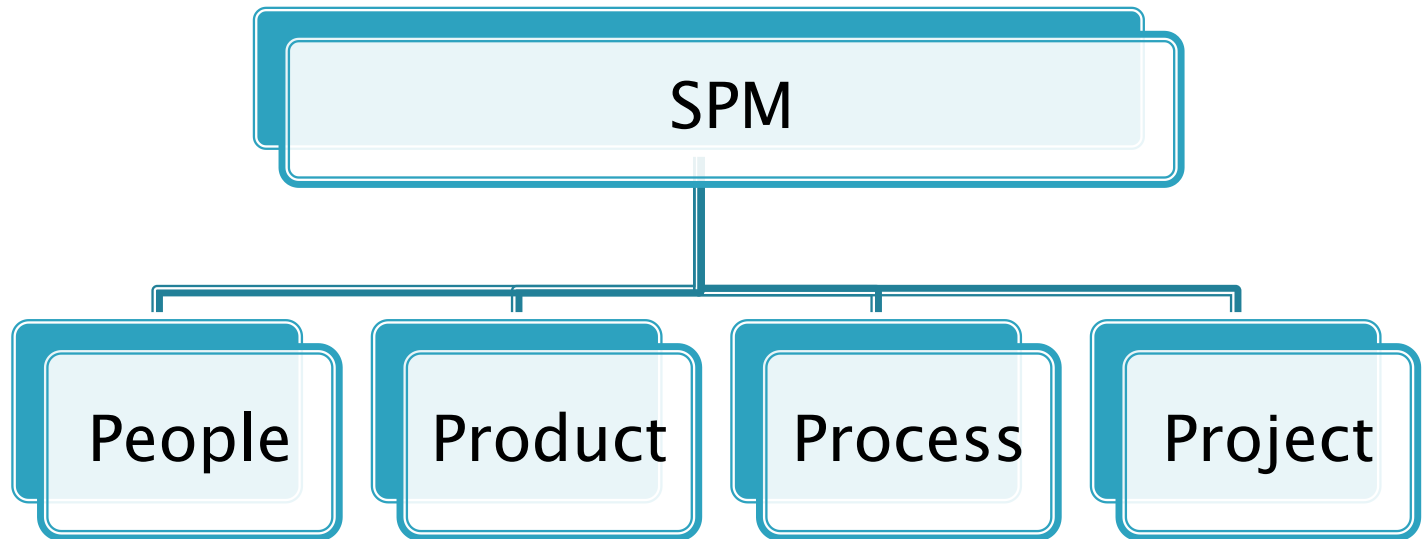# LECTURE–5

SOFTWARE PROJECT MANAGEMENT

MANAGEMENT SPECTRUM

▶ Software project management focuses on the four P's: People, Product, Process, and project

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                    ┌──────────────┐
                    │     SPM      │
                    └──────┬───────┘
         ┌────────┬────────┼────────┬────────┐
    ┌────────┐ ┌─────────┐ ┌─────────┐ ┌─────────┐
    │ People │ │ Product │ │ Process │ │ Project │
    └────────┘ └─────────┘ └─────────┘ └─────────┘
```

The People

➤ The most important factor in success of software project.

➤ "Companies That sensibly manage their investment in people will prosper in the long run" Tim & Tom.

➤ Cultivation of motivated and highly skilled software people has always been important for software organizations.

➤ The "people-factor" is so important that SEI has developed People Management Capability Maturity Model (PM-CMM).

PM-CMM

Developed by SEI

- ✓ "To enhance the readiness of s/w organizations to undertake increasingly complex applications by helping to attract, grow, motivate, deploy, and retain the talent needed to improve their software development capability"

- ✓ In simple words - to enhance the people"s capabilities through personnel development

Organizations that achieve high levels of maturity in PM-CMM have a higher likelihood of implementing effective software engineering practices.

