Unit 1: Information System

AGENDA

- Overview of Information System
- Information Technology
- Information System Components
- Business Process Modelling – Business Information System
- Characteristics of Information System
- Types of Business Information System -Organizational Structure
- Systems Development Techniques and Tools
- Role of System Analyst

Overview of Information System

- "Information system is set of **people, information technology**, and **business process** in order to achieve a business objective."
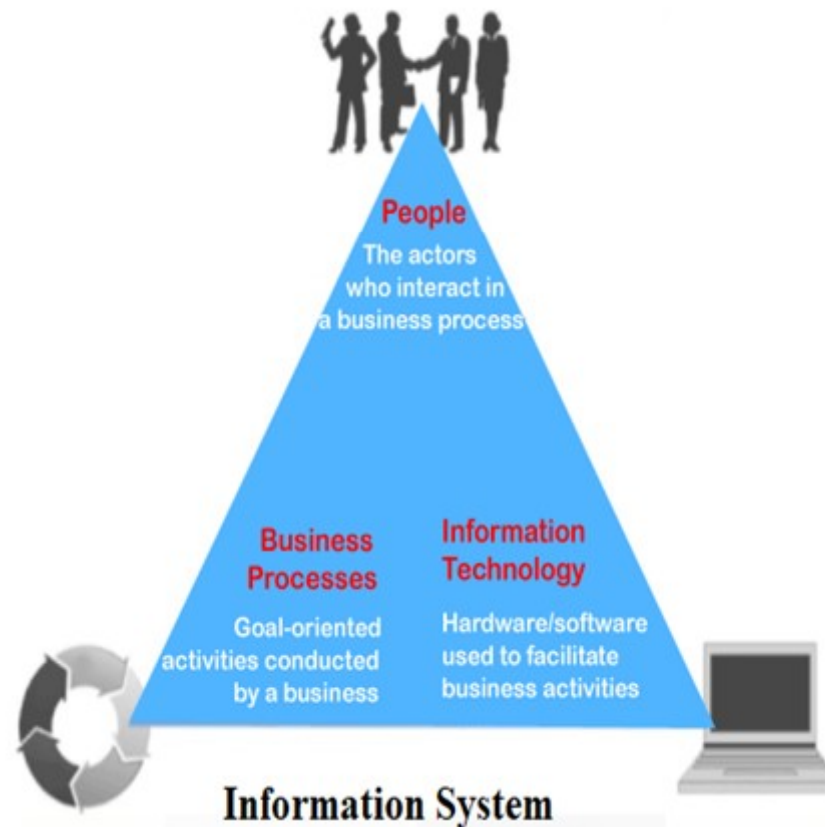
Overview of Information System

- Information systems surround you almost every day. Fro example, Wi-Fi networks on your university campus, database search services in the learning resource centre, and printers in computer labs.

- Online shopping: interacting with an information system that manages inventory and sales.

- Driving to school or work results: an interaction with the transportation information system, impacting traffic lights, cameras, etc.

- Vending machines connect and communicate using the Internet of Things (IoT).

- Your car's computer system does more than just control the engine – acceleration, shifting, and braking data is always recorded

- Your Smartphone is constantly connecting to available networks via Wi-Fi, recording your location and other data.

Overview of Information System

- "Information systems (IS) is the study of complementary networks of hardware and software that people and organizations use to collect, filter, process, create, and distribute data."[1]

- "Information systems are combinations of hardware, software, and telecommunications networks that people build and use to collect, create, and distribute useful data, typically in organizational settings."

- "Information systems are interrelated components working together to collect, process, store, and disseminate information to support decision making, coordination, control, analysis, and visualization in an organization."[3]

Overview of Information System

- The Information system can be defined as a collection of **software, hardware**, and **telecommunications network** that people develop and use to **gather, create,** and **distribute useful data**, mainly in organizational settings.

People
The actors who interact in a business process

Business Processes
Goal-oriented activities conducted by a business

Information Technology
Hardware/software used to facilitate business activities

Information System

Overview of Information System

- The basic process an IS follows includes the following steps:

- **Input**. The system collects data and information from various sources, such as sensors, keyboards, scanners or databases.

- **Processing**. The system transforms the raw data into meaningful information by applying various operations, such as sorting, classifying, calculating, analyzing or synthesizing.

- **Storage**. The system stores the processed information in a structured and secure way, such as in a database, a file system or in cloud storage.

- **Output**. The system presents the information to the users in a usable format, such as reports, graphs, charts or dashboards.

- **Feedback**. The system collects feedback from users and other stakeholders to evaluate its performance and improve its design and functionality.

Information Technology

- Management information system (MIS) refers to a large infrastructure used by a business or corporation, whereas information technology (IT) is one component of that infrastructure that is used for collecting and transmitting data.

- Information technology falls under the IS umbrella but deals with the technology involved in the systems themselves.

- Information technology can be defined as the study, design, implementation, support or management of computer-based information systems.

- IT focuses on the technology infrastructure, hardware, software, and networks that enable data processing and communication.

Information Technology

- IT typically includes hardware, software, databases, and networks.

- Information technology often governs the acquisition, processing, storage, and dissemination of digitized information, or data, generated through the disciplines of computing and telecommunications.

- Information technology focuses on managing technology and improving its utilization to advance the overall business goals.

Information Technology

- Differences

Information System	Information Technology
It is a software used to organize and analyze data.	It is a sub system of Information system.
Its main purpose is to turn raw data into useful information that in turn will provide useful information for making decision within organization or business.	Its main purpose is to help people perform their work properly and effectively and achieve their objective within organization or business.
It mainly focuses on providing support to operations, management, and decision-making.	It mainly focuses on improving productivity and efficiency using technology.
It is generally composed of four components i.e., task, people, structure, and technology.	It is generally composed of three components i.e., hardware, software. Networks and data.
It works as a bridge between technology and people.	It helps people to utilize and make sense of that system.

Information Technology

● Differences

Information System	Information Technology
It simply incorporates technology, people and processes involved with information.	It designs, implement, maintain and support information or data within information system.
It includes how people and processes can support or hinder performance of their organization, managing computer networks and applications within modern business environments.	It includes rolling out new software updates, troubleshooting problems of user's technology, replacing outdated hardware, etc., to meet operational demands.
It helps in storing operational data, communication records, documents, and revision histories.	It helps in implementing communication, build and grow commerce and business sector, improve reputation of business, etc.

Information System Components

- Information systems are made up of five components: hardware, software, data, people, and process.

- The first three, fitting under the technology category, are generally what most students think of when asked to define information systems.

- But the last two, people and process, are really what separate the idea of information systems from more technical fields, such as computer science.

Components of Information System

Information System Components

- **Hardware** means equipment and machinery. The part of an information system you can touch – the physical components of the technology.

- The supporting devices contain input and output devices, communication devices and storage device like Computers, keyboards, disk drives, iPads, and flash drives .

- Hardware in pre-computer information systems may contain ledger books and ink.

Information System Components

- **Software** means computer programs as well as the manuals which support them.

- Computer program means the machine-readable instructions that tell circuitry in the system's hardware to work to generate helpful information from the data.

- Software is a set of instructions that tells the hardware what to do. Software is not tangible – it cannot be touched.

