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INFORMATION SYSTEM CONCEPT

CHAPTER 1

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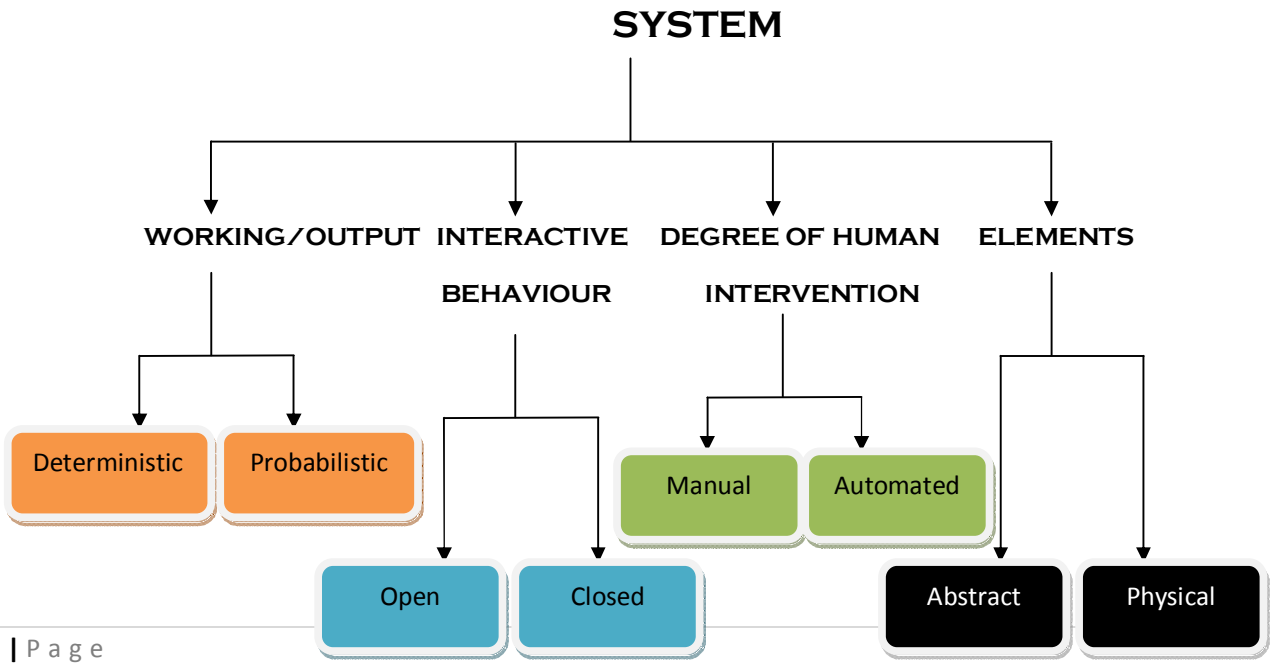
INFORMATION SYSTEM CONCEPT

1. DEFINITION OF A SYSTEM:

Orderly arrangement of set of interrelated & independent, Elements that operate collectively to accomplish common purpose or goal. A computer based information system is a **collection of the people, software, hardware, data and procedures.**

2. TYPES OF SYSTEM:

CODE TO REMEMBER: W.I.D.E.



Now following types of system are being given in detail:

According to output

Deterministic

1. This system operates in a predictable manner.
2. Wherein the interaction among the parts is known with certainty.

Probabilistic

1. This system operates in probable behaviour, but certain degree of error is always there.
2. Prediction in error is in respect of what system will do

According to interactive behaviour

Open

1. Here system interacts with its environment by taking input & returning output.
2. Changes itself to match its environment.
3. Example: **Business system, educational system**

Closed

1. Here system does not interact with environment nor changes itself.
2. Such system is insulated from the environment.
3. Such system will finally run down or become de-organised.

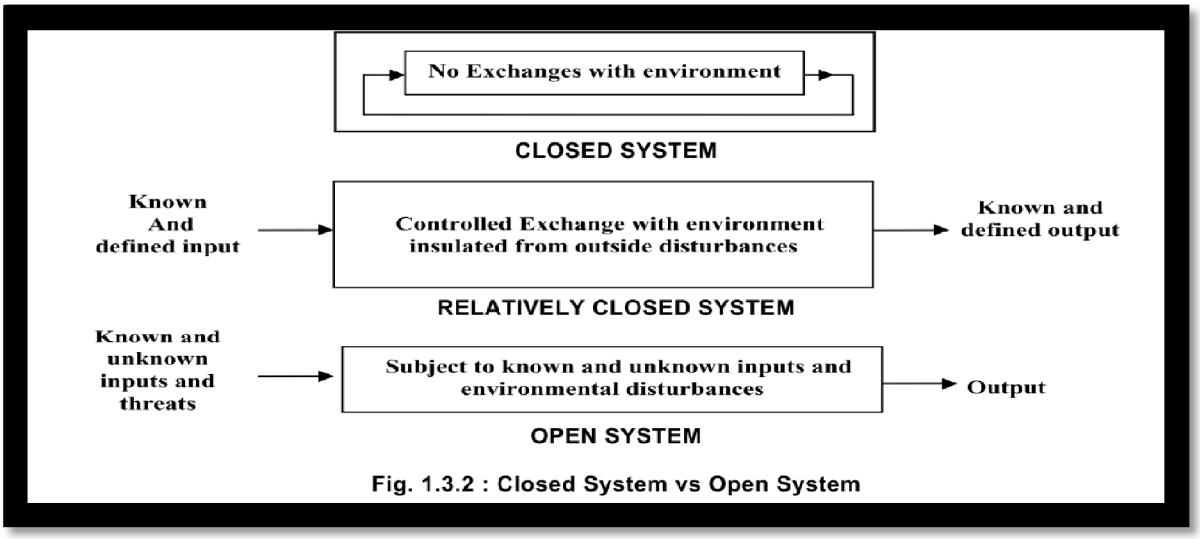
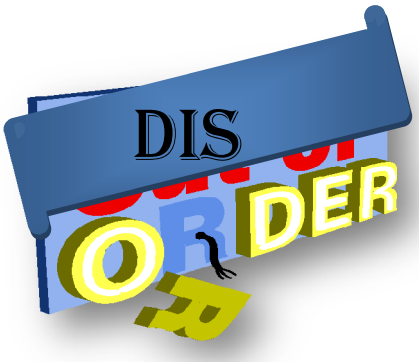


Fig. 1.3.2 : Closed System vs Open System



ENTROPY

It is quantitative measure of disorder in a system. To repair such disorder requires inputs of matter and energy. Such maintenance input is termed as **NEGATIVE ENTROPY.**

ACCORDING TO DEGREE OF HUMAN INTERVENTION

MANUAL

1. Here the data collection, manipulation, maintenance & final reporting are carried out **MANUALLY OR BY HUMAN EFFORTS.**

