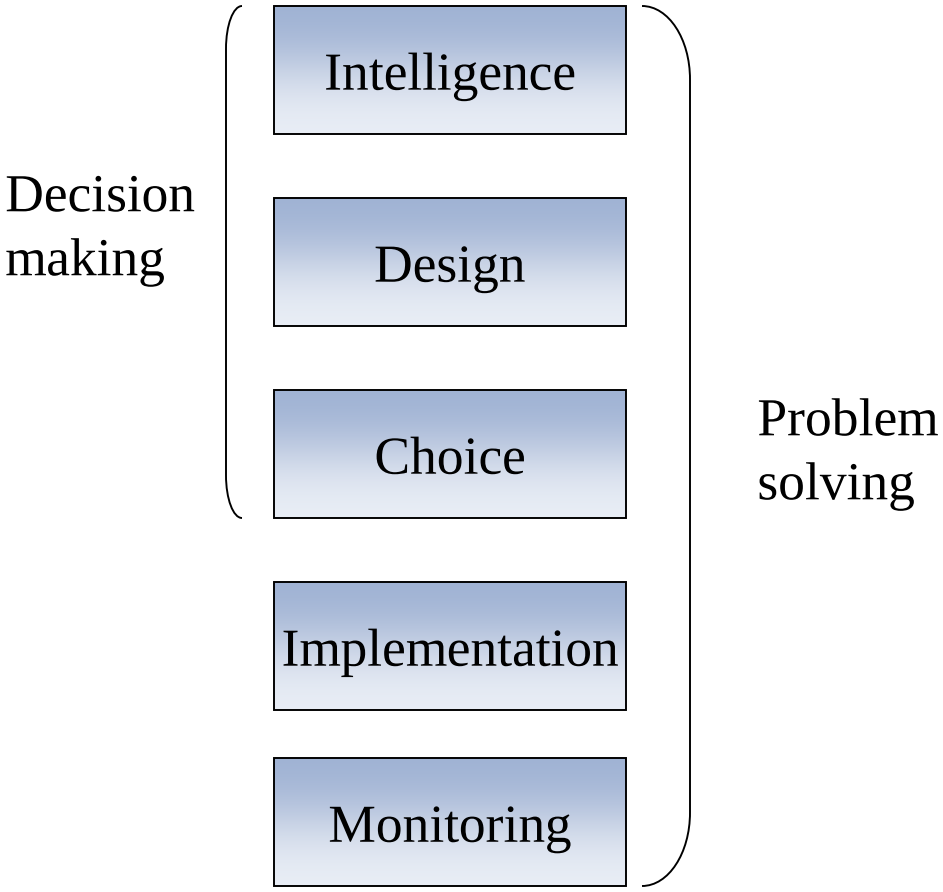
Decision Support Systems

Decision Support Systems

- Decision support systems (DSS)
  - Offer potential to assist in solving both semi-structured and unstructured problems

Decision Making as a Component of Problem Solving



Problem Solving Factors

- Multiple decision objectives
- Increased alternatives
- Increased competition
- The need for creativity
- Social and political actions
- International aspects
- Technology
- Time compression

Characteristics of a DSS (1)

- Handles large amounts of data from different sources
- Provides report and presentation flexibility
- Offers both textual and graphical orientation

Characteristics of a DSS (2)

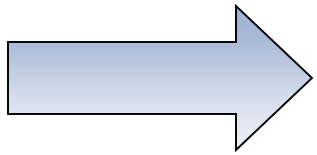
- Supports drill down analysis
- Performs complex, sophisticated analysis and comparisons using advanced software packages
- Supports optimization, satisficing, and heuristic approaches

Characteristics of a DSS (3)

- Performs different types of analyses
  - "What-if" analysis
    - Makes hypothetical changes to problem and observes impact on the results
  - Simulation
    - Duplicates features of a real system
  - Goal-seeking analysis
    - Determines problem data required for a given result

Goal Seeking Example

- You know the desired result
- You want to know the required input(s)
- Example:
  - Microsoft Excel's "Goal Seek" and "Solver" functions



Goal Seek

When you know the desired result of a single formula but not the input value the formula needs to determine the result, you can use the **Goal Seek** feature. When goal seeking, Microsoft Excel varies the value in one specific cell until a formula that's dependent on that cell returns the result you want.

The value in cell B4 is the result of the formula =PMT(B3/12,B2,B1).

	A	B
1	Loan Amount	$ 100,000
2	Term in Months	180
3	Interest Rate	7.02%
4	Payment	($900.00)

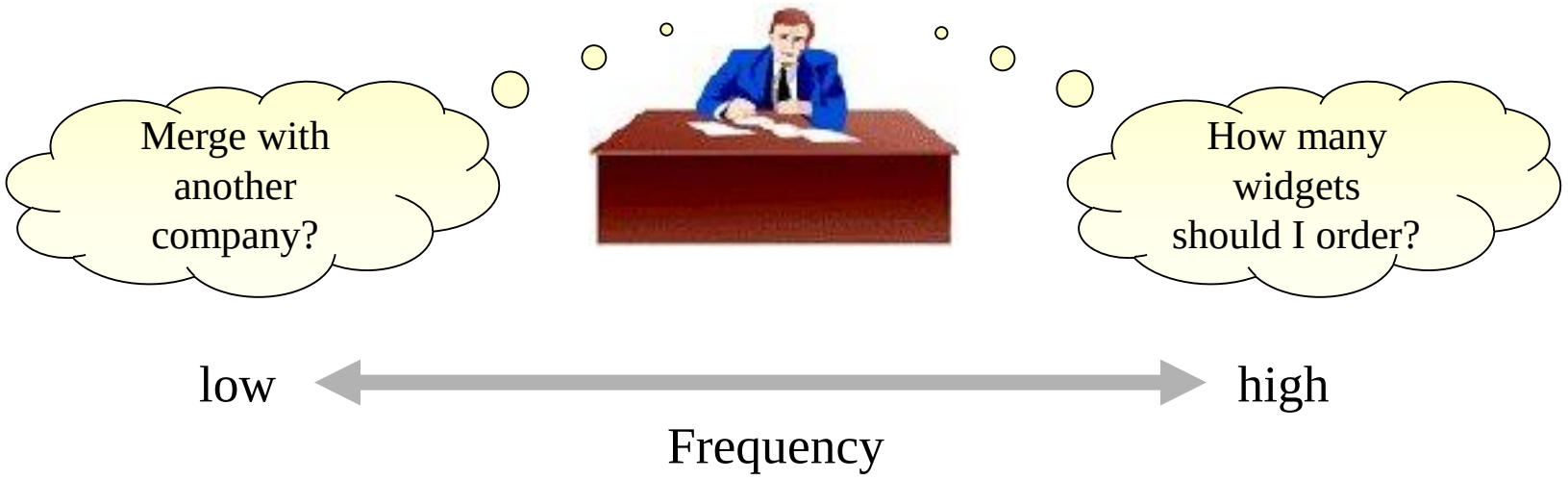
Goal seek to determine the interest rate in cell B3 based on the payment in cell B4.

Excel demo

For example, use **Goal Seek** to change the interest rate in cell B3 incrementally until the payment value in B4 equals $900.00.

