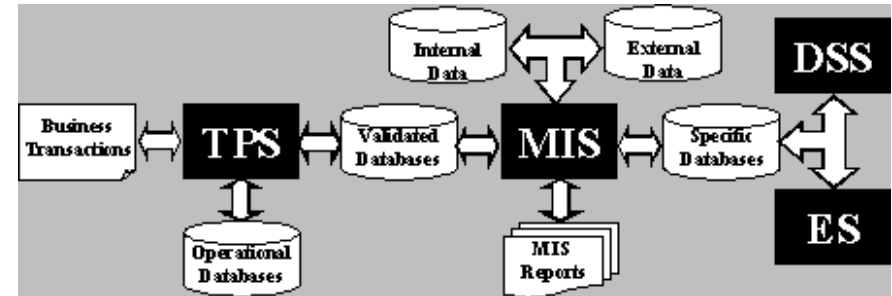


Chapter 14: Information Systems – Types and Presentations

Classification of Information Systems

What is a Computer-based Information System?

- This is one that uses technology to perform some or all of its intended tasks which include the handling of inputs such as business problems, processing the problems and producing as output, reports and recommendations.
- The typical components of such a system are hardware, software, a database, network, procedures and people.



Classification of Information Systems

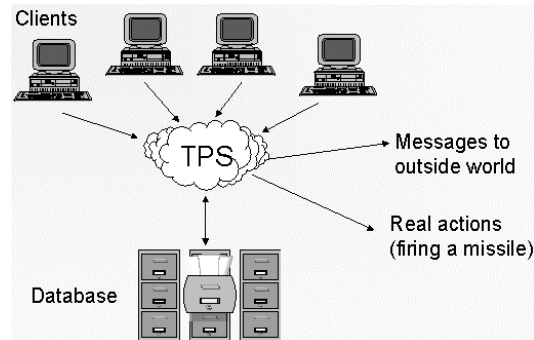
- There are various ways of classifying information systems.
- One common approach is to classify according to its main functions.
 - ◆ Transaction Processing Systems (TPS)
 - ◆ Information Reporting Systems (IRS)
 - ◆ Decision Support Systems (DSS)
 - ◆ Expert Systems (ES)
 - ◆ Executive Information Systems (EIS)
 - ◆ Office Automation (OA)

Types of Information Systems

TYPES OF SYSTEMS		Strategic-Level Systems				
Executive Support Systems (ESS)		5-year sales forecasting	5-year trend operating plan	5-year budget forecasting	Profit planning	Personnel planning
		Management-Level Systems				
Management Information Systems (MIS)		Sales management	Inventory control	Annual budgeting	Capital investment analysis	Relocation analysis
Decision-Support Systems (DSS)		Sales region analysis	Production scheduling	Cost analysis	Pricing/profitability analysis	Contract cost analysis
		Knowledge-Level Systems				
Knowledge Work Systems (KWS)		Engineering workstations		Graphics workstations		Managerial workstations
Office Systems		Word processing		Document imaging		Electronic calendars
		Operational-Level Systems				
Transaction Processing Systems (TPS)		Order tracking	Plant scheduling	Securities trading	Payroll	Compensation
		Order processing	Material movement control	Cash management	Accounts payable/receivable	Training & development/Employee record keeping
		Sales and Marketing	Manufacturing	Finance	Accounting	Human Resources

Transaction Processing Systems (TPS)

- These systems automate clerical and operational functions and track data at the most elementary level in the organization.



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Information Reporting System (IRS)

- Information Reporting System (IRS) provide routine summary and exception reports, often drawing on transaction level data.

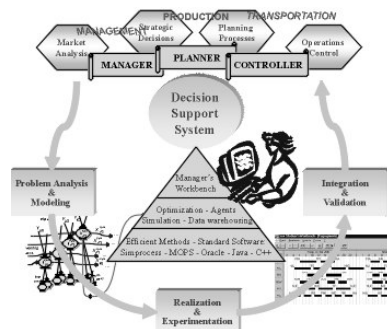


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Decision Support System (DSS)

- A Decision Support Systems (DSS) is an interactive, highly “user-friendly” system that supports management decisions that are semi-structured or that cannot be specified in advance.



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Expert System (ES)

- An expert system is a computer system programmed to use knowledge that has been supplied by a human expert to solve a problem that normally requires human expertise.
 - Captures human expert knowledge to solve problems
 - Gives the computer the ability to make suggestions and act like an expert
 - Captures the use of the wisdom of experts and specialists
 - Years of experience and specific skills are not completely lost when a human expert dies, retires or leaves the company
 - To solve complex problems and support difficult decisions

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Executive Information System (EIS)

- An executive Information System (EIS) is a system for senior managers that utilizes heavy graphic displays, draws together data from numerous internal and external sources and has “drill-down” capabilities.



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Office Automation (OA)

- Office Automation (OA) refers to a wide variety of computer-based technologies that make office workers more productive at their jobs.
- This improvement in productivity can be achieved through increases in effectiveness or efficiency.



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Management Information Systems

- Another common term used loosely is Management Information Systems (MIS).
- We will consider it to be any information system that supports the timely use, management and processing of data or information pertaining to an organization's operations by authorized people in the organization's environment.
- In this definition, the relevant parts of any TPS, IRS, DSS, ES, EIS and OA can be considered components of an organization's MIS.

