SNS COLLEGE OF TECHNOLOGY

Coimbatore-35

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DEPARTMENT OF MCA

23CAT604 – PRINCIPLES OF MANAGEMENT

I YEAR I SEM

UNIT5 –CONTROLLING

TOPIC 5– MIS

MIS - Definition and Concept

Right Information
To the right person
At the right place
At the right time
In the right form
At the right cost

The three sub-components

Management, Information and System

- together bring out the focus clearly & effectively.

System emphasizing a fair degree of integration and a holistic view;
Information stressing on processed data in the context in which it is used by end users;
Management focusing on the ultimate use of such information systems for managerial decision making.

MIS – Definition and Concept

A management information system (MIS) is system of collecting, processing, storing, disseminating and utilizing data in the form of information needed to carry out the functions of management.

Today, the term is used broadly in a number of contexts and includes (but is not limited to):

- Decision support systems,
- Resource and people management applications,
- Enterprise Resource Planning (ERP),
- Supply Chain Management (SCM),
- Customer Relationship Management (CRM),
- project management and database retrieval applications.

Difference between management information systems and information systems

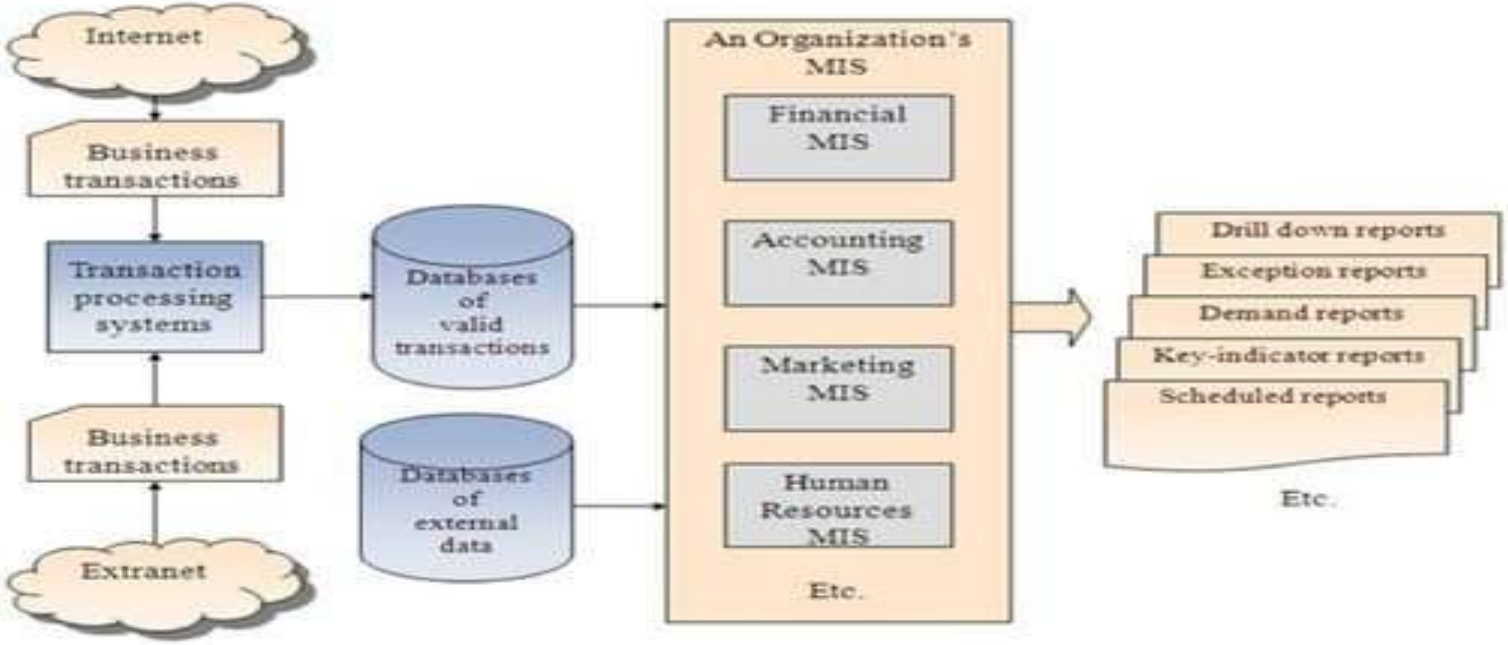
The terms *MIS* and IS are often confused. IS may include systems that are not intended for decision making. In effect, MIS must not only indicate how things are going, but why they are not going as well as planned where that is the case

