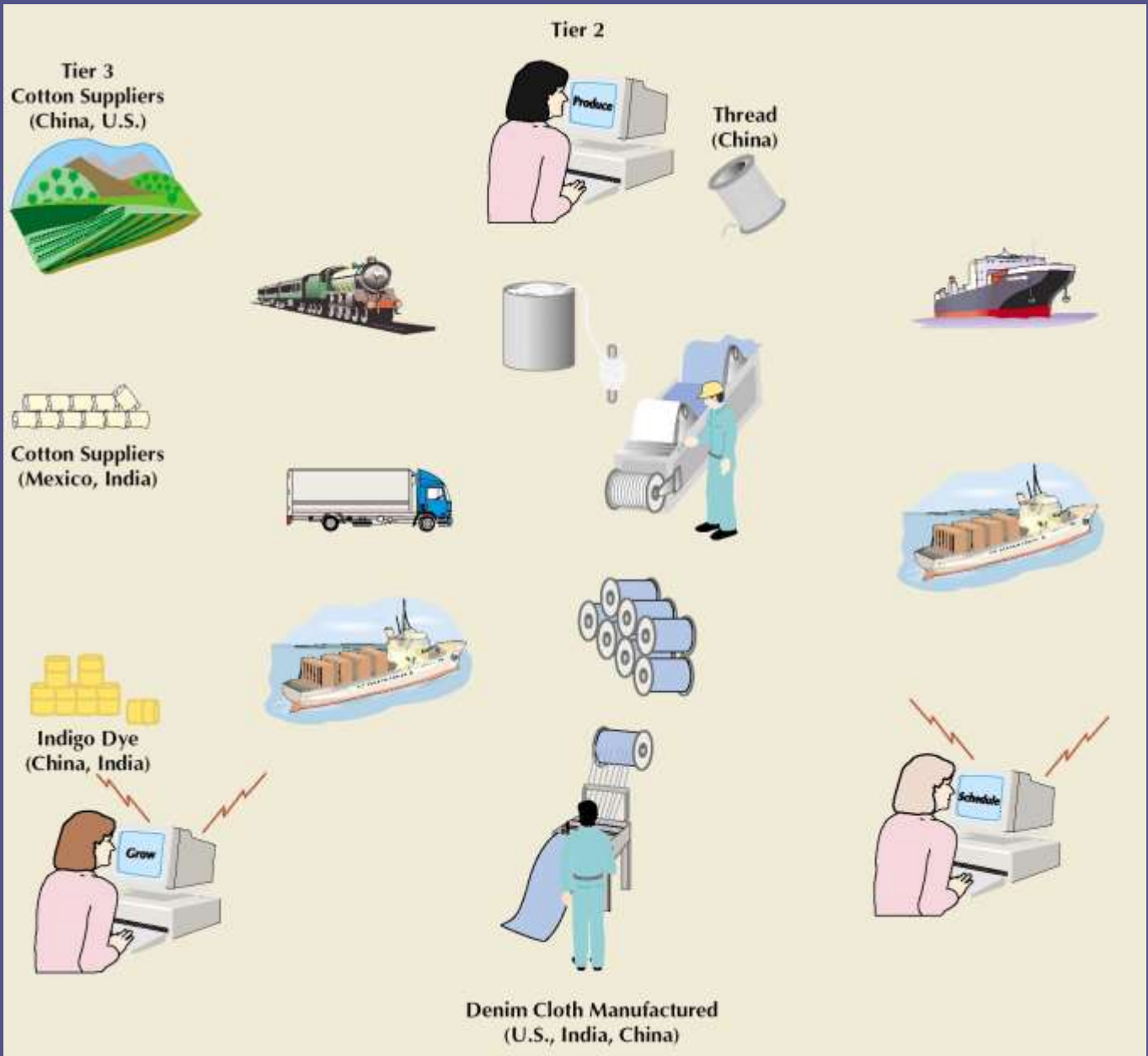
Supplier → Manufacturer → Distributor → Retailer → Customers



A Supply Chain Example...