AUTOMATED

1. Here computers and microprocessors are used to carry out all the tasks.

REASON FOR USING COMPUTER IN THE BUSINESS AREA

A. **Handling huge volume of data.**

B. **Quick retrieval of information.**

C. **Quick & efficient data movement.**

D. **Storing enormous volume of data.**

ACCORDING TO ELEMENTS

ABSTRACT

1. Conceptual model.
2. Orderly arrangement of the interdependent ideas.

PHYSICAL

1. It is a set of all tangible elements that operating together to accomplish the goals.

3. GENERAL MODEL OF A SYSTEM:

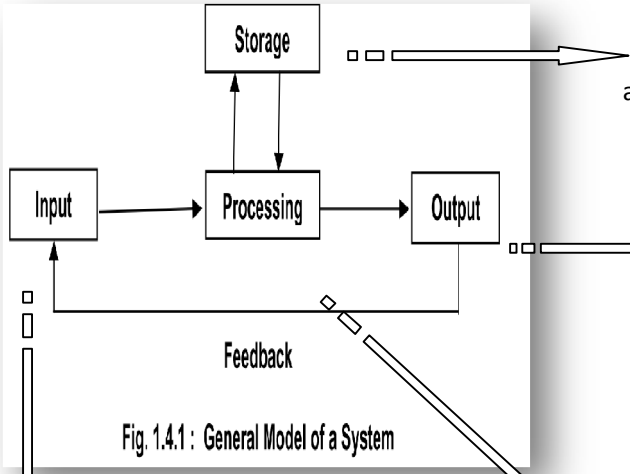


Fig. 1.4.1 : General Model of a System

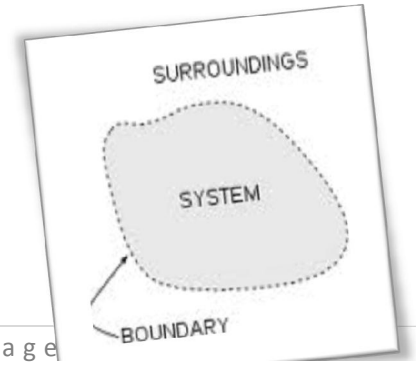
Means holding information for use afterwards

It is information flowing out of system

It is action of manipulating input into useful form

It is data flowing into system from outside.

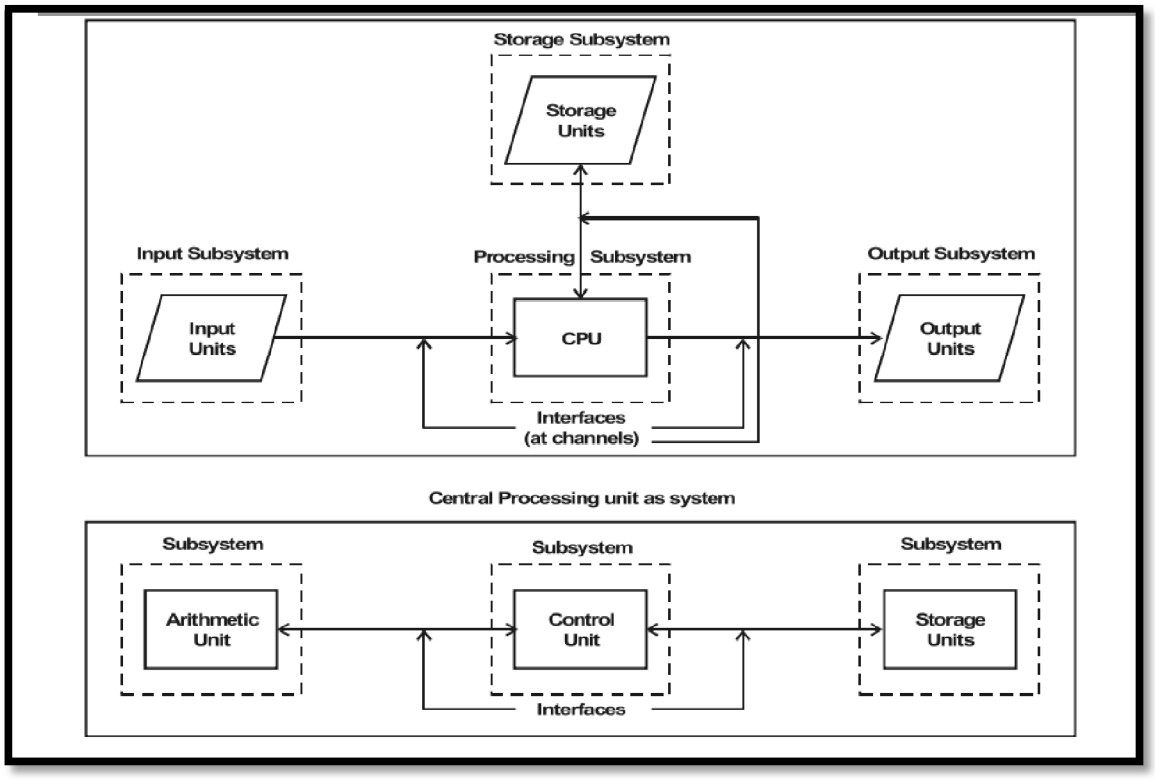
4. SYSTEM ENVIRONMENT:



5. THE EXTERNAL WORLD WHICH IS OUTSIDE THE SYSTEM BOUNDARY IS KNOWN AS **SYSTEM ENVIRONMENT.**

5. SUB-SYSTEM:

A sub system is a part of a larger system. The interaction between subsystems is termed **as INTERFACES.** Interface occurs at boundary and take the form of inputs & outputs.



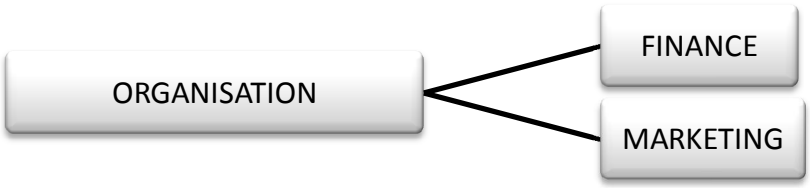
SOME IMPORTANT DEFINITIONS TO BE READ:

1. SIMPLIFICATION: **It is a process of organising subsystems to reduce the number of interconnections.**

2. DECOUPLING: **If 2 different sub systems are connected tightly then strong coordination required between them.**

6. SUPRA SYSTEM:

Refers to the entity formed by a system and other equivalent systems with which it interacts. It is just an example that how organisation is divided into functional areas:



7. INFORMATION:

"INFORMATION" is **DATA** that has been represented & processed in a form that is meaningful to **the recipient.**

Following are the attributes of the INFORMATION:

CODE TO REMEMBER: V^2 - -TQM & RD - - FR CAP

We **(V^2)** - done **TQM & RD** (TQM & R&D kari) - **FR**(For) - **CAP**

1. **V**alue of information**:**

- It is difference between the value of the :

Change in decision behavior caused by information & cost of information

2. **V**alidity:

- Measures closeness of information with purpose for which it was collected.

3. **T**ransparency:

- It means that information must reveal directly what is imperative for decision making.

4. **Q**uality:

- Refers to correctness of information.
- Personal interest may destroy the quality of the information.

5. **M**ode & Format:

- In business following are the modes of communication of information:

Visual, verbal or in written form

- Format must be designed in such a way that it assists DECISION MAKING.
- Format must be simple, relevant & highlight important points.

6. **R**ate:

- ♠ It denotes the rate of transmission/reception of information.
- ♠ Useful information is one which is transmitted in time required by receiver.

7. **D**ecay:

- ♠ Value of information decay with the time & usage.
- ♠ For instance **information on the net is regularly updated.**

8. **F**requency:

- ♠ Frequency with which information is transmitted affects its value.
- ♠ For instance **weekly report** may show little changes **but monthly** report may depict high changes.

9. **R**eliability:

- ♠ It is measure of failure or success of using information for decision making
- ♠ Information is reliable if it leads to correct decision making.

