Google Project Management Certification

Module 1

Introduction

A project is a unique endeavour, a temporary pursuit with a definite end which includes a set of unique deliverables. Project Management is the application of knowledge, skills, tools, and techniques to meet the project requirements and achieve the desired outcomes. Project Management is valuable to businesses because it helps to ensure that a project delivers the expected outcomes on time and within budget.

A project manage usually does the following on a day-to-day basis:

- Planning and Organizing: Figuring out what the project is trying to accomplish and creating project plans.
- Managing tasks: Helps to manage tasks and coordinates between different teams.
- Budgeting: Manages and keeps track of the budget.
- Controlling costs and other factors: Control costs and make sure that the project sticks to the budget and deal with any factors which might affect the project timeline or budget.

Future Scope of Project Management

The industries with the most growth requiring project management aligned roles are:

- Manufacturing and Construction
- Information Services and Publishing
- Management and Professional Services
- Finance and Insurance
- Utilities
- Oil and Gas

A project manager can work in different fields and be called by different names. There are many jobs available such as:

- Operations Assistant
- Project Coordinator
- Operations Manager
- Program Assistant
- Program Manager

Project Management Job categories and common roles

Entry level:

- *Junior Project Manager*
  Performs all aspects of being a project manager alongside a more experienced professional.
- *Project Administrator*
  Assists the rest of the project team with administrative tasks.
- *Project/Program Assistant*
  Supports team members working on a project and offers administrative support. May perform research or create training documents along with other jobs as assigned by program leaders.

- *Project/Program Coordinator*

  Participates in hands-on project work and administrative tasks. Works under a project manager to make sure projects are completed on time and within budget.
- *Project Support Specialist*

  Works alongside a project manager and team members to oversee assigned projects. May also be responsible for training and developing employees to perform designated tasks.

Traditional Project Management Roles
- *Project Manager*

  Responsible for the initiating, planning, executing, monitoring, and closing of a project. Includes industry-specific titles like IT project manager, construction project manager, or engineering project manager, which utilize skills that are transferable among industries.
- *Project Analyst*

  Moves a project along by sharing information, providing support through data analysis, and contributing to strategy and performance.
- *Project Leader/Director*

  Drives core decision-making and sets the direction for the project. Usually knowledgeable about the product or deliverable.
- *Project Controller*

  Primarily responsible for project planning. You are likely to see this job title in industries like engineering and construction.
- *Technical Project Manager*

  Conducts project planning and management for identified goals within a company. Ensures that projects are completed to the requirements within a defined time frame and budget.
- *Project Management Office (PMO) Analyst*

  Manages the progress of complex projects to ensure timely execution and completion.

Usually after Project Manager comes the Program Manager role. While a project is one single-focused endeavour, a program is a collection of projects. Program managers are responsible for managing many projects. Successfully implementing programs as a program manager can eventually make you a great fit for more senior positions, such as a senior program manager or a portfolio manager. A portfolio is a collection of projects and programs across an entire organization.

The difference between a Project manager, Program manager and a Portfolio manager is given below:
- *Project Manager*

  Responsible for the initiating, planning, executing, monitoring, and closing of a project. Includes industry-specific titles like IT project manager, construction project manager, or engineering project manager, which utilize skills that are transferable among industries.
- *Program Manager*

  Manage a group of projects that are related or like one another and handle the coordination of these projects. They facilitate effective communication between

individual project managers and provide support where necessary. They also help create and manage long-term goals for their organization.

- *Portfolio Manager*
  Responsible for managing a group of related programs within the same organization. They coordinate various programs in order to ensure they are on track and that the organization is meeting its strategic initiatives. Portfolio managers look at all projects and programs within the organization and prioritize work as necessary.

Operations Management Roles:

In operational management roles, you will get the opportunity to experience several different departments and how they interact and operate. Operational management roles allow you to work alongside peers and management from various business segments. Key elements of project management include making sure a project is on budget and on schedule. Some operational management positions include:

- *Operations Analyst*
  Manages and coordinates research, investigates workflows, creates business procedures, and recommends changes to improve the project and company.
- *Operations Manager*
  Oversees strategic decision-making and rolls out plans of action based on financial, schedule, and resource reporting.
- *Chief Operating Officer*
  Responsible for overseeing the day-to-day administrative and operational functions of a business.

Agile Roles:

- *Scrum Master*
  Coordinates and guides the Scrum team. Knowledgeable in Agile framework and Scrum and can teach others about the Scrum values and principles. May also be listed as a Technical Program Manager or Technical Project Manager.
- *Product Owner*
  Drives the direction of product development and progress.

Project Managers

Project Managers are those that shepherd projects from start to finish and serve as guides for their team, using their impeccable organizational and interpersonal skills every step of the way. There are 3 keyways through which Project Managers add value to the organisation. These are:

- *Prioritization*
  Project Managers add value to their teams and organizations through effective prioritization of tasks required to complete a project. This is done by breaking down large tasks into small tasks and allocating them. Project Managers will connect the team and the stakeholders to plan appropriately. Stakeholders are interested in and are affected by the project's completion and success.
- *Delegation*
  Project Managers use delegation to add value to their teams and organization by matching tasks to individuals who can best complete the work. For this step, it is necessary for the managers to know their team and everyone's strengths.
- *Effective Communication*
  Project Managers deliver value through effective communication, both with their team and the key stakeholders.

- *Focusing on the customer*

    Customers are always a key element to success in any business. In project management, the word "customer" refers to a person or an organization that defines the requirements of the project and sets important guidelines, such as budget and deadlines. In projects, customers can be internal or external. Internal customers are stakeholders within your organization, such as management, project team members, resource managers, and other organizational departments. External customers are customers outside of your organization, such as clients, contractors, suppliers, and consumers. To successfully deliver a project, it must meet the customer's standards. To meet the customer's standards, you must make sure you clearly understand their expectations. The customer is at the centre of a successful project. Project managers can add a lot of value to the project by building relationships with customers and taking the time to make sure the customer is heard and satisfied with the result.

- *Building a great team*

    The team is a project's biggest asset. A successful project manager knows that and takes the time to understand each person's motivations, strengths, and weaknesses. Project managers add value to the project by identifying the right team for the project and enabling the team to be successful and make decisions. Understanding the customer's requirements helps shape the skills needed for your team. As project manager, you should bring on people with the right skills and ensure the team knows that everyone is valued, trusted, and appreciated.

- *Fostering relationships and communication*

    Maintaining customer satisfaction and building a great team are two ways that you, as a project manager, can add value to a project. Both skills are built on the foundation of relationships and communication. The project managers who add the most value are the ones who take the time to build relationships, communicate, and treat others with consideration and respect. Project managers can set the tone for a project and build relationships within their teams and with stakeholders.

- *Managing the project*

    When you build teams, each person is generally assigned specific project tasks. Once each task is done, the person responsible for that task hands that part of the project over to the next person. Your team members don't always see the whole picture and how they impact others in a project. A successful project manager sees the impacts of each process within the project and communicates those impacts to the team. This ensures that everyone working on the project understands their task goal as well as the big picture goal for the finished product. Managing a project can be busy, but if you take the time to build relationships and maintain open lines of communication, you will increase the chances of the project's success as well as the customer's and your team members' satisfaction.

- *Breaking down barriers*

    A project manager adds value to a project when they break down barriers, allow their team to innovate new ways to do things, and empower them to share ideas. As a project manager, you must model ingenuity and collaboration, and encourage your team to do the same. You can provide support for your team as they try new approaches to find solutions, and you can advocate for additional resources for your team. If your team is having a hard time getting an answer from another organization, you can reach out to the organization yourself to keep the team on track and on schedule.
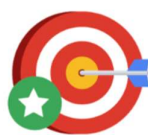
Project Management Roles and Responsibilities
- *Planning and Organising*

- o Making use of productivity tools and creating processes during the planning process.
- *Managing tasks*
  - o A project task is an activity that needs to be accomplished within a set period of time by you, your team or your stakeholders.
  - o Creating documentation and maintaining it throughout the project.
- *Budgeting and controlling costs and other factors*
  - o Monitor and manage the budget.
  - o Track issues and risks.
  - o Manage the quality.
  - o Remove the unforeseen barriers to the task.
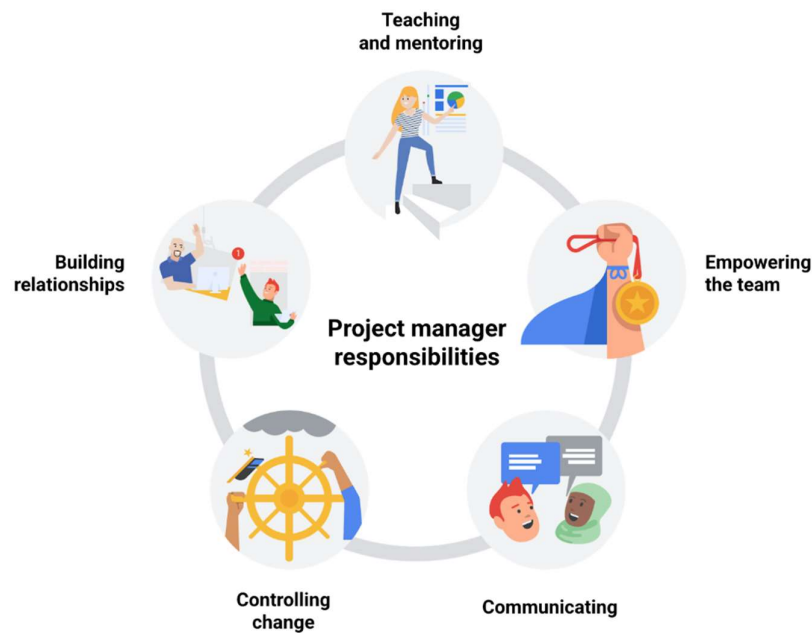
As a project manager, you will likely work with cross-functional teams. A cross-functional team includes team members who have different backgrounds, types of expertise, and job functions. Even though these team members have different skill sets, occupy different roles, and may even work in different departments, they are all working towards a common goal: the successful completion of your project.

- *Clarify goals*

  When working with cross-functional teams, it is important to ensure that each member of the team understands their role, how they support each other, and the common goals of the project. It is vital to set clear goals for the team and make sure that the team understands those goals. Be direct and concise, avoiding extraneous details and explanations. When communicating task or project goals, make sure you define key items, such as budget, deadlines, quality requirements, or important resources. Ensure your team members understand task and project goals by encouraging them to ask questions and clarify information. It will be up to you to continuously check in with your team to make sure they're all moving towards their goals, staying on track, and completing quality work.

- *Get team members with the right skills*

  Making sure you have team members with the correct skill sets for each of the project functions is critical. As the project manager, you must help ensure that your team has the right people with the right skill sets needed for the project to succeed.

- *Measure progress*

  Showing your team how much they have accomplished helps keep them motivated. Take the time to measure and communicate the project's progress across the cross-functional team. This helps everyone see the full picture and recognize their impact on the project. You can measure progress in many ways, including meeting key milestones, completing project tasks, and meeting project goals on time and within budget. Regularly communicate with your team members to check on their progress. Ask them if they anticipate being finished on time. If not, ask how you can help them succeed. Keep track of the team's progress throughout the project by documenting when tasks and goals are completed and let your team members know if the project is on track or not. Make sure you communicate successes, delays, or issues, to the team so they know how the project is progressing. Keeping everyone informed is essential to the project's success.

- *Recognize efforts*

  Sometimes, when you work with cross-functional teams, there are certain skills that get recognized more than others. As a project manager, it is your job to make sure that each member of your cross-functional team recognizes the value of their efforts each step of the way. You have learned the importance of building relationships with stakeholders and building relationships with your cross-functional team members is just as important. Learning what makes your team members feel supported, giving and taking feedback, and being mindful of everyone's background, personal identifiers, and work style can help mediate some of the differences among team members.

Skills for successful Project Management

- *Enabling Decision Making*

  You can help team members feel empowered from the start of your project by making the decision-making process collaborative. Empowering your team to express their opinions and make their own decisions allows you to focus on the overarching management tasks and prioritize them in order of importance. Additionally, when you allow team members to have a voice in decisions, it helps foster an environment of responsibility, accountability, and team closeness.

