Bangladesh Govt. & UGC Approved
UNIVERSITY OF GLOBAL VILLAGE (UGV), BARISHAL.
THE FIRST SKILL BASED HI-TECH UNIVERSITY IN BANGLADESH

MANAGEMENT INFORMATION SYSTEM

Md. Mahadi Hasan Shaon

Theory of Computation

Course Code:	CSE-316	Credits:	03
		CIE Marks:	90
Exam Hours:	03	SEE Marks:	60

Course Learning Outcome (CLOs): After Completing this course successfully, the student will be able to…

CLO-1	**Remember and understand the state-of-the-art concepts, frameworks, and technologies in MIS.**
CLO-2	Identify and construct solutions for optimizing existing business systems in areas like accounting, finance, marketing, and manufacturing.
CLO-3	Analyze and examine the technical aspects of telecommunication systems, the Internet, and their pivotal roles in the modern business environment.
CLO-4	Evaluate business applications through organized planning, implementation, and control strategies for enhanced decision-making and performance.
CLO-5	Demonstrate the ability to design and manage an integrated MIS that aligns with organizational goals, ensuring data accuracy, security, and accessibility.

SUMMARY OF COURSE CONTENT

Serial No.	Headings	SUMMARY OF COURSE CONTENT	Hours	Alignment to CLOs
1	Introduction	MIS versus Data processing, MIS & Decision Support Systems, MIS & Information Resources Management, End user computing, Concept of an MIS, Structure of a Management information system, Types of information systems, Effectiveness and efficiency criteria in information system, Solving business problems with information systems.	9	CLO-1
2	Concepts of planning & control	Concept of organizational planning, The Planning Process, Computational support for planning, Characteristics of control process, The nature of control in an organization.	9	CLO-1, CLO-2
3	Business applications of information technology	Internet & electronic commerce, Intranet, Extranet & Enterprise Solutions, Information System for Business Operations, Information System for Managerial Decision Support, Information System for Strategic Advantage.	10	CLO-3, CLO-4
4	Managing Information Technology	Enterprise & Global management, Security & Ethical challenges, Planning & Implementing changes; Advanced Concepts in Information Systems: Enterprise Resource Planning, Supply Chain Management, Customer Relationship Management, and Procurement Management.	8	CLO-3, CLO-4
5	Computer Systems	Centralized computer systems, decentralized computer systems, centralized Vs decentralized systems	6	CLO-3
6	E-commerce	E-commerce, Advantages, types, Disadvantages	3	CLO-4

Recommended Books:

1. O Brian, "Management Information System", TMH .

2. Gordon B. Davis & Margrethe H. Olson, "Management Information System", TMH

ASSESSMENT PATTERN

CIE- Continuous Internal Evaluation (90 Marks)

Bloom's Category Marks (out of 90)	Tests (45)	Assignments (15)	Quizzes (15)	Attendance (15)
Remember	5	03		
Understand	5	04	05	
Apply	15	05	05	
Analyze	10			
Evaluate	5	03	05	
Create	5			

SEE- Semester End Examination (60 Marks)

Bloom's Category	Test
Remember	7
Understand	7
Apply	20
Analyze	15
Evaluate	6
Create	5

Week No.	Topics	Teaching Learning Strategy(s)	Assessment Strategy(s)	Alignment to CLO
1	Introduction to MIS: Definition and Importance	- Interactive discussion - Lecture with multimedia aids - Group discussion	- Assessment through Q&A and discussion	CLO1
2	Components of MIS	- Recap main points - Interactive discussion - Case studies and examples - Group activities	- Assessment of understanding of MIS components	CLO1
3	Decision Support Systems (DSS)	- Recap main points - Interactive discussion - Lecture on DSS models and applications - Group exercises and simulations	- Assessment through case studies and simulations on DSS applications	CLO2
4	Business Intelligence (BI)	- Recap main points - Interactive discussion - Guest lecture from industry expert - Group projects and presentations	- Assessment of BI tools and analysis projects	CLO2
5	Enterprise Resource Planning (ERP)	- Recap main points - Interactive discussion - Case studies on ERP implementation - Group discussions and role-playing exercises	- Assessment through ERP case study analysis and role-play scenarios	CLO3
6	Customer Relationship Management (CRM)	- Recap main points - Interactive discussion - CRM software demonstration - Group exercises and case studies	- Assessment of CRM software analysis and customer interaction strategies	CLO3
7	Supply Chain Management (SCM)	- Recap main points - Interactive discussion - SCM case studies and simulations - Group projects and presentations	- Assessment through SCM case study analysis and supply chain optimization exercises	CLO4
8	Knowledge Management Systems (KMS)	- Recap main points - Interactive discussion - Lecture on KMS implementation - Group activities and knowledge sharing exercises	- Assessment through KMS implementation project and knowledge sharing initiatives	CLO4
	MID TERM EXAMINATION			
9	E-Business and E-Commerce	- Recap main points - Interactive discussion - Guest lecture on e-commerce trends - Group projects and	- Assessment through e-commerce business plan and online market analysis	CLO5

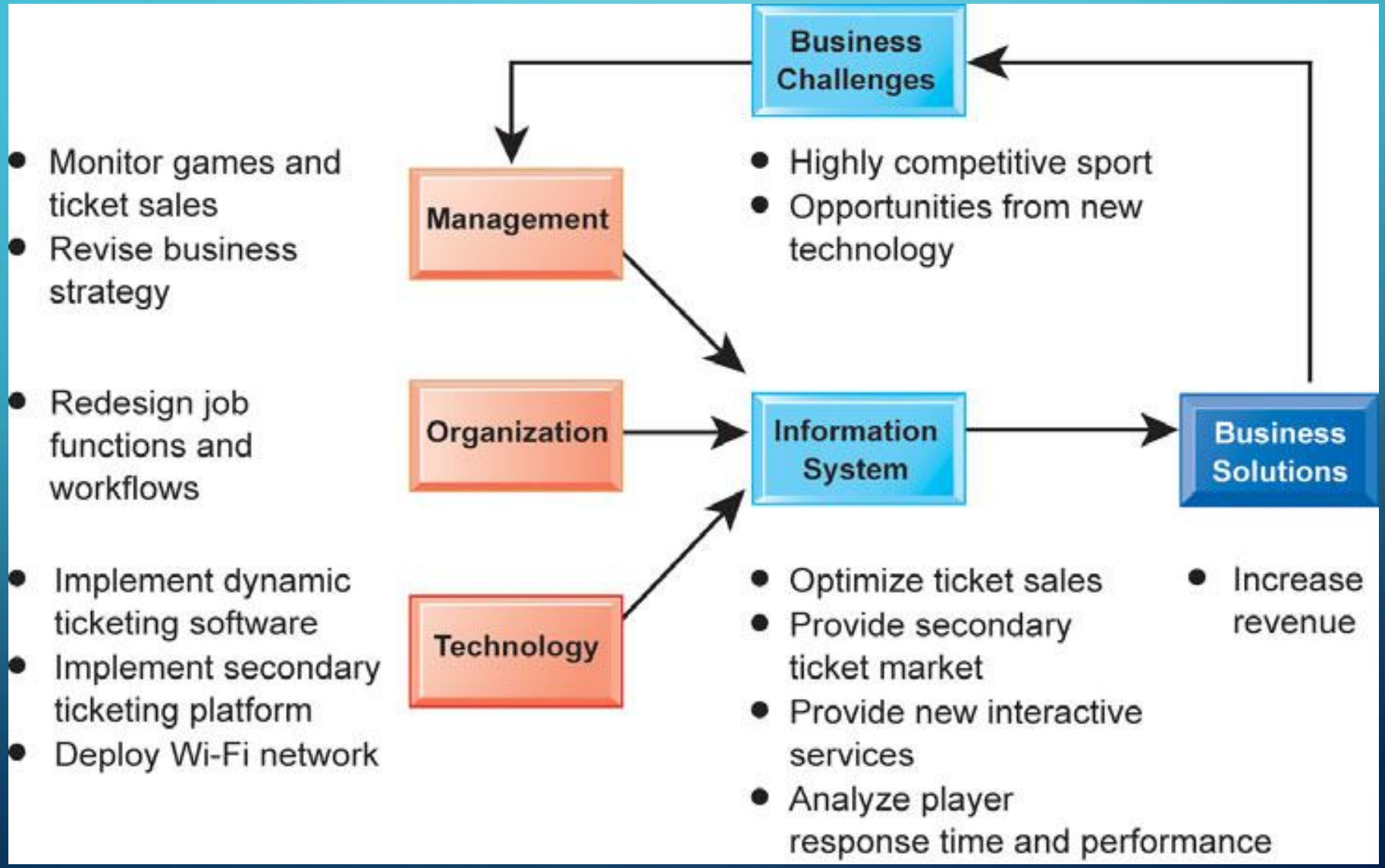
10	**Information Security and Risk Management**	**- Recap main points - Interactive discussion - Workshop on cybersecurity measures - Case studies and risk assessment exercises**	**- Assessment of information security policies, risk assessment reports, and compliance measures**	**CLO5**
11	Emerging Technologies in MIS	- Recap main points - Interactive discussion - Presentation on AI/ML applications in MIS - Group projects and technological trend analysis	- Assessment through research papers on emerging technologies in MIS	CLO6
12	Business Process Reengineering (BPR)	- Recap main points - Interactive discussion - BPR case studies and process mapping exercises - Group projects and presentations	- Assessment through BPR project implementation and process improvement analysis	CLO6
13	MIS in Strategic Planning	- Recap main points - Interactive discussion - Strategic planning simulation - Group projects and strategic analysis exercises	- Assessment through strategic planning simulation and MIS impact analysis	CLO7
14	Project Management Software	- Recap main points - Interactive discussion - PM software demo and case studies - Group projects and project scheduling exercises	- Assessment through project management software implementation and project scheduling analysis	CLO7
15	Ethical and Social Issues in MIS	- Recap main points - Interactive discussion - Debate on ethical dilemmas - Case studies and ethical decision-making exercises	- Assessment through ethical case studies and ethical decision-making scenarios	CLO8
16	Project Work and Final Assessment	- Recap main points - Interactive discussion - Final project presentation - Group evaluation and peer assessment	- Final project assessment and presentation of the developed MIS project	CLO9
17	FINAL TERM EXAMINATION			

WEEK 1

MANAGEMENT INFORMATION SYSTEM

Management Information System (MIS) is a planned system of collecting, storing, and disseminating data in the form of information needed to carry out the functions of management.

MANAGEMENT INFORMATION SYSTEM



BASIC INFORMATION CONCEPTS

1-212-290-4700

Does it mean anything?

Tel: +1-212-290-4700

Meaningful information

information is a sequence of symbols that can be construed to a useful message.

INFORMATION (DEFINITION)

- "Information can be recorded as signs, or transmitted as signals. Information is any kind of event that affects the state of a dynamic system that can interpret the information.
- Conceptually, information is the message (utterance or expression) being conveyed. Therefore, in a general sense, information is "Knowledge communicated or received, concerning a particular fact or circumstance". Information cannot be predicted and resolves uncertainty."

