Lecture One

Projects Management

Definition:

Project management is the application of processes, methods, skills, knowledge and experience to achieve specific project objectives according to the project acceptance criteria within agreed parameters. Project management has final deliverables that are constrained to a finite timescale and budget.

Time, cost, and scope are the three primary variables (or triple constraints) in any project. The purpose of project management is to ensure that the delivered product, service or result meets the customer's requirements and is delivered on time and within budget. A project management methodology improves the quality of project planning, communication, control of the execution and closure processes, and thus the deliverables. As the project progresses, and as challenges or changes emerge, the Project Manager must understand and balance the project's scope, schedule, cost, and quality objectives.

A key factor that distinguishes project management from just 'management' is that it has this final deliverable and a finite timespan, unlike management which is an ongoing process. Because of this a project professional needs a wide range of skills; often technical skills, and certainly people management skills and good business awareness.

Typical attributes of a Project are:

1. A project has a unique purpose.
2. A project is temporary (definite beginning and definite end).
3. A project requires resources (people, hardware, software, and other assets).
4. A project should have a primary sponsor or customer (provides direction and funding for the project).
5. A project involves uncertainty (every project is unique).

The Stages of a Project:

All projects pass through at least four identifiable phases:

1. **Conception.**
2. **Development.**
3. **Realisation.**
4. **Termination.**

The Conception Phase:

The feasibility study must take place during this phase and will include (price, outline specification, contract conditions, budget and resource requirements).

The Development Phase:

A detailed project plan should be drawn up under the direction of the project manager

The Realisation Phase:

A comprehensive project log should be kept with details of any problems which have been met and the way they were resolved.

The Termination Phase:

An analysis of the project reports will provide invaluable information which can be helpful in other projects.

Why do project success?

There are many elements lead to the success of the project, the most important:

1. Executive management support.
2. User involvement.
3. Good project manager.
4. Clear requirements.
5. Proper planning.

Why do project fail?

There are many elements lead to the failed of the project, the most important:

1. Lack of executive support.
2. Lack of user input.
3. Incomplete requirements specification
4. Changing requirements.

Characteristics of a good project manager:

A. Personality:
1. Ability to motivate people.
2. Competent, makes clear decisions, issues precise instructions, delegates well, and accepts advice.
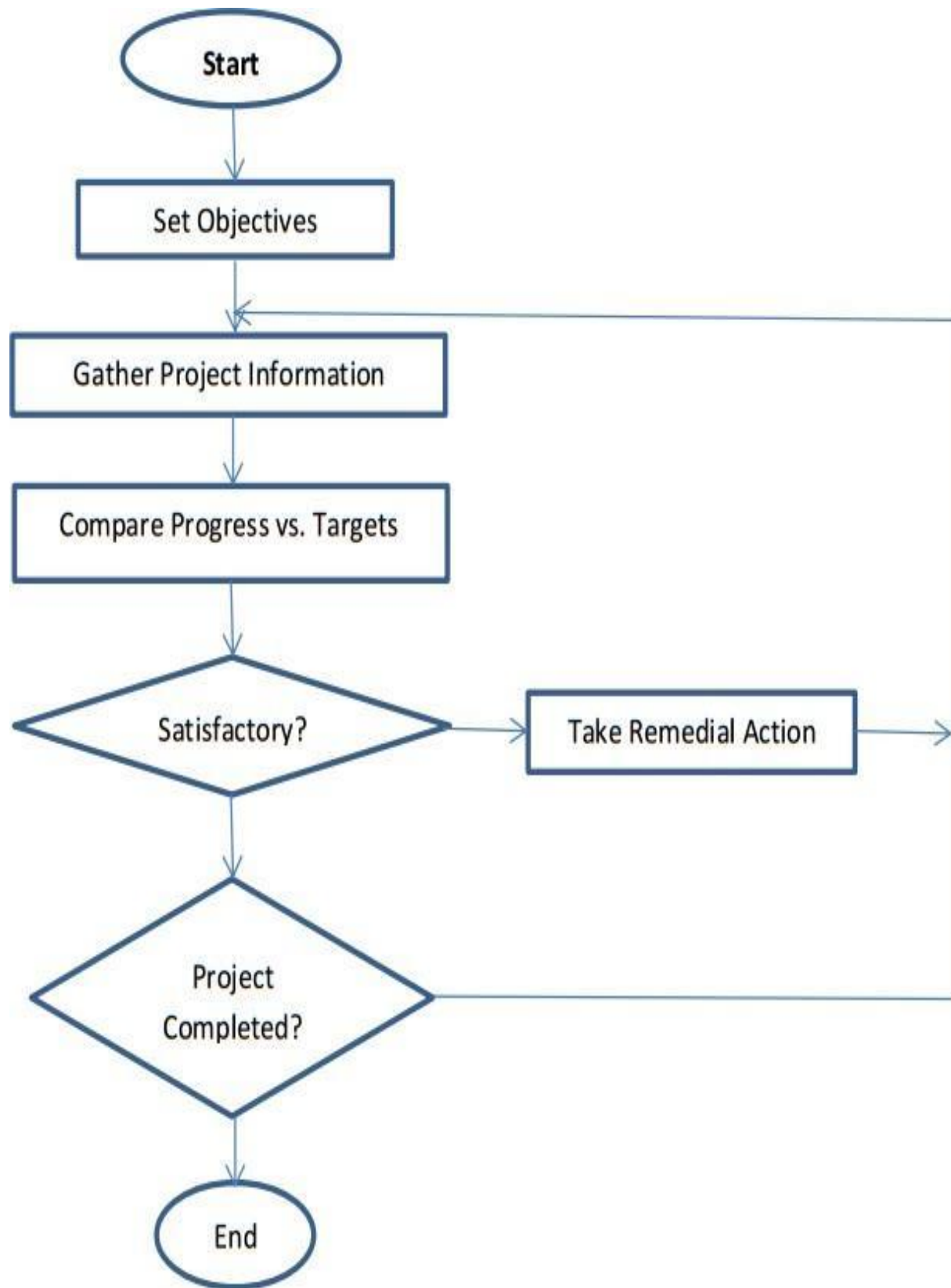
B. Perceptiveness:
1. Ability to select salient facts.
2. Ability to perceive what needs action now, in the future, not at all.

C. General knowledge and current awareness.

The project control life cycle:

Enterprise Systems includes the development and integration, system and application engineering and technical support to improve the automated systems and agency-wide applications of an organization. It involves:

1. Planning,
2. Design,
3. Development,
4. Testing,
5. Implementation,
6. Operations coordination,
7. Maintenance

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Start

Set Objectives

Gather Project Information

Compare Progress vs. Targets

Satisfactory?

Take Remedial Action

Project Completed?

End

Lecture Two

Project Management Methodology

A Structured Project Management Methodology:-

1- Waterfall Development:

The waterfall model is a classical model used in system development life cycle to create a system with a linear and sequential approach. It is termed as waterfall because the model develops systematically from one phase to another in a downward fashion. This model is divided into different phases and the output of one phase is used as the input of the next phase. Every phase has to be completed before the next phase starts and there is no overlapping of the phases.

Description: The sequential phases described in the Waterfall model are:

1. Requirement Gathering- All possible requirements are captured in product requirement documents.

2. Analysis Read - the requirement and based on analysis define the schemas, models and business rules.

3. System Design -- Based on analysis design the software architecture.

4. Implementation Development of the software in the small units with functional testing.

5. Integration and Testing Integrating of each unit developed in previous phase and post integration test the entire system for any faults.

6. Deployment of system - Make the product live on production environment after all functional and nonfunctional testing completed.

7. Maintenance Fixing issues and release new version with the issue patches as required.

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Advantages:

1. Easy to use, simple and understandable,

 2. Easy to manage as each phase has specific outputs and review process,

3. Clearly-defined stages,

4. Works well for smaller projects where requirements are very clear,

 5. Process and output of each phase are clearly mentioned in the document.

**The two key advantages of waterfall development based methodologies are:**

- that system requirements are identified long before programming begins.

- that changes to the requirements are minimized as the project proceeds.

