

**COLLEGE OF
COMPUTER STUDIES**

**QUEZON CITY
UNIVERSITY**



WEEK 4 SOFTWARE PROJECT MANAGEMENT

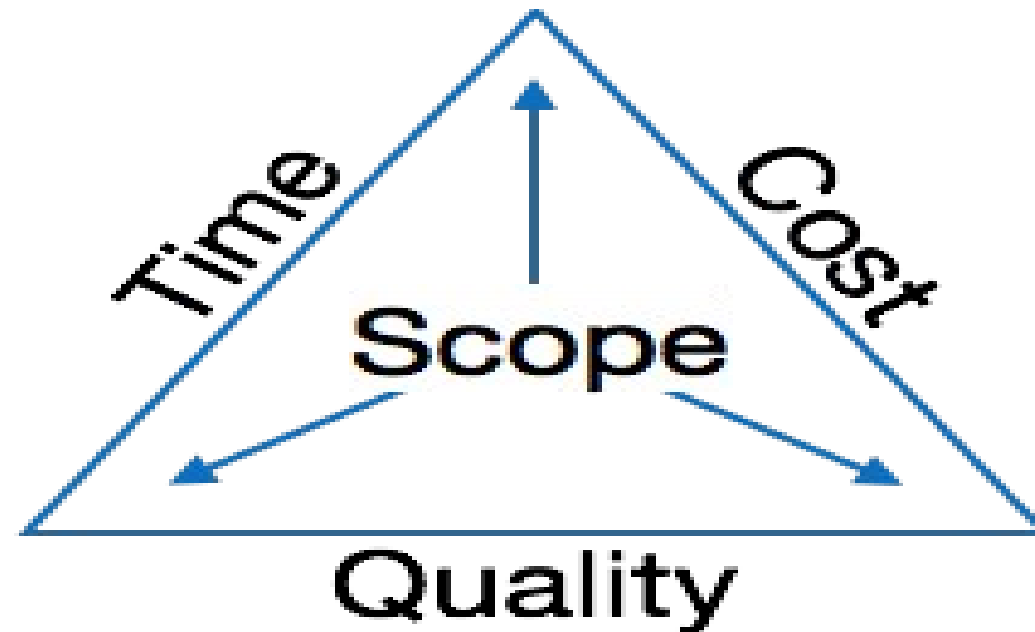
SE101 – SOFTWARE ENGINEERING

v2020

LEARNING OUTCOMES:

- Demonstrate through involvement in a team project the central elements of team building and team management.
- Prepare a project plan for a software project that includes estimates of size and effort, a schedule, resource allocation, configuration control, change management, and project risk identification and management.
- Indicate an approach to risk that will help to secure the on-time delivery of software.
- Compare and contrast the different methods and techniques used to assure the quality of a software product

Need of Software Project Management



What is Software Project Management?

Software Project Roles and Responsibilities

Roles	Responsibilities
Project Manager	Develop a project plan, Manage deliverables according to the plan, recruit project staff, Lead and manage the project team, Determine the methodology used on the project, Established a project schedule and determine each phase, assign task to project team members, provide regular updates to upper management
Functional Manager	Assign project, discuss how well person is doing the work and if person wants to continue doing it (providing opportunities for growth), gathering information from the other PMs to write the evaluation, work with member to set and coach on career goals
Operational Manager	Coordination and Supervision, Financial, HR, improve process and policies, coordinate and monitor the work of various department

Software Project Roles and Responsibilities

Analyst	Ensuring that the requirements of the business client are captured and documented correctly before a solution is developed and implemented.
Change Manager	Accept changes to the project requirements, budget and timelines
Database Administrator	Models, designs and creates the databases and tables used by the software solution
Developer	Actual building of the solution
Tester	Ensures that the solution meets the business requirements and that is free of errors and defects
Client	Beneficiaries of a project or service.
User	Use the deliverables of the project.

Software Management Activities

1. Project Planning.

2. Scope Management.

- During Project Scope management, it is necessary to -
 - Define the scope
 - Decide its verification and control
 - Divide the project into various smaller parts for ease of management.
 - Verify the scope
 - Control the scope by incorporating changes to the scope

3. Project Estimation.

- Project estimation may involve the following:

Software Management Activities

- Software size estimation.
- Effort estimation.
- Time estimation.
- Cost estimation.
 - 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

Software Management Activities

- Travel involved
- Communication
- Training and support
- **Project Estimation Techniques**
 - Decomposition Technique.
 - **Line of Code** Estimation
 - **Function Points** Estimation
 - Empirical Estimation Technique.
 - **Putnam Model.**
 - **COCOMO.**

Software Management Activities

4. Project Scheduling.

- Break down the project tasks into smaller, manageable form
- Find out various tasks and correlate them
- Estimate time frame required for each task
- Divide time into work-units
- Assign adequate number of work-units for each task
- Calculate total time required for the project from start to finish

5. Resource management.

- 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.

6. Project Risk Management.

- 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.

Software Management Activities

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.

