

Lecture Slides for Managing and Leading Software Projects

Chapter 10: Teams, Teamwork, Motivation, Leadership, and Communication

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to accompany the text

Managing and Leading Software Projects

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THE FOUR MAJOR ACTIVITIES OF SPM

1. Planning and Estimating
 - o identify work activities
 - o prepare a schedule
 - o prepare a budget
2. Measuring and Controlling
 - o requirements
 - o quality and productivity
 - o schedule and budget
 - o product evolution
3. Communicating and Coordinating
 - o motivating / coaching / educating project members
 - o communicating with management, customers, subcontractors, other projects
4. Managing Risk
 - o identifying and confronting potential problems

Chapter 10 Topics

- Managing versus Leading
- Teams and Teamwork
- Maintaining Morale and Motivation
- Can't versus Won't
- Personality Styles
- Jungian Personality Traits
- MBTI Personality Types
- Dimensions of Social Styles
- The Five-Layer Behavioral Model

Additional Sources of Information (1)

- The standards and guidelines presented in each of the preceding chapters, namely, CMMI-DEV-v1.2, ISO/IEEE Standard 12207, IEEE Standard 1058, and the PMI Body of Knowledge, address people issues to a limited degree.
- Other guidelines for leading and directing individual and team efforts include the People CMMI, the Team Software Process (TSP), the Personal Software Process (PSP), and the dos and don'ts from the text *Peopleware*.
 - A summary of these guidelines is provided in Appendix 10A to Chapter 10.

Additional Sources of Information (2)

- Terms used in this chapter and throughout this text are defined in Appendix A to the text.
- Presentation slides for this chapter and other supporting material are available at the URL listed in the Preface.

Objectives of Chapter 10

- After reading this chapter and completing the exercises you should understand:
 - managing versus leading
 - the nature of teams and teamwork
 - techniques for maintaining morale and motivation
 - personality styles
 - the 5-layer behavioral model of software development

Managing versus Leading (1)

- Managing is concerned with:
 - making plans and estimates,
 - collecting and analyzing project and product data,
 - reporting progress,
 - controlling the development process and the work products,
 - and identifying and mitigating risk factors.
- Leading is concerned with communicating with your project personnel and other stakeholders, coordinating the work activities, and maintaining morale.

Managing versus Leading (2)

- Good managers are not necessarily good leaders, and good leaders are not necessarily good managers
 - managing is an analytical activity whereas leading involves human relations
 - different personality traits and different skill sets are required for managing and for leading
- Some excellent managers are poor leaders and some excellent leaders are poor managers

Some Attributes of a Good Leader

- Listens carefully
- Accept responsibility
- Delegates authority
- Facilitates communication
- Facilitates teamwork
- Coordinates work activities
- Speaks with individuals on a daily basis
- Says “thank you” when warranted
- Coaches and trains
- Maintains enthusiasm
- Reconciles differences
- Resolves conflicts
- Indoctrinates newly assigned personnel
- Helps employees develop career plans and achieve their professional objectives
- Reassigns, transfers, and terminates personnel as necessary

Division of Responsibilities

- The project manager is responsible for delivering an acceptable product on schedule and within budget
- The technical leader (software architect) is responsible for leading the project team to achieve the “acceptable product” part of the equation, within the constraints of schedule and budget

On a small project, one person may play the roles of both project manager and technical leader

Individuals, Teams, and Teamwork

- A **team** is a group of individuals working in cooperative manner toward common, shared goals
- A **group of people** who work together is not necessarily a team
 - team members are individuals with individual goals, agendas, motivations, desires, and attitudes
 - a team has a shared vision and shared work products
 - team members are willing to help one another
 - a vision of common, shared goals seldom happens spontaneously
- Factors that contribute to team formation include personalities and social and cultural factors
 - sometimes team formation seem to be a matter of factors that are difficult to quantify, or even identify

Factors That Contribute to Teams and Teamwork

- Appropriate number of people
- Correct skill mixture
- Good tools
- Adequate training
- Respect for one another
- Respect for managers and leaders
- Willingness to be team members
- Shared ownership of the work products
- Good communication skills
- Good communication channels
- Good working environment
- Having some fun together

Respect

- Respect must be earned
- To earn the respect of others, an individual must display:
 - competence,
 - ability,
 - integrity, and
 - concern for the welfare of others

Other Techniques

- Other techniques that contribute to team coalescence include:
 - conducting off-site planning and review meetings that include sufficient time for informal socializing,
 - arranging for team members to participate together in off-site training courses,
 - providing pizza or cookies to celebrate achievement of project milestones, and
 - organized social events such as attending baseball games or “family days” at amusement parks.

