# SCS 3208 –
# Software Project Management

Delivered by

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# About The Course

- Credits – 02
- 02 Lecture Hours per week
- Lectures – 02 Hour x 15 weeks = 30 Hours
- Evaluation – 20% Assignments, 80% Exam Paper
- Exam Paper – 02 Hours
  - 4 Compulsory Questions
- Assignments – 2 or more - will be announced

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# References/Recommended Text

1. Hughes, B., & Cotterell, M. (2010). Software project management- 5th edition, Tata McGraw-Hill Education.

2. PMI (2017). Agile Practice Guide, Project Management Institute, Inc. Newtown Square, Pennsylvania

3. Murray, A. P. (2016). The Complete Software Project Manager: Mastering Technology from Planning to Launch and Beyond. John Wiley & Sons

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PMBOK® Guide – Sixth Edition (https://www.pmi.org/pmbok-guide-standards/foundational/pmbok)

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## Course Outline

| | |
|---|---|
| **1**. Introduction to Software Project Management | 2 hrs |
| **2**. Project Evaluation | 3 hrs |
| **3**. Project Planning I (Step Wise Planning) | 3 hrs |
| **4**. Project Planning II (Activity Planning) | 2 hrs |
| **5**. Risk Management | 2 hrs |
| **6**. Software Effort Estimation | 2 hrs |
| **7**. Allocation of Resources | 2 hrs |
| **8**. Monitoring and Control | 2 hrs |
| **9**. Contract Management and Termination | 2 hrs |
| **10**. Communication Management | 2 hrs |

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# **1**. Introduction to Software Project Management

After following this section, you should be able to;

- Define what software project management is
- Compare s/w projects and other types of projects
- Describe typical issues of s/w projects
- Define the usual stages of a software project and management
- Identify the stakeholders and their roles
- Define the success criteria for a s/w project

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# What is a Project?

A project is a temporary endeavour undertaken to create a unique product, service, or result.

A sequence of unique, complex, and connected activities which

- has a <span style="color:red">goal or purpose</span> and
- must be completed by <span style="color:red">a specific time</span>,
- should be completed <span style="color:red">within budget</span>, and
- according to <span style="color:red">specification</span>.

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# Characteristics of a Project of an organization

- **Temporary** – every project must have a defined start and end in time
  - Has a defined scope and resources
- **Unique** – not a routine activity, there should be a goal, a specific set of operations to achieve the goal
- **Business Value Creation** – (net quantifiable benefit)– New assets, Tools, Public benefits, and brand recognition that can drive change in the organization

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# Examples for Projects

- Writing a report
- Setting up a sales kiosk for a professional accounting meeting
- Developing a software
- Writing a new piano piece
- Designing a new product

- The outcome from a project of an organization may result in a standard product or a process for the organization

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# Exercise 1

i)   Give three examples for projects and routine activities and discuss how projects differ from routine activities.

ii) Which of the following is a project?
A.  Running a donut shop
B.  Building another library in your area, which might take a long time
C.  Keeping a network up and running in a university department
D.  Running a warehouse

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# Characteristics of a Software Project

- Non-routine tasks are involved
- Planning is required
- Specific objectives are to be met or a specific product is to be created
- The project has a pre-determined time plan
- Work is often carried out for someone other than yourself

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# Characteristics of a S/W Project contd..

- Work involves several specialism
- People are formed into temporary groups to carry out the task
- Work is carried out in several phases
- The resources that are available for use on the project are constrained
- The project can be large or complex

More the factors apply → the more difficult the task will be.
More staff needs → requires more additional coordination

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Exercise 2

- What is the difference between software projects and other types of project?

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# Software Projects Vs Other Projects

- Invisibility
  - Physical artefacts such as bridges and roads are visible unlike a software product

- Conformity
  - Other projects interact with physical materials while software projects interact only with human clients. People can change their attitudes and beliefs easily.

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# Software Projects Vs Other Projects   Contd.