- *Communicating and Escalating*

  Project management requires clearly communicating project goals and expectations, team member roles and responsibilities, and constructive feedback. Knowing how to effectively communicate and when to escalate issues to management

is key to keeping you, your team, and your organization on the path to success. When escalation is required, try to approach management with both the problem and the potential solution or suggestions.

- *Flexibility*

  All project managers need the ability to adapt and overcome changes and challenges. Change is inevitable, and the more flexible you are as a project manager, the more successful you will be throughout your career. These flexible planning strategies can help you manage your project during times of unpredictability:

  - *Assess External constraints*

    When planning your project, take external events into account, such as national holidays and team member vacations and sick leave. Leaving extra time in the schedule for these inevitable events up front can help minimize the impact to your project.

  - *Plan for risks and challenges*

    If you consider the risks that may occur, you may be able to find solutions for them in advance. You can also assess risks by looking at historical data. Review your past projects and examine the challenges you faced. Then evaluate if similar challenges could occur in this project and prepare accordingly.

  - *Calculate float in your schedule*

    Float, or slack, refers to the amount of time you can wait to begin a task before it impacts the project schedule and threatens the project outcome. Identifying float in your schedule can help with resource management, scheduling, and keeping your project on track.

- *Strong Organisational skills*

  If you demonstrate that it is important for you, as a leader, to stay organized through efficient tracking and communications, your team will follow suit. One way to do this is by utilizing the abundance of organizational tools available, such as:

  - Planning and scheduling softwares
  - Collaboration tools
  - Documentation
  - Quality Assurance tools

- *Handling Ambiguity*

  Ambiguity can be a big challenge in managing projects. Project managers often face ambiguity in goals, requirements, schedules, vision, or other areas related to the project. Your team will look to you to lead during times of ambiguity and change, and flexibility is especially important during these instances. Here are some different ways to help your team deal with ambiguity:

  - Keep calm
  - Express empathy
  - Communicate what you know clearly
  - Make decisions and stick to them
  - Trust the expertise of your team

- *Strong Interpersonal skills*

  A project manager's ability to guide teammates to complete their assigned work without acting as their direct managers is what is called influencing without authority. A few key interpersonal skills are:

  - Communication
  - Negotiation
  - Conflict mediation

o   Understanding Motivations

Common myths about being a Project Manager
- You must be an expert in the field and have a lot of technical knowledge about the project. Project managers hire the experts and help put all the pieces of the project together. Project managers don't need to be experts in every field.
- Only people with a lot of experience within an organization can manage projects successfully. To be a successful project manager at any organization—regardless of whether you have worked there previously—it is essential to master the skills, tools, and techniques of project management.
- You must always know every single detail about the project. Your role as a project manager is to communicate with your stakeholders, clarify objectives, and set expectations. Trust your team to handle the details of each project task and communicate with you when there's an issue. Through your direct communication and strategic approach to problem-solving, you can provide solutions and help remove barriers for your team.

Project Life Cycle
Each project has at the least the following 4 phases:
- *Initiate the project*
    In this phase the project goals and deliverables are defined. The budget and resources are identified, the people involved in the project are identified and any other details. All the information pertaining to the project is organised in this step. The approval of the project is also taken in this course.
- *Plan*
    In this phase a plan is created to answer how the goal of the project is met. Plans include creating a budget, setting the schedule, establishing the team, determining the roles and responsibilities, creating a breakdown of all tasks to be completed, a plan to communicate, resources, risk assessments, etc.
- *Execute and complete the task*
    In this phase the team is liable to complete tasks which when integrated completes the entire project. As a project manager the main task is to make sure that the different tasks end up completing the project. In this step the progress is managed, essential communication is done between the team members, different work groups and the stakeholders, adjustments are made to the plan as and when required.
- *Close the project*
    Close the project by evaluating the project on what worked and what did not. It is a great way of reflecting and creating a document so that the next project manager can refer to it for another similar project. In this step one ensures that all the tasks have been completed, receive confirmation of acceptance of the project outcome. One must also communicate the results with the stakeholders.

Project Methodologies
    Project management methodologies is a set of guiding principles and processes for owning a project through its life cycle. There are different types of methodologies. One is a linear approach wherein the previous task needs to be finished before moving on to the next task. This means that the project it is used on is a clear and sequential project. The other type of project methodology is the iterative approach. In the iterative approach one can anticipate the changes and test out parts of the project. This allows one to deliver parts of the project as they are completed. The types of methodologies are explained further:

- *Waterfall methodology*

  It is a methodology which has a linear approach. There are 4 main steps to the waterfall model which are initiating, planning, executing, and closing. More steps could be added based on the company, or the project being worked on. It is used when the phases of the project are clearly defined, the tasks need to be completed sequentially, or when changes to the project are very expensive to implement once it started.

- *Agile methodology*

  It is a methodology which is based on its ability to move quickly and easily. This means that this methodology is flexible and can change and adapt based on the circumstances. It is an iterative approach where different pieces of the project are done at the same time. Agile project phases overlap, and tasks are completed in iterations, which in SCRUM are called sprints. This methodology is used when the client has an idea of what they want but do not have a concrete picture in mind. It can also be used when there are uncertainties and a high amount of risk involved with the project.

- *SCRUM methodology*

  It is an Agile framework that focuses on developing, delivering, and sustaining complex projects and products through collaboration, accountability, and an iterative process. Work is completed by small, cross-functional teams led by a Scrum Master and is divided into short Sprints with a set list of deliverables.

- *Kanban methodology*

  Kanban is another method within agile project management. Originating from the manufacturing industry, the term "Kanban" has evolved to denote a framework in which tasks are visually represented as they progress through columns on a Kanban board. Work is pulled from the predefined backlog on a continuous basis as the team has capacity and moved through the columns on the board, with each column representing a stage of the process.

- *Scrumban methodology*

  Scrumban is a hybrid agile project management methodology that has scrum's nose and Kanban's eyes. The main benefit of Scrumban as a method is that instead of deciding which task from the backlog to work on in each sprint at the outset, Scrumban allows teams to continuously "pull" from the backlog based on their capacity.

- *Extreme Programming methodology (XP)*

  The Extreme Programming (XP) methodology is another form of agile project management that was designed for software development. It emphasizes teamwork and collaboration across managers, customers, and developers, with teams self-organizing. It has a defined set of rules that teams should follow, which are based on its five values: simplicity, communication (face to face is preferred), feedback, respect, and courage.

- *Adaptive Project Framework methodology (APF)*

  The adaptive project framework (APF) methodology, also known as adaptive project management (APM), is a type of agile project management methodology that was designed with the inevitability of change in mind. That means that using adaptive project framework methods, teams must try to anticipate the risks and prepare for the unexpected in their project. They need to understand that key components are constantly in flux and be able to constantly re-evaluate results and decisions with these moving parts in mind. This requires lots of communication with all stakeholders and — like other agile project management methodologies — be able to work collaboratively.

- *Critical Path Method*

  The critical path method (also known as critical path analysis) is a way of identifying and scheduling all of the critical tasks that comprise your project, as well as their

dependencies. The longest sequence of critical tasks becomes your critical path and will define the timeframe for your project.

- *Critical Chain Project Management method*

    Critical chain project management (or CCPM) takes the critical path method (CPM) one step further. While the critical path method defines the length of time needed to get each critical activity done from the beginning of the project to the end, it can often be, well, unrealistic when the time comes to put it into practice. Critical chain project management addresses those issues by allowing a bit more time for the human elements of your project — like delays and resourcing issues. In critical chain project management, you have a few buffers built in that your critical chain can use without derailing everything else, so that your entire project doesn't have to go off track just because life happens.

- *New Product Introduction methodology (NPI)*

    New product introduction is a great project management methodology for when you want to, well, introduce a new product. Also known as new product development (NPD), the new product introduction process covers everything you need to define, develop, and launch a new (or improved) product. The project follows a single product through the entire development process. This process involves multiple phases or a stage-gate process, which can vary from organization to organization.

- *Package Enabled Reengineering methodology (PER)*

    Package enabled reengineering (PER) is a project management methodology that aims to help organizations redesign products or processes with fresh eyes. It focuses on facilitating business transformations quickly and strategically, whether through redesign of processes or realignment of people.

- *PRINCE 2 methodology*

    PRINCE2 (PRojects IN Controlled Environments) is a project management methodology and certification that aims to equip project managers with knowledge of best practices and processes. It's guided by seven principles, which in turn dictate the seven processes a project manager needs to use in each project when using PRINCE2.

- *Rapid Application Development methodology (RAD)*

    Rapid application development (RAD) is a type of agile project management methodology that aims to facilitate faster software development. It uses rapid prototype releases and iterations to gather feedback in a short period of time, and values that user feedback over strict planning and requirements recording.

- *Lean methodology*

    Lean methodology is often referred to as Lean Manufacturing because it originated in the manufacturing world. The main principle in Lean methodology is the removal of waste within an operation. By optimizing process steps and eliminating waste, only value is added at each phase of production. In the manufacturing industry, these types of waste are often attributed to issues such as:

    - Lack of proper documentation
    - Lack of process standards
    - Not understanding the customers' needs
    - Lack of effective communication
    - Lack of process control
    - Inefficient process design
    - Failures of management

    One can achieve this by using the pillars of the Lean 5S quality tool. The 5S method includes these five steps:

- o Sort: Remove all items not needed for current production operations and leave only the essentials.
- o Set in order: Arrange needed items so that they are easy to use. Label items so that anyone can find them or put them away.
- o Shine: Keep everything in the correct place. Clean your workspace every day.
- o Standardize: Perform the process in the same way every time.
- o Sustain: Make a habit of maintaining correct procedures and instil this discipline in your team.

       The final concept of Lean uses a Kanban scheduling system to manage production. The Kanban scheduling system, or Kanban board, is a visualization tool that enables you to optimize the flow of your team's work. It gives the team a visual display to identify what needs to be done and when. The Kanban board uses cards that are moved from left to right to show progress and help your team coordinate the work.

- *Six Sigma methodology*

       Six Sigma is a methodology used to reduce variations by ensuring that quality processes are followed every time. The term "Six Sigma" originates from statistics and generally means that items or processes should have 99.9996% quality. The seven key principles of Six Sigma are:
- o Always focus on the customer.
- o Identify and understand how the work gets done. Understand how work really happens.
- o Make your processes flow smoothly.
- o Reduce waste and concentrate on value.
- o Stop defects by removing variation.
- o Involve and collaborate with your team.
- o Approach improvement activity in a systematic way.

       Use this methodology to find aspects of the product or process that are measurable like time, cost, or quantity. Then inspect that measurable item and reject any products that do not meet the Six Sigma standard. Any process that created unacceptable products has to be improved upon.

- *Lean and Six Sigma methodology*

       After both Lean and Six Sigma were put into practice, it was discovered that the two methodologies could be combined to increase benefits. The tools used in Lean, such as Kanban boards and 5S, build quality in processes from the beginning. Products developed using Lean methods are then inspected or tested using Six Sigma standards. The products that do not meet these standards are rejected. This methodology is used when the project is characterized by one which is used to improve quality, needs to save money, and moves quickly through the process. It focuses on team collaboration and positive work environment. There are 5 steps to Lean and Six Sigma approach. These are Define, Measure, Analyse, Improve and Control. This process is also called as the DMAIC and is usually used on existing processes where one needs to figure out where the problems are and usually fix it. DMAIC focusses on the data. The DMAIC is further explained below:
- o Define: Set a plan for how to get the data and how often to measure the data.
- o Measure: Measure the data based on the plan.
- o Analyse: Identify the gaps and issues based on the data.
- o Improve: Present your findings and start making improvements.
- o Control: Put forward new processes and documentation in place.

Project Management Institute's Project Management Book Of Knowledge
The Project Management Institute's Project Management Book of Knowledge (AKA the PMI's PMBOK) isn't a project management methodology in and of itself. However, it is a best practices guide — and it forms the basis of the PMI's Project Management Professional (PMP) certification, one of the leading project management qualifications. As such, the PMBOK is an industry-standard set of guiding principles that you can use to ensure that your projects across multiple types of teams and organizations meet the PMI's high standards and comply with best practices.