INFORMATION VS. DATA

- Data can be described as unprocessed facts and figures. Plain collected data as raw facts cannot help in decision-making. However, data is the raw material that is organized, structured, and interpreted to create useful information systems.
- Data is defined as 'groups of non-random symbols in the form of text, images, voice representing quantities, action and objects'.
- Information is interpreted data; created from organized, structured, and processed data in a particular context.

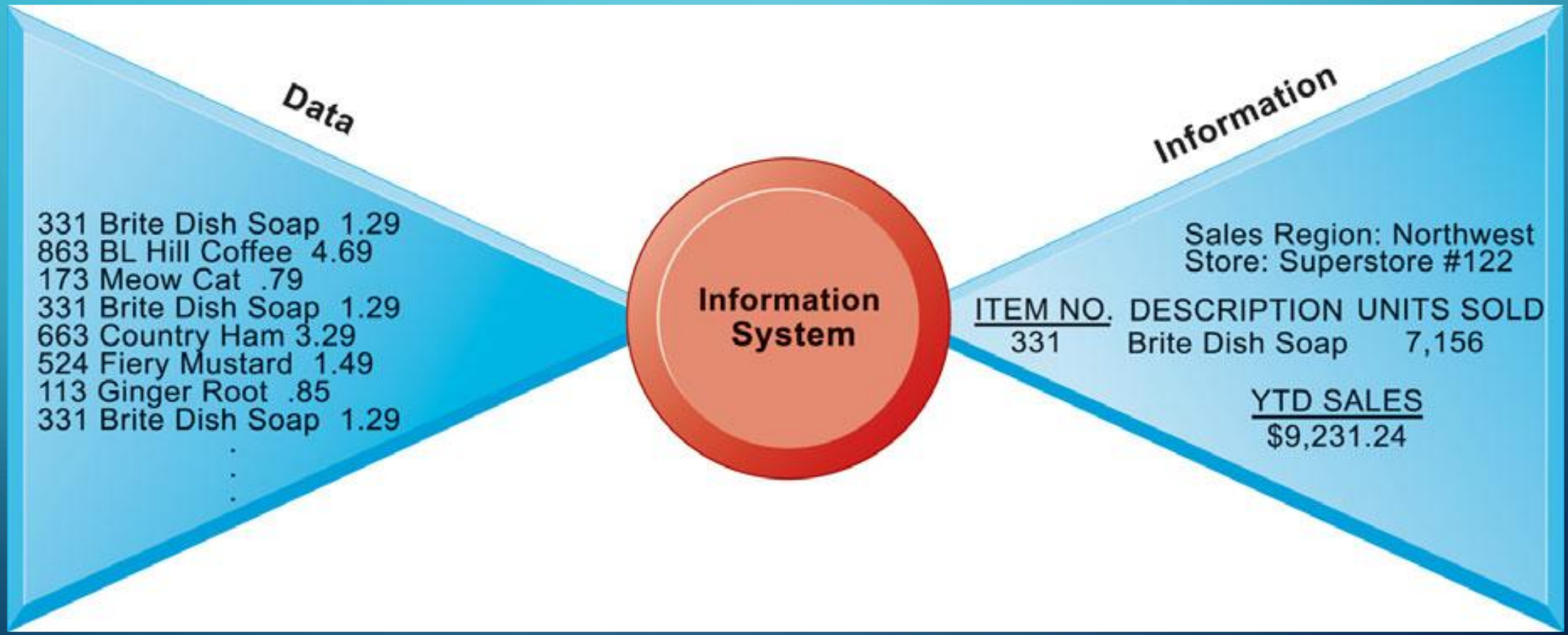
INFORMATION VS. DATA

- "Information is a data that has been processed into a form that is meaningful to recipient and is of real or perceived value in the current or the prospective action or decision of recipient."

INFORMATION SYSTEM

- An Information System is a system that gathers data and disseminates information with the sole purpose of providing information to its users.
- The main object of an information system is to provide information to its users. Information systems vary according to the type of users who use the system.

INFORMATION SYSTEM



MANAGEMENT INFORMATION SYSTEM

Definition:

A Management Information System is an information system that evaluates, analyzes, and processes an organization's data to produce meaningful and useful information based on which the management can take right decisions to ensure future growth of the organization.

INFORMATION, KNOWLEDGE AND BUSINESS INTELLIGENCE

Professor Ray R. Larson of the School of Information at the University of California, Berkeley, provides an Information Hierarchy, which is:

- Data - The raw material of information.
- Information - Data organized and presented by someone.
- Knowledge - Information read, heard, or seen, and understood.
- Wisdom - Distilled and integrated knowledge and understanding.

INFORMATION, KNOWLEDGE AND BUSINESS INTELLIGENCE

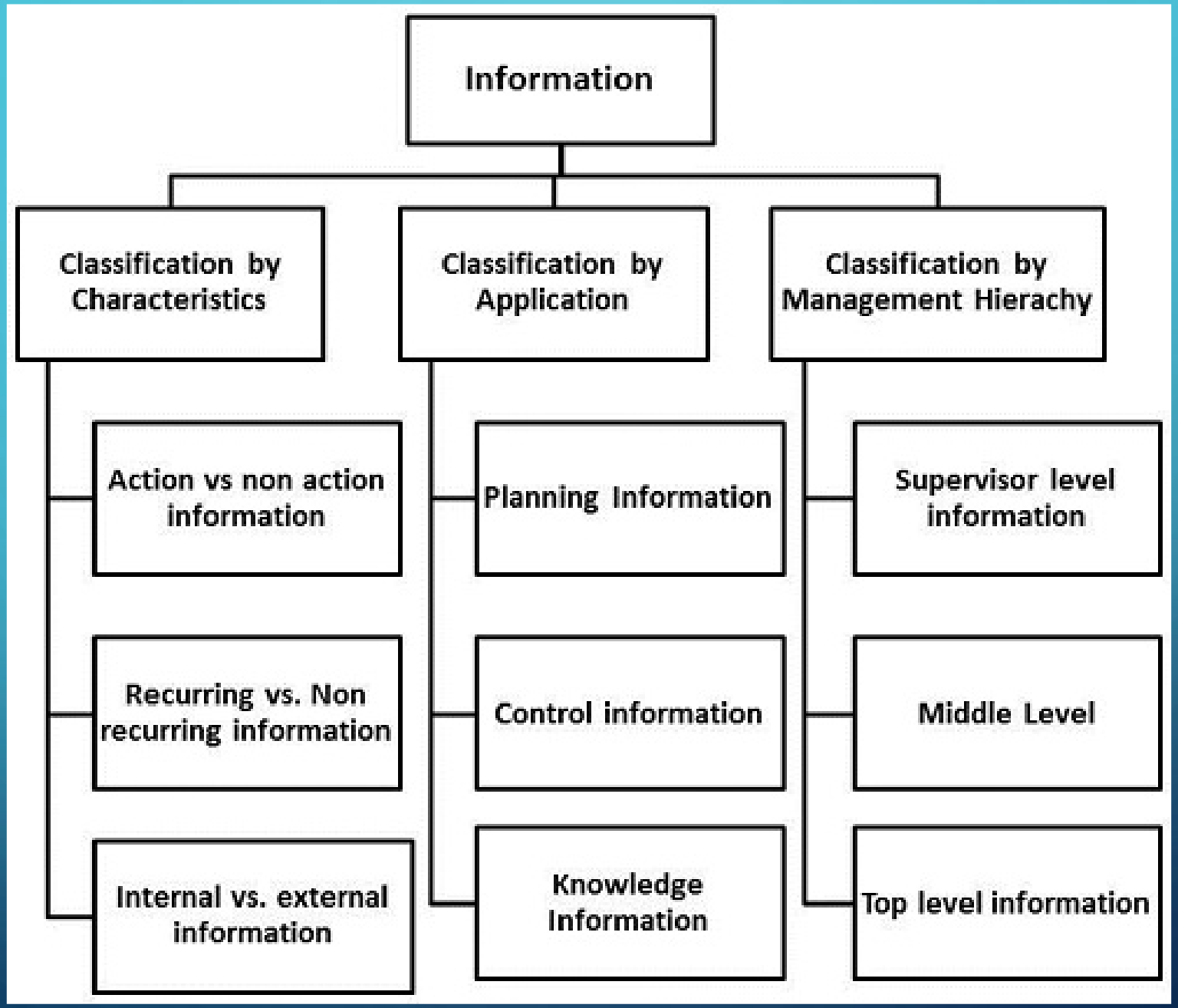
Scott Andrews' explains Information Continuum as follows:

- Data - A Fact or a piece of information, or a series thereof.
- Information - Knowledge discerned from data.
- Business Intelligence - Information Management pertaining to an organization's policy or decision-making, particularly when tied to strategic or operational objectives.

INFORMATION DATA COLLECTION TECHNIQUES

- Surveys: A questionnaire is prepared to collect the data from the field
- Secondary data sources or archival data: Data is collected through old records, magazines, company website, etc.
- Objective measures or tests: An experimental test is conducted on the subject and the data is collected.
- Interviews: Data is collected by the system analyst by following a rigid procedure and collecting the answers to a set of pre-conceived questions through personal interviews.

CLASSIFICATION OF INFORMATION


Information
Classification by Characteristics
Classification by Application
Classification by Management Hierachy
Action vs non action information
Recurring vs. Non recurring information
Internal vs. external information
Planning Information
Control information
Knowledge Information
Supervisor level information
Middle Level
Top level information

CLASSIFICATION BY CHARACTERISTICS

- **Strategic Information**: concerned with long term policy decisions that defines the objectives of a business and checks how well these objectives are met. For example, acquiring a new plant, a new product, diversification of business etc., comes under strategic information.
- **Tactical Information**: concerned with the information needed for exercising control over business resources, like budgeting, quality control, service level, inventory level, productivity level etc.
- **Operational Information**: concerned with plant/business level information and is used to ensure proper conduction of specific operational tasks as planned/intended. Various operator specific, machine specific and shift specific jobs for quality control checks comes under this category.

CLASSIFICATION BY APPLICATION

- **Planning Information**: information needed for establishing standard norms and specifications in an organization. This information is used in strategic, tactical, and operation planning of any activity. Examples of such information are time standards, design standards.
- **Control Information**: This information is needed for establishing control over all business activities through feedback mechanism. This information is used for controlling attainment, nature and utilization of important processes in a system. When such information reflects a deviation from the established standards, the system should induce a decision or an action leading to control.
- **Knowledge Information**: Knowledge is defined as "information about information". Knowledge information is acquired through experience and learning, and collected from archival data and research studies.

