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<tr><td colspan="5">Program: Final Year (Common for All Programs)</td><td colspan="5">Semester: VIII</td></tr>
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Objectives:

1. To familiarize the students with the use of a structured methodology/approach for each and every unique project undertaken, including utilizing project management concepts, tools and techniques.
2. To appraise the students with the project management life cycle and make them knowledgeable about the various phases from project initiation through closure.

Outcomes: Learn

1. Apply selection criteria and select an appropriate project from different options.
2. Write work break down structure for a project and develop a schedule based on it.
3. Identify opportunities and threats to the project and decide an approach to deal with them strategically.
4. Use Earned value technique and determine & predict status of the project.
5. Capture lessons learned during project phases and document them for future reference

Syllabus Content in Brief

1. Project Management Foundation
2. Initiating Projects
3. Project Planning and Scheduling
4. Planning Projects, Risk Management in projects
5. Executing Projects, Monitoring and Controlling Projects, Project Contracting
6. Project Leadership and Ethics, Closing the Project

Module 1. Project Management Foundation (07 hr)

1. Definition of a project
2. Project Vs Operations
3. Necessity of project management
4. Triple constraints
5. Project life cycles (typical & atypical) Project phases and stage gate process.
6. Role of project manager,
7. Negotiations and resolving conflicts,
8. Introduction to project leadership, ethics in projects,
9. Multicultural and virtual projects,
10. Project management in various organization structures,
11. PM knowledge areas as per Project Management Institute (PMI).

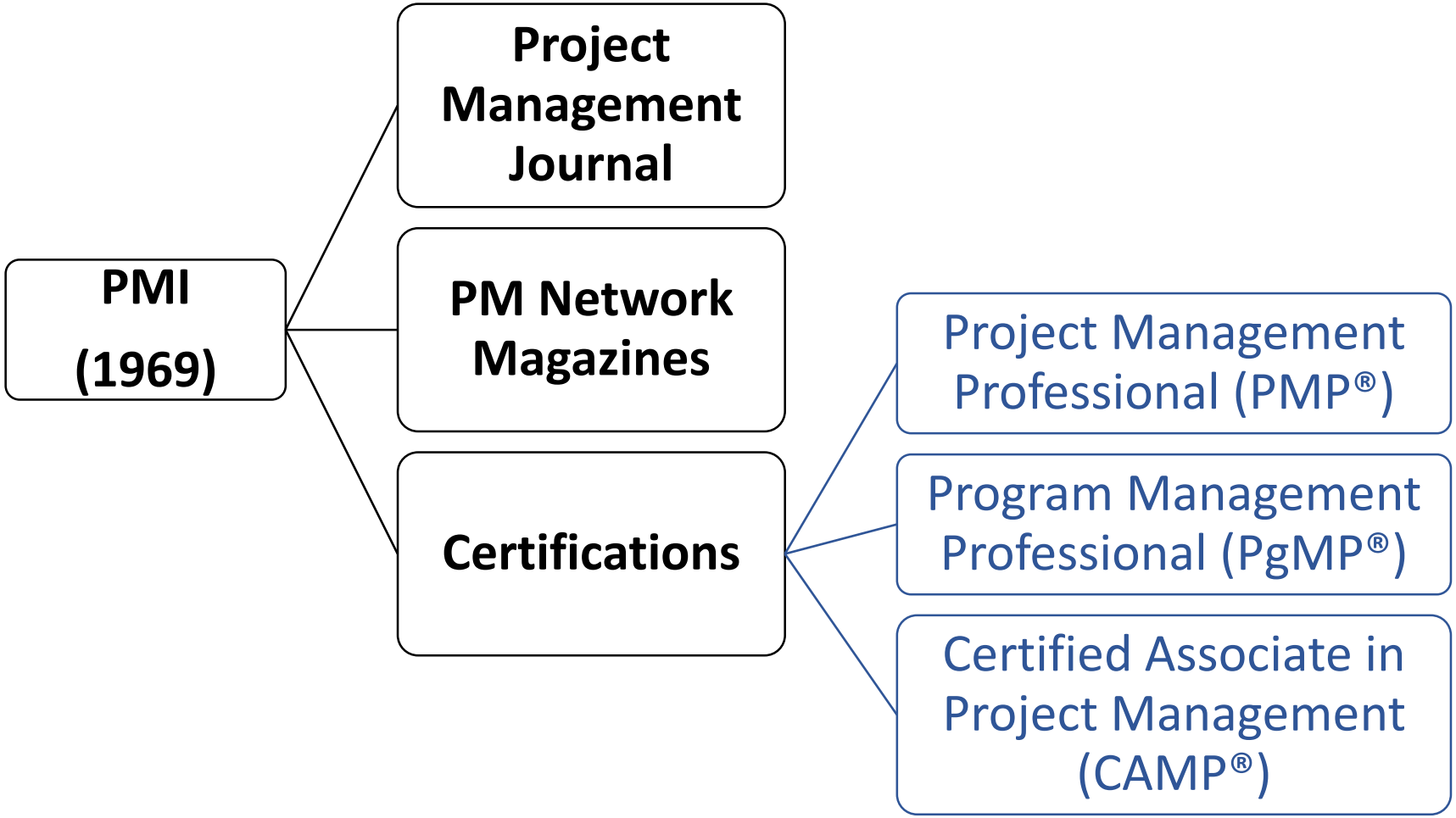
Definition of a project

All of mankind's greatest accomplishments—from building the great pyramids to discovering a cure for polio to putting a man on the moon—began as a project.

