Module 1

Introduction to Project Management and Project Integration Management

Introduction

This module is designed to introduce you to the basic concepts and definitions associated with project management and project initiation management. You will learn about the triple constraints of scope, time and cost; the nine functional knowledge areas associated with project management and the four major phases of a project. You will also learn about the skills and tools used to integrate all of the knowledge areas throughout a project's lifecycle.

Outcomes

Upon completion of this module you will be able to:

- *demonstrate* an understanding of the importance of project management.
- *discuss* the importance of the nine bodies of knowledge to project management.
- *evolve* the initial plan systematically using the project life cycle and the project management processes.
- *assess* the feasibility of a basic project base on technical and economic factors.
- *demonstrate* an understanding of project integration management to coordinate the various fields of knowledge for the success of the project and scope change control.

Terminology

Activity on Arrow (AOA) or Arrow Diagramming Method (ADM):	A project diagram in which activities are represented by arrows and are connected at points called nodes to illustrate activity sequencing.
Backward pass:	The technique that determines late start and late finish dates for each activity.
Baseline dates:	The initial planned dates.
Crashing:	A technique for making cost and schedule trade-offs to obtain the greatest amount of schedule compression for the least incremental cost. This

	involves adding more resources on a critical path item. The trade-off is shortened project duration for higher overall project cost.
Controlling processes:	Ensuring that project objectives are met as defined by monitoring, measuring progress against plan, identifying variance from plan and taking corrective action.
Closing processes:	Formalising the completion and acceptance of a phase and or the project and closing all associated activities.
Critical path method (CPM):	A project network analysis technique used to predict longest total project duration.
Change control system:	A formal, documented process that describes when and how official project documents (especially the project plan) may be changed. It describes those authorised to make changes, the procedures to be followed and the tracking system that will be used.
Dependency arrows:	Arrows connecting the individual task duration bars show relationships, dependencies and precedents between tasks.
Early start:	The earliest possible time an activity can start.
Early finish:	The earliest possible time an activity can finish, represented as (early start date + duration).
Executing processes:	Managing the resources required to carry out the project as defined in the plan.
Fast tracking:	Performing activities in parallel that you would normally do sequentially or in slightly overlapping time frames (e.g., starting to programme or code before all of the analysis is complete).
Forward pass:	The technique to determine the early start and early finish dates for each activity.
Free slack:	The amount of time an activity can be delayed without delaying the early start of any immediately following activity.
Gantt chart:	A standard format for displaying project schedule information by listing project activities and their corresponding start and finish dates in calendar format.

Initiating processes:	Formal authorisation of the project or phase.
Late start:	The latest possible time an activity can start without delaying the project completion date.
Late finish:	The latest possible date an activity can be completed without delaying the overall project completion date.
PERT:	A network analysis technique used to estimate project duration when there is a high degree of uncertainty about the individual duration estimates.
Project life cycle:	The life cycle starts with initiation phase, planning, implementation, and close out.
Slipped milestone:	A milestone activity that was completed later than originally planned.
Summary tasks:	This summarises the duration for all sub-tasks beneath it – represented by a thick black bar with downward pointing arrows at the beginning and end.
Task duration bars:	These are smaller lighter-coloured horizontal bars representing the duration of an individual task.
Total slack:	The amount of time an activity can be delayed from its early start without delaying the planned project completion date.
Work breakdown structure (WBS):	The work breakdown structure is a tool that displays in detail, the project statement of work to aid in understanding and communication of the project scope. The WBS is created from the earliest stages of project definition.
Work authorisation systems:	This is a formalised process used on large projects to authorise work to begin on a particular activity or work package.

Project definition

A project is defined by the Project Management Institute (PMI) ™, as a "temporary endeavour undertaken to create a unique product or service."[1] In lay person terms a project is a grouping of tasks with a specified start

[1] A guide to the Project Management Body of Knowledge -PMBOK®

and end date, a specific and defined objective, a budget and resources assigned to the effort. A project is a one time event that creates or manages change. Either you are implementing something new such as a new programme, a new system or you are enhancing existing programmes or systems. Repetitive tasks or performing the same task again and again are not by definition projects.

What is project management?

Project management has been called an accidental profession. In many organisations in the past project managers typically stumbled or fell into project management responsibilities.The world has since changed and project management is now recognised globally as a formal discipline, with international standards and guidelines and a growing knowledge base of best practices.