CLASSIFICATION BY APPLICATION

- **Organizational Information**: deals with an organization's environment, culture in the light of its objectives. Karl Weick's Organizational Information Theory emphasizes that an organization reduces its equivocality or uncertainty by collecting, managing and using these information prudently. This information is used by everybody in the organization; examples of such information are employee and payroll information.
- **Functional/Operational Information**: This is operation specific information. For example, daily schedules in a manufacturing plant that refers to the detailed assignment of jobs to machines or machines to operators. In a service oriented business, it would be the duty roster of various personnel. This information is mostly internal to the organization.
- **Database Information**: Database information construes large quantities of information that has multiple usage and application. Such information is stored, retrieved and managed to create databases. For example, material specification or supplier information is stored for multiple users.

WEEK 2

QUALITY OF INFORMATION

QUALITY OF INFORMATION

- **Intrinsic**: Accuracy, Objectivity, Believability, Reputation
- **Contextual**: Relevancy, Value-Added, Timeliness, Completeness, Amount of information
- **Representational**: Interpretability, Format, Coherence, Compatibility
- **Accessibility:** Accessibility, Access security
- **Reliability** - It should be verifiable and dependable.
- **Timely** - It must be current and it must reach the users well in time, so that important decisions can be made in time.
- **Relevant** - It should be current and valid information and it should reduce uncertainties.

QUALITY OF INFORMATION

- **Accurate** - It should be free of errors and mistakes, true, and not deceptive.
- **Sufficient** - It should be adequate in quantity, so that decisions can be made on its basis.
- **Unambiguous** - It should be expressed in clear terms. In other words, in should be comprehensive.
- **Complete** - It should meet all the needs in the current context.
- **Unbiased** - It should be impartial, free from any bias. In other words, it should have integrity.
- **Explicit** - It should not need any further explanation.

QUALITY OF INFORMATION

- **Comparable** - It should be of uniform collection, analysis, content, and format.
- **Reproducible** - It could be used by documented methods on the same data set to achieve a consistent result.

WEEK 3

INFORMATION NEED AND OBJECTIVE

INFORMATION NEED AND OBJECTIVE

- Increasing impact of information processing for organizational decision making.
- Dependency of services sector including banking, financial organization, health care, entertainment, tourism and travel, education and numerous others on information.
- Changing employment scene world over, shifting base from manual agricultural to machine-based manufacturing and other industry related jobs.
- Information revolution and the overall development scenario.
- Growth of IT industry and its strategic importance.
- Strong growth of information services fueled by increasing competition and reduced product life cycle.

INFORMATION NEED AND OBJECTIVE

- Need for sustainable development and quality life.
- Improvement in communication and transportation brought in by use of information processing.
- Use of information processing in reduction of energy consumption, reduction in pollution and a better ecological balance in future.
- Use of information processing in land record managements, legal delivery system, educational institutions,

IN A NUTSHELL….

- Information is needed to survive in the modern competitive world.
- Information is needed to create strong information systems and keep these systems up to date.

IMPLICATIONS OF INFORMATION IN BUSINESS

A complete business information system accomplishes the following functionalities:

- Collection and storage of data.
- Transform these data into business information useful for decision making.
- Provide controls to safeguard data.
- Automate and streamline reporting.

FIVE MAIN USES OF INFORMATION

- **Planning** - At the planning stage, information is the most important ingredient in decision making. Information at planning stage includes that of business resources, assets, liabilities, plants and machineries, properties, suppliers, customers, competitors, market and market dynamics, fiscal policy changes of the Government, emerging technologies, etc.
- **Recording** - Business processing these days involves recording information about each transaction or event. This information is collected, stored, and updated regularly at the operational level.
- **Controlling** - A business need to set up an information filter, so that only filtered data is presented to the middle and top management. This ensures efficiency at the operational level and effectiveness at the tactical and strategic level.
- **Measuring** - A business measures its performance metrics by collecting and analyzing sales data, cost of manufacturing, and profit earned.
- **Decision-making** - MIS is primarily concerned with managerial decision-making, theory of organizational behavior, and underlying human behavior in organizational context. Decision-making information includes the socio-economic impact of competition, globalization, democratization, and the effects of all these factors on an organizational structure.

LOGICAL FOUNDATIONS OF INFORMATION

- Operations research and management science
- Theory of organizational behavior
- Computer science:
  - Data and file structure
  - Data theory design and implementation
  - Computer networking
  - Expert systems and artificial intelligence
- Information theory

OUTCOMES OF INFORMATION PROCESSING

- Directly and immediate linkage to the system
- Faster communication of an order
- Electronic transfer of funds for faster payment
- Electronically solicited pricing (helps in determining the best price)

WEEK 4

MIS NEED FOR INFORMATION SYSTEMS

DECISION-MAKING PATHS

- Understanding the need for decision or the opportunity,
- Preparing alternative course of actions,
- Evaluating all alternative course of actions,
- Deciding the right path for implementation.

MIS NEED FOR INFORMATION SYSTEMS

- MIS is an information system that provides information in the form of standardized reports and displays for the managers. MIS is a broad class of information systems designed to provide information needed for effective decision making.
- Data and information created from an accounting information system and the reports generated thereon are used to provide accurate, timely and relevant information needed for effective decision making by managers.

MIS NEED FOR INFORMATION SYSTEMS

Management information systems provide information to support management decision making, with the following goals:

- Pre-specified and preplanned reporting to managers.
- Interactive and ad-hoc support for decision making.
- Critical information for top management.

MIS is of vital importance to any organization, because:

- It emphasizes on the management decision making, not only processing of data generated by business operations.
- It emphasizes on the systems framework that should be used for organizing information systems applications.

WEEK 5

MAJOR ENTERPRISE APPLICATIONS

MAJOR ENTERPRISE APPLICATIONS

- Enterprise applications are specifically designed for the sole purpose of promoting the needs and objectives of the organizations.
- Enterprise applications provide business-oriented tools supporting electronic commerce, enterprise communication and collaboration, and web-enabled business processes both within a networked enterprise and with its customers and business partners.

SERVICES PROVIDED BY ENTERPRISE APPLICATIONS

- Online shopping, billing and payment processing
- Interactive product catalogue
- Content management
- Customer relationship management
- Manufacturing and other business processes integration
- IT services management
- Enterprise resource management
- Human resource management
- Business intelligence management
- Business collaboration and security
- Form automation

MOST COMMONLY USED ENTERPRISE APPLICATIONS

- Management information system (MIS)
- Enterprise Resource Planning (ERP)
- Customer Relationship Management (CRM)
- Decision Support System (DSS)
- Knowledge Management Systems (KMS
- Content Management System (CMS)
- Executive Support System (ESS)
- Business Intelligence System (BIS)
- Enterprise Application Integration (EAI)
- Business Continuity Planning (BCP)
- Supply Chain Management (SCM)

MANAGEMENT INFORMATION SYSTEM (MIS)

The three components of MIS provide a more complete and focused definition, where System suggests integration and holistic view, Information stands for processed data, and Management is the ultimate user, the decision makers.

Management information system can thus be analyzed as follows:

- Management
  - Management covers the planning, control, and administration of the operations of a concern. The top management handles planning; the middle management concentrates on controlling; and the lower management is concerned with actual administration.
- Information
  - Information, in MIS, means the processed data that helps the management in planning, controlling and operations. Data means all the facts arising out of the operations of the concern. Data is processed i.e. recorded, summarized, compared and finally presented to the management in the form of MIS report.
- System
  - Data is processed into information with the help of a system. A system is made up of inputs, processing, output and feedback or control.

Thus MIS means a system for processing data in order to give proper information to the management for performing its functions.

OBJECTIVES OF MIS

- Capturing Data: Capturing contextual data, or operational information that will contribute in decision making from various internal and external sources of organization.
- Processing Data: The captured data is processed into information needed for planning, organizing, coordinating, directing and controlling functionalities at strategic, tactical and operational level. Processing data means:
  - making calculations with the data
  - sorting data
  - classifying data and
  - summarizing data
- Information Storage: Information or processed data need to be stored for future use.
- Information Retrieval: The system should be able to retrieve this information from the storage as and when required by various users.
- Information Propagation: Information or the finished product of the MIS should be circulated to its users periodically using the organizational network.

CHARACTERISTICS OF MIS

- It should be based on a long-term planning.
- It should provide a holistic view of the dynamics and the structure of the organization.
- It should work as a complete and comprehensive system covering all interconnecting sub-systems within the organization.
- It should be planned in a top-down way, as the decision makers or the management should actively take part and provide clear direction at the development stage of the MIS.
- It should be based on need of strategic, operational and tactical information of managers of an organization.
- It should also take care of exceptional situations by reporting such situations.