What do the following headlines have in common?

- Millions watch Olympic Opening Ceremony
- Citywide WiFi system set to go live
- Hospitals respond to new Health Care Reforms
- Apple's new iPhone hits the market
- City receives stimulus funds to expand light rail system

A Project is a temporary endeavor undertaken to create a unique product or service



Major characteristics of Project

1. An established **objective**.
2. A **defined life span** with a beginning and an end.
3. Usually, the involvement of several departments and professionals.
4. Typically, doing something that has never been done before.
5. Specific time, cost, and performance requirements.

Project vs. Operations

Projects are temporary efforts to create unique products or services

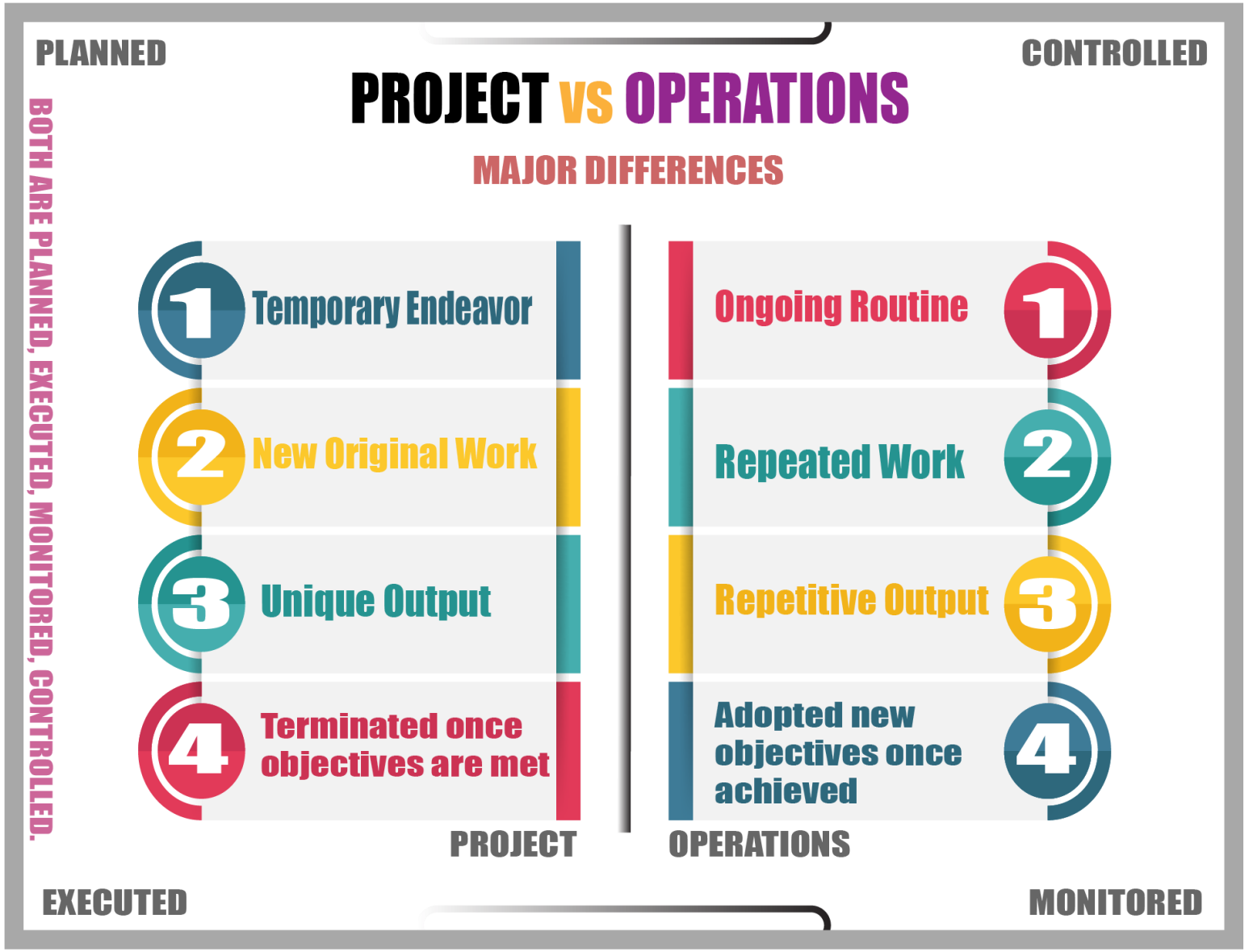
Operations are the ongoing activities that produce and deliver these products repeatedly.

Projects focus on creating something new.

Operations ensure consistent production and efficiency

Examples of projects:
Construction: Building a new home,
Marketing: Developing a marketing plan,
Manufacturing: Creating a new product
Event: Organizing a fundraising event.

Examples of operations:
Construction: Infrastructure maintenance-Repairing an electrical panel,
Manufacturing: Producing goods
Services: Supporting the business's system-Scheduling staff shifts



Similarities

- Resource Management
- Process Optimization
- Quality Control
- Stakeholder Communication
- Risk Management

Project 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 - *(by APM Body Of Knowledge- APMBOK).*

Project management has final deliverables that are constrained to a finite timescale and budget.