Information System Components

⦿ When programmers create software programs, what they are really doing is simply typing out lists of instructions that tell the hardware what to do.

⦿ There are several categories of software, with the two main categories being <u>operating-system software</u>, which makes the hardware usable, and <u>application software</u>, which does something useful.

⦿ In most cases, programs are stored on an input/output medium, such as a tape or disk.
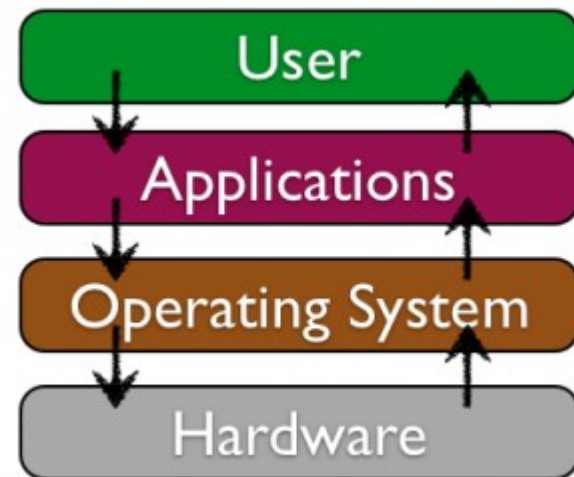
Information System Components

- **Data** means facts that systems use to generate valuable knowledge.

- Data is usually stored in machine-readable form on tape or disk until the computer requires them.

- Data is a collection of facts. For example, your street address, the city you live in, and your phone number are all pieces of data. Like software, data is also intangible.

- By themselves, pieces of data are not really very useful. But aggregated, indexed, and organized together into a database, data can become a powerful tool for businesses.

Information System Components

⦿ **Procedures/processes** mean rules which govern how an operation is performed in information system.

⦿ "Procedures are for people what software is for hardware".

⦿ A process is a series of steps undertaken to achieve a desired outcome or goal.

Information System Components

- **People**
- Every system requires individuals if the system is to be beneficial.
- People are often the most neglected part of the system, and they are possibly the factor that has the greatest impact on the success or failure of information systems.
- From the front-line help-desk workers, to systems analysts, to programmers, all the way up to the chief information officer (CIO), those who support the network of computers, and the individuals who keep up the information, etc must not be overlooked.

Information System Components

- **Feedback** component determines that an information system can be offered with feedback. However, this component is not needed to function.

- The system collects feedback from users and other stakeholders to evaluate its performance and improve its design and functionality.

Information System Components

- **Networking Communication**

- Networking communication is another component of an IS that some believe should be in its own category.

- An information system can exist without the ability to communicate. For instance, the first personal computers were stand-alone machines that did not have access to the Internet.

- Information Systems, however, have evolved since they were developed.

- For example, we used to have only desktop operating system software or hardware. However, in today's environment, the operating system software now includes mobile OS, and hardware now includes other hardware devices besides desktops.

- It is extremely rare for a computer device that does not connect to another device or a network.

Business Process Modelling

- **Business process modelling** (or) process modelling, is the analytical representation or put simply an illustration of an organization's business processes.

- Modelling processes is a critical component for effective business process management.

- There are many modelling methodologies available which can be used to model business processes.

- Regarding the three goals of process modelling (i.e. description, analysis and enactment), most methodologies tend to be suitable for only one of the three goals, but not all three.

Business Process Modelling

- The following languages have played an important role in business process modelling:
    - Flowchart, Petri net, Unified Modelling Language, Role Activity Diagram, Event-driven Process Chain, Integrated Definition for Function Modelling and Business Process Management Notation.

Business Information System

- A business information system is a group of interrelated components that work collectively to carry out input, processing, output, storage and control actions in order to convert data into information products that can be used to support forecasting, planning, control, coordination, decision making and operational activities in organization.

- The components that undertake these activities are five basic resources: people, hardware, software, communication and data.

- People: users and developers

- Hardware: computers, printers and other such items

- Software: computer programs and instruction manuals

- Communication resources: networks and hardware-software needed to support them.

- Data resource: data that an organization has access to such as computer databases and paper files.

Characteristics of Information System

⊙ **Availability/accessibility**

⊙ Information should be easy to obtain or access. Information kept in a book of some kind is only available and easy to access if you have the book to hand.

⊙ A good example of availability is a telephone directory, as every home has one for its local area. It is probably the first place you look for a local number.

⊙ But nobody keeps the whole country's telephone books so for numbers further afield you probably phone a directory enquiry number.

⊙ For business premises, say for a hotel in London, you would probably use the Internet.

Characteristics of Information System

- **Accuracy**

- Information needs to be accurate enough for the use to which it is going to be put. To obtain information that is 100% accurate is usually unrealistic as it is likely to be too expensive to produce on time.

- The degree of accuracy depends upon the circumstances.

- Accuracy is important. E.g, if government statistics based on the last census wrongly show an increase in births within an area, plans may be made to build schools and construction companies may invest in new housing developments.

- In these cases any investment may not be recouped.

Characteristics of Information System

⦿ **Reliability or objectivity**

⦿ You can only really use information confidently if you are sure of its reliability and objectivity.

⦿ When researching for an essay in any subject, we might make straight for the library to find a suitable book. We are reasonably confident that the information found in a book, especially one that the library has purchased, is reliable and (in the case of factual information) objective.

⦿ The book has been written and the author's name is usually printed for all to see. The publisher should have employed an editor and an expert in the field to edit the book and question any factual doubts they may have.

⦿ In short, much time and energy goes into publishing a book and for that reason we can be reasonably confident that the information is reliable and objective.

Characteristics of Information System

- **Relevance/appropriateness**

- Information should be relevant to the purpose for which it is required. It must be suitable.

- What is relevant for one manager may not be relevant for another. The user will become frustrated if information contains data irrelevant to the task in hand.

- For example, a market research company may give information on users' perceptions of the quality of a product. This is not relevant for the manager who wants to know opinions on relative prices of the product and its rivals. The information gained would not be relevant to the purpose.

Characteristics of Information System

⦿ **Completeness**

⦿ Information should contain all the details required by the user. Otherwise, it may not be useful as the basis for making a decision.

⦿ For example, if an organisation is supplied with information regarding the costs of supplying a fleet of cars for the sales force, and servicing and maintenance costs are not included, then a costing based on the information supplied will be considerably underestimated.

Characteristics of Information System

- **Level of detail/conciseness**

- Information should be in a form that is short enough to allow for its examination and use. There should be no extraneous information.

- For example, it is very common practice to summarise financial data and present this information, both in the form of figures and by using a chart or graph.

- We would say that the graph is more concise than the tables of figures as there is little or no extraneous information in the graph or chart. Clearly there is a trade-off between level of detail and conciseness.

Characteristics of Information System

- **Presentation**

- The presentation of information is important to the user. Information can be more easily understood if it is aesthetically pleasing.

- For example, a marketing report that includes graphs of statistics will be more concise as well as more aesthetically pleasing to the users within the organisation.

- Many organisations use presentation software and show summary information via a data projector.

- These presentations have usually been well thought out to be visually attractive and to convey the correct amount of detail.

Characteristics of Information System

⊙ **Timing**

⊙ Information must be on time for the purpose for which it is required. Information received too late will be irrelevant.

