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LOGISTICS

Lecture Overview

- **Logistics Information Technologies**
- **Logistics Information Systems**
 - *Concept*
 - *Structure*
 - *Components*
 - *Traits*
- **Adapting to New Information Technologies**

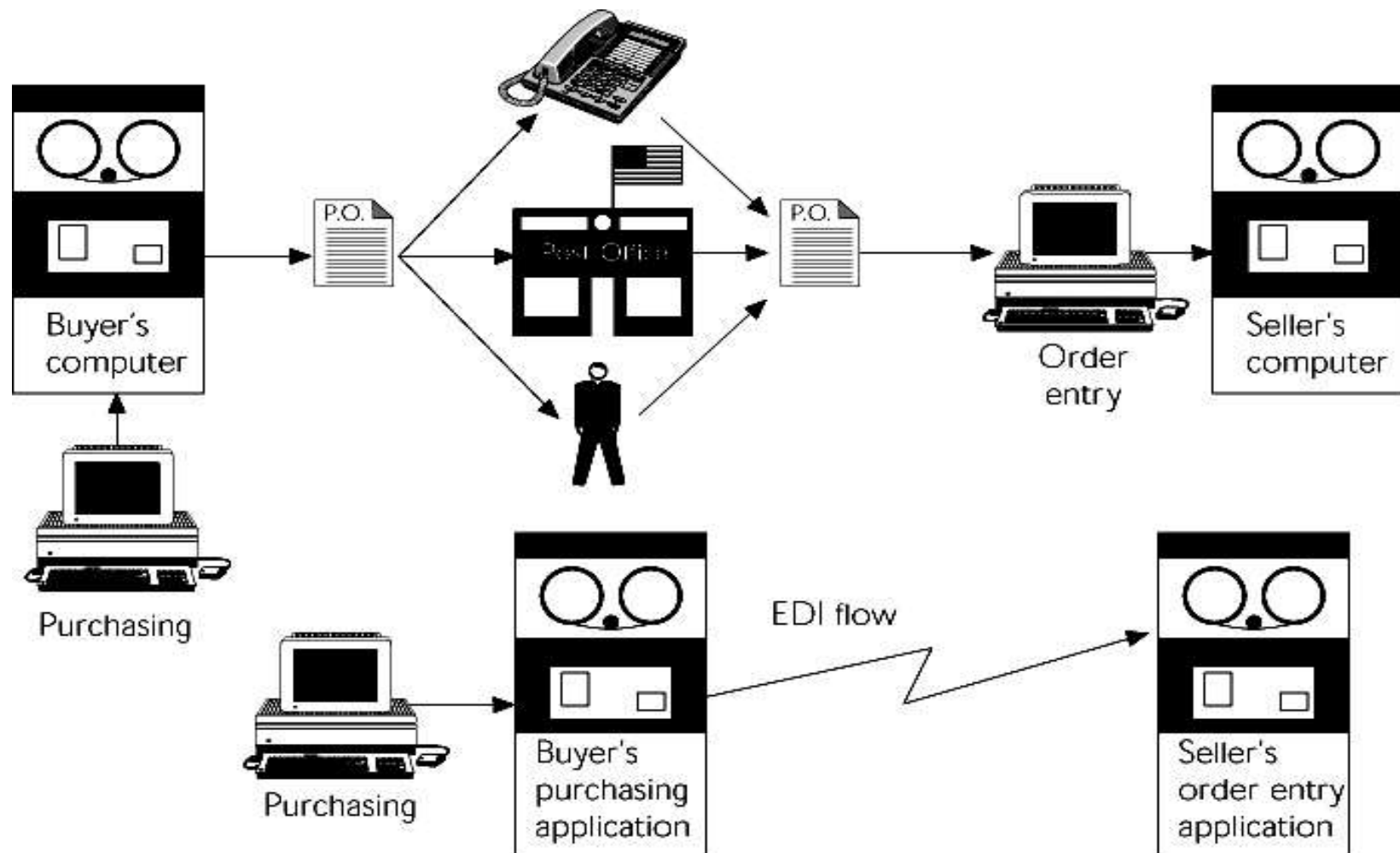
IT in Logistics

- **New Logistics Technologies based on informatics are developing rapidly for the last decade**
 - **Service of customers**
 - **Marketing channel**
 - **Information correction**
 - **Financial operations**
 - **Strategic alliances**
 - **Electronic procurement**
 - **Internal and external communications**
 - **Human resources and personnel management**
 - **Computerization of trade personnel work**