- Information system applied to management context is called MIS. IS can be applied to any area of business while MIS is applicable for managerial decision-making.
- IS means use of hardware and software for any business. MIS can be used in any form - even manual reports, which aid decision-making
- MIS is used to analyze other information systems applied in operational activities in the organization.
- MIS summarize and report on the company's basic operations. The basic transaction data from TPS are compressed and reported

Outputs of MIS

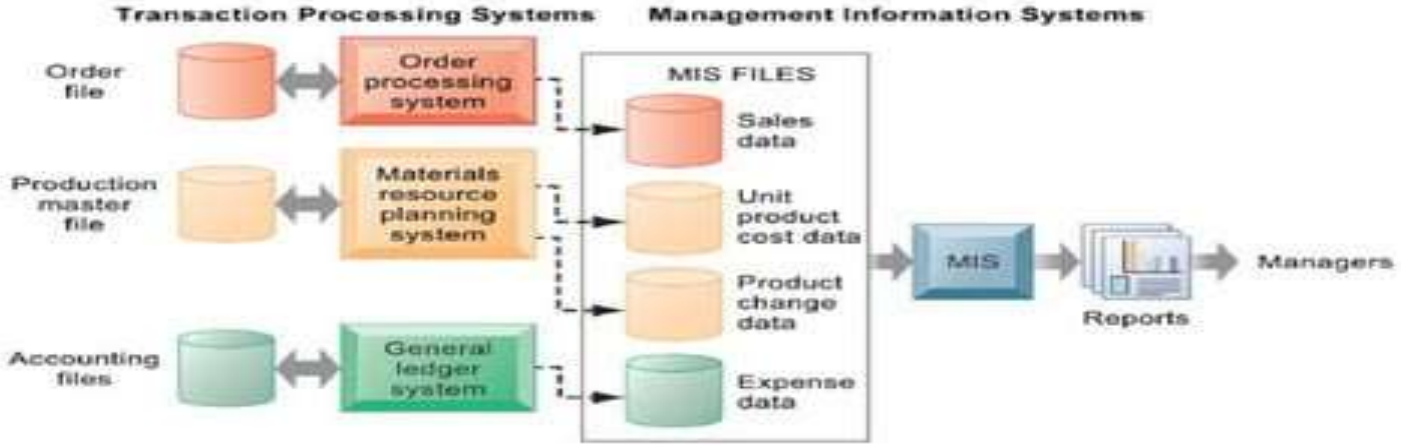
- Scheduled reports
  - Produced periodically, or on schedule (daily, weekly, monthly)
- Key Indicator Report
  - Summarizes the previous day's critical activities
- Demand Report
  - Gives certain report at manager's request
- Exception Report
  - Automatically produced when a situation is unusual or requires management action

MIS – Functional View



How MIS Obtain Data from TPS:

How MIS Obtain their Data from the Organization's TPS:



In the system illustrated by this diagram, three TPS supply summarized transaction data to the MIS reporting system at the end of the time period. Managers gain access to the organizational data through the MIS, which provides them with the appropriate reports.

Sample MIS Report

Consolidated Consumer Products Corporation Sales by Product and Sales Region: 2007