⊙ For example, if you receive a brochure from a theatre and notice there was a concert by your favourite band yesterday, then the information is too late to be of use.

Characteristics of Information System

- **Value of information**

- The relative importance of information for decision-making can increase or decrease its value to an organisation.

- For example, an organisation requires information on a competitor's performance that is critical to their own decision on whether to invest in new machinery for their factory.

- The value of this information would be high. Always keep in mind that information should be available on time, within cost constraints and be legally obtained.
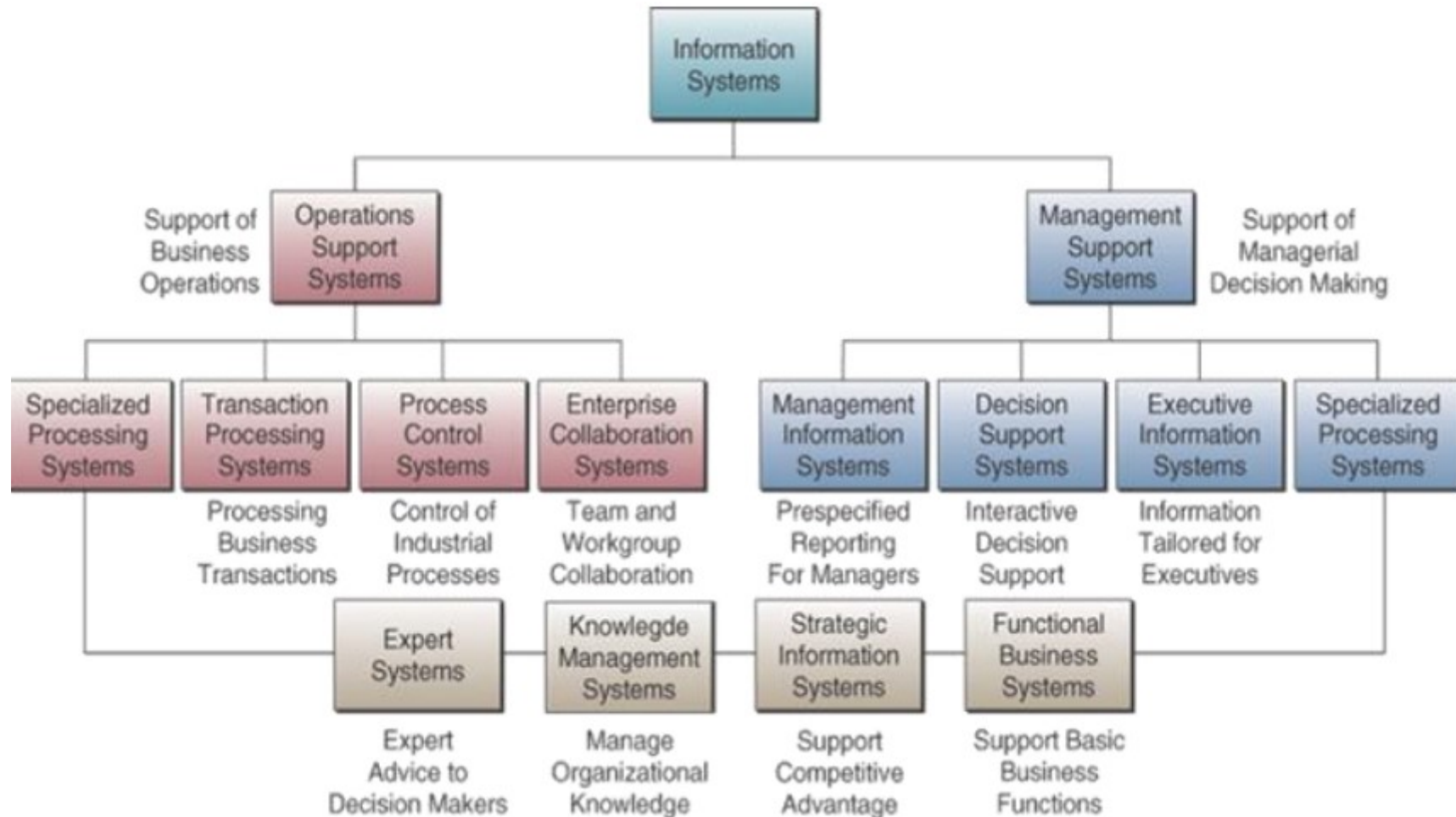
Characteristics of Information System

- **Cost of information**

- Information should be available within set cost levels that may vary dependent on situation.

- If costs are too high to obtain information an organisation may decide to seek slightly less comprehensive information elsewhere.

- For example, an organisation wants to commission a market survey on a new product. The survey could cost more than the forecast initial profit from the product.

- In that situation, the organisation would probably decide that a less costly source of information should be used, even if it may give inferior information.

Types of Business Information System

- Information systems may be divided into two categories that support an organization's day-to-day business activities and systems that support managerial decision making.

- **Operations Information System** (OIS) and **Managerial Information system** (MIS)

- OIS are concerned with process control, transaction processing and communications.

- MIS are concerned with providing support to managerial decision making.

Types of Business Information System

Information Systems

Support of Business Operations — Operations Support Systems

Support of Managerial Decision Making — Management Support Systems

Specialized Processing Systems	Transaction Processing Systems	Process Control Systems	Enterprise Collaboration Systems	Management Information Systems	Decision Support Systems	Executive Information Systems	Specialized Processing Systems
	Processing Business Transactions	Control of Industrial Processes	Team and Workgroup Collaboration	Prespecified Reporting For Managers	Interactive Decision Support	Information Tailored for Executives	

Expert Systems	Knowlegde Management Systems	Strategic Information Systems	Functional Business Systems
Expert Advice to Decision Makers	Manage Organizational Knowledge	Support Competitive Advantage	Support Basic Business Functions

Management Support System

- MSS are computer-based systems that are supposed to be used by, or at least to support, managers to properly manage their business and help them to take correct management decisions.

- Types of MSS

  - Management Information Systems (MIS)

  - Decision Support Systems (DSS)

  - Executive Information Systems (EIS)

- Softwares that produce fixed, regularly scheduled reports based on data extracted and summarized from the organization's underlying transaction processing systems (TPS) to middle and operational level managers for their day-to-day decision making

Management Support System

◉ **Management Information System (MIS):**

◉ Management Information System is designed to take relatively raw data available through a Transaction Processing System and convert them into a summarized and aggregated form for the manager, usually in a report format.

◉ It reports tending to be used by middle management and operational supervisors.

◉ Many different types of report are produced in MIS. Some of the reports are a summary report, on-demand report, ad-hoc reports and an exception report.

◉ **Example**: Sales management systems, Human resource management system.

Management Support System

- **Transaction Processing System (TPS):**
- Transaction Processing System are information system that processes data resulting from the occurrences of business transactions
- Their objectives are to provide transaction in order to update records and generate reports i.e. to perform store keeping function
- The transaction is performed in two ways: **Batching processing** and **Online transaction processing**.
- **Example**: Bill system, payroll system, Stock control system.

Management Support System

- **Decision Support System (DSS):**

- Decision Support System is an interactive information system that provides information, models and data manipulation tools to help in making the decision in a semi-structured and unstructured situation.

