# SCHOOL OF PROJECT MANAGEMENT

# STUDY PACK

## FOR

**PROJECT QUALITY MANAGEMENT**

**AND**

**PROJECT HUMAN RESOURCE MANAGEMENT**

# Table of Content

Modules                                                                    Pages

**Chapter 1**

**An Introduction to Project Management**

**Objectives**
The purpose of this training is to introduce key project management terms and concepts to provide a common language for discussion, including what is:
- ✓ A project
- ✓ Project management
- ✓ Project success
- ✓ A project manager
- ✓ A project management plan

Successful project management has several significant characteristics. To understand the value of project management, it is necessary to understand the fundamental nature of a project; the core characteristics of project management processes; how success is evaluated, the roles, responsibilities, and activities of a project manager and the expertise required; and the context in which projects are performed.

**What is a Project?**
The fundamental nature of a project is that it is a "temporary endeavour undertaken to create a unique product, service, or result."

Projects are distinguished from operations and from programs.
The temporary nature of projects indicates a definite beginning and end. The end is reached when the project's objectives have been achieved or when the project is terminated because its objectives will not or cannot be met, or when the need for the project no longer exists. Temporary does not necessarily mean short in duration. Temporary does not generally apply to the product, service, or result created by the project; most projects are undertaken to create a lasting outcome. For example, a project to build a national monument will create a result expected to last centuries. Projects can also have social, economic, and environmental impacts that far outlast the projects themselves.
Every project creates a unique product, service, or result. Although repetitive elements may be present in some project deliverables, this repetition does not change the fundamental uniqueness of the project work.
An ongoing work effort is generally a repetitive process because it follows an organization's existing procedures. In contrast, because of the unique nature of projects, there may be uncertainties about the products, services, or results that the project creates. Project tasks can be new to a project team, which necessitates more dedicated planning than other routine work. In addition, projects are undertaken at all organizational levels. A project can involve a single person, a single organizational unit, or multiple organizational units.

**Temporary Endeavour**

To be temporary signifies that there is a discrete and definable commencement and conclusion; the management of a project requires tailored activities to support this characteristic, as such, a key indicator of project success is how it performs against its schedule that is, does is start and end on time.

**Unique Deliverable**

The uniqueness of the deliverable, whether it is a product, service, or result, requires a special approach in that there may not be a pre-existing blue print for the project's execution and there may not be a need to repeat the project once it is completed. Uniqueness does not mean that there are not similarities to other projects, but that the scope for a particular project has deliverables that must be produced within constraints, through risks, with specific resources, at a specific place, and within a certain period; therefore, the process to produce the deliverable as well as the deliverable itself is unique.
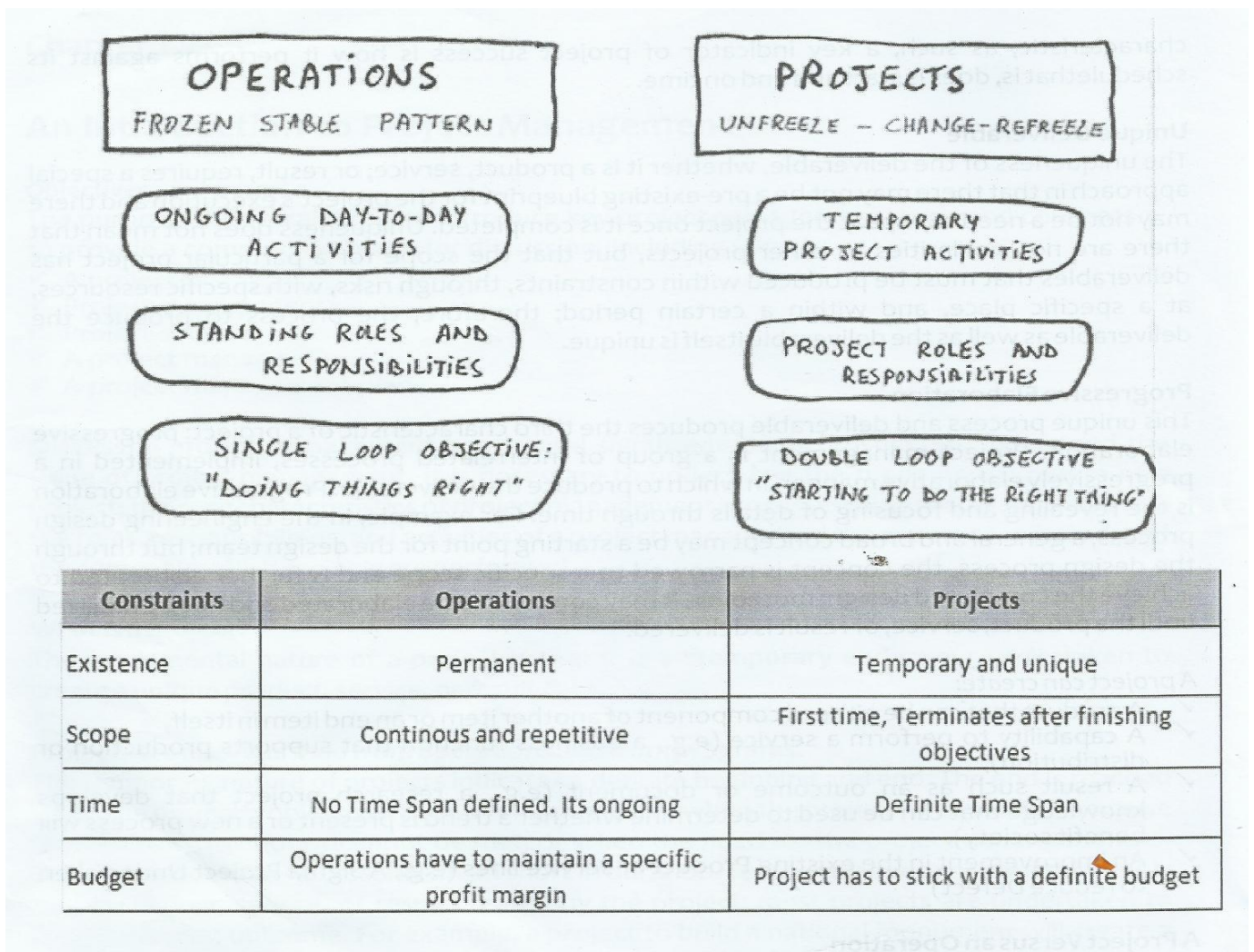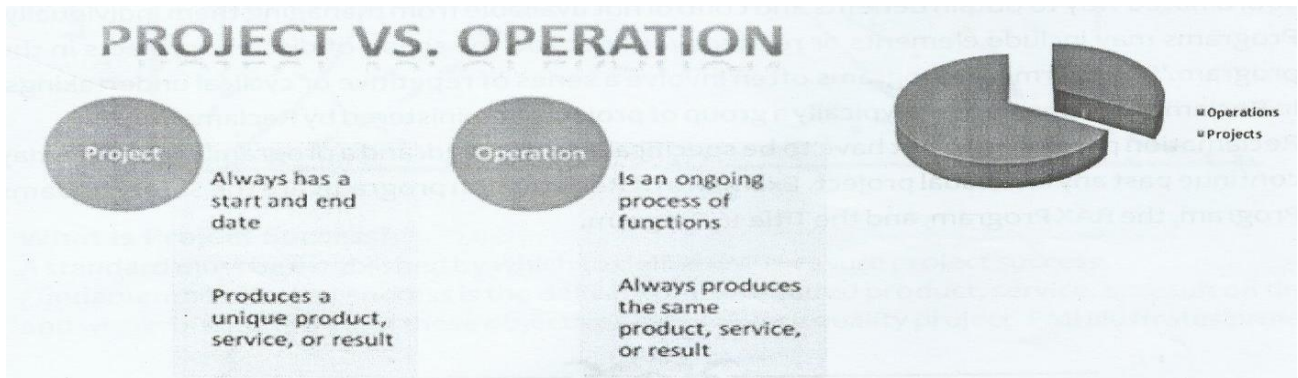
**Progressive Elaboration**

This unique process and deliverable produces the third characteristic of a project: progressive elaboration. Project management is a group of interrelated processes, implemented in a progressively elaborative manner, in which to produce the deliverable. Progressive elaboration is the revealing and focusing of details through time. For example, in the engineering design process, a general and broad concept may be a starting point for the design team; but through the design process, the concept is narrowed to a specific scope and is further elaborated to achieve the completed design; moreover, it may continue to be elaborated and not be finalized until the product, service, or result is delivered.

*A project can create:*
- ✓ A product that can be either a component of another item or an end item in itself,
- ✓ A capability to perform a service (e.g., a business function that supports production or distribution),
- ✓ A result such as an outcome or document (e.g., a research project that develops knowledge that can be used to determine whether a trend is present or a new process will benefit society).
- ✓ An improvement in the existing Product or service lines (e.g., A Sigma Project Undertaken to reduce Defect)
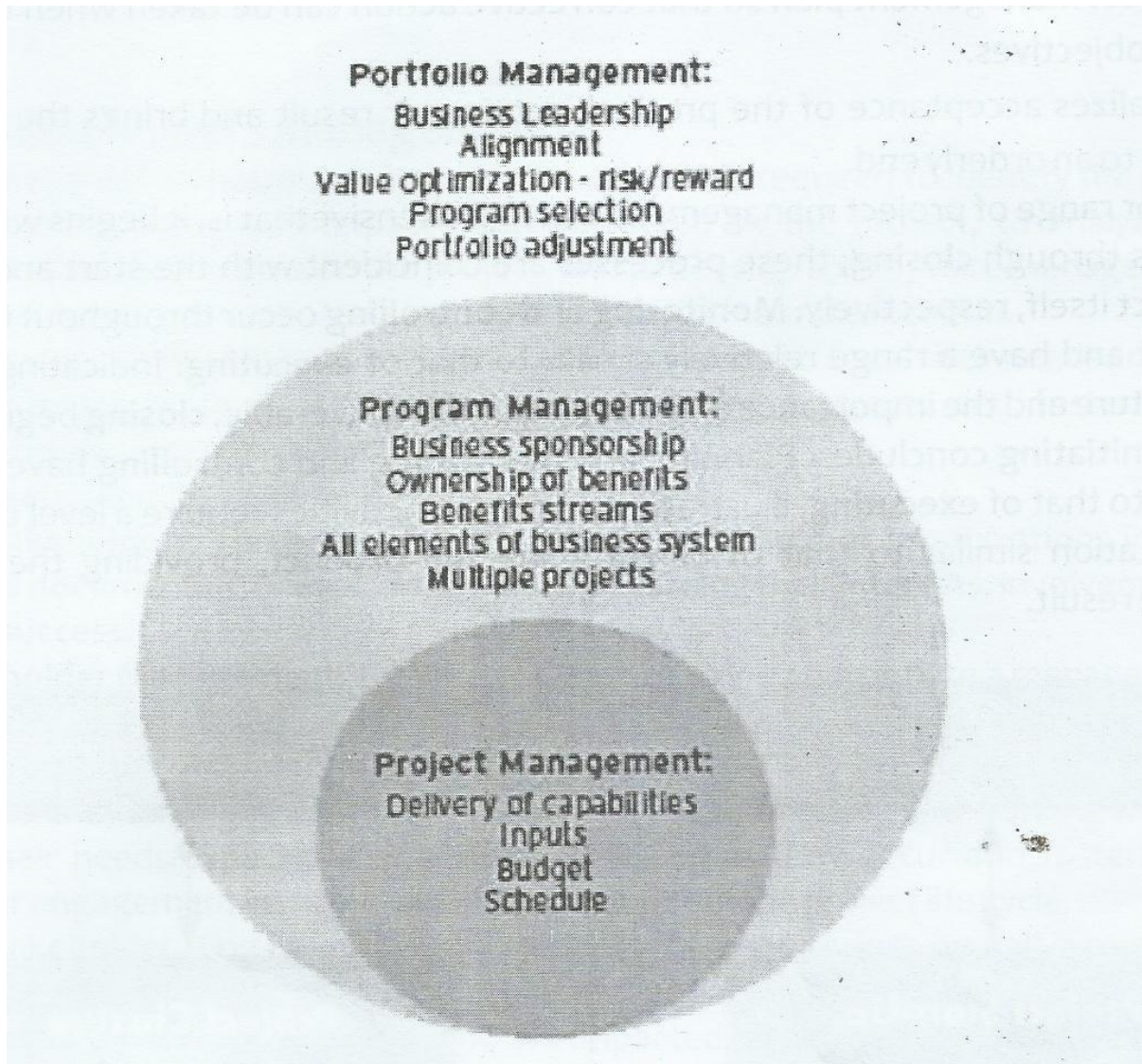
## A Project versus an Operation

The operations of an organization are continuing and repetitive activities that are executed to achieve its mission and sustain the business, but without a definable end to their performance and without a unique output that is, it is not produced or provided only once.