Project management is the application of skills and knowledge and the use of tools and techniques applied to activities in a project to complete the project as defined in the scope.

Project management is not only the use of a scheduling tool such as Microsoft Project™, and Scheduler Plus. Many organisations still do not understand that the ability to use a scheduling tool is not enough to successfully manage a project. The use of a tool is only one part of the equation. Successful project management requires a high level of skill in both the people and technical side of the discipline.

If we consider that the tasks in a project are completed by people, this then sheds an entirely different light to the concept of project management and should make it clear that for successful project management the right combination of skills can impact on success and project outcomes.

The world is changing very rapidly with added complexities, increased expectations and constant change. Project management is an effective process for organisations to address business needs to get products and services to market more quickly and preferably before the competition!

International standards and guidelines

Project management is a formal discipline with international standards and guidelines developed by the Project Management Institute (PMI) ™. A significant body of knowledge has been accumulated relating to effective project management practices, tools, techniques and processes across industries. PMI™ is recognised as the international body providing guidance and direction for the discipline. PMI™ has developed the “Project Management Body of Knowledge™” or “PMBOK™” documenting the essential knowledge areas and processes required to effectively manage projects. There are nine body of knowledge areas within the standards and guidelines.

1. **Integration management** – processes to ensure that the elements of the project are effectively coordinated. Integration management involves making decisions throughout the project in

terms of objectives and alternative approaches to meet or exceed stakeholder expectations.

2. **Scope management** – processes to ensure that all the work required to complete the project is defined. Defining what is or is not in scope.
3. **Time management** – all processes required to ensure that the project completes on time (defined schedule).
4. **Cost management** – all processes required to ensure the project is completed within the budget approved for the project.
5. **Quality management** – processes to ensure that the project delivers the need for which it was undertaken. Includes all quality processes such as quality policy, objectives, and responsibility and implements these through quality planning, quality assurance, quality control and quality improvement.
6. **Risk management** – all processes involved in identifying, assessing/analysing, responding and controlling project risk.
7. **Human resource management** – all processes required to make the most effective use of people resources in a project, including sponsor, stakeholders, partners, team etc.
8. **Communications management** – all processes to ensure timely and appropriate distribution of project information, includes providing links between key people in the project, generating, collecting, disseminating, storing and archival of project information.
9. **Procurement management** – processes to acquire goods and services for the project outside of the organisation.

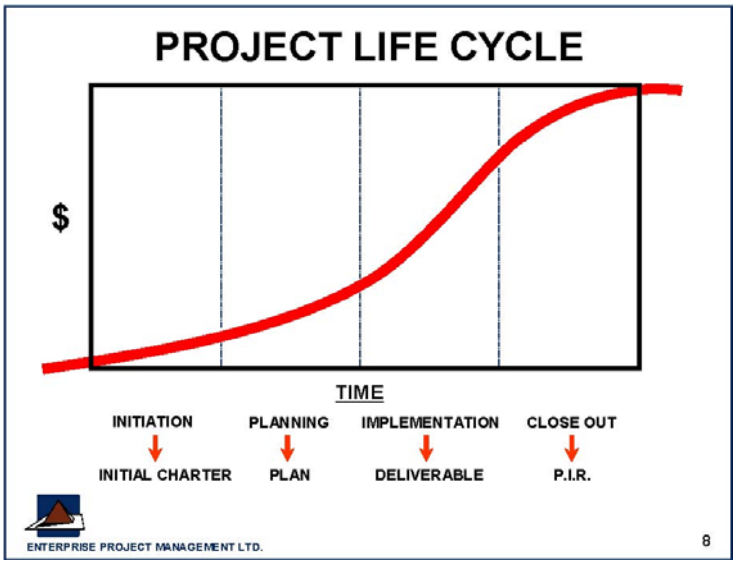
Project management processes

Project management processes define, organise and complete the work defined for the project. There are five project management process areas that apply to most projects and are defined in the PMBOK™:

1. **Initiating processes** – authorising the project or phase.
2. **Planning processes** – defining the project objectives and selecting the most appropriate approach for the project to attain the objectives.
3. **Executing processes** – managing the resources required to carry out the project as defined in the plan.
4. **Controlling processes** – ensuring that project objectives are met as defined by monitoring, measuring progress against plan, identifying variance from plan and taking corrective action.
5. **Closing processes** – formalising acceptance of a phase and or the project and closing all associated activities.