- Decision Support System comprises tools and techniques to help in gathering relevant information and analyze the options and alternatives, the end user is more involved in creating DSS than an MIS.

- **Example**: Financial planning systems, Bank loan management systems.

Management Support System

- **Executive Information Systems**

- Senior managers spend a good deal of their time planning and making major decisions.

- They set performance targets, determine whether they're being met, and routinely scan the external environment for opportunities and threats.

- To accomplish these tasks, they need relevant, timely, easily understood information.

- Often, they can get it through an **executive information system**, which provides ready access to strategic information that's customized to their needs and presented in a convenient format.

Management Support System

- **Executive Information Systems**

- **For Example**, Using an executive information system, for example, a gaming-company executive might simply touch a screen to view key summary information that highlights in graphical form a critical area of corporate performance, such as revenue trends.

- After scanning this summary, our executive can "drill down" to retrieve more detailed information—for example, revenue trends by resort or revenue trends from various types of activities, such as gaming, hotel, retail, restaurant, or entertainment operations.

Management Support System

- **Experts System:**

- Experts systems include expertise in order to aid managers in diagnosing problems or in problem-solving. These systems are based on the principles of artificial intelligence research.

- Experts Systems is a knowledge-based information system. It uses its knowledge about a specify are to act as an expert consultant to users.

- Knowledgebase and software modules are the components of an expert system. These modules perform inference on the knowledge and offer answers to a user's question.

Management Support System

ORGANIZATIONAL STRUCTURES

* Hierarchical   * Divisional
* Functional   * Matrix
* Flat   * Network

Management Support System
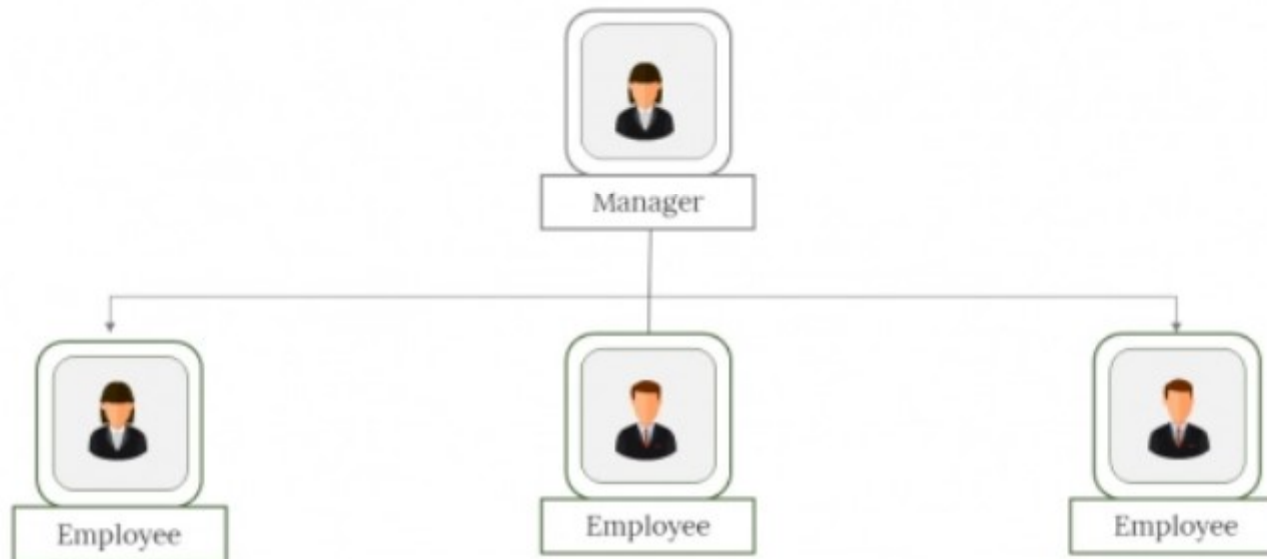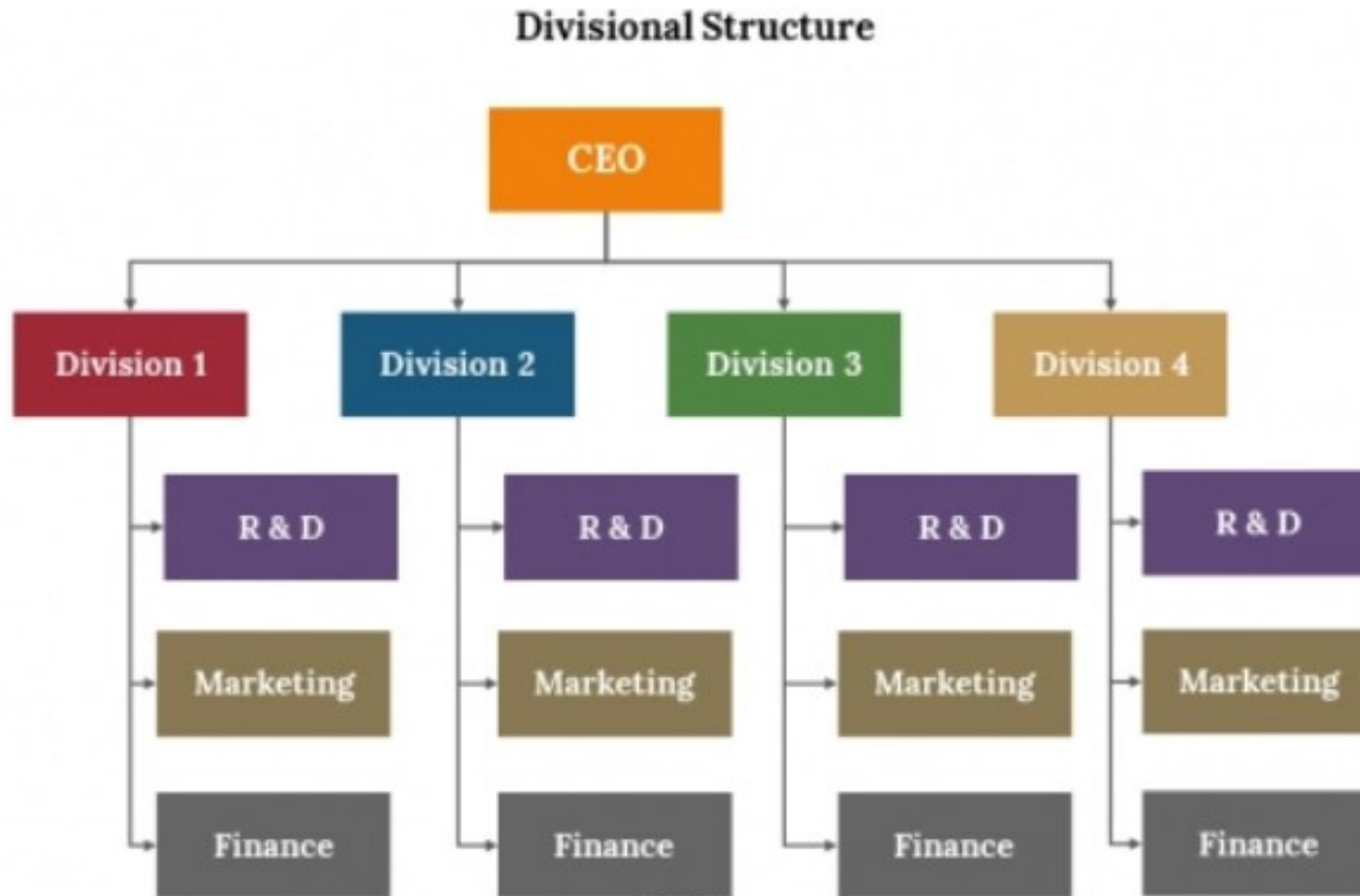