PROJECT VS. OPERATION

Project — Always has a start and end date. Produces a unique product, service, or result

Operation — Is an ongoing process of functions. Always produces the same product, service, or result

- Operations
- Projects



**OPERATIONS** — FROZEN STABLE PATTERN

- ONGOING DAY-TO-DAY ACTIVITIES
- STANDING ROLES AND RESPONSIBILITIES
- SINGLE LOOP OBJECTIVE: "DOING THINGS RIGHT"

**PROJECTS** — UNFREEZE – CHANGE – REFREEZE

- TEMPORARY PROJECT ACTIVITIES
- PROJECT ROLES AND RESPONSIBILITIES
- DOUBLE LOOP OBJECTIVE "STARTING TO DO THE RIGHT THING"

| Constraints | Operations | Projects |
|---|---|---|
| Existence | Permanent | Temporary and unique |
| Scope | Continous and repetitive | First time, Terminates after finishing objectives |
| Time | No Time Span defined. Its ongoing | Definite Time Span |
| Budget | Operations have to maintain a specific profit margin | Project has to stick with a definite budget |

*A Project Versus a Program*

A project differs from a program in that "a program is a group of related projects managed in a coordinated way to obtain benefits and control not available from managing them individually. Programs may include elements or related work outside the scope of discrete projects in the program." Furthermore, programs often involve a series of repetitive or cyclical undertakings. In Reclamation, a program is typically a group of projects administered by Reclamation.

Reclamation programs do not have to be specifically authorized, and a program's schedule may continue past any individual project. Examples of Reclamation programs are the Safety of Dams Program, the RAX Program, and the Title 16 Program.

**Portfolio Management:**
Business Leadership
Alignment
Value optimization - risk/reward
Program selection
Portfolio adjustment

**Program Management:**
Business sponsorship
Ownership of benefits
Benefits streams
All elements of business system
Multiple projects

**Project Management:**
Delivery of capabilities
Inputs
Budget
Schedule

**What Is Project Management?**

"Project management is the process of the application of knowledge, skills, tools, and techniques to project activities to meet project requirements." That is, project management is an interrelated group of processes that enables the project team to achieve a successful project. These processes manage inputs to and produce outputs from specific activities; the progression from input to output is the nucleus of project management and requires integration and iteration. For example, a feasibility report could be an input to a design phase; the output of a design phase could be a set of plans and specifications. This progression requires project management acumen, expertise, tools and techniques, including risk management, contingency development, and change control.

**Process Groups**

The project management process groups are initiating, planning, executing, monitoring and controlling, and closing.

**Initiating** defines and authorizes the projector a project phase.

**Planning** defines and refines objectives and plans the course of action required to attain the objectives and scope that the project was undertaken to address. Executing integrates people and other resources to carry out the project management plan for the project.

**Monitoring and** controlling regularly measures and monitors progress to identify variances from the project management plan so that corrective action can be taken when necessary to meet project objectives.

**Closing** formalizes acceptance of the product, service, or result and brings the project or a project phase to an orderly end.

The breadth or range of project management is comprehensive that is, it begins with initiating and continues through closing; these processes are coincident with the start and end of the specific project itself, respectively. Monitoring and controlling occur throughout the duration of the project and have a range relatively similar to that of executing. Indicating a project's temporary nature and the importance of the timing of the deliverable, closing begins relatively shortly after initiating concludes. Planning and monitoring and controlling have a collective depth similar to that of executing, illustrating that these activities require a level of effort and have a implication similar to that of constructing the product, providing the service, or producing the result.
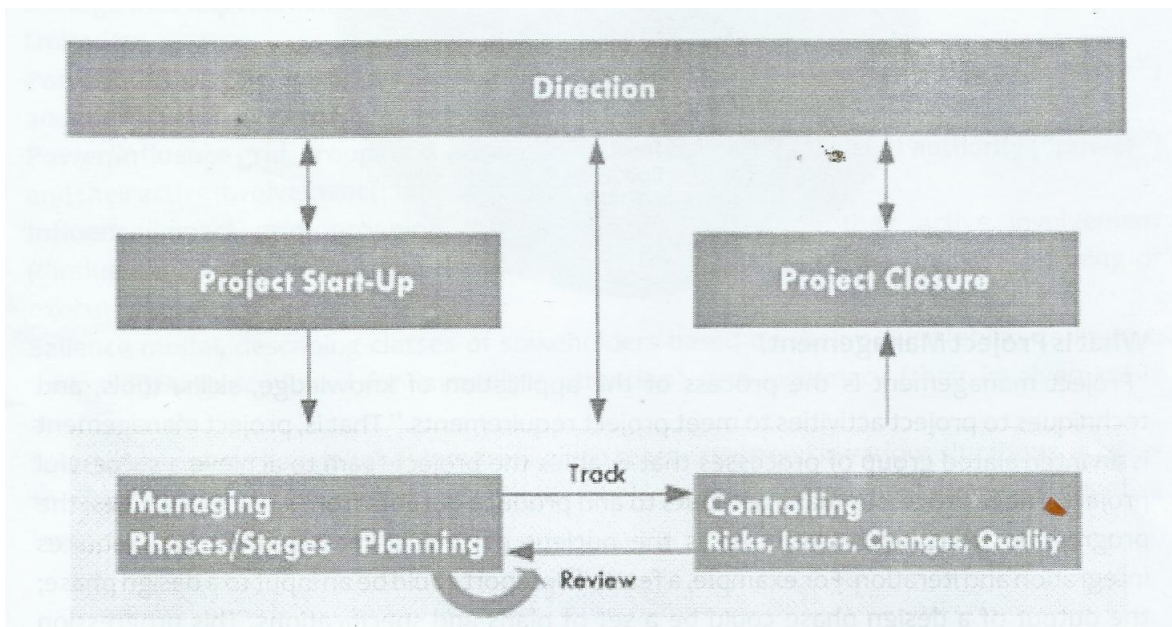
Process Group Interaction

The level of interaction of the five processes indicates a strong relational dependence not exclusive of one another. One process does not simply end and the next one begins. The presence of this interrelationship and range is a function of progressive elaboration. Projects are executed in increments and details are exposed and developed through the progression of time objectives are developed, discoveries are made; investigations, studies, and surveys are completed; analysis is performed; constraints are changed; resources are amended; contingencies are exercised; changes are managed; risks are mitigated; and Force Majeure (unforeseeable or unpreventable circumstances) occurs.

To manage the breadth or range of a project, active and proactive project management is required throughout the duration of the project. It cannot be simply initiated and/or planned and left alone; it must be continually planned and monitored and controlled. Sustained reactive project management is indicative of incomplete or absent planning and/or monitoring and controlling.
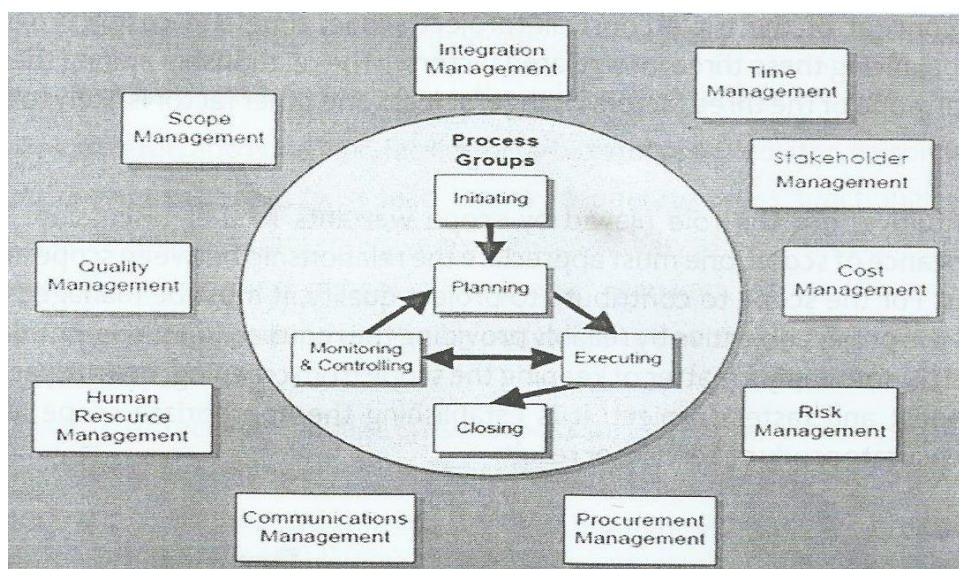
**Project Phases Versus Process Groups**

Project management process groups are not project phases. In fact, the process groups may need to be repeated for each phase, such as study, programming engineering, procurement, construction, and commissioning. A process group or project phase is not discrete; they are interdependent and require integration. Also, project management must ensure continuity as a project progresses through processes and phases.
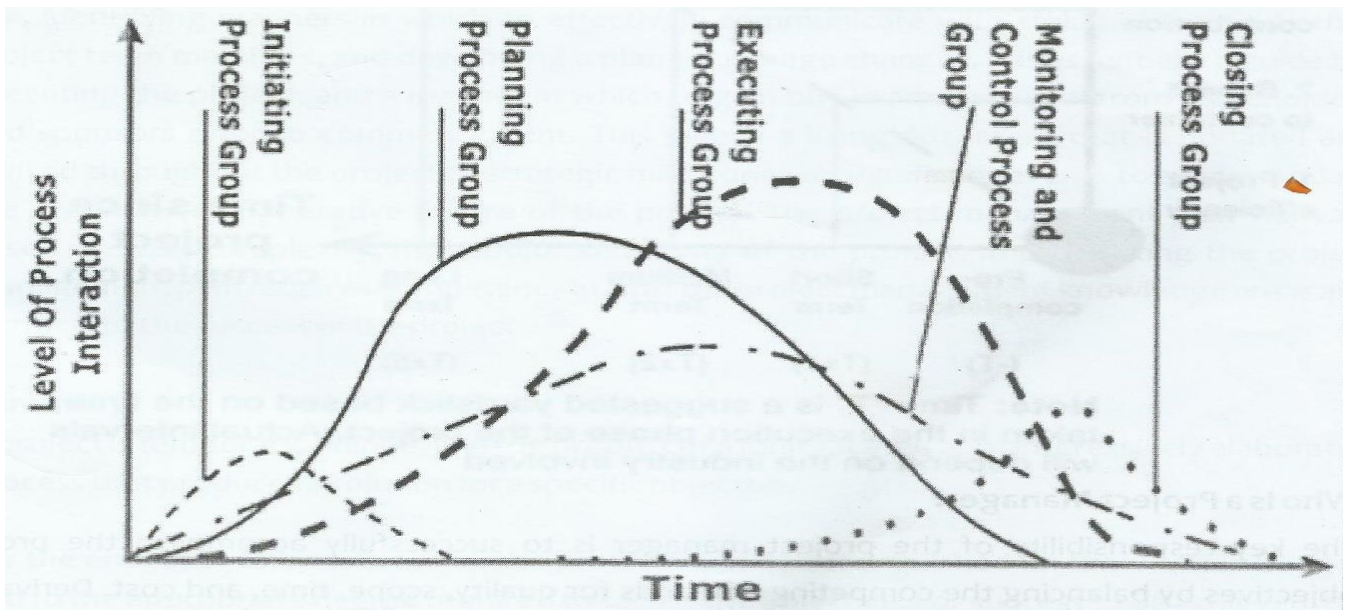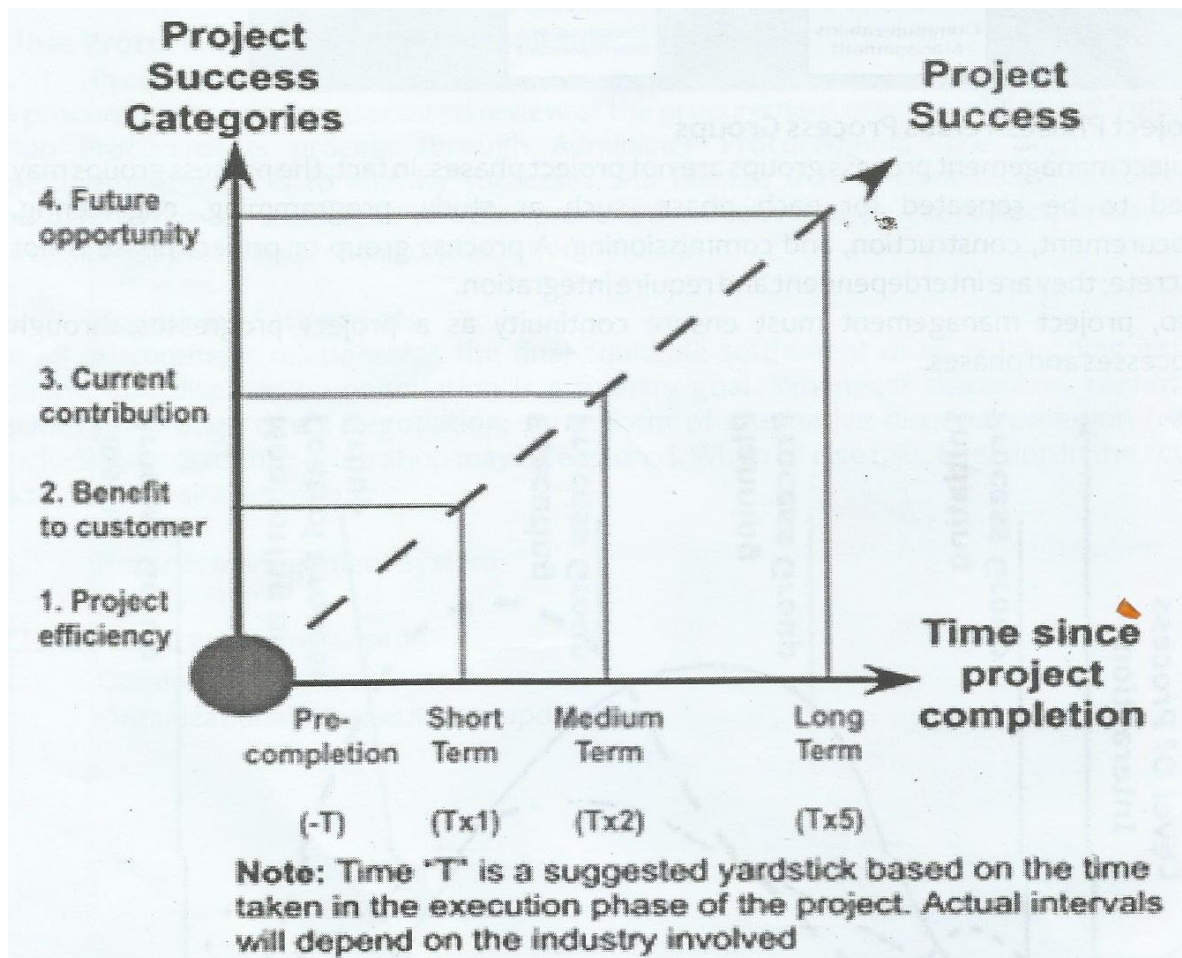


**What Is Project Success?**

A standard must be established by which to define and measure project success. Fundamentally, project success is the delivery of the required product, service, or result on time and within budget. To meet these objectives is to deliver a quality project. PMI illustrates project quality through the concept of the triple constraint project scope, time and cost.9 Project quality is affected by balancing these three interrelated factors. "The relationship among these factors is such that if any one of the three factors change, at least one other factor is likely to be affected."