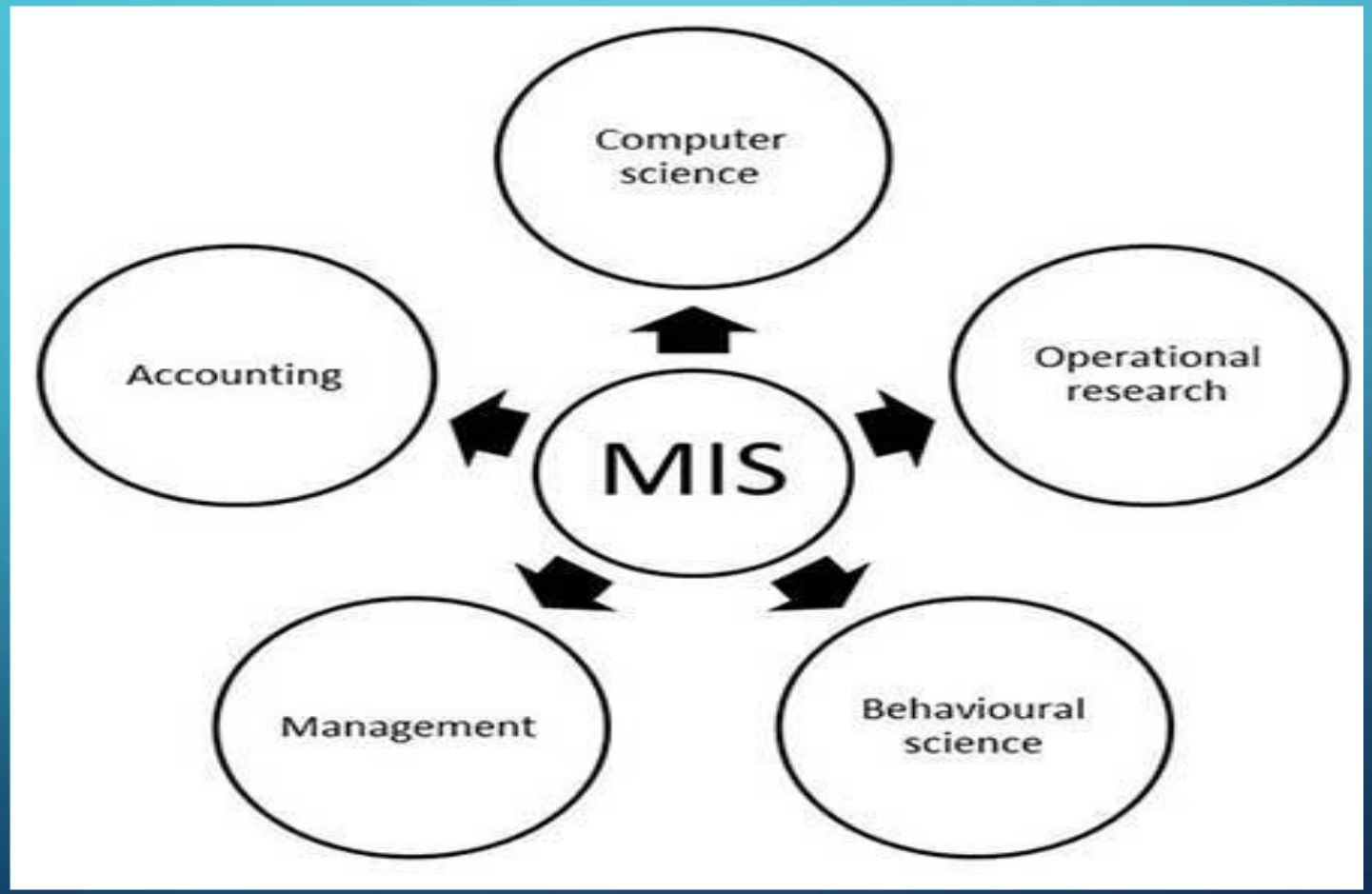
CHARACTERISTICS OF MIS

- It should be able to make forecasts and estimates, and generate advanced information, thus providing a competitive advantage. Decision makers can take actions on the basis of such predictions.
- It should create linkage between all sub-systems within the organization, so that the decision makers can take the right decision based on an integrated view.
- It should allow easy flow of information through various sub-systems, thus avoiding redundancy and duplicity of data. It should simplify the operations with as much practicability as possible.
- Although the MIS is an integrated, complete system, it should be made in such a flexible way that it could be easily split into smaller sub-systems as and when required.
- A central database is the backbone of a well-built MIS.

CHARACTERISTICS OF COMPUTERIZED MIS

- It should be able to process data accurately and with high speed, using various techniques like operations research, simulation, heuristics, etc.
- It should be able to collect, organize, manipulate, and update large amount of raw data of both related and unrelated nature, coming from various internal and external sources at different periods of time.
- It should provide real time information on ongoing events without any delay.
- It should support various output formats and follow latest rules and regulations in practice.
- It should provide organized and relevant information for all levels of management: strategic, operational, and tactical.
- It should aim at extreme flexibility in data storage and retrieval.

NATURE AND SCOPE OF MIS



WEEK 6

ENTERPRISE RESOURCE PLANNING

ENTERPRISE RESOURCE PLANNING

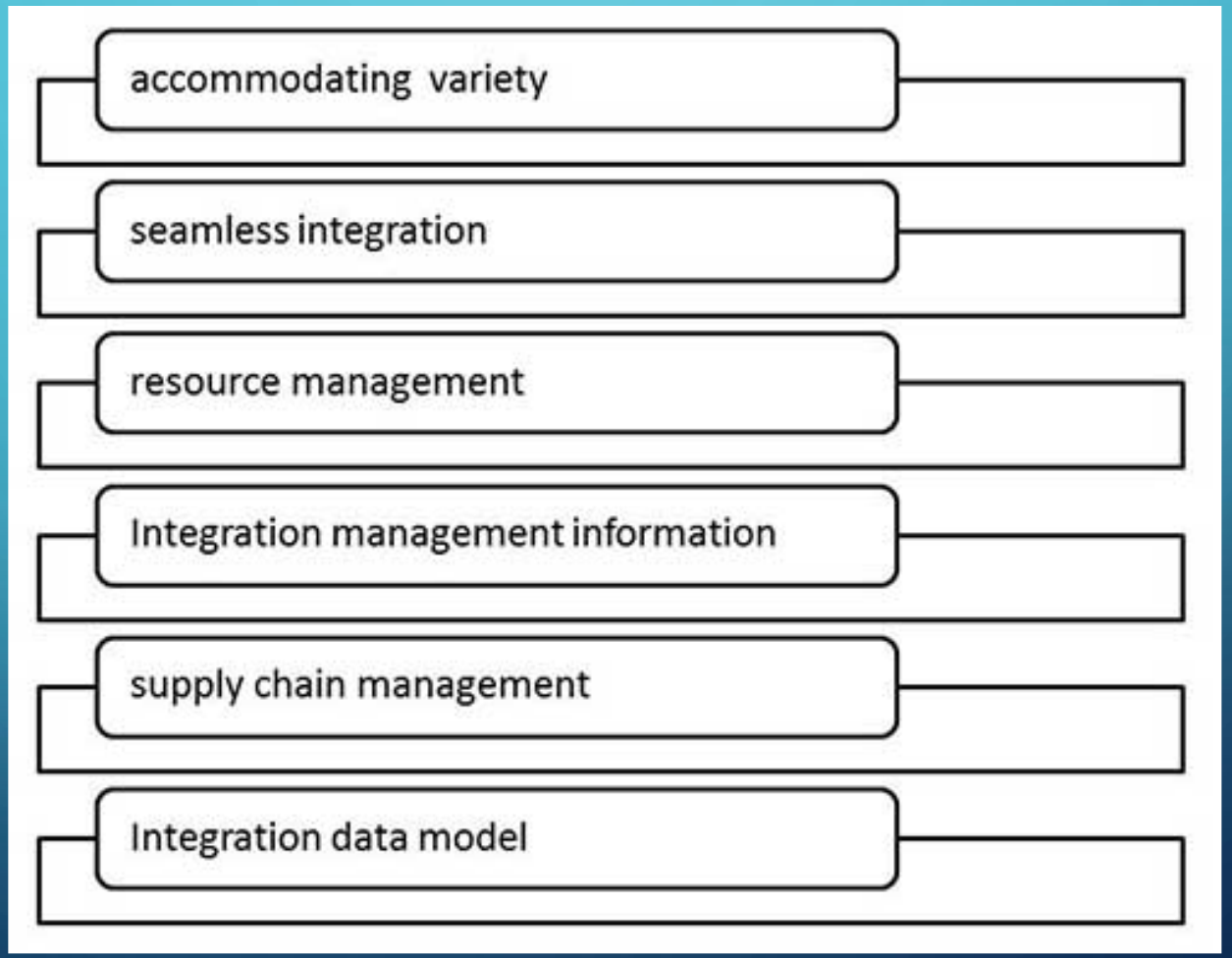
- ERP is an integrated, real-time, cross-functional enterprise application, an enterprise-wide transaction framework that supports all the internal business processes of a company.
- It supports all core business processes such as sales order processing, inventory management and control, production and distribution planning, and finance.

ENTERPRISE RESOURCE PLANNING

WHY ERP?

- Business integration and automated data update
- Linkage between all core business processes and easy flow of integration
- Flexibility in business operations and more agility to the company
- Better analysis and planning capabilities
- Critical decision-making
- Competitive advantage
- Use of latest technologies

FEATURES OF ERP



SCOPE OF ERP

- Finance: Financial accounting, Managerial accounting, treasury management, asset management, budget control, costing, and enterprise control.
- Logistics: Production planning, material management, plant maintenance, project management, events management, etc.
- Human resource: Personnel management, training and development, etc.
- Supply Chain: Inventory control, purchase and order control, supplier scheduling, planning, etc.
- Work flow: Integrate the entire organization with the flexible assignment of tasks and responsibility to locations, position, jobs, etc.

ADVANTAGES OF ERP

- Reduction of lead time
- Reduction of cycle time
- Better customer satisfaction
- Increased flexibility, quality, and efficiency
- Improved information accuracy and decision making capability
- Onetime shipment
- Improved resource utilization
- Improve supplier performance
- Reduced quality costs
- Quick decision-making
- Forecasting and optimization
- Better transparency

DISADVANTAGE OF ERP

- Expense and time in implementation
- Difficulty in integration with other system
- Risk of implementation failure
- Difficulty in implementation change
- Risk in using one vendor

WEEK 7

CUSTOMER RELATIONSHIP MANAGEMENT

CUSTOMER RELATIONSHIP MANAGEMENT

- CRM is an enterprise application module that manages a company's interactions with current and future customers by organizing and coordinating, sales and marketing, and providing better customer services along with technical support.
- Atul Parvatiyar and Jagdish N. Sheth provide an excellent definition for customer relationship management in their work titled - 'Customer Relationship Management: Emerging Practice, Process, and Discipline':
- Customer Relationship Management is a comprehensive strategy and process of acquiring, retaining, and partnering with selective customers to create superior value for the company and the customer. It involves the integration of marketing, sales, customer service, and the supply-chain functions of the organization to achieve greater efficiencies and effectiveness in delivering customer value.

WHY CRM?

- To keep track of all present and future customers.
- To identify and target the best customers.
- To let the customers know about the existing as well as the new products and services.
- To provide real-time and personalized services based on the needs and habits of the existing customers.
- To provide superior service and consistent customer experience.
- To implement a feedback system.

SCOPE OF CRM


Marketing anfd fullfillment
sales: cross sell upsell tele sales
customer service and support
CRM
store front and field service
retention and loyalty

ADVANTAGES OF CRM

- Provides better customer service and increases customer revenues.
- Discovers new customers.
- Cross-sells and up-sells products more effectively.
- Helps sales staff to close deals faster.
- Makes call centers more efficient.
- Simplifies marketing and sales processes.

DISADVANTAGES OF CRM

- Sometimes record loss is a major problem.
- Overhead costs.
- Giving training to employees is an issue in small organizations.

WEEK 8

DECISION SUPPORT SYSTEM

DECISION SUPPORT SYSTEM

- Decision support systems (DSS) are interactive software-based systems intended to help managers in decision-making by accessing large volumes of information generated from various related information systems involved in organizational business processes such as office automation system, transaction processing system, etc.
- DSS uses the summary information, exceptions, patterns, and trends using the analytical models. A decision support system helps in decision-making but does not necessarily give a decision itself. The decision makers compile useful information from raw data, documents, personal knowledge, and/or business models to identify and solve problems and make decisions.

TYPES OF DECISIONS

- There are two types of decisions - programmed and non-programmed decisions.
- Programmed decisions are basically automated processes, general routine work, where:
  - These decisions have been taken several times.
  - These decisions follow some guidelines or rules.
  - Example: selecting a reorder level for inventories, is a programmed decision.
- Non-programmed decisions occur in unusual and non-addressed situations, so:
  - It would be a new decision.
  - There will not be any rules to follow.
  - These decisions are made based on the available information.
  - These decisions are based on the manger's discretion, instinct, perception and judgment.
  - Example: investing in a new technology is a non-programmed decision.
- Decision support systems generally involve non-programmed decisions. Therefore, there will be no exact report, content, or format for these systems. Reports are generated on the fly.