Supply Chain for Denim Jeans

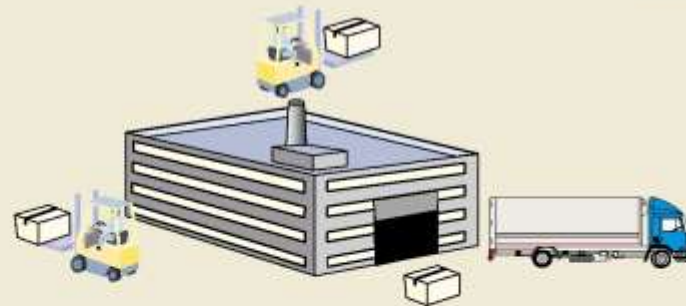
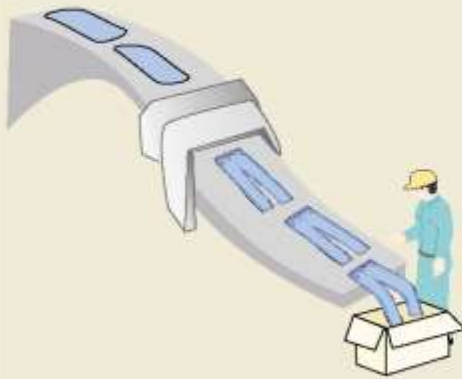
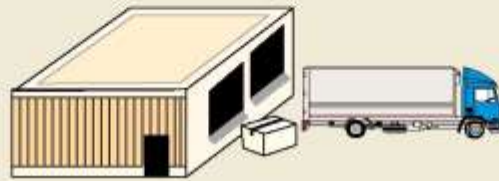




Tier 1



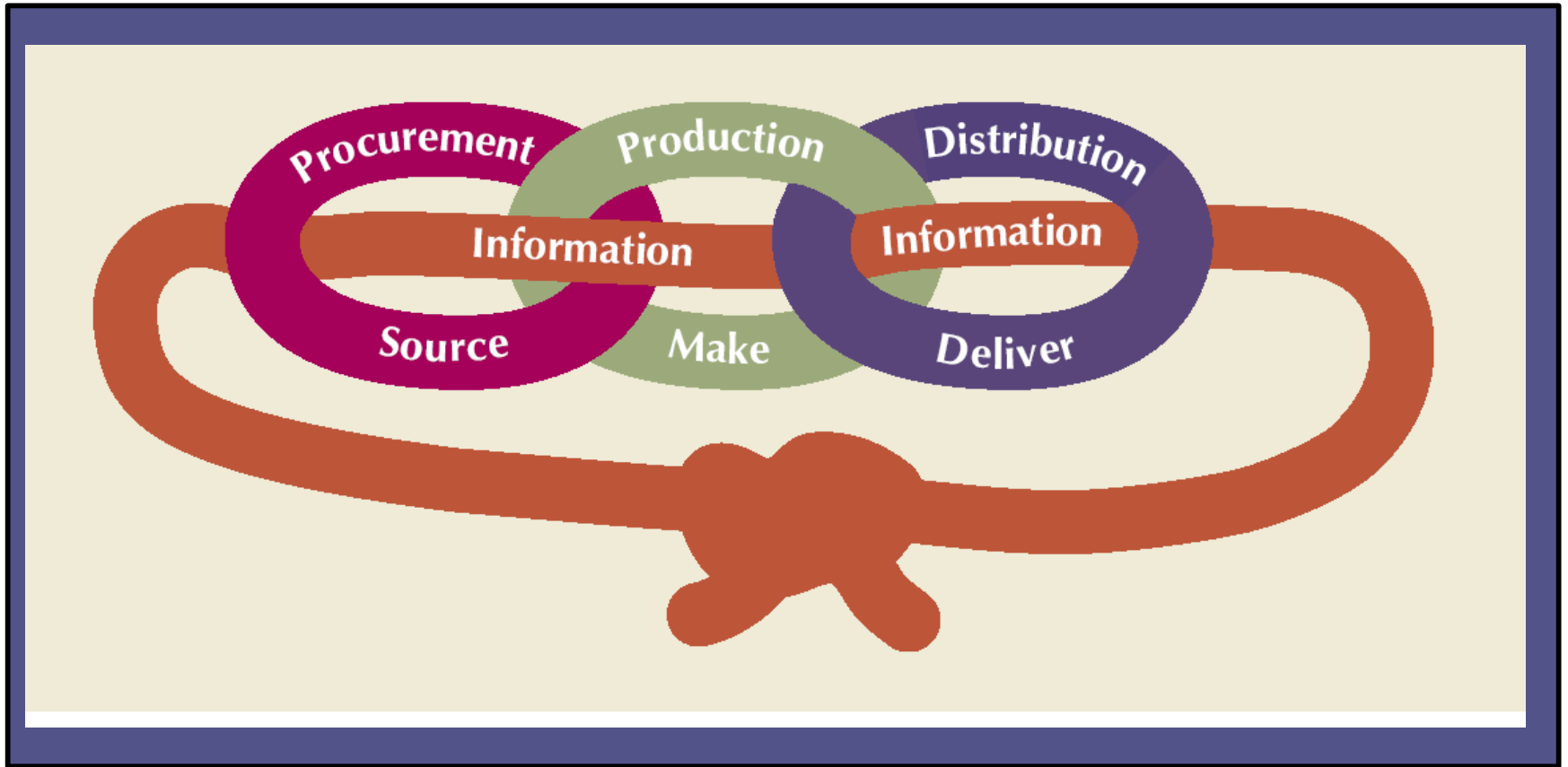
Retail Stores
(Global)