Choosing the right methodology
- Cost and budget
- Team size
- Ability to take risks
- Flexibility
- Timeline
- Client/Stakeholder collaboration

Difference between Waterfall and Agile methodologies

	Waterfall	Agile
Project manager's role	Project manager serves as an active leader by prioritizing and assigning tasks to team members.	Agile project manager (or Scrum Master) acts primarily as a facilitator, removing any barriers the team faces. Team shares more responsibility in managing their own work.
Scope	Project deliverables and plans are well-established and documented in the early stages of initiating and planning. Changes go through a formal change request process.	Planning happens in shorter iterations and focuses on delivering value quickly. Subsequent iterations are adjusted in response to feedback or unforeseen issues.
Schedule	Follows a mostly linear path through the initiating, planning, executing, and closing phases of the project.	Time is organized into phases called Sprints. Each Sprint has a defined duration, with a set list of deliverables planned at the start of the Sprint.
Cost	Costs are kept under control by careful estimation up front and close monitoring throughout the life cycle of the project.	Costs and schedule could change with each iteration.
Quality	Project manager makes plans and clearly defines criteria to measure quality at the beginning of the project.	Team solicits ongoing stakeholder input and user feedback by testing products in the field and regularly implementing improvements.

Communication	Project manager continually communicates progress toward milestones and other key indicators to stakeholders, ensuring that the project is on track to meet the customer's expectations.	Team is customer-focused, with consistent communication between users and the project team.
Stakeholders	Project manager continually manages and monitors stakeholder engagement to ensure the project is on track.	Team frequently provides deliverables to stakeholders throughout the project. Progress toward milestones is dependent upon stakeholder feedback.

Organisational Structures

Organisational structure refers to the way a company or organization is arranged or structured. This structure tells how the tasks are divided and coordinated and how the teams are connected. Organisational structures impact the way one manages the project based on the amount of authority one has been given for the project. Organisational There are multiple types of organisational structures, but the following are the 2 mainly seen ones:

- *Classic structure*

  It is a functional or top-down structure. This follows a chain of command with the CEO on top followed by executives, directors, managers, assistant managers, team leaders and then finally employees. In a Classic structure, authority comes from the top and filters to the bottom. Frequent reporting of project status updates may be required to pass up through management levels to keep higher leaders informed. Classic organizations are also referred to as functional organizations because the organization is divided into departments based on function. Each department is led by a functional manager, and employees are grouped according to the functions of their role.

- *Matrix structure*

  This structure resembles a grid where the top-down approach is followed but one is also responsible towards the other heads. Basically, in this structure one has a direct superior but is also liable to communicate with other branch superiors when required. The Matrix structure differs from the Classic structure in that the employees have two or more managers. In Matrix structures, you still have people above you, but you also have people in adjacent departments with whom you will need to communicate on your work progress. Functional areas tend to cross paths more frequently, and depending on the nature of the work, the responsible manager for each area has the most authority.

Impact of Organisational structure on Project Management

An organisation's structure provides the framework for accountability and communication in the organisation through the project life cycle. Knowing the organisational structure tells one on how and where to get resources to complete the project efficiently. It impacts the project management practices through its effect on authority and resource availability.

The role of a Project Management Office

A Project Management Office, or PMO, is a group within an organization that defines, sets, and helps maintain project management standards and processes throughout that organization. It often acts as a coordinated centre for all the organization's projects, helping them run more smoothly and efficiently. An organization's project managers may operate within the PMO itself or within other departments. PMOs offer guidance and support to their organization's project managers. They share best practices, project statuses, and direction for

all the organization's projects while often taking on strategic projects themselves. The main functions of a PMO include:

- Strategic planning and governance
- Best practices
- Common project culture
- Resource management
- Creation of project documentation, archives, and tools

Organisational Culture

Organisational culture is the values that employees share, as well as the organisation's values, missions, and history. One needs to have a good knowledge of the organisational culture before even the initiation of a project. A few questions to ask regarding the organisational culture are:

- How does communication happen?
- How are decisions made?
- What kind of rituals are in place when someone new comes to the facility?
- How are projects typically run?
- What kind of practices, behaviour, and values are reflected by the people in the organization?

Understanding the company's culture can help you navigate your team through a project. An organization's culture defines its identity. Its identity essentially describes the way the company conducts business, both internally and externally. A company's values and organizational culture go together; its values are part of its identity. The mission and value statements will help you understand why the company exists and will give your insight into what the company believes in and how it will behave. Strong, positive organizational culture helps retain a company's best employees. People who feel valued, engaged, and challenged are more likely to give their best and want to drive for success. One way to find out more about an organization's culture is to talk to the people who work there. You can also take note of the current employees' attire, expressions, and overall behaviour. Organizational culture can have direct impacts on a company's processes, and ultimately, its productivity. The organization's culture is instilled throughout the company—from its employees to how its employees do their job. As a project manager, it is important to understand your company's culture, especially because it could affect the projects you work on. Some aspects of an organization's culture that are directly related to how you will manage projects are communication, decision-making, rituals, previous management styles, and values.

Change Management

The process of delivering your completed project and getting people to adopt it is called as change management. It is the people who are directly impacted by any change in the organisation. A few core concepts of change management are:

- Creating a sense of ownership and urgency.
- Figuring out the right combination of skills and personalities.
- Keeping an effective communication.

Change management is a major undertaking and a project in and of itself. When it comes to change management, you may not always be responsible for leading and planning the entire end-to-end process. There will be times when your manager, a team member, or another senior leader might be responsible for taking on that transition and successfully implementing

the changes. As a project manager, you can think of change management as necessary for the successful outcome of your project. Both change management and project management aim to increase the likelihood of project success. They also incorporate tools and processes to accomplish that goal. The most effective way to achieve a project goal is to integrate project management and change management, and it is your responsibility as a project manager to do so. Some best practices for approaching change management on your projects are:

- Being proactive
- Communicating about upcoming changes
- Following a consistent process
- Practicing empathy
- Using tools

Corporate and Project Governance

Governance in business is the management framework within which decisions are made and accountability and responsibility are determined. In simple terms, governance is understanding who is in charge. Each organization is governed by its own set of standards and practices that direct and control its actions. Those standards and practices are called corporate governance, and they will influence your projects. Corporate governance is the framework by which an organization achieves its goals and objectives. Corporate governance is also a way to balance the requirements of the various corporate entities, such as stakeholders, management, and customers. Corporate governance affects every part of an organization, including action plans, internal and external controls, and performance measurements.

To successfully implement change management, it is essential that you understand the structure and culture of the organization. Effective governance in change management provides clearly defined roles and responsibilities during change. This enables the people within the organization to have a precise understanding of who makes decisions and of the relationship between those managing and participating in the change management process. Another example of governance within an organization is the creation and use of steering committees. Steering committees decide on the priorities of an organization and manage the general course of its operations. The steering committee essentially acts as an advisory board or council to help the project manager and the company make and approve strategic decisions that affect both the company and the project.

As a project manager, you will be responsible for project governance. Project governance is the framework for how project decisions are made. Project governance helps keep projects running smoothly on time, and within budget. Project governance involves all the key elements that make a project successful. It tells you what activities an organization does and who is responsible for those activities. Project governance covers policies, regulations, functions, processes, procedures, and responsibilities. Project governance needs to be tailored to your organization's specific needs. These needs will influence how you implement and monitor the governance framework on your project. Project governance concerns those areas of corporate governance that are specifically related to project activities. Effective project governance ensures that an organization's projects are aligned to the organization's larger objectives, are delivered efficiently, and are sustainable. Corporate governance can involve clearing many hurdles before making decisions. These decisions can influence not only a single project, but the entire corporation.

At the same time, corporate governance can help support project governance, as it provides oversight on compliance and mitigating risk and offers guidance and direction for

project managers. Good corporate governance can also help project managers secure resources, get issues addressed, avoid delays in decision-making, get buy-in from stakeholders, and achieve visibility for projects on the executive level.

Module 2

Introduction

Project initiation is the first phase of a project life cycle followed by planning, executing, and closing. A well-planned initiation sets up a strong foundation for the project. Initiation begins after the problem or opportunity is identified within an organisation. Initiation stage is the crucial time for asking stakeholders the right questions, performing research, determining resources, and clearly documenting the key components of a project. A cost benefit analysis is also done in the initiation phase. A cost benefit analysis is the process of adding up the expected value of the project, the benefits, and comparing them to the dollar costs.

A few questions to ask to determine the benefits of the project are:
- What value will the project create?
- How much money could this project save our organisation?
- How much money will it bring in from existing customers?
- How much time will be saved?
- How will the user experience be improved?

A few questions to ask to determine the costs of the project are:
- How much time will people have to spend on the project?
- What will be the onetime costs?
- Are there any ongoing costs?
- What about long term costs?

Key components of initiating a project

There are several key components that need to be considered for initiating a project.
- Goals
  - The goal is what one has to do and trying to achieve.
- Scope
  - This is the process to define the work that needs to happen to complete the project.
- Deliverables
  - Products and services that you will create for your customer, client, or project sponsor. A deliverable can be tangible or intangible.
- Success Criteria
  - It is the standards by which you measure how successful a project was in reaching its goals.
- Stakeholders
  - They are the people who both have an interest in, and are affected by, the completion and success of a project.
- Resources
  - These generally refer to the budget, people, materials, and other items that are used to complete the project.

- Project Charter
  - Once all the above are clarified a project charter is created. It is a document that clearly defines the project and its goals, and outlines what is needed to accomplish the goals.

Cost Benefit Analysis

A cost-benefit analysis can minimize risks and maximize gains for projects and organizations. It can help you communicate clearly with stakeholders and executives and keep your project on track. Because this type of analysis uses objective data, it can help reduce biases and keep stakeholder self-interest from influencing decisions. Comparing a project's benefits to its costs can help you make a strong business case to stakeholders and leadership and ensure your organization pursues the most profitable or useful projects. Organizations use cost-benefit analyses to reduce waste and invest their resources responsibly.

You might also consider questions about intangible benefits. These are gains that are not quantifiable, such as:
- Customer satisfaction. Will the project increase customer retention, causing them to spend more on the company's products or services?
- Employee satisfaction. Is the project likely to improve employee morale, reducing turnover?
- Employee productivity. Will the project reduce employee's overtime hours, saving the company money?
- Brand perception. Is the project likely to improve the company's brand perception and recognition, attracting more customers or providing a competitive advantage?

You can also flip these questions to consider intangible costs. These are costs that are not quantifiable. The process of calculating costs and benefits is also called calculating return on investment, or ROI. There are many ways to determine a project's ROI, but the easiest way is to compare the upfront and ongoing costs to its benefits over time. One common formula is:

$$\frac{Financial\ Gains - Upfront\ and\ ongoing\ costs}{Upfront\ and\ ongoing\ costs} = Return\ on\ Investment$$

Determining project goals and deliverables

A project goal is the desired outcome of the project. A well-defined goal is essential for a smooth project completion. Well defined goals are clear and specific. The initiation phase has the following steps:
- Refining goals with stakeholders
- Assessing the stakeholder power and influence
- Assign roles and responsibilities to promote the service
- Create a charter for the next stage of the project

SMART Goals

SMART stands for the following and each asks the following sub questions:
- Specific
  - What do I want to accomplish?
  - Why is this a goal?
  - Who is involved?
  - Where should the goal be delivered?

- o To what degree?
- Measurable
  - o How much?
  - o How many?
  - o How will I know when its accomplished?
- Attainable
  - o Can it be reasonably reached?
  - o How can it be accomplished?
- Relevant
  - o Does the goal make sense?
  - o Is the goal worthwhile?
  - o Is it the right time?
- Time bound
  - o Is it time bound?

Objectives and Key Results (OKRs)

OKRs help to establish goals or objectives for an organization, department, project, or person. OKRs combine a goal and a metric to determine a measurable outcome. A detailed summary of OKRs is given below:

- Objectives
  - o It defines what needs to be achieved.
  - o It describes a desired outcome.
- Key results
  - o It defines the measurable outcomes that define when the objective has been met.