ATTRIBUTES OF A DSS

- Adaptability and flexibility
- High level of Interactivity
- Ease of use
- Efficiency and effectiveness
- Complete control by decision-makers
- Ease of development
- Extendibility
- Support for modeling and analysis
- Support for data access
- Standalone, integrated, and Web-based

CHARACTERISTICS OF A DSS

- Support for decision-makers in semi-structured and unstructured problems.
- Support for managers at various managerial levels, ranging from top executive to line managers.
- Support for individuals and groups. Less structured problems often requires the involvement of several individuals from different departments and organization level.
- Support for interdependent or sequential decisions.
- Support for intelligence, design, choice, and implementation.
- Support for variety of decision processes and styles.
- DSSs are adaptive over time.

BENEFITS OF DSS

- Improves efficiency and speed of decision-making activities.
- Increases the control, competitiveness and capability of futuristic decision-making of the organization.
- Facilitates interpersonal communication.
- Encourages learning or training.
- Since it is mostly used in non-programmed decisions, it reveals new approaches and sets up new evidences for an unusual decision.

COMPONENTS OF A DSS

- **Database Management System (DBMS):** To solve a problem the necessary data may come from internal or external database. In an organization, internal data are generated by a system such as TPS and MIS. External data come from a variety of sources such as newspapers, online data services, databases (financial, marketing, human resources).
- **Model Management System:** It stores and accesses models that managers use to make decisions. Such models are used for designing manufacturing facility, analyzing the financial health of an organization, forecasting demand of a product or service, etc.
- **Support Tools:** Support tools like online help; pulls down menus, user interfaces, graphical analysis, error correction mechanism, facilitates the user interactions with the system.

CLASSIFICATION OF DSS

- **Text Oriented DSS:** It contains textually represented information that could have a bearing on decision. It allows documents to be electronically created, revised and viewed as needed.
- **Database Oriented DSS:** Database plays a major role here; it contains organized and highly structured data.
- **Spreadsheet Oriented DSS:** It contains information in spread sheets that allows create, view, modify procedural knowledge and also instructs the system to execute self-contained instructions. The most popular tool is Excel and Lotus 1-2-3.
- **Solver Oriented DSS:** It is based on a solver, which is an algorithm or procedure written for performing certain calculations and particular program type.
- **Rules Oriented DSS:** It follows certain procedures adopted as rules. Procedures are adopted in rules oriented DSS. Export system is the example.
- **Compound DSS:** It is built by using two or more of the five structures explained above.

TYPES OF DSS

- **Status Inquiry System:** It helps in taking operational, management level, or middle level management decisions, for example daily schedules of jobs to machines or machines to operators.
- **Data Analysis System:** It needs comparative analysis and makes use of formula or an algorithm, for example cash flow analysis, inventory analysis etc.
- **Information Analysis System:** In this system data is analyzed and the information report is generated. For example, sales analysis, accounts receivable systems, market analysis etc.
- **Accounting System:** It keeps track of accounting and finance related information, for example, final account, accounts receivables, accounts payables, etc. that keep track of the major aspects of the business.
- **Model Based System:** Simulation models or optimization models used for decision-making are used infrequently and creates general guidelines for operation or management.

WEEK 9

Project Work and Assessment

WEEK 10

KNOWLEDGE MANAGEMENT SYSTEM

WHAT IS KNOWLEDGE?

- Personalized information
- State of knowing and understanding
- An object to be stored and manipulated
- A process of applying expertise
- A condition of access to information
- Potential to influence action

SOURCES OF KNOWLEDGE OF AN ORGANIZATION

- Intranet
- Data warehouses and knowledge repositories
- Decision support tools
- Groupware for supporting collaboration
- Networks of knowledge workers
- Internal expertise

DEFINITION OF KMS

- A knowledge management system comprises a range of practices used in an organization to identify, create, represent, distribute, and enable adoption to insight and experience. Such insights and experience comprise knowledge, either embodied in individual or embedded in organizational processes and practices.

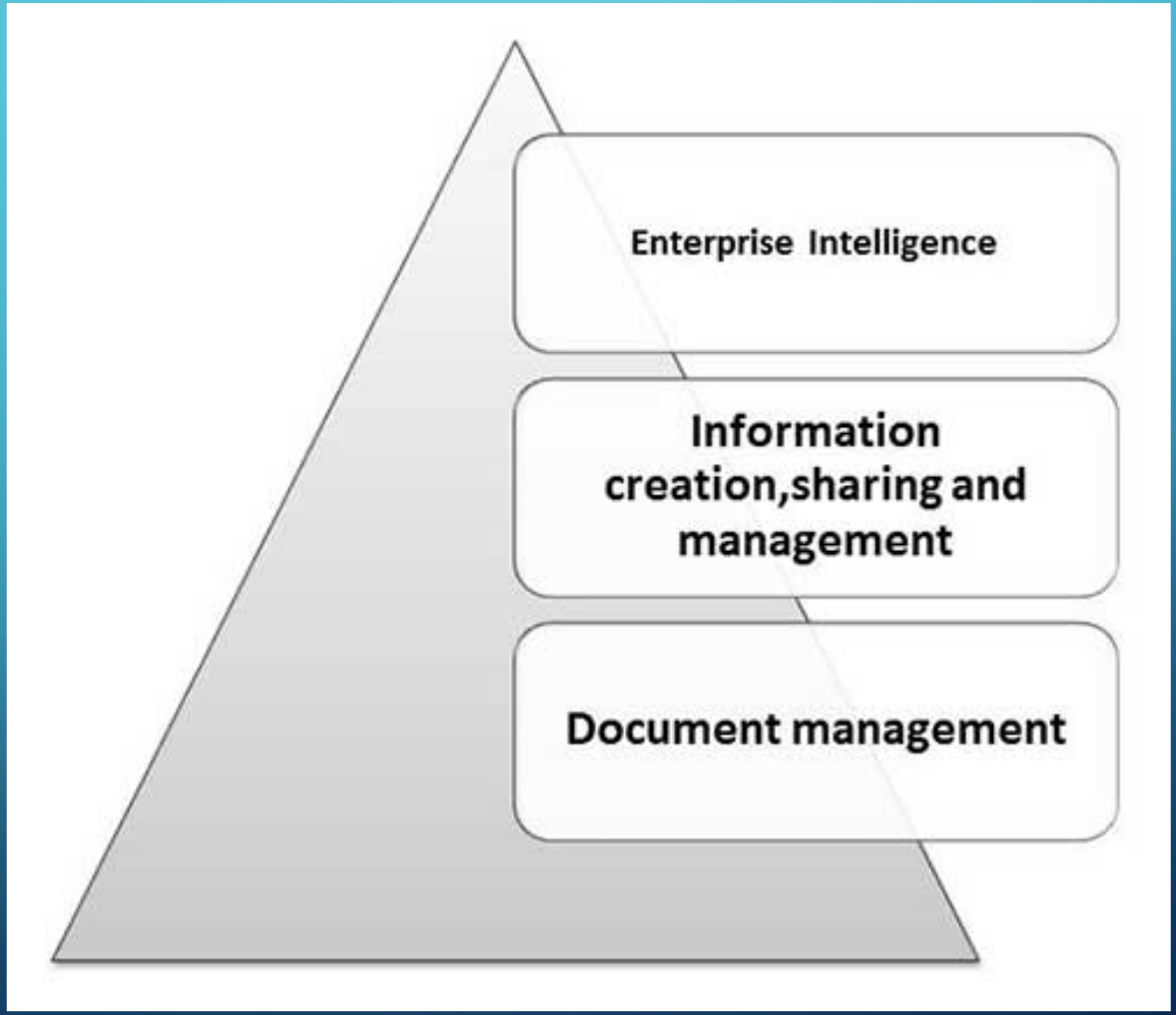
PURPOSE OF KMS

- Improved performance
- Competitive advantage
- Innovation
- Sharing of knowledge
- Integration
- Continuous improvement by:
  - Driving strategy
  - Starting new lines of business
  - Solving problems faster
  - Developing professional skills
  - Recruit and retain talent

ACTIVITIES IN KNOWLEDGE MANAGEMENT

- Start with the business problem and the business value to be delivered first.
- Identify what kind of strategy to pursue to deliver this value and address the KM problem.
- Think about the system required from a people and process point of view.
- Finally, think about what kind of technical infrastructure are required to support the people and processes.
- Implement system and processes with appropriate change management and iterative staged release.

LEVEL OF KNOWLEDGE MANAGEMENT



WEEK 11

CONTENT MANAGEMENT SYSTEM

CONTENT MANAGEMENT SYSTEM

- A Content Management System (CMS) allows publishing, editing, and modifying content as well as its maintenance by combining rules, processes and/or workflows, from a central interface, in a collaborative environment.
- A CMS may serve as a central repository for content, which could be, textual data, documents, movies, pictures, phone numbers, and/or scientific data.

FUNCTIONS OF CONTENT MANAGEMENT

- Creating content
- Storing content
- Indexing content
- Searching content
- Retrieving content
- Publishing content
- Archiving content
- Revising content
- Managing content end-to-end

CONTENT MANAGEMENT WORKFLOW

- Designing content template
  - Example: Web administrator designs webpage template for web content management.
- Creating content blocks
  - Example: A web administrator adds empower CMS tags called "content blocks" to webpage template using CMS.
- Positioning content blocks on the document
  - Example: Web administrator positions content blocks in webpage.
- Authoring content providers to search, retrieve, view and update content.

ADVANTAGES OF CMS

- Ensuring integrity and accuracy of content by ensuring only one user modifies the content at a time.
- Implementing audit trails to monitor changes made in content over time.
- Providing secured user access to content.
- Organization of content into related groups and folders.
- Allowing searching and retrieval of content.
- Recording information and meta-data related to the content, like author and title of content, version of content, date and time of creating the content etc.
- Workflow based routing of content from one user to another.
- Converting paper-based content to digital format.
- Organizing content into groups and distributing it to target audience.