Cost and time are intuitive, but the role played by scope warrants further discussion. To understand the significance of scope, one must appreciate the relationship between scope and the project objectives. For the scope to contribute to project quality, it must be managed to meet the demands of the project objective by reliably providing the required functions, nothing more or nothing less. It is not simply a matter of keeping the scope from creeping, or a

matter of completing the cheapest and fastest project; it is establishing the appropriate scope and delivering the commensurate product, service, or result.



Note: Time "T" is a suggested yardstick based on the time taken in the execution phase of the project. Actual intervals will depend on the industry involved

## Who is a Project Manager?

The key responsibility of the project manager is to successfully accomplish the project objectives by balancing the competing demands for quality, scope, time, and cost. Derivative responsibilities include identifying the project requirements; establishing clear and achievable objectives; and adapting the specifications, plans, and approach to the different concerns and expectations of the various stakeholders. Fundamentally, the project manager must direct the project from its inputs, through its nucleus, to delivery of its outputs. In order to accomplish these multifaceted responsibilities, the roles of the project manager include that of a leader, administrator, entrepreneur, facilitator, arbitrator and mediator, liaison, and coordinator.

The project manager must lead teams to operate cross functionally towards a common objective while assuring cohesiveness and continuity as the project

progresses through project processes and project phases. "The project manager acts as the key catalyst to stimulate effective communication and coordination between design, procurement and construction activities."

In order to effectively manage these responsibilities and assume these roles, a project manager must have experience in the following project management knowledge areas: project integration, scope, time, cost, quality, human resources, communications, risk, and procurement management.

**What Is a Project Management Plan (PMP)?**

A project management plan is a fundamental tool for the project manager deliver the project successfully. This document is a strategic and formalized roadmap to accomplish the project's objectives by describing how the project is to be executed, monitored and controlled, which includes creating a project work breakdown structure, identifying and planning to mitigate risk, identifying manners in which to effectively communicate with stakeholders and other project team members, and developing a plan to manage changes. It is essentially a guide for executing the project, and a manner in which to gain buy-in and approval from stakeholders and sponsors prior to commencement. This plan is a living document that is updated and revised throughout the project at strategic milestones or significant events to accommodate the progressive, elaborative nature of the project. The project management plan will vary based on size, complexity, risk, and/or sensitivity of the project. Implementing the project management plan requires competency in all of the project management knowledge areas and is critical to the success of the project

**Summary**

A project is temporary, unique, and the product of a multifaceted and progressively elaborated process that produces a solution for a specific objective.

For the endeavor to be successful, the project must be accomplished on time, within budget, and to the appropriate degree required to satisfy the objective. For success to be achieved, the project manager must be skilled and operate in an environment which enables a project team to function. Excellence in project management should be viewed as the positive trend in the performance of successful projects.

**Chapter 2**

**Project Life Cycle and Organization**
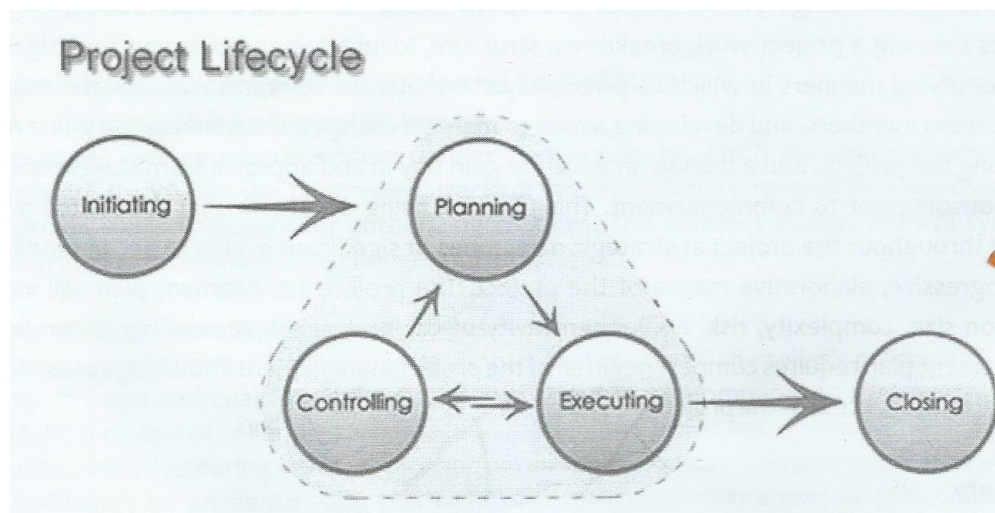
**The project life cycle Overview**
A project life cycle is a collection of generally sequential and sometimes overlapping project phases whose name and number are determined by the management and control needs of the organization or organizations involved in the project, the nature of the project itself, and its area of application.

Projects and project management take place in an environment that is broader than that of the project itself. It is imperative to understand these environments and structure approaches that would enhance project success.

✓ Divides the project into phases that provide better management
✓ Deliverable usually approved before the work starts on the next phase, but sometimes a subsequent phase is begun prior to approve of the previous phase (Fast Tracking)
✓ Cost are low at the start and higher towards the end and drop as the project closes
✓ Project life cycle VS Project management process

**Project Life Cycle:**
✓ Describes what you need to do to achieve the project object (to do the work for the project)
✓ Phases are known as project life cycle



**Project Management Process**
✓ Describe what you need to do to manage the project to achieve the project objective and meet the requirements
✓ Cost and Staffing Levels across the Project Life Cycle
✓ Impact of Variable Based on Project Time

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**Project Phases**
- ✓ Project phases are divisions within a project where extra control is needed to effectively manage the completion of a major deliverable.
- ✓ Project phases are typically completed sequentially, but can overlap in some project situations. Project Phase is not a Project Management Process Group.


**Project Governance Across the Life Cycle**

Project governance provides a comprehensive, consistent method of controlling the project and ensuring its success. The project governance approach should be described in the project management plan. A project's governance must fit within the larger context of the program or organization sponsoring it.

Within those constraints, as well as the additional limitations of time and budget, it is up to the project manager and the project management team to determine the most appropriate method of carrying out the project. Decisions must be made regarding who will be involved, what resources are necessary, and the general approach to completing the work. Another important consideration is whether more than one phase will be involved and, if so, the specific phased structure for the individual project.

The phase structure provides a formal basis for control. Each phase is formally initiated to specify what is allowed and expected for that phase. A management review is often held to reach a decision to start the activities of a phase. This is especially true when a prior phase has not yet completed. An example would be when an organization chooses a life cycle where more than one phase of the project progresses simultaneously. The beginning of a phase is also a time to revalidate earlier assumptions, review risks and define in more detail the processes necessary to complete the phase deliverable(s).

For example, if a particular phase does not require purchasing any new materials or equipment, there would be no need to carry out the activities or processes associated with procurement.

A project phase is generally concluded and formally closed with a review of the deliverables to determine completeness and acceptance. A phase-end review can achieve the combined goal of obtaining authorization to close the current phase and start the subsequent one. The end of a phase represents a natural point to reassess the effort underway and to change or terminate the project if necessary. A review of both key deliverables and project performance to date to a) determine if the project should continue into its next phase and b) detect and correct errors cost effectively should be regarded as good practice. Formal phase completion does not necessarily include authorizing the subsequent phase. For instance, if the risk is deemed to be too great for the project to continue or if the objectives are no longer required, a phase can be closed with the decision to not initiate any other phases.

**Business Value**

This Concept is unique to each organization. Business Value is defined as the entire value of the business; the total sum of all tangible and intangible elements. Examples of tangible element include monetary assets, fixtures, stakeholder utility. Examples of intangible elements include goodwill, brand recognition, public benefit, and trademarks.

Depending on the organization, business value scope can be short- medium- or long term. Value may be created through the effective management of ongoing operations. However, through the effective use of portfolio, program and project management, organizations will possess the ability to employ reliable established processes to meet strategic objective and obtain greater business value from their project investments.

Though some organizations are not business driven every organization conduct business related activities,

**Stakeholders**

✓ Stakeholders are persons or organizations who are active involved in the project or whose interests may be positively or negatively affected by the performance or completion of the projects, they may also exert influence over the project, its deliverable, and the project team members.

✓ The project management team must identify both internal and external stakeholders in order to determine the project requirements and expectations for all parties involved.

✓ The PM must manage the influence of the various stakeholders in relation to the project requirements to ensure successful outcome.

**What are stakeholders?**

✓ Project Sponsor
✓ Project Manager
✓ Project Management Team
✓ Project Team Members
✓ Program Manager
✓ Portfolio Manager
✓ Program manager

**Key Stakeholders**

✓ Customer/User
✓ Performing Organization
✓ Influences
✓ Stakeholder Analysis

Stakeholders must be identified, have their needs and expectations understood and managed, and be communicated with frequently in order to complete the project successfully.

**Organizational Structures**

Organizational Structure is an enterprise environmental factor which can affect the availability of resources and influence how projects are conducted. Organizational Structures range from functional to projectized, with a variety of matrix structures between them. The following table shows key project related characteristics of the major types of Organizational Structures.

The classic functional organization is a hierarchy which each employee has one clear superior. Staff members are grouped by specialty at the top level. Each department will do its project work independent of other departments.

Matrix Organizations are a blend of functional and projectized characteristics. Weak matrices maintain many of the c/s of a functional organizational, and the project manager role is more of a coordinator or expediter than that of a true project manager. Strong matrices have many of the c/s of the projectized organization, and can have full true project managers with considerable authority and full time project administrative staff. While the balanced matrix organization recognizes the need for a project manager, it does not provide the project manager with the full authority over the project and project funding.

At the opposite the projectized organization shown in figure , team members are often co located most of the resources are involved in project work, and project managers have a great deal of independence and authority. lt often have departments either report directly to the project manager or provide support services to the various projects.

Many organizations involve all these structures at various levels as shown in the figure (Composite Organization) to coordinate between various projects.

**PROJECT ROLES & EXPECTATIONS**
- Customer/Business
- Project Sponsor
- Project Manager
- Project Steering Committee
- Project Team Members
- Other Stakeholders

**Customer/Business**
The organization or individual receiving the final product
Responsible for business requirements that must be met

**Project Sponsor**
Manager/Executive with demonstrable interest in the outcome of the project
Responsible for securing spending authority and resources for the project

Ideally, highest-ranking manager possible appropriate for the project size and scope
- ✓ Champions the project.
- ✓ Ultimate decision-maker for the project.
- ✓ Provides support for the Project Manager.
- ✓ Approves major deliverables.
- ✓ Signs off on approvals to proceed to each succeeding project phase.

**Project Manager**
- ✓ Responsible for ensuring that the Project Team completes the project
- ✓ Develops the Project Plan with the team
- ✓ Manages the team's performance of project tasks
- ✓ Secures acceptance and approval of deliverable from the Sponsor and Stakeholders
- ✓ Monitors performance and takes corrective actions when needed

**Project Steering Committee**
- ✓ Representatives from stakeholders.
- ✓ Review and approve major protect decisions or deliverable.
- ✓ When escalation reaches this level, make decisions on project issues and change requests.

**Project Team**
Responsible for executing tasks and producing deliverable:
- ✓ As outlined in the Project Plan.
- ✓ As directed by the Project Manager.
- ✓ At the level of effort or participation defined for them.

**Vendor**
- ✓ Contracted to provide additional product or services the project requires.
- ✓ PM manages relationship.
- ✓ May be part of Project Team.

**Other Project Stakeholders:**
Individuals and organizations actively involved in the project, or with interests that may be positively or negatively affected as a result of the completion of the project.