Logistics Information Technologies

- Bar coding
 - Most commonly used automatic identification technology
 - Consistency of this technology important factor in efficiency and effectiveness.
- Electronic Data Interchange (EDI)
 - B2B, computer-to-computer exchange of business data in a structured, machine-processable format – see *next slide*

EDI versus Traditional Methods



Logistics Information Technologies

- **Extensible Markup Language (XML)**
 - Method of packing information for movement on the Internet.
 - May replace EDI in the future.
- **Data management**
 - Handheld input devices and optical scanning popular in data management.
 - CD-ROMs are another data management tool seeing increasing use.

Logistics Information Technologies

- **Imaging**
 - Both photographic and facsimile processes are being used to image documents.
- **Artificial intelligence/expert systems**
 - Attempts to transfer human intelligence to a machine.
 - Expert systems replicate “best practices” of humans to a computer-based system.

Logistics Information Technologies

- **RF technology**
 - **Uses radio frequency to transmit computer outputs, possibly from an expert system to human operated devices, such as, a forklift.**
 - **Optimizes quality, efficiency, and accuracy.**
- **Onboard computers and satellite tracking**
 - **Uses systems such as GPS to track and communicate with mobile and/or remote vehicles.**

Logistics Information System - *Definition*

- *Logistics Information System* keep a prime position in Logistics Information Technologies
- *Logistics Information System* is an interacting structure of people, equipment, and procedures
 - that together make relevant information available to the logistics manager for the purposes of *planning, implementation, and control*