Distribution Centers
& Warehouses
(U.S., France, Hong Kong)

Denim Jeans Manufactured
(U.S., China, India)

Supply Chain Processes



Supply Chain for Service Providers

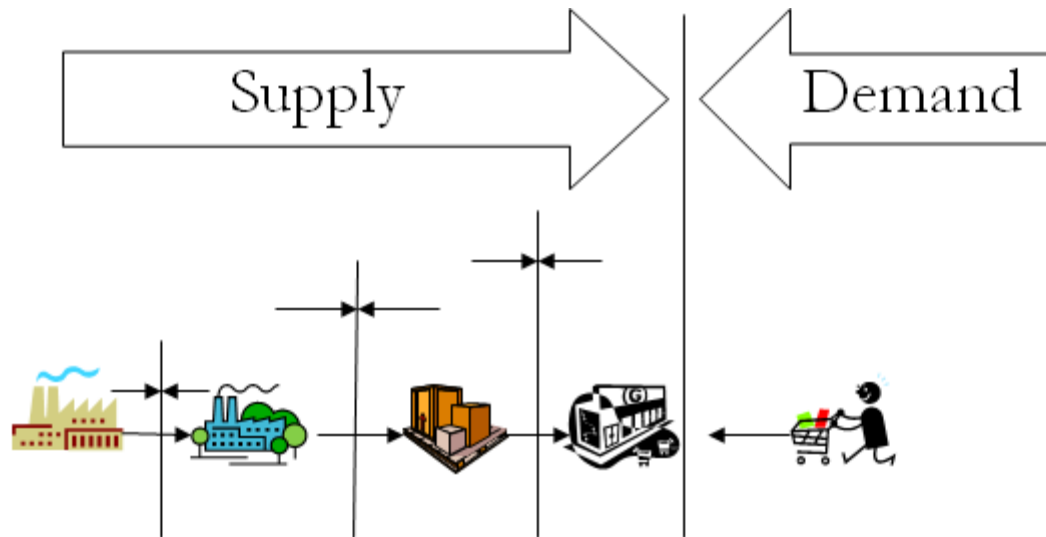
- More difficult than manufacturing
- Does not focus on the flow of physical goods
- Focuses on human resources and support services
- More compact and less extended

Value Chain Vs Supply Chain

- Value Chain
 - every step from raw materials to the eventual end user
 - ultimate goal is delivery of maximum value to the end user
- Supply Chain
 - activities that get raw materials and subassemblies into manufacturing operation
- Terms are used interchangeably

Supply Chain Management (SCM)

Supply Chain Management is the *design and management of processes across organizational boundaries* with the *goal of matching supply and demand* in the most *cost effective* way.



Mission impossible: Matching Supply and Demand

Why so Difficult to Match Supply and Demand?

- Uncertainty in demand and/or supply
- Changing customer requirements
- Decreasing product life cycles
- Fragmentation of supply chain ownership
- Conflicting objectives in the supply chain
- Conflicting objectives even within a single firm
 - Marketing/Sales wants: more FGI inventory, fast delivery, many package types, special wishes/promotions
 - Production wants: bigger batch size, depots at factory, latest ship date, decrease changeovers, stable production plan
 - Distribution wants: full truckload, low depot costs, low distribution costs, small # of SKUs, stable distribution plan

Supply Chain Story On Supplier Management

Suppliers US auto man.