Company level OKRs are shared across an organisation so that everyone can align and focus their efforts to help the company reach its goals. Project level OKRs help define measurable project goals. They need to align with and support both company and department level OKR's. Following are a few steps to create OKRs:

- Set your objectives.
  - o Project objectives should be aspirational, aligned with organizational goals, action-oriented, concrete, and significant. Consider the vision you and your stakeholders have for your project and determine what you want the project team to accomplish in 3–6 months.
- Develop key results
  - o Next, add 2–3 key results for each objective. Key results should be time-bound. They can be used to indicate the amount of progress to achieve within a shorter period or to define whether you've met your objective at the end of the project. They should also challenge you and your team to stretch yourselves to achieve more.

Determining the Project Scope

The project scope defines the boundaries of the project. The scope ensures that the project is clearly defined and mapped out. Scope includes the project timeline, budget, and resources. The easiest way to figure out the scope of a project is by asking the project sponsors and stakeholders and decide what is and what is not included in the project. A few additional questions to ask for the project scope are:

- Where did this project come from?
- Why is it needed?

- What is the project expected to achieve?
- What does the project sponsor have in mind?
- Who approves the results?

Stakeholders	How did you arrive at the decision to update the dining space? Did the request originate from the restaurant owner, customers, or other stakeholders? Who will approve the scope for the project?
Goals	What is the reason for updating the dining space? What isn't working in the current dining space? What is the end goal of this project?
Deliverables	Which dining space is being updated? What exactly needs to be updated? Does the dining space need a remodel?
Resources	What materials, equipment, and people will be needed? Will we need to hire any contractors? Will we need to obtain a floor plan and building permits?
Budget	What is the budget for this project? Is it fixed or flexible?
Schedule	How much time do we have to complete the project? When does the project need to be completed?
Flexibility	How much flexibility is there? What is the highest priority: hitting the deadline, sticking to the budget, or making sure the result meets all the quality targets?

Project Scope

Tasks that are included in the project plan and contribute to the project's goals are said to be in scope tasks. Tasks that are not included in the project plan and don't contribute to the project's goal are said to be out of scope tasks. Scope creep is when changes, growth, and uncontrolled factors that affect a project's scope at any point after the project begins. There are multiple types of scope creeps such as:
- External Scope Creeps
  - Causes
    - Customer Requests
    - Business environment shifts
    - Changes in technology
  - Solutions
    - Make project plans visible to the stakeholders.
    - Get clarity on project requirements.
    - Set ground rules and expectations for stakeholder involvement.
    - Create a plan for dealing with out-of-scope requests.
    - Put your agreements and plans in writing.
- Internal Scope Creeps
  - Causes

- Product improvements
- Processes changes

The scope of a project can get out of control quickly. Scope creep is when a project's work starts to grow beyond what was originally agreed upon during the initiation phase. Scope creep can put stress on you, your team, and your organization, and it can put your project at risk. The effects of scope creep can hinder every aspect of the project, from the schedule to the budget to the resources, and ultimately, its overall success. Some best practices for scope management and controlling scope creep are:

- Define your project's requirements.

  Communicate with your stakeholders or customers to find out exactly what they want from the project and document those requirements during the initiation phase.
- Set a clear project schedule.

  Time and task management are essential for sticking to your project's scope. Your schedule should outline all your project's requirements and the tasks that are necessary to achieve them.
- Determine what is out of scope.

  Make sure your stakeholders, customers, and project team understand when proposed changes are out of scope. Come to a clear agreement about the potential impacts to the project and document your agreement.
- Provide alternatives.

  Suggest alternative solutions to your customer or stakeholder. You can also help them consider how their proposed changes might create additional risks. Perform a cost-benefit analysis, if necessary.
- Set up a change control process.

  During your project, some changes are inevitable. Determine the process for how each change will be defined, reviewed, and approved (or rejected) before you add it to your project plan. Make sure your project team is aware of this process.
- Learn how to say no.

  Sometimes you will have to say no to proposed changes. Saying no to a key stakeholder or customer can be uncomfortable, but it can be necessary to protect your project's scope and its overall quality. If you are asked to take on additional tasks, explain how they will interfere with the budget, timeline, and/or resources defined in your initial project requirements.
- Collect costs for out-of-scope work.

  If out-of-scope work is required, be sure to document all costs incurred. That includes costs for work indirectly impacted by the increased scope. Be sure to indicate what the charges are for.

Triple Constraint Model

The triple constraint model is the combination of the 3 most significant restrictions of any project: the scope, cost, and time. Any change is either of these 3 constraints inevitably leads to a change in the other 2 constraints.

Launching and landing a project

Delivering the result of your project to the client or the user is called launching the project. Landing is measuring the success of your project using the success criteria established at the outset of the project.

In project management, a project "launching" means you have delivered the results of the project to the client or user. You can't solely base project success on when the client accepts the project, though. Your work on a project won't be complete until you "land" it by thoroughly measuring the results. This is when the success criteria and the metrics you defined initially when setting SMART goals will come in handy.

The success criteria tell you whether a project was successful or not. These are the specific details of project goals, deliverables, requirements, and expectations and the standards by which the project will be judged once it's been delivered to the customer or user. To determine project success one can, follow the following:
- Identify the measurable aspects of your project.
- Get clarity from stakeholders on the project requirements and expectations.

Exploring Project team roles and responsibilities
When choosing a team, one must consider multiple aspects such as:
- Required roles – Which people do I need and when?
- Team size – How many people do I need for the project?
- Necessary skills
- Each person's availability – Is the person already busy with another project?

In a project we will have a varied set of project roles, but the following roles will always be fixed:
- Project Sponsor
    The person who is accountable for the project and who ensures the project delivers the agreed upon business benefits. Sometimes they even fund the project.
- Project Team Member
    The people who are doing the work and making things happen.
- Customer
    The people who will get some value from a successfully landed project.
- Users
    The people that use the product produced by the project.
- Project Stakeholder
    Anyone involved in the project who has a vested interest in the project's success.
- Project Manager
    The person who plans., organizes, and oversees the whole project.

The most important part about program management is understanding the personalities of the people you work with so that you can tailor your approach to make sure that you are working effectively with them.
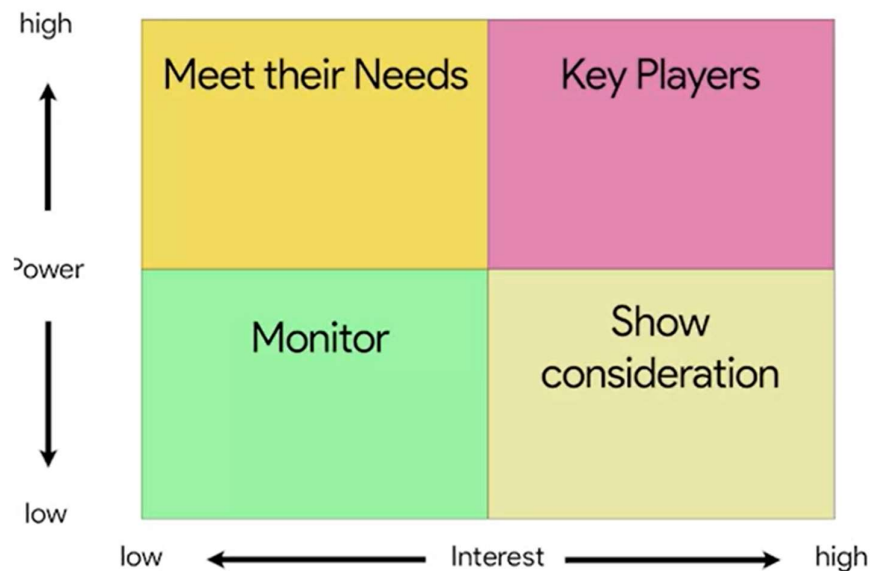
Stakeholders
Stakeholders are primarily of 2 types, the primary stakeholders, and the secondary stakeholders. The primary stakeholders are people who will benefit directly from the project's success, while secondary stakeholders are indirectly impacted by the project's success. A stakeholder analysis is a visual representation of all the stakeholders. Stakeholder analysis helps you see all the opportunities for success and the potential risks, it illustrates which stakeholders are taking on which responsibilities, and it can help you include the right people

in important conversations, which is key to getting the support you need throughout the project. There are 2 keys steps to making a stakeholder analysis:
- Make a list of all the stakeholders the project impacts.
- Determine the level of interest and influence for each stakeholder.
- Assess the stakeholder's ability to participate and then find ways to involve them.

Influence measures how much power a stakeholder has and how much this stakeholder's actions affect the project outcome. We use the power grid, a 2x2 grid, to assign each stakeholder's level of importance to the project by measuring the interest and influence. The higher the interest and influence the more important they are to the project success and hence place more towards the top of the grid. The power grid looks like the following:

A steering committee can also be created by the high interest high power stakeholders who would be the highest level decision maker in the project. They have the authority to change the budget, timeline, etc. The process of involving the stakeholders in decision making to hopefully reach a broader consensus on the organisation's future is called stakeholder buy in. Gaining key stakeholder buy-in is essential to ensuring that your project is not deprioritized or deprived of resources.

RACI Chart
A RACI chart helps to defines the roles and responsibilities for individuals or teams to ensure work gets done efficiently. A RACI chart can be an extremely effective way to define project roles, give direction to each team member and stakeholder, and ensure work gets done efficiently. Having a RACI chart available throughout the duration of your project as a quick visual can be invaluable. A RACI chart referred to as a Responsibility Assignment Matrix (RAM), RACI diagram, or RACI matrix. The goal of this chart is to clarify each person's role on your project. RACI stands for:
- Responsible: Who gets the work done.
- Accountable: Who makes sure the work gets done.
- Consulted: Who gives input or feedback on the work.
- Informed: Who needs to know the outcome.
An example of a RACI chart is:

Step	Project initiation	Project executive	Project manager	Project analyst	Project architect	Application developers
1	Task 1	C	A/R	C	I	I
2	Task 2	A	I	R	C	I
3	Task 3	A	I	R	C	I
4	Task 4	C	A	R	R	I

Reasons for Project Failure

- Unclear expectations

    Not taking the time at the beginning of a project to ask essential questions, document decisions, and understand the true scope of the project may lead to failure. After all, without directions, you can never reach your destination.

- Unrealistic expectations

    It's important to understand the requirements of a project before agreeing to any deadlines. As a best practice, don't commit to firm dates when initiating the project to avoid setting unrealistic expectations. You will have more information and will be able to better manage expectations in the planning phase.

- Miscommunications

    Clear communication is key. If information is not communicated in a timely manner, does not include pertinent information (risks, decisions made, scope changes, etc.), or is not sent to the correct stakeholders, then you may be setting yourself up for failure. Conducting a stakeholder analysis and then utilizing a RACI chart to understand which stakeholders should be kept informed or consulted is a great start to creating an effective communication strategy.

- Lack of resources

    Resources include your team members, budget, and materials. Unfortunately, without proper planning, your resources can quickly be over-tasked or depleted. Sometimes project managers don't account for the fact that team members are juggling multiple tasks and may not be able to devote the time necessary to complete all of their assigned tasks correctly and on time. Or project managers may not realize that a specific skill set is required to complete certain tasks. Ensuring that the right team members are available at the right time is crucial.

- Scope creep

    The scope provides an overarching framework of what is and is not included in the project's work and deliverables. Defining the scope in the initiation phase helps identify the resources needed, the cost associated with those resources, and the schedule required to complete the work. Sometimes projects fail because the scope of the project grows and impacts to the scope are not captured. This is why it is so important to make

sure that everything is documented in the initiation phase. Have a plan for how to handle scope creep if it occurs and clarify who has the authority to approve scope changes.

Essential project resources

Project resources usually include budget, people, and materials. Budget is an estimate of the amount of money a project will cost to complete. Resources include the people who help execute the tasks of a project. Tools are aids that make it easier for a project manager or team to manage resources and organize work. It can help one to track tasks, manage budgets, and collaborate with team members.

Project Documentations

Clear and consistent documentation can ensure transparency and clear communication. Documentation can answer the following questions:
- What problem are you trying to solve?
- What are the project goals?
- What are the scope and deliverables, and who are the project stakeholders?
- What resources do they need to complete their work?

