Unit 5

Controlling software Project

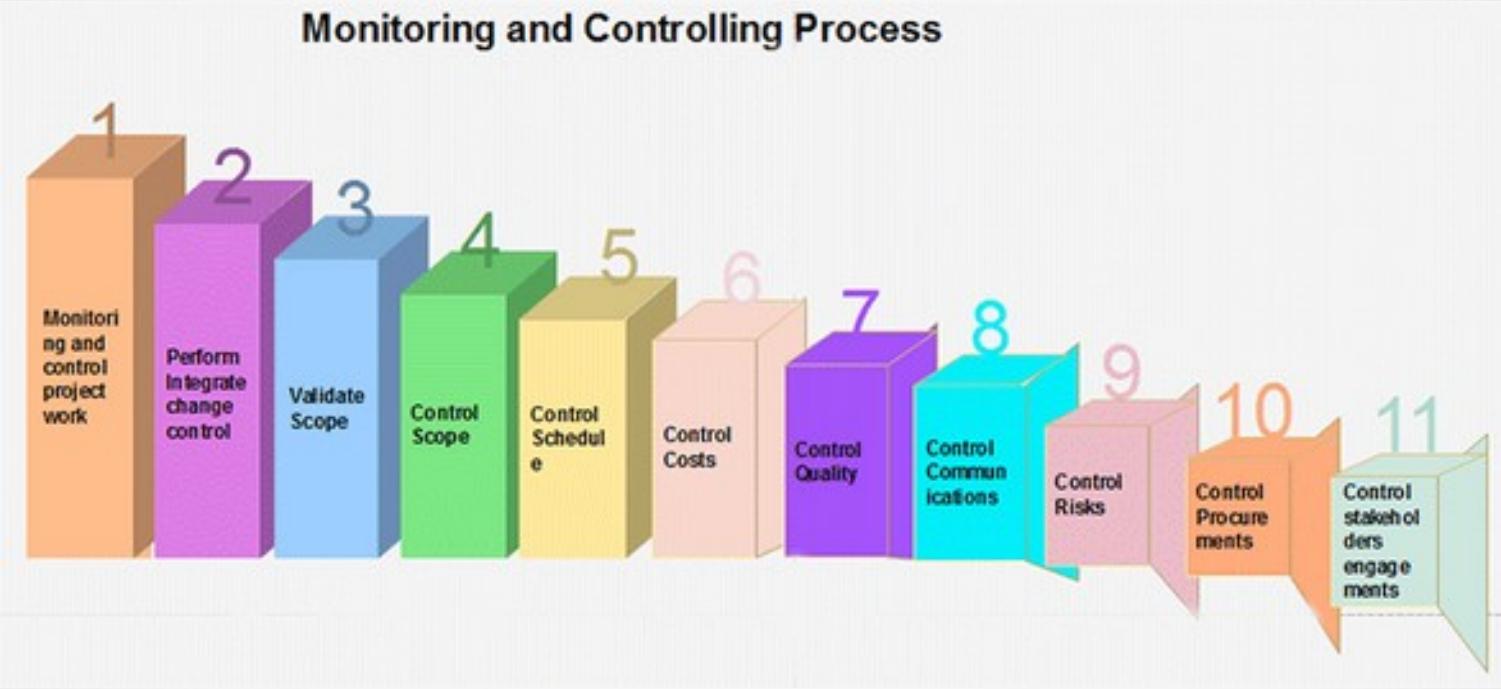
Introduction

- A Software Project is the complete procedure of software development from requirement gathering to testing and maintenance, carried out according to the execution methodologies, in a specified period of time to achieve intended software product.