Teamicide*

- Teamicide practices include:
 - defensive management,
 - mindless bureaucracy,
 - physical separation of team members,
 - fragmentation of time,
 - unrealistic schedules,
 - lack of sufficient time to produce quality work products,
 - clique control, and
 - excessive overtime.

* Tom DeMarco and Tim Lister. *Peopleware, Productive Projects and Teams, 2nd Edition*, Dorset Publishing, 1999.

Teamicide Antidotes

Teamicide practice	Antidote
Defensive management	Trust your team members until proven otherwise; fix personnel problems as they occur
Mindless bureaucracy	Use cost-effective procedures and paperwork; demonstrate the benefit of them to all involved parties
Unrealistic deadlines	Set deadlines that have a reasonable probability of being met
Physical separation	Provide group workspaces and opportunities for casual interactions
Fragmentation of time	Assign people to one task at a time, and to one team at a time; avoid “firefighting” assignments
Clique control	Allow team members to work together for extended periods of time
Quality reduction	Don’t compress schedules without de-scoping the requirements; Don’t add requirements without extending the schedule
Excessive overtime	Avoid it!

Trust

- Trust, like respect, must be earned
- Factors that contribute to trust include:
 - honesty,
 - candor,
 - sincerity, and
 - follow-through

Motivation and Morale

- Motivation is the drive to satisfy one's psychological needs
- Workplace motivation:
 - why do you go to work, other than to get paid and to relieve social pressure?
 - what makes you feel good about your job?
- Workplace de-motivation:
 - what factors kill your enthusiasm for your job or a particular job assignment?
- Morale is the manifestation of motivation
 - motivation is internally generated
 - morale is both an individual and group phenomenon

Psychological Needs

- In order to satisfy psychological needs at work people need:
 - to believe their work is important
 - to have a continuing sense of achievement
 - to receive recognition for their contributions
 - to use a variety of skills
 - to perform well defined tasks
 - to have profession growth opportunities
 - to have some autonomy
 - to have pleasant social interactions

different people need these elements of job satisfaction to varying degrees

Some Factors That Make Software Engineers Happy at Work

- A quiet place to work
- Challenging technical problems
- Autonomy to solve problems
- Ability to control one's schedule
- To know their work is important
- To be recognized for their contributions
- A chance to learn new things & try new ideas
- Adequate computing facilities
- Technically competent leaders
- Chance to communicate with peers:
 - electronic mail, bulletin boards, news groups, technical conferences
- Informal social gatherings
- Free junk food and drinks

Can't vs Won't*

- When people are not performing up to expectations, it is either because they **can't** or they **won't** or both
- Reasons for can't (**willing but unable**):
 - lack of education & training
 - lack of methodology & tools
 - lack of experience
 - lack of basic ability
- Reasons for won't (**able but unwilling**):
 - no psychological payoff
 - perverse psychological payoff
- Those who are able but unwilling are not motivated to perform at their level of ability

* Andrew Grove, *High Output Management*, Random House, 1983

Can't and Won't Situations

- Can and Will: the best situation
- Can't and Won't: a remedial situation
- Can't and Will: a dangerous situation
- Can and Won't: a matter of motivation

Motivation for Software Engineers

- We must ensure that people are able and willing to perform their jobs
- Able:
 - training, ability, time, resources
- Willing:
 - a safe and secure environment
 - physically and psychologically
 - feedback and reinforcement
 - both positive and negative

Leadership Styles for Can't – Won't

Can't – Won't	Leadership style
Unable and unwilling	Teaching plus selling
Unable but willing	Teaching plus reinforcing
Able but unwilling	Selling plus reinforcing
Able and willing	Reinforcing plus delegating

Jungian Personality Traits

- A personality trait is a characteristic way in which a person perceives, feels, believes, or acts.
- A primary aspect of Jungian personality traits:
 - introversion – extroversion
- Four additional attributes of Jungian personality traits
 1. sensing,
 2. thinking,
 3. intuiting, and
 4. feeling.

