

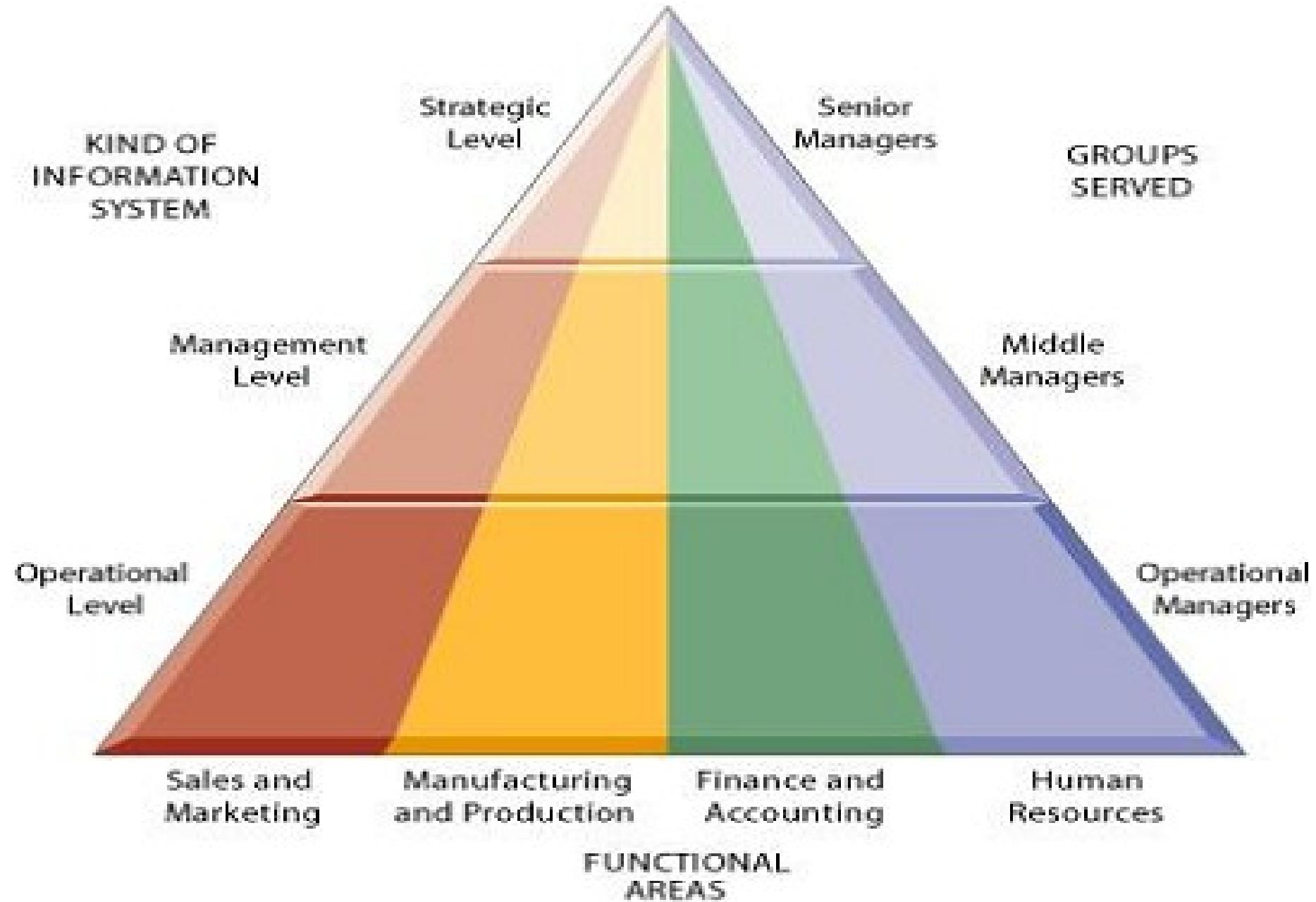
# Information Systems in the Enterprise

Lecture 2

# Test your self

Write the scientific terms for the following

- A measure of what is produced divided by what is consumed.
- Extent to which system attains its goals.
- A specific objective of a system.
- Quantity or item controlled by the decision maker.
- Value or quantity that cannot be controlled (e.g., raw materials cost).