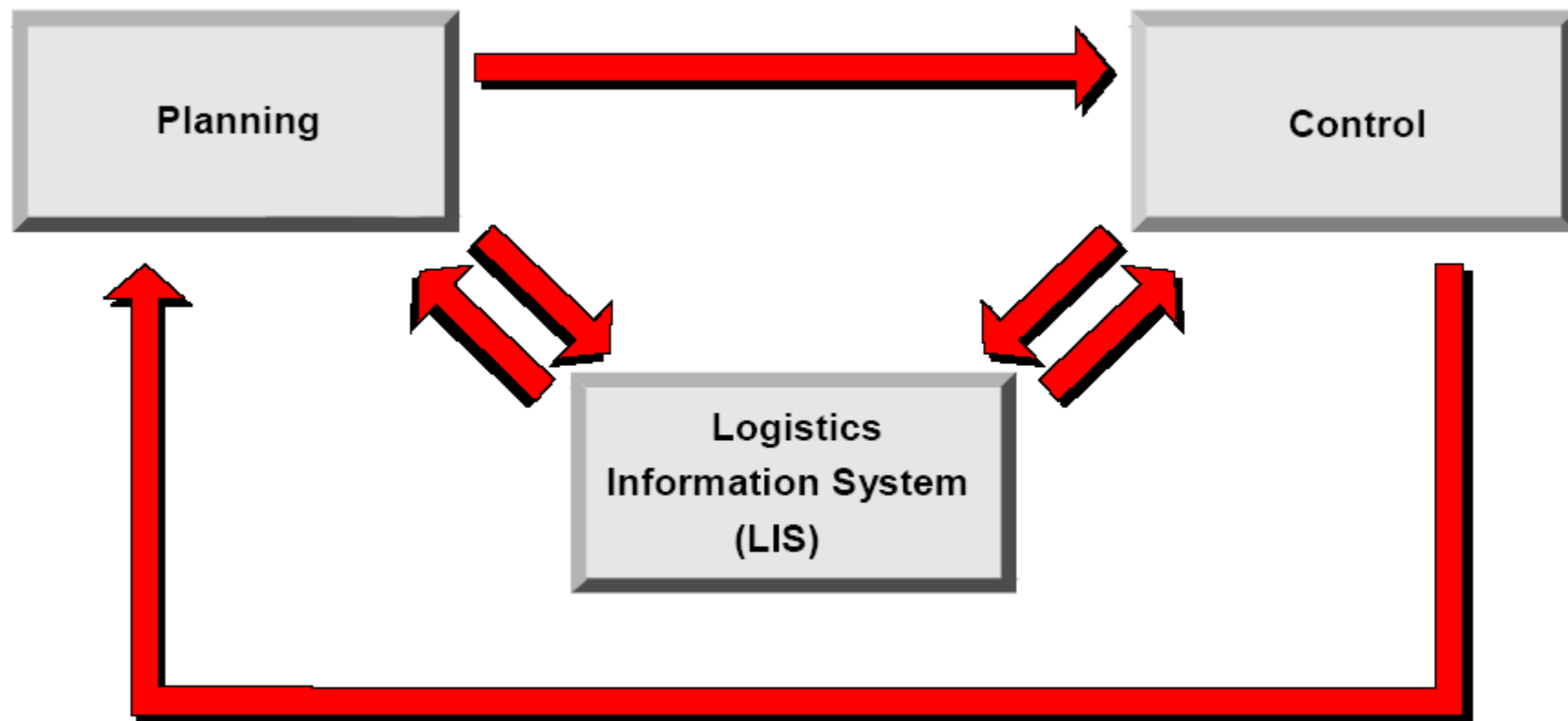
LIS Concept – *Main Principles*

- **Hierarchy (governance of tasks and data sources)**
- **Building-block principle of data**
- **Redundancy (design with glance of current and future tasks as well)**
- **Confidentiality**
- **Adapting to changing demands**
- **Coordination and information unity**
- **System openness**