Capabilities of a DSS (1)

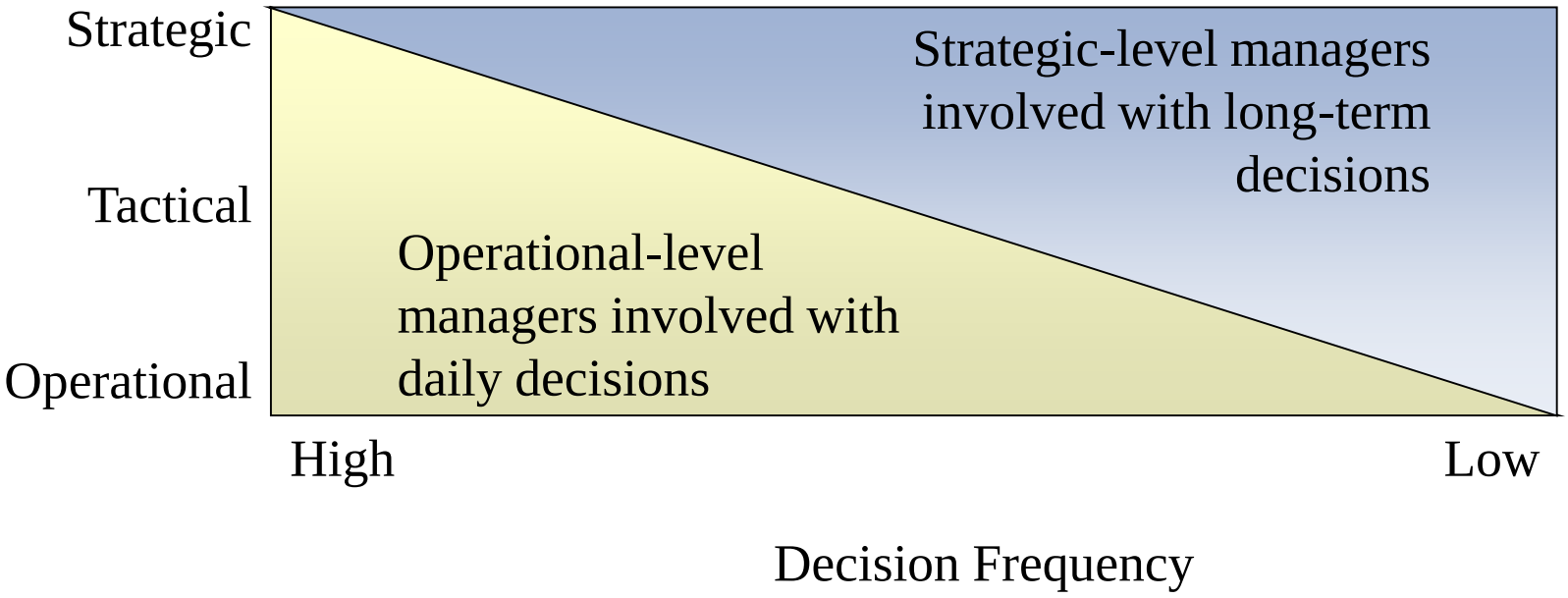
- Supports
  - Problem solving phases
  - Different decision frequencies



Capabilities of a DSS (2)

- Highly structured problems
  - Straightforward problems, requiring known facts and relationships.
- Semi-structured or unstructured problems
  - Complex problems wherein relationships among data are not always clear, the data may be in a variety of formats, and are often difficult to manipulate or obtain

Decision Making Levels



Integration of TPS, MIS, and DSS

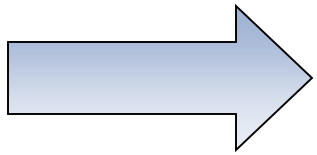
- In many organizations they are integrated through a common database
- Separation of DSS transactions in the database from TPS and MIS transactions may be important for performance reasons

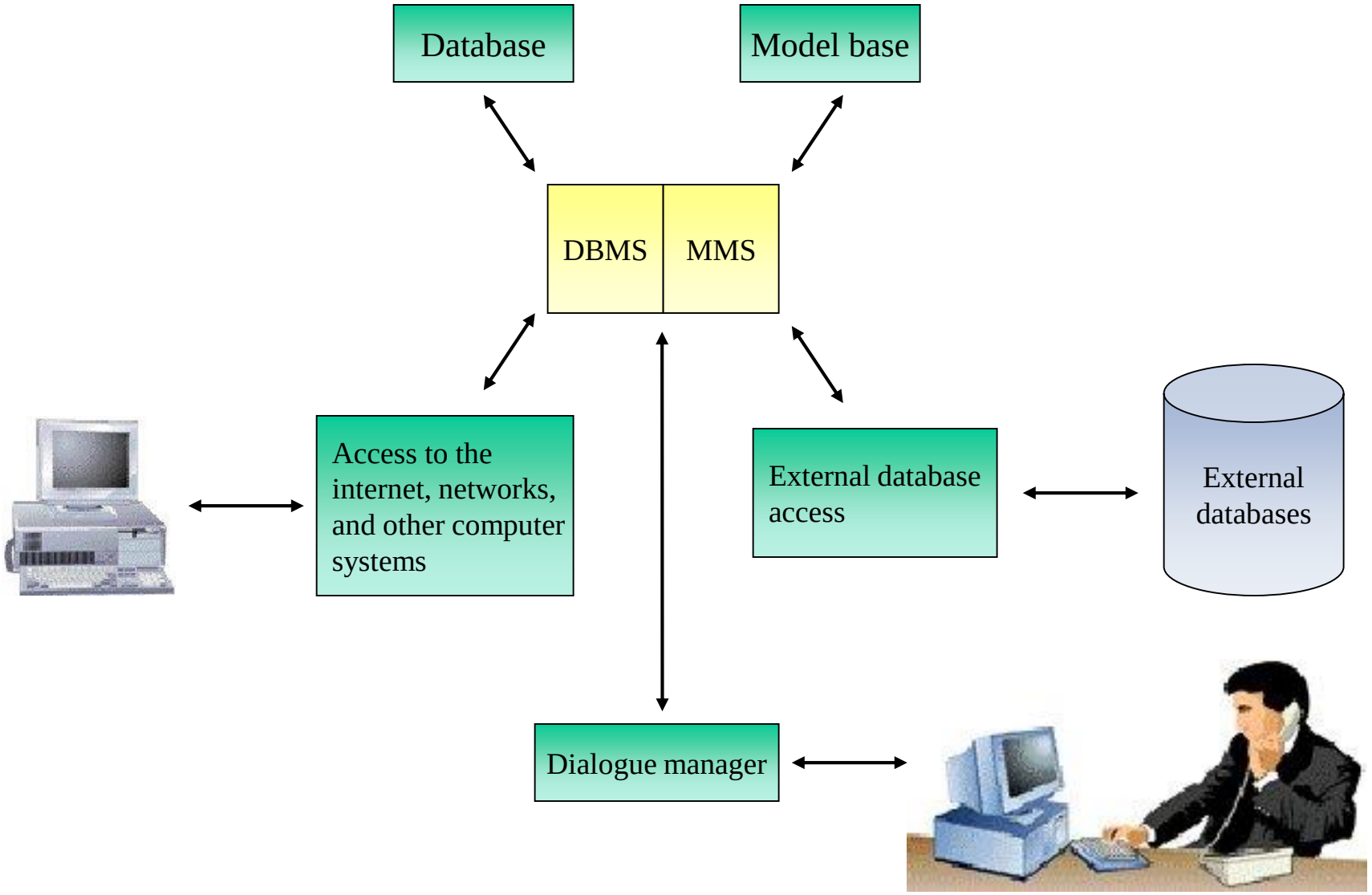
Web-Based Decision Support Systems

- Web-based decision support systems
  - Decision support system software provides business intelligence through web browser clients that access databases either through the Internet or a corporate intranet

Components of a DSS

- Model management software (MMS)
  - Coordinates the use of models in the DSS
- Model base
  - Provides decision makers with access to a variety of models
- Dialogue manager
  - Allows decision makers to easily access and manipulate the DSS




Database
Model base
DBMS
MMS
Access to the internet, networks, and other computer systems
External database access
External databases
Dialogue manager

Model Base

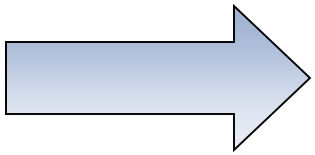
- Model Base
  - Provides decision makers with access to a variety of models and assists them in decision making
- Models
  - Financial models
  - Statistical analysis models
  - Graphical models
  - Project management models