# Levels of Information Systems

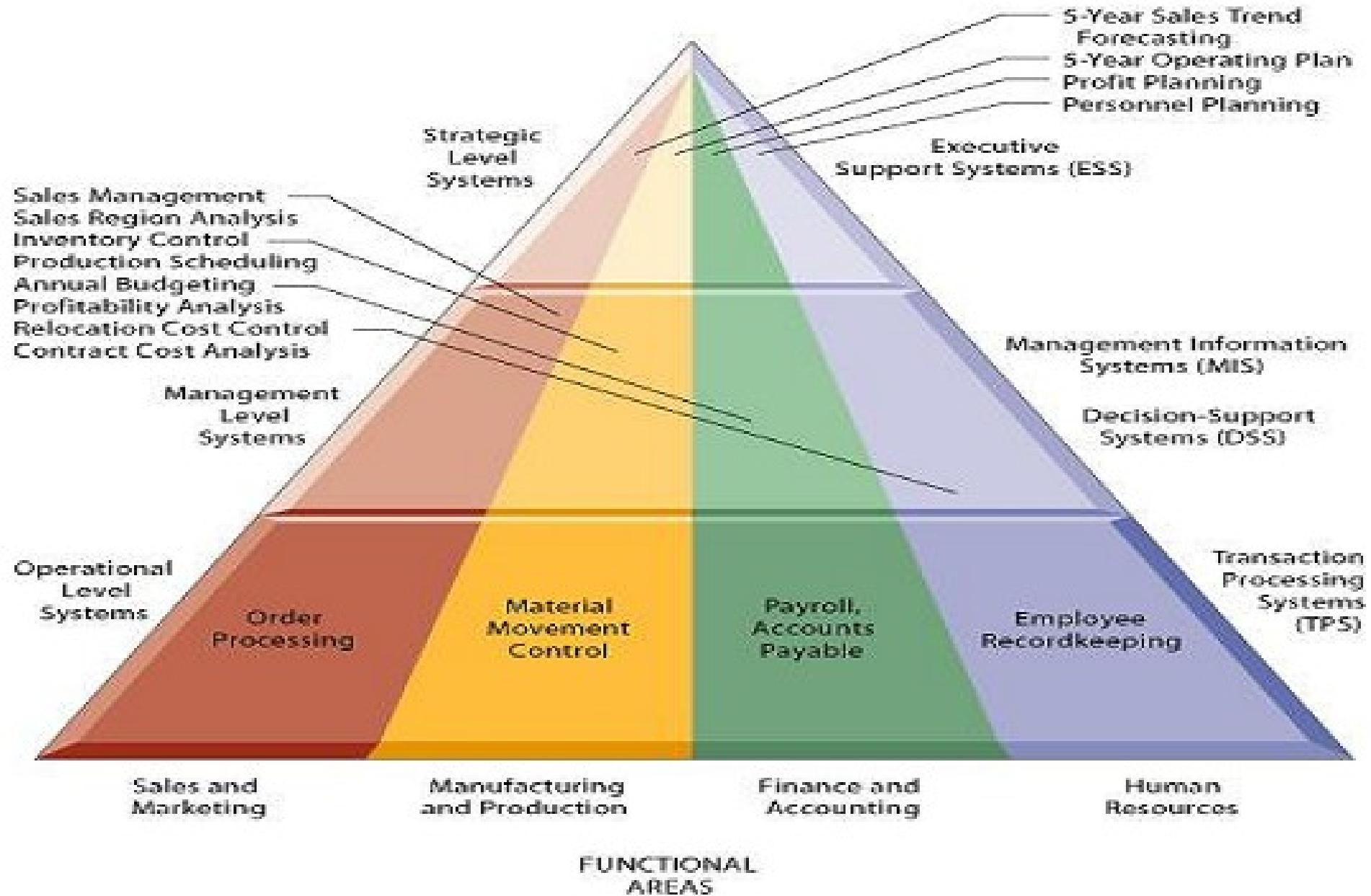
- **Operational-level systems** support operational managers by keeping track of the elementary **activities and transactions of the organization**, such as sales, receipts, cash deposits, payroll, credit decisions, and the flow of materials in a factory.
- The principal purpose is to answer **routine questions** and to track the flow of **transactions** through the organization.
- Examples of operational-level systems include a system to
  - Record bank deposits **أودانج** from automatic teller machines
  - Tracks the number of hours worked each day by employees on a factory floor.

# Levels of Information Systems

- **Management-level systems** serve the monitoring, controlling, decision-making, and administrative activities of middle managers.
- The principal question : **Are things working well? “what-if” questions**: What would be the impact on production schedules if we were to double sales in the month of December?
- Management-level systems typically provide **periodic reports**. An example is a **relocation control system** that reports on the total moving, house-hunting, and home financing costs for employees in all company divisions, noting wherever actual costs exceed budgets.
- Some management-level systems support **no routine decision making**. They tend to focus on **less-structured decisions**