Necessity of Project Management

Necessity of Project Management

1. Achieving Goals and Objectives: Project management ensures that projects are completed on time, within scope, and within budget. This alignment with strategic goals is crucial for organizational success. Projects are the means by which strategic plans are executed, turning ideas into reality.

2. Improving Efficiency and Productivity: With a structured approach, project management optimizes resource utilization, reduces waste, and enhances productivity. It provides a clear roadmap, ensuring that every team member knows their tasks and deadlines.

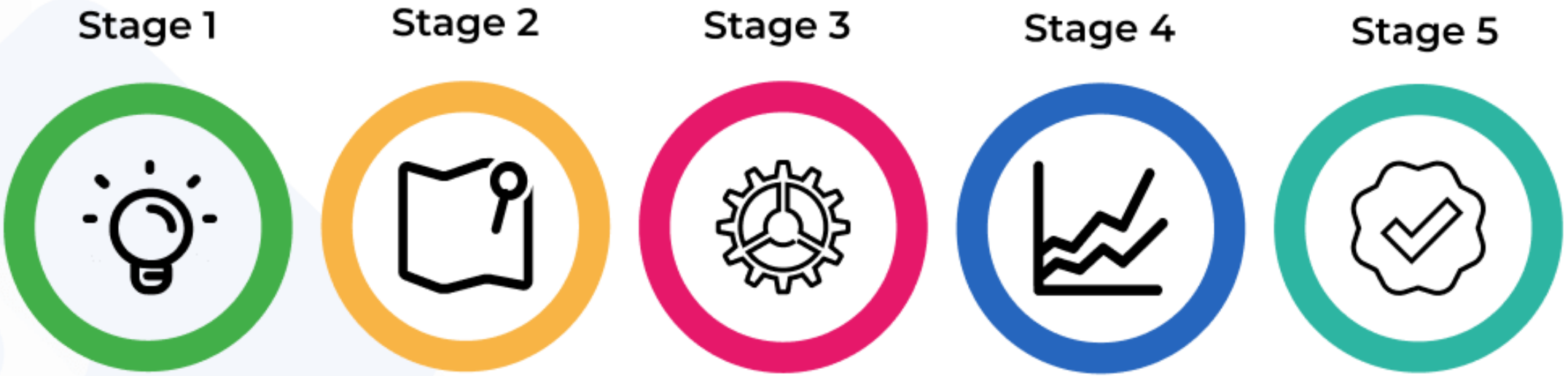
3. Enhancing Communication and Collaboration: Project management fosters clear communication and collaboration among team members, stakeholders, and clients, ensuring everyone is aligned and informed. Effective communication plans ensure that all parties receive timely updates and feedback, reducing misunderstandings and conflicts.

4. Risk Management: Effective project management identifies potential risks early and implements strategies to mitigate them, reducing the likelihood of project failures. Proactive risk management saves time, money, and resources by addressing issues before they become critical problems.

5. Quality Assurance: Through continuous monitoring and control, project management ensures that the project deliverables meet the required quality standards. Quality management processes help to maintain high standards and deliver products that meet or exceed customer expectations.

6. Customer Satisfaction: Delivering projects that meet or exceed expectations leads to higher customer satisfaction, fostering long-term relationships and repeat business. Happy customers are likely to provide positive testimonials, references, and future business opportunities.

Stages in Project Management



Stage 1

Project Initiation

- Define the project's **purpose, scope, and objectives**
- Identify **key stakeholders**
- Create **project charter**

Stage 2

Project Planning

- Create a **project plan**
- Create a **work breakdown structure**
- Develop a **risk management strategy**

Stage 3

Project Execution

- **Start working** on the project plan
- Build **workflows**, **assign tasks** to team members
- Keep everyone **in the loop**

Stage 4

Project Monitoring & Controlling

- Do regular **reviews**
- **Monitor progress** against KPIs
- **Apply changes** when needed

Stage 5

Project Closure

- Complete all **project deliverables**
- Discuss **failures and successes**
- Document **lessons learned**

Industries Benefiting from Project Management

- **Construction**: Managing complex construction projects, ensuring safety, quality, and timely completion. Project managers in construction coordinate multiple contractors, manage resources, and ensure compliance with regulations.
- **Information Technology**: Implementing software development projects, system upgrades, and IT infrastructure projects. IT project managers ensure that technology projects are delivered on time and within budget while meeting user requirements.
- **Healthcare**: Coordinating research projects, patient care initiatives, and medical equipment installations. In healthcare, project managers work to improve patient outcomes, implement new systems, and ensure regulatory compliance.
- **Manufacturing**: Overseeing production processes, new product development, and process improvements. Manufacturing project managers streamline operations, reduce costs, and bring new products to market efficiently.
- **Marketing:** Planning and executing marketing campaigns, product launches, and promotional events. Marketing project managers ensure that campaigns are executed smoothly, reach the target audience, and achieve desired outcomes.

Triple constraints of PM

(Project Management Triangle or Iron Triangle or Project Triangle)

Constraints in project management are limits or boundaries that have an impact on how a project is carried out.