Functional Structure
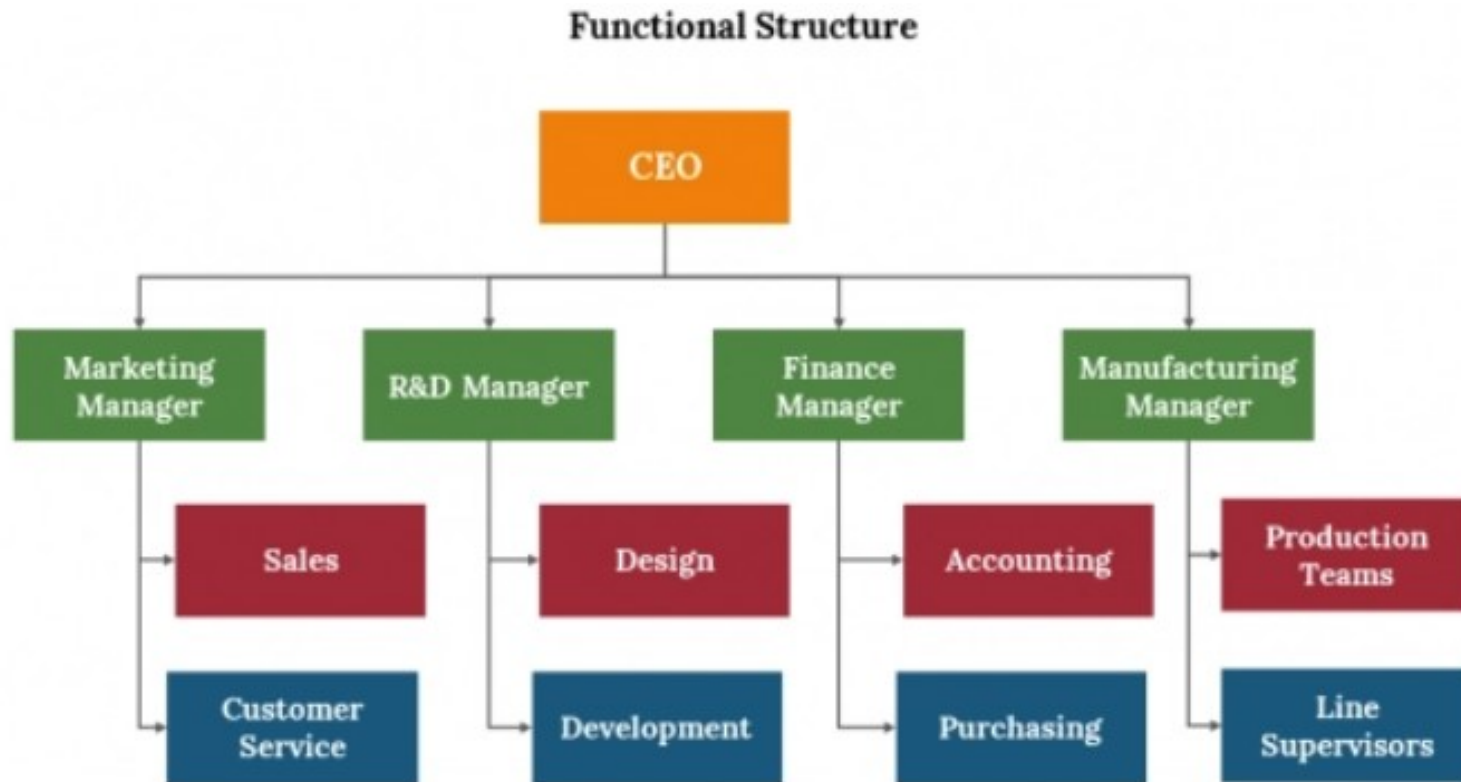
Organizational Structure
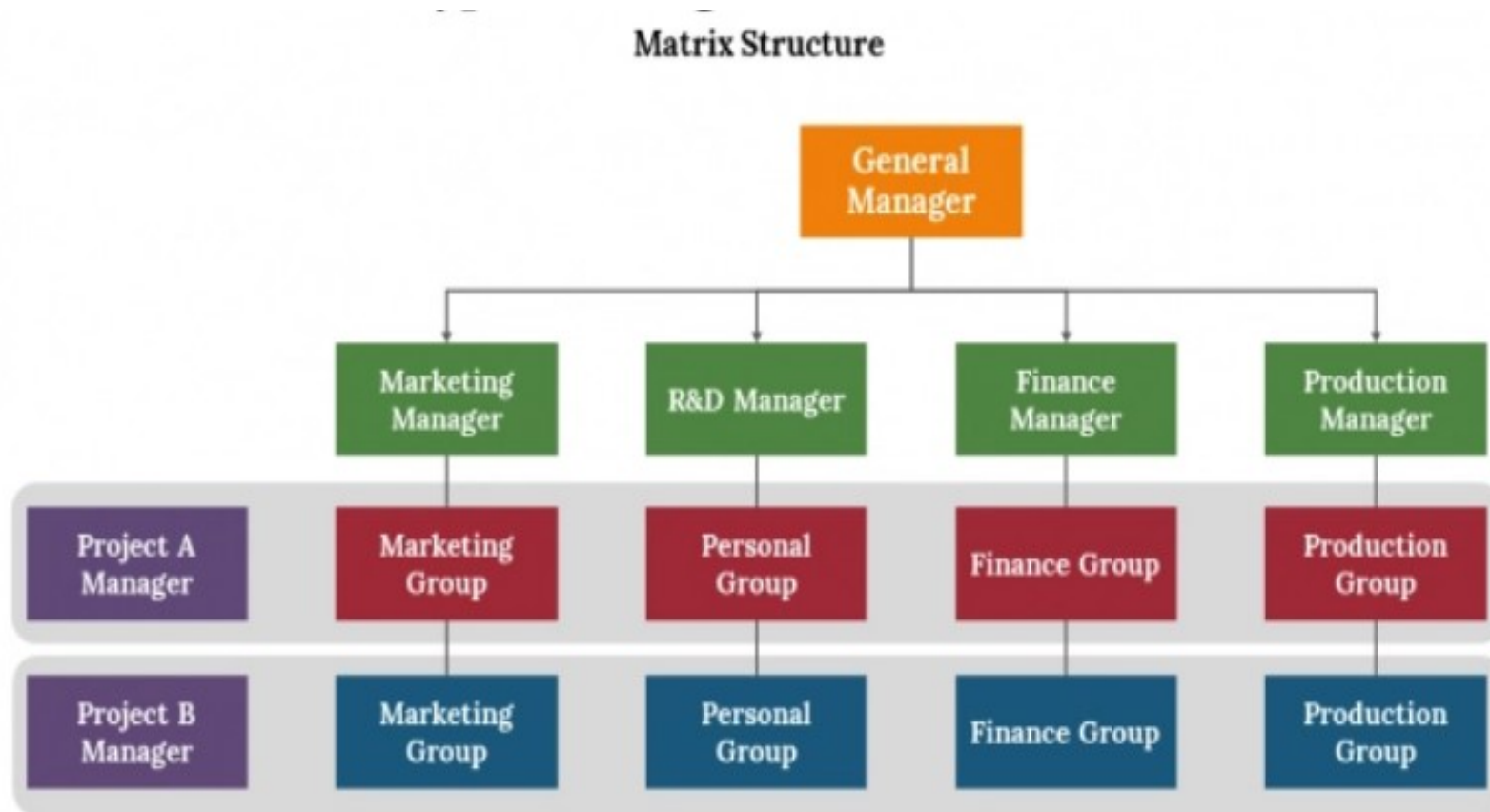
Management Support System

