**LECTURE 1: SPM CONCEPTS**

What is Project?

A temporary endeavor undertaken to create a unique product or service with a definite beginning and end, different from ongoing, repetitive operations and requiring progressive elaboration of characteristics.

These project definitions have a few things in common:

Objective. There must be a clearly defined goal or set of goals for the project. A project must accomplish something. If a project has multiple goals, they should be related to each other, and not conflict with one another.

Start and end points. A project is a temporary endeavor. It must have a clearly defined beginning and ending, usually expressed as dates. Software maintenance is usually an ongoing operation, not a project, but may have well-defined projects that occur within it, such as specific releases.

Uniqueness. A project is a one-time thing, not usually repeated exactly the same way. This does not imply that repeat performance is not a project. Building a house is usually classified as a project, even though contractors have built millions of houses. Although the pattern and process are basically the same (a template), there are enough differences in each house (such as lot and location, varying materials, and code and design changes) to distinguish it from others. Otherwise, it becomes an ongoing production line making identical pieces in exactly the same way. The same is true for software professionals—we never build exactly the same software system, although we may copy it or port it.

Constraints. A project has cost, schedule, and quality performance constraints. These are the "big three" of the PM triangle that must be balanced and managed to achieve success.

What is Program?

A program is a group of related projects managed in a coordinated way. Programs usually include an element of ongoing activity.

Project Management

The definition of PM as it applies to software: Project management is a specialization of general management studies that employs the standard management skills of planning, organizing, staffing, leading or directing, and controlling to achieve defined project objectives.

Task: A generic term for work that is not included in the work breakdown structure, but potentially could be a further decomposition of work by the individuals responsible for that work. Also, the lowest level of effort on a project.

Activity: An element of work performed during the course of a project. An activity normally has an expected duration, an expected cost, and expected resource requirements. Activities can be subdivided into tasks.

Phase: A group of activities/tasks, producing a significant deliverable work product.

Project Processes:

Projects are composed of processes. A process is “a series of actions bringing about a result”. Project processes are performed by people and generally fall into one of two major categories:

Project management processes describe, organize, and complete the work of the project. Product-oriented processes specify and create the project’s product. Project management processes and product-oriented processes overlap and interact throughout the project.

Project management processes can be organized into five groups of one or more processes each:

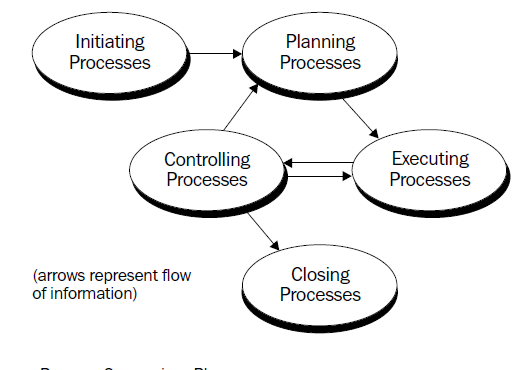
Initiating processes—authorizing the project or phase.

Planning processes—defining and refining objectives and selecting the best of the alternative courses of action to attain the objectives that the project was undertaken to address.

Executing processes—coordinating people and other resources to carry out the plan.

Controlling processes—ensuring that project objectives are met by monitoring and measuring progress regularly to identify variances from plan so that corrective action can be taken when necessary.

Closing processes—formalizing acceptance of the project or phase and bringing it to an orderly end.



Within each process group, the individual processes are linked by their inputs and outputs. By focusing on these links, we can describe each process in terms of its:

Inputs—documents or documentable items that will be acted upon.

Tools and techniques—mechanisms applied to the inputs to create the outputs.

Outputs—documents or documentable items that are a result of the process.

**LECTURE 2: KNOWLEDGE AREAS**

The Ten Knowledge Areas The ten knowledge areas are the skills a project manager must practice and master to manage a project efficiently.