01 Time constraint

The schedule for the project to reach completion

02 Scope constraint

The tasks required to fulfill the project's goals

03 Cost constraint

The financial constraints of a project, also known as the project budget

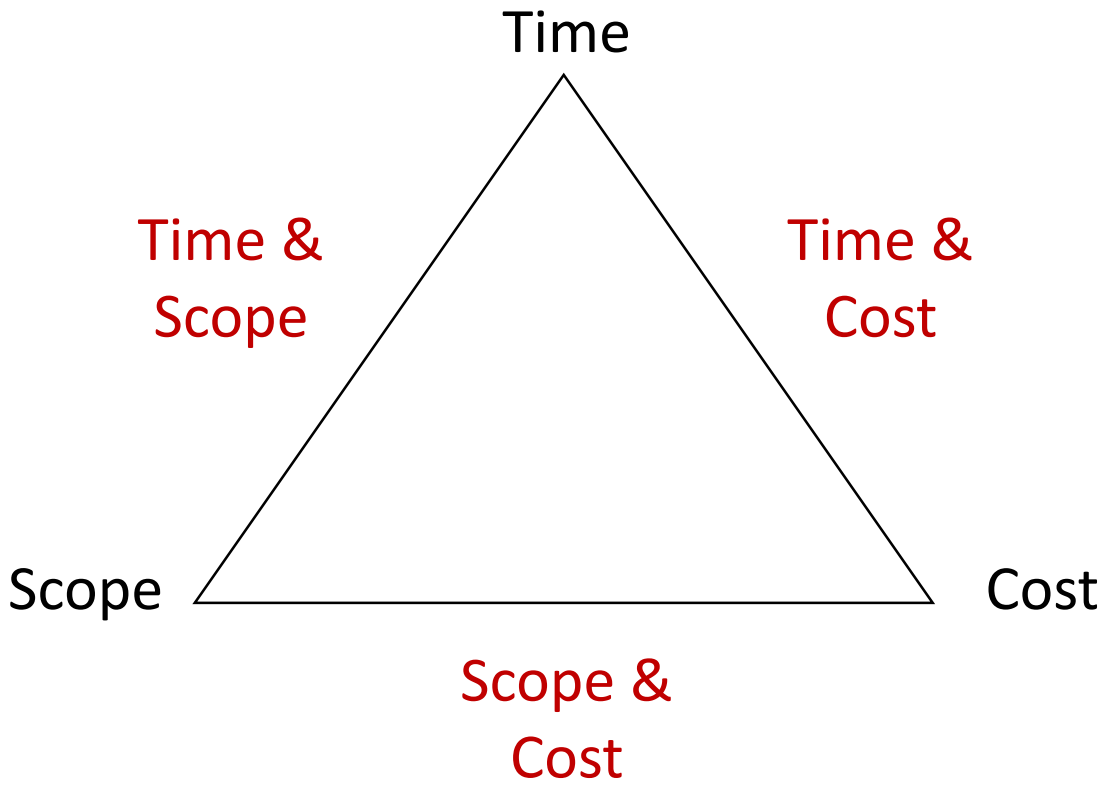
Applies to Programs and even project portfolios.

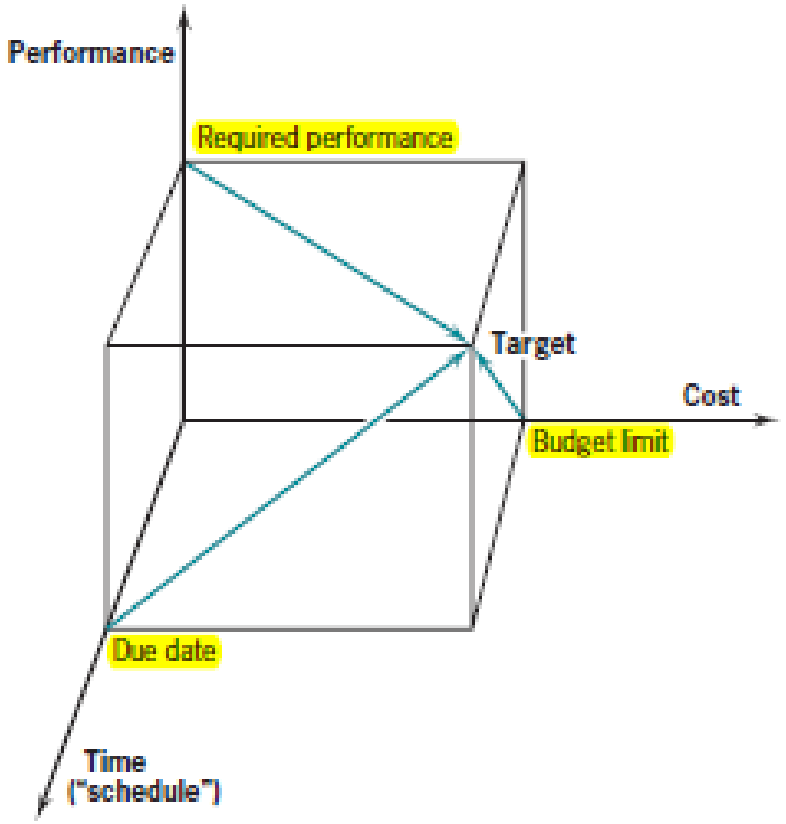
The particular dates and benchmarks that must be reached within the project schedule are referred to as time limitations.