**Chapter 3**

**PROJECT QUALITY MANAGEMENT**
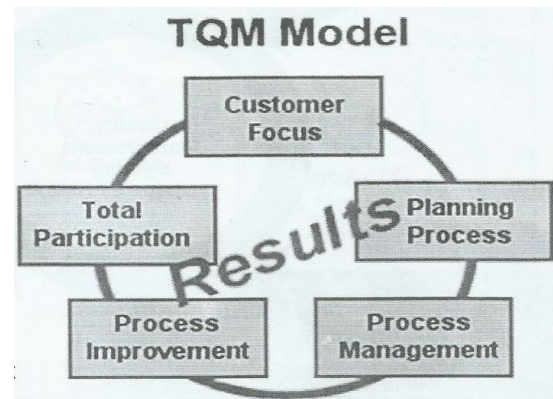
**What is Quality?**
Quality is "the degree to which a set of inherent characteristics fulfill requirements
Quality Means:
Meets requirements
Satisfy the Customer
Fit for use



Project Quality Management includes organization that determine quality project that will satisfy the needs for which it was undertaken.
It implements the quality management system through policy and procedures with continuous process improvement activities conducted throughout, as appropriate.

**Project Quality Management processes:**
**Plan Quality:** The process of identifying quality requirements and/or standards for the project and product, and documenting how the project will demonstrate compliance
**Perform Quality Assurance:** The process of auditing the quality requirements and the results from quality control measurements to ensure appropriate quality standards and operational definitions are used.
Perform Quality Control: The process of monitoring and recording results of executing the quality activities to assess performance and recommend necessary changes.
These processes interact with each other and with the processes in the other Knowledge Areas.

Project Quality Management addresses the management of the project and the product of the project. It applies to all projects, regardless of the nature of their product. Product quality measures and techniques are specific to the type of product produced by the project. While quality management of software products uses different approaches and measures than building a nuclear power plant, Project Quality Management approaches apply to both. In either case, failure to meet product or project quality requirements can have serious negative consequences for any or all of the project stakeholders. For example:

- Meeting customer requirements by overworking the project team may result in increased employee attrition, errors, or rework.
- Meeting project schedule objectives by rushing planned quality inspections may result in undetected errors.
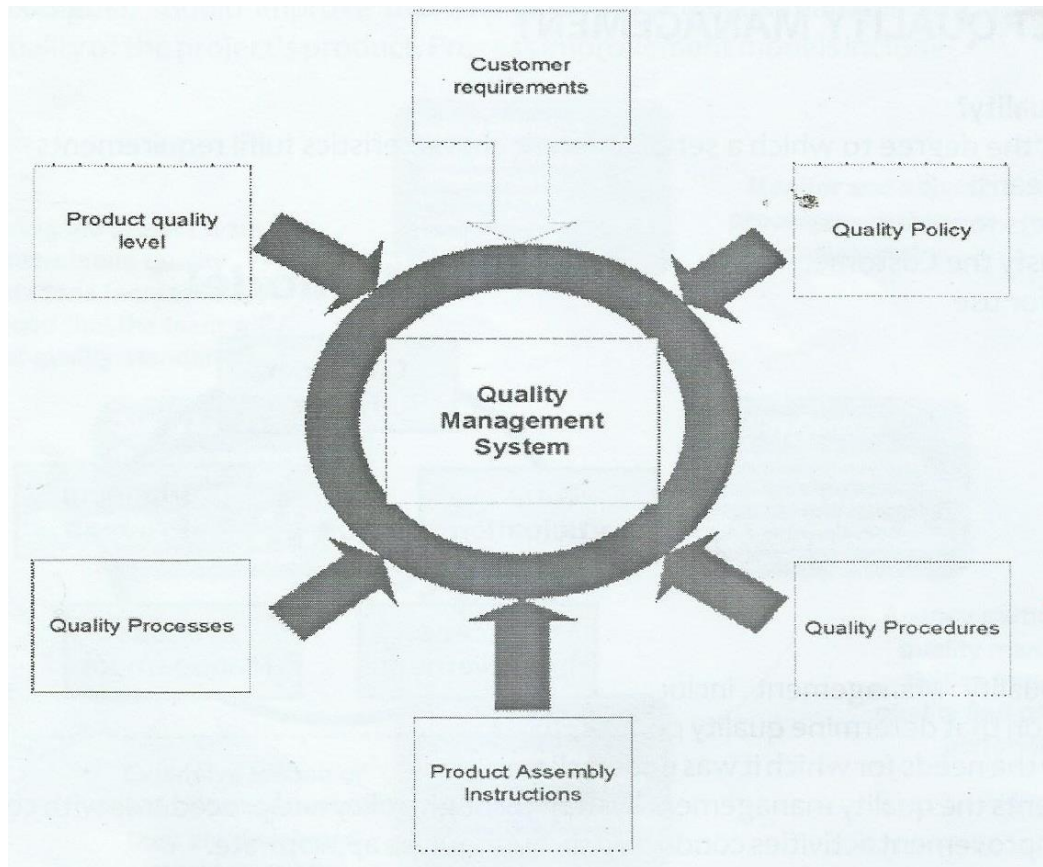


**Quality Vs grade**

Quality and grade are not the same. Quality is "the degree to which a set of inherent characteristics fulfill requirements."

Grade is a category assigned to products or services having the same functional use but different technical characteristics.

While a quality level that fails to meet quality requirements is always a problem, low grade may not be.

For example, a software product can be of high quality (no obvious defects, readable manual) and low grade (a limited number of features), or of low quality (many defects, poorly organized user documentation) and high grade (numerous features). The project manager and the project management team are responsible for managing the tradeoffs involved to deliver the required levels of both quality and grade.
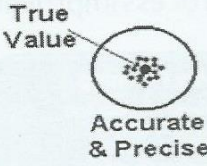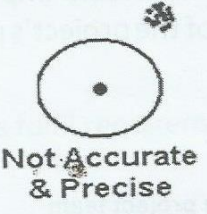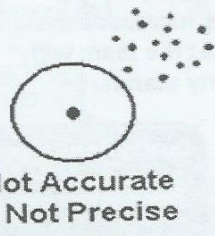
**Precision vs Accuracy**

Precision and accuracy are not equivalent.

Precision means the values of repeated measurements are clustered and have little scatter. Accuracy means that the measured value is very close to the true value.

Precise measurements are not necessarily accurate. A very accurate measurement is not necessarily precise.

The project management team must determine appropriate levels of accuracy and precision.





**Precision**

❖ reproducibility
❖ check by repeating measurements
❖ poor precision results from poor technique.

**Accuracy**

❖ correctness
❖ check by using a different method
❖ poor accuracy results from procedural or equipment flaws.

Modern quality management complements project management. Both disciplines recognize the importance of:

- Customer satisfaction. Understanding, evaluating, defining, and managing expectations so that customer requirements are met. This requires a combination of conformance to requirements (to ensure the project produces what it was created to produce) and fitness for use (the product or service must satisfy real needs).
- Prevention over inspection. One of the fundamental tenets of modern quality management states that quality is planned, designed, and built in not inspected in. The cost of preventing mistakes is generally much less than the cost of correcting them when they are found by inspection.
- Continuous improvement. The plan-do-check-act cycle is the basis for quality improvement as defined by Shewhart and modified by Deming. In addition, quality improvement initiatives undertaken by the performing organization, such as TQM and Six Sigma, should improve the quality of the project's management as well as the quality of the project's product. Process improvement models include
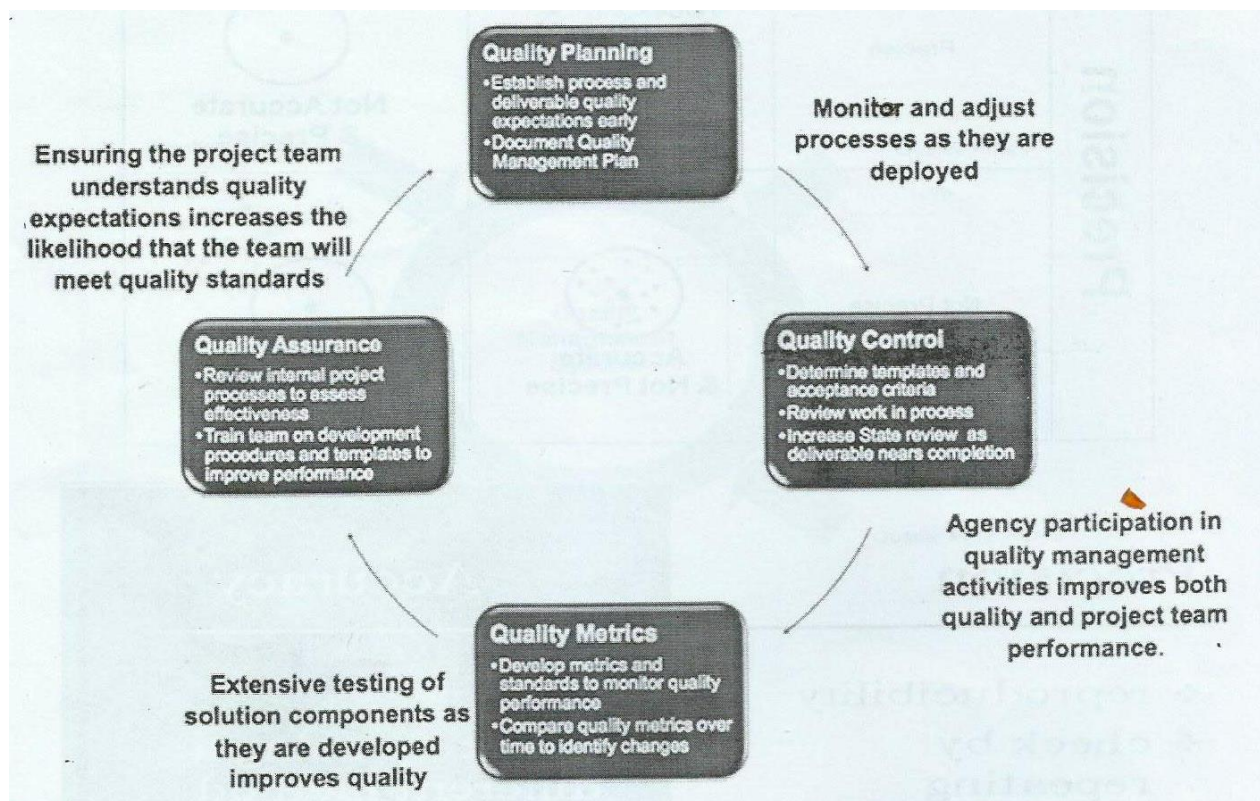


## Plan Quality

Plan Quality is the process of identifying quality requirements and/or standards for the project and product, and documenting how the project will demonstrate compliance. Quality planning should be performed in parallel with the other project planning processes. For example, proposed changes in the product to meet identified

quality standards may require cost or schedule adjustments and a detailed risk analysis of the impact to plans.

The quality planning techniques discussed here are those most frequently used on projects. There are many others that may be useful on certain projects or in some application areas.

**Plan Quality: inputs**
1. Scope Baseline
2. Stakeholder Register
3. Cost Performance Baseline
4. Schedule Baseline
5. Risk Register
6. Enterprise Environmental Factors
7. organizational Process Assets

**Plan Quality: Tools and Techniques**

**1.      Cost-Benefit Analysis**

The primary benefits of meeting quality requirements can include less rework, higher productivity, lower costs, and increased stakeholder satisfaction. A business case for each quality activity compares the cost of the quality step to the expected benefit.

**2.      Cost of Quality (C0Q)**

Cost of quality includes all costs incurred over the life of the product by investment in preventing nonconformance to requirements, appraising the product or service for conformance to requirements, and failing to meet requirements (re Failure costs are often categorized into internal (found by the project) and external (f by the customer). Failure costs are also called cost of poor quality.

# 1.    Control Charts

Control charts are used to determine whether or not a process is stable or has predictable performance.

Upper and lower specification limits are based on requirements of the contract. They reflect the maximum and minimum values allowed. There may be penalties associated with exceeding the specification limits.

Cost of Good Quality

Upper and lower control limits are set by the project manager and appropriate stakeholders to reflect the points at which corrective action will be taken to prevent exceeding specification limits.