Documentation helps preserve decisions made early on in the project and can serve as a reference point for team members who might join later in the project. Documenting decisions can help you uncover tasks, timelines, or costs. There are different documentations that can be prepared. A few of them are:
- Project proposal

  A form of documentation that persuades a stakeholder to begin a project. This is created at the very start of the project. A proposal kicks of the initiation phase by influencing and pursuing the company to move forward with the project.
- Project charter

  A formal document that clearly defines the project and outlines the necessary details needed to reach its goals. The goal of a project charter is to clearly define the key details of the project. It makes clear that the project benefits outweigh the costs of the project. It also helps ensure that everyone agrees on the details of the project.

A project charter clearly defines the project and outlines the necessary details for the project to reach its goals. A well-documented project charter can be a project manager's secret weapon to success. The charter is the formal way that the project's goals, values, benefits, and details are captured. You can think of the charter as the compass for your project since you will use it throughout the life cycle of the project. Many stakeholders will look to your project charter to ensure that you are indeed aligned with strategic goals and set up for achieving the desired end goal. As with any of your project documents, it is a good idea to collaborate with your team and stakeholders early and often. Developing the project charter in collaboration with both groups can help you make sure that your project charter addresses your key stakeholders' most important concerns and keeps your team aligned. Project Charters usually include the following:

Introduction	Project Summary	Goals	Objectives
Business case	Benefits and costs	Project team	Scope
Success criteria	Major requirements	Key deliverables	Budget
Schedule	Timeline	Milestones	Constraints
Assumptions	Risks	OKRs	Approvals

Introducing new tools to the project
Here are some important considerations and keys to successfully introducing new tools:
- Discuss the tool early and often, if possible.

    The team should not feel blindsided by a new change. Make sure they know the change is coming as early as possible. This will help them prepare for an introduction or migration to the new tool.
- Ask for feedback from key stakeholders.

    You could get great feedback on features that you may have overlooked without asking for their expertise. You can solicit this feedback by requesting their input about functionality or have them list features in order of priority. The key is to create an opportunity for stakeholders to provide their feedback and allow you to incorporate their feedback into next steps.
- Involve the key stakeholders in demonstrations as you get closer to making the final decision on the project tracking tool.

    You will be able to leverage key stakeholders' acceptance by letting them test the product or sign up for a trial run. It is also important to make sure that the tool is going to meet the mark and provide a meaningful change for the project. You may want to pull in key users from your team to test and familiarize themselves with the tool prior to rolling it out. This will allow the team to get on board with your plans or discuss their concerns beforehand. This will also highlight in-house experts for future training, assistance, and implementation.
- Ensure the tool is fully functional before the team is introduced to it.

    Whenever possible, hold off from introducing the tool if it still has any issues. Make sure the tool is accessible for all users. Keep in mind, your team members may resist a tool that doesn't live up to how it is supposed to function. This will impact implementation and acceptance significantly, so put your best tool forward!
- Set up training for the tool as needed before you ask the team to use it.

    Everyone has different levels of comfort with different tools. It is your job as the project manager to ensure that each team members' needs are addressed. Setting up training also helps create positive first impressions, which will lead to higher productivity and quicker, more successful implementation and acceptance.

A few types of production and collaboration tools are:

Online shared docs	Meeting agendas	Status updates	Spreadsheets
RACI Charts	Project plans	Presentations	Project overviews
Email	Chats	Scheduling tools	Work management

A few examples of Project Management tools are:

Asana	Spreadsheets	Basecamp	Trello
Jira	ClickUp	Monday.com	Microsoft Project
Project Libre	Smartsheet	Asana Guide	

Module 3

Introduction

Planning is an integral part of ensuring success. Planning helps out to understand the work needed to achieve your goals, coordinate efforts and timelines with other teams, contractors and vendors and most of all identify and prepare for risks.

Planning stage might differ from project to project but generally the schedule, budget and risk management plan is worked out in this stage. Following is a description for each of the 3:

- Schedule
  - The project timeline which includes the start date, the end date, and the dates for events in between.
- Budget
  - The budget accounts for the total cost to complete the project.
- Risk Management Plan
  - Searching for possible problems related to the project and planning to mitigate these risks.

Kick off Meeting!

This is the first meeting in which a project team comes together to ground everyone in a shared vision, gain a shared understanding of the project's goals and scope, and to understand each person's individual roles within the team. The people invited in the meeting would be the ones in the RACI chart.

A meeting is required to establish a shared vision, align the scope, build team rapport and ask questions and offer insights, and set expectations for the project. Usually a meeting lasts for an hour but can be variable depending on the time and scope of the project. The meeting usually has the following pattern:

- Introductions
  - Team member names
  - Project roles
  - Fun facts
- Background
  - How the project came to be
  - Why the project matters
  - Set a shared vision.
- Goals and Scope
  - Figure out what is in scope.
  - Figure out what is out of scope.
  - Set important milestones.
  - Set the target launch date.
- Roles
  - What work everyone is responsible for throughout the duration of the project.
- Collaboration
  - Shared project tools and documents
  - Communication expectations
- What comes next?
  - Set expectations and action items.
- Questions
  - Gain clarity on meeting topics.
  - Ensure the project benefits from diversity of thoughts and experiences, and ideas.

A meeting agenda is created as a document to note the proceedings of the meeting. Some of the best practices are:

- Ask a teammate to take notes on key points and action items before the meeting.
- Record the meeting if needed with everyone's permission.
- After the meeting send a follow-up email to summarize the key points and outcomes from the meeting and any action items to the attendees.
- Invite the attendees to reach out if they have any additional questions.
- Set the right time so that most of them are present.
- Set the right length, it should not be too long or too short.
- Invite the right people.
- Set the agenda.
- Stick to the agenda.

Tasks and Milestones

Setting milestones gives you a clear understanding of the amount of work your project will require and help uncover areas where you might need to adjust scope, timelines, or resources to meet your goals. Tasks can help to clearly define milestones. This can be done in the following two ways:
- Top-down scheduling
  Here PM lays out higher level milestones then works to break down the effort into project tasks.
- Bottom-up scheduling
  Here PM looks for individual tasks that need to be completed and rolls them into manageable chunks that lead to a milestone.

One thing to remember is that one must not set too many milestones and tasks much should not be mistaken for milestones. Milestones and tasks should not be listed separately.

Work Breakdown Structure (WBS)

It is a tool that sorts the milestones and tasks of a project hierarchy, in the order they need to be completed. The easiest way to create a WBS is to create a tree diagram. The WBS is usually the project name broken down into the milestones which are further sub divided into tasks which are needed to be completed to achieve the said milestone. The tasks are assigned on the basis of the role of the team members. In case a team has members having the same roles, each person's familiarity with the tasks at hand are taken into consideration. Following are the steps to build a WBS:
- Start with a high level, overarching project picture. Brainstorm with your team to list the major deliverables and milestones.
- Identify the tasks that need to be performed to meet those milestones.
- Examine those tasks and break down further into sub-tasks.

Project Plan

At the centre of the project plan is the project schedule. It can contain tasks, schedule, people, documentation, and time. A realistic time estimate needs to be made for the project plan and the most accurate estimate can be given by the team member working on that particular tasks. A buffer can be added at the start or end of the task to provide for a safety cushion for any unexpected delays. Buffers are of 2 types:
- Task buffers:
  Extra time tacked on to a specific task. These are used primarily for tasks that are out of the project team's control. This needs to be used sparingly.

- Project buffers:
    Extra time tacked onto the end of the project.

Planning Fallacy and Optimism Bias
      The planning fallacy describes our tendency to underestimate the amount of time it will take to complete a task, as well as the costs and risks associated with that task, due to optimism bias. Optimism bias is when a person believes that they are less likely to experience a negative event.

Capacity Planning and Critical Path
      Capacity is the amount of work that the people or resources assigned to the project can reasonably complete in a set period. Capacity planning refers to the act of allocating people and resources to project tasks, determining whether they have necessary resources required to complete the work on time.

Following are the steps to create a critical path:
- Capture all the tasks.
- Set dependencies.
- Create a network diagram.
- Make time estimates.
- Find the critical path using either:
    o Forward pass
        The forward pass refers to when you start at the beginning of your project task list and add up the duration of the tasks on the critical path to the end of your project. When using this approach, start with the first task you have identified that needs to be completed before anything else can start.
    o Backward pass
        The backward pass is the opposite—start with the final task or milestone and move backwards through your schedule to determine the shortest path to completion. When there is a hard deadline, working backwards can help you determine which tasks are actually critical. You may be able to cut some tasks—or complete them later—in order to meet your deadline.

      Critical path is a list of project milestones one must reach in order to meet the project goal on schedule, as well as the mandatory tasks that contribute to the completion of each milestone. Critical path includes the bare minimum number of tasks and milestones needed to reach a project goal. A few tips to create the critical path is as follows:
- Identify which tasks can happen in parallel and which can happen sequentially.
- Determine which project tasks have a fixed start date.
- Determine which project tasks have an earliest start date.
- Identify if a task has float (slack)

      Float refers to the amount of time you can wait to begin a task before it impacts the project schedule and threatens the project outcome.

Project Schedule

An anchor of a good project plan is a clear schedule containing all the tasks of a project, their owners, and when they need to be completed. There are many tools that can help to make a project schedule, but a Gantt chart is the best. Gantt charts are a highly visual representation of a project's tasks, with clear breakdowns of who's responsible for the work and when those tasks are due. A few good project planning practices are:

- Carefully review deliverables, milestones, and tasks.
- Give yourself time to plan.
- Recognize and plan for the inevitable.
- Stay curious.

Project plans are critical because they are used to capture the scope and time it takes to complete a project. The project plan is essentially the project's blueprint—it lays out all of the activities and milestones that your team needs to achieve in order to successfully complete the project. Project plans come in various shapes, sizes, and forms. Spreadsheets are an excellent tool to use for project plans, particularly for projects that are less complex and that have a clear assignment of tasks. Spreadsheets can require a lot of manual input of information, but as a project manager, you may find that you like the control that spreadsheets provide. Spreadsheets are also customizable, so you can tailor them to your project's needs.

Kanban boards are a visual tool used to manage tasks and workflows. Kanban boards can be created on whiteboards, magnetic boards, poster boards, computer programs, and more. Tasks associated with the project are written on cards. These cards are placed in columns, which represent the progress made. Although Kanban boards are useful for all kinds of projects, they are typically most suitable for project teams working in an Agile project management approach. You may remember that Agile project management is an iterative approach to managing projects that focuses on continuous releases and incorporates customer feedback with every iteration. Once you become a project manager and have created your project plan, you can decide whether a Kanban board is right for your project. Kanban boards are used to:

- Give a quick visual understanding of work details and provide critical task information.
- Facilitate handoffs between stakeholders, such as between development and testing resources or between team members who work on related tasks.
- Help with capturing metrics and improving workflows.

Budgeting

A project budget is the estimated monetary resources needed to achieve the project's goals and objectives. Milestones are important points within the project schedule that indicates progress and usually signifies the completion of a deliverable or phase of the project. Budget creation takes place in the initiation stage of planning of the project. Budget and milestones go hand in hand. When creating a budget, a project manager must account for the following:

- Understanding stakeholder needs
- Budgeting for surprise expenses
- Maintaining adaptability
- Reviewing and reforecasting throughout the project

Budgets are typically created in the initiation and planning phases of your project. It is a helpful tool to reference when communicating with stakeholders and can double as a tracker for your project's progress. Budgets also help control your costs and act as the baseline for the financial portion of the project. A few project budgeting tips are:

- Reference historical data.
- Utilize team, mentors, or manager.
- Time-phase your budget.
- Keep checking.

There are different types of costs that your project will incur. Categorize these different types of costs in your budget so that you can ensure you are meeting the requirements of your organization and customer. There are primarily 2 types of costs:
- Direct cost: These are costs for items that are necessary in order to complete your project.
- Indirect cost: These are costs for items which do not directly lead to the completion of your project but are still essential for the project team to do their work. They are also referred to as overhead costs.

