# Module 1

▼ What is project engineering management?

The goal of a project manager is to guide a team of individuals through the processes of a project from inception to conclusion.

A good manager understands the project is finite and knows how to harness the team's expertise to complete the project.

▼ What is a project?

A **temporary** activity intended to make a product or service. Every project has an end.

▼ What is the idea of a project as a placeholder?

For example, Apple makes iPhone 1 then iPhone 2 and so on. While the activity (of designing iPhones) may be open ended, the product has a process in place but a definitive closure to its lifecycle.

▼ What is a placeholder?

A placeholder is a way of scheduling and assigning pieces of a project to roles, disciplines, and processes **without knowing specifically who will be performing tasks.**

▼ Why use a placeholder?

The budget, resource management, workflow, and overall impact of a project can be evaluated for portions of the project without needing the finite resource mapped out.

▼ What are Enterprise Environment Factors (EEFs)?

They include all policies, practices, procedures, and legislation that exist both inside and outside of the organization.

These may include factors such as antidiscrimination processes, quality standards, codes of conduct, and safety legislation in regards to workers on site and can have a serious impact on the enterprise and a project as a whole.

- Quality Standards
- Product Standards
- Codes of conduct
- Government standards
- Work authorization systems

▼ What are Organizational Process Assets (OPAs)?

They are knowledge bases that can be used in the management of a project.

They include formal and informal plans, policies, procedures, and guidelines.

- Work breakdown structure templates
- Lessons learned
- Risk templates
- Proposal evaluation criteria
- Change control procedures
- Project files

▼ How many project processes according to PMBOK Guide (2017)?

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▼ What are the 5 highest order project process groups?

- Initiation
  - This is where the project starts. Initiation is typically where a client will sit down with the project manager and team to brainstorm what they want the system to be when it is finished.
  - Here, the project will be appropriately defined and there will be initial milestones and parameters identified so that the project can begin.
- Planning

    - The planning phase is the foundational portion of the project. Here is where all the baseline items are created such as resources and resource lists, schedules, experts, team members, risk processes, and reporting hierarchies.
    - Once the bones of the project have been appropriately assembled, the plan can then be brought to the client or the stakeholders for approval.
- Execution
    - This is where implementation happens. This phase is by far the longest of the project phases. Depending on what the project is, this **could take months or even years**.
    - The reason for having an appropriate reporting and execution process is so that **milestones can be identified as they are reached through this phase and reported to the project staff and the stakeholders**.
- Monitoring and Controlling
    - Basically ensuring that a project stays on time and on task.
    - Individuals are responsible for reporting to stakeholders about budgetary concerns and execution phases and to ensure that the project meets plan requirements.
    - **Having continual audits and checks in the monitoring and controlling phase is a necessary method for keeping a project on time, on task, and on budget.**
- Closure
    - Project managers will meet with the experts and the assurance staff to make sure that all aspects of the project are appropriately coming to an end.
    - **Final reports can be completed for the knowledge management base** and the transfer of the completed system.
    - **Documentation** will be key to this aspect of project management.
    - Estimation of the final results and the functionality of the team will also be part of the project manager's duties in this phase.

▼ What defines an engineering project?

The creation/building of technology

▼ What is project engineering management? (PEM)

**The notion of planning and organizing the activities that will create the desired end product** — e.g. things that need to be done *before* the start of the project.

▼ What are subordinate managers?

People in charge of segments of a project.

▼ Projects vs Continuous Business Operations

**Projects vs Continuous Business Operations**

| Aa Projects | Continuous Business Operations |
|---|---|
| Temporary | On-going |
| Unique | Repetitive |
| Specific time frame | Open-ended time frame |
| Situational | Standardized |
| Focus on creating something new | Focus is on reducing unjustified variation |
| Changes status quo | Is status quo |

▼ Why is managing a project to meet schedule and cost vital?

Projects spend money long before they return any benefits.

▼ What is the customer or client?

A person or org that pays for the project. Can be internal or external.

▼ What is the buyer?

A customer may hire a buyer to oversee the project acquisition process for them. The buyer selects some org to build the project and oversees that org's progress. Why? The buyer has the expertise to select the org for the customer.

Example: Customer is Congress. they want an aircraft. Buyer is US Air Force. The org is Lockheed Martin.

▼ What is a process?

Written guidance about how to accomplish a task; in PEM this includes lessons learned from previous projects that guides future activities.

▼ What is the Project Life-Cycle?

1. Idea
2. R&D (Research and Development)
3. Testing
4. Production - continuous business operation
5. Fielding and Use - continuous business operation
6. Disposal

▼ What are competing project goals?

Product meets the requirements. Product delivered on time. Product delivered on budget. Managed risks to avoid failure. PEM essence is achieving balance among these goals.

Manager needs to find a project design that accomplishes large portion of all of the goals.

For example, as manager you decide certain project details are not worth the cost of implementing them so you go back to the customer and get written approval to do so.

You must accomplish goals without taking inordinate risks.

▼ What are the legally binding goals of a project?

A contract with specs specifications. Includes deliverable date, price you will be paid, product capabilities and quantifiable measures.

▼ What is assigning responsibility?

A project manager PM breaks project into small pieces and assigns responsibility for each piece to a named person.

▼ A PM must ensure all people on the team have what?

A shared vision about the project desired outcome.

A shared understanding of the means and methods that will be employed to create those outcomes.

A shared knowledge of the constraints (schedule and cost).

▼ What is project manager authority?

You are allowed to make personnel decisions, technical decisions about the design, and what companies and vendors to use to provide parts and services.

▼ A PM leads the interaction of ...

all the people involved in the project.

▼ What are stakeholders?

All the people who have vital interest in the outcome of the project.

Examples: your management, finances, HR, law, the customer(s), the buyer, your users, and other affected parties.

▼ Why does a PM need to align the team and stakeholders?

A project does not happen without consensus. Shared goals, plans, priorities

▼ What are engineering processes?

Written guidance on how to complete each project activity.

▼ Why must a PM be able to talk with a variety of specialists?

Over the course of a project, you'll need to review their plans and progress and offer guidance.

▼ What is the engineering project manager mindset?

- Create realistic planning documents
- Motivate engineers to be committed to the success of the project
- Be able to persuade people with the required skills to come work on the project
- Learn about your customer: what do they value and consider success?
- Build relationships of trust with many people
- With team create clear statement of scope and objectives for project. Must obtain alignment with team and stakeholders

▼ Science vs. Engineering

Science: knowledge for knowledge sake; study the world

Engineering: achieve practical results; change the world