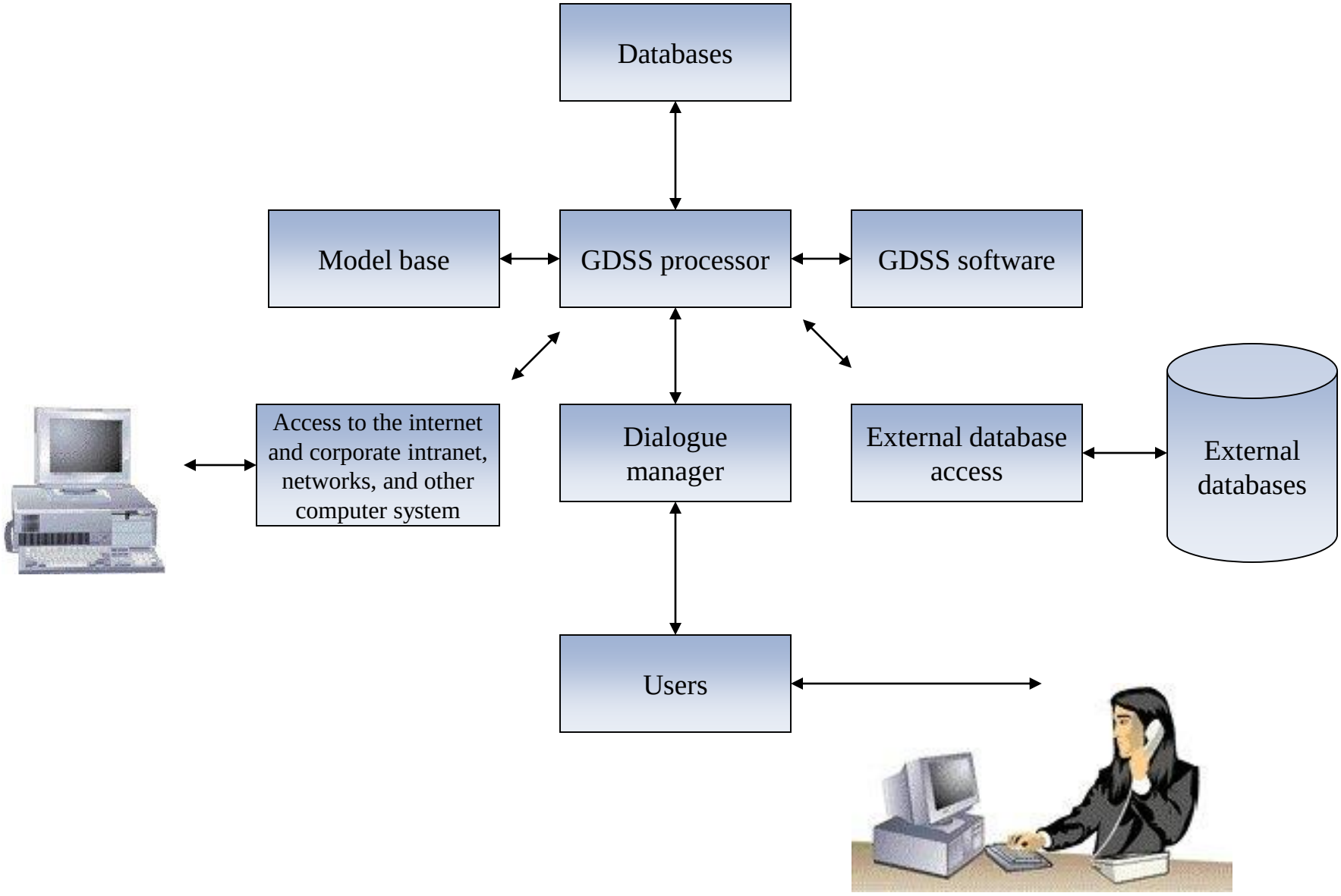
Advantages and Disadvantages of Modeling

- Advantages
  - Less expensive than custom approaches or real systems.
  - Faster to construct than real systems
  - Less risky than real systems
  - Provides learning experience (trial and error)
  - Future projections are possible
  - Can test assumptions
- Disadvantages
  - Assumptions about reality may be incorrect
  - Accuracy of predications often unreliable
  - Requires abstract thinking

Group Decision Support System

- Group Decision Support System (GDSS)
  - Contains most of the elements of DSS plus software to provide effective support in group decision-making settings




Databases
Model base
GDSS processor
GDSS software
Access to the internet and corporate intranet, networks, and other computer system
Dialogue manager
External database access
External databases
Users

Characteristics of a GDSS (1)

- Special design
- Ease of use
- Flexibility
- Decision-making support
  - Delphi approach (decision makers are geographically dispersed)
  - Brainstorming
  - Group consensus
  - Nominal group technique

Characteristics of a GDSS (2)

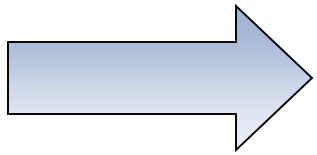
- Anonymous input
- Reduction of negative group behaviour
- Parallel communication
- Automated record keeping
- Cost, control, complexity factors

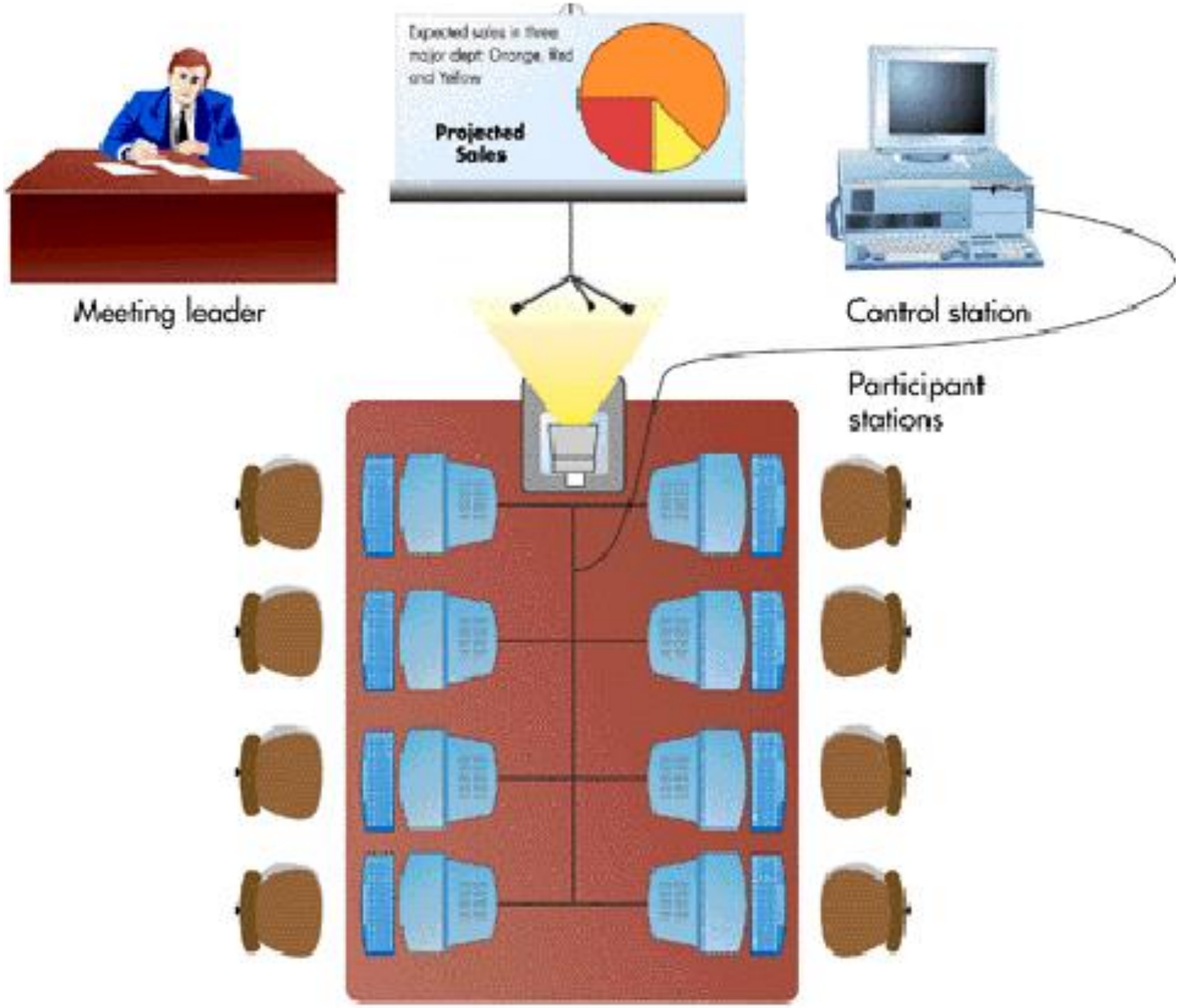
Components of a GDSS and GDSS Software

- Database
- Model base
- Dialogue manager
- Communication capability
- Special software (also called GroupWare)
- E.g., Lotus Notes
  - people located around the world work on the same project, documents, and files, efficiently and at the same time