The project's scope limits specify what is included and what is not, as well as the precise deliverables and needs.

Budgetary restrictions pertain to the project's allotted funds, which cover charges for labour, supplies, and overhead.

How Does the Triple Constraint Work?





Other Common Project Constraints to Consider

Risk:

- Lack of Clarity
- High Costs
- Low Performance

Resources:

- People
- Software
- Equipment or materials

Quality:

- Too many project changes
- Poor design or development skills
- Communication Gap

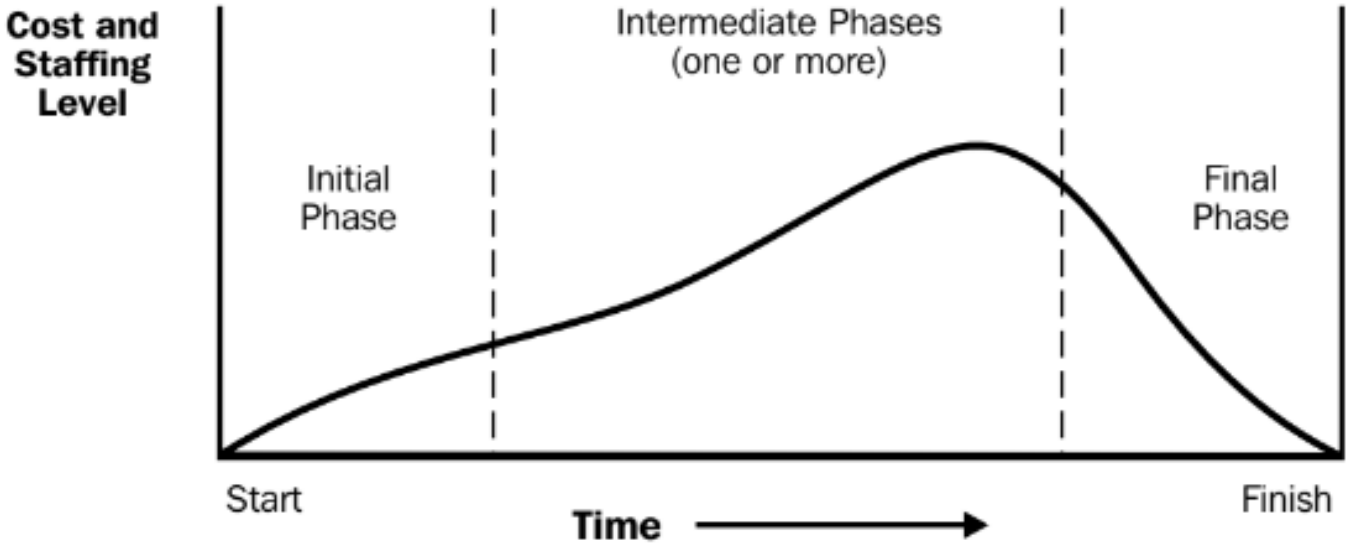
How do you determine the limitations of a project?

Careful Examinations of: Project specifications, Stakeholder expectations, and Outside influences

Methods: Stakeholder interviews, Requirements gathering meetings, and Environmental scans

Managing Project Constraints

Project Phases & Project Life Cycle



Characteristics of Project Phases

- Each project phase is marked by completion of one or more deliverables.
- A deliverable is a tangible, verifiable work product such as a feasibility study, a detail design, or a working prototype.
- The deliverables, and hence the phases, are part of a generally sequential logic designed to ensure proper definition of the product of the project.
- **Phase exits, stage gates, or kill points:** The conclusion of a project phase is generally marked by 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.

Most project life-cycle descriptions share a number of common characteristics:

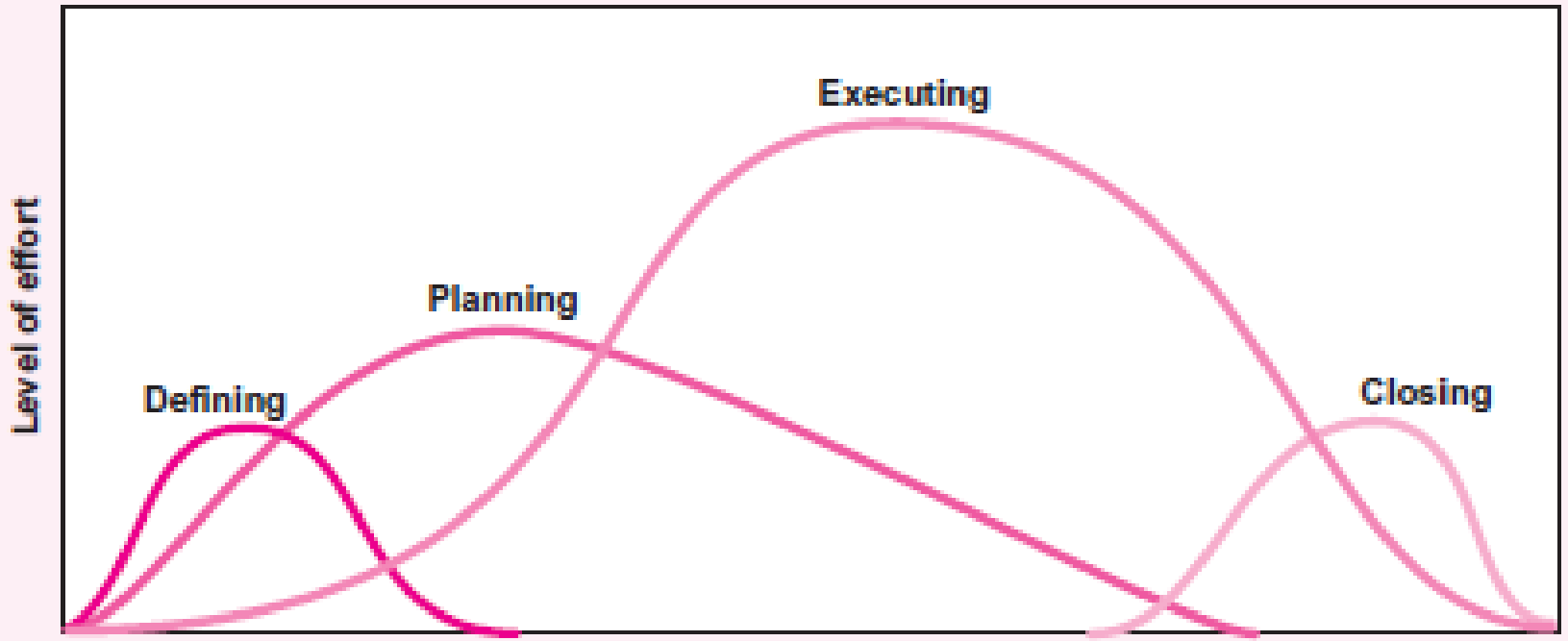
- Cost and staffing levels are low at the start, higher toward the end, and drop rapidly as the project draws to a conclusion.