- Complexity
  - Software projects are more complex due to the Complexity factors and characteristics they possess

- Flexibility
  - Software can be changed easily. Therefore, subject to change according to the needs or changes of other components

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# Classification of S/W Projects

- Objective based Vs Product-based
- Compulsory user-based Vs Voluntary user-based
- Information Systems Vs Embedded Systems

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# Objective based Vs Product based

- An on-line voting system for general public to select the most popular sportsman of the year
- An on-line educational game for primary students

**Exercise 3: Categorize the following projects into two groups: Objective-based projects and Product-based projects**

1. A payroll system for a business organization
2. An information and news website for a government ministry
3. A software system for a survey to determine the mobile phone usage of selected government servants (in order to consider for a communication allowance)

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# Compulsory User-based Vs Voluntary User-based

- An on-line home delivery/take away food ordering system
- A payroll system for a business organization

Exercise 4: Categorize the following projects into Compulsory User-based projects and Voluntary User-based projects

1. An information and news website for a government ministry
2. An on-line educational game for primary students
3. A CCTV camera-based surveillance system for a defense authority
4. An on-line registration system for internal students at a university
5. An on-line market survey system for a multi-national company

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# Information Systems Vs Embedded Systems

- **Information systems** –enable staff to carry out office processes
  - E.g. Stock control system
- **Embedded systems-** control machines
  - E.g. A system to control air conditioning equipment in a building
- **Systems having elements of both**
  - E.g. A stock control system which can control an [automated warehouse](#)

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# **1**. Introduction to Software Project Management > Part 2

1.2 Introduction to project management
  i. Roles in Project management
  ii. Major Activities of a project
  iii. Project Life Cycle



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# What is Project Management?

Refers to application of knowledge, skills, tools and techniques to achieve specific **targets** within specified **budget** and **time** constraints.
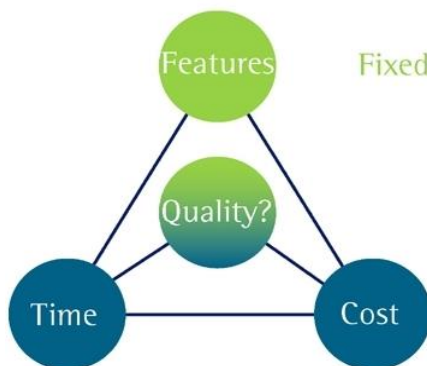
1. Planning – what is to be done
2. Organizing – making arrangements
3. Directing – giving instructions
4. Monitoring – checking on progress
5. Controlling – taking actions to remedy hold-ups
6. Innovating – coming up with new solutions
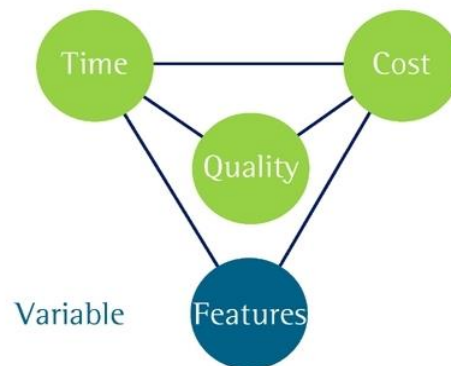7. Representing – liaising with users

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## Project Variables – Traditional and Atern

**Traditional Approach**

Features

Fixed

Quality?

Time

Cost

**Atern Approach**

Time

Cost

Quality

Features

Variable

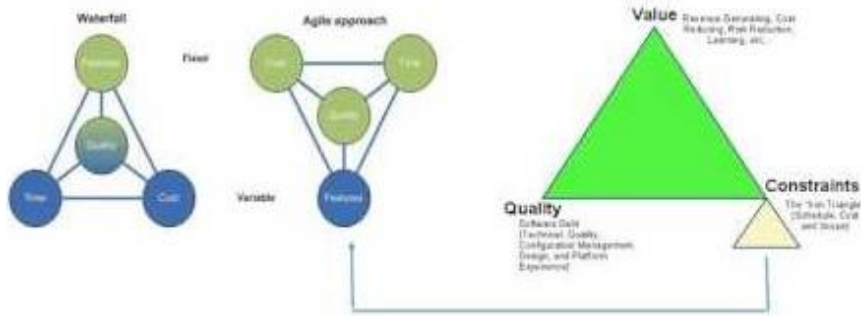® 2008 Dynamic Systems Development Method Limited

- There are six major factors to be considered: scope, cost, time, quality, risks and benefits

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# Watch this video in the VLE?