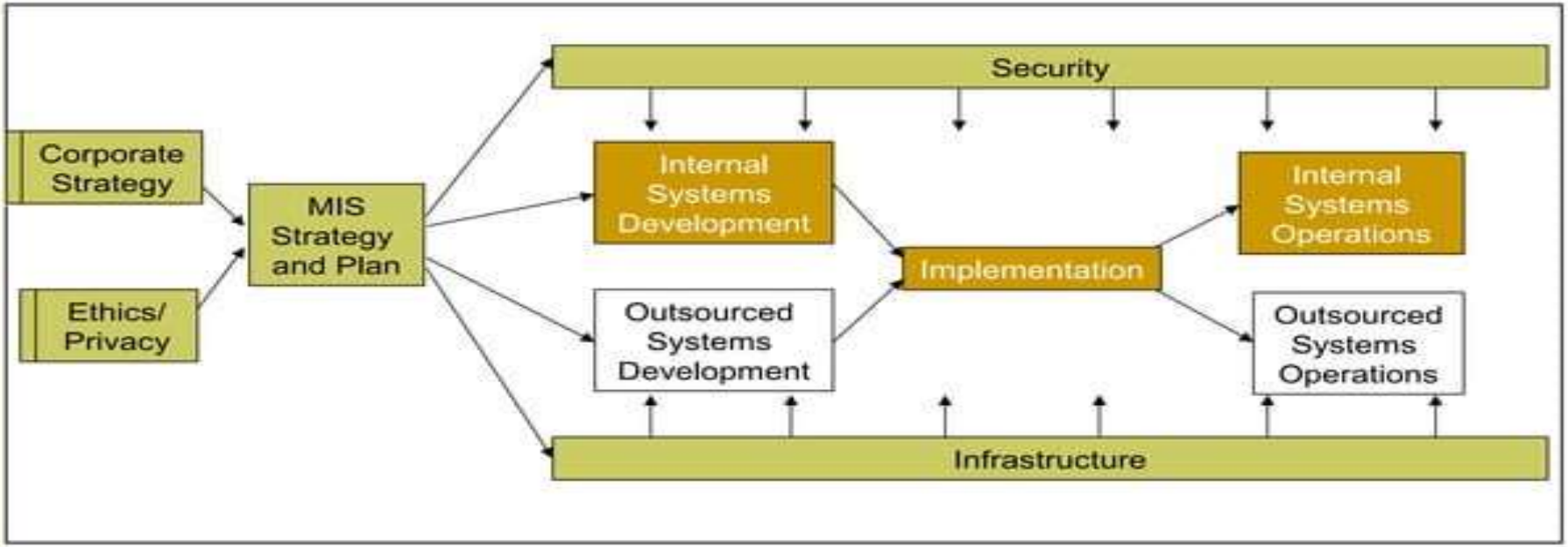
PRODUCT CODE	PRODUCT DESCRIPTION	SALES REGION	ACTUAL SALES	PLANNED	ACTUAL versus PLANNED
4469	Carpet Cleaner	Northeast	4,066,700	4,800,000	0.85
		South	3,778,112	3,750,000	1.01
		Midwest	4,867,001	4,600,000	1.06
		West	4,003,440	4,400,000	0.91
	TOTAL		16,715,253	17,550,000	0.95
5674	Room Freshener	Northeast	3,676,700	3,900,000	0.94
		South	5,608,112	4,700,000	1.19
		Midwest	4,711,001	4,200,000	1.12
		West	4,563,440	4,900,000	0.93
	TOTAL		18,559,253	17,700,000	1.05

This report, showing summarized annual sales data, was produced by the MIS in previous slide

Impact of MIS

- Management of marketing, finance, production and personnel becomes more efficient, the tracking and monitoring becomes easy
- Helps in understanding of business itself, MIS begins with definition of data and its attributes – uses data dictionary and brings common understanding of terms and terminology in organization
- MIS calls for systemization of business operations – leads to streamlining of operations, brings discipline in its operations everyone is required to follow
- Since the goals of MIS are driven from organization goals, it helps indirectly pulling everyone in organization towards corporate goals by providing relevant information to the people in organization
- MIS helps to monitor results and performances
- MIS provides alerts, in some cases daily, to managers at each level of the organization, on all deviations between results and pre-established objectives and budgets.
- IT enabled MIS is partly responsible for the PARADIGM shift (A change, a new model,) from support to contributing to an organizations profitability

