LECTURE 1

Introduction to software project management

Nature of the module

- The module provides for learners the concepts and basic cri teria to manage a software project.
- The learners will understand the purpose, the necessity of managing software project as well as having necessary skill s to manage a specific software project.

Learning objectives

- Upon completion of this module, students are expected to:
  - ❖ Understand the concepts and related criteria to software proj ect management
  - ❖ Understand and categorize the software project management models
  - ❖ Know the standards, technology and stages in software proje ct management process
  - ❖ Know how to make plan for a software project

Course topics

- Introduction to software project management
- Selection of software development lifecycle model
- Project cost estimation
- Project planning
- Risk management
- Quality management
- Project team management
- Project execution & closure

Learning resources

- Website:
  - http://fit.hanu.vn
- Bibliography:
  - Jalote P. (2002), Software Project Management in Practice, Addison Wesley.
  - Futrell R. T., Shafer D. F., Shafer L. I (2002), Quality Software Project Management, Prentice Hall.
  - Hughes B., Cotterrell M. (2004), Software Project Management, China Machine Press.

Lecturer contact

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Course assessment

- Weekly performance: 10%
- Progress: 30%
- Exam: 60%

- Evening: (17h30 – 19h35) & (19h50 – 21h55)

Content

1 What is software project management?

2 Problems in project management

3 Processes in software project

4 Processes in project management

What Is Project?

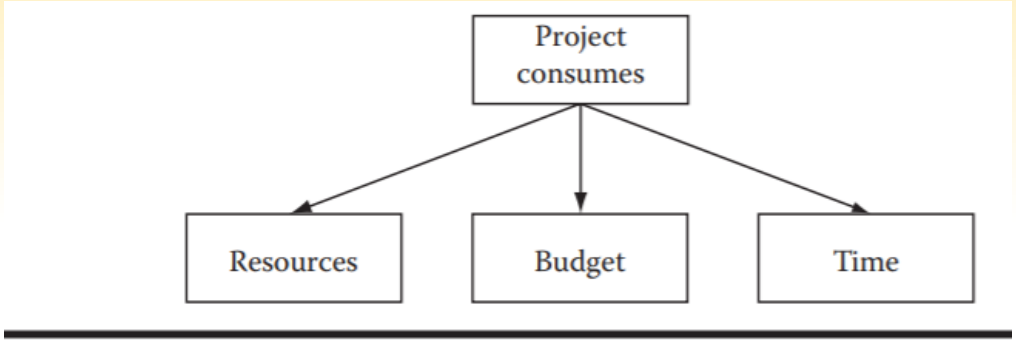
- A project is a combination of interrelated activities with well defined objectives to be completed in a specific time period
- Project is something special which is different from routine and regular activities

Examples:

- Building a house
- Writing a book
- Organizing a seminar
- Conducting an election

What Is Project Management?

- Project management can be broadly defined as starting an activity to achieve some stated goals using limited resources, budget, and time.
- During the project, resources and budget are consumed in a limited span of time.



Any project consumes resources, time, and budget.

What Is Project Management?

- After the project is finished, the unconsumed resources and budget should be released.
- Since each project is started for a customer. The customer must be satisfied with the goal achieved by the project. This goal could be the creation of any product or service.
- So we can see that there are inputs to the project in terms of resources, budget, and allocated time duration, and the output of the project is the achieved goal.
- To execute the project in a systematic manner, it is better to have a project plan.
- A project must be initiated.

What Is Project Management?

Project Charter

Project Initiation

Scope & Budget

Work Breakdown Schdue

Gantt Chart

Communication Plan

Risk Management

Status & Tracking

KPIs

Quality

Forecasts

Objectives

Quality Deliverables

Effort & Cost Tracking

Performance

Post Mortem

Project Punchlist

Reporting

What are software projects?

- Projects can be defined as something which has a beginning and an end within a specified time frame with a purpose.
- A project can be represented by the Meliorist Model which is represented by a set of actions that you perform.

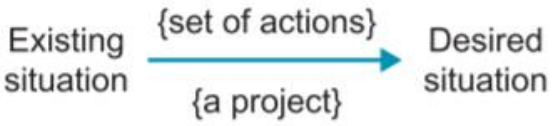


Figure 1.1 The Meliorist Model

- Software projects come in all different shapes and sizes.

Software project types

- There are five categories of software projects.
- These categories are not intended to be discrete and you may well find that your own project falls into two or even more of these classes (or it perhaps falls distinctly into one category but draws on approaches that are identified in others).
  - Research-based
  - Development
  - Evaluation
  - Industry-based
  - Problem solving

What Is Software Project Management?