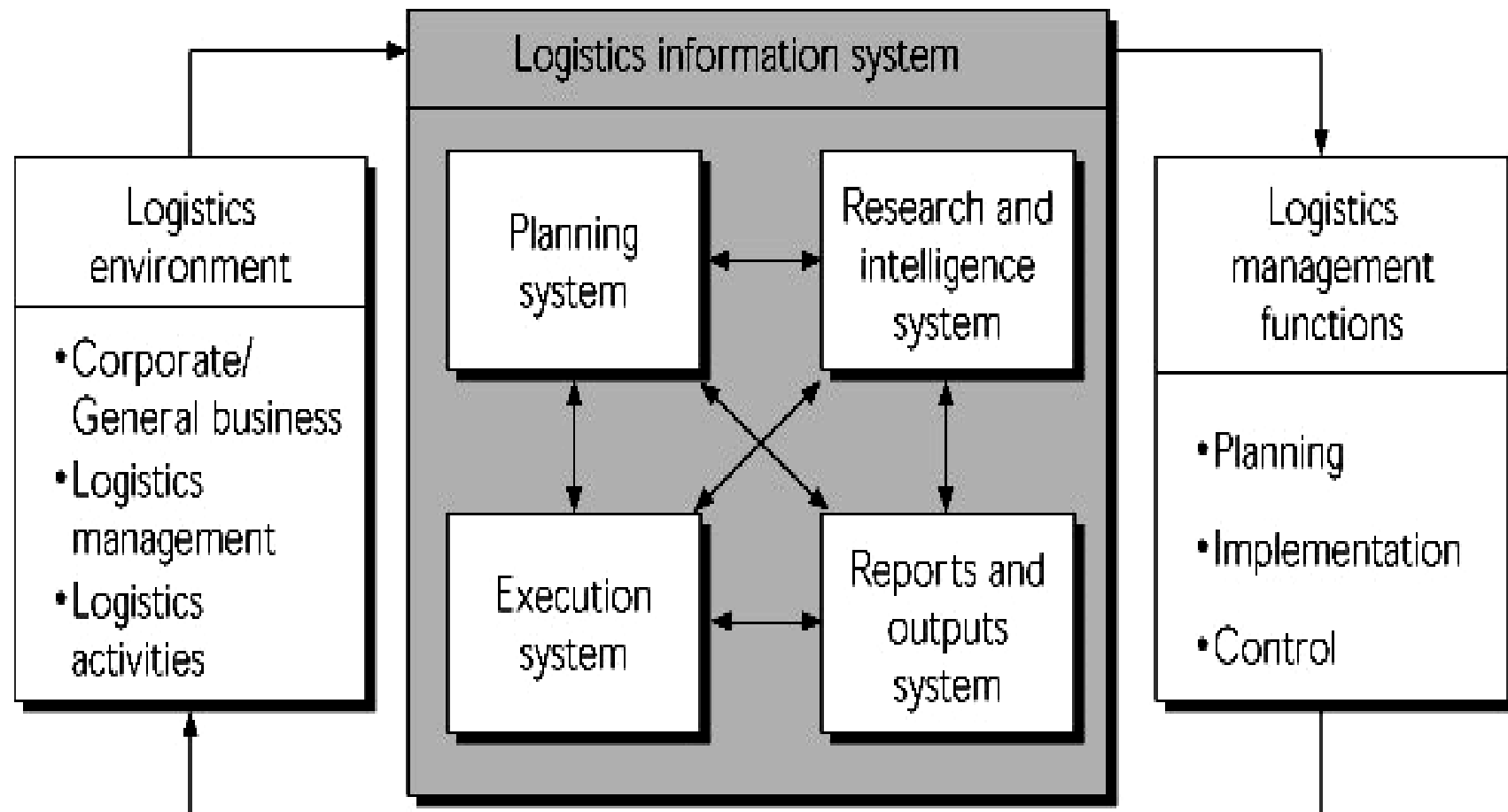
LIS Functions

- **Data Bases**
 - customers applications
 - production and reserves
- **Planning**
 - inventory management
 - demand forecasting
- **Coordination**
 - scheduling of production
 - material requirements planning