- The probability of successfully completing the project is lowest, and hence risk and uncertainty are highest, at the start of the project. The probability of successful completion generally gets progressively higher as the project continues.

- The ability of the stakeholders to influence the final characteristics of the project's product and the final cost of the project is highest at the start and gets progressively lower as the project continues.

A major contributor to this phenomenon is that the cost of changes and error correction generally increases as the project continues. Care should be taken to distinguish the project life cycle from the product life cycle. For example, a project undertaken to bring a new desktop computer to market is one but it could be one phase or stage of the product life cycle.

Level of Effort in Project Phases



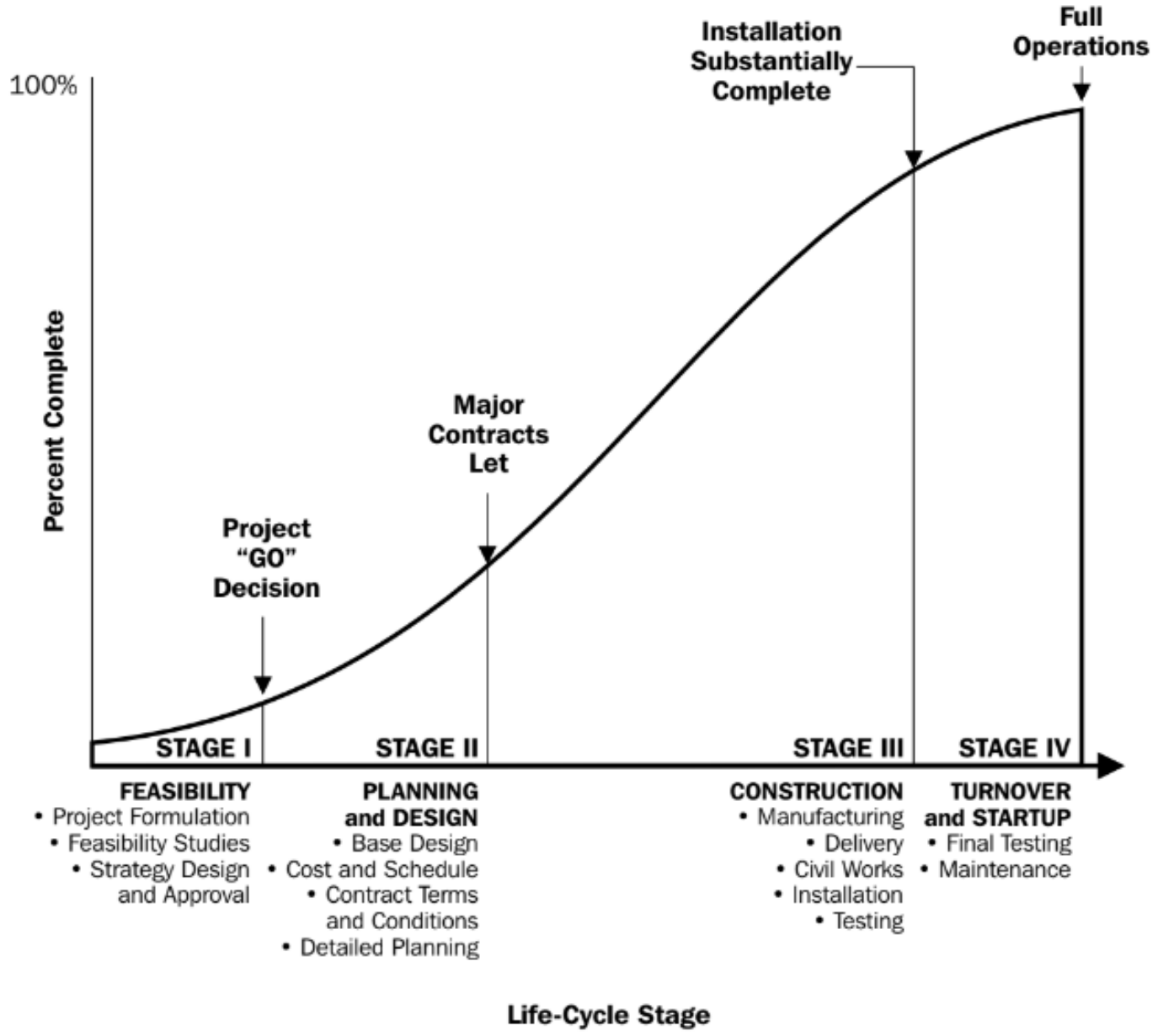
Defining	Planning	Executing	Closing
1. Goals	1. Schedules	1. Status reports	1. Train customer
2. Specifications	2. Budgets	2. Changes	2. Transfer documents
3. Tasks	3. Resources	3. Quality	3. Release resources
4. Responsibilities	4. Risks	4. Forecasts	4. Evaluation
	5. Staffing		5. Lessons learned