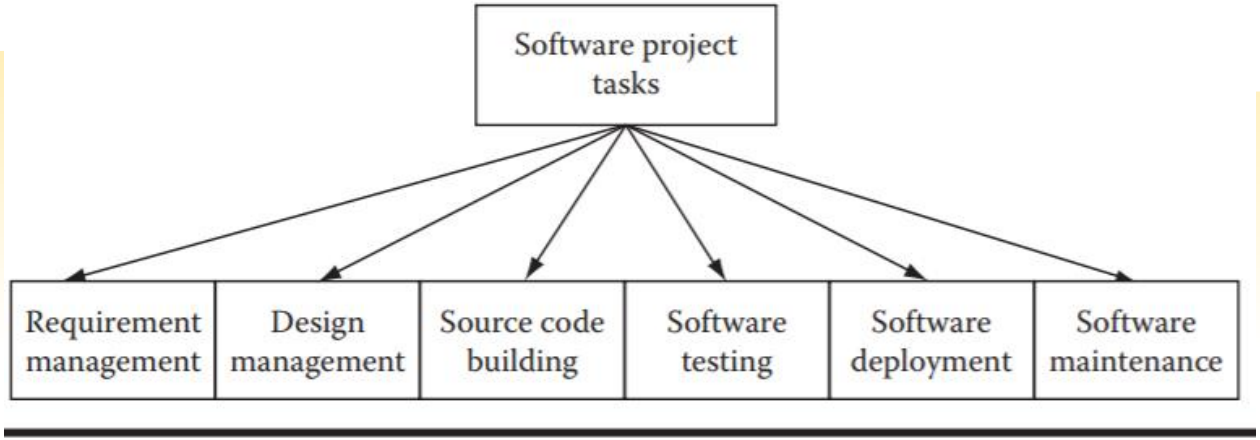
- A software development project on the other hand is making software design based on customer requirements and implementing it into source code.
- This source code is then tested to make sure that it is defect free so that end users can use the software system without running into many problems.
- Software projects demand not only general project management skills but also good software engineering skills.

What Is Software Project Management?

- A goal of any software project management is to develop/maintain a software product by applying good project management principles as well as software engineering principles so that the software project is delivered at minimum cost, within minimum time, and with good product quality.
- Good project management principles will ensure good productivity.
- Good productivity in turn will ensure that the project is delivered in minimum time at minimum cost.
- Good software engineering principles will ensure good product quality.

What Is Software Project Management?

- A project manager responsible for managing a software project must have knowledge and experience in software engineering.

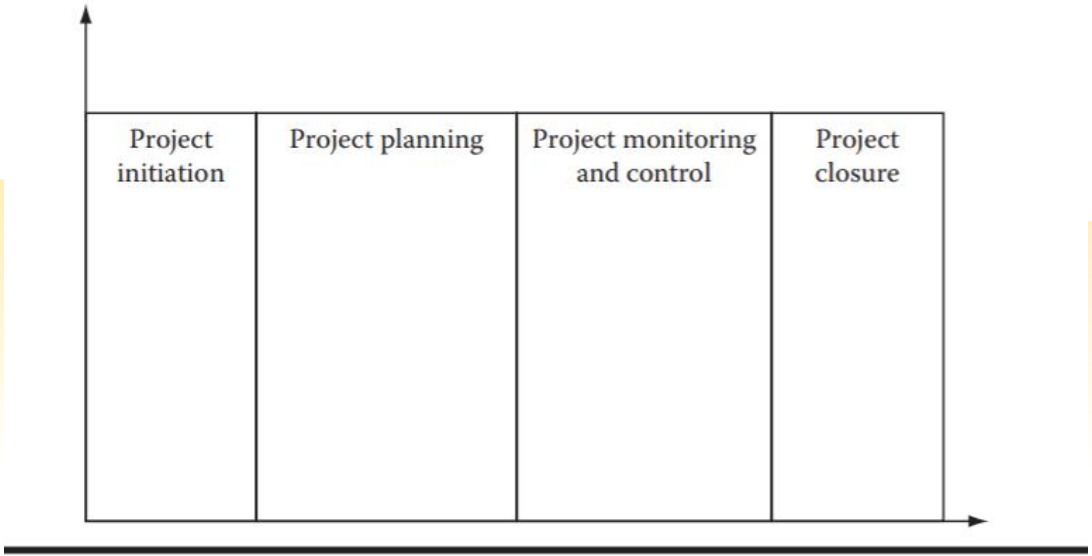


Tasks in software projects.

What Is Software Project Management?