Project management is integrative and to effectively manage a project, a project manager uses all of the body of knowledge areas and all of the processes throughout the life cycle of a project.

The following diagram is a sample of a standard four-phase project life cycle.



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Project vs. product life cycles

Those of you involved in information technology fields have likely heard of the systems development life cycle (SDLC) – a framework for describing the phases involved in developing and maintaining IT systems. This is an example of a **product** life cycle.

The project life cycle applies to all projects (regardless of product produced) whereas a product life cycle varies depending on the nature of the product. Many products (such as large IT systems) are actually developed through a series of several different projects.

Large projects are seldom given full funding and approval from the beginning. Usually a project has to successfully pass through each of the project phases before continuing to the next. The practice of "progressive resource commitment" also means you only get the money for the next phase after the earlier phase has been completed and there is an opportunity for management review to evaluate progress, probability of success and continued alignment with organisational strategy. These management points are often called **phase exits**, **kill points** or **stage gates**.

What is the value of project management?

Project management increases the probability of project success. Project management is change facilitation, and used effectively with appropriate processes, tools, techniques and skills will:

- Support the business
  - get the product or service to market effectively, efficiently and to quality standards
  - provide common approach to project management
  - improve service.

Project management is the application of knowledge, skills, tools, and techniques to project activities in order to meet or exceed stakeholder needs and expectations from a project.

How project management relates to other disciplines

Project management overlaps with general management knowledge and practice, as well as with the project's application areas, knowledge, and practice. Project managers focus on integrating all the pieces required for project completion. General managers or operational managers tend to focus on a particular discipline or functional area. In this respect, project management tends to be a cross-functional role, often involving people from various business areas and divisions.

While project management requires some fundamental understanding of the knowledge area of the project itself, the project manager does not have to be an expert in that field. You don't need to be a certified carpenter, plumber, and electrician to manage the construction of your house, but you do need to have at least a fundamental understanding of each trade or discipline.

The project management profession

The Project Management Institute (PMI) ™ provides certification as a project management professional (PMP). The requirements include verification of from 4500 to 7500 hours of project management experience (depending on education level), adherence to a Code of Ethics, and obtaining a score of 70 per cent or higher on a 200-question multiple choice certification exam. For further information see the PMI Internet website at http://www.PMI.org.

There are also numerous other sources of information on the project management profession. Here are some other websites you may wish to check out:

- www.gantthead.com
- www.projectmanagement.com
- www.4pm.com

- www.pmforum.org
- www.allpm.com
- www.ipma.ch
- www.apm.org.uk
- www.projectnet.com
- www.comptia.org/certification/itprojectplus/index.htm

Understanding organisations

Ask any experienced project manager what the most important part of project management is and what is likely to give them the most difficulty, and the answer invariably is **people**. That's because managing projects is really about getting people to work together co-operatively. So understanding organisational dynamics and politics is often key to project success. Organisations can be viewed as having four different frames:

1. **Structural** (this is the formal or rational view – like you see in an org chart)
2. **Human resource** (this focuses on balancing the needs of the organisation and the needs of its people)
3. **Political** (who really has the power, influence and control over resources – often different than what the org chart would lead you to believe!)
4. **Symbolic** (this relates to organisational culture and the meaning attributed to certain symbols, events, or processes)

The importance of project stakeholders

Project stakeholders are the people involved in or affected by project activities.

- *Internal stakeholders:*
  - project sponsor
  - project team
  - support staff
  - internal customers
  - Senior Management
  - Functional Managers
  - Other Project Managers

  Compete for Resources
- *External stakeholders*
  - external customers
  - competitors
  - suppliers

- others affected by the project, but not directly involved (e.g., government, concerned citizens, etc.).

A project manager once said there are three important questions to ask at the beginning of any project regarding stakeholders and decision-making:

1. How do we know when we've won?
2. How do we know when we are done?
3. Who gets to decide 1. and 2.?

Stakeholder analysis

Identifies key stakeholders and information about them such as:

- organisation or affiliation
- project role
- unique facts
- level of interest
- level of influence
- suggestions for managing the relationship with this stakeholder

Techno-economic feasibility analysis

Techno-economic analysis enables an investor to arrive at definite decisions about the project implementation. As the project involves in a huge sum of money and time, it's imperative to verify its technical and economical viability. This is otherwise known as techno-economic feasibility analysis. In this section we will examine how the technical aspects of a project be evaluated for its technical feasibility followed by its economic analysis.