WEEK 12

EXECUTIVE SUPPORT SYSTEM

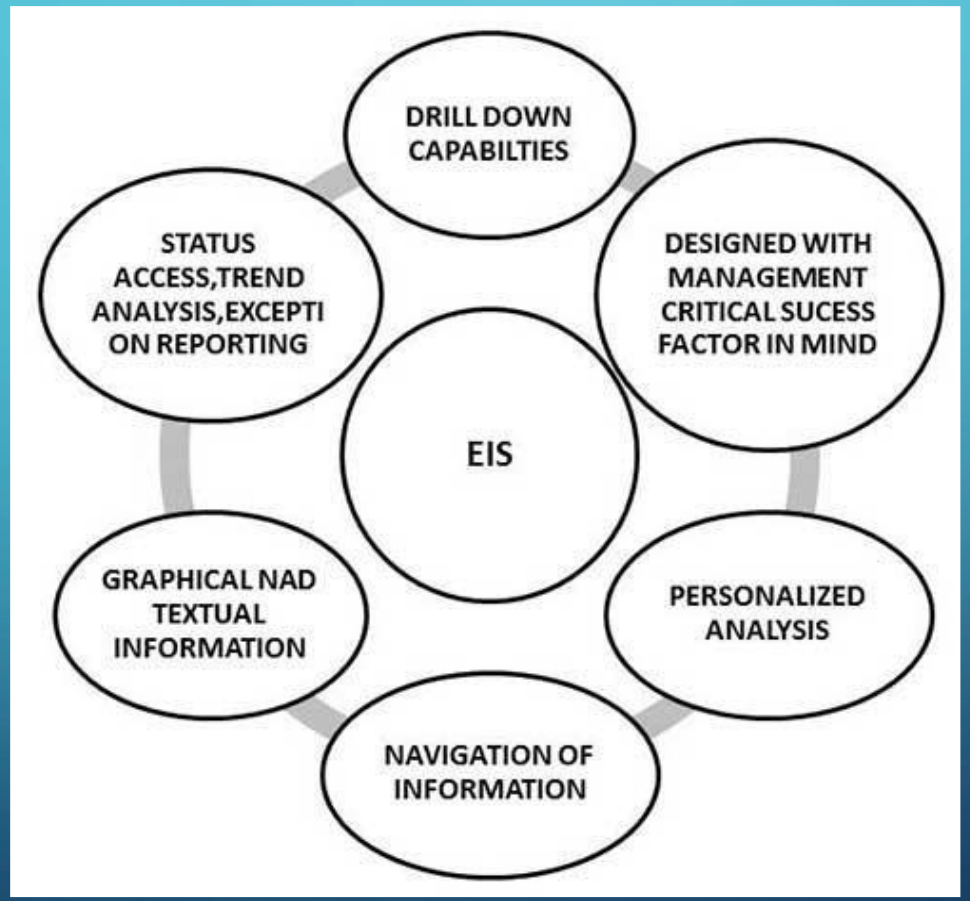
EXECUTIVE SUPPORT SYSTEM

- Executive support systems are intended to be used by the senior managers directly to provide support to non-programmed decisions in strategic management.
- These information are often external, unstructured and even uncertain. Exact scope and context of such information is often not known beforehand.
- This information is intelligence based:
  - Market intelligence
  - Investment intelligence
  - Technology intelligence

EXAMPLES OF INTELLIGENT INFORMATION

- External databases
- Technology reports like patent records etc.
- Technical reports from consultants
- Market reports
- Confidential information about competitors
- Speculative information like market conditions
- Government policies
- Financial reports and information

FEATURES OF EXECUTIVE INFORMATION SYSTEM



ADVANTAGES OF ESS

- Easy for upper level executive to use
- Ability to analyze trends
- Augmentation of managers' leadership capabilities
- Enhance personal thinking and decision-making
- Contribution to strategic control flexibility
- Enhance organizational competitiveness in the market place
- Instruments of change
- Increased executive time horizons.
- Better reporting system
- Improved mental model of business executive
- Help improve consensus building and communication

ADVANTAGES OF ESS

- Improve office automation
- Reduce time for finding information
- Early identification of company performance
- Detail examination of critical success factor
- Better understanding
- Time management
- Increased communication capacity and quality

DISADVANTAGE OF ESS

- Functions are limited
- Hard to quantify benefits
- Executive may encounter information overload
- System may become slow
- Difficult to keep current data
- May lead to less reliable and insecure data
- Excessive cost for small company

WEEK 13

SUPPLY CHAIN MANAGEMENT

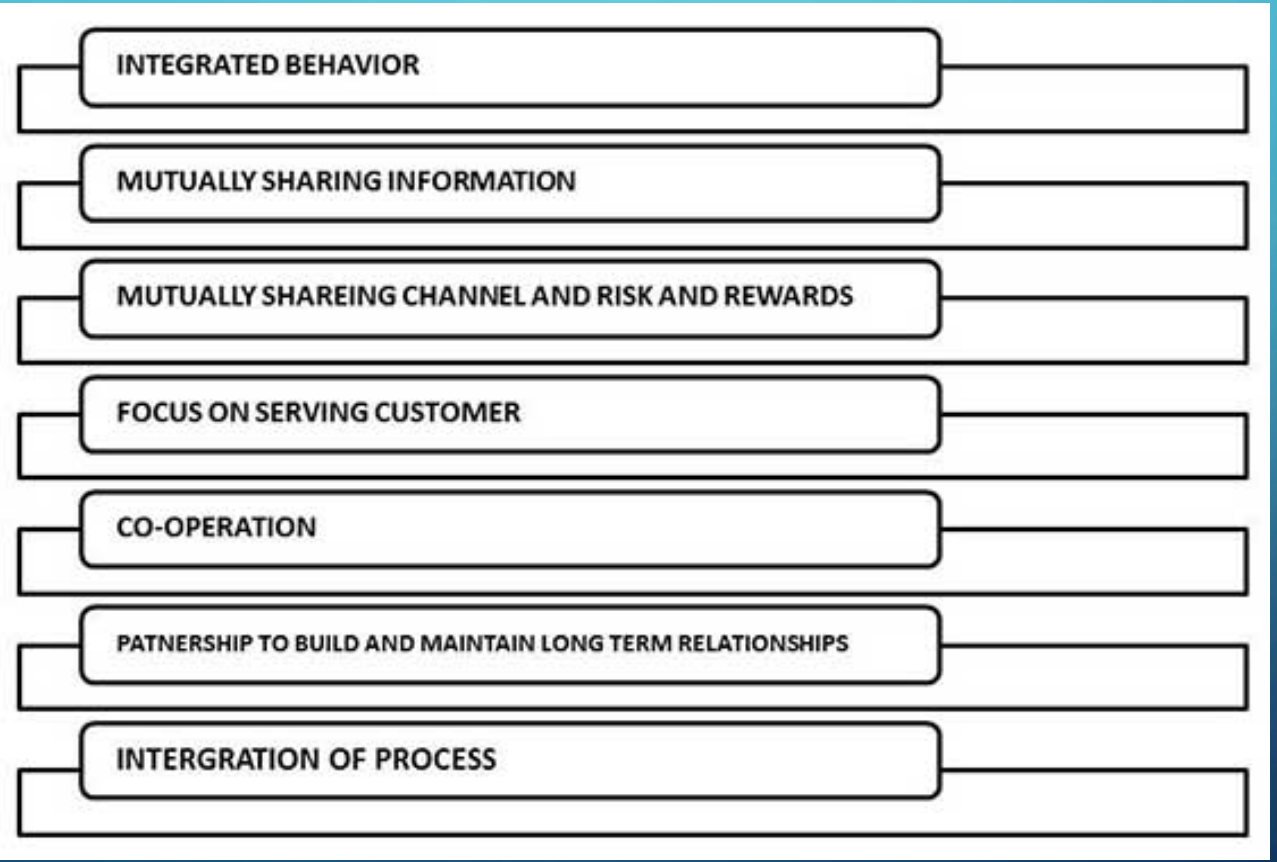
SUPPLY CHAIN MANAGEMENT

- Supply chain management is the systemic, strategic coordination of the traditional business functions and tactics across these business functions - both within a particular company and across businesses within the supply chain- all coordinated to improve the long-term performance of the individual companies and the supply chain as a whole.

CONTENTS AND OBJECTIVE

- Contents:
  - operations management
  - logistics
  - procurement
  - information technology
  - integrated business operations
- Objectives:
  - To decrease inventory cost by more accurately predicting demand and scheduling production to match it.
  - To reduce overall production cost by streamlining production and by improving information flow.
  - To improve customer satisfaction.

FEATURES OF SCM



SCOPE OF SCM


supplier management
inventory management
distribution management
channel management
Payment management
finacial management
sales force management
Scope

SCM PROCESSES

- Customer Relationship Management
- Customer Service Management
- Demand Management
- Customer Order Fulfillment
- Manufacturing Flow Management
- Procurement Management
- Product Development and Commercialization
- Returns Management

ADVANTAGES OF SCM

- To the suppliers:
  - Help in giving clear-cut instruction
  - Online data transfer reduce paper work
- Inventory Economy:
  - Low cost of handling inventory
  - Low cost of stock outage by deciding optimum size of replenishment orders
  - Achieve excellent logistical performance such as just in time
- Distribution Point:
  - Satisfied distributor and whole seller ensure that the right products reach the right place at right time
  - Clear business processes subject to fewer errors
  - Easy accounting of stock and cost of stock
- Channel Management:
  - Reduce total number of transactions required to provide product assortment
  - Organization is logically capable of performing customization requirements

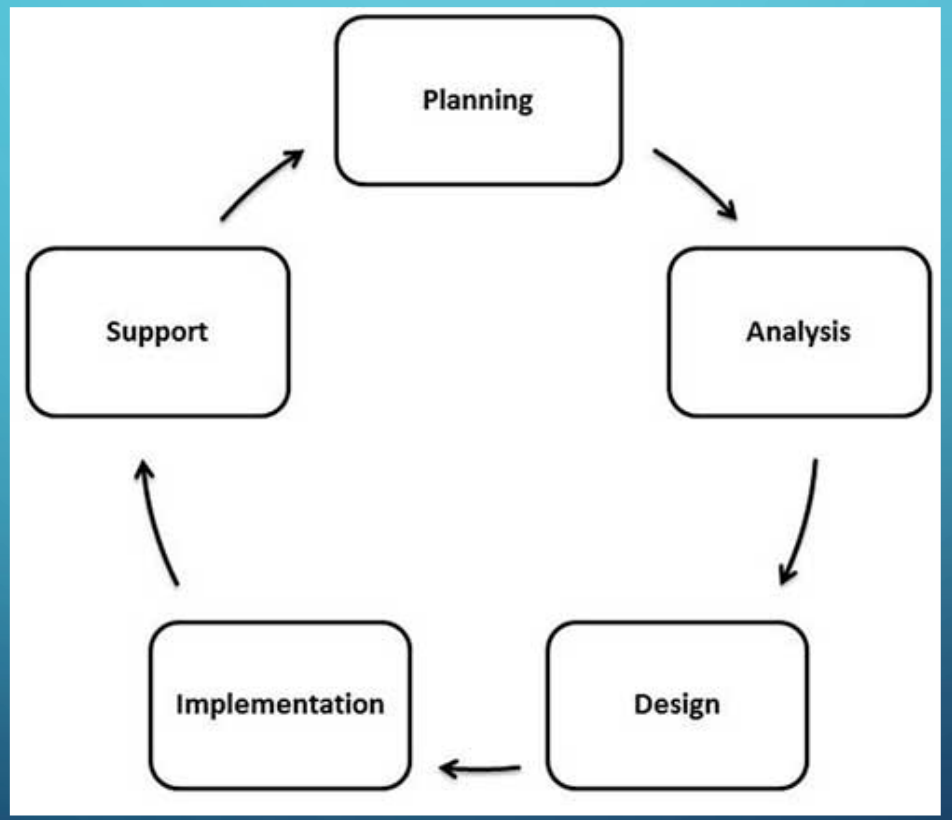
ADVANTAGES OF SCM

- Financial management:
  - Low cost
  - Realistic analysis
- Operational performance:
  - It involves delivery speed and consistency.
- External customer:
  - Conformance of product and services to their requirements
  - Competitive prices
  - Quality and reliability
  - Delivery
  - After sales services
- To employees and internal customers:
  - Teamwork and cooperation
  - Efficient structure and system
  - Quality work
  - Delivery

WEEK 14

SYSTEM DEVELOPMENT LIFE CYCLE

SYSTEM DEVELOPMENT LIFE CYCLE



PLANNING AND REQUIREMENT ANALYSIS

- The project planning part involves the following steps:
  - Reviewing various project requests
  - Prioritizing the project requests
  - Allocating the resources
  - Identifying the project development team
- The techniques used in information system planning are:
  - Critical Success Factor
  - Business System Planning
  - End/Mean Analysis
- The requirement analysis part involves understanding the goals, processes, and the constraints of the system for which the information system is being designed.