MIS Development Outlook



Pointers for MIS Design

- To take care for data problems (bias and error) by high level validations, checking and controlling the procedures.
- Due regard to the communication theory of transmitting the information from the source to the destination.
  - Handling of noise and distortion by summarization and message routing
  - Ensuring that no information is suppressed or over emphasized
- To provide specific attention to quality parameters – Utility, Satisfaction, Error and Bias
  - By controlling inputs to the MIS on the factors of impartiality, validity, reliability, consistency and age
- Should make a distinction between the different kinds of information for the purpose of communication. Say an action, a decision oriented information should be distinguished from a non action/knowledge-oriented information.
- To recognize some aspects of human capabilities as a decision maker. Capabilities differ from manager to manager and the designer should skillfully deal with them.
- It should meet the needs of the total organization.
- Recognizing that the information may be misused if it falls into wrong hands, the MIS design should have the features of filtering, blocking, suppressions, and delayed delivery.

MIS Planning

A very important fundamental concept of MIS planning is that the organization's strategic plan (Business Plan) should be the basis for MIS strategic plan.

Alignment of MIS strategy with organizational strategy is one of the central problems of MIS planning.

The Information Master Plan establishes a framework for all detailed information system planning.

Information Master Plan typically has one long-range plan for three to five years (or more) and one a short-range plan for one year.

The long-range portion provides general guidelines for direction and short-range portion provides a basis for specific accountability as to operational and financial performance.

In general, plan contains four major sections:

- Information system goals, objectives and architecture (assessment of organizational context);
- Inventory of current capabilities;
- Forecast of development affecting the plan;
- The specific plan.

Systems Development Life Cycle (SDLC)

Activities that go into production of an MIS to an organizational problem or opportunity:

- **Project definition** Determines whether or not the organization has a problem and whether or not the problem can be solved by launching a system project.
- **Systems study** Analyzes the problems of existing systems, defines the objectives to be attained by a solution and evaluates various solution alternatives.
- **Design** Logical and physical design specifications for the systems solution are produced.
- **Programming** Specifications from *design stage* translated into program code.
- **Installation** The final steps required to put a system into operation or production: testing, training and conversion.
- **Post-implementation** System is used and evaluated while in production and is modified to make improvements or meet new requirements.

SDLC


Systems Analysis
System Design
Programming
Testing
Conversion
Production and Maintenance

Project definition & Systems study

Systems Analysis (study)

The analysis of a problem that the organization will try to solve with an information system; describes what a system should do.

- **Feasibility study** A way to determine whether the solution is achievable, given the organization's resources and constraints.
- **Technical feasibility** Determines whether a proposed solution can be implemented with available hardware, software, and technical resources.
- **Economic feasibility** Determines whether the benefits of a proposed solution outweigh the costs.
- **Operational feasibility** Determines whether a proposed solution is desirable within the existing managerial and organizational framework.
- **Information requirements** A detailed statement of the information needs that a new system must satisfy; identifies who needs what information, and when, where and how the information is needed

Systems Design

Phase of detailing how a system will meet the information requirements determined by the systems analysis. This phase is broken into two sub phases:

1. **Logical design** 1st phase, lays out the components of the information system and their relationship to each other as they would appear to users.

2. **Physical design** 2nd phase, the process of translating the abstract logical model into the specific technical design for the new system

Tools and Techniques used for designing:

Flow Chart	Dataflow Diagrams (DFDs)
Data Dictionary	Structured English
Decision Table	Decision Tree

Design specifications include: Output, Input, User interface, Database design, Manual procedures , Documentation etc..

Construction (Programming & Testing)

- **Programming**

The process of translating the system specifications prepared during the design stage into code

- **Test plan**
  Prepared by the development team in conjunction with the users; it includes all of the preparations for the series of tests to be performed on the system.
- **Testing**
  The exhaustive and thorough process that determines whether the system produces the desired results under known conditions.
  - **Unit testing**
    The process of testing each program separately in the system. Sometimes called program testing.
  - **System testing**
    Tests the functioning of the information systems as a whole in order to determine if discrete modules will function together as planned.
  - **Acceptance testing**
    Provides the final certification that the system is ready to be used in a production setting.
- **Documentation**
  Descriptions of how an information system works from both the technical and the end-user standpoint.