- **Communication**
 - customer's request status
 - availability of reserves
- **Control -level of customer service**

Logistics Information System – *General Structure*



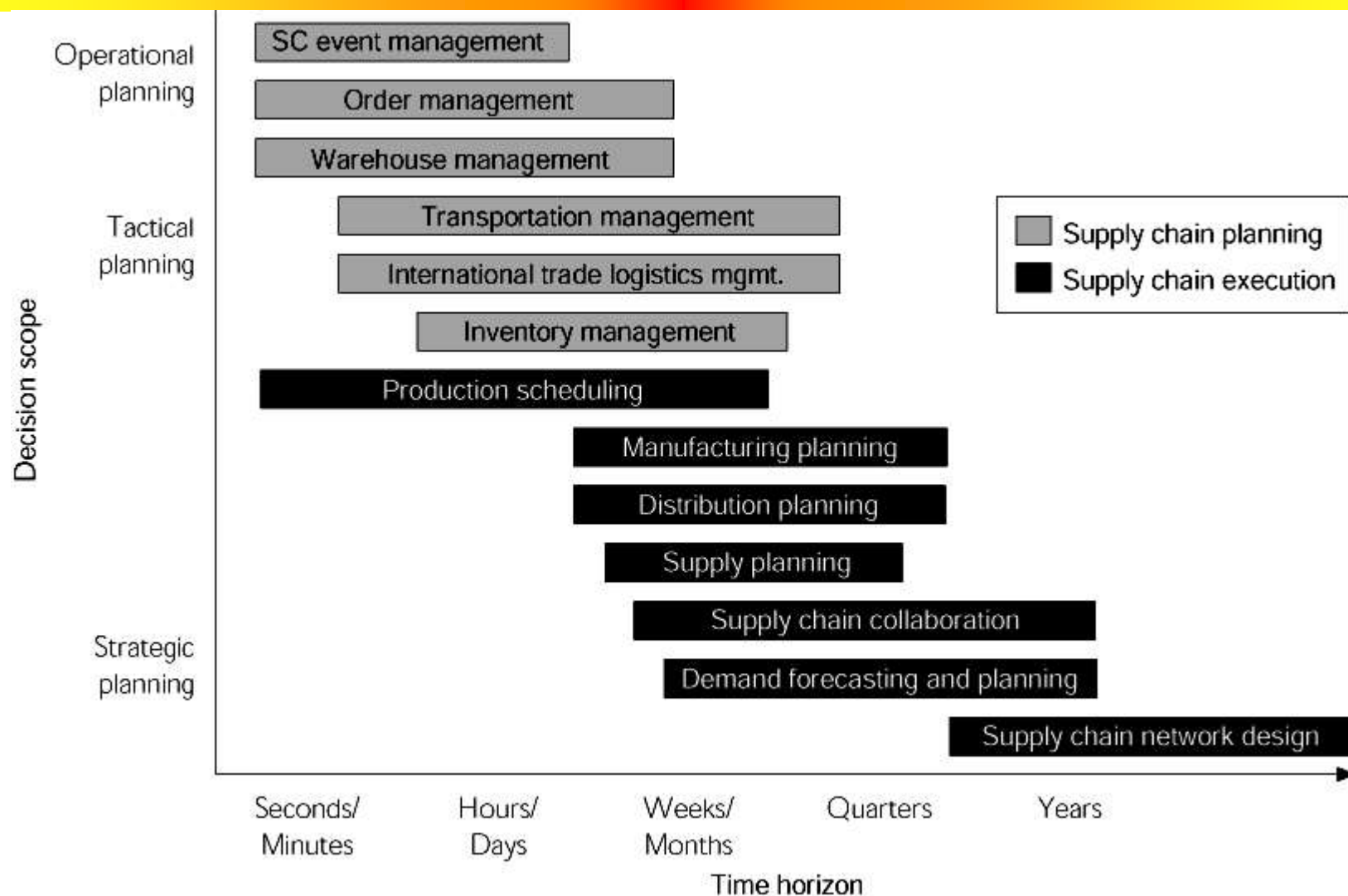
Logistics Information System: *Structure*