MBTI* Personality Types

- The four dimensions of MBTI personality types:
 1. extroversion – introversion;
 2. sensing – intuiting;
 3. thinking – feeling; and
 4. judging – perceiving.

* Myers-Briggs Type Indicator

Personality Traits of Project Managers

- Some researchers see evidence that your style as a project manager is most closely related to your position on the Judging – Perceiving scale of the MBTI profile
- Those on the Judging side of the scale are most likely “by the book” managers
- Those on the Perceiving side of the scale are most like “people-oriented” leaders

- Judging does not mean judgmental
 - a judging trait indicates a quantitative orientation
 - a perceiving trait indicates a qualitative orientation

The Judging Personality Trait

- If you are on the Judging side of the scale you will probably prefer to:
 - Set clear, measurable goals
 - Break large tasks down into subtasks and proceed methodically
 - Develop a time line with milestones to monitor progress carefully
 - Come to closure quickly and be reluctant to change decisions
 - Like to work in a structured environment
 - Believe that a recipe for success is “Plan the work, then work the plan”
 - Be motivated by achievement
 - Want to achieve results on one project and then move on
 - Establish rules for who makes decisions when

Some Cautions

- Cautions for those project managers who are predominantly Judging include:
 - Confusing the plan with the project
 - Missing opportunities by failing to adapt to new information
 - Mistakenly assuming that everyone is as motivated by deadlines as you are
 - Irritating others by continually reminding them of deadlines
 - Making decisions without all the information you need
 - Appearing rigid to others
 - Limiting creativity or spontaneity that could prove valuable
 - Setting unrealistic time lines that don't account for human behavior