Installation

- **Conversion**
  The process of changing from the old system to the new system.
- **Conversion plan**
  Provides a schedule of all activities required to install a new system.
- **Parallel strategy**
  A safe and conservative conversion approach where both the old system and its potential replacement are run together for time until everyone is assured that the new one functions correctly.
- **Direct cut-over**
  A risky conversion approach where the new system completely replaces the old one on an appointed day.
- **Pilot study**
  A strategy to introduce the new system to a limited area of the organization until it is proven to be fully functional; only then can the conversion to the new system across the entire organization take place.
- **Phased approach**
  Introduces the new system in stages either by functions or by organizational units.

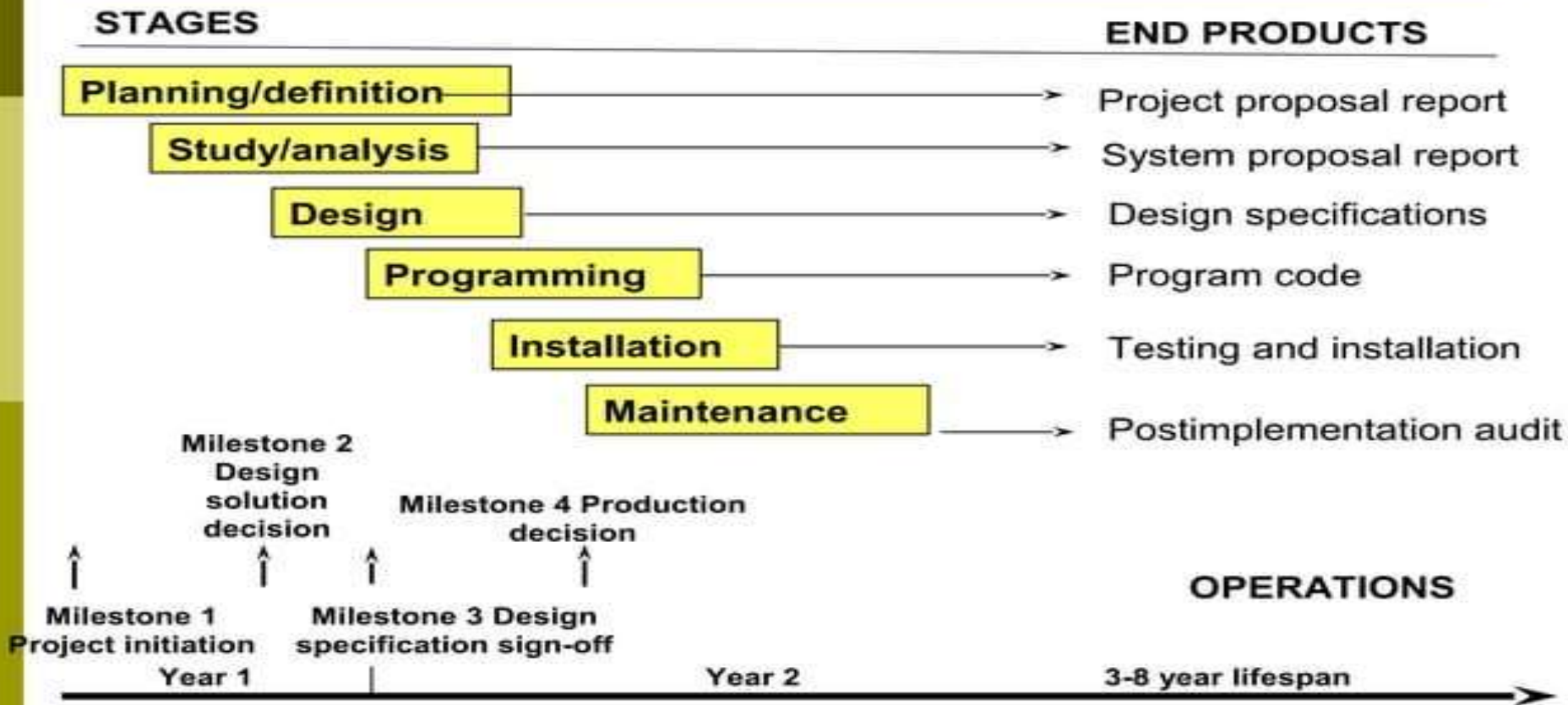
ost-implementation

- **Production**
  The stage after the new system is installed and the conversion is complete; during this time the system is reviewed by users and technical specialists to determine how well it has met its original goals.
- **Maintenance**
  Changes in hardware, software, documentation, or procedures to production system to correct errors, meet new requirements, or improve processing efficiency

Software Development Methodology: Approaches

The software development methodology is an approach used by organizations and project teams to apply the software development methodology framework.