10. **C**ompleteness:

- ♠ The information must be complete as possible.
- ♠ With complete information, manager is able to decide whether particular matter is in favour of the company or not.

11. **A**vailability:

- ♠ It is an important property of information.
- ♠ Information not available is useless.
- ♠ Information can be derived from database in form of **facts & figures.**

12. **P**urpose:

- ♠ Information should have value when transmitted to receiver.
- ♠ Purpose of information depends on the type of activities performed by the organisational person(s).
- ♠ Basic purpose is to :

Inform, evaluate, persuade & organize

8. TYPES OF INFORMATION:

Information can be divided broadly into 2 categories:

INTERNAL INFORMATION

EXTERNAL INFORMATION

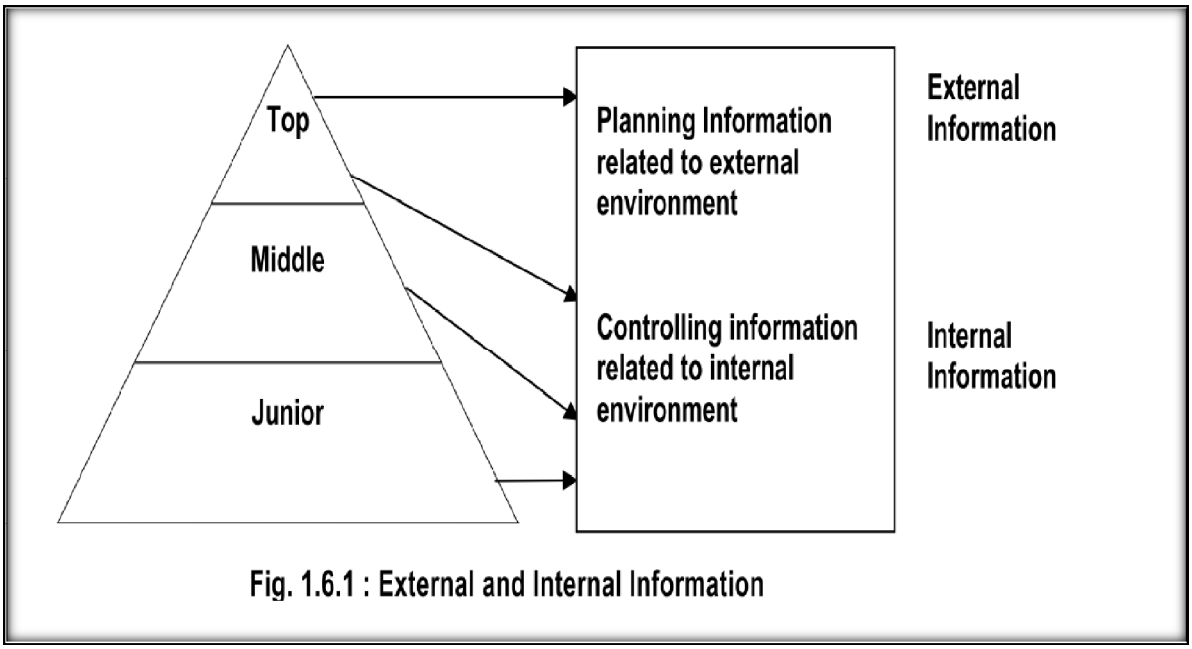


Fig. 1.6.1 : External and Internal Information

INTERNAL INFORMATION: Information that has been generated from the operations of the organisation at various functional areas. Example: **production figures, accounts, material etc.**

EXTERNAL INFORMATION: Information is collected from the external environment of the business organisation. Such information is considered to affect the organisational performances from outside organisation.

9. ROLE OF INFORMATION SYSTEM:

INFORMATION SYSTEM can be considered as an arrangement of number of elements that provide effective information for decision making.

Following are the important implications of the information system:

CODE TO REMEMBER: S.U.C.I.D.

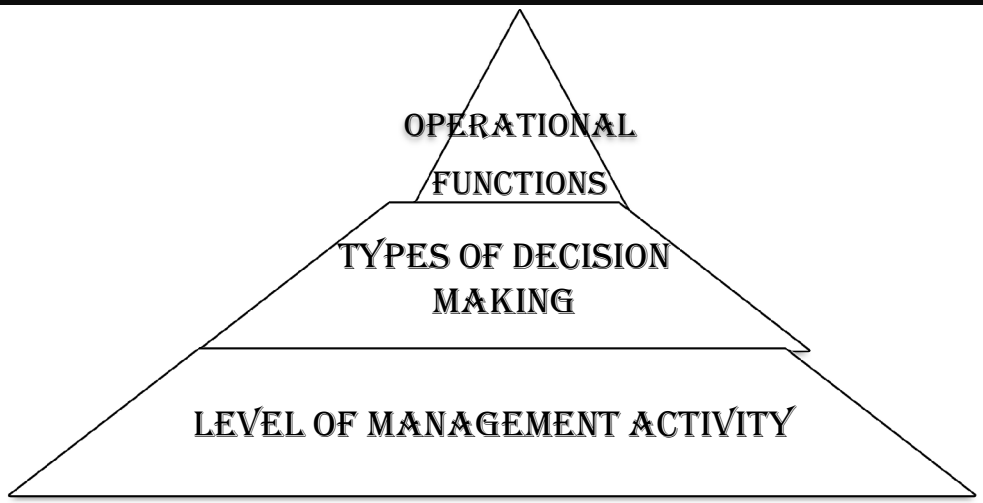
No information system means **SUCID**E.

1. **S**trategy formulation:
   - *Information is viewed as process & is integrated to form strategies.*
2. **U**nusual transaction:
   - *Knowledge gathered through information system may be utilized by the managers in unusual situations.*
3. **C**ompetitive Edge:
   - *Based on well designed information system, organization will gain edge in the competition.*
4. **I**nnovative ideas:
   - *Proper information system provides new innovative ideas for solving the critical problems.*

5. Decision effectiveness:

- *Information system helps manager in effective decision making to achieve organisational goals.*

10. FACTORS ON WHICH INFORMATION REQUIREMENT DEPEND:



A. OPERATIONAL FUNCTION:

i. Grouping of several functional units on basis of related activities into a sub-system is termed as **operational function.**
ii. For instance, **marketing** includes **market analysis, advertising etc.**
iii. Information requirement depends upon operational function.

B. TYPES OF DECISION MAKING:

i. This can be categorised in 2 decision:

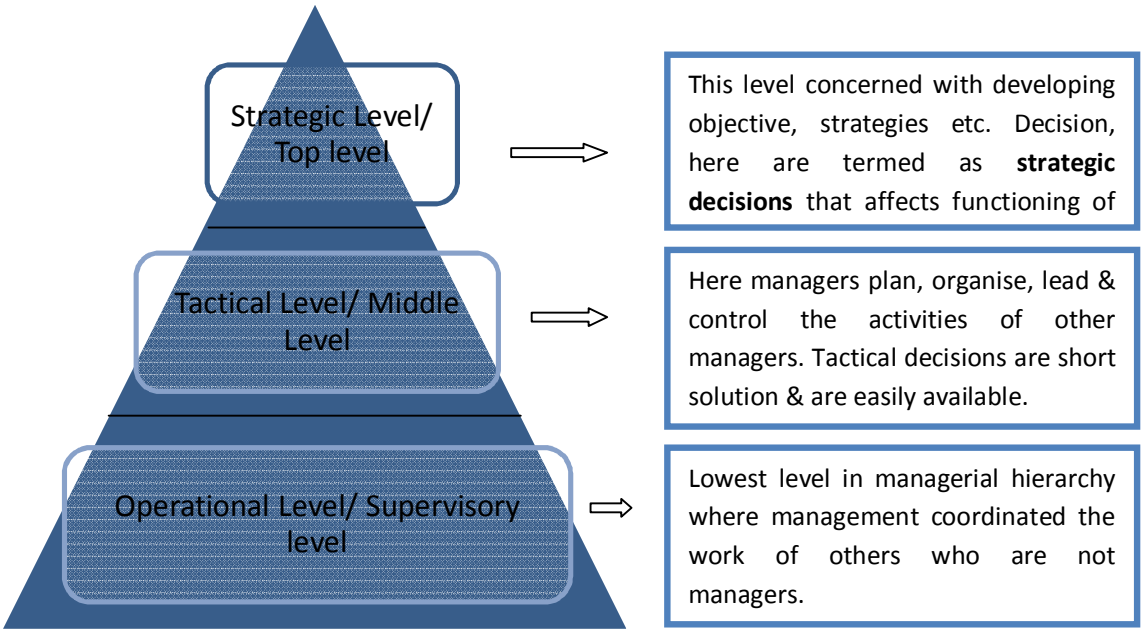
PROGRAMMED DECISION ⇒ Here decisions are made on problems by referring to the predetermined set of procedures.

Programmed decisions are made for the recurring problems by applying well defined procedures.

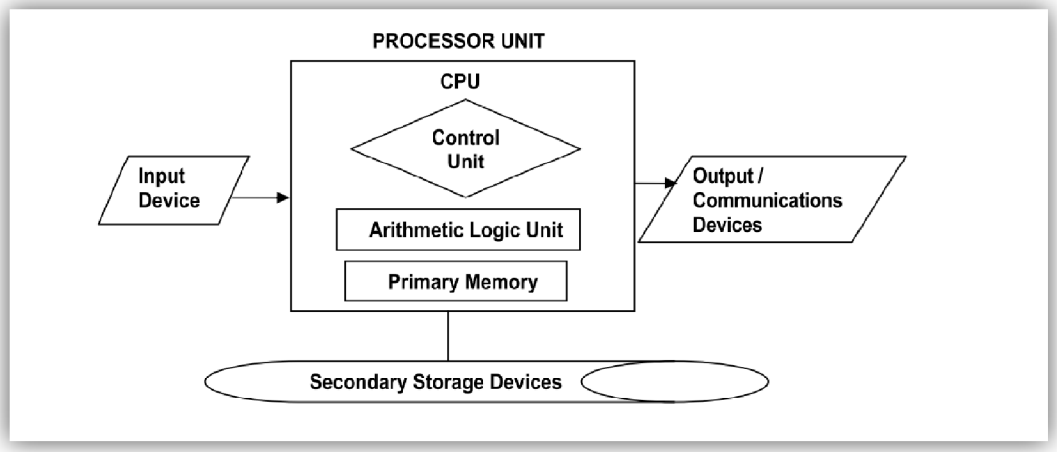
NON- PROGRAMMED DECISION ⇒ Those decisions which are made on situation & problems which are non-repetitive.

These decisions are not made by referring to pre determined rules and procedures.

C. LEVEL OF MANAGEMENT ACTIVITY:



11. COMPONENT OF COMPUTER BASED INFORMATION SYSTEM:



HARDWARE: Refer to machinery including computer & all of its support equipment.

SOFTWARE: Refer to computer programs (**machine readable instruction)** that direct circuitry within the hardware parts.

DATA: Facts that are used by programs to produce information.

PROCEDURE: These are policies that govern the operation of a computer system.

PEOPLE: People are the component that influences the success & failure of the information system.

12. Characteristics of COMPUTER BASED INFORMATION SYSTEM:

I am hereby citing the characteristics of the **CBIS:**

1. All systems work for predetermined objectives & is designed & developed accordingly.
2. All sub-system in a system interacts with each other and can't work in isolation.
3. The sub systems interact with each other to accomplish the business objective.

Major areas of **computer based applications**:

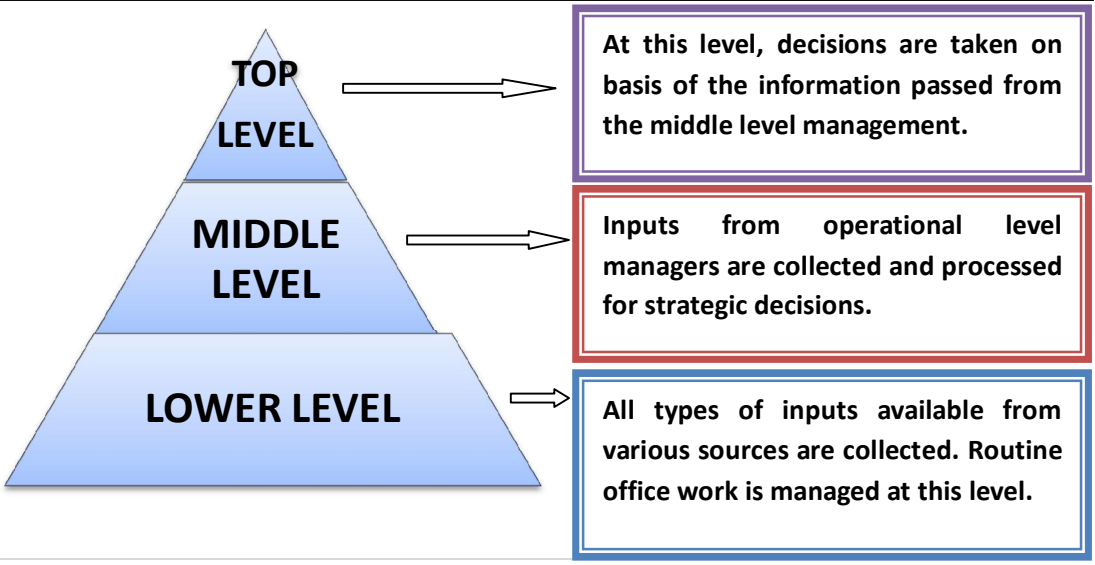
FIANANCE & ACCOUNTS

PRODUCTION & MANUFACTURING

INVENTORY & STORES MANAGEMENT

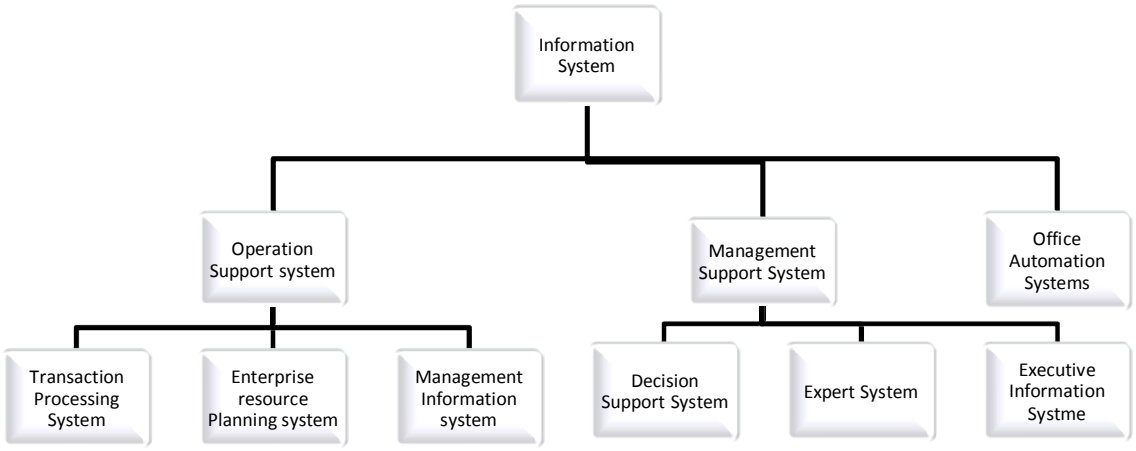
HUMAN RESOURCE MANAGEMENT

13. TYPES OF INFORMATION SYSTEMS AT DIFFERENT LEVELS:



14. CLASSIFICATIONS OF INFORMATION SYSTEM:

BASIS- KIND OF ACTIVITIES IN BUSINESS ENTE



1. OPERATION SUPPORT SYSTEM:

TRANSACTION PROCESSING SYSTEM

DEFINITION & MEANING:

- ✓ It is present at the lowest level of the management.
- ✓ TPS manipulates data from business transactions to generate various information for external use.
- ✓ TPS involves following activities:
- ■ **Capturing data to organise in files/database.**
- ■ **Processing of files/database.**
- ■ **Generating reports.**
- ■ **Processing of the queries.**

TPS COMPONENT:

Input	Processing	Storage	Outputs
Customer orders, sales. Slips, PO's etc are the physical evidences of inputs into **TPS.**	It involves use of journals to provide chronological records of inputs.	Ledgers & files provide storage of data on both manual/computerised system.	Any document which is generated in system is output.

FEATURES OF TRANSACTION PROCESSING SYSTEM:

CODE TO REMEMBER: B.A.D.I.

A. **B**enefits are easily measurable:

TPS reduce the work load of people by automating the operations. Most of benefits are visible & measurable & easy to conduct cost benefit analysis.

B. **A**utomation of basic operations:

TPS aims at automating the basic operations & vital in day-to-day operations too. TPS is the vital source of up-to-date information.

C. **D**ata Volume:

TPS consist of large volume of data & requires greater storage capacity.

D. **I**nput for other system:

TPS is basic source of internal information for other system. Organisation relies heavily on TPS information system.

MANAGEMENT INFORMATION SYSTEM

DEFINITION & MEANING:

DAVIS & OLSON:

"An integrated user machine system designed for providing information to support operational control, management control & decision making functions in an organisation."

- MIS supports managers at different levels,
- To take **strategic management decision to,**
- **Fulfil the organisational goals.**

Management	Management refers to **set of functions designed to initiate & coordinate group efforts to pursue certain goals of the organisation.**
Information	It can be defined **as sets of facts, figures & symbols processed for certain decision making situation.**
System	A system is defined as **a set of related components, activities & processes interacting together to accomplish common objectives.**

CHARACTERISTIC OF MIS:

CODE TO REMEMBER: M-CC-MIS-HC

M (Maine)—**CC** (carbon copy) kari of **MIS** to **HC** (High Court)

A. **M**anagement Oriented:

Efforts for developing information system should start from appraisal of management needs & keeping in mind the objective of organisation.

B. **C**ommon Data flow:

It means use of **common inputs, processing & output procedures.** System analyst tries to obtain minimum inputs, data processing procedures to provide useful information. This eliminates **duplication in data collection.**

C. **C**ommon Database:

It is defined as **"SUPER-FILE"** which **consolidates & integrates** data records stored in many places. Since all data is available at a place hence **avoiding duplication of data storage, updation, deleting & protection.**

D. **M**anagement directed:

Management should actively **direct the system development efforts**. It is imperative for the management to devote their sufficient time on designing the system.

E. **I**ntegrated:

An information system **must be integrated** so as to ensure that **all the functional & operational information sub systems are tied together**. An integrated system ensures correct information.

F. **S**ubsystem concept:

Information system must be broke down in to digestible sub-systems which can be implemented one by one.

G. **H**eavy planning element:

A **MIS** usually takes 3-5 years to get established firmly in the organisation. As such **MIS** designer must be present in **MIS development.**

H. **C**omputerised:

Use of computers efficiently increases the effectiveness of the system. MIS with computerisation helps in accuracy & consistency in processing of data.

MISCONCEPTION OF MIS:

A. Misconception about **MIS** is that it is all about computers. **MIS** may or may not be computer based. Computer is just a tool. **MIS** installation mainly depends on the size of the organisation & its nature.

B. In **MIS** it is not the quantity of data that matters but it is the **relevance of data** that has to be **considered.** Data provided in the reports must meet the requirement of the managers in decision making.

C. **Accuracy** of the information is of prime importance. But it is not imperative that at all level of the management needs accuracy. For instance, **in decision making cost in precise rupee term** may not be required. **Estimation of the project work** will be sufficient.

PRE-REQUISITES OF AN EFFECTIVE MIS:

CODE TO REMEMBER: DM -- CES

DM (**D**irect **M**aterial) par **CES**S

1. **D**atabase:

It is defined as **"SUPER-FILE"** which **consolidates & integrates** data records stored in many places. Data in database can be accessed by the required person easily. Following are the characteristic of the database:

- It is user oriented.
- Available to only authorised persons.
- It is controlled by seperate authority.
- Source of common Data.

Database is sub-divided into major information sub-sets needed to run a business.

2. Management Support:

In order to have effective management information system, support of top management is imperative for the following reasons:

- Subordinate managers are rather lethargic (drowsy).
- Resources involved in MIS are large so has to be viewed carefully by management.

3. Control & Maintenance of MIS:

Control means the operation of the system as it was designed to operate.

Maintenance means improvement in the system.

4. Evaluation of MIS:

MIS aims at providing information to the managers as and when required. This may be possible with by evaluating the MIS and taking appropriate actions thereon. Following points to be considered while evaluation:

- **Examine whether flexibility exists in the system.**
- **Ascertaining the views of the users & the designer about the system.**
- **Guiding the appropriate authority to take necessary steps for maintaining the MIS.**

5. Staff:

MIS has to be managed by the qualified staff. These staffs include the experts in their respective field. The staffs include 2 categories of officers: **SYSTEM & COMPUTER EXPERTS AND MANAGEMENT EXPERTS.**

CONSTRAINTS IN OPERATING MIS:

CODE TO REMEMBER: C.S. – S.E.

Constraints can be solved: **CS...** (Company Secretary) **– S.E.**

1. Lack of Cooperation from staff:

Non-availability of cooperation form staff is the biggest constraint in operating MIS. However this can be handled by the utility of the system through lectures, showing films etc.

2. Sub-system selection problem:

Expert faces the problem of selecting the sub-system of MIS to be installed. This priority is done by evaluating the need and importance of the function.

3. Standardisation absence:

Due to the varied business objectives of the various businesses, it is difficult for the expert to design & implement the MIS on standard norms.

4. Expert non availability:

The most important constraint in operating the MIS is the **non availability of the experts** who can **diagnose** the problems. The one way out for this is grooming the internal staff.

EFFECT OF USING COMPUTERS FOR MIS:

CODE TO REMEMBER: I- C.A.P.E.

I go to **CAPE** town

1. Integrating of working of sub-system:

A good MIS structure is one which is consolidation of various information sub-systems e.g. **production, material, finance etc.** Each of the sub-system requires to provide the requisite information to the management for operation, control & planning.

2. Comprehensive information:

Through MIS experts are able to provide comprehensive information to the management on business matters.