## Agile Triangle



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# Importance of Project Management

Meet business objectives

Satisfy stakeholder expectations

Be more predictable

Increase chances of success

Deliver the right products at the right time

Resolve problems and issues

Respond to risks in a timely manner

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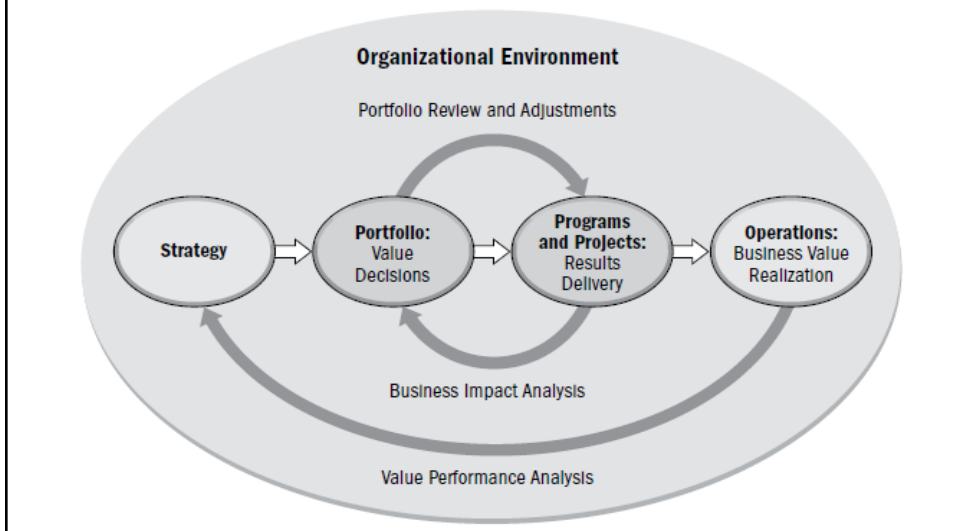
# Project Management Framework



Master of Computer Science/ Master of
Science in Computer Science
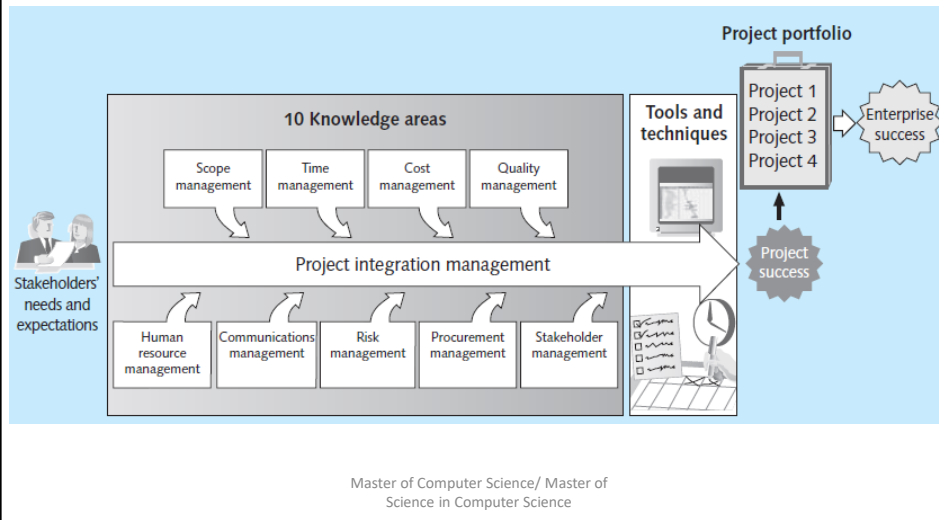
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# Organizational Project Management