Development Approach – Waterfall Model



Development Approach – Waterfall Model

Sequential development approach, in which development is seen as flowing steadily downwards (like a waterfall).

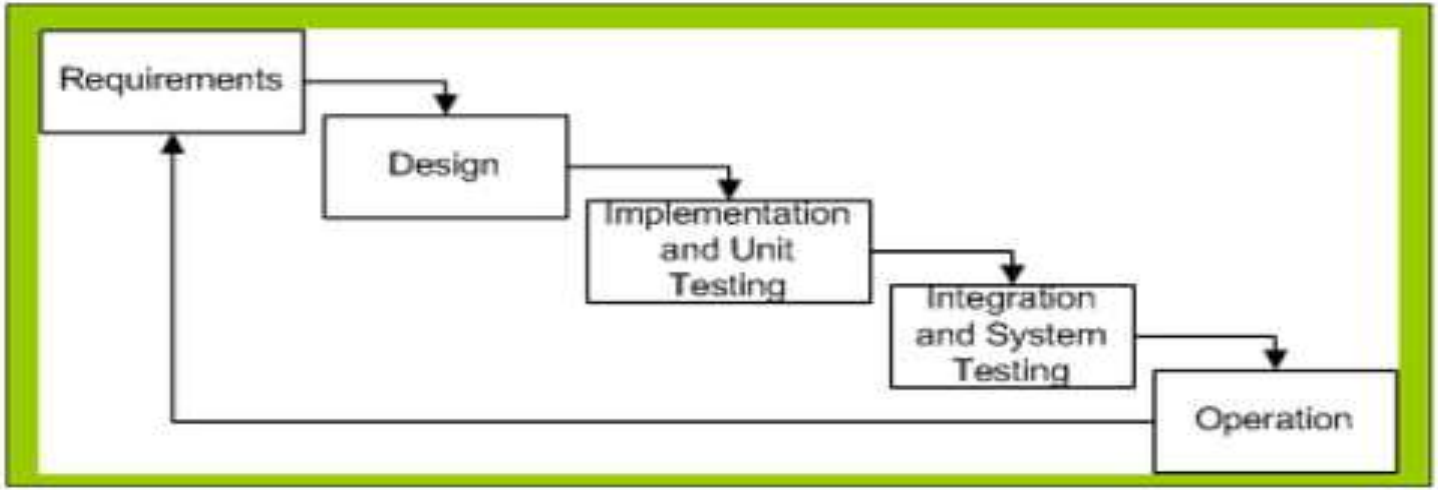
Advantages

- Simple and easy to use.
- Easy to manage due to the rigidity of the model – each phase has specific deliverables and a review process.
- Phases are processed and completed one at a time.
- Works well for smaller projects where requirements are very well understood.

Disadvantages

- Adjusting scope during the life cycle can kill a project
- No working software is produced until late during the life cycle.
- High amounts of risk and uncertainty.
- Poor model for complex and object-oriented projects.
- Poor model for long and ongoing projects.
- Poor model where requirements are at a moderate to high risk of changing.

Development Approach – Incremental Model



Development Approach – Incremental Model

The incremental model is an intuitive approach to the waterfall model. Multiple development cycles take place here, making the life cycle a "multi-waterfall" cycle. Cycles are divided up into smaller, more easily managed iterations. Each iteration passes through the requirements, design, implementation and testing phases.