# Levels of Information Systems

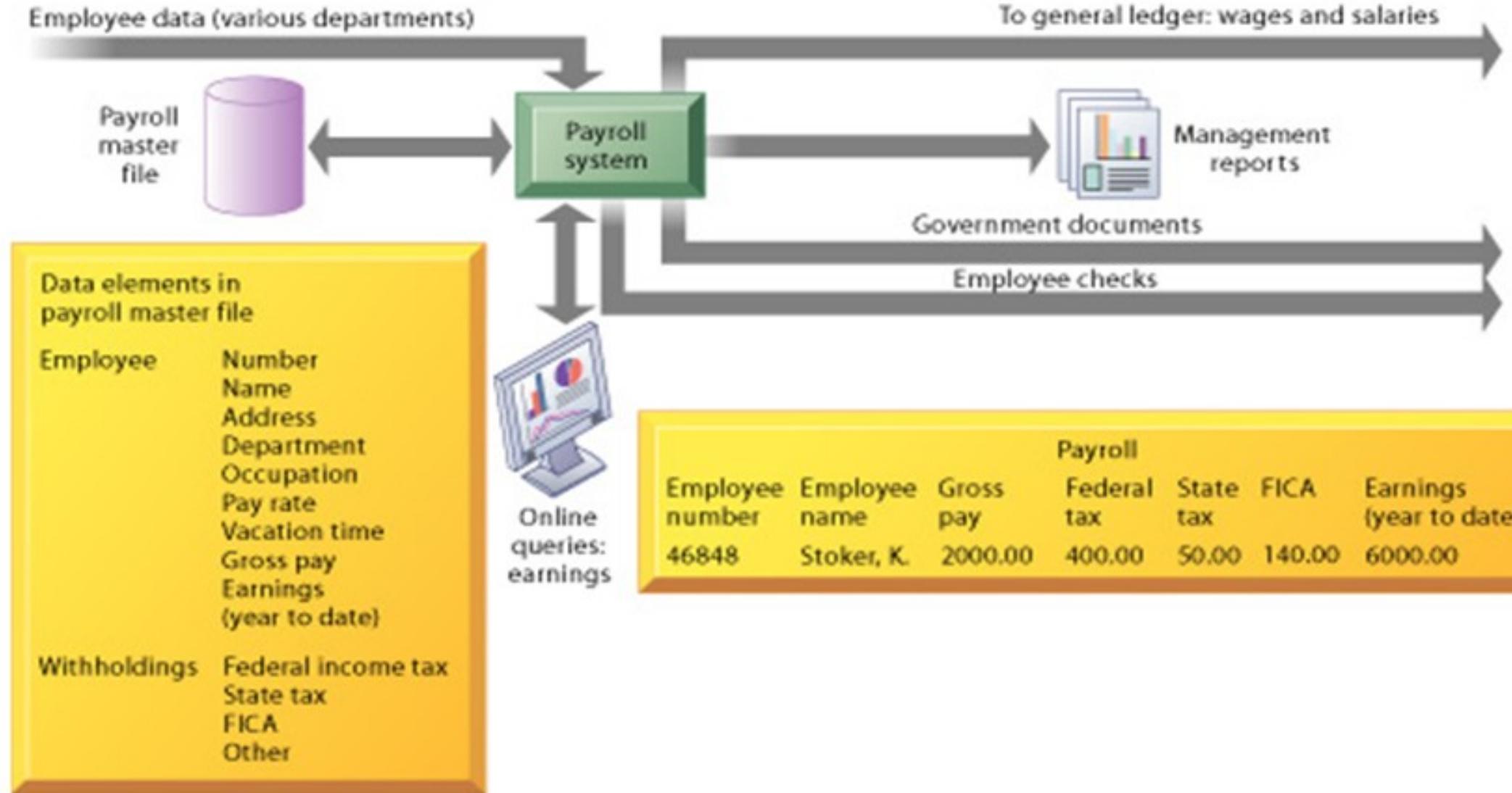
- **Strategic-level systems** help senior management tackle and address strategic issues and long-term trends, both in the firm and in the external environment.
- Their principal concern is matching changes in the **external environment** with existing organizational capability.
- What will employment levels be in five years? What are the **long-term** industry cost trends, and where does our firm fit in? What products should we be making in five years?



Type of System	Information Inputs	Processing	Information Outputs	Users
ESS	Aggregate data; external, internal	Graphics; simulations; interactive	Projections; responses to queries	Senior managers
DSS	Low-volume data or massive databases optimized for data analysis; analytic models and data analysis tools	Interactive; simulations; analysis	Special reports; decision analyses; responses to queries	Professionals; staff managers
MIS	Summary transaction data; high-volume data; simple models	Routine reports; simple models; low-level analysis	Summary and exception reports	Middle managers
TPS	Transactions; events	Sorting; listing; merging; updating	Detailed reports; lists; summaries	Operations personnel; supervisors