Flat

Flat: Organized based on self-management and a lack of managerial structures

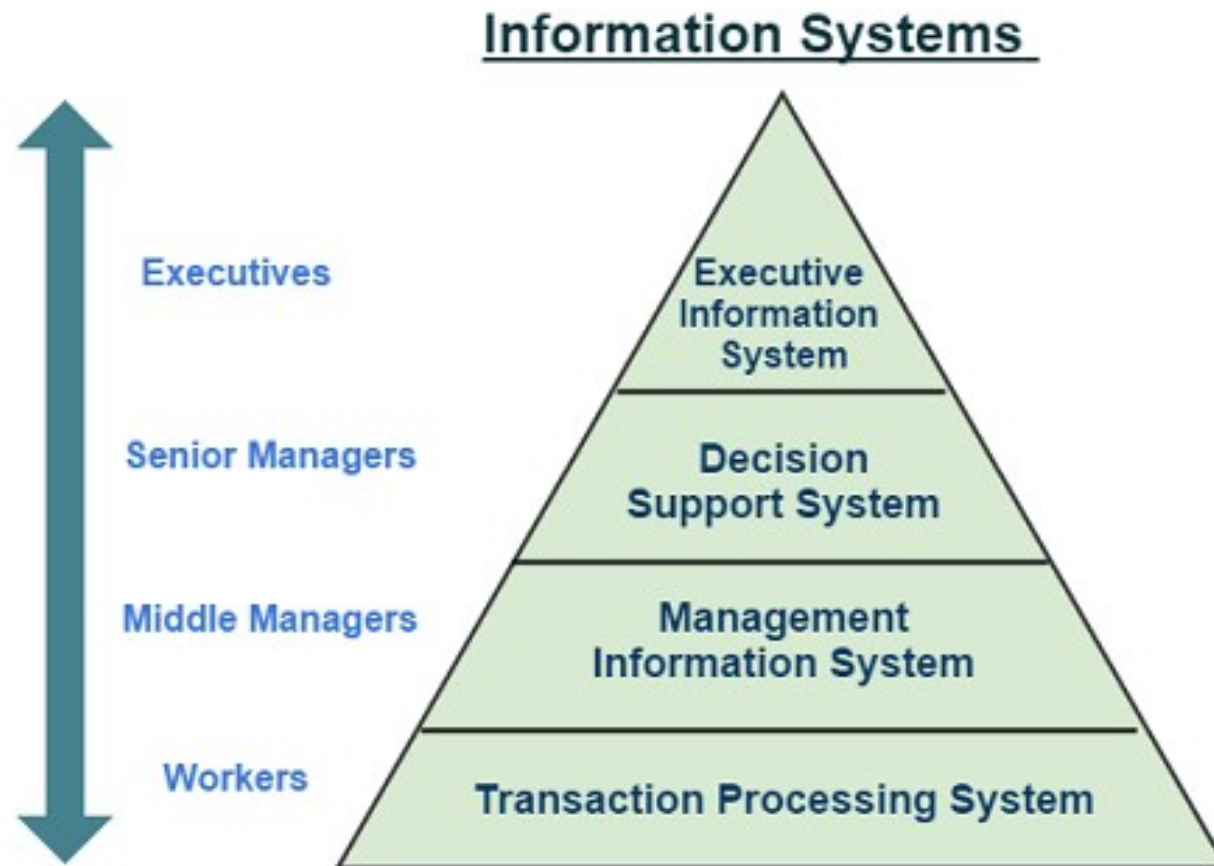# Management Support System

Divisional Structure

Management Support System

Matrix Structure

Management Support System

Information Systems

Executives — Executive Information System

Senior Managers — Decision Support System

Middle Managers — Management Information System

Workers — Transaction Processing System

Systems Development Techniques and Tools

⊙ In addition to understanding business operations, systems analyst must know how to use a variety of techniques, such as _modeling_, _prototyping,_ _and computer-aides systems engineering tools_ to plan in a team environment, where input from users, managers, and IT staff contributes to the system design.

Systems Development Techniques and Tools

⦿ **MODELIING**

⦿ Modelling produces a graphical representation of a concept or process that systems developers can analyze, test, and modify.

⦿ A system analyst can describe and simplify an information system by using a set of business, data, object, network, and process models.

⦿ A business model, or requirements model, describes the information that a system must provide.

⦿ A data model describes data structure and design.

⦿ An object model describes objects, which combine data and processes.

⦿ A network model describes the design and protocols of telecommunications links.

⦿ A process model describes the logic that programmers use to write code modules.

⦿ Although the models might appear to overlap, they actually work together to describe the same environment from different points of view.

Systems Development Techniques and Tools

- **PROTOTYPING**

- Prototyping tests system concepts and provides an opportunity to examine input, output, and user interfaces before final decisions are made.

- A prototype is an early working version of an information system.

- Just as an aircraft manufacturer test a new design in a wind tunnel, systems analysts construct and study information systems prototypes.

- A prototype can serve as an initial model that is used as benchmark to evaluate the finished system, or the prototype itself can develop into the final version of the system.

Systems Development Techniques and Tools

⦿ **PROTOTYPING**

⦿ Either way, prototyping speeds up the development process significantly.

⦿ A possible disadvantage of prototyping is that important decisions might be made too early, before business or IT issues are understood thoroughly.

⦿ A prototype based on careful fact finding and modelling techniques, however can be an extremely valuable tool.

Systems Development Tools

- **COMPUTER-AIDED SYSTEM ENGINEERING (CASE) TOOLS**

- Computer-aided systems engineering (CASE), also called computer-aided software engineering, is a technique that uses powerful software, called CASE Tools, to help system s analyst's develop and maintain information systems.

- CASE tools provide an over all framework for systems development and support a wide variety of design methodologies, including structured analysis and object-oriented analysis.

- Because CASE tools make it easier to build an information system, they boost it productivity and improved the quality of the finished product.

Systems Development Tools

- **COMPUTER-AIDED SYSTEM ENGINEERING (CASE) TOOLS**

- In addition to traditional CASE tools system developers often use project management tools, such as Microsoft Project, and special – purpose charting tools, such as Microsoft Visio

- A system analyst's can use Visio to create many different types of diagrams, including block diagrams, Building plans, forms and charts, maps, network diagrams, and organization charts.

