Note Junction

Best IT Notes Ever

Note By: Roshan Bist (SNSC,MNR)

UNIT-1 [Around 5 marks]

Introduction to Software Project Management

⊛ Software Engineering Problem:

Software engineering is associated with development of software product using well-defined scientific principles, methods and procedures. The outcome of software engineering is an efficient and reliable software product.

Most problems are large and sometimes tricky to handle, especially if they present something new that has never been solved before. So, we must begin investigating it by analyzing it, that is, by breaking problem into pieces that we can understand and deal with. Once we have analyzed the problem, synthesis is done to put pieces together to get solution of entire problem. Thus, problem-solving technique must have two parts: Analyzing and Synthesizing.

Software engineers use tools, techniques, procedures, and paradigms (pattern) to enhance the quality of their software products. Their aim is to use efficient and productive approaches to generate effective solutions to problems.

Major Challenges (Problems) in Software Development: [Imp]

→ Rapid technology advancement.
→ Increasing customer demands.
→ Time limitation.
→ Limited infrastructure/resources.
→ Conflicts with software testing teams.

⊛ Software Product:

Software is considered to be collection of executable programming code, associated libraries and documentations. Software, when made for a specific requirement is called software product.

⊛Software Product attributes: [Imp]

A software product can be judged by what it offers and how well it can be used. The software product must satisfy following attributes:

1) Operational: This tells us how well software works in operations. It can be measured on:
   - → Usability
   - → Efficiency
   - → Correctness
   - → Functionality
   - → Dependability
   - → Security

2) Transitional: This aspect is important when the software is moved from one platform to another. It can be measured on:
   - → Portability
   - → Interoperability
   - → Reusability
   - → Adaptability.

3) Maintenance: This aspect briefs about how well a software has the capabilities to maintain itself in the ever-changing environment. It can be measured on:
   - → Modularity
   - → Maintainability
   - → Flexibility
   - → Scalability.

⊛ Software Project:

A software project is the complete procedure of software development from requirement gathering to testing and maintenance, carried out in a specified period of time to achieve intended software product.

⊛Software Project vs. Other types of Project: [Imp]

Following are some of the characteristics that makes software projects different from other types of projects:

i) Invisibility: When a physical artifact such as in construction of bridge progress is clearly visible. But with software progress is not immediately visible.

ii) Complexity: Per dollar, pound or Euro spent, software products contain more complexity.

iii) Conformity: The traditional Engineers works with physical systems which are clearly governed by consistent physical laws. But software engineers have to conform to the human clients or organizational requirements and if they are inconsistent in what they need then developing software can be a difficult job.

iv) Flexibility: The software is very easy to adapt with the change in needs.

⊛Activities covered by SPM:

1) Feasibility Study: It is the study to find out whether a project is worth starting; to see if developmental and operational cost are feasible; and to see if ~~developmental~~ there is value of the benefits from the system.

2) Planning: We can start planning if feasibility study indicates project is possible. We can make the detailed planning of the earlier stages of the project and start working on it. Planning may include forming a team, deciding a schedule and work allocation, resource requirement analysis, calculating cost, effort and time.

3) Project Execution: Now the execution of project can start. Generally project execution involves Design and Implementation phase. Design is making decision about the form of product to be created. Implementation means coding, integration and testing of software.

⊛ Categorizing Software Projects:

i) Information system vs. Embedded system: Information systems help staffs to perform office processes (e.g. Microsoft office Package). Embedded systems control machines. (e.g. Automatic washing machine).

ii) Outsourced Projects: Sometimes when a project is too large then some of its component is given to other companies to develop it for them. Such projects are called outsourced projects.

iii) Object-driven software projects: Projects that are developed to meet specific objectives only.

iv) Compulsory vs. Voluntary: Compulsory systems are those that has to be used by people to get their work done. (for e.g, office softwares). Voluntary softwares are those that may be used or may not be used. (for e.g, computer games).

⊛ Project Management Cycle: [Imp]

It has four phases: Initiation, Planning, Execution, and Closure.

1) Initiation:

→ Undertake a Feasibility study.
→ Appoint the Project Team.
→ Set up the Project Office.

2) Planning: Project planning is an important responsibility of a project manager. During project planning a manager needs to perform a well-defined activities listed below:

Cost estimation: How much it is going to cost to complete a project?
Estimating Duration: How long is it going to take to complete a project?
Effort: How much effort would be necessary for completing a project?
Scheduling: Human resources and other resources are scheduled.
Staffing: Selecting right people for the right job?
Risk management: includes risk identification, analysis and planning.

3). Execution:

i) Build Deliverables: to develop software product as modules.

ii) Monitor and Control: to ensure that software development proceeds as planned.

iii) Perform time management, cost management, quality management.

iv) Perform risk management to identify possible risks and try to move it.