Disadvantages:

1. It doesn't allow much reflection or revision. When the product is in testing phase, it is very difficult to go back and change something which is left during the Requirement analysis phase.

2. Risk and uncertainty are high.

3. Not advisable for complex and object-oriented projects.

4. Changing requirements can't be accommodated in any phase.

5. As testing is done at a later phase. So, there is a chance that challenges and risks at earlier phases are not identified.

This methodology is called waterfall development because:

-it moves forward from phase to phase in the same manner as a waterfall.

-it is possible to go backward in the SDLC, it is extremely difficult**.**
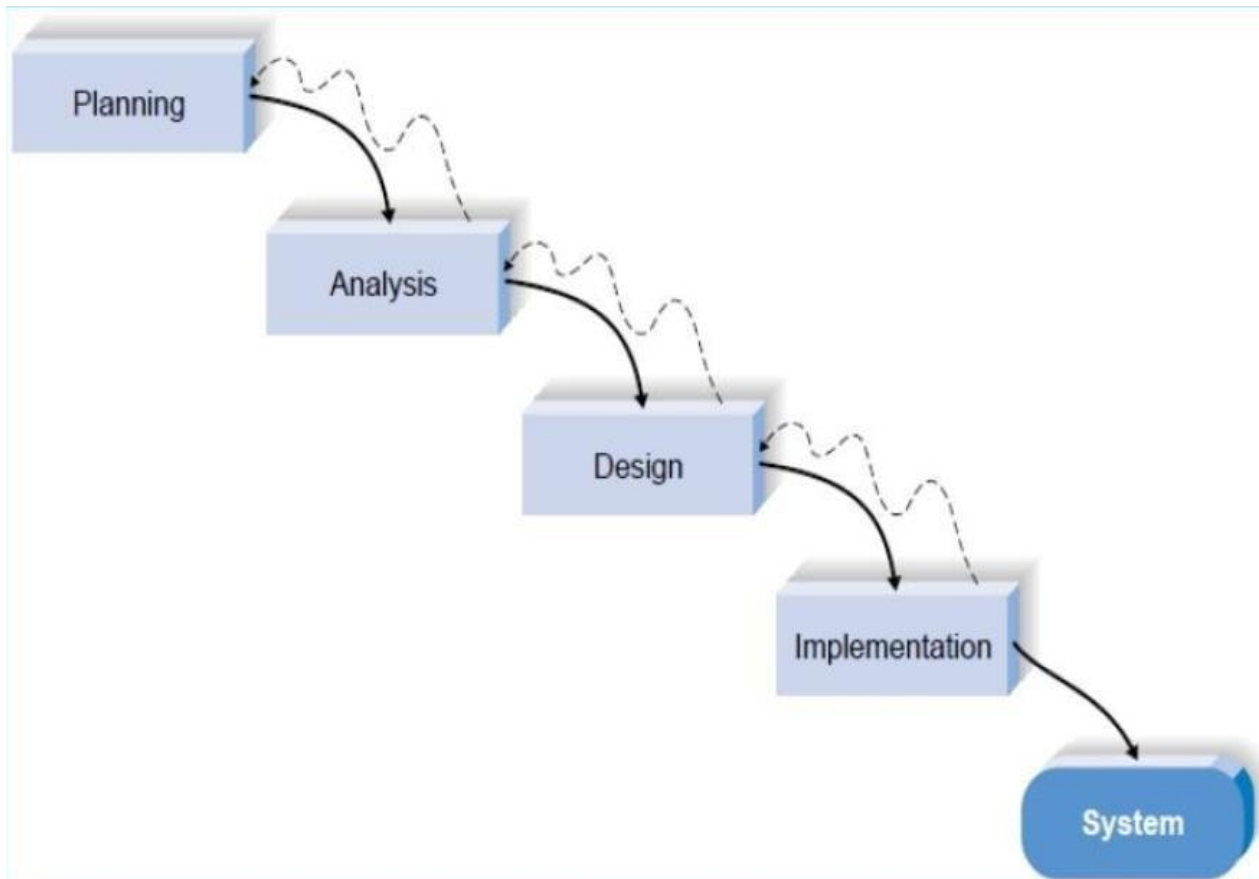
"Waterfall Development-based Methodology"

2- Parallel Development:

Many software projects, especially in their early stages, follow a strictly linear development progression in which each successive version of the software is derived from, and increments, the previous version. The configuration management of such a project is straightforward, since in general there is just one "latest and greatest" version of the software, which forms the context in which all development work takes place.