Project life cycles generally define:

- What technical work should be done in each phase (e.g., is the work of the architect part of the definition phase or part of the execution phase?).

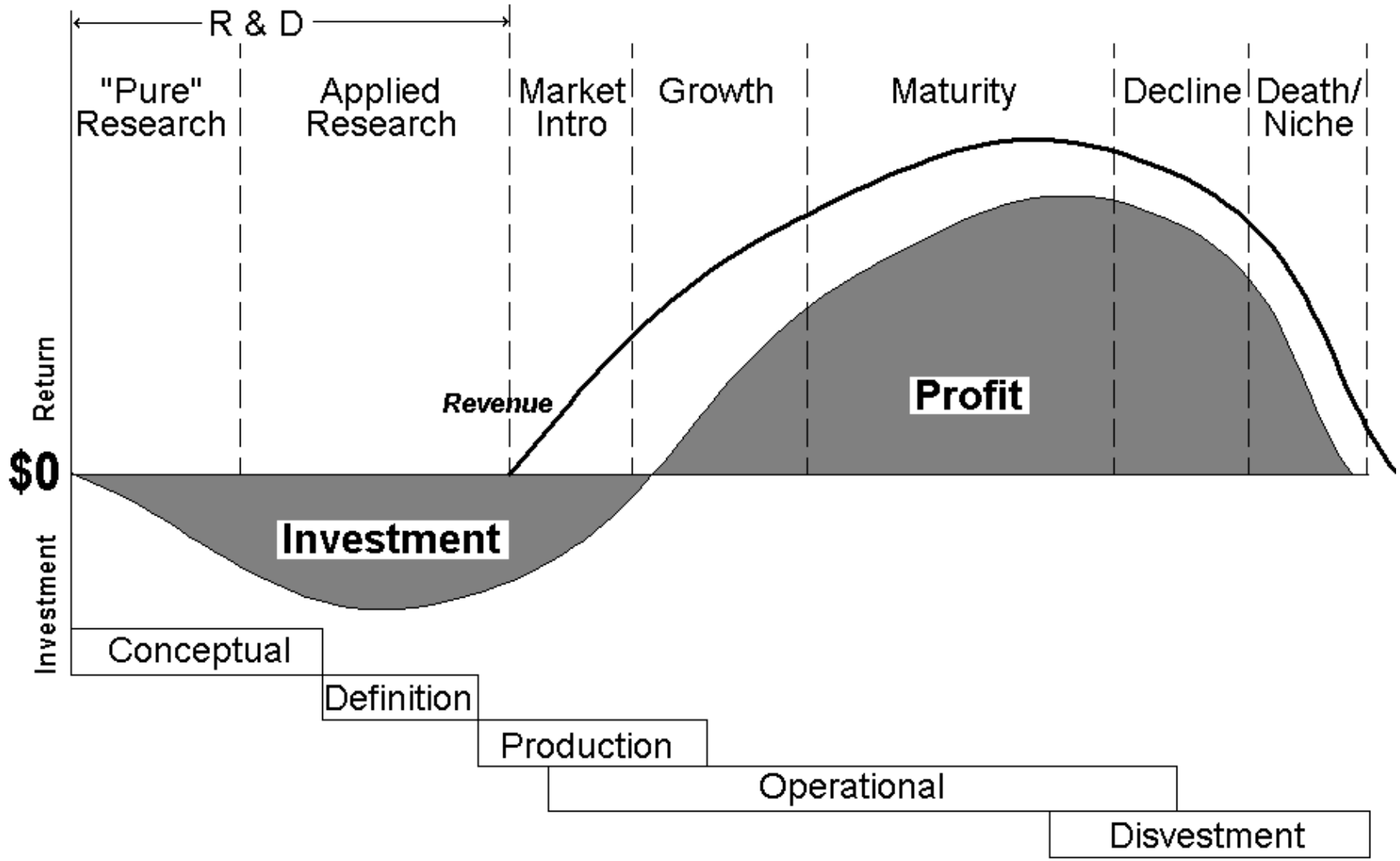
- Who should be involved in each phase (e.g., implementers who need to be involved with requirements and design).