A baseline budget is an estimate of project costs that you start with at the beginning of your project. Once you have created a budget for your project and gotten it approved, you should publish this baseline and use it to compare against actual performance progress. This will give your insight into how your project budget is doing and allow you to make informed adjustments. It is important to continually monitor your project budget and make changes if necessary. Be aware that budget updates can require the same approvals as your initial budget. A reserve analysis will help your account for any buffer funds you may need. First, review all potential risks to your project and determine if you need to add buffer funds, also referred to as a contingency budget. These funds are necessary because new costs that you did not expect are likely to happen throughout the project. You may also want to account for cost of quality in your overall project budget. The cost of quality refers to all of the costs that are incurred to deliver a quality product or service, which can extend beyond material resources. This includes preventing or addressing issues with products, processes, or tasks, & internal and external failure costs.

A few common budgeting challenges are as follows:
- Budget pre-allocation.
- Inaccuracy calculating Total Cost of Ownership (TCO).
- Scope Creep.

Procurement
It is the process of obtaining all of the materials, services, and supplies required to complete the project. It comprises of 5 steps which is:
- Initiating: Planning processes of defining what is needed apart from the current resources to reach the project goal. A Non-Disclosure Agreement (NDA) can be created in this phase. NDA is a document that keeps confidential information within the organization.
- Selecting: The process of selecting the vendors and deciding what supplies are needed. A Request for Proposal (RFP) can be created in this phase. RFP is a document which outlines the details of the project and may be used to solicit bids from the vendor.
- Contract Writing: Contracts are reviewed, developed, and signed. A Statement of Work (SOW) is created in this phase. It is created after the vendor is created. It is a document that clearly lays out the products and services a vendor or contractor will provide for the organisation.
- Control: Payments are done, quality is maintained, and the service agreement is met.

- Completing: Here measure the success of the procurement process

There are 2 types of procurement processes, namely:
- Agile Procurement Management
  - Collaborative with both the project team and the end supplier.
  - Emphasis on the relationship between these parties.
  - Project team plays a large role in identifying what needs to be procured.
  - Living contract
  - Negotiations are done on multiple occasions.
- Traditional Procurement Management
  - Focus on standard contracts with clear terms and deliverables.
  - Project Manager may be responsible for end-to-end procurement.
  - Contracts may feature lengthy and extensive documentation.

A few tips for the Procurement process are as follows:
- Decide which items will be internally procured and which items will be externally outsourced.
- Research and assess various vendors and suppliers and try to find out if your preferred vendors have a reputation for delivering quality work on time.
- Contract writing requires excellent attention to detail, so pay close attention to the inclusions and exclusions in the vendor's offer.
- Periodically review the performance and quality of each vendor.

Ethical Traps in Procurement

An ethical trap is an ethical dilemma that causes us to make a certain decision without regard for our ethical principles. Sometimes, potential ethical issues can be overlooked or can be considered the necessary cost of doing business. A few of the most common ethical traps that exist when conducting procurements are corruption and bribery, sole-supplier sourcing, and interactions with state-owned agencies. You may be confronted with different types of corruption when going through the procurement process. A few examples of ethical traps are:
- Corruption and Bribery:

  A company may attempt to bribe members within the organization to sway their decision into a favourable outcome for the vendor. Bribes may include things like money, gifts, tickets to events, and more. Another type of corruption scheme is to offer a certain percentage of an awarded contract—also known as a kickback—to an official who can ensure that their company wins the bid.
- Sole Supplier Sourcing

  Ethical issues arise when other vendors aren't even allowed to bid for contracts for which they are similarly qualified. With sole-supplier sourcing, vendors may reach out to buyers before a bid is even requested. When the buyer's organization decides to work with that vendor based on their previously established relationship, that limits competition before the bidding has even begun. When this happens, companies and the public miss out on the advantages of competition, such as reasonable pricing, product quality standards, or speedy delivery options.
- Interactions with State owned entities.

  There are some instances in which government agencies require an organization to adhere to stricter ethical standards than they might have otherwise.

Risk Management

      An issue is a known or real problem that can affect the ability to complete a task. A risk on the other hand is a potential event which can occur and can impact your project. The process of identifying and evaluating the potential risks and issues that could impact a project is called as Risk Management. It provides us an understanding of the following:

- What could go wrong?
- Who you will need to consult?
- How the risk could be mitigated?

      If sufficient planning is not done the project may be at risk of not completing its goal, timelines, or its success criteria. By failing to plan for risks, one can also fail in thinking the many ways the project could pivot and still meet its goals, even if an issue does arise. Risk management is an ongoing practice throughout the life cycle of your project. It typically involves some variation of these five steps:

- Identify
- Analyse
- Evaluate
- Treat
- Monitor and Control

      But when identifying risks, it is important to also consider the good things that could happen, which are considered opportunities. An opportunity is a potential positive outcome of a risk. It is important to recognize opportunities and to capitalize on them as they appear so you can reach your project goals faster, more cheaply, or with less effort.

Tools to identify risks.

- Fishbone Diagram

        It is also known as Ishikawa diagrams or cause-and-effect diagrams were developed to measure quality control processes. Fishbone diagrams are a visual way to look at cause and effect. They are called fishbone diagrams because they have a similar shape to a fish skeleton. Fishbone diagrams help the team to brainstorm potential causes of a problem or risk and sort them into useful categories. These categories show the areas that you should focus on to mitigate that risk. Fishbone diagrams are also very helpful in finding the root cause of a problem. A root cause is the initial cause of a situation that introduces a problem or risk. The purpose of using fishbone diagrams in risk management is to identify the root cause of a potential problem for a project or program.

Types of risks

- Time
  The possibility that projects tasks will take longer than anticipated to complete.
- Budget
  The possibility that the costs of a project will increase due to poor planning or expanding the project's scope.
- Scope
  The possibility that a project won't produce the results outlined in the project goals.
- External
  Risks resulting from factors outside the company that you have little or no control over.

- Single point of Failure
  A risk that has the potential to be catastrophic and halt work across a project.
- Dependency
  A relationship between two project tasks, where the start or completion of one depends on the start or completion of the other. There are 2 types of dependencies:
    - Internal: These refer to dependencies within the project that you and your team have control over.
    - External: These refer to dependencies outside the project that you and your team have no control over.

Types of Risk Mitigation
- Avoid
  This strategy seeks to sidestep—or avoid—the situation.
- Minimize
  Mitigating a risk involves trying to minimize the catastrophic effects that it could have on the project. The key to minimizing risk starts with realizing that the risk exists.
- Transfer
  The strategy of transferring shifts the responsibility of handling the risk to someone else.
- Accept
  You can accept the risk as the normal cost of doing business. Active acceptance of risk usually means setting aside extra funds to pay your way out of trouble. Passive acceptance of risk is the "do nothing" approach. While passive acceptance may be reasonable for smaller risks, it is not recommended for most single point of failure risks. It is also important to be proactive and mitigate risks ahead of time whenever possible, as this may save you from having to accept risks.

Types of Dependencies
Dependencies are a relationship between two project tasks in which the completion or the initiation of one is reliant on the completion or initiation of the other. There are 4 types of dependencies, which are:
- Finish to Start (FS)
  In this type of relationship between two tasks, Task A must be completed before Task B can start.
- Finish to Finish (FF)
  In this model, Task A must finish before Task B can finish.
- Start to Start (SS)
  In this model, Task A can't begin until Task B begins. This means Tasks A and B start at the same time and run in parallel.
- Start to Finish (SF)
  In this model, Task A must begin before Task B can be completed.

Risk Management Plan
It is a living document that contains information regarding the high-level risks and the mitigation plans for those risks. The risk management plan must be updated regularly to add newly identified risks, remove risks that are no longer relevant, and include any changes in the mitigation plan.

Communication

Communication is the flow of information, and it includes what is shared, how it is shared, and with whom it is shared. Effective communication is always clear, honest, relevant, and frequent. There are multiple types of communication such as meetings, emails, phone calls, written documents, and formal presentations. Communication is something that needs to happen in the entire life cycle of the project. A few tips for effective communication is given below:

- Recognize and understand individual differences.
- Brainstorm and craft the appropriate message.
- Deliver your message.
- Obtain feedback and incorporate that feedback going forward.

Communication Plan

A communication plan organizes and documents the process, types, and expectations of communication for the project. A communication plan needs to answer the following questions:

- What needs to be communicated?
- Who needs to be communicated to?
- When does communication need to happen?
- Why and how to communicate?
- Where being the information communicated is stored?

Following are a few tips to develop a communication plan:

- Identify project stakeholders, communication frequency and methods, goals and barriers.
- Document and develop the communication plan.
    - Add a column for notes.
    - Use formatting to highlight any key details in the plan.
    - Ensure that the team can access your document.
    - Test your plan.

Module 4

Introduction

You can keep tabs on the project tasks and milestones through tracking and measurement. Tracking is a method of following the progress of project activities. Deviation is anything that alters your original course of action. Deviations from the project plan can be positive or negative. The main task of tracking is to make sure that the project does not deviate from the original course of action or if it does, it does so in a positive sense.

Tracking centralises product information in each phase of the project. Tracking ensures that nothing is forgotten. It keeps all team members and stakeholders in touch with deadlines and goals. Tracking is also crucial for recognizing risks and issue that can derail your progress. Tracking helps build confidence that the project is set to be delivered on time, in scope, and within budget.

Some common items to track are project schedule, status of action items, key tasks and activities, progress toward milestones, costs, key decisions, changes, dependencies, and risks to the project. Tracking methods that are used to track needs to be simple and easy to understand by all team members. There are different tracking methods such as:

- Gantt Chart

  It is the most used method. It measures task against time. It is useful for staying on schedule and is particularly useful when projects have a lot of dependencies, tasks, activities, or milestones or have large teams. It is usually used with waterfall models and the horizontal axis denotes the time.

- Roadmap

  It is useful for high level tracking of large milestones and illustrating how a project should evolve over time.

- Burndown Chart

  It is the most manual type of tracking method which measures the amount of time against the amount of work done and the amount of work remaining. It is useful for projects that require a granular, broken-down look at each task and is the best for projects where finishing on time is the top priority.

Project Status Reports

Most project report contains the following components:
- Project name
- Date
- Summary
- Status
- Milestones and tasks
- Issues

Managing changes, risks, and dependencies

Risk is a potential event that might occur and could impact the project. There are a few examples of risks such as missing deadlines, communication breakdown due to technical difficulties, workload increases due to unforeseen circumstances, etc. There Are multiple types of changes that can happen in a project as well. Some types of changes are new or changing dependencies, changing priorities, capacity and people, limitations on budget or resources, scope creep, force majeure, etc.

Dependencies are the links that connect one project task to another and are often the greatest source of risk to a project. There are multiple types of dependencies such as internal dependencies (the relationship between 2 tasks within the same project), external dependencies (tasks that are reliant on outside factors like regulatory agencies or other projects) and discretionary dependencies (tasks that could occur on their own, but the team chose to make them reliant on one another). The process of managing interrelated tasks and resources within the project to ensure the overall project is completed successfully, on time, and in budget is called dependency management. The following are the steps for appropriate dependency management:
- Proper identification
- Recording dependencies
- Continuous monitoring and control
- Efficient communication

Once all dependencies are identified a risk register needs to be created. A risk register is a table or chart that contains a list of risks and dependencies. The risk register should include the description of the dependency, the date, and all activities or tasks that may be impacted by the dependency. Risk management is the process of identifying potential risks and issues which

could impact a project and evaluating and applying steps to address the effects of the identified risks and issues. Another important calculation to be done is the risk exposure. Risk exposure is a way to measure the potential future loss resulting from a specific activity or event. To calculate risk exposure a matrix is created with the impact of the risk on the x-axis and the probability of it occurring on the y-axis. Each axis is divided into 3 parts: low, medium, and high. The risks are then placed in the cross section of the impact and probability to assess the risk exposure.

The process of enlisting the help of a higher-level project leadership or management to remove an obstacle, clarify or reinforce priorities, and validate next steps is called escalating issues. Escalation acts as checks and balances, generates speedy decision making, reduces frustrations, and encourages participation.