3. Analysis scope widened:

Computers can provide multiple types of information accurately in no time. Such multiple information enables the executives to carry out a detailed analysis of the problems.

4. Processing speed & data retrieval:

Computer with its fast processing capabilities & systematic storage of the information enables the business to provide quick information in no time.

5. **E**ffectiveness of Information system increases:

Information received in time is of immense value. Through the use of computer technology it is possible to share information timely & accurately. Without the computer technology it would not have been possible.

LIMITATIONS OF MIS:

CODE TO REMEMBER: F.Q. - - N - - H.I.N.T

Fast **Q**uestions a**N**d **HINT**

1. **F**requent Changes:

Effectiveness of MIS may decrease due to frequent changes in top management, organisational structure & operational team.

2. **Q**ualitative factors ignored:

MIS don't take in to account the qualitative factors such as morale, attitude of members. However such factors may impact the organisation by way of crucial decision making process.

3. **N**on-substitute:

MIS is not a substitute of the effective management that is it cannot replace the judgement qualities of the management people. It is just an important tool in the hands of the management for decision making & problem solving.

4. **H**oarding information:

The effectiveness of the MIS is reduced where the culture of hoarding information is there & not sharing with others.

5. **I**nflexibility:

MIS may not flexible to quickly update itself with the changing need of the business.

6. **N**on-programmed decisions:

MIS may not prove useful for making non programmed decision. Such type of decision is of non routine.

7. **T**ailor(not) made:

MIS is not tailor made information package suitable for every types of decision.

2. MANAGEMENT SUPPORT SYSTEM:

DECISION SUPPORT SYSTEM

DEFINITION & MEANING:

- ✓ Specific class of computerised information system,
- ✓ that supports business decision making activities.
- ✓ Helps decision maker compile useful information to identify problems & make decision.

DSS helps in solving SEMI STRUTCURED & UNSTRUCTURED problems.

1. Those decisions for which information obtained from a computer system is only a portion of the total knowledge needed to make the decision.

CHARACTERISITIC OF DSS:

A. Support semi structured or unstructured decision making.

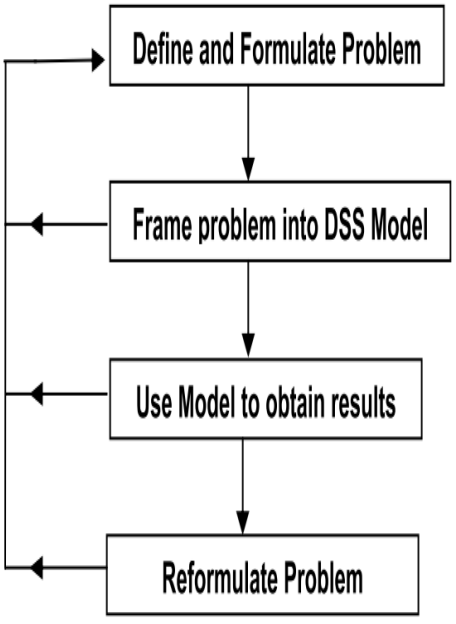


Figure depicts how the semi structured problem is solved:

- Firstly problem is defined & formulated.
- Then modelled with the DSS software.
- Model is run on computer to provide results.

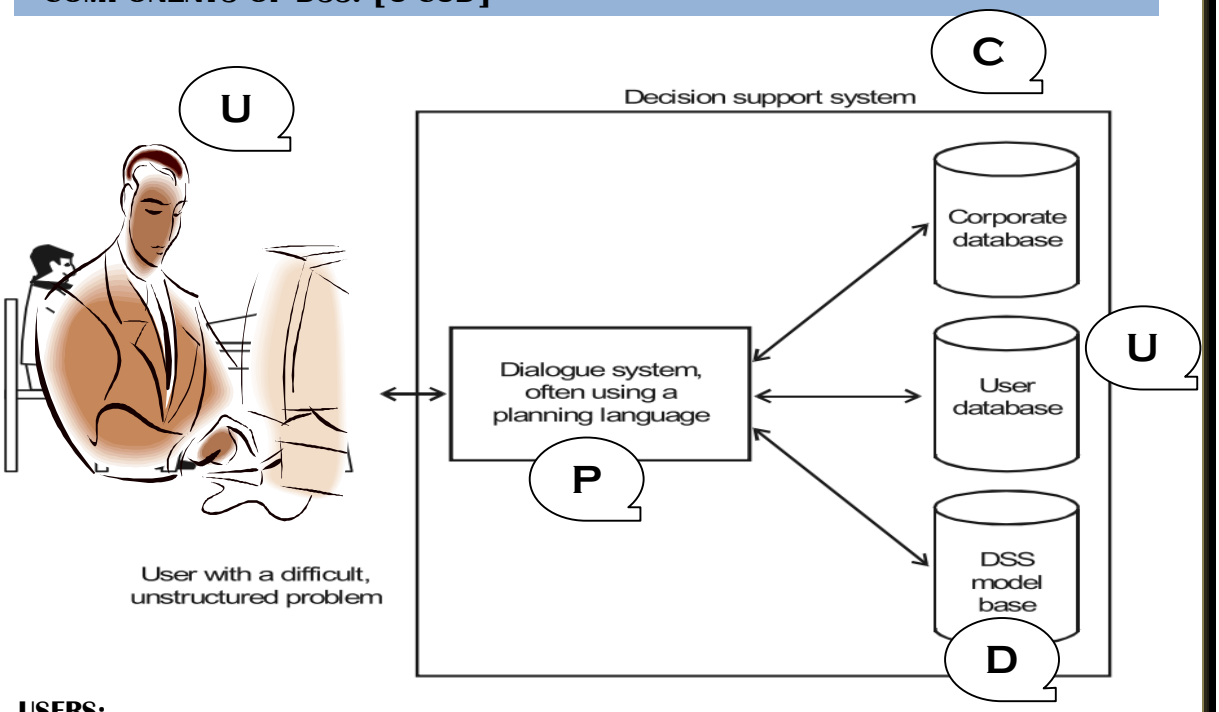
B. <u>They are flexible enough to respond to changing needs of the users.</u>

- Semi structured & unstructured decisions are not confined to pre determined rules.
- As such **DSS** provides enough flexibility to users so that they can from their own models.

C. <u>They are easy to use.</u>

- DSS are built & used by user rather than computer professionals,
- As such it is easy to use by the users.

COMPONENTS OF DSS: [U-CUD]



<u>USERS:</u>

Following are the users:

These are the users with the basic knowledge. The manager may be at any level of the management.

These are more details oriented & willing to work in a more complex scenario.

1. **DATABASES:**

DSS includes more than 1 database containing routine & non-routine data from both external & internal sources.

This data base may be implemented at THREE levels:

A. PHYSICAL LEVEL: Involves implementation of database on **Hard Disk.**

B. LOGICAL LEVEL: It is designed by the professional programs who have complete knowledge of Data Base Management System..

C. EXTERNAL LEVEL:

The logical level defines schema which is divided into smaller units known as **sub-schema** containing all relevant data needed by a manager.

2. **PLANNING LANGUAGE:**

2 TYPES of planning languages are used in decision support system:

GENERAL PURPOSE PLANNING LANGUAGES

- **Allow users to perform many routine tasks.**
- **These languages help the users to tackle broad range of budgeting, forecasting etc.**
- **For example:** languages used in the spreadsheets(Ms Excel)

SPECIFIC PURPOSE PLANNING LANGUAGES

- **Allow users to perform limited tasks.**
- **However they perform the tasks in better manner than that of general purpose planning languages.**
- **For example:** Statistical languages used for that purpose only.