The ten knowledge areas of project management are given below:

• Project Integration Management

• Project Scope Management

• Project Time Management

• Project Cost Management

• Project Quality Management

• Project Human Resources Management

• Project Communications Management

• Project Risk Management

• Project Procurement Management

• Project Stakeholder Management

Project Integration Management: The knowledge area which is devoted to identify and define the work in the project is known as the Integration Management. This knowledge area deals also with efficiently integrating changes into the project. There are six different processes in the integration knowledge area.

Project Scope Management: This knowledge area deals with defining the project scope, project requirement scope, project work, making the work breakdown structure, making the scope baselines and managing the scope of the project. This is one point where you can plan the ways of keeping the project within the established boundaries. There are six processes in the scope management knowledge area.

Project Time Management: The project managers estimate the duration of the tasks in this knowledge area. This is where he/she sequences the tasks and chooses the number of resources required to achieve the objective of the project. Schedule is monitored and managed here in this area to keep the project on the track. Seven processes are present in this knowledge area of project management.

Project Cost Management: Budget baseline is established and costs are estimated in this knowledge area. The plan to manage the costs is categorized in the cost management knowledge area too. This knowledge area consists of four processes.

Project Quality Management There are three processes in Project Quality Management, the knowledge area where the quality requirements for project deliverables are planned and tracked. In this area, all the quality issues are monitored and fixed.

Project Human Resources Management This knowledge area, which is the HR management of the project, comprises of the processes very essential to define the ways human resources will be utilized, developed, acquired and managed. Project Human Resources Management has four processes in it.

Project Communications Management Communications management is the knowledge area that defines how communications within the project will work. In these processes, the project manager makes the communication management plan, ensures the plan is followed, and controls information flow within the project. The communications management knowledge area has three processes.

Project Stakeholder Management: Project Stakeholder Management area encompasses all the processes which is used by a project manager for recognizing and satisfying the ones who are affected by the project. The affected party can either be internal or external, in nature. You can pay close attention to those stakeholders who can have a powerful positive or negative impact on the project. There are four processes in stakeholder management.

Project Risk Management Project Risk Management consists of identifying risks, planning risk management, conducting risk assessments, and controlling risks. This knowledge area has six processes in it. The area concentrates on identifying, analyzing, planning responses to both ‘threat risks’ (negative) and ‘opportunity risks’ (positive).

Project Procurement Management (some changes)This knowledge area deals with the processes which project managers usually follow to acquire required material for the successful completion of the project. In this knowledge area, project managers come up with the plan for conducting procurements, controlling the procurements and closing out the procurements. 4 processes are there in this knowledge area.

**LECTURE 3: PROJECT MANAGEMENT KNOWLEDGE AREAS AND THE RELATED PROCESS GROUPS**



**PROCESS GROUPS**

Develop Project Charter—Overview: This is the process of developing a document that formally authorizes a project or a phase and documents initial requirements that satisfy the stakeholder’s needs and ex-pectations.

Identify Stakeholders—Overview: Identify Stakeholders is the process of identifying all people or organizations impacted by the project, and documenting relevant information regarding their interests, involve-ment, and impact on project success.

The Project Management Plan: The project management plan is the major output from this process. Developing it is the process of documenting the actions necessary to define, prepare, integrate, and coor-dinate all subsidiary plans. It represents the primary source of information for how the project will be planned, executed, monitored and controlled, and closed.

Collect Requirements—This process is essential for clarifying and manag-ing expectations as adjustments are made throughout the project. Your project requirements document and management plan, plus the requirements traceabil-ity matrix are outputs of this process.

Define Scope—This process produces a detailed description of the project and its product that ensures the confidence and trust of the stakeholders. Your project scope statement and project document updates are the outputs of this process.