PM–CMM

Key Practice Areas of PM-CMM

- ✓ Recruiting

- ✓ Selection

- ✓ Performance Management

- ✓ Training

The People

▶ In theis section we examine the players, team leaders, software teams who participate in the software process and the manner in which they are organized to perform effective software engineering.

The Players	• Senior Manager , Project Manager , Devloper , Customers , End-users
Team Leaders	• Motivaters , Organizers , Problem solvers , Innoveters
The Software Team	• Democratic Decenterlized • Controlled Decenteralized • Controlled Centeralized

The People– (The Players)

They can be categorized into one of the following

Senior Managers

They define business issues that often have significant influence on business

Project (technical) managers

They must plan, motivate, organize and control the practitioners who do software work

Practitioners

They deliver the technical skills necessary to engineer a product or application

Customers

They specify the requirements for the software to be engineered

End Users

They interact with the software after it is released for production use

The People– (The Team Leaders)

In his book of technical leadership, **Jerry Weinberg** suggests a **MOI model** of leadership MOI Model of Leadership

✓ Motivation

       encourage technical people (by "push" or "pull") to produce

✓ Organization

       Apply , improve processes efficiently

✓ Ideas or Innovation

       Make people feel creative

       Be Creative

(The Team Leaders)

The Team Leaders - Characteristics of an effective project managers:

✓ Problem Solving

     Diagnostic

     Skill to solve

     Ability to design solution

✓ Managerial Identity

     Control the project

(The Team Leaders)

The Team Leaders - Characteristics of an effective project managers:

✓ Achievement

   Reward Initiative

   Encourage Controlled risk taking

✓ Influence and team building

   Influence the team

   Read people''s mind and respond according to their needs

   Be controlled in stress situations

The People- (The SoftwareTeam)
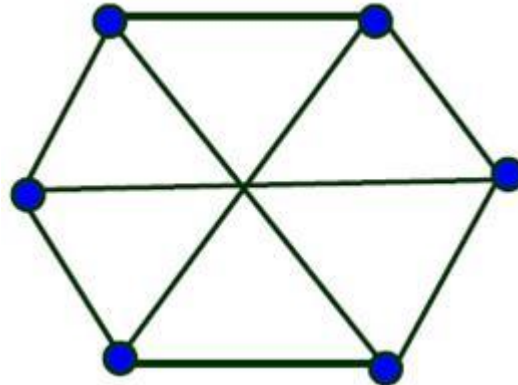
Organizations/Structure of teams:

- ➢ Democratic decentralized

- ➢ Controlled decentralized

- ➢ Controlled centralized

Democratic decentralized

✓ No permanent leader

✓ Communication is horizontal

✓ Suitable for small projects requiring less than 5 to 6 engineers, research-oriented projects

The Software Teams: Democratic decentralized

Pros

At different times, different Members within the team provide technical leadership. the team.