For repetitive processes, the control limits are generally ± 3L A process is considered out of control when a data point exceeds a control limit or if seven consecutive points are above or below the mean. Control charts can be used to monitor various types of output variables. Although used most frequently to track repetitive activities required for producing manufactured lots, control charts may also be used to monitor cost and schedule variances, volume, and frequency of scope changes, or other management results to help determine if the project management processes are in control.
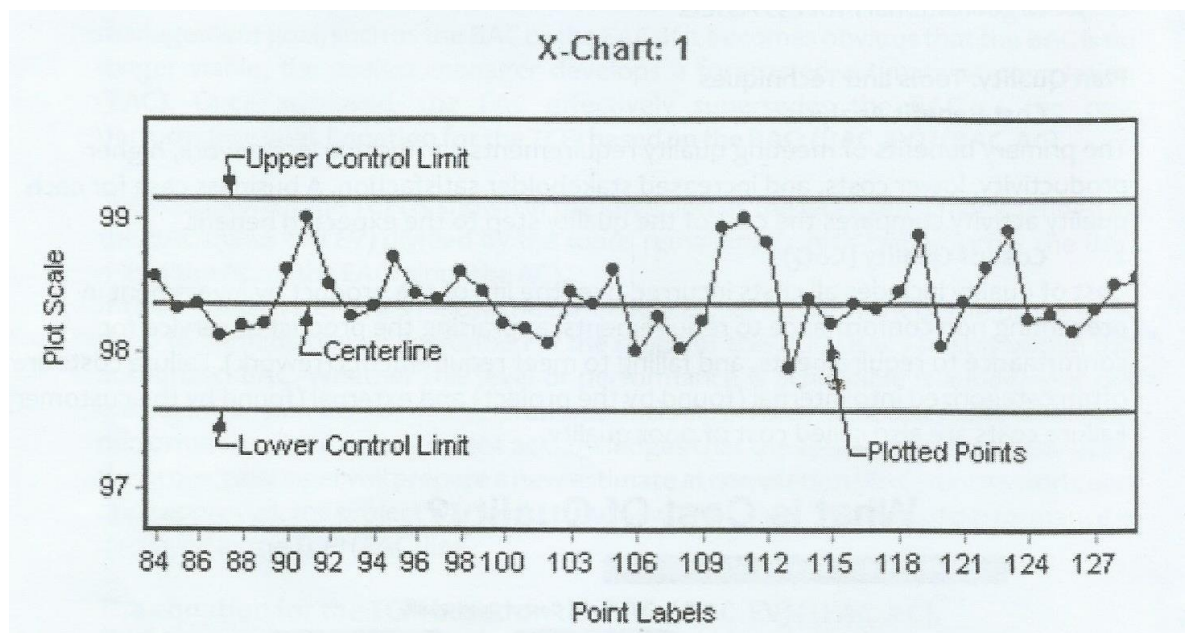


# 1.    Benchmarking

Benchmarking involves comparing actual or planned project practices to those of comparable projects to identify best practices, generate ideas for improvement, and provide a basis for measuring performance. These other projects can be within the performing organization or outside of it and can be within the same or in another application area.

# 2. Design of Experiments

Design of experiments (DOE) is a statistical method for identifying which factors may influence specific variables of a product or process under development or in

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production. DOE should be used during the Plan Quality process to determine the number and type of tests and their impact on cost of quality.

DOE also plays a role in the optimization of products or processes. DOE can be used to reduce the sensitivity of product performance to sources of variations caused by environmental or manufacturing differences. One important aspect of this technique is that it provides a statistical framework for systematically changing all of the important factors, rather than changing the factors one at a time.

Analysis of the experimental data should provide the optimal conditions for the product or process highlight the factors that influence the results, and reveal the presence of interactions and synergy among the factors. For example, automotive designers use this technique to determine which combination of suspension and tires will produce the most desirable ride characteristics at a reasonable cost.

## 3.    Statistical Sampling

Statistical sampling involves choosing part of a population of interest for inspection (for example, selecting ten engineering drawings at random from a list of seventy-five). Sample frequency and sizes should be determined during the Plan Quality process so the cost of quality will include the number of tests, expected scrap, etc.

There is a substantial body of knowledge on statistical sampling. In some application areas it may be necessary for the project management team to be familiar with a variety of sampling techniques to assure the sample selected actually represents the population of interest.

## 4.    Flowcharting

A flowchart is a graphical representation of a process showing the relationships among process steps. There are many styles, but all process flowcharts show activities, decision points, and the order of processing. During quality planning, flowcharting can help the project team anticipate quality problems that might occur. An awareness of potential problems can result in the development of test procedures or approaches for dealing with them.
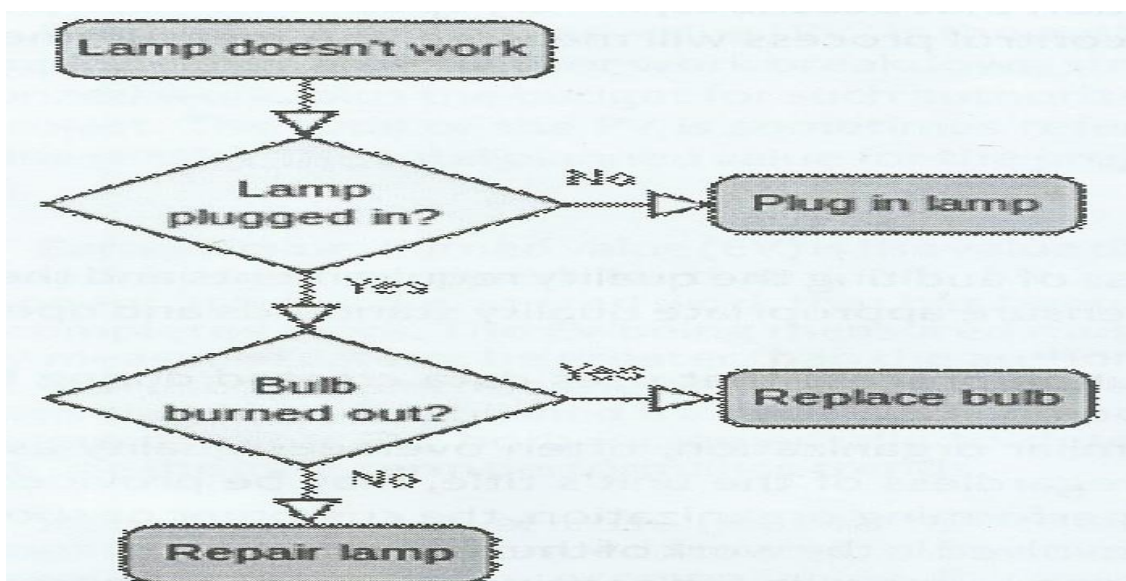
**1. Proprietary Quality Management Methodologies**

These include Six Sigma, Lean Six Sigma, Quality Function Deployment, CMMI®, etc. Many other methodologies exist this is not intended to be a recommended or complete list of examples.

**Additional Quality Planning Tools**

Other quality planning tools are often used to better define the quality requirements and plan effective quality management activities. These include, but are not limited to:

- ✓ Brainstorming
- ✓ Affinity diagrams, used to visually identify logical groupings based on natural relationships.
- ✓ Force field analysis, which are diagrams of the forces for and against change.
- ✓ Nominal group techniques, to allow ideas to be brainstormed in small groups and then reviewed by a larger group.
- ✓ Matrix diagrams, which include two, three, or four groups of information and show relationships between factors, causes, and objectives. Data in a matrix is organized in rows and columns with intersecting cells that can be filled with information that describes the demonstrated relationship between the items located in the row and column.
- ✓ Prioritization matrices, which provide a way of ranking a diverse set of problems and/or issues (usually generated through brainstorming) by their importance.

**Plan Quality: outputs**

1. Quality Management Plan
2. Quality Metrics

A quality metric is an operational definition that describes, in very terms, a project or product attribute and how the quality control process will measure it. A measurement is an actual value.

3. Quality Checklists
4. Process improvement Plan
5. Project Document updates

**Perform Quality Assurance**

Perform Quality Assurance is the process of auditing the quality requirements and the results from quality control measurements to ensure appropriate quality standards and operational definitions are used.

Perform Quality Assurance is an execution process that uses data created during Perform Quality

A quality assurance department, or similar organization, often oversees quality assurance activities. Quality assurance support, regardless of the unit title, may be provided to the project team, the management of the performing organization, the

customer or sponsor, as well as other stakeholders not actively involved in the work of the project.

Perform Quality Assurance also provides an umbrella for continuous process improvement, which is an iterative means for improving the quality of all processes. Continuous process improvement reduces waste and eliminates activities that do not add value. This allows processes to operate at increased levels of efficiency and effectiveness.

**Perform Quality Assurance: inputs**
i.    Project Management Plan
ii.   Quality Metrics
iii.  Work Performance information

1.

**Performance results which may support the audit process include, but are not limited to:**
✓ Technical performance measures,
✓ Project deliverables status,
✓ Schedule progress, and
✓ Costs incurred.

1. **Quality Control Measurements**
   Perform Quality Assurance: Tools and Techniques

1. **Plan Quality and Perform Quality Control Tools and Techniques**
2. **Quality Audits**

A quality audit is a structured, independent review to determine whether project activities comply with organizational and project policies, processes, and procedures. The objectives of a quality audit are:
✓ Identify all the good/best practices being implemented,
✓ Identify all the gaps/shortcomings,
✓ Share the good practices introduced or implemented in similar projects in the organization and/or industry,
✓ Proactively offer assistance in a positive manner to improve implementation of processes to help the team raise productivity, and
✓ Highlight contributions of each audit in the lessons learned repository of the organization.

The subsequent effort to correct any deficiencies should result in a reduced cost of quality and an increase in sponsor or customer acceptance of the project's product. Quality audits may be scheduled or random and maybe conducted by internal or external auditors.

Quality audits can confirm the implementation of approved change requests including corrective actions, defect repairs, and preventive actions.

**3.       Process Analysis**

Process analysis follows the steps outlined in the process improvement plan to identify needed improvements. This analysis also examines problems experienced, constraints experienced, and non-value-added activities identified during process operation. Process analysis includes root cause analysis a specific technique to identify a problem, discover the underlying causes that lead to it, and develop preventive actions.

**Perform Quality Assurance: outputs**

1. Organizational Process Assets updates
2. Change Requests
3. Project Management Plan updates
4. Project Document updates

**Perform Quality Control**

Perform Quality Control is the process of monitoring and recording results of executing the quality activities to assess performance and recommend necessary changes. Quality control is performed throughout the project. Quality standards include project processes and product goals.

Project results include deliverables and project management results, such as cost and schedule performance. Quality control is often performed by a quality control department or similarly titled organizational unit. Quality control activities identify causes of poor process or product quality and recommend and/or take action to eliminate them. The project management team should have a working knowledge of statistical quality control, especially sampling and probability, to help evaluate quality control outputs.

**Perform Quality Control: inputs**

1.      Project Management Plan
2.      Quality Metrics
3.      Quality Checklists
4.      Work Performance Measurements Approved Change Requests
5.      Deliverables
4.      7 Organizational Process Assets

**Perform Quality Control: Tools and Techniques**

The first seven of these tools and techniques are known as Ishikawa's seven basic tools of quality.

**1.      Cause and Effect Diagrams**

Cause and effect diagrams, also called Ishikawa diagrams or fishbone diagrams, illustrate how various factors might linked to potential problems or effects:

A possible root cause can be uncovered by continuing to ask "why" or "how" along one of the lines. "Why-Why" and "How-How" diagrams may be used in root cause analysis. Cause and effect diagrams are also used in risk analysis.

**Communication**

Skills

picking slips
lack of information
procedures  products
documentation

legibility
telephone orders
knowledge

details
sales staff
literacy
ambiguity

lack of knowledge
order details

**Incorrect deliveries**

incorrect dept
consistency
incorrect person
carriers
manual

information
efficiency

incorrect addresses
automated

customer data base
methods
reliability

not up-to-date
correctness

incorrect program

**Transport**          **Procedures**

## Control Charts

In this tool, the appropriate data is collected and analyzed to indicate the quality status of project processes and products. Control charts illustrate how a process behaves over time and when a process is subject to special cause variation, resulting in an out-of-control condition. They graphically answer the question: "Is this process variance within acceptable limits?" The pattern of data points on a control chart may reveal random fluctuating values, sudden process jumps, or a gradual trend in increased variation. By monitoring the output of process overtime, a control chart can help assess whether the application of process changes resulted in the desired improvements.

When a process is within acceptable limits it is in control and does not need to be adjusted.

Conversely, when a process is outside acceptable limits, the process should be adjusted. Seven consecutive points above or below the central line indicate a process that is out of control. The upper control limit and lower control limit are usually set at ±3I where 1 one standard deviation.

### 1.    Flowcharting

Flowcharting is used during Perform Quality Control to determine a failing step(s) and identify potential process improvement opportunities. Flowcharting is also used in risk analysis.

### 2.    Histogram

A histogram is a vertical bar chart showing how often a particular variable state occurred. Each column represents an attribute or characteristic of a problem/situation. The height of each column represents the relative frequency of

the characteristic. This tool helps illustrates the most common cause of problems in a process by the number and relative heights of the bars.

### 3.      Pareto Chart

A Pareto chart, also referred to as a Pareto diagram, is a specific type of histogram, ordered by frequency of occurrence. It shows how many defects were generated by type or category of identified cause.

Rank ordering is used to focus corrective action. The project team should address the causes creating the greatest number of defects first.

Pareto diagrams are conceptually related to Pareto's Law, which holds that a relatively small number of causes will typically produce a majority of the problems or defects. This is commonly referred to as the 80/20 principle, where 80% of the problems are due to 20% of the causes.

Pareto diagrams can also be used to summarize various types of data for 80/20 analyses.

### 4.      Run Chart

Similar to a control chart without displayed limits, a run chart shows the history and pattern of variation. A run chart is a line graph that shows data points plotted in the order in which they occur.

Run charts show trends in a process overtime, variation overtime, or declines or improvements in a process overtime. Trend analysis is performed using run charts and involves mathematical techniques to forecast future outcomes based on historical results. Trend analysis is often used to monitor:

- ✓    Technical performance. How many errors or defects have been identified, and how many remain uncorrected
- ✓    Cost and schedule performance. How many activities per period were completed with significant variances

### 5.      Scatter Diagram

A scatter diagram shows the relationship between two variables. This tool allows the quality team to study and identify the possible relationship between changes observed in two variables. Dependent variables versus independent variables are plotted. The closer the points are to a diagonal line, the more closely they are related. Figure 8-16 shows the correlation between the timecard submission date and the number of days traveling per month.