Logistics Information Systems: *Planning System*

- Illustrated in *next slide*
- Provides decision support for logistics managers
 - Logistics functional databases
 - Comprehensive relational database that contains the type of information needed to make effective decisions
 - Greatest use in the transportation, inventory, and product areas with warehousing and customer areas showing less progress

Supply Chain Functional Scope: Planning and Execution



Modeling Approaches

- **Types of modeling approaches**
 - **Optimization**
 - Searches for “best” solution
 - **Simulation**
 - Replicates the logistics network
 - **Heuristic**
 - Used for broader, non-optimum solutions

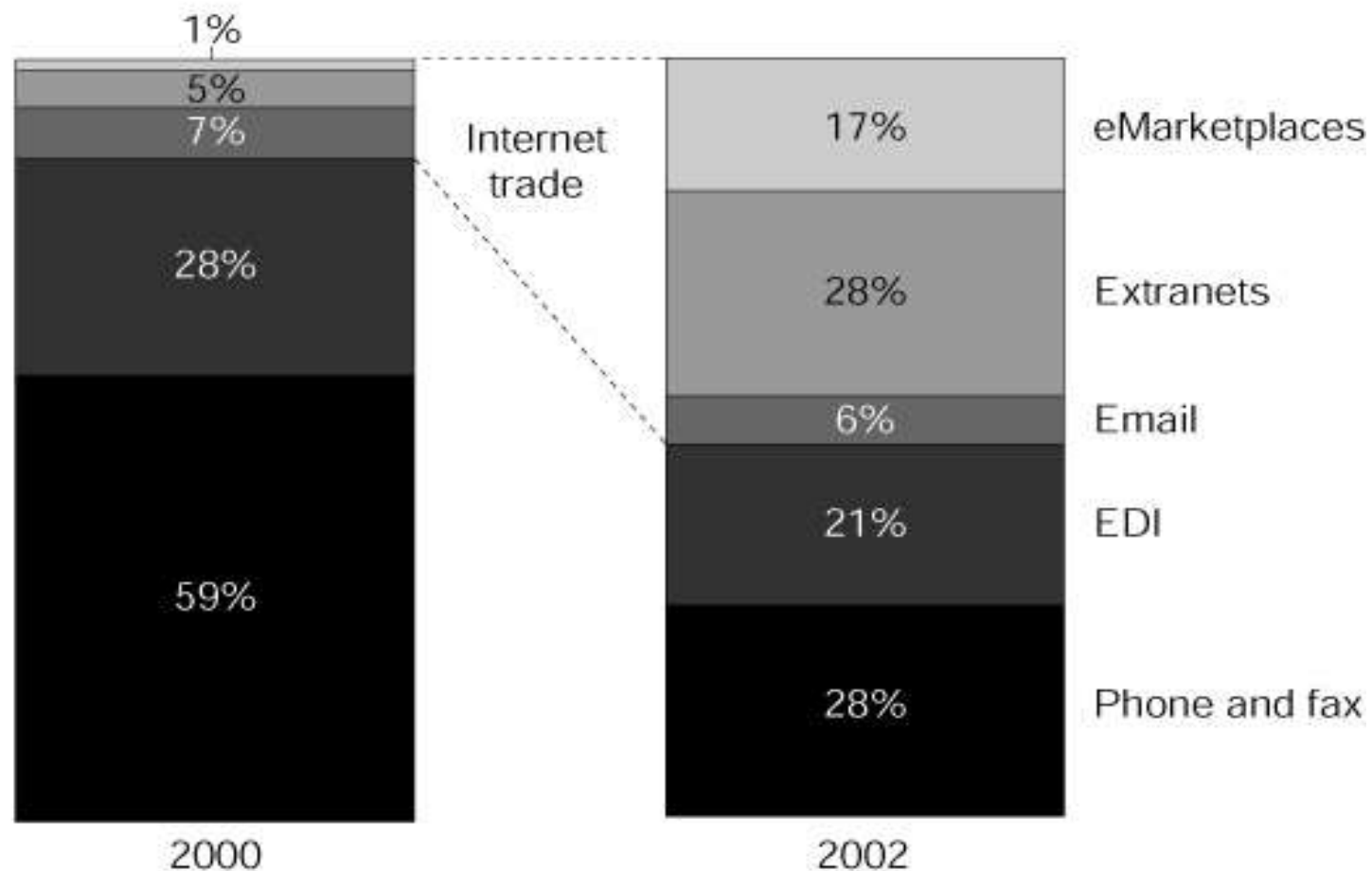


Logistics Information Systems: *Execution System*

- Examine Figure in *next slide* (EDI – Electronic Data Interchange)
 - Responsible for short-term, day-to-day functioning of the logistics system.
 - Include technologies that help manage warehousing, transportation, international trade, and inventory.
 - Many recent advances in technology and these advances will most likely continue to evolve and impact logistics management in the future.

Direct Materials Purchasing Moves Online

"Through what mechanisms do you purchase your direct materials today? In 2002?"



Based on 50 companies responding
(multiple responses accepted)

Logistics Information Systems: *Research and Intelligence System*

- **Environmental scanning**
 - **Undirected viewing**
 - **General exposure to information**
 - **Conditioned viewing**
 - **Directed exposure to information**
- **Informal search**
 - **Limited and unstructured effort to find information**
- **Formal search**
 - **Deliberate effort to find information relating to a specific issue**

Logistics Information Systems: *Knowledge Management*

- To maximize the results of an environmental scan, the logistics manager needs to consult:
 - Logistics area employees
 - Channel partners
 - Internal audit or external consultant
 - Other internal logistics initiatives
- It is increasingly popular to dedicate a web site to hold information from the scan