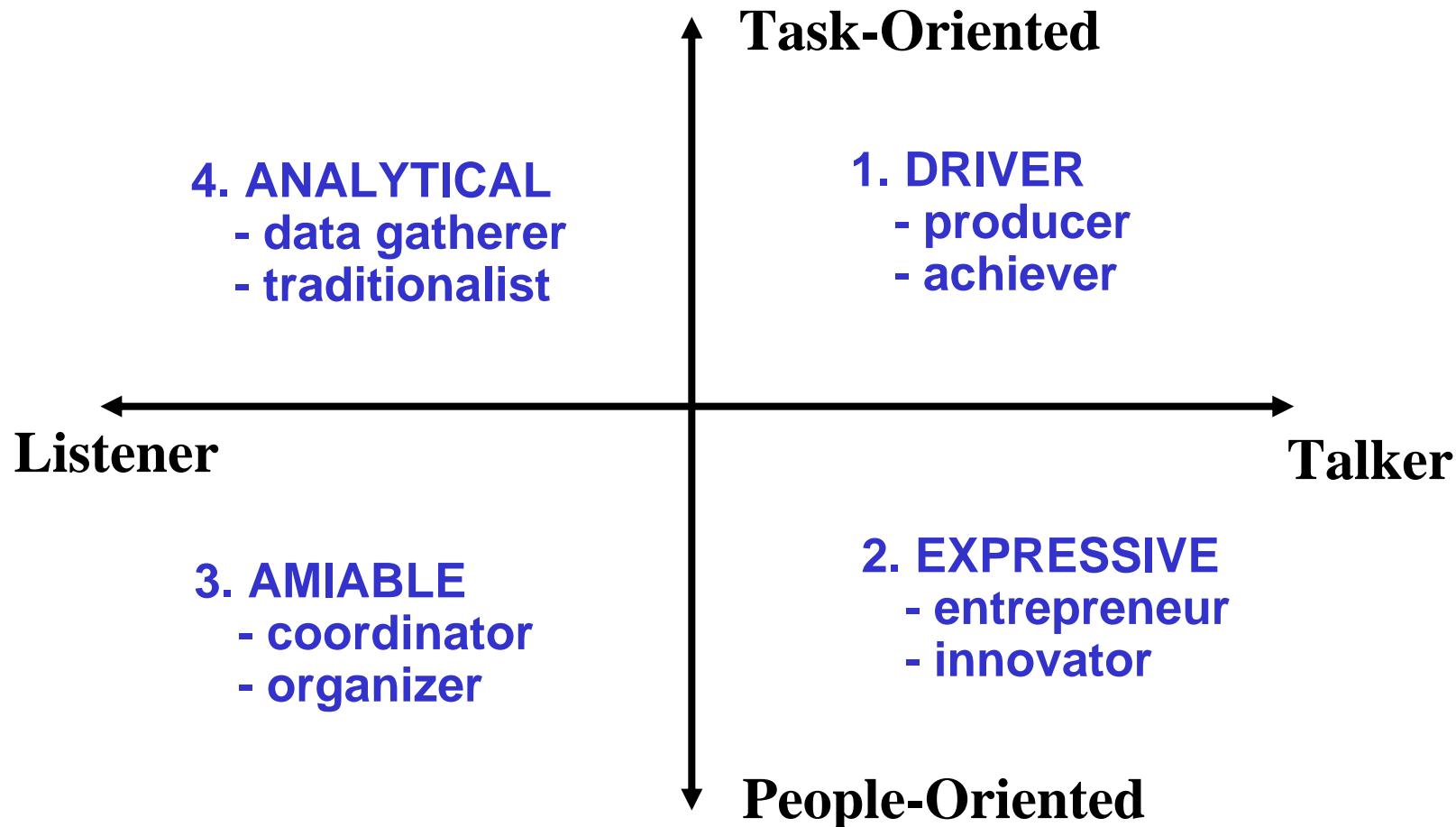
The Perceiver Personality Trait

- If you are predominantly a Perceiver, you will probably:
 - Realize that a clear plan doesn't ensure that everything will go well
 - Stay open to changing the plan as more information becomes available
 - Find out what motivates others in addition to achievement of deadlines (e.g., autonomy, opportunity for learning new skills)
 - Develop ways to regularly scan the environment for new information or consult with someone who does this naturally (e.g., marketing or sales staff)
 - Allow people to work in their own ways while still holding them accountable for the final product
 - Plan for spontaneity; for example, set a time period for brainstorming and then let the process emerge
 - Early in the process, seek feedback on the feasibility of time lines

Judging versus Perceiving

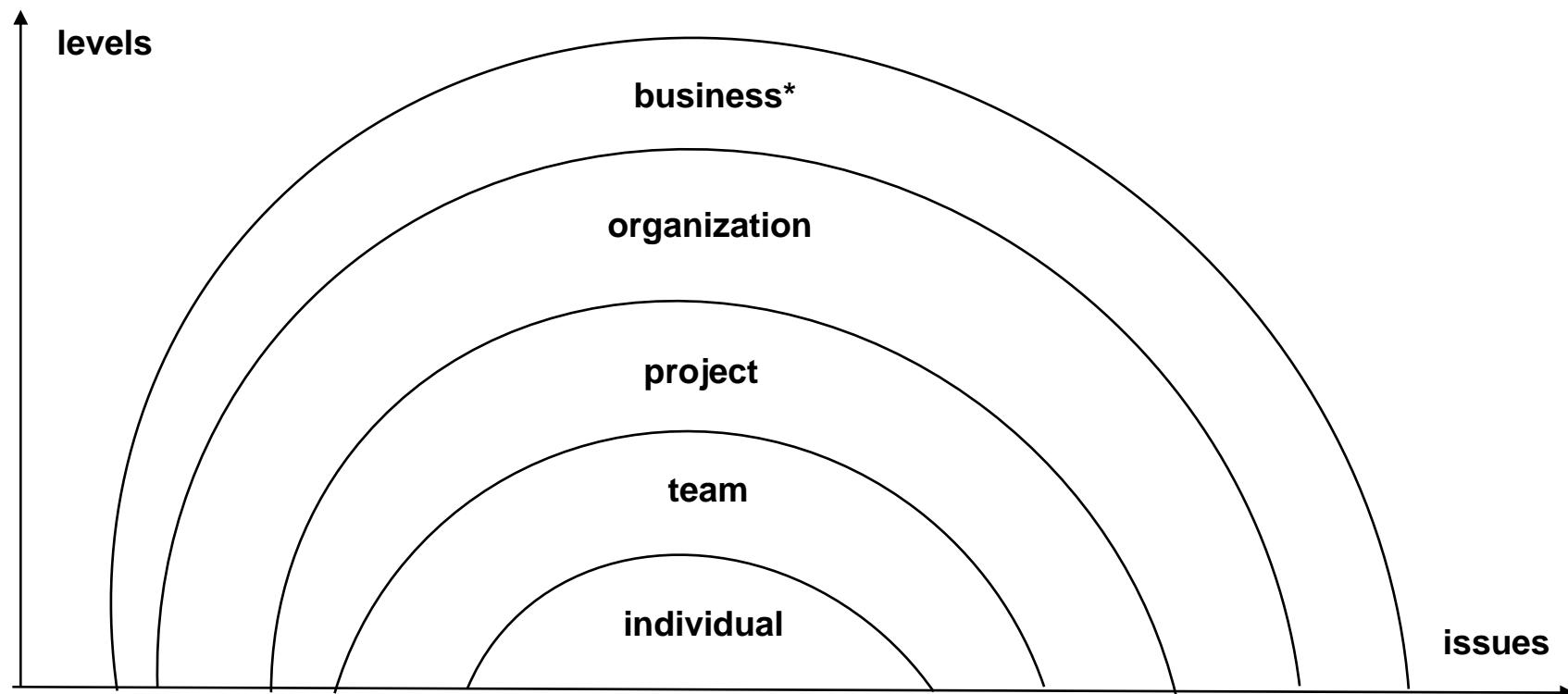
- Elements of both judging and perceiving are valuable personality traits for project managers and project leaders
- Understanding your personality traits can help you compensate for traits that may not be natural for you
 - and also help you to guard against overzealousness in the traits that are most natural for you.