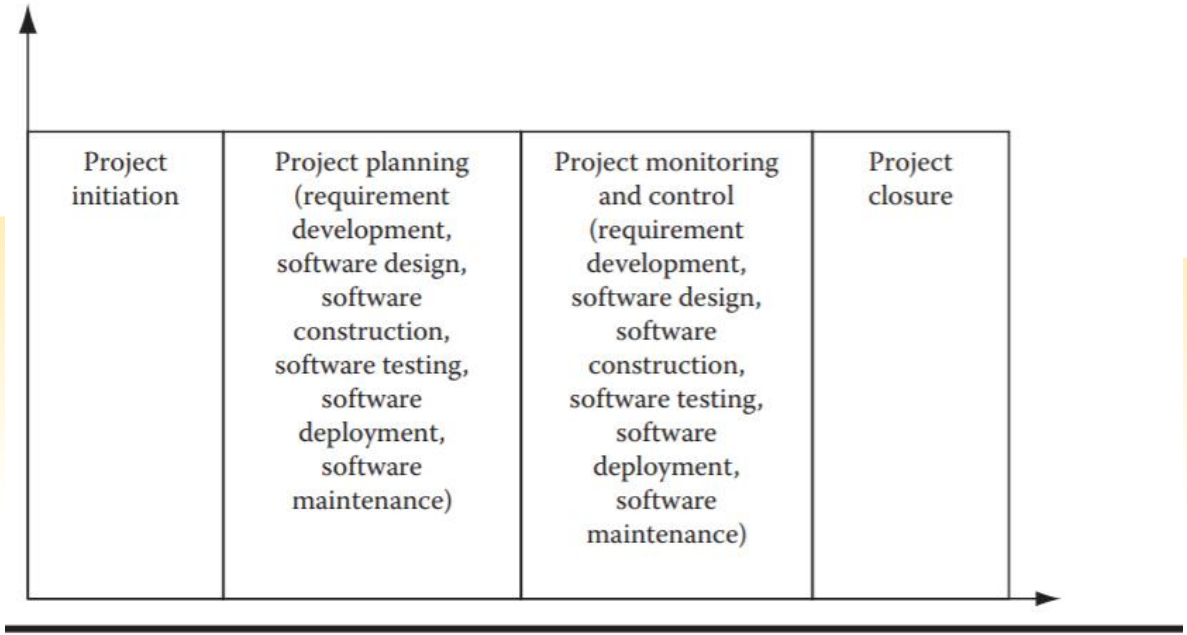
- Project management processes may include project initiation, project planning, project monitoring and control, and finally project closure.
- The software engineering processes may include requirement development, software design, software construction, software testing, and software maintenance.
- These software engineering processes have to be somehow accommodated in project management processes

What Is Software Project Management?



Project management processes.

What Is Software Project Management?



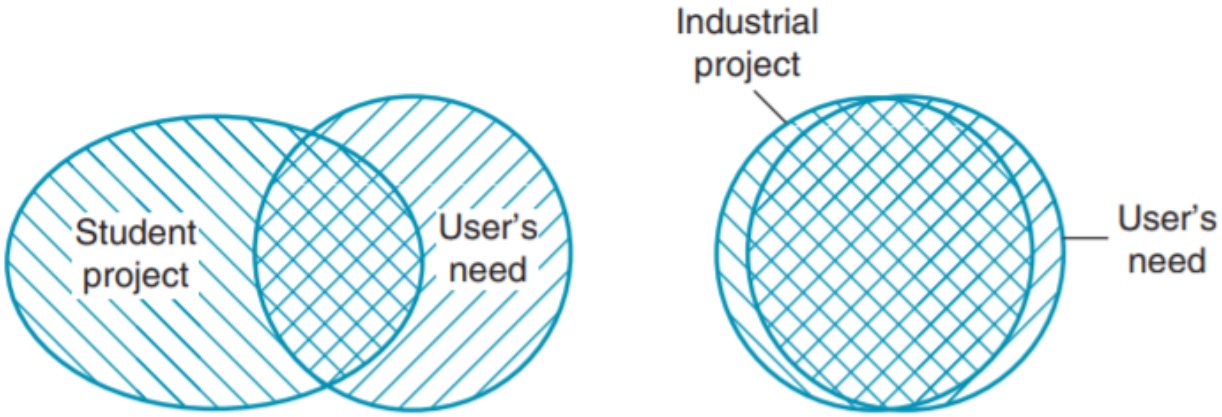
Software project management processes with software engineering processes.

What Is Software Project Management?

- In summary, software project management can be defined as applying project management and software engineering methods to develop/maintain a software product so that the goal of developing/ maintaining a software product can be achieved using minimum possible resources and money and within the minimum time possible.

What Is Software Project Management?