Decision Room

- Decision Room
  - For decision makers located in the same geographic area or building
  - Use of computing devices, special software, networking capabilities, display equipment, and a session leader
  - Collect, coordinate, and feed back organized information to help a group make a decision
  - Combines face-to-face verbal interaction with technology-aided formalization



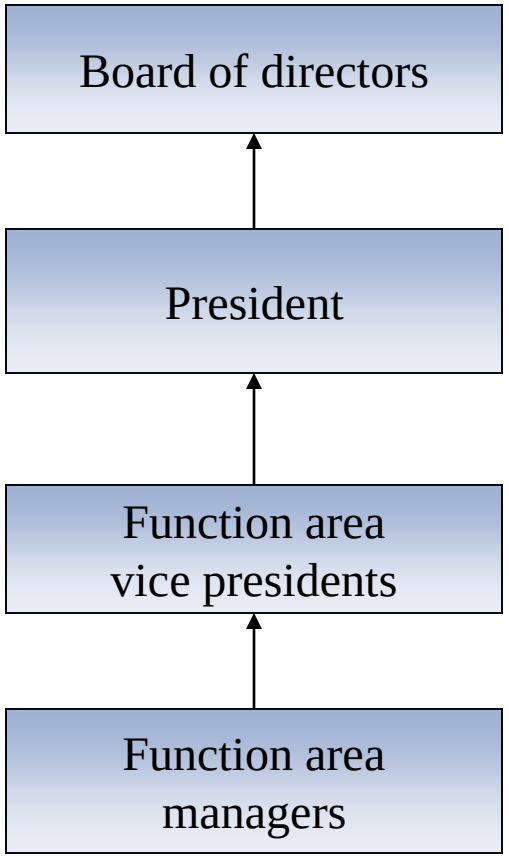

Expected sales in three major dept: Orange, Red and Yellow
Projected Sales
Meeting leader
Control station
Participant stations

Wide Area Decision Network

- Characteristics
  - Location of group members is distant
  - Decision frequency is high
  - Virtual workgroups
    - Groups of workers located around the world working on common problems via a GDSS

Executive Support System

- Characteristics
  - A specialized DSS that includes all the hardware, software, data, procedures, and people used to assist senior-level executives within the organization



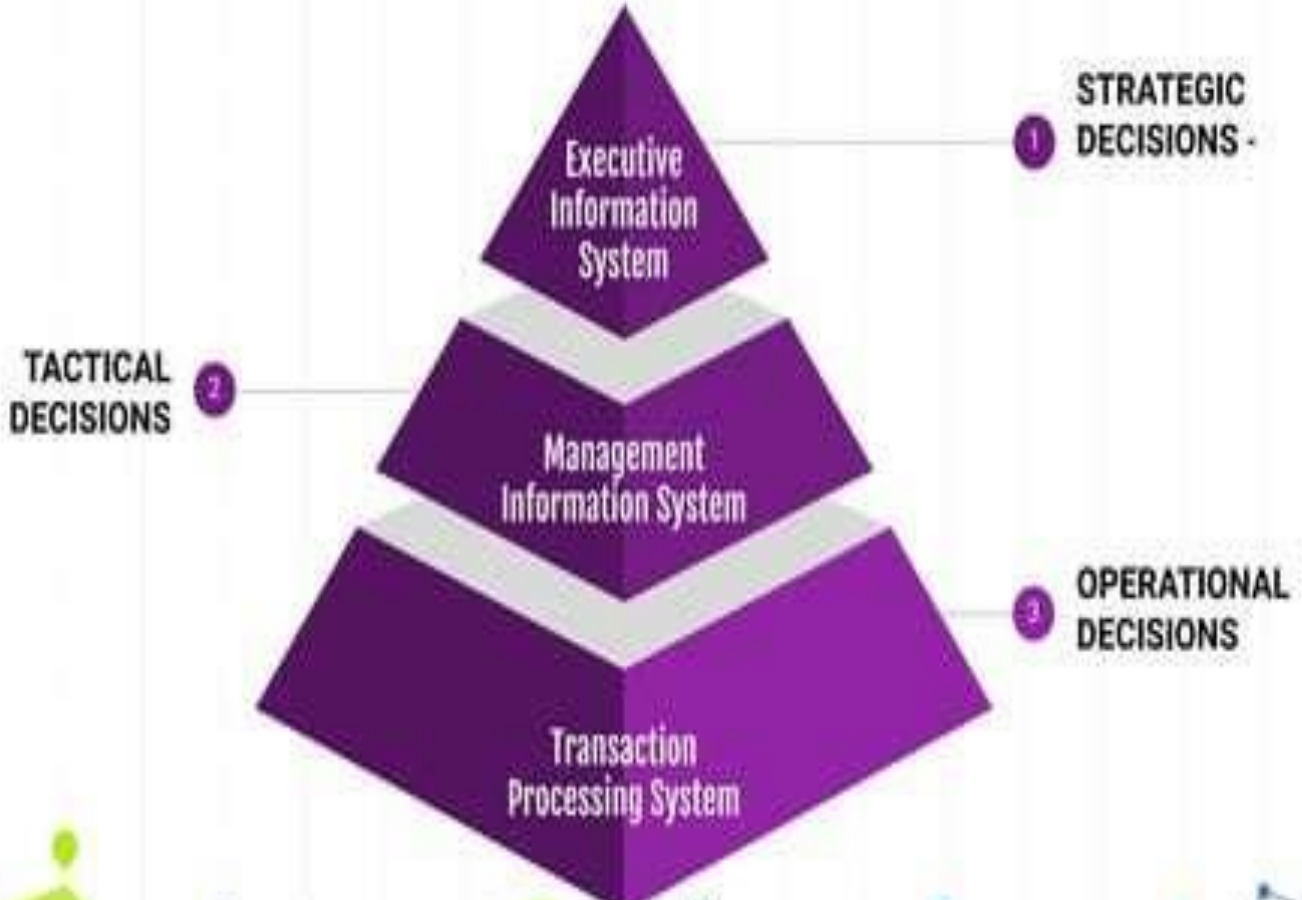
Characteristics of ESSs

- Tailored to individual executives
- Easy to use
- Drill down capabilities
- Support the need for external data
- Help with situations with high degree of uncertainty
- Futures orientation (predictions, forecasting)
- Linked with value-added business processes