Quality Management Concepts

Quality is when you fulfill the outlined requirements for the deliverable and meet or exceed the needs or expectations of your customers. There are 4 main concepts of Quality management, which are:

- Quality standards

  Quality standards provide requirements, specifications, or guidelines that can be used to ensure that products, processes, or services are fit for achieving the desired outcome. A few examples are: reliability standards, usability standards, product standards, etc.

- Quality planning

  Quality planning refers specifically to the actions of the project manager or the team to establish a process for identifying and determining exactly which standards of quality are relevant to the project. Some questions that can be asked to ensure proper quality planning are: what outcome do my customers want? What does quality look like for them? How can I meet their expectations? How will I determine if the quality measure will lead to project success?

- Quality assurance

  Quality assurance refers to the evaluating if the product is moving towards delivering a high-quality service or product.

- Quality control

  Quality control involves monitoring project results and delivery to determine if they are meeting desired results or not. If not, then alternative actions should be taken.

Communication Skills

- Negotiation
- Empathetic Listening
- Trust Building

It is necessary to ask open ended questions and actively listen to understand the customer's current state versus their desired state. It is also necessary to communicated with the people in the organization and the clients and anyone involved with tact. Exhibiting empathy for your client is the best way to understand client requirements. Understanding their frustrations, addressing those frustrations, and finding a solution that's beneficial for both of you is the best course of action.

User Acceptance Testing

UAT is testing that helps a business make sure that a product, service, or process works for its users. The main objectives of UAT are to:

- Demonstrate that the product, service, or process is behaving in expected ways in real-world scenarios.
- Show that the product, service, or process is working as intended.
- Identify issues that need to be addressed before considering the project as done.

UAT simulates real-world conditions, so when the feature works as intended during the testing process, you can be more confident that your product, service, or process will work properly once it is launched. It allows a project team to gather detailed information about how users interact with a product, service, or process. Some of the best practices for effective UAT are as follows:

- Define and write down your acceptance criteria.
- Create the test cases for each item that you are testing.
- Select your users carefully.
- Write the UAT scripts based on user stories.
- Communicate with users and let them know what to expect.
- Prepare the testing environment for UAT.
- Provide a step-by-step plan to help guide users through the testing process.
- Compile notes in a single document and record any issues that are discovered.

Sometimes the UAT might be good, sometimes maybe bad. Following are tips to manage UAT feedback.

- Bugs or issues

  Users might report technical issues, also known as bugs, or other types of issues after performing UAT. You can track and monitor these issues in a spreadsheet or equivalent system and prioritize which issues to fix. For instance, critical issues, such as not being able to access, download, or search the employee handbook, need to be prioritized over non-critical issues, such as feedback on the cover art of the handbook.

- Change requests

  Sometimes the user might suggest minor changes to the product, service, or process after UAT. These types of requests or changes should also be managed and prioritized. Depending on the type and volume of the requests, you may want to share this data with your primary stakeholders, and you may also need to adjust your project timeline to implement these new requests.

Improvements

Continuous improvement is an ongoing effort to improve products or services which helps ensure that the product or service reaches its best possible outcome. Continuous improvement begins with recognizing when processes and tasks need to be created, eliminated, or improved.

Process improvement is the practice of identifying, analysing, and improving existing processes to enhance the performance of your team and develop best practices, or to optimize consumer experiences.

Data driven improvement frameworks are techniques used to make decisions based on actual data. The DMAIC procedure comes under this. The DMAIC stands for the following:

- Define – Define the business problem, project scope, goals, resources, timeline, etc.
- Measure – Measure the performance measures through data collection.
- Analyse – Work of the root cause of the problem.
- Improve – Implementing a reasonable solution to the problem.
- Control – Monitor the updated processes.

Another improvement technique which can be used is the PDCA. The PDCA is a 4-step process that focusses on identifying a problem, fixing that issue, assessing whether the fix was successful, and fine-tuning the final fix. The steps are as follows:
- Plan – Identify the issue and root cause, and brainstorm solutions to the problem.
- Do – Do or fix the problem.
- Check – Compare results to the goal and find out if the problem is fixed.
- Act – Fine tune the fix to ensure continuous improvement.

Projects, Programs and Portfolios
Projects is a one single-focused endeavour. Programs are a collection of projects. Portfolios are a collection of projects and programs.

Data Informed Decision Making
Data is a collection of facts or information and through data analysis we can draw conclusions and inferences from the data. We need data analysis to improve performance and efficiency. There Are different types of project data which are involved. Some of these are:
- Milestone - A milestone is a productivity metric. Milestones are important points within the project schedule that indicate progress and often signify when a team completes a deliverable or phase of the project.
- Task - A task is a productivity metric. Project managers assign tasks to project team members for them to accomplish within a set period.
- Projection - A projection is a productivity metric. This metric helps you analyse current information to predict future outcomes.
- Duration - Duration is a productivity metric. A project's duration is the total time it takes to complete a project from start to finish. Duration can also be used for tasks.
- Number of changes - Number of changes is a quality metric. Changes show any inconsistencies from the initial requirements of the project.
- Issue - An issue is a quality metric and is known as a real problem that may affect the ability to complete a task.
- Cost variance - Cost variance is a quality metric and illustrates the difference between the actual cost and the budgeted cost.

Through critical analysis, application, and execution, data becomes a powerful tool to guide any project in the right direction. Data is information. It's the numbers and feedback available to you about different aspects of your project. Metrics are how you measure your data. They define the important or specific information (data) you need to know about your project, such as productivity, quality, or engagement. Once you determine your project's metrics, you analyse the data according to those metrics to find patterns and answer questions about your project. This process is called analytics: using data to answer questions, discover relationships, and predict unknown outcomes.

As a project manager, data collection and analysis will be a key part of your projects. The data you collect will usually hold PII (personally identifiable information)—information

that could be used to directly identify, contact, or locate an individual. A lot of times, you will also need to report on the data you collect to stakeholders, customers, and your project team. Collecting, analysing, and sharing this data in an ethical way is extremely important for maintaining the integrity of your organization, your projects, and your position.

Data ethics is the study and evaluation of moral challenges related to data collection and analysis. This includes generating, recording, curating, processing, sharing, and using data to come up with ethical solutions. Data privacy is a key part of data ethics. Data privacy deals with the proper handling of data. This includes the purpose of data collection and processing, privacy preferences, the way organizations manage personal data, and the rights of individuals. It focuses on making sure the ways we collect, process, share, archive, and delete data are all in accordance with the law. You can help ensure the privacy of data collected from users, stakeholders, and others for your projects by:

- Increasing data privacy awareness
- Using security tools
- Anonymizing data

Data bias is a type of error that tends to skew results in a certain direction. Bias can also happen if a sample group lacks inclusivity. There are different types of biases to keep in mind when setting up your data collection processes. Here are four of the most common types of biases that could impact your data:

- Sampling bias
- Observer bias
- Interpretation bias
- Confirmation bias

Data Visualization

It is the graphical representation of information to facilitate understanding. Data visualizations are great because they help in filtering information by focusing the audience on the most important data points and insights. Th data visuals condense long ideas and facts into a single image or representation and make sense of the information being presented. There are various tools used for data visualization. A few are:

- Dashboard
  It is a type of user interface that provides a snapshot view of your project's progress or performance.
- KPI
  It is a measurable value or metric that demonstrates how effective an organisation is at achieving key objectives.
- Burndown Chart
  It is a line chart which measures the time against the amount of work done and the amount of work that remains.
- Infographics
  Visual representations of information or data intended to present information quickly and clearly.

Following are a few effective presentation techniques:

- Get clear on your goals and the purpose of your presentation.
- Seek input and set expectations.
- Create a delivery plan.

- Be mindful of your audience's time.
- Understand the audience and whether information is to inform, entertain or share with them.
- Guide your audience through your presentation.
- Do a mock presentation with your team.
- Schedule time to practice.
- Be prepared for surprises.
- Be precise about your key points.
- Be flexible.
- Know the key points of the presentation.
- Develop a strategy to make your narrative unforgettable.
- Get right to the point.
- Check your pace.
- Make presentations accessible.

Tips to make presentations accessible:
- Create clear, simple slides.
- Add alt text for images, drawings, or diagrams.
- Use text for critical information.
- Provide captions for all audio or video recordings.
- For contrast and text size, more is better.
- Share content in advance.

Teamwork

A team is a group of people who plan, solve problems, make decisions, and review progress in service of a specific project or objective. A team is different from a work group. A work group consists of people in an organisation who work towards a common goal. Work groups are more likely to be coordinated, controlled, or assigned by a single person or entity.

Teamwork is an effective, collaborative way of working in which each person is committed to and heading towards a shared goal. Teamwork is required as it fosters creativity, encourages accountability, and helps get stuff done. Team effectiveness is impacted by generally the following 5 factors:
- Psychological safety
  It refers to an individual's perception of the consequences of taking an interpersonal risk.
- Dependability
  It refers to the fact that team members are reliable and complete their work on time.
- Structure and ability
  It refers to an individual's understanding of job expectations, knowledge of how to meet those expectations, and the consequences of their performances.
- Meaning
  Finding a sense of purpose either in the work itself or in the results of that work.
- Impact
  The belief that the results of one's work matters and creates change.

Leadership

Project managers can lead high-functioning teams through the following steps:
- Create systems that turn chaos into order.

- Communicate and listen.
- Promote trust and psychological safety.
- Demonstrate empathy and create motivation.
- Delegate responsibility and prioritize.
- Celebrate team success.

A leader needs to develop a team. Following is the Bruce Tuckman's stages of team development:

- Forming
  In this stage the team gets to know each other. The project manager needs to clarify project goals, roles, and context about the project.
- Storming
  In this stage frustrations might emerge. The project manager should focus on conflict resolution, listen as the team addresses problems to solve, and share insights on how the team might better function as a unit.
- Norming
  In this stage the conflict is mostly resolved, and the team is working together. Here the project manager should codify the team norms, ensure that the team is aware of those norms, and reinforce them when needed.
- Performing
  In this stage the team works together seamlessly. Here the project manager should focus on delegating, motivating, and providing feedback to keep up the team's momentum.
- Adjourning
  In this stage the project is wrapped up and the team disbands. One can celebrate the final milestones and successes.

Ethical leadership is a form of leadership that promotes and values honesty, justice, respect, community, and integrity. As the leader of a project team, you will be expected to help your team succeed by leading with ethics. Building respect and trust with the teams you work with—from individuals to external partners to project stakeholders—begins with practicing ethical conduct.

Ethics can be defined as the principles of conduct governing an individual or a group. However, there is no single, universally-accepted grouping of ethical standards—these definitions differ based on the culture and community at your company. In the working world, ethical standards may differ based on profession, industry, and organization. Usually, an organization will have its own code of conduct which specifies the standards to which it holds its employees accountable.

Influencing is another important quality of a Leader or a Project Manager. Influencing is the ability to alter another person's thinking or behaviours. There are 4 basic steps to influencing people:

- Establishing credibility
  In this step one makes the case for why your audience should listen to you. Credibility comes from either expertise or relationships.
- Frame for common ground
  In this step one makes the case for how your idea can benefit your audience.
- Provide evidence.
  In this step one makes your case through hard data and persuasive storytelling.

- Connect emotionally.
  Here you demonstrate to your audience that you are emotionally committed to your idea.

There are 2 buckets of power sources from which you draw your power to influence, these are:
- Organisational sources of power
  - Role: Your position within the organisation.
  - Information: Your level of access and control over information.
  - Network: The people you are connected with, professionally or personally.
  - Reputation: How others perceive you.
- Personal sources of power
  - Knowledge: The power you draw from your expertise in certain subjects, your unique abilities and skill sets, and your ability to learn new things.
  - Expressiveness: Your ability to communicate with others.
  - History: The level of personal history that exists between you and another person.
  - Character: Other people's view of your personal qualities.

Module 5

Introduction

Waterfall methodology is a popular project management methodology in which the stages are completed in a sequential or liner order. Agile refers to being able to move quickly and easily. It also refers to flexibility and ability to change and adapt. Agile projects take an iterative approach. Iterations may get repeated based on the feedback received.