Parallel development occurs when there is a need for separate development paths to diverge from a common starting point, so that there is no longer a single "latest and greatest" version, but instead two or more concurrent "latest" configurations (often called *variants*) where new development is carried on. Also implicit is the potential need for the divergent development paths to converge again. This means that any strategy for development branching should also take into account the process for merging.
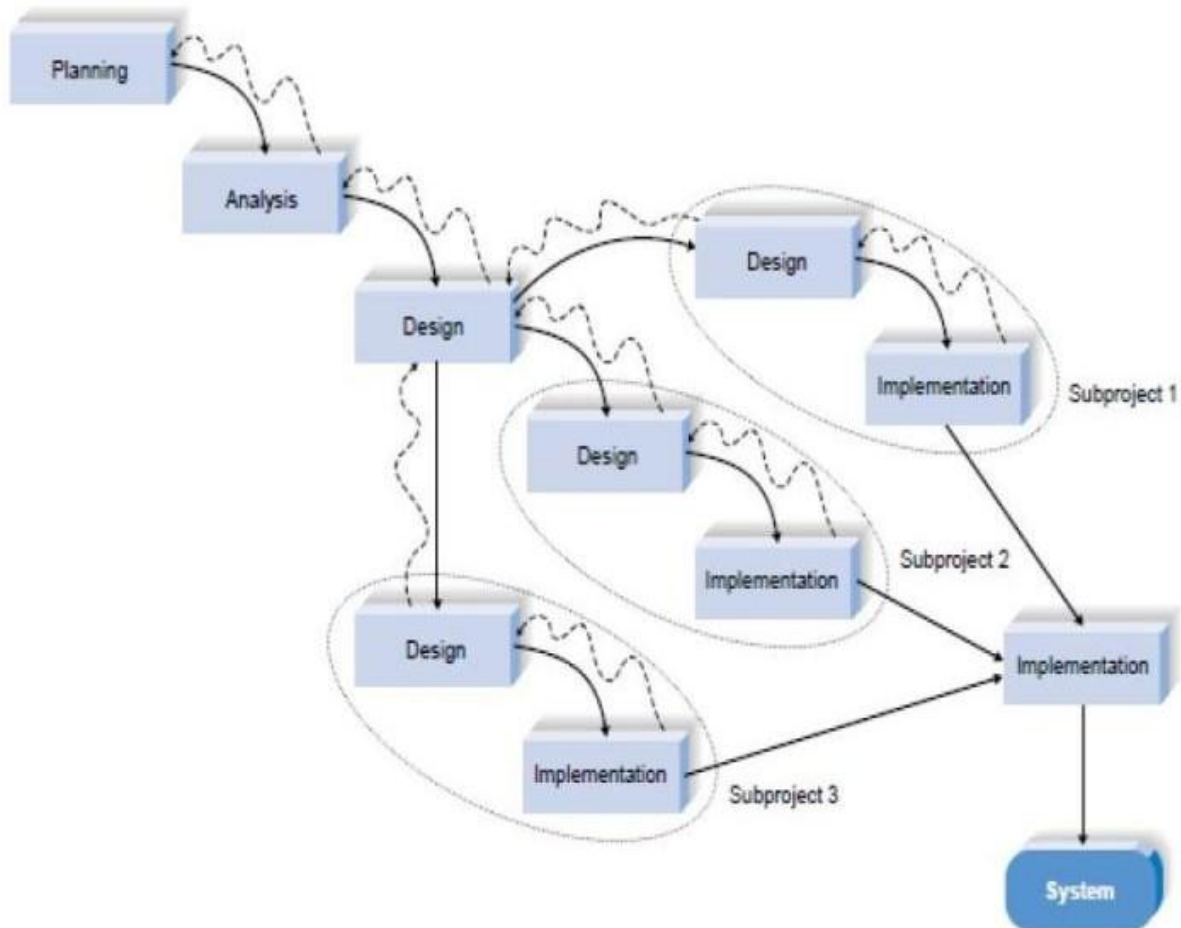
Why Parallel Development?