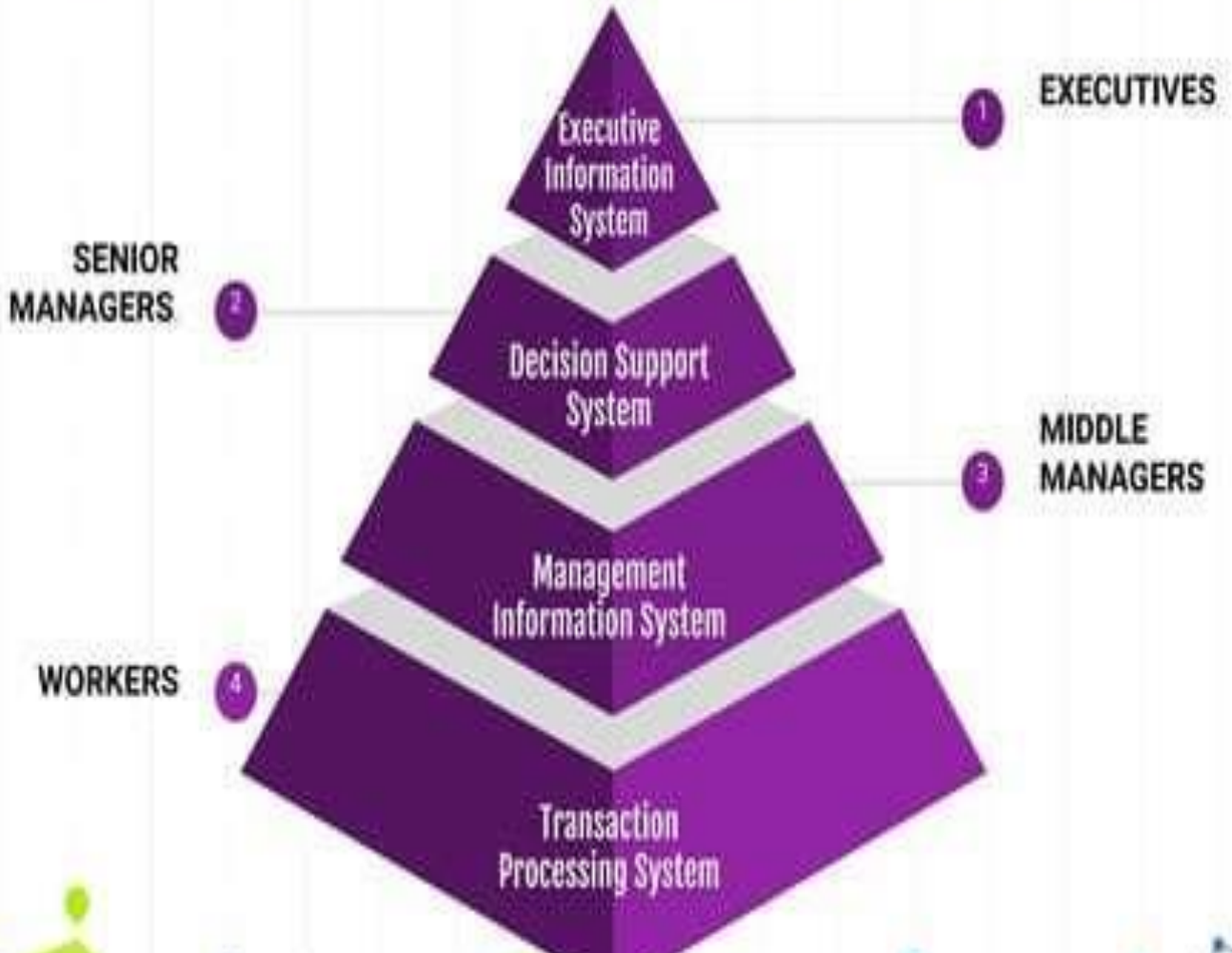
Capabilities of an ESS

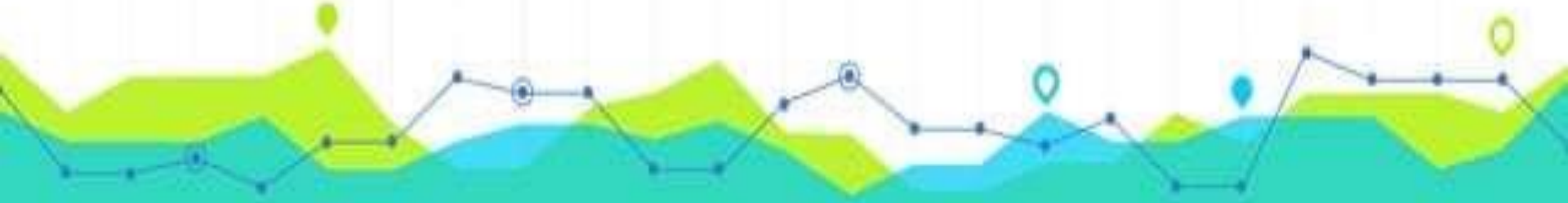
- Support for
  - defining overall vision
  - strategic planning
  - strategic organizing and staffing
  - strategic control
  - crisis management

TIER OF INFORMATION SYSTEM



TIER OF INFORMATION SYSTEM



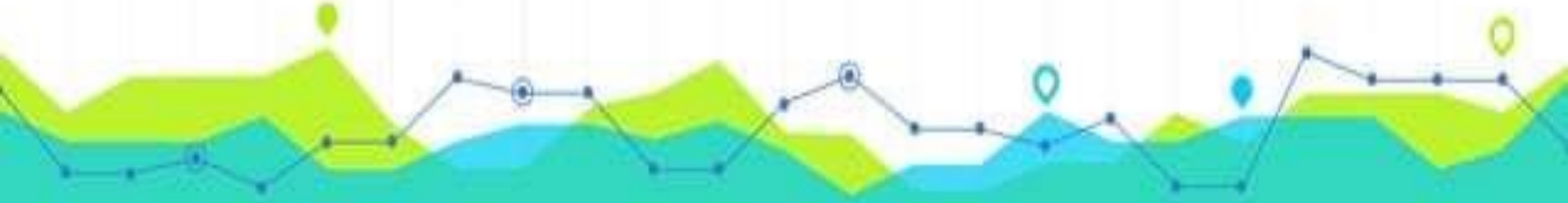


WHAT IS EXECUTIVE INFORMATION SYSTEM?

EXECUTIVE INFORMATION SYSTEM

DEFINITION

- An Executive information system (EIS) is a type of management support system that facilitates and supports senior executive information and decision-making needs.
- It provides easy access to internal and external information relevant to organizational goals.
- It is commonly considered a specialized form of decision support system (DSS).
- Its also known as Executive Support System (ESS).



WHY EXECUTIVE INFORMATION SYSTEM?

EXECUTIVE INFORMATION SYSTEM

SIGNIFICANCE

- Time management
- Improve office automation
- Easy for upper level executive to use
- Enhance personal thinking and decision-making
- Reduce time for finding information
- Increased communication capacity and quality

COMPONENTS OF EIS

EXECUTIVE INFORMATION SYSTEM

COMPONENTS

EIS components can typically be classified as:

- Hardware
- Software
- User interface
- Telecommunications

EXECUTIVE INFORMATION SYSTEM

COMPONENTS -HARDWARE

The basic hardware needed for a typical EIS includes four components:

- Input data-entry devices.
- The central processing unit
- Data storage files.
- Output devices

EXECUTIVE INFORMATION SYSTEM

COMPONENTS -SOFTWARE

A typical EIS includes four software components:

- Text-handling software
- Heterogeneous databases
- Graphic base
- Model base

EXECUTIVE INFORMATION SYSTEM

COMPONENTS -USER INTERFACE

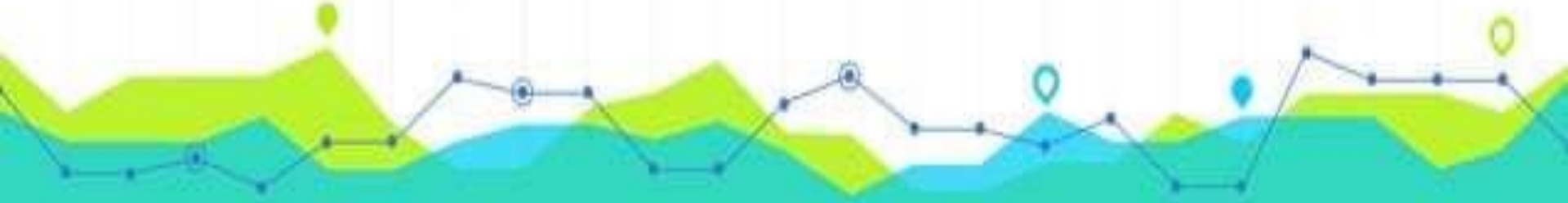
Several types of interfaces can be available to the EIS structure

- Scheduled reports
- Questions/Answers
- Menu driven
- Command language
- Natural language
- Input / Output

EXECUTIVE INFORMATION SYSTEM

COMPONENTS - TELECOMMUNICATION

- Transmitting data from one place to another has become crucial for establishing a reliable network.
- In addition, telecommunications within an EIS can accelerate the need for access to distributed data.
- It can be both by scientific and business means.