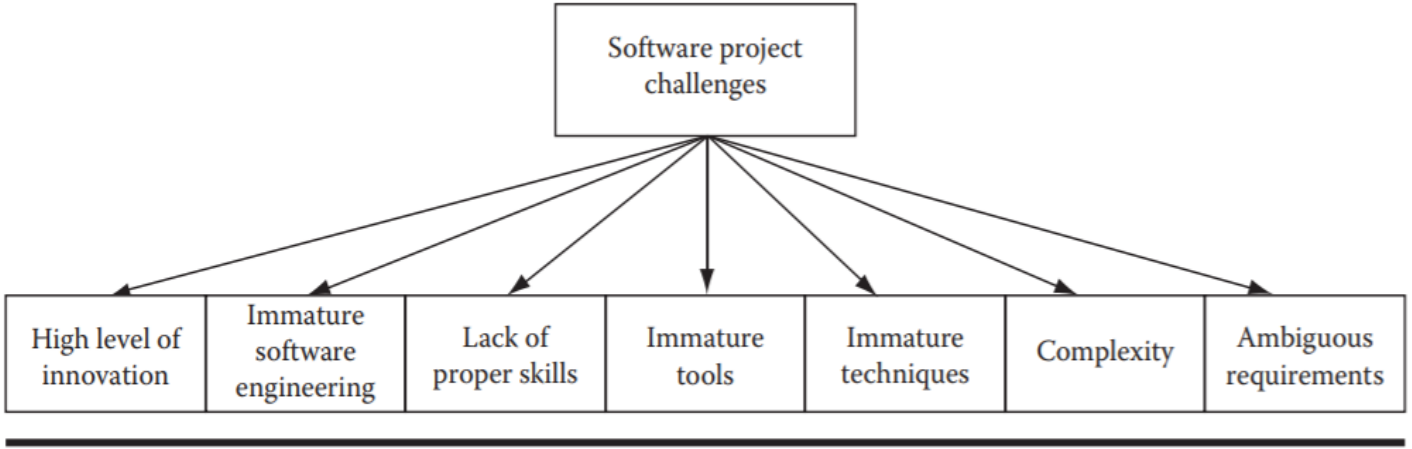
- ***Student Project vs Industrial Project.***



Comparison of student development project and industrial development project

Problems in Project Management

- Project management for any kind of project is a complicated matter.



Typical challenges encountered in software projects.

Problems in Project Management

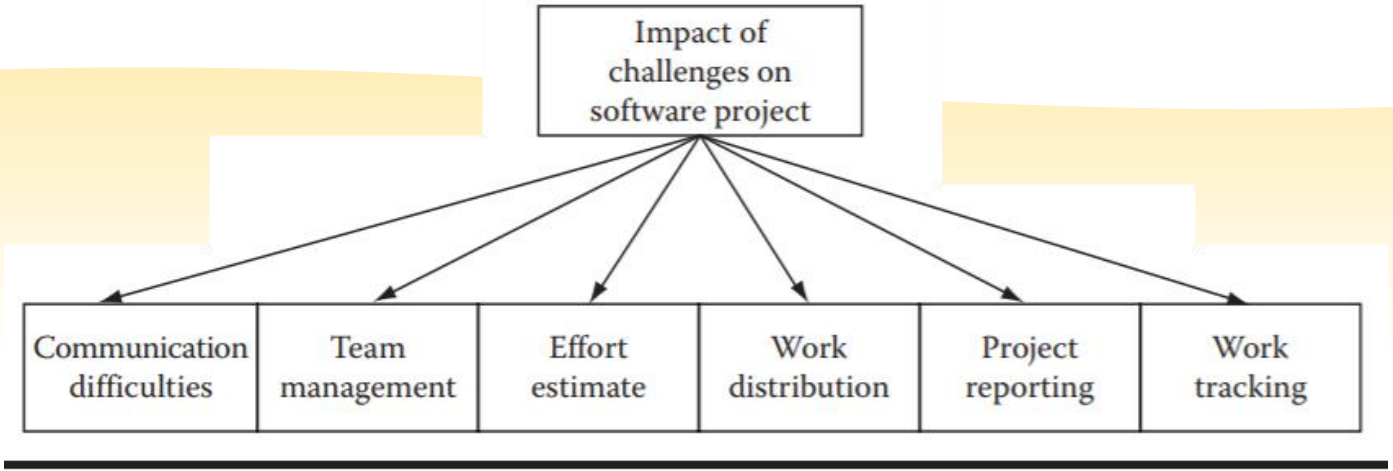
- When the project size is big and the nature of the project is complex, managing the project becomes a daunting task.
- Project managers have to comply with government regulations, meet deadlines; deal with suppliers, staff, and customers, report to higher authorities, and tackle issues and myriad tasks planned or unplanned on a regular basis.
- When it comes to big software development projects, some more complexities get added. In the software industry, finding and retaining skillful and experienced resources is a big challenge.