Project life-cycle descriptions may be very general or very detailed. Highly detailed descriptions may have numerous forms, charts, and checklists to provide structure and consistency. Such detailed approaches are often called **project management methodologies.**



Example: Project cycle for a Construction Project by Peter W. G. Morris

Project Phases & Project Life Cycle



Project Management Methodology

•As a general project management methodology, a structural approach is most widely used.

•A structural approach means that project activities are not based on concrete instructions but on certain structures, allowing the discovery of optimal solutions that take into account the individual characteristics and conditions of the project.

•Four main sets of structures are considered in project management:

- ❑ Project management knowledge areas,
- ❑ Project management process groups,
- ❑ Project management activities,
- ❑ Project management artefacts.

Project management knowledge areas

•The basic document that defines knowledge areas and process groups is A Guide to the Project Management Body of Knowledge ([PMBOK Guide]). These areas are:

•1. ***Project Integration Management*** includes activities (called *processes* in the guide) that ensure the co-ordination of various elements of the project.

•2. ***Project Scope Management*** includes activities that ensure the completion of all tasks (and only these!) necessary for completing the project successfully.

•3. ***Project Time Management*** includes activities that ensure the timely completion of the project.

•4. ***Project Cost Management*** includes activities that ensure the completion of the project within the approved budget.

•5. ***Project Quality Management*** includes activities that ensure the satisfaction of the needs for which the project was undertaken.

Project management knowledge areas

6. ***Project Human Resource Management*** includes activities that ensure the most effective usage of people involved in the project.

7. ***Project Communications Management*** includes activities that ensure the timely generation and handling of adequate project information.

8. ***Project Risk Management*** includes activities that ensure adequate identification, analysis and response to project risks.

9. ***Project Procurement Management*** includes activities that ensure the acquisition of necessary goods and services from outside the performing organization.

10. ***Project Stakeholders Management*** includes the processes necessary for identifying people or organizations impacted by the project, analyzing stakeholder expectations, and their impact on the project.

Project management process groups

- ***Initiating processes*** are processes that start the project and each phase, activity or action. Even project closing needs to be initiated: the activities should be started to prove that the outcome satisfies the needs of the customers, the necessary project documentation is present, etc.

- ***Planning processes*** are processes that are necessary for performing executing processes. Planning processes include scope planning, activity definition and sequencing, schedule composition, resource planning, cost estimation, budgeting, etc.

- ***Executing processes*** are processes that coordinate people and other resources to carry out the plan.

- ***Controlling processes*** are monitoring and measuring processes ensuring that project objectives are met and corrective actions are taken when necessary.

- ***Closing processes*** are processes that lead a project or its phase to an orderly end.

Project management activities

Project management activities are activities that are the responsibility of the project manager and that usually are performed (or delegated) by the project manager.

1. Planning, organizing and coordinating the work of the project team.

2. Acquiring and allocating human and other resources.

3. Controlling project execution, tracking and reporting progress.

4. Solving problems/conflicts both inside the project team as well with other parties.

5. Assessing and controlling the risks.

Project management activities

6. Informing the project team and other parties involved about the state of the art of the project, as well as about success and problems.

7. Creating the necessary work environment.

8. Encouraging devotion, excitement and creativity inside the project team.

Project management artefacts

- Project management artefacts are documents that regulate project execution. Most often the following artefacts are present:
    - 1. Needs analysis and/or feasibility studies.
    - 2. Project charter.
    - 3. Terms of reference/scope statement.
    - 4. Work breakdown structure and/or project schedule.
    - 5. Project management plan and/or responsibilities assignment document.
    - 6. Communications plan.
    - 7. Resource management plan.
    - 8. Change control plan.
    - 9. Risk management plan and/or table/database of risks.
    - 10. Lessons learned document/database.

Measurements of Project Success

1. Within specifications
2. Within allotted time period
3. Within the budgeted costs
4. Accepted by the customer/user
5. Minimal and mutual scope changes
6. Within corporate culture & without disturbing organizational workflow

Project Manager's Role

- Responsible for coordinating and integrating activities across multiple and functional lines
- Understand operations of line organizations
- Familiar with technology
  - Master if in R&D activities

What's in the Successful Project Manager's Toolbox ?

- Strong communication skills
- Strong interpersonal skills
- Ability to
  - balance technical and managerial functions;
  - overcome organizational constraints;
  - cope with and survive risks

Ten Specific Skills

- Team Building
- Leadership
- Conflict Resolution
- Technical Expertise
- Planning

Ten Specific Skills

- Organizing
    - Entrepreneurship
        - Administration
            - Management support
                - Resource allocation

What Project Managers Manage

- Engineering
  - Procurement
    - Construction
      - Finance
        - Cost engineering

Project Managers Manage

- Schedule
- Environmental considerations
- Regulatory requirements and law
- Inflation & cost escalations
- Labor and client relations

Management Skills

- Human behavior and interpersonal relationships
  - Psychology
- Organizational behavior
  - Sociology
- Communications

Project Manager's Responsibilities

- Planning agent
  - Overall and summary
  - ***NOT*** detailed planning
    - Functional or line managers
- Resolve conflicts
- Make tradeoffs

“Planning Architect” defines

- Complete tasks
- Resource requirements
- Major timetable milestones
- End-item quality and reliability requirements
- Performance measurements