Dimensions of Social Styles*



* Larry Wilson, *The Social Styles Handbook: Find Your Comfort Zone and Make People Feel Comfortable with You*, Wilson Learning Library, 2004.

The 5-level Behavioral Model*



*business: users, customers, acquirers, competitors

* Curtis, B. et al, *A Field Study of the Software Design Process for Large Systems*, CACM, Vol. 31, No. 11, November 1988.

Some Findings from the Curtis Study (1)

Some of their findings, for each of the three areas studied are:

1. Thin spread of application domain knowledge
 - o at the individual level, exceptional designers exerted extraordinary influence because they were able to map deep application knowledge into a computational architecture
 - o at the team level, substantial effort was spent coordinating a common understanding of both the application domain and how the system should perform within it
 - o at the project level, time was spent to ensure that the development teams shared a common model of the system
 - o at the company level, the cost of learning an application area was a significant corporate expense. The time required for a new project member to become productive in an unfamiliar application domain ranged from six months to one year.
 - o within the business milieu, common understanding of the application domain and the system architecture for large, complex systems developed by several companies was hindered by the organizational boundaries between and among the companies

Some Findings from the Curtis Study (2)

2. Fluctuating and Conflicting Requirements

- at the business milieu level, fluctuations and conflicts among requirements usually resulted from market factors such as differing needs among customers, the changing needs of a single customer, changes in underlying technologies or in competitors' products, and misunderstandings of the application domain
- at the company level, requirements problems also emerged from internal sources such as marketing, corporate politics, and management of product lines
- at the project level, the design team often negotiated to reduce conflicts and limit requirements to those that could be implemented within schedule, budget, and technology constraints
- at the team level, it was difficult to enforce those agreements across teams
- at the individual level, programmers often created a hidden source of requirements fluctuation when they added enhancements that were not required

Some Findings from the Curtis Study (3)

3. Communications and Coordination

- at the individual level, the need for extensive communication was not reduced by documentation
- at the team level, teams spend considerable time defining terms, coordinating representational conventions, and creating channels for the flow of information
- at the project level, artificial (often political) barriers to communication among project teams created a need for individuals to span team boundaries and to create informal communication networks
- at the company level, organization boundaries hindered understanding of requirements, while temporal boundaries buried the design rationale
- at the business milieu level, no single group served as the sole source of requirements; organizational communications became crucial to managing projects

The Main Points of Chapter 10

- managing and leading are distinct activities; a competent project manager is good at both, or finds ways to compensate for his or her weaknesses
- a team is a group of individuals working in a cooperative manner to achieve common, shared goals
- many organization do not intentionally kill teams, they just act that way; antidotes can be applied to overcome commonly occurring teamicide techniques
- when people are not performing up to expectations, it is because they can't and/or because they won't
- your job as a leader is to create the conditions in which your followers can satisfy their psychological needs in their work environments
- you and your personnel can communicate more effectively when each person understands and compensates for the personality traits of the others
- the 5-layer behavioral model illustrates problems of communication and coordination at the individual, team, project, company, and business milieu levels