Technical feasibility analysis

This involves location decision, input raw material, size of plant, infrastructure facilities, manpower availability, technology and construction process available for the proposed project. We will discuss below briefly about each of them.

Location decision: The final location of a project comes from many alternative locations at the initial stage. The optimum final location should then be evaluated using the criteria such as materials availability, market orientation, infrastructural status, local laws, local government benefit scheme, and socio-economic conditions. Local geography and climatic conditions also play important rolls in the selection process. Further information on availability of land and its cost, utility infrastructure (power, water, road/water transport, telecommunication.), Internet broadband, availability and quality of skilled labour, public policies and taxes also help in the location decision.

Input raw material: Traditionally input raw materials need to be available next to the location of an engineering project. This includes raw materials, component parts, sub-assemblies, coal, water and steam, gas,

fuel and electricity. In some cases quality and quantity of raw materials is crucial. Further important consideration is the suppliers of raw materials and their location from where they operate. In today's scenario, when the business operates in a globalised economy, sourcing of the raw materials and component parts is possible from anywhere in the world thereby the physical boundary is no longer a constraint for a new project. Also an important investigation at this stage is the location of suppliers' warehouse from where the raw materials, component parts etc. are sourced easily with minimum lead time.

Size of plant: Plant size and market demand are interdependent. If the average demand of the market is high and the proposed project is planning to cater the need of the market, a large capacity plant is an obvious solution. Capacity determination is crucial at this stage because under-utilisation of the large capacity plant means operating below break-even or leading to a loss-making situation. On the other hand, small capacity results in having to forgo the market opportunity to the competitors. Therefore building on the initial average capacity is a wise and conservative approach.

Infrastructure facilities: Infrastructures such as roads, railways, airways, waterways and ports are to be studied at both implementation and operational stage of a proposed project. Close proximity to these infrastructures facilitates the project operations and saves time in procurement and delivery of products to market. Again the land area for the project itself should be able to house all road network, service road, air-condition plant, gas and water pipe lines, storm water drainage systems, captive power plant for a large scale plant etc. A detailed study of all such requirements is necessary to avoid future surprises.

Manpower availability: Human involvement is central to all project management irrespective of the degree of automation and computerisation. Any project in the construction industry is a good example of a labour-intensive endeavour whereas a technical project has got some level of automation with less labour requirement. Manpower requirement and its availability are prerequisite to any project from planning stage to implementation.

Technology: People, processes and technology are considered the foundation to any project management. Technology drives the business. The same is true for the project and its management. The technology requirement is quite different from one project/service to another. Examples like construction of a multi-purpose dam, laying railway tracks, installing high power transmission lines, multiplex theater and cafeteria need varying degrees of technology and processes. Building and launching a satellite requires a high level of technology. Identification of an appropriate technology remains a challenge for project managers or a team working behind a project. A technology is considered appropriate only if it is assessed to be relevant and satisfactory. Some issues need to be considered before buying a technology for the project management. The cost of acquisition, installation, repairs and maintenance, obsolescence and the capacity of a project organisation to absorb/adopt the technology are few among many others. Patents, trademarks or licensing may be involved.

Construction process: It involves methodologies for smooth flow of project and the risk associated in it. A decision has to be made whether the project is to be undertaken in-house, on a turnkey basis, or sub-contracting out various work packages. Special assistance may be needed for some critical activities in order to finish a project on time. The arrangement of construction equipment, input raw material such as brick, cement, steel, and water, in the case of a construction project, has to be organized by the sole owner. Also important is the supplier and their location in order to make the just in time supply. Time scheduling the project activities using CPM/PERT network is crucial. If the need arises, software such as MS Project or Primavera would be a great help in scheduling the project.

Economic and financial feasibility analysis

This includes all economic analysis and financial feasibility. The estimate of the total cost of project investment and the cash-flow pattern is important at this stage of project evaluation. The capital structure (debt and equity ratio), the financing sources, interest rates and working capital requirement are to be decided before any final decision is taken. Financial decisions such as break-even point calculation, pay-back period, NPV (net present value), IRR (internal rate of return), return on investment (ROI), and return of assets (ROA) are to be considered at this feasibility stage of a project. The final decision rests on the compliance of the above ratios and indices. The availability of timely and relevant information ensures the correct calculation of the above ratios leading to appropriate direction. Incorrect or incomplete information requires additional safety margins which might lead to infeasibility.