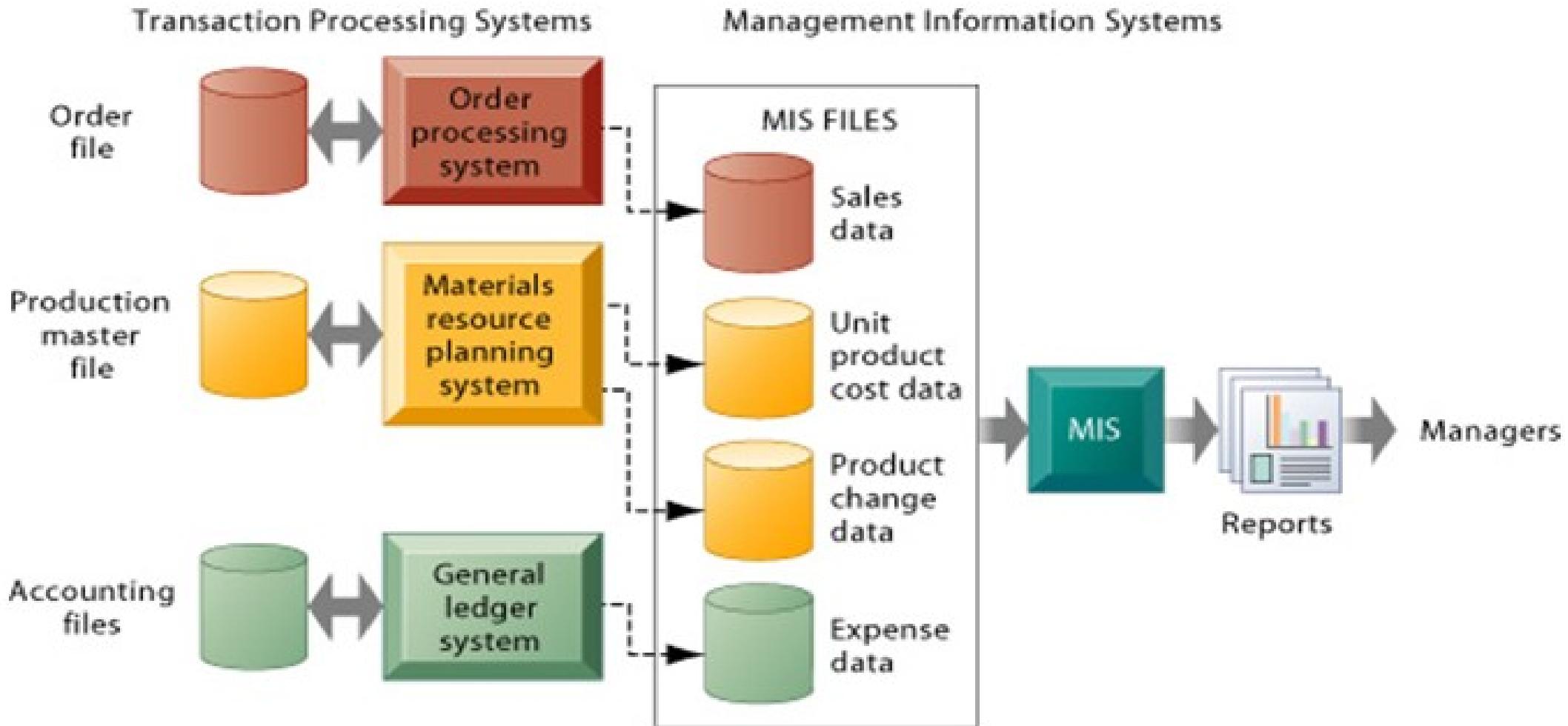
# TRANSACTION PROCESSING SYSTEMS (1)

- **Transaction processing systems (TPS)** are the basic business systems that serve the operational level of the organization.
- A transaction processing system is a computerized system that performs and records the **daily routine transactions** necessary to conduct business.
- Examples are **sales order entry, hotel reservation systems, payroll, employee record keeping, and shipping**.
- At the **operational level**, tasks, resources, and goals are **predefined and highly structured**. The decision made by a lower level supervisor according to predefined criteria.



# : MANAGEMENT INFORMATION SYSTEMS(2)

- Middle management needs systems to help with monitoring, controlling, decision making, and administrative activities. The principles question: Are things working well?
- Management information systems (MIS) serve the management level of the organization, providing managers with reports and often online access to the organization's current performance and historical records.
- Typically, MIS are oriented almost exclusively to internal, not environmental or external, events.
- MIS primarily serve the functions of planning, controlling, and decision making at the management level. Generally, they depend on summarizing underlying transaction processing systems for their data (annually or periodically).



Product Code	Product Description	Sales Region	Actual Sales	Planned	Actual versus Planned
4469	Carpet Cleaner	Northeast	4,066,700	4,800,000	0.85
		South	3,778,112	3,750,000	1.01
		Midwest	4,867,001	4,600,000	1.06
		West	4,003,440	4,400,000	0.91
		TOTAL	16,715,253	17,550,000	0.95
5674	Room Freshener	Northeast	3,676,700	3,900,000	0.94
		South	5,608,112	4,700,000	1.19
		Midwest	4,711,001	4,200,000	1.12
		West	4,563,440	4,900,000	0.93
		TOTAL	18,559,253	17,700,000	1.05

# :DECISION-SUPPORT SYSTEMS (3)

- DSS help managers make decisions that are **unique, rapidly changing, and not easily specified in advance**.
- They address problems where the procedure for arriving at a solution may **not be fully predefined** in advance.
- Although DSS **use internal information** from TPS and MIS, they often **bring in information from external sources**, such as current stock prices or product prices of competitors.
- Clearly, by design, DSS have **more analytical power** than other systems.
- DSS are designed so that users can work with them directly; these systems explicitly include **user-friendly** software.