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# Software Project Mgt Methods

1. **Traditional/Waterfall method** - Best when scope, budget and time factors are known

2. **Incremental method (Kanban)** – Uses a board to visually represent work items. Ensures a manageable number of active items are in progress at a time. Focuses on continuous improvement and helps to find the weak spots in the workflow

3. **Iterative method (Scrum)** - A prescriptive framework employs an iterative, incremental approach to optimize predictability and control risk, Does the project work in short cycles or sprints each producing a potentially rich deliverable product

4. **Hybrid method (Scrumban)** - A combination of both, that actually puts the Kanban practices on top of Scrum and makes it easy for Scrum teams to focus on continuous improvement

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# Scrum or Kanban, Which is the best?
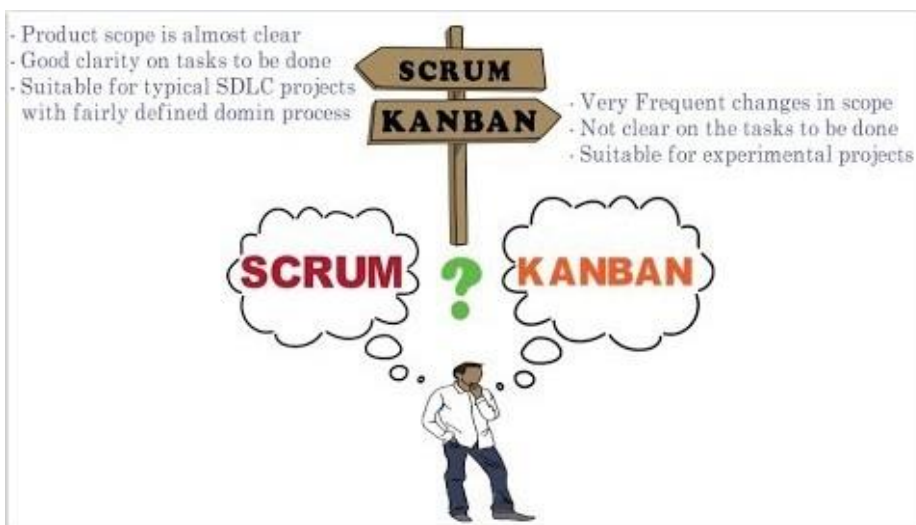


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## What is Scrumban?



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## Exercise 5: Select the correct option

What is the difference between Waterfall method and Agile method in S/W project management?

A. Waterfall is preplanned and so are Agile projects.

B. Scope is fixed on Agile projects but not on Waterfall projects.

C. Agile plans are just in time, and Waterfall projects are preplanned.

D. They both are project management frameworks.

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# Roles in Project Management
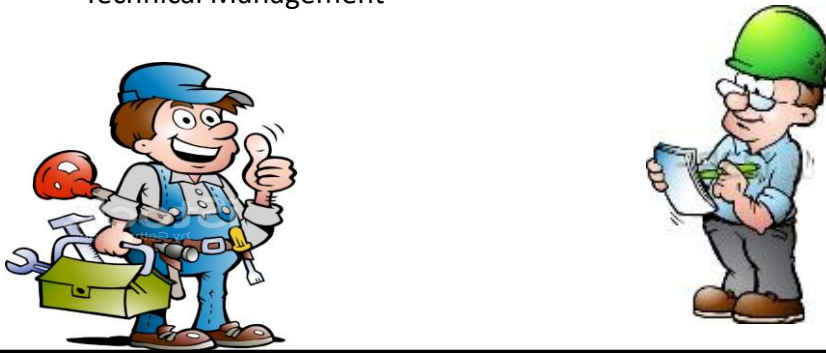