There are many reasons why parallel development may be necessary for a project. These include:

- Release preparation
- Post-release maintenance (segregated from new development)
- Tailored or customer-specific software
- Segregation of work by different development teams or individuals
- Segregation of work on different features
- Deployment of different software variants into different environments

The primary advantage of these methodologies is:

- that the schedule time required to deliver a system is shortened.

"Parallel Development-based Methodology"

3- Phased Development:

During the development phase, everything that will be needed to implement the project is arranged. Potential suppliers or subcontractors are brought in, a schedule is made, materials and tools are ordered, instructions are given to the personnel and so forth. The development phase is complete when implementation is ready to start. All matters must be clear for the parties that will carry out the implementation.

In some projects, particularly smaller ones, a formal development phase is probably not necessary. The important point is that it must be clear what must be done in the implementation phase, by whom and when.

Phased development-based methodologies have the advantage of: quickly getting a useful system into the hands of the users.
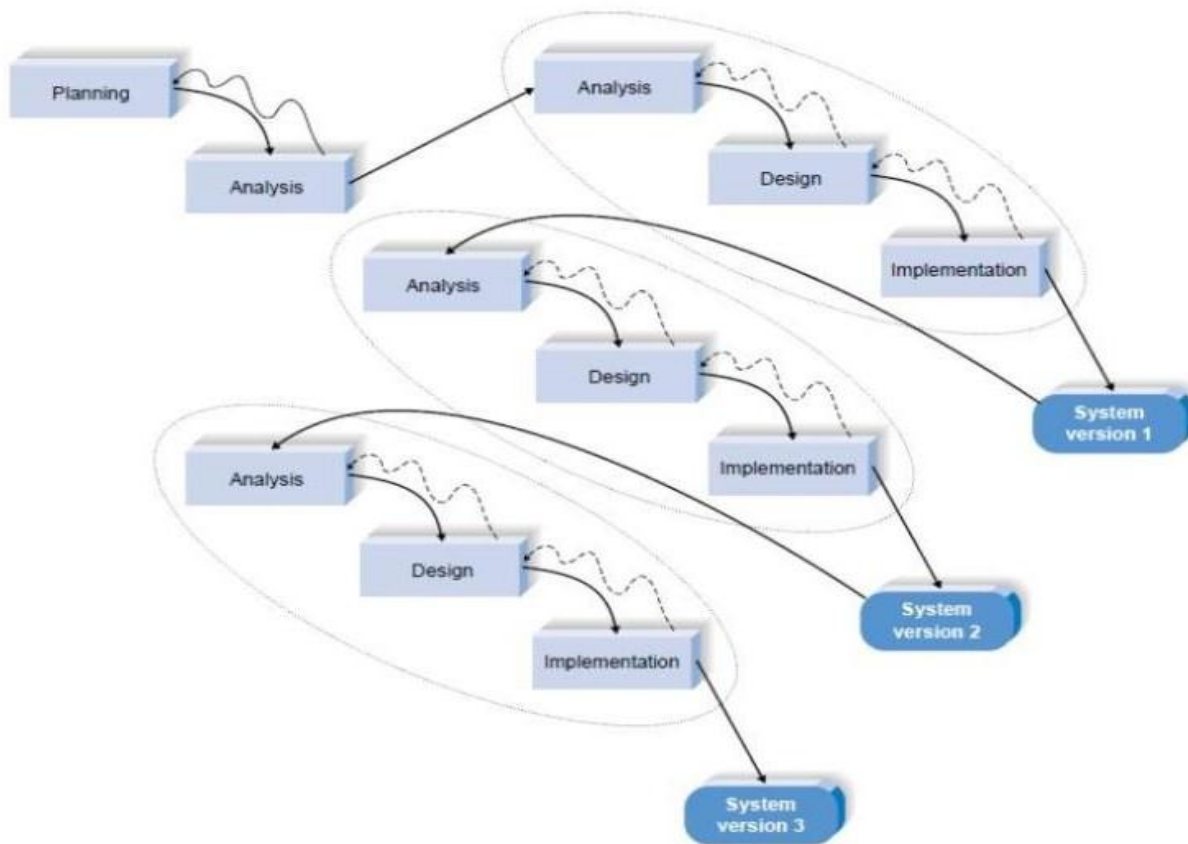
"Phased Development-based Methodology"