3. **MODEL BASE:**

- Planning languages help the users to maintain a link between **MODELBASE.**
- **Modelbase** is **"BRAIN"** of **DSS** which performs data manipulations & computation of data.
- Examples: **Cross tabulation, time series analysis, linear programming etc.**

EXECUTIVE INFORMATION SYSTEM

DEFINITION & MEANING:

- ✓ It is designed to meet the needs of the top level managers.
- ✓ EIS helps in handling the executive needs for timely & accurate information in a meaningful format.

CHARACTERISTICS OF EIS:

CODE TO REMEMBER: N.I.T. - - D.U.D.E.

1. **N**eed of top executives:

   EIS is computer based information system that serves information needs of top executives.

2. **I**nternet connected:

   EIS get easily connected to the internet.

3. **T**imely information:

   EIS provide access to timely information & direct access to management reports.

4. **D**ecision making easy:

   EIS can be easily given a DSS support for effective decision making.

5. **U**ser –friendly:

   EIS is user friendly supported by graphics, reports etc.

6. **D**ata access:

   EIS is capable of accessing **external & internal Data.**

7. **E**xtraction of summary:

   EIS is capable of **extracting summary data & models.**

EXECUTIVE ROLES & DECISION MAKING:

Executive decisions fall into 3 categories

CHARACTERISTIC OF INFORMATION USED IN EXECUTIVE DECISION MAKING:

CODE TO REMEMBER: D - - S.U.F.I.

1. **D**etails insufficiency:

- ❖ Good decisions can be taken if there is broadened observation of the information & trends.
- ❖ This requires executives to be aware of all the information. However, many executives emphasis on the tiny matter & less information base.

2. **S**tructure (Lacking):

- ❖ Decisions made by executives are relatively unstructured.
- ❖ Here it is not possible to ascertain which data is required & how to prioritise the data available.

3. **U**ncertainty:

- ❖ Executives work in very uncertain atmosphere of business.
- ❖ It is characterised by lack of precedent (past work), and as such the results are not scientifically predictable from the actions.

4. **F**uture orientation:

- ❖ Strategic planning is done keeping in view of future events.
- ❖ However the same should be changed if the organisation changes with time & it is executive responsibility to ensure that organisation commensurate with the time.

5. **I**nformal source:

❖ Executives uses often **informal source of getting information.** For example **televisions, lunch with colleagues of other firm etc.**

CONTENTS OF EIS:

CODE TO REMEMBER: U - - B.E.A.P.

1. EIS must be easy to **U**nderstand. Data should be collected naturally.
2. EIS must be based on **B**alanced view of organisation's objectives.
3. **P**erformance indicators must be in EIS to measure each person contribution.
4. EIS must **E**ncourage management & staff to share ownership of the organisational objectives.
5. EIS information must be **A**vailable to everyone in the organisation.

EXPERT SYSTEM

DEFINITION & MEANING:

✓ Expert systems are software systems that imitate the reasoning process of the human experts.

✓ A characteristic of expert system is the ability to declare or explain the reasoning process which is used to make the decisions.

NEED FOR EXPERT SYSTEM:

■ Expert labor is **EXPENSIVE AND SCARCE.** People having high knowledge of the system & can handle the matters easily.

■ Such human expert's knowledge may not solve the problems all time.

BENEFITS EXPERT SYSTEM:

CODE TO REMEMBER: F.R.I.E.S.

1. **F**ree from fatigue:

Expert systems are not subject to fatigue, emotional or busy.

2. **R**eal life expert:

Expert system put or present in active form so that it just likes analysis by a real life expert solving the problems.

3. **I**nformation preservation:

Expert systems preserve knowledge that might be lost because of any unwanted happening.

4. **E**xpert touch:

Expert systems assist **novices (New to the field)** in thinking the way as experts do.

5. **S**trategic Tool:

Expert system is an effective strategic tool in areas of cutting cost, improving products & marketing products.

QUALITIES THAT GOOD EXPERT SYSTEM POSSESS:

CODE TO REMEMBER: C.E. - - S.A.D

1. **C**omplexity:

   Expert system requires logical inference processing, which may not be handled by conventional **(traditional)** processing systems.

2. **E**xpertise:

   Solution to a problem requires efforts of the experts i.e. only few people possess that knowledge to solve the problem.

3. **S**tructure:

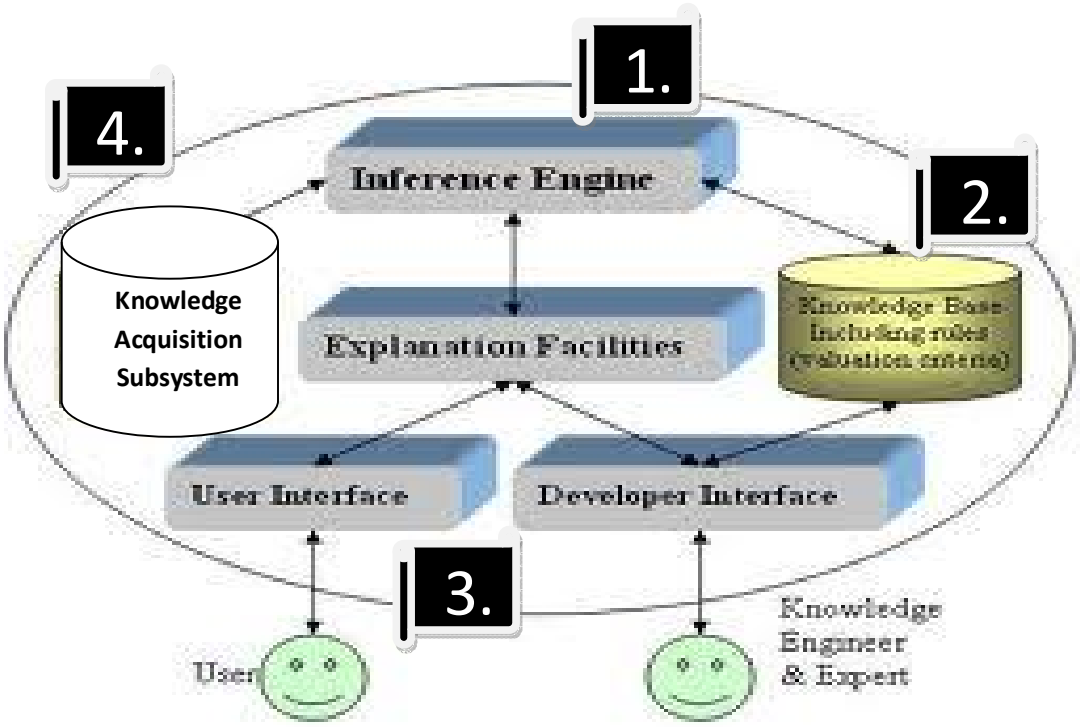
   The system must be capable to **cope with ILL-STRUCTURED, uncertain, missing & conflicting data.**

4. **A**vailability:
   One or more experts are capable of communicating how they are solving the problem to which the expert system will be applied.

5. **D**omain:
   The domain/subject area of the problem is relatively small & limited to a relatively well defined problem area.