Arm's Length

“The Big Three [US automakers] set annual cost-reduction targets [for the parts they purchase]. To realize those targets, they'll do anything. [They've unleashed] a reign of terror, and it gets worse every year. You can't trust anyone [in those companies]”

-Director, interior systems supplier to Ford, GM, and Chrysler, October 1999*

Suppliers Toyota



Partnership

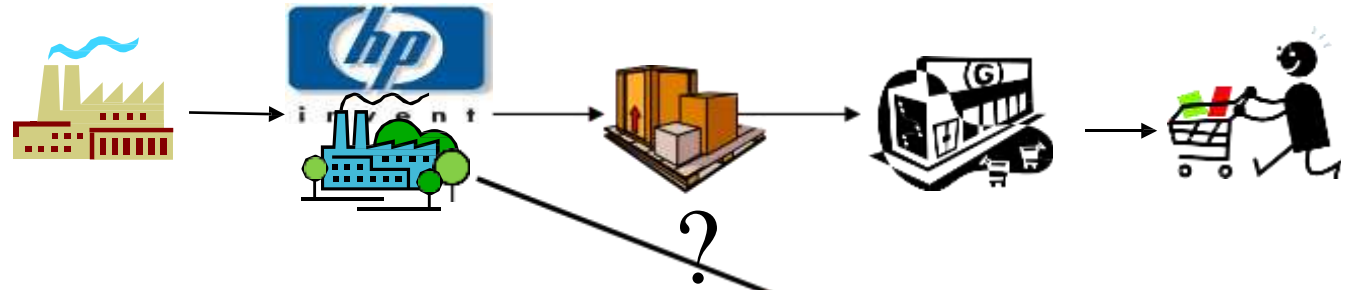
“Toyota helped us dramatically improve our production system. We started by making one component, and as we improved, [Toyota] rewarded us with orders for more components. Toyota is our best customer.”

-Senior executive, supplier to Ford, GM, Chrysler, and Toyota, July 2001**

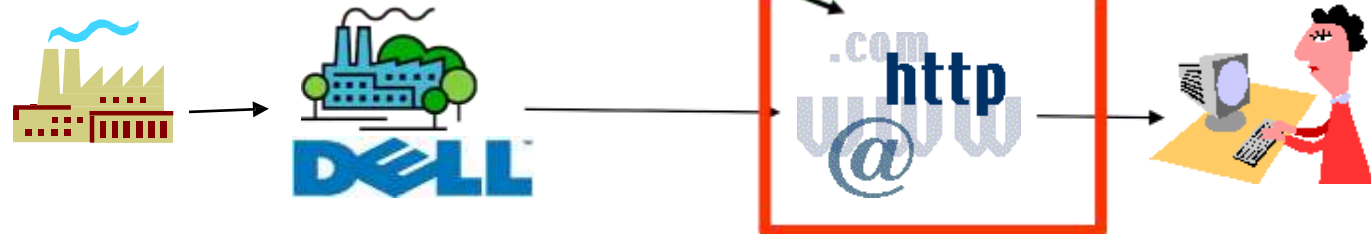
Supply Chain Story

On gaining competitive advantage with enabling Information Systems

Traditional Supply Chain



Dell Supply Chain



- On April 20, 2001 Dell toppled Compaq as the world's largest PC maker*
 - Dell's market share was 12.8% as opposed to Compaq's market share 12.1%
- Compaq and HP could not get into a price war with Dell because
 - Dell's profit margin was 18%
 - Compaq and HP's profit margins were in single digits

Supply Chain Story

On gaining competitive advantage

In the late 1970s, with about 200 stores, Wal-Mart was a relatively small retailer. At that time, Sears and Kmart dominated the retail market. Since then, Wal-Mart gained significant market share from these retailers and became the largest and most profitable retailer in the world. Today, Wal-Mart is admired for its collaboration and technology driven supply chain practices and is leading the retailing industry with its innovative supply chain practices.