# :DECISION-SUPPORT SYSTEMS (3)

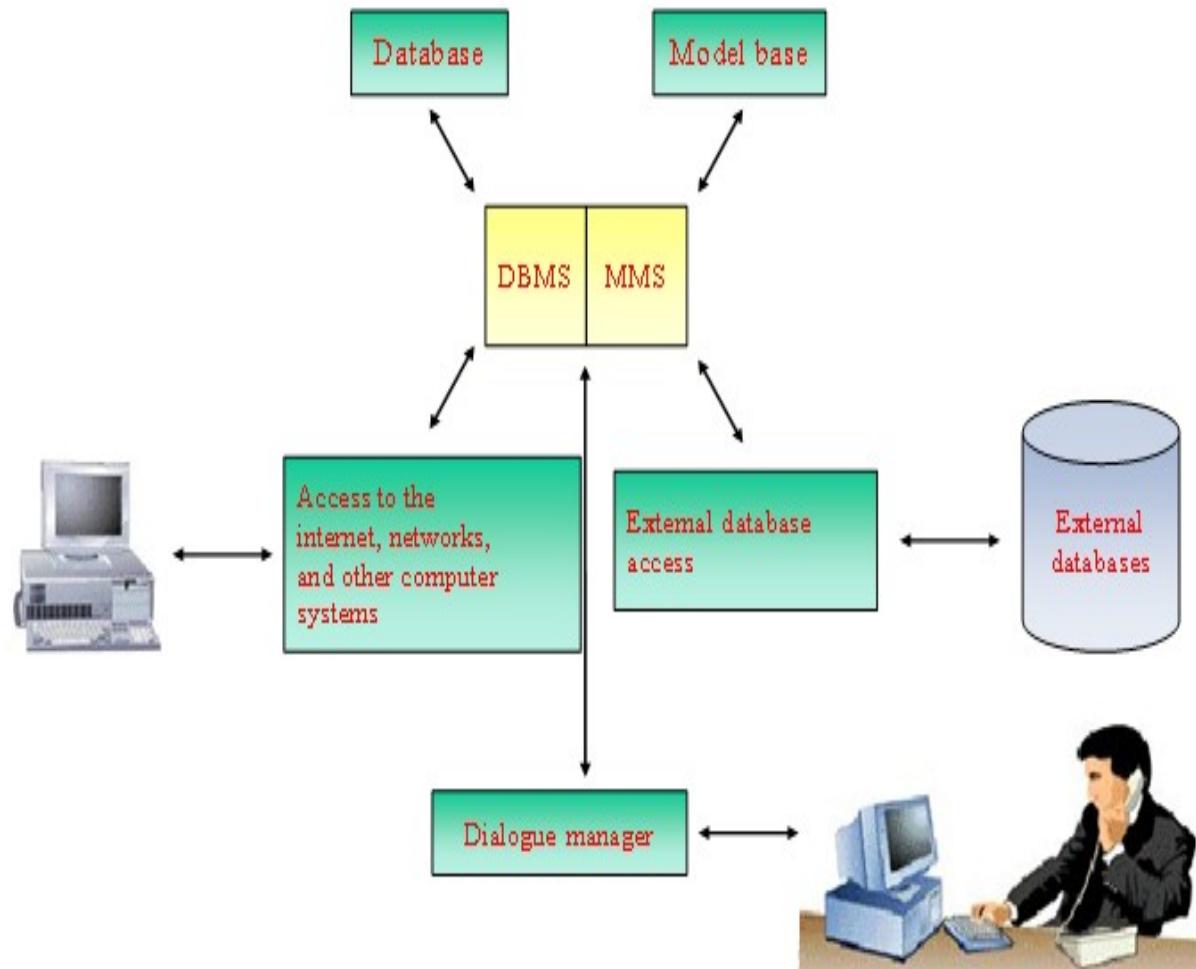
- DSS different from TPS, which focus on **processing the data generated** by business transaction and operations through they extract data from corporate databases maintained by TPS.
- They also differ from MIS, which focus on providing managers with **pre-specified information (reports)** that can be used to help them **make more effective, structured types of decisions**.
- **Decision support systems consists of a set of components:**