Problems in Project Management

- Software projects are often outsourced.
- Software projects often involve teams located at many sites. They may have different work ethics, may have different productivity levels, and may speak different languages.
- Software professionals are not only required to deliver as per specifications given to them but they need to use their intuition and capability to think out of the box to deliver software design or software prototype or software code.
- So software building is not only a science but also an art.

Problems in Project Management

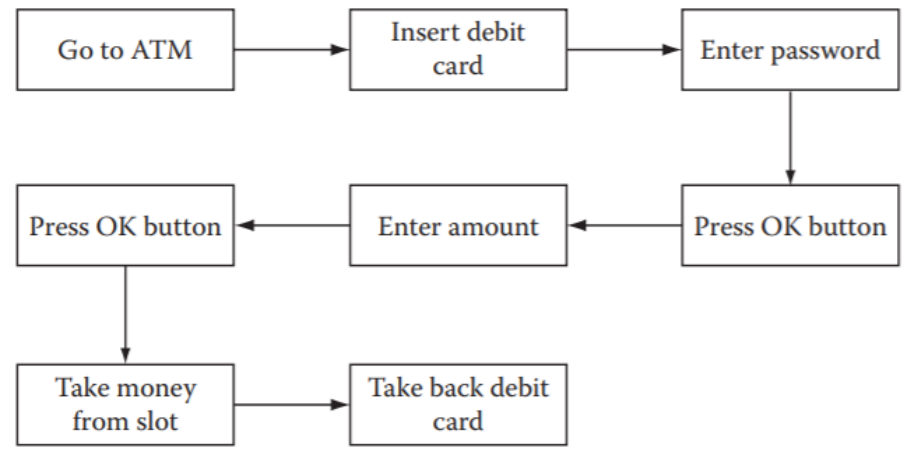
- Due to these factors, communication, effort estimation, work distribution, reporting, work tracking, team management, etc., get affected.



Impact of challenges on software projects.

Processes in Software Projects

- What is process?
  - Process is a defined way of doing things
  - A process to do a task can be broken down into certain series of steps.
  - For instance: withdraw money from ATM.



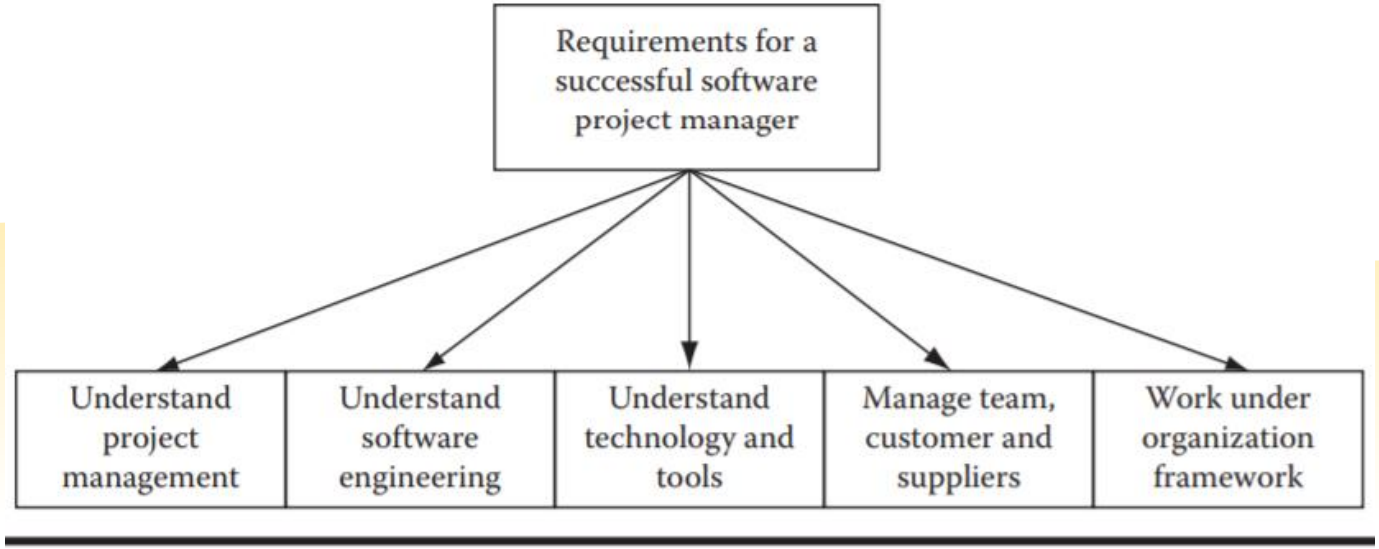
Processes in Software Projects

- There are many processes going on in any software development project. We can classify these processes under the following categories based on their priorities.
  - Evolving processes beyond a project.
  - Project management processes (project initiation, planning, control, monitoring, and closure).
  - Software development life-cycle (SDLC) processes (requirements, design, build, testing, maintenance, etc.)