Information Technology: A Supply Chain Enabler

- Information links all aspects of supply chain
- E-business
 - replacement of physical business processes with electronic ones
- Electronic data interchange (EDI)
 - a computer-to-computer exchange of business documents
- Bar code and point-of-sale
 - data creates an instantaneous computer record of a sale
- Radio frequency identification (RFID)
 - technology can send product data from an item to a reader via radio waves
- Internet
 - allows companies to communicate with suppliers, customers, shippers and other businesses around the world, instantaneously

E-business and Supply Chain

- Cost savings and price reductions
- Reduction or elimination of the role of intermediaries
- Shortening supply chain response and transaction times
- Gaining a wider presence and increased visibility for companies
- Greater choices and more information for customers
- Improved service as a result of instant accessibility to services
- Collection and analysis of voluminous amounts of customer data and preferences
- Creation of virtual companies
- Leveling playing field for small companies
- Gaining global access to markets, suppliers, and distribution channels

Supply Chain Evolution at Nabisco

Forecasting/Ordering

Then: Nabisco determines the amount of Planters cashews a customer in New York might sell in a quarter, without consulting the customer.

Now: Nabisco and its customer share sales forecasts based on current point-of-sale data, past demand patterns, and upcoming promotions via the Web, and agree on an amount to supply.



Procurement

Then: Nabisco phones its Brazilian office and employees deliver the orders in person to local farmers, who put the raw cashews on trucks, which take them to the port.

Now: Nabisco contacts its Brazilian office by e-mail, but employees still must contact local farmers personally.



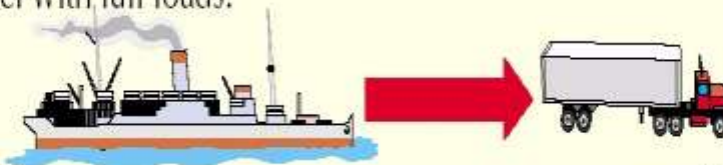
Source: FKeenan, "Logistics Gets a Little Respect," *Business Week* (November 20, 2000), pp. 112-115.

Supply Chain Evolution at Nabisco (2)

Transportation

Then: The shipping company notifies Nabisco when the cashews have sailed. When the cashews arrive in Jacksonville, Florida, a freight forwarder processes the paperwork to clear the shipment through customs, and scurries to locate a truck to deliver them to Nabisco plants. The truck takes the cashews to Nabisco's manufacturing plant, although it may be only half-full and return empty, costing Nabisco money.

Now: Shippers and truckers share up-to-date data online via a collaborative global logistics system that connects multiple manufacturers and transportation companies and handles the customs process. The system matches orders with carriers to make certain trucks travel with full loads.



Source: FKeenan, "Logistics Gets a Little Respect," *Business Week* (November 20, 2000), pp. 112-115.

Supply Chain Evolution at Nabisco (3)

Distribution

Then: The nuts are roasted and packed, and trucks take them to Nabisco's 12 warehouses across the country, where they are ready to be shipped to stores. However, they may not be near the store where the customer needs them because regional demand has not been discussed.

Now: After the nuts are roasted and packed at the plant, Nabisco sends the cashews to a third-party distributor, which relieves Nabisco of a supply chain activity not among its core competencies. The distributor consolidates the nuts on trucks with other products from Nabisco's competitors going to a customer resulting in full loads.