Data (Base) Management Subsystem .1

Model (Base) Management Subsystem .2

Knowledge-based (Management) Subsystem .3

The User .5



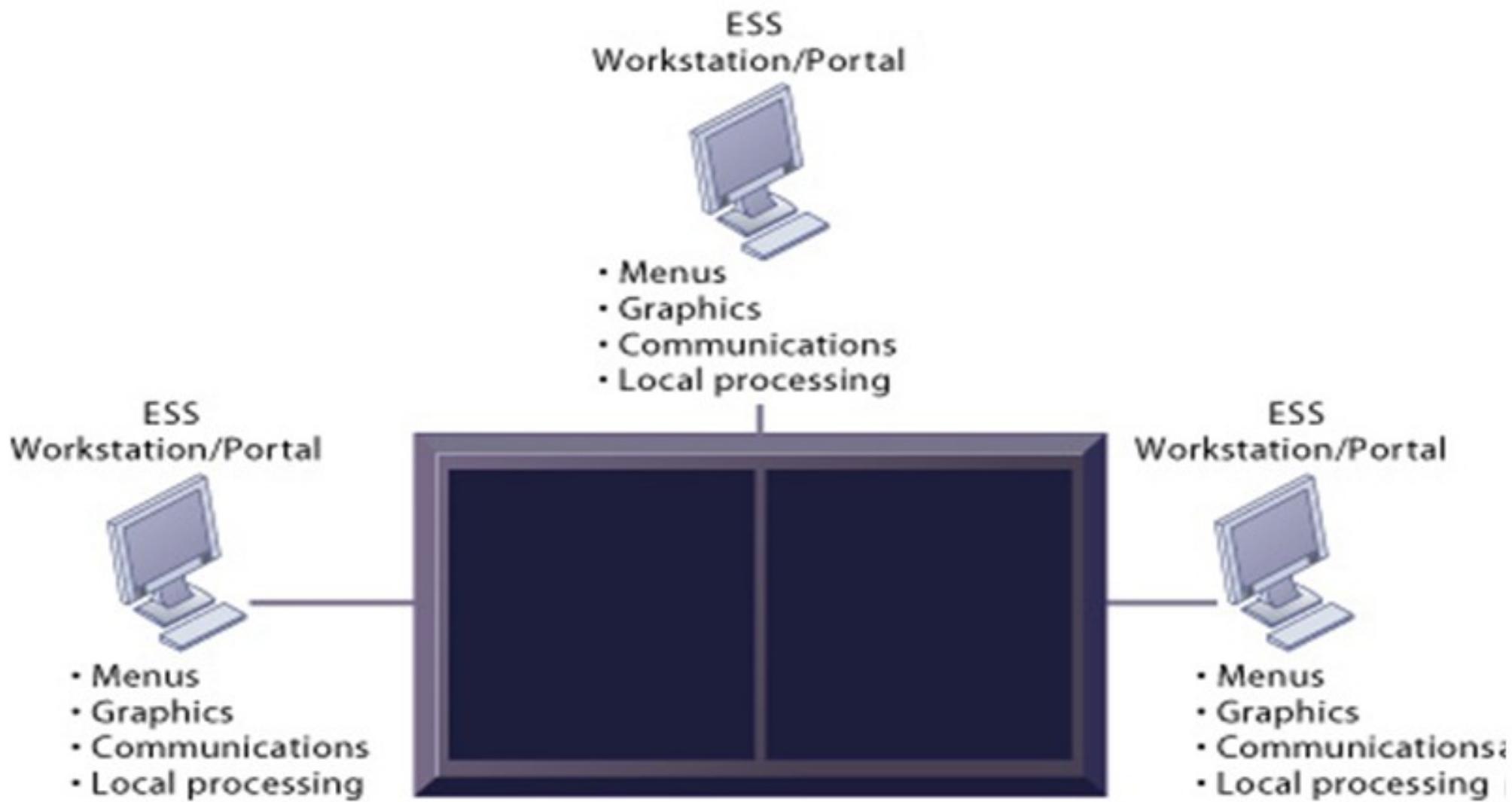
MIS	DSS
<ul style="list-style-type: none"> <li>• Structured decision-making</li> </ul>	<ul style="list-style-type: none"> <li>• Semi- to Un-structured decision-making</li> </ul>
<ul style="list-style-type: none"> <li>• Present- and Past-tense</li> </ul>	<ul style="list-style-type: none"> <li>• Future tense (based on historical models)</li> </ul>
<ul style="list-style-type: none"> <li>• Periodic and Exception reports</li> </ul>	<ul style="list-style-type: none"> <li>• Ad hoc reports</li> </ul>
<ul style="list-style-type: none"> <li>• Rigid design</li> </ul>	<ul style="list-style-type: none"> <li>• Flexible design</li> </ul>
<ul style="list-style-type: none"> <li>• Do things right</li> </ul>	<ul style="list-style-type: none"> <li>• Do the right thing</li> </ul>
<ul style="list-style-type: none"> <li>• Indirect access to data</li> </ul>	<ul style="list-style-type: none"> <li>• Direct access to data</li> </ul>