Successful Software Project Manager

- A successful software project manager should be able to understand not only how a project should be planned and executed but also the processes beyond the project itself.
- He should learn the environment in which he should be planning and executing the projects.
- Software project tasks require a lot of creativity.
- Software project managers should understand these practical aspects and should plan and execute their projects accordingly to be successful.

Successful Software Project Manager

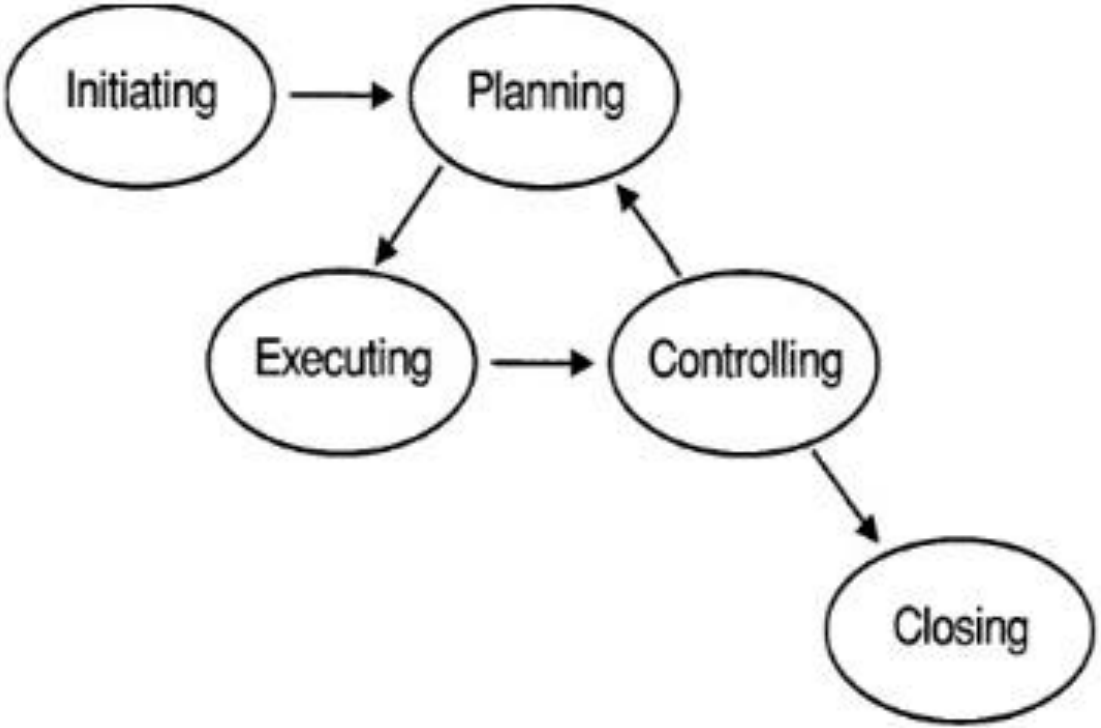


Requirements to be a successful software project manager.