Customer

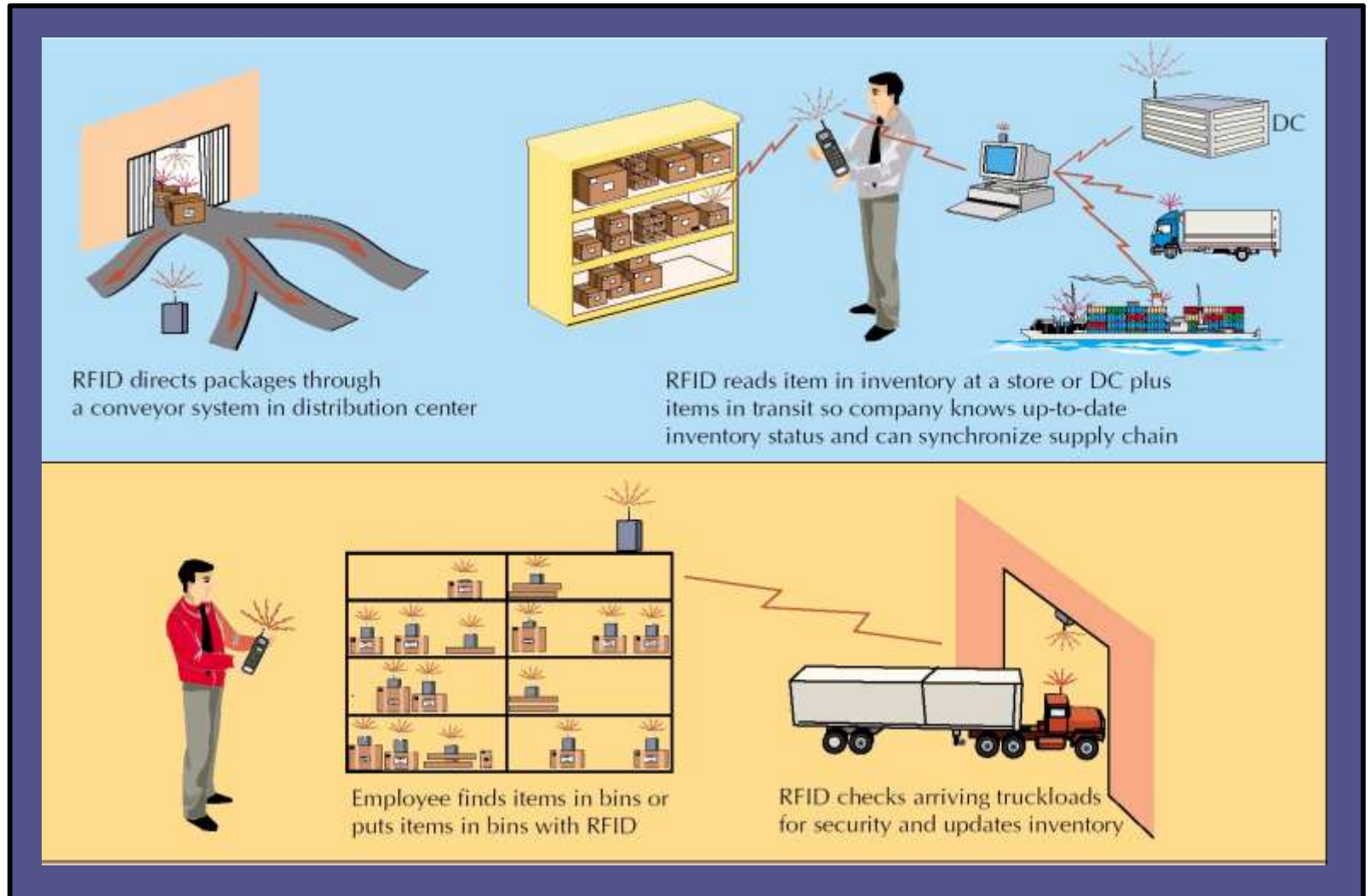
Then: If Nabisco ordered too many cashews they will turn soft in the warehouses, and if they ordered too few the customer will buy cashews elsewhere.

Now: Nabisco correctly knows the customer's needs so there is neither a shortage nor an oversupply of cashews. Transportation, distribution, warehousing, and inventory costs drop, and product and service quality improve.

