System Analysis and Design (SAD)

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A Modern Approach to Systems Analysis and Design

- System analysis and design is a complex, challenging, and simulating organizational process that a team of business and systems professionals uses to develop and maintain computer-based information systems.
- It is an organizational improvement process. Information systems are built and rebuilt for organizational benefits.
- An important (but not the only) result of system analysis and design is application software i.e. software designed to support organizational functions or processes such as inventory management, payroll, or mark-sheet analysis.
- In addition to application software, the total information system includes the hardware and systems software on which the application software runs, documentation and training materials, the specific

A Modern Approach to Systems Analysis and Design

- In the current business environment, the internet, especially the World Wide Web, has been firmly integrated into an organization's way of doing business.
- Although you are probably most familiar with marketing done on the web and web-based retailing sites such as Daraz.com or hamrobazar.com, the overwhelming majority of business use of the web is business-to-business applications.
- In System Analysis & Design, we use various methodologies, techniques and tools that have been developed, tested, and widely used over the years to assist people during system analysis and design

A Modern Approach to Systems Analysis and Design - Timeline

- 1950s: focus on efficient automation of existing processes
- 1960s: advent of 3GL, faster and more reliable computers
- 1970s: system development becomes more like an engineering discipline
- 1980s: major breakthrough with 4GL, CASE tools, object oriented methods
- 1990s: focus on system integration, GUI applications, client/server platforms, Internet The new century: Web application development, wireless PDAs, component-based applications

What is Information System?

Any Ideas

Introduction

- What is Information System?
  - First let's understand – INFORMATION?
    - Anything that is processed from raw data to useful data is called information
  - ➢ What is Information System?
  - In a simplest sense, a system that provides information to people in an organization is called information system (IS).
  - An information system is integrated and co-ordinate network of components, which combine together to convert data into information.

About Information System

- Information systems in organizations capture and manage data to produce useful information that supports an organization and its employees, customers, suppliers and partners.
- So, many organizations consider information system to be the essential one.
- Information systems produce information by using data about significant people, places, and things from within the organization and/or from the external environment **to make decisions, control operations, analyze problems, and create new products or services.**
- Information is the data shaped into a meaningful form.
- Data, on the other hand, are the collection of raw facts representing events occurring in organizations or the environment before they have been organized and arranged into a form that people can understand and use.

Information System Activities

- There is 3 activities to produce information in information system
  - Input
    - Input captures or **collects raw data** from within the organization or from its external environment for processing
  - Processing
    - Processing **converts these raw data into meaningful information**
  - Output
    - Output **transfers this information to the people** who will use it or to the activities for which it will be used.

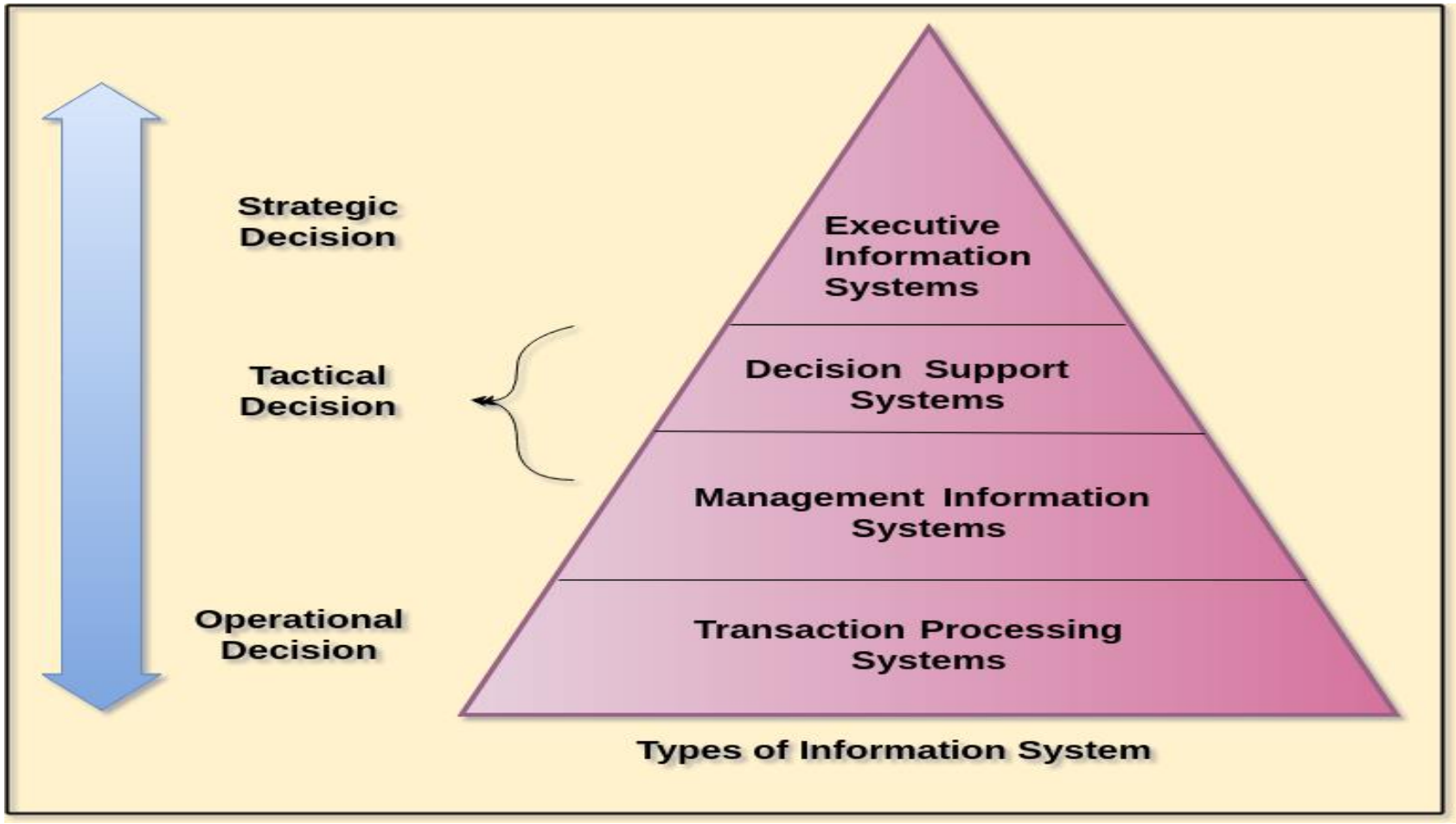
Types of Information System[1]