Create Work Breakdown Structure (WBS)—This is the process where you break down the project elements into manageable work packages producing your WBS and associated dictionary. The WBS Dictionary describes each component of the WBS with milestones, deliverables, activities, scope, and sometimes dates, resources, costs, quality. If the WBS element names are ambiguous, a WBS dic-tionary can help clarify the distinctions between WBS elements. Other outputs includes the scope baseline that enables stakeholders and the project manager to assess ongoing progress and the impact of necessary adjustments.

Define Activities, 3.4.6 Sequence Activities, 3.4.7 Estimate Activity Re-sources, 3.4.8 Estimate Activity Durations—These four processes create the list of activities and their attributes that are required for the project. These ac-tivities are then scheduled into network diagrams along with estimates of the resources needed and how long it will take to complete. These outputs enable benchmark goals to be set so that teams with the right resources can be created.

Develop Schedule—This process produces the schedule baseline and data needed to complete the work. This is a complex process and often requires a great deal of coordination with many project constituents.

Estimate Costs—This part of the planning process produces the cost es-timates for each activity and phase. The expertise of your project manager will have a significant impact on their accuracy and attention to detail.

Determine Budget—This brings together all activity and work package cost estimates into a complete project budget. This forms the documentation for the project funding that includes contingency for potential issues that may arise and produces the cost performance baseline. To ensure smooth authorization by stakeholders these details must be presented logically and clearly.

Plan Quality—The quality management plan this process produces must define the quality metrics and checklists that take into account potential risks, cost performance baseline, and organizational and environmental factors.

Develop Human Resource Plan—Each phase of the project plan must have the correct resources and skills in the staff assigned to it. These individuals will form teams to produce work packages or for phases. The resulting management plan details the skills, roles, responsibilities, and reporting relationships that sup-port the schedule of work and project objectives.

Plan Communications—Communicating the correct level of information in a timely manner to all parties is essential for your success. This management plan enables you to set and manage stakeholder expectations through your regu-lar updates on progress and project changes. It also helps to create good working relationships within the project team, gaining their support and cooperation.

Plan Risk Management, 3.4.16 Identify Risks, 3.4.17 Perform Qualitative Risk analysis 3.4.18 Perform Quantitative Risk Analysis, 3.4.19 Plan Risk Re-sponses—The importance of assessing and planning for potential risks is paramount if your project is to be completed on time and to budget. Your resulting risk register enables your communication with stakeholders to be informed and practical.

Plan Procurements—This management plan will define the approach your project adopts towards procurement and identify potential suppliers you want to approach. There will be detailed reports outlining procurement state-ments of work and decision-making throughout the project life cycle.

Direct and Manage Project Execution—This process is concerned with per-forming and delivering the work as defined in the project management plan so that its objectives can be attained. Project managers will spend the majority of the project budget during the execution process so scheduling and phasing de-tails must be as accurate as possible. This includes the complete management of the change request procedure.

Perform Quality Assurance—A key aspect of any project is ensuring that the quality of products and deliverables meets the criteria set. Performing regular quality assurance checks has several purposes:○Ensures any necessary amends can be incorporated in plan to maintain quality.○Assures stakeholders that the project is staying within its budget. and times-cales. Any quality issues highlighted can be incorporated into your organization’s processes as required.

Acquire Project Team—This process is simply concerned with ensuring the composition of people and skills matches the project’s needs. It also ensures the availability of the required individuals by clearly communicating project expecta-tions and timelines.

Develop Project Team—This process enables the project manager to en-sure that the interactions and competencies within the team match the required level of performance. It is also the process responsible for building a cohesive team and conducting regular team assessments.

Manage Project Team—This process involves managing and monitoring team members’ performance. The project manager will give constructive feed-back to individuals or groups to ensure that issues and conflicts are avoided. It also manages project changes to maintain performance. This process provides a means for concerns to be fed back to the project management team.

Distribute Information—A major contributor to a project’s success is how well pertinent information is routinely communicated to the relevant parties. Se-lecting the best means of communicating plays a key role in this process. Know-ing what issues warrant a call to a stakeholder (e.g. delay of a timeline) and those that don’t helps to create a positive working environment.