Lecture Three

Types of Information Systems Management

<u>The organization is viewed as a management pyramid with four levels:</u>

1- At the lowest level, <u>non-management staff</u> attends to routine daily business transactions such as selling goods and issuing receipts for payment.

2- <u>Operational</u> management is responsible for monitoring the transactions that are occurring, and dealing with any problems that may arise.

3- <u>Tactical</u> management decides on budgets, set targets, identify trends and develop short term plans for the business.

4- At the top of the pyramid, <u>strategic</u> management is responsible for defining the long term goals of the company.

<u>**four different types of information systems:**</u>

1- Transaction Processing Systems:

A Transaction Processing System (TPS) is a type of information system that collects, stores, modifies and retrieves the data transactions of an enterprise. Transaction processing systems also attempt to provide predictable response times to requests, although this is not as critical as for real-time systems. Rather than allowing the user to run arbitrary programs as time-sharing, transaction processing allows only predefined, structured transactions. Each transaction is usually short duration and the processing activity for each transaction is programmed in advance.

2- Management Information Systems:

A Management Information System (MIS) is an information system used for decision-making, and for the coordination, control, analysis, and visualization of information in an organization.

The study of the management information systems involves people, processes and technology in an organizational context. In a corporate setting, the ultimate goal of the use of a management information system is to increase the value and profits of the business. This is done by providing managers with timely and appropriate information allowing them to make effective decisions within a shorter period of time.

3- Decision Support Systems:

are computer program applications used by middle and higher management to compile information from a wide range of sources to support problem solving and decision making. A DSS is used mostly for semi-structured and unstructured decision problems.

A decision support system (DSS) is a computerized program used to support determinations, judgments, and courses of action in an organization or a business. A DSS sifts through and analyzes massive amounts of data, compiling comprehensive information that can be used to solve problems and in decision-making. DSS is an information system that supports business or organizational decision-making activities. DSSs serve the management, operations and planning levels of an organization (usually mid and higher management) and help people make decisions about problems that may be rapidly changing and not easily specified in advance—i.e. unstructured and semi-structured decision problems. Decision support systems can be either fully computerized or human-powered, or a combination of both.

A decision support systems consists of three main components, namely database, software system and user interface. DSS Database: It contains data from various

sources, including internal data from the organization, the data generated by different applications, and the external data mined form the Internet, etc.

DSS components may be classified as:

1- Inputs: Factors, numbers, and characteristics to analyze

2- User knowledge and expertise: Inputs requiring manual analysis by the user

3- Outputs: Transformed data from which DSS "decisions" are generated

4- Decisions: Results generated by the DSS based on user criteria

 4- Executive Information Systems:

Executive information system (EIS), also known as an Executive support system (ESS), 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. EIS is a decision support system (DSS) used to assist senior executives in the decision-making process. It does this by providing easy access to important data needed to achieve strategic goals in an organization. An EIS normally features graphical displays on an easy-to-use interface. Executive information systems can be used in many different types of organizations to monitor enterprise performance as well as to identify opportunities and problems.