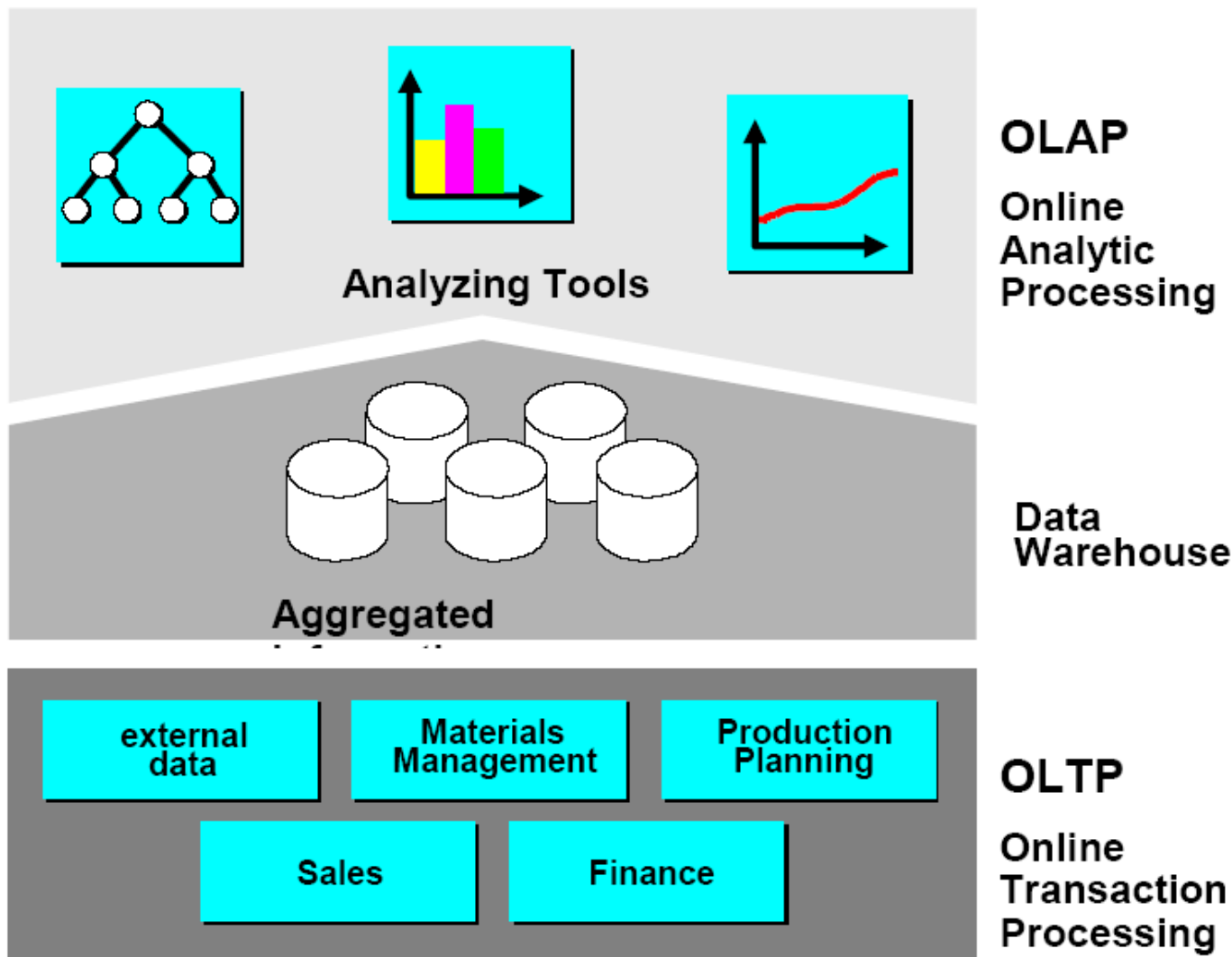
Logistics Information Systems: *Reports and Outputs System*

- Many logistics managers do not believe that reports communicate effectively.
- Communication occurs only if the message keys into the receiver's values and responds directly to the needs of the recipient.
- Types of reports
 - Planning reports
 - Operating reports
 - Control reports

Logistics Information Systems - *Traits*

- The information systems that belong to LIS have a modular structure, yet have a variety of techniques that allow you to evaluate data
- This type of structure also allows the individual information systems to retain their special features.
- The Logistics Information System allows you not only to evaluate actual data, but also to create planning data
- The information systems provide an easy-to-use planning functions that are also supported by a forecasting function.

Logistics Information Systems - *Example*



Adapting to New Information Technologies

- Relevant issues in the search for new technologies
 - Firms must have a scientific and intuitive knowledge of customer and supplier information requirements.
 - Lack of coordination and integration among key logistics and supply chain processes.
 - See that logistics organizational strategies move from a functional to a process orientation.
 - Early implementation efforts may suffer due to poor data or the non-availability or non-sharing of future data.

Adapting to New Information Technologies

- **Relevant issues in the search for new technologies**
 - **The organization must have the financial resources needed to assure a smooth, full implementation, and the people willing to accept and use new technologies.**
 - **Firms must create opportunities for interaction and team efforts among logistics managers and those others most knowledgeable about information technologies.**