Systems Development Methods

- There are various methods for developing computer-based information systems.

- Structured analysis is the most popular method, but a newer strategy called Object-oriented Analysis and Design also is used widely.

- Each method offers many variations.

- Some organizations develop their own approaches or adopt methods offered by software suppliers, CASE tool vendors, or consultants.

- Most IT experts agree that no single, best system development strategy exists.

- Instead, a systems analyst should understand the alternative methodologies and their strengths and weaknesses.

Systems Development Methods

◉ **STRUCTURED ANALYSIS**

◉ Structured analysis is a traditional systems development technique that is time-tested and easy to understand.

◉ Structured analysis uses a series of phases, called the systems development cycle (SDLC), to plan, analyze, design, implement and support an information system.

◉ Although structured analysis evolved when most systems were based on mainframe processing, it remains a dominant systems development method.

◉

Systems Development Methods

- **STRUCTURED ANALYSIS**

- Structured analysis uses a set of processes models to describe a system graphically.

- Because it focuses on processes that transform data in useful information, structured analysis is called a <u>process-centered technique</u>.

- In addition to modelling the processes structured analysis includes data organization and structure, relational database design and user interfaces issue.

- Process modelling identifies the data flowing into a process, the business rules that transform the data, and the resulting output data flow.

- ◉

Systems Development Methods

- **OBJECT –ORIENTED ANALYSIS**

- Where as structured analysis treats processes and data as separate components, object-oriented analysis (O-O) components data and the process that act on the data into things called objects.

- System's analyst use O-O concepts to model real-world business process and operation.

- The result is a set of software objects that represent actual people, things, transaction, and events.

- Using an O-O programming language, a programmer then writes the code that creates the objects.

- An object is a member of a class, which is a collection of similar objects.

- Objects possess characteristic called properties, which the objects inherits from its class or possess on its own.

⦿

Systems Development Methods

- JOINT APPLICATION DEVELOPMENT AND RAPID APPLICATION DEVELOPMENT

- In the past, IT departments sometimes developed systems without sufficient input from users.

- Not surprisingly, users often were unhappy with the finished product.

- Over time, many companies discovered that systems development teams composed of IT staff, users, and managers could complete their work more rapidly an produce better results.

- Two methodologies became popular: joint application development (JAD) and rapid application development (RAD).

- Both JAD and RAD use teams composed of users, managers, and IT staff.

- The difference is that JAD focuses on team-based fact-finding, which is only one phase of the development process, while RAD is more like a compressed version of the entire process.

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Systems Development Methods

- **OTHER DEVELOPMENT STRATEGIES**

- In addition to structured analysis and O-O methodologies, you might encounter other systems development techniques.

- For example Microsoft Offers an approach called **Microsoft Solution Framework (MSF)**, which document the experience of its own IT teams.

- Using an MSF, systems analysts design a series of models, including a risk management model; a team model, and a process model, among others.

- Each model has a specific purpose and output that contributes to the overall design of the system.

Systems Development Methods

- **OTHER DEVELOPMENT STRATEGIES**

- Although the Microsoft processes differ from the SDLC phase-oriented approach, MSF developers perform the same kind of planning, ask the same kinds of fact-finding questions, deal with the same kinds of design and implementation issues, and resolve the same kinds of problems.

- MSF uses O-O analysis and design concepts, but also examines a broader business and organizational context that surrounds the development of an information system.

Systems Development Methods

⦿ **Agile development methodology**

⦿ Teams use the agile development methodology to minimize risk (such as bugs, cost overruns, and changing requirements) when adding new functionality.

⦿ In all agile methods, teams develop the software in iterations that contain mini-increments of the new functionality.

⦿ There are many different forms of the agile development method, including scrum, crystal, extreme programming (XP), and feature-driven development (FDD).

⦿

Systems Development Tools

- To understand user's requirements, there are two aspects:
- 1. Understanding the flow of documents in an organization.
- 2. Understanding the rules used to process data.
- Important tools used to assist system analysis are:

1. Data flow Diagrams (DFDs) which specify the origin of data and how they flow through a system and where they are processed.

2. Decision Tables, which are used to specify processing rules in a concise and easily understood form.

3. Decision Tree helps to show the paths that are possible in a design following an action or decision by user.

Systems Development Tools

4. <u>Structured English</u> attempts to describe verbal statements made in natural English more precisely using ideas of logic and block structuring as in programming languages.

5. <u>Data Dictionary</u> used to document all data records flowing in the system.

⊙ Besides the above tools a system analyst should know the use of modern tools such as prototyping systems, spread sheets, database systems, report generators and graphics systems.

Role of System Analyst

- A **systems analyst** is an information technology (IT) professional who specializes in analyzing and designing information systems.

- Systems analysts assess the suitability of information systems in terms of their intended outcomes and liaise with end users, software vendors and programmers in order to achieve these outcomes.

- A systems analyst is a person who uses analysis and design techniques to solve business problems using information technology.

- Systems analysts may serve as change agents who identify the organizational improvements needed, design systems to implement those changes, and train and motivate others to use the systems.
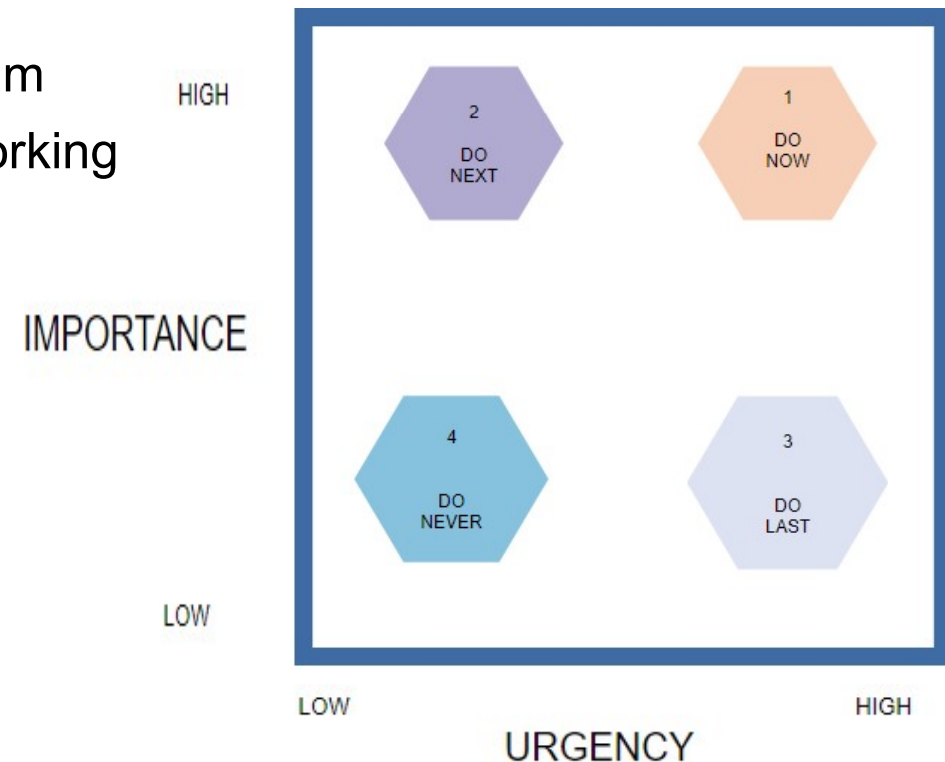
Role of System Analyst

◉ **Defining user requirements**

◉ A systems analyst has the responsibility of observing users and their requirements from a system.