# :Executive Support Systems(4)

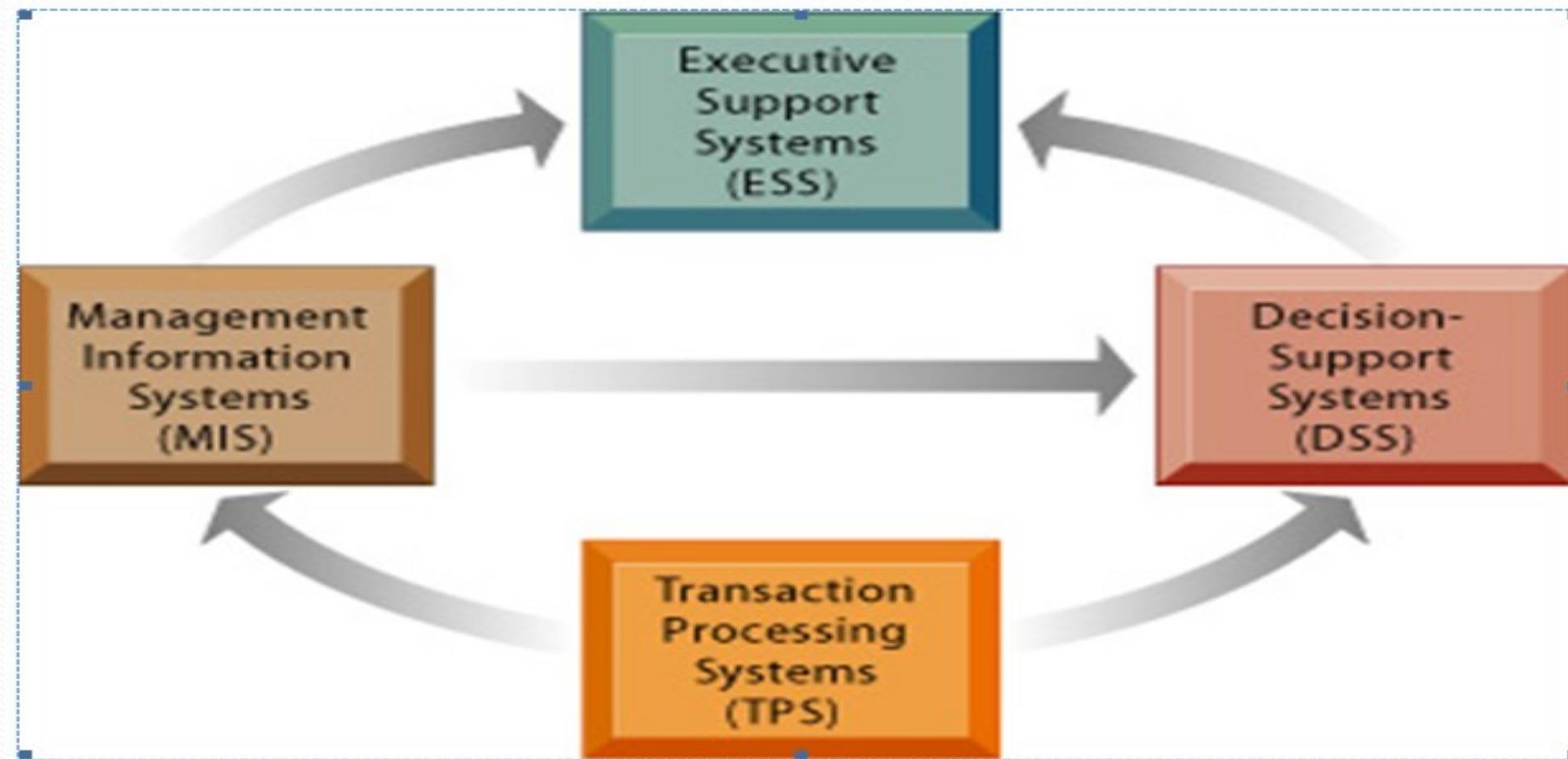
- ESS serve the **strategic level of the organization**. They address no routine decisions requiring judgment, evaluation, and insight because there is no agreed-on procedure for arriving at a solution.
- ESS are designed to incorporate data about **external events**, such as new tax laws or competitors, but they also draw **summarized** information from internal MIS and DSS. They filter, compress, and track critical data, displaying the data of greatest importance to senior managers.
- Often the information is delivered to senior executives through **a portal**, which uses a **Web interface** to present **integrated personalized business content** from a variety of sources.

# :Executive Support Systems(4)

- ESS are **not designed primarily to solve specific problems**. Instead, ESS provide a generalized computing and communications capacity that can be applied to a changing array of problems.
- Questions ESS assist in answering include the following: **In what business should we be? What are the competitors doing?**
- It **consists of workstations with menus, interactive graphics, and communications capabilities** that can be used to **access historical and competitive data from internal corporate systems and external databases**.
- Because ESS **are designed to be used by senior managers** , they incorporate **easy-to-use graphic interfaces**.



# Relationship of Systems to One Another



# Relationship of Systems to One Another

- TPS are typically a major **source** of data for other systems, whereas **ESS** are primarily a **recipient** of data from lower-level systems. The **other** types of systems may **exchange** data with each other as well.
- **Advantageous**
  - information can flow easily between different parts of the organization
  - provide management with an **enterprise-wide view**
- **Disadvantageous**
  - integration **costs money**,
  - integrating many different systems is extremely **time consuming** and **complex**.

# :SYSTEMS FROM A FUNCTIONAL PERSPECTIVE

## (1) Sales and Marketing Systems:

- The sales and marketing function is responsible for selling the organization's products or services.
- **Marketing:** identifying the customers for the firm's products or services, determining what customers need, and advertising and promoting these products and services.
- **Sales:** contacting customers, selling the products and services, taking and follow orders.

# :SYSTEMS FROM A FUNCTIONAL PERSPECTIVE

## (2) Manufacturing and Production Systems:

- Responsible for actually producing the firm's goods and services.
- The planning, development, and maintenance of **production** facilities;
- the establishment of production **goals**;
- the acquisition, storage, and availability of production **materials**;
- the **scheduling** of equipment, facilities, materials, and labor required to fashion finished products.