In addition to the financial analysis discussed above, economic analysis is done from view point of society or economy as a whole. It is known as **social cost benefit analysis** (SCBA). This analysis looks into the national priorities, development of a specific economy sector and justifies the consumption of national resources. The SCBA establishes a fact that the project is deemed fit only if the sum total of the benefits to whom-so-ever they may accrue exceed the estimated costs.

Social cost and benefit analysis (SCBA), as discussed above, differs from monetary cost and benefit analysis (financial analysis). SCBA considers external aspects of a project such as ecology and environment. If the external damage is too great the project idea may be dropped, no matter what financial benefits it has. SCBA considers poor and weaker sections of society rather than the rich and affluent. The investment decision in SCBA is based on the need of a society without considering the financial benefit. Some category of investment in a society is deemed appropriate looking at the needs and wants of the society, whereas it is uncommon in an entrepreneurial firm.

Project management skill set

Some research has indicated that the following 15 functions are essential for effective project management:

1. Define project scope
2. Identify stakeholders, decision-makers and escalation procedures
3. Develop detailed task lists (work breakdown structures)
4. Estimate time requirements
5. Develop initial project management flow chart
6. Identify required resources and budget
7. Evaluate project requirements
8. Identify and evaluate risks
9. Prepare contingency plans
10. Identify interdependencies
11. Identify and track critical milestones
12. Participate in project phase review
13. Secure needed resources
14. Manage the change control process
15. Report project status.

A March 1998 study of 100 practising project managers found the following to be necessary critical characteristics of an effective project manager:

- Leads by example
- Is visionary
- Is technically competent
- Is decisive
- Is a good communicator
- Is a good motivator
- Stands up to upper management when necessary
- Supports team members
- Encourages new ideas.

Project integration management

Many people confuse integration management with systems integration. The definition of **project integration management** is "the processes involved in coordinating all of the other project management knowledge areas throughout a project's life cycle."

To be an effective project manager, you must focus on performing integration management ,making sure all the pieces come together at the right times to ensure project success. It is especially difficult for people with technical backgrounds to delegate many technical tasks, so that they can focus on integration management and the "big picture" view of the

project. The three key components of project integration management are:

1. Project Plan Development (creating the Project Plan)
2. Project Plan Execution (carrying out the Project Plan)
3. Change Control (coordinating changes across the entire project).

Integration management is about integrating the work of the entire project team by focussing on high quality communication and relationship building. Thus project integration management includes what is known as i**nterface management** – or identifying and managing the points of interaction between the various project players and elements.

The project plan

The project plan is the core high-level document that guides a project's execution and control. Project plans:

- document assumptions, definitions and decisions
- facilitate stakeholder communication
- define content, extent and timing of key management reviews
    - provide a baseline for project control and measuring progress
    - define a size appropriate to the scope of the project.

The basic outline of a project plan is as follows:

1. *Introduction or project overview*
    a. Project name
    b. Project description
    c. Project sponsor
    d. Project manager
    e. Key team members
    f. Summary of key deliverables
    g. List of reference documents or materials
    h. Glossary of definitions and acronyms
2. *Project organisation*
    a. Organisation charts
        i. Company or institution organisation chart
        ii. Project organisation chart (lines of authority, responsibilities and communication)
    b. Project responsibilities
    c. Diagram, flow chart or timeline of major steps
3. *Project management and technical processes*

a. Management objectives, priorities, assumptions & constraints
b. Project controls
    i. How is progress monitored?
    ii. What is the change control process?
    iii. Who has authority to make what types of decisions?
c. Risk management – how is risk identified, managed and controlled?
d. Project staffing – how many and what type of people are required and when?
e. Technical processes – (e.g., Systems Development Life Cycle (SDLC) and CASE (Computer Aided Software Engineering) tool selection.
f. Project documentation requirements.

4. *Project deliverables and work breakdown structure*
    a. Major work packages
    b. Key deliverables
    c. Required specifications (hardware, software, construction specifications, codes, regulations.).
5. *Project schedule*
    a. Summary schedule (key deliverables and their planned completion dates)
    b. Detailed schedule including dependencies (network diagram for illustration)
    c. Schedule assumptions and constraints.
6. *Project budget*
    a. Summary budget
    b. Detailed budget:
        i. fixed and variable costs
        ii. projected benefits.
    c. Assumptions.