Project Monitoring and Control

- Monitoring and Controlling are processes needed to track, review, and regulate the progress and performance of the project. It also identifies any areas where changes to the project management method are required and initiates the required changes.
- The Monitoring & Controlling process group includes eleven processes, which are:

Monitoring and Controlling Process



- Monitor and control project work: The generic step under which all other monitoring and controlling activities fall under.
- Perform integrated change control: The functions involved in making changes to the project plan. When changes to the schedule, cost, or any other area of the project management plan are necessary, the program is changed and re-approved by the project sponsor.
- Validate scope: The activities involved with gaining approval of the project's deliverables.
- Control scope: Ensuring that the scope of the project does not change and that unauthorized activities are not performed as part of the plan (scope creep).
- Control schedule: The functions involved with ensuring the project work is performed according to the schedule, and that project deadlines are met.

- Control costs: The tasks involved with ensuring the project costs stay within the approved budget.
- Control quality: Ensuring that the quality of the project?s deliverables is to the standard defined in the project management plan.
- Control communications: Providing for the communication needs of each project stakeholder.
- Control Risks: Safeguarding the project from unexpected events that negatively impact the project's budget, schedule, stakeholder needs, or any other project success criteria.
- Control procurements: Ensuring the project's subcontractors and vendors meet the project goals.
- Control stakeholder engagement: The tasks involved with ensuring that all of the project's stakeholders are left satisfied with the project work.

Project Estimation

- For an effective management accurate estimation of various measures is a must. With correct estimation managers can manage and control the project more efficiently and effectively.
- Project estimation may involve the following:
- **Software size estimation:** Software size may be estimated either in terms of KLOC (Kilo Line of Code) or by calculating number of function points in the software. Lines of code depend upon coding practices and Function points vary according to the user or software requirement.
- **Effort estimation:** The managers estimate efforts in terms of personnel requirement and man-hour required to produce the software. For effort estimation software size should be known. This can either be derived by managers' experience, organization's historical data or software size can be converted into efforts by using some standard formulae.

- **Time estimation**
- Once size and efforts are estimated, the time required to produce the software can be estimated. Efforts required is segregated into sub categories as per the requirement specifications and interdependency of various components of software. Software tasks are divided into smaller tasks, activities or events by Work Breakthrough Structure (WBS). The tasks are scheduled on day-to-day basis or in calendar months
- The sum of time required to complete all tasks in hours or days is the total time invested to complete the project.
- **Cost estimation**
- This might be considered as the most difficult of all because it depends on more elements than any of the previous ones. For estimating project cost, it is required to consider -
- Size of software
- Software quality
- Hardware
- Additional software or tools, licenses etc.
- Skilled personnel with task-specific skills
- Travel involved
- Communication
- Training and support

Resource management

- All elements used to develop a software product may be assumed as resource for that project. This may include human resource, productive tools and software libraries.
- The resources are available in limited quantity and stay in the organization as a pool of assets. The shortage of resources hampers the development of project and it can lag behind the schedule. Allocating extra resources increases development cost in the end. It is therefore necessary to estimate and allocate adequate resources for the project.
- Resource management includes -
- Defining proper organization project by creating a project team and allocating responsibilities to each team member
- Determining resources required at a particular stage and their availability
- Manage Resources by generating resource request when they are required and de-allocating them when they are no more needed.
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Project Risk Management

- Risk management involves all activities pertaining to identification, analyzing and making provision for predictable and non-predictable risks in the project. Risk may include the following:

- Experienced staff leaving the project and new staff coming in.
- Change in organizational management.
- Requirement change or misinterpreting requirement.
- Under-estimation of required time and resources.
- Technological changes, environmental changes, business competition.

Risk Management Process

- There are following activities involved in risk management process:
- **Identification** - Make note of all possible risks, which may occur in the project.
- **Categorize** - Categorize known risks into high, medium and low risk intensity as per their possible impact on the project.
- **Manage** - Analyze the probability of occurrence of risks at various phases. Make plan to avoid or face risks. Attempt to minimize their side-effects.
- **Monitor** - Closely monitor the potential risks and their early symptoms. Also monitor the effects of steps taken to mitigate or avoid them.

The End