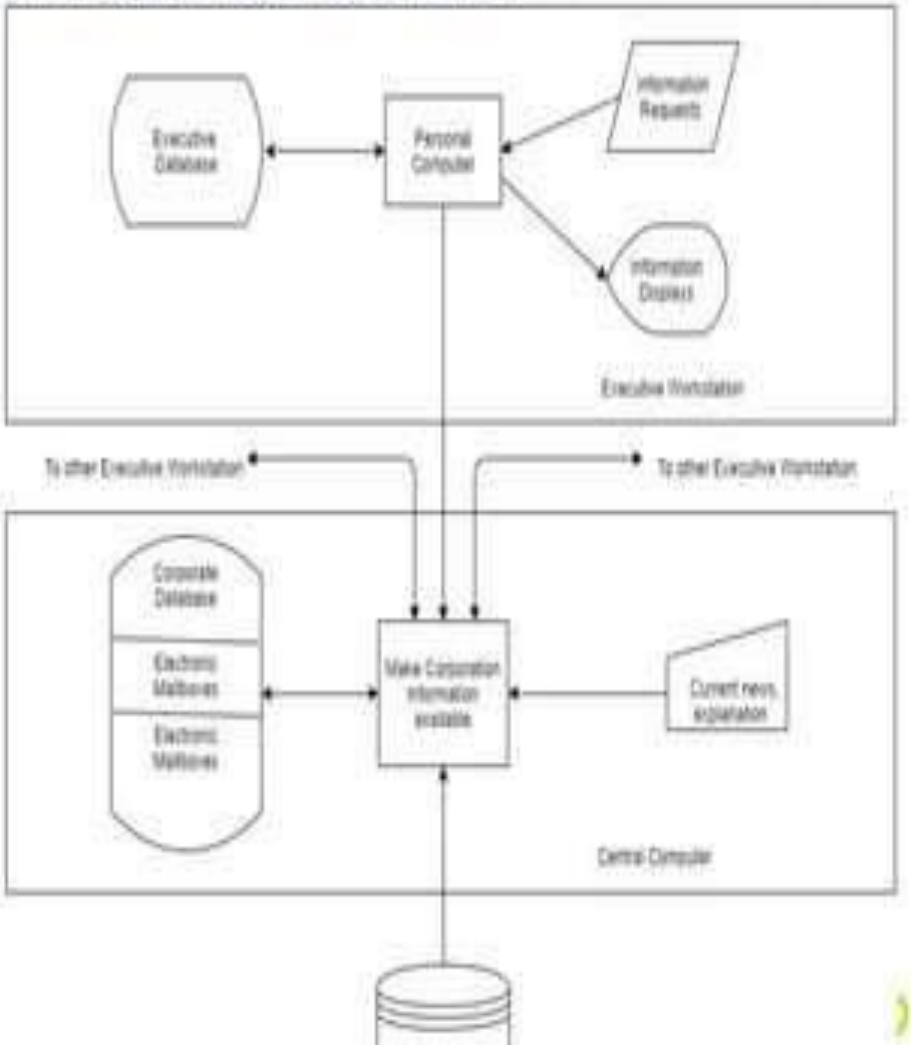


MODEL OF EIS

EXECUTIVE INFORMATION SYSTEM

MODEL

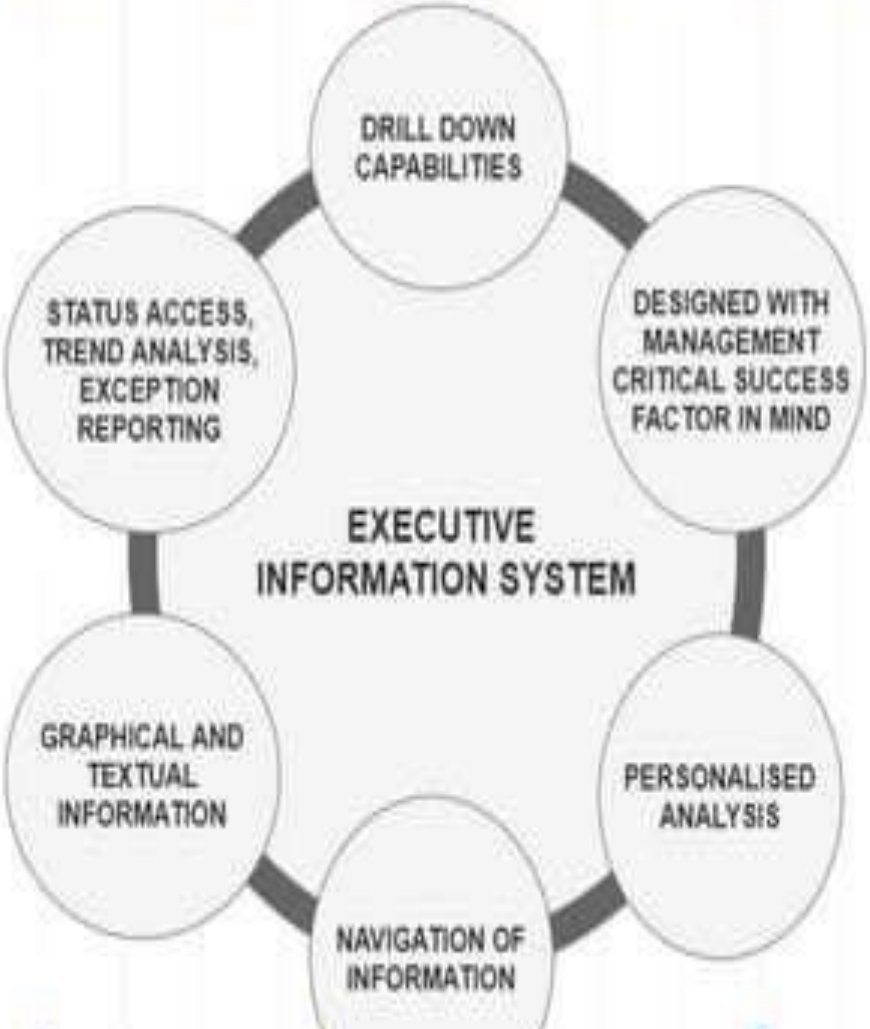
- It usually consists of a personal computer. The executive's personal computer serves as the executive workstation.
- The executive database contains data and information that has been processed by the firm's central computer.
- The executive is provided by an EIS software, which are menu driven software to implement EIS. The system permits the use of firm's electronic mail system and access to the environmental data & information.