◉ This can be done through conversational interviews with the users and anticipating the new needs of users from already existing systems.

◉ This helps in identifying the requirements from new systems via examination of current systems and updating configurations for new systems.
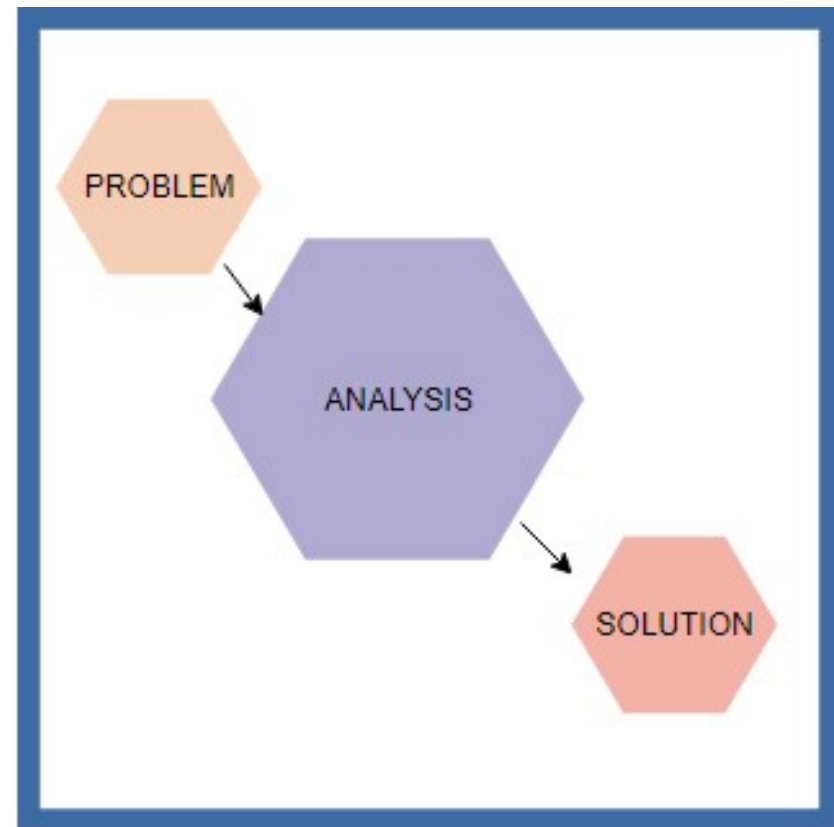
Role of System Analyst

- **Prioritizing requirements**

- Systems analysts use social and analytical skills in prioritizing system specifications. Most enterprise systems have a lot of requirements but these are frequently constrained due to a lack of resources.

- Different users in an organization have different needs from a system, but a systems analyst helps to prioritize the user's needs in accordance with the available resources.

- This helps to ensure that maximum productivity is obtained from a working system.
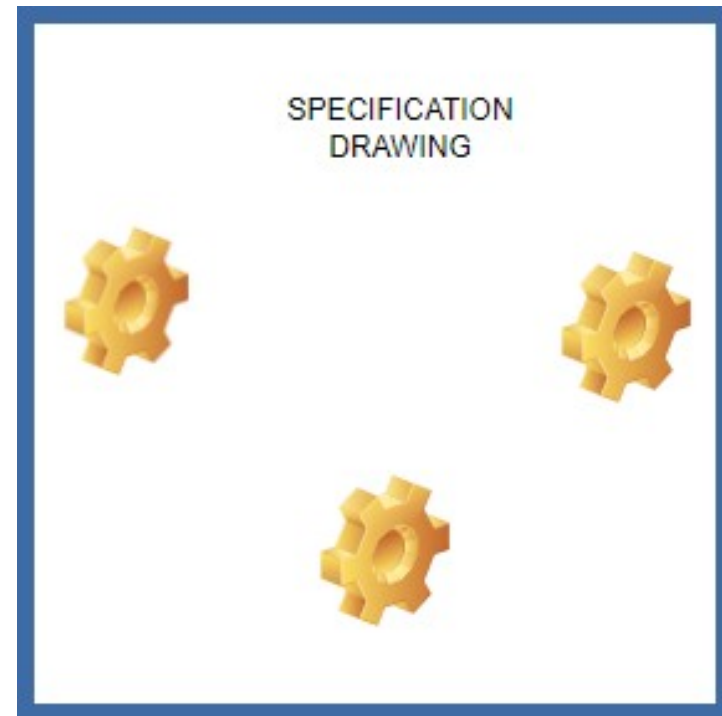
Role of System Analyst

⦿ **Problem analysis**

⦿ Systems analysts tend to observe data and facts about an operating business. They use technological techniques in identifying problems and removing unnecessary details so as to enable the fulfilment of real needs from a system.

Role of System Analyst

Drawing specifications

◉ Systems analysts also assign the relevant responsibilities of managing system requirements to the right individuals and team members.

◉ They specify programming tasks to programmers and managerial tasks to managers.

◉ They also document these system tasks in detail, using specification documents, and review the output to ensure that it matches the required specification.

SPECIFICATION
DRAWING

Role of System Analyst

⊙ **System design and evaluation**

⊙ Systems analysts guide the development of every system in an organization, from the specification of requirements to the designing of the system itself.

⊙ They ensure that the built systems correspond to the system specifications by carrying out system evaluation.

⊙ They also test the performance of the built system to ensure that it meets the required performance as specified.

Role of System Analyst

- **Keeping up to date with technological advancements**

- Systems analysts are real agents of change in the use of technology in an organization.

- They tend to observe the overall use of technology in an organization and work to keep up with evolving technological demands by replacing outdated technologies with the latest ones.

- They frequently encounter the challenge of having the users accept the changes and, therefore, involve the users in the development process.

- They do this by conducting interviews with the systems' users and identifying possible user needs and requirements in order to integrate the latest technology for users.

- From time to time, systems analysts check to make sure that an organization is working with the latest technological systems, thus giving rise to high productivity and output.

Role of System Analyst

⊙ **Skills of a systems analyst**

⊙ <u>Communication</u>

⊙ A systems analyst works with a lot of people in varying departments in an organization. They need good communication skills to delegate roles and communicate problems that they identify.

⊙ <u>Critical thinking</u>

⊙ Systems analysts go through a lot of analytical tasks. They need good critical thinking abilities in order to help them in problem analyses, system development, and implementation.

⊙ <u>Business analytics</u>

⊙ A systems analyst mostly uses information technology knowledge in solving business problems. The knowledge of business analysis is of huge importance to a systems analyst as it helps one attain competence in problem handling.

Role of System Analyst

- **Skills of a systems analyst**

- Technical analysis

- A systems analyst ought to be good in the knowledge of certain technical areas like programming languages, information technology infrastructure, and database administration.

- Management

- A systems analyst works with several individuals of different departments in an organization. They need good managerial skills for effective resource, including human resource, management.