4). Closure:

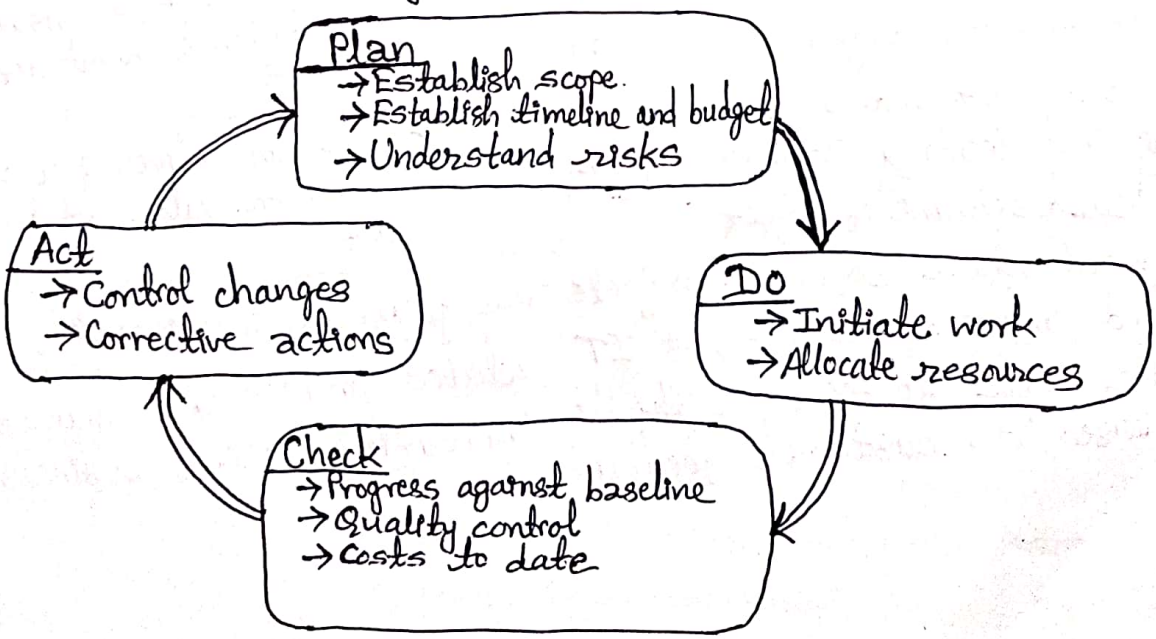
→ Perform project closure to ensure activities are logically completed.
→ Review project completion.

⊛ SPM Framework: [Imp]

A SPM framework consists of three parts: a project lifecycle, a project control cycle, and tools and templates to facilitate the execution of the project.

. Project Lifecycle: Project lifecycle consists of four steps: initiating, planning, executing, and closing. [We can discuss in short, we recently read in previous topic above].

Project Control Cycle: The project lifecycle describes what needs to be done at each stage and the project control lifecycle acts as a navigation system for the project through the roadmap defined by the lifecycle.



Template and Tools: Simple tools and templates support the implementation of project management within an organization. Making these relevant to the size, risk and scope of the project is essential to ensure they are effective in supporting the project managers. Using standardized templates can support common language and processes.

⊛Types of Project Plan:

A project plan defines project goals and objectives, specifies tasks and how goals will be achieved, identifies what resources will be needed and associated budgets and timelines for completion. A typical project plan consists of: A statement of work, a resource list, work breakdown structure, a project schedule and a risk plan.

While there are numerous project management types, there are seven primary ones that get used most often.

→ Waterfall Project Management.
→ Agile Project Management.
→ Scrum Project Management.
→ Kanban Project Management.
→ lean Project Management.
→ Six Sigma Project Management.
→ Prince2 Project Management.

describe पनि सारै short मा concepts लेख्ने

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Scrum is similar to Agile involving a small team led by a Scrum master, whose job is to remove all obstacles to getting work done

project's workflow visualized and broken down into actionable pieces

focuses on delivering a product with more value and less waste

Q. What is software project management?

Ans: It is an art and science of planning and leading software projects. It is subdiscipline of project management where software projects are planned, implemented, monitered, and controlled. Most IT related projects are managed in Agile style to keep up with the increasing pace of business and based on customer feedback.

Software project management is the process of planning, organizing, and overseeing the development, testing, and deployment of software applications. It involves coordinating various tasks, resources, and stakeholders to ensure that the project is completed on time, within budget, and with the desired quality. The primary goal of software project management is to successfully deliver a software product that meets the specified requirements while managing risks and uncertainties.