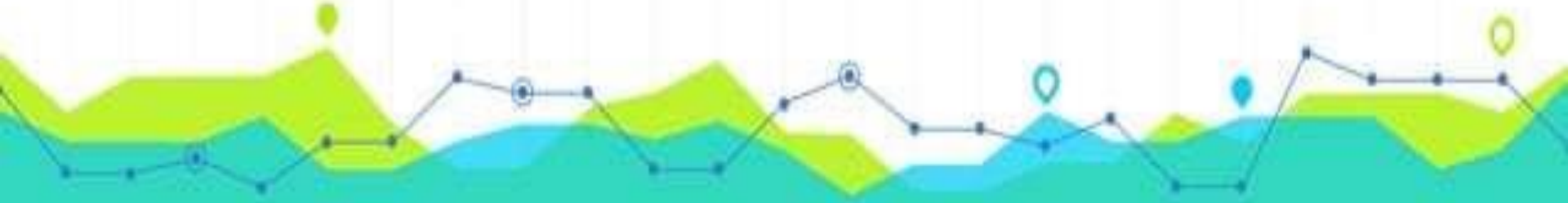


FEATURES OF EIS

EXECUTIVE INFORMATION SYSTEM

FEATURES

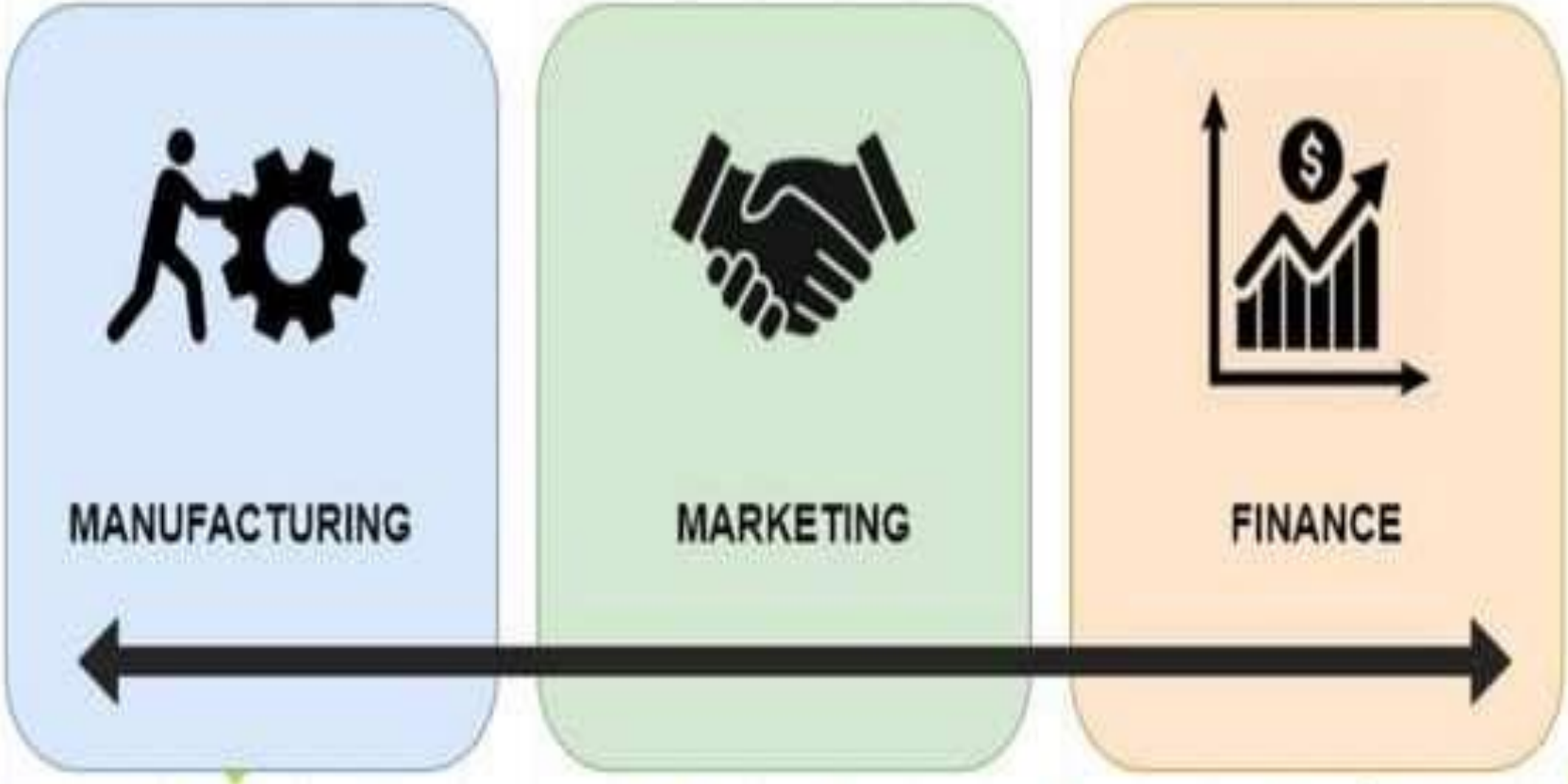


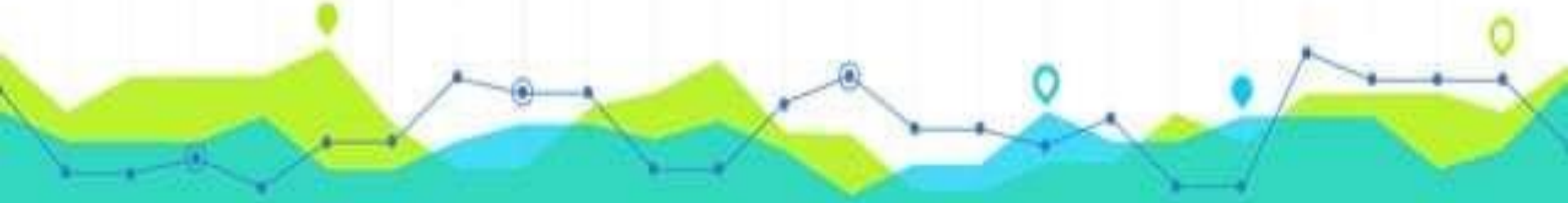


APPLICATIONS

EXECUTIVE INFORMATION SYSTEM

APPLICATIONS





CRITICAL SUCCESS FACTOR

EXECUTIVE INFORMATION SYSTEM

CRITICAL SUCCESS FACTOR

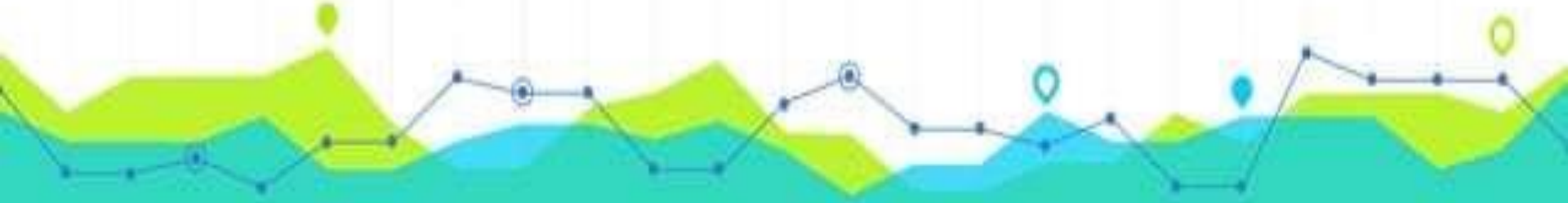
- A committed and Informed Executive sponsor.
- An operating sponsor.
- An appropriate information service staff.
- Appropriate information technology.
- Data management.
- Management of the spread and evolution of the system.
- A clear link to business objectives.

ADVANTAGES

EXECUTIVE INFORMATION SYSTEM

ADVANTAGES

- Easy for upper-level executives to use, extensive computer experience is not required in operations
- Provides strong drill-down capabilities to better analyze the given information.
- Information that is provided is better understood
- EIS provides timely delivery of information. Management can make decisions promptly.
- Improves tracking information
- Offers efficiency to decision makers