High morale and job satisfaction Due to autonomy, hence less employee turnover
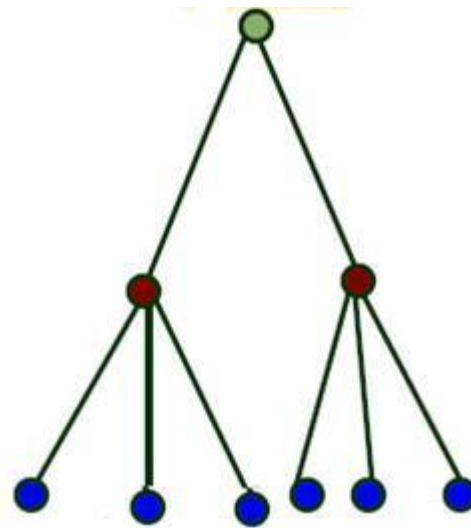
Cons

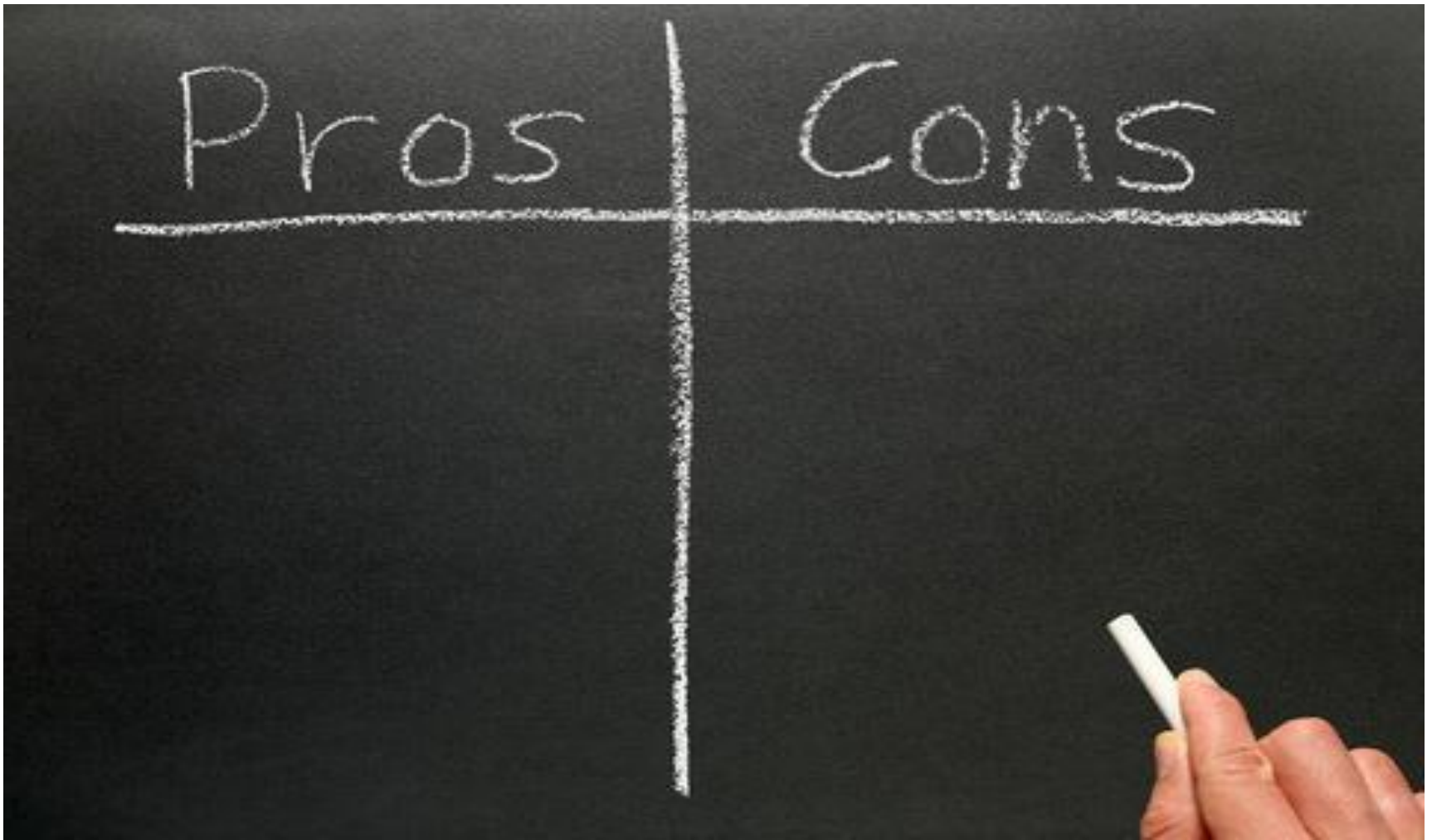Team members may waste time arguing about trivial points due to absence of any authority in the team.