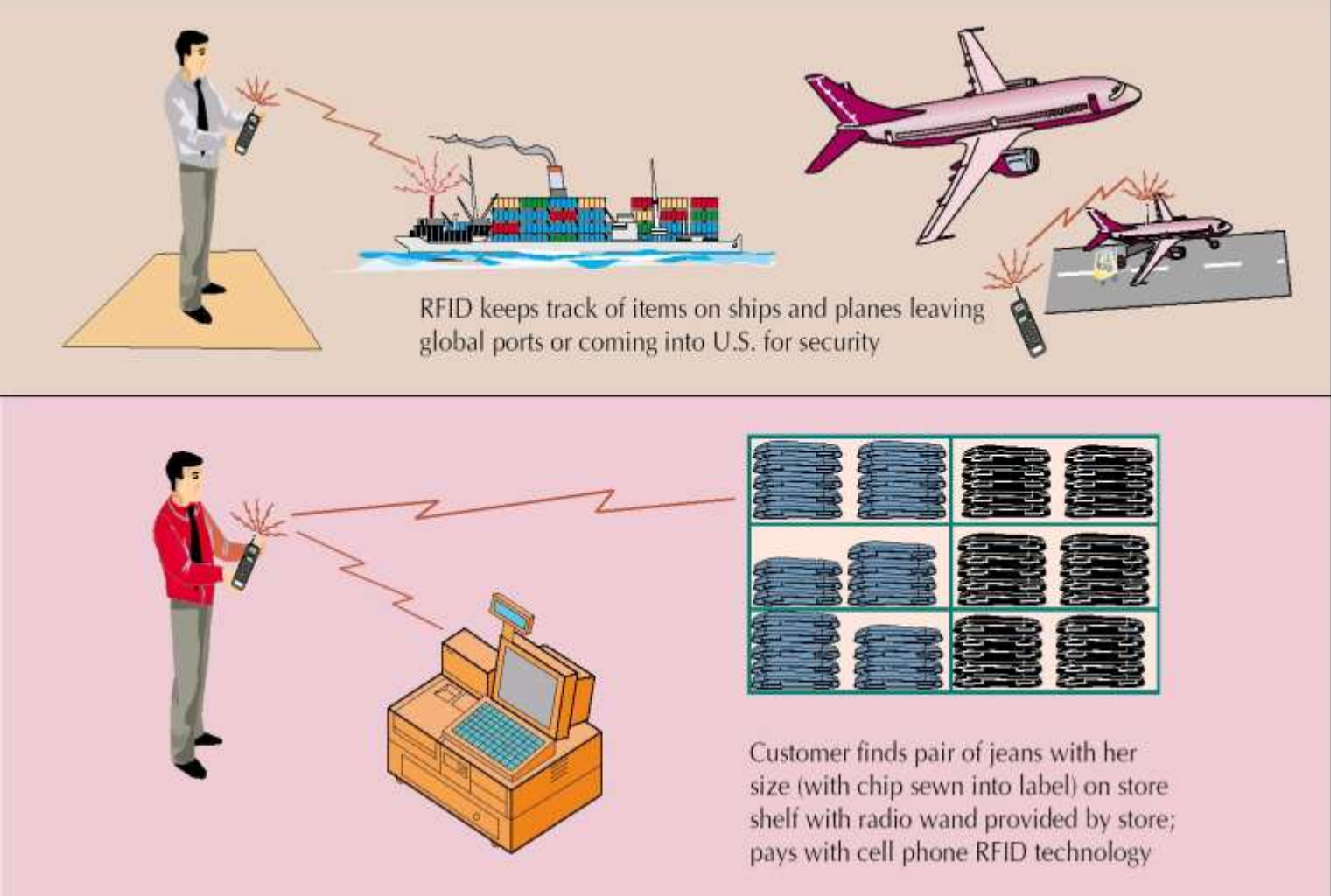


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RFID Capabilities



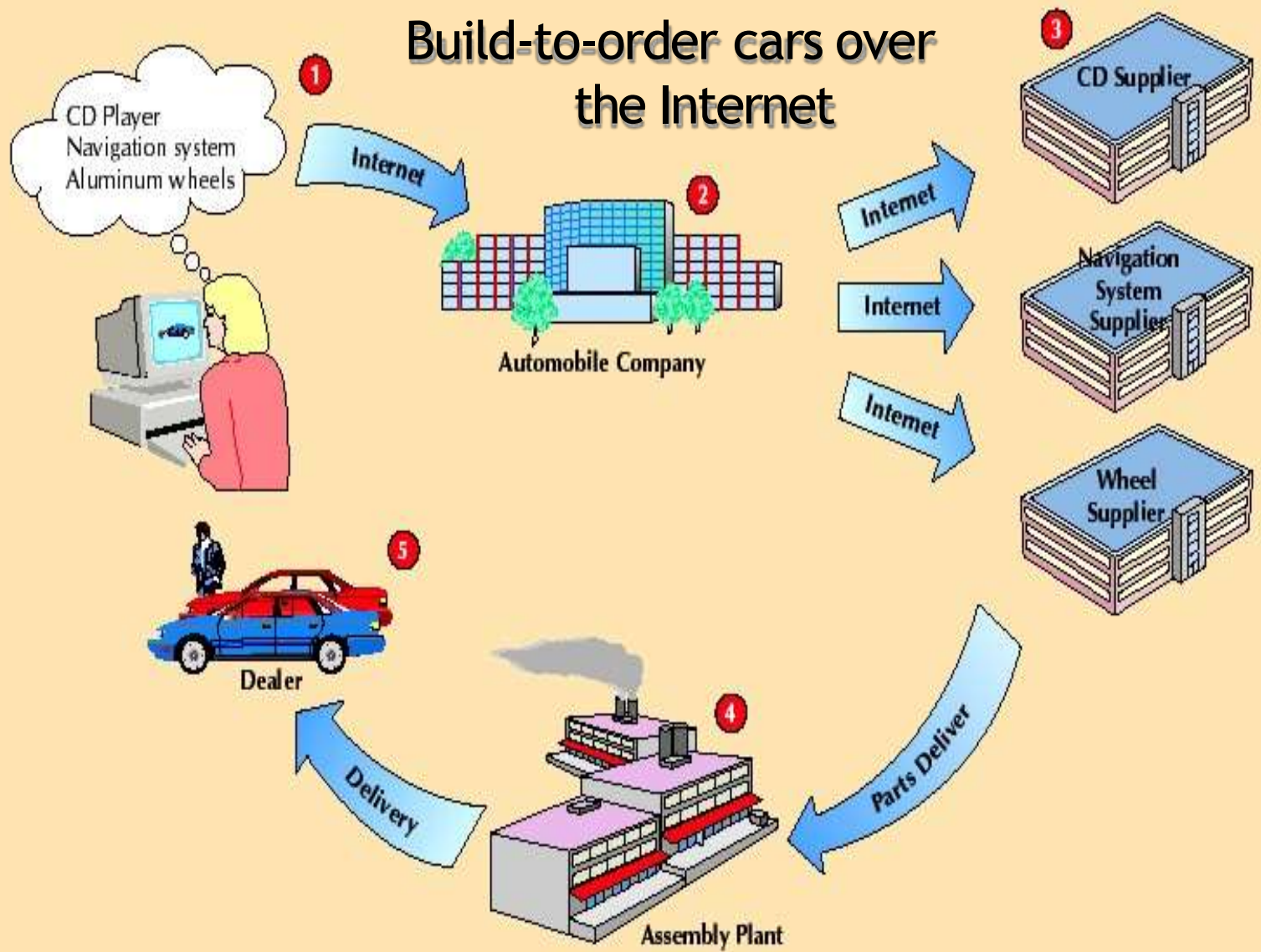
RFID Capabilities (2)



RFID keeps track of items on ships and planes leaving global ports or coming into U.S. for security

Customer finds pair of jeans with her size (with chip sewn into label) on store shelf with radio wand provided by store; pays with cell phone RFID technology

Build-to-order cars over the Internet



Information Systems Enabled Supply Chain

Supply Chain Processes	Automotive Past	E-Automotive
<ul style="list-style-type: none">◆ Customer sales◆ Production	<ul style="list-style-type: none">◆ Push—sell from inventory stock◆ Goal of even and stable production	<ul style="list-style-type: none">◆ Pull—build-to-order
<ul style="list-style-type: none">◆ Distribution	<ul style="list-style-type: none">◆ Mass approach	<ul style="list-style-type: none">◆ Focus on customer demand, respond with supply chain flexibility◆ Fast, reliable, and customized to get cars to specific customer location
<ul style="list-style-type: none">◆ Customer relationship	<ul style="list-style-type: none">◆ Dealer-owned	<ul style="list-style-type: none">◆ Shared by dealers and manufacturers

Information Systems Enabled Supply Chain (2)

Supply Chain Processes	Automotive Past	E-Automotive
<ul style="list-style-type: none">◆ Managing uncertainty◆ Procurement◆ Product design	<ul style="list-style-type: none">◆ Large car inventory at dealers◆ Batch-oriented; dealers order based on allocations◆ Complex products don't match customer needs	<ul style="list-style-type: none">◆ Small inventories with shared information and strategically placed parts inventories◆ Orders made in real time based on available-to-promise information◆ Simplified products based on better information about what customers want

THANK YOU