PLANNING AND REQUIREMENT ANALYSIS

- It is basically an iterative process involving systematic investigation of the processes and requirements. The analyst creates a blueprint of the entire system in minute details, using various diagramming techniques like:
  - Data flow diagrams
  - Context diagrams
- Requirement analysis has the following sub-processes:
  - Conducting preliminary investigation
  - Performing detailed analysis activities
  - Studying current system
  - Determining user requirements
  - Recommending a solution

DEFINING REQUIREMENTS

- The requirement analysis stage generally completes by creation of a 'Feasibility Report'. This report contains:
  - A preamble
  - A goal statement
  - A brief description of the present system
  - Proposed alternatives in details
- The feasibility report and the proposed alternatives help in preparing the costs and benefits study.
- Based on the costs and benefits, and considering all problems that may be encountered due to human, organizational or technological bottlenecks, the best alternative is chosen by the end-users of the system.

DESIGNING SYSTEM ARCHITECTURE

- System design specifies how the system will accomplish this objective. System design consists of both logical design and physical design activity, which produces 'system specification' satisfying system requirements developed in the system analysis stage.
- In this stage, the following documents are prepared:
  - Detailed specification
  - Hardware/software plan

BUILDING OR DEVELOPING THE SYSTEM

- The most creative and challenging phase of the system life cycle is system design, which refers to the technical specifications that will be applied in implementing the candidate system. It also includes the construction of programmers and program testing.
- It has the following stages:
  - Acquiring hardware and software, if necessary
  - Database design
  - Developing system processes
  - Coding and testing each module
- The final report prior to implementation phase includes procedural flowcharts, record layout, report layout and plan for implementing the candidate system. Information on personnel, money, hardware, facility and their estimated cost must also be available. At this point projected cost must be close to actual cost of implementation.

TESTING THE SYSTEM

- System testing requires a test plan that consists of several key activities and steps for programs, strings, system, and user acceptance testing. The system performance criteria deals with turnaround time, backup, file protection and the human factors.
- Testing process focuses on both:
  - The internal logic of the system/software, ensuring that all statements have been tested;
  - The external functions, by conducting tests to find errors and ensuring that the defined input will actually produce the required results.
- In some cases, a 'parallel run' of the new system is performed, where both the current and the proposed system are run in parallel for a specified time period and the current system is used to validate the proposed system.

DEPLOYMENT AND SYSTEM EVALUATION & MAINTENANCE

- Deployment of the System
  - At this stage, system is put into production to be used by the end users. Sometime, we put system into a Beta stage where users' feedback is received and based on the feedback, the system is corrected or improved before a final release or official release of the system.
- System Evaluation and Maintenance
  - Maintenance is necessary to eliminate the errors in the working system during its working life and to tune the system to any variation in its working environment. Often small system deficiencies are found, as system is brought into operation and changes are made to remove them. System planner must always plan for resources availability to carry on these maintenance functions.

WEEK 15

MIS DEVELOPMENT PROCESS

MIS DEVELOPMENT PROCESS

- In MIS, the information is recognized as a major resource like capital and time. If this resource has to be managed well, it calls upon the management to plan for it and control it, so that the information becomes a vital resource for the system.
  - The management information system needs good planning.
  - This system should deal with the management information not with data processing alone.
  - It should provide support for the management planning, decision-making and action.
  - It should provide support to the changing needs of business management.

CHALLENGES IN MIS IMPLEMENTATION

- Quantity, content and context of information - how much information and exactly what should it describe.
- Nature of analysis and presentation - comprehensibility of information.
- Availability of information - frequency, contemporariness, on-demand or routine, periodic or occasional, one-time info or repetitive in nature and so on
- Accuracy of information.
- Reliability of information.
- Security and Authentication of the system.

PLANNING FOR MIS

- There should be effective communication between the developers and users of the system.
- There should be synchronization in understanding of management, processes and IT among the users as well as the developers.
- Understanding of the information needs of managers from different functional areas and combining these needs into a single integrated system.
- Creating a unified MIS covering the entire organization will lead to a more economical, faster and more integrated system, however it will increase in design complexity manifold.

PLANNING FOR MIS

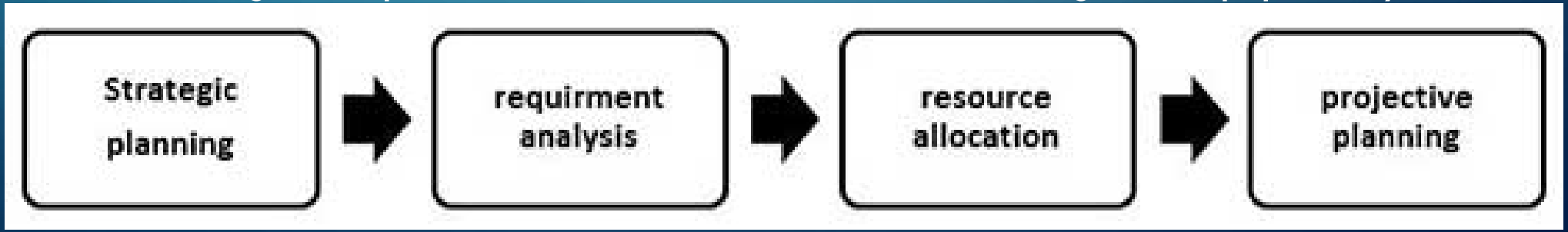
- The MIS has to be interacting with the complex environment comprising all other sub-systems in the overall information system of the organization. So, it is extremely necessary to understand and define the requirements of MIS in the context of the organization.
- It should keep pace with changes in environment, changing demands of the customers and growing competition.
- It should utilize fast developing in IT capabilities in the best possible ways.
- Cost and time of installing such advanced IT-based systems is high, so there should not be a need for frequent and major modifications.
- It should take care of not only the users i.e., the managers but also other stakeholders like employees, customers and suppliers.

PLANNING FOR MIS

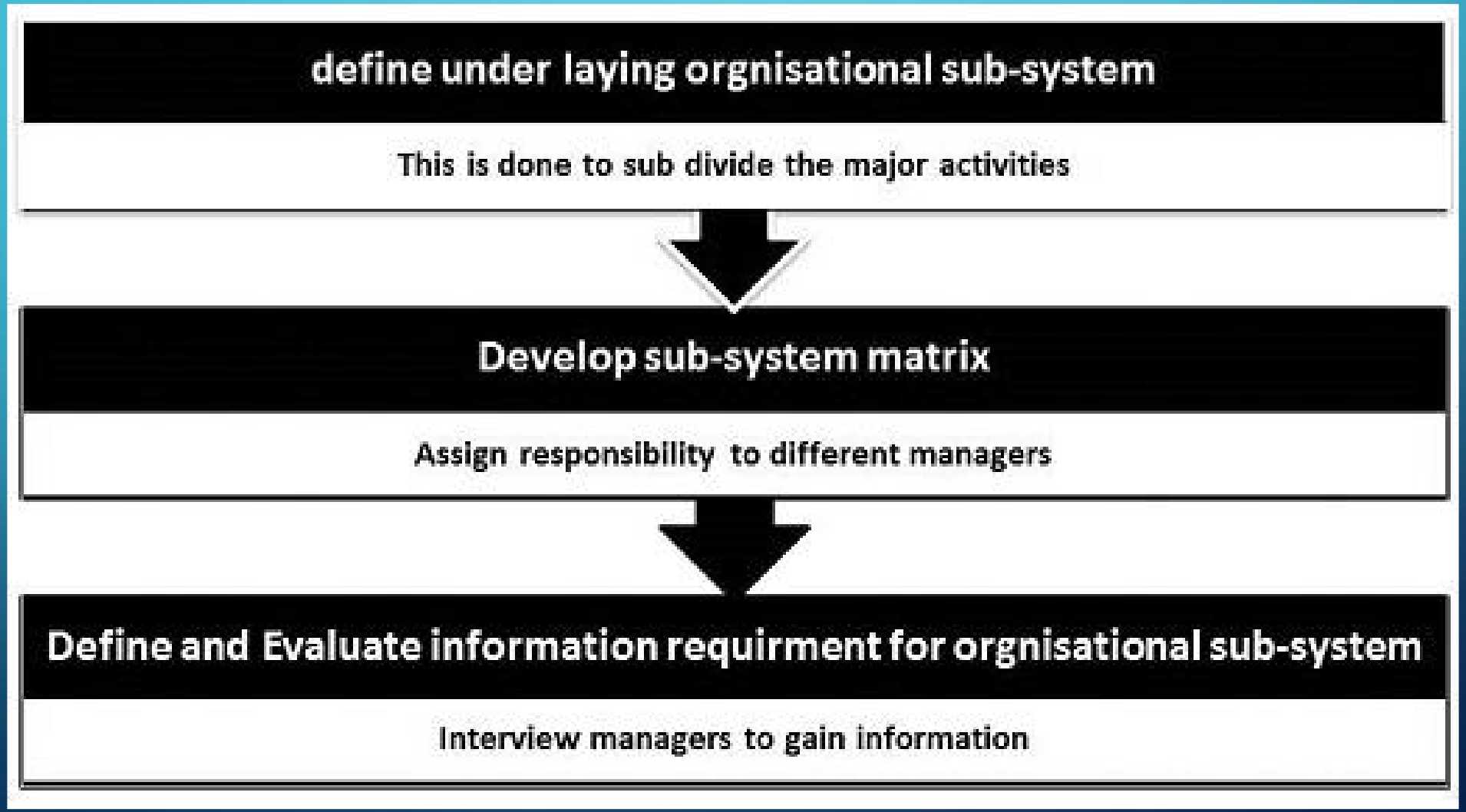
- Once the organizational planning stage is over, the designer of the system should take the following strategic decisions for the achievement of MIS goals and objectives:
  - Development Strategy: Example - an online, real-time batch.
  - System Development Strategy: Designer selects an approach to system development like operational verses functional, accounting verses analysis.
  - Resources for the Development: Designer has to select resources. Resources can be in-house verses external, customized or use of package.
  - Manpower Composition: The staffs should have analysts, and programmers.