- Transaction-Processing Systems(TPS)
  - Automate handling of data about business activities (transactions)
  - Process orientation
- Management Information Systems(MIS)
  - Converts raw data from transaction processing system into meaningful form
  - Data orientation

Types of Information System[2]

- Decision Support Systems
  - Designed to help decision makers
  - Provides interactive environment for decision making
  - Involves data warehouses, executive information systems (EIS)Database, model base, user dialogue

Information System use in Business Organization



Transaction-Processing Systems (TPSs)

- These are the computerized systems that perform and records the daily routine transactions necessary to conduct business. These systems serve the operational level of the organization.
- Transaction processing systems are central to a business. TPS failure for a few hours can cause a firm's demise and perhaps other firms linked to it. Managers need TPS to monitor the status of internal operations and the firm's relations with external environment. TPS are also major producers of information for the other types of systems
- Examples are:
  - Payroll
  - Accounts Payable
  - HR System
  - Hotel Reservation System

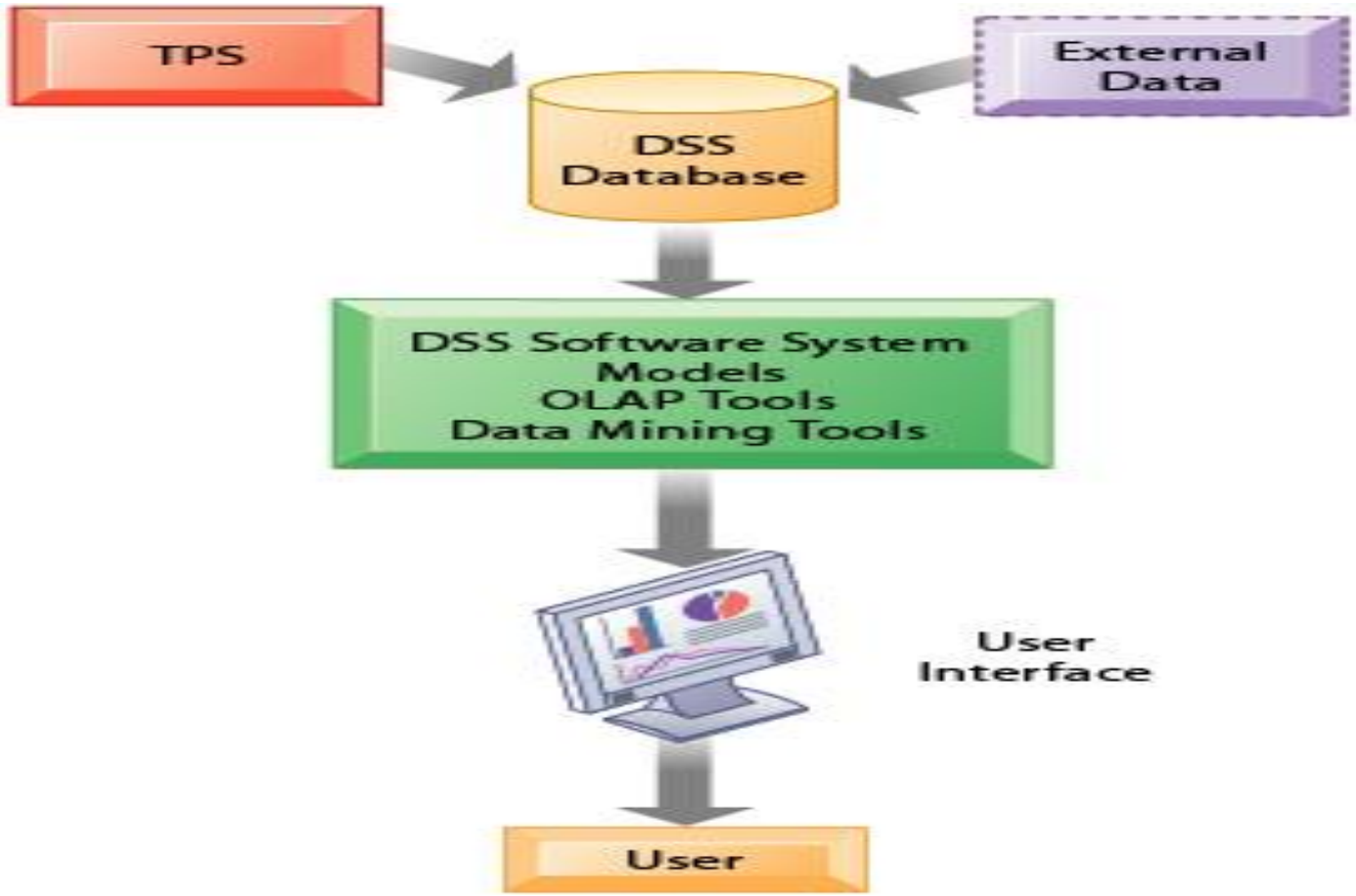
Management Information System (MISs)

- These are the information systems at the management level of an organization and serve management-level functions like **planning, controlling, and decision-making.**
- These systems provide reports that are usually generated on a predetermined schedule and appear in prearranged format.
- Typically, these systems use internal data provided by the transaction processing systems. These systems are used for structured decision-making and in some cases for semi-structured decision making as well.
- MIS provide managers with access and reports to the organizations current performance and historical records
- Examples are:
  - Capital Investment Analysis
  - Annual Budgeting
  - Salary Analysis
  - Sales Reporting

Decision-Support System (DSSs)

- These systems also serve at the management level of the organization.
- These systems combine data and sophisticated analytical models or data analysis tools to support semi structured and unstructured decision-making.
- These systems use internal information from TPS and MIS, and often information from external sources, such as current stock prices or product prices of competitors. DSS have more analytical power than other systems