# :SYSTEMS FROM A FUNCTIONAL PERSPECTIVE

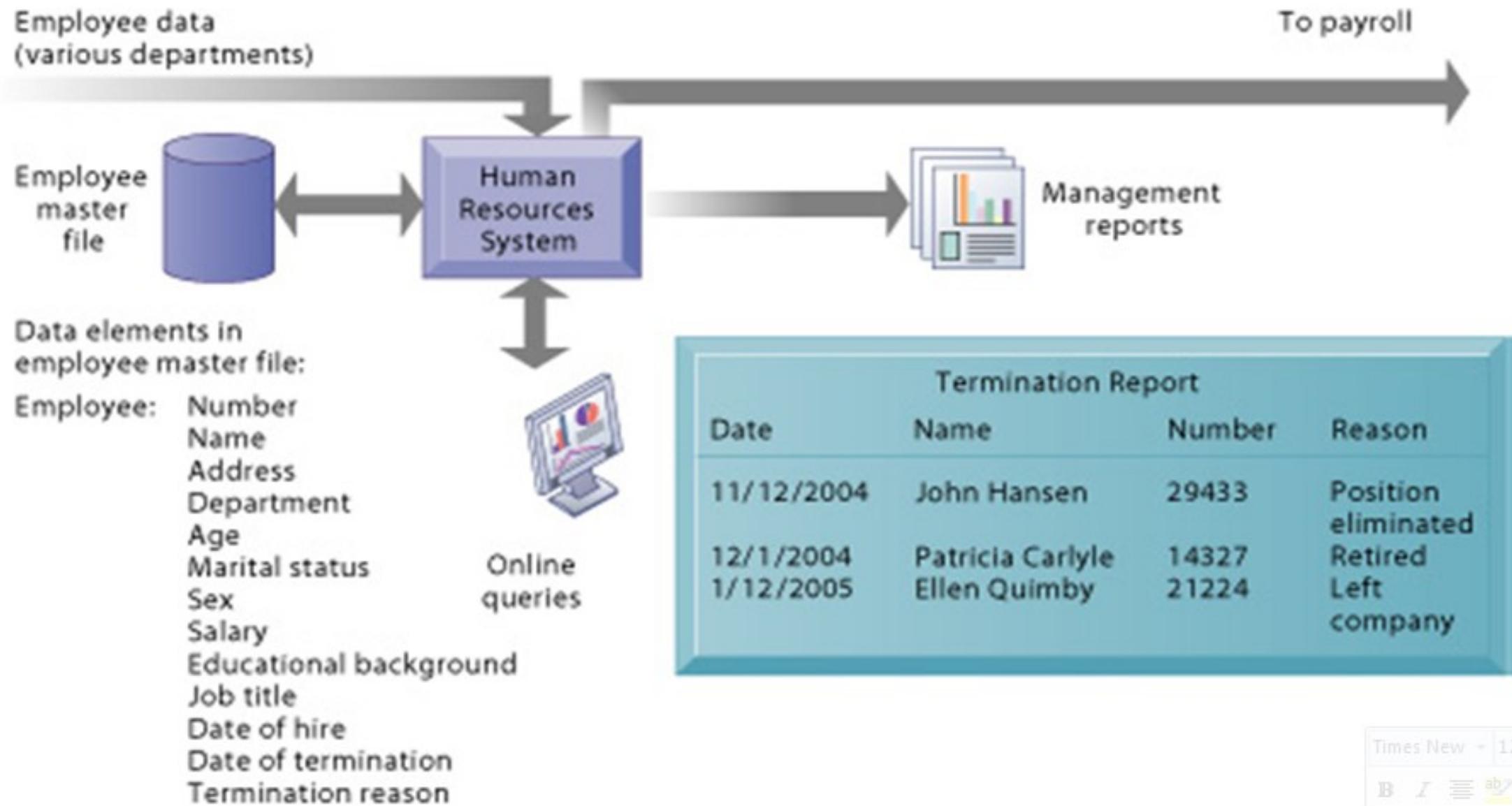
## (3) Finance and Accounting Systems :

- The **finance function** is responsible for managing the firm's financial assets to maximize the return. The finance function is also in charge of managing the capitalization of the firm. To determine whether the firm is getting the best return on its investments.
- The **accounting function** is responsible for maintaining and managing the firm's financial records—receipts, payroll—to account for the **flow of funds** in a firm.

# **:SYSTEMS FROM A FUNCTIONAL PERSPECTIVE**

## **(4) Human Resources Systems:**

- Responsible for attracting, developing, and **maintaining** the firm's **workforce**. Human resources information systems support activities, such as
  - Identifying potential employees,
  - Maintaining complete records on existing employees,
  - Creating programs to develop employees' talents and skills.



# Other Categories of information systems

- **Expert Systems:** are knowledge –based systems that provide **expert advice** and act as expert consultants to users.
- **End User Computing Systems:** support the direct, **hands-on-use** of computers by end users for operational and managerial application.
- **Business Information Systems:** support the **operational and managerial** applications of the basic business functions of a firm.
- **Strategic information Systems:** provide a firm with **strategic products, services, and capabilities** for competitive advantage.

# Discussion

A typical organization has four of information systems with each supporting a specific organizational level. These systems include transaction processing systems (TPS) at the operational level, management information systems (MIS) and decision support Systems (DSS) at the management level, and the executive support systems (ESS) at the strategic level. State the system that can support the following situations:

- A summary report, such as a report on the quarterly sales made by each sales representative.
- An exception report that specifies the exception conditions the sales made by some sales representative is far below than expected.
- Help to track activities of competitors, identify opportunities, and forecast trends.
- Calculate projected sales for next years.
- Used only at the most senior management levels.