COMPONENTS OF EXPERT SYSTEM:

An expert system is typically composed of:



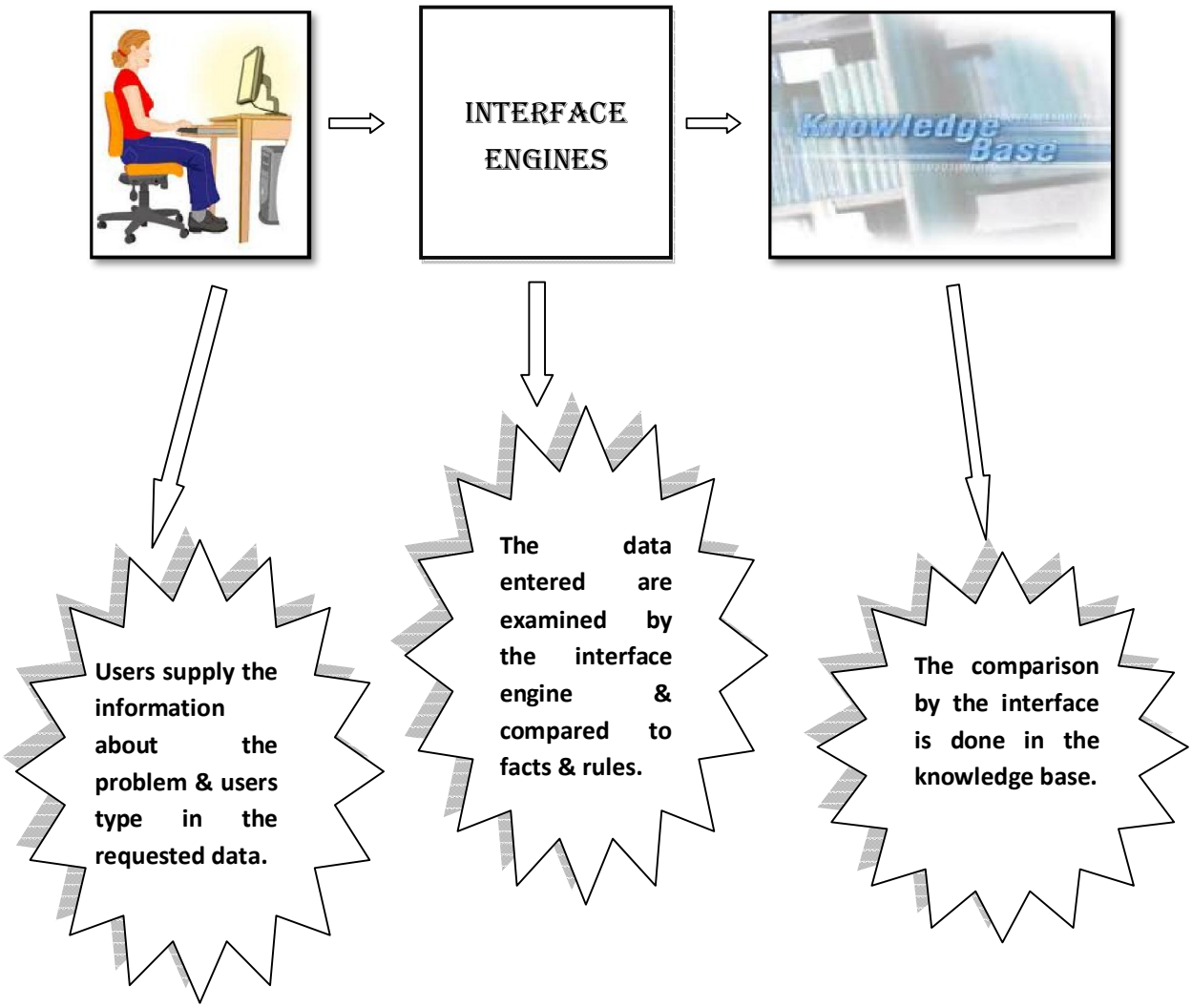
1. **Inference Engine:**
   - ❖ It is the main processing element consisting of systems of programs,
   - ❖ That request data from the users, manipulates knowledge base & provides decision to the users.

2. **Knowledge Base:**
   - ❖ It stores the rules data and relationship that are used to solve problems.
   - ❖ The knowledge acquired from the experts is represented formally.
   - ❖ For example: **Agent may need tax & financial advisor,** so needed 2 KB.

3. **User Interface:**

- ❖ It is the method by which an expert system interacts with users.
- ❖ These can be through:
  - **-- Dialogue Box** **-- Forms**
  - **-- Command Prompt** **-- Other Input methods.**
- ❖

4. **Knowledge Acquisition system:**



1. Office Automation SYSTEM:

OAS are the among the newest & rapidly expanding **computer based information systems.** Following are the categorisation of the office activities:

DOCUMENTS:

Documents originating from **outside sources** i.e. **incoming mails, notes, handouts, charts, graphs etc.**

This consists of **preparation of documents, editing texts etc.**

This basically includes **distribution of correspondence to designated recipients.**

This is related to **filing, indexing, searching of documents.**

This includes calculation functions like **routine arithmetic, bill passing, interest calculation etc.**

This includes **record keeping in respect to specific resources** utilised by office personnel

BENEFITS OF OFFICE AUTOMATION SYSTEM :

CODE TO REMEMBER: C- - A.R.C.

1. **C**ycle time reduction:
   OAS reduces the cycle time between **preparation of messages & receipt of message** at the recipient end.

2. **A**ccuracy:
   OAS ensures **accuracy of communication flows.**

3. **R**eduction of costs:
   OAS reduces the costs of **office communication** in terms of **TIME & COST OF COMMUINCATION LINKS.**

4. **C**ommunication improvement:
   OAS improves communication **within an organisation & between organisations.**

CATEGORIES OF COMPUTER BASED OFFICE AUTOMATION SYSTEM :

1. **Text processor s & related Systems:**
   - It is most commonly component of **OAS.**
   - Text processing system automates the process of document development.
   - It is a simple word processing system.

2. **Electronic document management system:**
   - It captures the information contained in the documents, stored for the future references.
   - These systems are useful in remote access of documents. For example: **customer complaint is handled by the executive by his computer notebook connected to PHONELINE & shows** it to the customer.
   - EDMS in an internal environment can be proved to be worth & time saving since a document can be accessed by any person in organisation.

3. **Electronic message communication system:**

- EMCS offers a lot of economy in terms of reduced time & reliability of message & cost of communication:
- Components of message communication systems:

A. Electronic Mail (E-Mail): {BED PIE}

- **Electronic Transmission Online Development & editing:** Email message can be developed & edited online before transmission.
- **Broadcasting & Rerouting:** Email permits sending a message to a large number of senders. The email can be rerouted to people having direct interest in the message.
- **Integration with other information systems:** Email can be easily integrated with other information systems.
- **Portability:** Email provides the facility that email can be accessed from any personal computers equipped with proper hardware.
- **Economical:** Email is the most economical & fast mode of transmitting data. It is excellent way of transmitting data both in formal & informal types of communication channel.

B. Facsimile (Fax):

- It is electronic communication of images of documents over telephone lines.
- It uses special software & fax servers to send & receive messages.

C. Voicemail (Fax):

- In this message is sent or transmitted as digitised voice.
- The recipient of the voice has to dial a voice mail service or access email box using the specified equipments.

4. **Teleconferencing and Video conferencing system:**

- It is conducted involving 2 or more person located at different places.
- The teleconferencing helps in reducing time & cost of meeting. It may audio or video.
- These are based on the personal computers featuring a digital camera & running on visual communication software.