- Help various decision makers Identify and choose between options or decisions.
- Examples are:
  - Contract Cost Analysis
  - Inventory Control

Components of a decision support system



Components of a decision support system

- **DSS database**
  - The database draws on a variety of sources, including data internal to the organization, data generated by applications, and external data purchased from third parties or mined from the Internet.
  - The size of the DSS database will vary based on need, from a small, standalone system to a large data warehouse.
- **DSS software system**
  - It consists of various mathematical and analytical models that are used to analysis the complex data, thereby producing the requirement analysis
- **DSS user interface**
  - Dashboards and other user interfaces that allow users to interact with and view results

Characteristic of DSS

- Support for decision makers in semi structured and unstructured problems.
- Support at various manager levels, ranging from Top Executives to line managers.
- Support for individual or groups.
- Support for independent or sequential decisions
- Adaptive in nature
- Decision Maker has final authority.

Executive-Information Systems (EISs)

- These systems are also called executive support systems (ESSs) and serve the strategic level of the organization.
- These systems are designed to address unstructured decision making through advanced graphics and communication.
- These systems incorporate data about external events such as new tax laws or competitors, but they also draw summarized information from internal MIS and DSS.
- These systems are not designed to solve a specific problem but they provide a generalized computing and telecommunication capacity that can be applied to a changing array of problems.
- Examples are:
  - 5 Year Sales Trend Forecasting
  - Manpower Planning
  - 5 Year Budget Forecasting

Some more Information Systems

- Communication and Collaboration Systems
  - These systems enable more effective communications between workers, partners, customers and suppliers to enhance their ability to collaborate. These systems use network technology that allows companies to coordinate with other organizations across great distances.
- Office Automation Systems
  - Office automation (OA) is more than word processing and spreadsheet applications. Office automation systems support the wide range of business office activities for improved work flow and communication between workers, regardless of whether or not those workers are located in the same office.