Current EIS data is available company- or enterprise-wide, facilitated by personal computers and workstations on local area networks (LANs). Employees can access company data to help decision-making in their individual workplaces, departments, divisions, etc.. This allows employees to provide pertinent information and ideas both above and below their company level. The typical EIS has four components: hardware, software, user interface and telecommunication.
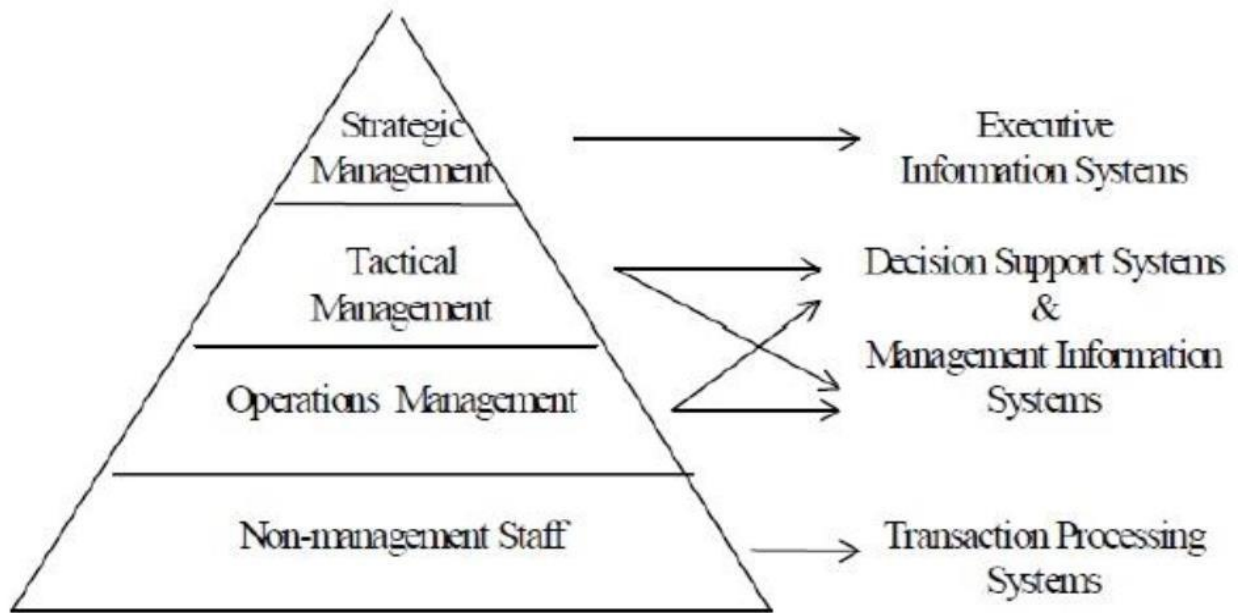
"Levels of management and types of support systems"

Table: summarizes the major differences between the four levels of organizational support systems:

Management Level	Applications Support	Inputs	Processing	Outputs
Clerical	Transaction Processing System	Detailed transactions	Transaction updates	Detailed reports Operational documentation
Operational Control	Management Information System	Operational data	Selection Summarisation Reconciliation	Summary and Exception reports
Tactical	Decision Support System	Operational data & Decision models	Simulation Analysis	Ad hoc reports
Strategic	Executive Information System	Internal and External data	Summarisation Drill down	Critical Success Indices

Project Cost Management

This is exactly what it sounds like. Project cost management involves estimating the cost of resources, including people, equipment, materials, and such things as travel and other support details. After this is done, costs are budgeted and tracked to keep the project within that budget.

Enterprise applications

Enterprise systems—also known as enterprise resource planning (ERP) systems—provide integrated software modules and a unified database that personnel use to plan, manage, and control core business processes across multiple locations. Modules of ERP systems may include finance, accounting, marketing, human resources, production, inventory management, and distribution.

- Supply chain management (SCM) systems enable more efficient management of the supply chain by integrating the links in a supply chain. This may include suppliers, manufacturers, wholesalers, retailers, and final customers.

- Customer relationship management (CRM) systems help businesses manage relationships with potential and current customers and business partners across marketing, sales, and service.

- Knowledge management system (KMS) helps organizations facilitate the collection, recording, organization, retrieval, and dissemination of knowledge. This may include documents, accounting records, unrecorded procedures, practices, and skills. Knowledge management (KM) as a system covers the process of knowledge creation and acquisition from internal processes and the external world. The collected knowledge is incorporated in organizational policies and procedures, and then disseminated to the stakeholders.