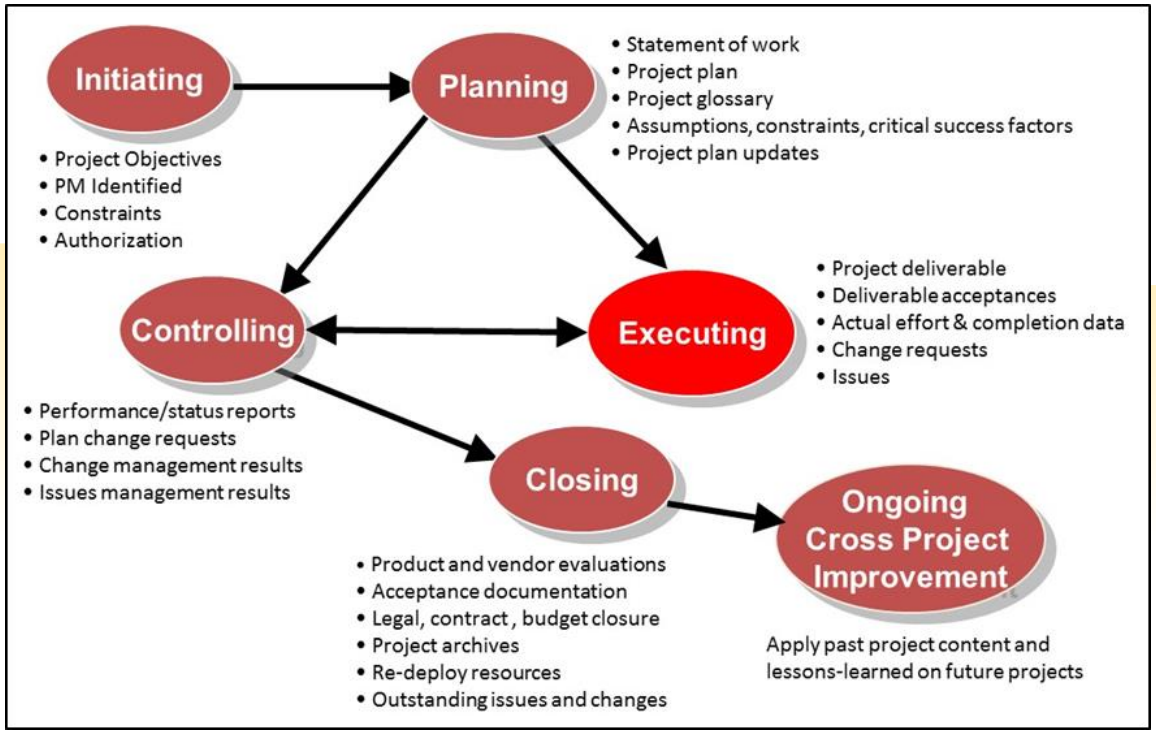
Project Management Processes

- Project management processes form the basis on which a project can be initiated, planned, monitored, controlled, and closed. On the other hand, software engineering processes define structure, steps, and procedures to do various tasks in software development.
- All projects progress through five main stages during their lifetime; from the time the project is established as an initial idea, to the time the project is finally completed.
- Each of these stages requires managing in one way or another and there are different considerations you will have to make as your project progresses through them.

Project Management Processes



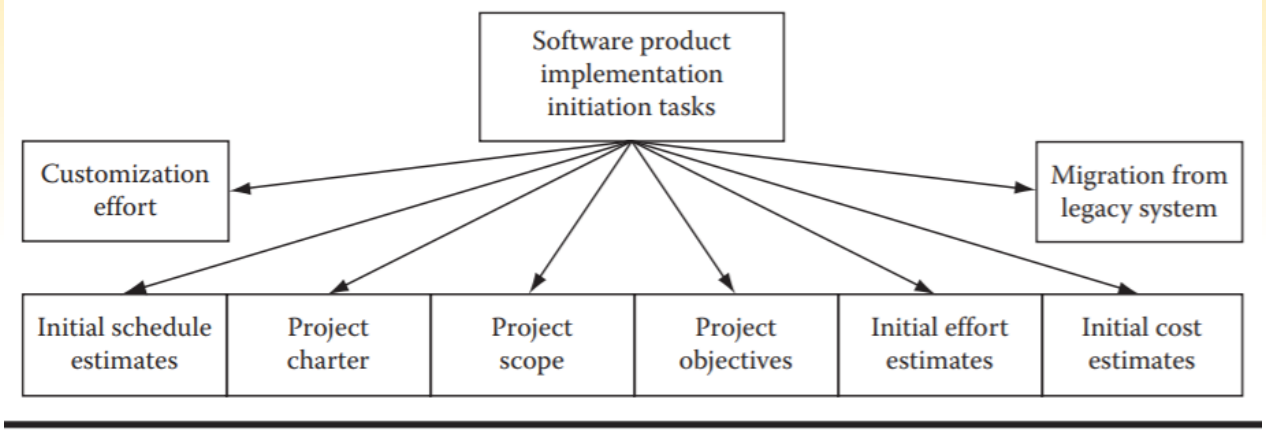
Project Management Processes



Project Management Processes

❑ Software Project Initiation:

- In this phase of any software product development project, project charter, the project scope, project objectives, risk planning, and effort estimate are made.



Software product implementation initiation tasks.