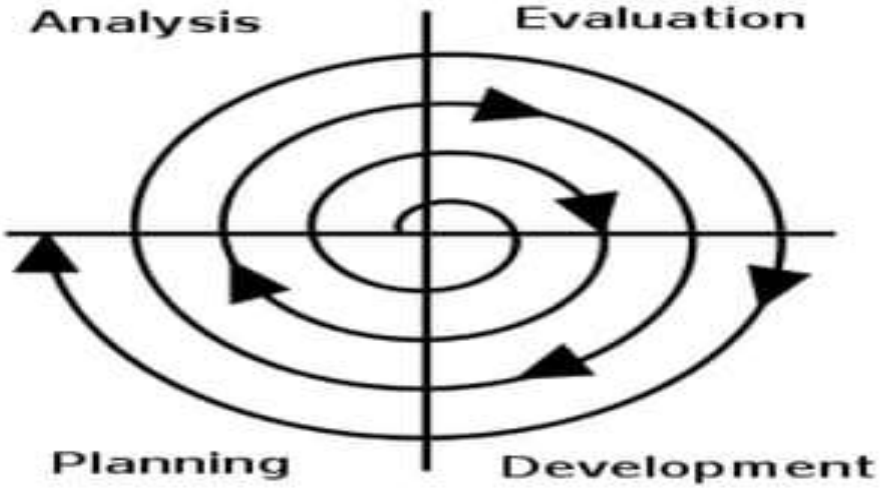
Advantages

- Generates working software quickly and early during the software life cycle.
- More flexible – less costly to change scope and requirements.
- Easier to test and debug during a smaller iteration.
- Easier to manage risk because risky pieces are identified and handled during its iteration.
- Each iteration is an easily managed milestone.

Disadvantages

- Each phase of an iteration is rigid and do not overlap each other.
- Problems may arise pertaining to system architecture because not all requirements are gathered up front for the entire software life cycle.

Development Approach - Spiral Model



Development Approach – Spiral Model

The spiral model is similar to the incremental model, with more emphasis placed on risk analysis. The spiral model has four phases: Planning, Risk Analysis, Engineering and Evaluation. A software project repeatedly passes through these phases in iterations (called Spirals in this model). The baseline spiral, starting in the planning phase, requirements are gathered and risk is assessed. Each subsequent spirals builds on the baseline spiral.

Advantages

- High amount of risk analysis
- Good for large and mission-critical projects.
- Software is produced early in the software life cycle.

Disadvantages

- Can be a costly model to use.
- Risk analysis requires highly specific expertise.
- Project's success is highly dependent on the risk analysis phase.
- Doesn't work well for smaller projects.

Development Approach : Prototyping

Prototype: Preliminary working version of information system for demonstration, evaluation purposes

Prototyping: Process of building experimental system quickly for demonstration and evaluation. Small-scale mock-ups of the system are developed following an iterative modification process until the prototype evolves to meet the users' requirements

- Advantages:
  - Useful in designing system's end user interface
  - Often faster
  - Attempts to reduce inherent project risk by breaking a project into smaller segments and providing more ease-of-change during the development process
  - User is involved throughout the development process, which increases the likelihood of user acceptance of the final implementation.

- Problems:
  - Omission of basic requirements.
  - Lack of documentation, testing.
  - Prototyping tools may not be capable of developing complex systems.

Alternative Methodology: Object-Oriented Development:

- Uses the object as the basic unit of systems analysis and design
- Objects combine data, and processes used on the data
- Use class and inheritance to group objects and apply common embedded procedures
- Development is iterative and incremental
- Analysis identifies objects, classes of objects, and behavior of objects.

Alternative Methodology: End-User Development

- Development by end users with little or no help formal assistance from technical specialist
- Allows users to specify their own business needs
- Doesn't require IT staff so is more rapid
- Appropriate mainly for smaller applications
- Generally not well designed, easily maintained or efficient software
- Creates islands of software in firm, and redundancies

Alternative Methodology: Acquiring Software Packages

Commercial Off the Shelf (COTS) Packages

- Set of prewritten application software programs that are commercially available
- Modification of software package to meet organization's needs may be required

Customization:

- "Tailor and off the rack suit"
- Great if you are a close fit
- Ends up more trouble than worth if you aren't close fit..

Alternative Methodology : Outsourcing

The purchase of an externally produced good or service that was previously produced internally

- Advantages
  - Economy
  - Predictability
  - Frees up human resources
- Disadvantages
  - Loss of control
  - Vulnerability of strategic information
  - Dependency

Thank You