### 6.      Statistical Sampling

Samples are selected and tested as defined in the quality plan.

### 7.      Inspection

An inspection is the examination of a work product to determine whether it conforms to documented standards. The results of an inspection generally include measurements and may be conducted at any level. For example, the results of a

single activity can be inspected, or the final product of the project can be inspected. Inspections may be called reviews, peer reviews, audits, or walkthroughs.

In some application areas, these terms have narrow and specific meanings. Inspections are also used to validate defect repairs.

**8.      Approved Change Requests Review**

All approved change requests should be reviewed to verify that they were implemented as approved.

**Perform Quality Control: outputs**
1.      Quality Control Measurements
2.      Validated Changes
3.      Validated Deliverables
4.      Organizational Process Assets updates
5.      Change Requests
6.      Project Management Plan updates
7.      Project Document update

**Chapter 8**
**PROJECT HUMAN RESOURCE MANAGEMENT**
The project team is comprised of the people with assigned roles and responsibilities for completing the project.
Project team members may also be referred to as the project's staff.

The type and number of project team members can change frequently as the project progresses.

Project Human Resource Management includes the processes that organize, manage, and lead the project team.
Organize- Lead- Manage

While the specific roles and responsibilities for the project team members are assigned, the involvement of all team members in project planning and decision making can be beneficial.
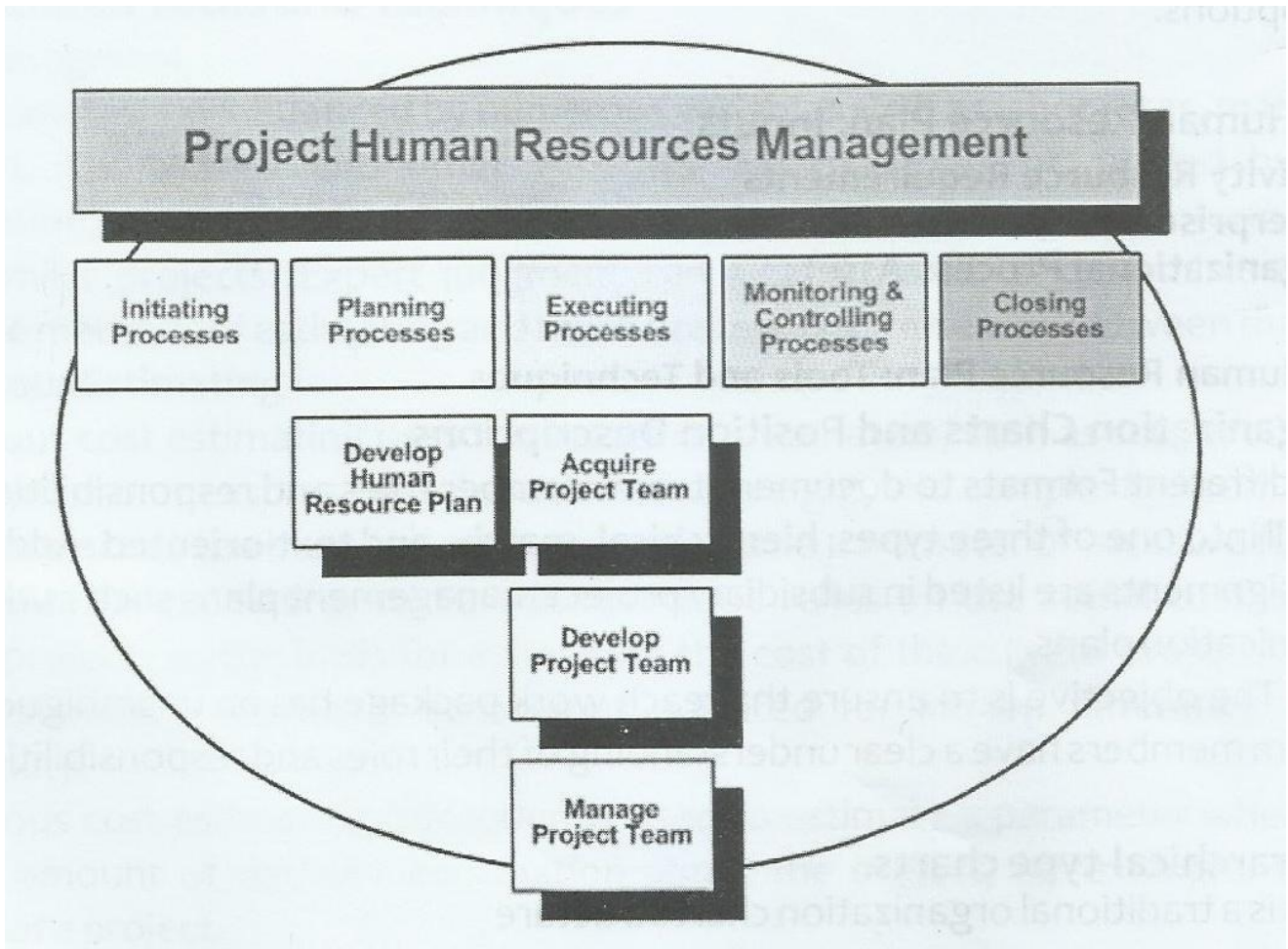
1. Develop Human Resource Plan: The process of identifying and documenting project roles, responsibilities, and required skills, reporting relationships, and creating a staffing management plan.
2. Acquire Project Team: The process of confirming human resource availability and obtaining the team necessary to complete project assignments
3. Develop Project Team: The process of improving the competencies, team interaction, and the overall team environment to enhance project performance.
4. Manage Project Team: The process of tracking team member performance, providing feedback, resolving issues, and managing changes to optimize project performance.

The project management team is a subset of the project team and is responsible for the project Management and leadership activities such as initiating, planning, executing, monitoring, controlling, and closing the various project phases. This group can also be referred to as the core, executive, or leadership team.
For smaller projects, the project management responsibilities can be shared the entire team or administered solely by the project manager.
Managing and leading the project team also includes, but is not limited to:
- Influencing the project team: Being aware of, and influencing when possible, those human resource factors that may impact the project. This includes team environment, geographical locations of team members, communications among stakeholders, internal and external politics, cultural issues, organizational uniqueness, and other such people factors that may alter the project performance.
- Professional and ethical behaviour: The project management team should be aware of, subscribe to, and ensure that all team members follow ethical behavior.

**Develop Human Resource Plan**

Develop Human Resource Plan is the process of
✓ identifying and documenting project roles, responsibilities, and required skills
✓ reporting relationships, and
✓ Creating a staffing management plan.

**Why Plan Human Resources?**
✓ Human resource planning is used to determine and identify human resources with the necessary skills required for project success.
✓ The human resource plan documents project roles and responsibilities, It determines project organization charts
✓ It is also used to structure the staffing management plan including the timetable for staff acquisition and release.

**What is it about?**
It may also include:
✓ Identification of training needs,
✓ Team-building strategies,
✓ plans for recognition and rewards programs,
✓ Compliance considerations,
✓ Safety issues, and

✓ The impact of the staffing management plan on the organization.

Important consideration should be given to the availability of, or competition for, scarce or limited human resources. Project roles can be designated for persons or groups. Those persons or groups can be from inside or outside the organization performing the project. Other projects may be competing for resources with the same competencies or skill sets. Given these factors, project costs, schedules, risks, quality, and other areas may be significantly affected. Effective human resource planning should consider and plan for these factors and develop human resource options.

**Develop Human Resource Plan: Inputs**
1. Activity Resource Requirements
2. Enterprise Environmental Factors.
3. Organizational Process Assets

**Develop Human Resource Plan: Tools and Techniques**
1. Organization Charts and Position Descriptions

There are different Formats to document team member roles and responsibilities. Most of the formats fall into one of three types: hierarchical, matrix, and text-oriented. Additionally, some project assignments are listed in subsidiary project management plans such as the risk, quality, or communication plans.

Objective: The objective is to ensure that each work package has an unambiguous owner and that all team members have a clear understanding of their roles and responsibilities.

- ❖ Hierarchical-type charts.
- ✓ This is a traditional organization chart structure
- ✓ It is used to show positions and relationships in a graphic, top-down format
- ✓ Work breakdown structures (WBS) designed to show how project deliverables are broken down into work packages provide a way of showing high-level areas of responsibility.
- ✓ While the WBS shows a breakdown of project deliverables, the organizational breakdown structure (OBS) is arranged according to an organization's existing departments, units, or teams with the project activities or work packages listed under each department.

II. **Matrix-based charts.**
- ✓ A responsibility assignment matrix (RAM) is used to illustrate the connections between work packages or activities and project team members.
- ✓ On larger projects, RAMs can be developed at various levels.
- ✓ a high-level RAM can define what a project team group or unit is responsible for within each component of the WBS,
- ✓ While lower level RAMs are used within the group to designate roles, responsibilities, and levels of authority for specific activities.

- ✓ The matrix format shows all activities associated with one person and all people associated with one activity.
- ✓ This also ensures that there is only one person accountable for any one task to avoid confusion.
- ✓ One example of a RAM is a RACI (responsible, accountable, consult, and inform) chart.

III. **Text-oriented format**
- ✓ Team member responsibilities that require detailed descriptions can be specified in text- oriented formats.
- ✓ Usually in outline form, the documents provide information such as responsibilities, authority, competencies, and qualifications.
- ✓ The documents are known by various names including position descriptions and role- responsibility-authority forms.
- ✓ These documents can be used as templates for future projects, especially when the information is updated throughout the current project by applying lessons learned.



Hierarchical-type Organization Chart     Matrix-based Responsibility Chart     Text-oriented Format
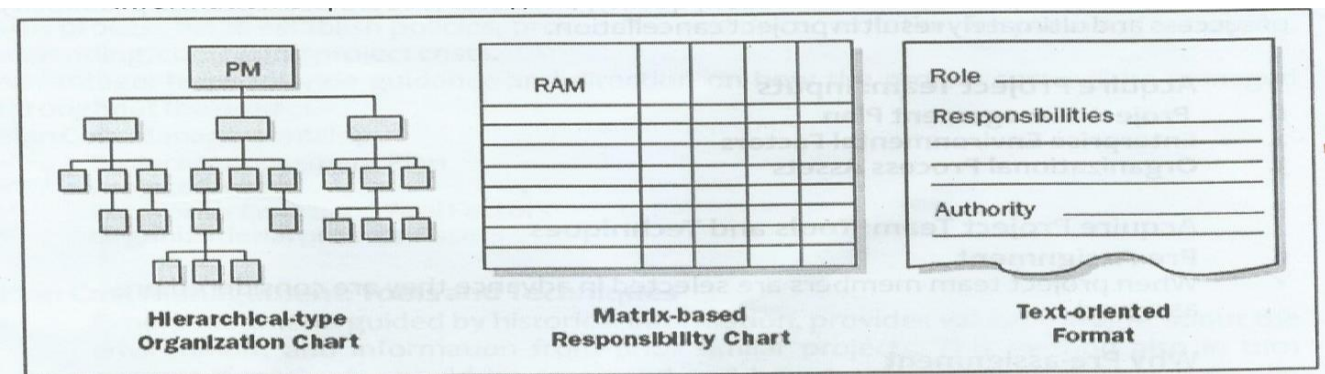
1. Networking
- ✓ Networking is the formal and informal interaction with others in an organization, industry, or professional environment.
- ✓ It is a constructive way to understand political and interpersonal factors that will impact the effectiveness of various staffing management options.
- ✓ Human resources networking activities include proactive correspondence, luncheon meetings, informal conversations including meetings and events, trade conferences, and symposia.
- ✓ Networking can be a useful technique at the beginning of a project. It can also be an effective way to enhance project management professional development during the project and after the project ends.

2. **Organizational Theory**
- ✓ Organizational theory provides information regarding the way in which people, teams, and organizational units behave.
- ✓ Effective use of this information can shorten the amount of time, cost, and effort needed to create the human resource planning outputs and improve the likelihood that the planning will be effective. The theories are quite

limiting because human beings want to be free and dynamic, never wanting to be limited by some old theories.

✓ It is important to recognize that different organizational structures have different individual response, individual performance, and personal relationship characteristics.

**Develop Human Resource Plan: outputs**
1. Human Resource Plan
2. Project organization charts
3. Staffing management plan

**Acquire Project Team**

Acquire Project Team is the process of confirming human resource availability and obtaining the team necessary to complete project assignments. It is important that the following factors are considered during the process of acquiring the project team:

i. The project manager or project management team should effectively negotiate and influence others who are in a position to provide the required human resources for the project.

ii. Failure to acquire the necessary human resources for the project may affect project schedules, budgets, customer satisfaction, quality, and risks. It could decrease the probability of success and ultimately result in project cancellation.

**Acquire Project Team: Inputs**
1. **Project Management Plan**
2. **Enterprise Environmental Factors**
3. **Organizational Process Assets**

**Acquire Project Team: Tools and Techniques**
1. **Pre-Assignment**
✓ When project team members are selected in advance they are considered pre assigned.

**Why Pre-assignment**
i. If the project is the result of specific people being promised as part of a competitive proposal,
ii. If the project is dependent upon the expertise of particular persons, or if some staff assignments are defined within the project charter.