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# Project Stakeholders

- **Internal to the project team**
  - Be under the direct control of the project leader
- **External to the project team but within the same organization**
  - Users of the system who can do system testing
- **External to the project team and the organization**
  - Users of the system – customers or contractors
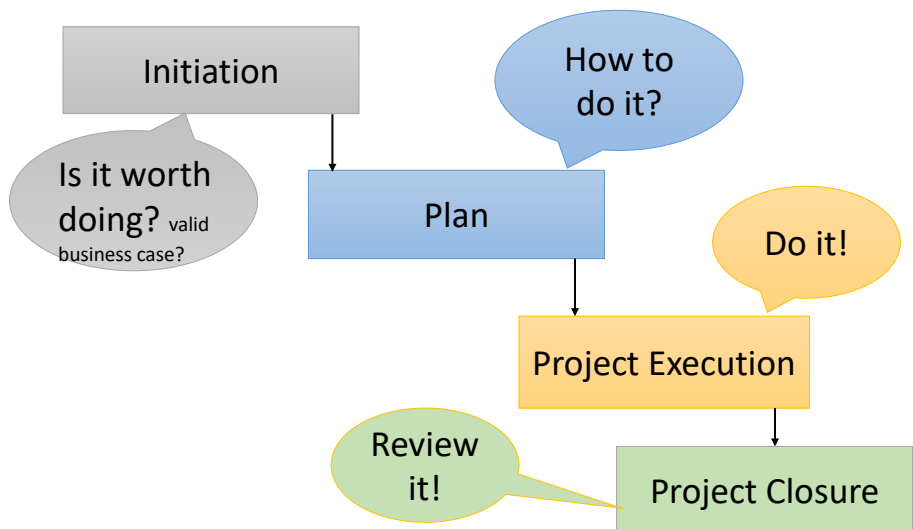


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# Contract Management and Technical Project Management

- Project Manager in Client Organization
  - Contract Supervision
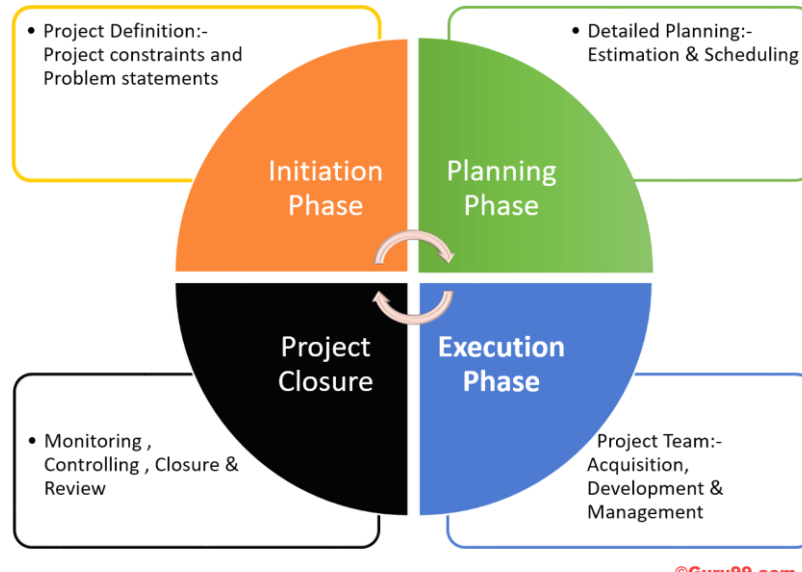- Project Manager in Software Supplier Org.
  - Technical Management

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# Major Activities Covered by Software Project Management

Initiation

Is it worth doing? valid business case?

How to do it?

Plan

Do it!

Project Execution

Review it!

Project Closure

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## Project Life Cycle



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## Exercise 6

i.  Remind the software project you carried out during your 2nd Year.
    1.  What type of software project was it?
    2.  List the problems that you have encountered when you engaged with software development project.
    3.  How could have you minimized the effect of the problems you stated in question 2?

ii. UCSC is going to outsource the development of a library management system.
    1.  Identify the stakeholders of this system.
    2.  What would be the objective of this project?

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# Summary of Topic 1- 2

i.   Defined what project management is.
ii.  Identified the roles in Project management
iii. Described the major Activities of a project
iv.  Described the Project Life Cycle

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