DISADVANTAGES

EXECUTIVE INFORMATION SYSTEM

DISADVANTAGES

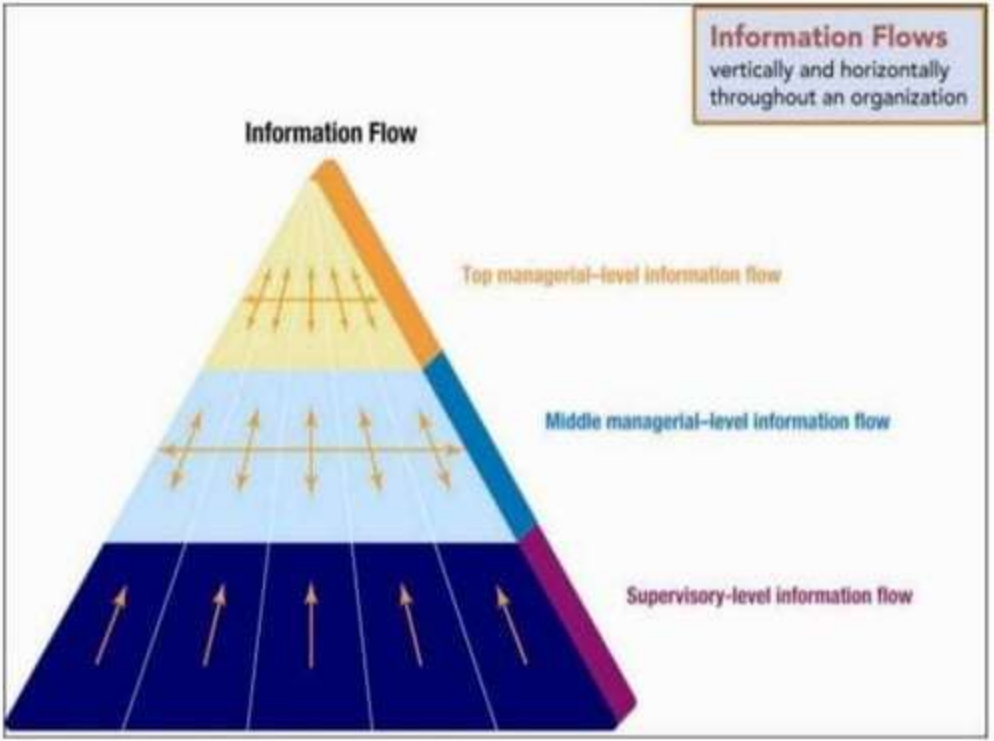
- System dependent
- Limited functionality, by design
- Information overload for some managers
- Benefits hard to quantify
- High implementation costs
- System may become slow, large, and hard to manage
- Need good internal processes for data management
- May lead to less reliable and less secure data
- Excessive cost for small company

Introduction:

- Executive support system are intended to be use by senior managers directly to provide support to programmed decision in strategic management.

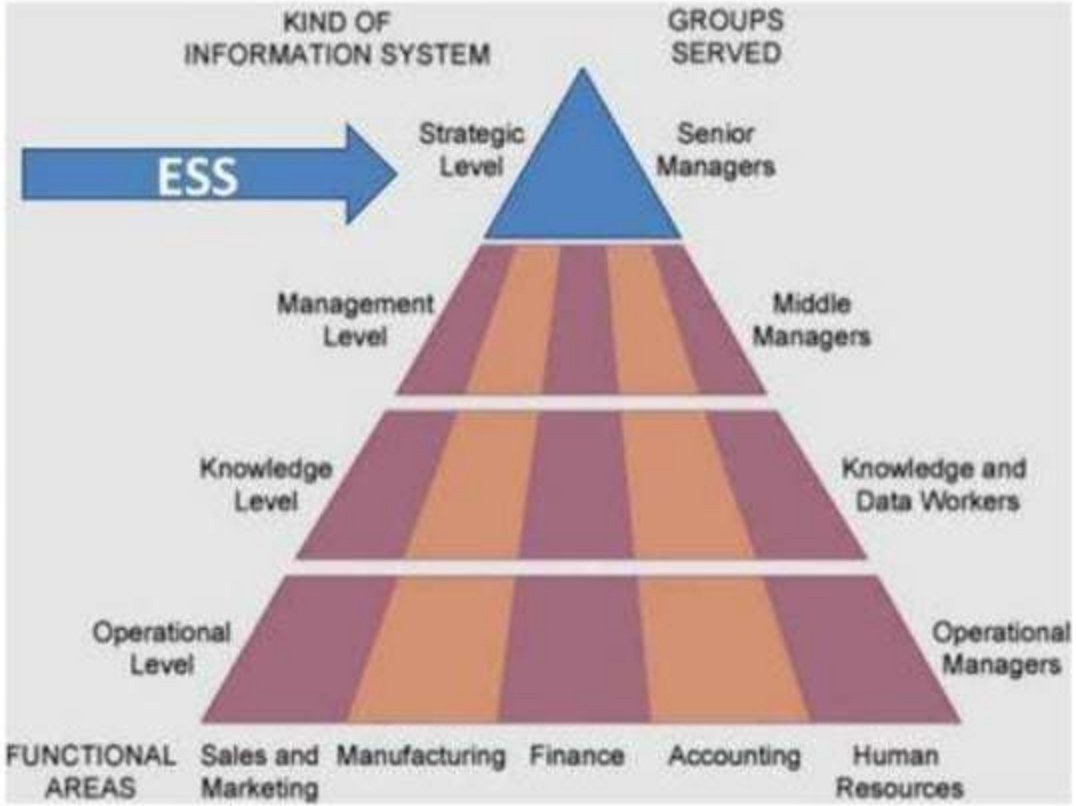
- These information are external, unstructured and even uncertain. Exact scope and context of such information is often not known beforehand.

Flow of Information in Organization



What is ESS ???

- A Reporting tool(software)
- Also known as Executive Information System
- Allows you turn organization's data into useful summarize reports
- These reports are generally used by executive level managers for quick access to report coming from all company levels and departments
- The exact reporting tool and outcome of an Executive support system completely depends on ESS developer and it's intended industry use.


KIND OF INFORMATION SYSTEM
GROUPS SERVED
ESS
Strategic Level
Senior Managers
Management Level
Middle Managers
Knowledge Level
Knowledge and Data Workers
Operational Level
Operational Managers
FUNCTIONAL AREAS
Sales and Marketing
Manufacturing
Finance
Accounting
Human Resources

Characteristics of ESS

- Computer Based Information System
- Enable user to extract summary data and solve complex problem.
- Provide rapid and direct access to timely information and management reports.
- Capable of both accessing both internal and external data.
- Provide extensive online analysis like trend analysis, scenario analysis etc.

Component of ESS

- Hardware
- Software
- User interface
- Telecommunication

Hardware

The basic hardware needed for a typical EIS includes four components:-

- **Input data entry devices. :** This device allows to executive to enter, verify, and update data immediately
- **Central processing unit (CPU) :** which is the kernel because it control the other computer system components.
- **Data storage file :**The executive can use this part to save useful business information and this part also help the executive to search historical business information easily.
- **Output devices :**which provide a visual or permanent report to executive to save or read. This device refer to the visual output device such as monitor or printer.

Software -

A typical EIS includes four software components:-

- Text – handling software
- Database
- Graphic base
- Model base

User interface -

- An EIS must be efficient to retrieve relevant data for decision makers, so the user interface is very important.

- Several types of interface can be available to the EIS structure, such as schedule reports, question-answers, menu driven, command language, natural language, and input/output.

Telecommunication -

- Transmitting data from one place to another has become crucial for establishing reliable network.

- In addition, telecommunications within an EIS can accelerate the need for access to distribute data.

Role of ESS in the organization

- An ESS can be supply the summarised information executive need and yet provide the opportunity to drill down to more detail if necessary.
- As technology advantages, ESS are able to link data from various sources both in internal and external to provide the amount and kind of information executive find useful.
- They are turning out to be an easy way to manipulate information.

Advantages of ESS

- Easy for upper–level executive to use, extensive computer experience is not required in operations.
- Provides timely delivery of company summary information.
- Information that is provide better understood.
- Filter data for management.
- Improves to tracking information.
- Offers efficiency to decision maker.

Disadvantages of ESS

- Limited functionality, by design.
- Information overload for some managers.
- Benefits hard to quantify.
- High implementation cost.
- System may become slow, large, and hadr to manage.
- Need good internal process for data management.
- May lead to reliable and less secure data.
- System dependent.

Application of ESS :-

After realising it's advantages, people had applied ESS in many areas, especially in :- manufacturing, marketing and finance areas.

Manufacturing:

Basically manufacturing is the transformation of raw materials into finished good for sale, or intermediate process involving the production or finishing of semi manufactures.

Marketing:

In an organization, marketing executives roles is to create the future. their main duty is managing available marketing resources to create.

Financial:

A financial analysis is one of the most important step to companies today.EIS enables executives to focus more on the long term basic of current year and beyond.

Summary :

- ESSs meet the needs of corporate executives by providing them with vast amount of information quickly and in graphical form to help them make effective decision.

- ESS must be flexible, easy to use, and contain both internal and external source of information.

Thank You