2. **Negotiation**
✓ Staff assignments are negotiated on many projects. For example, the project management team may need to negotiate with:
✓ Functional managers to ensure that the project receives appropriately competent staff in the required time frame, and that the project team members will be able, willing, and authorized to work on the project until their responsibilities are completed,
✓ Other project management teams within the performing organization to appropriately assign scarce or specialized human resources, and

✓ External organizations: vendors, suppliers, contractors, etc., for appropriate, scarce, specialized, qualified, certified, or other such specified human resources.

## 3. Acquisition
✓ When the performing organization lacks the in-house staff needed to complete a project, the required services may be acquired from outside sources.
✓ This can involve hiring individual consultants or subcontracting work to another organization.

## 4. Virtual Teams
✓ Virtual teams can be defined as groups of people with a shared goal who fulfil their roles with little or no time spent meeting face to face.
✓ The use of virtual teams creates new possibilities when acquiring project team members.
✓ The availability of electronic communication such as e-mail, audio conferencing, web- based meetings and video conferencing has made such teams feasible.

**ADVANTAGES:**
  I. Form teams of people from the same company who live in widespread geographic areas,
 II. Add special expertise to a project team even though the expert is not in the same geographic area,
III. Ill. Incorporate employees who work from home offices,
IV. Form teams of people who work different shifts or hours,
 V. Include people with mobility limitations or disabilities, and
VI. Move forward with projects that would have been ignored due to travel expenses.

**LIMITATIONS:**
  I. Communication planning becomes increasingly important in a virtual team environment.
 II. Additional time may be needed to set clear expectations, facilitate communications, develop protocols for resolving conflict, include people in decision-making, and share credit in successes.

**Acquire Project Team: outputs**
1. **Project staff Assignments**
2. **Resource Calendars**
3. **Project Management Plan updates**

**Develop Project Team**
✓ Develop Project Team is the process of improving the competencies, team interaction, and the overall team environment to enhance project performance.
✓ Project managers should acquire skills to identify, build, maintain, motivate, lead, and inspire Project teams to achieve high team performance and to meet the project's objectives.

- ✓ Teamwork is a critical factor for project success, and developing effective project teams is one of the primary responsibilities of the project manager.
- ✓ Project managers should create an environment that facilitates teamwork.
  - ✓ Project managers should continually motivate their team by providing challenges and opportunities, by providing timely feedback and support as needed, and by recognizing and rewarding good performance.
  - ✓ High team performance can be achieved by using open and effective communication, developing trust among team members, managing conflicts in a constructive manner, and encouraging collaborative problem-solving and decision-making.
  - ✓ V The project manager should request management support and/or influence the appropriate stakeholders to acquire the resources needed to develop effective project teams.

**Develop Project Team: Inputs**
4. Project staff Assignments
5. Project Management Plan
6. Resource Calendars

**Develop Project Team: Tools and Techniques**
1. **Interpersonal skills**

- ✓ These are sometimes known as "soft skills," and are particularly important to team development.
- ✓ The project management team can greatly reduce problems arid increase cooperation by understanding the sentiments of project team members, anticipating their actions, acknowledging their concerns, and following up on their issues.
- ✓ Skills such as empathy, influence, creativity, and group facilitation are valuable assets.
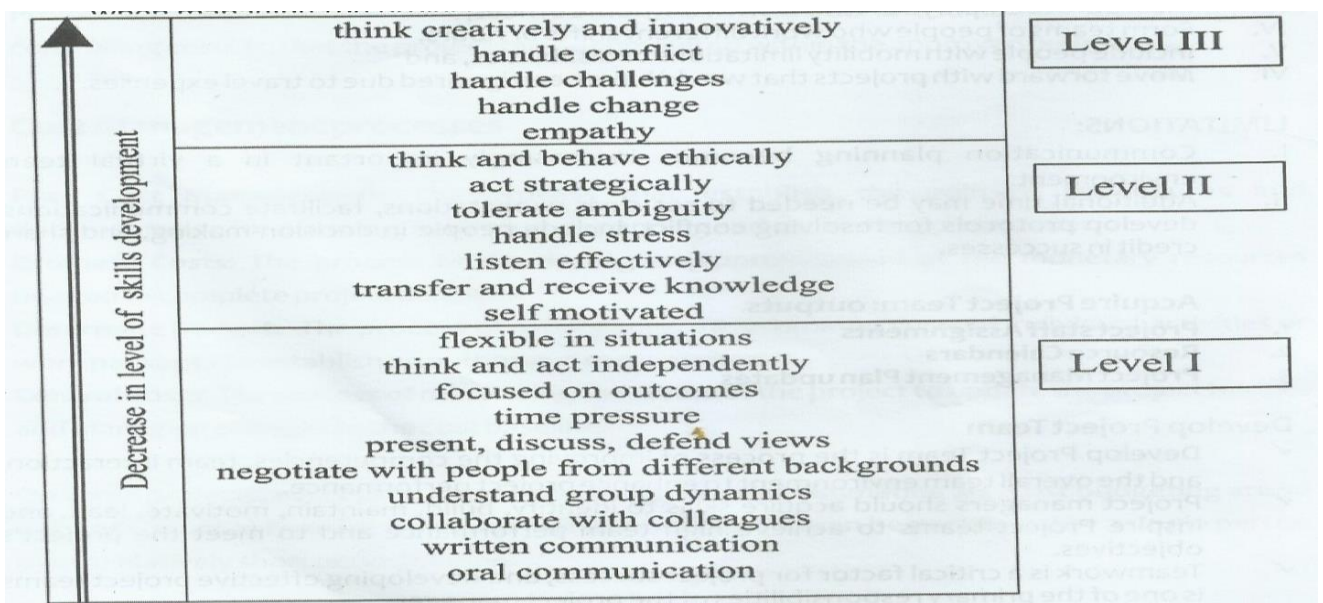
**Training**

- ✓ Training includes all activities designed to enhance the competencies of the project team members.
- ✓ Training can be formal or informal. Examples of training methods include classroom, online, computer based, on-the-job training from another project team member, mentoring, and coaching. If project team members lack necessary management or technical skills, such skills can be developed as part of the project work. Scheduled training takes place as stated in the human resource plan.
- ✓ Unplanned training takes place as a result of observation, conversation, and project performance appraisals conducted during the controlling process of managing the project team.
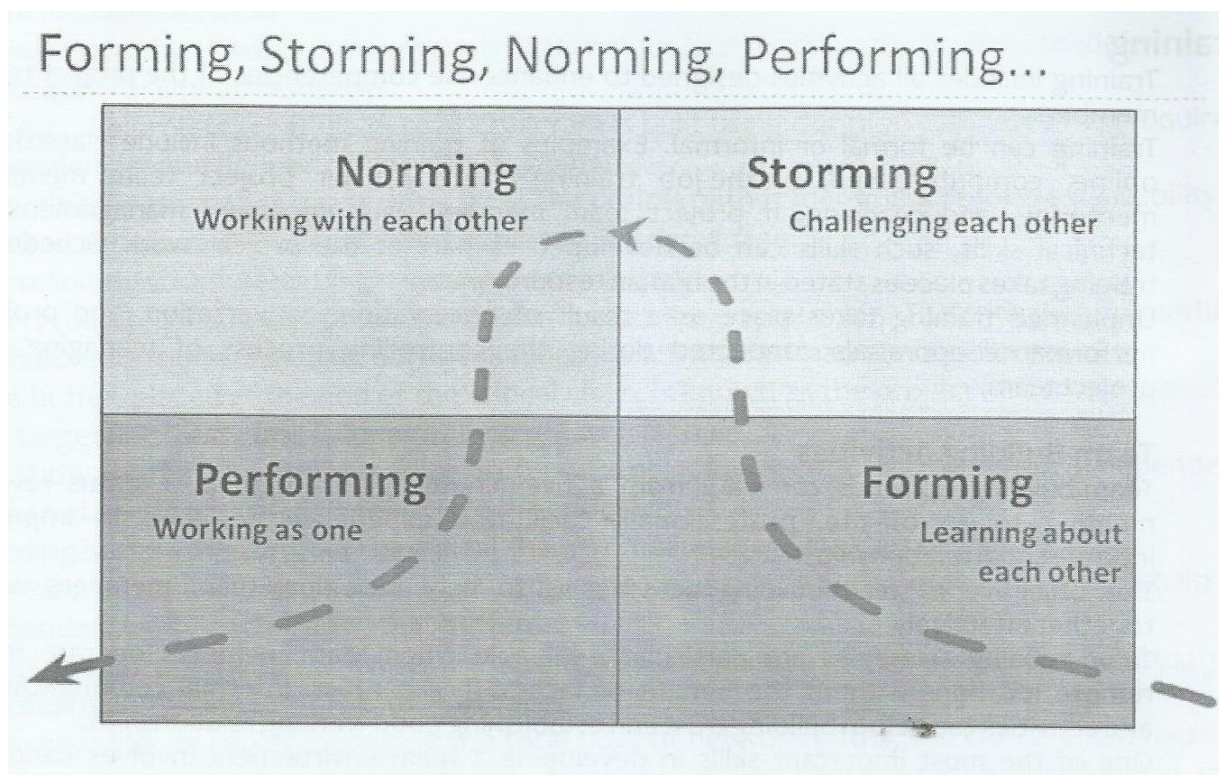
**2. Team-Building Activities**
- ✓ Team-building activities can vary from a five-minute agenda item in a status review meeting to an off-site, professionally facilitated experience designed to improve interpersonal relationships.
- ✓ The objective of team-building activities is to help individual team members work together effectively.
- ✓ Team-building strategies are particularly valuable when team members operate from remote locations without the benefit of face-to-face contact. Informal communication and activities can help in building trust and establishing good working
- ✓ One of the most important skills in developing a team environment involves handling project team problems and discussing these as team issues.
- ✓ The entire team should be encouraged to work collaboratively to resolve these issues.
- ✓ To build effective project teams, project managers should:
- ✓ Obtain top management support,
- ✓ obtain commitment of team members,
- ✓ introduce appropriate rewards and recognition,
- ✓ create a team identity,
- ✓ manage conflicts effectively,
- ✓ promote trust and open communication among team members
- ✓ provide good team leadership

One theory states that there are five stages of development that teams may go through. Usually these occur in order. However, it not uncommon for a team to get stuck in a particular stage or slip to an earlier stage. Also, projects with team members who have worked together in the past could skip a stage.

i. **Forming.** This phase is where the team meets and learns about the project and what their formal roles and responsibilities are. Team members tend to be independent and not as open in this phase.

ii. **Storming.** During this phase, the team begins to address the project work, technical decisions, and the project management approach. If team members are not collaborative and open to differing ideas and perspectives the environment can become destructive.

iii. **Norming.** In the forming phase, team members begin to work together and adjust work habits and behaviors that support the team. The team begins to trust each other.

iv. Performing. Teams that reach the performing stage function as a well-organized unit. They are interdependent and work through issues smoothly and effectively.

v. Adjourning. In the adjourning phase, the team completes the work and moves on from the project.



Forming, Storming, Norming, Performing...

| Norming | Storming |
|---|---|
| Working with each other | Challenging each other |
| Performing | Forming |
| Working as one | Learning about each other |

1. **Ground Rules**
✓ Ground rules establish clear expectations regarding acceptable behavior by project team members.
✓ Early commitment to clear guidelines decreases misunderstandings and increases productivity.
✓ Discussing ground rules allows team members to discover values that are important to one another.
✓ All project team members share responsibility for enforcing the rules once they are established.

## 2. Co-location

- ✓ Co-location involves placing many or all of the most active project team members in the same physical location to enhance their ability to perform as a team.
- ✓ Co-location can be temporary, such as at strategically important times during the project, or for the entire project.
- ✓ Co-location strategies can include a team meeting room, places to post schedules, and other conveniences that enhance communication and a sense of community.
- ✓ While co-location is considered a good strategy, the use of virtual teams is sometimes unavoidable.

## 3. Recognition and Rewards

- ✓ Part of the team development process involves recognizing and rewarding desirable behavior.
- ✓ The original plans concerning ways in which to reward people are developed during the Develop Human Resource Plan process.
- ✓ It is important to recognize that a particular reward given to any individual will only be effective if it satisfies a need which is valued by that individual. Award decisions are made, formally or informally, during the process of managing the project team through project performance appraisals.
- ✓ Cultural differences should be considered when determining recognition and rewards. For example, developing appropriate team rewards in a culture that encourages individualism can be difficult.
- ✓ Only desirable behavior should be rewarded. For example, the willingness to work overtime to meet an aggressive schedule objective should be rewarded or recognized; needing to work overtime as the result of poor planning by the team member should not be rewarded.
- ✓ However, the team members should not be punished for poor planning and consistently unrealistic expectations imposed by senior management. Win-lose (zero sum) rewards that only a limited number of project team members can achieve, such as team member of the month, can hurt team cohesiveness.
- ✓ Rewarding behavior that everyone can achieve, such as turning in progress reports on time, tends to increase support among team members.

## Develop Project Team: outputs

### 1. Team Performance Assessments

As project team development efforts such as training, team building, and co-location are implemented, the project management team makes formal or informal assessments of the project team's effectiveness.

**The evaluation of a team's effectiveness may include indicators such as:**
- ✓ Improvements in skills that allow individuals to perform assignments more effectively,
- ✓ Improvements in competencies that help the team perform better as a team,
- ✓ Reduced staff turnover rate, and
- ✓ Increased team cohesiveness where team members share information and experiences openly and help each other to improve the overall project performance.