7. Project Execution & Monitoring.

Software Management Activities

8. Project Communication Management.

- Communication management process may have the following steps:
 - Planning
 - Sharing
 - Feedback
 - Closure

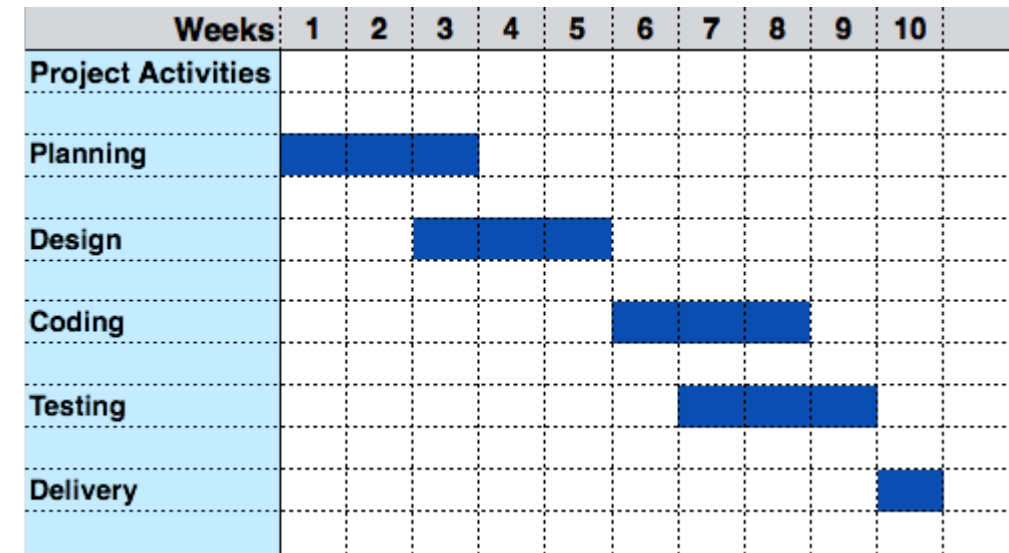
9. Configuration Management.

- Change control is function of configuration management, which ensures that all changes made to software system are consistent and made as per organizational rules and regulations. A change in the configuration of product goes through following steps -
 - Identification
 - Validation
 - Analysis.
 - Control
 - Execution
 - Close request

Project Management Tools

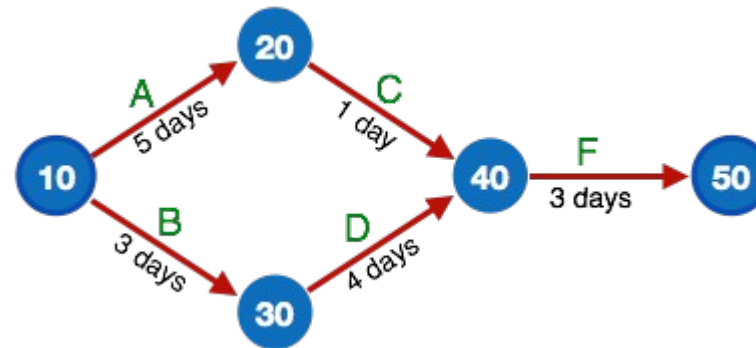
Gantt Chart

- Gantt charts was devised by Henry Gantt (1917). It represents project schedule with respect to time periods. It is a horizontal bar chart with bars representing activities and time scheduled for the project activities



PERT Chart

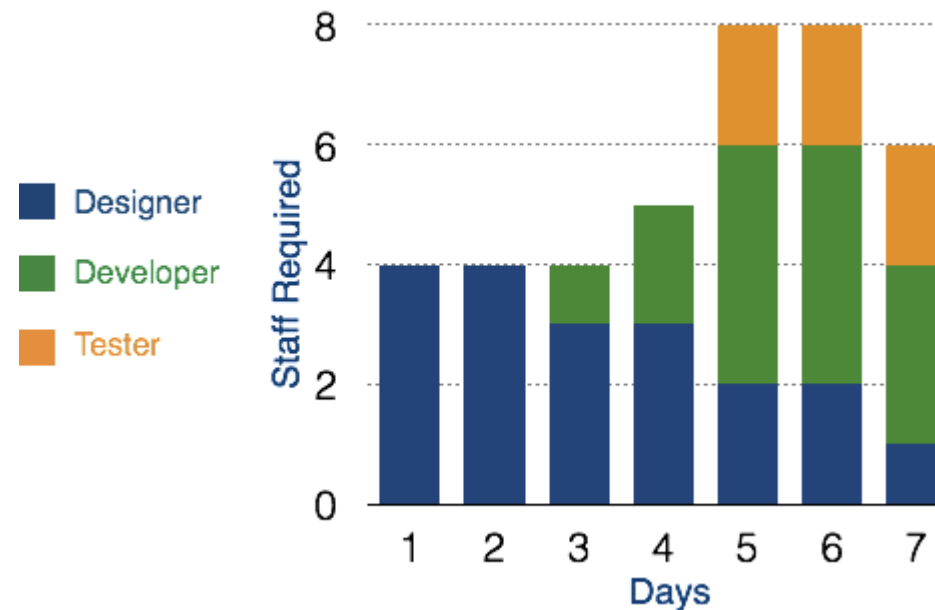
- PERT (Program Evaluation & Review Technique) chart is a tool that depicts project as network diagram. It is capable of graphically representing main events of project in both parallel and consecutive way.



Resource Histogram

- This is a graphical tool that contains bar or chart representing number of resources (usually skilled staff) required over time for a project event (or phase). Resource Histogram is an effective tool for staff planning and coordination.

Staff	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Designer	4	4	3	3	2	2	1
Developer	0	0	1	2	4	4	3
Tester	0	0	0	0	2	2	2
Total	4	4	4	5	8	8	6



Critical Path Analysis

- This tool is useful in recognizing interdependent tasks in the project. It also helps to find out the shortest path or critical path to complete the project successfully. Like PERT diagram, each event is allotted a specific time frame. This tool shows dependency of event assuming an event can proceed to next only if the previous one is completed.

References:

- eBook
 - Software Engineering A Practitioner's Approach by Pressman and Maxim
 - Software Engineering by Sommerville
- Journal:
 - Software Engineering Tools and Methods by Carrington
- Online Resources:
 - https://www.tutorialspoint.com/software_engineering/software_project_management.htm
 - <https://medium.com/@SherrieRose/software-project-team-roles-and-responsibilities-152a7d575759>

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End of Lesson