Manage Stakeholder Expectations—Since your stakeholders are a signifi-cant party in any project, communicating appropriately with them is an essential skill to acquire. Such communications need to assure them that their needs are being met, their concerns are heard, and that issues that occur are being properly addressed.

Conduct Procurements—All projects need to acquire certain resources from external suppliers and having the necessary procurement processes in place ensures the correct distribution of resources. Regular reports set suppliers’ ex-pectations and provide a structured process to voice and address their responses. This process is also responsible for the timely awarding of and managing of any contracts required for the project.

Monitor and Control Project Work—This process is concerned with track-ing the progress of the performance objectives as they have been defined in the project management plan. Another aspect of this process is the reviewing, regu-lating, and forecasting of these objectives. The performance reports generated by this process feed into other processes to monitor and control cost, resources, risk, scope, schedule, quality, benchmark goals, and timelines. The project status report is a key method of keeping your project stakeholders informed about project progress and performance. These documents provide a trail and history that can be used to aid future projects.

Perform Integrated Change Control—Changes are inevitable in any proj-ect and it is this process that manages the reviewing, approving, documenting and then execution of the proposed changes. The larger the project the greater the number of change requests. These changes are most likely to alter the proj-ect deliverables and plan. It is essential the project manager documents and as-sesses each change against its impact on timescales and budget.

Verify Scope—This process formally accepts project deliverables as be-ing complete. To attain this completed status all documentation relating to that phase or work package must be included to be accepted as complete. This in-cludes documenting any follow-through that is required as the project progresses.

Control Scope—Any changes to the scope baseline must be closely moni-tored and, once accepted, reflected in the project scope and relevant work pack-ages. These adjustments must be communicated to the project stakeholders so that implications for the budget and timeframes can be understood and agreed to.

Control Schedule—The project schedule baseline is a critical document and it is essential that any changes or adjustments that result from monitoring are properly incorporated and communicated to all necessary parties. Careful and thorough monitoring will reduce instances of major setbacks due to schedul-ing issues that have been poorly reported.

Control Costs—Monitoring and controlling the costs of any project are crit-ical aspects of its success. It is essential that project status reports accurately re-port current expenditure and forecasted spend, and highlight any variances from the cost baseline.

Perform Quality Control—Managing and controlling the quality of what is produced during a project are vital to its success. This process monitors the qual-ity of the executed activities, assesses how well it matches the required quality metrics and checklist, and recommends any necessary changes.

Report Performance—This is the process that defines and monitors the production of performance status reports, measurements, and forecasts. These reports form a key aspect of the communication within the project team and stakeholders on how well progress maps the project benchmark goals.

Monitor and Control Risks—This process plays a key role in project man-agement and performance because it documents identified risks, and monitors and evaluates any changes or responses to this initial assessment. It is also iden-tifies, evaluates, and reports new risks, updating the risk register as appropriate.3.6.10 Administer Procurements—All projects require the procurement of some resources so that their performance matches project timelines and budget. This process manages, monitors, and documents the performance of suppliers against the contracted requirements. It also manages these working relationships to en-sure that any changes that occur during the contract period are properly incorpo-rated and delivered.

Close Project or Phase: This is the process of finalizing all activities across all of the Project Management Process Groups to formally complete the project or phase. When closing the project, the project manager will review all prior information from the previous phase closures to ensure that all project work is complete and that the project has met its objectives. Since project scope is measured against the project management plan, the project man-ager will review that document to ensure completion before considering the project closed. This process also establishes the procedures to investigate and document the reasons for actions taken if a project is terminated before completion.

Close Procurements: This is the process of formally closing any contracts set up by the project and involves verification that all work and deliverables were acceptable. It also involves administra-tive activities such as finalizing open claims, updating records to reflect final results, and archiving such information for future use.