Project Management Processes

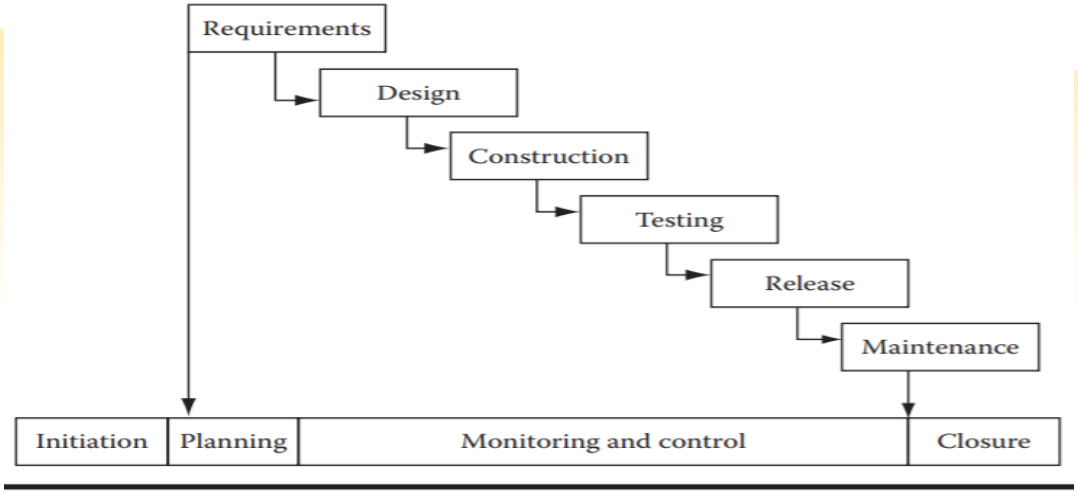
❑ **Software Project Planning:**

- Depending on the characteristics of a project, detailed project planning is done either after project initiation or after completion of project requirements.
- Generally, detailed project planning can be done only after the project team has complete requirements for the project since the requirements together with project scope determine effort, cost, and quality required.
- In project planning the main tasks that are to be planned are software life-cycle processes.

Project Management Processes

❑ **Software Project Planning:**

- Depending on the software life cycle chosen, the project plan may vary.

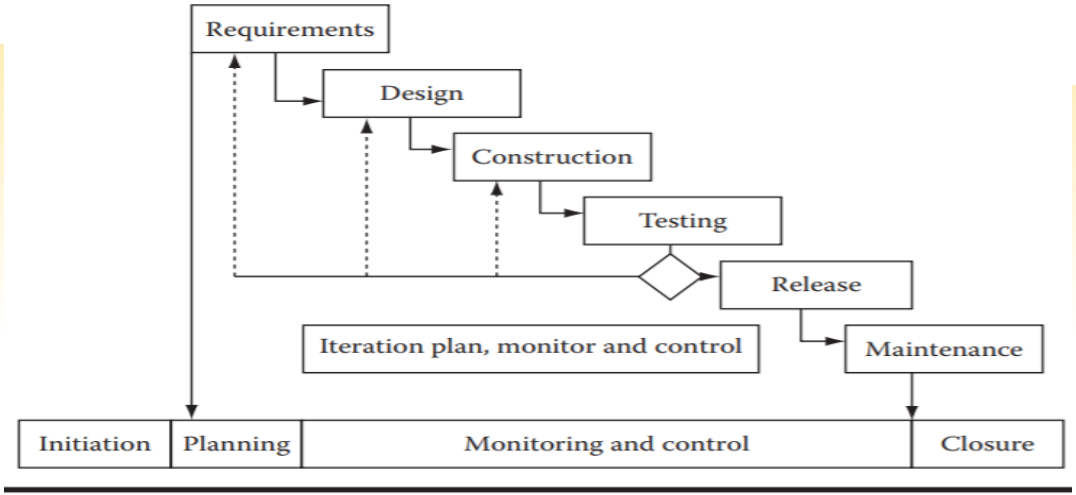


Project management in waterfall model environment.

Project Management Processes

❑ Software Project Planning:

- Depending on the software life cycle chosen, the project plan may vary.



Project management in iterative model environment.

Project Management Processes

- **Software Project Monitoring and Control:**
  - Due to the inherently risky nature of software projects, constant monitoring and control is required to rectify any event that may risk the project.
  - To monitor and control effectively, the project manager needs measurement data. The measurement data come from measuring processes and product.

Project Management Processes

- **Software Project Closure:**
  - With the increasing use of statistical process control, project closure has become an important activity in projects.
  - During project closure, all project artifacts are analyzed and completed. Data from these artifacts are transferred to central project repository so that these data can be used for future projects.
  - It has to be ensured that all project data are normalized so that the data are useful..

Advantages of Project Management

- Project management is a powerful business tool that can deliver many advantages to businesses of all sizes.
- It gives you repeatable processes, guidelines and techniques to help you manage the people and the work involved in your projects. It can increase your chances of success and help you deliver projects consistently, efficiently, on time and budget.
- The main advantage of project management is that is helps you to manage your projects effectively, enabling you to resolve problems more quickly.

Advantages of Project Management

❖ **Benefits of project management:**

- Improve your chances of achieving the desired result.
- Prioritise your business' resources and ensure their efficient use.
- Set the scope, schedule and budget accurately from the start.
- Stay on schedule and keep costs and resources to budget
- Improve productivity and quality of work

Advantages of Project Management

❖ **Benefits of project management:**

- Encourage consistent communications among staff, suppliers and clients.
- Satisfy the various needs of the project's stakeholders.
- Mitigate risks of a project failing.
- Gain a fresh perspective on your project, and how it fits with your business strategy.

THANK YOU !