Project plan execution

Project integration management considers project planning and execution as inseparable activities. The purpose of the project plan is to guide execution. However, project plans are often changed during the course of execution as additional knowledge and information is gained through experience. Project managers rely on the expertise of team members in each knowledge area to help guide and build the plan. Project managers need good leadership, communication and political skills to execute project plans.

A key function of the project manager is to make sure the right resources are available in the right quantities at the right time to get the job done. This includes making sure that team members have the necessary knowledge and skills. In the many projects, labour shortages often mean having to provide staff training. Also, making sure that there are back-up resources in case a key team player becomes ill or is 'lured away' also becomes a critical element of risk management on IT projects.

Project execution tools and techniques

Some of the specialised tools and techniques used by project managers for project plan execution include:

Project management software

Project management software has become a standard tool of the trade. Microsoft Project™, is the most widely used project management software tools in the world. Primavera Project Planner™, Scheduler Plus™, Open Plan™ are examples of other scheduling tools on the market. For a list of other software products and resources check out the following website: http://www.infogoal.com/pmc/pmcswr.htm

Project management software assists in creating detailed work breakdown structures, assigning resources, scheduling, budgeting and monitoring progress. It automates the production of Gantt and network diagrams and can include hyperlinks to other project documents.

Status review meetings

Regularly scheduled status review meetings are a standard project management tool for:

- exchanging project information
- monitoring progress
- maintaining motivation
- managing risk
- identifying issues
- stakeholder communication.

Work authorisation systems

Work authorisation systems are a formalised process used on large projects to authorise work to begin on a particular activity or work package. They are designed to ensure that the right things are done by the right people at the right time. They can be manual or automated.

Overall change control

Overall change control includes identifying, evaluating and managing project changes. Remember the triple constraint triangle of project management (quality, time and cost) and how you cannot change one

parameter without impacting at least one of the other constraints. Without proper change control, a project can easily drift into 'scope creep' and severe cost and/or time over-runs.

The three objectives of overall change control are:

1. Making sure the changes are useful and beneficial (this usually involves making trade-offs).
2. Determining if and when a change has occurred (and making sure senior management stays informed so there are no surprises).
3. Managing actual changes as they occur.

Key tools in overall change control are the project plan, status or performance reports and change requests. Project plans need to be updated as changes are made during execution. Status reports provide a mechanism to alert the project manager and other team members to issues that could cause problems. Change requests must be formal and written. Significant changes should be written, and be reviewed through a formal change control process implemented for analysing and authorising project changes.

Change control system

A change control system is a formal, documented process that describes when and how official project documents (especially the project plan) may be changed. It describes who is authorised to make changes, the procedures to be followed and the tracking system that will be used. A change control system often includes the following elements:

1. **A change control board (CCB) or steering committee** – a group of people specifically responsible for reviewing and authorising or rejecting project changes. They provide guidelines for change requests, evaluate these requests and manage their implementation.
2. **Configuration management**– a process that ensures that the descriptions of the project's products and deliverables are complete and correct.
3. **Change communication plan** – policies and procedures for identifying and reporting change requirements and communicating change decisions. This is to ensure that the entire project team remains up to date with the project details.

Suggestions for managing change control

- Understand that constant communication and negotiation is a normal part of the process
- Plan for change
- Establish formal change control systems and procedures
- Use configuration management
- Define procedures for quick decisions on small-scale changes
- Use status reports to identify and manage change
- Use project management and other tools and processes to help manage and communicate changes

The need for senior management buy-in

Senior management commitment and support is one of the critical success factors for project management. The main reasons cited for this are:

- To ensure the project has adequate resources
- To ensure approval for unique or unanticipated project needs
- To ensure cooperation of other managers and staff
- To help deal with political issues
- To provide coaching and mentoring on leadership issues

Some organisations will create a special project management office or centre of excellence as a special support module for project activity.