Agile project management is an approach to project and team management that embodies agility and is based on the Agile Manifesto. The manifesto is a collection of 4 values and 12 principles that define the mindset that all Agile teams should strive for. These are:
- 4 values
  - Individuals and interactions over processes and tools.
  - Working software over comprehensive documentation.
  - Customer collaboration over contract negotiation.
  - Responding to change over following a plan.
- 4 themes (12 principles)
  - Value delivery
    - Highest priority is to satisfy the customer through early and continuous delivery of valuable software.
    - Deliver working software frequently, from a couple of weeks to a couple of months, with a preference for the shorter time scale.
    - Working software is the primary measure of progress.
    - Simplicity-the art of maximising the amount of work not done-is essential.
    - Continuous attention to technical excellence and good design enhances agility.
  - Business collaboration
    - Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage.
    - Businesspeople and developers must work together daily throughout the project.
  - Team dynamic and culture

- - Build projects around motivated individuals. Give them the environment and support they need and trust them to get the job done.
    - The most efficient and effective method of conveying information to and within a development team is face-to-face conversation.
    - Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely.
    - The best architectures, requirements, and designs emerge from self-organizing teams.
  - Retrospectives and continuous learning
    - At regular intervals, the team reflets on how to become more effective, then tunes and adjusts its behaviour accordingly.

Agile works best in industries or projects that are susceptible to or that encourage change and uncertainty.

SCRUM Model

When using SCRUM, a team is formed which works closely together and completes work in short cycles. A few key ideas to remember pertaining to SCRUM are:
- Product backlog
  The central artifact in Scrum, where all possible ideas, deliverables, features, or tasks are captured for the team to work on.
- Sprint
  A time boxed iteration in Scrum where work is done.
- Daily Scrum
  A meeting of 15 minutes or fewer every day of the Sprint.

The following are the roles in a Scrum Model:
- Scrum master
  - Responsible for ensuring the team lives Agile values and principles.
  - Responsible for ensuring the tram follows the processes and practices that the team agreed to.
  - Responsible for sharing information to the larger project team.
  - Responsible for helping the team focus on doing their best work.
- Product Owner
  - Responsible for maximising the value of the product and the work of the team.
  - Responsible for the inventory of work and has final say on how to prioritize the work.
- Development team
  - Responsible for how a team will deliver a product.

SCRUM provides clear roles and responsibilities, while continuously emphasising the power of the team. It has regular and predictable meeting and delivery schedules, formats, and outcomes. Scrum also supports and reinforces the Agile values and principles, while adding structure and foundations that help new Agile teams get started and more experiences teams get better.

Agile Methodologies

There are several agile methodologies such as Scrum, Kanban, XP, Lean, etc. Following is a short note on each of them:

- Kanban

  It is derived from the Japanese word of signboard. It is very prominent because it provides transparent visual feedback to the users. The kanban boards display the tasks in an assortment of to do, doing, and done. This method ensures that the project team only accepts a sustainable amount of in progress work.
- XP

  It is short for Extreme Programming. This is named so because it took regular programming activities to an extreme level. XP methodology aims to improve product quality and the ability to respond to changing customer needs. It takes the best practices for the development process to the extreme levels. A few innovative practices in XP programming is pair programming where 2 members work together at the same time on one task, Continuous integration and continuous refactoring where merging product changes into a shared version of the product, etc.
- Lean

  It consists of 5 principles which are:
    - Define value.
      - Identify and focus on what the customer wants and include the customer.
    - Map value stream.
      - Map out the steps to production and challenge all wasted steps.
    - Create flow.
      - Ensure the product flows through the value stream efficiently, eliminating waste throughout the cycle.
    - Establish pull.
      - Ensure the customer is pulling on the product through this stream by asking for features and incremental deliveries.
    - Pursue perfection.
      - Push the team to continuously improve the first four process steps.

SCRUM Methodology

It is one of the most famous methodologies under Agile methodology. Agile is the foundational philosophy and mindset while scrum is a framework that materializes or brings that philosophy to life. Scrum is a framework for developing, delivering, and sustaining complex products in an iterative and incremental way. Scrum theory has 3 pillars and 5 values. These are:

- 3 pillars
  - Transparency

    This means to make the most significant aspects of our work visible to those responsible for the outcome.
  - Inspection

    It refers to conducting tiny checks towards the outcome of a sprint goal to detect undesirable variances.
  - Adaptation

    It refers to the continuous search for adjusting the project, product, or processes to minimize any further deviation or issues.
- 5 values
  - Commitment
    - Personally, committing to achieving the goals of the Scrum team.
  - Courage
    - The scrum team members must have the courage to do the right thing and work on tough problems.

- o Focus
  - Everyone focusing on the work of the sprint and the overall goals of the scrum team.
- o Openness
  - The scrum team and its stakeholders agree to be open about all the work and challenges with performing the work.
- o Respect
  - Team members should respect the opinions, skills, and independence of their teammates.

There are 3 main roles involved in a scrum team. These are:
- Scrum master
  - o They are responsible for managing the team and making sure that the thing is built fast. The scrum master is very similar to a project manager's role. The scrum master promotes and supports the scrum process by helping everyone understand and implement scrum. The responsibilities of a scrum master include coaching team members on agile and scrum practices, rules, and values, and helping to find ways to manage the product backlog effectively. They are responsible for facilitating scrum events, helping the team remove blockers, and preventing unhelpful interactions from outside of the team. A few traits for scrum masters are organisational skills, supportive leaders, facilitate productivity and collaboration, good coaching skills, and are great communicators.
- Development team
  - o They are responsible for creating the thing. The need to make sure that they build the thing right. This team is made up of people who do the work to build the product. The size ranges from 3 to 9 people. The team needs to be cross functional, self-organizing, customer oriented and they support each other.
- Product Owner
  - o They are responsible for what the team builds and to make sure the team builds the right thing. A product owner is tasked with ensuring that the team is building the right product or service. Their main responsibilities include to continuously maximise the value of the product delivered by the scrum team, help the scrum team understand why their work matters within the overall goal and mission and prioritizes the product backlog to optimize delivery and value to customers. They also ensure the backlog is visible and transparent to all while making sure that the product or services fulfills the customer's needs. A few traits of product owners are customer focused, decisive, flexible, optimistic, and positive, available, and collaborative.

Scrum teams are cross functional. When a scrum team delivers something, it's the accomplishment of the entire team. Scrum teams are self-organising. The central figure of the scrum model is the product backlog. The product backlog is the single authoritative source for things that a team works on to achieve the project goal. It consists of the product features, product requirements, and the activities associated with product deliverables.

Elements of Scrum
The product backlog is the single authoritative source for things that a team works on. It contains all the features, requirements, and activities associated with deliverables to achieve the goal of the project. There are 3 key features of the project backlog:

- It is a living artifact: the project backlog evolves throughout the project lifecycle and things are added to it throughout the lifecycle.
- It is owned and adjusted by the product owner.
- The product backlog is a prioritized list of features meaning that anything added to the product backlog is added in terms of their priority.

The product backlog has the following generic components:
- The item description.
- The order (priority).
- The value of the item.
- The estimate of the effort required for the item.

Another component is the user stories. User stories are short, simple descriptions of a feature told from the perspective of the user. An Epic is a collection of user stories. A User story is made up of 3 different components User, Action, and Benefit. Each user story should represent 6 different criteria which are:
- Independent: The story from start to finish should not be dependent on any other user stories.
- Negotiable: There is room for negotiation and room for changes.
- Valuable: The completed user story must provide some value.
- Estimable: The user story should be able to provide clear estimates to the team.
- Small: Each user story needs to be small and if its big, needs to be broken down into smaller stories.
- Testable: It needs to be tested to make sure it passes the acceptance criteria.

Backlog refinement is when the product owner and the scrum team review the product backlog to ensure that it contains the appropriate items, and that nothing new is needed or nothing needs to be removed, whether the items are prioritized by the product owner correctly, if the items at the top of the backlog are ready for delivery with clear acceptance criteria, and that the backlog items include estimates or an informed assessment about how much work a particular backlog item will be.

Sprints are the heartbeat of Scrum, where ideas are turned into value. They are fixed length events of one month or less to create consistency. A new Sprint starts immediately after the conclusion of the previous Sprint. All the work necessary to achieve the Product Goal, including Sprint Planning, Daily Scrums, Sprint Review, and Sprint Retrospective, happen within Sprints. Sprints enable predictability by ensuring inspection and adaptation of progress toward a Product Goal at least every calendar month. When a Sprint's horizon is too long the Sprint Goal may become invalid, complexity may rise, and risk may increase. Shorter Sprints can be employed to generate more learning cycles and limit risk of cost and effort to a smaller time frame. Each Sprint may be considered a short project. Various practices exist to forecast progress, like burndowns, burn-ups, or cumulative flows. While proven useful, these do not replace the importance of empiricism. In complex environments, what will happen is unknown. Only what has already happened may be used for forward-looking decision making. A Sprint could be cancelled if the Sprint Goal becomes obsolete. Only the Product Owner has the authority to cancel the Sprint.

Scrum Tools

Velocity is defined as the measure of how many points the team burns down in each Sprint on average." Velocity measures the amount of work a single team can be expected to complete during an iteration. When we refer to story points, we are referring to a unit of measurement that expresses the estimated effort required to implement that Product Backlog item. These story points are calibrated and decided on by the team.

Roadmaps

Roadmaps are an important part of any long-running project. There are multiple types of roadmaps such as project roadmap, product roadmap, value roadmap, lean roadmap, agile roadmap, etc. Roadmaps are often represented visually and many try to fit the roadmap on one page so that reviewers can notice the big picture of the product timeline. The **benefits** of developing and maintaining a product roadmap are numerous:
- Clarifying the sequence of deliverables
- Showing teams how their efforts relate to the north-star vision. In other words, their ultimate goal.
- Showing stakeholders the incremental value that will be achieved over the course of the project (rather than reviewing it as one big delivery at the end)
- Helping stakeholders roughly understand the layout of the work behind the deliverable

There are also some **pitfalls** around roadmaps to avoid:
- Letting stakeholders think the roadmap is set and unchangeable. This may cause stakeholders to impede teams' ability to adapt in response to new information, as well as put a lot of pressure on teams to achieve deadlines no matter what it takes.
- Spending too much time fine-tuning delivery dates versus keeping them rough and improving specificity as the dates get closer
- Putting all the work into creating the roadmap rather than producing the deliverables

Here are some **best practices** to help you get the most from your roadmaps:
- Make it highly noticeable to the team and refer to it frequently.
- Clearly indicate the highest priority items.
- If possible, clearly indicate the highest value items.
- Make it visible to your wider stakeholder group so that they can use it for their planning.
- Conduct regular reviews of the roadmap with sponsors, stakeholders, and the team to ensure that it is still providing the blueprint for the project.

Scaling Agile
- Scaled Agile Framework

    SAFe is a Lean-Agile scaling framework that draws heavily on concepts from Kanban, Scrum, Extreme Programming (XP), DevOps, and Design Thinking methodologies. SAFe puts the goal of delivering value above all else—the first principle of SAFe is "take an economic view." The framework organizes all work and teams into "Agile Release Trains" based on value streams, for example, sales. The SAFe framework is mature and provides detailed guidance on all elements of using SAFe, but some elements are more critical than others.
- Scrum of Scrums

    It is a technique for integrating the work of multiple, smaller Scrum teams working on the same project or solution. Coordination among teams is critical to ensuring the deliverables from each team can be integrated into one larger, cohesive deliverable.

- Large Scale Scrum

  It is a framework that aims to maximize the Scrum team's ability to deliver value and reduce waste in larger organizations.
- Disciplined Agile Delivery

  It is a hybrid approach that combines the strategies from various Agile frameworks, including Kanban, LeSS, Lean Development, Extreme Programming, Agile Modelling, and more. DAD guides people through the process-related decisions that frameworks like SAFe and Scrum of Scrums leave open. DAD helps you develop a scaled Agile strategy based on context and desired outcomes.
- Spotify model

  It is important to note that Spotify's model is not a true Agile framework. The model began as a description of how Spotify overcame the challenges of scaling Agile. By focusing their efforts on culture, team autonomy, communication, accountability, and quality, they increased their agility over time. Spotify's approach has had a huge impact on workflows and team structures across the tech world.