Controlled centralized

- ✓ Defined team leader
- ✓ Problem solving , communication and management by team leader
- ✓ Communication is vertical

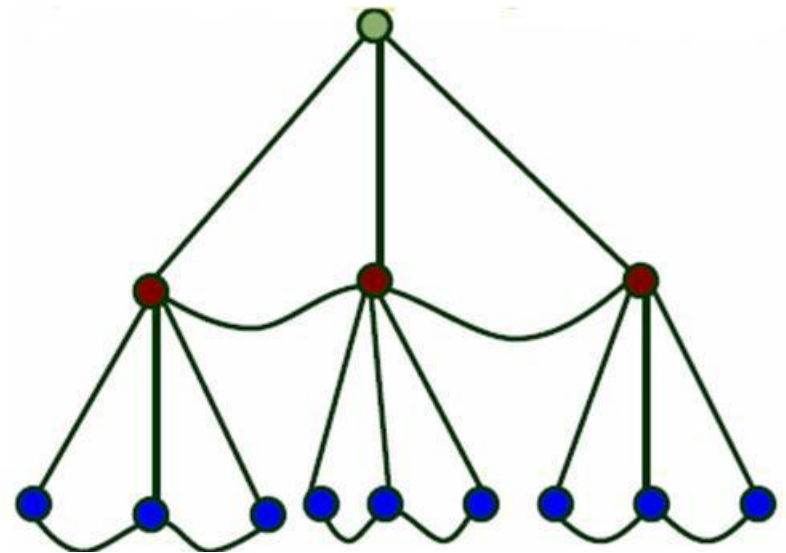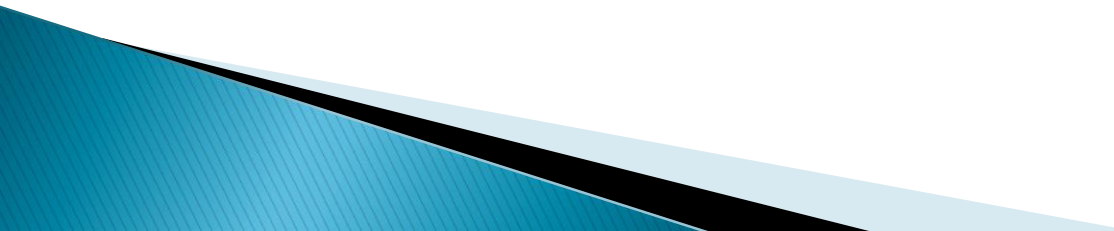# The Software Teams: Controlled Centralized

Controlled decentralized

- ✓ Draws upon the ideas from both earlier structures
- ✓ Defined Leader
- ✓ Horizontal communication
- ✓ Problem solving is a group activity
- ✓ Suitable for large organizations

The Software Teams

Mantei describes seven factors that should be considered when planning team structure:

- ✓ Difficulty of task
- ✓ Size of resultant code (no. of lines)
- ✓ Time that team will stay together
- ✓ Degree of modularization
- ✓ Required quality and reliability of the system being built
- ✓ Rigidity of delivery date (schedule)
- ✓ Degree of communication

The People - Agile Teams

✓ *Agile software development encourages customer satisfaction and early incremental delivery of software with overall simplicity.*

✓ **Agile teams** are small, highly motivated teams.

✓ They adopt many characteristics of successful software project teams and avoid toxins that create problems.

✓ They are self organizing and do not necessarily maintain a single team structure

✓ Agile process models give significant autonomy to agile teams

The People - Agile Teams

✓ Planning is kept to minimum.

✓ The agile team is allowed to select its own approach (e.g., process, methods, tools).

✓ The agile team may have daily team meetings to coordinate and synchronize the day's work.

✓ With each passing day, this self organization and collaboration move the team towards a completed software increment.

ASSIGNMENT

Question1 – *What do we look for when we select someone to lead a software project?*

- *Question 2– How do we avoid "toxins" that often infect a software team?*