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Chapter 14: Information Systems – Types and Presentations

Transaction Processing Systems

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Transaction Processing Systems (TPS)

- It is a system that supports the processing of a firm's business transactions.
- These systems are designed to keep an organization running smoothly by automating the processing of the huge amounts of paperwork that must be handled daily.

Characteristics of TPS

- Large amount input data
- Large amount of output
- Users impact on the system
- Efficient processing
- Storage requirements
- I/O capabilities
- High degree of of repetition processing
- Security related problems
- Fails to operate correctly
- Less complexity

Example of TPS

- There are several examples of TPS.
 - ◆ Order Entry
 - ◆ Inventory
 - ◆ Distribution
 - ◆ Sales Invoicing
 - ◆ Accounts Receivable
 - ◆ Purchasing
 - ◆ Receiving
 - ◆ Accounts Payable
 - ◆ Payroll

Example of TPS - Order Entry

- This is the TPS which processes customer orders.
- Orders may arrive by a variety of means : mail, phone, fax etc.
- In cases of repeat orders, a trigger within the system will be the source.

Example of TPS - Inventory

- An inventory system monitors the quantity of each product available for sale and helps ensure that the proper amount of stock is maintained.
- All movement of goods in and out of the store or warehouse will be recorded.

Example of TPS - Distribution

- This involves ensuring the best mode of transport is selected to deliver goods to the customer on time.
- Customs clearance, insurance and freight forwarding are the areas of concern here.

Example of TPS - Sales Invoicing

- The main role of the sales invoicing system is to receive delivery information from the Distribution System and to prepare invoices to be sent to the customer.
- Discounts are applied where appropriate. In some systems, monthly statement of accounts are also prepared.

Example of TPS - Accounts Receivable

- As the name implies, this TPS records the amount owed by customers and the payments made.
- The data comes from the sales invoicing system.
- In companies with cash sales, there is little or no receivables.
- A large amount of money may be tied in A/R and the results of this system often receive close attention.

Example of TPS - Purchasing

- Many companies have central department to handle procurement of its goods and services.
- The advantages are to gain maximum volume discounts, obtain the lowest price or best deal from various vendors and to achieve standardization where necessary.

Example of TPS - Receiving

- The role of the receiving system is to record the receipt, inspection, acceptance or rejection of goods.
- The inspection serves to identify damaged or incomplete goods which must be rejected.

Example of TPS - Accounts Payable

- This system records the invoices received from vendors, determines the optimum time to pay and prepares and prints cheques.
- Cash forecasting is another important task of the A/P system.

Example of TPS - Payroll

- This system calculates the salary to be paid to employees, taking into account any relevant deductions (e.g. pension fund) or additions (e.g. allowances).
- The payroll system must produce income tax reports and should also keep track of pension fund or union fees which have to be credited to another organization.

Chapter 14: Information Systems – Types and Presentations

Information Reporting Systems

Information Reporting Systems

- An **Information Reporting Systems (IRS)** is an information system that provides predefined types of information to management for relatively structured types of decisions.
- Many of the traditional hard copy reports are now also available in screen form.
- Printouts like invoices or remittance advice are not traditionally considered reports and are more closely associated with the **Transaction Processing System (TPS)** that produced them.
- Information Reporting Systems are used for both management planning and management control functions.

Methods of Information Presentation

- Common methods of presentation used in information systems are via the PC screen or printed page.
- Information can also be presented vocally, either by face to face communication, telephone or pre-recorded message,
- The aim of an information system, beyond presenting the required information at the required time, must be to present it in such a way that it may be readily absorbed.
- A number of factors contribute to this:
 - ◆ Visual Presentation
 - ◆ Use of Graphics
 - ◆ Format and layout

Visual Presentation

- About 70% of all the information that we absorb is acquired visually rather than through the other senses.
- This already the primary method used in information systems as both screen and paper printouts show information visually.

Use of Graphics

- Although text forms the bulk of the contents of information being provided, alternatives should be sought.
- Graphics is a useful supplement. Examples are pie charts, line charts, etc.

Format and Layout

- Use of different fonts and different font sizes, underlining and so on help to highlight important points and make the presented information easier to absorb.
- Even the way sentences and paragraphs are positioned is important in making the page or screen look more appealing. Imagine how boring a textbook looks if all you see are lot of words arranged close together on each page.

Chapter 14: Information Systems – Types and Presentations

Artificial Intelligence

What is Artificial Intelligence (AI)?

- Artificial Intelligence (AI) can be defined as the effort to develop computer-based systems (both hardware and software) that behave as humans.
 - ◆ Learn natural language
 - ◆ Accomplish coordinated physical tasks – robotics
 - ◆ Use a perceptive systems that informs their physical behavior and language – visual and oral perception systems.
 - ◆ Emulate human expertise and decision making – expert systems.
 - ◆ Intelligent machines, the physical hardware that performs these tasks.

Differences between AI and Human Intelligence

AI	Human
Lacks of common sense and generality	Has common sense or generality
Incapable to impose a conceptual apparatus in the environment	Capable of think in terms of meta-concept such as cause-and-effect and time

Why Business interested in AI?

- To preserve expertise that might be lost.
- To store information in an active form.
- To create a mechanism that is not subject to human feelings such as fatigue & worry.
- To eliminate routine & unsatisfying jobs held by people.
- To enhance the organization's knowledge base by suggesting solutions to specific problems that are too complex to be analyzed by human.