Module summary

Summary

In this module you learned:

The concept of project planning in relation to project cycle. In addition, cost, quality and time are the three important elements in influencing the project cost constraints. Before embarking on any project, the scope management must be clear. Scope management identifies things to be included and excluded in the project. The next step is selecting the project. Project selection can be done using analytical approaches such as NPV. After a project is identified, a project charter needs to be developed. This project charter is a document that describes and names the project. After the project charter is identified, the next is scope planning. Scope planning involves developing documents to clarify project scope and is the basis for project decisions including the criteria for phase sign-off. One way to undertake scope planning is through WBS. Sometimes the scope needs to be changed due to a customer request although that has been agreed earlier. Two techniques can be used when scope change occurs, scope verification and scope change control. As a project starts to take off, time management is very important. Project time management is important to ensure the project is completed on time and under the budget. To assist the project manager in managing project time, schedule development tools such as PERT, CPM and others can be used to manage the project time.

Assignment

Assignment

1. What are the differences between the critical path and probabilistic time estimates?
2. Explain in detail the following three schedule development tools used in project management:-
   a. Gantt chart
   b. PERT
   c. CPM

Assessment

Assessment

1. What is the definition and objective of a project plan?
2. What is the function of a project charter?
3. What is a work breakdown structure? What is a responsibility matrix? How are they related?
4. Why is project management time important?
5. Why would you recommend project management software to someone involved in project management? What features and benefits does it provide?
6. What are Net Present Value and Payback Period?

Assessment answers

1. The project plan is the core high-level document that guides a project's execution and control.
2. Project charter is the first document that exists in the project. It causes the project to come into existence. The project charter names the project and briefly describes it. It also names the project manager and causes a cost account to be opened to capture the cost of the project. When this is done, then only work on the project can proceed. The project charter must be written by the project manager, however, it must be issued under the signature of someone who is above the project manager and has authority to make project assignments. The charter is often used to let key members of the organisation know about the existence of the project, and to authorise its implementation. Key project stakeholders should sign the charter.
3. A key strategy of effective planning is to "break" the project down into manageable components of work that can be individually planned, estimated and managed. The process of "breaking" the work down is called the "Work Breakdown Structure". The work breakdown structure (WBS) is a tool that displays in detail, the project statement of work to aid in understanding and communication of the project scope. The WBS is created from the earliest stages of project definition. Without the WBS, there is no schedule or cost control in modern project management. The WBS is a powerful tool for expressing the scope or extent of a project in simple terms. It represents the project in terms of the hierarchy of deliverables it will produce. The WBS starts with a single box at the top, which represents the entire project. The project is then broken down into lower levels such as a phase, and then is further detailed into activity, task and step. The WBS supports the principle of management by objectives/deliverables by providing a map of what is to be produced in the project. The WBS is the input into activity definition. Once it is determined what to build, the next level of detail takes us to specifying how it can be built by developing the activities, tasks and steps to the bottom level of the WBS. Again, this is an important aspect to the development of the WBS. We want to take the project down to a level where the project manager can effectively manage the project! The WBS can be structured according to the responsibility as well as deliverables. The project responsibility matrix will only be developed after the project team has developed the WBS. In the responsibility matrix, it shows who has primary and secondary responsibility for each task.
4. Project time management is important because project management must make sure the project is completed as scheduled. The schedule, once set, tends to be the least flexible and the most easily measured and evaluated of the three project constraints.
5. Project management software such as Microsoft Project contains numerous reports, filters and views that can assist the project manager with scheduling and time management. Project management

software has become a standard tool of the trade. Microsoft Project™, is the most widely used project management software tools in the world. Primavera Project Planner™, Scheduler Plus™, Open Plan™ are examples of other scheduling tools available. For a list of other software products and resources check out the following website:

http://www.infogoal.com/pmc/pmcswr.htm

Project management software assists in creating detailed work breakdown structures, assigning resources, scheduling, budgeting and monitoring progress. It automates the production of Gantt and network diagrams and can include hyperlinks to other project documents.

6. **Payback period** is the amount of time it takes before discounted benefits exceed discounted costs. The questions to be asked are:

    - When does NPV become positive?
    - How soon does the investment start paying off?
    - How long will it take to recoup the dollars invested in a project?

    Net Present Value (NPV) provides a way of comparing projects of different duration, cost and expected benefit.

    All projected future costs and returns are 'discounted' or brought back to a present value. (This is based on the time value of money that says a dollar earned or spent today is worth more than a dollar five years from now.) The present values will depend on the time period and discount or interest rate applied. For example, the net present of $50 earned five years from now is $31 using a 10per cent discount rate. Another way to think of this is if I gave you $31 today and you put it in a savings account that paid 10 per cent compound annual interest, in five years from now the value of that account would be $50.