INFORMATION SYSTEM PLANNING

- Identification of the stage of information system in the organization.
- Identification of the application of organizational IS.
- Evolution of each of this application based on the established evolution criteria.
- Establishing a priority ranking for these applications.
- Determining the optimum architecture of IS for serving the top priority



INFORMATION SYSTEM REQUIREMENTS



TECHNOLOGY FOR INFORMATION SYSTEMS

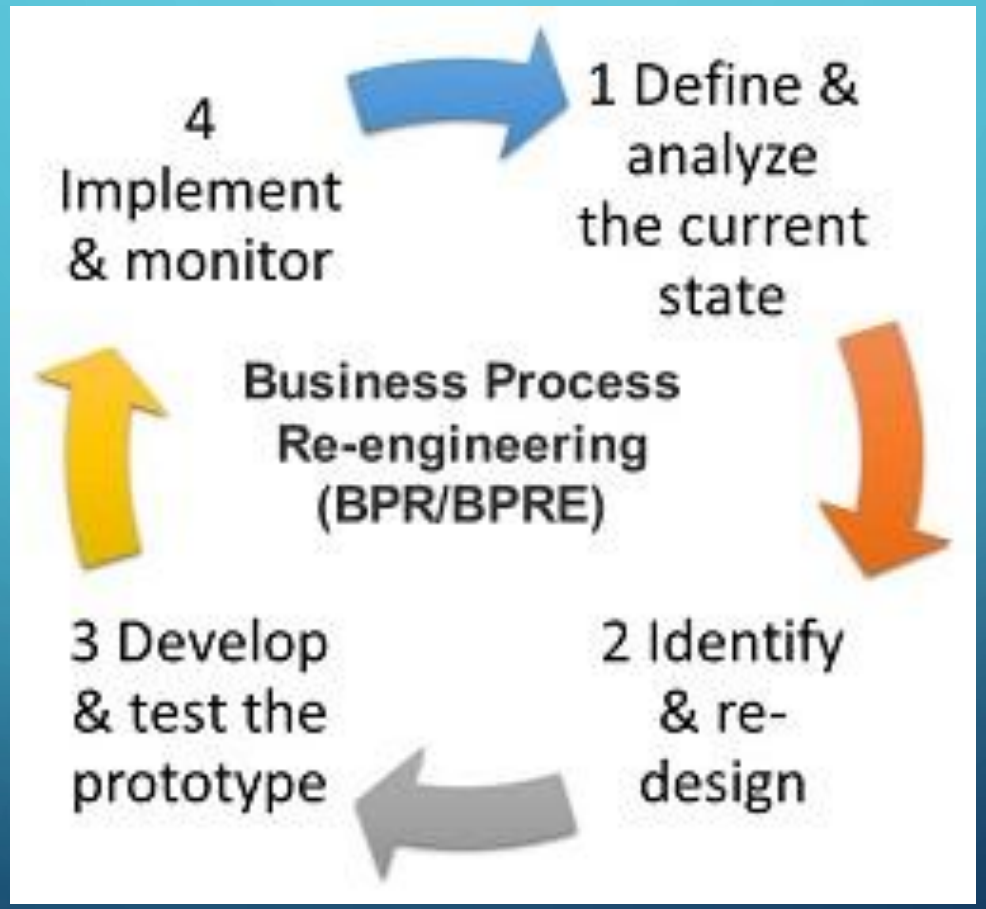
- Devices
- Data center systems - It is the environment that provides processing, storage, networking, management and the distribution of data within an enterprise.
- Enterprise software - These are software system like ERP, SCM, Human Resource Management, etc. that fulfill the needs and objectives of the organizations.
- IT services - It refers to the implementation and management of quality IT services by IT service providers through people, process and information technology. It often includes various process improvement frameworks and methodologies like six sigma, TQM, and so on.
- Telecom services

SYSTEM OPERATION

- Data security, backup and recovery;
- Systems control;
- Testing of the system to ensure that it works bug-free in all expected business situations;
- The hardware and software used should be able to deliver the expected processing;
- The system capacity and expected response time should be maintained;
- The system should be well documented including:
  - A user guide for inexperienced users,
  - A user reference or operations manual for advanced users,
  - A system reference manual describing system structures and architecture.

WEEK 16

BUSINESS PROCESS REENGINEERING (BPR)



WHAT IS BPR ABOUT..

- BPR involves the fundamental rethinking and radical redesign of business processes to achieve significant improvements in critical performance measures, such as cost, quality, service, and speed. This is not about making small adjustments; it's about completely reimagining how processes work.
- BPR is a transformative approach aimed at improving the efficiency and effectiveness of the business processes within an organization. In the context of Management Information Systems (MIS), BPR focuses on rethinking and redesigning the way work is performed to better support an organization's mission and reduce costs.

IMPORTANCE OF BPR

1. **Alignment with Business Goals:** BPR helps align processes with the strategic objectives of the organization.
2. **Integration with Technology:** MIS enables the automation and streamlining of reengineered processes, making them more efficient.
3. **Customer-Centric Approach:** Reengineering focuses on meeting customer needs more effectively by eliminating unnecessary steps and enhancing process efficiency.

KEY STEPS IN BPR

- **Identify Processes for Redesign:** Focus on processes that have the most significant impact on customer satisfaction and business outcomes.
- **Analyze Existing Processes:** Understand the current processes, identify inefficiencies, and gather data to inform the redesign.
- **Design New Processes:** Develop innovative processes that leverage MIS to streamline operations, improve information flow, and enhance decision-making.
- **Implement Changes:** Use MIS tools like ERP and CRM to automate and monitor new processes.
- **Continuous Improvement:** Regularly review processes to ensure they remain aligned with business goals and adapt to changes in the environment.

WEEK 17

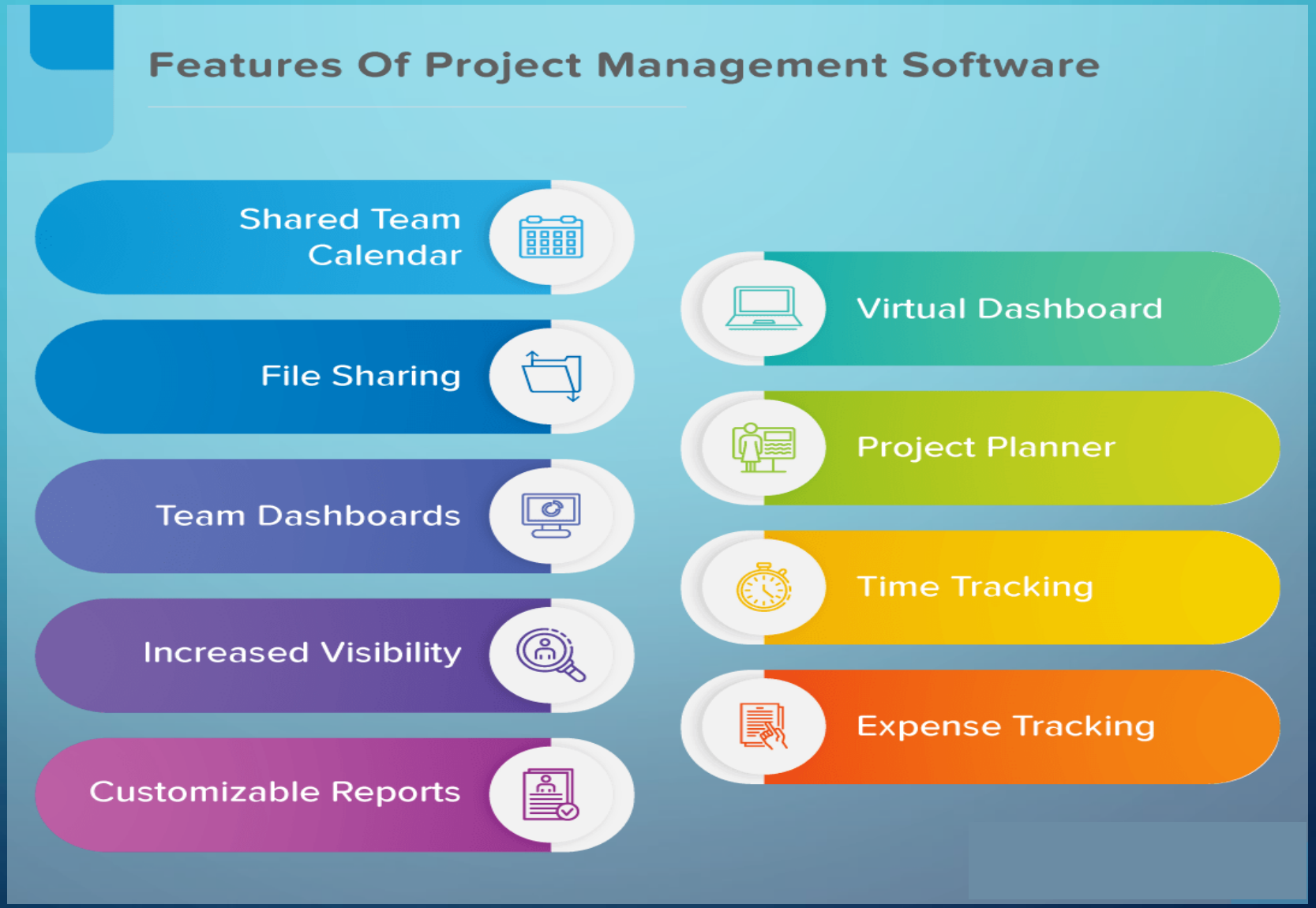
PROJECT MANAGEMENT SOFTWARE

What is Project Management Software? Project Management Software is a tool used to plan, organize, allocate resources, and manage project tasks. It facilitates collaboration, tracking of project progress, and helps ensure that projects align with business goals.

IMPORTANCE OF PMS

Efficiency and Organization: PMS helps streamline project workflows, reduce manual effort, and centralize information.
Resource Management: Efficiently allocate resources such as personnel, equipment, and budget, reducing wastage and ensuring optimal use.
Collaboration: Enhances communication and collaboration among team members, even if they are in different locations.
Real-Time Monitoring: Provides real-time updates on project progress, helping managers to identify bottlenecks and adjust plans accordingly.

EXAMPLES


Features Of Project Management Software
Shared Team Calendar
File Sharing
Team Dashboards
Increased Visibility
Customizable Reports
Virtual Dashboard
Project Planner
Time Tracking
Expense Tracking

BENEFITS OF USING PMS:

- Improved Productivity: Automation of routine tasks allows teams to focus on critical project components.
- Better Communication: Centralized communication channels keep everyone on the same page.
- Enhanced Decision-Making: Real-time data and analytics provide insights into project performance, aiding better decision-making.
- Risk Management: Early identification of potential risks and issues, enabling proactive measures to mitigate them.

CHALLENGES WITH PMS:

- Complexity: Some software can be complex and require training.
- Cost: High-end project management tools can be expensive.
- Adoption Resistance: Teams may resist adopting new software due to a learning curve or changes in workflow.