**2. Enterprise Environmental Factors updates**

**Manage Project Team**
- ✓ Manage Project Team is the process of:
- ✓ tracking team member performance
- ✓ providing feedback, resolving issues
- ✓ Managing changes to optimize project performance.
- ✓ The project management team:
- ✓ observes team behavior,
- ✓ manages conflict,
- ✓ resolves issues, and
- ✓ Appraises team member performance.
- ✓ As a result of managing the project team, change requests are submitted, the human resource plan is updated, issues are resolved, input is provided for performance appraisals, and lessons learned are added to the organization's database.
- ✓ Managing the project team requires a variety of management skills for fostering teamwork and integrating the efforts of team members to create high-performance teams.
- ✓ Team management involves a combination of skills with special emphasis on:
  - i. communication,
  - ii. conflict management,
  - iii. negotiation, and
  - iv. leadership.

**Manage Project Team: Inputs**
1. Project staff Assignments
2. Project Management Plan
3. Team Performance Assessments
4. Performance Reports
5. Organizational Process Assets

**Manage Project Team: Tools and Techniques**
**1. Observation and Conversation**
- ✓ Observation and conversation are used to stay in touch with the work and attitudes of project team members.

- ✓ The project management team monitors progress toward project deliverables, accomplishments that are a source of pride for team members and interpersonal issues.
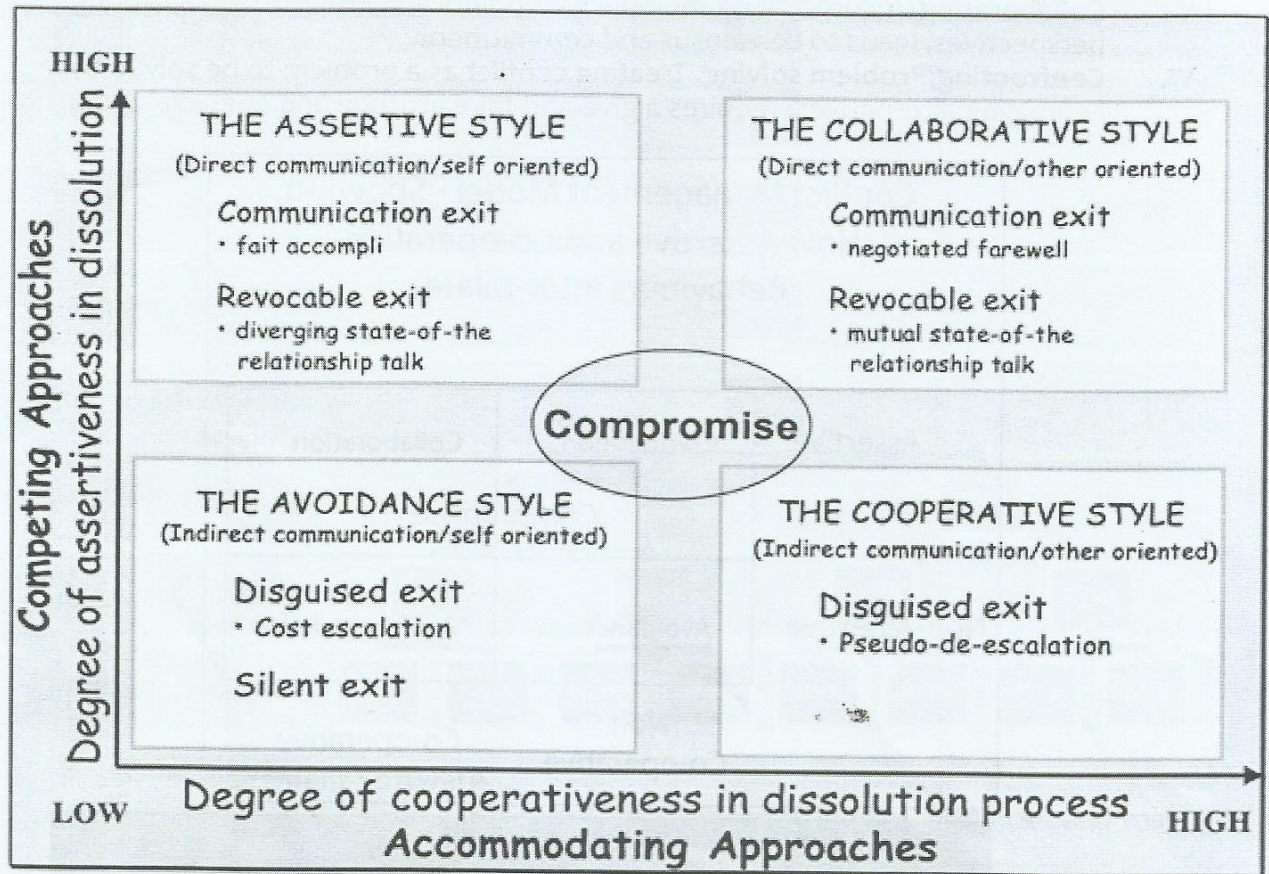
2. **Project Performance Appraisals**

**Objectives for conducting performance appraisals**

i. Clarification of roles and responsibilities,
ii. Constructive feedback to team members,
iii. Discovery of unknown or unresolved issues,
iv. Development of individual training plans,
v. Establishment of specific goals for future time periods.

**NOTE:** The need for formal or informal project performance appraisals depends on the length of the project, complexity of the project, organizational policy, labor contract requirements, and the amount and quality of regular communication.

3. **Conflict Management**

- ✓ Conflict is inevitable in a project environment.

- ✓ Sources of conflict include scarce resources, scheduling priorities, and personal work styles.

- ✓ Team ground rules, group norms, and solid project management practices like communication planning and role definition, reduce the amount of conflict.

- ✓ Successful conflict management results in greater productivity and positive working relationships.

- ✓ When managed properly, differences of opinion can lead to increased creativity and better decision making.

- ✓ If the differences become a negative factor, project team members are initially responsible for their resolution.

- ✓ If conflict escalates, the project manager should help facilitate a satisfactory resolution.

- ✓ Conflict should be addressed early and usually in private, using a direct, collaborative approach. If disruptive conflict continues, formal procedures may be used, including disciplinary actions.

**HIGH**

Competing Approaches — Degree of assertiveness in dissolution

**THE ASSERTIVE STYLE**
(Direct communication/self oriented)

Communication exit
• fait accompli

Revocable exit
• diverging state-of-the relationship talk

**THE COLLABORATIVE STYLE**
(Direct communication/other oriented)

Communication exit
• negotiated farewell

Revocable exit
• mutual state-of-the relationship talk

**Compromise**

**THE AVOIDANCE STYLE**
(Indirect communication/self oriented)

Disguised exit
• Cost escalation

Silent exit

**THE COOPERATIVE STYLE**
(Indirect communication/other oriented)

Disguised exit
• Pseudo-de-escalation

**LOW** — **Degree of cooperativeness in dissolution process** — **HIGH**
**Accommodating Approaches**

**Characteristics of conflict and the conflict management process:**

✓ Conflict is natural and forces a search for alternatives

✓ Conflict is a team issue,

✓ Openness resolves conflict,

✓ Conflict resolution should focus on issues, not personalities,

✓ Conflict resolution should focus on the present, not the past.

**NOTE:** The success of project managers in managing their project teams often depends a great deal on their ability to resolve conflict. Different project managers may have different conflict resolution styles.

**Factors that influence conflict resolution methods include:**

✓ Relative importance and intensity of the conflict,

✓ Time pressure for resolving the conflict,

✓ Position taken by players involved, and

✓ Motivation to resolve conflict on a long-term or a short-term basis.

**Six general techniques for resolving conflict:**

i.   **Withdrawing/Avoiding.** Retreating from an actual or potential conflict situation.

ii.  **Smoothing/Accommodating.** Emphasizing areas of agreement rather than areas of difference.

iii. **Compromising.** Searching for solutions that bring some degree of satisfaction to all parties.

iv.  **Forcing.** Pushing one's viewpoint at the expense of others; offers only win-lose solutions.

v.   **Collaborating.** Incorporating multiple viewpoints and insights from differing perspectives; leads to consensus and commitment.

vi.  **Confronting/Problem solving.** Treating conflict as a problem to be solved by examining alternatives; requires a give-and-take attitude and open dialogue.



Conflict Management Model - Showing How Assertive and Co-operative Behaviours Inter-ralate
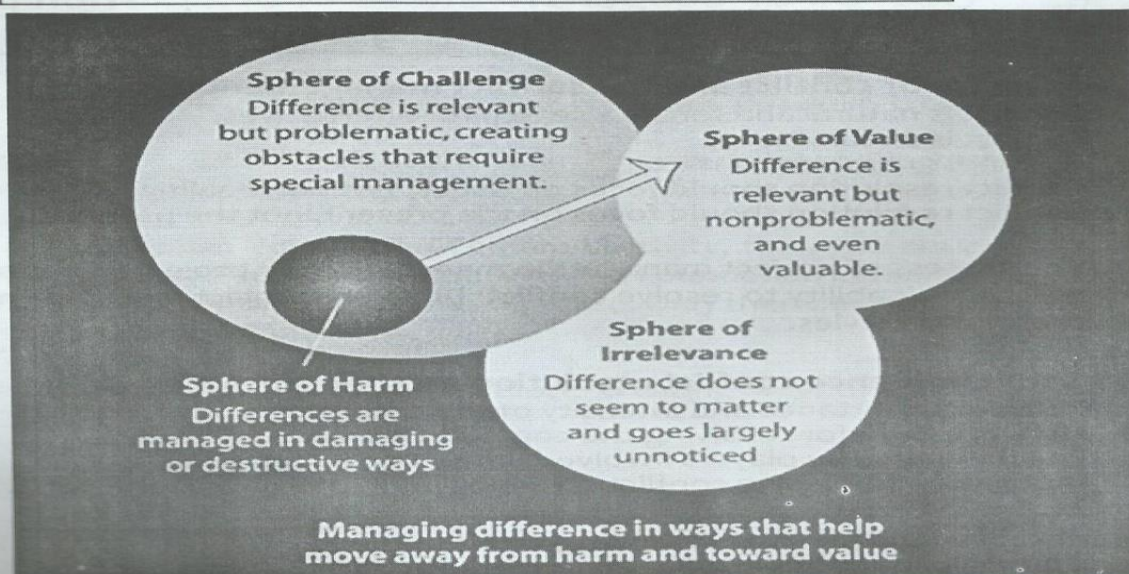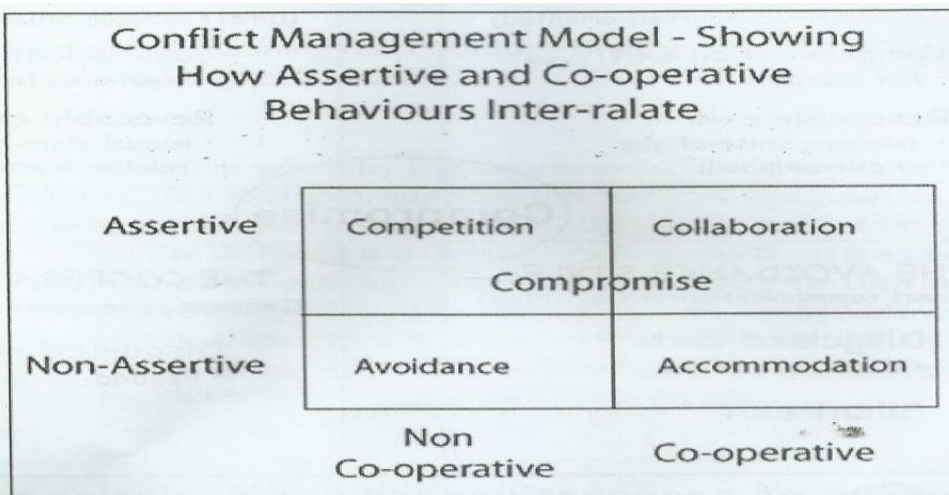
1. **Issue Log**
- ✓ Issues arise in the course of managing the project team.
- ✓ A written log documents and helps monitor who is responsible for resolving specific issues by a target date. Issue resolution addresses obstades that can block the team from achieving its goals.

2. **Interpersonal skills**
- ✓ Project managers use a combination of technical, human, and conceptual skills to analyze situations and interact appropriately with team members. Using appropriate interpersonal skills aids project managers in capitalizing on the strengths of all team members.
- ✓ There is a wide body of knowledge about interpersonal skills that is appropriate to project work and non-project work.
- ✓ That body of knowledge is too in-depth to cover in this publication.
- ✓ Some of the interpersonal skills the project managers use most often are briefly covered below.

I. **Leadership.** Successful projects require strong leadership skills. Leadership is important through all phases of the project life cycle. It is especially important to communicate the vision and inspire the project team to achieve high performance.

II. **Influencing.** Since project managers often have little or no direct authority over their team members in a matrix environment, their ability to influence stakeholders on a timely basis is critical to project success. Key influencing skills include:
- ✓ Ability to be persuasive and clearly articulate points and positions,
- ✓ High levels of active and effective listening skills,
- ✓ Consideration of the various perspectives in any situation, and
- ✓ Gathering relevant and critical information to address important issues and reach agreements while maintaining mutual trust.

**Manage Project Team: outputs**
- i. Enterprise Environmental Factors updates
- ii. Organizational Process Assets updates
- iii. Change Requests
- iv. Project Management Plan updates